



City of Winter Garden Vision Zero Safety Action Plan

AUGUST 2024



Image of Plant Street in the City of Winter Garden



Image of public engagement at Winter Garden Spring Fever in the Garden



Image of public engagement at Winter Garden Spring Fever in the Garden

Preparation of this Safety Action Plan was funded by a \$3.79 million Safe Streets and Roads for All Federal grant that was awarded to MetroPlan Orlando.

Statement of Protection of Data from Discovery and Admissions

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Key Terms

Crash/Collision – An occurrence where a road user collides with another road user or a moving or stationary obstruction. It may result in injury or loss of life, trauma, and/or property damage and can involve a single party or multiple parties.

High Injury Network – The mapping of corridors where high numbers of people have been killed and seriously injured in traffic crashes.

KSI Crash – A crash that results in someone being killed or seriously injured.

Safe System Approach – A guiding safety approach that builds and reinforces multiple layers of protection to both prevent crashes from occurring and minimize the harm caused to those involved when a crash does occur.

Serious Injury – Serious injuries may include broken bones, severed limbs, burns, traumatic brain injuries, and other major injuries. These injuries usually require hospitalization and transport to a medical facility. May also be referred to as an incapacitating injury.

Transportation Underserved Communities – Communities where people experience greater transportation inequities to access jobs, housing, food, health care, education, and other destinations due to overlapping factors, including demographics, features of the built environment, and in some instances a lack of prior investment in the transportation system.

Vision Zero – A road safety philosophy which states that no loss of life or incapacitating injury due to traffic crashes is acceptable.

Vision Zero Safety Action Plan – A comprehensive plan focusing on reducing and eliminating traffic-related injuries and fatalities. For the purposes of this document, Winter Garden will refer to its Vision Zero Safety Action Plan as “Safety Action Plan.”

Vulnerable Road User – For the purposes of this Safety Action Plan, a person outside of a car or truck, which includes pedestrians, bicyclists, or motorcyclists. This also includes people in wheelchairs and on e-mobility devices, like scooters.

List of Abbreviations

AASHTO – American Association of State Highway and Transportation Officials

ADA – Americans with Disabilities Act

BIL – Bipartisan Infrastructure Law

DUI – Driving Under the Influence

FDOT – Florida Department of Transportation

FHWA – Federal Highway Administration

HIN – High Injury Network

HSIP – Highway Safety Improvement Plan

KSI – Killed or Severely Injured

LTS – Level of Traffic Stress

MTP – Metropolitan Transportation Plan

NACTO – National Association of City Transportation Officials

PPL – Prioritized Project List

PROWAG – Public Right-of-Way Accessibility Guidelines

SRTS – Safe Routes to School

SS4A – Safe Streets and Roads for All

SSA – Safe System Approach

TIP – Transportation Improvement Plan

USDOT – United States Department of Transportation

A Message from the Mayor

The City of Winter Garden is proud to be known as a vibrant, charming town that is safe and welcoming for all who wish to live, work, and play here. We strive to be a place where families and individuals can travel safely to visit all of the wonderful destinations that the City has to offer. The City is always seeking opportunities to enhance the safety and comfort of our roadways and trail network, and is eager to explore any creative ideas that will ultimately lead to less dangerous outcomes for our community.

On January 11, 2024, the Winter Garden City Commission voted unanimously to approve Resolution 24-02, which affirmed the City's commitment to reaching zero traffic fatalities and a 50 percent reduction in serious injuries in the coming years. This Resolution was a first step in achieving Winter Garden's goal of becoming a Vision Zero city. Vision Zero is a road safety philosophy that states no loss of life or serious injuries due to traffic accidents is acceptable. Achieving Vision Zero will require close coordination between all our stakeholders including elected officials, City staff, expert consultants, the business community, and our residents. We will need everyone at the table to help us expand education and awareness, as well as develop and implement safer street designs that improve driver behaviors and reduce the risk of tragic outcomes.

In recent years, it has been well publicized that Central Florida is one of the most dangerous regions for pedestrians and bikers in the United States. We hope that by following the roadmap outlined in this Vision Zero Safety Action Plan, the City of Winter Garden can do our part to ensure safer days ahead for our region.

Winter Garden is a wonderful City, and we are committed to making our roads and trails safer to better serve our community, now and for generations to come.

John Rees

Mayor, City of Winter Garden

City of Winter Garden

Vision Zero Safety Action Plan



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Image of Winter Garden City Hall



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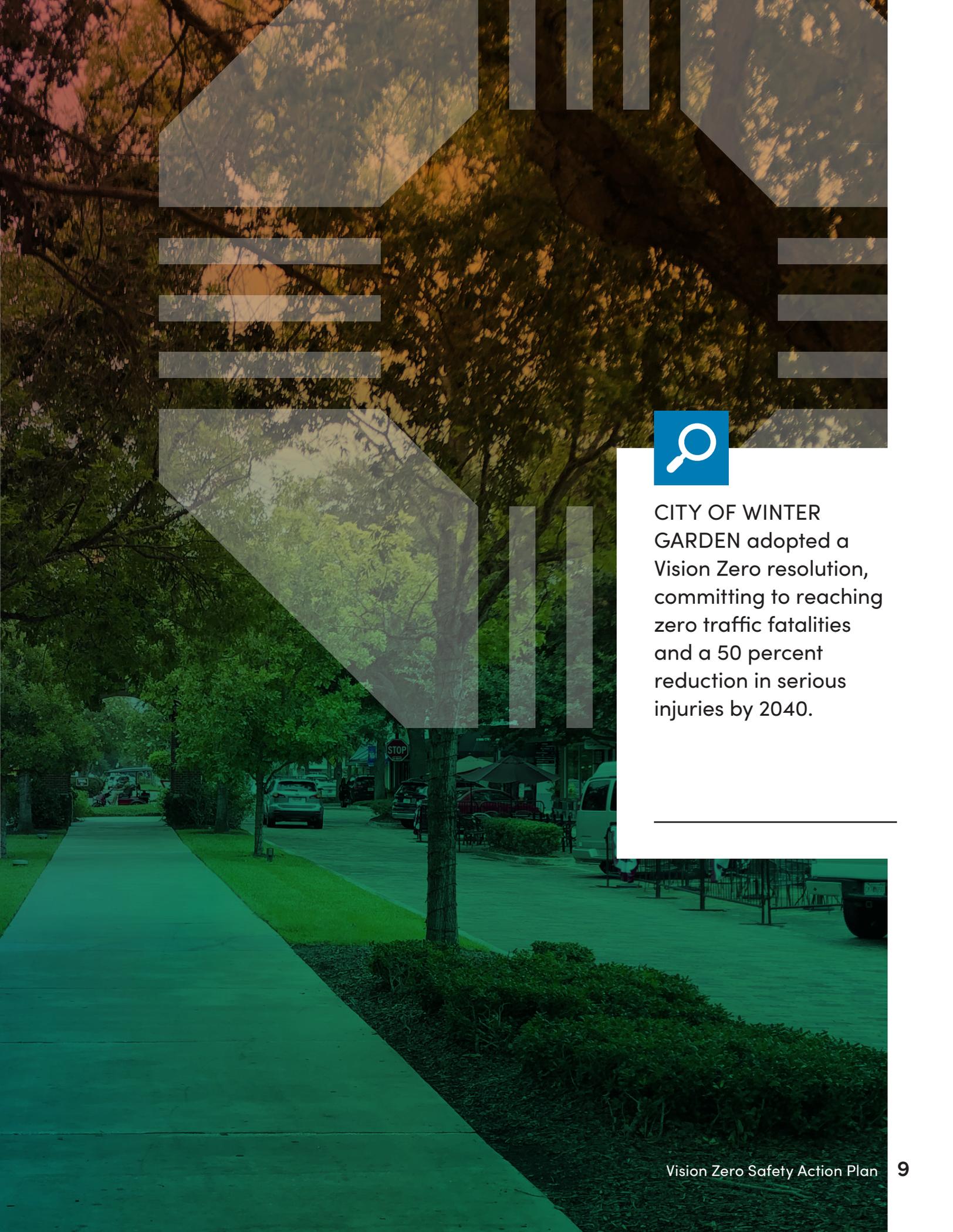


CHAPTER 1

Executive Summary



Image of Plant Street in the City of Winter Garden



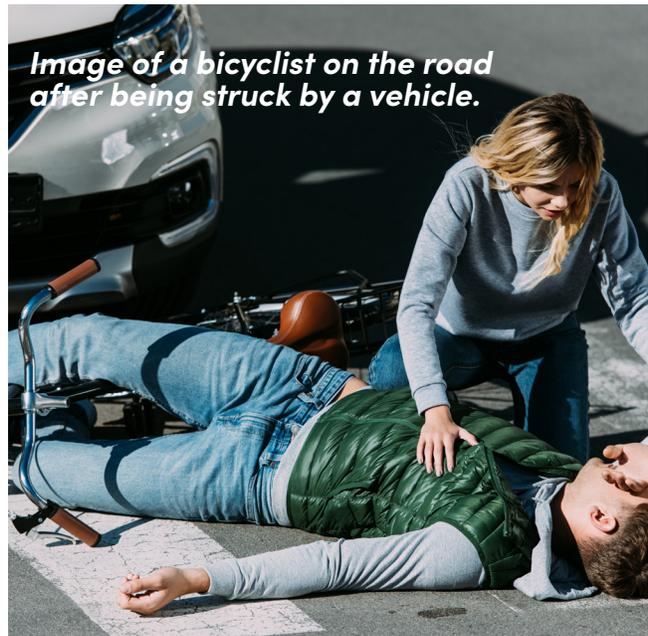
CITY OF WINTER GARDEN adopted a Vision Zero resolution, committing to reaching zero traffic fatalities and a 50 percent reduction in serious injuries by 2040.

Seven people have been killed and 20 people were seriously injured in traffic crashes from 2018 to 2022.

Vision Zero is a road safety philosophy stating no loss of life or incapacitating injury due to traffic crashes is acceptable. The **City of Winter Garden adopted a Vision Zero policy on January 11, 2024.** This Vision Zero Safety Action Plan, known as the Safety Action Plan, is the City's roadmap to reaching the goal of zero crashes that result in a fatality or serious injury.

This Safety Action Plan is part of a larger regional safety effort funded by a \$3.79 million Safe Streets for All (SS4A) grant and conducted by MetroPlan Orlando, the metropolitan planning organization for Orange, Osceola, and Seminole Counties. MetroPlan guides the region toward envisioning a 25-year plan for transportation for all Central Floridians.

During a typical week in the MetroPlan Orlando Region, 5 people are killed and 35 are seriously injured in traffic crashes on the region's roads, which translates to approximately 1,300 fatalities and 9,100 serious injuries over a five-year period. By comparison, in Winter Garden seven people have been killed (in seven crashes) and 20 people were seriously injured (in 17 crashes) in traffic crashes from 2018 to 2022. To address this reality, this Safety Action Plan turns to the core elements of Vision Zero and the Safe Systems Approach.



1.1 What Are the Transportation Safety Issues?

A large share of fatal or serious injury crashes happens on a small percentage of the overall roadway network. While most crashes only involve people in motor vehicles, crashes that result in a fatality or severe injury disproportionately involve someone walking, bicycling, or riding a motorcycle. This Safety Action Plan identifies Winter Garden's HIN (High Injury Network), which is a mapping of corridors where people have been killed or severely injured in traffic crashes in the past five years. Eighty-six percent of the City's traffic deaths occur on five percent of the roads within the City. **Figure 1** shows a map of Winter Garden's HIN.

1.2 Getting to Zero

There is no one solution to reach zero traffic deaths and serious injuries in the region. Rather, it will require a multidisciplinary and collaborative approach.

Community outreach was a component of identifying transportation safety issues in Winter Garden. This plan summarizes the community outreach that was conducted as a part of this plan and how that feedback was incorporated.

This Safety Action Plan also provides tailored Safe System Approach non-engineering and engineering countermeasures Winter Garden can take into consideration with MetroPlan Orlando and others in the region. Finally, it provides monitoring strategies the City can use to track its progress toward zero.

1.3 Vision Zero Policy

The City of Winter Garden adopts Vision Zero as the policy for road and traffic safety in the City and commits to zero fatalities and a 50 percent reduction in severe injuries by 2040. The full resolution is included in **Appendix A**.

1.4 Grants and Other Implementation Sources

The Bipartisan Infrastructure Law (BIL) established the Safe Streets and Roads for All (SS4A) discretionary program with \$5 billion in appropriated funds over 5 years, 2022–2026. The SS4A program funds regional, local, and Tribal initiatives through grants to prevent roadway deaths and serious injuries. To facilitate future SS4A grant application processes, the 2024 SS4A Action Plan Component Checklist was completed for this plan, as summarized in **Appendix B**. This demonstrates that this Safety Action Plan meets the requirements of a qualified Vision Zero Safety Action Plan to qualify for Supplemental Planning and Demonstration as well as Implementation Grant funds through the SS4A program.

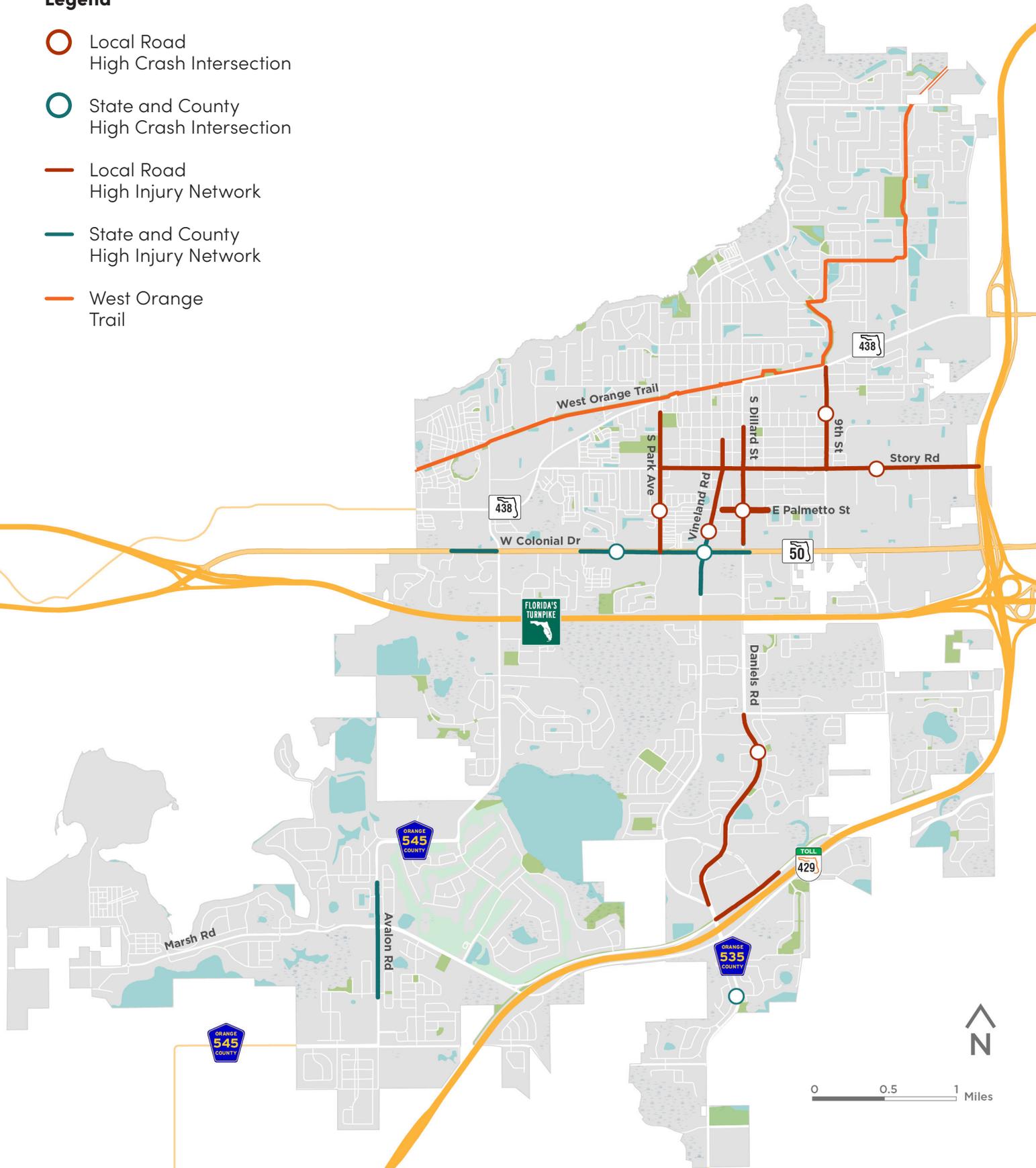
1.5 Tracking the City's Progress

Monitoring progress is an important part of the process. On an annual basis, the City will reflect on progress towards zero through an assessment of the crash trends from the prior year and comparing them to the base-year trends documented in this Safety Action Plan.

Figure 1: Map of Winter Garden High Injury Network

Legend

- Local Road High Crash Intersection
- State and County High Crash Intersection
- Local Road High Injury Network
- State and County High Injury Network
- West Orange Trail



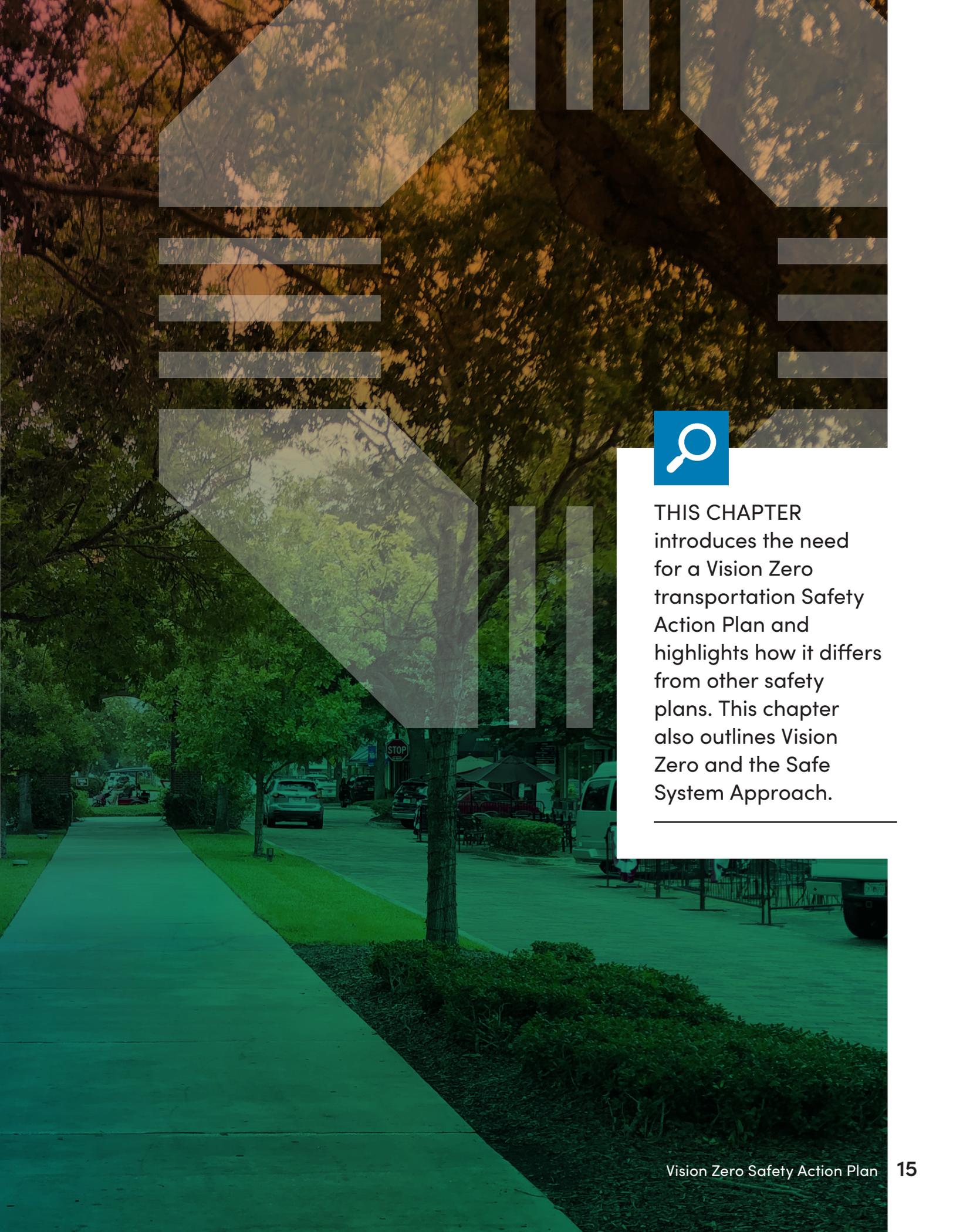


CHAPTER 2

Winter Garden Has a Vision of Zero Fatal and Serious Injury Crashes



Image of Plant Street in the City of Winter Garden



THIS CHAPTER introduces the need for a Vision Zero transportation Safety Action Plan and highlights how it differs from other safety plans. This chapter also outlines Vision Zero and the Safe System Approach.

Visitors and residents in Winter Garden have lost their lives or have had them permanently changed in traffic crashes.

This Safety Action Plan addresses the City of Winter Garden's roadway safety challenges by offering concrete, data-backed safety solutions.

2.1 Vision Zero Makes Roads Safer

Solving Winter Garden's roadway safety challenges will require a holistic approach shaped by forward-minded thinking. That's where Vision Zero and the Safe System Approach come into play.

Vision Zero is a road safety philosophy that views any loss of life or serious injury due to traffic crashes as unacceptable. Vision Zero aims to eliminate crashes that result in death and serious injuries by anticipating human mistakes and minimizing impacts on the human body when crashes do occur. To accomplish this goal, Vision Zero draws from the Safe System Approach (SSA).

How Is Vision Zero Different?

- 1. Reframes traffic deaths as preventable.*
- 2. Integrates human failure into the approach.*
- 3. Focuses on preventing fatal and severe injury crashes rather than eliminating all crashes.*
- 4. Aims to establish safe systems rather than relying on individual responsibility.*
- 5. Applies data-driven decision-making.*
- 6. Establishes road safety as a social equity issue.*

2.2 The Safe System Approach

As an engineering strategy, the SSA insists the responsibility for safety must be shared between all road users, including drivers, motorcyclists, bicyclists, and pedestrians, and those who plan, design, maintain, and enforce the transportation system.

The SSA defines five elements of a safe transportation system:



Safer people: Encourage safe, responsible driving, bicycling, and walking behavior by people who use the roads and create conditions that prioritize their ability to reach their destination unharmed.



Safer vehicles: Proactively plan for a connected and autonomous vehicle fleet and encourage the purchase of vehicles that feature crash prevention technology.



Safer speeds: Use a multidisciplinary approach that induces drivers to travel at speeds appropriate for the context, thus reducing injuries even when human error leads to a crash.



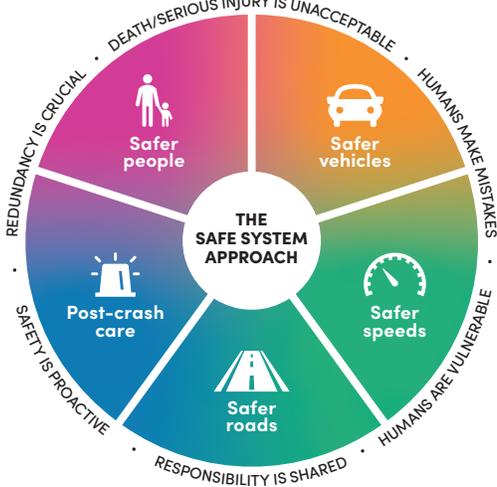
Safer roads: Prioritize roadway design changes, inclusive of bike lanes, sidewalks, crosswalks, and intersections, that address the factors contributing to severe injury and fatal crashes.



Post-crash care: Partner with law enforcement and emergency response to identify strategic investments in crash response and to clearly prescribe protocols for uniform, comprehensive, and consistent crash assessment and crash reporting.

The SSA approach relies on layering interventions in each of these areas atop one another to provide cumulative, redundant safety for all users. The relationship between these elements is represented in **Figure 2**.

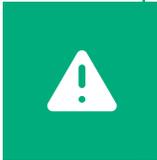
Figure 2: Safe Systems Approach



Source: Adapted from Federal Highway Administration, 2024.

In addition, the SSA is driven by its core principles:

- 

Death and serious injury are unacceptable which is why Winter Garden commits to zero fatalities and a 50 percent reduction in severe injuries by 2040.
- 

Humans make mistakes that can lead to a crash, regardless of whether they are walking, bicycling, or driving. The goal of the SSA is to design and manage a transportation system to ensure these mistakes do not have life-altering impacts.
- 

Humans are vulnerable and bodies can only withstand a limited amount of impact from a crash before death or serious injury occurs.
- 

Responsibility is shared by every person in the transportation system, from everyday users to elected officials, planners, and engineers. Each person has a role to play in reaching zero fatalities and serious injuries.
- 

Safety is proactive, so instead of waiting for a crash to occur, transportation agencies should seek to proactively identify dangerous situations and develop solutions to eliminate them before a crash occurs.
- 

Redundancy of safety measures is crucial to ensure there are multiple layers of the transportation system working together towards safer outcomes so that if one layer fails, people are still protected.

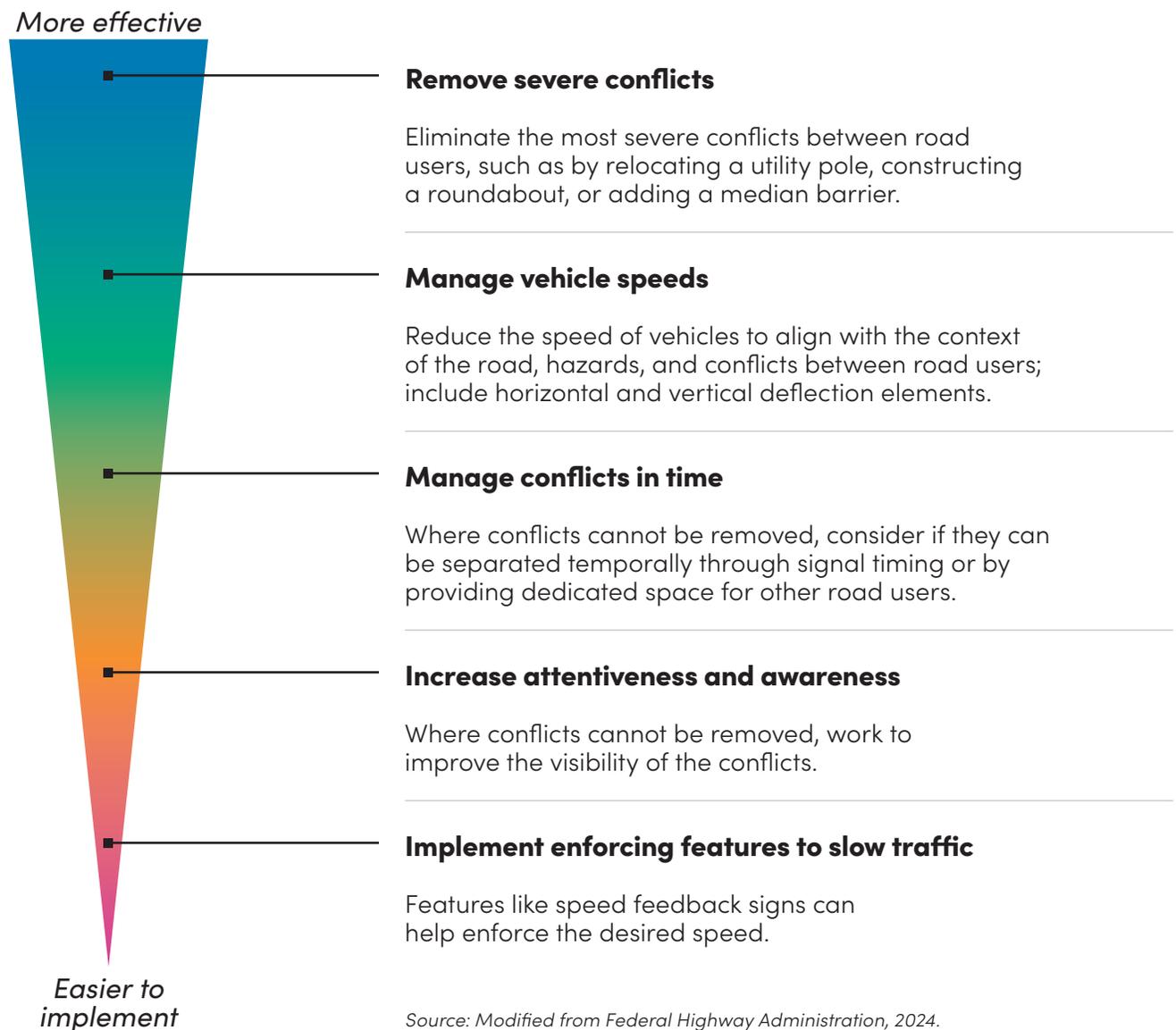
2.3 Safe System Approach Framework

Achieving a safe system requires the coordination of planning, design, operations, and law enforcement to anticipate human errors and proactively compensate for human vulnerabilities.

As shown in **Figure 3**, the SSA tiers roadway interventions broadly by their impact. While this hierarchy offers a general prioritization of safety projects, the SSA does not present a one-size-fits-all solution to roadway safety. Instead, the approach prioritizes context-sensitive design. Every site in a region's HIN will require a different combination of countermeasures depending on what the crash trends reveal at those locations.

The SSA treats safety as a systemic quality and requires regional partners to work together. As such, this Safety Action Plan is meant to work in tandem with MetroPlan Orlando's Regional Vision Zero Safety Action Plan and other concurrent safety efforts being undertaken by neighboring municipalities, Orange County, and the Florida Department of Transportation (FDOT).

Figure 3: FHWA Safe Systems Solutions Hierarchy



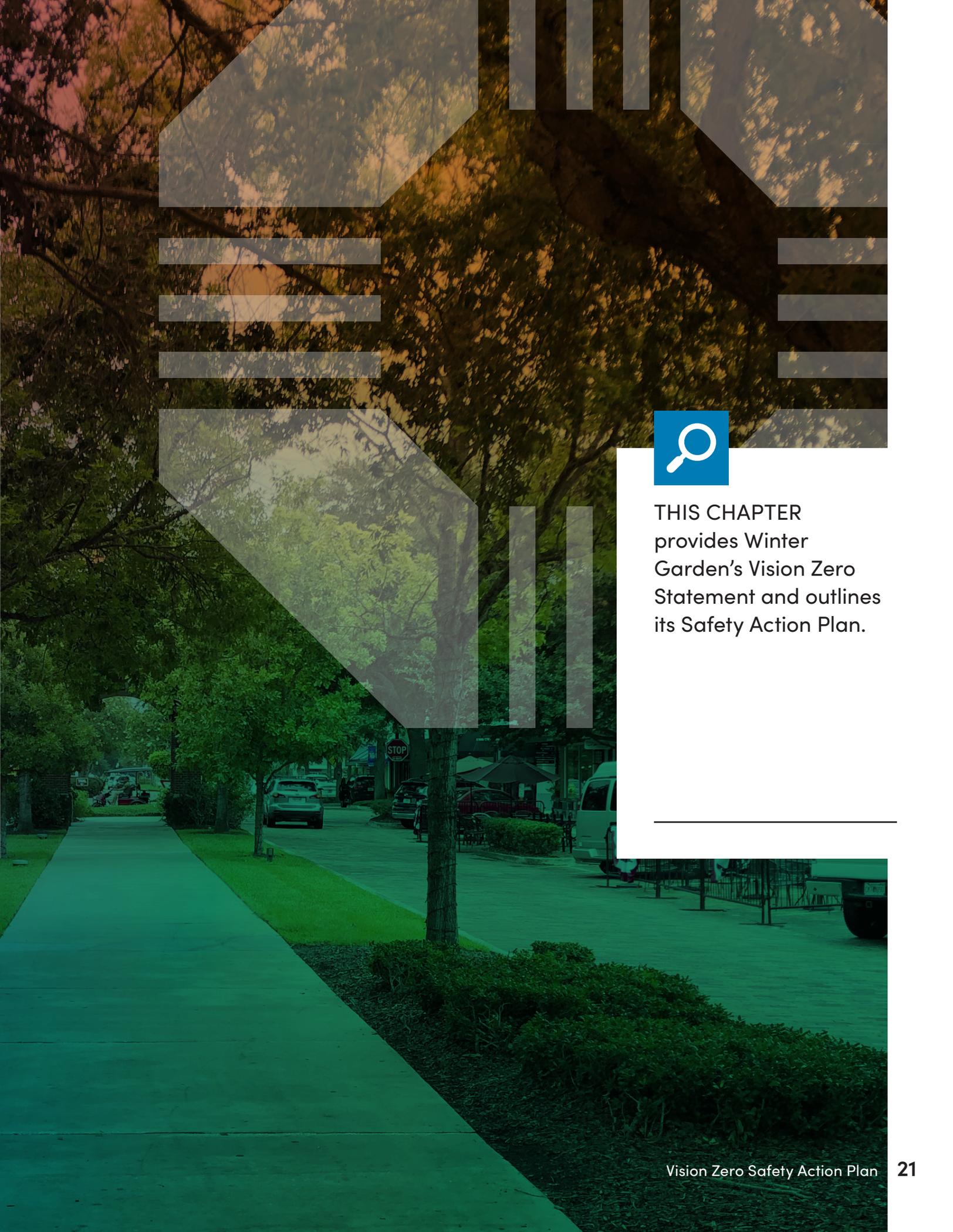


CHAPTER 3

Winter Garden Vision Zero Statement and Plan Framework



Image of Plant Street in the City of Winter Garden



THIS CHAPTER provides Winter Garden's Vision Zero Statement and outlines its Safety Action Plan.



Image of Winter Garden City Hall

The City of Winter Garden adopts Vision Zero as the policy for road and traffic safety and is committed to zero fatalities and a 50 percent reduction in severe injuries by 2040. The City will meet these goals through a local and regional safety approach that is proactive, data-informed, and community-based. Seven fatal crashes and 17 serious injury crashes (with 20 serious injuries) have occurred in Winter Garden from 2018 to 2022. Implementing the projects and strategies identified in the Safety Action Plan will help achieve the vision of safer, accessible, and convenient travel in Winter Garden for all road users, especially the most vulnerable road users.

3.1 Vision Zero Safety Action Plan Outline

This Safety Action Plan plays a key role in eliminating fatal and serious injury crashes. The subsequent sections will:

1

Identify Winter Garden's HIN, which is a network of roads having the highest incidence of death and serious injury crashes. Forty-one percent of the region's traffic deaths between 2018 and 2022 occurred on 2 percent of the roads. In Winter Garden, 86 percent of the City's traffic deaths between 2018 and 2022 occurred on five percent of the roads within the City.

2

Prioritize feasible projects that will have the greatest safety impacts.

3

Recommend policy updates that will support design and maintenance of safe roads.

4

Define next steps so the City can begin working with MetroPlan Orlando, the Florida Department of Transportation (FDOT), and Orange County to implement changes and monitor long-term progress towards roadway safety.

The City of Winter Garden's Safety Action Plan is the result of a coordinated planning effort led by a City Staff Working Group and supported by MetroPlan Orlando and FDOT.



CHAPTER 4

Crash Analysis and Trends

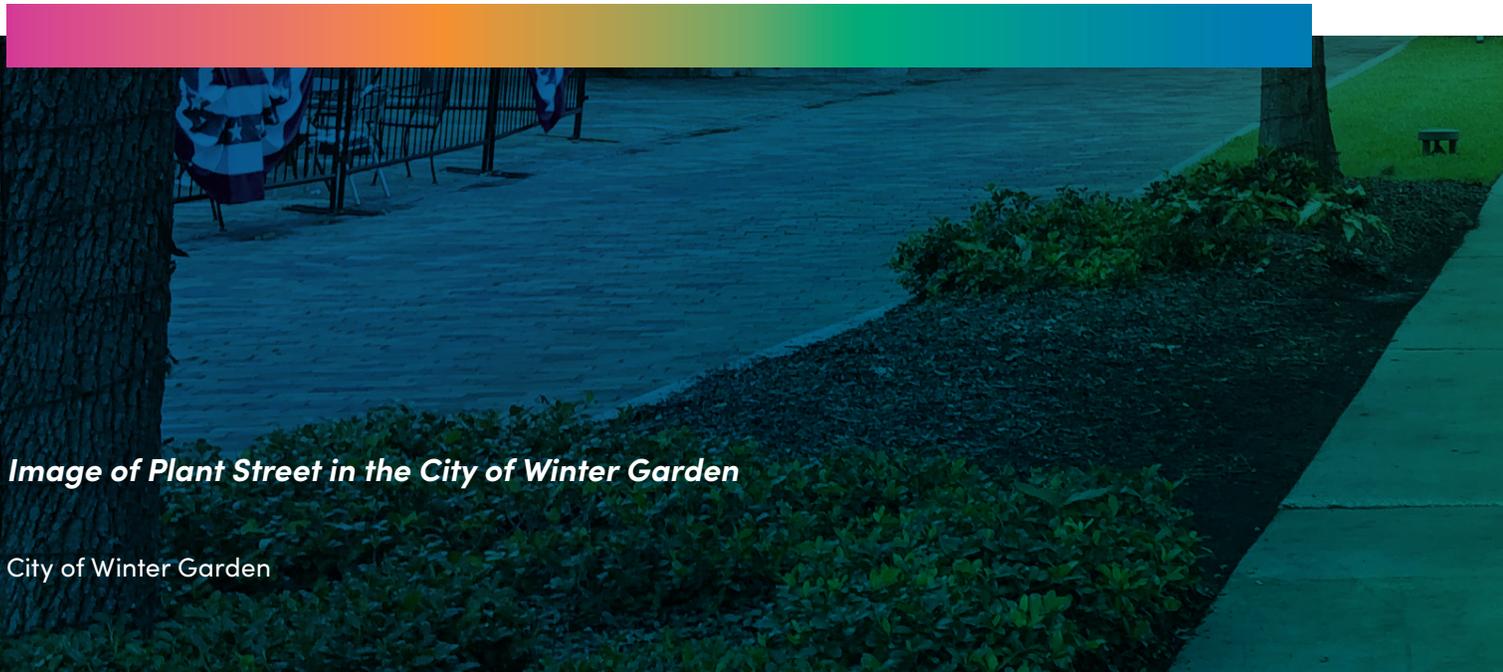
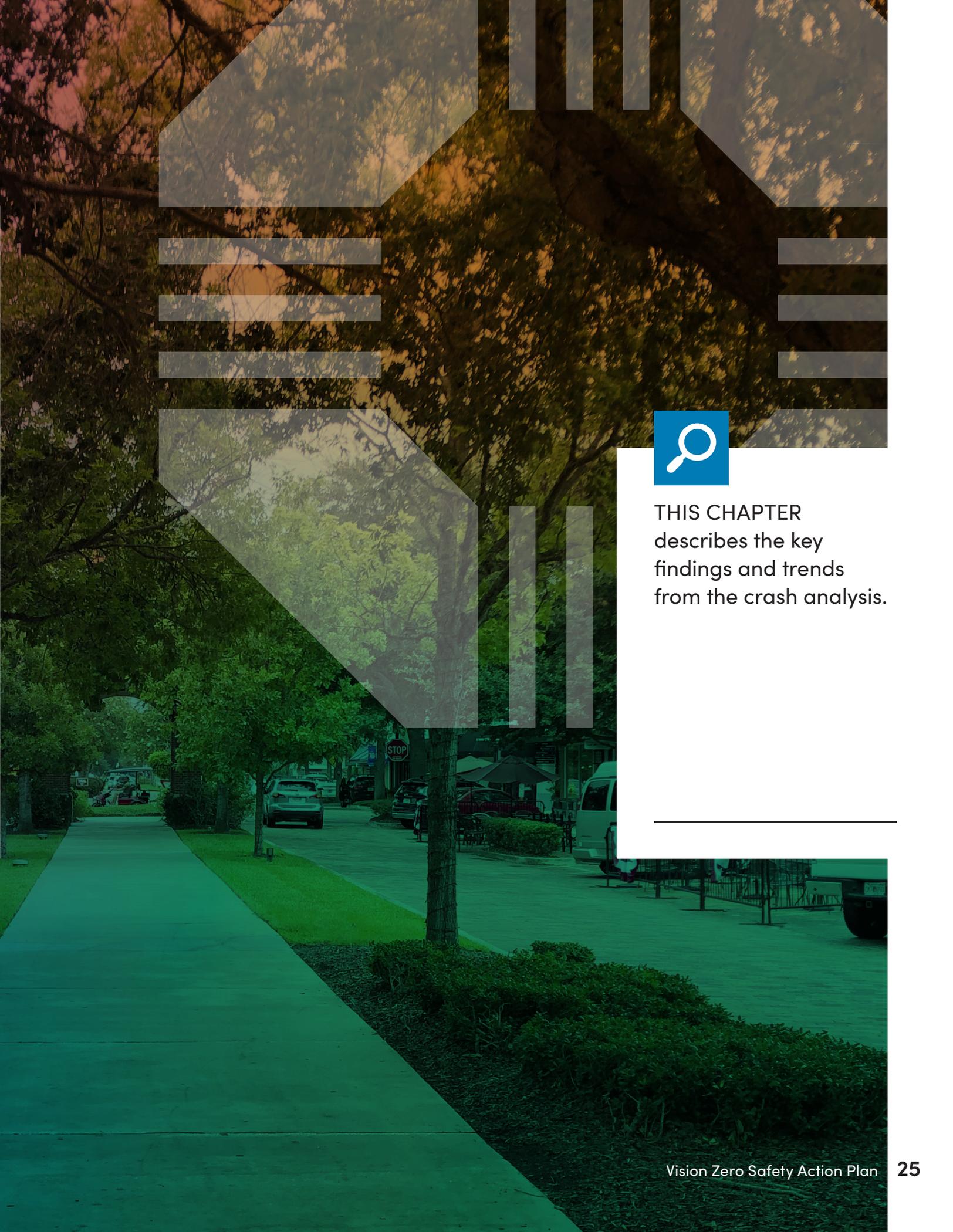


Image of Plant Street in the City of Winter Garden



THIS CHAPTER describes the key findings and trends from the crash analysis.

To provide Winter Garden’s residents, visitors, and businesses with improved roadway safety, this Safety Action Plan identifies the areas of the Winter Garden roadway network that pose the greatest safety challenges. This section identifies Winter Garden’s crash data trends in order to identify the City’s **High Injury Network (HIN)**.

4.1 Who Is Involved in Crashes?

While anyone on the road is at risk of being involved in a crash, certain users in Winter Garden are more at risk. For example, people walking and bicycling are involved in only 3 percent of all crashes but account for 41 percent of the serious injuries and 57 percent of the fatalities between 2018 and 2022. This is shown in **Figure 4**, **Figure 5**, and **Figure 6**, which show the proportion of road users involved in all crashes, fatal crashes, and serious injury crashes.

Figure 4: All Crashes within Winter Garden by Travel Mode (2018-2022)

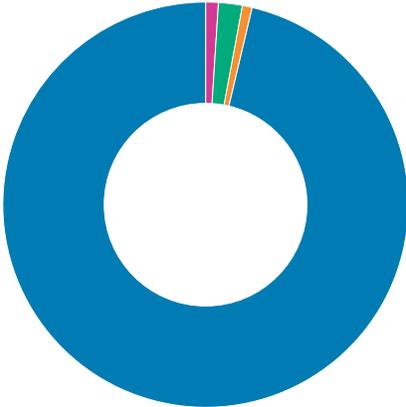
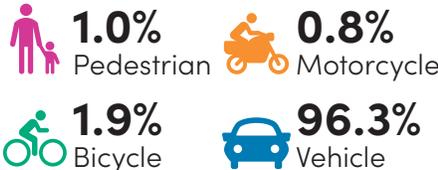


Figure 5: Fatal Crashes within Winter Garden by Travel Mode (2018-2022)

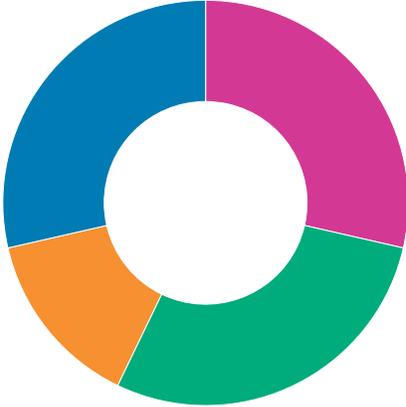
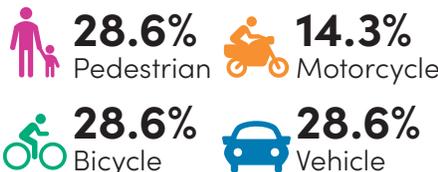
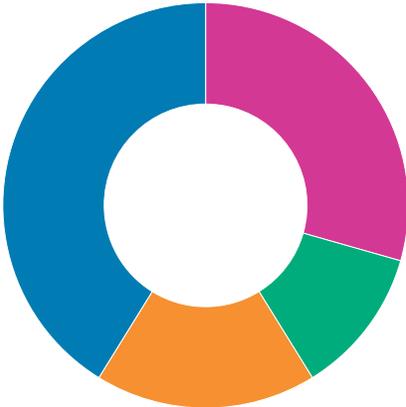
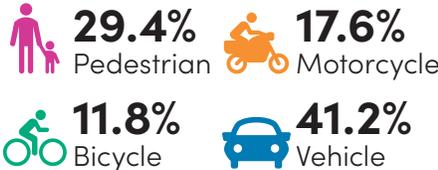


Figure 6: Severe Injury Crashes within Winter Garden by Travel Mode (2018-2022)



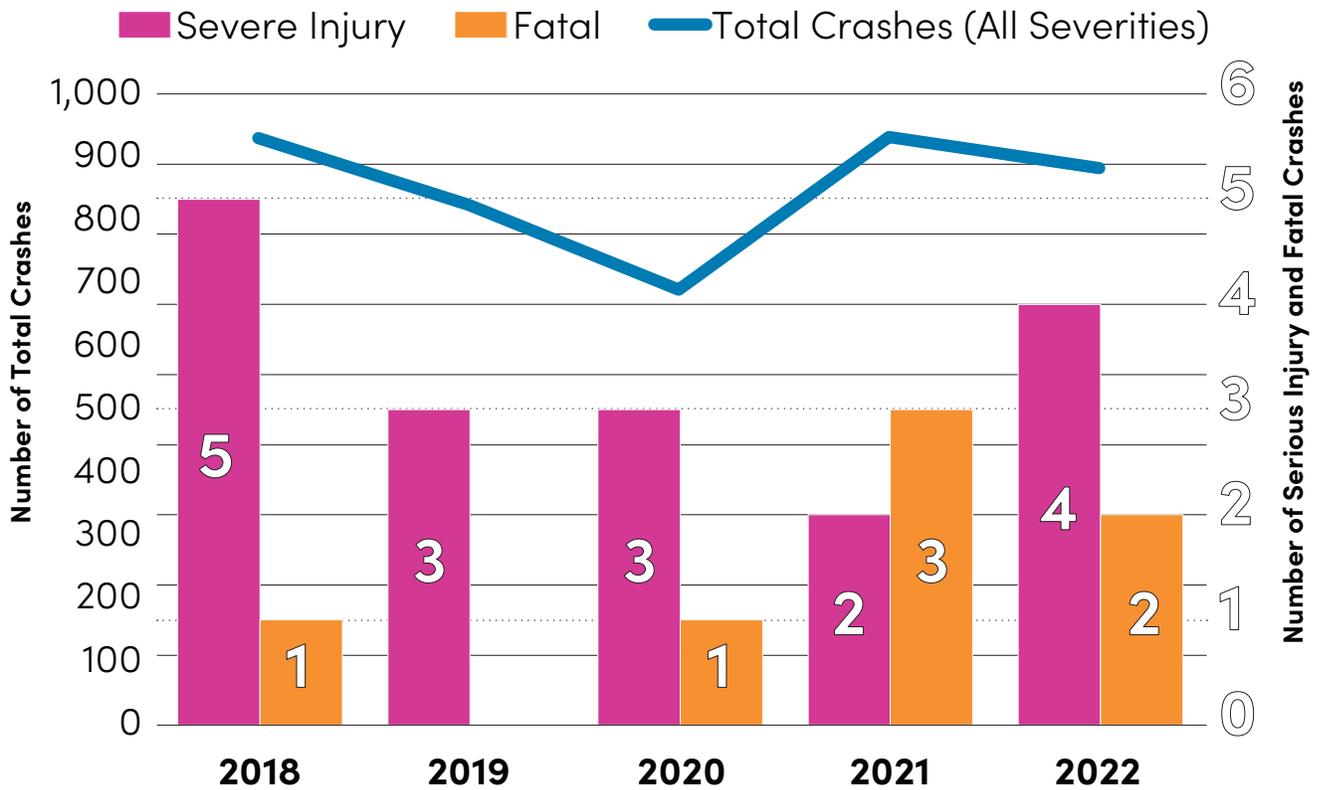


A “serious” or “severe injury” crash results in an incapacitating injury, such as burns, lacerations, spinal cord injuries, or broken bones that require hospitalization. These are frequently life-altering injuries that affect a person’s quality of life and capacity to do tasks—sometimes permanently.

4.8 crashes per year in Winter Garden result in severe injuries or fatalities.

An overview of crashes by year and severity is shown in **Figure 7**, which shows total crashes, severe injury crashes, and fatal crashes, but it is important to note that some of these crashes had multiple severe injuries or fatalities.

Figure 7: Crashes within Winter Garden by Year and Severity



4.1.1 Focus on Transportation Underserved Communities

Every community has its unique transportation advantages and disadvantages based on factors such as land use, road network characteristics (i.e. the sidewalks and streetlights), and demographics. Transportation disadvantage occurs when people are unable to access the needs of their daily life regularly, reliably, and safely. To better understand the disadvantages the US Department of Transportation (USDOT) developed the Equitable Transportation Community (ETC) Explorer which uses a set of criteria to identify transportation underserved communities. These criteria served as the basis of MetroPlan Orlando's Transportation for All: Overcoming Obstacle report, which included five components or indicators of transportation disadvantage as summarized below:



Transportation Insecurity:

When people are unable to get to where they need to go to meet the needs of their daily life regularly, reliably, and safely.



Environmental Burden:

Natural or built environments making transportation challenging or burdensome, such as pollution, physical barriers (i.e. waterways, bridges, unsafe roadways), hazardous facility exposure, and the built environment.



Social Vulnerability:

Socioeconomic indicators such as lack of employment, under-employment, educational attainment, and poverty.



Health Vulnerability:

Increased frequency of health conditions that may result from exposure to air, noise, and water pollution, as well as lifestyle factors such as poor walkability, car dependency, and long commute times.



Climate and Disaster Risk Burden:

Impacts from sea level rise, changes in precipitation, extreme weather, and heat which pose risks to the transportation system. These hazards may affect system performance, safety, and reliability.



54%
of all crashes
and

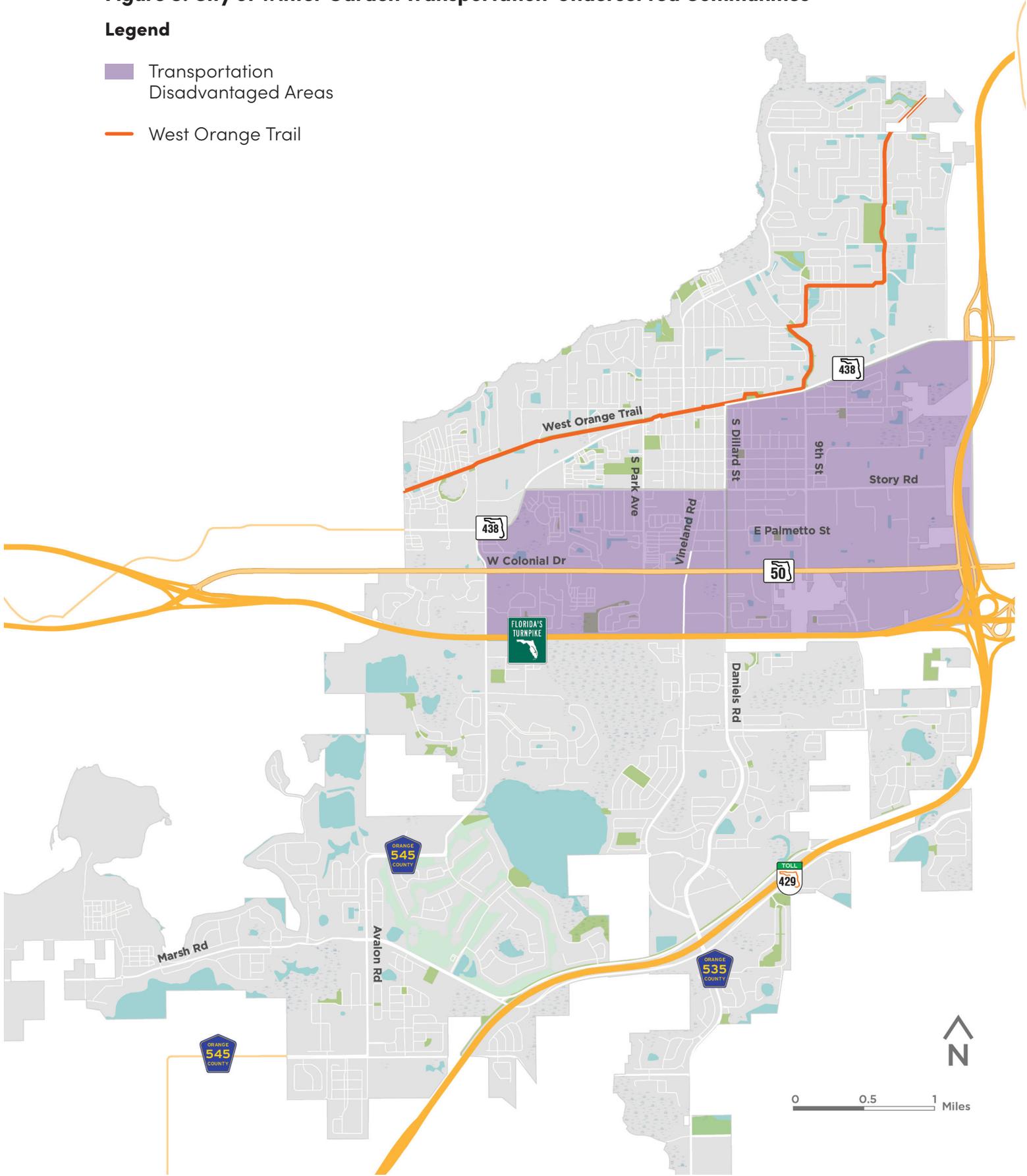
43%
of fatal crashes
occur in or
adjacent to
transportation
underserved
communities

In Winter Garden, 29 percent of the population lives in a community considered to be transportation underserved (as defined by USDOT) and 54 percent of all crashes and 43 percent of fatal crashes occur in or adjacent to transportation underserved communities. Many of those crashes involved a severe injury or fatality. As fatal and severe injury crashes disproportionately occur in transportation underserved communities, improvements in transportation underserved communities will be prioritized. The identified transportation underserved communities in Winter Garden are shown in [Figure 8](#).

Figure 8: City of Winter Garden Transportation Underserved Communities

Legend

- Transportation Disadvantaged Areas
- West Orange Trail



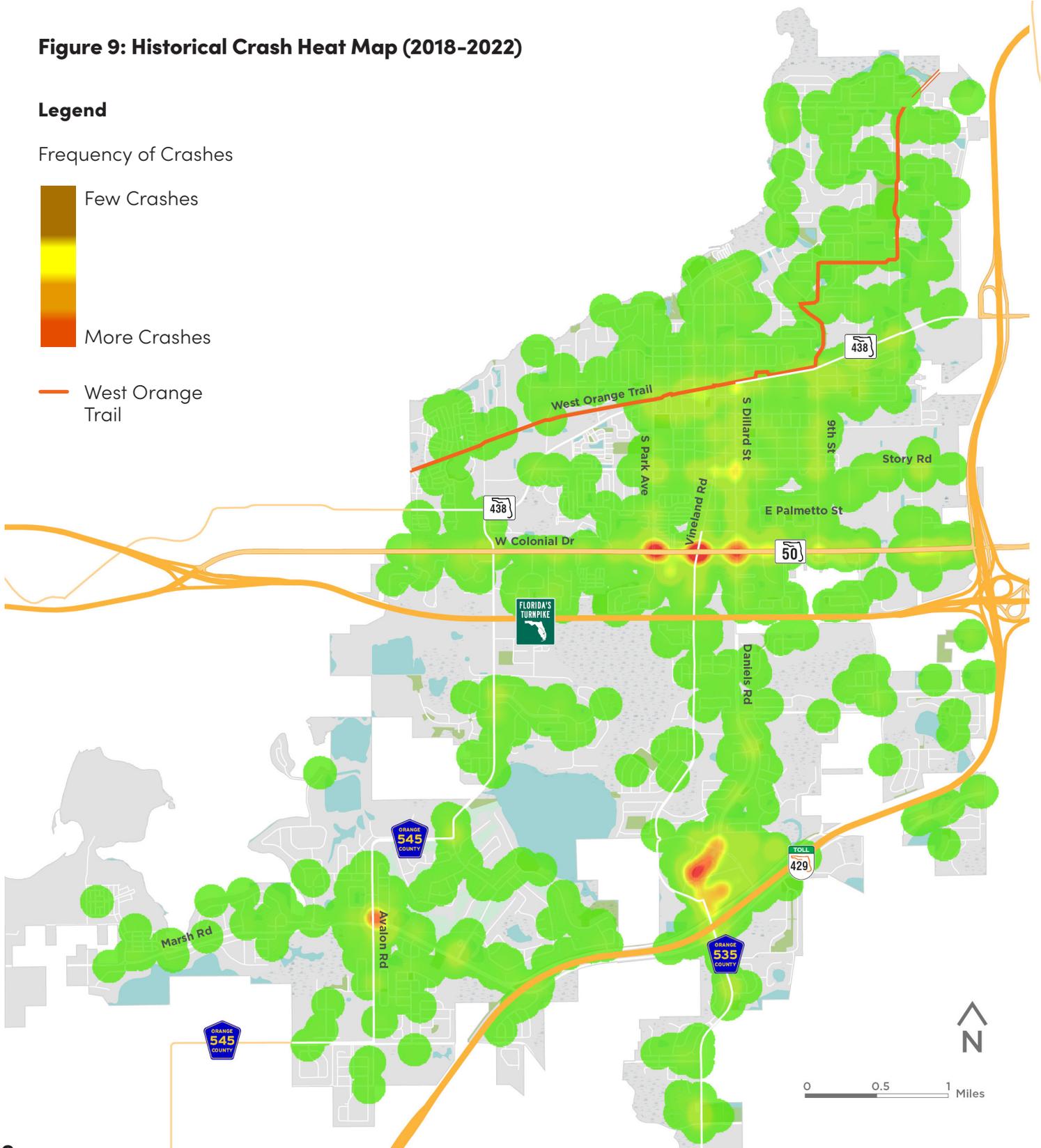
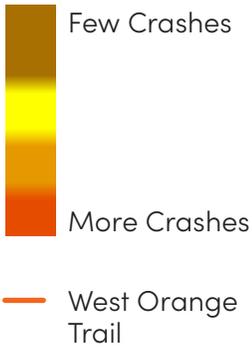
4.2 Where Are Crashes Happening?

Figure 9 is a heat map showing where crashes are occurring. On the map, red indicates a higher concentration of crashes where green indicates fewer crashes. Crash concentrations are apparent on S.R. 50, Winter Garden Vineland Road, Daniels Road, and Avalon Road.

Figure 9: Historical Crash Heat Map (2018-2022)

Legend

Frequency of Crashes



4.3 What Behaviors Are Contributing to the Crash Trends?

Based on the evaluation of the crash data, it is likely that the following factors played a role in causing crashes in Winter Garden:

Behavioral/Driver Factors

- Crashes involving **alcohol and drug use, distraction, aggression, speeding, and passengers not wearing seatbelts** are more likely to result in a fatality.

Contextual Factors

- Time of day and road conditions can affect crash severity. For example, **nighttime lighting** and **wet roadways** both can increase crash severity.
- Certain parts of the roadway are more dangerous for drivers, including near **intersections** and **when the vehicle leaves its lane**.

Regionally, fatal and severe injury crashes are most likely to occur on roads that have been designed to accommodate vehicle travel at 45 mph or above, that are also expected to serve pedestrians, bicyclists, and transit, all while providing direct and convenient access to a variety of destinations.

A breakdown of the contributing behavioral factors that resulted in fatal crash outcomes in Winter Garden is shown below in [Table 1](#), similar results for contextual factors are shown in [Table 2](#).

Table 1: Behaviors that Contributed to Crashes in Winter Garden

BEHAVIOR	TOTAL NUMBER OF CRASHES	% OF FATAL CRASHES
Alcohol or drugs involved	113	0%
Distraction	988	29%
Aggressive driving	68	0%
Speeding*	38	0%
Not wearing a seatbelt	95	0%

*Crashes involving speeding are based on the reporting officer's assessment of travel speed and are likely an under count of crashes with a direct correlation to speeding.

Table 2: Contexts that Contributed to Crashes in Winter Garden

CONTEXT	TOTAL NUMBER OF CRASHES	% OF FATAL CRASHES
Nighttime	1,005	71%
Wet Roadway	477	11%
Intersection related	1,127	57%
Lane departure	93	0%

Note: Some crashes may have multiple factors, so total and percent of fatal crashes may be different than shown in other tables and figures.

4.4 High Injury Network

Winter Garden’s High Injury Network (HIN), **Figure 10**, represents the corridors and intersections where a disproportionate number of fatal or serious injury crashes occur, with added emphasis on crashes involving people walking, bicycling, and motorcycling.

The HIN map provides a comprehensive set of locations for the City of Winter Garden and partner jurisdictions to prioritize safety improvements and resources.

Table 3, **Table 4**, and **Figure 10** shows the HIN on both local and State/County roadways. Details of how the HIN was calculated are provided in **Appendix C**.

Table 5 shows the percentage of total, serious injury, and fatal crashes occurring on Winter Garden’s HIN by jurisdiction. By comparison, **Table 6** shows the percentage of total, serious injury, and fatal crashes occurring on Winter Garden’s entire roadway network by jurisdiction.

Table 3: High Injury Network Segments

ROADWAY	FROM	TO	HIN TYPE	LENGTH (MI.)
Stoneybrook West Pkwy.	Winter Garden Vineland Rd.	Lowe’s Entrance	Local Road	0.48
Daniels Rd.	Winter Garden Vineland Rd.	Roper Rd.	Local Road	1.29
Park Ave.	SR 50	Smith St.	Local Road	0.85
Vineland Rd.	Morgan St.	Miller St.	Local Road	0.57
Dillard St.	N. Of SR 50	Maple St.	Local Road	0.72
Story Rd.	Park Ave.	SR 429	Local Road	1.94
9th St.	Story Rd.	Plant St.	Local Road	0.61
Palmetto St.	Main St.	Grand Royal Cir.	Local Road	0.27
Avalon Rd.	S. Of Golden Bell St.	N. of Ardmore Dr.	County Road/ State Road	0.69
SR 50	Winterwoods Apartments	Avalon Rd.	County Road/ State Road	0.27
SR 50	Stage Stop Campground	E. of Dillard St.	County Road/ State Road	0.99
Winter Garden Vineland Rd.	Palm Crossing Blvd.	Morgan St.	County Road/ State Road	0.39

Table 4: High Injury Network Intersections

INTERSECTION	HIN TYPE
Daniels Rd. & Lost Grove Cir.	Local Road
Park Ave. & Jackson St.	Local Road
Morgan St. & Vineland Rd.	Local Road
Dillard St. & Palmetto St.	Local Road
Garden Commerce Pkwy. & Story Rd.	Local Road
9th St. & Smith St.	Local Road
Winter Garden Vineland Rd. & Lakeshore Grove Dr.	County Road/State Road
Hyde Park Cir. & SR 50	County Road/State Road
Winter Garden Vineland Rd. & SR 50	County Road/State Road

Table 5: HIN Serious Injury and Fatal Crashes (2018-2022)

HIN BY JURISDICTION	% OF TOTAL CRASHES	% OF TOTAL SERIOUS INJURY CRASHES	% OF TOTAL FATAL CRASHES
Local	19%	35%	57%
County Road/ State Road	21%	24%	29%
Total	40%	59%	86%

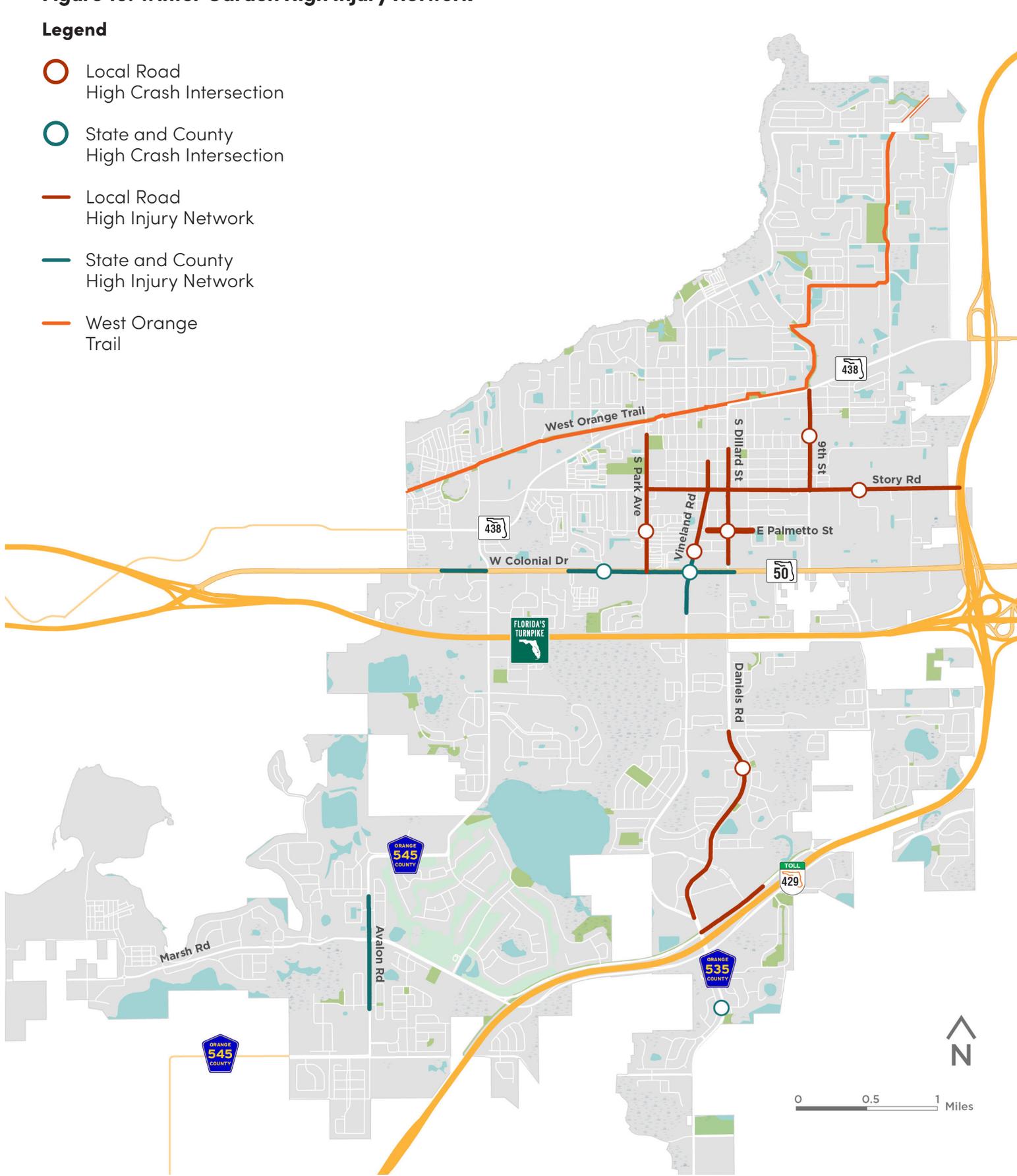
Table 6: Entire Roadway Network Serious Injury and Fatal Crashes (2018-2022)

ENTIRE ROADWAY NETWORK BY JURISDICTION	% OF TOTAL CRASHES	% OF TOTAL SERIOUS INJURY CRASHES	% OF TOTAL FATAL CRASHES
Local	66%	53%	57%
County Road/State Road	34%	47%	43%

Figure 10: Winter Garden High Injury Network

Legend

-  Local Road High Crash Intersection
-  State and County High Crash Intersection
-  Local Road High Injury Network
-  State and County High Injury Network
-  West Orange Trail



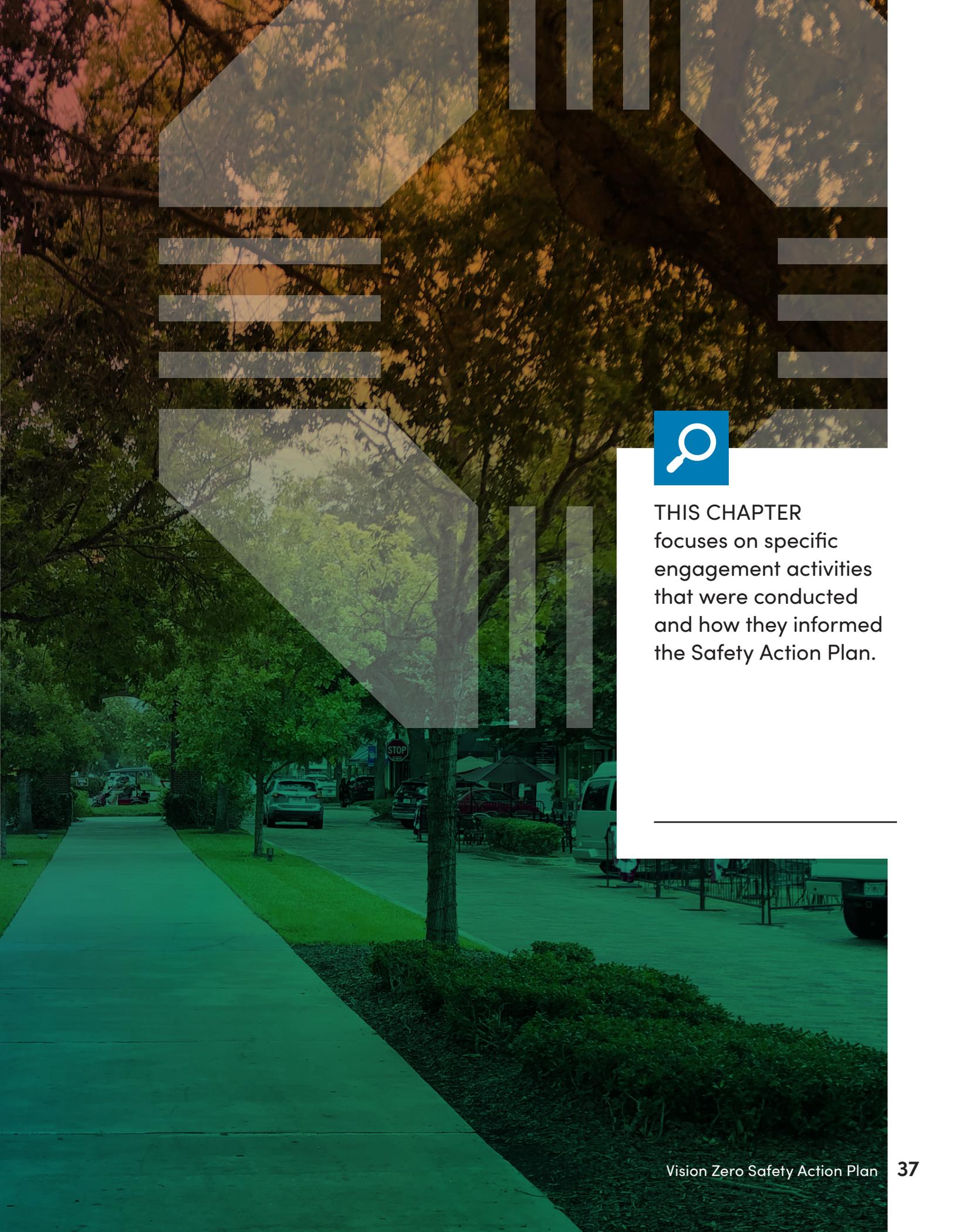


CHAPTER 5

Listening to the Community



Image of Plant Street in the City of Winter Garden



THIS CHAPTER
focuses on specific
engagement activities
that were conducted
and how they informed
the Safety Action Plan.

The City of Winter Garden and MetroPlan Orlando reached out to stakeholders, residents, and visitors, to gain an understanding of how the people who live, work, and visit the region and Winter Garden experience its roadways.

Local and regional stakeholder engagement gathered feedback from multiple sources to inform the development of the local and regional Safety Action Plans . Public feedback was collected using a range of in-person and online opportunities. This section describes the regional engagement conducted by MetroPlan Orlando and the local engagement conducted by the City of Winter Garden.

5.1 MetroPlan Orlando’s Regional Engagement

The engagement strategies deployed as part of the MetroPlan Orlando Regional Vision Zero Safety Action Plan complement strategies at the city level. Cumulatively, they spread awareness and engagement much more broadly than any single agency could. Further details on the regional engagement efforts are provided in [Appendix D](#).

5.1.1 Regional Task Force and Steering Committees

A **Regional Vision Zero Task Force** provided feedback and strategic guidance throughout the preparation of the regional Safety Action Plan and included people representing local agencies, FDOT, public health officials, medical professionals, bicycling and pedestrian advocacy groups, and members of the public. The task force provided key feedback on the technical analysis, public engagement strategies, policy benchmarking, Safety Action Plan elements, and project prioritization criteria.

5.1.2 Regional Hub Site

To supplement information provided on the MetroPlan Orlando website, a Hub Space was developed to provide one centralized location for sharing of safety information. The site provides an overview of the Safety Action Plan process and purpose, an interactive HIN dashboard, and crash data by jurisdiction. The hub also allows visitors to provide feedback, comments, testimony, and specific locations of concern.

The site is intended to live on beyond the preparation of this Safety Action Plan and serve as a clearinghouse for information and Vision Zero updates. The site can be accessed at VisionZeroCFL.gov or by using the QR code in [Figure 11](#). The crash dashboard will be updated on an annual basis as part of progress monitoring.



5.1.3 Regional Public Feedback

Public feedback has been collected through the Hub resulting in over 650 comments from 350 people as of April 2024. Of the feedback received, the majority were from Orange County (84%), with Osceola County (7%) and Seminole County (9%) having lower response rates. Approximately 30 percent of the comments were made about transportation facilities within transportation underserved communities, slightly higher than the regional percentage of people who live in transportation underserved communities (25%).

Common themes that emerged from the feedback relate to **a need for improved infrastructure**, especially for people walking, bicycling, and taking transit, as well as, **a need for more education** directed at all road users to provide safe walking, bicycling and driving habits. In addition, there is **a need for more enforcement of egregious behaviors** that are prevalent throughout the region, including excessive speeding, people driving golf carts on sidewalks, and people using their phones.

There is a lack of road courtesies that contributes to the issue. With the wide center section, traffic from multiple directions frequently perform maneuvers to jump in front of vehicles or around vehicles that are having difficulty navigating the intersection.

– Orange County Resident



Image of public engagement at Winter Garden Spring Fever in the Garden

Reckless driving [occurs] on a regular basis near a playground and [the] area where many people are walking and riding on bikes.

– Winter Garden Resident

5.2 City of Winter Garden Local Engagement

The City of Winter Garden conducted targeted public engagement efforts in coordination with MetroPlan Orlando’s regional efforts to bring awareness to local roadway safety issues and to learn about challenges the community is facing. The local engagement plan is provided in [Appendix E](#) and community engagement materials are provided in [Appendix F](#).

5.2.1 City of Winter Garden Staff Working Group

The City of Winter Garden developed a Working Group that planning effort for the City. It included representatives from planning, engineering, public services, and fire and police departments. The Working Group met at key points in the development of the Safety Action Plan. Meetings were held on the following dates.



Working Group meeting notes are provided in [Appendix G](#).

5.2.2 City of Winter Garden Community Events

The City conducted outreach efforts at public events to inform the community about the planning process and solicit feedback about transportation safety concerns in each community. These were held on:

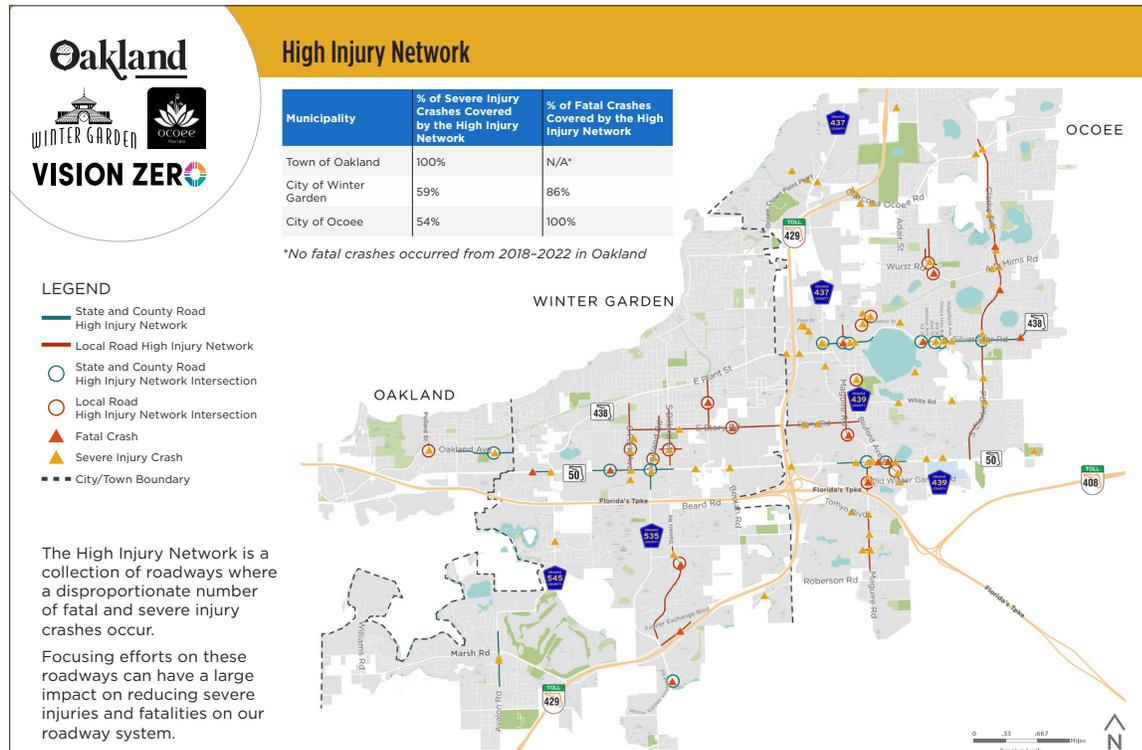
October 4, 2023
Winter Garden Farmers Market

April 6, 2024
Spring Fever in the Garden 2024

Boards of information presented at community engagement events are shown in [Figure 12](#).



Figure 12: Community Engagement Boards



Oakland
WINTER GARDEN OCOEE
VISION ZERO

Higher Speed Risks and Countermeasures

Speed Influences Drivers' Cone of Vision

40 MPH | 30 MPH | 20 MPH | 15 MPH

Pedestrian's Risk of Death or Serious Injury

40 MPH 85% **30 MPH 45%**

Countermeasures you would like to see

Vote for Intersection and Corridor Potential Countermeasures

Vote for Pedestrian/Bicycle Potential Countermeasures

The public was encouraged to vote on countermeasures they would like to see more of. The result of interactions with 80 individuals led to the following countermeasures receiving the most votes:

- Separated bicycle lanes (21 votes)
- Roundabouts (14 votes)
- Speed enforcement (10 votes)

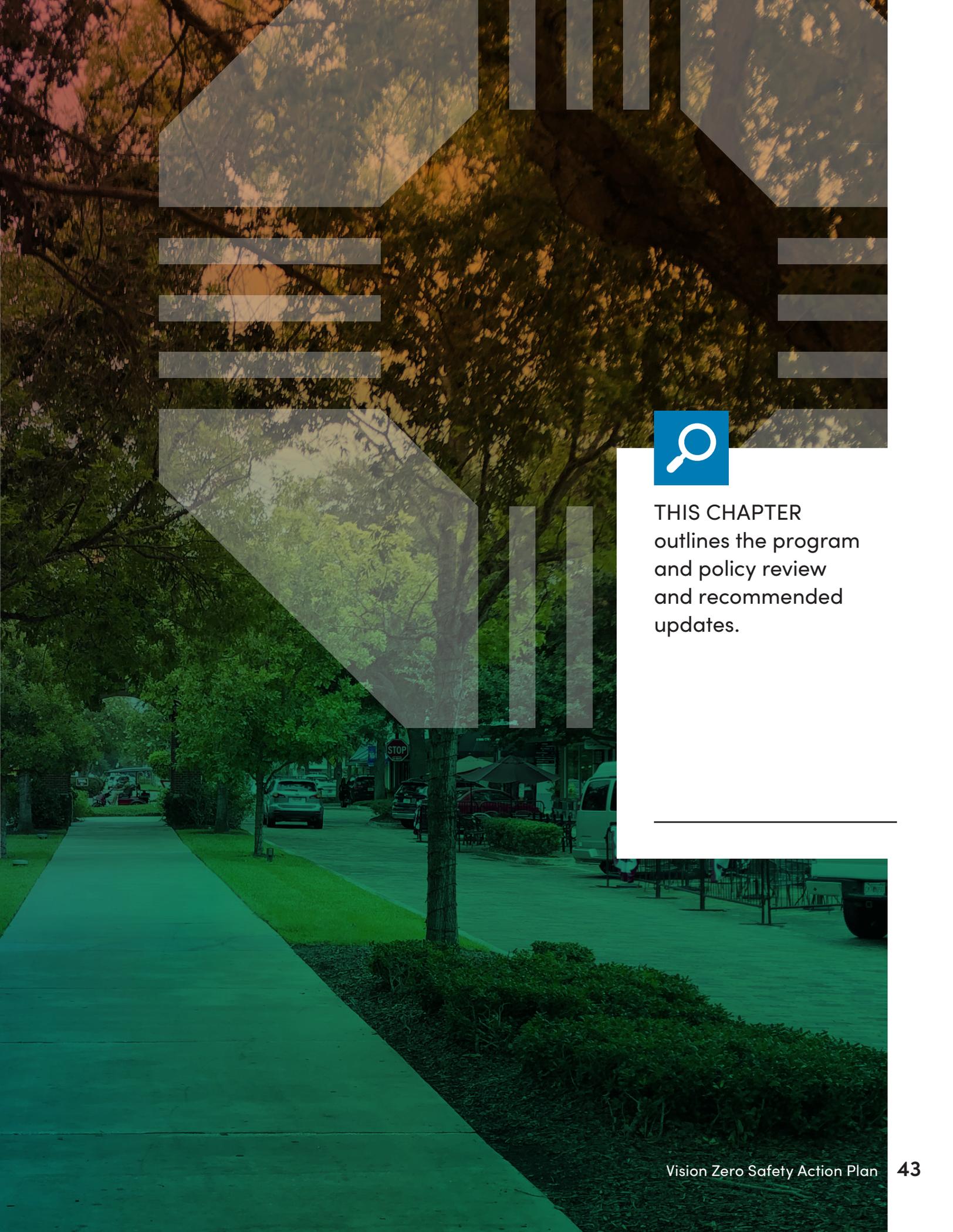


CHAPTER 6

Recommended Programs and Policy Updates



Image of Plant Street in the City of Winter Garden



THIS CHAPTER
outlines the program
and policy review
and recommended
updates.

This section of the Safety Action Plan addresses non-engineering programs and policies geared toward improving road user behavior.

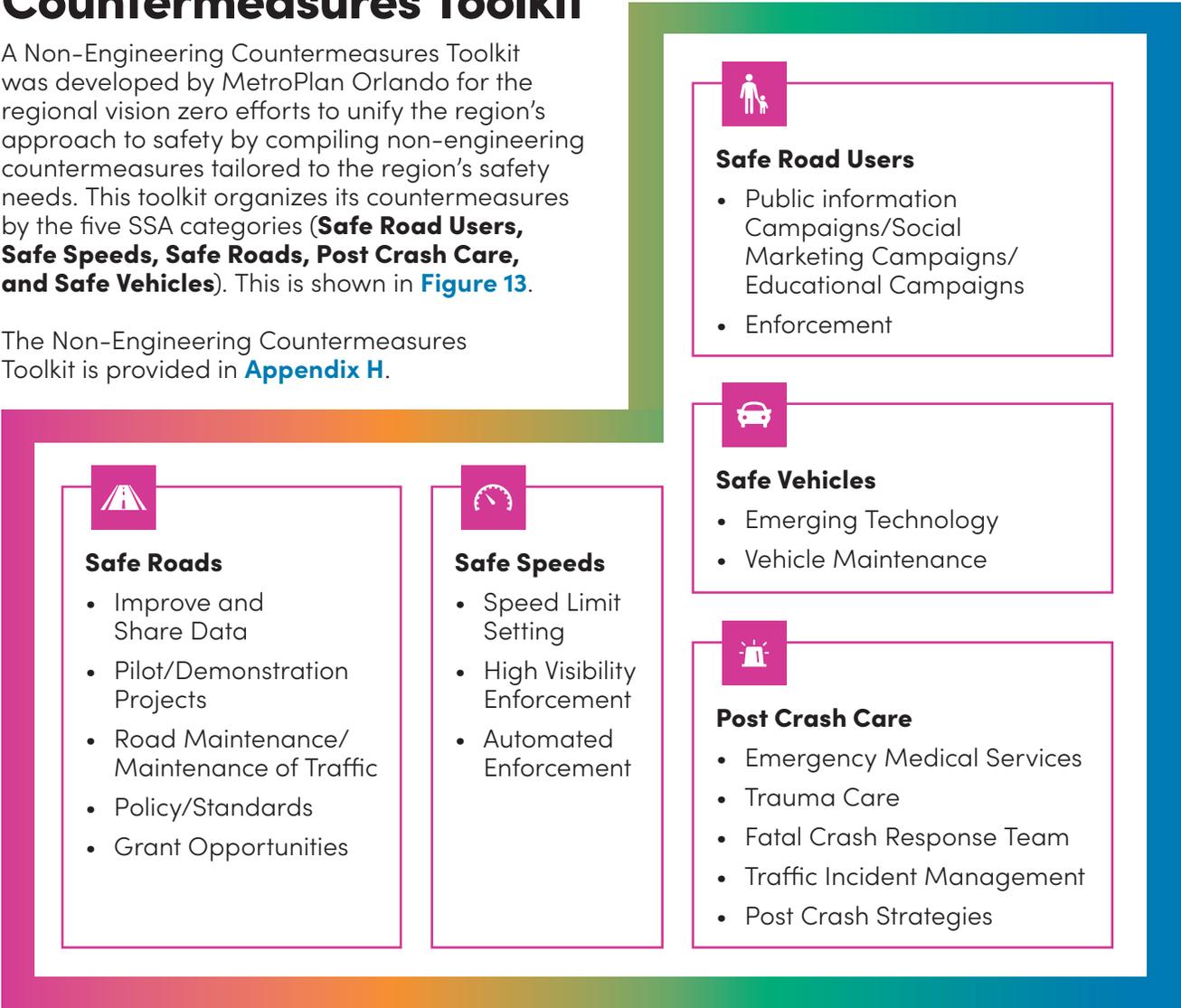
These **non-engineering countermeasures** include efforts like educational campaigns, high-visibility enforcement of driving speeds, and publicized sobriety checkpoints. They can target at-risk audiences (like teens).

6.1 Non-Engineering Countermeasures Toolkit

A Non-Engineering Countermeasures Toolkit was developed by MetroPlan Orlando for the regional vision zero efforts to unify the region's approach to safety by compiling non-engineering countermeasures tailored to the region's safety needs. This toolkit organizes its countermeasures by the five SSA categories (**Safe Road Users, Safe Speeds, Safe Roads, Post Crash Care, and Safe Vehicles**). This is shown in **Figure 13**.

The Non-Engineering Countermeasures Toolkit is provided in **Appendix H**.

Figure 14: Organization of Non-Engineering Countermeasures Toolkit



6.2 Potential City Programs

Winter Garden conducted a benchmarking evaluation, provided in the [Appendix I](#), and applied the Non-Engineering Countermeasure Toolkit to identify the following programs that could be pursued at the city level to reduce fatal and serious injury crashes:

Expand Road Safety Education for Children and Teens

Work with schools and parent organizations to organize supervised walking and cycling groups (walking school bus and bicycle trains). This introduces children to the rules of the road in a safe environment, provides an opportunity for exercise and community building, and builds safety habits for walking and cycling at an early age. Work with high schools to promote Teen safety programs such as the Teen Driver Challenge (www.flsheriffs.org/law-enforcement-programs/teen-driverchallenge), free and low cost behind the wheel training provided by the Florida Safety Council (<https://www.floridasafetycouncil.org/categories>), as well as resources that provide opportunities for local agencies and law enforcement to partner with schools to deliver educational campaigns to teach teens about the dangers of alcohol and driving, such as Every 15 Minutes, Sober Graduation, and DUI mock trials.

Speed Enforcement in School Zones.

Consider high visibility enforcement in school zones, such as electronic message boards, command posts, breath alcohol testing mobiles units, and sobriety checkpoints.

Progressive Ticketing. This is a method of introducing ticketing in three stages: education (to raise awareness), warning (to give the public time to change behavior), and ticketing (to enforce the rules of the road after an education campaign has been introduced).

Develop a Quick-build Program. This is a method of introducing ticketing in three stages: education (to raise awareness), warning (to give the public time to change behavior), and ticketing (to enforce the rules of the road after an education campaign has been introduced).

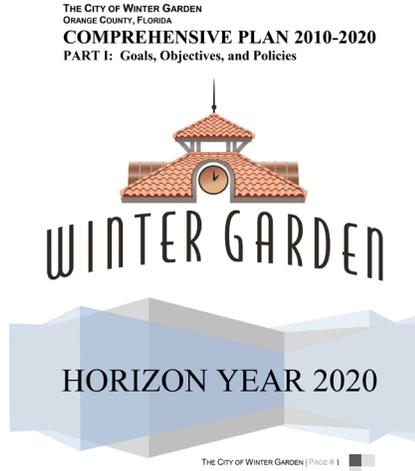
- The appropriate location for quick builds
- Materials to use
- Public engagement strategies to use
- Before and after analysis to learn from the quick build and move towards permanent projects

The City can consider further developing the non-engineering countermeasures as part of their Transportation Plan update.

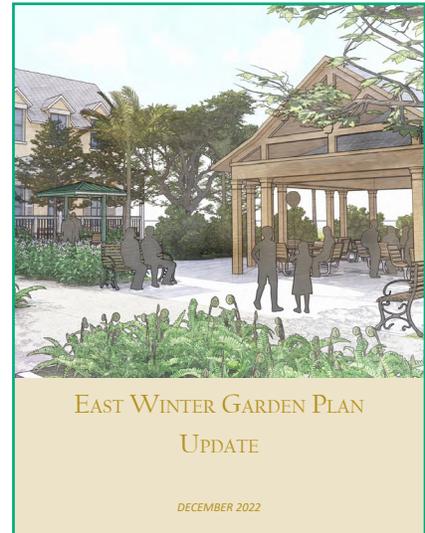
6.3 Potential City Policies

The City conducted a Policy Benchmark Review to identify potential issues and provide content for current City policy updates. The policy review included the following documents:

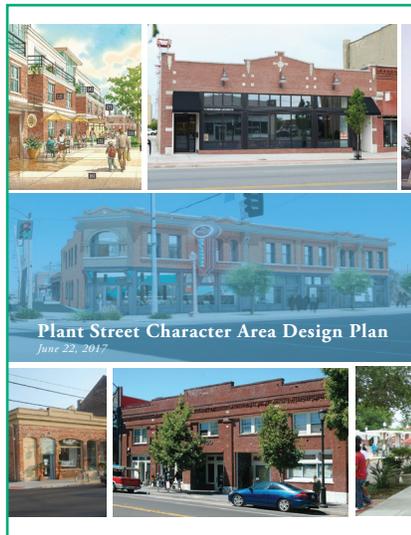
- Comprehensive Plan 2010–2020, Multimodal Transportation Element
- Design Standards and Guidelines Manual, December 2009
- Transportation Plan (draft)
- Code of Ordinances, Chapter 62, Streets and Sidewalks (2024)
- Five Year Capital Improvements Plan (FY 2021/2022)
- East Winter Garden Plan Update (December 2022)
- Plant Street Character Area Design Plan
- West State Road 50 Commercial Corridor
- Traffic Calming Manual of Practice (draft)
- Dillard Street Reconstruction
- SR 50/UCF Connector Alternatives Analysis



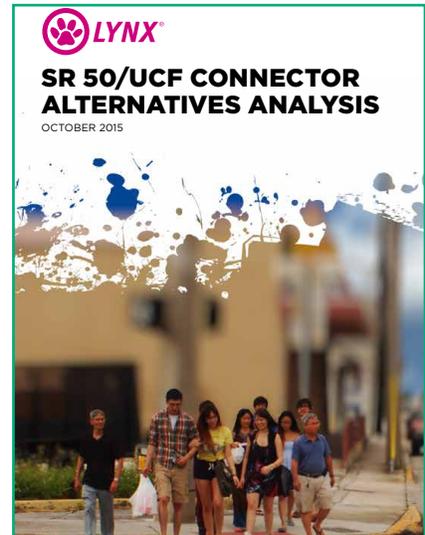
Comprehensive Plan 2010–2020, Multimodal Transportation Element



East Winter Garden Plan Update (December 2022)



Plant Street Character Area Design Plan



SR 50/UCF Connector Alternatives Analysis

The policy review is timely as the City is beginning efforts to update the City's Comprehensive Plan and the Land Development Code.

Develop target speed policy based on context and crash history.

Target speed is the speed at which a vehicle should ideally operate on a road in a given context. It's the operating speed that designers intend for drivers to use. Target speeds tailored to the setting of the street promote driving behavior that improves safety and comfort for all roadway users.

Update to the Bicycle and Pedestrian Master Plan.

The Bicycle and Pedestrian Master Plan provides a framework that guides both public investments and private development.



Image of public engagement at Winter Garden Spring Fever in the Garden

Update the Comprehensive Plan and Transportation Plan.

- Consider including other best practice elements such as the Public Right-of-Way Accessibility Guidelines (PROWAG), Americans with Disability Act (ADA), *The American Association of State Highway and Transportation Officials (AASHTO) Roadside Design Guides*, *National Association of City Transportation Officials (NACTO) Urban Street Design Guide*, *NACTO Urban Bikeway Design Guide*, *NACTO Don't Give Up at the Intersections*.
- Consider adopting multimodal Quality of Service standards, such as bicycle and pedestrian level of traffic stress (LTS). See the FDOT Multimodal Quality and Level of Service Handbook for more information on LTS.
- Consider including speed management tools, a traffic calming program, and a Safe Routes to School (SRTS) plan.

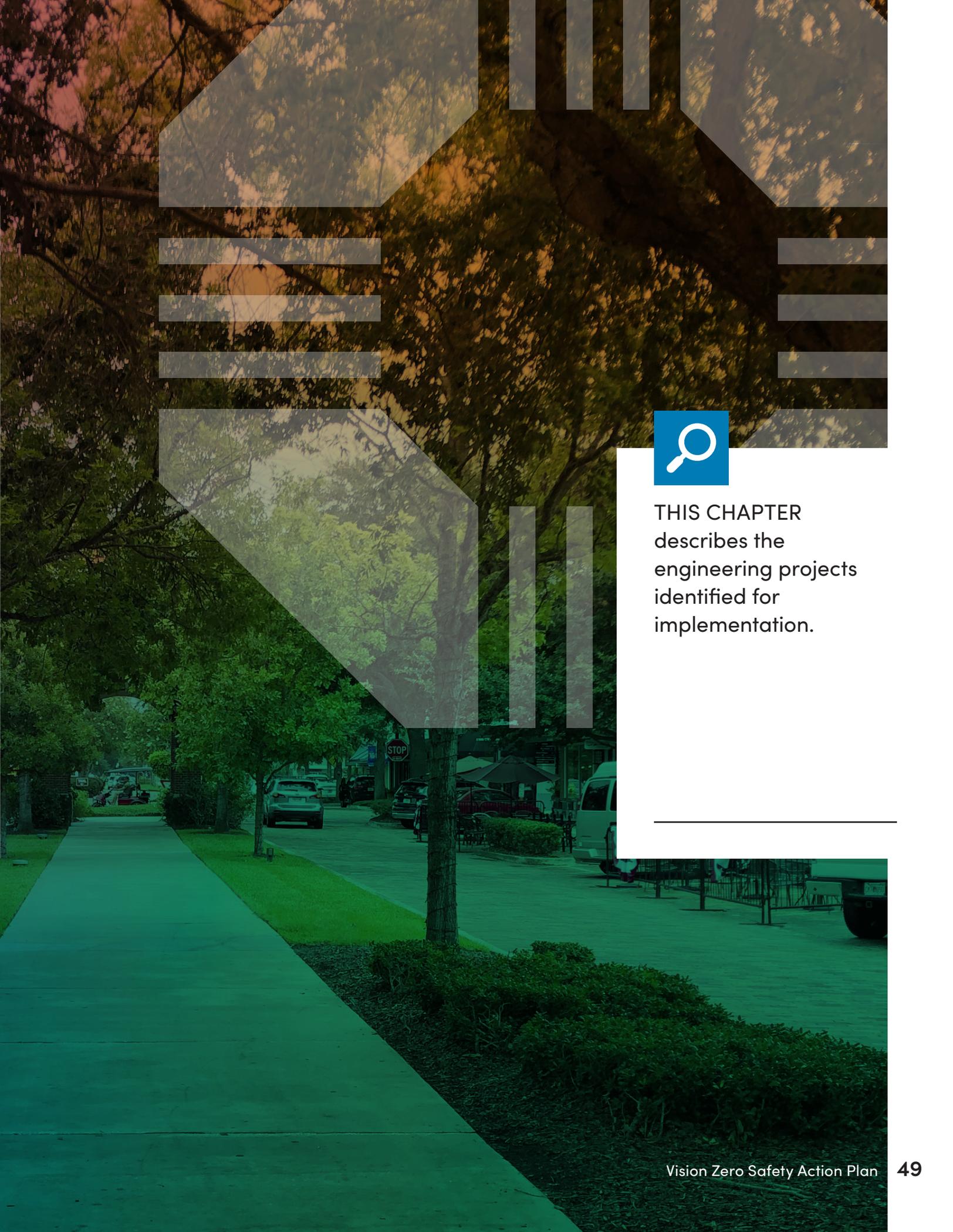


CHAPTER 7

Recommended Safety Projects



Image of Plant Street in the City of Winter Garden



THIS CHAPTER describes the engineering projects identified for implementation.

7.1 MetroPlan Orlando's Engineering Countermeasures Toolkit

The purpose of MetroPlan Orlando's Engineering Countermeasure Toolkit is to establish a shared understanding of key strategies available to address roadway safety issues that align with the SS4A strategy. The Toolkit is provided in [Appendix J](#). The key objectives of the Engineering Countermeasure Toolkit are to:

1

Inform partner jurisdictions about safety treatment options and their appropriate uses and contexts,

2

Communicate safety tools using easy-to-understand language and graphics,

3

Facilitate coordination between staff, contractors, developers, and the community when discussing transportation safety improvements, and

4

Create a shared understanding and realistic expectations around safety treatments.



Image of Plant Street in the City of Winter Garden

7.2 MetroPlan Orlando's Project Development Process

Following MetroPlan Orlando's project development process, the City Working Group used the Engineering Countermeasure Toolkit to identify specific countermeasures for high crash segments and intersections within the City of Winter Garden. To summarize, the Working Group:



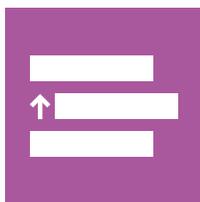
Analyzed HIN Segments/Intersections: A detailed analysis was conducted, including crash summaries, and other contextual information. Prevailing crash types were summarized, and crash locations were mapped. Additional contextual information was gathered, such as the number of travel lanes, location of signalized intersections, locations of bus stops, posted speeds, and the context classification or functional classification.



Identified Planned Improvements: For each roadway segment/ intersection included in the countermeasure selection process, planned projects (if any) along the segment were identified.



Identified Potential Countermeasures: For each segment corridor, potential countermeasures were identified using input from the City's Working Group, the Engineering Countermeasures Toolkit, FDOT, and Federal Highway Administration (FHWA) guidelines, as well as professional judgment. An opinion of probable cost was developed for each project.



Prioritized Projects: Based on the prioritization criteria, projects were prioritized for implementation and other purposes, such as grant applications.

7.3 Projects

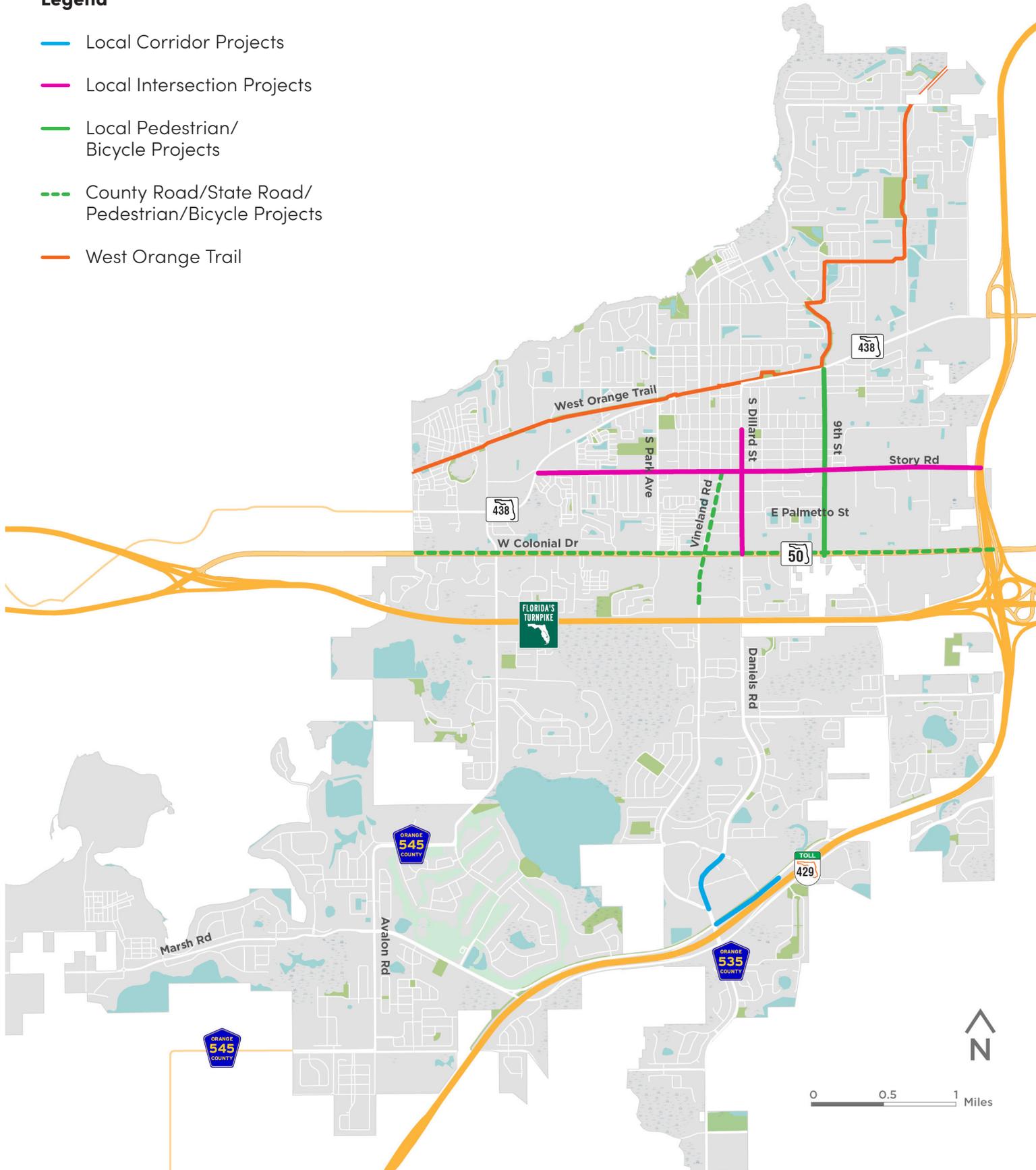
Seven (7) projects were developed as part of Winter Garden's Safety Action Plan. [Figure 14](#) provides a map of the segment and intersection projects. Project details are in [Appendix K](#). For each project, the following is provided:

- Focus crash type
- Map of corridor
- Identification of potential countermeasures
- Project prioritization score and ranking
- Planning level of cost estimate

Figure 15: Proposed Safety Projects

Legend

- Local Corridor Projects
- Local Intersection Projects
- Local Pedestrian/Bicycle Projects
- County Road/State Road/
Pedestrian/Bicycle Projects
- West Orange Trail



7.4 Project Highlight

Dillard Street Reconstruction Project

The City of Winter Garden has completed the design phase of the Dillard Street Reconstruction project, located on the City's HIN. The project extends approximately one (1) mile, from SR 50 to Plant Street. There were 35 crashes along this roadway segment between 2018-2022, including 28 left-turn crashes and seven bicycle crashes. The project consists of the following safety elements:

- Lane repurposing from a five-lane to three-lane cross section
- Roundabouts at Story Road, Smith Street, and Plant Street
- Separated bicycle facility
- Midblock crosswalks
- Lighting

The project is estimated to cost approximately \$40,000,000 to complete construction. The project ranks second on the City's Vision Zero project priority list. With planning and engineering complete, the Dillard Street Reconstruction Project is ready for construction once funding is identified.



Image of Plant Street in the City of Winter Garden

7.5 Project Prioritization Process

Project prioritization criteria were developed based on the goals identified by MetroPlan Orlando and in this Safety Action Plan. For details on how these criteria were developed, see [Appendix L](#).

The criteria help identify projects that could be included in a regional or local SS4A grant application or another safety-focused grant program. High-priority safety improvements identified through this process may also be added to the 2050 Metropolitan Transportation Plan (MTP) or incorporated into an already planned project in the Prioritized Project List (PPL) or Transportation Improvement Plan (TIP). The City of Winter Garden can use these criteria or a modified version for its own project prioritization process.

Key prioritization criteria include:

50% Safety History	15% Transportation Underserved	15% Safety Benefit	10% Regional Benefit	10% Timeline
<p>Safety History (50%) – Based on the safety score calculated for each corridor and intersection, this criterion prioritizes projects where the most fatal and severe injury crashes occur.</p>	<p>Transportation Underserved (15%) – This criterion considers where people might be disproportionately affected by traffic crashes and benefit the most from transportation safety improvements.</p>		<p>Safety Benefit (15%) – This considers the potential safety benefit of identified improvements.</p>	
<p>Regional Benefit (10%) – If a project is on multiple high injury networks, it is likely to have a regional benefit.</p>	<p>Implementation Timeline (10%) – Projects start saving lives when they are implemented, so projects that can be implemented quickly are prioritized.</p>			

Table 7 describes the identified projects ranked using the developed project prioritization.

Table 7: Proposed Safety Projects

RANK	PROJECT	SCORE	OPINION OF PROBABLE COST
1	Winter Garden Vineland Road/Vineland Road from Palm Crossing Blvd to Story Rd	0.63	\$728,000
1	Dillard Street from SR 50 to Plant Streett	0.58	\$40,000,000
1	SR 50 from Tucker Oaks Blvd to SR 429	0.58	\$1,474,000
1	9th Street from SR 50 to Plant St	0.58	\$2,016,000
5	Story Road from SR 438 to SR 429	0.48	\$9,111,000
6	Daniels Road from Winter Garden Vineland Rd to Fowler Grove Blvd	0.43	\$407,000
7	Stoneybrook W Parkway from Winter Garden Vineland Rd to N Winter Garden Village Dwy	0.18	\$374,000

Bold: Project is on a city-maintained roadway.

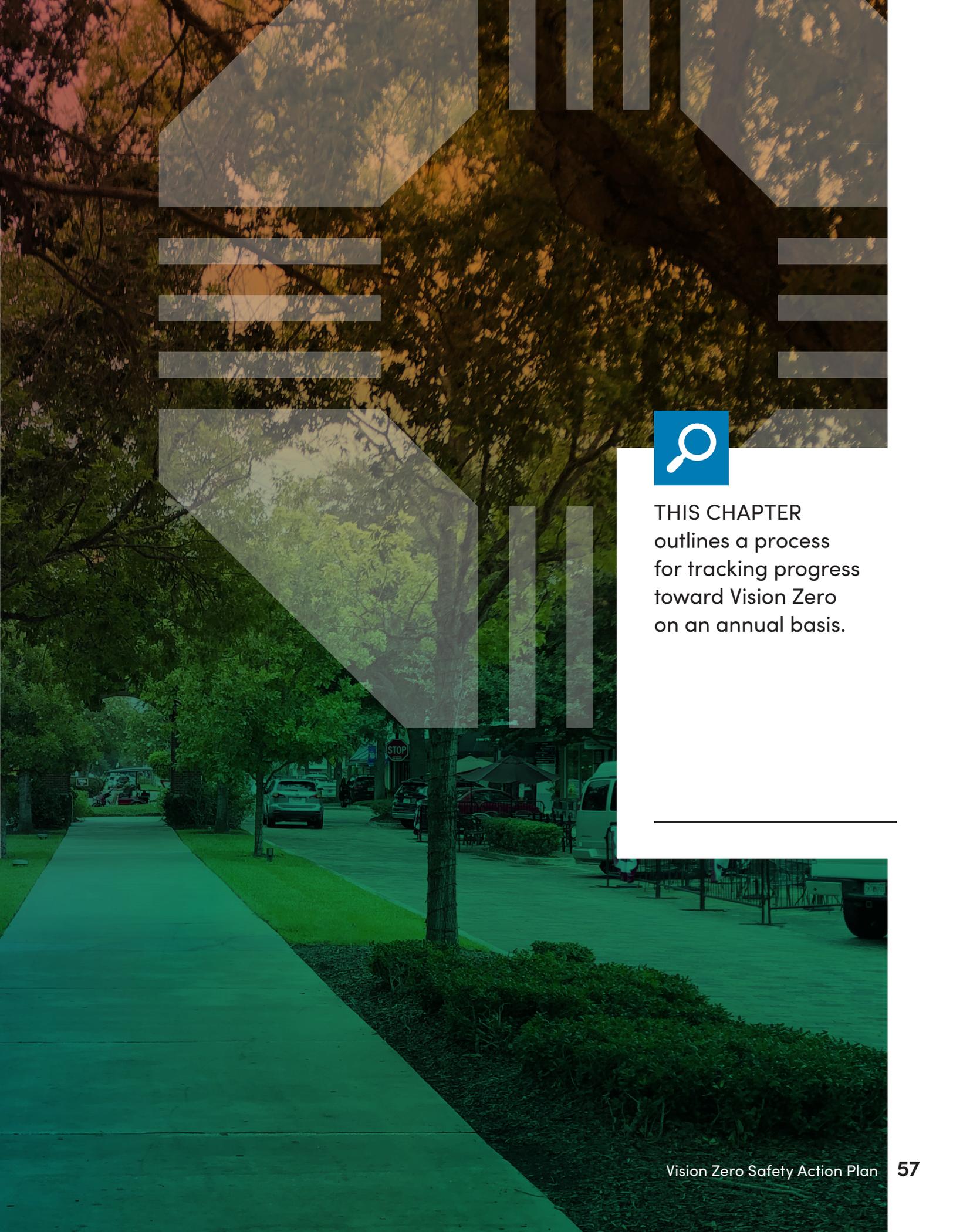


CHAPTER 8

Monitoring and Implementation



Image of Plant Street in the City of Winter Garden



THIS CHAPTER
outlines a process
for tracking progress
toward Vision Zero
on an annual basis.

The recommendations offered in this Safety Action Plan can only make roadways safer if they are implemented. For that reason, both MetroPlan and the City of Winter Garden have created groups dedicated to tracking the progress of regional and local safety efforts.

8.1 Safety Action Plan Responsibility

Upon the adoption of the City's Safety Action Plan, the City of Winter Garden's Working Group can continue to meet to review progress towards zero fatalities and serious injuries and reassess project and policy priorities over time. The City's **Working Group** will be responsible for updating and maintaining the City's Safety Action Plan.

With adoption of the regional Safety Action Plan, the MetroPlan Orlando's Vision Zero Task Force will continue their work as the newly formed **Safety Action Committee** that will help with the implementation of the various action items of the regional Safety Action Plan, by providing feedback, identifying resources, and holding other jurisdictions accountable for their role in reaching zero. The Safety Action Committee will be involved in overseeing the regional annual safety progress report.

Additionally, MetroPlan Orlando hosts a **Vulnerable Users Safety Working Group**, which focuses on decreasing corridor driving speeds and on decreasing fatal and serious injuries involving pedestrians and bicyclists.

8.2 City of Winter Garden Progress Monitoring

Annually monitoring progress made toward achieving zero traffic fatalities and severe injuries will help the City evaluate the success of current action items and adopt new strategies as needed. Performance metrics will be used to evaluate the effectiveness of the Safety Action Plan.

Each July, MetroPlan Orlando will update the regional crash dashboard and provide regional and jurisdictional summaries of key information. Winter Garden can use this data prepared at the regional level to help support their progress monitoring. The annual monitoring process should begin with reviewing the most recent year of crash data. Using the data, a variety of metrics should be calculated, as presented in **Table 8**. In addition to the crash data, a list of safety improvements implemented in the prior calendar year should be developed.

The **safety dashboard** hosted at VisionZeroCFL.gov will be updated on an annual basis to reflect new data as well as highlight key findings from the crash analysis. A data management plan that details the process to obtain, review and upload data to MetroPlan Orlando's crash dashboard is provided in **Appendix M** and includes documentation for calculating the VMT in Winter Garden for the metrics shown in **Table 8**.

As safety projects are implemented and before and after studies are completed, these results shall also be shared as part of the annual progress reporting.

Table 8: Annual Progress Monitoring Metric

PERFORMANCE METRIC	DATA SOURCE	2021	2022	2022-2021 CHANGE
Total fatalities	Signal 4	3	2	-1
Fatality rate (Per 100M VMT)	Signal 4, Census	0.60	0.37	-0.23
Total serious injuries	Signal 4	2	4	2
Serious injury rate (Per 100M VMT)	Signal 4, Census	0.40	0.74	0.34
Non-motorized fatalities and serious injuries	Signal 4	3/1	0/3	-3/2
Percentage change in KSI crash types (2021-2022)	Signal 4	Rear End: 0 Left Turn: 0 Right Turn: 0 Pedestrian: 3 Bicycle: 1 Run off Road: 1	Rear End: 1 Left Turn: 2 Right Turn: 1 Pedestrian: 1 Bicycle: 1 Run off Road: 0	Rear End: Increased from zero in 2021 Left Turn: Increased from zero in 2021 Right Turn: Increase from zero in 2021 Pedestrian: -67% Bicycle: 0% Run off Road: -100%
Impaired Driving Assessment (percent of people killed or severely injured in a DUI crash as compared to prior year)	Signal 4	0%*	0%*	0%*
Citations for Key Behaviors	Signal 4, Florida Highway Patrol, Local Law Enforcement	N/A	N/A	N/A
Implemented safety improvements in prior calendar year	All jurisdictions in region	N/A	N/A	N/A
Progress made on specific actions	Safety Action Committee, MetroPlan Orlando, All jurisdictions in region	N/A	N/A	N/A
Before/After Study Completion	Various studies	N/A	N/A	N/A
Number and outcome of Non-Engineering Countermeasures	FDOT, Best Foot Forward, and local jurisdictions	N/A	N/A	N/A

*No severe or fatal impaired driving crashes occurred in the City in 2021 or 2022
Source: MetroPlan Orlando, 2024

8.3 Federal Funding Opportunities

No one funding source will be able to pay for all the safety improvements identified in Winter Garden’s Safety Action Plan. In addition to the traditional **Highway Safety Improvement Program** (HSIP), the MetroPlan Orlando funding progress, and other local funding sources, such as developer fees, **Table 9** summarizes potential federal funding sources related to transportation safety.

MetroPlan Orlando will also continue to look for opportunities to layer safety-related projects onto other capital improvement projects, as well as maintenance projects and through review and approval of projects in the PPL and TIP. The City can directly pursue funding from the sources in **bold** below. Funding from other sources listed is available through FDOT and MetroPlan Orlando.

Table 9: Potential Federal Funding Sources

POTENTIAL FUNDING SOURCE	ADDITIONAL INFORMATION
Safe Streets and Roads for All (SS4A)	<p>The SS4A program funds regional, local, and Tribal initiatives through grants to prevent roadway deaths and serious injuries. The Fiscal Year (FY) 2024 Notice of Funding Opportunity (NOFO) for the SS4A grants offers funding for two distinct types of grants:</p> <ol style="list-style-type: none"> 1. Planning and Demonstration Grants: These grants allocate federal funds to develop, complete, or enhance a Safety Action Plan. Demonstration activities are temporary safety improvements that inform comprehensive safety action plans (referred to as “Action Plans”) by testing proposed project and strategy approaches to determine future benefits and future scope. 2. Implementation Grants: These grants provide federal funds to execute projects and strategies outlined in an Action Plan, specifically aimed at addressing roadway safety issues. Eligible projects and strategies may encompass infrastructure, behavioral, and operational activities.
Rebuilding American Infrastructure with Sustainability & Equity (RAISE) Discretionary Grant Program	<p>The program funds multimodal, multi-jurisdiction projects that have significant local or regional impact but are more difficult to support through traditional DOT programs.</p>
Transportation Alternatives Program (TAP)	<p>The TAP provides funding for programs and projects defined as transportation alternatives, including on- and off-road pedestrian and bicycle facilities, infrastructure projects for improving non-driver access to public transportation and enhanced mobility, community improvement activities, and environmental mitigation; recreational trail program projects; safe routes to school projects; and projects for planning, designing, or constructing boulevards and other roadways largely in the right-of-way of former Interstate System routes or other divided highways.</p>
Carbon Reduction Program (CRP)	<p>Provides funds for projects designed to reduce transportation emissions, defined as carbon dioxide (CO2) emissions from on-road highway sources.</p>

POTENTIAL FUNDING SOURCE	ADDITIONAL INFORMATION
Infrastructure for Rebuilding America Discretionary Grant Program (INFRA)	Funds available for multimodal freight and highway projects of national or regional significance to improve the safety, efficiency, and reliability of the movement of freight and people in and across rural and urban areas.
Reconnecting Communities Pilot Program (RCP)	Planning grants and capital construction grants, as well as technical assistance, to restore community connectivity through the removal, retrofit, mitigation, or replacement of eligible transportation infrastructure facilities.
Federal Transit Administration Capital Funds (FTA)	Funds transit capital investments, including heavy rail, commuter rail, light rail, streetcars, and bus rapid transit.
Areas of Persistent Poverty Program (AoPP)	Funds projects that provide access to transit in disadvantaged communities, including safety improvements.
Congestion Mitigation and Air Quality Improvement Program (CMAQ)	Provides funds to States for transportation projects designed to reduce traffic congestion and improve air quality, particularly in areas of the country that do not attain national air quality standards.
Highway Safety Improvement Program (HSIP)	HSIP is a core Federal-aid program with the purpose to achieve a significant reduction in traffic fatalities and serious injuries on all public roads, including non-State-owned roads and roads on tribal land. The HSIP requires a data-driven, strategic approach to improving highway safety on all public roads with a focus on performance.
Railway-Highway Crossings (Section 130) Program (RHCP)	The Railway-Highway Crossings (Section 130) Program provides funds for the elimination of hazards at railway-highway crossings.
National Highway Performance Program (NHPP)	Provides support for the condition and performance of the National Highway System (NHS), for the construction of new facilities on the NHS, and to ensure that investments of Federal-aid funds in highway construction are directed to support progress toward the achievement of performance targets established in a state's asset management plan for the NHS.
Promoting Resilient Operations for Transformative, Efficient, and Cost Saving Transportation (PROTECT)	Used to help make surface transportation more resilient to natural hazards, including climate change, sea level rise, flooding, extreme weather events, and other natural disasters through support of planning activities, resilience improvements, community resilience and evacuation routes, and at-risk coastal infrastructure.
Surface Transportation Block Grant Program (STBG)	Provides flexible funding that may be used by States and localities for projects to preserve and improve the conditions and performance on any Federal-aid highway, bridge and tunnel projects on any public road, pedestrian and bicycle infrastructure, and transit capital projects, including intercity bus terminals.
Safe Routes to School Program (SRTS)	Projects that improve safety for students going to school.

Source: MetroPlan Orlando, 2024

8.4 Vision Zero Safety Action Plan Updates

From adoption, the City of Winter Garden Safety Action Plan should provide an update every five years.

8.5 Implementation

Implementing Vision Zero will require broad collaboration across many partners and disciplines. Transportation safety projects will get implemented in many ways, including through local funding, the traditional MetroPlan Orlando funding, as well as grant programs. As projects move forward from the Metropolitan Transportation Plan to construction, there are opportunities to prioritize the funding projects that will be able to improve transportation safety outcomes along high-crash corridors.



CHAPTER 9

Technical Appendix



Image of Plant Street in the City of Winter Garden



- A-Vision Zero Resolution
- B-2024 SS4A Safety Action Plan Component Checklist
- C-MetroPlan Orlando's High Injury Network Development
- D-Regional Engagement Efforts
- E-Local Engagement Plan
- F-Local Engagement Materials
- G-Working Group Meeting Notes
- H-Non-Engineering Countermeasure Toolkit
- I-Benchmarking Evaluation
- J-Engineering Countermeasure Toolkit
- K-Project Details
- L-Prioritization Criteria
- M-Data Management Plan



CHAPTER 9

Technical Appendix

A- Vision Zero Resolution



Image of Plant Street in the City of Winter Garden



RESOLUTION NO. 24-02

A RESOLUTION OF THE CITY COMMISSION OF THE CITY OF WINTER GARDEN, FLORIDA, ADOPTING A VISION ZERO POLICY; PROVIDING FOR CONFLICTS, SEVERABILITY, AND AN EFFECTIVE DATE.

WHEREAS, the State of Florida is one of the most dangerous states for pedestrians, consistently ranking high on the Pedestrian Danger Index by Smart Growth America, with the metro area of Orlando-Kissimmee-Sanford, Florida ranking as one of the most dangerous metropolitan areas for pedestrians in the country; and

WHEREAS, the City of Winter Garden is responsible for the operation and maintenance of the continuing transportation planning process designed to prepare and adopt transportation plans and programs; and

WHEREAS, fatal and severe crashes are preventable, and death and severe injury are not an acceptable cost for using our public roadway system; and

WHEREAS, roadways have historically been designed to prioritize vehicle throughput at high speeds to the detriment of health and safety; and

WHEREAS, vehicle speeds and lack of safe facilities for people walking and biking have been identified as major causes of traffic fatalities; and

WHEREAS, communities of color, low-income communities, youth, and seniors are disproportionately impacted by traffic fatalities; and

WHEREAS, measures to make City of Winter Garden streets safer for all road users, particularly those who are most physically vulnerable, such as seniors, youth, and people with disabilities, will further encourage people of all ages and abilities to walk, bike and utilize other non-vehicular modes of transportation; and

WHEREAS, it is critical for the City of Winter Garden to develop a Vision Zero plan to build complete streets and begin to ensure the safety of our pedestrians, cyclists and road users of all ages and abilities; and

WHEREAS, Vision Zero is a data-driven strategy to eliminate all traffic fatalities and severe injuries, while increasing safe, healthy, equitable mobility for all; and

WHEREAS, Vision Zero is founded on a Safe System approach that recognizes that people will make mistakes and roadway systems and policies should be designed to protect them through redundancies and shared responsibilities; and

WHEREAS, there are over 50 Vision Zero jurisdictions in the United States, which is expected to increase significantly in the coming years; and

WHEREAS, the U. S. Department of Transportation has adopted the Safe System approach; and

WHEREAS, the Florida Department of Transportation has adopted a Target Zero Initiative; and

WHEREAS, Vision Zero should create opportunities to invite meaningful input from the community, including residents that are disproportionately burdened by traffic collisions, and historically have been underserved.

NOW, THEREFORE, BE IT RESOLVED BY THE CITY COMMISSION OF THE CITY OF WINTER GARDEN, FLORIDA:

Section 1. *Adoption of Representations.* The foregoing “Whereas” clauses are hereby ratified and confirmed as being true and the same are hereby made a specific part of this Resolution.

Section 2. *Adoption of Vision Zero.* City of Winter Garden adopts Vision Zero as the policy for road and traffic safety in the City of Winter Garden and makes this part of this Resolution effective immediately.

Section 3. *Vision Zero Commitment.* The City of Winter Garden commits to zero fatalities and a 50% reduction in severe injuries by 2040.

Section 4. *Vision Zero Action Plan.* The City of Winter Garden will develop a Vision Zero Action Plan following the passage of this resolution.

Section 5. *Effective Date.* This Resolution shall take effect upon its adoption by the City Commission.

ADOPTED at a Regular Meeting this 11TH day of JANUARY, 2024.

CITY COMMISSION OF THE CITY OF WINTER GARDEN, FLORIDA



John Rees, Mayor/Commissioner

ATTEST:



Angela Grimmage, City Clerk

Technical Appendix

B- 2024 SS4A Safety Action Plan Component Checklist

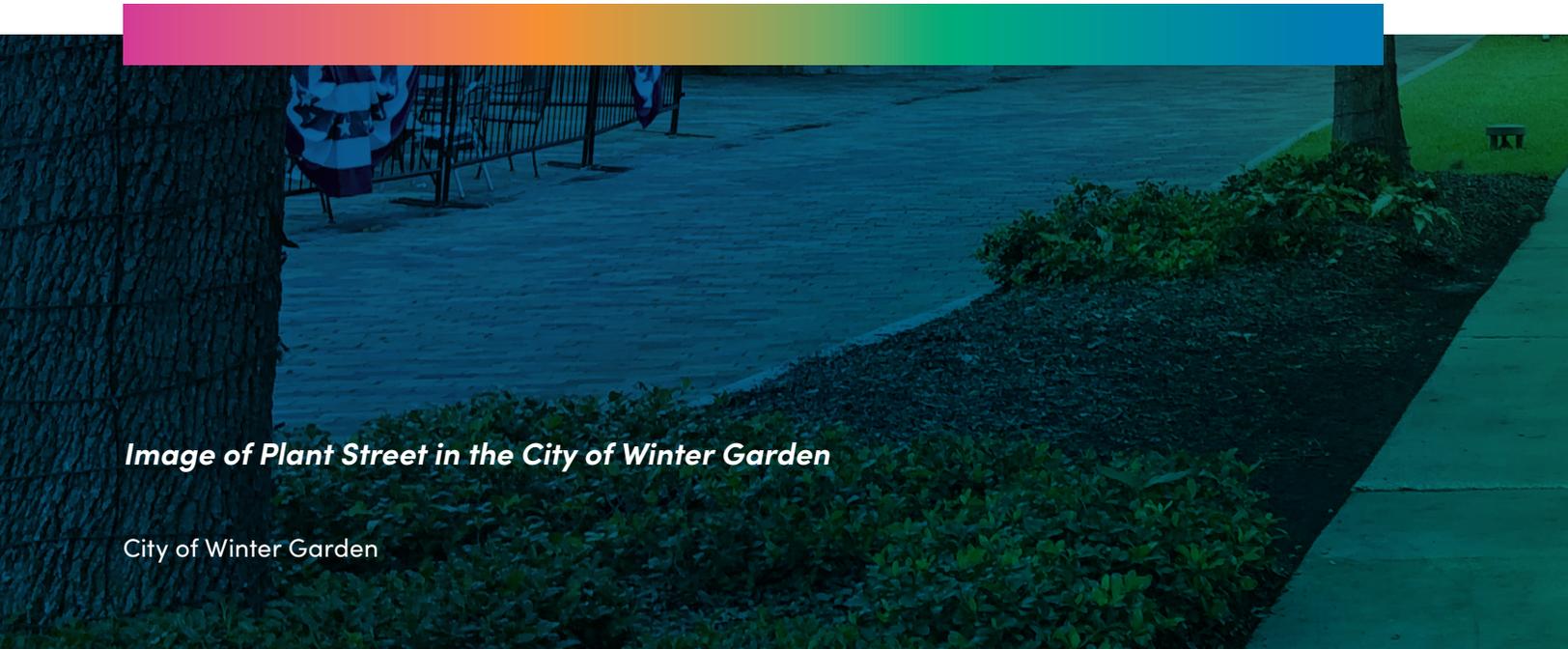


Image of Plant Street in the City of Winter Garden



SS4A 2024 Action Plan Component Checklist

	Description	How Plan Achieves Component
1	Governing body in the jurisdiction publicly committed to an eventual goal of zero roadway fatalities and serious injuries.	Resolution adopted on January 11, 2024 and included in appendix.
	Set targets to achieve significant declines in roadway fatalities and serious injuries.	Target set for 2040, as noted in the resolution in appendix.
2	To develop the Action Plan, a committee, task force, implementation group, or similar body established and charged with the plan's development, implementation, and monitoring.	See <i>Listening to the Community</i> for overview of engagement activities and <i>Monitoring and Implementation</i> for implementation and monitoring actions.
3	Analysis of existing conditions and historical trends to baseline the level of crashes involving fatalities and serious injuries across a jurisdiction, locality, Tribe, or region.	See <i>Winter Garden Crash Analysis and Trends</i> and technical appendix.
	Analysis of systemic and specific safety needs is performed as needed (e.g., high risk)	See <i>Winter Garden Crash Analysis and Trends</i> and technical appendix.
	Analysis of the location where there are crashes, the severity, as well as contributing factors and crash types.	See <i>Winter Garden Crash Analysis and Trends</i> and technical appendix.
	A geospatial identification (geographic or locational data using maps) of higher risk locations.	See <i>Winter Garden Crash Analysis and Trends</i> and technical appendix.
4	Engagement with the public and relevant stakeholders, including the private sector and community groups.	See <i>Listening to the Community</i> for overview of engagement activities.
	Incorporation of information received from the engagement and collaboration into the plan.	See <i>Listening to the Community</i> for overview of engagement activities and how feedback was incorporated into Action Plan.
	Coordination that included inter- and intragovernmental cooperation and collaboration, as appropriate.	See <i>Listening to the Community</i> for overview of level of intergovernmental collaboration.
5	Considerations of equity using inclusive and representative processes.	See <i>Winter Garden Crash Analysis and Trends, Recommended Safety Projects, and Monitoring and Implementation</i> for descriptions of how equity was incorporated into analysis and process.
	Identified underserved communities through data.	See <i>Winter Garden Crash Analysis and Trends</i> for description of how transportation underserved data was incorporated into analysis.
	Equity analysis in collaboration with appropriate partners, focused on initial equity impact.	See <i>Winter Garden Crash Analysis and Trends</i> and <i>Listening to the Community</i> for equity analysis and collaboration.

	Description	How Plan Achieves Component
6	The plan development included an assessment of current policies, plans, guidelines, and/or standards to identify opportunities to improve how processes prioritize safety.	See <i>Recommended Programs and Policy Updates</i> and technical analysis for policy benchmarking and Action Plan Elements.
	The plan discusses implementation through the adoption of revised or new policies, guidelines, and/or standards.	See <i>Recommended Programs and Policy Updates</i> and technical analysis for policy benchmarking and Action Plan Elements.
7	The plan identifies a comprehensive set of projects and strategies to address the safety problems in the Action Plan, time ranges when projects and strategies will be deployed, and explain project prioritization criteria.	See <i>Recommended Safety Projects</i> .
8	A description of how progress will be measured over time that includes, at a minimum, outcome data.	See <i>Monitoring and Implementation</i> .
	The plan is posted publicly online.	Plan will be available here: VisionZeroCFL.gov
9	The plan was finalized and/or last updated between 2018 and 2024.	Plan was finalized in 2024.



CHAPTER 9

Technical Appendix

C- MetroPlan Orlando's High Injury Network Development



Image of Plant Street in the City of Winter Garden

City of Winter Garden



Draft Memorandum

Date: September 12, 2023

To: Vision Zero Central Florida Partners

From: Mighk Wilson, MetroPlan Orlando
Kathrin Tellez, Fehr & Peers

Subject: Vision Zero Central Florida – Regional High Injury Network



Introduction

The MetroPlan Orlando metropolitan area has the unfortunate distinction of having the one of the highest pedestrian fatality rates in the country, with transportation safety affecting all roadway users as the region has an overall fatal crash rate 15 percent higher than the national average and 10 percent higher than the statewide average. To understand where and why crashes that result in fatalities and serious injuries are most likely to occur and how to reduce the severity and frequency of these crashes, MetroPlan Orlando is preparing a Regional Vision Zero Action Plan, rooted in the core elements of Vision Zero and the Safe System approach. The overall purpose of the Action Plan is to identify projects, programs and strategies that will eliminate fatalities and serious injuries on the regions roadways by taking advantage of implementation funding through the Safe Streets for All (SS4A) grant program. The SS4A program is also funding the preparation of County and Local Vision Zero action plans in the region.

This memo summarizes the methodology to analyze collision trends and develop a high-injury network (HIN) for the MetroPlan Orlando region, with a focus on the non-access-controlled Federal Aid (MPO) network. The HIN is a collection of streets where a disproportionate number of collisions that result in someone being killed or severely injured (KSI) occur. Together, these collision types are referred to as KSI collisions throughout this memo. In addition to identifying corridors where a disproportionate number of KSI crashes occur, top KSI crash intersections are also identified.

This work will culminate in the preparation of a Safety Action Plan for the region. Additionally, separate HINs will be prepared for each County and each local jurisdiction that reflects:

1. All roadways within the jurisdiction regardless of ownership
2. All roadways maintained by the jurisdiction

Based on the preliminary data analysis, about 47 percent of KSI crashes occur on about 4 percent of centerline miles of non-access-controlled roadways in Orange, Osceola, and Seminole County, and about 13 percent of the Federal Aid System centerline miles.

The following describes the data sources that were used and explains the methodology employed by Fehr & Peers to develop the HIN.

Data Inputs

Roadway Network

The roadway network that served as the basis for this analysis was obtained from the xGeographic Wave database, which is a land use, transportation, environmental and demographic mapping database, usable across GIS mapping platforms, that has been built for the Orlando Metropolitan Area. For the purposes of developing the high injury network, limited access, and toll facilities (e.g., I-4 and the Turnpike) and their corresponding on/off ramps were removed from the network prior to the HIN analysis. Ramp terminal intersections were included in the analysis, including the ramp influence area of 100 feet. Preparation of the initial HIN included all non-limited access facilities in the network with non-Federal Aid roadways removed from the final HIN for the regional HIN. This process identified the primary roadways where a disproportionate number of crashes that result in a KSI occur in the region on roadways where MetroPlan Orlando can provide funding for safety improvements through the Metropolitan Transportation Plan (MTP) process as well as support regional grant applications for implementation funding through future SS4A applications.

Collision Severity Weighting

The goal of Vision Zero within the Safe System approach is to eliminate all serious and fatal injury crashes on roadways within the MetroPlan Orlando region, recognizing that while it is not feasible to prevent all crashes, implementation of safe system strategies can reduce the severity of crashes. To prioritize efforts at locations where crashes result in a fatality or severe injury, KSI crashes were assigned a weight factor. As presented in **Table 1**, collision weights are derived from comprehensive crash costs from the 2023 FDOT Design Manual, with the Highway Safety Manual (HSM) Equivalent Property Damage Only (EPDO) weighting applied.

Comprehensive crash costs include both economic costs and monetized pain and suffering costs. Economic costs are monetary costs associated with emergency services deployment, medical services, productivity loss due to victim injury, insurance, and legal costs, cost associated congestion impacts because of the collision, and property damage costs. Monetized pain and suffering costs are an assumption of the costs associated with lost quality-of-life (or Quality-Adjusted Life Years), accounting for reductions in life expectancy and quality of life changes because of a crash.

Application of the EPDO weighting (dividing the cost of each crash type by the cost of a property damage only crash) approach results in different crash types receiving a different weight factor. As shown in Table 1, application of the EPDO weight results in fatal crashes receiving a significantly higher weight which could skew the HIN. In many instances, a crash that results in a severe injury could have been a fatality under slightly different circumstances, such as a victim with underlying health issues. Conversely, a fatal crash involving someone not wearing a seatbelt could have been injury only if the victim was wearing a seatbelt. Additionally, only fatalities that occur within 30 days are reported in the crash dataset. If a serious injury crash resulted in a fatality more than 30 days after the crash, it would not be reflected in this analysis as a fatality. Consequently, a modified EPDO method was used that groups fatal and serious injury crashes together and groups non-incapacitating injuries together. This approach has been used by agencies across the county. The approach to develop the regional HIN also includes all crashes – given the low weight applied to

property damage only crashes, only locations where there is high frequency of crashes would affect the HIN.

Table 1: Crash Costs¹ and EPDO Weight Factors

Severity	Crash Cost	EPDO Weight	Modified EPDO Weight ²
Fatal (K)	\$10,890,000	1,414	317
Incapacitating Injury (A)	\$888,030	115	
Non-Incapacitating Injury (B)	\$180,180	23	17
Possibly Injury (C)	\$103,950	14	
No Injury (0)	\$7,700	1	1

1. Source: FDOT Design Manual, Table 122.6.2 FDOT KABCO Crash Costs

2. Based on an average weighted KA crash cost in Orange, Osceola and Seminole Counties of \$2,438,850 for 2018 – 2022 and an average weighted BC crash cost in Orange, Osceola and Seminole Counties of \$129,725.

Collision Mode Weighting

In addition to applying a weight factor based on the severity of a crash, a weight factor was developed and applied based on the travel mode of crash victims. Review of the data indicates that people walking, bicycling, and riding motorcycles are disproportionately represented in crashes that result in a KSI. People outside of vehicles are involved in about 3.7 percent of all reported crashes but represent 54 percent of all fatalities, 31 percent of all KSI crashes and 10 percent of all injury crashes. For the region, the resulting weight factor, based on the proportion of overall crashes involving someone outside a vehicle to crashes that resulted in an injury, is 3. **All crashes involving a person walking, bicycling, or riding a motorcycle were weighed by a factor of 3** in the development of the Regional HIN for the MetroPlan Orlando region. The factor, while based on local data, is in-line with weight factors used by other jurisdictions in the development of their HINs.

HIN Development

Sliding Window Approach

The HIN analysis was conducted using a sliding window approach, which uses overlapping windows to account for errors in collision location reporting. For a specific window length, performance measures are calculated for that window along a corridor (e.g., the number of fatal or serious injury collisions). The window is shifted along the corridor for a given offset distance and the analysis is repeated for the shifted window. Using this approach, a single location would be evaluated in several different windows, so any inaccuracies inherent within collision location reporting can be accounted for. Windows with the highest values for the segment or facility are identified as candidate HIN locations.

Sliding Window Parameters

A 1-mile window length with a 0.2-mile offset distance was chosen for the regional HIN analysis. Analyses prepared for a smaller geography should consider a smaller scale, such as a 0.5-mile window and 0.1-mile offset for a city boundary. Any segment less than 1-mile in length was treated as a single segment without any offset shifting.

Collision Summary for Each Window

Collisions were summarized for each window using a 100-ft search radius. This radius was chosen by inspecting collision locations relative to the centerline network at various locations throughout the network. The collision summary for each window consisted of summing all weighted collision values within the search radius. For example, a window with 15 property-damage only, 10 minor injury collisions and 5 KSI collisions within 100 feet would receive a weighted score of 1,770 ($15 \cdot 1 + 10 \cdot 17 + 5 \cdot 317$), presuming no pedestrians, bicyclists or motorcyclists were involved. For that same window, if a pedestrian, bicyclist, or motorcyclist was involved in 1 of the 15 property-damage only crashes, 3 of the 10 minor injury collisions and 3 of the 5 KSI collisions, that window would receive a weighted score of 3,776 ($14 \cdot 1 + 1 \cdot 3 \cdot 1 + 7 \cdot 17 + 3 \cdot 3 \cdot 17 + 2 \cdot 317 + 3 \cdot 3 \cdot 317$).

HIN Development

After summarizing collisions all windows throughout the network, the HIN draft was built using the weighted score of each window. By visualizing the weighted score throughout the network, potential HIN corridors could be identified, as shown on [Figure 1](#).

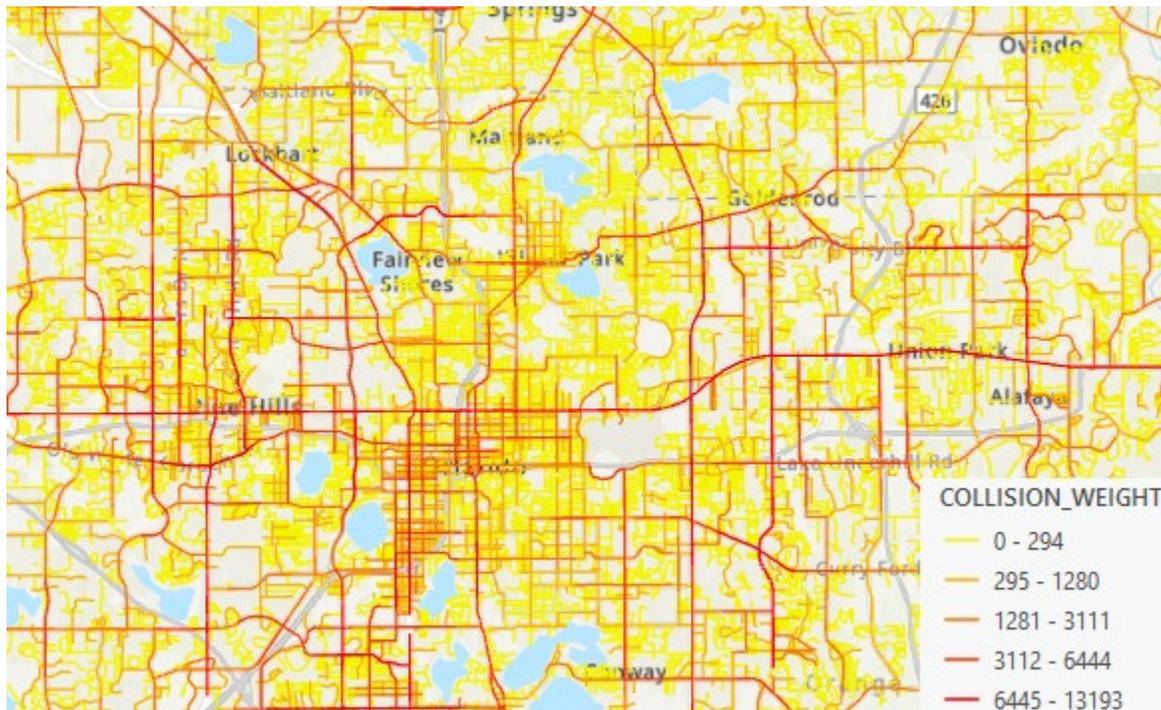


Figure 1: Initial visualization of Collision Weight Summaries Throughout Network

The HIN draft was built by using the following iterative process, with the goal of achieving a network that accounted for approximately 50 percent of the KSI collisions in the region:

1. Select/flag window segments throughout the network with collision weight values above a certain threshold.
2. Adjacent high-scoring windows (flagged in the previous step) are aggregated into longer corridor segments (greater than 1 mile in length) when appropriate.
3. Cleaning/reasonableness check:
 - a. Some high scoring windows on local roads which intersect with major ones were removed from consideration if it was discovered that the collision score was being skewed by the number of collisions on the major leg of the intersection.
 - b. Any small gaps (<1/2 mile) in between the aggregated corridor segments in step 2 were added to the draft HIN for continuity.

HIN and HIN Statistics

The resulting HIN can be viewed through this [weblink](#). The MetroPlan Orlando Regional HIN contains about 260 centerline miles and includes roadway segments in all three counties, with a disproportionate number of roadways in Orange County. Crashes that occur on the HIN segments account for 47 percent of all KSI crashes in the region. 61 percent of pedestrian KSI, 50 percent of bicyclist KSI, and 44 percent of motorcyclist KSI crashes also occur on these roadways, as summarized in [Table 2](#).

Table 2: MPO Network HIN Statistics

	All Roadways*	All Federal Aid Roadway*	Draft Regional HIN	HIN % All Roadways	HIN % of Federal Aid Roadways
Centerline miles	7,461	1,966	258	4%	13%
All collisions	272,500	229,280	98,987	36%	43%
KSI (All modes)	7,146	6,398	3,3378	47%	53%
Ped KSI	949	854	576	61%	67%
Bike KSI	327	285	164	50%	58%
Motorcycle KSI	953	864	416	44%	48%

Source: Signal 4 Analytics, Fehr & Peers.

Notes: * Excluding Toll facilities and access-controlled facilities

The 10 corridors on the HIN that received the highest weighted score on a per mile basis is summarized in [Table 3](#), with the full list provided as an attachment.

Table 3: Top 10 HIN Corridors

Roadway Name	From	To	Location	Total Weighted Score per Mile
1. John Young Parkway	SR 50	Orange Center Blvd.	Orlando	17,478
2. Sand Lake Road/ McCoy Road	Turkey Lake Rd.	Universal Blvd.	Orlando	17,104
3. Chickasaw Trail	Frontage Rd.	Lake Underhill Rd.	Orange County	14,589
4. Hiawasse Road	SR 438/Silver Star Rd.	SR 50	Orange County	14,547
5. Oakridge Road	Millenia Blvd.	S. Orange Blossom Trail	Orlando	14,296
6. SR 435	SR 50	Raleigh St.	Orange County	14,130
7. SR 551	SR 50	Lake Underhill Rd.	Orange County	14,129
8. SR 436	Lee Vista Rd.	TG Lee Blvd.	Orlando	14,088
9. Pine Hills Road	SR 50	Old Winter Garden Rd.	Orange County	13,941
10. Alafaya Trail	SR 50	Lake Underhill Rd.	Orange County	13,564

Source: Signal 4 Analytics, Fehr & Peers.

Notes: * Excluding Toll facilities and access-controlled facilities

Top Intersections

In addition to developing a HIN, the intersections with the highest weighted crash were also identified based on a similar process as the HIN development. For this analysis, any crash that was within 250 feet of an intersection was considered as attributed to that intersection, except for crashes in downtown areas where short blocks reduce the intersection influence area. For crashes in those contexts, crashes within 50 feet of an intersection were considered. The top 30 intersections are also shown on the HIN network, with a summary in [Table 4](#). Of the top 30 intersections, none are off the HIN. Intersections where a disproportionate share of the KSI crashes involved a person outside a vehicle are noted in ***bold italics***.

Table 4: Top 30 HIN Intersections¹

Intersection	Total Weight	Intersection	Total Weight
1. John Young Parkway at Sand Lake Road ²	10,140	16. Colonial Drive at Econlockhatchee Trail	6,480
2. <i>Alfaya Trail at Colonial Drive</i>	10,103	17. Powers Drive at Silver Star Road	6,415
3. <i>Orange Blossom Trail at Holden Avenue</i>	10,055	18. Orange Blossom Trail at Conroy Road/Americana Boulevard	6,401
4. <i>Hiawassee Road at Silver Star Road</i>	9,630	19. <i>Old Cheney Highway/Tucker Avenue at Colonial Drive</i>	6,386
5. <i>N Poinciana Boulevard at Irlo Bronson Memorial Highway</i>	9,399	20. Goldenrod Road at University Boulevard	6,224
6. Pine Hills Road at Silver Star Road	8,673	21. Alfaya Trail at Lokanotosa Trail	5,905
7. <i>Semorán Boulevard at Old Cheney Hwy</i>	8,509	22. Semoran Boulevard at Curry Ford Road	5,504
8. W Colonial Drive at N Kirkman Road	7,097	23. S French Street at W 25th Street	5,459
9. Goldenrod Road at Colonial Drive	7,040	24. Hastings Street at Silver Star Road	5,368
10. Simpson Road at Irlo Bronson Memorial Highway	6,946	25. Orange Blossom Trail at Orlando Central Parkway	5,160
11. <i>Orange Blossom Trail at Gore Street</i>	6,769	26. Orange Blossom Trail at Michigan Street	4,924
12. N Kirkman Road at Old Winter Garden Road	6,724	27. <i>Irlo Bronson Memorial Highway at Club Sevilla</i>	4,812
13. Goldenrod Road at Curry Ford Road	6,715	28. Forsyth Road at University Boulevard	4,722
14. John Young Parkway at Conroy Road	6,699	29. N French Avenue at W 1st Street (US 17/92)	4,294
15. Pine Hills Road at North Lane	6,651	30. Orange Blossom Trail at Premier Row	3,919

Source: Signal 4 Analytics, Fehr & Peers.

Note: 1. Intersections where a disproportionate share of the KSI crashes involved a person outside a vehicle are noted in **bold italics**.

2. At the intersection of John Young Parkway at Sand Lake Road, improvements were completed in late 2019/early 2020 to convert an at-grade intersection to a single-point urban interchange (SPUI). The number of KSI crashes per year has reduced from approximately 9 per year (2018/2019) to an average of 3 per year (2020-2022). This intersection could be a candidate for more detailed analysis as part of the County plan to document the safety benefit associated with the SPUI and potentially identify additional countermeasures that could be implemented at the intersection.

Next Steps

Using the same process that was used to identify the Regional HIN, County and Local HINs will be developed, which will include:

- County (all roadways included in the analysis) – this will identify the roadways in each county where a disproportionate number of fatal and severe injury crashes are reported. This will likely overlap with the regional HIN, but this map will provide focus locations for each county and the respective local jurisdiction(s). A secondary HIN of only roadways within the County jurisdiction will also be prepared.
- Jurisdictional – this will identify the roadways in each jurisdiction regardless of ownership where a disproportionate number of fatal and severe injury crashes are reported. For example, for the City of Kissimmee, an initial HIN may include roadways such as John Young Parkway and Vine Street which are maintained by the County. A secondary HIN of only roadways within the city jurisdiction will be prepared.
- Top Intersections – this will identify the intersections in each jurisdiction where a disproportionate number of fatal and severe injury crashes are reported.

If you have questions, please contact Mighk Wilson at mighk.wilson@metroplanorlando.gov.

Attachments: Roadways in HIN

**Central Florida Vision Zero
Regional HIN Segments
September 2023**

Corridor Number	Road Name	Location	Total Weighted Score per Mile	From	To
1	John Young Parkway	Orlando	17,478	SR 50	Orange Center Blvd.
2	Sand Lake Road/McCoy Road	Orlando	17,104	Turkey Lake Rd.	University Blvd.
3	Chickasaw Trail	Orange County	14,589	Frontage Rd.	Lake Underhill Rd.
4	Hiawassee Road	Orange County	14,547	SR 438/Silver Star Rd.	SR 50
5	Oakridge Road	Orlando	14,296	Millenia Blvd.	S. Orange Blossom Trail
6	SR 435	Orange County	14,130	SR 50	Raleigh St.
7	SR 551	Orange County	14,129	SR 50	Lake Underhill Rd.
8	SR 436	Orlando	14,088	Lee Vista Rd.	TG Lee Blvd.
9	Pine Hills Road	Orange County	13,941	SR 50	Old Winter Garden Rd.
10	Alafaya Trail	Orange County	13,564	SR 50	Lake Underhill Rd.
11	SR 435	Orlando	13,466	LB Mcleod Rd.	Major Blvd.
12	Colonial Drive	Orlando	13,415	Orange Blossom Trail N.	N Bumby Ave.
13	North Lane	Orange County	12,946	Westgate Rd.	N Pine Hills Rd.
14	Hiawassee Rd	Orange County	12,344	SR 50	Old Winter Garden Rd.
15	SR 434	Orange County	12,284	McCulloch Rd.	SR 50
16	CR 506	Orange County	12,054	S. Orange Blossom Trail	Orange Ave S.
17	SR 423	Orange County	11,972	N. Orange Blossom Trail	N. Wymore Rd.
18	University Blvd.	Orange County	11,938	SR 436	Lake Mirage Blvd.
19	Rosalind Ave	Orlando	11,526	E. Livingston St.	S. Lucerne Cir.
20	Semoran Boulevard	Orlando	11,419	Lake Underhill Rd.	Lake Margaret Dr.
21	US 192/Vine St	Osceola County	11,347	Celebration Ave.	Four Winds Blvd.
22	Goldenroad Road	Orange County	11,182	Lake Underhill Rd.	Beatty Dr.
23	N Ronald Regan Blvd	Seminole County	10,951	Eldersprings Cir.	Jones Ave.
24	W First Street (US 17/92)	Sanford	10,856	N. Persimmon Ave.	N. Frence Ave.
25	Edgewater Dr/Highland Ave	Orange County	10,652	Clarcona Ocoee Rd.	Lee Rd.
26	Conway Road	Orlando	10,570	Curry Ford Rd.	E. Michigan St.
27	Pershing Ave.	Orlando	10,554	Woodgate Blvd.	Goldenrod Rd. S.
28	John Young Pkwy	Orange County	10,510	SR 528 Ramps	Lazio Ln.
29	East Lake Mary Blvd	Seminole County	10,477	North of Celery Ave.	SR 46
30	Poinciana Blvd	Osceola County	10,431	US 192	Siesta Lago Dr.
31	Holden Ave	Orange County	10,402	Rio Grande Ave. S.	Lake Holden Hills Dr.
32	S Orange Blossom Trail	Kissimmee	10,376	E. Osceola Pkwy.	Ridgewood Ave.
33	US-192/Vine St	Kissimmee	10,356	South of Four Winds Blvd.	N. John Young Pkwy.
34	CR 435/Apopka Vineland Rd	Orange County	10,310	Balboa Dr.	SR 50
35	Texas Ave	Orange County	10,255	Americana Blvd.	W. Oak Ridge Rd.
36	Vineland Road	Orange County	10,156	I-4	South of LBV Factory Shores Dr.
37	Orange Avenue	Orlando	10,131	S. Lucerne Cir.	Gatlin Ave.
38	Orange Blossom Trail	Orange County	9,988	Overland Rd.	Rosamond Dr.
39	Ivey Ln	Orlando	9,944	Edgemoor St.	Raleigh St.
40	Orange Blossom Trail	Apopka	9,928	Drage Dr.	S. McGee Ave.
41	Orange Blossom Trail	Orlando	9,902	Lee Rd.	Shader Rd.
42	Lancaster Road	Orange County	9,900	S. Orange Blossom Trail	Orange Ave. S.
43	Goldenroad Road	Orange County	9,875	North of Dwell Well Way	SR 50
44	John Young Pkwy.	Orlando	9,873	LB McLeod Rd.	W. Sand Lake Rd.
45	US-17/92/Orlando Ave	Seminole County	9,853	South St.	Spartan Dr.
46	S Orange Blossom Trail	Kissimmee	9,546	Ridgewood Ave.	Neptune Rd.
47	Conroy Rd/Americana	Orlando	9,495	West of President Barack Obama Pkwy.	S. Orange Blossom Trail
48	John Young Pkwy	Orange County	9,488	Deerfield Blvd.	South of Town Loop Blvd.
49	University Blvd.	Orange County	9,410	Bibb Ln.	Rouse Rd.

**Central Florida Vision Zero
Regional HIN Segments
September 2023**

Corridor Number	Road Name	Location	Total Weighted Score per Mile	From	To
50	W Colonial Dr/Martin Luther King B	Orange County	9,406	Economic Ct.	Good Homes Rd.
51	Westmoreland Drive	Orlando	9,377	SR 526/Washington Street	W. Gore St.
52	West 25th Street	Sanford	9,328	Club Rd.	S. Mellonville Ave.
53	Osceola Pkwy	Kissimmee	9,281	N. Orange Blossom Trail	Florida's Turnpike
54	US-17/92/Orlando Ave/French Ave	Seminole County	9,122	North of Longdale Ave.	SR 434
55	E Bronson Hwy/13 St/Vine St	Osceola County	9,118	Neocity Way	Pecan St.
56	Semoran Boulevard	Altamonte Springs	9,083	Montgomery Rd.	Palm Springs Dr.
57	Silver Star Road	Orange County	9,070	Mercy Dr.	East of N. John Young Pkwy.
58	Orange Avenue	Orange County	9,055	Prince St.	Spruce Ave.
59	Orange Blossom Trail	Orange County	9,038	Consulate Dr.	Town Center Blvd.
60	Old Winter Garden Rd	Orange County	8,868	N. Hiawasse Rd.	Takoma St.
61	SR 434	Seminole County	8,843	West of E. Lake Brantley Dr.	Oak St.
62	Fairbanks Avenue	Winter Park	8,816	Clay St.	Pennsylvania Ave. S.
63	Old Winter Garden Rd	Orlando	8,698	SR 408 Exit Ramp	Orange Blossom Trail N.
64	Aloma Avenue	Orange County	8,691	West of St. Andrews Blvd.	West of Tangerine Ave.
65	SR 434	Orange County	8,672	Pembroke Dr.	Edgewater Dr.
66	Michigan Ave.	Kissimmee	8,545	E. Donegan Dr.	E. Vine St.
67	Powers Drive	Orange County	8,540	Indian Hill Rd.	SR 438
68	Semoran Boulevard	Casselberry	8,485	US 17-92	Kewannee Trl.
69	John Young Pkwy.	Orange County	8,451	Sand Lake Rd.	South of SR 528 Ramps
70	Rio Grande Avenue	Orange County	8,446	W. Gore St.	Holden Ave.
71	US-17/92/French Ave	Sanford	8,421	W. 20th St.	W. 27th St.
72	Chickasaw Trl	Orange County	8,374	SR 50	Valencia College Ln.
73	Curry Ford Rd	Orange County	8,218	West of Frederica Dr.	East of Excalibur Dr.
74	Orlando Avenue	Winter Park	8,217	Lake Ave.	W. Fairbanks Ave.
75	Buenaventura Blvd.	Osceola County	8,171	County Boundary	Simpson Rd.
76	Simpson Rd	Osceola County	8,139	Harbor Town Dr.	US 192
77	Wetherbee Rd	Orange County	8,093	Orange Blossom Trail S.	Orange Ave. S.
78	Clark Road	Ocoee	8,093	Sparrow Song Ln.	White Rd.
79	Hoffner Avenue (SR 15)	Orange County	8,083	Conway Rd.	Goldenrod Rd. S.
80	SR 434	Longwood	8,076	S. Ronald Reagan Blvd.	US 17-92
81	Semoran Boulevard	Orlando	8,053	Lake Margaret Dr.	Hoffner Ave.
82	Lake Underhill Rd	Orange County	7,611	S. Oxalis Ave.	Econlockhatchee Trl. N.
83	Conway Road	Orange County	7,501	Caitlin Ave.	Hoffner Ave.
84	Hiawasse Rd.	Orange County	7,437	Beggs Rd.	SR 438/Silver Star Rd.
85	Semoran Boulevard	Casselberry	7,388	Lake Howell Ln.	County Boundary
86	Colonial Drive	Orange County	7,358	N. Avalon Park Blvd.	SR 520
87	Robinson Street	Orlando	7,204	N. Rosalind Ave.	N. Primrose Rd.
88	John Young Pkwy	Kissimmee	7,052	West of Ham Brown Rd.	Palmetto Ave.
89	Turkey Lake Rd	Orange County	6,854	Toscana Blvd.	South of Hillenmeyer Way
90	Clarcona-Ocoee Rd.	Orange County	6,815	Apopka Vineland Rd. N.	Powers Dr. N.
91	Landstar/Fairway Wds	Orange County	6,702	Fairway Woods Blvd.	County Boundary
92	Sand Lake Rd.	Orange County	6,682	Dr. Phillips Blvd.	Turkey Lane Rd.
93	Irlo Bronson Memorial Highway	Orange County	6,653	Westside Blvd.	East of Inspiration Dr.
94	Colonial Drive	Orange County	6,645	Econlockhatchee Trl. N.	N. Avalon Park Blvd.
95	International Drive	Orange County	6,622	West of Universal Blvd.	Destination Pkwy.
96	Rock Springs Rd N	Orange County	6,606	Faye St.	Welch Rd. E.
97	Semoran Boulevard	Orange County	6,531	Sheeler Ave. S.	Bear Lake Rd.

**Central Florida Vision Zero
Regional HIN Segments
September 2023**

Corridor Number	Road Name	Location	Total Weighted Score per Mile	From	To
98	Boggy Creek Rd	Orlando	5,949	Tradeport Dr.	E. Wetherbee Rd.
99	Narcoossee Road	Orange County	5,777	Tavistock Lake Blvd.	County Boundary
100	Colonial Drive	Orange County	5,662	N. Bumby Ave.	Econlockhatchee Trl. N.
101	Avalon Park Blvd	Orange County	5,630	SR 50	South of Timber Springs Blvd.
102	US-17/92/Orlando Ave/French Ave	Sanford	5,568	W. 27th St.	W. Lake Mary Blvd.
103	SR 531	Osceola County	5,405	Marsh Rd.	South of Granada Blvd.
104	E Bronson Hwy/13 St/Vine St	St. Cloud	5,168	West of Florida's Turnpike	Eastern Ave.
105	Winter Garden Vineland Road	Orange County	5,147	Fiquette Rd.	Overstreet Rd.
106	Winter Garden Vineland Road	Orange County	4,590	E. Buena Vista Dr.	S. Apopka Vineland Rd.
107	Boggy Creek Rd	Osceola County	4,451	E. Osceola Parkway	Buenaventura Blvd.
108	W Colonial Drive	Orange County	4,233	Apopka Vineland Rd. N.	Orange Blossom Trail N.
109	Apopka Vineland Road	Orange County	4,003	North of Buena Vista Woods Blvd.	North of Vineland Ave.
110	Apopka Vineland Road	Orange County	3,983	Windy Ridge Rd.	Sandberry Blvd.
111	Alafaya Trail	Orange County	3,161	Golfway Blvd.	Innovation Way
112	SR 438	Orange County	3,031	Apopka Vineland Rd. N.	Chantelle Ave.
113	Sand Lake Road	Orange County	2,646	Mandarin Dr.	Jetport Dr.
114	Orange Blossom Trail	Orlando	2,530	SR 50	Holden Ave.
115	Semorán Boulevard	Orange County	2,417	County Boundary	SR 408
116	Orange Blossom Trail	Orange County	2,315	Holden Ave.	Florida's Turnpike
117	SR 50	Orange County	1,667	Fort Christmas Rd S.	County Boundary
118	Pine Hills Road	Orange County	1,410	Pinto Way	SR 50



CHAPTER 9

Technical Appendix

D- Regional Engagement Efforts



Image of Plant Street in the City of Winter Garden

City of Winter Garden



Regional Engagement Efforts

The engagement strategies for the MetroPlan Orlando Regional Vision Zero Safety Action Plan were designed to complement strategies at the county and local plan levels, such that collectively there was a much broader reach and impact than could be realized by any one agency.

Task Force, Steering Committees and Working Groups

A regional **Vision Zero Task Force** provided feedback and strategic guidance throughout the preparation of the plan and included people representing local agencies, the Florida Department of Transportation, public health officials, the medical professionals, bicycling and pedestrian advocacy groups, and members of the public. Throughout the course of the project, the regional Task Force met 5 times around the following topics:

August 2023: Introduction to Vision Zero and the Safe System Approach, Project Overview, and High-Level Crash Trends.

September 2023: High Injury Network, Crash Trends, Public Engagement, and Hub Site Overview.

November 2023: Public Engagement Update, Countermeasures, Policy Benchmarking, Reduction Goals.

February 2024: Public Engagement Update, Policy Benchmarking Outcomes, Preliminary Prioritization Process, and Project Development Process.

April 2024: Public Engagement Update, Project Prioritization, Project Development, and Action Plan Development.

Each task force meeting was recorded, and summaries are available on the hub site (<https://www.visionzerocfl.gov/pages/project-resources>).

The Task Force provided key feedback on the technical analysis, public engagement strategies, policy benchmarking, action plan elements, and project prioritization criteria. Several smaller focused discussions were conducted with key stakeholders to review the policy benchmarking and prioritization criteria and feedback from the Task Force was incorporated into the final set of actions and prioritization criteria.

Vision Zero Central Florida by the Numbers

- 22 Vision Zero Action Plans
 - 1 Regional Task Force
 - 3 County Steering Committees
 - 18 Local Working Groups
- 40+ community events with 1,000+ of interactions with the public
- 400+ views of Call-to-Action video
- 150+ local government meetings
- 15+ updates to MetroPlan Orlando Board and committees
- Over 10,000 views by over 2,700 unique users of VisionZeroCFL.gov
- 345+ survey responses
- 1 Regional Press Conference
- 4 Safety Champion Speaker Series Events
- 30+ mentions on local media outlets

Speaker Series

MetroPlan Orlando facilitated a **Safety Champion Speaker Series**, a series of webinars and events with safety experts from the region and country presenting topics centered around the Safe System Approach. As of June 2024, the following speaker series events have occurred or have been scheduled.

- World Day of Remembrance for Road Traffic Victims, November 15, 2023
- Moving the Needle on Pedestrian and Bicyclist Safety, Rebecca Sanders, PhD, April 4, 2024
- Centering Safety and Equity, Charles Brown, May 23, 2024
- From the Perspective of those Left Behind, Melissa Wandall, June 4
- A Plan for Action for Walking & Cycling, Dan Burden, June 13
- Stories of Speed Management, Loreen Bobo, Whit Blanton, Makenzi Rasey (LADOT), August/September 2024

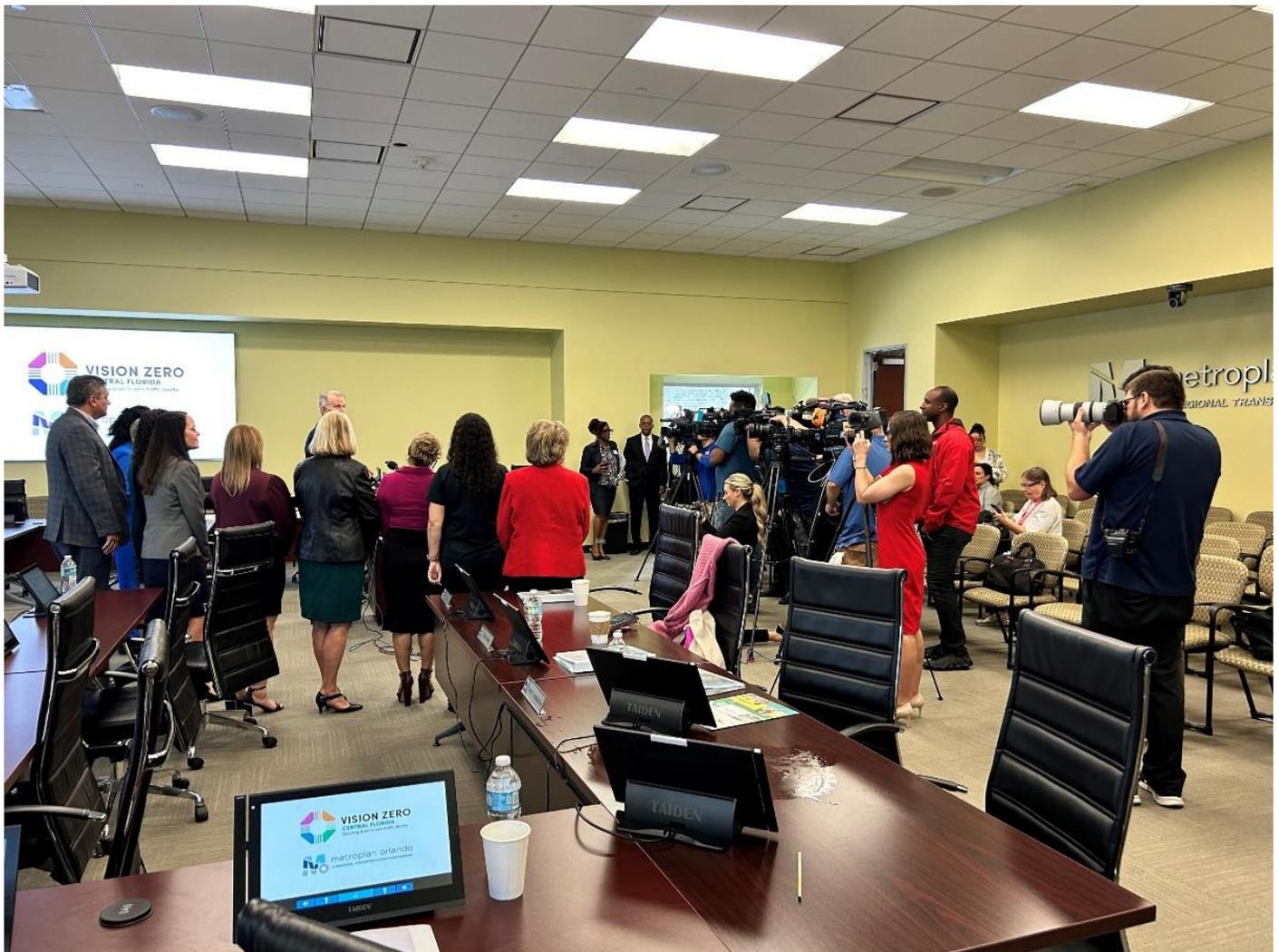
This series is intended to continue beyond plan adoption with a quarterly speaker series event and an annual safety summit for all jurisdictions in the region to share their progress, successes and failures so we can learn as a region. Recordings of the sessions are available on the MetroPlan Orlando YouTube Channel.

Media Briefing

In December 2023, MetroPlan Orlando hosted a Media Briefing to introduce the plan to the local media and generate interest from across the region. The MetroPlan Orlando Board and staff, as well as Florida Department of Transportation staff were present at the event, which also included:

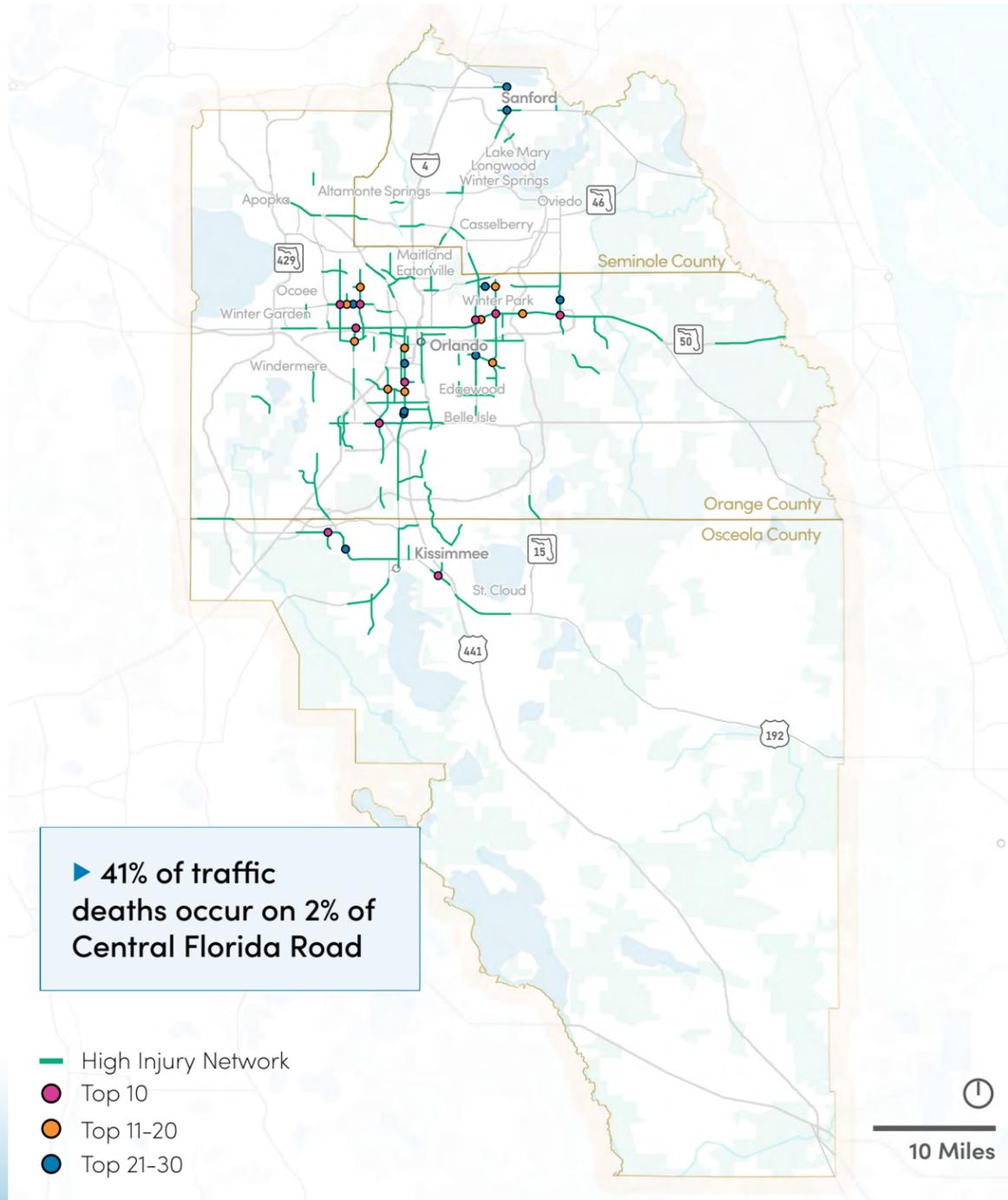
- 5 English and 1 Spanish-language broadcast outlet
- 25+ minutes of on-air coverage following event
- Fact sheets in English, Spanish and Haitian Creole

After the media briefing, there continue to be additional inquiries from print and broadcast journalists, with at least 30 additional segments in local media about the Vision Zero efforts occurring throughout the region, including announcements of local community workshops.



High Injury Network (HIN)

WORST ROADS & INTERSECTIONS FOR CRASH DEATHS AND SERIOUS INJURIES



WHAT IS A HIGH INJURY NETWORK (HIN)?

A HIN is a collection of streets where a disproportionate number of crashes that result in someone being killed or severely injured (KSI) occur. This allows us to focus our efforts on the places where crashes are more likely to result in a KSI.

HOW IS IT CALCULATED?

The HIN calculations weight crashes differently depending on the mode of travel involved and the severity of the crash. Crash summaries for each half mile roadway segment were calculated with the segments that receive the highest score comprising the HIN. High injury intersections are identified using a similar process as the HIN, considering all crashes within 250 feet of each intersection.

HIN FACTS

- Average Posted Speed **43mph**
- Average Prevailing Speed **53mph**
- 53%** of HIN in **Disadvantaged Community**¹ (**25%** of the region is classified as disadvantaged)
- HIN includes:
 - 60%** State Roads
 - 30%** County Roads
 - 10%** Local roads

¹ **Disadvantaged Communities** experience greater transportation inequities to access jobs, housing, food, health care, education and other destinations. More information can be found on the website: <https://www.transportation.gov/priorities/equity/justice40/etc-explorer>

HIN NETWORK OVERALL STATISTICS

	ALL ROADS*	HIN	% HIN	FEDERAL AID (FA) NETWORK	% HIN OF FA
CENTERLINE MILES	10,728	258	2%	1,965	13%
All Crashes	272,523	98,975	36%	229,278	43%
DEATHS	1,143	638	56%	1,071	60%
KSI	7,146	3,378	47%	6,398	53%
PEDESTRIAN KSI	949	576	61%	854	67%
BICYCLIST KSI	327	164	50%	285	58%
MOTORCYCLIST KSI	956	416	44%	864	48%

* All roads excluding limited access (interstate, toll roads, parking lots, etc.)

* All roads in HIN are on FA network

HOW CAN YOU GET INVOLVED

This planning initiative encourages participation from people of all ages across our region, including community leaders, residents, and visitors. Join us in this quest to eliminate deaths and serious injuries on Central Florida's roads. We can save lives when each of us does our part and we all work together.



Visit our website to review crash data, learn more about safety, provide feedback and get details for upcoming events:

VisionZeroCFL.gov

TOP 30 HIGH INJURY NETWORK INTERSECTION LOCATIONS

#	Intersection	Location	Safety Score ²
1.	John Young Parkway at Sand Lake Road	Orange County	10,140
2.	Alafaya Trail at Colonial Drive	Orange County	10,103
3.	Orange Blossom Trail at Holden Avenue	Orange County	10,055
4.	Hiawassee Road at Silver Star Road	Orange County	9,630
5.	N Poinciana Boulevard at Irlo Bronson Memorial Highway	Osceola County	9,399
6.	Pine Hills Road at Silver Star Road	Orange County	8,673
7.	Semorán Boulevard at Old Cheney Hwy	Orange County	8,509
8.	W Colonial Drive at N Kirkman Road	Orange County	7,097
9.	Goldenrod Road at Colonial Drive	Orange County	7,040
10.	Simpson Road at Irlo Bronson Memorial Highway	Osceola County	6,946
11.	Orange Blossom Trail at Gore Street	Orlando	6,769
12.	N Kirkman Road at Old Winter Garden Road	Orange County	6,724
13.	Goldenrod Road at Curry Ford Road	Orange County	6,715
14.	John Young Parkway at Conroy Road	Orange County	6,699
15.	Pine Hills Road at North Lane	Orange County	6,651
16.	Colonial Drive at Econlockhatchee Trail	Orange County	6,480
17.	Powers Drive at Silver Star Road	Orange County	6,415
18.	Orange Blossom Trail at Conroy Road/Americana Boulevard	Orange County	6,401
19.	Old Cheney Highway/Tucker Avenue at Colonial Drive	Orange County	6,386
20.	Goldenrod Road at University Boulevard	Orange County	6,224
21.	Alafaya Trail at Lokanotosa Trail	Orange County	5,905
22.	Semorán Boulevard at Curry Ford Road	Orlando	5,504
23.	S French Street at W 25th Street	Sanford	5,459
24.	Hastings Street at Silver Star Road	Orange County	5,368
25.	Orange Blossom Trail at Orlando Central Parkway	Orange County	5,160
26.	Orange Blossom Trail at Michigan Street	Orange County	4,924
27.	Irlo Bronson Memorial Highway at Club Sevilla	Osceola County	4,812
28.	Forsyth Road at University Boulevard	Orange County	4,722
29.	N French Avenue at W 1st Street (US 17/92)	Sanford	4,294
30.	Orange Blossom Trail at Premier Row	Orange County	3,919

1. The **Safety Score** is calculated based on the total number of crashes, the **highest level of injury** sustained in each crash, and the **travel mode** of victims. Crashes that result in death or severe injury, or include a person outside a vehicle have different factors applied. With the Safety Score, a higher score indicates the location experiences a high crash rate and a lower score indicates as lower crash rate. A Safety Score of zero indicates no history of crashes at the location.

TOP 30 HIGH INJURY NETWORK CORRIDORS

#	Road Name	From	To	Location	Safety Score ¹
1.	John Young Parkway	SR 50	Orange Center Blvd.	Orlando	17,478
2.	Sand Lake Road/McCoy Road	Turkey Lake Rd.	Universal Blvd.	Orlando	17,104
3.	Chickasaw Trail	Frontage Rd.	Lake Underhill Rd.	Orange County	14,589
4.	Hiawassee Road	SR 438/Silver Star Rd.	SR 50	Orange County	14,547
5.	Oakridge Road	Millenia Blvd.	S. Orange Blossom Trail	Orlando	14,296
6.	Kirkman Road (SR 435)	SR 50	Raleigh St.	Orange County	14,130
7.	Goldenrod Road (SR 551)	SR 50	Lake Underhill Rd.	Orange County	14,129
8.	Semorán Boulevard (SR 436)	Lee Vista Rd.	TG Lee Blvd.	Orlando	14,088
9.	Pine Hills Road	SR 50	Old Winter Garden Rd.	Orange County	13,941
10.	Alafaya Trail	SR 50	Lake Underhill Rd.	Orange County	13,564
11.	Kirkman Road (SR 435)	LB Mcleod Rd.	Major Blvd.	Orlando	13,466
12.	Colonial Drive	Orange Blossom Trail N.	N Bumby Ave.	Orlando	13,415
13.	North Lane	Westgate Rd.	N Pine Hills Rd.	Orange County	12,946
14.	Hiawassee Rd.	SR 50	Old Winter Garden Rd.	Orange County	12,344
15.	SR 434	McCulloch Rd.	SR 50	Orange County	12,284
16.	Oak Ridge Road (CR 506)	S. Orange Blossom Trail	Orange Ave S.	Orange County	12,054
17.	Lee Road	N. Orange Blossom Trail	N. Wymore Rd.	Orange County	11,972
18.	University Blvd.	Semorán Blvd. (SR 436)	Lake Mirage Blvd.	Orange County	11,938
19.	Rosalind Ave.	E. Livingston St.	S. Lucerne Cir.	Orlando	11,526
20.	Semorán Boulevard	Lake Underhill Rd.	Lake Margaret Dr.	Orlando	11,419
21.	US 192/Vine St.	Celebration Ave.	Four Winds Blvd.	Osceola County	11,347
22.	Goldenrod Road	Lake Underhill Rd.	Beatty Dr.	Orange County	11,182
23.	N Ronald Reagan Blvd.	Elder Springs Cir.	Jones Ave.	Seminole County	10,951
24.	W First Street (US 17/92)	N. Persimmon Ave.	N French Ave.	Sanford	10,856
25.	Edgewater Dr./Highland Ave.	Clarcona Ocoee Rd.	Lee Rd.	Orange County	10,652
26.	Conway Road	Curry Ford Rd.	E. Michigan St.	Orlando	10,570
27.	Pershing Ave.	Woodgate Blvd.	Goldenrod Rd.	Orlando	10,554
28.	John Young Pkwy.	SR 528 Ramps	Lazio Ln.	Orange County	10,510
29.	East Lake Mary Blvd.	North of Celery Ave.	SR 46	Seminole County	10,477
30.	Poinciana Blvd.	US 192	Siesta Lago Dr.	Osceola County	10,431

1. The **Safety Score** is calculated based on the total number of crashes, the **highest level of injury** sustained in each crash, and the **travel mode** of victims. Crashes that result in death or severe injury, or include a person outside a vehicle have different factors applied. The roadway segment score was normalized on a per mile basis. With the Safety Score, a higher score indicates the location experiences a high crash rate and a lower score indicates as lower crash rate. A Safety Score of zero indicates no history of crashes at the location.

Memorandum

Date: January 17, 2024

To: Vision Zero Central Florida Partners

From: Mighk Wilson, MetroPlan Orlando
Kathrin Tellez, Fehr & Peers

Subject: Vision Zero Central Florida – Crash Analysis and Profiles



Introduction

The MetroPlan Orlando metropolitan area has the unfortunate distinction of having one of the highest pedestrian fatality rates in the country, and the region's overall fatal crash rate (for all road users) is 15% higher than the national average and 10% higher than the statewide average. To understand where and why crashes that result in fatalities and serious injuries are most likely to occur and how to reduce the severity and frequency of these crashes, MetroPlan Orlando is preparing a Regional Vision Zero Action Plan, rooted in the core elements of Vision Zero and the Safe System approach. The overall purpose of the Action Plan is to identify projects, programs and strategies that will eliminate fatalities and serious injuries on the region's roads by taking advantage of the next round of implementation funding through the Safe Streets for All (SS4A) grant program. The SS4A program is also funding the preparation of County and Local Vision Zero action plans in the region.

This memo summarizes the methodology used to analyze the crash data, identify trends in the data and complete a contextual analysis to understand the characteristics of roads throughout the MetroPlan Orlando region where fatal and severe injury crashes are more likely to occur. This analysis is presented in a series of high-level descriptive summary tables to capture relationships between crash data, infrastructure data, and contextual variables. These tables explore overall crash trends and patterns that can be used to guide the selection of other variables warranting deeper analysis, new driver behavior programs, policy changes, or the selection of safety countermeasures for project development. Detailed crash matrices for the region and each county are provided as attachments at the end of this memorandum. The memorandum is organized as follows:

1. Key Findings
2. Methodology and Data Sources
3. Crash Trends
4. Contextual Analysis
 - a. Behavioral Factors
 - b. Road Factors
 - c. Environmental Factors
5. Systemic Matrices

Key Findings

Key findings from the crash analysis are summarized below. The crash analysis considered all reported vehicular crashes in the MetroPlan Orlando Region between January 1, 2018 and December 31, 2022, as well as supplemental information from the Florida Injury Surveillance System (FISS), and the Florida Department of Transportation (FDOT) Modal Office. Crash data was downloaded from Signal 4 Analytics in July 2023; data downloaded before or after this date may reflect different information, especially for the latter years of analysis as the datasets are continually being reviewed and updated. Throughout the report, crashes that result in someone being **killed or severely injured (KSI)** are referred to as **KSI crashes**.

Overall

- During a typical week in the MetroPlan Orlando Region, which includes Orange, Osceola, and Seminole Counties, **5 people are killed and 35 people are seriously injured** in traffic crashes on our roads.
- Although only 25% of the regional population lives in a designated transportation disadvantaged community almost **50% of all crashes and 52% of fatal crashes** occur within or adjacent to **transportation disadvantaged** communities. The designation of transportation disadvantage considers many factors, including poverty rates, motor vehicle ownership, and access to destinations. Additional information is provided in the next section.
- Crashes involving people **outside a vehicle** – pedestrians, bicyclists and motorcyclists – accounted for about 3% of overall crashes, 25% of serious injury crashes and 48% of fatal crashes in the region.
- **Distraction** was a factor in 25% of overall crashes, 31% of serious injury crashes and 18% of fatal crashes.

Car and Truck Involved Crashes

- 61% of **left-turn** KSI crashes are due to a failure to yield the right of way, with 15% related to disobeying the traffic control device (running red light or stop sign). Left-turn related crashes are more likely to result in a KSI as the total number of travel lanes and the posted speed limit increases.
- **Off-road** crashes are more prevalent on 2-lane, 40+ mile per hour speed limit roads without a raised median or shoulders,
- **Rollover** crashes are most prevalent on high-speed principal arterial roads, with operating the motor vehicle in a careless or negligent manner a contributing factor in over 40% of KSI crashes, driving too fast for conditions a contributing factor in 7% of KSI crashes, and swerving to avoid a hazard a contributing factor in 3% of KSI crashes.
- **Alcohol and/or drugs** are a factor in about 10% of KSI crashes, with alcohol/drug related crashes more likely to occur on a Friday or Saturday night/early morning.

- **Teens** comprise about 6% of licensed drivers in the region and are involved in 11% of KSI crashes. **Aging drivers** comprise about 15% of licensed drivers in the region and are involved in about 14% of KSI crashes.
- **Rear-end** crashes are more likely to occur on high-speed, multilane roads, comprising 19% of all KSI crashes.
- 38% of people who died in a car or truck crash in the region were **not wearing their seatbelt**.

Pedestrian and Bicyclist

- 65% of pedestrian and 65% of bicyclist fatalities occur in **transportation disadvantaged communities**.
- Almost 20% of pedestrian KSI and 19% of bicyclist KSI crashes were **hit and run**, as compared to 9% of all crashes.
- Fatal and serious injury crashes involving a person walking or bicycling are more likely to occur at night, under **dark and dark-lighted conditions**.
- The percent of **KSI pedestrian and bicyclist** crashes increases as the number of lanes, the **volume of motor vehicles**, and the **posted speed limit increase**, with 71% of pedestrian KSIs occurring on roads with a posted speed limit higher than 40 miles per hour, 74% occurring on roads with 4 or more lanes, and 82% occurring on roads with more than 15,000 motor vehicle trips per day.
- Approximately 71% of KSI pedestrian crashes are **not at an intersection**.
- About 64% of **bicyclist hospital admissions** (over 100 per year) do not involve a motor vehicle.
- There are about 3 bicyclist fatalities per year that do **not involve a motor vehicle**.
- Non-motor-vehicle pedestrian **hospital admissions** have nearly doubled over the past decade from about 15 to 30 per year, with the increase corresponding to an increase in e-scooter use (and similar devices).

Motorcyclist Crashes

- 43% of motorcyclists who died in a crash were **not wearing a helmet**.
- Crashes involving a motorcyclist are more likely to lead to a severe or fatal injury as posted **speed limit increases**.
- 30% of motorcyclist KSI crashes involve **left-turn** movements and 16% involve **rear-end** crashes.
- Motorcyclist crashes are more likely to result in a **fatality under dark-not lighted conditions**.
- About 10% of motorcyclist KSI are **single-motor vehicle** crashes.

Railroad Crossings

- Of the 19 pedestrian fatalities along railroad **tracks or at railroad crossings**, 58% were determined to be suicides.

Methodology and Data Sources

Several datasets were used to aid in the understanding of crash trends within the region, including data from Signal 4 Analytics (Signal 4)¹, the Florida Injury Surveillance System (FISS), and the Florida Department of Transportation (FDOT) Modal Office. Data from Signal 4 reflects all crashes in the region that were reported to law enforcement and that involve a motor vehicle. From the FISS dataset, deaths, emergency room visits and hospitalizations for people who were injured while walking and biking are provided, including information for people who were injured or killed while walking or bicycling when a motor vehicle was not involved. The FDOT Modal Office provided information related to trespassing incidents near train tracks in the region as incidents between people walking or bicycling and trains do not typically show up in crash reports that would be included in the Signal 4 dataset unless a motor vehicle was involved. Data reflective of 2018 to 2022 from Signal 4 downloaded in June 2023, data from October 2018 to March 2023 from the modal office, and data from 2011 to 2021 from FISS was considered in this analysis.

Spatial Data

The road network that served as the basis for this analysis was obtained from the xGeographic Wave database, which is a land use, transportation, environmental and demographic mapping database, usable across Geographic Information System (GIS) mapping platforms, that has been built for the MetroPlan Orlando region. Information within the database that was considered in the analysis includes:

- Number of through lanes
- Number of turn lanes
- Average Annual Daily Traffic (AADT)
- Posted Speed
- Median Presence
- Presence of walking and biking facilities
- Functional Classification
- Context Classification
- Proximity to key destinations, such as public schools and transit stops

¹ The Signal 4 dashboard and analytics system receives data from Florida's statutory custodian of records, the Florida Department of Highway Safety and Motor Vehicles (FLHSMV); all data is considered preliminary until the year is reconciled and closed out by the FLHSMV, and thus certain adjustments may be made to verify the data where clerical errors are noted. As such, data downloaded before or after the data download for this project (July 2023) may slightly differ from the data used in this analysis.

Signal 4 Crash Dataset

All data from Signal 4 was mapped based on the geolocation associated with each crash record, which revealed some crashes with incomplete or incorrect information, such as crashes that did not actually occur in any of the three counties. After removing incorrectly geolocated crashes (i.e., those not actually located within the region), a total of 327,306 crashes, including 1,366 that resulted in a fatality, 7,484 that resulted in a serious injury, 89,957 that resulted in some injury, and 228,499 that resulted in no injury are considered in the analysis. Of the total reported crashes, approximately 3,950 occurred in parking lots, including 9 fatal crashes and 119 serious injury crashes. Of the total crashes, 50,850 reported crashes occurred on limited access facilities, including 214 fatal crashes and 1,363 serious injury crashes.

For some analyses presented in the subsequent sections, crashes that occurred on limited access facilities, like Interstate 4, and in parking lots, were not considered. Some high-level analyses incorporate all crashes, while most only consider crashes where someone was severely injured or killed. Additionally, total crashes are used as the unit of measurement (as opposed to total number of people involved), unless otherwise stated.

US DOT Transportation Disadvantage

The US Department of Transportation's (DOT) has developed a metric to identify communities that experience transportation insecurity through transportation disadvantage. Transportation disadvantage occurs when people are unable to access the needs of their daily life regularly, reliably, and safely. There are five main components of transportation disadvantage with the indicators used to identify transportation disadvantaged communities summarized below:

1. **Transportation Insecurity** occurs when people are unable to get to where they need to go to meet the needs of their daily life regularly, reliably, and safely. Nationally, there are well-established policies and programs that aim to address food insecurity and housing insecurity, but not transportation insecurity. A growing body of research indicates that transportation insecurity is a significant factor in persistent poverty.
2. The **Environmental Burden** component of the index includes variables measuring factors such as pollution, hazardous facility exposure, and the built environment. These environmental burdens can have far-reaching consequences such as health disparities, negative educational outcomes, and economic hardship.
3. **Social Vulnerability** is a measure of socioeconomic indicators that have a direct impact on quality of life. This set of indicators measure lack of employment, educational attainment, poverty, housing tenure, access to broadband, and housing cost burden as well as identifying household characteristics such as age, disability status and English proficiency.
4. The **Health Vulnerability** category assesses the increased frequency of health conditions that may result from exposure to air, noise, and water pollution, as well as lifestyle factors such as poor walkability, car dependency, and long commute times.
5. **Climate and Disaster Risk Burden** reflects sea level rise, changes in precipitation, extreme weather, and heat which pose risks to the transportation system. These hazards may affect system performance, safety, and reliability. As a result, people may have trouble getting to their homes, schools, stores, and medical appointments.

Each indicator is comprised of multiple factors. Additional information can be found on the US DOT website for Equitable Transportation Community (ETC):

<https://www.transportation.gov/priorities/equity/justice40/etc-explorer>.

For each indicator, a score was developed by normalizing and then summing indicators within each component. Census Tracts/projects areas at “0%” are considered the least disadvantaged and “100%” are the most. US DOT considers a census tract to be experiencing disadvantage if the overall index score places it in the 65 percentile (or higher) of all census tracts in the United States. The ranked Component Scores are then summed across all components to generate an Overall Score. The Transportation Insecurity component was double weighted in generating the final score. Census tracts that have an overall weighted score of 65% or higher are considered Transportation Disadvantaged.

As part of the preparation of a Regional Equity Profile, MetroPlan Orlando reviewed the US DOT data and made minor adjustments based on local data to remove a large census tract in southeast Osceola County that was skewing the results. A summary of the total transportation disadvantaged population in the MetroPlan Orlando region is provided in **Table 1**, which shows that about 25% of the regional population lives in a community considered to be transportation disadvantaged. For some crash statistics throughout the region presented in this memorandum, crash frequency and outcomes for crashes that occurred within transportation disadvantaged communities were compared to the overall regional data.

Table 1: Transportation Disadvantaged Summary Statistics – MetroPlan Orlando Region

Criteria	Total Disadvantaged Population	Total Disadvantaged Census Tracts	Total Disadvantaged area (in Acres)
MetroPlan Orlando Equitable Transportation Community (ETC) Final Rank Score	0.57M (25.2%)	103 (24.9%)	0.16M (9.6%)
Transportation Insecurity	0.78M (34.7%)	131 (31.6%)	1.27M (78%)

Source: Transportation for All; Overcoming Obstacles, Regional Equity Profile, MetroPlan Orlando; November 2023 and EquityIndex_V2 | Tableau Public

Statistical Test Methodology

To test if a certain category of crashes had a significantly higher crash rate, the crashes were normalized based on available data, such as traffic volume or centerline miles in that specific category. For example, crashes that result in someone being killed or severely injured, referred to as KSI crashes, are over-represented for roads with 6+ lanes based on the number of crashes that occurred on roads with 6+ lanes and the proportion of centerline miles for roads with 6+ lanes in the data set. Throughout the report, results that were found to be higher or lower than regional averages or disproportionately represented are highlighted in **blue**. Where applicable, a comparative analysis was made between modes (i.e., all modes versus pedestrians and bicyclists), by severity (i.e., all crashes versus KSI crashes only), or transportation disadvantaged status.

Limitations of the Data and Analysis

There are known limitations of the various datasets that are used for this analysis and the extent to which these limitations affect the overall dataset and subsequent analysis is not quantified. Some limitations include:

- **Only reported crashes** are included in the Signal 4 dataset. Some crash types may be underreported due to a variety of reasons, such as no apparent injuries, law enforcement response time, fear of law enforcement, lack of knowledge about the reporting process, lack of insurance or desire to not involve insurance, or legal status of people involved in crash.
- Potential for **incomplete or inaccurate data** within crash reports. While there are many layers of review that occur for crash reports, some information may not be correct. For example, in some instances, the reporting officer may use the GPS coordinates of where they completed the crash report, which could be a parking lot near the crash site, instead of the location of the first harmful event. Additionally, crashes involving a person in a wheelchair, or micromobility device, like an e-scooter, may be classified as pedestrian or bicyclist related, and a golf cart crash may be characterized as a motor vehicle crash as there are not fields within the crash report to denote the wide range of road users. While the details are often in the crash report, they are not available at this scale of analysis.
- **Only crashes involving a motor vehicle** are reported in the Signal 4 dataset. A crash between a bicyclist and a pedestrian or a bicyclist and a train would not be reflected in the Signal 4 dataset. As noted previously, other data sources were considered to better incorporate those crash types, but it may be difficult to compare trends with a variety of data resources that need to be compiled.
- Results are based on crash data and current attribute data from **2018-2022** and do not account for road improvements made during the study period. Locations where major safety improvements were made during that time frame may be candidates for before-and-after analysis to determine if the road improvements had any effect on crash severity, crash frequency, crash causes, and/or crash types. This type of analysis would also inform the effectiveness of road safety improvements within the study area.
- Some of the crash analyses are based on exposure by using the average annual daily traffic (AADT) volumes for motor vehicles, where available. However, pedestrian and bicyclist volumes are not readily available to adjust for exposure. Therefore, analyses reported here do not adjust for exposure rates based on volumes by modes, and results show crash density but not frequency of crashes based on how many people are walking, i.e., exposure. For example, in many communities, pedestrian crashes are more common during daylight conditions than dark conditions. This does not mean that daylight conditions are more dangerous than dark conditions. Rather, it reflects the fact that people are more likely to travel, and especially more likely to travel by walking, in light conditions than in dark conditions. Having volume by mode would provide some insight into exposure and frequency for non-motorized modes.

Crash Trends

The following sections summarize crash data from 2018 through 2022 to provide statistical trends by year, by mode and by severity. While the data presented in this memorandum is at the regional scale, there are similarities between roads in the region, such that the takeaways from the regional crash analysis can be used by local jurisdictions to help identify common crash trends.

Crashes by Year

The number of crashes by year by severity are summarized in **Table 2** for reported crashes from 2018 through 2022 in the MetroPlan Orlando region. The severity level reflects the maximum injury severity of any crash participant and is reflected as:

- No Injury – crashes where no persons were reported to be injured. Also known as property damage only crashes.
- Injury – crashes where there is a possible injury or a non-incapacitated injury which may or may not require hospitalization.
- Serious Injury – crashes where there is an incapacitating injury, such as burns, lacerations, or broken bones that require hospitalization.
- Fatality – crash results in one or more fatalities within 30 days.

In 2018 and 2019, the total number of reported crashes was around 75,000 per year. In 2020, the number of reported crashes decreased by about 33%. This reduction in total crashes, with an increase in the percent of crashes that resulted in a fatality or severe injury was likely influenced by the COVID-19 pandemic, which led to a significant reduction in overall travel for a portion of 2020, an increase in severity for crashes that did occur as people tended to be driving faster, and an overall decrease in reporting for non-injury crashes related to social distancing.

Table 2: Crash Summary by Year – MetroPlan Orlando Region

Year	No Injury	Injury	Serious Injury	Fatality	Total
2018	53,529 (71.7%)	19,252 (25.8%)	1,651 (2.2%)	262 (0.4%)	74,694
2019	53,141 (71%)	20,008 (26.7%)	1,465 (2%)	267 (0.4%)	74,881
2020	35,972 (68.1%)	15,217 (28.8%)	1,399 (2.6%)	249 (0.5%)	52,837
2021	42,539 (67.8%)	18,314 (29.2%)	1,648 (2.6%)	280 (0.4%)	62,781
2022	43,318 (69.7%)	17,166 (27.6%)	1,321 (2.1%)	308 (0.5%)	62,113
Total	228,499 (69.8%)	89,957 (27.5%)	7,484 (2.3%)	1,366 (0.4%)	327,306

Source: Signal 4 Analytics; Notes: Includes limited access facilities

Crash summaries by facility type were also developed, as presented in **Table 3** for non-limited access facilities and in **Table 4** for limited access facilities. Limited access facilities include freeways and toll roads while non-limited access roads include surface streets that typically accommodate non-auto travel as well as transit. National data shows that the overall crash rate per million miles of vehicle travel is lower on limited access roads than on non-limited access roads because there are fewer conflicts on limited access roads, including driveways, and bicyclists and pedestrians are not allowed on limited access roads. Therefore, some data is presented for only non-limited access roads.

Table 3: Crash Summary by Year Non-Limited Access Facilities – MetroPlan Orlando Region

Year	No Injury	Injury	Serious Injury	Fatality	Total
2018	44,585 (71.4%)	16,225 (26%)	1,382 (2.2%)	215 (0.3%)	62,407
2019	44,509 (70.7%)	16,937 (26.9%)	1,244 (2%)	226 (0.4%)	62,916
2020	30,986 (68.3%)	13,001 (28.7%)	1,141 (2.5%)	211 (0.5%)	45,339
2021	36,259 (67.7%)	15,766 (29.4%)	1,318 (2.5%)	245 (0.5%)	53,588
2022	36,192 (69.3%)	14,725 (28.2%)	1,036 (2%)	255 (0.5%)	52,208
Total	192,531 (69.6%)	76,654 (27.7%)	6,121 (2.2%)	1,152 (0.4%)	276,458

Source: Signal 4 Analytics

Notes: Does not include limited access facilities

Table 4: Crash Summary by Year Limited Access Facilities Only – MetroPlan Orlando Region

Year	No Injury	Injury	Serious Injury	Fatality	Total
2018	8,944 (72.8%)	3,027 (24.6%)	269 (2.2%)	47 (0.4%)	12,287
2019	8,632 (72.1%)	3,071 (25.7%)	221 (1.8%)	41 (0.3%)	11,965
2020	4,986 (66.5%)	2,216 (29.6%)	258 (3.4%)	38 (0.5%)	7,498
2021	6,280 (68.3%)	2,548 (27.7%)	330 (3.6%)	35 (0.4%)	9,193
2022	7,126 (71.9%)	2,441 (24.6%)	285 (2.9%)	53 (0.5%)	9,905
Total	35,968 (70.7%)	13,303 (26.2%)	1,363 (2.7%)	214 (0.4%)	50,848

Source: Signal 4 Analytics

Notes: Only limited access facilities

For crashes that occurred on non-limited access roads, the number of reported crashes within or 250 feet from of the boundary of a census tract that is identified as transportation disadvantaged was summarized, as presented in [Table 5](#), which shows that while only 25% of people live in transportation disadvantaged Census Tracts, almost **50% of all crashes and 54% of fatal crashes occur within or adjacent to transportation disadvantaged communities.**

Table 5: Crash Summary by Year on Non-Limited Access Roads in MetroPlan Orlando Transportation Disadvantaged Areas

Year	No Injury	Injury	Serious Injury	Fatality	Total
2018	21,904 (70.9%)	8,194 (26.5%)	677 (2.2%)	123 (0.4%)	30,898
2019	21,405 (69.2%)	8,773 (28.4%)	629 (2%)	124 (0.4%)	30,931
2020	15,432 (66.7%)	6,997 (30.2%)	603 (2.6%)	113 (0.5%)	23,145
2021	17,306 (65.7%)	8,148 (30.9%)	740 (2.8%)	146 (0.6%)	26,340
2022	16,728 (67.1%)	7,507 (30.1%)	585 (2.3%)	120 (0.5%)	24,940
Total	92,775 (68.1%)	39,619 (29.1%)	3,234 (2.4%)	626 (0.5%)	136,254
Percent of Regional Total	48%	52%	53%	54%	49%

Source: Signal 4 Analytics

Notes: Does not include limited access facilities

Crashes by Mode

Table 6 through **Table 9** summarize crashes by injury severity and mode for all roads, limited access roads, non-limited access roads, and roads within and adjacent to transportation disadvantaged communities. Overall, motor vehicle crashes accounted for most of the crashes with almost 97% of total crashes. This is expected as most trips in the region are typically made by motor vehicles. Motorcyclists, pedestrians, and bicyclists together account for about 3.3% of total crashes. On limited access facilities, like freeways and toll roads, people in cars and trucks were involved in 98.8% of all crashes, with pedestrians involved in 0.1% of crashes and motorcyclists involved in 1.1% of all crashes. There were no bicyclist involved crashes on limited access facilities reported during the analysis time frame.

While motor vehicle crashes accounted for the largest share of both overall crashes and KSI crashes, when vulnerable road users were involved in a crash (defined for the purposes of this memorandum as someone outside a motor vehicle, including a pedestrian, bicyclist, or motorcyclist) the risk of death or serious injury increased disproportionately. **Crashes involving vulnerable road users accounted for about 3% of overall crashes, 25% of serious injury crashes and 48% of fatal crashes** (see **Table 6**). In transportation disadvantaged communities, crashes involving pedestrians and bicyclists were even higher (**Table 9**) than for roads that are not in disadvantaged communities.

- **Pedestrians:** Pedestrians were involved in 1% of all crashes, 9% of crashes that resulted in a serious injury and 26% of crashes that resulted in a fatality (crashes involving a pedestrian where the pedestrian was unharmed or experienced minor injuries are underreported). **In transportation disadvantaged communities, pedestrians were involved in 35% of fatal crashes.** Pedestrians were also involved in 18 fatal crashes on limited access facilities. Most of these people were hit while on the side of the road with a disabled vehicle. Pedestrian coded crashes typically include skateboard, scooter and other micro-mobility devices, and the hospital injury data has shown a significant increase in "pedestrian" injuries that did not involve a motor vehicle (see **Table 14**). These are most likely injuries involving solo micro-mobility users.
- **Bicyclists:** People bicycling were involved in about 0.7% of all crashes, 4% of crashes that resulted in a serious injury and 4% of crashes that resulted in a fatality (crashes involving a bicyclist where the person bicycling was unharmed or experienced minor injuries are underreported). In transportation disadvantaged communities, bicyclists were involved in 5% of fatal crashes. Hospital injury data shows that an average of 64% of bicyclist hospitalizations do not involve a motor vehicle (Table 13).
- **Motorcyclist:** Motorcycle crashes comprised 1.4% of all crashes, 12% of crashes that resulted in a serious injury and 18% of crashes that resulted in a fatality. Approximately 12% of motorcyclist KSI crashes are single vehicle crashes.
- **Cars and Trucks:** Crashes involving cars and trucks comprised 97% of all crashes, 75% of crashes that resulted in a serious injury and 53% of crashes that resulted in a fatality.

Table 6: Crash Summary by Mode – MetroPlan Orlando Region (2018-2022)

Mode	No Injury	Injury	Serious Injury	Fatality	Total
Bicycle	380 (0.2%)	1,706 (1.9%)	289 (3.9%)	52 (3.8%)	2,427 (0.7%)
Pedestrian	409 (0.2%)	2,600 (2.9%)	702 (9.4%)	352 (25.8%)	4,063 (1.2%)
Motorcycle	992 (0.4%)	2,437 (2.7%)	871 (11.6%)	245 (17.9%)	4,545 (1.4%)
Motor vehicles (including trucks)	226,718 (99.2%)	83,214 (92.5%)	5,622 (75.1%)	717 (52.5%)	316,271 (96.6%)
Total	228,499	89,957	7,484	1,366	327,306

Source: Signal 4 Analytics

Notes: Includes limited access facilities; **Blue/Bold** indicates that crash type disproportionately results in a KSI.**Table 7: Crash Summary by Mode on Limited Access Roads in MetroPlan Orlando Region (2018-2022)**

Mode	No Injury	Injury	Serious Injury	Fatality	Total
Bicycle	1 (0%)	13 (0.1%)	2 (0.1%)	0 (0%)	16 (0%)
Pedestrian	10 (0%)	27 (0.2%)	18 (1.3%)	18 (8.4%)	73 (0.1%)
Motorcycle	93 (0.3%)	290 (2.2%)	137 (10.1%)	21 (9.8%)	541 (1.1%)
Motor vehicles (including trucks)	35,864 (99.7%)	12,973 (97.5%)	1,206 (88.5%)	175 (81.8%)	50,218 (98.8%)
Total	35,968	13,303	1,363	214	50,848

Source: Signal 4 Analytics

Table 8: Crash Summary by Mode on Non-Limited Access Roads in MetroPlan Orlando Region (2018-2022)

Mode	No Injury	Injury	Serious Injury	Fatality	Total
Bicycle	379 (0.2%)	1,693 (2.2%)	287 (4.7%)	52 (4.5%)	2,411 (0.9%)
Pedestrian	399 (0.2%)	2,573 (3.4%)	684 (11.2%)	334 (29%)	3,990 (1.4%)
Motorcycle	899 (0.5%)	2,147 (2.8%)	734 (12%)	224 (19.4%)	4,004 (1.4%)
Motor vehicles (including trucks)	190,854 (99.1%)	70,241 (91.6%)	4,416 (72.1%)	542 (47%)	266,053 (96.2%)
Total	192,531	76,654	6,121	1,152	276,458

Source: Signal 4 Analytics

Notes: Does not include limited access facilities

Table 9: Crash Summary by Mode on Non-Limited Access Roads in Transportation Disadvantaged Areas in MetroPlan Orlando Region (2018-2022)

Mode	No Injury	Injury	Serious Injury	Fatality	Total
Bicycle	197 (0.2%)	853 (2.2%)	161 (5%)	34 (5.4%)	1,245 (0.9%)
Pedestrian	216 (0.2%)	1,359 (3.4%)	433 (13.4%)	219 (35%)	2,227 (1.6%)
Motorcycle	461 (0.5%)	1,094 (2.8%)	365 (11.3%)	120 (19.2%)	2,040 (1.5%)
Motor vehicles (including trucks)	91,901 (99.1%)	36,313 (91.7%)	2,275 (70.3%)	253 (40.4%)	130,742 (96%)
Total	92,775	39,619	3,234	626	136,254

Source: Signal 4 Analytics

Notes: Does not include limited access facilities; **Blue/Bold** indicates that crash type disproportionately results in a KSI as compared to non-limited access roads not in transportation disadvantaged communities.

Crashes by People Involved

The data in the prior section reflects crashes, which may involve multiple motor vehicles, people traveling by other modes, and result in numerous people in each crash being hurt, severely injured or killed. **Table 10** summarizes the number of people involved crashes by injury severity by year, with **Table 11** summarizing total injuries by mode of travel. The trend shows that the number of people killed in the MetroPlan Orlando region is trending higher, with 1,465 people killed in crashes between 2018 and 2022, 9,500 people seriously injured and almost 150,000 people sustaining a moderate or minor injury. Of people who were hurt or killed on non-limited access facilities, crashes that resulted in in 52% of injuries or fatalities occurred within or adjacent to a transportation disadvantaged community. Although only 25% of the regional population lives in a transportation disadvantaged community, **65% of bicyclist fatalities and 65% of pedestrian fatalities occur in transportation disadvantaged communities (Table 12).**

Table 10: Injury Summary by Year – MetroPlan Orlando Region

Year	Injury	Serious Injury	Fatality	Total
2018	31,407 (93%)	2,084 (6.2%)	278 (0.8%)	33,769
2019	32,878 (93.8%)	1,877 (5.4%)	288 (0.8%)	35,043
2020	25,068 (92.5%)	1,769 (6.5%)	271 (1%)	27,108
2021	31,099 (92.8%)	2,106 (6.3%)	309 (0.9%)	33,514
2022	28,469 (93.5%)	1,662 (5.5%)	319 (1%)	30,450
Total	148,921 (93.1%)	9,498 (5.9%)	1,465 (0.9%)	159,884

Source: Signal 4 Analytics

Notes: Includes limited access facilities

Table 11: Total Injuries by Mode of Travel – MetroPlan Orlando Region (2018-2022)

Mode	Injury	Serious Injury	Fatality	Total
Bicycle	1,788 (1.2%)	293 (3.1%)	52 (3.5%)	2,133 (1.3%)
Pedestrian	2,874 (1.9%)	723 (7.6%)	359 (24.5%)	3,956 (2.5%)
Motorcycle	3,119 (2.1%)	945 (9.9%)	252 (17.2%)	4,316 (2.7%)
Motor vehicles (including trucks)	141,140 (94.8%)	7,537 (79.4%)	802 (54.7%)	149,479 (93.5%)
Total	148,921	9,498	1,465	159,884

Source: Signal 4 Analytics

Notes: Includes limited access facilities; **Blue/Bold** indicates that crash type disproportionately results in a KSI.

Table 12: Percent of Total Injuries by Mode of Travel in Transportation Disadvantaged Communities – MetroPlan Orlando Region

Mode	Injury	Serious Injury	Fatality	Total
Bicycle	51%	56%	65%	52%
Pedestrian	54%	63%	65%	57%
Motorcycle	51%	51%	53%	51%
Motor vehicles (including trucks)	52%	51%	47%	52%
Total	52%	52%	54%	52%

Source: Signal 4 Analytics

Notes: Does not include limited access facilities; when limited access facilities are included, the percent of vehicle occupants who are injured or killed decreases from 52% to 51%, and the percent of pedestrians who are injured or killed decreases from 57% to 56% largely due to the amount of through travel on limited access facilities. Approximately 25% of the region's population lives in a transportation disadvantaged community.

Railroad Incidents (not involving a motor vehicle)

Data related to trespasser incidents between trains and bicyclists or pedestrians was obtained from the FDOT modal office for the period between October 2018 and March 2023. The data includes incidents that resulted in a fatality or severe injury, as well as near-misses. As mentioned previously, crash data at railroad crossings involving motor vehicles is included in the Signal 4 crash database, but incidents that do not involve motor vehicles are not reported to Signal 4. A full summary of the incidents by location is provided as **Attachment A**, with a summary of key findings presented below reflective of incidents between people walking or biking and trains operated by SunRail, CSX or Amtrak.

- 27 incidents that resulted in a serious injury or death and 55 near-misses that did not result in an injury were reported between October 2018 and March 2023, including:
 - 8 Injuries, with 2 suicide attempts
 - 19 fatalities, with 11 confirmed or apparent suicides
 - 55 near-misses that did not result in an injury

- Of the 27 KSI incidents, 9 (33%) occurred at a grade crossing and 18 (67%) occurred outside of a crossing area; of the near-miss incidents, 21 (38%) occurred at a crossing and 34 (62%) occurred outside of a crossing.
- Of the KSI incidents, 18 (67%) people were standing, sitting, kneeling, or lying on the railroad tracks, 4 (15%) were walking along the railroad tracks, 2 (7%) were walking across the railroad tracks, and the action was unknown in 3 (11%) of the incidents. Of the near-miss incidents, 22 (40%) people were standing, sitting, kneeling, or lying on the railroad tracks, 14 (25%) were walking along the railroad tracks, 14 (25%) were walking across the railroad tracks, and the action was unknown in 3 (9%) of the incidents.
- Frequency and type of railroad incidents by community:
 - 11 KSI and 22 near-misses in Orlando
 - 3 KSI and 8 near-misses in Winter Park
 - 3 KSI and 5 near-misses in unincorporated Osceola County
 - 3 KSI and 8 near-misses in Kissimmee
 - 2 KSI in Edgewood
 - 2 KSI and 2 near-misses in Longwood
 - 1 KSI and 4 near-misses in unincorporated Orange County
 - 1 KSI in Altamonte Springs
 - 1 KSI and 1 near-miss in Maitland
 - 5 near-misses in Sanford
 - 2 near-misses in Lake Mary

Bicycle and Pedestrian Emergency Room Admission

Data from the Florida Injury Surveillance System (FISS) includes deaths, emergency room visits and hospitalizations for people who were injured while walking and biking, as well as information for people who were injured or killed while walking or bicycling when a motor vehicle was not involved, as summarized in **Table 13** for bicyclist and **Table 14** for pedestrians. These tables show hospital data for Emergency Room (ER) visits, hospitalizations, and fatalities. Data from Law Enforcement (LE) is also shown for comparison purposes. Pedestrian hospitalization data may also include people using electric-scooters (e-scooter) and other mobility devices.

Table 13: Bicyclists Hospitalizations 2011 – 2021 – MetroPlan Orlando Region

Year	LE Fatal Bike Crash	Hospital Reported Fatalities Motor Vehicle Involved	Hospital Reported Fatalities Non Motor Vehicle Involved	LE Incapacitating Bike Crashes	Hospitalizations: Motor Vehicle	Hospitalizations: Non Motor Vehicle	ER: Motor Vehicle	ER: Non Motor Vehicle
2011	12	11	3	53	57	140	376	1,736
2012	11	20	0	70	63	156	393	1,692
2013	15	13	3	91	54	151	458	1,636
2014	13	12	2	127	48	141	379	1729
2015	18	14	4	160	56	137	535	1,533
2016	11	5	0	118	70	102	777	1,042
2017	13	10	5	83	72	82	791	1,323
2018	14	13	3	91	96	100	652	1,354
2019	12	13	3	66	78	125	430	1,040
2020	10	14	1	78	85	144	332	934
2021	17	12	5	75	98	125	-	-
% Change 2011-13 to...								
To 2014-16	11%	-30%	0%	89%	0%	-15%	38%	-15%
To 2017-20	-3%	-15%	50%	11%	43%	-24%	35%	-31%

Source: FISS and MetroPlan Orlando

Table 14: Pedestrian Hospitalizations 2011 – 2021 – MetroPlan Orlando Region

Year	LE Fatal Ped Crash	Hospital Reported Fatalities Motor Vehicle Involved	Hospital Reported Fatalities Non Motor Vehicle Involved	LE Incapacitating Bike Ped Crashes	Hospitalizations: Motor Vehicle	Hospitalizations: Non Motor Vehicle	ER: Motor Vehicle	ER: Non Motor Vehicle
2011	62	46	4	125	141	15	606	84
2012	45	39	2	126	178	19	641	89
2013	55	37	7	160	146	18	684	73
2014	65	48	6	226	153	18	697	123
2015	64	41	4	234	121	22	640	202
2016	77	61	7	207	89	27	542	380
2017	88	70	6	156	108	30	523	434
2018	73	59	4	165	114	32	550	316
2019	89	68	8	171	136	30	429	218
2020	63	57	2	145	127	21	257	133
2021	81	85	6	176	178	29	-	-
% Change 2011-13 to...								
To 2014-16	27%	23%	31%	62%	-22%	29%	-3%	187%
to 2017-20	45%	56%	15%	16%	-22%	63%	-32%	236%

Source: FISS and MetroPlan Orlando

Some key findings include:

- About 64% of bicyclist hospital admissions (over 100 per year) do not involve a motor vehicle.
- There are about 3 bicyclist fatalities per year that do not involve a motor vehicle.
- Non-motor-vehicle pedestrian admissions have nearly doubled over the past decade from about 15 to 30 per year, with the increase corresponding to the increase in e-scooter use (and similar devices). The biggest increases in both admissions and ER visits for pedestrians without motor vehicles are in Orange County, which has the most e-scooter use, especially in Downtown Orlando and near UCF. ER visits in Orange County increased by 370% from 2011-13 to 2017-19.
- A drop in the percent of non-motor vehicle bicyclist admissions and ER visits during the same time periods could indicate a shift from bicycling to scootering.

Additional details related to bicycling and pedestrian hospital visits have been requested from local hospitals, but at the time this report was prepared, the data was not provided.

Crashes by Type

Table 15 summarizes the crashes based on the recorded crash type for all crashes where a crash type is known and **Table 16** summarizes the contributing action of the first driver for the crash categories that disproportionately result in KSIs. Following the table, a definition of each crash type is provided with a summary of key takeaways. This information can be used to identify appropriate strategies to implement at high crash locations that reduce the frequency and severity of crashes.

Table 15: Crash Summary by Type – MetroPlan Orlando Region (2018-2022)

Crash Type	No Injury	Injury	Serious Injury	Fatality	Total	Percent of Total Crashes	Percent of KSI
Angle	10,754	7,173	549	67	18,543	5.7%	7.0%
Animal	610	118	9	0	737	0.2%	0.1%
Backed Into	9,267	699	21	2	9,989	3.1%	0.3%
Bicycle	380	1706	289	52	2427	0.7%	3.9%
Head On	1,746	1,244	211	93	3,294	1.0%	3.4%
Left Entering	9,715	8,632	853	129	19,329	5.9%	11.1%
Left Leaving	4,460	3,138	292	48	7,938	2.4%	3.8%
Left Rear	4,517	2,460	171	23	7,171	2.2%	2.2%
Off Road	17,268	6,934	1,010	227	25,439	7.8%	14.0%
Opposing Sideswipe	1,737	462	33	2	2,234	0.7%	0.4%
Other	8,266	2,874	260	47	11,447	3.5%	3.5%
Parked vehicle	16,288	1,382	130	26	17,826	5.4%	1.8%
Pedestrian	409	2,600	702	352	4,063	1.2%	11.9%
Rear End	89,393	38,494	1,802	121	129,810	39.7%	21.7%
Right/Left	694	99	3	0	796	0.2%	0.0%
Right/Through	3,556	1,190	85	4	4,835	1.5%	1.0%
Right/U-Turn	139	28	0	0	167	0.1%	0.0%
Rollover	942	973	171	40	2,126	0.6%	2.4%
Same Direction Sideswipe	37,221	5,281	324	19	42,845	13.1%	3.9%
Solo vehicle–Cars/Trucks	5,355	2420	347	73	8,195	2.5%	4.7%
Solo vehicle–Motorcycle	38	372	121	14	545	0.2%	1.5%
Unknown	5,744	1,678	101	27	7,550	2.3%	1.4%
Grand Total	228,499	89,957	7,484	1,366	327,306	100%	100%

Source: Signal 4 Analytics; Notes: Includes limited access facilities; **Blue/Bold** indicates that crash type disproportionately results in a KSI or has a high share of KSI.

Table 16: KSI Crash Summary by Contributing Action of First Driver – MetroPlan Orlando Region^{1&2}

Crash Type	Angle	Bicycle	Head On	Left Turn	Off Road	Pedestrian	Rear End	Right Turn
Disregarded Other Road Markings	0.2%	0.0%	0.0%	0.0%	0.1%	0.0%	0.0%	0.0%
Disregarded Other Traffic Sign	0.5%	0.3%	0.0%	0.1%	0.2%	0.0%	0.1%	0.0%
Drove Too Fast for Conditions	0.7%	0.0%	2.0%	0.0%	5.5%	0.2%	0.9%	0.0%
Exceeded Posted Speed	0.5%	0.0%	1.0%	1.0%	2.1%	1.0%	0.5%	0.0%
Failed to Keep in Proper Lane	1.0%	1.7%	23.8%	0.5%	13.8%	1.5%	1.5%	0.0%
Failed to Yield Right-of-Way	28.4%	24.4%	3.0%	61.0%	0.3%	11.8%	1.4%	62.2%
Followed Too Closely	0.2%	0.0%	0.0%	0.0%	0.0%	0.0%	5.3%	0.0%
Improper Backing	0.0%	0.3%	0.0%	0.0%	0.2%	1.7%	0.0%	0.0%
Improper Passing	0.2%	1.4%	6.4%	0.5%	0.2%	0.4%	0.6%	1.1%
Improper Turn	1.9%	0.7%	0.7%	3.0%	0.6%	0.2%	0.3%	8.9%
No Contributing Action ²	7.6%	52.6%	4.4%	6.0%	8.6%	65.6%	3.3%	4.4%
Operated MV in Careless or Negligent Manner	9.5%	8.6%	21.8%	5.9%	42.2%	9.4%	77.7%	1.1%
Operated MV in Erratic, Reckless or Aggressive Manner	1.7%	0.0%	1.0%	0.3%	1.9%	0.8%	1.0%	1.1%
Other Contributing Action	6.1%	6.9%	5.0%	7.1%	13.7%	6.0%	6.6%	5.6%
Over-Correcting/Over-Steering	0.0%	0.3%	0.0%	0.0%	0.8%	0.1%	0.0%	0.0%
Ran Off Road	0.0%	0.0%	1.3%	0.0%	7.7%	0.4%	0.1%	0.0%
Ran Red Light	23.5%	0.0%	1.3%	9.7%	0.1%	0.0%	0.3%	5.6%
Ran Stop Sign	17.6%	2.1%	0.7%	4.6%	0.5%	0.3%	0.2%	10.0%
Swerved or Avoided	0.0%	0.0%	0.3%	0.0%	1.2%	0.6%	0.3%	0.0%
Wrong Side or Wrong Way	0.7%	0.7%	27.2%	0.3%	0.2%	0.0%	0.0%	0.0%

Source: Signal 4 Analytics

Notes: 1. Includes limited access facilities; **Blue/Bold** indicates that contributing action is involved in a disproportionate number of KSI crashes.

2. The data in this table reflects the contributing action of Driver 1. Typically, Driver #1 is the at-fault party, but not always. In some instances where a person driving hits a pedestrian or cyclist, and the reporting officer determined the pedestrian or bicyclist was at-fault, the crash report will note "No Contributing Action" for Driver 1.

Angle crashes are when two motor vehicles traveling perpendicularly collide, such as a person driving across an intersection colliding with a motor vehicle traveling on the intersecting street. Some angle crashes may be referred to as a T-bone crash. This crash type reflects 5.7% of all crashes and 7% of KSI crashes – crashes where someone is seriously injured or killed. The top contributing factors in KSI angle on crashes are failure to yield the right-of-way (28%), running a red light (24%), running a stop sign (18%) and operating the motor vehicle in a careless or negligent manner (10%). 7% of motorcyclist KSIs and 11% of motorist KSIs are angle-crash related.

Animal involves an animal, which could range from a small animal such as a cat or dog, that would be unlikely to cause significant injury to heavier animals, such as deer or bears. Overall, animals are involved in 0.2% of all crashes and 0.1% of KSI crashes.

Backed into involves a driver backing into another road user. This crash type reflects 3.1% of all crashes and 0.3% of KSI crashes. The low proportion of these crashes resulting in KSI is likely due to the slow speed at which most people back-up.

Bicycle crashes involve someone bicycling and another motorized road user, typically someone in a motor vehicle, but sometimes a motorcycle. Crashes between two people bicycling are not included in the dataset. This crash type reflects 0.7% of all crashes and **3.9% of KSI crashes**. When people bicycling are involved in a crash, they are more likely to be seriously injured or killed. The top motorist contributing factors in KSI bicycle involved crashes are failure to yield right-of-way (24%) and operating the motor vehicle in a careless or negligent manner (9%). For 53% of bicyclist involved KSI crashes, no contributing action is noted for the motor vehicle driver, indicating that the person bicycling likely failed to yield the right-of-way in those crashes.

Head-on crashes occur when two motor vehicles traveling in the opposite direction collide head-on. This crash type reflects 1.0% of all crashes and **3.4% of KSI crashes**. The top contributing factors in KSI head on crashes are wrong-way driving (27%), failure to keep in proper lane (24%) and operating the motor vehicle in a careless or negligent manner (21%). Head-on crashes account for about 5% of motor vehicle KSI crashes.

Left-turn crashes are categorized as **left entering (Figure 1)**, which are crashes that occur when a motor vehicle turning left collides with a through motor vehicle in the opposite direction of travel with both motor vehicles traveling on the same road in opposite directions prior to the crash, **left leaving (Figure 2)**, which are crashes that occur when a motor vehicle turning left collides with a through motor vehicle on the other road, and **left rear (Figure 3)**, which are crashes that occur when one motor vehicle is making a left turn onto the same street as an approaching through motor vehicle. Overall, left-turn related crashes comprise about 11% of all crashes and **17% of KSI crashes**, with the left-entering crash type being the most prevalent. The top contributing factors in KSI left turn related crashes are failure to yield the right-of-way (61%) and running the red light or stop sign (15%). **30% of motorcyclist KSIs and 25% of motorist KSIs are left-turn related.**

Off-road crashes, also known as road departures, occur when the motor vehicle leaves the roadway. This crash type reflects 7.8% of all crashes and **14% of KSI crashes**. The top contributing factors in KSI off-road crashes are operating the motor vehicle in a careless or negligent manner (42%) and failure to keep in proper lane (14%).

Sideswipe crashes can occur between motor vehicles traveling in the same or opposite direction and involve an impact between the sides of the motor vehicles with no significant involvement of the front or rear of the motor vehicle. The impact then swipes along the surface of the motor vehicle parallel to the direction of travel. Opposite direction sideswipe crashes represent about 0.7% of total crashes, and 0.4% of KSI crashes. Same direction sideswipe crashes represent about 13.1% of total crashes, and 3.9% of KSI crashes. About 4% of motor vehicle KSI and 5% of motorcyclist KSIs are related to sideswipes. The top contributing factors in KSI sideswipe crashes are failure to keep in proper lane (25%) and operating the motor vehicle in a careless or negligent manner (22%).

Parked motor vehicle crashes occur when a motor vehicle collides with a parked motor vehicle. These accounted for 5.4% of total crashes and 1.8% of KSI crashes.

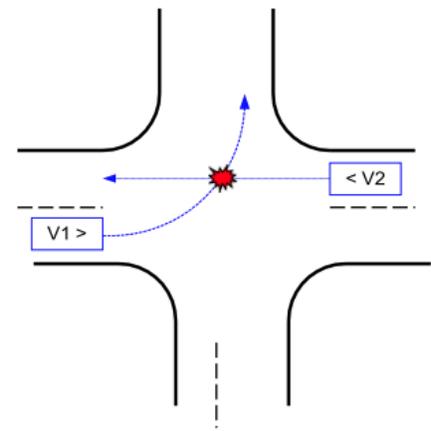


Figure 1: Left Entering Crash Type

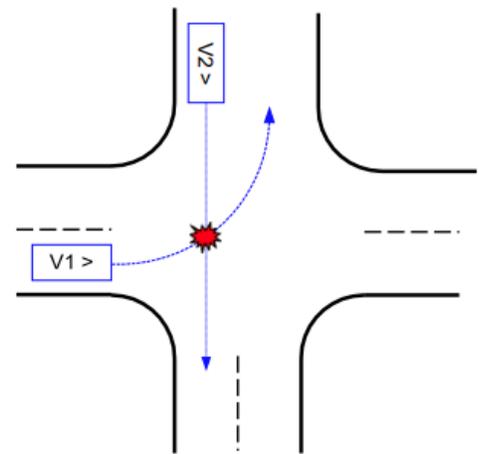
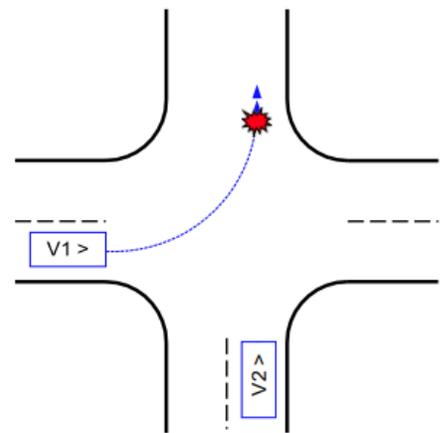


Figure 2: Left Leaving Crash Type



Pedestrian related crashes occur between a person walking and a motor vehicle driver, including motorcyclists. This crash type reflects 1.2% of all crashes and **11.9% of KSI crashes**. No contributing action by a driver is noted in 66% of KSI pedestrian crashes (likely meaning that the pedestrian failed to yield the right-of-way to the person driving), with a person driving failing to yield the right-of-way a contributing factor in 11.8% of KSI crashes. Operating a motor vehicle in a careless or negligent manner is a contributing factor in 9.4% of pedestrian KSI crashes. **71% of pedestrian KSI crashes are not at an intersection (Table 52).**

Rear-end crashes occur when a motor vehicle crashes into the motor vehicle in front of it. This crash type reflects 39.6% of all crashes and **21.7% of KSI crashes**. Rear-end crashes are the most common crash type in the region. 78% of rear-end KSI crashes are caused by people operating the motor vehicle in a careless or negligent manner, including driver inattention or distraction. Following too closely was a contributing action in 5.3% of rear-end KSI crashes. **16% of motorcyclist KSIs and 24% of motorist KSIs are rear-end related** which could involve a motorcyclist running into the back of a motor vehicle or a motor vehicle running into the back of a motorcyclist.

Right-turn crashes include **right/left** crashes where a right-turning and left-turning motor vehicle were entering the same road in the same direction; **right/through** when a right-turning motor vehicle turns in front of a motor vehicle traveling through, with both motor vehicles traveling in the same direction after then respective maneuvers; **right/U-turn**, when a motor vehicle is turning right at the same time a motor vehicle is making a U-turn into the same lane. Overall, right-turn related crashes comprise about 1.8% of all crashes and 1% of KSI crashes, with the right-through crash type being the most prevalent. The top contributing factors in KSI right-turn related crashes are failure to yield the right-of-way (62%), running a red light or stop sign (15%), or improper turning (6%).

Rollover crashes occur when a motor vehicle tips on its side or roof during a crash. Depending on the force of the crash, a motor vehicle may roll just once, or it may roll multiple times before coming to a stop. Rollover crashes represent about 0.6% of total crashes, and **2.4%** of KSI crashes. The top contributing factor in KSI rollover crashes is operating the motor vehicle in a careless or negligent manner (41%).

Single-motor vehicle crashes involve only one motor vehicle. Single-car and truck vehicle crashes account for about 2.5% of total crashes and **4.7% of KSI crashes**. Single-motorcyclist crashes account for about 0.2% of total crashes and **1.5% of KSI crashes**, 10% of motorcyclist KSI are single-vehicle crashes.

Time of Day

Crashes by time of day are summarized as percentages by the travel mode in **Table 17** for all crashes and **Table 18** for KSI crashes. Overall, crashes are most likely to occur between 3 and 6 PM, as that period typically reflects the busiest time on our roads. While crashes involving vulnerable road users are also high during this time, crashes involving people walking and motorcycling are also prevalent from 6 to 9 PM. Crashes involving bicyclists tend to occur throughout much of the day.

Table 17: All Crash Summary by Time of Day by Mode – MetroPlan Orlando Region

Time of Day	All Crashes	Motor vehicles	Motorcyclist	Pedestrians	Bicyclists
12-3 AM	4%	4%	6%	6%	1%
3-6 AM	3%	3%	3%	4%	3%
6-9 AM	12%	12%	9%	14%	16%
9-Noon	14%	14%	10%	10%	16%
Noon-3 PM	19%	19%	16%	12%	19%
3-6 PM	24%	24%	21%	18%	23%
6-9 PM	16%	16%	20%	23%	14%
9-Midnight	8%	8%	14%	13%	6%

Source: Signal 4 Analytics

Notes: Does not include limited access facilities; **Bold/Blue** indicates a disproportionate number of crashes occurs for this mode during the timeframe indicated.

KSI crashes are more likely to occur between 3 PM and midnight, with the percentage/number of KSI crashes involving vulnerable road users higher than for people in cars or trucks. Approximately 25% of pedestrian KSI crashes occur between 6 and 9 PM with another 22% occurring between 9 PM and midnight. Overall KSI crashes occur more frequently between 6 PM and 6 AM, indicating that darkness can be a contributing factor, in addition to other contributing factors, including less overall travel during that time period leading to faster speeds for people driving, and less light, which can make it difficult to see hazards in and along the roadway, including disabled vehicles or pedestrians.

Table 18: KSI Crash Summary by Time of Day by Mode – MetroPlan Orlando Region

Time of Day	All Crashes	Motor vehicles	Motorcyclist	Pedestrians	Bicyclists
12-3 AM	9%	9%	8%	10%	4%
3-6 AM	6%	7%	3%	7%	5%
6-9 AM	12%	14%	9%	10%	15%
9-Noon	11%	13%	9%	6%	14%
Noon-3 PM	13%	14%	14%	7%	14%
3-6 PM	16%	16%	19%	10%	15%
6-9 PM	17%	15%	19%	26%	19%
9-Midnight	15%	13%	19%	22%	12%

Source: Signal 4 Analytics

Notes: Does not include limited access facilities; **Bold/Blue** indicates a disproportionate number of KSI crashes occurs for this mode during the timeframe indicated.

Day of Week

Crashes by day of week are summarized as percentages by travel mode in [Table 19](#) for all crashes and [Table 20](#) for KSI crashes. During a typical week, there are a similar number of crashes observed to occur Monday through Thursday, with Friday being slightly higher than other days. The overall number of crashes is lower on Saturday and Sunday. While crashes involving vulnerable road users are also the highest on Friday, crashes involving bicyclists tend to be higher on weekdays and lower on weekends.

Table 19: All Crash Summary by Day of Week by Mode – MetroPlan Orlando Region

Day of Week	All Crashes	Motor vehicles	Motorcyclist	Pedestrians	Bicyclists
Monday	15%	15%	12%	15%	16%
Tuesday	15%	15%	12%	15%	16%
Wednesday	15%	15%	14%	15%	16%
Thursday	15%	15%	15%	15%	17%
Friday	17%	17%	17%	17%	16%
Saturday	12%	12%	16%	12%	11%
Sunday	10%	10%	14%	11%	8%

Source: Signal 4 Analytics

Notes: Does not include limited access facilities

Crashes that result in a severe injury or fatality are slightly more likely to occur on Friday and Saturday, except for bicyclists, which see the highest KSI crash rates on Thursdays and Saturdays. For bicyclist-involved crashes, the overall number of reported crashes involving a bicyclist is low compared to other modes so caution should be used when using this data. Alcohol may be a contributing factor in the slightly higher KSI crashes on Friday and Saturday as alcohol involved crashes are more likely to occur on a Friday or Saturday (see [Table 25](#)).

Table 20: KSI Crash Summary by Day of Week by Mode – MetroPlan Orlando Region

Day of Week	All Crashes	Motor vehicles	Motorcyclist	Pedestrians	Bicyclists
Monday	14%	14%	12%	12%	16%
Tuesday	14%	14%	12%	15%	14%
Wednesday	14%	14%	13%	15%	13%
Thursday	14%	14%	15%	15%	17%
Friday	15%	15%	16%	16%	13%
Saturday	16%	15%	17%	15%	17%
Sunday	13%	13%	15%	12%	10%

Source: Signal 4 Analytics

Notes: Does not include limited access facilities

Contextual Analysis

This section provides additional information related to road user behavior, the environmental conditions and the roadway conditions to provide additional context about why crashes are occurring.

Behavioral Factors

This section provides an overview of behavioral factors that contribute to crashes, including alcohol and drug impairment, aggressive driving, speeding, and occupant protection.

Alcohol Impairment

Table 21 summarizes crashes caused by alcohol impairment. These crashes include both when the alcohol level was reported as over the legal limit as well as when alcohol use was listed as a contributing crash factor in the crash report. Most crashes (98.5%) did not include an alcohol impaired driver. **Although only 1.5% of crashes involved alcohol impairment, alcohol involved crashes account for 3% of crashes where someone was seriously injured and 21% of fatal crashes in the region.**

Table 21: Crash Summary by Alcohol Impairment – MetroPlan Orlando Region

Alcohol Involved	No Injury	Injury	Serious Injury	Fatality	Total
Yes	2,569 (1.1%)	1,741 (1.9%)	229 (3.1%)	282 (20.6%)	4,821 (1.5%)
No	225,930 (98.9%)	88,216 (98.1%)	7,255 (96.9%)	1,084 (79.4%)	322,485 (98.5%)
Total	228,499	89,957	7,484	1,366	327,306

Source: Signal 4 Analytics

Notes: Includes limited access facilities, **Blue/Bold** indicates that behavioral factor disproportionately results in a KSI.

While the percent of crashes involving alcohol is slightly more likely to occur on non-limited access roads than on the road network overall, the percent of those crashes resulting in a fatality is slightly less than on the overall network, likely due to a slightly lower speed (**Table 22**). Alcohol is a factor in about 1.4% of all crashes and 15.7% of fatal crashes in transportation disadvantaged communities, a slightly lower rate than the regional average (**Table 23**). Of crashes on non-limited access roads, **51% of serious injury (95 of 187) and 44% of fatal crashes (98 of 224) involving alcohol** occur in transportation disadvantaged communities.

Table 22: Crash Summary by Alcohol Impairment on Non-Limited Access Facilities – MetroPlan Orlando Region

Alcohol Involved	No Injury	Injury	Serious Injury	Fatality	Total
Yes	2,338 (1.2%)	1,541 (2%)	187 (3.1%)	224 (19.4%)	4,290 (1.6%)
No	190,193 (98.8%)	75,113 (98%)	5,934 (96.9%)	928 (80.6%)	272,168 (98.4%)
Total	192,531	76,654	6,121	1,152	276,458

Source: Signal 4 Analytics

Notes: Does not include limited access facilities.

Table 23: Crash Summary by Alcohol Impairment on Non-Limited Access Facilities in Transportation Disadvantaged Communities – MetroPlan Orlando Region

Alcohol Involved	No Injury	Injury	Serious Injury	Fatality	Total
Yes	1,064 (1.1%)	703 (1.8%)	95 (2.9%)	98 (15.7%)	1,960 (1.4%)
No	91,711 (98.9%)	38,916 (98.2%)	3,139 (97.1%)	528 (84.3%)	134,294 (98.6%)
Total	92,775	39,619	3,234	626	136,254

Source: Signal 4 Analytics

Notes: Does not include limited access facilities.

Crashes that involve alcohol are significantly more likely to result in a serious injury or fatality, as shown in **Table 24**, which shows that about 6% of alcohol involved crashes resulted in a fatality, as compared to 0.4% of all crashes (see Table 2).

Table 24: Alcohol Involved Crashes by Severity by Year – MetroPlan Orlando Region

Year	No Injury	Injury	Serious Injury	Fatality	Total
2018	606 (55.6%)	365 (33.5%)	60 (5.5%)	58 (5.3%)	1,089
2019	582 (53.3%)	407 (37.3%)	46 (4.2%)	57 (5.2%)	1,092
2020	401 (49.6%)	324 (40.1%)	30 (3.7%)	53 (6.6%)	808
2021	507 (54.3%)	320 (34.3%)	49 (5.3%)	57 (6.1%)	933
2022	473 (52.6%)	325 (36.2%)	44 (4.9%)	57 (6.3%)	899
Total	2,569 (53.3%)	1,741 (36.1%)	229 (4.8%)	282 (5.8%)	4,821

Source: Signal 4 Analytics

Notes: Includes limited access facilities

As shown in **Table 25**, alcohol involved crashes are more likely to occur on a Friday or Saturday, and as shown in **Table 26**, are more likely to occur late in the evening or early morning hours.

Table 25: Alcohol Involved Crashes by Day of Week– MetroPlan Orlando Region

Day of Week	All Crashes	All KSI Crashes	All Crashes Involving Alcohol	KSI Crashes Involving Alcohol
Monday	15%	14%	11%	13%
Tuesday	15%	14%	8%	6%
Wednesday	15%	14%	10%	10%
Thursday	15%	14%	11%	10%
Friday	17%	15%	16%	17%
Saturday	12%	16%	21%	23%
Sunday	10%	13%	22%	21%

Source: Signal 4 Analytics

Notes: Does not include limited access facilities or parking lots, **Blue/Bold** indicates that behavioral factor disproportionately results in crashes and KSI crashes during these days of week.

Table 26: Alcohol Involved Crashes by Time of Day – MetroPlan Orlando Region

Day of Week	All Crashes	All Crashes KSI Crashes	All Crashes Involving Alcohol	All KSI Crashes Involving Alcohol
12-3 AM	9%	4%	26%	29%
3-6 AM	6%	3%	11%	16%
6-9 AM	12%	12%	4%	4%
9-Noon	11%	14%	2%	5%
Noon-3 PM	13%	19%	6%	8%
3-6 PM	16%	24%	10%	16%
6-9 PM	17%	16%	19%	16%
9-Midnight	15%	8%	23%	19%

Source: Signal 4 Analytics

Notes: Does not include limited access facilities or parking lots, **Blue/Bold** indicates that behavioral factor disproportionately results in crashes and KSI crashes during these time periods.

Drug Impairment

Table 21 summarizes crashes caused by drug impairment. Drugs can include illegal drugs, as well as prescription drugs. This finding is made when a drug test of a driver is positive, or a driver refused a test after being suspected of a drug impairment. Most crashes (99.5%) did not include a drug impaired driver. **Despite about 0.5% of crashes involving drug impairment, drug impaired crashes account for 16% of crashes where someone was killed in the region.**

Table 27: Crash Summary by Drug Impairment – MetroPlan Orlando Region

Drug Impaired Driver?	No Injury	Injury	Serious Injury	Fatality	Total
Yes	690 (0.3%)	506 (0.6%)	86 (1.1%)	212 (15.5%)	1,494 (0.5%)
No	227,809 (99.7%)	89,451 (99.4%)	7,398 (98.9%)	1,154 (84.5%)	325,812 (99.5%)
Total	228,499	89,957	7,484	1,366	327,306

Source: Signal 4 Analytics

Notes: Includes limited access facilities

The percent of crashes involving drugs on non-limited access roads is similar to the regional average, the percent of those crashes resulting in a fatality is slightly less than on the overall network, likely due to a slightly lower speed (**Table 28**). Drugs are a factor in about 0.4% of all crashes and 14.4% of fatal crashes in transportation disadvantaged communities, a slightly lower rate than the regional average (**Table 23**). Of crashes on non-limited access roads, **43% of serious injury (30 of 70) and 53% of fatal crashes (90 of 169) involving drugs** occur in transportation disadvantaged communities.

Table 28: Crash Summary by Drug Impairment on Non-Limited Access Facilities – MetroPlan Orlando Region

Drug Impaired Driver?	No Injury	Injury	Serious Injury	Fatality	Total
Yes	610 (0.3%)	435 (0.6%)	70 (1.1%)	169 (14.7%)	1,284 (0.5%)
No	191,921 (99.7%)	76,219 (99.4%)	6051 (98.9%)	983 (85.3%)	275,174 (99.5%)
Total	192,531	76,654	6,121	1,152	276,458

Source: Signal 4 Analytics

Notes: Does not include limited access facilities.

Table 29: Crash Summary by Drug Impairment on Non-Limited Access Facilities in Transportation Disadvantaged Communities – MetroPlan Orlando Region

Drug Impaired Driver?	No Injury	Injury	Serious Injury	Fatality	Total
Yes	281 (0.3%)	179 (0.5%)	30 (0.9%)	90 (14.4%)	580 (0.4%)
No	92,494 (99.7%)	39,440 (99.5%)	3,204 (99.1%)	536 (85.6%)	135,674 (99.6%)
Total	92,775	39,619	3,234	626	136,254

Source: Signal 4 Analytics

Notes: Does not include limited access facilities.

Crashes that involve drug impairment are significantly more likely to result in a serious injury or fatality, as shown in [Table 30](#), which shows that about **14% of drug involved crashes results in a fatality, as compared to 0.4% of all crashes** (see Table 2).

Table 30: Drug Impaired Driver Involved Crashes by Severity by Year – MetroPlan Orlando Region

Year	No Injury	Injury	Serious Injury	Fatality	Total
2018	179 (50.6%)	114 (32.2%)	17 (4.8%)	44 (12.4%)	354
2019	172 (49%)	104 (29.6%)	17 (4.8%)	58 (16.5%)	351
2020	109 (41.8%)	103 (39.5%)	16 (6.1%)	33 (12.6%)	261
2021	138 (45.7%)	108 (35.8%)	14 (4.6%)	42 (13.9%)	302
2022	92 (40.7%)	77 (34.1%)	22 (9.7%)	35 (15.5%)	226
Total	690 (46.2%)	506 (33.9%)	86 (5.8%)	212 (14.2%)	1,494

Source: Signal 4 Analytics

Notes: Includes limited access facilities

When both drugs and alcohol are factors in a crash, a serious injury or fatality is more likely to occur, as shown in [Table 31](#).

Table 31: Alcohol and Drug Involved Crashes by Severity by Year – MetroPlan Orlando Region

Year	No Injury	Injury	Serious Injury	Fatality	Total
2018	75 (41.7%)	64 (35.6%)	12 (6.7%)	29 (16.1%)	180
2019	70 (41.9%)	56 (33.5%)	7 (4.2%)	34 (20.4%)	167
2020	41 (35%)	51 (43.6%)	8 (6.8%)	17 (14.5%)	117
2021	54 (40.3%)	51 (38.1%)	9 (6.7%)	20 (14.9%)	134
2022	38 (36.2%)	38 (36.2%)	12 (11.4%)	17 (16.2%)	105
Total	278 (39.5%)	260 (37%)	48 (6.8%)	117 (16.6%)	703

Source: Signal 4 Analytics

Notes: Includes limited access facilities

A comparison of crash outcomes when alcohol or drugs, or when both alcohol and drugs are involved is presented in [Figure 4](#), which shows when alcohol or drugs are involved, a crash is more likely to result in an injury or fatality. When someone is under the influence of drugs or alcohol, their reaction time is slower than when not under the influence, contributing to worsening crash outcomes with drug and alcohol use.

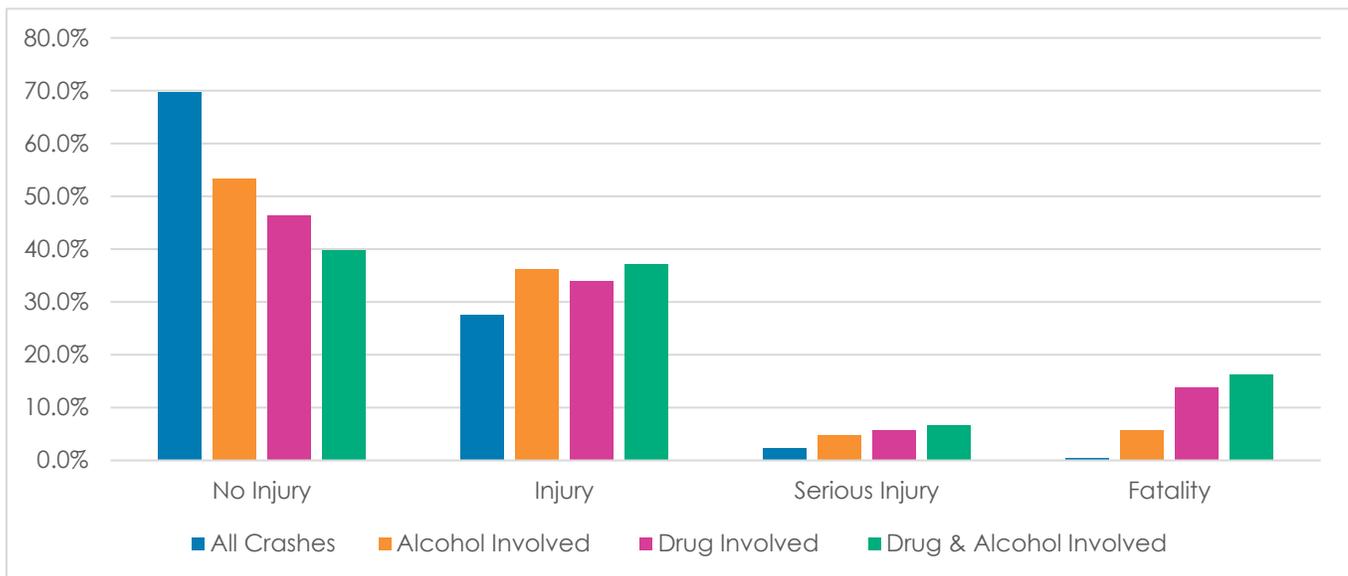


Figure 4: Drug and Alcohol Crash Severity Comparison

Speeding

Table 32 summarizes crashes where either exceeding the speed limit or driving too fast for the conditions was noted in the crash report. The approximately 6,000 crashes where speeding was noted as a factor made up about 1.8% of all crashes; however, **3.1% of the crashes listed as**

speeding-related resulted in a serious injury and 8% resulted in a fatality. As it can be difficult to prove speeding, the number of KSI crashes attributed to speeding is likely an undercount.

Table 32: Crash Summary by Reported Speeding – MetroPlan Orlando Region

Speeding?	No Injury	Injury	Serious Injury	Fatality	Total
Yes	3,616 (1.6%)	2,100 (2.3%)	230 (3.1%)	109 (8%)	6,055 (1.8%)
No	224,883 (98.4%)	87,857 (97.7%)	7,254 (96.9%)	1,257 (92%)	321,251 (98.2%)
Total	228,499	89,957	7,484	1,366	327,306

Source: Signal 4 Analytics

Notes: Includes limited access facilities

Of crashes that involve speeding, they tend to be more fatal for people outside of vehicles. Of speeding crashes, 15% result in the fatality of a pedestrian and 25% result in the fatality of a motorcyclist, as presented in [Table 33](#).

Table 33: Crash by Mode with Reported Speeding Non-Limited Access Roads – MetroPlan Orlando Region

Mode	No Injury	Injury	Serious Injury	Fatality	Total
Bicycle	0 (0%)	4 (0.3%)	0 (0%)	2 (2.1%)	6 (0.1%)
Pedestrian	17 (0.7%)	12 (0.8%)	7 (4.5%)	14 (14.9%)	50 (1.2%)
Motorcycle	14 (0.6%)	75 (5.3%)	43 (27.7%)	23 (24.5%)	155 (3.9%)
Motor Vehicles (including trucks)	2,321 (98.7%)	1,333 (93.6%)	105 (67.7%)	55 (58.5%)	3,814 (94.8%)
Total	2,352	1,424	155	94	4,025

Source: Signal 4 Analytics

Notes: Does not include limited access facilities

Crashes by Age

A crash analysis of speeding and impaired drivers by age was conducted, with the results presented in [Figure 5](#) and [Figure 6](#). Consistent with statewide and national data, younger drivers are more likely to be involved in speeding related and impaired crashes.

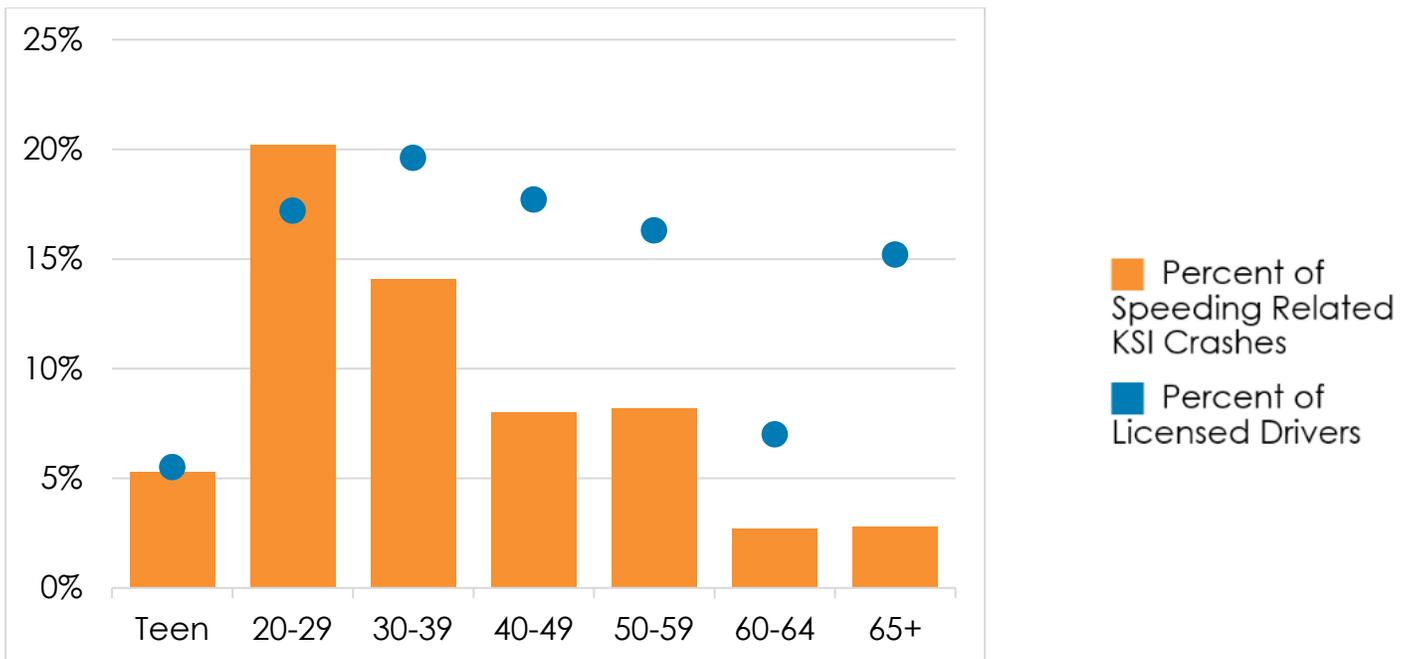


Figure 5: Speeding Related KSI Crashes by Age

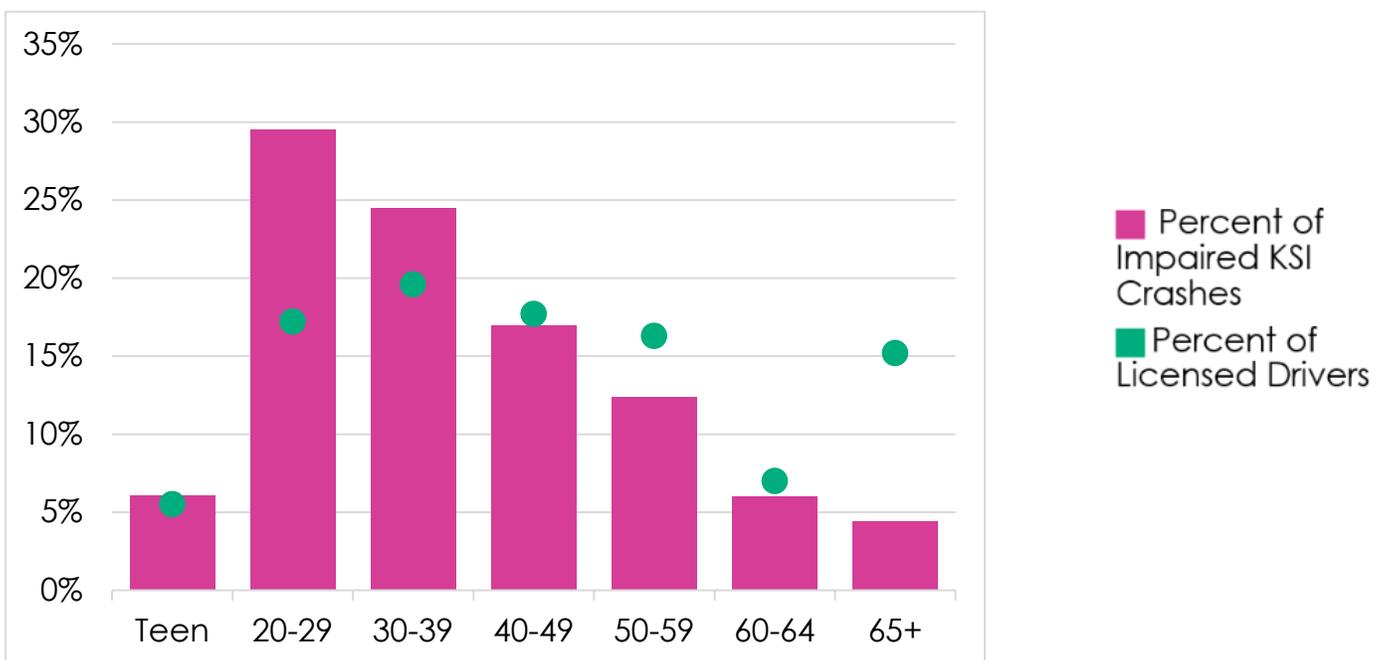


Figure 6: Impaired KSI Crashes by Age

Crashes that involve an aging driver (defined as a driver 65 or older) or teen driver are summarized in [Table 34](#) through [Table 37](#). Aging drivers comprise about 15.2% of licensed drivers (from Florida Department of Highway Safety and Motor Vehicles Licensed Drivers by County, January 1, 2022).

in the region and are involved in about 14.4% of all crashes and 13.9% of KSI crashes. Aging drivers are less likely to be involved in a crash involving a vulnerable road user. Although the aging driver crash rates are proportional to the percentage of licensed drivers, it is likely that some people in the aging driver cohort maintain a license but do not drive frequently.

Table 34: All Crash Summary Aging Drivers by Mode – MetroPlan Orlando Region

Aging Driver?	All Crashes	Motor vehicles	Motorcyclist	Pedestrians	Bicyclists
Yes	47,023 (14.4%)	45,767 (14.5%)	531 (11.7%)	447 (11%)	278 (11.5%)
No	280,283 (85.6%)	270,504 (85.5%)	4014 (88.3%)	3,616 (89%)	2,149 (88.5%)
Total	327,306	316,271	4,545	4,063	2,427

Source: Signal 4 Analytics

Notes: Includes limited access facilities

Table 35: KSI Crash Summary Aging Drivers by Mode – MetroPlan Orlando Region

Aging Driver?	All Crashes	Motor vehicles	Motorcyclist	Pedestrians	Bicyclists
Yes	1,233 (13.9%)	987 (15.6%)	128 (11.5%)	84 (8%)	34 (10%)
No	7,617 (86.1%)	5352 (84.4%)	988 (88.5%)	970 (92%)	307 (90%)
Total	8,850	6,339	1,116	1,054	341

Source: Signal 4 Analytics

Notes: Includes limited access facilities

Teens comprise about 5.5% of licensed drivers in the region and are involved in 12.5% of all crashes and 10.8% of KSI crashes. Like aging drivers, they are more likely to be involved in a motor vehicle-to-motor vehicle crash than one with vulnerable road users. The inexperience of teen drivers is a large factor in their disproportionate representation in crashes.

Table 36: All Crash Summary Teen Drivers by Mode – MetroPlan Orlando Region

Teen Driver?	All Crashes	Motor vehicles	Motorcyclist	Pedestrians	Bicyclists
Yes	40,931 (12.5%)	40,219 (12.7%)	411 (9%)	182 (4.5%)	119 (4.9%)
No	286,375 (87.5%)	276,052 (87.3%)	4,134 (91%)	3,881 (95.5%)	2,308 (95.1%)
Total	327,306	316,271	4,545	4,063	2,427

Source: Signal 4 Analytics

Notes: Includes limited access facilities

Table 37: KSI Crash Summary Teen Drivers by Mode – MetroPlan Orlando Region

Teen Driver?	All Crashes	Motor vehicles	Motorcyclist	Pedestrians	Bicyclists
Yes	953 (10.8%)	799 (12.6%)	85 (7.6%)	46 (4.4%)	23 (6.7%)
No	7,897 (89.2%)	5,540 (87.4%)	1,031 (92.4%)	1,008 (95.6%)	318 (93.3%)
Total	8,850	6,339	1,116	1,054	341

Source: Signal 4 Analytics

Notes: Includes limited access facilities

Teen drivers and aging drivers were also less likely to be involved in crashes and KSI crashes on limited access facilities, potentially indicating a preference for travel on lower speed roadways.

Aggressive Driving

Table 38 summarizes crashes where aggressive driving was noted in the crash report. The approximately 8,700 crashes that involved aggressive driving comprise about 3% of all crashes; however, 5% of the crashes listed as aggressive driving related resulted in a serious injury and 10% resulted in a fatality.

Table 38: Crash Summary by Reported Aggressive Driving – MetroPlan Orlando Region

Aggressive Driving?	No Injury	Injury	Serious Injury	Fatality	Total
Yes	5,243 (2.3%)	3,026 (3.4%)	342 (4.6%)	139 (10.2%)	8,750 (2.7%)
No	223,256 (98.2%)	86,931 (97%)	7,142 (95.5%)	1,227 (89.8%)	318,556 (97.3%)
Total	228,499	89,957	7,484	1,366	327,306

Source: Signal 4 Analytics

Notes: Includes limited access facilities

Distracted Driving

Table 39 summarizes crashes where distracted driving was noted in the crash report. The approximately 83,000 crashes that involved distracted driving comprise about 25 % of all crashes; however, 30% of the crashes listed as distracted-driving related resulted in a serious injury and 18% resulted in a fatality.

Table 39: Crash Summary by Reported Distracted Driving – MetroPlan Orlando Region

Distracted Driving ?	No Injury	Injury	Serious Injury	Fatality	Total
Yes	51,924 (22.7%)	28,514 (31.7%)	2,295 (30.7%)	243 (17.8%)	82,976 (25.4%)
No	176,575 (77.3%)	61,443 (68.3%)	5,189 (69.3%)	1,123 (82.2%)	244,330 (74.6%)
Total	228,499	89,957	7,484	1,366	327,306

Source: Signal 4 Analytics

Notes: Includes limited access facilities

It should also be noted that multiple behavioral factors can collectively contribute to the occurrence of crashes. For example, a person driving under the influence of drugs may also be distracted and/or driving aggressively.

Occupant Protection: Seatbelts & Helmets

A crash summary by use of occupant protection is provided in **Table 40** for people in motor vehicles (seatbelts) and in **Table 41** for motorcyclists (helmet use). In all motor vehicle crashes, 98.3% of occupants were wearing a seatbelt. As seatbelt usage declines, more injuries occur, **with 38% of motor vehicle occupants who died in the MetroPlan Orlando region not wearing a seatbelt**. 49% of motorcyclist who died were wearing a FDOT compliant helmet; **43% of motorcyclists who died where not wearing a helmet**.

Table 40: Motor vehicle Crash Summary by Reported Occupant Seatbelt Use– MetroPlan Orlando Region

Occupant Protection Used	No Injury	Injury	Serious Injury	Fatality	Total
Yes	641,445 (98.7%)	136,840 (97.3%)	6,729 (89.3%)	438 (54.6%)	785,452 (98.3%)
No	4,368 (0.7%)	2,161 (1.5%)	521 (6.9%)	307 (38.3%)	7,357 (0.9%)
Unknown	4,175 (0.6%)	1,622 (1.2%)	289 (3.8%)	57 (7.1%)	6,143 (0.8%)
Total	649,988 (100%)	140,623 (100%)	7,539 (100%)	802 (100%)	798,952

Source: Signal 4 Analytics

Notes: Includes limited access facilities

Table 41: Motorcycle Crash Summary by Helmet Use – MetroPlan Orlando Region

Occupant Protection Used	No Injury	Injury	Serious Injury	Fatality	Total
FDOT Compliant Helmet	460 (9.8%)	1,500 (48.6%)	455 (48.3%)	124 (49%)	2,539 (28.2%)
Other Helmet	17 (0.4%)	56 (1.8%)	21 (2.2%)	11 (4.3%)	105 (1.2%)
No Helmet	1,140 (24.2%)	826 (26.8%)	324 (34.4%)	109 (43.1%)	2,399 (26.7%)
Unknown	3,093 (65.7%)	705 (22.8%)	143 (15.2%)	9 (3.6%)	3,950 (43.9%)
Total	4,710 (100%)	3,087 (100%)	943 (100%)	253 (100%)	8,993 (100%)

Source: Signal 4 Analytics

Notes: Includes limited access facilities

For crashes that resulted in a fatality or serious injury, the responding officer likely made the determination of seatbelt and helmet use. For crashes with lower levels of severity, people involved in crashes may have self-reported wearing a seatbelt or helmet when they were not. For motorcyclist involved crashes, reporting of helmet use appears to decline with no injury or minor injury crashes.

Hit and Run

A hit and run crash is defined as the act of causing a traffic crash and failing to remain at the scene of the crash afterwards. Of all the reported crashes in the region, about 14% are classified as a hit and run, with that percentage increasing for crashes involving pedestrians and bicyclists, as shown in **Table 42**. Approximately 20% of pedestrian KSI and 19% of bicyclist KSIs are classified as a hit and run, as shown in **Table 43**. Hit and run crashes that occur in transportation disadvantaged communities are shown in **Table 44**. **Pedestrian and bicyclists hit and run crashes are more likely to occur in a disadvantaged community than in other places, with approximately 72% of pedestrian hit and run KSIs and 70% of bicyclist hit and run KSIs occurring in transportation disadvantaged communities; only 25% of the population lives in a transportation disadvantaged community.**

Table 42: All Crash Summary Hit and Run by Mode – MetroPlan Orlando Region

Hit & Run?	All Crashes	Motor vehicles	Motorcyclist	Pedestrians	Bicyclists
Yes	45,394 (13.9%)	43,588 (13.8%)	488 (10.7%)	896 (22.1%)	422 (17.4%)
No	281,912 (86.1%)	272,683 (86.2%)	4,057 (89.3%)	3,167 (77.9%)	2,005 (82.6%)
Total	327,306	316,271	4,545	4,063	2,427

Source: Signal 4 Analytics

Notes: Includes limited access facilities

Table 43: KSI Crash Summary Hit and Run by Mode – MetroPlan Orlando Region

Hit & Run?	All Crashes	Motor vehicles	Motorcyclist	Pedestrians	Bicyclists
Yes	783 (8.8%)	454 (7.2%)	59 (5.3%)	206 (19.5%)	64 (18.8%)
No	8,067 (91.2%)	5,885 (92.8%)	1,057 (94.7%)	848 (80.5%)	277 (81.2%)
Total	8,850	6339	1116	1054	341

Source: Signal 4 Analytics

Notes: Includes limited access facilities

Table 44: KSI Crash Summary Hit and Run by Mode in Transportation Disadvantaged Communities – MetroPlan Orlando Region

Hit & Run?	All Crashes	Motor vehicles	Motorcyclist	Pedestrians	Bicyclists
Yes	448 (11.6%)	228 (9%)	27 (5.6%)	148 (22.7%)	45 (23.1%)
No	3,412 (88.4%)	2,300 (91%)	458 (94.4%)	504 (77.3%)	150 (76.9%)
Total	3,860	2,528	485	652	195

Source: Signal 4 Analytics

Notes: Does not include limited access facilities

Commercial Motor Vehicle

Commercial motor vehicles include those with a gross motor vehicle weight greater than 26,001 pounds or that have three or more axles regardless of weight. Of all the reported crashes in the region, about 6% involve a commercial motor vehicle (**Table 45**), with about 6% of KSI crashes involving a commercial motor vehicle. People in motor vehicles were more likely to be involved in fatal and severe injury crashes that involve a commercial motor vehicle, as shown in **Table 46**. KSI crashes involving commercial vehicles are less likely to occur in transportation disadvantaged communities, although motorcycle and bicycle involved KSI crashes with commercial vehicles are slightly overrepresented in transportation disadvantaged communities, as shown in **Table 47**.

Table 45: All Crash Summary Commercial Motor Vehicle by Mode – MetroPlan Orlando Region

Commercial Motor vehicle Involved?	All Crashes	Motor vehicles	Motorcyclist	Pedestrians	Bicyclists
Yes	20,377 (6.2%)	20,151 (6.4%)	95 (2.1%)	91 (2.2%)	40 (1.6%)
No	306,929 (93.8%)	296,120 (93.6%)	4,450 (97.9%)	3,972 (97.8%)	2,387 (98.4%)
Total	327,306	316,271	4,545	4,063	2,427

Source: Signal 4 Analytics

Notes: Includes limited access facilities

Table 46: KSI Crash Summary Commercial Motor Vehicle by Mode – MetroPlan Orlando Region

Commercial Motor vehicle Involved?	All Crashes	Motor vehicles	Motorcyclist	Pedestrians	Bicyclists
Yes	530 (6%)	456 (7.2%)	28 (2.5%)	34 (3.2%)	12 (3.5%)
No	8,320 (94%)	5883 (92.8%)	1088 (97.5%)	1020 (96.8%)	329 (96.5%)
Total	8,850	6,339	1,116	1,054	341

Source: Signal 4 Analytics

Notes: Includes limited access facilities

Table 47: KSI Crash Summary Commercial Motor Vehicle by Mode in Transportation Disadvantaged Communities – MetroPlan Orlando Region

Commercial Motor vehicle Involved?	All Crashes	Motor vehicles	Motorcyclist	Pedestrians	Bicyclists
Yes	184 (4.8%)	145 (5.7%)	16 (3.3%)	13 (2%)	10 (5.1%)
No	3676 (95.2%)	2383 (94.3%)	469 (96.7%)	639 (98%)	185 (94.9%)
Total	3,860	2,528	485	652	195

Source: Signal 4 Analytics

Notes: Does not include limited access facilities

Environmental Factors

Crash outcomes were also evaluated based on environmental factors, such as road conditions and lighting conditions.

Road Surface Condition

Table 48 summarizes crash outcomes by road surface conditions. Overall, all crashes, including KSI crashes, were more likely to occur on dry roads than other road conditions. This finding is similar for disadvantaged communities.

Table 48: Crash Summary by Road Surface Condition – MetroPlan Orlando Region

Road Surface Condition	No Injury	Injury	Serious Injury	Fatality	Total
Dry	198,872 (87%)	78,102 (86.8%)	6,580 (87.9%)	1,212 (88.7%)	284,766 (87%)
Ice/Frost	7 (0%)	3 (0%)	(0%)	(0%)	10 (0%)
Mud, Dirt, Gravel	102 (0%)	19 (0%)	2 (0%)	2 (0.1%)	125 (0%)
Oil	9 (0%)	10 (0%)	(0%)	(0%)	19 (0%)
Other	67 (0%)	19 (0%)	5 (0.1%)	5 (0.4%)	96 (0%)
Sand	15 (0%)	4 (0%)	(0%)	(0%)	19 (0%)
Unknown	589 (0.3%)	48 (0.1%)	11 (0.1%)	1 (0.1%)	649 (0.2%)
Water (standing/ moving)	44 (0%)	19 (0%)	(0%)	1 (0.1%)	64 (0%)
Wet	28,794 (12.6%)	11,733 (13%)	886 (11.8%)	145 (10.6%)	41,558 (12.7%)
Total	228,499	89,957	7,484	1,366	327,306

Source: Signal 4 Analytics

Notes: Includes limited access facilities

Lighting Condition

Table 49 summarizes crashes by reported lighting condition for all modes of travel. While most crashes occur during daylight hours, crashes that occur under dark conditions, either lighted or unlighted, are more likely to result in a serious injury or a fatality. As shown in **Table 50**, crashes involving a person walking, bicycling, or motorcycling are more likely to occur at night than crashes involving only people in motor vehicles. Crashes in transportation disadvantaged communities are also more likely to occur at night than in non-transportation disadvantaged communities, as shown in **Table 51**.

Table 49: Crash Summary by Lighting Conditions – MetroPlan Orlando Region

Lighting Condition	No Injury	Injury	Serious Injury	Fatality	Total
Dark - Lighted	42,745 (18.7%)	19,665 (21.9%)	2,151 (28.7%)	556 (40.7%)	65,117 (19.9%)
Dark - Not Lighted	8,173 (3.6%)	4,179 (4.6%)	647 (8.6%)	267 (19.5%)	13,266 (4.1%)
Dark - Unknown Lighting	585 (0.3%)	206 (0.2%)	6 (0.1%)	2 (0.1%)	799 (0.2%)
Dawn	3,861 (1.7%)	1,602 (1.8%)	148 (2%)	44 (3.2%)	5,655 (1.7%)
Daylight	164,995 (72.2%)	60,996 (67.8%)	4,272 (57.1%)	455 (33.3%)	230,718 (70.5%)
Dusk	7,315 (3.2%)	3,258 (3.6%)	250 (3.3%)	37 (2.7%)	10,860 (3.3%)
Other	115 (0.1%)	17 (0%)	4 (0.1%)	5 (0.4%)	141 (0%)
Unknown	710 (0.3%)	34 (0%)	6 (0.1%)	(0%)	750 (0.2%)
Total	228,499 (69.8%)	89,957 (27.5%)	7,484 (2.3%)	1,366 (0.4%)	327,306

Source: Signal 4 Analytics

Notes: Includes limited access facilities

Table 50: Crash Summary by Lighting Conditions – Pedestrians, Bicyclists and Motorcyclists – MetroPlan Orlando Region

Lighting Condition	No Injury	Injury	Serious Injury	Fatality	Total
Dark – Lighted	381 (21.4%)	1,413 (21%)	598 (32.1%)	292 (45%)	2,684 (24.3%)
Dark – Not Lighted	78 (4.4%)	403 (6%)	194 (10.4%)	146 (22.5%)	821 (7.4%)
Dark – Unknown Lighting	3 (0.2%)	18 (0.3%)	3 (0.2%)	1 (0.2%)	25 (0.2%)
Dawn	29 (1.6%)	146 (2.2%)	30 (1.6%)	27 (4.2%)	232 (2.1%)
Daylight	1,223 (68.7%)	4,495 (66.7%)	963 (51.7%)	160 (24.7%)	6,841 (62%)
Dusk	62 (3.5%)	260 (3.9%)	70 (3.8%)	20 (3.1%)	412 (3.7%)
Other	1 (0.1%)	3 (0%)	1 (0.1%)	3 (0.5%)	8 (0.1%)
Unknown	4 (0.2%)	5 (0.1%)	3 (0.2%)	0 (0%)	12 (0.1%)
Total	1,781 (16.1%)	6,743 (61.1%)	1,862 (16.9%)	649 (5.9%)	11,035

Source: Signal 4 Analytics

Notes: Includes limited access facilities

Table 51: Crash Summary by Lighting Conditions in Transportation Disadvantaged Communities – MetroPlan Orlando Region

Lighting Condition	No Injury	Injury	Serious Injury	Fatality	Total
Dark – Lighted	18,516 (20%)	8,864 (22.4%)	1,021 (31.6%)	293 (46.8%)	28,694 (21.1%)
Dark – Not Lighted	2,683 (2.9%)	1,443 (3.6%)	233 (7.2%)	106 (16.9%)	4,465 (3.3%)
Dark – Unknown Lighting	255 (0.3%)	95 (0.2%)	4 (0.1%)	1 (0.2%)	355 (0.3%)
Dawn	1,493 (1.6%)	644 (1.6%)	49 (1.5%)	16 (2.6%)	2,202 (1.6%)
Daylight	66,622 (71.8%)	27,126 (68.5%)	1,821 (56.3%)	197 (31.5%)	95,766 (70.3%)
Dusk	2,920 (3.1%)	1,424 (3.6%)	103 (3.2%)	11 (1.8%)	4,458 (3.3%)
Other	42 (0%)	7 (0%)	1 (0%)	2 (0.3%)	52 (0%)
Unknown	244 (0.3%)	16 (0%)	2 (0.1%)	(0%)	262 (0.2%)
Total	92,775 (68.1%)	39,619 (29.1%)	3,234 (2.4%)	626 (0.5%)	136,254

Source: Signal 4 Analytics

Notes: Does not include limited access facilities

Road Factors

This section of the report provides crash information by characteristics of the road, such as the crash location (intersection or segment), number of lanes, speed limit, and type of road. This section focuses on crashes that occurred on the surface road system, and as such, limited access and toll facilities are excluded from this analysis.

Crash Location (Intersection vs Segment)

At a high-level, a crash location can either be at an intersection (or within the intersection influence area) or along a road segment. As summarized in [Table 52](#), about 25% of all crashes occurred at an intersection, with crashes occurring at intersections disproportionately resulting in a serious injury or fatality, as shown in [Table 53](#). About 70% of pedestrian involved crashes occur at non-intersection locations, with 73% of pedestrian crashes that result in serious injury or fatality occurring at a non-intersection location. The percent of pedestrian KSI crashes at non-intersection locations is slightly higher in transportation disadvantaged communities ([Table 55](#)).

Table 52: All Crash Summary by Location by Mode – MetroPlan Orlando Region

Location	All Crashes	Motor vehicles	Motorcyclist	Pedestrians	Bicyclists
Intersection	82,062 (25.1%)	78,455 (24.8%)	1,292 (28.4%)	1,211 (29.8%)	1,104 (45.5%)
Segment	245,244 (74.9%)	237,816 (75.2%)	3,253 (71.6%)	2,852 (70.2%)	1,323 (54.5%)
Total	327,306	316,271	4,545	4,063	2,427

Source: Signal 4 Analytics

Notes: Includes limited access facilities

Table 53: KSI Crash Summary by Location by Mode – MetroPlan Orlando Region

Location	All Crashes	Motor vehicles	Motorcyclist	Pedestrians	Bicyclists
Intersection	2,860 (39.3%)	2,059 (41.5%)	391 (40.8%)	272 (26.7%)	138 (40.7%)
Segment	4,413 (60.7%)	2,899 (58.5%)	567 (59.2%)	746 (73.3%)	201 (59.3%)
Total	7,273	4,958	958	1,018	339

Source: Signal 4 Analytics

Notes: Does not include limited access facilities

Table 54: KSI Crash Summary by Location by Mode in Transportation Disadvantaged Communities – MetroPlan Orlando Region

Location	All Crashes	Motor vehicles	Motorcyclist	Pedestrians	Bicyclists
Intersection	1,537 (39.8%)	1,108 (43.8%)	188 (38.8%)	158 (24.2%)	83 (42.6%)
Segment	2,323 (60.2%)	1,420 (56.2%)	297 (61.2%)	494 (75.8%)	112 (57.4%)
Total	3,860	2,528	485	652	195

Source: Signal 4 Analytics

Notes: Does not include limited access facilities

Posted Speed Limit

The number of reported crashes by the speed limit of the road where the crash occurred is summarized in **Table 55**, and compared to the miles of road in the analysis area with that posted speed limit. Crashes disproportionately occur on roads with higher speeds – **roads with a posted speed limit 40 miles per hour or greater represent about 13% of the total centerline miles in the region, and account for 63% of all crashes and 72.4% of KSI crashes**, as shown in **Table 56**.

Table 55: All Crash Summary by Posted Speed Limit by Mode – MetroPlan Orlando Region

Mode	25 or less	30 35	40 45	50 55	60+	Total
% of Centerline miles with Posted Speed Limit	79.4%	7.2%	8.8%	3.0%	1.5%	100%
Motor vehicles	408 (8.5%)	861 (17.9%)	2,788 (58%)	654 (13.6%)	99 (2.1%)	250,381
Motorcyclist	93 (9.9%)	185 (19.6%)	527 (55.8%)	127 (13.5%)	12 (1.3%)	3,893
Pedestrian	97 (10.4%)	174 (18.6%)	555 (59.3%)	109 (11.6%)	1 (0.1%)	3,385
Bicyclist	43 (13.2%)	71 (21.8%)	178 (54.8%)	31 (9.5%)	2 (0.6%)	2,302
All modes combined	34,262 (13.2%)	63,078 (24.3%)	137,537 (52.9%)	24,131 (9.3%)	953 (0.4%)	259,961

Source: Signal 4 Analytics

Notes: Does not include limited access facilities; Total crashes does not sum to total non-limited access crashes as presented in Table 3 as posted speed limit data is not readily available for all roadways.

Table 56: KSI Crash Summary by Posted Speed Limit by Mode – MetroPlan Orlando Region

Mode	25 or less	30 35	40 45	50 55	60+	Total
% of Centerline miles with Posted Speed Limit	79.4%	7.2%	8.8%	3.0%	1.5%	100%
Motor vehicles	32,797 (13.1%)	60,872 (24.3%)	132,490 (52.9%)	23,310 (9.3%)	912 (0.4%)	4,810
Motorcyclist	479 (12.3%)	847 (21.8%)	2,116 (54.4%)	417 (10.7%)	34 (0.9%)	944
Pedestrian	610 (18%)	808 (23.9%)	1,713 (50.6%)	252 (7.4%)	2 (0.1%)	936
Bicyclist	376 (16.3%)	551 (23.9%)	1,218 (52.9%)	152 (6.6%)	5 (0.2%)	325
All modes combined	641 (9.1%)	1,291 (18.4%)	4,048 (57.7%)	921 (13.1%)	114 (1.6%)	7,015

Source: Signal 4 Analytics

Notes: Does not include limited access facilities; Total KSI crashes does not sum to total non-limited access crashes as presented in Table 3 as posted speed limit data is not readily available for all roadways.

Number of Travel Lanes

The number of reported crashes by the number of travel lanes on the road where the crash occurred is summarized in **Table 57**, and compared to the centerline miles of road in the analysis area with that number of lanes. KSI Crashes disproportionately occur on roads with more lanes, as shown in **Table 58**. For example, 4 lane roadways are about 6.5% of all roadways and where 39% of all crashes and 41% of KSI crashes occur. Crash outcomes by number of lanes are closely correlated with crashes by speed as multilane roads tend to have higher speed limits and higher operating speeds than 2-lane roads.

Table 57: All Crash Summary by Number of Travel Lanes by Mode – MetroPlan Orlando Region

Mode	2	4	6+	Total
% of Centerline miles with number of lanes	91.8%	6.5%	1.7%	100%
Motor vehicles	87213 (34.8%)	96,320 (38.5%)	66,848 (26.7%)	250,381
Motorcyclist	1401 (36%)	1,565 (40.2%)	927 (23.8%)	3,893
Pedestrian	1239 (36.6%)	1,225 (36.2%)	921 (27.2%)	3,385
Bicyclist	842 (36.6%)	910 (39.5%)	550 (23.9%)	2,302
All modes combined	90695 (34.9%)	100,020 (38.5%)	69,246 (26.6%)	259,961

Source: Signal 4 Analytics

Notes: Does not include limited access facilities; Total crashes does not sum to total non-limited access crashes as presented in Table 3 as number of travel lane data is not readily available for all roadways.

Table 58: KSI Crash Summary by Number of Travel Lanes by Mode – MetroPlan Orlando Region

Mode	2	4	6+	Total
% of Centerline miles with number of lanes	91.8%	6.5%	1.7%	100%
Motor vehicles	1,528 (31.8%)	1,985 (41.3%)	1,297 (27%)	4,810
Motorcyclist	330 (35%)	391 (41.4%)	223 (23.6%)	944
Pedestrian	244 (26.1%)	347 (37.1%)	345 (36.9%)	936
Bicyclist	115 (35.4%)	133 (40.9%)	77 (23.7%)	325
All modes combined	2,217 (31.6%)	2,856 (40.7%)	1,942 (27.7%)	7,015

Source: Signal 4 Analytics

Notes: Does not include limited access facilities; Total KSI crashes does not sum to total non-limited access crashes as presented in Table 3 as number of travel lane data is not readily available for all roadways.

Median Type

The number of reported crashes by the median type of the road where the crash occurred is summarized in **Table 57** for all crashes and **Table 58** for KSI crashes, and compared to the centerline miles of road in the analysis with that type of median. For roadways with no median, they are more

likely to be 2-lane, low speed roadways, where roadways with paved or grass medians are more likely to have multiple lane and posted speed limits.

Table 59: All Crash Summary by Median Type by Mode – MetroPlan Orlando Region¹

Mode	None	Grass	Multiple ²	Paved ³	Other ⁴	Total
% of Centerline miles	88.1%	8.3%	0.3%	3.2%	0.1%	100%
Motor vehicles	92,114 (36.8%)	77,706 (31%)	7,547 (3%)	69,936 (27.9%)	3,024 (1.2%)	250,327
Motorcyclist	1497 (38.5%)	1239 (31.8%)	109 (2.8%)	1,009 (25.9%)	39 (1%)	3,893
Pedestrian	1504 (44.4%)	910 (26.9%)	67 (2%)	869 (25.7%)	35 (1%)	3,385
Bicyclist	964 (41.9%)	692 (30.1%)	47 (2%)	563 (24.5%)	36 (1.6%)	2,302
All modes combined	96,079 (37%)	80,547 (31%)	7,770 (3%)	72,377 (27.8%)	3,134 (1.2%)	259,907

Source: Signal 4 Analytics

Notes: 1. Does not include limited access facilities; Total crashes does not sum to total non-limited access crashes as presented in Table 3 as median type data is not readily available for all roadways. 2. One some roadway segments, multiple median types are present along the length of a roadway, such as grass median on segments, transitioning to a paved median at an intersection. 3. A paved median could either concrete or asphalt and includes 1) a raised paved median, or 2) non-raised medians where road markings do not allow for automobile travel. 4. Other medians could include brick, gravel or a bridge structure.

Table 60: KSI Crash Summary by Median Type by Mode – MetroPlan Orlando Region

Mode	None	Grass	Multiple	Paved	Other	Total
% of Centerline miles	88.1%	8.3%	0.3%	3.2%	0.1%	100%
Motor vehicles	1,668 (34.7%)	1,750 (36.4%)	123 (2.6%)	1,246 (25.9%)	23 (0.5%)	4,810
Motorcyclist	356 (37.7%)	309 (32.7%)	25 (2.6%)	247 (26.2%)	7 (0.7%)	944
Pedestrian	345 (36.9%)	288 (30.8%)	28 (3%)	268 (28.6%)	7 (0.7%)	936
Bicyclist	134 (41.2%)	100 (30.8%)	3 (0.9%)	84 (25.8%)	4 (1.2%)	325
All modes combined	2,503 (35.7%)	2,447 (34.9%)	179 (2.6%)	1,845 (26.3%)	41 (0.6%)	7,015

Source: Signal 4 Analytics

Notes: Does not include limited access facilities; Total KSI crashes does not sum to total non-limited access crashes as presented in Table 3 as median type data is not readily available for all roadways.

Functional Classification

The number of reported crashes by the functional classification of the road where the crash occurred is summarized in [Table 61](#), and compared to the miles of road in the analysis with that functional classification. Crashes disproportionately occur on arterial and major collector-roads with the proportion of all crashes and KSI crashes increasing as the functional classification becomes a higher level, as shown in [Table 62](#). This finding is consistent with the finding that crashes disproportionately occur on roads with a higher posted speed limit and more travel lanes.

Table 61: All Crash Summary by Functional Classification by Mode – MetroPlan Orlando Region

Mode	Principal Arterial	Minor Arterial	Major Collector	Minor Collector	Local/Other	Total
% of Centerline miles with Functional Classification	4.1%	4.0%	7.2%	1.9%	82.8%	100%
Motor vehicles	91,625 (35.1%)	65,443 (25%)	50,840 (19.4%)	6,135 (2.3%)	47,366 (18.1%)	261,409
Motorcyclist	1,456 (36.7%)	996 (25.1%)	796 (20.1%)	98 (2.5%)	617 (15.6%)	3,963
Pedestrian	1,225 (35.5%)	800 (23.2%)	674 (19.5%)	89 (2.6%)	667 (19.3%)	3,455
Bicyclist	753 (32.5%)	583 (25.2%)	501 (21.6%)	98 (4.2%)	382 (16.5%)	2,317
All modes combined	95,059 (35.1%)	67,822 (25%)	52,811 (19.5%)	6,420 (2.4%)	49,032 (18.1%)	271,144

Source: Signal 4 Analytics

Notes: Does not include limited access facilities; Total crashes does not sum to total non-limited access crashes as presented in Table 3 as functional classification data is not readily available for all roadways.

Table 62: KSI Crash Summary by Functional Classification by Mode – MetroPlan Orlando Region

Mode	Principal Arterial	Minor Arterial	Major Collector	Minor Collector	Local/Other	Total
% of Centerline miles with Functional Classification	4.1%	4.0%	7.2%	1.9%	82.8%	100%
Motor vehicles	1,688 (34.5%)	1,439 (29.4%)	1018 (20.8%)	117 (2.4%)	631 (12.9%)	4,893
Motorcyclist	349 (36.7%)	255 (26.8%)	198 (20.8%)	30 (3.2%)	118 (12.4%)	950
Pedestrian	428 (45.2%)	234 (24.7%)	152 (16.1%)	22 (2.3%)	111 (11.7%)	947
Bicyclist	112 (34.3%)	74 (22.6%)	75 (22.9%)	12 (3.7%)	54 (16.5%)	327
All modes combined	2,577 (36.2%)	2,002 (28.1%)	1,443 (20.3%)	181 (2.5%)	914 (12.8%)	7,117

Source: Signal 4 Analytics

Notes: Does not include limited access facilities; Total KSI crashes does not sum to total non-limited access crashes as presented in Table 3 as functional classification data is not readily available for all roadways.

Context Classification

All roads maintained by the Florida Department of Transportation (FDOT) have also been assigned a context classification to reflect the land use and transportation context through which the road traverses. The respective context classification is based on the roadway function as well as the surrounding land uses. A brief description of each context classification is provided below. For more information, please refer to the FDOT Context Classification Guide at

<https://fdotwww.blob.core.windows.net/sitefinity/docs/default-source/roadway/completestreets/files/fdot-context-classification.pdf>.

- **C1 – Natural:** Lands preserved in a natural or wilderness condition, including lands unsuitable for settlement due to natural conditions. Design speed ranges from 55-70 mph.
- **C2 – Rural:** Sparsely settled lands; may include agricultural land, grassland, woodland, and wetlands. Design speed ranges from 55-70 mph.
- **C2T – Rural Town:** Small concentrations of developed areas immediately surrounded by rural and natural areas; includes many historic towns. Design speed ranges from 25-45 mph.
- **C3R – Suburban Residential:** Mostly residential uses within large blocks and a disconnected or sparse roadway network. Design speed ranges from 35-55 mph.
- **C3C – Suburban Commercial:** Mostly non-residential uses with large building footprints and large parking lots within large blocks and a disconnected or sparse roadway network. Design speed ranges from 35-55 mph.
- **C4 – Urban General:** Mix of uses set within small blocks with a well-connected roadway network. May extend long distances. The roadway network usually connects to residential neighborhoods immediately along the corridor or behind the uses fronting the roadway. Design speed ranges from 30-45 mph.
- **C5 – Urban Center:** Mix of uses set within small blocks with a well-connected roadway network. Typically concentrated around a few blocks and identified as part of a civic or economic center of a community, town, or city. Design speed ranges from 25-35 mph.
- **C6 – Urban Core:** Areas with the highest densities and building heights, and within FDOT classified Large Urbanized Areas (population >1,000,000). Many are regional centers and destinations. Buildings have mixed uses, are built up to the roadway, and are within a well-connected roadway network. Design speed ranges from 25-30 mph.

For FDOT roads where a context classification has been assigned, the number of reported crashes by context classification is summarized in **Table 63**. Crashes disproportionately occur on Suburban Commercial Corridors (C3C) as these are roads that typically carry large volumes of motor vehicle traffic, provide direct access to land uses, serve transit, and accommodate people walking and bicycling. The percent of KSI crashes for people walking, bicycling, and motorcycling is also disproportionately higher on C3C roads, as shown in **Table 64**.

Table 63: All Crash Summary by Functional Classification by Mode – MetroPlan Orlando Region

Mode	C1	C2	C2T	C3C	C3R	C4	C5	C6	Total
% of Centerline miles with Context Class	1.0%	20.9%	0.2%	48.3%	16.7%	10.6%	1.0%	0.5%	100%
Motor vehicles	206 (0.2%)	2,659 (2%)	86 (0.1%)	91804 (68.6%)	11,416 (8.5%)	23,715 (17.7%)	2372 (1.8%)	1487 (1.1%)	133,745
Motorcyclist	8 (0.4%)	55 (2.7%)	3 (0.1%)	1363 (65.8%)	224 (10.8%)	354 (17.1%)	44 (2.1%)	19 (0.9%)	2,070
Pedestrian	0 (0%)	10 (0.6%)	4 (0.2%)	1224 (68.3%)	118 (6.6%)	375 (20.9%)	30 (1.7%)	32 (1.8%)	1,793
Bicyclist	0 (0%)	8 (0.7%)	2 (0.2%)	803 (69.8%)	112 (9.7%)	195 (16.9%)	12 (1%)	19 (1.7%)	1,151
All modes combined	214 (0.2%)	2,732 (2%)	95 (0.1%)	95194 (68.6%)	11,870 (8.6%)	24,639 (17.8%)	2,458 (1.8%)	1,557 (1.1%)	138,759

Source: Signal 4 Analytics

Notes: Only includes FDOT non-limited access roads that have been assigned a context classification.

Table 64: KSI Crash Summary by Functional Classification by Mode – MetroPlan Orlando Region

Mode	C1	C2	C2T	C3C	C3R	C4	C5	C6	Total
% of Centerline miles with Context Class	1.0%	20.9%	0.2%	48.3%	16.7%	10.6%	1.0%	0.5%	100%
Motor vehicles	2 (0.4%)	19 (3.9%)	1 (0.2%)	315 (63.9%)	70 (14.2%)	71 (14.4%)	12 (2.4%)	3 (0.6%)	493
Motorcyclist	0 (0%)	5 (0.9%)	0 (0%)	419 (71.7%)	37 (6.3%)	107 (18.3%)	9 (1.5%)	7 (1.2%)	584
Pedestrian	0 (0%)	1 (0.6%)	1 (0.6%)	121 (75.2%)	18 (11.2%)	20 (12.4%)	0 (0%)	0 (0%)	161
Bicyclist	17 (0.5%)	193 (5.2%)	6 (0.2%)	2,510 (68.1%)	445 (12.1%)	457 (12.4%)	39 (1.1%)	19 (0.5%)	3,686
All modes combined	15 (0.6%)	168 (6.9%)	4 (0.2%)	1,655 (67.6%)	320 (13.1%)	259 (10.6%)	18 (0.7%)	9 (0.4%)	2,448

Source: Signal 4 Analytics

Notes: Only includes FDOT non-limited access roads that have been assigned a context classification.

Traffic Volumes

The number of reported crashes by the volume of traffic on the road where the crash occurred is summarized in [Table 65](#) for roads where traffic volume data is available. Crashes disproportionately occur on roads with higher traffic volumes, with the proportion of KSI crashes increasing as the traffic volumes increase, as shown in [Table 66](#).

Table 65: All Crash Summary by Traffic Volumes by Mode – MetroPlan Orlando Region

Mode	Less than 15,000	15,000 30,000	More than 30,000	Total
Motor vehicles	50,384 (23.5%)	70,400 (32.8%)	94,045 (43.8%)	214,829
Motorcyclist	855 (25.5%)	1,145 (34.1%)	1,354 (40.4%)	3,354
Pedestrian	683 (24.5%)	857 (30.7%)	1,251 (44.8%)	2,791
Bicyclist	534 (27.5%)	609 (31.4%)	798 (41.1%)	1,941
All modes combined	52,456 (23.5%)	73,011 (32.8%)	97,448 (43.7%)	222,915

Source: Signal 4 Analytics

Notes: Does not include limited access facilities; Total crashes does not sum to total non-limited access crashes as presented in Table 3 as traffic count data is not readily available for all roadways.

Table 66: KSI Crash Summary by Traffic Volume by Mode – MetroPlan Orlando Region

Mode	Less than 15,000	15,000 30,000	More than 30,000	Total
Motor vehicles	1,055 (24.7%)	1,477 (34.5%)	1,746 (40.8%)	4,278
Motorcyclist	229 (27.3%)	298 (35.5%)	312 (37.2%)	839
Pedestrian	149 (17.8%)	260 (31.1%)	427 (51.1%)	836
Bicyclist	72 (26.2%)	85 (30.9%)	118 (42.9%)	275
All modes combined	1,505 (24.2%)	2,120 (34%)	2,603 (41.8%)	6,228

Source: Signal 4 Analytics

Notes: Does not include limited access facilities; Total KSI crashes does not sum to total non-limited access crashes as presented in Table 3 as functional classification data is not readily available for all roadways.

Systemic Matrices

Based on the crash type, behavior, environmental and road factors, the travel modes, and factors involved in a disproportionate number of fatal and severe injury crashes was identified, as presented in **Attachment B** for the MetroPlan Orlando region, **Attachment C** for Orange County, **Attachment D** for Osceola County and **Attachment E** for Seminole County. While similar analyses were prepared for each individual jurisdiction, the small relative sample size in many local communities can skew some of the analysis results.

For this analysis, only crashes on non-limited access facilities and where sufficient roadway information was available were included in the analysis. Parking lot crashes were also excluded, with the resulting regional analysis reflecting 260,000 crashes (94% of the total non-limited access crashes) and 7,015 KSI crashes (98% of all non-limited access KSI crashes). Therefore, some of the information presented in these tables may be slightly different than the information presented in the tables in this report due to this difference in data sets, although the overall conclusions remain the same.

Data is presented in the following tables:

- All Crash Matrix – Raw number of total crashes by each factor
- All KSI Crash Matrix – Raw number of KSI crashes by each factor
- % of All Crashes that Resulted in a KSI – Shows the percentage of overall crashes that resulted in a KSI.

- % of KSI – Shows of only KSI, what percentage of total KSIs each factor represents.
- % of Car and Truck KSI – Of KSI crashes involving only people in cars and trucks, the most prevalent factors.
- % of Motorcycle KSI – Of KSI crashes involving motorcyclists, the most prevalent factors.
- % of Pedestrian KSI – Of KSI crashes involving pedestrians, the most prevalent factors.
- % of Bicyclist KSI – Of KSI crashes involving bicyclists, the most prevalent factors.

The information is cross tabulated by the following factors:

- Crash Type
- Alcohol Related
- Hit and Run
- Aggressive Driving
- Distracted Driving
- Intersection Related
- Drug Related
- Aging Driver
- Teen Driver
- Day of Week
- Time of Day
- Lighting Condition
- Number of Lanes
- Number of Turn Lanes
- Posted Speed Limit
- Roadway Classification
- Average Annual Daily Traffic
- Context Classification
- Presence of Bike Lane or Pave Shoulder
- Presence of Sidewalks
- Median Presence

Some key findings that build on the findings presented previously include:

- Crashes involving a variety of behavioral and contextual factors are more likely to be fatal on non-limited access roadways with a posted speed limit of 40 MPH or greater, including hit and run, alcohol and drug related crashes, aging and teen drivers, and bicycle and pedestrian involved crashes. KSI crashes occur more frequently on high-speed roadways.
- The FDOT Context Classification C3C – Commercial Corridor is associated with a disproportionate number of KSI crashes for all travel modes as these roadways tend to have a high-level of multimodal activity as well as high-speeds. Left-turn, rear-end and pedestrian KSI crashes are most prevalent on this roadway type.
- While overall crash trends are similar across each of the three counties that comprise the MetroPlan Orlando region, there are some subtle differences:
 - **Hit and Run** KSI crashes as a percent of overall KSI crashes are more prevalent in **Orange County** (10.3%), as compared to the regional average (9.2%), Osceola County (6.2%) and Seminole County (5.8%)

- **Alcohol Related** KSI crashes as a percent of overall KSI crashes occur more frequently in Osceola (7.5%) and Seminole Counties (6.6%), than Orange County (5.2%) with a regional average of 5.7%.
- **Teen Driver** KSI crashes as a percent of overall KSI crashes occur at a similar rate in all counties: Orange County is 11.6%, Osceola County is 12.4% and Seminole County is 10.2%. The regional average is 11.6%.
- **Ageing Driver** KSI crashes occur more frequently as a percent of overall KSI crashes in Seminole County (18.7%) with Osceola County a close second (16.4%), as compared to the regional average (14.9%) and Orange County (14.0%).
- **Pedestrian** involved KSI crashes occur more frequently as a percent of overall KSI crashes in Seminole County (17.1%), as compared to Orange County (13.4%), the regional average (13.3%), and Osceola County (10.8%).

Attachments:

Attachment A: FDOT Modal Office Crash Data

Attachment A-1: Trespasser Near Misses

Attachment A-2: Trespasser Incidents (Results in a KSI)

Attachment B: MetroPlan Orlando Regional Systemic Crash Matrix

1. All Crash Matrix
2. All KSI Crash Matrix
3. Percent of All Crashes that Resulted in a KSI
4. Percent of KSI for All Crashes
5. Percent of Car and Truck KSI
6. Percent of Motorcycle KSI
7. Percent of Pedestrian KSI
8. Percent of Bicyclist KSI

Attachment C: Orange County Systemic Crash Matrix

- Same List as Regional

Attachment D: Osceola County Systemic Crash Matrix

- Same List as Regional

Attachment E: Seminole County Systemic Crash Matrix

- Same List as Regional

**Attachment A-1
Railroad Near Misses
MetroPlan Orlando Region**

CFRC Trespasser Near Misses 2018 - 2023 YTD												
Date				Time	Location				Operator	Rev.?	Trespasser Action	Description of Incident / Employee or Subcontractor
Day	M	D	Y	Hr & Min	Milepost	Description	Jurisdiction	At crossing?				
Fri	4	28	2023	06:32	805.09	Near Garden St.	Osceola County	N	SunRail	Y	Standing	Pedestrian trespasser loitering in the area south of Garden St. in Osceola County. Walking around and standing on tracks.
Thu	4	27	2023	17:06	767.80	Between CR 46A and Airport Blvd.	Sanford	N	SunRail	Y	Walking Along	Homeless pedestrian trespasser walking along tracks pulling wagon just north of Airport Blvd. Stepped off tracks at last second as SunRail train approached.
Mon	4	24	2023	18:18	798.50	Between Fourth St. and Taft Vineland Rd.	Orange County	N	SunRail	Y	Walking Along	Pedestrian trespasser walking in the gauge of the tracks. Stepped off tracks at last second as SunRail train approached.
Tue	2	28	2023	20:12	800.83	Between S. Orange Ave. Overpass and E. Wetherbee Rd.	Orange County	N	SunRail	Y	Sitting	Pedestrian trespasser sitting on rail just south of the Orange Ave. overpass. Trespasser got up and walked off the tracks at the last second as SunRail train approached.
Thu	2	23	2023	16:59	788.97	Near Magnolia Ave.	Orlando	N	SunRail	Y	Walking Across	Homeless pedestrian trespasser crossing the tracks to reach a homeless encampment between Magnolia Ave. and Orange Ave. Cleared tracks before SunRail train passed.
Wed	1	11	2023	20:05	789.62	Near Concord St.	Orlando	N	SunRail	Y	Sitting	Pedestrian trespasser sitting on rail just north of Concord St. in Orlando. Trespasser got up and walked off the tracks at the last second as SunRail train approached. Trespasser said to be possibly intoxicated.
Mon	12	26	2022	16:25	809.30	Between S. Clyde Ave. and Jack Calhoun Dr.	Kissimmee	N	SunRail	Y	Walking Across	Homeless pedestrian trespasser crossing the tracks to reach a homeless encampment south of the John Young Pkwy. Overpass. Cleared tracks before SunRail train passed.
Fri	12	2	2022	08:54	791.20	Columbia St.	Orlando	N	SunRail	Y	Walking Across	Pedestrian trespasser crossing the tracks just north of the Columbia St. crossing in Orlando. Cleared tracks before SunRail train passed.
Wed	11	30	2022	07:55	777.68	E. Church Ave.	Longwood	Y	SunRail	Y	Walking Across	Pedestrian trespasser crossing the tracks on the south edge of the Church Ave. crossing in Longwood. Trespasser ignored warning lights, bells, and gates.
Fri	9	23	2022	15:39	798.50	Between Fourth St. and Taft Vineland Rd.	Orange County	N	SunRail	Y	Walking Along	Pedestrian trespasser walking in the gauge of the tracks. Stepped off tracks at last second as SunRail train approached.
Wed	8	31	2022	07:40	786.60	Near S. Denning Dr.	Winter Park	N	SunRail	Y	Standing	Pedestrian trespasser loitering in the area S. Denning Dr., Minnesota Ave., and Holt Ave. in Winter Park. Mental health issues. SunRail train applied emergency braking to avoid hitting trespasser.
Wed	6	15	2022	08:21	790.40	Near Church St.	Orlando	N	SunRail	Y	Walking Along	Pedestrian trespasser walking along tracks between the Church St. station NB platform and the South St. crossing.
Fri	6	3	2022	16:00	804.70	Near Osceola Pkwy.	Osceola County	N	SunRail	Y	Unknown	Pedestrian trespasser on tracks near the Osceola Pkwy. Overpass.
Fri	3	25	2022	12:30	791.77	Near Kaley St.	Orlando	N	SunRail	Y	Sitting	Pedestrian trespasser sitting against rail just south of the Kaley St. crossing. Trespasser scooted out of the foul at the last second.
Fri	3	18	2022	15:45	786.06	Near Fairbanks Ave.	Winter Park	N	SunRail	Y	Walking Along	Pedestrian Trespasser walking in the gauge of the tracks from Lyman Ave. towards Fairbanks Ave. in Winter Park. Trespasser stepped of tracks at the last second.
Fri	3	11	2022	20:13	786.42	Near Minnesota Ave.	Winter Park	N	SunRail	Y	Sitting	Pedestrian trespasser sitting in the gauge of the tracks just south of the Minnesota Ave. crossing. Trespasser got up and cleared the tracks before the train passed and appeared intoxicated.
Tue	12	21	2021	20:39	773.09	Lake Mary Station	Lake Mary	N	SunRail	Y	Walking Along	Pedestrian trespassers walking down the tracks towards the Lake Mary Station.
Mon	11	29	2021	15:58	788.97	Magnolia Ave.	Orlando	Y	SunRail	Y	Walking Across	Pedestrian Trespasser walking across the tracks at the Magnolia Ave. crossing in Orlando. Trespasser walked around warning gate and ignored lights and bells.

**Attachment A-1
Railroad Near Misses
MetroPlan Orlando Region**

CFRC Trespasser Near Misses 2018 - 2023 YTD												
Date				Time	Location				Operator	Rev.?	Trespasser Action	Description of Incident / Employee or Subcontractor
Day	M	D	Y	Hr & Min	Milepost	Description	Jurisdiction	At crossing?				
Thu	11	4	2021	07:26	789.99	Robinson St.	Orlando	Y	SunRail	Y	Standing	Pedestrian trespasser stood in front of train at the Robinson St. grade crossing in Orlando. Train stopped short of trespasser.
Tue	11	2	2021	17:27	789.81	LYNX Central Station	Orlando	Y	SunRail	Y	Walking Across	Pedestrian trespasser walked out in front of train at the LYNX Central Station north pedestrian crossing as the train was departing the station.
Thu	10	28	2021	16:46	784.70	Near N Denning Dr.	Winter Park	Y	SunRail	Y	Walking Along	Homeless pedestrian trespasser walking in the gauge of the tracks. Trespasser stepped away from tracks before train passed.
Mon	10	11	2021	18:17	789.50	Colonial Dr.	Orlando	Y	SunRail	Y	Standing	Pedestrian trespasser walked out in front of train at the Colonial Dr. crossing and then stopped and stood in front of train. Trespasser moved on at last second.
Fri	10	8	2021	08:41	766.00	Between SR 46 Overpass and McCracken Rd.	Sanford	Y	SunRail	Y	Standing	Pedestrian trespasser standing on the tracks refusing to move. Possible attempted suicide. Same individual and location from 9/21/21.
Tue	9	21	2021	07:11	766.00	Between SR 46 Overpass and McCracken Rd.	Sanford	Y	SunRail	Y	Standing	Pedestrian trespasser standing on the tracks refusing to move. Possible attempted suicide.
Tue	9	7	2021	16:38	773.09	Lake Mary Station	Lake Mary	Y	SunRail	Y	Walking Across	Pedestrian trespasser walked out in front of SunRail train entering the Lake Mary Station at the south station pedestrian crossing. Trespasser was on the phone and distracted. Upon noticing the train, the trespasser jumped backwards out of the way.
Mon	8	30	2021	19:35	807.49	Between Magnolia St. and East Oak St.	Kissimmee	N	SunRail	Y	Standing	Pedestrian trespasser attempted to lay down in front of train. Attempted suicide.
Fri	8	20	2021	18:30	790.49	Near South St.	Orlando	N	SunRail	Y	Standing	Pedestrian trespasser standing on tracks.
Tue	8	17	2021	14:27	804.60	Near Tupperware Station	Osceola County	N	SunRail	Y	Walking Along	Pedestrian trespasser walking down tracks towards the Tupperware Station.
Thu	7	29	2021	14:22	808.17	Near Monument Ave.	Kissimmee	Y	SunRail	Y	Walking Across	Pedestrian trespasser crossing at the Monument Ave. crossing in Kissimmee. Trespasser was elderly and walking at slow rate.
Thu	7	15	2021	19:48	787.99	Princeton St.	Orlando	Y	SunRail	Y	Walking Across	Pedestrian trespasser walked out in front of train at the Princeton St. crossing in Orlando. Trespasser ignored warning gate, lights, and bells.
Tue	7	13	2021	19:48	789.40	Between Marks St. and Colonial Dr.	Orlando	N	SunRail	Y	Walking Along	Homeless pedestrian trespasser walking within the foul of the tracks between Marks St. and Colonial Dr. in Orlando. Train was able to stop before contacting individual.
Tue	7	6	2021	05:45	766.00	Between SR 46 Overpass and McCracken Rd.	Sanford	N	SunRail	Y	Walking Along	Pedestrian trespasser walking down tracks near the SR 46 overpass and Amtrak auto train facility.
Wed	6	30	2021	06:35	784.10	Near Orlando Ave. Overpass	Orlando	N	SunRail	Y	Unknown	Two pedestrian trespassers fouling the tracks near the Orlando Ave. overpass.
Mon	3	22	2021	15:38	786.06	Fairbanks Ave.	Winter Park	Y	SunRail	Y	Standing	Two pedestrian trespassers reported playing chicken with a SunRail train at the Fairbanks Ave. crossing in Winter Park.
Wed	2	3	2021	18:12	786.06	Fairbanks Ave.	Winter Park	Y	SunRail	Y	Walking Along	Pedestrian trespasser jaywalking across Fairbanks Ave. at the grade crossing in front of approaching SunRail train.
Wed	11	18	2020	22:34	789.81	Near Livingston St.	Orlando	N	SunRail	Y	Standing	Pedestrian trespasser standing between the LYNX Central Station platforms on the tracks. Stood by intertrack fence as train passed.
Wed	11	11	2020	08:31	787.79	Rollins St.	Orlando	Y	SunRail	Y	Standing	Pedestrian trespasser stood in front of train at the Rollins St. grade crossing in Orlando. Trespasser moved at last second. Possible attempted suicide.

**Attachment A-1
Railroad Near Misses
MetroPlan Orlando Region**

CFRC Trespasser Near Misses 2018 - 2023 YTD												
Date				Time	Location				Operator	Rev.?	Trespasser Action	Description of Incident / Employee or Subcontractor
Day	M	D	Y	Hr & Min	Milepost	Description	Jurisdiction	At crossing?				
Thu	10	8	2020	21:36	809.36	Between Clyde Ave. and Pleasant Hill Rd.	Kissimmee	N	SunRail	Y	Unknown	Pedestrian trespasser reported on tracks.
Mon	5	18	2020	18:29	793.20	Between Drennen St. and Holden Ave.	Orlando	N	SunRail	Y	Sitting	Pedestrian trespasser sitting in the gauge of the tracks. SunRail train stopped and the visually intoxicated trespasser attempted to board the train.
Wed	4	22	2020	08:12	767.41	Near Country Club Rd.	Sanford	N	SunRail	Y	Walking Along	Pedestrian trespasser walking down the tracks near the Country Club Rd. grade crossing in Sanford. Train stopped and trespasser ran off.
Tue	3	10	2020	14:57	790.29	Pine St.	Orlando	Y	SunRail	Y	Standing	Pedestrian trespasser running around in circles over the Pine St. crossing in Orlando. The trespasser momentarily stopped and stood in front of the train and then ran off.
Fri	2	14	2020	17:05	787.73	Rollins St.	Orlando	Y	SunRail	Y	Walking Across	Pedestrian trespasser walked in front of train at the Rollins St. crossing in Orlando. Elderly person. Froze when observing train and backed up.
Thu	2	13	2020	17:07	800.75	Wetherbee Rd.	Orange County	Y	SunRail	Y	Riding Across	Pedestrian trespassers (Kids on bikes) rode around the warning gates and in front of a SunRail train at the Wetherbee Rd. crossing.
Wed	1	15	2020	19:35	806.50	Between Donegan Ave. and Vine St.	Osceola County	N	SunRail	Y	Sitting	Pedestrian trespassers (teenagers) sitting on tracks. Moved forward just enough to not get hit by train.
Wed	1	15	2020	16:50	792.03	Grant St.	Orlando	N	SunRail	Y	Walking Along	Pedestrian trespasser walking down tracks towards the Grant St. crossing in Orlando. Upon seeing train, the trespasser ran off the tracks towards the Target store.
Tue	1	14	2020	06:55	790.20	Near Central Blvd.	Orlando	N	SunRail	Y	Standing	Pedestrian trespasser standing in the gauge of the tracks.
Wed	1	8	2020	16:29	789.16	Near Orange Ave.	Orlando	N	SunRail	Y	Walking Along	Pedestrian trespasser walking down the tracks between the Magnolia Ave. and Orange Ave. crossings.
Sun	2	10	2019	14:24	789.48	Colonial Dr.	Orlando	Y	Amtrak	Y	Standing	Pedestrian trespasser standing in the middle of the tracks at Colonial Dr. Amtrak train was able to stop and the trespasser was very hostile towards the train crew.
Tue	1	22	2019	12:53	808.22	Near Ruby Ave.	Kissimmee	N	SunRail	Y	Laying	Pedestrian trespasser laying on tracks just north of Ruby Avenue in Kissimmee. Train was able to stop just short of trespasser.
Thu	1	10	2019	19:08	805.70	Garden St.	Osceola County	Y	SunRail	Y	Walking Across	Pedestrian trespasser walked out in front of train at the Garden St. crossing in Osceola County. Trespasser ignored warning gate, lights, and bells.
Fri	12	21	2018	13:19	782.84	Lake Ave.	Maitland	Y	SunRail	Y	Walking Across	Mobility scooter stalled or got stuck over the tracks at the Lake Ave. grade crossing. Rider got off scooter and pulled it out of the path of the train.
Thu	11	1	2018	14:50	807.80	Near Park St.	Kissimmee	N	SunRail	Y	Standing	Homeless pedestrian trespasser stood in the middle of the tracks in front of train. Camp set up beside tracks.
Wed	10	31	2018	16:20	809.00	Between Clyde Ave. and Pleasant Hill Rd.	Kissimmee	N	SunRail	Y	Walking Across	Pedestrian trespasser crossed the tracks in front of train.
Tue	10	23	2018	12:52	776.12	CR 427	Longwood	Y	SunRail	Y	Unknown	Pedestrian trespasser fouling tracks at the CR-427 grade crossing in Longwood.
Fri	10	5	2018	09:23	809.80	Between Clyde Ave. and Pleasant Hill Rd.	Kissimmee	N	SunRail	Y	Unknown	Pedestrian trespasser fouling tracks.

**Attachment A-2
Railroad Incidents
MetroPlan Orlando Region**

CFRC Trespasser Incidents 2018 - 2023 YTD															
Date				Time	Location				Operator	Rev.?	Fatality or Injury/Illness		Trespasser Action	Suicide?	Description of Incident / Employee or Subcontractor
Day	M	D	Y	Hr & Min	Milepost	Description	Jurisdiction	At crossing?							
Thu	4	13	2023	05:45	789.10	Near Orange Ave.	Orlando	No	SunRail	Y	Fatality	1	Kneeling	Apparent	SunRail train struck pedestrian trespasser kneeling in the gauge of the track just north of the Orange Ave. grade crossing in Orlando.
Sun	7	24	2022	03:05	805.90	Near Carroll St.	Osceola County	No	CSX	Y	Fatality	1	Lying	Apparent	CSX train struck pedestrian trespasser lying on the tracks just south of Carrol St. in Osceola County.
Mon	6	6	2022	18:52	794.50	Near Mary Jess Rd.	Edgewood	No	SunRail	Y	Injury	1	Sitting	No	SunRail train struck a pedestrian trespasser sitting on the tracks just south of Mary Jess Rd. in Edgewood. Trespasser noticed train at last second and attempted to get up and move out of the way.
Sun	6	5	2022	00:23	807.23	Near Vine St.	Kissimmee	No	CSX	Y	Fatality	1	Sitting	Apparent	CSX train struck pedestrian trespasser sitting on the tracks near the Vine St. grade crossing in Kissimmee.
Sun	1	30	2022	13:08	789.77	LYNX Central Station North Ped Crossing	Orlando	Yes	Amtrak	Y	Injury	1	Walking Across	No	Amtrak train struck pedestrian trespasser walking across the LYNX Central Station north pedestrian crossing. The individual ignored warning lights and bells and walked out in front of the approaching Amtrak train. The individual appeared distracted and did not appear to be trying to beat the train.
Thu	12	30	2021	16:19	790.05	Jefferson St.	Orlando	Yes	SunRail	Y	Fatality	1	Standing	Yes	SunRail train struck pedestrian trespasser standing at the Jefferson St. grade crossing in Orlando. The trespasser ran out in front of the train at the last second.
Mon	9	13	2021	02:00	807.40	Near Magnolia St.	Kissimmee	No	CSX	Y	Fatality	1	Unknown	Unknown	CSX train struck pedestrian trespasser near the Magnolia St. grade crossing in Kissimmee.
Wed	7	14	2021	15:55	790.24	Near Central Blvd.	Orlando	No	SunRail	Y	Fatality	1	Standing	Yes	SunRail train struck pedestrian trespasser standing in the gauge of the track near the Central Blvd. grade crossing in Orlando. The trespasser walked out in front of the train at the last second.
Tue	7	6	2021	08:31	776.30	Between CR 427 and Georgia Ave.	Longwood	No	None	N	Fatality	1	Hanging	Yes	Trespasser found hanging from signal mast.
Tue	3	30	2021	15:48	791.60	Between Columbia St. and Kaley St.	Orlando	No	SunRail	Y	Fatality	1	Sitting	No	SunRail train struck pedestrian trespasser sitting outside the gauge of the rail but fouling the tracks. After investigation, the trespasser was found to be under the influence of drugs.
Wed	2	24	2021	21:45	786.17	Holt Ave.	Winter Park	Yes	CSX	Y	Fatality	1	Walking Across	No	CSX train struck pedestrian trespasser at the S Pennsylvania Ave and Holt Ave. grade crossing in Winter Park. Trespasser was elderly and assumed to be attempting to cross the tracks.

**Attachment A-2
Railroad Incidents
MetroPlan Orlando Region**

CFRC Trespasser Incidents 2018 - 2023 YTD															
Date				Time	Location				Operator	Rev.?	Fatality or Injury/Illness		Trespasser Action	Suicide?	Description of Incident / Employee or Subcontractor
Day	M	D	Y	Hr & Min	Milepost	Description	Jurisdiction	At crossing?							
Wed	1	6	2021	06:55	810.80	Between Jack Calhoun Dr. and Crestridge Dr.	Osceola County	No	Unknown	Unknown	Fatality	1	Unknown	Unknown	Deceased body found in the gauge of the tracks at milepost 810.8 near the Hoagland Ave. overpass. No report from trains of a trespasser. Cause of death unknown.
Mon	8	10	2020	05:58	781.15	Near Ballard St.	Altamonte Springs	No	SunRail	Y	Fatality	1	Sitting	Apparent	SunRail train struck pedestrian trespasser sitting in the gauge of the tracks just north of the Ballard St. grade crossing in Altamonte Springs.
Fri	12	13	2019	22:52	791.40	Between Columbia St. and Kaley St.	Orlando	No	SunRail	Y	Fatality	1	Walking Along	No	SunRail train struck pedestrian trespasser walking down the gauge of the tracks. Trespasser was walking the same direction as the train.
Fri	11	22	2019	20:57	777.68	Church Ave.	Longwood	Yes	Amtrak	Y	Fatality	1	Unknown	Yes	Amtrak train struck a pedestrian trespasser at the Church Ave. grade crossing in Longwood.
Mon	10	28	2019	06:22	808.15	Monument Ave.	Kissimmee	Yes	SunRail	Y	Fatality	1	Standing	Yes	SunRail train struck a pedestrian trespasser standing on the Monument Ave. grade crossing in Kissimmee. Trespasser ran out in front of train at the last second and stood over the tracks.
Tue	9	17	2019	08:48	791.50	Between Columbia St. and Kaley St.	Orlando	No	SunRail	Y	Injury	1	Standing	No	SunRail train struck a pedestrian trespasser standing next to the tracks, just within the foul.
Tue	6	4	2019	08:17	792.30	Near Michigan St.	Orlando	No	SunRail	Y	Fatality	1	Sitting	Yes	SunRail train struck a pedestrian trespasser just south of the Michigan St. grade crossing in Orlando. The trespasser walked out in front of the train at the last second and sat in the gauge of the tracks.
Fri	5	10	2019	09:41	783.66	Palmetto Ave.	Maitland	Yes	SunRail	Y	Fatality	1	Standing	Yes	SunRail train struck a pedestrian trespasser at the Palmetto Ave. grade crossing (Lake Lilly Park) in Maitland. The trespasser ran out in front of the train at the last second and stood over the tracks.
Thu	2	28	2019	17:52	795.57	Lancaster Ave.	Orange County	Yes	SunRail	Y	Fatality	1	Standing	Apparent	SunRail train struck a pedestrian trespasser standing with a bicycle at the Lancaster Rd. grade crossing. Trespasser rode bike into crossing in front of train and stood up over the tracks.
Mon	2	18	2019	10:04	794.87	Between Mary Jess Rd. and Oakridge Rd.	Edgewood	No	SunRail	Y	Fatality	1	Walking Along	No	SunRail train struck pedestrian trespasser walking down the gauge of the tracks. Trespasser was walking the same direction as the train.
Tue	1	29	2019	15:12	784.50	Between Lake Ave. and N. Denning Dr.	Winter Park	No	SunRail	Y	Injury	1	Walking Along	No	SunRail train struck pedestrian trespasser walking along side the tracks, just within the foul.
Wed	1	2	2019	16:58	792.10	Near Grant St.	Orlando	No	SunRail	Y	Injury	1	Standing	No	SunRail train struck a shopping cart just south of the Grant St. grade crossing in Orlando. Homeless trespasser handling cart was hit by the cart and injured.

**Attachment A-2
Railroad Incidents
MetroPlan Orlando Region**

CFRC Trespasser Incidents 2018 - 2023 YTD															
Date				Time	Location				Operator	Rev.?	Fatality or Injury/Illness		Trespasser Action	Suicide?	Description of Incident / Employee or Subcontractor
Day	M	D	Y	Hr & Min	Milepost	Description	Jurisdiction	At crossing?							
Fri	12	7	2018	06:20	790.30	Near Pine St.	Orlando	No	SunRail	Y	Fatality	1	Standing	No	SunRail train struck pedestrian trespasser just north of Pine St. Trespasser was standing between the wall/fence for the Orlando Urban Trail and the tracks.
Wed	12	5	2018	19:04	791.02	Gore St.	Orlando	Yes	SunRail	Y	Injury	1	Standing	No	SunRail train struck pedestrian trespasser at the Gore St. grade crossing. Trespasser was standing on a bicycle and appeared to be slumped over and passed out.
Wed	11	14	2018	18:25	810.75	Between Pleasant Hill Rd. and Crestridge Dr.	Osceola County	No	SunRail	Y	Fatality	1	Standing	No	SunRail train struck pedestrian trespasser south of Pleasant Hill Road (now Jack Calhoun Dr). Trespasser was standing just within the foul of the tracks.
Fri	10	12	2018	15:37	786.06	Fairbanks Ave.	Winter Park	Yes	SunRail	Y	Injury	1	Riding Along	Apparent	SunRail train struck pedestrian trespasser riding a bicycle at the Fairbanks Ave. grade crossing in Winter Park. Trespasser rode out in front of train from the west side of the crossing then turned and rode down the tracks in the same direction of travel as the train.

**Attachment B-1
MetroPlan Orlando Region
All Crashes 2018 -2022**

Mode:	All Collisions	Number of Lanes			Turn Lanes			Posted Speed					Roadway Classification						AADT (2022)			Context Classification			
		3 Lanes or Less	4-5 Lanes	6+ Lanes				25 or less	30-35	40-45	50-55	60+	Principal Arterial	Minor Arterial	Major Collector	Minor Collector	Local	None	< 15000	15,000-30,000	30,000+	C1	C2	C2T	C3C
All		2-3	4-5	6-8	None	1 to 2	3+	0-25	30-35	40-45	50-55	60+													
Type	Angle	8995	6029	2486	7111	9387	1547	3909	6302	6517	757	25	3953	3757	4974	689	379	4293	5558	4282	3668	3	122	10	4116
	Animal	334	225	43	371	212	22	60	81	252	128	81	197	120	167	34	3	84	287	161	70	0	84	0	72
	Bicycle	842	910	550	723	1394	200	376	551	1218	152	5	753	583	501	98	17	365	534	609	798	0	8	2	803
	Head On	1482	1009	464	1361	1478	245	540	814	1296	267	38	863	643	779	96	18	685	851	840	702	7	66	1	760
	Left Turn	12807	14946	5871	7712	23368	2900	3544	10072	17915	2066	27	8189	10098	9185	1278	341	4889	8749	10800	9353	15	344	9	9912
	Off Road	8805	5086	2118	9692	6604	755	4748	3539	6318	1212	192	3638	3185	3477	710	202	5839	4046	3759	3263	34	292	10	3319
	Other	18417	9857	5457	23922	14649	2651	12499	7861	11521	1715	135	8284	6260	5979	932	377	19390	6760	7076	7712	12	294	6	7812
	Pedestrian	1239	1225	921	1151	1976	328	610	808	1713	252	2	1225	800	674	89	24	643	683	857	1251	0	10	4	1224
	Rear End	25714	41535	36007	19858	66388	17788	4306	21791	63746	13238	175	47641	29481	18790	1667	519	5936	16921	31039	49829	106	1013	46	47737
	Right Turn	1718	2316	1588	1136	3622	963	529	1323	3319	440	11	1836	1760	1189	157	46	733	1107	1636	2231	1	34	0	2287
	Rollover	618	517	265	655	659	105	162	299	572	233	134	573	283	304	43	17	199	458	371	381	3	136	0	356
	Sideswipe	7937	13939	11675	7312	20827	5883	2340	7840	20073	3188	110	15429	9275	5610	526	185	2997	5300	9865	15757	32	284	7	14659
	Unknown	1787	2426	1801	1633	3623	933	639	1797	3077	483	18	2478	1577	1182	101	50	801	1202	1716	2433	1	45	0	2137
Alcohol Related	Y	1663	1418	1006	1646	2082	497	801	940	1947	371	28	1474	898	821	145	38	849	950	999	1399	6	65	1	1436
	N	89032	98602	68240	80991	152105	33823	33461	62138	135590	23760	925	93585	66924	51990	6275	2140	46005	51506	72012	96049	208	2667	94	93758
Hit and Run	Y	13415	12211	9436	13932	19236	4489	6799	8193	17025	2969	76	12426	8583	6553	757	300	9038	6702	8870	12838	17	225	6	12143
	N	77280	87809	59810	68705	134951	29831	27463	54885	120512	21162	877	82633	59239	46258	5663	1878	37816	45754	64141	84610	197	2507	89	83051
Aggressive Driving	Y	2337	2415	1411	2232	3466	633	958	1705	2959	518	23	2225	1434	1322	186	58	1106	1376	1770	2044	7	89	0	2002
	N	88358	97605	67835	80405	150721	33687	33304	61373	134578	23613	930	92834	66388	51489	6234	2120	45748	51080	71241	95404	207	2643	95	93192
Distracted Driving	Y	22744	27095	18675	20043	41233	9075	7593	14944	38621	7079	277	24925	18922	13914	1615	644	10331	12808	20286	26512	69	875	31	25871
	N	67951	72925	50571	62594	112954	25245	26669	48134	98916	17052	676	70134	48900	38897	4805	1534	36523	39648	52725	70936	145	1857	64	69323
Intersection Related	Y	30778	32147	17298	18896	50727	10988	9683	23147	41324	5976	93	25055	20988	19588	2849	923	11208	19914	23770	25136	47	806	26	28670
	N	59917	67873	51948	63741	103460	23332	24579	39931	96213	18155	860	70004	46834	33223	3571	1255	35646	32542	49241	72312	167	1926	69	66524
Drug Related	Y	465	428	333	447	681	143	195	247	638	134	12	460	277	245	44	14	231	283	289	458	2	20	0	448
	N	90230	99592	68913	82190	153506	34177	34067	62831	136899	23997	941	94599	67545	52566	6376	2164	46623	52173	72722	96990	212	2712	95	94746
Aging Driver	Y	13225	15957	10450	11770	24315	5451	4758	9877	21553	3331	113	15322	10254	7933	1002	354	6671	8142	11084	15428	36	432	12	15321
	N	77470	84063	58796	70867	129872	28869	29504	53201	115984	20800	840	79737	57568	44878	5418	1824	40183	44314	61927	82020	178	2300	83	79873
Teenage Driver	Y	11864	13397	8871	10306	20922	4227	4106	7768	18884	3278	96	11886	8992	7312	1118	303	5844	7092	9686	12679	28	394	18	12332
	N	78831	86623	60375	72331	133265	30093	30156	55310	118653	20853	857	83173	58830	45499	5302	1875	41010	45364	63325	84769	186	2338	77	82862
Day of the Week	Monday	13490	15051	10363	12151	23299	5107	4966	9286	20907	3601	144	14461	10134	7854	965	305	6838	7936	10866	14738	34	410	17	14530
	Tuesday	13742	15484	10590	12355	23788	5319	5038	9547	21382	3709	140	14691	10537	8018	1003	296	6917	8000	11153	15210	34	393	17	14750
	Wednesday	13701	15447	10343	12510	23539	5186	5065	9630	21148	3531	117	14488	10342	8160	989	317	6939	8052	11144	14890	28	408	10	14573
	Thursday	13789	15613	10732	12478	24100	5223	5057	9821	21408	3726	122	14789	10482	8192	1059	355	6924	8252	11169	15222	39	389	15	14683
	Friday	15115	17168	11727	13688	26470	5780	5532	10680	23568	4090	140	16375	11426	8983	1040	366	7748	8809	12452	16713	43	451	21	16334
	Saturday	11187	11780	8724	10436	18366	4303	4581	7763	16275	2923	149	11360	8181	6314	716	295	6239	6111	8966	11609	22	349	5	11317
	Sunday	9671	9477	6767	9019	14625	3402	4023	6351	12849	2551	141	8895	6720	5290	648	244	5249	5296	7261	9066	14	332	10	9007
Time of Day	12-3 AM	4517	3721	2770	4437	5524	1395	2090	2782	4966	1085	85	3662	2700	2299	270	88	2337	2384	2930	3620	10	134	4	3523
	3-6 AM	2930	2560	1808	2774	3766	939	1193	1608	3572	822	103	2575	1794	1395	207	64	1444	1543	1953	2491	8	159	1	2482
	6-9 AM	11784	12666	7982	9735	19431	4054	4070	7243	17600	3349	170	11590	8710	6691	904	260	5065	6923	9258	11808	26	462	13	11856
	9-Noon	12229	13507	9574	11638	20814	4934	4885	8714	18517	3100	94	13177	9119	6801	816	288	7185	6887	9537	13602	32	327	13	13198
	Noon-3 PM	16959	19265	13772	16269	30025	6853	6673	12482	26574	4153	114	19166	12679	9576	1216	445	10065	9714	13503	19593	43	452	16	18541
	3-6 PM	20898	24366	16527	18959	37669	7745	7346	15300	33419	5574	152	23159	16211	12885	1560	525	10033	12734	17649	23628	54	581	26	23000
	6-9 PM	13964	15956	10924	12138	24718	5414	5032	9799	22040	3855	118	14438	10917	8735	957	339	6884	8136	11984	15071	34	391	18	14868
	9-Midnight	7414	7979	5889	6687	12240	2986	2973	5150	10849	2193	117	7292	5692	4429	490	169	3841	4135	6197	7635	7	226	4	7726
Lighting Conditions	Dark - Lighted	16830	19615	14967	15208	30337	7539	6841	13235	26653	4631	52	18631	13624	10483	1110	397	8839	9559	14803	19611	17	247	9	19053
	Dark - Not Lighted	5335	3513	1553	4887	4868	823	1767	1785	4751	1761	337	3232	2353	2388	378	108	2119	2985	2843	2561	30	521	8	3065
	Dark - Unknown Lighting	349	165	99	331	275	40	194	178	214	27	0	147	126	142	21	3	207	156	133	149	0	6	0	142
	Dawn	1595	1704	1024	1341	2523	579	502	966	2321	491	43	1529	1113	964	132	35	670	1008	1299	1445	7	76	1	1609
	Daylight	63241	71516	49295	57751	110912	24190	23569	44871	98690	16427	495	68583	48096	36853	4551	1560	33210	36909	51307	70468	153	1803	72	68140
	Dusk	2859	3376	2246	2561	5066	1128	1009	1917	4762	771	22	2828	2416	1874	214	68	1355	1696	2537	3121	7	75	5	3089
	Other	48	33	25	63	49	8	28	21	48	9	0	38	22	22	1	0	37	25	21	36	0	0	0	38
Unknown	431	97	36	488	1																				

**Attachment B-1
MetroPlan Orlando Region
All Crashes 2018 -2022**

Mode:	All Collisions	Context Classification					Bike Lane/Paved Shoulder > 4 ft			Bike Slots			Sidewalks			Median Presence				
All		C3R	C4	C5	C6	None	None	One Side	Both Sides	None	One Side	Both Sides	None	One Side	Both Sides	None	Grass	Multiple	Paved	Other
Type	Angle	481	2070	250	156	10837	13282	1697	2531	16217	1210	83	1687	2995	12828	9709	3961	293	3427	118
	Animal	57	6	1	1	384	309	50	243	578	22	2	271	106	225	304	221	10	64	3
	Bicycle	112	195	12	19	1166	1562	221	519	2119	165	18	132	260	1910	964	692	47	563	36
	Head On	148	298	23	23	1758	2093	284	578	2755	178	22	387	482	2086	1633	590	38	669	23
	Left Turn	1924	2895	228	103	18550	23612	3711	6301	30876	2565	183	2953	4721	25950	14146	10113	864	8239	258
	Off Road	751	749	77	58	11761	11722	1122	3165	15238	696	75	2902	3114	9993	8273	4643	324	2634	130
	Other	983	2979	354	336	28446	25742	2853	5136	31607	1930	194	3914	5000	24817	19150	7226	613	6415	318
	Pedestrian	118	375	30	32	1662	2288	396	701	3057	296	32	248	387	2750	1504	910	67	869	35
	Rear End	5475	9853	861	358	38585	60257	17926	25073	87815	13882	1559	7775	12789	82692	26600	37103	3840	34158	1532
	Right Turn	280	401	32	13	2673	3794	797	1031	4925	644	53	348	672	4602	1772	1628	203	1975	44
	Rollover	77	118	13	8	708	852	160	388	1294	102	4	395	217	788	615	484	32	263	6
	Sideswipe	1284	3767	481	359	13149	21087	5124	7340	29296	3844	411	2656	4034	26861	9212	11227	1269	11275	559
	Unknown	180	933	96	91	2706	3934	891	1189	5291	655	68	413	706	4895	2197	1749	170	1826	72
Alcohol Related	Y	197	359	39	35	2087	2714	534	839	3640	396	51	463	600	3024	1715	1216	114	993	49
	N	11673	24280	2419	1522	130298	167820	34698	53356	227428	25793	2653	23618	34883	197373	94364	79331	7656	71384	3085
Hit and Run	Y	1242	3630	375	308	19711	24278	6224	6224	31248	3459	355	2997	4681	27384	14855	9317	920	9569	394
	N	10628	21009	2083	1249	112674	146256	47971	47971	199820	22730	2349	21084	30802	173013	81224	71230	6850	62808	2740
Aggressive Driving	Y	278	620	65	30	3240	3914	1476	1476	5530	569	64	636	983	4544	2462	1971	140	1494	95
	N	11592	24019	2393	1527	129145	166620	52719	52719	225538	25620	2640	23445	34500	195853	93617	78576	7630	70883	3039
Distracted Driving	Y	3544	5330	481	174	33976	44613	14530	14530	60853	7069	592	6718	9378	52418	24123	22424	2183	19156	615
	N	8326	19309	1977	1383	98409	125921	39665	39665	170215	19120	2112	17363	26105	147979	71956	58123	5587	53221	2519
Intersection Related	Y	4408	7631	782	512	37729	54069	15141	15141	71364	8187	672	6813	11628	61782	30930	23483	2329	22410	1061
	N	7462	17008	1676	1045	94656	116465	39054	39054	159704	18002	2032	17268	23855	138615	65149	57064	5441	49967	2073
Drug Related	Y	71	80	7	5	638	784	278	278	1084	129	13	153	179	894	455	403	41	315	12
	N	11799	24559	2451	1552	131747	169750	53917	53917	229984	26060	2691	23928	35304	199503	95624	80144	7729	72062	3122
Aging Driver	Y	1887	4195	445	164	19044	26012	8274	8274	35183	3986	463	3137	5213	31282	14339	12184	1101	11429	569
	N	9983	20444	2013	1393	113341	144522	45921	45921	195885	22203	2241	20944	30270	169115	81740	68363	6669	60948	2565
Teenage Driver	Y	1941	2464	213	87	17978	21572	7981	7981	30248	3535	349	2828	4880	26424	12012	11213	954	9520	427
	N	9929	22175	2245	1470	114407	148962	46214	46214	200820	22654	2355	21253	30603	173973	84067	69334	6816	62857	2707
Day of the Week	Monday	1779	3696	368	231	19492	25504	8208	8208	34643	3846	415	3575	5336	29993	14360	12033	1164	10874	469
	Tuesday	1803	3888	391	197	19989	26043	8316	8316	35295	4094	427	3658	5421	30737	14513	12230	1193	11369	502
	Wednesday	1863	3833	369	225	19926	25977	8360	8360	35257	3816	418	3424	5394	30673	14713	12141	1130	11021	476
	Thursday	1832	3947	403	229	20264	26270	8420	8420	35702	4047	385	3599	5358	31177	14763	12402	1220	11252	494
	Friday	2020	4149	403	235	22282	28725	9299	9299	39103	4461	446	4032	5932	34046	16176	13699	1247	12306	568
	Saturday	1373	2918	294	236	16591	20879	6411	6411	28050	3299	342	3113	4329	24249	11667	9919	1019	8720	358
	Sunday	1200	2208	230	204	13841	17136	5181	5181	23018	2626	271	2680	3713	19522	9887	8123	797	6835	267
Time of Day	12-3 AM	458	1077	130	205	5815	7473	2025	2025	9880	1032	96	1289	1692	8027	4659	3177	404	2657	108
	3-6 AM	333	606	85	92	3713	4824	1442	1442	6476	761	61	1023	1077	5198	2894	2248	243	1842	68
	6-9 AM	1744	2708	285	155	15971	21267	6918	6918	28996	3092	344	3337	4759	24336	12110	10090	979	8816	430
	9-Noon	1518	3730	357	207	18004	23472	7082	7082	31400	3555	355	3151	4723	27436	12999	10712	1017	10138	439
	Noon-3 PM	2162	5450	515	257	25711	33026	10237	10237	44403	5052	541	4153	6530	39313	18358	15103	1322	14579	623
	3-6 PM	2748	6039	596	281	31048	40214	13420	13420	55092	6083	616	5201	8149	48441	22810	19312	1764	17127	769
	6-9 PM	1927	3327	314	176	21215	26456	8751	8751	36131	4261	452	3613	5552	31679	14654	13029	1255	11428	470
9-Midnight	980	1702	176	184	10908	13802	4320	4320	18690	2353	239	2314	3001	15967	7595	6876	786	5790	227	
Lighting Conditions	Dark - Lighted	2108	4970	553	557	25570	33806	10036	10036	45071	5738	603	3778	6663	40971	17907	16266	1833	14785	608
	Dark - Not Lighted	738	307	25	13	5871	6302	2777	2777	9496	839	66	2794	2104	5503	4942	3328	336	1739	54
	Dark - Unknown Lighting	29	63	4	5	397	434	109	109	557	52	4	72	110	431	354	122	19	110	8
	Dawn	248	313	41	13	2135	2745	971	971	3829	443	51	529	678	3116	1609	1369	134	1152	56
	Daylight	8329	18364	1781	935	93276	121089	38474	38474	163904	18250	1898	16061	24628	143363	67792	56590	5182	52151	2301
	Dusk	393	589	50	29	4518	5594	1745	1745	7556	845	80	742	1178	6561	3000	2754	259	2365	103
	Other	7	5	0	0	70	73	19	19	93	12	1	10	20	76	47	32	3	22	2
Unknown	18	28	4	5	539	484	62	62	553	10	1	92	101	371	420	85	4	53	2	

**Attachment B-2
MetroPlan Orlando Region
All KSI Crashes 2018 -2022**

Mode:	All Collisions	Number of Lanes			Turn Lanes			Posted Speed					Roadway Classification						AADT (2022)			Context Classification							
		3 Lanes or Less	4-5 Lanes	6+ Lanes	None	1 to 2	3+	25 or less	30-35	40-45	50-55	60+	Principal Arterial	Minor Arterial	Major Collector	Minor Collector	Local	None	< 15000	15,000-30,000	30,000+	C1	C2	C2T	C3C	C3R	C4	C5	C6
All		2-3	4-5	6-8				0-25	30-35	40-45	50-55	60+																	
Type	Angle	272	208	114	208	344	54	104	170	267	48	5	159	134	154	24	16	119	171	150	153	0	13	1	180	26	41	2	5
	Animal	4	3	0	4	3	0	2	0	1	3	1	2	1	1	1	0	2	3	2	0	0	2	0	1	0	0	0	0
	Bicycle	115	133	77	102	195	30	43	71	178	31	2	112	74	75	12	3	51	72	85	118	0	1	1	121	18	20	0	0
	Head On	147	82	33	152	103	8	14	43	121	64	20	100	59	69	11	2	22	104	76	60	3	29	0	60	24	17	0	0
	Left Turn	451	696	349	281	1100	120	85	298	940	169	4	428	522	372	34	15	130	348	530	484	4	38	1	508	110	80	8	0
	Off Road	316	355	126	437	354	37	128	156	408	91	14	213	225	179	21	12	178	189	253	199	4	19	0	180	56	22	5	1
	Other	284	271	198	309	405	67	118	149	375	90	21	273	180	150	26	6	146	181	202	250	2	22	1	227	43	68	7	5
	Pedestrian	244	347	345	267	580	100	97	174	555	109	1	428	234	152	22	1	110	149	260	427	0	5	0	419	37	107	9	7
	Rear End	234	540	542	282	832	210	19	137	923	221	16	636	429	193	14	11	41	159	412	705	2	31	2	612	98	77	4	0
	Right Turn	19	40	31	16	63	12	5	17	53	14	1	31	30	21	2	1	6	17	30	38	1	1	0	37	3	4	0	0
	Rollover	57	42	18	74	40	5	12	22	44	21	18	45	18	28	5	1	22	49	23	25	1	17	0	23	11	3	1	0
	Sideswipe	55	93	85	67	143	24	10	37	132	46	8	114	68	30	7	2	13	42	68	109	0	10	0	109	11	12	2	1
	Unknown	19	46	24	23	63	3	4	17	51	14	3	36	28	19	2	0	4	21	29	35	0	5	0	33	8	6	1	0
Alcohol Related	Y	134	171	95	173	204	26	39	79	211	54	17	158	92	89	16	4	44	116	105	136	3	22	0	130	29	26	3	1
	N	2083	2685	1847	2049	4021	644	602	1212	3837	867	97	2419	1910	1354	165	66	800	1389	2015	2467	14	171	6	2380	416	431	36	18
Hit and Run	Y	194	240	213	182	409	62	67	119	381	76	4	260	174	124	12	8	75	113	187	273	0	6	0	248	26	58	3	3
	N	2023	2616	1729	2040	3816	608	574	1172	3667	845	110	2317	1828	1319	169	62	769	1392	1933	2330	17	187	6	2262	419	399	36	16
Aggressive Driving	Y	148	147	69	136	213	19	46	102	177	34	5	125	75	101	12	3	52	104	106	105	2	6	0	96	25	34	4	3
	N	2069	2709	1873	2086	4012	651	595	1189	3871	887	109	2452	1927	1342	169	67	792	1401	2014	2498	15	187	6	2414	420	423	35	16
Distracted Driving	Y	614	832	526	582	1208	210	146	317	1183	287	39	698	620	402	41	23	216	408	636	726	6	73	3	677	150	96	7	1
	N	1603	2024	1416	1640	3017	460	495	974	2865	634	75	1879	1382	1041	140	47	628	1097	1484	1877	11	120	3	1833	295	361	32	18
Intersection Related	Y	945	1152	748	646	1914	291	254	617	1631	326	17	936	836	655	81	30	313	673	862	980	5	65	3	1020	202	179	19	14
	N	1272	1704	1194	1576	2311	379	387	674	2417	595	97	1641	1166	788	100	40	531	832	1258	1623	12	128	3	1490	243	278	20	5
Drug Related	Y	77	98	61	88	129	21	19	33	139	35	10	97	62	45	6	4	24	58	63	91	2	12	0	76	21	16	1	0
	N	2140	2758	1881	2134	4096	649	622	1258	3909	886	104	2480	1940	1398	175	66	820	1447	2057	2512	15	181	6	2434	424	441	38	19
Aging Driver	Y	340	441	263	302	650	114	84	194	597	151	18	396	303	211	28	7	121	246	308	386	4	42	1	383	73	65	5	3
	N	1877	2415	1679	1920	3575	556	557	1097	3451	770	96	2181	1699	1232	153	63	723	1259	1812	2217	13	151	5	2127	372	392	34	16
Teenage Driver	Y	258	345	212	235	515	74	76	142	482	111	4	254	250	172	27	10	111	177	232	298	1	14	3	284	58	28	3	2
	N	1959	2511	1730	1987	3710	596	565	1149	3566	810	110	2323	1752	1271	154	60	733	1328	1888	2305	16	179	3	2226	387	429	36	17
Day of the Week	Monday	350	362	244	319	560	90	91	174	553	119	19	334	267	215	24	9	120	228	277	335	3	27	1	341	68	50	5	3
	Tuesday	290	406	286	306	608	84	89	172	570	132	19	355	290	196	27	7	123	194	312	365	3	24	2	363	53	53	2	2
	Wednesday	305	400	288	304	622	83	90	198	571	120	14	377	260	208	28	12	124	218	276	384	1	31	1	348	64	73	7	1
	Thursday	311	422	275	311	616	97	90	179	602	124	13	367	300	209	19	13	116	209	300	390	2	27	0	365	56	78	7	2
	Friday	353	427	306	348	645	112	108	198	624	141	15	402	318	211	30	13	131	245	333	390	5	29	1	379	70	77	5	2
	Saturday	309	468	305	322	657	115	92	198	631	142	19	411	308	222	26	10	117	213	339	416	0	29	0	391	73	77	7	5
	Sunday	299	371	238	312	517	89	81	172	497	143	15	331	259	182	27	6	113	198	283	323	3	26	1	323	61	49	6	4
Time of Day	12-3 AM	176	247	178	212	322	70	49	111	331	94	16	254	171	113	11	2	53	129	182	237	1	18	0	232	43	58	4	5
	3-6 AM	138	159	132	170	215	48	34	83	231	67	14	178	118	66	14	5	52	87	127	165	2	21	0	148	29	26	8	1
	6-9 AM	287	365	231	247	565	80	71	161	511	117	23	282	270	199	27	7	107	193	264	323	4	37	1	303	52	52	5	0
	9-Noon	247	333	227	253	476	90	88	146	456	104	13	295	234	153	22	6	109	168	224	314	4	29	1	284	48	47	5	3
	Noon-3 PM	300	374	231	283	574	74	94	187	519	100	5	307	268	191	25	12	128	199	284	311	1	18	0	312	52	62	2	3
	3-6 PM	375	440	284	373	670	75	119	198	651	116	15	385	295	250	32	12	144	257	349	362	2	23	1	373	77	75	6	2
	6-9 PM	371	508	344	368	748	124	103	212	735	162	11	454	344	254	31	15	142	243	390	454	3	24	1	430	66	70	3	3
	9-Midnight	323	430	315	316	655	109	83	193	614	161	17	422	302	217	19	11	109	229	300	437	0	23	2	428	78	67	6	2
Lighting Conditions	Dark - Lighted	527	884	748	587	1352	244	164	431	1295	260	9	890	618	406	41	23	205	366	633	967	1	19	2	860	122	189	21	11
	Dark - Not Lighted	345	304	119	345	377	51	52	113	371	183	49	309	176	170	27	5	86	255	235	192	4	69	1	247	73	19	0	0
	Dark - Unknown Lighting																												

**Attachment B-2
MetroPlan Orlando Region
All KSI Crashes 2018 -2022**

Mode:	All Collisions	Bike Lane/Paved Shoulder > 4 ft				Bike Slots			Sidewalks			Median Presence				
		None	None	One Side	Both Sides	None	One Side	Both Sides	None	One Side	Both Sides	None	Grass	Multiple	Paved	Other
Type	Angle	338	406	82	106	529	62	3	85	96	413	288	169	10	123	4
	Animal	4	3	1	3	7	0	0	5	1	1	4	3	0	0	0
	Bicycle	166	210	37	78	293	26	6	33	30	262	134	100	3	84	4
	Head On	130	159	13	90	257	4	1	84	50	128	155	58	5	44	0
	Left Turn	752	983	216	297	1323	164	9	162	215	1119	530	522	31	408	5
	Off Road	541	532	54	211	759	35	3	153	123	521	313	321	21	138	4
	Other	406	487	85	181	691	59	3	117	108	528	308	249	21	169	6
	Pedestrian	363	601	121	214	825	98	13	65	99	772	345	288	28	268	7
	Rear End	498	718	258	340	1097	202	17	144	154	1018	270	522	46	471	7
	Right Turn	45	51	9	30	82	8	0	9	10	71	15	37	1	37	0
	Rollover	63	69	5	43	113	3	1	46	15	56	49	46	3	18	1
	Sideswipe	89	125	42	66	196	34	3	26	23	184	68	98	6	58	3
	Unknown	36	50	13	26	79	10	0	14	8	67	24	34	4	27	0
Alcohol Related	Y	189	239	48	113	364	34	2	88	50	262	161	143	15	79	2
	N	3242	4155	888	1572	5887	671	57	855	882	4878	2342	2304	164	1766	39
Hit and Run	Y	309	439	132	132	592	54	1	56	72	519	270	173	13	185	6
	N	3122	3955	1553	1553	5659	651	58	887	860	4621	2233	2274	166	1660	35
Aggressive Driving	Y	198	219	91	91	324	39	1	54	68	242	159	126	5	72	2
	N	3233	4175	1594	1594	5927	666	58	889	864	4898	2344	2321	174	1773	39
Distracted Driving	Y	987	1235	455	455	1744	211	17	306	261	1405	668	726	64	504	10
	N	2444	3159	1230	1230	4507	494	42	637	671	3735	1835	1721	115	1341	31
Intersection Related	Y	1344	1796	606	606	2489	335	21	318	375	2152	1032	953	60	785	15
	N	2087	2598	1079	1079	3762	370	38	625	557	2988	1471	1494	119	1060	26
Drug Related	Y	110	144	63	63	213	21	2	48	36	152	92	90	5	49	0
	N	3321	4250	1622	1622	6038	684	57	895	896	4988	2411	2357	174	1796	41
Aging Driver	Y	490	632	263	263	918	114	12	161	137	746	376	351	25	284	8
	N	2941	3762	1422	1422	5333	591	47	782	795	4394	2127	2096	154	1561	33
Teenage Driver	Y	431	497	207	207	718	92	5	79	129	607	262	292	19	234	8
	N	3000	3897	1478	1478	5533	613	54	864	803	4533	2241	2155	160	1611	33
Day of the Week	Monday	471	593	237	237	861	86	9	130	132	694	358	317	30	243	8
	Tuesday	496	601	263	263	891	86	5	135	125	722	351	340	16	270	5
	Wednesday	483	642	207	207	873	109	11	132	140	721	356	352	20	258	7
	Thursday	487	628	254	254	900	98	10	128	130	750	360	335	25	284	4
	Friday	537	674	254	254	948	129	9	140	141	805	392	373	26	289	6
	Saturday	512	675	260	260	961	112	9	139	145	798	365	388	37	289	3
	Sunday	445	581	210	210	817	85	6	139	119	650	321	342	25	212	8
Time of Day	12-3 AM	243	353	159	159	530	66	5	94	80	427	192	216	19	168	6
	3-6 AM	198	263	105	105	380	46	3	79	61	289	145	174	13	94	3
	6-9 AM	438	548	214	214	778	97	8	125	103	655	305	309	23	241	5
	9-Noon	398	526	178	178	722	80	5	110	102	595	262	283	18	241	3
	Noon-3 PM	481	599	195	195	817	80	8	111	130	664	342	297	18	247	1
	3-6 PM	559	709	260	260	995	95	9	126	140	833	427	380	28	258	6
	6-9 PM	640	758	303	303	1096	118	9	144	162	917	447	408	34	326	8
	9-Midnight	474	638	271	271	933	123	12	154	154	760	383	380	26	270	9
Lighting Conditions	Dark - Lighted	958	1360	476	476	1880	256	23	166	249	1744	685	771	67	612	24
	Dark - Not Lighted	360	382	284	284	698	64	6	249	153	366	330	277	21	138	2
	Dark - Unknown Lighting	3	5	1	1	6	0	0	0	0	0	1	2	0	1	2
	Dawn	67	84	32	32	118	18	0	27	16	93	52	43	1	40	0
	Daylight	1914	2420	833	833	3342	344	28	469	480	2765	1350	1287	80	985	12
	Dusk	123	136	55	55	196	21	2	27	32	160	78	64	8	68	1
	Other	2	4	1	1	5	2	0	1	2	4	1	3	2	1	0
	Unknown	4	3	3	3	6	0	0	4	0	2	6	0	0	0	0

Attachment B-3
MetroPlan Orlando Region
Percent of All Crashes that Result in a KSI 2018-2022

Mode:	All Collisions	Number of Lanes			Turn Lanes			Posted Speed					Roadway Classification						AADT (2022)			Context Classification				
All		3 Lanes or Less	4-5 Lanes	6+ Lanes	None	1 to 2	3+	25 or less	30-35	40-45	50-55	60+	Principal Arterial	Minor Arterial	Major Collector	Minor Collector	Local	None	< 15000	15,000-30,000	30,000+	C1	C2	C2T	C3C	C3R
		2-3	4-5	6-8				0-25	30-35	40-45	50-55	60+														
Type	Angle	3.0%	3.4%	4.6%	2.9%	3.7%	3.5%	2.7%	2.7%	4.1%	6.3%	20.0%	4.0%	3.6%	3.1%	3.5%	4.2%	2.8%	3.1%	3.5%	4.2%	0.0%	10.7%	10.0%	4.4%	5.4%
	Animal	1.2%	1.3%	0.0%	1.1%	1.4%	0.0%	3.3%	0.0%	0.4%	2.3%	1.2%	1.0%	0.8%	0.6%	2.9%	0.0%	2.4%	1.0%	1.2%	0.0%	-	2.4%	-	1.4%	0.0%
	Bicycle	13.7%	14.6%	14.0%	14.1%	14.0%	15.0%	11.4%	12.9%	14.6%	20.4%	40.0%	14.9%	12.7%	15.0%	12.2%	17.6%	14.0%	13.5%	14.0%	14.8%	-	12.5%	50.0%	15.1%	16.1%
	Head On	9.9%	8.1%	7.1%	11.2%	7.0%	3.3%	2.6%	5.3%	9.3%	24.0%	52.6%	11.6%	9.2%	8.9%	11.5%	11.1%	3.2%	12.2%	9.0%	8.5%	42.9%	43.9%	0.0%	7.9%	16.2%
	Left Turn	3.5%	4.7%	5.9%	3.6%	4.7%	4.1%	2.4%	3.0%	5.2%	8.2%	14.8%	5.2%	5.2%	4.1%	2.7%	4.4%	2.7%	4.0%	4.9%	5.2%	26.7%	11.0%	11.1%	5.1%	5.7%
	Off Road	3.6%	7.0%	5.9%	4.5%	5.4%	4.9%	2.7%	4.4%	6.5%	7.5%	7.3%	5.9%	7.1%	5.1%	3.0%	5.9%	3.0%	4.7%	6.7%	6.1%	11.8%	6.5%	0.0%	5.4%	7.5%
	Other	1.5%	2.7%	3.6%	1.3%	2.8%	2.5%	0.9%	1.9%	3.3%	5.2%	15.6%	3.3%	2.9%	2.5%	2.8%	1.6%	0.8%	2.7%	2.9%	3.2%	16.7%	7.5%	16.7%	2.9%	4.4%
	Pedestrian	19.7%	28.3%	37.5%	23.2%	29.4%	30.5%	15.9%	21.5%	32.4%	43.3%	50.0%	34.9%	29.3%	22.6%	24.7%	4.2%	17.1%	21.8%	30.3%	34.1%	-	50.0%	0.0%	34.2%	31.4%
	Rear End	0.9%	1.3%	1.5%	1.4%	1.3%	1.2%	0.4%	0.6%	1.4%	1.7%	9.1%	1.3%	1.5%	1.0%	0.8%	2.1%	0.7%	0.9%	1.3%	1.4%	1.9%	3.1%	4.3%	1.3%	1.8%
	Right Turn	1.1%	1.7%	2.0%	1.4%	1.7%	1.2%	0.9%	1.3%	1.6%	3.2%	9.1%	1.7%	1.7%	1.8%	1.3%	2.2%	0.8%	1.5%	1.8%	1.7%	100.0%	2.9%	-	1.6%	1.1%
	Rollover	9.2%	8.1%	6.8%	11.3%	6.1%	4.8%	7.4%	7.4%	7.7%	9.0%	13.4%	7.9%	6.4%	9.2%	11.6%	5.9%	11.1%	10.7%	6.2%	6.6%	33.3%	12.5%	-	6.5%	14.3%
	Sideswipe	0.7%	0.7%	0.7%	0.9%	0.7%	0.4%	0.4%	0.7%	0.7%	1.4%	7.3%	0.7%	0.7%	0.5%	1.3%	1.1%	0.4%	0.8%	0.7%	0.7%	0.0%	3.5%	0.0%	0.7%	0.9%
	Unknown	1.1%	1.9%	1.3%	1.4%	1.7%	0.3%	0.6%	0.9%	1.7%	2.9%	16.7%	1.5%	1.8%	1.6%	2.0%	0.0%	0.5%	1.7%	1.7%	1.4%	0.0%	11.1%	-	1.5%	4.4%
Alcohol Related	Y	8.1%	12.1%	9.4%	10.5%	9.8%	5.2%	4.9%	8.4%	10.8%	14.6%	60.7%	10.7%	10.2%	10.8%	11.0%	10.5%	5.2%	12.2%	10.5%	9.7%	50.0%	33.8%	0.0%	9.1%	14.7%
	N	2.3%	2.7%	2.7%	2.5%	2.6%	1.9%	1.8%	2.0%	2.8%	3.6%	10.5%	2.6%	2.9%	2.6%	2.6%	3.1%	1.7%	2.7%	2.8%	2.6%	6.7%	6.4%	6.4%	2.5%	3.6%
Hit and Run	Y	1.4%	2.0%	2.3%	1.3%	2.1%	1.4%	1.0%	1.5%	2.2%	2.6%	5.3%	2.1%	2.0%	1.9%	1.6%	2.7%	0.8%	1.7%	2.1%	2.1%	0.0%	2.7%	0.0%	2.0%	2.1%
	N	2.6%	3.0%	2.9%	3.0%	2.8%	2.0%	2.1%	2.1%	3.0%	4.0%	12.5%	2.8%	3.1%	2.9%	3.0%	3.3%	2.0%	3.0%	3.0%	2.8%	8.6%	7.5%	6.7%	2.7%	3.9%
Aggressive Driving	Y	6.3%	6.1%	4.9%	6.1%	6.1%	3.0%	4.8%	6.0%	6.0%	6.6%	21.7%	5.6%	5.2%	7.6%	6.5%	5.2%	4.7%	7.6%	6.0%	5.1%	28.6%	6.7%	-	4.8%	9.0%
	N	2.3%	2.8%	2.8%	2.6%	2.7%	1.9%	1.8%	1.9%	2.9%	3.8%	11.7%	2.6%	2.9%	2.6%	2.7%	3.2%	1.7%	2.7%	2.8%	2.6%	7.2%	7.1%	6.3%	2.6%	3.6%
Distracted Driving	Y	2.7%	3.1%	2.8%	2.9%	2.9%	2.3%	1.9%	2.1%	3.1%	4.1%	14.1%	2.8%	3.3%	2.9%	2.5%	3.6%	2.1%	3.2%	3.1%	2.7%	8.7%	8.3%	9.7%	2.6%	4.2%
	N	2.4%	2.8%	2.8%	2.6%	2.7%	1.8%	1.9%	2.0%	2.9%	3.7%	11.1%	2.7%	2.8%	2.7%	2.9%	3.1%	1.7%	2.8%	2.8%	2.6%	7.6%	6.5%	4.7%	2.6%	3.5%
Intersection Related	Y	3.1%	3.6%	4.3%	3.4%	3.8%	2.6%	2.6%	2.7%	3.9%	5.5%	18.3%	3.7%	4.0%	3.3%	2.8%	3.3%	2.8%	3.4%	3.6%	3.9%	10.6%	8.1%	11.5%	3.6%	4.6%
	N	2.1%	2.5%	2.3%	2.5%	2.2%	1.6%	1.6%	1.7%	2.5%	3.3%	11.3%	2.3%	2.5%	2.4%	2.8%	3.2%	1.5%	2.6%	2.6%	2.2%	7.2%	6.6%	4.3%	2.2%	3.3%
Drug Related	Y	16.6%	22.9%	18.3%	19.7%	18.9%	14.7%	9.7%	13.4%	21.8%	26.1%	83.3%	21.1%	22.4%	18.4%	13.6%	28.6%	10.4%	20.5%	21.8%	19.9%	100.0%	60.0%	-	17.0%	29.6%
	N	2.4%	2.8%	2.7%	2.6%	2.7%	1.9%	1.8%	2.0%	2.9%	3.7%	11.1%	2.6%	2.9%	2.7%	2.7%	3.0%	1.8%	2.8%	2.8%	2.6%	7.1%	6.7%	6.3%	2.6%	3.6%
Aging Driver	Y	2.6%	2.8%	2.5%	2.6%	2.7%	2.1%	1.8%	2.0%	2.8%	4.5%	15.9%	2.6%	3.0%	2.7%	2.8%	2.0%	1.8%	3.0%	2.8%	2.5%	11.1%	9.7%	8.3%	2.5%	3.9%
	N	2.4%	2.9%	2.9%	2.7%	2.8%	1.9%	1.9%	2.1%	3.0%	3.7%	11.4%	2.7%	3.0%	2.7%	2.8%	3.5%	1.8%	2.8%	2.9%	2.7%	7.3%	6.6%	6.0%	2.7%	3.7%
Teenage Driver	Y	2.2%	2.6%	2.4%	2.3%	2.5%	1.8%	1.9%	1.8%	2.6%	3.4%	4.2%	2.1%	2.8%	2.4%	2.4%	3.3%	1.9%	2.5%	2.4%	2.4%	3.6%	3.6%	16.7%	2.3%	3.0%
	N	2.5%	2.9%	2.9%	2.7%	2.8%	2.0%	1.9%	2.1%	3.0%	3.9%	12.8%	2.8%	3.0%	2.8%	2.9%	3.2%	1.8%	2.9%	3.0%	2.7%	8.6%	7.7%	3.9%	2.7%	3.9%
Day of the Week	Monday	2.6%	2.4%	2.4%	2.6%	2.4%	1.8%	1.8%	1.9%	2.6%	3.3%	13.2%	2.3%	2.6%	2.7%	2.5%	3.0%	1.8%	2.9%	2.5%	2.3%	8.8%	6.6%	5.9%	2.3%	3.8%
	Tuesday	2.1%	2.6%	2.7%	2.5%	2.6%	1.6%	1.8%	1.8%	2.7%	3.6%	13.6%	2.4%	2.8%	2.4%	2.7%	2.4%	1.8%	2.4%	2.8%	2.4%	8.8%	6.1%	11.8%	2.5%	2.9%
	Wednesday	2.2%	2.6%	2.8%	2.4%	2.6%	1.6%	1.8%	2.1%	2.7%	3.4%	12.0%	2.6%	2.5%	2.5%	2.8%	3.8%	1.8%	2.7%	2.5%	2.6%	3.6%	7.6%	10.0%	2.4%	3.4%
	Thursday	2.3%	2.7%	2.6%	2.5%	2.6%	1.9%	1.8%	1.8%	2.8%	3.3%	10.7%	2.5%	2.9%	2.6%	1.8%	3.7%	1.7%	2.5%	2.7%	2.6%	5.1%	6.9%	0.0%	2.5%	3.1%
	Friday	2.3%	2.5%	2.6%	2.5%	2.4%	1.9%	2.0%	1.9%	2.6%	3.4%	10.7%	2.5%	2.9%	2.3%	2.9%	3.6%	1.7%	2.8%	2.7%	2.3%	11.6%	6.4%	4.8%	2.3%	3.5%
	Saturday	2.8%	4.0%	3.5%	3.1%	3.6%	2.7%	2.0%	2.6%	3.9%	4.9%	12.8%	3.6%	3.8%	3.5%	3.6%	3.4%	1.9%	3.5%	3.8%	3.6%	0.0%	8.3%	0.0%	3.5%	5.3%
	Sunday	3.1%	3.9%	3.5%	3.5%	3.5%	2.6%	2.0%	2.7%	3.9%	5.6%	10.6%	3.7%	3.9%	3.4%	4.2%	2.5%	2.2%	3.7%	3.9%	3.6%	21.4%	7.8%	10.0%	3.6%	5.1%
Time of Day	12-3 AM	3.9%	6.6%	6.4%	4.8%	5.8%	5.0%	2.3%	4.0%	6.7%	8.7%	18.8%	6.9%	6.3%	4.9%	4.1%	2.3%	2.3%	5.4%	6.2%	6.5%	10.0%	13.4%	0.0%	6.6%	9.4%
	3-6 AM	4.7%	6.2%	7.3%	6.1%	5.7%	5.1%	2.8%	5.2%	6.5%	8.2%	13.6%	6.9%	6.6%	4.7%	6.8%	7.8%	3.6%	5.6%	6.5%	6.6%	25.0%	13.2%	0.0%	6.0%	8.7%
	6-9 AM	2.4%	2.9%	2.9%	2.5%	2.9%	2.0%	1.7%	2.2%	2.9%	3.5%	13.5%	2.4%	3.1%	3.0%	3.0%	2.7%	2.1%	2.8%	2.9%	2.7%	15.4%	8.0%	7.7%	2.6%	3.0%
	9-Noon	2.0%	2.5%	2.4%	2.2%	2.3%	1.8%	1.8%	1.7%	2.5%	3.4%	13.8%	2.2%	2.6%	2.2%	2.7%	2.1%	1.5%	2.4%	2.3%	2.3%	12.5%	8.9%	7.7%	2.2%	3.2%
	Noon-3 PM	1.8%	1.9%	1.7%	1.7%	1.9%	1.1%	1.4%	1.5%	2.0%	2.4%	4.4%	1.6%	2.1%	2.0%	2.1%	2.7%	1.3%	2.0%	2.1%	1.6%	2.3%	4.0%	0.0%	1.7%	2.4%
	3-6 PM	1.8%	1.8%	1.7%	2.0%	1.8%	1.0%	1.6%	1.3%	1.9%	2.1%	9.9%	1.7%	1.8%	1.9%	2.1%	2.3%	1.4%	2.0%	2.0%	1.5%	3.7%	4.0%	3.8%	1.6%	2.8%
	6-9 PM	2.7%	3.2%	3.1%	3.0%	3.0%	2.3%	2.0%	2.2%	3.3%	4.2%	9.3%	3.1%	3.2%	2.9%	3.2%	4.4%	2.1%	3.0%	3.3%	3.0%	8.8%	6.1%	5.6%	2.9%	3.4%
	9-Midnight	4.4%	5.4%	5.3%	4.7%	5.4%	3.7%	2.8%	3.7%	5.7%	7.3%	14.5%	5.8%	5.3%	4.9%	3.9%	6.5%	2.8%	5.5%	4.8%	5.7%	0.0%	10.2%	50.0%	5.5%	8.0%
Lighting Conditions	Dark - Lighted	3.1%	4.5%	5.0%	3.9%	4.5%	3.2%	2.4%	3.3%	4.9%	5.6%	17.3%	4.8%	4.5%	3.9%	3.7%	5.8%	2.3%	3.8%	4.3%	4.9%	5.9%	7.7%	22.2%	4.5%	5.8%
	Dark - Not Lighted	6.5%	8.7%	7.7%	7.1%	7.7%	6.2%	2.9%	6.3%	7.8%	10.4%	14.5%	9.6%	7.5%	7.1%	7.1%	4.6%	4.1%	8.5%	8.3%	7.5%	13.3%	13.2%	12.5%	8.1%	9.9%
	Dark - Unknown Lighting	0.6%	1.2%	2.0%	0.9%	1.1%	0.0%	1.0%	0.0%	1.9%	0.0%	-	2.0%	0.8%	0.7%	0.0%	0.0%	0.5%	0.6%	1.5%	1.3%	-	0.0%	-	0.7%	0.0%
	Dawn	3.2%	3.3%	2.8%	3.1%	3.3%	2.2%	2.4%	2.6%	3.1%	3.7%	11.6%	2.7%	3.2%	4.0%	3.8%	2.9%	2.2%	3.7%							

Attachment B-3
MetroPlan Orlando Region
Percent of All Crashes that Result in a KSI 2018-2022

Mode:	All Collisions	Context Classification				Bike Lane/Paved Shoulder > 4 ft			Bike Slots			Sidewalks			Median Presence				
All		C4	C5	C6	None	None	One Side	Both Sides	None	One Side	Both Sides	None	One Side	Both Sides	None	Grass	Multiple	Paved	Other
Type	Angle	2.0%	0.8%	3.2%	3.1%	3.1%	4.8%	4.2%	3.3%	5.1%	3.6%	5.0%	3.2%	3.2%	3.0%	4.3%	3.4%	3.6%	3.4%
	Animal	0.0%	0.0%	0.0%	1.0%	1.0%	2.0%	1.2%	1.2%	0.0%	0.0%	1.8%	0.9%	0.4%	1.3%	1.4%	0.0%	0.0%	0.0%
	Bicycle	10.3%	0.0%	0.0%	14.2%	13.4%	16.7%	15.0%	13.8%	15.8%	33.3%	25.0%	11.5%	13.7%	13.9%	14.5%	6.4%	14.9%	11.1%
	Head On	5.7%	0.0%	0.0%	7.4%	7.6%	4.6%	15.6%	9.3%	2.2%	4.5%	21.7%	10.4%	6.1%	9.5%	9.8%	13.2%	6.6%	0.0%
	Left Turn	2.8%	3.5%	0.0%	4.1%	4.2%	5.8%	4.7%	4.3%	6.4%	4.9%	5.5%	4.6%	4.3%	3.7%	5.2%	3.6%	5.0%	1.9%
	Off Road	2.9%	6.5%	1.7%	4.6%	4.5%	4.8%	6.7%	5.0%	5.0%	4.0%	5.3%	3.9%	5.2%	3.8%	6.9%	6.5%	5.2%	3.1%
	Other	2.3%	2.0%	1.5%	1.4%	1.9%	3.0%	3.5%	2.2%	3.1%	1.5%	3.0%	2.2%	2.1%	1.6%	3.4%	3.4%	2.6%	1.9%
	Pedestrian	28.5%	30.0%	21.9%	21.8%	26.3%	30.6%	30.5%	27.0%	33.1%	40.6%	26.2%	25.6%	28.1%	22.9%	31.6%	41.8%	30.8%	20.0%
	Rear End	0.8%	0.5%	0.0%	1.3%	1.2%	1.4%	1.4%	1.2%	1.5%	1.1%	1.9%	1.2%	1.2%	1.0%	1.4%	1.2%	1.4%	0.5%
	Right Turn	1.0%	0.0%	0.0%	1.7%	1.3%	1.1%	2.9%	1.7%	1.2%	0.0%	2.6%	1.5%	1.5%	0.8%	2.3%	0.5%	1.9%	0.0%
	Rollover	2.5%	7.7%	0.0%	8.9%	8.1%	3.1%	11.1%	8.7%	2.9%	25.0%	11.6%	6.9%	7.1%	8.0%	9.5%	9.4%	6.8%	16.7%
	Sideswipe	0.3%	0.4%	0.3%	0.7%	0.6%	0.8%	0.9%	0.7%	0.9%	0.7%	1.0%	0.6%	0.7%	0.7%	0.9%	0.5%	0.5%	0.5%
	Unknown	0.6%	1.0%	0.0%	1.3%	1.3%	1.5%	2.2%	1.5%	1.5%	0.0%	3.4%	1.1%	1.4%	1.1%	1.9%	2.4%	1.5%	0.0%
Alcohol Related	Y	7.2%	7.7%	2.9%	9.1%	8.8%	9.0%	13.5%	10.0%	8.6%	3.9%	19.0%	8.3%	8.7%	9.4%	11.8%	13.2%	8.0%	4.1%
	N	1.8%	1.5%	1.2%	2.5%	2.5%	2.6%	2.9%	2.6%	2.6%	2.1%	3.6%	2.5%	2.5%	2.5%	2.9%	2.1%	2.5%	1.3%
Hit and Run	Y	1.6%	0.8%	1.0%	1.6%	1.8%	2.1%	2.1%	1.9%	1.6%	0.3%	1.9%	1.5%	1.9%	1.8%	1.9%	1.4%	1.9%	1.5%
	N	1.9%	1.7%	1.3%	2.8%	2.7%	3.2%	3.2%	2.8%	2.9%	2.5%	4.2%	2.8%	2.7%	2.7%	3.2%	2.4%	2.6%	1.3%
Aggressive Driving	Y	5.5%	6.2%	10.0%	6.1%	5.6%	6.2%	6.2%	5.9%	6.9%	1.6%	8.5%	6.9%	5.3%	6.5%	6.4%	3.6%	4.8%	2.1%
	N	1.8%	1.5%	1.0%	2.5%	2.5%	3.0%	3.0%	2.6%	2.6%	2.2%	3.8%	2.5%	2.5%	2.5%	3.0%	2.3%	2.5%	1.3%
Distracted Driving	Y	1.8%	1.5%	0.6%	2.9%	2.8%	3.1%	3.1%	2.9%	3.0%	2.9%	4.6%	2.8%	2.7%	2.8%	3.2%	2.9%	2.6%	1.6%
	N	1.9%	1.6%	1.3%	2.5%	2.5%	3.1%	3.1%	2.6%	2.6%	2.0%	3.7%	2.6%	2.5%	2.6%	3.0%	2.1%	2.5%	1.2%
Intersection Related	Y	2.3%	2.4%	2.7%	3.6%	3.3%	4.0%	4.0%	3.5%	4.1%	3.1%	4.7%	3.2%	3.5%	3.3%	4.1%	2.6%	3.5%	1.4%
	N	1.6%	1.2%	0.5%	2.2%	2.2%	2.8%	2.8%	2.4%	2.1%	1.9%	3.6%	2.3%	2.2%	2.3%	2.6%	2.2%	2.1%	1.3%
Drug Related	Y	20.0%	14.3%	0.0%	17.2%	18.4%	22.7%	22.7%	19.6%	16.3%	15.4%	31.4%	20.1%	17.0%	20.2%	22.3%	12.2%	15.6%	0.0%
	N	1.8%	1.6%	1.2%	2.5%	2.5%	3.0%	3.0%	2.6%	2.6%	2.1%	3.7%	2.5%	2.5%	2.5%	2.9%	2.3%	2.5%	1.3%
Aging Driver	Y	1.5%	1.1%	1.8%	2.6%	2.4%	3.2%	3.2%	2.6%	2.9%	2.6%	5.1%	2.6%	2.4%	2.6%	2.9%	2.3%	2.5%	1.4%
	N	1.9%	1.7%	1.1%	2.6%	2.6%	3.1%	3.1%	2.7%	2.7%	2.1%	3.7%	2.6%	2.6%	2.6%	3.1%	2.3%	2.6%	1.3%
Teenage Driver	Y	1.1%	1.4%	2.3%	2.4%	2.3%	2.6%	2.6%	2.4%	2.6%	1.4%	2.8%	2.6%	2.3%	2.2%	2.6%	2.0%	2.5%	1.9%
	N	1.9%	1.6%	1.2%	2.6%	2.6%	3.2%	3.2%	2.8%	2.7%	2.3%	4.1%	2.6%	2.6%	2.7%	3.1%	2.3%	2.6%	1.2%
Day of the Week	Monday	1.4%	1.4%	1.3%	2.4%	2.3%	2.9%	2.9%	2.5%	2.2%	2.2%	3.6%	2.5%	2.3%	2.5%	2.6%	2.6%	2.2%	1.7%
	Tuesday	1.4%	0.5%	1.0%	2.5%	2.3%	3.2%	3.2%	2.5%	2.1%	1.2%	3.7%	2.3%	2.3%	2.4%	2.8%	1.3%	2.4%	1.0%
	Wednesday	1.9%	1.9%	0.4%	2.4%	2.5%	2.5%	2.5%	2.5%	2.9%	2.6%	3.9%	2.6%	2.4%	2.4%	2.9%	1.8%	2.3%	1.5%
	Thursday	2.0%	1.7%	0.9%	2.4%	2.4%	3.0%	3.0%	2.5%	2.4%	2.6%	3.6%	2.4%	2.4%	2.4%	2.7%	2.0%	2.5%	0.8%
	Friday	1.9%	1.2%	0.9%	2.4%	2.3%	2.7%	2.7%	2.4%	2.9%	1.4%	3.5%	2.4%	2.4%	2.4%	2.7%	2.1%	2.3%	1.1%
	Saturday	2.6%	2.4%	2.1%	3.1%	3.2%	4.1%	4.1%	3.4%	3.4%	2.6%	4.5%	3.3%	3.3%	3.1%	3.9%	3.6%	3.3%	0.8%
	Sunday	2.2%	2.6%	2.0%	3.2%	3.4%	4.1%	4.1%	3.5%	3.2%	2.2%	5.2%	3.2%	3.3%	3.2%	4.2%	3.1%	3.1%	3.0%
Time of Day	12-3 AM	5.4%	3.1%	2.4%	4.2%	4.7%	7.9%	7.9%	5.4%	6.4%	5.2%	7.3%	4.7%	5.3%	4.1%	6.8%	4.7%	6.3%	5.6%
	3-6 AM	4.3%	9.4%	1.1%	5.3%	5.5%	7.3%	7.3%	5.9%	6.0%	4.9%	7.7%	5.7%	5.6%	5.0%	7.7%	5.3%	5.1%	4.4%
	6-9 AM	1.9%	1.8%	0.0%	2.7%	2.6%	3.1%	3.1%	2.7%	3.1%	2.3%	3.7%	2.2%	2.7%	2.5%	3.1%	2.3%	2.7%	1.2%
	9-Noon	1.3%	1.4%	1.4%	2.2%	2.2%	2.5%	2.5%	2.3%	2.3%	1.4%	3.5%	2.2%	2.2%	2.0%	2.6%	1.8%	2.4%	0.7%
	Noon-3 PM	1.1%	0.4%	1.2%	1.9%	1.8%	1.9%	1.9%	1.8%	1.6%	1.5%	2.7%	2.0%	1.7%	1.9%	2.0%	1.4%	1.7%	0.2%
	3-6 PM	1.2%	1.0%	0.7%	1.8%	1.8%	1.9%	1.9%	1.8%	1.9%	1.5%	2.4%	1.7%	1.7%	1.9%	2.0%	1.6%	1.5%	0.8%
	6-9 PM	2.1%	1.0%	1.7%	3.0%	2.9%	3.5%	3.5%	3.0%	2.8%	2.0%	4.0%	2.9%	2.9%	3.1%	3.1%	2.7%	2.9%	1.7%
	9-Midnight	3.9%	3.4%	1.1%	4.3%	4.6%	6.3%	6.3%	5.0%	5.2%	5.0%	6.7%	5.1%	4.8%	5.0%	5.5%	3.3%	4.7%	4.0%
Lighting Conditions	Dark - Lighted	3.8%	3.8%	2.0%	3.7%	4.0%	4.7%	4.7%	4.2%	4.5%	3.8%	4.4%	3.7%	4.3%	3.8%	4.7%	3.7%	4.1%	3.9%
	Dark - Not Lighted	6.2%	0.0%	0.0%	6.1%	6.1%	10.2%	10.2%	7.4%	7.6%	9.1%	8.9%	7.3%	6.7%	6.7%	8.3%	6.3%	7.9%	3.7%
	Dark - Unknown Lighting	3.2%	0.0%	0.0%	0.8%	1.2%	0.9%	0.9%	1.1%	0.0%	0.0%	0.0%	0.0%	1.4%	0.3%	1.6%	0.0%	0.9%	25.0%
	Dawn	1.6%	4.9%	0.0%	3.1%	3.1%	3.3%	3.3%	3.1%	4.1%	0.0%	5.1%	2.4%	3.0%	3.2%	3.1%	0.7%	3.5%	0.0%
	Daylight	1.3%	0.8%	0.9%	2.1%	2.0%	2.2%	2.2%	2.0%	1.9%	1.5%	2.9%	1.9%	1.9%	2.0%	2.3%	1.5%	1.9%	0.5%
	Dusk	2.0%	2.0%	0.0%	2.7%	2.4%	3.2%	3.2%	2.6%	2.5%	2.5%	3.6%	2.7%	2.4%	2.6%	2.3%	3.1%	2.9%	1.0%
	Other	0.0%	-	-	2.9%	5.4%	5.3%	5.3%	5.4%	16.7%	0.0%	10.0%	10.0%	5.3%	2.1%	9.4%	66.7%	4.5%	0.0%
Unknown	0.0%	0.0%	0.0%	0.7%	0.6%	4.8%	4.8%	1.1%	0.0%	0.0%	4.3%	0.0%	0.5%	1.4%	0.0%	0.0%	0.0%	0.0%	

Attachment B-4
MetroPlan Orlando Region
Percent of All KSI Crashes 2018-2022

Mode:	All Collisions	Number of Lanes			Turn Lanes			Posted Speed					Roadway Classification						AADT (2022)			Context Classification				
All		3 Lanes or Less	4-5 Lanes	6+ Lanes	None	1 to 2	3+	25 or less	30-35	40-45	50-55	60+	Principal Arterial	Minor Arterial	Major Collector	Minor Collector	Local	None	< 15000	15,000-30,000	30,000+	C1	C2	C2T	C3C	C3R
		2-3	4-5	6-8				0-25	30-35	40-45	50-55	60+														
Type	Angle	3.9%	3.0%	1.6%	2.9%	4.8%	0.8%	1.5%	2.4%	3.8%	0.7%	0.1%	2.2%	1.9%	2.2%	0.3%	0.2%	1.7%	2.7%	2.4%	2.5%	0.0%	0.2%	0.0%	2.5%	0.4%
	Animal	0.1%	0.0%	0.0%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Bicycle	1.6%	1.9%	1.1%	1.4%	2.7%	0.4%	0.6%	1.0%	2.5%	0.4%	0.0%	1.6%	1.0%	1.1%	0.2%	0.0%	0.7%	1.2%	1.4%	1.9%	0.0%	0.0%	0.0%	1.7%	0.3%
	Head On	2.1%	1.2%	0.5%	2.1%	1.4%	0.1%	0.2%	0.6%	1.7%	0.9%	0.3%	1.4%	0.8%	1.0%	0.2%	0.0%	0.3%	1.7%	1.2%	1.0%	0.0%	0.4%	0.0%	0.8%	0.3%
	Left Turn	6.4%	9.9%	5.0%	3.9%	15.5%	1.7%	1.2%	4.2%	13.4%	2.4%	0.1%	6.0%	7.3%	5.2%	0.5%	0.2%	1.8%	5.6%	8.5%	7.8%	0.1%	0.5%	0.0%	7.1%	1.5%
	Off Road	4.5%	5.1%	1.8%	6.1%	5.0%	0.5%	1.8%	2.2%	5.8%	1.3%	0.2%	3.0%	3.2%	2.5%	0.3%	0.2%	2.5%	3.0%	4.1%	3.2%	0.1%	0.3%	0.0%	2.5%	0.8%
	Other	4.0%	3.9%	2.8%	4.3%	5.7%	0.9%	1.7%	2.1%	5.3%	1.3%	0.3%	3.8%	2.5%	2.1%	0.4%	0.1%	2.1%	2.9%	3.2%	4.0%	0.0%	0.3%	0.0%	3.2%	0.6%
	Pedestrian	3.5%	4.9%	4.9%	3.8%	8.1%	1.4%	1.4%	2.5%	7.9%	1.6%	0.0%	6.0%	3.3%	2.1%	0.3%	0.0%	1.5%	2.4%	4.2%	6.9%	0.0%	0.1%	0.0%	5.9%	0.5%
	Rear End	3.3%	7.7%	7.7%	4.0%	11.7%	3.0%	0.3%	2.0%	13.2%	3.2%	0.2%	8.9%	6.0%	2.7%	0.2%	0.2%	0.6%	2.6%	6.6%	11.3%	0.0%	0.4%	0.0%	8.6%	1.4%
	Right Turn	0.3%	0.6%	0.4%	0.2%	0.9%	0.2%	0.1%	0.2%	0.8%	0.2%	0.0%	0.4%	0.4%	0.3%	0.0%	0.0%	0.1%	0.3%	0.5%	0.6%	0.0%	0.0%	0.0%	0.5%	0.0%
	Rollover	0.8%	0.6%	0.3%	1.0%	0.6%	0.1%	0.2%	0.3%	0.6%	0.3%	0.3%	0.6%	0.3%	0.4%	0.1%	0.0%	0.3%	0.8%	0.4%	0.4%	0.0%	0.2%	0.0%	0.3%	0.2%
	Sideswipe	0.8%	1.3%	1.2%	0.9%	2.0%	0.3%	0.2%	0.5%	1.9%	0.7%	0.1%	1.6%	1.0%	0.4%	0.1%	0.0%	0.2%	0.7%	1.1%	1.8%	0.0%	0.1%	0.0%	1.5%	0.2%
	Unknown	0.3%	0.7%	0.3%	0.3%	0.9%	0.0%	0.1%	0.2%	0.7%	0.2%	0.0%	0.5%	0.4%	0.3%	0.0%	0.0%	0.1%	0.3%	0.5%	0.6%	0.0%	0.1%	0.0%	0.5%	0.1%
Alcohol Related	Y	1.9%	2.4%	1.4%	2.4%	2.9%	0.4%	0.6%	1.1%	3.0%	0.8%	0.2%	2.2%	1.3%	1.3%	0.2%	0.1%	0.6%	1.9%	1.7%	2.2%	0.0%	0.3%	0.0%	1.8%	0.4%
	N	29.7%	38.3%	26.3%	28.8%	56.5%	9.0%	8.6%	17.3%	54.7%	12.4%	1.4%	34.0%	26.8%	19.0%	2.3%	0.9%	11.2%	22.3%	32.4%	39.6%	0.2%	2.4%	0.1%	33.4%	5.8%
Hit and Run	Y	2.8%	3.4%	3.0%	2.6%	5.7%	0.9%	1.0%	1.7%	5.4%	1.1%	0.1%	3.7%	2.4%	1.7%	0.2%	0.1%	1.1%	1.8%	3.0%	4.4%	0.0%	0.1%	0.0%	3.5%	0.4%
	N	28.8%	37.3%	24.6%	28.7%	53.6%	8.5%	8.2%	16.7%	52.3%	12.0%	1.6%	32.6%	25.7%	18.5%	2.4%	0.9%	10.8%	22.4%	31.0%	37.4%	0.2%	2.6%	0.1%	31.8%	5.9%
Aggressive Driving	Y	2.1%	2.1%	1.0%	1.9%	3.0%	0.3%	0.7%	1.5%	2.5%	0.5%	0.1%	1.8%	1.1%	1.4%	0.2%	0.0%	0.7%	1.7%	1.7%	1.7%	0.0%	0.1%	0.0%	1.3%	0.4%
	N	29.5%	38.6%	26.7%	29.3%	56.4%	9.1%	8.5%	16.9%	55.2%	12.6%	1.6%	34.5%	27.1%	18.9%	2.4%	0.9%	11.1%	22.5%	32.3%	40.1%	0.2%	2.6%	0.1%	33.9%	5.9%
Distracted Driving	Y	8.8%	11.9%	7.5%	8.2%	17.0%	3.0%	2.1%	4.5%	16.9%	4.1%	0.6%	9.8%	8.7%	5.6%	0.6%	0.3%	3.0%	6.6%	10.2%	11.7%	0.1%	1.0%	0.0%	9.5%	2.1%
	N	22.9%	28.9%	20.2%	23.0%	42.4%	6.5%	7.1%	13.9%	40.8%	9.0%	1.1%	26.4%	19.4%	14.6%	2.0%	0.7%	8.8%	17.6%	23.8%	30.1%	0.2%	1.7%	0.0%	25.8%	4.1%
Intersection Related	Y	13.5%	16.4%	10.7%	9.1%	26.9%	4.1%	3.6%	8.8%	23.3%	4.6%	0.2%	13.2%	11.7%	9.2%	1.1%	0.4%	4.4%	10.8%	13.8%	15.7%	0.1%	0.9%	0.0%	14.3%	2.8%
	N	18.1%	24.3%	17.0%	22.1%	32.5%	5.3%	5.5%	9.6%	34.5%	8.5%	1.4%	23.1%	16.4%	11.1%	1.4%	0.6%	7.5%	13.4%	20.2%	26.1%	0.2%	1.8%	0.0%	20.9%	3.4%
Drug Related	Y	1.1%	1.4%	0.9%	1.2%	1.8%	0.3%	0.3%	0.5%	2.0%	0.5%	0.1%	1.4%	0.9%	0.6%	0.1%	0.1%	0.3%	0.9%	1.0%	1.5%	0.0%	0.2%	0.0%	1.1%	0.3%
	N	30.5%	39.3%	26.8%	30.0%	57.6%	9.1%	8.9%	17.9%	55.7%	12.6%	1.5%	34.8%	27.3%	19.6%	2.5%	0.9%	11.5%	23.2%	33.0%	40.3%	0.2%	2.5%	0.1%	34.2%	6.0%
Aging Driver	Y	4.8%	6.3%	3.7%	4.2%	9.1%	1.6%	1.2%	2.8%	8.5%	2.2%	0.3%	5.6%	4.3%	3.0%	0.4%	0.1%	1.7%	3.9%	4.9%	6.2%	0.1%	0.6%	0.0%	5.4%	1.0%
	N	26.8%	34.4%	23.9%	27.0%	50.2%	7.8%	7.9%	15.6%	49.2%	11.0%	1.4%	30.6%	23.9%	17.3%	2.1%	0.9%	10.2%	20.2%	29.1%	35.6%	0.2%	2.1%	0.1%	29.9%	5.2%
Teenage Driver	Y	3.7%	4.9%	3.0%	3.3%	7.2%	1.0%	1.1%	2.0%	6.9%	1.6%	0.1%	3.6%	3.5%	2.4%	0.4%	0.1%	1.6%	2.8%	3.7%	4.8%	0.0%	0.2%	0.0%	4.0%	0.8%
	N	27.9%	35.8%	24.7%	27.9%	52.1%	8.4%	8.1%	16.4%	50.8%	11.5%	1.6%	32.6%	24.6%	17.9%	2.2%	0.8%	10.3%	21.3%	30.3%	37.0%	0.2%	2.5%	0.0%	31.3%	5.4%
Day of the Week	Monday	5.0%	5.2%	3.5%	4.5%	7.9%	1.3%	1.3%	2.5%	7.9%	1.7%	0.3%	4.7%	3.8%	3.0%	0.3%	0.1%	1.7%	3.7%	4.4%	5.4%	0.0%	0.4%	0.0%	4.8%	1.0%
	Tuesday	4.1%	5.8%	4.1%	4.3%	8.5%	1.2%	1.3%	2.5%	8.1%	1.9%	0.3%	5.0%	4.1%	2.8%	0.4%	0.1%	1.7%	3.1%	5.0%	5.9%	0.0%	0.3%	0.0%	5.1%	0.7%
	Wednesday	4.3%	5.7%	4.1%	4.3%	8.7%	1.2%	1.3%	2.8%	8.1%	1.7%	0.2%	5.3%	3.7%	2.9%	0.4%	0.2%	1.7%	3.5%	4.4%	6.2%	0.0%	0.4%	0.0%	4.9%	0.9%
	Thursday	4.4%	6.0%	3.9%	4.4%	8.7%	1.4%	1.3%	2.6%	8.6%	1.8%	0.2%	5.2%	4.2%	2.9%	0.3%	0.2%	1.6%	3.4%	4.8%	6.3%	0.0%	0.4%	0.0%	5.1%	0.8%
	Friday	5.0%	6.1%	4.4%	4.9%	9.1%	1.6%	1.5%	2.8%	8.9%	2.0%	0.2%	5.6%	4.5%	3.0%	0.4%	0.2%	1.8%	3.9%	5.3%	6.3%	0.1%	0.4%	0.0%	5.3%	1.0%
	Saturday	4.4%	6.7%	4.3%	4.5%	9.2%	1.6%	1.3%	2.8%	9.0%	2.0%	0.3%	5.8%	4.3%	3.1%	0.4%	0.1%	1.6%	3.4%	5.4%	6.7%	0.0%	0.4%	0.0%	5.5%	1.0%
	Sunday	4.3%	5.3%	3.4%	4.4%	7.3%	1.3%	1.2%	2.5%	7.1%	2.0%	0.2%	4.7%	3.6%	2.6%	0.4%	0.1%	1.6%	3.2%	4.5%	5.2%	0.0%	0.4%	0.0%	4.5%	0.9%
Time of Day	12-3 AM	2.5%	3.5%	2.5%	3.0%	4.5%	1.0%	0.7%	1.6%	4.7%	1.3%	0.2%	3.6%	2.4%	1.6%	0.2%	0.0%	0.7%	2.1%	2.9%	3.8%	0.0%	0.3%	0.0%	3.3%	0.6%
	3-6 AM	2.0%	2.3%	1.9%	2.4%	3.0%	0.7%	0.5%	1.2%	3.3%	1.0%	0.2%	2.5%	1.7%	0.9%	0.2%	0.1%	0.7%	1.4%	2.0%	2.6%	0.0%	0.3%	0.0%	2.1%	0.4%
	6-9 AM	4.1%	5.2%	3.3%	3.5%	7.9%	1.1%	1.0%	2.3%	7.3%	1.7%	0.3%	4.0%	3.8%	2.8%	0.4%	0.1%	1.5%	3.1%	4.2%	5.2%	0.1%	0.5%	0.0%	4.3%	0.7%
	9-Noon	3.5%	4.7%	3.2%	3.6%	6.7%	1.3%	1.3%	2.1%	6.5%	1.5%	0.2%	4.1%	3.3%	2.1%	0.3%	0.1%	1.5%	2.7%	3.6%	5.0%	0.1%	0.4%	0.0%	4.0%	0.7%
	Noon-3 PM	4.3%	5.3%	3.3%	4.0%	8.1%	1.0%	1.3%	2.7%	7.4%	1.4%	0.1%	4.3%	3.8%	2.7%	0.4%	0.2%	1.8%	3.2%	4.6%	5.0%	0.0%	0.3%	0.0%	4.4%	0.7%
	3-6 PM	5.3%	6.3%	4.0%	5.2%	9.4%	1.1%	1.7%	2.8%	9.3%	1.7%	0.2%	5.4%	4.1%	3.5%	0.4%	0.2%	2.0%	4.1%	5.6%	5.8%	0.0%	0.3%	0.0%	5.2%	1.1%
	6-9 PM	5.3%	7.2%	4.9%	5.2%	10.5%	1.7%	1.5%	3.0%	10.5%	2.3%	0.2%	6.4%	4.8%	3.6%	0.4%	0.2%	2.0%	3.9%	6.3%	7.3%	0.0%	0.3%	0.0%	6.0%	0.9%
	9-Midnight	4.6%	6.1%	4.5%	4.4%	9.2%	1.5%	1.2%	2.8%	8.8%	2.3%	0.2%	5.9%	4.2%	3.0%	0.3%	0.2%	1.5%	3.7%	4.8%	7.0%	0.0%	0.3%	0.0%	6.0%	1.1%
Lighting Conditions	Dark - Lighted	7.5%	12.6%	10.7%	8.2%	19.0%	3.4%	2.3%	6.1%	18.5%	3.7%	0.1%	12.5%	8.7%	5.7%	0.6%	0.3%	2.9%	5.9%	10.2%	15.5%	0.0%	0.3%	0.0%	12.1%	1.7%
	Dark - Not Lighted	4.9%	4.3%	1.7%	4.8%	5.3%	0.7%	0.7%	1.6%	5.3%	2.6%	0.7%	4.3%	2.5%	2.4%	0.4%	0.1%	1.2%	4.1%	3.8%	3.1%	0.1%	1.0%	0.0%	3.5%	1.0%
	Dark - Unknown Lighting	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Dawn	0.7%	0.8%	0.4%	0.6%	1.2%	0.2%	0.2%	0.4%	1.1%	0.3%	0.1%	0.6%	0.5%	0.5%	0.1%	0.0%	0.2%	0.6%	0.7%	0.7%	0.0%	0.1%	0.0%	0.6%	0.1%
	Daylight	17.3%	21.7%	14.0%	16.4%	32.0%	4.7%	5.5%	9.8%	30.7%	6.3%	0.7%	17.7%	15.5%	10.9%	1.4%	0.5%	7.0%	12.9%	18.2%	21.2%	0.1%	1.3%	0.0%	17.9%	3.3%
	Dusk	1.0%	1.3%	0.8%	1.0%	1.8%	0.4%	0.3%	0.5%	2.1%	0.3%	0.0%	1.0%	1.0%	0.7%	0.1%	0.0%	0.5%	0.6%	1.2%	1.2%	0.0%	0.1%	0.0%	1.1%	0.1%
	Other	0.0%	0.0%	0.1%	0.0%	0.1%	0.0%	0.0%	0.0%	0.1%	0.0%	0.0%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	0.0%	0.0%	0.0%	0.1%	0.0%
Unknown	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	

**Attachment B-4
MetroPlan Orlando Region
Percent of All KSI Crashes 2018-2022**

Mode:	All Collisions	Context Classification				Bike Lane/Paved Shoulder > 4 ft			Bike Slots			Sidewalks			Median Presence				
All		C4	C5	C6	None	None	One Side	Both Sides	None	One Side	Both Sides	None	One Side	Both Sides	None	Grass	Multiple	Paved	Other
Type	Angle	0.6%	0.0%	0.1%	4.7%	5.8%	1.2%	1.5%	7.5%	0.9%	0.0%	1.2%	1.4%	5.9%	4.1%	2.4%	0.1%	1.8%	0.1%
	Animal	0.0%	0.0%	0.0%	0.1%	0.0%	0.0%	0.0%	0.1%	0.0%	0.0%	0.1%	0.0%	0.0%	0.1%	0.0%	0.0%	0.0%	0.0%
	Bicycle	0.3%	0.0%	0.0%	2.3%	3.0%	0.5%	1.1%	4.2%	0.4%	0.1%	0.5%	0.4%	3.7%	1.9%	1.4%	0.0%	1.2%	0.1%
	Head On	0.2%	0.0%	0.0%	1.8%	2.3%	0.2%	1.3%	3.7%	0.1%	0.0%	1.2%	0.7%	1.8%	2.2%	0.8%	0.1%	0.6%	0.0%
	Left Turn	1.1%	0.1%	0.0%	10.6%	14.0%	3.1%	4.2%	18.9%	2.3%	0.1%	2.3%	3.1%	16.0%	7.6%	7.4%	0.4%	5.8%	0.1%
	Off Road	0.3%	0.1%	0.0%	7.6%	7.6%	0.8%	3.0%	10.8%	0.5%	0.0%	2.2%	1.8%	7.4%	4.5%	4.6%	0.3%	2.0%	0.1%
	Other	1.0%	0.1%	0.1%	5.7%	6.9%	1.2%	2.6%	9.9%	0.8%	0.0%	1.7%	1.5%	7.5%	4.4%	3.5%	0.3%	2.4%	0.1%
	Pedestrian	1.5%	0.1%	0.1%	5.1%	8.6%	1.7%	3.1%	11.8%	1.4%	0.2%	0.9%	1.4%	11.0%	4.9%	4.1%	0.4%	3.8%	0.1%
	Rear End	1.1%	0.1%	0.0%	7.0%	10.2%	3.7%	4.8%	15.6%	2.9%	0.2%	2.1%	2.2%	14.5%	3.8%	7.4%	0.7%	6.7%	0.1%
	Right Turn	0.1%	0.0%	0.0%	0.6%	0.7%	0.1%	0.4%	1.2%	0.1%	0.0%	0.1%	0.1%	1.0%	0.2%	0.5%	0.0%	0.5%	0.0%
	Rollover	0.0%	0.0%	0.0%	0.9%	1.0%	0.1%	0.6%	1.6%	0.0%	0.0%	0.7%	0.2%	0.8%	0.7%	0.7%	0.0%	0.3%	0.0%
	Sideswipe	0.2%	0.0%	0.0%	1.3%	1.8%	0.6%	0.9%	2.8%	0.5%	0.0%	0.4%	0.3%	2.6%	1.0%	1.4%	0.1%	0.8%	0.0%
	Unknown	0.1%	0.0%	0.0%	0.5%	0.7%	0.2%	0.4%	1.1%	0.1%	0.0%	0.2%	0.1%	1.0%	0.3%	0.5%	0.1%	0.4%	0.0%
Alcohol Related	Y	0.4%	0.0%	0.0%	2.7%	3.4%	0.7%	1.6%	5.2%	0.5%	0.0%	1.3%	0.7%	3.7%	2.3%	2.0%	0.2%	1.1%	0.0%
	N	6.1%	0.5%	0.3%	45.6%	59.2%	12.7%	22.4%	83.9%	9.6%	0.8%	12.2%	12.6%	69.5%	33.4%	32.8%	2.3%	25.2%	0.6%
Hit and Run	Y	0.8%	0.0%	0.0%	4.3%	6.3%	1.9%	1.9%	8.4%	0.8%	0.0%	0.8%	1.0%	7.4%	3.8%	2.5%	0.2%	2.6%	0.1%
	N	5.6%	0.5%	0.2%	43.9%	56.4%	22.1%	22.1%	80.7%	9.3%	0.8%	12.6%	12.3%	65.9%	31.8%	32.4%	2.4%	23.7%	0.5%
Aggressive Driving	Y	0.5%	0.1%	0.0%	2.8%	3.1%	1.3%	1.3%	4.6%	0.6%	0.0%	0.8%	1.0%	3.4%	2.3%	1.8%	0.1%	1.0%	0.0%
	N	5.9%	0.5%	0.2%	45.4%	59.5%	22.7%	22.7%	84.5%	9.5%	0.8%	12.7%	12.3%	69.8%	33.4%	33.1%	2.5%	25.3%	0.6%
Distracted Driving	Y	1.3%	0.1%	0.0%	13.9%	17.6%	6.5%	6.5%	24.9%	3.0%	0.2%	4.4%	3.7%	20.0%	9.5%	10.3%	0.9%	7.2%	0.1%
	N	5.1%	0.4%	0.3%	34.3%	45.0%	17.5%	17.5%	64.2%	7.0%	0.6%	9.1%	9.6%	53.2%	26.2%	24.5%	1.6%	19.1%	0.4%
Intersection Related	Y	2.5%	0.3%	0.2%	18.9%	25.6%	8.6%	8.6%	35.5%	4.8%	0.3%	4.5%	5.3%	30.7%	14.7%	13.6%	0.9%	11.2%	0.2%
	N	3.9%	0.3%	0.1%	29.3%	37.0%	15.4%	15.4%	53.6%	5.3%	0.5%	8.9%	7.9%	42.6%	21.0%	21.3%	1.7%	15.1%	0.4%
Drug Related	Y	0.2%	0.0%	0.0%	1.5%	2.1%	0.9%	0.9%	3.0%	0.3%	0.0%	0.7%	0.5%	2.2%	1.3%	1.3%	0.1%	0.7%	0.0%
	N	6.2%	0.5%	0.3%	46.7%	60.6%	23.1%	23.1%	86.1%	9.8%	0.8%	12.8%	12.8%	71.1%	34.4%	33.6%	2.5%	25.6%	0.6%
Aging Driver	Y	0.9%	0.1%	0.0%	6.9%	9.0%	3.7%	3.7%	13.1%	1.6%	0.2%	2.3%	2.0%	10.6%	5.4%	5.0%	0.4%	4.0%	0.1%
	N	5.5%	0.5%	0.2%	41.3%	53.6%	20.3%	20.3%	76.0%	8.4%	0.7%	11.1%	11.3%	62.6%	30.3%	29.9%	2.2%	22.3%	0.5%
Teenage Driver	Y	0.4%	0.0%	0.0%	6.1%	7.1%	3.0%	3.0%	10.2%	1.3%	0.1%	1.1%	1.8%	8.7%	3.7%	4.2%	0.3%	3.3%	0.1%
	N	6.0%	0.5%	0.2%	42.2%	55.6%	21.1%	21.1%	78.9%	8.7%	0.8%	12.3%	11.4%	64.6%	31.9%	30.7%	2.3%	23.0%	0.5%
Day of the Week	Monday	0.7%	0.1%	0.0%	6.6%	7.6%	3.1%	3.1%	12.3%	1.2%	0.1%	1.9%	1.9%	9.9%	5.1%	4.5%	0.4%	3.5%	0.1%
	Tuesday	0.7%	0.0%	0.0%	7.0%	7.7%	3.4%	3.4%	12.7%	1.2%	0.1%	1.9%	1.8%	10.3%	5.0%	4.8%	0.2%	3.8%	0.1%
	Wednesday	1.0%	0.1%	0.0%	6.8%	8.3%	2.7%	2.7%	12.4%	1.6%	0.2%	1.9%	2.0%	10.3%	5.1%	5.0%	0.3%	3.7%	0.1%
	Thursday	1.1%	0.1%	0.0%	6.8%	8.1%	3.3%	3.3%	12.8%	1.4%	0.1%	1.8%	1.9%	10.7%	5.1%	4.8%	0.4%	4.0%	0.1%
	Friday	1.1%	0.1%	0.0%	7.5%	8.7%	3.3%	3.3%	13.5%	1.8%	0.1%	2.0%	2.0%	11.5%	5.6%	5.3%	0.4%	4.1%	0.1%
	Saturday	1.1%	0.1%	0.1%	7.2%	8.7%	3.3%	3.3%	13.7%	1.6%	0.1%	2.0%	2.1%	11.4%	5.2%	5.5%	0.5%	4.1%	0.0%
	Sunday	0.7%	0.1%	0.1%	6.3%	7.5%	2.7%	2.7%	11.6%	1.2%	0.1%	2.0%	1.7%	9.3%	4.6%	4.9%	0.4%	3.0%	0.1%
Time of Day	12-3 AM	0.8%	0.1%	0.1%	3.4%	4.5%	2.0%	2.0%	7.6%	0.9%	0.1%	1.3%	1.1%	6.1%	2.7%	3.1%	0.3%	2.4%	0.1%
	3-6 AM	0.4%	0.1%	0.0%	2.8%	3.4%	1.4%	1.4%	5.4%	0.7%	0.0%	1.1%	0.9%	4.1%	2.1%	2.5%	0.2%	1.3%	0.0%
	6-9 AM	0.7%	0.1%	0.0%	6.2%	7.1%	2.8%	2.8%	11.1%	1.4%	0.1%	1.8%	1.5%	9.3%	4.3%	4.4%	0.3%	3.4%	0.1%
	9-Noon	0.7%	0.1%	0.0%	5.6%	6.8%	2.3%	2.3%	10.3%	1.1%	0.1%	1.6%	1.5%	8.5%	3.7%	4.0%	0.3%	3.4%	0.0%
	Noon-3 PM	0.9%	0.0%	0.0%	6.8%	7.7%	2.5%	2.5%	11.6%	1.1%	0.1%	1.6%	1.9%	9.5%	4.9%	4.2%	0.3%	3.5%	0.0%
	3-6 PM	1.1%	0.1%	0.0%	7.9%	9.1%	3.3%	3.3%	14.2%	1.4%	0.1%	1.8%	2.0%	11.9%	6.1%	5.4%	0.4%	3.7%	0.1%
	6-9 PM	1.0%	0.0%	0.0%	9.0%	9.8%	3.9%	3.9%	15.6%	1.7%	0.1%	2.1%	2.3%	13.1%	6.4%	5.8%	0.5%	4.6%	0.1%
	9-Midnight	0.9%	0.1%	0.0%	6.7%	8.2%	3.5%	3.5%	13.3%	1.8%	0.2%	2.2%	2.2%	10.8%	5.5%	5.4%	0.4%	3.8%	0.1%
Lighting Conditions	Dark - Lighted	2.7%	0.3%	0.2%	13.5%	17.5%	6.1%	6.1%	26.8%	3.6%	0.3%	2.4%	3.5%	24.9%	9.8%	11.0%	1.0%	8.7%	0.3%
	Dark - Not Lighted	0.3%	0.0%	0.0%	5.1%	4.9%	3.7%	3.7%	10.0%	0.9%	0.1%	3.5%	2.2%	5.2%	4.7%	3.9%	0.3%	2.0%	0.0%
	Dark - Unknown Lighting	0.0%	0.0%	0.0%	0.0%	0.1%	0.0%	0.0%	0.1%	0.0%	0.0%	0.0%	0.0%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%
	Dawn	0.1%	0.0%	0.0%	0.9%	1.1%	0.4%	0.4%	1.7%	0.3%	0.0%	0.4%	0.2%	1.3%	0.7%	0.6%	0.0%	0.6%	0.0%
	Daylight	3.2%	0.2%	0.1%	26.9%	31.2%	10.7%	10.7%	47.6%	4.9%	0.4%	6.7%	6.8%	39.4%	19.2%	18.3%	1.1%	14.0%	0.2%
	Dusk	0.2%	0.0%	0.0%	1.7%	1.8%	0.7%	0.7%	2.8%	0.3%	0.0%	0.4%	0.5%	2.3%	1.1%	0.9%	0.1%	1.0%	0.0%
	Other	0.0%	0.0%	0.0%	0.0%	0.1%	0.0%	0.0%	0.1%	0.0%	0.0%	0.0%	0.0%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%
Unknown	0.0%	0.0%	0.0%	0.1%	0.0%	0.0%	0.0%	0.1%	0.0%	0.0%	0.1%	0.0%	0.0%	0.1%	0.0%	0.0%	0.0%	0.0%	

Attachment B-5
MetroPlan Orlando Region
Percent of All KSI Crashes Involving only Car Truck 2018-2022

Mode:	All Collisions	Number of Lanes			Turn Lanes			Posted Speed					Roadway Classification						AADT (2022)			Context Classification						
All		3 Lanes or Less	4-5 Lanes	6+ Lanes	None	1 to 2	3+	25 or less	30-35	40-45	50-55	60+	Principal Arterial	Minor Arterial	Major Collector	Minor Collector	Local	None	< 15000	15,000-30,000	30,000+	C1	C2	C2T	C3C	C3R		
		2-3	4-5	6-8				0-25	30-35	40-45	50-55	60+																
Type	Angle	5.0%	3.8%	2.2%	3.7%	6.3%	1.0%	1.8%	3.2%	4.9%	0.9%	0.1%	2.8%	2.5%	2.8%	0.4%	0.3%	2.2%	3.6%	3.0%	3.2%	0.0%	0.2%	0.0%	3.4%	0.5%		
	Animal	0.0%	0.1%	0.0%	0.0%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	
	Bicycle	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Head On	2.8%	1.6%	0.7%	2.8%	2.0%	0.2%	0.2%	0.8%	2.4%	1.2%	0.4%	1.9%	1.1%	1.3%	0.2%	0.0%	0.4%	2.3%	1.6%	1.4%	0.1%	0.6%	0.0%	1.2%	0.4%		
	Left Turn	7.3%	11.7%	6.3%	4.2%	18.6%	2.2%	1.3%	4.9%	16.1%	2.9%	0.1%	7.2%	8.9%	6.0%	0.5%	0.3%	2.1%	6.2%	10.2%	9.6%	0.1%	0.7%	0.0%	8.7%	1.8%		
	Off Road	5.6%	6.3%	2.3%	7.6%	6.2%	0.7%	2.3%	2.7%	7.2%	1.7%	0.3%	3.9%	3.8%	3.1%	0.4%	0.2%	3.1%	3.8%	5.1%	4.0%	0.1%	0.4%	0.0%	3.1%	1.0%		
	Other	4.6%	4.3%	3.1%	5.0%	6.3%	1.1%	1.9%	2.4%	5.9%	1.4%	0.4%	4.2%	2.8%	2.5%	0.4%	0.1%	2.5%	3.3%	3.5%	4.5%	0.0%	0.4%	0.0%	3.5%	0.6%		
	Pedestrian	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Rear End	4.2%	9.9%	10.0%	5.0%	15.1%	3.8%	0.4%	2.5%	17.0%	4.1%	0.2%	11.2%	7.8%	3.6%	0.3%	0.2%	0.8%	3.2%	8.5%	14.6%	0.0%	0.5%	0.0%	10.9%	1.8%		
	Right Turn	0.4%	0.8%	0.5%	0.3%	1.2%	0.2%	0.1%	0.4%	1.0%	0.2%	0.0%	0.5%	0.6%	0.4%	0.0%	0.0%	0.1%	0.4%	0.6%	0.8%	0.0%	0.0%	0.0%	0.6%	0.0%		
	Rollover	0.6%	0.6%	0.1%	1.0%	0.3%	0.0%	0.2%	0.2%	0.4%	0.2%	0.4%	0.6%	0.2%	0.2%	0.0%	0.0%	0.3%	0.6%	0.3%	0.2%	0.0%	0.3%	0.0%	0.2%	0.1%	0.1%	
	Sidewipe	0.9%	1.6%	1.3%	1.1%	2.3%	0.4%	0.2%	0.7%	2.1%	0.7%	0.1%	1.7%	1.2%	0.5%	0.1%	0.0%	0.2%	0.8%	1.2%	2.0%	0.0%	0.2%	0.0%	1.6%	0.2%		
Unknown	0.4%	0.8%	0.4%	0.4%	1.0%	0.0%	0.1%	0.3%	0.9%	0.2%	0.1%	0.5%	0.5%	0.3%	0.0%	0.0%	0.1%	0.4%	0.6%	0.6%	0.0%	0.1%	0.0%	0.5%	0.2%			
Alcohol Related	Y	2.2%	2.6%	1.6%	2.8%	3.1%	0.4%	0.6%	1.3%	3.3%	0.9%	0.3%	2.5%	1.5%	1.3%	0.2%	0.1%	0.7%	2.1%	1.7%	2.5%	0.1%	0.3%	0.0%	2.0%	0.4%		
	N	29.6%	38.7%	25.4%	28.3%	56.2%	9.2%	7.9%	16.6%	54.7%	12.7%	1.8%	32.0%	28.0%	19.5%	2.2%	1.1%	11.0%	22.6%	32.8%	38.3%	0.2%	3.1%	0.1%	31.8%	6.1%		
Hit and Run	Y	2.0%	2.8%	2.6%	2.0%	4.7%	0.7%	0.7%	1.2%	4.5%	0.9%	0.1%	2.8%	2.1%	1.6%	0.1%	0.1%	0.7%	1.6%	2.3%	3.7%	0.0%	0.1%	0.0%	2.8%	0.4%		
	N	29.7%	38.4%	24.4%	29.1%	54.6%	8.9%	7.8%	16.7%	53.5%	12.7%	2.0%	31.7%	27.3%	19.3%	2.3%	1.0%	11.0%	23.1%	32.2%	37.1%	0.3%	3.4%	0.1%	31.0%	6.2%		
Aggressive Driving	Y	2.3%	2.3%	1.0%	2.1%	3.2%	0.3%	0.7%	1.6%	2.6%	0.6%	0.1%	1.7%	1.2%	1.5%	0.2%	0.1%	0.9%	1.9%	1.8%	1.6%	0.0%	0.1%	0.0%	1.4%	0.4%		
	N	29.4%	39.0%	25.9%	29.0%	56.1%	9.3%	7.8%	16.3%	55.3%	13.0%	2.0%	32.8%	28.2%	19.3%	2.2%	1.1%	10.8%	22.7%	32.7%	39.2%	0.3%	3.3%	0.1%	32.5%	6.1%		
Distracted Driving	Y	10.0%	13.8%	8.9%	9.2%	19.9%	3.6%	2.2%	5.1%	19.8%	5.0%	0.7%	11.4%	10.5%	6.4%	0.6%	0.4%	3.3%	7.6%	12.0%	13.7%	0.1%	1.3%	0.1%	11.1%	2.6%		
	N	21.7%	27.4%	18.0%	21.9%	39.4%	6.0%	6.3%	12.8%	38.2%	8.6%	1.3%	23.1%	18.9%	14.4%	1.8%	0.8%	8.4%	17.1%	22.5%	27.1%	0.2%	2.1%	0.0%	22.8%	3.9%		
Intersection Related	Y	13.6%	17.5%	11.6%	8.9%	28.6%	4.5%	3.5%	9.0%	24.9%	5.0%	0.3%	13.7%	12.9%	9.3%	1.1%	0.5%	4.4%	11.0%	14.9%	16.5%	0.1%	1.2%	0.0%	15.3%	3.1%		
	N	18.2%	23.8%	15.4%	22.3%	30.7%	5.1%	5.0%	8.9%	33.0%	8.6%	1.8%	20.8%	16.5%	11.5%	1.3%	0.7%	7.3%	13.7%	19.6%	24.3%	0.2%	2.3%	0.0%	18.5%	3.5%		
Drug Related	Y	1.1%	1.5%	1.0%	1.4%	1.9%	0.3%	0.2%	0.6%	2.1%	0.6%	0.2%	1.6%	0.9%	0.7%	0.1%	0.1%	0.3%	1.0%	1.0%	1.7%	0.0%	0.2%	0.0%	1.2%	0.3%		
	N	30.6%	39.8%	25.9%	29.7%	57.4%	9.2%	8.3%	17.3%	55.8%	13.0%	1.9%	32.9%	28.5%	20.2%	2.3%	1.1%	11.4%	23.6%	33.5%	39.1%	0.3%	3.2%	0.1%	32.6%	6.2%		
Aging Driver	Y	5.6%	7.2%	4.2%	4.9%	10.3%	2.0%	1.3%	3.3%	9.7%	2.4%	0.4%	6.2%	4.9%	3.5%	0.5%	0.1%	2.0%	4.7%	5.6%	7.0%	0.1%	0.8%	0.0%	5.9%	1.1%		
	N	26.1%	34.1%	22.7%	26.2%	49.0%	7.6%	7.2%	14.6%	48.3%	11.2%	1.7%	28.3%	24.5%	17.3%	1.9%	1.0%	9.7%	20.0%	28.9%	33.8%	0.2%	2.6%	0.1%	27.9%	5.4%		
Teenage Driver	Y	4.5%	6.0%	3.5%	3.9%	8.6%	1.3%	1.3%	2.3%	8.4%	1.8%	0.1%	4.0%	4.4%	2.9%	0.4%	0.2%	1.9%	3.4%	4.6%	5.5%	0.0%	0.3%	0.0%	4.5%	1.0%		
	N	27.3%	35.3%	23.5%	27.2%	50.7%	8.3%	7.2%	15.6%	49.5%	11.8%	2.0%	30.5%	25.0%	17.9%	2.0%	1.0%	9.8%	21.3%	29.9%	35.3%	0.3%	3.2%	0.0%	29.3%	5.5%		
Day of the Week	Monday	5.0%	5.6%	3.4%	4.6%	8.1%	1.3%	1.2%	2.6%	8.2%	1.7%	0.3%	4.7%	3.9%	3.2%	0.3%	0.2%	1.7%	3.8%	4.6%	5.4%	0.0%	0.4%	0.0%	4.7%	1.0%		
	Tuesday	4.2%	6.0%	3.8%	4.3%	8.5%	1.2%	1.2%	2.4%	8.2%	1.8%	0.3%	4.5%	4.5%	2.9%	0.3%	0.1%	1.7%	3.2%	5.3%	5.5%	0.1%	0.4%	0.0%	4.6%	0.8%		
	Wednesday	4.5%	5.7%	4.2%	4.1%	9.1%	1.1%	1.2%	2.6%	8.3%	1.9%	0.3%	5.3%	3.8%	3.0%	0.3%	0.2%	1.7%	3.6%	4.4%	6.3%	0.0%	0.6%	0.0%	4.9%	0.9%		
	Thursday	4.5%	6.1%	3.6%	4.6%	8.3%	1.3%	1.2%	2.3%	8.6%	1.8%	0.2%	4.6%	4.5%	3.0%	0.2%	0.2%	1.6%	3.6%	4.7%	5.9%	0.0%	0.5%	0.0%	4.7%	0.8%		
	Friday	4.9%	6.0%	4.4%	4.7%	9.1%	1.6%	1.5%	2.6%	8.9%	2.1%	0.3%	5.5%	4.5%	2.9%	0.4%	0.2%	1.9%	3.6%	5.6%	6.1%	0.1%	0.5%	0.0%	5.4%	1.0%		
	Saturday	4.4%	6.6%	4.3%	4.3%	9.2%	1.7%	1.1%	3.0%	8.7%	2.1%	0.4%	5.5%	4.4%	3.3%	0.3%	0.2%	1.5%	3.6%	5.4%	6.6%	0.0%	0.6%	0.0%	5.3%	1.1%		
	Sunday	4.3%	5.3%	3.2%	4.6%	7.0%	1.3%	1.1%	2.4%	7.0%	2.1%	0.2%	4.4%	3.8%	2.5%	0.4%	0.1%	1.6%	3.3%	4.5%	5.0%	0.1%	0.4%	0.0%	4.2%	0.9%		
Time of Day	12-3 AM	2.6%	3.7%	2.5%	3.0%	4.6%	1.0%	0.7%	1.6%	4.7%	1.4%	0.3%	3.5%	2.5%	1.7%	0.2%	0.0%	0.7%	2.3%	2.8%	3.8%	0.0%	0.3%	0.0%	3.2%	0.7%		
	3-6 AM	2.1%	2.5%	1.9%	2.8%	3.1%	0.6%	0.5%	1.2%	3.5%	1.0%	0.3%	2.5%	1.8%	1.0%	0.2%	0.1%	0.8%	1.5%	2.2%	2.7%	0.0%	0.4%	0.0%	2.1%	0.5%		
	6-9 AM	4.4%	5.7%	3.4%	3.8%	8.3%	1.3%	1.1%	2.2%	7.9%	1.9%	0.4%	4.0%	4.3%	3.0%	0.3%	0.1%	1.6%	3.4%	4.6%	5.4%	0.1%	0.7%	0.0%	4.4%	0.8%		
	9-Noon	3.8%	5.4%	3.7%	3.8%	7.5%	1.6%	1.2%	2.1%	7.6%	1.8%	0.2%	4.7%	3.9%	2.4%	0.3%	0.1%	1.6%	2.8%	4.3%	5.8%	0.1%	0.6%	0.0%	4.5%	0.8%		
	Noon-3 PM	4.4%	5.8%	3.6%	3.9%	8.8%	1.2%	1.2%	2.9%	8.2%	1.5%	0.1%	4.6%	4.2%	2.8%	0.4%	0.2%	1.8%	3.2%	5.0%	5.5%	0.0%	0.3%	0.0%	4.6%	0.8%		
	3-6 PM	5.2%	6.6%	4.2%	5.2%	9.7%	1.1%	1.5%	2.8%	9.7%	1.7%	0.3%	5.5%	4.4%	3.5%	0.4%	0.2%	2.0%	4.1%	5.9%	5.9%	0.0%	0.4%	0.0%	5.2%	1.1%		
	6-9 PM	4.7%	6.4%	4.2%	4.7%	9.0%	1.6%	1.1%	2.6%	9.2%	2.2%	0.2%	5.1%	4.7%	3.3%	0.3%	0.2%	1.7%	3.8%	5.4%	6.1%	0.1%	0.3%	0.0%	5.0%	0.9%		
	9-Midnight	4.6%	5.2%	3.6%	4.0%	8.2%	1.2%	1.2%	2.5%	7.3%	2.1%	0.3%	4.7%	3.6%	3.1%	0.2%	0.2%	1.6%	3.5%	4.3%	5.5%	0.0%	0.4%	0.0%	4.8%	1.0%		
Lighting Conditions	Dark - Lighted	7.5%	11.5%	9.1%	7.9%	17.1%	3.1%	2.4%	5.7%	16.6%	3.4%	0.2%	10.0%	8.5%	5.8%	0.6%	0.3%	2.9%	5.9%	9.4%	13.2%	0.0%	0.3%	0.0%	10.3%	1.9%		
	Dark - Not Lighted	4.6%	3.6%	1.3%	4.6%	4.4%	0.4%	0.6%	1.4%	4.1%	2.5%	0.9%	3.8%	1.9%	2.2%	0.3%	0.1%	1.2%	4.0%	3.0%	2.3%	0.1%	1.2%	0.0%	2.6%	0.9%		
	Dark - Unknown Lighting	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	
	Dawn	0.7%	0.7%	0.4%	0.6%	1.1%	0.1%	0.1%	0.3%</																			

Attachment B-5
MetroPlan Orlando Region
Percent of All KSI Crashes involving only Car Truck 2018-2022

Mode:	All Collisions	Context Classification				Bike Lane/Paved Shoulder > 4 ft			Bike Slots			Sidewalks			Median Presence				
All		C4	C5	C6	None	None	One Side	Both Sides	None	One Side	Both Sides	None	One Side	Both Sides	None	Grass	Multiple	Paved	Other
Type	Angle	0.7%	0.0%	0.1%	6.1%	7.5%	1.5%	1.9%	9.8%	1.1%	0.1%	1.6%	1.8%	7.6%	5.2%	3.2%	0.2%	2.3%	0.1%
	Animal	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	0.0%	0.0%	0.1%	0.0%	0.0%	0.0%	0.1%	0.0%	0.0%	0.0%
	Bicycle	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Head On	0.3%	0.0%	0.0%	2.4%	3.0%	0.3%	1.7%	4.9%	0.1%	0.0%	1.6%	0.9%	2.6%	2.9%	1.1%	0.1%	0.9%	0.0%
	Left Turn	1.2%	0.1%	0.0%	12.3%	16.5%	4.0%	4.8%	22.0%	3.1%	0.1%	2.8%	3.5%	19.0%	8.5%	9.2%	0.5%	7.0%	0.1%
	Off Road	0.3%	0.1%	0.0%	9.6%	9.3%	1.0%	3.9%	13.5%	0.7%	0.0%	2.8%	2.2%	9.2%	5.8%	5.7%	0.4%	2.3%	0.0%
	Other	1.1%	0.1%	0.1%	6.5%	8.0%	1.3%	2.7%	11.0%	1.0%	0.1%	1.9%	1.7%	8.3%	5.1%	4.0%	0.3%	2.6%	0.1%
	Pedestrian	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Rear End	1.3%	0.0%	0.0%	9.3%	13.2%	4.8%	6.1%	20.0%	3.8%	0.3%	2.6%	2.7%	18.9%	4.8%	9.5%	0.9%	8.8%	0.1%
	Right Turn	0.1%	0.0%	0.0%	0.9%	1.0%	0.1%	0.5%	1.5%	0.1%	0.0%	0.2%	0.2%	1.3%	0.3%	0.6%	0.0%	0.7%	0.0%
	Rollover	0.0%	0.0%	0.0%	0.6%	0.7%	0.1%	0.5%	1.2%	0.0%	0.0%	0.7%	0.1%	0.5%	0.5%	0.6%	0.0%	0.1%	0.0%
	Sideswipe	0.2%	0.0%	0.0%	1.6%	2.0%	0.7%	1.1%	3.2%	0.5%	0.1%	0.4%	0.4%	3.0%	1.2%	1.7%	0.1%	0.8%	0.0%
	Unknown	0.0%	0.0%	0.0%	0.7%	0.8%	0.2%	0.4%	1.3%	0.2%	0.0%	0.2%	0.2%	1.1%	0.4%	0.7%	0.0%	0.4%	0.0%
Alcohol Related	Y	0.4%	0.0%	0.0%	3.0%	3.8%	0.8%	1.7%	5.7%	0.6%	0.0%	1.5%	0.8%	4.1%	2.5%	2.3%	0.2%	1.2%	0.0%
	N	4.9%	0.3%	0.2%	47.0%	58.5%	13.1%	22.0%	83.0%	10.0%	0.7%	13.3%	12.9%	67.4%	32.2%	34.0%	2.3%	24.7%	0.5%
Hit and Run	Y	0.5%	0.0%	0.0%	3.6%	4.9%	1.5%	1.5%	6.7%	0.7%	0.0%	0.7%	0.7%	6.0%	2.8%	2.2%	0.1%	2.2%	0.1%
	N	4.8%	0.3%	0.2%	46.3%	57.4%	22.3%	22.3%	82.0%	9.9%	0.7%	14.1%	13.0%	65.5%	31.9%	34.2%	2.5%	23.7%	0.4%
Aggressive Driving	Y	0.4%	0.0%	0.0%	3.2%	3.4%	1.4%	1.4%	5.0%	0.6%	0.0%	0.9%	1.1%	3.6%	2.5%	2.1%	0.1%	0.9%	0.0%
	N	4.9%	0.3%	0.2%	46.7%	58.9%	22.4%	22.4%	83.7%	10.0%	0.6%	13.8%	12.6%	67.9%	32.2%	34.3%	2.5%	25.0%	0.5%
Distracted Driving	Y	1.4%	0.0%	0.0%	16.1%	20.4%	7.5%	7.5%	28.7%	3.8%	0.3%	5.3%	4.3%	23.2%	10.5%	12.5%	1.1%	8.5%	0.2%
	N	3.9%	0.3%	0.2%	33.9%	41.9%	16.3%	16.3%	60.0%	6.8%	0.4%	9.5%	9.4%	48.3%	24.1%	23.9%	1.5%	17.4%	0.3%
Intersection Related	Y	2.2%	0.2%	0.1%	19.7%	26.8%	8.8%	8.8%	36.9%	5.4%	0.3%	5.1%	5.8%	31.7%	14.5%	15.1%	0.9%	11.8%	0.2%
	N	3.0%	0.2%	0.1%	30.3%	35.4%	15.0%	15.0%	51.8%	5.3%	0.4%	9.7%	8.0%	39.8%	20.2%	21.3%	1.6%	14.1%	0.2%
Drug Related	Y	0.2%	0.0%	0.0%	1.6%	2.1%	1.0%	1.0%	3.3%	0.4%	0.0%	0.7%	0.6%	2.3%	1.3%	1.5%	0.1%	0.7%	0.0%
	N	5.0%	0.4%	0.2%	48.4%	60.2%	22.7%	22.7%	85.4%	10.3%	0.6%	14.0%	13.2%	69.2%	33.3%	34.9%	2.5%	25.2%	0.5%
Aging Driver	Y	1.0%	0.1%	0.1%	8.1%	10.3%	4.2%	4.2%	14.8%	2.1%	0.2%	2.9%	2.3%	11.9%	6.1%	5.9%	0.5%	4.6%	0.1%
	N	4.3%	0.3%	0.1%	41.9%	52.0%	19.6%	19.6%	73.9%	8.6%	0.5%	11.9%	11.4%	59.7%	28.6%	30.5%	2.1%	21.3%	0.4%
Teenage Driver	Y	0.4%	0.0%	0.0%	7.5%	8.6%	3.6%	3.6%	12.4%	1.5%	0.1%	1.4%	2.2%	10.3%	4.4%	5.1%	0.3%	4.0%	0.1%
	N	4.9%	0.3%	0.1%	42.5%	53.7%	20.2%	20.2%	76.3%	9.2%	0.6%	13.4%	11.5%	61.2%	30.3%	31.2%	2.3%	21.9%	0.4%
Day of the Week	Monday	0.6%	0.1%	0.1%	7.0%	7.7%	3.3%	3.3%	12.7%	1.2%	0.1%	2.0%	1.9%	10.1%	4.9%	4.9%	0.4%	3.6%	0.1%
	Tuesday	0.7%	0.0%	0.0%	7.4%	8.0%	3.1%	3.1%	12.6%	1.3%	0.0%	2.2%	1.9%	9.9%	4.8%	4.9%	0.2%	4.0%	0.0%
	Wednesday	0.9%	0.1%	0.0%	7.0%	8.4%	2.7%	2.7%	12.6%	1.7%	0.1%	2.2%	2.1%	10.1%	5.1%	5.5%	0.4%	3.5%	0.1%
	Thursday	0.9%	0.0%	0.0%	7.2%	8.4%	3.1%	3.1%	12.8%	1.2%	0.1%	2.0%	1.9%	10.4%	5.0%	4.8%	0.2%	4.1%	0.1%
	Friday	0.7%	0.0%	0.0%	7.7%	8.4%	3.3%	3.3%	13.2%	2.0%	0.1%	2.2%	2.0%	11.1%	5.3%	5.6%	0.4%	4.1%	0.0%
	Saturday	0.8%	0.1%	0.0%	7.3%	8.4%	3.3%	3.3%	13.3%	1.8%	0.1%	2.2%	2.0%	11.0%	4.9%	5.9%	0.6%	3.8%	0.0%
	Sunday	0.7%	0.0%	0.0%	6.4%	7.5%	2.7%	2.7%	11.5%	1.3%	0.1%	2.0%	2.0%	8.9%	4.6%	4.8%	0.4%	3.0%	0.1%
Time of Day	12-3 AM	0.7%	0.0%	0.0%	3.6%	4.5%	2.2%	2.2%	7.6%	1.0%	0.1%	1.5%	1.2%	6.0%	2.6%	3.4%	0.3%	2.3%	0.1%
	3-6 AM	0.4%	0.1%	0.0%	3.1%	3.6%	1.5%	1.5%	5.8%	0.7%	0.0%	1.3%	0.9%	4.3%	2.1%	2.8%	0.2%	1.4%	0.0%
	6-9 AM	0.7%	0.0%	0.0%	6.9%	7.6%	2.9%	2.9%	11.9%	1.6%	0.1%	2.1%	1.4%	10.0%	4.7%	4.7%	0.4%	3.7%	0.1%
	9-Noon	0.7%	0.1%	0.0%	6.3%	7.5%	2.5%	2.5%	11.4%	1.4%	0.1%	1.9%	1.8%	9.2%	4.1%	4.6%	0.3%	3.8%	0.0%
	Noon-3 PM	0.9%	0.0%	0.0%	7.3%	8.3%	2.6%	2.6%	12.3%	1.4%	0.1%	1.7%	2.0%	10.1%	5.1%	4.6%	0.3%	3.8%	0.0%
	3-6 PM	0.9%	0.1%	0.0%	8.1%	9.4%	3.4%	3.4%	14.6%	1.4%	0.1%	1.8%	2.1%	12.0%	6.1%	5.8%	0.3%	3.7%	0.1%
	6-9 PM	0.5%	0.0%	0.0%	8.3%	8.6%	3.4%	3.4%	13.6%	1.6%	0.1%	2.0%	2.2%	11.0%	5.2%	5.6%	0.5%	3.8%	0.1%
	9-Midnight	0.6%	0.0%	0.0%	6.4%	7.2%	3.0%	3.0%	11.6%	1.7%	0.1%	2.4%	2.1%	8.9%	4.9%	4.8%	0.3%	3.3%	0.1%
Lighting Conditions	Dark - Lighted	1.8%	0.1%	0.1%	13.4%	16.2%	5.5%	5.5%	24.3%	3.7%	0.2%	2.6%	3.8%	21.8%	8.7%	10.7%	0.9%	7.6%	0.3%
	Dark - Not Lighted	0.2%	0.0%	0.0%	4.6%	4.1%	3.4%	3.4%	8.8%	0.7%	0.0%	3.6%	2.0%	3.9%	4.1%	3.6%	0.2%	1.5%	0.0%
	Dark - Unknown Lighting	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Dawn	0.1%	0.0%	0.0%	0.8%	0.9%	0.5%	0.5%	1.6%	0.2%	0.0%	0.4%	0.1%	1.2%	0.7%	0.6%	0.0%	0.5%	0.0%
	Daylight	3.1%	0.2%	0.1%	29.4%	33.8%	11.5%	11.5%	51.3%	5.7%	0.4%	7.6%	7.5%	42.3%	20.1%	20.4%	1.2%	15.4%	0.2%
	Dusk	0.1%	0.0%	0.0%	1.6%	1.7%	0.7%	0.7%	2.6%	0.4%	0.0%	0.4%	0.4%	2.2%	1.0%	1.0%	0.1%	0.9%	0.0%
	Other	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Unknown	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	0.0%	0.0%	0.0%	0.0%	

**Attachment B-6
MetroPlan Orlando Region
Percent of All KSI Crashes Involving Motorcyclists 2018-2022**

Mode:	All Collisions	Number of Lanes			Turn Lanes			Posted Speed					Roadway Classification						AADT (2022)			Context Classification						
All		3 Lanes or Less	4-5 Lanes	6+ Lanes	None	1 to 2	3+	25 or less	30-35	40-45	50-55	60+	Principal Arterial	Minor Arterial	Major Collector	Minor Collector	Local	None	< 15000	15,000-30,000	30,000+	C1	C2	C2T	C3C	C3R		
		2-3	4-5	6-8				0-25	30-35	40-45	50-55	60+																
Type	Angle	3.4%	2.9%	0.8%	3.1%	3.8%	0.3%	1.8%	1.9%	3.1%	0.3%	0.0%	2.2%	1.4%	1.8%	0.3%	0.2%	1.3%	2.0%	2.6%	1.9%	0.0%	0.2%	0.0%	1.4%	0.3%		
	Animal	0.2%	0.0%	0.0%	0.2%	0.0%	0.0%	0.1%	0.0%	0.0%	0.1%	0.0%	0.0%	0.0%	0.0%	0.1%	0.0%	0.1%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	
	Bicycle	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Head On	1.5%	0.5%	0.0%	1.6%	0.4%	0.0%	0.2%	0.3%	0.7%	0.6%	0.1%	0.6%	0.3%	0.5%	0.1%	0.0%	0.4%	0.8%	0.8%	0.1%	0.0%	0.2%	0.0%	0.1%	0.3%	0.3%	
	Left Turn	10.7%	14.2%	4.9%	8.1%	20.0%	1.5%	2.4%	6.8%	17.4%	3.2%	0.0%	8.2%	9.1%	8.0%	1.1%	0.2%	3.1%	9.8%	11.3%	8.9%	0.0%	0.3%	0.1%	8.6%	2.4%	2.4%	
	Off Road	4.8%	5.4%	1.8%	6.6%	5.2%	0.5%	1.8%	2.6%	6.6%	1.0%	0.0%	2.5%	4.0%	2.6%	0.3%	0.1%	2.7%	3.2%	4.3%	3.2%	0.0%	0.0%	0.0%	3.1%	0.8%	0.8%	
	Other	6.5%	7.0%	5.1%	6.6%	10.4%	1.5%	2.6%	3.6%	9.4%	2.6%	0.2%	7.3%	4.7%	3.1%	0.5%	0.2%	2.7%	4.5%	6.4%	7.0%	0.1%	0.1%	0.0%	6.1%	1.3%	1.3%	
	Pedestrian	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Rear End	3.3%	6.9%	6.3%	4.0%	9.7%	2.6%	0.2%	1.9%	11.1%	2.6%	0.5%	9.2%	4.7%	2.0%	0.1%	0.0%	0.3%	2.6%	5.8%	9.7%	0.0%	0.7%	0.0%	8.1%	1.3%	1.3%	
	Right Turn	0.2%	0.3%	0.5%	0.2%	0.6%	0.2%	0.1%	0.0%	0.5%	0.3%	0.1%	0.7%	0.1%	0.1%	0.0%	0.0%	0.1%	0.1%	0.4%	0.6%	0.0%	0.1%	0.0%	0.6%	0.1%	0.1%	
	Rollover	3.2%	1.5%	1.2%	2.7%	2.7%	0.3%	0.3%	1.5%	2.8%	1.2%	0.1%	1.7%	1.1%	1.8%	0.5%	0.1%	0.6%	2.7%	1.3%	1.8%	0.1%	0.2%	0.0%	1.2%	0.6%	0.6%	
	Sideswipe	1.1%	1.8%	2.4%	1.5%	3.4%	0.4%	0.2%	0.5%	3.3%	1.1%	0.2%	3.1%	1.2%	0.7%	0.1%	0.0%	0.2%	1.1%	2.0%	2.6%	0.0%	0.1%	0.0%	3.1%	0.2%	0.2%	
	Unknown	0.2%	1.0%	0.6%	0.1%	1.5%	0.2%	0.0%	0.4%	1.0%	0.4%	0.0%	1.3%	0.3%	0.2%	0.0%	0.0%	0.0%	0.2%	0.5%	1.3%	0.0%	0.0%	0.0%	0.9%	0.0%	0.0%	
Alcohol Related	Y	2.3%	3.2%	1.5%	2.5%	4.0%	0.4%	0.6%	1.2%	3.9%	1.0%	0.3%	2.6%	1.3%	1.9%	0.3%	0.1%	0.7%	2.4%	2.3%	2.4%	0.0%	0.4%	0.0%	2.2%	0.6%	0.6%	
	N	32.6%	38.2%	22.1%	32.2%	53.7%	7.2%	9.2%	18.4%	51.9%	12.5%	1.0%	34.1%	25.6%	18.9%	2.8%	0.7%	10.8%	24.9%	33.3%	34.8%	0.2%	1.6%	0.1%	30.9%	6.7%	6.7%	
Hit and Run	Y	1.7%	2.1%	1.1%	0.9%	3.4%	0.5%	0.3%	1.1%	2.9%	0.6%	0.0%	1.8%	1.2%	1.3%	0.2%	0.1%	0.3%	1.1%	2.1%	1.8%	0.0%	0.1%	0.0%	1.9%	0.1%	0.1%	
	N	33.3%	39.3%	22.6%	33.8%	54.3%	7.1%	9.5%	18.5%	53.0%	12.8%	1.3%	34.9%	25.7%	19.6%	2.9%	0.7%	11.3%	26.2%	33.4%	35.4%	0.2%	1.9%	0.1%	31.3%	7.3%	7.3%	
Aggressive Driving	Y	3.1%	3.3%	1.4%	2.6%	4.6%	0.4%	0.7%	2.3%	4.3%	0.3%	0.0%	3.2%	1.5%	2.4%	0.1%	0.0%	0.5%	2.4%	2.6%	3.2%	0.0%	0.0%	0.0%	2.3%	0.5%	0.5%	
	N	31.9%	38.1%	22.2%	32.1%	53.1%	7.2%	9.1%	17.3%	51.5%	13.1%	1.3%	33.6%	25.4%	18.4%	3.1%	0.8%	11.1%	24.9%	32.9%	34.0%	0.2%	2.0%	0.1%	30.8%	6.8%	6.8%	
Distracted Driving	Y	8.7%	12.0%	5.8%	9.4%	15.4%	1.7%	2.5%	4.7%	14.8%	4.0%	0.4%	9.5%	7.6%	5.7%	0.4%	0.2%	3.1%	6.7%	9.8%	10.0%	0.0%	0.6%	0.0%	8.6%	1.5%	1.5%	
	N	26.3%	29.4%	17.8%	25.4%	42.3%	5.9%	7.3%	14.9%	41.0%	9.4%	0.8%	27.3%	19.3%	15.2%	2.7%	0.6%	8.5%	20.6%	25.7%	27.2%	0.2%	1.4%	0.1%	24.5%	5.9%	5.9%	
Intersection Related	Y	16.5%	17.8%	7.0%	12.4%	26.0%	2.6%	4.4%	8.8%	23.0%	4.7%	0.4%	12.7%	11.1%	11.1%	1.6%	0.3%	4.3%	13.6%	15.3%	12.8%	0.0%	0.7%	0.1%	11.8%	3.5%	3.5%	
	N	18.4%	23.6%	16.6%	22.3%	31.7%	4.9%	5.4%	10.8%	32.8%	8.8%	0.8%	24.0%	15.8%	9.8%	1.6%	0.5%	7.3%	13.7%	20.3%	24.4%	0.2%	1.3%	0.0%	21.4%	3.9%	3.9%	
Drug Related	Y	1.9%	1.8%	0.5%	1.3%	2.7%	0.2%	0.7%	0.4%	2.3%	0.5%	0.2%	0.9%	1.3%	1.2%	0.1%	0.1%	0.6%	1.5%	1.5%	1.0%	0.0%	0.2%	0.0%	0.9%	0.3%	0.3%	
	N	33.1%	39.6%	23.1%	33.5%	54.9%	7.4%	9.1%	19.2%	53.5%	12.9%	1.1%	35.8%	25.6%	19.7%	3.1%	0.7%	10.9%	25.7%	34.0%	36.2%	0.2%	1.8%	0.1%	32.2%	7.1%	7.1%	
Aging Driver	Y	3.8%	5.8%	2.8%	3.2%	8.0%	1.2%	0.8%	1.5%	7.6%	2.4%	0.0%	5.1%	3.4%	2.3%	0.4%	0.0%	1.2%	3.1%	4.5%	5.0%	0.0%	0.3%	0.0%	4.9%	1.3%	1.3%	
	N	31.1%	35.6%	20.9%	31.6%	49.7%	6.4%	9.0%	18.1%	48.2%	11.0%	1.3%	31.7%	23.5%	18.5%	2.7%	0.8%	10.4%	24.2%	31.0%	32.2%	0.2%	1.7%	0.1%	28.2%	6.1%	6.1%	
Teenage Driver	Y	3.0%	3.5%	2.0%	2.6%	5.2%	0.6%	0.8%	1.4%	4.3%	1.9%	0.0%	3.3%	1.4%	1.9%	0.4%	0.2%	1.3%	2.7%	2.6%	2.9%	0.0%	0.1%	0.1%	3.2%	0.5%	0.5%	
	N	32.0%	37.9%	21.6%	32.1%	52.5%	6.9%	9.0%	18.2%	51.5%	11.5%	1.3%	33.5%	25.5%	18.9%	2.7%	0.6%	10.3%	24.6%	32.9%	34.3%	0.2%	1.9%	0.0%	30.0%	6.8%	6.8%	
Day of the Week	Monday	5.7%	3.8%	2.4%	4.3%	6.7%	0.8%	1.2%	2.0%	6.7%	1.7%	0.4%	3.8%	3.8%	2.8%	0.2%	0.0%	1.3%	4.4%	3.8%	3.8%	0.1%	0.5%	0.0%	3.6%	0.9%	0.9%	
	Tuesday	3.0%	5.6%	3.8%	3.4%	8.0%	0.9%	0.8%	1.9%	6.9%	2.5%	0.2%	5.7%	3.1%	1.8%	0.5%	0.2%	1.1%	2.4%	5.0%	5.2%	0.0%	0.4%	0.1%	4.6%	1.1%	1.1%	
	Wednesday	3.4%	6.5%	2.6%	4.7%	6.8%	0.9%	0.8%	3.6%	7.3%	0.7%	0.0%	4.3%	3.9%	2.7%	0.2%	0.2%	1.2%	2.9%	5.2%	4.8%	0.1%	0.1%	0.0%	3.8%	0.9%	0.9%	
	Thursday	5.5%	5.9%	3.5%	5.2%	8.6%	1.1%	1.9%	3.2%	8.3%	1.6%	0.0%	5.3%	4.2%	2.9%	0.4%	0.0%	2.0%	3.2%	5.7%	5.6%	0.0%	0.2%	0.0%	4.7%	1.1%	1.1%	
	Friday	6.5%	6.4%	3.4%	6.3%	8.6%	1.3%	2.1%	3.2%	8.9%	1.8%	0.2%	5.4%	4.1%	4.0%	0.4%	0.4%	1.9%	5.8%	4.4%	5.8%	0.0%	0.2%	0.0%	4.6%	1.4%	1.4%	
	Saturday	5.6%	7.4%	4.2%	5.6%	10.2%	1.6%	1.7%	2.9%	10.0%	2.6%	0.1%	6.8%	4.1%	3.5%	0.9%	0.0%	2.0%	4.8%	5.6%	7.0%	0.0%	0.2%	0.0%	6.6%	1.1%	1.1%	
	Sunday	5.3%	5.8%	3.6%	5.3%	8.6%	0.9%	1.3%	2.9%	7.8%	2.4%	0.3%	5.5%	3.7%	3.1%	0.4%	0.0%	2.2%	3.8%	5.7%	4.9%	0.0%	0.3%	0.0%	5.2%	0.9%	0.9%	
Time of Day	12-3 AM	2.2%	3.7%	1.7%	2.9%	4.2%	0.4%	0.4%	1.3%	4.7%	1.2%	0.1%	3.2%	2.7%	1.3%	0.0%	0.0%	0.4%	1.4%	3.7%	3.0%	0.0%	0.1%	0.0%	2.5%	0.8%	0.8%	
	3-6 AM	1.0%	1.3%	0.8%	0.8%	1.9%	0.3%	0.1%	0.7%	1.6%	0.5%	0.1%	1.3%	1.1%	0.4%	0.1%	0.1%	0.1%	1.1%	1.2%	1.1%	0.0%	0.3%	0.0%	0.7%	0.4%	0.4%	
	6-9 AM	3.0%	3.4%	2.3%	2.5%	5.7%	0.4%	0.4%	2.2%	4.9%	1.0%	0.2%	3.4%	2.1%	1.7%	0.3%	0.0%	1.2%	2.1%	2.9%	3.5%	0.1%	0.3%	0.0%	3.3%	0.5%	0.5%	
	9-Noon	3.4%	3.8%	1.8%	4.0%	4.6%	0.3%	1.0%	2.5%	4.3%	0.8%	0.3%	3.3%	2.2%	1.8%	0.6%	0.0%	1.1%	3.2%	3.0%	2.7%	0.1%	0.2%	0.0%	2.7%	0.5%	0.5%	
	Noon-3 PM	5.2%	5.4%	3.7%	5.4%	8.3%	0.8%	2.1%	1.8%	7.8%	2.4%	0.1%	4.9%	3.7%	3.3%	0.3%	0.1%	2.2%	4.8%	4.3%	4.9%	0.0%	0.4%	0.0%	4.8%	0.7%	0.7%	
	3-6 PM	7.0%	7.6%	4.2%	6.1%	11.3%	1.4%	2.1%	3.4%	10.6%	2.6%	0.1%	7.5%	5.1%	4.1%	0.3%	0.1%	1.7%	5.1%	7.2%	7.0%	0.0%	0.2%	0.0%	6.7%	1.5%	1.5%	
	6-9 PM	8.3%	7.4%	3.8%	6.6%	11.4%	1.6%	3.0%	3.6%	10.3%	2.3%	0.3%	5.7%	4.3%	4.7%	1.1%	0.2%	3.6%	4.9%	7.4%	5.6%	0.0%	0.3%	0.0%	4.5%	1.2%	1.2%	
	9-Midnight	5.0%	8.8%	5.2%	6.3%	10.3%	2.3%	0.7%	4.0%	11.7%	2.5%	0.0%	7.6%	5.7%	3.6%	0.4%	0.3%	1.4%	4.6%	6.0%	9.4%	0.0%	0.1%	0.1%	7.8%	1.7%	1.7%	
Lighting Conditions	Dark - Lighted	8.5%	14.6%	9.2%	9.7%	19.5%	3.2%	2.0%	7.8%	18.6%	3.8%	0.0%	12.7%	8.6%	6.7%	0.7%	0.6%	2.8%	7.4%	10.7%	15.1%	0.0%	0.1%	0.0%	11.9%	1.8%	1.8%	
	Dark - Not Lighted	5.2%	4.3%	1.1%	4.7%	5.2%	0.6%	0.6%	1.3%	5.8%	2.3%	0.5%	3.9%	3.2%	1.8%	0.7%	0.0%	0.9%	3.9%	4.8%	2.1%	0.0%	0.9%	0.1%				

Attachment B-6
MetroPlan Orlando Region
Percent of All KSI Crashes Involving Motorcyclists 2018-2022

Mode:	All Collisions	Context Classification				Bike Lane/Paved Shoulder > 4 ft			Bike Slots			Sidewalks			Median Presence				
All		C4	C5	C6	None	None	One Side	Both Sides	None	One Side	Both Sides	None	One Side	Both Sides	None	Grass	Multiple	Paved	Other
Type	Angle	0.9%	0.0%	0.1%	4.2%	4.6%	1.2%	1.4%	6.4%	0.7%	0.0%	1.1%	1.2%	4.9%	4.0%	1.7%	0.0%	1.4%	0.0%
	Animal	0.0%	0.0%	0.0%	0.2%	0.1%	0.0%	0.1%	0.2%	0.0%	0.0%	0.2%	0.0%	0.0%	0.2%	0.0%	0.0%	0.0%	0.0%
	Bicycle	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Head On	0.1%	0.0%	0.0%	1.3%	1.4%	0.0%	0.6%	2.0%	0.0%	0.0%	1.0%	0.5%	0.5%	1.6%	0.4%	0.0%	0.0%	0.0%
	Left Turn	2.1%	0.3%	0.0%	15.7%	20.0%	2.6%	7.1%	27.9%	1.6%	0.3%	3.1%	5.0%	21.7%	12.9%	8.5%	0.5%	7.7%	0.1%
	Off Road	0.6%	0.1%	0.1%	7.6%	8.9%	0.7%	2.3%	11.5%	0.3%	0.1%	1.9%	1.6%	8.5%	3.8%	4.9%	0.3%	2.8%	0.2%
	Other	1.4%	0.4%	0.1%	9.1%	10.8%	2.4%	5.3%	17.2%	1.4%	0.0%	2.5%	2.5%	13.5%	6.8%	6.0%	0.8%	4.9%	0.0%
	Pedestrian	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Rear End	1.3%	0.2%	0.0%	4.7%	8.6%	2.9%	5.0%	14.2%	1.9%	0.3%	2.2%	2.5%	11.7%	4.1%	6.8%	0.3%	5.1%	0.1%
	Right Turn	0.0%	0.0%	0.0%	0.2%	0.3%	0.2%	0.5%	1.0%	0.1%	0.0%	0.1%	0.2%	0.7%	0.0%	0.7%	0.0%	0.3%	0.0%
	Rollover	0.2%	0.1%	0.0%	3.4%	3.6%	0.2%	2.0%	5.6%	0.1%	0.1%	1.4%	1.2%	3.3%	2.5%	1.8%	0.2%	1.2%	0.1%
	Sideswipe	0.4%	0.1%	0.0%	1.4%	2.9%	1.0%	1.5%	4.3%	1.0%	0.0%	0.6%	0.3%	4.3%	1.3%	1.7%	0.2%	1.9%	0.2%
	Unknown	0.4%	0.0%	0.0%	0.4%	1.1%	0.2%	0.5%	1.6%	0.2%	0.0%	0.3%	0.0%	1.5%	0.4%	0.2%	0.2%	1.0%	0.0%
Alcohol Related	Y	0.3%	0.1%	0.1%	3.2%	4.0%	0.6%	2.3%	6.7%	0.2%	0.1%	1.4%	0.7%	4.9%	2.8%	2.2%	0.3%	1.6%	0.1%
	N	7.2%	1.2%	0.2%	44.9%	58.2%	10.8%	24.0%	85.2%	7.1%	0.7%	13.0%	14.3%	65.7%	35.0%	30.5%	2.3%	24.6%	0.6%
Hit and Run	Y	0.4%	0.0%	0.0%	2.3%	3.7%	0.8%	0.8%	4.4%	0.4%	0.0%	0.5%	0.8%	3.5%	2.2%	1.2%	0.4%	1.1%	0.0%
	N	7.1%	1.3%	0.3%	45.8%	58.5%	25.5%	25.5%	87.4%	6.9%	0.8%	13.9%	14.2%	67.1%	35.5%	31.6%	2.2%	25.1%	0.7%
Aggressive Driving	Y	1.1%	0.2%	0.2%	3.4%	4.8%	2.0%	2.0%	7.3%	0.4%	0.0%	0.7%	1.5%	5.5%	3.0%	2.2%	0.0%	2.4%	0.1%
	N	6.4%	1.1%	0.1%	44.7%	57.4%	24.4%	24.4%	84.5%	6.9%	0.8%	13.7%	13.6%	65.0%	34.7%	30.5%	2.6%	23.7%	0.6%
Distracted Driving	Y	1.7%	0.4%	0.0%	13.6%	16.1%	7.0%	7.0%	24.5%	1.9%	0.1%	4.1%	4.7%	17.7%	10.7%	9.3%	0.8%	5.6%	0.0%
	N	5.8%	0.8%	0.3%	34.5%	46.1%	19.4%	19.4%	67.4%	5.4%	0.7%	10.3%	10.4%	52.9%	27.0%	23.4%	1.8%	20.6%	0.7%
Intersection Related	Y	3.5%	0.5%	0.2%	20.7%	25.7%	10.5%	10.5%	37.9%	3.1%	0.3%	5.7%	6.1%	29.4%	18.9%	11.7%	0.8%	9.7%	0.2%
	N	4.0%	0.7%	0.1%	27.4%	36.4%	15.9%	15.9%	53.9%	4.2%	0.5%	8.7%	8.9%	41.1%	18.9%	21.1%	1.8%	16.4%	0.5%
Drug Related	Y	0.1%	0.1%	0.0%	2.5%	2.9%	1.1%	1.1%	4.1%	0.1%	0.0%	1.0%	0.7%	2.5%	2.1%	1.2%	0.2%	0.7%	0.0%
	N	7.4%	1.2%	0.3%	45.6%	59.3%	25.3%	25.3%	87.7%	7.2%	0.8%	13.5%	14.3%	68.0%	35.6%	31.6%	2.4%	25.4%	0.7%
Aging Driver	Y	0.6%	0.2%	0.0%	4.9%	7.1%	4.1%	4.1%	11.5%	0.6%	0.2%	1.9%	1.5%	9.0%	4.2%	4.6%	0.1%	3.3%	0.2%
	N	6.8%	1.1%	0.3%	43.2%	55.1%	22.2%	22.2%	80.3%	6.7%	0.6%	12.5%	13.6%	61.5%	33.5%	28.2%	2.5%	22.9%	0.5%
Teenage Driver	Y	0.5%	0.2%	0.0%	3.8%	4.2%	2.4%	2.4%	7.1%	1.4%	0.0%	1.1%	1.6%	5.8%	3.3%	2.6%	0.1%	2.4%	0.0%
	N	6.9%	1.1%	0.3%	44.3%	57.9%	23.9%	23.9%	84.7%	5.9%	0.8%	13.3%	13.5%	64.7%	34.4%	30.1%	2.5%	23.7%	0.7%
Day of the Week	Monday	0.4%	0.0%	0.0%	6.3%	6.7%	2.9%	2.9%	11.4%	0.5%	0.0%	2.6%	2.0%	7.3%	5.4%	3.7%	0.4%	2.4%	0.0%
	Tuesday	0.7%	0.1%	0.0%	5.3%	5.7%	3.6%	3.6%	10.9%	1.2%	0.3%	1.5%	1.3%	9.6%	4.1%	4.4%	0.3%	3.4%	0.1%
	Wednesday	1.2%	0.4%	0.1%	5.9%	7.1%	2.3%	2.3%	11.3%	1.1%	0.1%	1.4%	2.0%	9.1%	3.7%	4.4%	0.1%	4.0%	0.2%
	Thursday	1.2%	0.1%	0.1%	7.5%	8.4%	2.7%	2.7%	13.5%	1.5%	0.0%	1.9%	1.9%	11.1%	6.3%	4.7%	0.5%	3.5%	0.0%
	Friday	1.8%	0.4%	0.0%	7.8%	9.0%	4.0%	4.0%	15.3%	0.8%	0.1%	2.2%	2.8%	11.2%	6.9%	4.2%	0.5%	4.1%	0.4%
	Saturday	1.7%	0.1%	0.0%	7.7%	9.5%	4.1%	4.1%	15.9%	1.2%	0.2%	1.7%	3.6%	12.0%	6.1%	5.1%	0.4%	5.6%	0.0%
	Sunday	0.5%	0.1%	0.1%	7.7%	7.6%	3.4%	3.4%	13.6%	1.1%	0.1%	3.1%	1.5%	10.2%	5.2%	6.1%	0.3%	3.1%	0.0%
Time of Day	12-3 AM	1.1%	0.1%	0.2%	2.7%	3.5%	2.6%	2.6%	7.2%	0.4%	0.0%	1.1%	1.3%	5.3%	2.5%	2.0%	0.5%	2.4%	0.1%
	3-6 AM	0.1%	0.2%	0.0%	1.3%	1.3%	0.9%	0.9%	2.8%	0.3%	0.0%	0.5%	0.7%	1.8%	1.3%	1.4%	0.0%	0.4%	0.0%
	6-9 AM	0.7%	0.0%	0.0%	3.7%	4.5%	2.5%	2.5%	7.8%	0.6%	0.2%	1.3%	1.1%	6.4%	3.1%	3.1%	0.2%	2.2%	0.1%
	9-Noon	0.5%	0.2%	0.0%	4.6%	5.0%	2.4%	2.4%	8.6%	0.4%	0.0%	1.6%	1.1%	6.4%	3.1%	3.4%	0.0%	2.5%	0.0%
	Noon-3 PM	0.7%	0.1%	0.0%	7.7%	8.2%	3.2%	3.2%	13.7%	0.6%	0.0%	2.4%	2.2%	9.6%	5.3%	5.0%	0.4%	3.6%	0.0%
	3-6 PM	1.6%	0.2%	0.0%	8.5%	9.9%	4.3%	4.3%	16.5%	2.1%	0.2%	2.8%	2.5%	13.6%	7.1%	5.6%	0.7%	5.2%	0.2%
	6-9 PM	1.4%	0.0%	0.1%	12.1%	11.5%	3.2%	3.2%	18.5%	0.8%	0.1%	3.3%	3.4%	12.8%	9.0%	5.5%	0.3%	4.6%	0.1%
	9-Midnight	1.4%	0.4%	0.0%	7.5%	10.2%	3.8%	3.8%	16.7%	1.9%	0.3%	1.5%	2.8%	14.7%	6.4%	6.8%	0.4%	5.2%	0.2%
Lighting Conditions	Dark - Lighted	3.3%	0.7%	0.3%	14.2%	17.8%	6.5%	6.5%	29.3%	2.8%	0.2%	1.9%	3.9%	26.5%	10.9%	11.3%	0.7%	8.8%	0.5%
	Dark - Not Lighted	0.2%	0.0%	0.0%	4.7%	4.5%	3.6%	3.6%	9.9%	0.5%	0.2%	3.7%	2.5%	4.3%	4.7%	3.0%	0.4%	2.5%	0.0%
	Dark - Unknown Lighting	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Dawn	0.2%	0.0%	0.0%	1.1%	1.1%	0.4%	0.4%	1.8%	0.1%	0.0%	0.2%	0.4%	1.3%	0.8%	0.4%	0.0%	0.6%	0.0%
	Daylight	3.4%	0.4%	0.0%	25.7%	28.3%	11.6%	11.6%	46.9%	3.7%	0.3%	7.8%	7.5%	35.6%	19.4%	17.1%	1.2%	13.1%	0.2%
	Dusk	0.4%	0.1%	0.0%	2.4%	2.4%	0.8%	0.8%	3.9%	0.2%	0.1%	0.7%	0.6%	2.9%	1.9%	1.0%	0.3%	1.1%	0.0%
	Other	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Unknown	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	

Attachment B-7
MetroPlan Orlando Region
Percent of All KSI Crashes Involving Bicyclist 2018-2022

Mode:	All Collisions	Number of Lanes			Turn Lanes			Posted Speed					Roadway Classification						AADT (2022)			Context Classification				
All		3 Lanes or Less	4-5 Lanes	6+ Lanes	None	1 to 2	3+	25 or less	30-35	40-45	50-55	60+	Principal Arterial	Minor Arterial	Major Collector	Minor Collector	Local	None	< 15000	15,000-30,000	30,000+	C1	C2	C2T	C3C	C3R
		2-3	4-5	6-8				0-25	30-35	40-45	50-55	60+														
Type	Angle	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Animal	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Bicycle	35.4%	40.9%	23.7%	31.2%	59.6%	9.2%	13.2%	21.8%	54.8%	9.5%	0.6%	34.3%	22.6%	22.9%	3.7%	0.9%	15.6%	26.2%	30.9%	42.9%	0.0%	0.3%	0.3%	37.0%	5.5%
	Head On	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Left Turn	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Off Road	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Other	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Pedestrian	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Rear End	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Right Turn	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Rollover	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Sideswipe	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Unknown	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Alcohol Related	Y	0.0%	1.2%	0.3%	0.0%	1.5%	0.0%	0.0%	0.0%	1.5%	0.0%	0.0%	0.6%	0.6%	0.3%	0.0%	0.0%	0.0%	0.0%	0.7%	1.1%	0.0%	0.0%	0.0%	0.6%	0.0%
	N	35.4%	39.7%	23.4%	31.2%	58.1%	9.2%	13.2%	21.8%	53.2%	9.5%	0.6%	33.6%	22.0%	22.6%	3.7%	0.9%	15.6%	26.2%	30.2%	41.8%	0.0%	0.3%	0.3%	36.4%	5.5%
Hit and Run	Y	7.1%	7.1%	4.6%	5.5%	11.0%	2.1%	2.2%	4.6%	9.8%	2.2%	0.0%	7.6%	3.1%	4.6%	0.6%	0.0%	2.8%	4.4%	5.8%	8.7%	0.0%	0.0%	0.0%	8.0%	0.6%
	N	28.3%	33.8%	19.1%	25.7%	48.6%	7.0%	11.1%	17.2%	44.9%	7.4%	0.6%	26.6%	19.6%	18.3%	3.1%	0.9%	12.8%	21.8%	25.1%	34.2%	0.0%	0.3%	0.3%	29.1%	4.9%
Aggressive Driving	Y	0.3%	0.0%	0.0%	0.3%	0.0%	0.0%	0.0%	0.3%	0.0%	0.0%	0.0%	0.0%	0.0%	0.3%	0.0%	0.0%	0.0%	0.0%	0.4%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	N	35.1%	40.9%	23.7%	30.9%	59.6%	9.2%	13.2%	21.5%	54.8%	9.5%	0.6%	34.3%	22.6%	22.6%	3.7%	0.9%	15.6%	26.2%	30.5%	42.9%	0.0%	0.3%	0.3%	37.0%	5.5%
Distracted Driving	Y	5.2%	8.0%	4.6%	4.0%	10.4%	3.4%	1.2%	3.4%	11.7%	1.5%	0.0%	5.8%	4.3%	4.6%	1.2%	0.0%	1.8%	3.3%	6.9%	8.7%	0.0%	0.3%	0.0%	7.3%	1.5%
	N	30.2%	32.9%	19.1%	27.2%	49.2%	5.8%	12.0%	18.5%	43.1%	8.0%	0.6%	28.4%	18.3%	18.3%	2.4%	0.9%	13.8%	22.9%	24.0%	34.2%	0.0%	0.0%	0.3%	29.7%	4.0%
Intersection Related	Y	17.8%	15.4%	9.2%	12.8%	26.0%	3.4%	5.8%	12.9%	19.7%	4.0%	0.0%	11.6%	8.6%	12.8%	1.8%	0.3%	7.0%	13.8%	12.0%	15.6%	0.0%	0.0%	0.0%	15.3%	1.5%
	N	17.5%	25.5%	14.5%	18.3%	33.6%	5.8%	7.4%	8.9%	35.1%	5.5%	0.6%	22.6%	14.1%	10.1%	1.8%	0.6%	8.6%	12.4%	18.9%	27.3%	0.0%	0.3%	0.3%	21.7%	4.0%
Drug Related	Y	0.3%	0.9%	0.3%	0.3%	1.2%	0.0%	0.3%	0.0%	1.2%	0.0%	0.0%	0.6%	0.3%	0.3%	0.0%	0.0%	0.3%	0.0%	0.7%	0.7%	0.0%	0.0%	0.0%	0.6%	0.0%
	N	35.1%	40.0%	23.4%	30.9%	58.4%	9.2%	12.9%	21.8%	53.5%	9.5%	0.6%	33.6%	22.3%	22.6%	3.7%	0.9%	15.3%	26.2%	30.2%	42.2%	0.0%	0.3%	0.3%	36.4%	5.5%
Aging Driver	Y	3.7%	3.4%	2.8%	3.1%	6.7%	0.3%	1.5%	2.8%	4.6%	0.9%	0.0%	3.7%	2.1%	2.8%	0.0%	0.0%	1.5%	2.5%	3.3%	4.4%	0.0%	0.0%	0.0%	2.8%	0.9%
	N	31.7%	37.5%	20.9%	28.1%	52.9%	8.9%	11.7%	19.1%	50.2%	8.6%	0.6%	30.6%	20.5%	20.2%	3.7%	0.9%	14.1%	23.6%	27.6%	38.5%	0.0%	0.3%	0.3%	34.3%	4.6%
Teenage Driver	Y	1.8%	3.1%	1.5%	1.5%	4.3%	0.9%	0.3%	2.2%	3.4%	0.6%	0.0%	1.8%	2.1%	1.8%	0.3%	0.0%	0.6%	1.5%	3.3%	2.5%	0.0%	0.0%	0.0%	3.1%	0.6%
	N	33.5%	37.8%	22.2%	29.7%	55.4%	8.3%	12.9%	19.7%	51.4%	8.9%	0.6%	32.4%	20.5%	21.1%	3.4%	0.9%	15.0%	24.7%	27.6%	40.4%	0.0%	0.3%	0.3%	33.9%	4.9%
Day of the Week	Monday	6.5%	5.8%	4.9%	5.2%	9.8%	2.1%	2.2%	3.7%	9.8%	1.5%	0.0%	5.8%	4.0%	3.7%	0.9%	0.0%	2.8%	3.6%	5.8%	7.6%	0.0%	0.0%	0.0%	7.0%	0.6%
	Tuesday	6.2%	5.2%	4.0%	5.5%	8.9%	0.9%	3.1%	2.5%	8.0%	1.5%	0.3%	5.2%	3.1%	3.1%	0.3%	0.3%	3.4%	3.3%	4.7%	6.2%	0.0%	0.3%	0.0%	6.1%	0.0%
	Wednesday	5.2%	5.2%	3.1%	3.1%	9.8%	0.9%	1.2%	4.0%	7.7%	0.6%	0.0%	4.0%	3.1%	4.0%	0.9%	0.0%	1.8%	5.5%	3.3%	5.5%	0.0%	0.0%	0.0%	5.8%	0.6%
	Thursday	4.0%	6.8%	3.4%	3.7%	9.2%	1.2%	0.9%	3.1%	7.7%	2.2%	0.3%	6.4%	2.8%	3.4%	0.0%	0.3%	1.2%	3.3%	5.8%	6.2%	0.0%	0.0%	0.0%	6.4%	0.6%
	Friday	6.2%	5.2%	3.1%	5.8%	6.4%	2.1%	2.2%	4.3%	6.5%	1.5%	0.0%	4.6%	2.8%	3.7%	0.9%	0.0%	2.4%	5.1%	4.4%	4.7%	0.0%	0.0%	0.3%	4.3%	0.9%
	Saturday	3.4%	7.7%	3.4%	4.6%	8.6%	1.5%	1.2%	2.2%	10.2%	0.9%	0.0%	5.5%	4.6%	2.1%	0.0%	0.3%	2.1%	2.2%	4.7%	7.6%	0.0%	0.0%	0.0%	4.9%	1.5%
	Sunday	4.0%	4.9%	1.8%	3.4%	7.0%	0.3%	2.5%	2.2%	4.9%	1.2%	0.0%	2.8%	2.4%	3.1%	0.6%	0.0%	1.8%	3.3%	2.2%	5.1%	0.0%	0.0%	0.0%	2.4%	1.2%
Time of Day	12-3 AM	1.2%	1.8%	0.9%	1.2%	2.4%	0.3%	0.3%	0.9%	1.5%	1.2%	0.0%	1.5%	1.2%	0.6%	0.0%	0.0%	0.6%	0.7%	1.5%	1.8%	0.0%	0.0%	0.0%	0.9%	0.0%
	3-6 AM	1.8%	0.9%	2.2%	2.1%	2.1%	0.6%	0.6%	0.9%	2.8%	0.6%	0.0%	2.4%	0.6%	0.6%	0.3%	0.0%	0.9%	1.1%	0.7%	2.9%	0.0%	0.0%	0.0%	1.8%	0.0%
	6-9 AM	6.5%	6.8%	3.4%	4.3%	10.7%	1.5%	1.8%	4.0%	9.2%	1.2%	0.3%	4.6%	4.0%	4.6%	0.9%	0.0%	2.4%	4.7%	5.8%	6.2%	0.0%	0.3%	0.0%	6.1%	0.9%
	9-Noon	4.6%	4.6%	4.6%	3.7%	8.9%	1.2%	1.5%	4.0%	7.7%	0.6%	0.0%	4.6%	4.0%	3.1%	0.6%	0.3%	1.2%	5.5%	1.8%	7.3%	0.0%	0.0%	0.0%	6.1%	0.6%
	Noon-3 PM	4.9%	5.8%	3.1%	3.7%	8.9%	1.5%	2.5%	3.4%	6.5%	1.5%	0.0%	5.2%	2.8%	3.1%	0.6%	0.0%	2.4%	2.9%	4.0%	6.9%	0.0%	0.0%	0.0%	5.8%	0.3%
	3-6 PM	6.5%	6.2%	4.0%	6.7%	9.8%	0.3%	3.4%	3.4%	8.6%	1.2%	0.0%	5.5%	2.8%	3.7%	0.3%	0.3%	4.3%	3.6%	4.7%	6.5%	0.0%	0.0%	0.0%	5.8%	0.9%
	6-9 PM	5.8%	9.2%	3.1%	5.5%	10.1%	2.4%	1.8%	3.1%	12.0%	1.2%	0.0%	5.5%	4.6%	4.9%	0.3%	0.3%	2.4%	4.4%	7.6%	6.5%	0.0%	0.0%	0.0%	6.4%	0.9%
	9-Midnight	4.0%	5.5%	2.5%	4.0%	6.7%	1.2%	1.2%	2.2%	6.5%	1.8%	0.3%	4.9%	2.8%	2.4%	0.6%	0.0%	1.2%	3.3%	4.7%	4.7%	0.0%	0.0%	0.3%	4.0%	1.8%
Lighting Conditions	Dark - Lighted	4.9%	9.2%	6.2%	5.2%	12.8%	2.1%	1.2%	4.0%	12.6%	2.5%	0.0%	9.5%	4.9%	2.8%	0.9%	0.3%	1.8%	2.9%	8.4%	10.5%	0.0%	0.0%	0.3%	6.4%	1.5%
	Dark - Not Lighted	4.6%	4.3%	2.2%	4.9%	4.9%	1.2%	0.6%	1.8%	6.2%	1.8%	0.6%	3.7%	2.4%	3.1%	0.6%	0.0%	1.2%	4.4%	2.9%	4.4%	0.0%	0.0%	0.0%	4.6%	0.6%
	Dark - Unknown Lighting	0.3%	0.3%	0.0%	0.3%	0.3%	0.0%	0.3%	0.0%	0.3%	0.0%	0.0%	0.0%	0.3%	0.0%	0.0%	0.0%	0.3%	0.0%	0.4%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Dawn	1.5%	1.5%	0.0%	0.6%	1.8%	0.6%	0.3%	1.2%	1.2%	0.3%	0.0%	0.0%	1.5%	1.2%	0.3%	0.0%	0.0%	1.5%	1.5%	0.7%	0.0%	0.3%	0.0%	0.9%	0.0%
	Daylight	23.1%	24.3%	14.8%	19.9%	37.6%	4.9%	10.5%	14.5%	32.3%	4.9%	0.0%	20.2%	12.8%	15.0%	1.8%	0.6%	11.9%	16.7%	16.7%	26.2%	0.0%	0.0%	0.0%	23.9%	3.4%
	Dusk	0.6%	0.9%	0.3%	0.3%	1.2%	0.3%	0.3%	0.0%	1.5%	0.0%	0.0%	0.3%	0.6%	0.6%	0.0%	0.0%	0.3%	0.4%	1.1%	0.4%	0.0%	0.0%	0.0%	0.6%	0.0%
	Other	0.0%	0.0%	0.3%	0.0%	0.3%	0.0%	0.0%	0.0%	0.3%	0.0%	0.0%	0.3%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.4%	0.0%	0.0%	0.0%	0.3%	0.0%
	Unknown	0.3%	0.3%	0.0%	0.0%	0.6%	0.0%	0.0%	0.3%	0.3%	0.0%	0.0%	0.0%	0.3%	0.0%	0.3%	0.0%	0.0%	0.4%	0.0%	0.4%	0.0%	0.0%	0.0%	0.3%	0.0%

Attachment B-7
MetroPlan Orlando Region
Percent of All KSI Crashes Involving Bicyclist 2018-2022

Mode:	All Collisions	Context Classification				Bike Lane/Paved Shoulder > 4 ft			Bike Slots			Sidewalks			Median Presence					
All		C4	C5	C6	None	None	One Side	Both Sides	None	One Side	Both Sides	None	One Side	Both Sides	None	Grass	Multiple	Paved	Other	
Type	Angle	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Animal	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Bicycle	6.1%	0.0%	0.0%	50.8%	64.6%	11.4%	24.0%	90.2%	8.0%	1.8%	10.2%	9.2%	80.6%	41.2%	30.8%	0.9%	25.8%	1.2%	
	Head On	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Left Turn	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Off Road	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Other	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Pedestrian	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Rear End	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Right Turn	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Rollover	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Sideswipe	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Unknown	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Alcohol Related	Y	0.0%	0.0%	0.0%	0.9%	0.9%	0.3%	0.3%	1.2%	0.3%	0.0%	0.3%	0.0%	1.2%	0.9%	0.3%	0.0%	0.3%	0.0%	
	N	6.1%	0.0%	0.0%	49.8%	63.7%	11.1%	23.7%	88.9%	7.7%	1.8%	9.8%	9.2%	79.4%	40.3%	30.5%	0.9%	25.5%	1.2%	
Hit and Run	Y	1.2%	0.0%	0.0%	8.9%	12.0%	4.9%	4.9%	17.5%	0.9%	0.3%	2.5%	2.2%	14.2%	8.3%	5.2%	0.0%	4.9%	0.3%	
	N	4.9%	0.0%	0.0%	41.9%	52.6%	19.1%	19.1%	72.6%	7.1%	1.5%	7.7%	7.1%	66.5%	32.9%	25.5%	0.9%	20.9%	0.9%	
Aggressive Driving	Y	0.0%	0.0%	0.0%	0.3%	0.0%	0.3%	0.3%	0.3%	0.0%	0.0%	0.0%	0.0%	0.3%	0.3%	0.0%	0.0%	0.0%	0.0%	
	N	6.1%	0.0%	0.0%	50.5%	64.6%	23.7%	23.7%	89.8%	8.0%	1.8%	10.2%	9.2%	80.3%	40.9%	30.8%	0.9%	25.8%	1.2%	
Distracted Driving	Y	0.6%	0.0%	0.0%	8.0%	12.0%	4.0%	4.0%	15.7%	1.5%	0.6%	1.5%	0.6%	15.7%	6.8%	4.0%	0.3%	6.5%	0.3%	
	N	5.5%	0.0%	0.0%	42.8%	52.6%	20.0%	20.0%	74.5%	6.5%	1.2%	8.6%	8.6%	64.9%	34.5%	26.8%	0.6%	19.4%	0.9%	
Intersection Related	Y	2.4%	0.0%	0.0%	22.9%	26.8%	10.5%	10.5%	37.5%	4.3%	0.6%	3.4%	3.4%	35.7%	19.4%	12.0%	0.9%	9.8%	0.3%	
	N	3.7%	0.0%	0.0%	27.8%	37.8%	13.5%	13.5%	52.6%	3.7%	1.2%	6.8%	5.8%	44.9%	21.8%	18.8%	0.0%	16.0%	0.9%	
Drug Related	Y	0.0%	0.0%	0.0%	0.9%	0.9%	0.3%	0.3%	1.2%	0.3%	0.0%	0.3%	0.0%	1.2%	0.9%	0.3%	0.0%	0.3%	0.0%	
	N	6.1%	0.0%	0.0%	49.8%	63.7%	23.7%	23.7%	88.9%	7.7%	1.8%	9.8%	9.2%	79.4%	40.3%	30.5%	0.9%	25.5%	1.2%	
Aging Driver	Y	0.9%	0.0%	0.0%	5.5%	6.8%	1.5%	1.5%	8.9%	0.9%	0.0%	0.3%	0.3%	9.2%	4.3%	1.8%	0.3%	3.4%	0.0%	
	N	5.2%	0.0%	0.0%	45.3%	57.8%	22.5%	22.5%	81.2%	7.1%	1.8%	9.8%	8.9%	71.4%	36.9%	28.9%	0.6%	22.5%	1.2%	
Teenage Driver	Y	0.0%	0.0%	0.0%	3.1%	3.4%	1.5%	1.5%	4.9%	1.5%	0.0%	0.3%	0.0%	6.2%	1.8%	2.2%	0.3%	1.8%	0.3%	
	N	6.1%	0.0%	0.0%	47.7%	61.2%	22.5%	22.5%	85.2%	6.5%	1.8%	9.8%	9.2%	74.5%	39.4%	28.6%	0.6%	24.0%	0.9%	
Day of the Week	Monday	0.6%	0.0%	0.0%	8.9%	10.4%	2.7%	2.7%	14.2%	2.2%	0.9%	1.2%	1.8%	14.2%	8.6%	2.5%	0.3%	5.2%	0.6%	
	Tuesday	0.9%	0.0%	0.0%	8.0%	7.9%	4.9%	4.9%	15.1%	0.3%	0.0%	1.5%	2.2%	11.7%	5.8%	6.2%	0.0%	3.1%	0.3%	
	Wednesday	0.0%	0.0%	0.0%	7.3%	7.4%	4.1%	4.1%	12.6%	0.3%	0.6%	1.2%	1.2%	11.1%	6.5%	4.3%	0.0%	2.5%	0.3%	
	Thursday	0.9%	0.0%	0.0%	6.1%	6.0%	4.6%	4.6%	12.3%	1.5%	0.3%	2.5%	1.8%	9.8%	4.0%	6.5%	0.3%	3.4%	0.0%	
	Friday	0.9%	0.0%	0.0%	8.0%	8.5%	1.6%	1.6%	12.6%	1.8%	0.0%	1.5%	1.2%	11.7%	6.2%	4.3%	0.0%	4.0%	0.0%	
	Saturday	1.8%	0.0%	0.0%	6.4%	9.6%	2.2%	2.2%	13.2%	1.2%	0.0%	1.5%	0.9%	12.0%	5.8%	3.1%	0.3%	5.2%	0.0%	
	Sunday	0.9%	0.0%	0.0%	6.1%	7.7%	1.1%	1.1%	10.2%	0.6%	0.0%	0.6%	0.0%	10.2%	4.3%	4.0%	0.0%	2.5%	0.0%	
Time of Day	12-3 AM	0.6%	0.0%	0.0%	2.4%	2.5%	0.3%	0.3%	3.7%	0.3%	0.0%	0.3%	0.3%	3.4%	1.5%	1.2%	0.0%	1.2%	0.0%	
	3-6 AM	0.0%	0.0%	0.0%	3.1%	2.5%	1.4%	1.4%	4.3%	0.3%	0.3%	0.3%	0.9%	3.7%	1.8%	1.5%	0.6%	0.3%	0.6%	
	6-9 AM	0.3%	0.0%	0.0%	8.9%	9.3%	4.6%	4.6%	15.7%	0.6%	0.3%	2.2%	2.5%	12.0%	6.5%	4.9%	0.0%	4.9%	0.3%	
	9-Noon	0.6%	0.0%	0.0%	6.4%	8.5%	2.5%	2.5%	12.0%	1.5%	0.3%	0.3%	0.6%	12.9%	4.9%	4.3%	0.0%	4.3%	0.3%	
	Noon-3 PM	1.2%	0.0%	0.0%	6.7%	7.9%	2.5%	2.5%	12.0%	1.5%	0.3%	0.6%	1.5%	11.7%	6.2%	4.0%	0.0%	3.7%	0.0%	
	3-6 PM	0.6%	0.0%	0.0%	9.5%	9.3%	3.6%	3.6%	15.1%	1.2%	0.3%	1.5%	1.8%	13.2%	6.8%	7.7%	0.3%	1.8%	0.0%	
	6-9 PM	1.2%	0.0%	0.0%	9.5%	9.6%	4.9%	4.9%	16.3%	1.5%	0.3%	2.2%	0.3%	15.7%	8.6%	4.3%	0.0%	5.2%	0.0%	
	9-Midnight	1.5%	0.0%	0.0%	4.3%	7.9%	1.6%	1.6%	11.1%	0.9%	0.0%	2.8%	1.2%	8.0%	4.9%	2.8%	0.0%	4.3%	0.0%	
Lighting Conditions	Dark - Lighted	2.8%	0.0%	0.0%	9.2%	11.2%	4.4%	4.4%	19.1%	0.9%	0.3%	1.5%	0.9%	17.8%	7.7%	6.5%	0.3%	5.5%	0.3%	
	Dark - Not Lighted	0.3%	0.0%	0.0%	5.5%	6.8%	1.6%	1.6%	9.5%	1.2%	0.3%	2.8%	1.8%	6.5%	4.6%	2.8%	0.3%	3.1%	0.3%	
	Dark - Unknown Lighting	0.0%	0.0%	0.0%	0.6%	0.3%	0.3%	0.3%	0.6%	0.0%	0.0%	0.0%	0.0%	0.6%	0.0%	0.3%	0.0%	0.0%	0.3%	
	Dawn	0.0%	0.0%	0.0%	1.8%	2.5%	0.0%	0.0%	2.8%	0.3%	0.0%	0.9%	0.3%	1.8%	1.8%	0.0%	0.0%	1.2%	0.0%	
	Daylight	3.1%	0.0%	0.0%	32.1%	35.0%	14.2%	14.2%	55.4%	5.5%	1.2%	4.3%	6.2%	51.7%	25.8%	20.9%	0.3%	14.8%	0.3%	
	Dusk	0.0%	0.0%	0.0%	1.2%	1.1%	0.5%	0.5%	1.8%	0.0%	0.0%	0.0%	0.0%	1.8%	0.6%	0.0%	0.0%	1.2%	0.0%	
	Other	0.0%	0.0%	0.0%	0.0%	0.3%	0.0%	0.0%	0.3%	0.0%	0.0%	0.0%	0.0%	0.3%	0.0%	0.3%	0.0%	0.0%	0.0%	
Unknown	0.0%	0.0%	0.0%	0.3%	0.3%	0.3%	0.3%	0.6%	0.0%	0.0%	0.6%	0.0%	0.0%	0.6%	0.0%	0.0%	0.0%	0.0%		

Attachment B-8
MetroPlan Orlando Region
Percent of All KSI Crashes involving Pedestrians

Mode:	All Collisions	Number of Lanes			Turn Lanes			Posted Speed					Roadway Classification						AADT (2022)			Context Classification					
All		3 Lanes or Less	4-5 Lanes	6+ Lanes	None	1 to 2	3+	25 or less	30-35	40-45	50-55	60+	Principal Arterial	Minor Arterial	Major Collector	Minor Collector	Local	None	< 15000	15,000-30,000	30,000+	C1	C2	C2T	C3C	C3R	
		2-3	4-5	6-8				0-25	30-35	40-45	50-55	60+															
Type	Angle	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Animal	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Bicycle	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Head On	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Left Turn	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Off Road	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Other	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Pedestrian	26.1%	37.1%	36.9%	28.2%	61.2%	10.6%	10.4%	18.6%	59.3%	11.6%	0.1%	45.2%	24.7%	16.1%	2.3%	0.1%	11.6%	17.8%	31.1%	51.1%	0.0%	0.5%	0.0%	44.2%	3.9%	
	Rear End	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Right Turn	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Rollover	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Sideswipe	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Unknown	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	
Alcohol Related	Y	0.9%	1.4%	0.3%	1.3%	1.1%	0.2%	0.3%	0.7%	1.2%	0.3%	0.0%	1.0%	0.7%	0.4%	0.2%	0.0%	0.2%	0.8%	1.2%	0.6%	0.0%	0.1%	0.0%	1.0%	0.1%	
	N	25.2%	35.7%	36.5%	26.9%	60.2%	10.3%	10.0%	17.8%	58.1%	11.3%	0.1%	44.2%	24.0%	15.6%	2.1%	0.1%	11.4%	17.0%	29.9%	50.5%	0.0%	0.4%	0.0%	43.3%	3.8%	
Hit and Run	Y	6.1%	6.5%	6.8%	6.0%	11.6%	1.7%	2.6%	3.6%	11.2%	2.0%	0.0%	8.3%	5.4%	2.2%	0.3%	0.0%	3.1%	3.0%	6.3%	9.1%	0.0%	0.1%	0.0%	7.2%	0.5%	
	N	20.0%	30.6%	30.0%	22.2%	49.6%	8.9%	7.8%	15.0%	48.1%	9.6%	0.1%	36.9%	19.3%	13.8%	2.0%	0.1%	8.6%	14.8%	24.8%	42.0%	0.0%	0.4%	0.0%	37.1%	3.4%	
Aggressive Driving	Y	0.6%	0.6%	0.7%	0.7%	1.2%	0.1%	0.4%	0.4%	1.1%	0.1%	0.0%	1.1%	0.3%	0.2%	0.0%	0.0%	0.4%	0.2%	0.6%	1.0%	0.0%	0.0%	0.0%	0.7%	0.0%	
	N	25.4%	36.4%	36.1%	27.5%	60.1%	10.5%	9.9%	18.2%	58.2%	11.5%	0.1%	44.1%	24.4%	15.8%	2.3%	0.1%	11.2%	17.6%	30.5%	50.1%	0.0%	0.5%	0.0%	43.5%	3.9%	
Distracted Driving	Y	3.5%	3.0%	2.8%	3.0%	5.8%	0.7%	1.3%	1.8%	5.9%	0.3%	0.0%	3.3%	2.0%	1.9%	0.3%	0.0%	2.0%	2.2%	2.5%	3.8%	0.0%	0.1%	0.0%	3.2%	0.3%	
	N	22.5%	34.1%	34.1%	25.2%	55.4%	9.8%	9.1%	16.8%	53.4%	11.3%	0.1%	41.9%	22.7%	14.1%	2.0%	0.1%	9.6%	15.7%	28.6%	47.2%	0.0%	0.4%	0.0%	41.1%	3.6%	
Intersection Related	Y	8.4%	10.0%	10.3%	5.5%	19.1%	3.9%	2.9%	6.5%	16.1%	3.2%	0.0%	11.1%	7.5%	5.4%	0.8%	0.1%	3.6%	6.1%	7.4%	14.6%	0.0%	0.1%	0.0%	11.4%	1.5%	
	N	17.6%	27.0%	26.6%	22.7%	42.1%	6.7%	7.5%	12.1%	43.2%	8.4%	0.1%	34.1%	17.2%	10.7%	1.5%	0.0%	8.0%	11.7%	23.7%	36.5%	0.0%	0.4%	0.0%	32.8%	2.4%	
Drug Related	Y	0.3%	0.9%	0.5%	0.6%	0.8%	0.2%	0.1%	0.2%	1.2%	0.2%	0.0%	0.6%	0.6%	0.1%	0.1%	0.0%	0.2%	0.1%	0.7%	0.8%	0.0%	0.0%	0.0%	0.5%	0.1%	
	N	25.7%	36.2%	36.3%	27.6%	60.4%	10.3%	10.3%	18.4%	58.1%	11.4%	0.1%	44.6%	24.1%	15.9%	2.2%	0.1%	11.4%	17.7%	30.4%	50.2%	0.0%	0.5%	0.0%	43.7%	3.8%	
Aging Driver	Y	2.2%	3.1%	2.6%	2.3%	5.1%	0.6%	0.9%	1.5%	4.7%	0.9%	0.0%	3.6%	2.3%	1.1%	0.1%	0.0%	1.0%	1.6%	2.4%	4.1%	0.0%	0.0%	0.0%	3.8%	0.2%	
	N	23.8%	34.0%	34.3%	25.9%	56.2%	9.9%	9.5%	17.1%	54.6%	10.8%	0.1%	41.6%	22.4%	15.0%	2.2%	0.1%	10.7%	16.3%	28.7%	47.0%	0.0%	0.5%	0.0%	40.4%	3.7%	
Teenage Driver	Y	1.0%	1.4%	2.4%	1.4%	3.1%	0.2%	0.5%	1.0%	2.6%	0.6%	0.0%	2.0%	1.6%	0.4%	0.1%	0.0%	0.5%	0.6%	0.5%	3.6%	0.0%	0.0%	0.0%	2.3%	0.0%	
	N	25.1%	35.7%	34.5%	26.8%	58.2%	10.3%	9.8%	17.6%	56.7%	11.0%	0.1%	43.2%	23.1%	15.6%	2.2%	0.1%	11.1%	17.2%	30.6%	47.5%	0.0%	0.5%	0.0%	41.9%	3.9%	
Day of the Week	Monday	3.8%	4.3%	4.3%	4.0%	7.2%	1.2%	1.7%	1.9%	6.9%	1.8%	0.0%	5.4%	3.0%	2.0%	0.2%	0.0%	1.8%	2.2%	3.7%	6.1%	0.0%	0.0%	0.0%	5.7%	0.6%	
	Tuesday	4.2%	5.1%	6.0%	4.6%	9.1%	1.6%	1.5%	3.1%	9.0%	1.6%	0.1%	6.8%	3.5%	2.7%	0.4%	0.0%	1.9%	3.3%	3.6%	8.3%	0.0%	0.0%	0.0%	7.7%	0.5%	
	Wednesday	4.4%	4.9%	5.4%	4.9%	8.2%	1.8%	2.1%	2.6%	8.1%	1.9%	0.0%	6.7%	2.6%	2.5%	0.7%	0.0%	2.3%	3.1%	3.9%	7.2%	0.0%	0.1%	0.0%	5.7%	1.0%	
	Thursday	3.2%	5.4%	6.2%	2.7%	10.3%	1.8%	1.1%	3.2%	8.9%	1.7%	0.0%	7.6%	3.2%	2.3%	0.3%	0.1%	1.4%	2.2%	4.3%	8.7%	0.0%	0.1%	0.0%	7.2%	0.4%	
	Friday	3.8%	6.6%	5.4%	4.3%	10.2%	1.5%	1.1%	3.1%	9.9%	1.8%	0.0%	7.0%	5.1%	2.2%	0.4%	0.0%	1.4%	3.5%	5.1%	8.0%	0.0%	0.1%	0.0%	6.1%	0.7%	
	Saturday	3.6%	6.1%	4.8%	4.6%	8.7%	1.1%	2.0%	2.4%	9.0%	1.2%	0.0%	6.2%	4.1%	2.0%	0.0%	0.0%	2.0%	1.6%	5.9%	6.6%	0.0%	0.0%	0.0%	5.4%	0.4%	
	Sunday	3.0%	4.6%	4.7%	3.0%	7.5%	1.7%	0.9%	2.4%	7.5%	1.6%	0.0%	5.6%	3.3%	2.2%	0.2%	0.0%	0.8%	2.0%	4.5%	6.2%	0.0%	0.2%	0.0%	6.4%	0.2%	
Time of Day	12-3 AM	3.0%	3.1%	4.3%	3.7%	5.0%	1.7%	1.2%	1.8%	6.1%	1.3%	0.0%	5.3%	1.9%	1.7%	0.2%	0.0%	1.3%	1.9%	3.1%	5.3%	0.0%	0.0%	0.0%	5.1%	0.3%	
	3-6 AM	2.1%	2.6%	2.8%	2.0%	3.8%	1.6%	0.5%	1.5%	4.4%	1.1%	0.0%	3.6%	1.8%	1.2%	0.1%	0.0%	0.7%	1.2%	2.6%	3.7%	0.0%	0.0%	0.0%	3.5%	0.2%	
	6-9 AM	2.8%	3.7%	3.8%	2.4%	7.3%	0.6%	1.1%	2.0%	5.9%	1.4%	0.0%	4.1%	2.6%	2.0%	0.4%	0.0%	1.2%	2.0%	3.1%	5.3%	0.0%	0.0%	0.0%	4.1%	0.6%	
	9-Noon	2.0%	2.1%	1.9%	1.8%	3.8%	0.4%	1.7%	1.1%	2.7%	0.6%	0.0%	2.2%	1.1%	1.1%	0.0%	0.1%	1.6%	1.0%	1.4%	2.6%	0.0%	0.0%	0.0%	1.9%	0.3%	
	Noon-3 PM	2.6%	2.7%	1.5%	3.0%	3.6%	0.3%	1.1%	2.2%	3.3%	0.1%	0.0%	1.9%	2.0%	1.6%	0.0%	0.0%	1.4%	1.4%	2.8%	2.0%	0.0%	0.1%	0.0%	2.4%	0.4%	
	3-6 PM	4.0%	3.3%	3.1%	4.0%	6.0%	0.6%	1.6%	2.2%	6.1%	0.4%	0.0%	3.0%	2.5%	2.7%	0.6%	0.0%	1.8%	3.6%	2.6%	3.8%	0.0%	0.0%	0.0%	3.7%	0.4%	
	6-9 PM	5.0%	10.9%	10.5%	6.2%	17.4%	2.6%	1.5%	4.6%	16.9%	3.4%	0.0%	14.1%	5.9%	3.5%	0.7%	0.0%	2.0%	3.1%	9.0%	15.3%	0.0%	0.4%	0.0%	12.6%	0.6%	
	9-Midnight	4.6%	8.7%	9.0%	5.1%	14.4%	2.6%	1.7%	3.1%	14.0%	3.3%	0.1%	11.0%	6.9%	2.3%	0.2%	0.0%	1.7%	3.6%	6.5%	13.0%	0.0%	0.0%	0.0%	11.0%	1.0%	
Lighting Conditions	Dark - Lighted	7.3%	17.4%	21.6%	9.7%	30.5%	6.0%	2.8%	7.7%	30.0%	5.8%	0.0%	26.3%	11.2%	5.0%	0.4%	0.0%	3.4%	5.0%	14.2%	29.3%	0.0%	0.1%	0.0%	23.4%	0.8%	
	Dark - Not Lighted	6.4%	7.9%	4.4%	6.1%	10.3%	2.0%	1.4%	2.9%	10.8%	3.5%	0.1%	7.7%	4.6%	3.9%	0.5%	0.0%	1.7%	4.7%	6.8%	7.5%	0.0%	0.3%	0.0%	8.6%	1.2%	
	Dark - Unknown Lighting	0.1%	0.0%	0.1%	0.1%	0.1%	0.0%	0.1%	0.0%	0.1%	0.0%	0.0%	0.1%	0.0%	0.1%	0.0%	0.0%	0.0%	0.1%	0.0%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	
	Dawn	0.4%	1.0%	1.0%	0.5%	1.4%	0.4%	0.2%	0.4%	1.4%	0.3%	0.0%	0.8%	1.0%	0.1%	0.2%	0.0%	0.2%	0.2%	0.8%	1.3%	0.0%	0.0%	0.0%	1.0%	0.2%	
	Daylight	10.3%	9.9%	8.8%	10.1%	17.3%	1.7%	5.4%	6.6%	15.0%	1.9%	0.0%	9.1%	6.9%	6.2%	1.0%	0.1%	5.9%	6.9%	7.9%	11.5%	0.0%	0.1%	0.0%	10.0%	1.7%	
	Dusk	1.4%	0.7%	1.0%	1.5%	1.4%	0.3%	0.4%	0.7%	1.8%	0.1%	0.0%	1.1%	1.0%	0.5%	0.2%	0.0%	0.4%	0.6%	1.3%	1.1%	0.0%	0.0%	0.0%	1.1%	0.0%	
	Other	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	0.0%	0.2%	0.1%	0.0%	0.0%	0.1%	0.1%	0.1%	0.0%	0.0%	0.0%	0.1%	0.0%	0.2%	0.0%	0.0%	0.0%	0.2%	0.0%	
Unknown	0.1%	0.0%	0.0%	0.0%	0.1%	0.0%	0.0%	0.0%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	0.0%	0.0%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%		

Attachment B-8
MetroPlan Orlando Region
Percent of All KSI Crashes involving Pedestrians

Mode:	All Collisions	Context Classification				Bike Lane/Paved Shoulder > 4 ft			Bike Slots			Sidewalks			Median Presence					
All		C4	C5	C6	None	None	One Side	Both Sides	None	One Side	Both Sides	None	One Side	Both Sides	None	Grass	Multiple	Paved	Other	
Type	Angle	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Animal	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Bicycle	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Head On	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Left Turn	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Off Road	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Other	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Pedestrian	11.3%	1.0%	0.7%	38.3%	64.2%	12.9%	22.9%	88.1%	10.5%	1.4%	6.9%	10.6%	82.5%	36.9%	30.8%	3.0%	28.6%	0.7%	
	Rear End	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Right Turn	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Rollover	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Sideswipe	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Unknown	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	
Alcohol Related	Y	0.2%	0.0%	0.0%	1.2%	1.7%	0.2%	0.6%	2.2%	0.2%	0.1%	0.4%	0.4%	1.7%	1.4%	0.9%	0.0%	0.3%	0.0%	
	N	11.1%	1.0%	0.7%	37.2%	62.5%	12.7%	22.2%	85.9%	10.3%	1.3%	6.5%	10.1%	80.8%	35.5%	29.9%	3.0%	28.3%	0.7%	
Hit and Run	Y	2.5%	0.2%	0.3%	8.4%	13.7%	4.1%	4.1%	18.3%	1.2%	0.0%	1.1%	2.5%	15.9%	9.2%	4.1%	0.4%	5.6%	0.2%	
	N	8.8%	0.7%	0.4%	29.9%	50.5%	18.8%	18.8%	69.9%	9.3%	1.4%	5.9%	8.1%	66.6%	27.7%	26.7%	2.6%	23.1%	0.5%	
Aggressive Driving	Y	0.4%	0.1%	0.0%	0.7%	1.0%	0.6%	0.6%	1.6%	0.4%	0.0%	0.2%	0.1%	1.7%	1.1%	0.5%	0.0%	0.4%	0.0%	
	N	10.9%	0.8%	0.7%	37.6%	63.2%	22.2%	22.2%	86.5%	10.0%	1.4%	6.7%	10.5%	80.8%	35.8%	30.2%	3.0%	28.2%	0.7%	
Distracted Driving	Y	1.1%	0.1%	0.0%	4.8%	6.8%	1.8%	1.8%	8.9%	0.4%	0.0%	1.0%	0.9%	7.5%	4.1%	2.6%	0.2%	2.4%	0.1%	
	N	10.2%	0.8%	0.7%	33.6%	57.4%	21.0%	21.0%	79.3%	10.0%	1.4%	6.0%	9.7%	75.0%	32.8%	28.2%	2.8%	26.3%	0.6%	
Intersection Related	Y	3.0%	0.4%	0.6%	11.5%	18.7%	5.3%	5.3%	24.9%	3.5%	0.3%	1.1%	3.0%	24.7%	9.9%	8.3%	0.5%	9.8%	0.1%	
	N	8.3%	0.5%	0.1%	26.8%	45.5%	17.5%	17.5%	63.2%	6.9%	1.1%	5.9%	7.6%	57.8%	26.9%	22.4%	2.5%	18.8%	0.6%	
Drug Related	Y	0.3%	0.0%	0.0%	0.7%	1.3%	0.2%	0.2%	1.4%	0.2%	0.1%	0.2%	0.2%	1.3%	0.5%	0.5%	0.0%	0.6%	0.0%	
	N	11.0%	1.0%	0.7%	37.6%	62.9%	22.6%	22.6%	86.8%	10.3%	1.3%	6.7%	10.4%	81.2%	36.3%	30.2%	3.0%	28.0%	0.7%	
Aging Driver	Y	1.0%	0.0%	0.0%	3.1%	4.9%	2.0%	2.0%	7.2%	0.5%	0.2%	0.3%	1.1%	6.5%	3.1%	2.1%	0.1%	2.4%	0.2%	
	N	10.3%	1.0%	0.7%	35.3%	59.3%	20.8%	20.8%	81.0%	9.9%	1.2%	6.6%	9.5%	76.0%	33.8%	28.6%	2.9%	26.3%	0.5%	
Teenage Driver	Y	0.3%	0.0%	0.0%	2.0%	3.3%	0.9%	0.9%	4.2%	0.3%	0.2%	0.2%	0.7%	3.7%	1.5%	1.4%	0.3%	1.4%	0.1%	
	N	11.0%	1.0%	0.7%	36.3%	60.9%	22.0%	22.0%	84.0%	10.1%	1.2%	6.7%	9.8%	78.7%	35.4%	29.4%	2.7%	27.2%	0.6%	
Day of the Week	Monday	1.7%	0.0%	0.0%	4.3%	7.3%	2.0%	2.0%	10.5%	1.7%	0.2%	0.6%	1.9%	9.8%	4.4%	4.3%	0.4%	3.3%	0.0%	
	Tuesday	1.2%	0.0%	0.0%	5.9%	8.6%	3.9%	3.9%	14.1%	1.1%	0.1%	1.3%	1.5%	12.5%	6.5%	4.4%	0.3%	4.0%	0.1%	
	Wednesday	1.9%	0.0%	0.0%	6.2%	9.3%	2.1%	2.1%	12.8%	1.7%	0.2%	1.2%	1.6%	12.0%	6.1%	3.4%	0.2%	4.9%	0.1%	
	Thursday	1.9%	0.4%	0.0%	4.9%	7.1%	4.2%	4.2%	12.3%	2.2%	0.3%	0.9%	1.7%	12.3%	4.9%	4.2%	0.9%	4.8%	0.1%	
	Friday	2.5%	0.1%	0.1%	6.3%	9.9%	2.7%	2.7%	13.9%	1.8%	0.2%	0.7%	1.5%	13.7%	5.7%	5.6%	0.2%	4.5%	0.0%	
	Saturday	1.5%	0.1%	0.4%	6.5%	9.0%	3.1%	3.1%	13.5%	1.0%	0.1%	1.1%	1.2%	12.3%	5.3%	4.8%	0.4%	3.7%	0.2%	
	Sunday	0.6%	0.3%	0.2%	4.1%	7.2%	2.7%	2.7%	11.1%	1.0%	0.2%	1.2%	1.2%	9.9%	4.0%	4.2%	0.5%	3.4%	0.2%	
Time of Day	12-3 AM	1.3%	0.2%	0.1%	3.4%	6.8%	1.3%	1.3%	9.0%	1.2%	0.2%	1.2%	1.0%	8.2%	4.1%	3.1%	0.0%	3.1%	0.1%	
	3-6 AM	0.7%	0.1%	0.1%	2.7%	4.7%	1.2%	1.2%	6.3%	1.1%	0.1%	1.0%	0.6%	5.9%	2.9%	2.0%	0.0%	2.6%	0.0%	
	6-9 AM	1.3%	0.4%	0.0%	3.9%	6.3%	1.7%	1.7%	8.9%	1.4%	0.1%	0.5%	1.7%	8.1%	3.3%	3.8%	0.4%	2.8%	0.0%	
	9-Noon	0.8%	0.0%	0.1%	2.9%	4.2%	1.1%	1.1%	5.8%	0.3%	0.0%	0.3%	0.3%	5.4%	2.1%	1.5%	0.3%	2.1%	0.0%	
	Noon-3 PM	0.7%	0.0%	0.1%	3.1%	4.4%	1.1%	1.1%	6.2%	0.4%	0.1%	0.4%	1.1%	5.2%	3.0%	1.9%	0.0%	1.7%	0.1%	
	3-6 PM	1.3%	0.0%	0.0%	5.3%	7.0%	1.7%	1.7%	9.6%	0.6%	0.1%	0.7%	0.7%	8.9%	4.9%	2.5%	0.5%	2.5%	0.0%	
	6-9 PM	3.2%	0.1%	0.1%	9.3%	13.8%	6.6%	6.6%	23.1%	3.1%	0.2%	1.1%	2.5%	22.9%	8.8%	7.8%	1.0%	8.7%	0.2%	
	9-Midnight	2.0%	0.1%	0.2%	7.8%	11.3%	6.2%	6.2%	19.3%	2.4%	0.5%	1.7%	2.7%	17.8%	7.8%	8.1%	0.7%	5.2%	0.3%	
Lighting Conditions	Dark - Lighted	6.3%	0.7%	0.5%	14.3%	26.4%	9.3%	9.3%	40.0%	5.4%	0.9%	1.7%	3.0%	41.6%	14.6%	13.9%	1.6%	15.6%	0.5%	
	Dark - Not Lighted	0.8%	0.0%	0.0%	7.6%	9.0%	5.5%	5.5%	16.1%	2.2%	0.3%	3.2%	3.1%	12.4%	7.7%	7.1%	0.5%	3.3%	0.1%	
	Dark - Unknown Lighting	0.1%	0.0%	0.0%	0.1%	0.2%	0.0%	0.0%	0.2%	0.0%	0.0%	0.0%	0.0%	0.2%	0.1%	0.0%	0.0%	0.1%	0.0%	
	Dawn	0.0%	0.1%	0.0%	1.1%	1.4%	0.4%	0.4%	1.8%	0.5%	0.0%	0.2%	0.5%	1.6%	0.6%	0.9%	0.0%	0.9%	0.0%	
	Daylight	3.6%	0.1%	0.2%	13.4%	19.4%	4.7%	4.7%	26.9%	1.8%	0.2%	1.7%	3.1%	24.1%	12.3%	8.0%	0.9%	7.7%	0.1%	
	Dusk	0.4%	0.0%	0.0%	1.7%	1.7%	0.9%	0.9%	2.9%	0.2%	0.0%	0.1%	0.7%	2.2%	1.3%	0.9%	0.0%	1.0%	0.0%	
	Other	0.0%	0.0%	0.0%	0.1%	0.1%	0.0%	0.0%	0.1%	0.2%	0.0%	0.0%	0.1%	0.2%	0.1%	0.1%	0.0%	0.1%	0.0%	
Unknown	0.0%	0.0%	0.0%	0.1%	0.1%	0.0%	0.0%	0.1%	0.0%	0.0%	0.0%	0.0%	0.1%	0.1%	0.0%	0.0%	0.0%	0.0%		

**Attachment C-1
Orange County
All Crashes 2018-2022**

Mode:	All Collisions	Number of Lanes			Turn Lanes			Posted Speed					Roadway Classification						AADT (2022)			Context Classification			
		3 Lanes or Less	4-5 Lanes	6+ Lanes				25 or less	30-35	40-45	50-55	60+	Principal Arterial	Minor Arterial	Major Collector	Minor Collector	Local	None	< 15000	15,000-30,000	30,000+	C1	C2	C2T	C3C
All		2-3	4-5	6-8	None	1 to 2	3+	0-25	30-35	40-45	50-55	60+													
Type	Angle	5948	4213	1713	4877	6310	988	2585	4580	4214	479	16	2536	2744	3589	388	265	2653	3797	2994	2537	0	76	0	2545
	Animal	90	116	24	133	83	15	31	38	98	32	31	70	45	52	19	2	43	83	64	39	0	28	0	29
	Bicycle	557	634	399	514	949	136	267	407	814	99	3	489	436	350	54	13	257	347	415	572	0	4	0	525
	Head On	893	647	280	813	905	150	332	599	758	127	4	439	444	551	51	15	368	515	535	447	0	16	0	420
	Left Turn	7965	11131	4149	5619	16034	1811	2364	7216	12460	1189	16	4956	7718	6593	739	255	3203	5565	7879	6668	2	208	0	6149
	Off Road	5214	3187	1308	5740	4044	443	2784	2353	3943	550	79	1823	2182	2446	401	144	3231	2534	2323	2033	12	148	0	1803
	Other	11167	6955	3602	13579	9770	1645	7354	6057	7250	999	64	5151	4734	4330	506	240	10033	4587	4930	5251	7	124	0	4698
	Pedestrian	749	848	650	764	1321	209	405	570	1106	166	0	760	627	449	45	15	398	415	572	895	0	7	0	748
	Rear End	14500	26230	22833	12708	40672	10580	2696	15467	37596	7739	65	26586	20193	12494	835	362	3490	9781	19201	31308	4	450	0	26436
	Right Turn	1066	1716	1196	809	2572	657	335	943	2392	299	9	1204	1417	864	85	37	431	703	1212	1671	0	24	0	1614
	Rollover	289	319	158	331	380	68	85	207	328	112	34	273	181	189	24	8	104	224	212	236	0	55	0	211
	Sideswipe	4977	9135	7293	4898	13308	3449	1536	5944	11930	1971	24	8900	6643	3926	278	110	1798	3316	6599	9878	6	123	0	8151
	Unknown	1183	1854	1242	1125	2580	634	388	1488	2072	324	7	1689	1229	902	49	39	431	844	1323	1712	0	23	0	1330
Alcohol Related	Y	1005	900	646	1027	1300	293	479	698	1142	14	851	626	579	70	30	464	621	630	885	3	27	0	823	
	N	53593	66085	44201	50883	97628	20492	20683	45171	83819	13868	338	54025	47967	36156	3404	1475	25976	32090	47629	62362	28	1259	0	53836
Hit and Run	Y	9009	9150	6930	9334	14045	3132	4434	6567	12011	26	8374	6896	5056	464	218	5503	4789	6631	9442	1	128	0	8094	
	N	45589	57835	37917	42576	84883	17653	16728	39302	72950	12035	326	46502	41697	31679	3010	1287	20937	27922	41628	53805	30	1158	0	46565
Aggressive Driving	Y	1339	1493	851	1315	2091	355	512	1271	1599	17	1255	925	875	89	39	578	847	1070	1243	1	56	0	1003	
	N	53259	65492	43996	50595	96837	20430	20650	44598	83362	13802	335	53621	47668	35860	3385	1466	25862	31864	47189	62004	30	1230	0	53656
Distracted Driving	Y	14760	19573	13297	13969	28710	6079	5313	11074	27037	4103	103	15465	14527	10357	1070	509	6830	8336	14253	18991	9	494	0	16886
	N	39838	47412	31550	37941	70218	14706	15849	34795	57924	9983	249	39411	34066	26378	2404	996	19610	24375	34006	44256	22	792	0	37773
Intersection Related	Y	19307	21291	11628	13307	32737	6430	6429	16562	25743	3442	50	14706	14806	13865	1546	667	6884	13003	15464	16676	2	443	0	16476
	N	35291	45694	33219	38603	66191	14355	14733	29307	59218	10644	302	40170	33787	22870	1928	838	19556	19708	32795	46571	29	843	0	38183
Drug Related	Y	257	293	211	249	443	92	107	169	406	76	3	261	199	173	22	9	120	171	189	299	1	4	0	259
	N	54341	66692	44636	51661	98485	20693	21055	45700	84555	14010	349	54615	48394	36562	3452	1496	26320	32540	48070	62948	30	1282	0	54400
Aging Driver	Y	7321	9762	5855	6705	14062	2836	2704	6664	11755	1776	39	8002	6775	4964	448	232	3182	4712	6678	8875	4	205	0	7840
	N	47277	57223	38992	45205	84866	17949	18458	39205	73206	12310	313	46874	41818	31771	3026	1273	23258	27999	41581	54372	27	1081	0	46819
Teenage Driver	Y	6450	8248	5614	6147	12410	2389	2351	5107	11110	1718	26	6369	5870	4678	603	221	3205	4030	5793	7796	3	169	0	6692
	N	48148	58737	39233	45763	86518	18396	18811	40762	73851	12368	326	48507	42723	32057	2871	1284	23235	28681	42466	55451	28	1117	0	47967
Day of the Week	Monday	8060	9995	6634	7559	14869	3029	3078	6641	12824	2093	53	8294	7204	5346	535	219	3859	4862	7086	9522	10	209	0	8262
	Tuesday	8205	10187	6770	7665	15073	3190	3077	6875	13059	2109	42	8396	7391	5507	530	200	3904	4909	7214	9774	2	176	0	8339
	Wednesday	8168	10185	6626	7846	14908	3056	3073	6949	12868	2044	45	8339	7288	5550	537	230	3866	4952	7251	9592	4	179	0	8239
	Thursday	8268	10467	6942	7863	15386	3210	3153	7166	13120	2187	51	8633	7435	5640	551	245	3955	5143	7338	9862	6	187	0	8382
	Friday	9027	11324	7480	8515	16772	3448	3410	7634	14402	2336	49	9310	8094	6155	557	258	4361	5393	8111	10726	3	205	0	9256
	Saturday	6841	8148	5791	6586	12114	2721	2812	5756	10380	1780	52	6606	6146	4605	388	187	3489	3968	6177	7658	3	174	0	6733
	Sunday	6029	6679	4604	5876	9806	2131	2559	4848	8308	1537	60	5298	5035	3932	376	166	3006	3484	5082	6113	3	156	0	5448
Time of Day	12-3 AM	3021	2825	2104	3079	4058	1024	1354	2292	3565	695	44	2470	2185	1837	161	69	1439	1725	2192	2731	3	77	0	2386
	3-6 AM	1887	1828	1313	1833	2664	628	798	1204	2481	505	40	1613	1368	1071	139	45	889	1046	1349	1807	5	76	0	1616
	6-9 AM	6834	8111	5087	6024	12024	2371	2495	5050	10629	1794	64	6469	5884	4433	511	183	2939	4107	5699	7561	3	233	0	6654
	9-Noon	7443	8969	6096	7174	13341	2949	2998	6301	11353	1824	32	7638	6536	4723	414	186	3967	4378	6239	8763	6	164	0	7556
	Noon-3 PM	10000	12692	8728	9838	18890	3995	4013	8949	15991	2431	36	11173	8975	6357	630	308	5280	5914	8743	12574	4	210	0	10362
	3-6 PM	12286	15896	10280	11641	23448	4561	4476	10929	19837	3169	51	12945	11312	8671	792	353	5577	7720	11377	14775	5	254	0	12624
	6-9 PM	8460	10919	7118	7812	16041	3346	3184	7166	13832	2273	42	8201	7911	6258	550	244	4035	5115	8160	9749	3	180	0	8644
	9-Midnight	4667	5745	4121	4509	8462	1911	1844	3978	7273	1395	43	4367	4422	3385	277	117	2314	2706	4500	5287	2	92	0	4817
Lighting Conditions	Dark - Lighted	11165	14427	10326	10809	21151	4881	4458	10356	17925	3148	31	11664	10645	8135	657	291	5449	6673	10940	13567	2	139	0	11787
	Dark - Not Lighted	2608	1772	988	2501	2484	470	963	1060	2481	739	125	1333	1351	1412	195	69	1095	1493	1370	1455	8	225	0	1645
	Dark - Unknown Lighting	231	110	67	211	184	29	115	151	123	19	0	98	85	112	15	3	111	120	93	99	0	5	0	84
	Dawn	883	1065	680	812	1535	336	315	630	1397	271	15	845	756	627	63									

**Attachment C-1
Orange County
All Crashes 2018-2022**

Context Classification					Bike Lane/Paved Shoulder > 4 ft			Bike Slots			Sidewalks			Median Presence				
C3R	C4	C5	C6	None	None	One Side	Both Sides	None	One Side	Both Sides	None	One Side	Both Sides	None	Grass	Multiple	Paved	Other
311	1740	154	156	0	9011	1228	1635	10981	843	50	966	1785	9123	6719	2607	162	2341	45
20	5	1	1	0	124	19	87	214	14	2	89	35	106	88	112	4	24	2
80	161	10	19	0	1089	164	337	1452	123	15	74	152	1364	670	469	19	406	26
71	230	21	23	0	1318	189	313	1689	120	11	163	280	1377	1040	338	18	413	11
1230	2398	179	103	0	16639	2493	4113	21309	1830	106	1749	2811	18685	9823	7087	476	5708	147
417	578	71	58	0	7335	710	1664	9224	451	34	1500	1762	6447	5098	2682	170	1686	69
629	2466	267	336	0	16488	2034	3202	20253	1351	120	2043	2887	16794	12199	4623	361	4367	172
86	297	25	32	0	1552	265	430	2021	207	19	130	198	1919	996	593	24	618	16
3081	7937	642	358	0	38255	11624	13684	53311	9345	907	4068	6912	52583	17383	21597	1979	21926	664
193	335	25	13	0	2706	591	681	3453	486	39	193	375	3410	1215	1125	96	1521	21
35	78	5	8	0	473	109	184	690	73	3	153	107	506	308	277	22	156	3
761	3229	385	359	0	13921	3483	4001	18631	2571	203	1499	2286	17620	6551	6583	745	7324	201
113	816	80	91	0	2759	703	817	3725	505	49	240	475	3564	1620	1198	110	1317	34
110	292	33	35	0	1754	345	452	2262	262	27	230	368	1953	1110	710	67	639	25
6917	19978	1832	1522	0	109916	23267	30696	144691	17657	1531	12637	19697	131545	62600	48581	4119	47168	1386
838	3116	284	308	0	17564	4059	4059	22146	2693	250	1741	2977	20371	10716	6412	561	7179	220
6189	17154	1581	1249	0	94106	27089	27089	124807	15226	1308	11126	17088	113127	52994	42879	3625	40628	1191
134	512	63	30	0	2376	771	771	3258	395	30	353	533	2797	1545	1093	74	911	59
6893	19758	1802	1527	0	109294	30377	30377	143695	17524	1528	12514	19532	130701	62165	48198	4112	46896	1352
2311	4535	352	174	0	32102	8958	8958	42100	5147	383	3734	5727	38169	17264	14875	1228	14002	252
4716	15735	1513	1383	0	79568	22190	22190	104853	12772	1175	9133	14338	95329	46446	34416	2958	33805	1159
2584	6364	661	512	0	35861	8932	8932	46155	5672	399	3891	6793	41542	21074	14600	1205	14921	420
4443	13906	1204	1045	0	75809	22216	22216	100798	12247	1159	8976	13272	91956	42636	34691	2981	32886	991
52	66	7	5	0	498	148	148	660	93	8	71	105	585	275	241	20	216	9
6975	20204	1858	1552	0	111172	31000	31000	146293	17826	1550	12796	19960	132913	63435	49050	4166	47591	1402
1036	3294	316	164	0	15378	4283	4283	20237	2472	229	1518	2655	18765	8906	6609	521	6671	227
5991	16976	1549	1393	0	96292	26865	26865	126716	15447	1329	11349	17410	114733	54804	42682	3665	41136	1184
1144	1884	146	87	0	13117	4350	4350	17814	2301	197	1378	2519	16415	7267	6494	432	5933	182
5883	18386	1719	1470	0	98553	26798	26798	129139	15618	1361	11489	17546	117083	56443	42797	3754	41874	1229
1026	3039	282	231	0	16553	4670	4670	21833	2630	226	1899	2992	19798	9422	7309	623	7114	220
1055	3191	287	197	0	16920	4642	4642	22147	2768	247	1968	3002	20192	9544	7317	608	7466	223
1083	3146	285	225	0	16764	4795	4795	22156	2588	235	1780	3057	20142	9702	7274	584	7203	210
1088	3289	308	229	0	17240	4774	4774	22680	2766	231	2002	2988	20687	9804	7571	648	7445	208
1193	3379	282	235	0	18537	5344	5344	24585	3006	240	2108	3290	22433	10655	8179	674	8054	262
860	2361	230	236	0	13944	3814	3814	18266	2302	212	1698	2478	16604	7839	6354	569	5861	155
722	1865	191	204	0	11712	3109	3109	15286	1859	167	1412	2258	13642	6744	5287	480	4664	133
297	971	111	205	0	5493	1293	1293	7055	831	64	751	1096	6103	3301	2226	269	2070	82
221	520	69	92	0	3411	858	858	4404	580	44	609	634	3785	2025	1472	154	1338	38
962	2237	232	155	0	13701	3608	3608	17811	2036	185	1755	2520	15757	7718	5872	498	5747	191
890	3022	274	207	0	15309	4020	4020	19895	2422	191	1665	2696	18147	8658	6438	533	6690	188
1261	4496	389	257	0	21061	5868	5868	27697	3415	308	2177	3581	25662	12200	8950	680	9307	281
1539	4900	429	281	0	25642	7540	7540	34078	4025	359	2628	4493	31341	14919	11450	870	10900	320
1206	2707	230	176	0	17490	5219	5219	23297	2928	272	1936	3168	21393	9746	8247	678	7611	211
651	1417	131	184	0	9563	2742	2742	12716	1682	135	1346	1877	11310	5143	4636	504	4144	100
1492	4192	424	557	0	23879	6524	6524	31338	4204	376	2455	4180	29283	12863	11025	1146	10550	324
315	245	17	13	0	3434	1231	1231	4838	496	34	1210	1049	3109	2515	1724	130	975	24
14	58	3	5	0	286	68	68	368	38	2	38	82	288	236	83	13	69	7
122	259	29	13	0	1741	507	507	2310	285	33	288	337	2003	1002	767	78	762	18
4806	15022	1354	935	0	78078	21668	21668	102543	12264	1067	8402	13607	93865	44716	33756	2664	33724	1000
266	467	34	29	0	3899	1106	1106	5154	614	44	427	740	4645	2081	1865	152	1676	38
1	5	0	0	0	44	9	9	53	8	1	5	13	44	31	17	2	12	0
11	22	4	5	0	302	33	33	340	10	1	39	56	256	258	53	1	39	0

Attachmebt C-1

Limited access facilities, parking lots and roadways for which contextual data was not available were not included in this analysis.

**Attachment C-2
Orange County
All KSI Crashes 2018-2022**

Mode:	All Collisions	Number of Lanes			Turn Lanes			Posted Speed					Roadway Classification						AADT (2022)			Context Classification							
All		3 Lanes or Less	4-5 Lanes	6+ Lanes				25 or less	30-35	40-45	50-55	60+																	
		2-3	4-5	6-8	None	1 to 2	3+	0-25	30-35	40-45	50-55	60+	Principal Arterial	Minor Arterial	Major Collector	Minor Collector	Local	None	< 15000	15,000-30,000	30,000+	C1	C2	C2T	C3C				
Type	Angle	203	167	91	159	274	38	82	137	201	38	3	111	117	127	16	9	91	129	123	119	0	7	0	135				
	Animal	3	3	0	4	2	0	2	0	1	2	1	2	1	0	1	0	2	2	2	0	0	2	0	0				
	Bicycle	81	102	62	79	143	25	33	58	133	20	1	83	55	58	10	3	38	53	61	94	0	0	0	93				
	Head On	75	58	22	75	72	8	12	37	79	26	1	41	42	51	6	2	13	53	47	41	0	4	0	37				
	Left Turn	270	559	284	211	818	89	61	211	728	109	4	290	427	275	21	13	92	216	413	390	1	27	0	376				
	Off Road	211	231	89	289	241	23	83	112	276	50	10	122	157	135	15	8	116	132	160	139	3	14	0	116				
	Other	193	215	153	230	301	52	84	116	294	54	13	188	150	115	19	6	105	127	148	200	2	10	0	164				
	Pedestrian	160	262	270	195	433	73	69	139	414	70	0	301	199	110	12	1	78	95	192	335	0	3	0	294				
	Rear End	159	426	443	217	655	163	13	114	741	150	10	455	368	159	14	10	29	113	312	575	0	22	0	474				
	Right Turn	13	34	28	15	50	11	1	15	47	11	1	25	29	17	1	1	3	13	25	35	0	1	0	29				
	Rollover	28	26	13	41	23	4	7	14	25	11	10	29	8	17	2	0	12	23	13	20	0	10	0	16				
	Sideswipe	37	70	70	50	108	20	8	31	103	34	1	84	52	24	6	2	10	23	53	90	0	4	0	85				
	Unknown	12	36	20	16	50	2	3	14	41	9	1	24	23	16	2	0	3	15	23	27	0	3	0	26				
Alcohol Related	Y	79	118	72	105	148	17	25	59	145	31	9	106	64	65	8	4	23	72	77	96	2	11	0	95				
	N	1366	2071	1473	1476	3022	491	433	939	2938	553	47	1649	1564	1039	117	51	569	922	1495	1969	4	96	0	1750				
Hit and Run	Y	158	197	181	144	343	52	58	105	319	52	2	193	160	110	10	7	59	93	154	229	0	3	0	196				
	N	1287	1992	1364	1437	2827	456	400	893	2764	532	54	1562	1468	994	115	48	533	901	1418	1836	6	104	0	1649				
Aggressive Driving	Y	91	105	51	78	156	15	24	77	128	15	3	81	56	80	8	1	23	68	79	79	0	4	0	58				
	N	1354	2084	1494	1503	3014	493	434	921	2955	569	53	1674	1572	1024	117	54	569	926	1493	1986	6	103	0	1787				
Distracted Driving	Y	388	647	427	411	915	160	112	238	930	166	16	463	516	310	28	20	149	263	469	593	2	41	0	513				
	N	1057	1542	1118	1170	2255	348	346	760	2153	418	40	1292	1112	794	97	35	443	731	1103	1472	4	66	0	1332				
Intersection Related	Y	632	898	612	485	1445	217	190	476	1250	215	11	660	687	505	54	25	216	466	665	781	1	40	0	749				
	N	813	1291	933	1096	1725	291	268	522	1833	369	45	1095	941	599	71	30	376	528	907	1284	5	67	0	1096				
Drug Related	Y	43	69	44	45	94	17	13	24	97	20	2	59	45	34	3	3	12	32	45	66	1	2	0	53				
	N	1402	2120	1501	1536	3076	491	445	974	2986	564	54	1696	1583	1070	122	52	580	962	1527	1999	5	105	0	1792				
Aging Driver	Y	213	319	194	205	457	81	58	149	430	84	5	244	233	153	22	6	85	151	231	272	0	23	0	270				
	N	1232	1870	1351	1376	2713	427	400	849	2653	500	51	1511	1395	951	103	49	507	843	1341	1793	6	84	0	1575				
Teenage Driver	Y	160	264	179	166	389	56	49	100	387	66	1	180	200	134	17	7	73	122	162	250	0	9	0	218				
	N	1285	1925	1366	1415	2781	452	409	898	2696	518	55	1575	1428	970	108	48	519	872	1410	1815	6	98	0	1627				
Day of the Week	Monday	232	274	208	232	425	67	65	134	430	76	9	239	209	167	22	8	79	155	207	276	2	14	0	262				
	Tuesday	191	321	231	226	471	61	64	142	446	82	9	239	249	155	19	4	92	134	240	290	1	13	0	266				
	Wednesday	197	310	226	216	470	60	62	156	427	80	8	259	219	156	18	10	84	146	213	298	0	17	0	255				
	Thursday	205	327	209	216	463	73	64	140	449	81	7	248	240	161	12	11	80	135	224	305	1	16	0	268				
	Friday	233	338	249	249	497	87	78	157	485	94	6	286	264	154	20	10	99	158	252	318	1	17	0	289				
	Saturday	195	349	238	223	479	90	67	145	471	89	10	270	249	170	14	8	81	139	236	329	0	17	0	276				
	Sunday	192	270	184	219	365	70	58	124	375	82	7	214	198	141	20	4	77	127	200	249	1	13	0	229				
Time of Day	12-3 AM	102	184	150	153	232	54	33	89	243	59	12	185	133	77	6	2	36	77	126	197	0	12	0	167				
	3-6 AM	92	118	101	109	166	37	22	67	171	47	4	114	98	56	11	4	29	59	92	130	2	8	0	108				
	6-9 AM	208	315	191	197	457	67	55	136	432	78	13	215	235	165	22	5	79	147	216	275	2	25	0	242				
	9-Noon	179	267	196	192	386	74	63	119	379	75	6	215	208	124	16	6	83	121	182	263	1	17	0	225				
	Noon-3 PM	200	289	184	210	421	62	66	143	398	63	3	211	219	142	20	8	93	135	217	242	0	10	0	237				
	3-6 PM	233	331	209	259	477	53	88	143	459	76	7	247	227	188	17	8	102	162	250	271	1	14	0	259				
	6-9 PM	230	381	267	248	556	88	71	157	553	91	6	296	273	193	20	14	96	148	288	350	0	11	0	308				
	9-Midnight	201	304	247	213	475	73	60	144	448	95	5	272	235	159	13	8	74	145	201	337	0	10	0	299				
Lighting Conditions	Dark - Lighted	374	714	602	466	1052	192	116	351	1030	187	6	658	526	328	30	20	148	265	495	790	1	10	0	641				
	Dark - Not Lighted	167	144	78	167	200	25	33	66	191	78	21	138	94	92	13	3	52	117	106	114	1	32	0	142				
	Dark - Unknown Lighting	1	1	2	1	3	0	1	0	3	0	0	2	1	0	0	0	1	0	1	2	0	0	0	0				
	Dawn	39	48	24	35	69	8	11	21	63	13	3	31	30	33	4	1	13	31	29	38	1	5	0	36				
	Daylight	815	1213	784	856	1747	260	281	531	1683	291	26	871	924	611	73	29	355	554	885	1052	3	57	0	960				
	Dusk	44	68	51	53	93	22	16	25	108	14	0	51	52	36	5	2	22	23	56	64	0	3	0	61				
	Other	2	1	4	2	4	1	0	2	4	1	0	4	1	2	0	0	0	2	0	5	0	0	0	5				
	Unknown	3	0	0	1	2	0	0	2	1	0	0	0	0	2	0	0	1	2	0	0	0	0	0	0				

Attachmebt C-1

Limited access facilities, parking lots and roadways for which contextual data was not available were not included in this analysis.

**Attachment C-2
Orange County
All KSI Crashes 2018-2022**

Context Classification					Bike Lane/Paved Shoulder > 4 ft			Bike Slots			Sidewalks			Median Presence				
C3R	C4	C5	C6	None	None	One Side	Both Sides	None	One Side	Both Sides	None	One Side	Both Sides	None	Grass	Multiple	Paved	Other
21	35	2	5	0	319	65	77	410	49	2	63	64	334	230	128	4	98	1
0	0	0	0	0	3	0	3	6	0	0	5	0	1	3	3	0	0	0
14	15	0	0	0	160	27	58	222	19	4	22	17	206	95	79	1	66	4
8	16	0	0	0	109	9	37	150	4	1	29	26	100	88	34	2	31	0
75	55	7	0	0	743	172	198	967	142	4	98	139	876	376	404	13	317	3
37	18	4	1	0	374	40	117	506	23	2	90	76	365	217	199	8	103	4
34	56	5	5	0	375	66	120	509	49	3	82	66	413	222	186	14	133	6
27	88	8	7	0	460	90	142	603	81	8	41	56	595	257	211	11	210	3
66	65	3	0	0	581	205	242	843	173	12	87	94	847	203	403	31	388	3
2	4	0	0	0	44	8	23	67	8	0	7	5	63	13	29	0	33	0
6	3	1	0	0	43	4	20	64	3	0	21	7	39	24	29	3	10	1
5	11	2	1	0	100	34	43	149	26	2	12	18	147	50	74	4	49	0
6	6	0	0	0	37	11	20	60	8	0	7	4	57	17	27	1	23	0
18	23	3	1	0	171	34	64	241	27	1	47	24	198	106	93	8	61	1
283	349	29	18	0	3177	697	1036	4315	558	37	517	548	3845	1689	1713	84	1400	24
22	47	2	3	0	371	100	100	488	47	1	39	51	446	228	141	8	154	5
279	325	30	16	0	2977	1000	1000	4068	538	37	525	521	3597	1567	1665	84	1307	20
17	30	4	3	0	161	50	50	218	28	1	27	42	178	109	78	2	56	2
284	342	28	16	0	3187	1050	1050	4338	557	37	537	530	3865	1686	1728	90	1405	23
108	80	5	1	0	956	293	293	1280	171	11	170	158	1134	464	530	34	427	7
193	292	27	18	0	2392	807	807	3276	414	27	394	414	2909	1331	1276	58	1034	18
138	149	14	14	0	1385	403	403	1843	286	13	202	237	1703	754	722	31	627	8
163	223	18	5	0	1963	697	697	2713	299	25	362	335	2340	1041	1084	61	834	17
15	14	1	0	0	107	25	25	135	19	2	20	22	114	61	52	1	42	0
286	358	31	19	0	3241	1075	1075	4421	566	36	544	550	3929	1734	1754	91	1419	25
42	49	3	3	0	461	154	154	628	89	9	90	77	559	258	240	10	216	2
259	323	29	16	0	2887	946	946	3928	496	29	474	495	3484	1537	1566	82	1245	23
37	24	2	2	0	372	144	144	523	76	4	42	76	485	183	219	9	189	3
264	348	30	17	0	2976	956	956	4033	509	34	522	496	3558	1612	1587	83	1272	22
46	45	4	3	0	459	157	157	634	74	6	76	75	563	261	236	18	193	6
32	47	2	2	0	470	177	177	668	75	0	82	86	575	256	261	3	220	3
44	58	5	1	0	489	130	130	633	91	9	73	100	560	245	265	10	207	6
40	59	7	2	0	474	170	170	657	77	7	87	80	574	272	246	8	214	1
48	65	4	2	0	524	169	169	710	104	6	85	87	648	289	276	14	239	2
48	61	6	5	0	506	161	161	682	93	7	85	78	619	250	281	25	224	2
43	37	4	4	0	426	136	136	572	71	3	76	66	504	222	241	14	164	5
30	51	4	5	0	261	106	106	375	58	3	52	40	344	125	156	11	139	5
21	21	7	1	0	199	63	63	272	37	2	54	35	222	110	120	8	70	3
39	43	5	0	0	462	152	152	628	81	5	75	76	563	236	251	17	206	4
41	42	3	3	0	422	128	128	569	71	2	76	68	498	203	224	9	205	1
36	44	0	3	0	448	136	136	598	69	6	77	80	516	252	226	11	183	1
47	61	5	2	0	517	159	159	692	75	6	68	87	618	299	264	12	197	1
41	52	2	3	0	570	189	189	774	96	8	80	96	702	307	298	16	251	6
46	58	6	2	0	469	167	167	648	98	6	82	90	580	263	267	8	210	4
94	162	19	11	0	1087	344	344	1459	216	15	114	158	1418	533	585	38	516	18
29	13	0	0	0	208	125	125	341	45	3	121	71	197	167	149	4	68	1
0	2	0	0	0	3	1	1	4	0	0	0	0	4	0	1	0	1	2
6	5	2	0	0	72	23	23	98	13	0	17	13	81	44	35	0	32	0
167	185	11	8	0	1875	565	565	2505	289	18	294	307	2211	998	977	44	789	4
5	5	0	0	0	97	40	40	141	20	2	16	21	126	49	56	4	54	0
0	0	0	0	0	4	1	1	5	2	0	1	2	4	1	3	2	1	0
0	0	0	0	0	2	1	1	3	0	0	1	0	2	3	0	0	0	0

Attachmebt C-1

Limited access facilities, parking lots and roadways for which contextual data was not available were not included in this analysis.

**Attachment C-3
Orange County
Percent of All Crashes that Result in a KSI - 2018-2022**

Mode:	All Collisions	Number of Lanes			Turn Lanes			Posted Speed					Roadway Classification						AADT (2022)			Context Classification				
		3 Lanes or Less	4-5 Lanes	6+ Lanes	None	1 to 2	3+	25 or less	30-35	40-45	50-55	60+	Principal Arterial	Minor Arterial	Major Collector	Minor Collector	Local	None	< 15000	15,000-30,000	30,000+	C1	C2	C2T	C3C	C3R
								0-25	30-35	40-45	50-55	60+														
Type	Angle	3.4%	4.0%	5.3%	3.3%	4.3%	3.8%	3.2%	3.0%	4.8%	7.9%	18.8%	4.4%	4.3%	3.5%	4.1%	3.4%	3.4%	3.4%	4.1%	4.7%	-	9.2%	-	5.3%	6.8%
	Animal	3.3%	2.6%	0.0%	3.0%	2.4%	0.0%	6.5%	0.0%	1.0%	6.3%	3.2%	2.9%	2.2%	0.0%	5.3%	0.0%	4.7%	2.4%	3.1%	0.0%	-	7.1%	-	0.0%	0.0%
	Bicycle	14.5%	16.1%	15.5%	15.4%	15.1%	18.4%	12.4%	14.3%	16.3%	20.2%	33.3%	17.0%	12.6%	16.6%	18.5%	23.1%	14.8%	15.3%	14.7%	16.4%	-	0.0%	-	17.7%	17.5%
	Head On	8.4%	9.0%	7.9%	9.2%	8.0%	5.3%	3.6%	6.2%	10.4%	20.5%	25.0%	9.3%	9.5%	9.3%	11.8%	13.3%	3.5%	10.3%	8.8%	9.2%	-	25.0%	-	8.8%	11.3%
	Left Turn	3.4%	5.0%	6.8%	3.8%	5.1%	4.9%	2.6%	2.9%	5.8%	9.2%	25.0%	5.9%	5.5%	4.2%	2.8%	5.1%	2.9%	3.9%	5.2%	5.8%	50.0%	13.0%	-	6.1%	6.1%
	Off Road	4.0%	7.2%	6.8%	5.0%	6.0%	5.2%	3.0%	4.8%	7.0%	9.1%	12.7%	6.7%	7.2%	5.5%	3.7%	5.6%	3.6%	5.2%	6.9%	6.8%	25.0%	9.5%	-	6.4%	8.9%
	Other	1.7%	3.1%	4.2%	1.7%	3.1%	3.2%	1.1%	1.9%	4.1%	5.4%	20.3%	3.6%	3.2%	2.7%	3.8%	2.5%	1.0%	2.8%	3.0%	3.8%	28.6%	8.1%	-	3.5%	5.4%
	Pedestrian	21.4%	30.9%	41.5%	25.5%	32.8%	34.9%	17.0%	24.4%	37.4%	42.2%	-	39.6%	31.7%	24.5%	26.7%	6.7%	19.6%	22.9%	33.6%	37.4%	-	42.9%	-	39.3%	31.4%
	Rear End	1.1%	1.6%	1.9%	1.7%	1.6%	1.5%	0.5%	0.7%	2.0%	1.9%	15.4%	1.7%	1.8%	1.3%	1.7%	2.8%	0.8%	1.2%	1.6%	1.8%	0.0%	4.9%	-	1.8%	2.1%
	Right Turn	1.2%	2.0%	2.3%	1.9%	1.9%	1.7%	0.3%	1.6%	2.0%	3.7%	11.1%	2.1%	2.0%	2.0%	1.2%	2.7%	0.7%	1.8%	2.1%	2.1%	-	4.2%	-	1.8%	1.0%
	Rollover	9.7%	8.2%	8.2%	12.4%	6.1%	5.9%	8.2%	6.8%	7.6%	9.8%	29.4%	10.6%	4.4%	9.0%	8.3%	0.0%	11.5%	10.3%	6.1%	8.5%	-	18.2%	-	7.6%	17.1%
	Sideswipe	0.7%	0.8%	1.0%	1.0%	0.8%	0.6%	0.5%	0.5%	0.9%	1.7%	4.2%	0.9%	0.8%	0.6%	2.2%	1.8%	0.6%	0.7%	0.8%	0.9%	0.0%	3.3%	-	1.0%	0.7%
	Unknown	1.0%	1.9%	1.6%	1.4%	1.9%	0.3%	0.8%	0.9%	2.0%	2.8%	14.3%	1.4%	1.9%	1.8%	4.1%	0.0%	0.7%	1.8%	1.7%	1.6%	-	13.0%	-	2.0%	5.3%
Alcohol Related	Y	7.9%	13.1%	11.1%	10.2%	11.4%	5.8%	5.2%	8.5%	12.7%	14.2%	64.3%	12.5%	10.2%	11.2%	11.4%	13.3%	5.0%	11.6%	12.2%	10.8%	66.7%	40.7%	-	11.5%	16.4%
	N	2.5%	3.1%	3.3%	2.9%	3.1%	2.4%	2.1%	2.1%	3.5%	4.0%	13.9%	3.1%	3.3%	2.9%	3.4%	3.5%	2.2%	2.9%	3.1%	3.2%	14.3%	7.6%	-	3.3%	4.1%
Hit and Run	Y	1.8%	2.2%	2.6%	1.5%	2.4%	1.7%	1.3%	1.6%	2.7%	2.5%	7.7%	2.3%	2.3%	2.2%	2.2%	3.2%	1.1%	1.9%	2.3%	2.4%	0.0%	2.3%	-	2.4%	2.6%
	N	2.8%	3.4%	3.6%	3.4%	3.3%	2.6%	2.4%	2.3%	3.8%	4.4%	16.6%	3.4%	3.5%	3.1%	3.8%	3.7%	2.5%	3.2%	3.4%	3.4%	20.0%	9.0%	-	3.5%	4.5%
Aggressive Driving	Y	6.8%	7.0%	6.0%	5.9%	7.5%	4.2%	4.7%	6.1%	8.0%	5.3%	17.6%	6.5%	6.1%	9.1%	9.0%	2.6%	4.0%	8.0%	7.4%	6.4%	0.0%	7.1%	-	5.8%	12.7%
	N	2.5%	3.2%	3.4%	3.0%	3.1%	2.4%	2.1%	2.1%	3.5%	4.1%	15.8%	3.1%	3.3%	2.9%	3.5%	3.7%	2.2%	2.9%	3.2%	3.2%	20.0%	8.4%	-	3.3%	4.1%
Distracted Driving	Y	2.6%	3.3%	3.2%	2.9%	3.2%	2.6%	2.1%	2.1%	3.4%	4.0%	15.5%	3.0%	3.6%	3.0%	2.6%	3.9%	2.2%	3.2%	3.3%	3.1%	22.2%	8.3%	-	3.0%	4.7%
	N	2.7%	3.3%	3.5%	3.1%	3.2%	2.4%	2.2%	2.2%	3.7%	4.2%	16.1%	3.3%	3.3%	3.0%	4.0%	3.5%	2.3%	3.0%	3.2%	3.3%	18.2%	8.3%	-	3.5%	4.1%
Intersection Related	Y	3.3%	4.2%	5.3%	3.6%	4.4%	3.4%	3.0%	2.9%	4.9%	6.2%	22.0%	4.5%	4.6%	3.6%	3.5%	3.7%	3.1%	3.6%	4.3%	4.7%	50.0%	9.0%	-	4.5%	5.3%
	N	2.3%	2.8%	2.8%	2.8%	2.6%	2.0%	1.8%	1.8%	3.1%	3.5%	14.9%	2.7%	2.8%	2.6%	3.7%	3.6%	1.9%	2.7%	2.8%	2.8%	17.2%	7.9%	-	2.9%	3.7%
Drug Related	Y	16.7%	23.5%	20.9%	18.1%	21.2%	18.5%	12.1%	14.2%	23.9%	26.3%	66.7%	22.6%	22.6%	19.7%	13.6%	33.3%	10.0%	18.7%	23.8%	22.1%	100.0%	50.0%	-	20.5%	28.8%
	N	2.6%	3.2%	3.4%	3.0%	3.1%	2.4%	2.1%	2.1%	3.5%	4.0%	15.5%	3.1%	3.3%	2.9%	3.5%	3.5%	2.2%	3.0%	3.2%	3.2%	16.7%	8.2%	-	3.3%	4.1%
Aging Driver	Y	2.9%	3.3%	3.3%	3.1%	3.2%	2.9%	2.1%	2.2%	3.7%	4.7%	12.8%	3.0%	3.4%	3.1%	4.9%	2.6%	2.7%	3.2%	3.5%	3.1%	0.0%	11.2%	-	3.4%	4.1%
	N	2.6%	3.3%	3.5%	3.0%	3.2%	2.4%	2.2%	2.2%	3.6%	4.1%	16.3%	3.2%	3.3%	3.0%	3.4%	3.8%	2.2%	3.0%	3.2%	3.3%	22.2%	7.8%	-	3.4%	4.3%
Teenage Driver	Y	2.5%	3.2%	3.2%	2.7%	3.1%	2.3%	2.1%	2.0%	3.5%	3.8%	3.8%	2.8%	3.4%	2.9%	2.8%	3.2%	2.3%	3.0%	2.8%	3.2%	0.0%	5.3%	-	3.3%	3.2%
	N	2.7%	3.3%	3.5%	3.1%	3.2%	2.5%	2.2%	2.2%	3.7%	4.2%	16.9%	3.2%	3.3%	3.0%	3.8%	3.7%	2.2%	3.0%	3.3%	3.3%	21.4%	8.8%	-	3.4%	4.5%
Day of the Week	Monday	2.9%	2.7%	3.1%	3.1%	2.9%	2.2%	2.1%	2.0%	3.4%	3.6%	17.0%	2.9%	2.9%	3.1%	4.1%	3.7%	2.0%	3.2%	2.9%	2.9%	20.0%	6.7%	-	3.2%	4.5%
	Tuesday	2.3%	3.2%	3.4%	2.9%	3.1%	1.9%	2.1%	2.1%	3.4%	3.9%	21.4%	2.8%	3.4%	2.8%	3.6%	2.0%	2.4%	2.7%	3.3%	3.0%	50.0%	7.4%	-	3.2%	3.0%
	Wednesday	2.4%	3.0%	3.4%	2.8%	3.2%	2.0%	2.0%	2.2%	3.3%	3.9%	17.8%	3.1%	3.0%	2.8%	3.4%	4.3%	2.2%	2.9%	2.9%	3.1%	0.0%	9.5%	-	3.1%	4.1%
	Thursday	2.5%	3.1%	3.0%	2.7%	3.0%	2.3%	2.0%	2.0%	3.4%	3.7%	13.7%	2.9%	3.2%	2.9%	2.2%	4.5%	2.0%	2.6%	3.1%	3.1%	16.7%	8.6%	-	3.2%	3.7%
	Friday	2.6%	3.0%	3.3%	2.9%	3.0%	2.5%	2.3%	2.1%	3.4%	4.0%	12.2%	3.1%	3.3%	2.5%	3.6%	3.9%	2.3%	2.9%	3.1%	3.0%	33.3%	8.3%	-	3.1%	4.0%
	Saturday	2.9%	4.3%	4.1%	3.4%	4.0%	3.3%	2.4%	2.5%	4.5%	5.0%	19.2%	4.1%	4.1%	3.7%	3.6%	4.3%	2.3%	3.5%	3.8%	4.3%	0.0%	9.8%	-	4.1%	5.6%
	Sunday	3.2%	4.0%	4.0%	3.7%	3.7%	3.3%	2.3%	2.6%	4.5%	5.3%	11.7%	4.0%	3.9%	3.6%	5.3%	2.4%	2.6%	3.6%	3.9%	4.1%	33.3%	8.3%	-	4.2%	6.0%
Time of Day	12-3 AM	3.4%	6.5%	7.1%	5.0%	5.7%	5.3%	2.4%	3.9%	6.8%	8.5%	27.3%	7.5%	6.1%	4.2%	3.7%	2.9%	2.5%	4.5%	5.7%	7.2%	0.0%	15.6%	-	7.0%	10.1%
	3-6 AM	4.9%	6.5%	7.7%	5.9%	6.2%	5.9%	2.8%	5.6%	6.9%	9.3%	10.0%	7.1%	7.2%	5.2%	7.9%	8.9%	3.3%	5.6%	6.8%	7.2%	40.0%	10.5%	-	6.7%	9.5%
	6-9 AM	3.0%	3.9%	3.8%	3.3%	3.8%	2.8%	2.2%	2.7%	4.1%	4.3%	20.3%	3.3%	4.0%	3.7%	4.3%	2.7%	2.7%	3.6%	3.8%	3.6%	66.7%	10.7%	-	3.6%	4.1%
	9-Noon	2.4%	3.0%	3.2%	2.7%	2.9%	2.5%	2.1%	1.9%	3.3%	4.1%	18.8%	2.8%	3.2%	2.6%	3.9%	3.2%	1.1%	2.8%	2.9%	3.0%	16.7%	10.4%	-	3.0%	4.6%
	Noon-3 PM	2.0%	2.3%	2.1%	2.1%	2.2%	1.6%	1.6%	1.6%	2.5%	2.6%	8.3%	1.9%	2.4%	2.2%	3.2%	2.6%	1.8%	2.3%	2.5%	1.9%	0.0%	4.8%	-	2.3%	2.9%
	3-6 PM	1.9%	2.1%	2.0%	2.2%	2.0%	1.2%	2.0%	1.3%	2.3%	2.4%	13.7%	1.9%	2.0%	2.2%	2.1%	2.3%	1.8%	2.1%	2.2%	1.8%	20.0%	5.5%	-	2.1%	3.1%
	6-9 PM	2.7%	3.5%	3.8%	3.2%	3.5%	2.6%	2.2%	2.2%	4.0%	4.0%	14.3%	3.6%	3.5%	3.1%	3.6%	5.7%	2.4%	2.9%	3.5%	3.6%	0.0%	6.1%	-	3.6%	3.4%
	9-Midnight	4.3%	5.3%	6.0%	4.7%	5.6%	3.8%	3.3%	3.6%	6.2%	6.8%	11.6%	6.2%	5.3%	4.7%	4.7%	6.8%	3.2%	5.4%	4.5%	6.4%	0.0%	10.9%	-	6.2%	7.1%
Lighting Conditions	Dark - Lighted	3.3%	4.9%	5.8%	4.3%	5.0%	3.9%	2.6%	3.4%	5.7%	5.9%	19.4%	5.6%	4.9%	4.0%	4.6%	6.9%	2.7%	4.0%	4.5%	5.8%	50.0%	7.2%	-	5.4%	6.3%
	Dark - Not Lighted	6.4%	8.1%	7.9%	6.7%	8.1%	5.3%	3.4%	6.2%	7.7%	10.6%	16.8%	10.4%	7.0%	6.5%	6.7%	4.3%	4.7%	7.8%	7.7%	7.8%	12.5%	14.2%	-	8.6%	9.2%
	Dark - Unknown Lighting	0.4%	0.9%	3.0%	0.5%	1.6%	0.0%	0.9%	0.0%	2.4%	0.0%	-	2.0%	1.2%	0.0%	0.0%	0.0%	0.9%	0.0%	1.1%	2.0%	-	0.0%	-	0.0%	0.0%
	Dawn	4.4%	4.5%	3.5%	4.3%	4.5%	2.4%	3.5%	3.3%	4.5%	4.8%	20.0%	3.7%	4.0%	5.3%	6.3%	5.3%	3.5%	5.4%	3.6%	4.1%	50.0%	12.2%	-	3.9%	4.9%

**Attachment C-3
Orange County
Percent of All Crashes that Result in a KSI - 2018-2022**

Mode:	All Collisions	Context Classification				Bike Lane/Paved Shoulder > 4 ft			Bike Slots			Sidewalks			Median Presence				
All		C4	C5	C6	None	None	One Side	Both Sides	None	One Side	Both Sides	None	One Side	Both Sides	None	Grass	Multiple	Paved	Other
Type	Angle	2.0%	1.3%	3.2%	-	3.5%	5.3%	4.7%	3.7%	5.8%	4.0%	6.5%	3.6%	3.7%	3.4%	4.9%	2.5%	4.2%	2.2%
	Animal	0.0%	0.0%	0.0%	-	2.4%	0.0%	3.4%	2.8%	0.0%	0.0%	5.6%	0.0%	0.9%	3.4%	2.7%	0.0%	0.0%	0.0%
	Bicycle	9.3%	0.0%	0.0%	-	14.7%	16.5%	17.2%	15.3%	15.4%	26.7%	29.7%	11.2%	15.1%	14.2%	16.8%	5.3%	16.3%	15.4%
	Head On	7.0%	0.0%	0.0%	-	8.3%	4.8%	11.8%	8.9%	3.3%	9.1%	17.8%	9.3%	7.3%	8.5%	10.1%	11.1%	7.5%	0.0%
	Left Turn	2.3%	3.9%	0.0%	-	4.5%	6.9%	4.8%	4.5%	7.8%	3.8%	5.6%	4.9%	4.7%	3.8%	5.7%	2.7%	5.6%	2.0%
	Off Road	3.1%	5.6%	1.7%	-	5.1%	5.6%	7.0%	5.5%	5.1%	5.9%	6.0%	4.3%	5.7%	4.3%	7.4%	4.7%	6.1%	5.8%
	Other	2.3%	1.9%	1.5%	-	2.3%	3.2%	3.7%	2.5%	3.6%	2.5%	4.0%	2.3%	2.5%	1.8%	4.0%	3.9%	3.0%	3.5%
	Pedestrian	29.6%	32.0%	21.9%	-	29.6%	34.0%	33.0%	29.8%	39.1%	42.1%	31.5%	28.3%	31.0%	25.8%	35.6%	45.8%	34.0%	18.8%
	Rear End	0.8%	0.5%	0.0%	-	1.5%	1.8%	1.8%	1.6%	1.9%	1.3%	2.1%	1.4%	1.6%	1.2%	1.9%	1.6%	1.8%	0.5%
	Right Turn	1.2%	0.0%	0.0%	-	1.6%	1.4%	3.4%	1.9%	1.6%	0.0%	3.6%	1.3%	1.8%	1.1%	2.6%	0.0%	2.2%	0.0%
	Rollover	3.8%	20.0%	0.0%	-	9.1%	3.7%	10.9%	9.3%	4.1%	0.0%	13.7%	6.5%	7.7%	7.8%	10.5%	13.6%	6.4%	33.3%
	Sideswipe	0.3%	0.5%	0.3%	-	0.7%	1.0%	1.1%	0.8%	1.0%	1.0%	0.8%	0.8%	0.8%	0.8%	1.1%	0.5%	0.7%	0.0%
	Unknown	0.7%	0.0%	0.0%	-	1.3%	1.6%	2.4%	1.6%	1.6%	0.0%	2.9%	0.8%	1.6%	1.0%	2.3%	0.9%	1.7%	0.0%
Alcohol Related	Y	7.9%	9.1%	2.9%	-	9.7%	9.9%	14.2%	10.7%	10.3%	3.7%	20.4%	6.5%	10.1%	9.5%	13.1%	11.9%	9.5%	4.0%
	N	1.7%	1.6%	1.2%	-	2.9%	3.0%	3.4%	3.0%	3.2%	2.4%	4.1%	2.8%	2.9%	2.7%	3.5%	2.0%	3.0%	1.7%
Hit and Run	Y	1.5%	0.7%	1.0%	-	2.1%	2.5%	2.5%	2.2%	1.7%	0.4%	2.2%	1.7%	2.2%	2.1%	2.2%	1.4%	2.1%	2.3%
	N	1.9%	1.9%	1.3%	-	3.2%	3.7%	3.7%	3.3%	3.5%	2.8%	4.7%	3.0%	3.2%	3.0%	3.9%	2.3%	3.2%	1.7%
Aggressive Driving	Y	5.9%	6.3%	10.0%	-	6.8%	6.5%	6.5%	6.7%	7.1%	3.3%	7.6%	7.9%	6.4%	7.1%	7.1%	2.7%	6.1%	3.4%
	N	1.7%	1.6%	1.0%	-	2.9%	3.5%	3.5%	3.0%	3.2%	2.4%	4.3%	2.7%	3.0%	2.7%	3.6%	2.2%	3.0%	1.7%
Distracted Driving	Y	1.8%	1.4%	0.6%	-	3.0%	3.3%	3.3%	3.0%	3.3%	2.9%	4.6%	2.8%	3.0%	2.7%	3.6%	2.8%	3.0%	2.8%
	N	1.9%	1.8%	1.3%	-	3.0%	3.6%	3.6%	3.1%	3.2%	2.3%	4.3%	2.9%	3.1%	2.9%	3.7%	2.0%	3.1%	1.6%
Intersection Related	Y	2.3%	2.1%	2.7%	-	3.9%	4.5%	4.5%	4.0%	5.0%	3.3%	5.2%	3.5%	4.1%	3.6%	4.9%	2.6%	4.2%	1.9%
	N	1.6%	1.5%	0.5%	-	2.6%	3.1%	3.1%	2.7%	2.4%	2.2%	4.0%	2.5%	2.5%	2.4%	3.1%	2.0%	2.5%	1.7%
Drug Related	Y	21.2%	14.3%	0.0%	-	21.5%	16.9%	16.9%	20.5%	20.4%	25.0%	28.2%	21.0%	19.5%	22.2%	21.6%	5.0%	19.4%	0.0%
	N	1.8%	1.7%	1.2%	-	2.9%	3.5%	3.5%	3.0%	3.2%	2.3%	4.3%	2.8%	3.0%	2.7%	3.6%	2.2%	3.0%	1.8%
Aging Driver	Y	1.5%	0.9%	1.8%	-	3.0%	3.6%	3.6%	3.1%	3.6%	3.9%	5.9%	2.9%	3.0%	2.9%	3.6%	1.9%	3.2%	0.9%
	N	1.9%	1.9%	1.1%	-	3.0%	3.5%	3.5%	3.1%	3.2%	2.2%	4.2%	2.8%	3.0%	2.8%	3.7%	2.2%	3.0%	1.9%
Teenage Driver	Y	1.3%	1.4%	2.3%	-	2.8%	3.3%	3.3%	2.9%	3.3%	2.0%	3.0%	3.0%	3.0%	2.5%	3.4%	2.1%	3.2%	1.6%
	N	1.9%	1.7%	1.2%	-	3.0%	3.6%	3.6%	3.1%	3.3%	2.5%	4.5%	2.8%	3.0%	2.9%	3.7%	2.2%	3.0%	1.8%
Day of the Week	Monday	1.5%	1.4%	1.3%	-	2.8%	3.4%	3.4%	2.9%	2.8%	2.7%	4.0%	2.5%	2.8%	2.8%	3.2%	2.9%	2.7%	2.7%
	Tuesday	1.5%	0.7%	1.0%	-	2.8%	3.8%	3.8%	3.0%	2.7%	0.0%	4.2%	2.9%	2.8%	2.7%	3.6%	0.5%	2.9%	1.3%
	Wednesday	1.8%	1.8%	0.4%	-	2.9%	2.7%	2.7%	2.9%	3.5%	3.8%	4.1%	3.3%	2.8%	2.5%	3.6%	1.7%	2.9%	2.9%
	Thursday	1.8%	2.3%	0.9%	-	2.7%	3.6%	3.6%	2.9%	2.8%	3.0%	4.3%	2.7%	2.8%	2.8%	3.2%	1.2%	2.9%	0.5%
	Friday	1.9%	1.4%	0.9%	-	2.8%	3.2%	3.2%	2.9%	3.5%	2.5%	4.0%	2.6%	2.9%	2.7%	3.4%	2.1%	3.0%	0.8%
	Saturday	2.6%	2.6%	2.1%	-	3.6%	4.2%	4.2%	3.7%	4.0%	3.3%	5.0%	3.1%	3.7%	3.2%	4.4%	4.4%	3.8%	1.3%
	Sunday	2.0%	2.1%	2.0%	-	3.6%	4.4%	4.4%	3.7%	3.8%	1.8%	5.4%	2.9%	3.7%	3.3%	4.6%	2.9%	3.5%	3.8%
Time of Day	12-3 AM	5.3%	3.6%	2.4%	-	4.8%	8.2%	8.2%	5.3%	7.0%	4.7%	6.9%	3.6%	5.6%	3.8%	7.0%	4.1%	6.7%	6.1%
	3-6 AM	4.0%	10.1%	1.1%	-	5.8%	7.3%	7.3%	6.2%	6.4%	4.5%	8.9%	5.5%	5.9%	5.4%	8.2%	5.2%	5.2%	7.9%
	6-9 AM	1.9%	2.2%	0.0%	-	3.4%	4.2%	4.2%	3.5%	4.0%	2.7%	4.3%	3.0%	3.6%	3.1%	4.3%	3.4%	3.6%	2.1%
	9-Noon	1.4%	1.1%	1.4%	-	2.8%	3.2%	3.2%	2.9%	2.9%	1.0%	4.6%	2.5%	2.7%	2.3%	3.5%	1.7%	3.1%	0.5%
	Noon-3 PM	1.0%	0.0%	1.2%	-	2.1%	2.3%	2.3%	2.2%	2.0%	1.9%	3.5%	2.2%	2.0%	2.1%	2.5%	1.6%	2.0%	0.4%
	3-6 PM	1.2%	1.2%	0.7%	-	2.0%	2.1%	2.1%	2.0%	1.9%	1.7%	2.6%	1.9%	2.0%	2.0%	2.3%	1.4%	1.8%	0.3%
	6-9 PM	1.9%	0.9%	1.7%	-	3.3%	3.6%	3.6%	3.3%	3.3%	2.9%	4.1%	3.0%	3.3%	3.2%	3.6%	2.4%	3.3%	2.8%
	9-Midnight	4.1%	4.6%	1.1%	-	4.9%	6.1%	6.1%	5.1%	5.8%	4.4%	6.1%	4.8%	5.1%	5.1%	5.8%	1.6%	5.1%	4.0%
Lighting Conditions	Dark - Lighted	3.9%	4.5%	2.0%	-	4.6%	5.3%	5.3%	4.7%	5.1%	4.0%	4.6%	3.8%	4.8%	4.1%	5.3%	3.3%	4.9%	5.6%
	Dark - Not Lighted	5.3%	0.0%	0.0%	-	6.1%	10.2%	10.2%	7.0%	9.1%	8.8%	10.0%	6.8%	6.3%	6.6%	8.6%	3.1%	7.0%	4.2%
	Dark - Unknown Lighting	3.4%	0.0%	0.0%	-	1.0%	1.5%	1.5%	1.1%	0.0%	0.0%	0.0%	0.0%	1.4%	0.0%	1.2%	0.0%	1.4%	28.6%
	Dawn	1.9%	6.9%	0.0%	-	4.1%	4.5%	4.5%	4.2%	4.6%	0.0%	5.9%	3.9%	4.0%	4.4%	4.6%	0.0%	4.2%	0.0%
	Daylight	1.2%	0.8%	0.9%	-	2.4%	2.6%	2.6%	2.4%	2.4%	1.7%	3.5%	2.3%	2.4%	2.2%	2.9%	1.7%	2.3%	0.4%
	Dusk	1.1%	0.0%	0.0%	-	2.5%	3.6%	3.6%	2.7%	3.3%	4.5%	3.7%	2.8%	2.7%	2.4%	3.0%	2.6%	3.2%	0.0%
	Other	0.0%	-	-	-	9.1%	11.1%	11.1%	9.4%	25.0%	0.0%	20.0%	15.4%	9.1%	3.2%	17.6%	100.0%	8.3%	-
	Unknown	0.0%	0.0%	0.0%	-	0.7%	3.0%	3.0%	0.9%	0.0%	0.0%	2.6%	0.0%	0.8%	1.2%	0.0%	0.0%	0.0%	-

**Attachment C-4
Orange County
Percent of All KSI Crashes 2018-2022**

Mode:	All Collisions	Number of Lanes			Turn Lanes			Posted Speed					Roadway Classification						AADT (2022)			Context Classification					
All		3 Lanes or Less	4-5 Lanes	6+ Lanes	None	1 to 2	3+	25 or less	30-35	40-45	50-55	60+	Principal Arterial	Minor Arterial	Major Collector	Minor Collector	Local	None	< 15000	15,000-30,000	30,000+	C1	C2	C2T	C3C	C3R	
		2-3	4-5	6-8				0-25	30-35	40-45	50-55	60+															
Type	Angle	3.9%	3.2%	1.8%	3.0%	5.2%	0.7%	1.6%	2.6%	3.9%	0.7%	0.1%	2.1%	2.2%	2.4%	0.3%	0.2%	1.7%	2.8%	2.7%	2.6%	0.0%	0.3%	0.0%	5.0%	0.8%	
	Animal	0.1%	0.1%	0.0%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	0.0%	0.0%	0.0%	0.0%
	Bicycle	1.6%	2.0%	1.2%	1.5%	2.7%	0.5%	0.6%	1.1%	2.6%	0.4%	0.0%	1.6%	1.0%	1.1%	0.2%	0.1%	0.7%	1.1%	1.3%	2.0%	0.0%	0.0%	0.0%	3.5%	0.5%	
	Head On	1.4%	1.1%	0.4%	1.4%	1.4%	0.2%	0.2%	0.7%	1.5%	0.5%	0.0%	0.8%	0.8%	1.0%	0.1%	0.0%	0.2%	1.1%	1.0%	0.9%	0.0%	0.1%	0.0%	1.4%	0.3%	
	Left Turn	5.2%	10.8%	5.5%	4.0%	15.6%	1.7%	1.2%	4.1%	14.1%	2.1%	0.1%	5.5%	8.1%	5.2%	0.4%	0.2%	1.7%	4.7%	8.9%	8.4%	0.0%	1.0%	0.0%	14.0%	2.8%	
	Off Road	4.1%	4.5%	1.7%	5.5%	4.6%	0.4%	1.6%	2.2%	5.3%	1.0%	0.2%	2.3%	3.0%	2.6%	0.3%	0.2%	2.2%	2.9%	3.5%	3.0%	0.1%	0.5%	0.0%	4.3%	1.4%	
	Other	3.7%	4.2%	3.0%	4.4%	5.7%	1.0%	1.6%	2.2%	5.7%	1.0%	0.3%	3.6%	2.9%	2.2%	0.4%	0.1%	2.0%	2.7%	3.2%	4.3%	0.1%	0.4%	0.0%	6.1%	1.3%	
	Pedestrian	3.1%	5.1%	5.2%	3.7%	8.2%	1.4%	1.3%	2.7%	8.0%	1.4%	0.0%	5.7%	3.8%	2.1%	0.2%	0.0%	1.5%	2.1%	4.1%	7.2%	0.0%	0.1%	0.0%	11.0%	1.0%	
	Rear End	3.1%	8.2%	8.6%	4.1%	12.5%	3.1%	0.3%	2.2%	14.3%	2.9%	0.2%	8.7%	7.0%	3.0%	0.3%	0.2%	0.6%	2.4%	6.7%	12.4%	0.0%	0.8%	0.0%	17.7%	2.5%	
	Right Turn	0.3%	0.7%	0.5%	0.3%	1.0%	0.2%	0.0%	0.3%	0.9%	0.2%	0.0%	0.5%	0.6%	0.3%	0.0%	0.0%	0.1%	0.3%	0.5%	0.8%	0.0%	0.0%	0.0%	1.1%	0.1%	
	Rollover	0.5%	0.5%	0.3%	0.8%	0.4%	0.1%	0.1%	0.3%	0.5%	0.2%	0.2%	0.6%	0.2%	0.3%	0.0%	0.0%	0.2%	0.5%	0.3%	0.4%	0.0%	0.4%	0.0%	0.6%	0.2%	
	Sideswipe	0.7%	1.4%	1.4%	1.0%	2.1%	0.4%	0.2%	0.6%	2.0%	0.7%	0.0%	1.6%	1.0%	0.5%	0.1%	0.0%	0.2%	0.5%	1.1%	1.9%	0.0%	0.1%	0.0%	3.2%	0.2%	
	Unknown	0.2%	0.7%	0.4%	0.3%	1.0%	0.0%	0.1%	0.3%	0.8%	0.2%	0.0%	0.5%	0.4%	0.3%	0.0%	0.0%	0.1%	0.3%	0.5%	0.6%	0.0%	0.1%	0.0%	1.0%	0.2%	
Alcohol Related	Y	1.5%	2.3%	1.4%	2.0%	2.8%	0.3%	0.5%	1.1%	2.8%	0.6%	0.2%	2.0%	1.2%	1.2%	0.2%	0.1%	0.4%	1.6%	1.7%	2.1%	0.1%	0.4%	0.0%	3.5%	0.7%	
	N	26.4%	40.0%	28.4%	28.1%	57.5%	9.3%	8.4%	18.1%	56.7%	10.7%	0.9%	31.4%	29.7%	19.8%	2.2%	1.0%	10.8%	19.9%	32.3%	42.5%	0.1%	3.6%	0.0%	65.2%	10.6%	
Hit and Run	Y	3.1%	3.8%	3.5%	2.7%	6.5%	1.0%	1.1%	2.0%	6.2%	1.0%	0.0%	3.7%	3.0%	2.1%	0.2%	0.1%	1.1%	2.0%	3.3%	4.9%	0.0%	0.1%	0.0%	7.3%	0.8%	
	N	24.9%	38.5%	26.3%	27.3%	53.8%	8.7%	7.7%	17.2%	53.4%	10.3%	1.0%	29.7%	27.9%	18.9%	2.2%	0.9%	10.1%	19.5%	30.6%	39.6%	0.2%	3.9%	0.0%	61.5%	10.4%	
Aggressive Driving	Y	1.8%	2.0%	1.0%	1.5%	3.0%	0.3%	0.5%	1.5%	2.5%	0.3%	0.1%	1.5%	1.1%	1.5%	0.2%	0.0%	0.4%	1.5%	1.7%	1.7%	0.0%	0.1%	0.0%	2.2%	0.6%	
	N	26.1%	40.2%	28.8%	28.6%	57.3%	9.4%	8.4%	17.8%	57.1%	11.0%	1.0%	31.8%	29.9%	19.5%	2.2%	1.0%	10.8%	20.0%	32.2%	42.9%	0.2%	3.8%	0.0%	66.6%	10.6%	
Distracted Driving	Y	7.5%	12.5%	8.2%	7.8%	17.4%	3.0%	2.2%	4.6%	18.0%	3.2%	0.3%	8.8%	9.8%	5.9%	0.5%	0.4%	2.8%	5.7%	10.1%	12.8%	0.1%	1.5%	0.0%	19.1%	4.0%	
	N	20.4%	29.8%	21.6%	22.2%	42.9%	6.6%	6.7%	14.7%	41.6%	8.1%	0.8%	24.6%	21.1%	15.1%	1.8%	0.7%	8.4%	15.8%	23.8%	31.8%	0.1%	2.5%	0.0%	49.7%	7.2%	
Intersection Related	Y	12.2%	17.3%	11.8%	9.2%	27.5%	4.1%	3.7%	9.2%	24.1%	4.2%	0.2%	12.5%	13.1%	9.6%	1.0%	0.5%	4.1%	10.1%	14.4%	16.9%	0.0%	1.5%	0.0%	27.9%	5.1%	
	N	15.7%	24.9%	18.0%	20.8%	32.8%	5.5%	5.2%	10.1%	35.4%	7.1%	0.9%	20.8%	17.9%	11.4%	1.4%	0.6%	7.1%	11.4%	19.6%	27.7%	0.2%	2.5%	0.0%	40.9%	6.1%	
Drug Related	Y	0.8%	1.3%	0.8%	0.9%	1.8%	0.3%	0.3%	0.5%	1.9%	0.4%	0.0%	1.1%	0.9%	0.6%	0.1%	0.1%	0.2%	0.7%	1.0%	1.4%	0.0%	0.1%	0.0%	2.0%	0.6%	
	N	27.1%	40.9%	29.0%	29.2%	58.5%	9.3%	8.6%	18.8%	57.7%	10.9%	1.0%	32.2%	30.1%	20.3%	2.3%	1.0%	11.0%	20.8%	33.0%	43.2%	0.2%	3.9%	0.0%	66.8%	10.7%	
Aging Driver	Y	4.1%	6.2%	3.7%	3.9%	8.7%	1.5%	1.1%	2.9%	8.3%	1.6%	0.1%	4.6%	4.4%	2.9%	0.4%	0.1%	1.6%	3.3%	5.0%	5.9%	0.0%	0.9%	0.0%	10.1%	1.6%	
	N	23.8%	36.1%	26.1%	26.2%	51.6%	8.1%	7.7%	16.4%	51.2%	9.7%	1.0%	28.7%	26.5%	18.1%	2.0%	0.9%	9.6%	18.2%	29.0%	38.7%	0.2%	3.1%	0.0%	58.7%	9.7%	
Teenage Driver	Y	3.1%	5.1%	3.5%	3.2%	7.4%	1.1%	0.9%	1.9%	7.5%	1.3%	0.0%	3.4%	3.8%	2.5%	0.3%	0.1%	1.4%	2.6%	3.5%	5.4%	0.0%	0.3%	0.0%	8.1%	1.4%	
	N	24.8%	37.2%	26.4%	26.9%	52.9%	8.6%	7.9%	17.3%	52.1%	10.0%	1.1%	29.9%	27.2%	18.4%	2.1%	0.9%	9.9%	18.8%	30.4%	39.2%	0.2%	3.7%	0.0%	60.7%	9.8%	
Day of the Week	Monday	4.5%	5.3%	4.0%	4.4%	8.1%	1.3%	1.3%	2.6%	8.3%	1.5%	0.2%	4.5%	4.0%	3.2%	0.4%	0.2%	1.5%	3.3%	4.5%	6.0%	0.1%	0.5%	0.0%	9.8%	1.7%	
	Tuesday	3.7%	6.2%	4.5%	4.3%	9.0%	1.2%	1.2%	2.7%	8.6%	1.6%	0.2%	4.5%	4.7%	2.9%	0.4%	0.1%	1.7%	2.9%	5.2%	6.3%	0.0%	0.5%	0.0%	9.9%	1.2%	
	Wednesday	3.8%	6.0%	4.4%	4.1%	8.9%	1.1%	1.2%	3.0%	8.2%	1.5%	0.2%	4.9%	4.2%	3.0%	0.3%	0.2%	1.6%	3.2%	4.6%	6.4%	0.0%	0.6%	0.0%	9.5%	1.6%	
	Thursday	4.0%	6.3%	4.0%	4.1%	8.8%	1.4%	1.2%	2.7%	8.7%	1.6%	0.1%	4.7%	4.6%	3.1%	0.2%	0.2%	1.5%	2.9%	4.8%	6.6%	0.0%	0.6%	0.0%	10.0%	1.5%	
	Friday	4.5%	6.5%	4.8%	4.7%	9.5%	1.7%	1.5%	3.0%	9.4%	1.8%	0.1%	5.4%	5.0%	2.9%	0.4%	0.2%	1.9%	3.4%	5.4%	6.9%	0.0%	0.6%	0.0%	10.8%	1.8%	
	Saturday	3.8%	6.7%	4.6%	4.2%	9.1%	1.7%	1.3%	2.8%	9.1%	1.7%	0.2%	5.1%	4.7%	3.2%	0.3%	0.2%	1.5%	3.0%	5.1%	7.1%	0.0%	0.6%	0.0%	10.3%	1.8%	
	Sunday	3.7%	5.2%	3.6%	4.2%	6.9%	1.3%	1.1%	2.4%	7.2%	1.6%	0.1%	4.1%	3.8%	2.7%	0.4%	0.1%	1.5%	2.7%	4.3%	5.4%	0.0%	0.5%	0.0%	8.5%	1.6%	
Time of Day	12-3 AM	2.0%	3.6%	2.9%	2.9%	4.4%	1.0%	0.6%	1.7%	4.7%	1.1%	0.2%	3.5%	2.5%	1.5%	0.1%	0.0%	0.7%	1.7%	2.7%	4.3%	0.0%	0.4%	0.0%	6.2%	1.1%	
	3-6 AM	1.8%	2.3%	2.0%	2.1%	3.2%	0.7%	0.4%	1.3%	3.3%	0.9%	0.1%	2.2%	1.9%	1.1%	0.2%	0.1%	0.6%	1.3%	2.0%	2.8%	0.1%	0.3%	0.0%	4.0%	0.8%	
	6-9 AM	4.0%	6.1%	3.7%	3.7%	8.7%	1.3%	1.1%	2.6%	8.3%	1.5%	0.3%	4.1%	4.5%	3.1%	0.4%	0.1%	1.5%	3.2%	4.7%	5.9%	0.1%	0.9%	0.0%	9.0%	1.5%	
	9-Noon	3.5%	5.2%	3.8%	3.7%	7.3%	1.4%	1.2%	2.3%	7.3%	1.4%	0.1%	4.1%	4.0%	2.4%	0.3%	0.1%	1.6%	2.6%	3.9%	5.7%	0.0%	0.6%	0.0%	8.4%	1.5%	
	Noon-3 PM	3.9%	5.6%	3.6%	4.0%	8.0%	1.2%	1.3%	2.8%	7.7%	1.5%	0.1%	4.0%	4.2%	2.7%	0.4%	0.2%	1.8%	2.9%	4.7%	5.2%	0.0%	0.4%	0.0%	8.8%	1.3%	
	3-6 PM	4.5%	6.4%	4.0%	4.9%	9.1%	1.0%	1.7%	2.8%	8.9%	1.5%	0.1%	4.7%	4.3%	3.6%	0.3%	0.2%	1.9%	3.5%	5.4%	5.9%	0.0%	0.5%	0.0%	9.7%	1.8%	
	6-9 PM	4.4%	7.4%	5.2%	4.7%	10.6%	1.7%	1.4%	3.0%	10.7%	1.8%	0.1%	5.6%	5.2%	3.7%	0.4%	0.3%	1.8%	3.2%	6.2%	7.6%	0.0%	0.4%	0.0%	11.5%	1.5%	
	9-Midnight	3.9%	5.9%	4.8%	4.1%	9.0%	1.4%	1.2%	2.8%	8.7%	1.8%	0.1%	5.2%	4.5%	3.0%	0.2%	0.2%	1.4%	3.1%	4.3%	7.3%	0.0%	0.4%	0.0%	11.1%	1.7%	
Lighting Conditions	Dark - Lighted	7.2%	13.8%	11.6%	8.9%	20.0%	3.7%	2.2%	6.8%	19.9%	3.6%	0.1%	12.5%	10.0%	6.2%	0.6%	0.4%	2.8%	5.7%	10.7%	17.1%	0.0%	0.4%	0.0%	23.9%	3.5%	
	Dark - Not Lighted	3.2%	2.8%	1.5%	3.2%	3.8%	0.5%	0.6%	1.3%	3.7%	1.5%	0.4%	2.6%	1.8%	1.7%	0.2%	0.1%	1.0%	2.5%	2.3%	2.5%	0.0%	1.2%	0.0%	5.3%	1.1%	
	Dark - Unknown Lighting	0.0%	0.0%	0.0%	0.0%	0.1%	0.0%	0.0%	0.0%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	
	Dawn	0.8%	0.9%	0.5%	0.7%	1.3%	0.2%	0.2%	0.4%	1.2%	0.3%	0.1%	0.6%	0.6%	0.6%	0.1%											

**Attachment C-4
Orange County
Percent of All KSI Crashes 2018-2022**

Mode:	All Collisions	Context Classification				Bike Lane/Paved Shoulder > 4 ft			Bike Slots			Sidewalks			Median Presence				
All		C4	C5	C6	None	None	One Side	Both Sides	None	One Side	Both Sides	None	One Side	Both Sides	None	Grass	Multiple	Paved	Other
Type	Angle	1.3%	0.1%	0.2%	0.0%	6.2%	1.3%	1.5%	7.9%	0.9%	0.0%	1.2%	1.2%	6.4%	4.4%	2.5%	0.1%	1.9%	0.0%
	Animal	0.0%	0.0%	0.0%	0.0%	0.1%	0.0%	0.1%	0.1%	0.0%	0.0%	0.1%	0.0%	0.0%	0.1%	0.1%	0.0%	0.0%	0.0%
	Bicycle	0.6%	0.0%	0.0%	0.0%	3.1%	0.5%	1.1%	4.3%	0.4%	0.1%	0.4%	0.3%	4.0%	1.8%	1.5%	0.0%	1.3%	0.1%
	Head On	0.6%	0.0%	0.0%	0.0%	2.1%	0.2%	0.7%	2.9%	0.1%	0.0%	0.6%	0.5%	1.9%	1.7%	0.7%	0.0%	0.6%	0.0%
	Left Turn	2.1%	0.3%	0.0%	0.0%	14.3%	3.3%	3.8%	18.7%	2.7%	0.1%	1.9%	2.7%	16.9%	7.3%	7.8%	0.3%	6.1%	0.1%
	Off Road	0.7%	0.1%	0.0%	0.0%	7.2%	0.8%	2.3%	9.8%	0.4%	0.0%	1.7%	1.5%	7.0%	4.2%	3.8%	0.2%	2.0%	0.1%
	Other	2.1%	0.2%	0.2%	0.0%	7.2%	1.3%	2.3%	9.8%	0.9%	0.1%	1.6%	1.3%	8.0%	4.3%	3.6%	0.3%	2.6%	0.1%
	Pedestrian	3.3%	0.3%	0.3%	0.0%	8.9%	1.7%	2.7%	11.6%	1.6%	0.2%	0.8%	1.1%	11.5%	5.0%	4.1%	0.2%	4.1%	0.1%
	Rear End	2.4%	0.1%	0.0%	0.0%	11.2%	4.0%	4.7%	16.3%	3.3%	0.2%	1.7%	1.8%	16.4%	3.9%	7.8%	0.6%	7.5%	0.1%
	Right Turn	0.1%	0.0%	0.0%	0.0%	0.8%	0.2%	0.4%	1.3%	0.2%	0.0%	0.1%	0.1%	1.2%	0.3%	0.6%	0.0%	0.6%	0.0%
	Rollover	0.1%	0.0%	0.0%	0.0%	0.8%	0.1%	0.4%	1.2%	0.1%	0.0%	0.4%	0.1%	0.8%	0.5%	0.6%	0.1%	0.2%	0.0%
	Sideswipe	0.4%	0.1%	0.0%	0.0%	1.9%	0.7%	0.8%	2.9%	0.5%	0.0%	0.2%	0.3%	2.8%	1.0%	1.4%	0.1%	0.9%	0.0%
	Unknown	0.2%	0.0%	0.0%	0.0%	0.7%	0.2%	0.4%	1.2%	0.2%	0.0%	0.1%	0.1%	1.1%	0.3%	0.5%	0.0%	0.4%	0.0%
Alcohol Related	Y	0.9%	0.1%	0.0%	0.0%	3.3%	0.7%	1.2%	4.7%	0.5%	0.0%	0.9%	0.5%	3.8%	2.0%	1.8%	0.2%	1.2%	0.0%
	N	13.0%	1.1%	0.7%	0.0%	61.3%	13.5%	20.0%	83.3%	10.8%	0.7%	10.0%	10.6%	74.2%	32.6%	33.1%	1.6%	27.0%	0.5%
Hit and Run	Y	1.8%	0.1%	0.1%	0.0%	7.2%	1.9%	1.9%	9.4%	0.9%	0.0%	0.8%	1.0%	8.6%	4.4%	2.7%	0.2%	3.0%	0.1%
	N	12.1%	1.1%	0.6%	0.0%	57.5%	19.3%	19.3%	78.5%	10.4%	0.7%	10.1%	10.1%	69.5%	30.3%	32.1%	1.6%	25.2%	0.4%
Aggressive Driving	Y	1.1%	0.1%	0.1%	0.0%	3.1%	1.0%	1.0%	4.2%	0.5%	0.0%	0.5%	0.8%	3.4%	2.1%	1.5%	0.0%	1.1%	0.0%
	N	12.8%	1.0%	0.6%	0.0%	61.5%	20.3%	20.3%	83.8%	10.8%	0.7%	10.4%	10.2%	74.6%	32.6%	33.4%	1.7%	27.1%	0.4%
Distracted Driving	Y	3.0%	0.2%	0.0%	0.0%	18.5%	5.7%	5.7%	24.7%	3.3%	0.2%	3.3%	3.1%	21.9%	9.0%	10.2%	0.7%	8.2%	0.1%
	N	10.9%	1.0%	0.7%	0.0%	46.2%	15.6%	15.6%	63.3%	8.0%	0.5%	7.6%	8.0%	56.2%	25.7%	24.6%	1.1%	20.0%	0.3%
Intersection Related	Y	5.6%	0.5%	0.5%	0.0%	26.7%	7.8%	7.8%	35.6%	5.5%	0.3%	3.9%	4.6%	32.9%	14.6%	13.9%	0.6%	12.1%	0.2%
	N	8.3%	0.7%	0.2%	0.0%	37.9%	13.5%	13.5%	52.4%	5.8%	0.5%	7.0%	6.5%	45.2%	20.1%	20.9%	1.2%	16.1%	0.3%
Drug Related	Y	0.5%	0.0%	0.0%	0.0%	2.1%	0.5%	0.5%	2.6%	0.4%	0.0%	0.4%	0.4%	2.2%	1.2%	1.0%	0.0%	0.8%	0.0%
	N	13.3%	1.2%	0.7%	0.0%	62.6%	20.8%	20.8%	85.4%	10.9%	0.7%	10.5%	10.6%	75.9%	33.5%	33.9%	1.8%	27.4%	0.5%
Aging Driver	Y	1.8%	0.1%	0.1%	0.0%	8.9%	3.0%	3.0%	12.1%	1.7%	0.2%	1.7%	1.5%	10.8%	5.0%	4.6%	0.2%	4.2%	0.0%
	N	12.0%	1.1%	0.6%	0.0%	55.7%	18.3%	18.3%	75.8%	9.6%	0.6%	9.2%	9.6%	67.3%	29.7%	30.2%	1.6%	24.0%	0.4%
Teenage Driver	Y	0.9%	0.1%	0.1%	0.0%	7.2%	2.8%	2.8%	10.1%	1.5%	0.1%	0.8%	1.5%	9.4%	3.5%	4.2%	0.2%	3.6%	0.1%
	N	13.0%	1.1%	0.6%	0.0%	57.5%	18.5%	18.5%	77.9%	9.8%	0.7%	10.1%	9.6%	68.7%	31.1%	30.6%	1.6%	24.6%	0.4%
Day of the Week	Monday	1.7%	0.1%	0.1%	0.0%	8.3%	2.8%	2.8%	12.2%	1.4%	0.1%	1.5%	1.4%	10.9%	5.0%	4.6%	0.3%	3.7%	0.1%
	Tuesday	1.8%	0.1%	0.1%	0.0%	8.5%	3.2%	3.2%	12.9%	1.4%	0.0%	1.6%	1.7%	11.1%	4.9%	5.0%	0.1%	4.2%	0.1%
	Wednesday	2.2%	0.2%	0.0%	0.0%	8.8%	2.3%	2.3%	12.2%	1.8%	0.2%	1.4%	1.9%	10.8%	4.7%	5.1%	0.2%	4.0%	0.1%
	Thursday	2.2%	0.3%	0.1%	0.0%	8.5%	3.1%	3.1%	12.7%	1.5%	0.1%	1.7%	1.5%	11.1%	5.3%	4.7%	0.2%	4.1%	0.0%
	Friday	2.4%	0.1%	0.1%	0.0%	9.4%	3.0%	3.0%	13.7%	2.0%	0.1%	1.6%	1.7%	12.5%	5.6%	5.3%	0.3%	4.6%	0.0%
	Saturday	2.3%	0.2%	0.2%	0.0%	9.1%	2.9%	2.9%	13.2%	1.8%	0.1%	1.6%	1.5%	12.0%	4.8%	5.4%	0.5%	4.3%	0.0%
	Sunday	1.4%	0.1%	0.1%	0.0%	7.7%	2.5%	2.5%	11.0%	1.4%	0.1%	1.5%	1.3%	9.7%	4.3%	4.7%	0.3%	3.2%	0.1%
Time of Day	12-3 AM	1.9%	0.1%	0.2%	0.0%	4.7%	1.9%	1.9%	7.2%	1.1%	0.1%	1.0%	0.8%	6.6%	2.4%	3.0%	0.2%	2.7%	0.1%
	3-6 AM	0.8%	0.3%	0.0%	0.0%	3.6%	1.1%	1.1%	5.3%	0.7%	0.0%	1.0%	0.7%	4.3%	2.1%	2.3%	0.2%	1.4%	0.1%
	6-9 AM	1.6%	0.2%	0.0%	0.0%	8.3%	2.7%	2.7%	12.1%	1.6%	0.1%	1.4%	1.5%	10.9%	4.6%	4.8%	0.3%	4.0%	0.1%
	9-Noon	1.6%	0.1%	0.1%	0.0%	7.6%	2.3%	2.3%	11.0%	1.4%	0.0%	1.5%	1.3%	9.6%	3.9%	4.3%	0.2%	4.0%	0.0%
	Noon-3 PM	1.6%	0.0%	0.1%	0.0%	8.1%	2.5%	2.5%	11.5%	1.3%	0.0%	1.5%	1.5%	10.0%	4.9%	4.4%	0.2%	3.5%	0.0%
	3-6 PM	2.3%	0.2%	0.1%	0.0%	9.3%	2.9%	2.9%	13.4%	1.4%	0.1%	1.3%	1.7%	11.9%	5.8%	5.1%	0.2%	3.8%	0.0%
	6-9 PM	1.9%	0.1%	0.1%	0.0%	10.3%	3.4%	3.4%	14.9%	1.9%	0.2%	1.5%	1.9%	13.6%	5.9%	5.8%	0.3%	4.8%	0.1%
	9-Midnight	2.2%	0.2%	0.1%	0.0%	8.5%	3.0%	3.0%	12.5%	1.9%	0.1%	1.6%	1.7%	11.2%	5.1%	5.2%	0.2%	4.1%	0.1%
Lighting Conditions	Dark - Lighted	6.0%	0.7%	0.4%	0.0%	19.6%	6.2%	6.2%	28.2%	4.2%	0.3%	2.2%	3.1%	27.4%	10.3%	11.3%	0.7%	10.0%	0.3%
	Dark - Not Lighted	0.5%	0.0%	0.0%	0.0%	3.7%	2.3%	2.3%	6.6%	0.9%	0.1%	2.3%	1.4%	3.8%	3.2%	2.9%	0.1%	1.3%	0.0%
	Dark - Unknown Lighting	0.1%	0.0%	0.0%	0.0%	0.1%	0.0%	0.0%	0.1%	0.0%	0.0%	0.0%	0.0%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%
	Dawn	0.2%	0.1%	0.0%	0.0%	1.3%	0.4%	0.4%	1.9%	0.3%	0.0%	0.3%	0.3%	1.6%	0.8%	0.7%	0.0%	0.6%	0.0%
	Daylight	6.9%	0.4%	0.3%	0.0%	33.8%	10.2%	10.2%	48.4%	5.6%	0.3%	5.7%	5.9%	42.7%	19.3%	18.9%	0.8%	15.2%	0.1%
	Dusk	0.2%	0.0%	0.0%	0.0%	1.7%	0.7%	0.7%	2.7%	0.4%	0.0%	0.3%	0.4%	2.4%	0.9%	1.1%	0.1%	1.0%	0.0%
	Other	0.0%	0.0%	0.0%	0.0%	0.1%	0.0%	0.0%	0.1%	0.0%	0.0%	0.0%	0.0%	0.1%	0.0%	0.1%	0.0%	0.0%	0.0%
Unknown	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	0.0%	0.0%	0.0%	0.0%	

**Attachment C-5
Orange County
Percent of All KSI Crashes involving only Car Truck 2018-2022**

Mode:	All Collisions	Number of Lanes			Turn Lanes			Posted Speed					Roadway Classification						AADT (2022)			Context Classification					
All		3 Lanes or Less	4-5 Lanes	6+ Lanes	None	1 to 2	3+	25 or less	30-35	40-45	50-55	60+	Principal Arterial	Minor Arterial	Major Collector	Minor Collector	Local	None	< 15000	15,000-30,000	30,000+	C1	C2	C2T	C3C	C3R	
		2-3	4-5	6-8				0-25	30-35	40-45	50-55	60+															
Type	Angle	5.0%	4.1%	2.3%	3.7%	6.7%	0.9%	1.9%	3.4%	5.0%	1.0%	0.1%	2.6%	3.0%	3.1%	0.4%	0.2%	2.2%	3.6%	3.3%	3.3%	0.0%	0.3%	0.0%	6.9%	1.2%	
	Animal	0.0%	0.1%	0.0%	0.1%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	0.0%	0.0%	0.0%	0.1%	0.0%	0.0%	0.0%
	Bicycle	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Head On	1.9%	1.5%	0.6%	1.8%	1.8%	0.2%	0.3%	1.0%	2.1%	0.6%	0.0%	1.0%	1.1%	1.3%	0.1%	0.1%	0.3%	1.5%	1.3%	1.2%	0.0%	0.2%	0.0%	2.0%	0.4%	
	Left Turn	5.9%	12.9%	7.0%	4.3%	19.0%	2.2%	1.2%	4.7%	17.3%	2.6%	0.1%	6.6%	10.1%	6.1%	0.4%	0.3%	1.9%	5.2%	11.0%	10.3%	0.1%	1.4%	0.0%	17.8%	3.6%	
	Off Road	4.9%	5.4%	2.1%	6.7%	5.5%	0.6%	1.9%	2.6%	6.4%	1.3%	0.3%	3.0%	3.6%	3.1%	0.3%	0.2%	2.6%	3.4%	4.3%	3.6%	0.2%	0.8%	0.0%	5.4%	1.8%	
	Other	4.4%	4.6%	3.3%	5.0%	6.4%	1.2%	2.0%	2.5%	6.4%	1.0%	0.3%	3.9%	3.2%	2.5%	0.4%	0.1%	2.5%	3.1%	3.5%	4.8%	0.1%	0.5%	0.0%	6.8%	1.4%	
	Pedestrian	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Rear End	3.9%	10.6%	11.1%	5.2%	16.2%	4.0%	0.3%	2.8%	18.5%	3.8%	0.2%	10.9%	9.1%	4.0%	0.4%	0.3%	0.8%	3.1%	8.7%	15.9%	0.0%	1.0%	0.0%	23.3%	3.2%	
	Right Turn	0.4%	0.9%	0.7%	0.4%	1.3%	0.3%	0.0%	0.4%	1.2%	0.2%	0.0%	0.5%	0.8%	0.5%	0.0%	0.0%	0.1%	0.4%	0.7%	1.0%	0.0%	0.0%	0.0%	1.4%	0.1%	
	Rollover	0.3%	0.5%	0.1%	0.7%	0.2%	0.1%	0.1%	0.1%	0.3%	0.1%	0.2%	0.5%	0.1%	0.2%	0.0%	0.0%	0.2%	0.4%	0.2%	0.2%	0.0%	0.5%	0.0%	0.5%	0.2%	
	Sideswipe	0.9%	1.7%	1.5%	1.1%	2.4%	0.5%	0.2%	0.7%	2.3%	0.8%	0.0%	1.8%	1.2%	0.5%	0.1%	0.1%	0.3%	0.6%	1.3%	2.3%	0.0%	0.2%	0.0%	3.7%	0.2%	
Unknown	0.3%	0.8%	0.4%	0.4%	1.1%	0.0%	0.1%	0.3%	0.9%	0.2%	0.0%	0.5%	0.5%	0.4%	0.1%	0.0%	0.1%	0.4%	0.6%	0.6%	0.0%	0.2%	0.0%	1.2%	0.3%		
Alcohol Related	Y	1.8%	2.3%	1.7%	2.3%	3.0%	0.4%	0.6%	1.2%	3.1%	0.7%	0.2%	2.3%	1.4%	1.3%	0.2%	0.1%	0.5%	1.8%	1.7%	2.4%	0.1%	0.4%	0.0%	4.1%	0.8%	
	N	26.1%	40.8%	27.4%	27.1%	57.7%	9.5%	7.5%	17.2%	57.4%	10.9%	1.2%	29.1%	31.2%	20.3%	2.1%	1.1%	10.5%	20.1%	33.3%	40.8%	0.2%	4.8%	0.0%	64.7%	11.7%	
Hit and Run	Y	2.2%	3.2%	3.1%	2.1%	5.5%	0.8%	0.8%	1.5%	5.2%	0.9%	0.1%	2.9%	2.7%	1.8%	0.1%	0.2%	0.7%	1.7%	2.6%	4.3%	0.0%	0.1%	0.0%	6.2%	0.8%	
	N	25.7%	39.8%	26.0%	27.3%	55.2%	9.1%	7.3%	16.9%	55.3%	10.7%	1.3%	28.5%	29.9%	19.8%	2.2%	1.1%	10.2%	20.2%	32.4%	38.8%	0.3%	5.1%	0.0%	62.6%	11.7%	
Aggressive Driving	Y	1.8%	2.1%	1.0%	1.5%	3.1%	0.3%	0.5%	1.5%	2.5%	0.4%	0.1%	1.4%	1.1%	1.5%	0.2%	0.0%	0.5%	1.6%	1.8%	1.5%	0.0%	0.2%	0.0%	2.3%	0.8%	
	N	26.1%	41.0%	28.1%	27.9%	57.6%	9.6%	7.6%	16.9%	58.1%	11.2%	1.3%	30.0%	31.4%	20.0%	2.1%	1.2%	10.5%	20.2%	33.2%	41.6%	0.3%	5.0%	0.0%	66.6%	11.7%	
Distracted Driving	Y	8.3%	14.6%	9.7%	8.7%	20.3%	3.7%	2.2%	5.1%	21.0%	3.9%	0.4%	10.0%	11.8%	6.6%	0.6%	0.5%	3.1%	6.5%	12.0%	14.7%	0.1%	2.0%	0.0%	22.9%	5.3%	
	N	19.5%	28.4%	19.4%	20.8%	40.4%	6.2%	5.9%	13.3%	39.5%	7.7%	0.9%	21.4%	20.8%	15.0%	1.7%	0.7%	7.9%	15.4%	23.0%	28.5%	0.2%	3.2%	0.0%	45.9%	7.2%	
Intersection Related	Y	12.3%	18.5%	12.7%	9.0%	29.4%	4.4%	3.5%	9.2%	26.1%	4.5%	0.2%	12.9%	14.7%	9.7%	0.9%	0.5%	4.1%	10.1%	15.7%	17.6%	0.1%	2.0%	0.0%	30.7%	6.2%	
	N	15.6%	24.6%	16.4%	20.4%	31.3%	5.5%	4.6%	9.3%	34.4%	7.1%	1.1%	18.5%	17.9%	11.9%	1.3%	0.7%	6.9%	11.7%	19.3%	25.6%	0.2%	3.2%	0.0%	38.1%	6.3%	
Drug Related	Y	0.8%	1.3%	1.0%	0.9%	1.7%	0.4%	0.2%	0.5%	1.9%	0.4%	0.0%	1.3%	0.8%	0.7%	0.1%	0.1%	0.1%	0.7%	0.9%	1.6%	0.1%	0.1%	0.0%	2.3%	0.6%	
	N	27.1%	41.8%	28.1%	28.5%	59.0%	9.5%	8.0%	17.9%	58.6%	11.2%	1.3%	30.1%	31.8%	20.9%	2.2%	1.2%	10.8%	21.1%	34.1%	41.6%	0.2%	5.2%	0.0%	66.5%	11.9%	
Aging Driver	Y	4.8%	7.2%	4.3%	4.4%	10.0%	1.9%	1.2%	3.4%	9.7%	1.9%	0.1%	5.3%	5.2%	3.4%	0.5%	0.2%	1.8%	3.9%	5.7%	6.8%	0.0%	1.2%	0.0%	11.9%	1.9%	
	N	23.1%	35.8%	24.7%	25.0%	50.7%	8.0%	7.0%	15.0%	50.8%	9.7%	1.2%	26.1%	27.3%	18.2%	1.8%	1.1%	9.1%	17.9%	29.3%	36.4%	0.3%	4.0%	0.0%	57.0%	10.6%	
Teenage Driver	Y	3.7%	6.2%	4.0%	3.6%	8.8%	1.3%	1.1%	2.1%	9.1%	1.5%	0.0%	3.9%	4.8%	3.0%	0.4%	0.1%	1.6%	3.1%	4.4%	6.2%	0.0%	0.5%	0.0%	9.7%	2.0%	
	N	24.2%	36.9%	25.1%	25.8%	51.8%	8.6%	7.0%	16.3%	51.4%	10.1%	1.3%	27.5%	27.8%	18.6%	1.9%	1.1%	9.4%	18.7%	30.6%	36.9%	0.3%	4.7%	0.0%	59.2%	10.5%	
Day of the Week	Monday	4.5%	5.7%	3.9%	4.4%	8.4%	1.3%	1.1%	2.8%	8.6%	1.5%	0.2%	4.5%	4.1%	3.4%	0.4%	0.2%	1.4%	3.5%	4.8%	5.8%	0.1%	0.7%	0.0%	9.9%	2.0%	
	Tuesday	3.9%	6.4%	4.2%	4.3%	9.1%	1.2%	1.2%	2.7%	8.9%	1.5%	0.2%	4.0%	5.2%	3.2%	0.4%	0.0%	1.7%	3.1%	5.5%	5.9%	0.1%	0.5%	0.0%	9.4%	1.4%	
	Wednesday	3.9%	6.0%	4.4%	3.9%	9.3%	1.1%	1.1%	2.7%	8.4%	1.9%	0.2%	4.8%	4.4%	3.1%	0.3%	0.2%	1.5%	3.3%	4.5%	6.6%	0.0%	0.9%	0.0%	9.8%	1.9%	
	Thursday	3.9%	6.3%	3.8%	4.2%	8.5%	1.3%	1.2%	2.3%	8.9%	1.5%	0.2%	4.2%	4.8%	3.1%	0.2%	0.2%	1.5%	3.0%	4.8%	6.2%	0.1%	0.8%	0.0%	9.7%	1.7%	
	Friday	4.3%	6.5%	4.7%	4.4%	9.3%	1.7%	1.4%	2.8%	9.3%	1.9%	0.1%	5.0%	5.2%	2.8%	0.3%	0.2%	1.9%	3.0%	5.7%	6.5%	0.1%	0.8%	0.0%	11.1%	1.8%	
	Saturday	3.7%	6.7%	4.6%	3.9%	9.3%	1.9%	1.1%	2.9%	9.1%	1.8%	0.3%	5.0%	4.8%	3.4%	0.2%	0.2%	1.4%	3.1%	5.3%	6.9%	0.0%	0.9%	0.0%	10.6%	2.0%	
	Sunday	3.6%	5.4%	3.5%	4.2%	6.8%	1.4%	1.0%	2.3%	7.4%	1.6%	0.1%	3.9%	3.9%	2.6%	0.4%	0.1%	1.4%	2.7%	4.4%	5.3%	0.1%	0.6%	0.0%	8.3%	1.8%	
Time of Day	12-3 AM	2.0%	3.6%	2.9%	2.8%	4.5%	1.0%	0.6%	1.7%	4.8%	1.0%	0.3%	3.3%	2.6%	1.6%	0.2%	0.1%	0.6%	1.9%	2.6%	4.2%	0.0%	0.6%	0.0%	6.2%	1.3%	
	3-6 AM	1.7%	2.4%	2.1%	2.2%	3.3%	0.7%	0.4%	1.2%	3.5%	1.0%	0.1%	2.1%	2.1%	1.1%	0.2%	0.1%	0.5%	1.3%	2.0%	3.0%	0.1%	0.4%	0.0%	4.1%	1.0%	
	6-9 AM	4.4%	6.7%	3.8%	4.2%	9.2%	1.5%	1.1%	2.6%	9.1%	1.8%	0.3%	4.1%	5.2%	3.4%	0.4%	0.1%	1.6%	3.5%	5.2%	6.2%	0.1%	1.3%	0.0%	9.7%	1.5%	
	9-Noon	3.8%	6.0%	4.3%	3.9%	8.4%	1.8%	1.2%	2.3%	8.6%	1.8%	0.1%	4.6%	4.7%	2.7%	0.3%	0.1%	1.7%	2.8%	4.8%	6.5%	0.0%	0.9%	0.0%	9.8%	1.9%	
	Noon-3 PM	3.9%	6.0%	3.9%	3.9%	8.8%	1.3%	1.2%	2.9%	8.5%	1.2%	0.1%	4.4%	4.6%	2.6%	0.4%	0.2%	1.8%	2.8%	5.1%	5.7%	0.0%	0.3%	0.0%	9.9%	1.5%	
	3-6 PM	4.5%	6.8%	4.0%	4.8%	9.5%	1.1%	1.5%	2.8%	9.4%	1.5%	0.2%	4.6%	4.7%	3.7%	0.4%	0.2%	1.8%	3.5%	6.0%	5.7%	0.1%	0.7%	0.0%	9.9%	2.2%	
	6-9 PM	3.9%	6.5%	4.5%	4.2%	9.1%	1.5%	1.1%	2.6%	9.5%	1.6%	0.1%	4.4%	5.0%	3.3%	0.3%	0.3%	1.6%	3.1%	5.4%	6.4%	0.0%	0.5%	0.0%	10.0%	1.5%	
	9-Midnight	3.7%	5.0%	3.6%	3.4%	7.8%	1.1%	1.1%	2.3%	7.2%	1.6%	0.1%	3.8%	3.8%	3.1%	0.1%	0.2%	1.3%	2.9%	3.9%	5.5%	0.0%	0.5%	0.0%	9.2%	1.6%	
Lighting Conditions	Dark - Lighted	7.2%	12.6%	9.9%	8.2%	18.0%	3.3%	2.2%	6.1%	18.0%	3.2%	0.2%	9.8%	9.7%	6.4%	0.5%	0.4%	2.7%	5.8%	10.1%	14.3%	0.1%	0.5%	0.0%	21.2%	4.1%	
	Dark - Not Lighted	2.7%	2.2%	1.2%	2.8%	2.8%	0.3%	0.5%	0.9%	2.7%	1.4%	0.5%	2.1%	1.3%	1.5%	0.2%	0.1%	0.8%	2.3%	1.6%	1.8%	0.1%	1.5%	0.0%	3.6%	0.9%	
	Dark - Unknown Lighting	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	
	Dawn	0.7%	0.8%	0.4%	0.6%	1.2%	0.1%	0.2%	0.3%	1.1%	0.3%	0.1%	0.6%														

**Attachment C-5
Orange County
Percent of All KSI Crashes involving only Car Truck 2018-2022**

Mode:	All Collisions	Context Classification				Bike Lane/Paved Shoulder > 4 ft			Bike Slots			Sidewalks			Median Presence				
All		C4	C5	C6	None	None	One Side	Both Sides	None	One Side	Both Sides	None	One Side	Both Sides	None	Grass	Multiple	Paved	Other
Type	Angle	1.5%	0.1%	0.2%	0.0%	8.0%	1.6%	1.8%	10.1%	1.2%	0.1%	1.6%	1.7%	8.1%	5.7%	3.2%	0.1%	2.4%	0.0%
	Animal	0.0%	0.0%	0.0%	0.0%	0.1%	0.0%	0.1%	0.1%	0.0%	0.0%	0.1%	0.0%	0.0%	0.0%	0.1%	0.0%	0.0%	0.0%
	Bicycle	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Head On	0.8%	0.0%	0.0%	0.0%	2.8%	0.2%	0.9%	3.8%	0.1%	0.0%	0.7%	0.6%	2.7%	2.2%	0.9%	0.1%	0.9%	0.0%
	Left Turn	2.2%	0.3%	0.0%	0.0%	17.1%	4.4%	4.3%	22.1%	3.6%	0.1%	2.4%	3.0%	20.5%	8.2%	9.7%	0.3%	7.5%	0.1%
	Off Road	0.7%	0.2%	0.0%	0.0%	8.6%	0.9%	2.9%	11.8%	0.6%	0.1%	2.2%	1.9%	8.4%	5.2%	4.7%	0.2%	2.3%	0.1%
	Other	2.6%	0.2%	0.2%	0.0%	8.5%	1.3%	2.4%	11.1%	1.0%	0.1%	1.9%	1.4%	9.0%	5.1%	3.9%	0.3%	2.7%	0.2%
	Pedestrian	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Rear End	3.2%	0.1%	0.0%	0.0%	14.5%	5.2%	5.9%	20.9%	4.4%	0.2%	2.2%	2.2%	21.3%	5.0%	9.9%	0.8%	9.9%	0.1%
	Right Turn	0.2%	0.0%	0.0%	0.0%	1.2%	0.2%	0.5%	1.7%	0.2%	0.0%	0.2%	0.1%	1.6%	0.4%	0.7%	0.0%	0.9%	0.0%
	Rollover	0.1%	0.0%	0.0%	0.0%	0.5%	0.1%	0.4%	0.9%	0.1%	0.0%	0.4%	0.1%	0.5%	0.3%	0.5%	0.0%	0.1%	0.0%
	Sideswipe	0.4%	0.1%	0.1%	0.0%	2.3%	0.8%	1.0%	3.4%	0.6%	0.1%	0.3%	0.4%	3.3%	1.2%	1.8%	0.1%	1.0%	0.0%
	Unknown	0.1%	0.0%	0.0%	0.0%	0.8%	0.2%	0.5%	1.4%	0.2%	0.0%	0.1%	0.1%	1.3%	0.4%	0.7%	0.0%	0.4%	0.0%
Alcohol Related	Y	1.0%	0.1%	0.0%	0.0%	3.6%	0.8%	1.3%	5.1%	0.7%	0.0%	1.0%	0.5%	4.2%	2.2%	2.0%	0.2%	1.3%	0.0%
	N	10.8%	0.7%	0.5%	0.0%	60.7%	14.1%	19.4%	82.4%	11.3%	0.6%	10.9%	10.9%	72.4%	31.4%	34.1%	1.7%	26.7%	0.4%
Hit and Run	Y	1.3%	0.1%	0.0%	0.0%	5.7%	1.6%	1.6%	7.6%	0.9%	0.0%	0.6%	0.7%	7.3%	3.2%	2.5%	0.1%	2.6%	0.1%
	N	10.6%	0.8%	0.5%	0.0%	58.7%	19.1%	19.1%	79.8%	11.0%	0.6%	11.4%	10.8%	69.3%	30.4%	33.6%	1.8%	25.4%	0.3%
Aggressive Driving	Y	1.0%	0.1%	0.1%	0.0%	3.3%	0.9%	0.9%	4.3%	0.6%	0.0%	0.6%	0.9%	3.4%	2.2%	1.7%	0.1%	0.9%	0.0%
	N	10.9%	0.8%	0.4%	0.0%	61.1%	19.7%	19.7%	83.2%	11.4%	0.6%	11.4%	10.6%	73.2%	31.4%	34.4%	1.9%	27.0%	0.4%
Distracted Driving	Y	3.2%	0.1%	0.1%	0.0%	21.1%	6.4%	6.4%	28.2%	4.2%	0.2%	3.9%	3.5%	25.2%	9.8%	12.2%	0.9%	9.6%	0.1%
	N	8.6%	0.8%	0.4%	0.0%	43.2%	14.3%	14.3%	59.3%	7.7%	0.4%	8.0%	7.9%	51.4%	23.8%	23.9%	1.1%	18.3%	0.2%
Intersection Related	Y	4.9%	0.4%	0.3%	0.0%	28.0%	7.8%	7.8%	37.0%	6.2%	0.2%	4.5%	5.0%	34.0%	14.5%	15.4%	0.7%	12.7%	0.1%
	N	6.9%	0.4%	0.2%	0.0%	36.3%	12.8%	12.8%	50.4%	5.7%	0.4%	7.5%	6.5%	42.6%	19.1%	20.7%	1.3%	15.2%	0.2%
Drug Related	Y	0.6%	0.0%	0.0%	0.0%	2.0%	0.5%	0.5%	2.6%	0.4%	0.0%	0.4%	0.4%	2.2%	1.2%	1.1%	0.0%	0.8%	0.0%
	N	11.3%	0.8%	0.5%	0.0%	62.4%	20.1%	20.1%	84.8%	11.5%	0.6%	11.5%	11.0%	74.4%	32.4%	35.0%	1.9%	27.2%	0.4%
Aging Driver	Y	2.0%	0.1%	0.2%	0.0%	10.3%	3.3%	3.3%	13.9%	2.2%	0.2%	2.3%	1.9%	12.2%	5.6%	5.6%	0.3%	4.9%	0.0%
	N	9.9%	0.7%	0.3%	0.0%	54.1%	17.3%	17.3%	73.5%	9.7%	0.4%	9.7%	9.6%	64.4%	28.0%	30.5%	1.7%	23.1%	0.4%
Teenage Driver	Y	1.0%	0.1%	0.1%	0.0%	8.6%	3.4%	3.4%	12.1%	1.7%	0.1%	1.0%	1.8%	11.1%	4.1%	5.2%	0.2%	4.4%	0.1%
	N	10.9%	0.8%	0.4%	0.0%	55.8%	17.3%	17.3%	75.3%	10.3%	0.5%	10.9%	9.7%	65.5%	29.5%	30.9%	1.8%	23.6%	0.3%
Day of the Week	Monday	1.4%	0.2%	0.2%	0.0%	8.4%	3.0%	3.0%	12.6%	1.4%	0.1%	1.6%	1.4%	11.1%	4.8%	4.9%	0.3%	3.9%	0.1%
	Tuesday	1.6%	0.1%	0.1%	0.0%	8.9%	2.9%	2.9%	12.9%	1.5%	0.0%	1.8%	1.8%	10.8%	4.9%	5.1%	0.1%	4.3%	0.1%
	Wednesday	1.9%	0.1%	0.0%	0.0%	8.9%	2.4%	2.4%	12.3%	2.0%	0.1%	1.6%	2.0%	10.7%	4.7%	5.6%	0.2%	3.8%	0.1%
	Thursday	2.0%	0.1%	0.1%	0.0%	8.8%	2.9%	2.9%	12.6%	1.3%	0.1%	1.8%	1.5%	10.7%	5.1%	4.7%	0.1%	4.1%	0.0%
	Friday	1.5%	0.0%	0.1%	0.0%	9.2%	3.0%	3.0%	13.1%	2.2%	0.1%	1.9%	1.7%	11.9%	5.1%	5.5%	0.3%	4.6%	0.0%
	Saturday	2.0%	0.2%	0.1%	0.0%	8.9%	3.0%	3.0%	13.0%	2.0%	0.1%	1.8%	1.5%	11.8%	4.6%	5.7%	0.6%	4.1%	0.0%
	Sunday	1.5%	0.1%	0.1%	0.0%	7.8%	2.4%	2.4%	10.9%	1.5%	0.0%	1.5%	1.5%	9.5%	4.3%	4.6%	0.3%	3.3%	0.1%
Time of Day	12-3 AM	1.8%	0.1%	0.1%	0.0%	4.6%	2.1%	2.1%	7.2%	1.2%	0.1%	1.2%	0.8%	6.5%	2.3%	3.2%	0.3%	2.6%	0.1%
	3-6 AM	0.8%	0.2%	0.0%	0.0%	3.8%	1.1%	1.1%	5.4%	0.8%	0.0%	1.2%	0.7%	4.4%	2.0%	2.7%	0.2%	1.4%	0.0%
	6-9 AM	1.5%	0.1%	0.0%	0.0%	9.2%	2.8%	2.8%	13.1%	1.8%	0.1%	1.7%	1.5%	11.8%	5.1%	5.1%	0.4%	4.3%	0.1%
	9-Noon	1.6%	0.2%	0.1%	0.0%	8.6%	2.6%	2.6%	12.3%	1.7%	0.0%	1.9%	1.6%	10.6%	4.4%	5.1%	0.2%	4.4%	0.0%
	Noon-3 PM	1.8%	0.0%	0.1%	0.0%	8.6%	2.6%	2.6%	12.2%	1.5%	0.1%	1.6%	1.6%	10.7%	5.0%	4.7%	0.2%	3.9%	0.0%
	3-6 PM	1.9%	0.2%	0.1%	0.0%	9.7%	3.0%	3.0%	13.8%	1.4%	0.1%	1.3%	1.8%	12.2%	5.8%	5.5%	0.2%	3.8%	0.0%
	6-9 PM	1.0%	0.1%	0.1%	0.0%	9.1%	3.0%	3.0%	12.9%	1.8%	0.1%	1.5%	1.8%	11.6%	4.9%	5.4%	0.3%	4.1%	0.1%
	9-Midnight	1.5%	0.1%	0.0%	0.0%	7.2%	2.5%	2.5%	10.5%	1.7%	0.0%	1.7%	1.7%	8.9%	4.2%	4.4%	0.2%	3.4%	0.1%
	Lighting Conditions	Dark - Lighted	4.3%	0.3%	0.2%	0.0%	18.1%	5.6%	5.6%	25.4%	4.1%	0.2%	2.5%	3.3%	23.9%	9.2%	10.7%	0.8%	8.7%
Dark - Not Lighted		0.4%	0.0%	0.0%	0.0%	2.9%	2.0%	2.0%	5.4%	0.6%	0.0%	2.3%	1.2%	2.5%	2.5%	2.4%	0.1%	1.0%	0.0%
Dark - Unknown Lighting		0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Dawn		0.2%	0.1%	0.0%	0.0%	1.1%	0.4%	0.4%	1.7%	0.2%	0.0%	0.4%	0.2%	1.4%	0.7%	0.7%	0.0%	0.5%	0.0%
Daylight		6.8%	0.4%	0.3%	0.0%	37.0%	10.8%	10.8%	52.2%	6.5%	0.4%	6.4%	6.4%	46.3%	20.3%	21.1%	1.0%	16.7%	0.1%
Dusk		0.1%	0.0%	0.0%	0.0%	1.7%	0.7%	0.7%	2.6%	0.4%	0.0%	0.3%	0.4%	2.4%	0.9%	1.1%	0.1%	1.0%	0.0%
Other		0.0%	0.0%	0.0%	0.0%	0.1%	0.0%	0.0%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	0.0%	0.0%
Unknown		0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

**Attachment C-6
Orange County
Percent of All KSI Crashes Involving Motorcyclists 2018-2022**

Mode:	All Collisions	Number of Lanes			Turn Lanes			Posted Speed					Roadway Classification						AADT (2022)			Context Classification					
All		3 Lanes or Less	4-5 Lanes	6+ Lanes	None	1 to 2	3+	25 or less	30-35	40-45	50-55	60+	Principal Arterial	Minor Arterial	Major Collector	Minor Collector	Local	None	< 15000	15,000-30,000	30,000+	C1	C2	C2T	C3C	C3R	
		2-3	4-5	6-8				0-25	30-35	40-45	50-55	60+															
Type	Angle	3.5%	3.1%	1.3%	3.4%	4.2%	0.5%	1.9%	2.4%	3.1%	0.5%	0.0%	2.6%	1.3%	2.2%	0.3%	0.2%	1.4%	2.2%	2.7%	2.4%	0.0%	0.3%	0.0%	3.2%	0.0%	
	Animal	0.3%	0.0%	0.0%	0.3%	0.0%	0.0%	0.2%	0.0%	0.0%	0.2%	0.0%	0.0%	0.0%	0.0%	0.2%	0.0%	0.2%	0.2%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Bicycle	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Head On	1.1%	0.8%	0.0%	1.3%	0.6%	0.0%	0.3%	0.3%	0.6%	0.6%	0.0%	0.5%	0.3%	0.6%	0.2%	0.0%	0.3%	0.7%	0.9%	0.2%	0.0%	0.3%	0.0%	0.3%	0.0%	
	Left Turn	8.9%	14.8%	5.0%	8.3%	18.9%	1.3%	2.7%	6.8%	16.6%	2.6%	0.0%	7.2%	8.8%	7.8%	0.8%	0.3%	3.5%	8.3%	10.0%	10.0%	0.0%	0.3%	0.0%	16.4%	3.2%	
	Off Road	5.3%	5.6%	1.9%	6.9%	5.9%	0.3%	2.1%	3.1%	7.1%	0.6%	0.0%	1.9%	4.2%	3.4%	0.5%	0.2%	3.0%	3.6%	3.8%	3.8%	0.0%	0.0%	0.0%	5.8%	1.3%	
	Other	5.6%	7.7%	5.6%	7.0%	10.6%	1.4%	2.1%	4.2%	9.8%	2.6%	0.3%	7.2%	5.3%	3.7%	0.5%	0.3%	2.1%	4.7%	6.4%	8.2%	0.3%	0.0%	0.0%	13.2%	2.6%	
	Pedestrian	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Rear End	2.7%	6.8%	6.6%	4.2%	9.1%	2.7%	0.2%	1.9%	11.4%	2.3%	0.3%	8.5%	5.4%	1.8%	0.2%	0.0%	0.2%	2.0%	5.3%	10.7%	0.0%	1.3%	0.0%	15.8%	2.3%	
	Right Turn	0.0%	0.3%	0.6%	0.3%	0.5%	0.2%	0.0%	0.0%	0.5%	0.3%	0.2%	0.8%	0.2%	0.0%	0.0%	0.0%	0.0%	0.2%	0.2%	0.7%	0.0%	0.3%	0.0%	1.3%	0.0%	
	Rollover	2.7%	1.3%	1.3%	2.4%	2.6%	0.3%	0.3%	1.6%	2.3%	1.0%	0.2%	1.6%	0.8%	1.8%	0.3%	0.0%	0.8%	1.8%	1.1%	2.2%	0.0%	0.3%	0.0%	2.3%	0.6%	
	Sideswipe	0.8%	1.4%	2.7%	1.4%	3.2%	0.3%	0.2%	0.8%	3.1%	1.4%	0.0%	2.9%	1.1%	0.8%	0.2%	0.0%	0.0%	0.7%	2.0%	2.9%	0.0%	0.0%	0.0%	5.8%	0.3%	
	Unknown	0.3%	1.0%	0.6%	0.2%	1.6%	0.2%	0.0%	0.5%	1.1%	0.3%	0.0%	1.1%	0.5%	0.3%	0.0%	0.0%	0.0%	0.4%	0.5%	1.3%	0.0%	0.0%	0.0%	1.6%	0.0%	
Alcohol Related	Y	1.6%	3.5%	1.0%	2.1%	4.0%	0.0%	0.5%	1.1%	3.2%	0.8%	0.5%	2.1%	1.1%	1.9%	0.2%	0.2%	0.6%	2.0%	2.0%	2.2%	0.0%	1.0%	0.0%	3.5%	0.6%	
	N	29.8%	39.3%	24.8%	33.6%	53.1%	7.2%	9.5%	20.5%	52.3%	11.1%	0.5%	32.2%	26.7%	20.5%	2.9%	0.8%	10.9%	22.9%	30.9%	40.1%	0.3%	1.9%	0.0%	62.1%	9.6%	
Hit and Run	Y	2.1%	2.3%	1.1%	1.4%	3.4%	0.6%	0.3%	1.3%	3.2%	0.6%	0.0%	1.4%	1.4%	1.8%	0.3%	0.2%	0.3%	1.5%	2.0%	2.2%	0.0%	0.3%	0.0%	3.9%	0.0%	
	N	29.3%	40.6%	24.6%	34.2%	53.8%	6.6%	9.7%	20.3%	52.3%	11.3%	1.0%	32.8%	26.4%	20.6%	2.7%	0.8%	11.2%	23.4%	30.9%	40.1%	0.3%	2.6%	0.0%	61.7%	10.3%	
Aggressive Driving	Y	3.4%	3.9%	1.3%	2.9%	5.1%	0.5%	0.8%	2.9%	4.8%	0.0%	0.0%	2.9%	1.9%	3.2%	0.0%	0.0%	0.5%	2.4%	2.9%	3.8%	0.0%	0.0%	0.0%	3.5%	1.0%	
	N	28.0%	39.0%	24.5%	32.8%	52.0%	6.7%	9.2%	18.7%	50.7%	11.9%	1.0%	31.4%	25.9%	19.2%	3.0%	1.0%	11.0%	22.5%	29.9%	38.5%	0.3%	2.9%	0.0%	62.1%	9.3%	
Distracted Driving	Y	8.1%	11.8%	6.4%	9.6%	14.9%	1.6%	2.9%	4.8%	15.1%	3.2%	0.2%	8.3%	8.3%	6.6%	0.2%	0.3%	2.4%	6.5%	8.3%	11.8%	0.0%	1.3%	0.0%	16.7%	1.3%	
	N	23.3%	31.1%	19.3%	26.1%	42.2%	5.6%	7.1%	16.7%	40.4%	8.7%	0.8%	25.9%	19.5%	15.8%	2.9%	0.6%	9.1%	18.3%	24.5%	30.5%	0.3%	1.6%	0.0%	48.9%	9.0%	
Intersection Related	Y	14.3%	18.8%	7.7%	13.1%	25.0%	2.6%	4.7%	9.7%	22.2%	4.0%	0.3%	12.2%	10.7%	11.8%	1.3%	0.5%	4.2%	12.9%	14.0%	14.3%	0.0%	1.0%	0.0%	23.5%	4.2%	
	N	17.1%	24.0%	18.0%	22.6%	32.2%	4.6%	5.3%	11.9%	33.3%	7.9%	0.6%	22.1%	17.1%	10.6%	1.8%	0.5%	7.4%	12.0%	18.9%	27.9%	0.3%	1.9%	0.0%	42.1%	6.1%	
Drug Related	Y	1.8%	2.1%	0.5%	1.1%	3.0%	0.2%	0.8%	0.6%	2.3%	0.5%	0.2%	0.6%	1.4%	1.3%	0.2%	0.2%	0.6%	1.6%	1.3%	1.3%	0.0%	0.3%	0.0%	1.9%	1.0%	
	N	29.6%	40.7%	25.3%	34.6%	54.1%	7.0%	9.2%	20.9%	53.3%	11.4%	0.8%	33.6%	26.4%	21.1%	2.9%	0.8%	10.9%	23.2%	31.6%	41.0%	0.3%	2.6%	0.0%	63.7%	9.3%	
Aging Driver	Y	2.9%	4.5%	1.9%	2.6%	5.6%	1.1%	1.0%	1.1%	5.8%	1.4%	0.0%	3.0%	2.9%	1.9%	0.3%	0.0%	1.1%	1.6%	4.2%	3.4%	0.0%	0.3%	0.0%	7.4%	1.0%	
	N	28.5%	38.3%	23.8%	33.1%	51.5%	6.1%	9.0%	20.5%	49.8%	10.5%	1.0%	31.2%	25.0%	20.5%	2.7%	1.0%	10.4%	23.2%	28.7%	38.8%	0.3%	2.6%	0.0%	58.2%	9.3%	
Teenage Driver	Y	2.3%	3.7%	2.3%	2.6%	5.1%	0.5%	0.8%	1.4%	4.7%	1.3%	0.0%	3.4%	1.0%	1.9%	0.3%	0.3%	1.3%	2.4%	2.0%	3.4%	0.0%	0.0%	0.0%	6.1%	0.3%	
	N	29.1%	39.1%	23.5%	33.1%	52.0%	6.7%	9.2%	20.1%	50.9%	10.6%	1.0%	30.9%	26.9%	20.5%	2.7%	0.6%	10.2%	22.5%	30.9%	38.8%	0.3%	2.9%	0.0%	59.5%	10.0%	
Day of the Week	Monday	5.0%	3.7%	2.4%	4.3%	6.1%	0.6%	1.4%	1.8%	6.6%	1.0%	0.3%	2.7%	3.7%	2.9%	0.3%	0.0%	1.4%	3.8%	3.1%	4.0%	0.3%	0.3%	0.0%	6.8%	1.0%	
	Tuesday	2.4%	5.8%	3.9%	3.4%	8.0%	0.6%	0.8%	2.4%	6.6%	2.1%	0.2%	5.1%	3.0%	2.1%	0.6%	0.3%	0.8%	2.4%	4.5%	5.6%	0.0%	1.0%	0.0%	8.7%	1.0%	
	Wednesday	3.5%	7.1%	2.7%	5.3%	7.4%	0.6%	1.0%	4.5%	7.1%	0.8%	0.0%	4.5%	4.2%	2.9%	0.2%	0.3%	1.3%	2.4%	6.4%	4.9%	0.0%	0.0%	0.0%	7.7%	1.3%	
	Thursday	5.2%	6.8%	4.5%	5.1%	9.9%	1.3%	1.6%	4.0%	9.0%	1.8%	0.0%	5.8%	5.0%	3.5%	0.3%	0.0%	1.8%	3.3%	5.8%	7.4%	0.0%	0.3%	0.0%	11.3%	1.6%	
	Friday	5.6%	7.1%	4.2%	6.6%	9.3%	1.1%	2.1%	3.1%	9.7%	1.9%	0.2%	6.4%	3.7%	4.2%	0.5%	0.3%	1.9%	5.3%	4.4%	7.3%	0.0%	0.6%	0.0%	10.0%	2.3%	
	Saturday	5.0%	6.9%	4.3%	5.6%	9.1%	1.8%	1.9%	2.7%	9.3%	2.3%	0.0%	5.6%	4.3%	3.4%	0.8%	0.0%	2.4%	4.2%	3.6%	8.2%	0.0%	0.0%	0.0%	12.2%	1.3%	
	Sunday	4.7%	5.5%	3.7%	5.4%	7.4%	1.1%	1.1%	3.1%	7.2%	2.1%	0.3%	4.2%	4.0%	3.5%	0.3%	0.0%	1.9%	3.6%	5.1%	4.9%	0.0%	0.6%	0.0%	9.0%	1.9%	
Time of Day	12-3 AM	1.8%	3.9%	1.4%	2.9%	3.7%	0.5%	0.3%	1.4%	4.0%	1.1%	0.2%	2.7%	2.9%	1.1%	0.0%	0.0%	0.3%	1.3%	3.1%	3.3%	0.0%	0.3%	0.0%	5.1%	1.3%	
	3-6 AM	0.8%	1.1%	0.8%	0.6%	1.9%	0.2%	0.2%	0.8%	1.3%	0.5%	0.0%	1.1%	0.8%	0.3%	0.2%	0.2%	0.2%	0.9%	0.9%	1.1%	0.0%	0.3%	0.0%	1.6%	0.3%	
	6-9 AM	2.4%	4.0%	2.7%	2.4%	6.2%	0.5%	0.3%	2.4%	5.3%	1.0%	0.2%	4.0%	2.4%	1.6%	0.3%	0.0%	0.8%	2.0%	3.1%	4.4%	0.0%	0.6%	0.0%	6.8%	1.3%	
	9-Noon	2.7%	3.2%	1.9%	4.0%	3.5%	0.3%	0.8%	2.7%	3.7%	0.5%	0.2%	2.7%	1.9%	1.4%	0.6%	0.0%	1.1%	2.4%	2.5%	2.7%	0.3%	0.0%	0.0%	4.8%	0.6%	
	Noon-3 PM	5.5%	5.5%	3.9%	5.9%	8.0%	1.1%	2.1%	2.1%	8.2%	2.3%	0.2%	4.2%	4.0%	4.0%	0.3%	0.0%	2.6%	4.9%	4.4%	4.9%	0.0%	1.0%	0.0%	9.0%	1.3%	
	3-6 PM	5.8%	7.6%	4.7%	6.6%	10.1%	1.3%	2.6%	3.4%	9.5%	2.4%	0.2%	7.0%	4.8%	4.0%	0.2%	0.2%	1.8%	4.5%	5.8%	8.0%	0.0%	0.6%	0.0%	13.2%	1.3%	
	6-9 PM	7.7%	7.9%	3.9%	5.9%	12.2%	1.4%	2.7%	3.9%	10.8%	1.9%	0.2%	4.2%	5.1%	5.9%	0.8%	0.3%	3.2%	4.2%	8.0%	6.0%	0.0%	0.0%	0.0%	8.4%	2.3%	
	9-Midnight	4.7%	9.7%	6.4%	7.4%	11.5%	1.9%	1.0%	4.8%	12.7%	2.3%	0.0%	8.3%	5.9%	4.0%	0.6%	0.3%	1.6%	4.7%	5.1%	12.0%	0.0%	0.0%	0.0%	16.7%	1.9%	
Lighting Conditions	Dark - Lighted	8.7%	17.6%	10.6%	11.8%	21.9%	3.2%	2.1%	9.3%	20.9%	4.5%	0.0%	13.9%	10.4%	7.8%	0.8%	0.8%	3.2%	7.6%	11.3%	19.1%	0.0%	0.0%	0.0%	26.0%	2.9%	
	Dark - Not Lighted	3.4%	2.3%	0.8%	2.7%	3.7%	0.0%	0.5%	1.1%	3.4%	1.3%	0.2%	2.1%	1.8%	1.1%	0.6%	0.0%	0.8%	2.4%	2.2%	1.8%	0.0%	1.0%	0.0%	4.2%	1.3%	
	Dark - Unknown Lighting	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	
	Dawn	1.3%	1.1%	0.3%	1.1%	1.4%	0.2%	0.3%	0.5%	1.8%	0.2%	0.0%	0.														

**Attachment C-6
Orange County
Percent of All KSI Crashes involving Motorcyclists 2018-2022**

Mode:	All Collisions	Context Classification				Bike Lane/Paved Shoulder > 4 ft			Bike Slots			Sidewalks			Median Presence				
All		C4	C5	C6	None	None	One Side	Both Sides	None	One Side	Both Sides	None	One Side	Both Sides	None	Grass	Multiple	Paved	Other
Type	Angle	2.3%	0.0%	0.3%	0.0%	5.0%	1.1%	1.8%	7.1%	0.8%	0.0%	1.0%	0.6%	6.3%	4.0%	2.1%	0.0%	1.8%	0.0%
	Animal	0.0%	0.0%	0.0%	0.0%	0.2%	0.0%	0.2%	0.3%	0.0%	0.0%	0.3%	0.0%	0.0%	0.3%	0.0%	0.0%	0.0%	0.0%
	Bicycle	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Head On	0.3%	0.0%	0.0%	0.0%	1.3%	0.0%	0.6%	1.9%	0.0%	0.0%	0.6%	0.6%	0.6%	1.4%	0.5%	0.0%	0.0%	0.0%
	Left Turn	4.8%	0.6%	0.0%	0.0%	19.6%	2.3%	6.8%	26.7%	1.8%	0.2%	1.9%	5.2%	21.6%	12.9%	8.2%	0.2%	7.2%	0.2%
	Off Road	1.6%	0.3%	0.3%	0.0%	9.8%	1.1%	1.9%	12.4%	0.5%	0.0%	1.6%	1.3%	10.0%	4.3%	4.7%	0.2%	3.4%	0.3%
	Other	2.9%	0.6%	0.3%	0.0%	11.0%	2.9%	5.2%	17.2%	1.8%	0.0%	2.3%	2.6%	14.2%	5.8%	6.9%	0.5%	5.8%	0.0%
	Pedestrian	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Rear End	2.3%	0.6%	0.0%	0.0%	9.2%	2.4%	4.5%	13.7%	1.9%	0.5%	1.4%	2.3%	12.4%	3.5%	7.4%	0.3%	4.8%	0.0%
	Right Turn	0.0%	0.0%	0.0%	0.0%	0.2%	0.2%	0.6%	0.8%	0.2%	0.0%	0.2%	0.0%	0.8%	0.0%	0.6%	0.0%	0.3%	0.0%
	Rollover	0.6%	0.3%	0.0%	0.0%	3.9%	0.3%	1.1%	5.2%	0.2%	0.0%	1.1%	0.6%	3.5%	2.1%	1.8%	0.3%	1.0%	0.2%
	Sideswipe	1.0%	0.3%	0.0%	0.0%	2.7%	1.0%	1.3%	4.0%	1.0%	0.0%	0.2%	0.5%	4.3%	1.3%	1.4%	0.0%	2.3%	0.0%
	Unknown	1.3%	0.0%	0.0%	0.0%	1.1%	0.3%	0.5%	1.6%	0.3%	0.0%	0.3%	0.0%	1.6%	0.6%	0.2%	0.0%	1.1%	0.0%
Alcohol Related	Y	0.6%	0.3%	0.3%	0.0%	3.9%	0.3%	1.9%	6.1%	0.0%	0.0%	1.0%	0.5%	4.7%	2.3%	2.3%	0.0%	1.4%	0.2%
	N	16.4%	2.6%	0.6%	0.0%	60.1%	11.3%	22.5%	84.9%	8.4%	0.6%	10.0%	13.2%	70.7%	34.1%	31.6%	1.4%	26.2%	0.5%
Hit and Run	Y	0.6%	0.0%	0.0%	0.0%	4.0%	1.0%	1.0%	5.0%	0.5%	0.0%	0.8%	1.0%	3.7%	2.9%	1.3%	0.2%	1.1%	0.0%
	N	16.4%	2.9%	1.0%	0.0%	59.9%	23.5%	23.5%	86.0%	7.9%	0.6%	10.1%	12.7%	71.7%	33.5%	32.5%	1.3%	26.6%	0.6%
Aggressive Driving	Y	2.6%	0.6%	0.6%	0.0%	5.6%	1.8%	1.8%	8.1%	0.5%	0.0%	0.5%	1.6%	6.4%	3.4%	2.1%	0.0%	2.9%	0.2%
	N	14.5%	2.3%	0.3%	0.0%	58.3%	22.7%	22.7%	82.9%	7.9%	0.6%	10.5%	12.1%	68.9%	33.0%	31.7%	1.4%	24.8%	0.5%
Distracted Driving	Y	3.9%	1.0%	0.0%	0.0%	17.1%	6.4%	6.4%	24.5%	1.6%	0.2%	2.9%	4.0%	19.3%	10.5%	9.3%	0.2%	6.3%	0.0%
	N	13.2%	1.9%	1.0%	0.0%	46.9%	18.0%	18.0%	66.5%	6.8%	0.5%	8.1%	9.7%	56.0%	25.9%	24.5%	1.3%	21.4%	0.6%
Intersection Related	Y	8.4%	0.6%	0.6%	0.0%	26.1%	9.7%	9.7%	37.0%	3.5%	0.3%	4.0%	5.8%	31.1%	17.4%	12.7%	0.5%	10.0%	0.3%
	N	8.7%	2.3%	0.3%	0.0%	37.8%	14.8%	14.8%	53.9%	4.8%	0.3%	6.9%	7.9%	44.3%	19.0%	21.1%	1.0%	17.7%	0.3%
Drug Related	Y	0.0%	0.3%	0.0%	0.0%	3.2%	0.8%	0.8%	4.2%	0.2%	0.0%	0.6%	1.0%	2.7%	2.1%	1.3%	0.0%	1.0%	0.0%
	N	17.0%	2.6%	1.0%	0.0%	60.7%	23.7%	23.7%	86.8%	8.2%	0.6%	10.3%	12.7%	72.6%	34.3%	32.5%	1.4%	26.7%	0.6%
Aging Driver	Y	1.0%	0.3%	0.0%	0.0%	5.8%	2.7%	2.7%	8.5%	0.6%	0.2%	1.0%	1.0%	7.4%	3.7%	3.2%	0.0%	2.4%	0.0%
	N	16.1%	2.6%	1.0%	0.0%	58.1%	21.7%	21.7%	82.4%	7.7%	0.5%	10.0%	12.7%	68.0%	32.7%	30.6%	1.4%	25.3%	0.6%
Teenage Driver	Y	1.0%	0.3%	0.0%	0.0%	4.2%	2.1%	2.1%	6.6%	1.6%	0.0%	0.6%	1.0%	6.6%	2.9%	2.7%	0.0%	2.6%	0.0%
	N	16.1%	2.6%	1.0%	0.0%	59.7%	22.4%	22.4%	84.4%	6.8%	0.6%	10.3%	12.7%	68.8%	33.5%	31.1%	1.4%	25.1%	0.6%
Day of the Week	Monday	1.0%	0.0%	0.0%	0.0%	6.4%	2.6%	2.6%	10.3%	0.8%	0.0%	1.6%	2.1%	7.4%	5.6%	3.2%	0.2%	2.1%	0.0%
	Tuesday	1.9%	0.3%	0.0%	0.0%	5.8%	3.3%	3.3%	10.8%	1.3%	0.0%	1.3%	1.3%	9.5%	3.9%	4.2%	0.0%	4.0%	0.0%
	Wednesday	2.9%	1.0%	0.3%	0.0%	7.8%	2.4%	2.4%	12.1%	1.1%	0.2%	1.4%	1.9%	10.0%	3.4%	5.0%	0.2%	4.5%	0.3%
	Thursday	2.3%	0.3%	0.3%	0.0%	9.6%	2.6%	2.6%	14.7%	1.8%	0.0%	1.8%	1.6%	13.0%	6.8%	5.2%	0.3%	4.2%	0.0%
	Friday	4.8%	1.0%	0.0%	0.0%	9.6%	4.3%	4.3%	16.1%	0.8%	0.0%	1.3%	3.1%	12.6%	6.8%	4.8%	0.3%	4.7%	0.3%
	Saturday	3.2%	0.3%	0.0%	0.0%	9.8%	3.1%	3.1%	14.3%	1.6%	0.3%	1.3%	2.7%	12.2%	5.5%	5.2%	0.2%	5.5%	0.0%
	Sunday	1.0%	0.0%	0.3%	0.0%	7.6%	3.4%	3.4%	12.7%	1.0%	0.2%	2.3%	1.0%	10.6%	4.5%	6.3%	0.3%	2.7%	0.0%
Time of Day	12-3 AM	2.3%	0.3%	0.6%	0.0%	3.4%	2.1%	2.1%	6.6%	0.5%	0.0%	0.6%	1.0%	5.5%	1.9%	2.1%	0.2%	2.7%	0.2%
	3-6 AM	0.0%	0.6%	0.0%	0.0%	1.3%	1.0%	1.0%	2.7%	0.0%	0.0%	0.2%	0.8%	1.8%	1.3%	1.3%	0.0%	0.2%	0.0%
	6-9 AM	2.3%	0.0%	0.0%	0.0%	4.7%	2.6%	2.6%	8.1%	1.0%	0.2%	1.0%	0.8%	7.4%	2.3%	3.9%	0.2%	2.7%	0.2%
	9-Noon	1.3%	0.0%	0.0%	0.0%	4.6%	2.0%	2.0%	7.6%	0.3%	0.0%	1.0%	1.0%	6.0%	2.4%	2.9%	0.0%	2.6%	0.0%
	Noon-3 PM	1.0%	0.0%	0.0%	0.0%	9.0%	3.0%	3.0%	13.8%	1.0%	0.0%	2.6%	2.3%	10.0%	5.6%	5.5%	0.5%	3.2%	0.0%
	3-6 PM	4.2%	0.6%	0.0%	0.0%	9.7%	3.7%	3.7%	15.3%	2.6%	0.2%	2.1%	2.3%	13.7%	6.9%	5.0%	0.3%	5.8%	0.0%
	6-9 PM	2.3%	0.0%	0.3%	0.0%	12.4%	3.1%	3.1%	18.7%	0.6%	0.2%	2.7%	3.1%	13.7%	8.5%	5.8%	0.2%	4.8%	0.2%
	9-Midnight	3.9%	1.3%	0.0%	0.0%	11.6%	4.1%	4.1%	18.2%	2.4%	0.2%	0.8%	2.6%	17.4%	7.4%	7.4%	0.2%	5.6%	0.2%
Lighting Conditions	Dark - Lighted	8.0%	2.3%	1.0%	0.0%	20.5%	7.6%	7.6%	33.2%	3.5%	0.2%	1.8%	4.0%	31.1%	12.1%	13.2%	0.5%	10.5%	0.6%
	Dark - Not Lighted	0.3%	0.0%	0.0%	0.0%	2.9%	2.4%	2.4%	6.1%	0.3%	0.0%	1.8%	1.6%	3.1%	3.1%	1.8%	0.0%	1.6%	0.0%
	Dark - Unknown Lighting	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Dawn	0.6%	0.0%	0.0%	0.0%	1.7%	0.4%	0.4%	2.6%	0.2%	0.0%	0.2%	0.6%	1.9%	1.3%	0.6%	0.0%	0.8%	0.0%
	Daylight	7.7%	0.6%	0.0%	0.0%	29.4%	10.3%	10.3%	45.2%	4.0%	0.3%	6.6%	6.6%	36.4%	18.4%	16.9%	0.6%	13.7%	0.0%
	Dusk	0.3%	0.0%	0.0%	0.0%	2.1%	1.0%	1.0%	3.9%	0.3%	0.2%	0.6%	0.8%	2.9%	1.6%	1.3%	0.3%	1.1%	0.0%
	Other	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Unknown	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	

**Attachment C-7
Orange County
Percent of All KSI Crashes Involving Bicyclist 2018-2022**

Mode:	All Collisions	Number of Lanes			Turn Lanes			Posted Speed					Roadway Classification						AADT (2022)			Context Classification				
All		3 Lanes or Less	4-5 Lanes	6+ Lanes	None	1 to 2	3+	25 or less	30-35	40-45	50-55	60+	Principal Arterial	Minor Arterial	Major Collector	Minor Collector	Local	None	< 15000	15,000-30,000	30,000+	C1	C2	C2T	C3C	C3R
		2-3	4-5	6-8				0-25	30-35	40-45	50-55	60+														
Type	Angle	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Animal	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Bicycle	33.1%	41.6%	25.3%	32.0%	57.9%	10.1%	13.5%	23.7%	54.3%	8.2%	0.4%	33.6%	22.3%	23.5%	4.0%	1.2%	15.4%	25.5%	29.3%	45.2%	0.0%	0.0%	0.0%	76.2%	11.5%
	Head On	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Left Turn	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Off Road	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Other	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Pedestrian	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Rear End	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Right Turn	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Rollover	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Sideswipe	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Unknown	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Alcohol Related	Y	0.0%	1.2%	0.4%	0.0%	1.6%	0.0%	0.0%	0.0%	1.6%	0.0%	0.0%	0.4%	0.8%	0.4%	0.0%	0.0%	0.0%	0.0%	1.0%	1.0%	0.0%	0.0%	0.0%	0.8%	0.0%
	N	33.1%	40.4%	24.9%	32.0%	56.3%	10.1%	13.5%	23.7%	52.7%	8.2%	0.4%	33.2%	21.5%	23.1%	4.0%	1.2%	15.4%	25.5%	28.4%	44.2%	0.0%	0.0%	0.0%	75.4%	11.5%
Hit and Run	Y	6.9%	8.2%	5.3%	5.3%	12.6%	2.4%	2.4%	4.9%	11.0%	2.0%	0.0%	8.5%	3.6%	4.9%	0.8%	0.0%	2.4%	4.3%	7.2%	9.6%	0.0%	0.0%	0.0%	18.0%	1.6%
	N	26.1%	33.5%	20.0%	26.7%	45.3%	7.7%	11.0%	18.8%	43.3%	6.1%	0.4%	25.1%	18.6%	18.6%	3.2%	1.2%	13.0%	21.2%	22.1%	35.6%	0.0%	0.0%	0.0%	58.2%	9.8%
Aggressive Driving	Y	0.4%	0.0%	0.0%	0.4%	0.0%	0.0%	0.0%	0.4%	0.0%	0.0%	0.0%	0.0%	0.0%	0.4%	0.0%	0.0%	0.0%	0.0%	0.5%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	N	32.7%	41.6%	25.3%	31.6%	57.9%	10.1%	13.5%	23.3%	54.3%	8.2%	0.4%	33.6%	22.3%	23.1%	4.0%	1.2%	15.4%	25.5%	28.8%	45.2%	0.0%	0.0%	0.0%	76.2%	11.5%
Distracted Driving	Y	4.9%	8.6%	5.7%	4.0%	11.3%	3.6%	1.2%	3.7%	13.1%	1.2%	0.0%	6.5%	4.9%	4.9%	1.2%	0.0%	1.6%	2.9%	7.2%	10.6%	0.0%	0.0%	0.0%	16.4%	4.1%
	N	28.2%	33.1%	19.6%	27.9%	46.6%	6.5%	12.2%	20.0%	41.2%	6.9%	0.4%	27.1%	17.4%	18.6%	2.8%	1.2%	13.8%	22.6%	22.1%	34.6%	0.0%	0.0%	0.0%	59.8%	7.4%
Intersection Related	Y	18.0%	17.1%	10.2%	13.8%	27.9%	3.2%	6.1%	14.3%	21.2%	3.7%	0.0%	12.1%	8.5%	15.0%	2.4%	0.4%	6.5%	15.9%	12.0%	17.3%	0.0%	0.0%	0.0%	32.8%	2.5%
	N	15.1%	24.5%	15.1%	18.2%	30.0%	6.9%	7.3%	9.4%	33.1%	4.5%	0.4%	21.5%	13.8%	8.5%	1.6%	0.8%	8.9%	9.6%	17.3%	27.9%	0.0%	0.0%	0.0%	43.4%	9.0%
Drug Related	Y	0.4%	0.8%	0.4%	0.4%	1.2%	0.0%	0.4%	0.0%	1.2%	0.0%	0.0%	0.4%	0.4%	0.4%	0.0%	0.0%	0.4%	0.0%	1.0%	0.5%	0.0%	0.0%	0.0%	0.8%	0.0%
	N	32.7%	40.8%	24.9%	31.6%	56.7%	10.1%	13.1%	23.7%	53.1%	8.2%	0.4%	33.2%	21.9%	23.1%	4.0%	1.2%	15.0%	25.5%	28.4%	44.7%	0.0%	0.0%	0.0%	75.4%	11.5%
Aging Driver	Y	4.1%	4.1%	2.9%	3.6%	7.3%	0.4%	1.6%	3.3%	5.7%	0.4%	0.0%	3.6%	2.8%	3.2%	0.0%	0.0%	1.6%	2.9%	3.8%	4.8%	0.0%	0.0%	0.0%	4.9%	2.5%
	N	29.0%	37.6%	22.4%	28.3%	50.6%	9.7%	11.8%	20.4%	48.6%	7.8%	0.4%	30.0%	19.4%	20.2%	4.0%	1.2%	13.8%	22.6%	25.5%	40.4%	0.0%	0.0%	0.0%	71.3%	9.0%
Teenage Driver	Y	2.0%	2.9%	1.2%	2.0%	3.6%	0.8%	0.4%	2.9%	2.9%	0.0%	0.0%	1.2%	1.6%	2.4%	0.4%	0.0%	0.8%	1.9%	2.4%	2.4%	0.0%	0.0%	0.0%	5.7%	0.0%
	N	31.0%	38.8%	24.1%	30.0%	54.3%	9.3%	13.1%	20.8%	51.4%	8.2%	0.4%	32.4%	20.6%	21.1%	3.6%	1.2%	14.6%	23.6%	26.9%	42.8%	0.0%	0.0%	0.0%	70.5%	11.5%
Day of the Week	Monday	6.5%	6.1%	5.3%	6.1%	9.3%	2.4%	2.0%	4.1%	10.6%	1.2%	0.0%	5.7%	4.5%	4.0%	1.2%	0.0%	2.4%	3.8%	5.8%	8.7%	0.0%	0.0%	0.0%	16.4%	0.8%
	Tuesday	5.3%	6.1%	4.9%	5.3%	9.7%	1.2%	2.9%	3.3%	8.6%	1.6%	0.0%	6.1%	2.4%	3.6%	0.0%	0.4%	3.6%	2.4%	5.3%	7.2%	0.0%	0.0%	0.0%	13.9%	0.0%
	Wednesday	3.7%	4.9%	4.1%	3.2%	8.9%	0.8%	1.2%	3.7%	7.3%	0.4%	0.0%	4.9%	2.4%	3.2%	0.8%	0.0%	1.6%	4.3%	3.4%	5.8%	0.0%	0.0%	0.0%	11.5%	0.8%
	Thursday	3.7%	6.5%	2.0%	3.6%	7.3%	1.2%	0.8%	3.7%	6.1%	1.2%	0.4%	5.3%	1.6%	3.6%	0.0%	0.4%	1.2%	3.4%	4.8%	4.8%	0.0%	0.0%	0.0%	11.5%	0.8%
	Friday	6.5%	4.9%	4.1%	6.1%	6.5%	2.8%	2.9%	4.9%	6.1%	1.6%	0.0%	4.9%	3.2%	3.2%	1.2%	0.0%	2.8%	5.8%	3.8%	5.3%	0.0%	0.0%	0.0%	9.8%	1.6%
	Saturday	2.9%	7.3%	3.3%	4.5%	8.1%	1.2%	1.2%	1.6%	9.8%	0.8%	0.0%	3.6%	5.7%	2.0%	0.0%	0.4%	2.0%	1.9%	3.8%	7.7%	0.0%	0.0%	0.0%	7.4%	4.1%
	Sunday	4.5%	5.7%	1.6%	3.2%	8.1%	0.4%	2.4%	2.4%	5.7%	1.2%	0.0%	3.2%	2.4%	3.6%	0.8%	0.0%	1.6%	3.8%	2.4%	5.8%	0.0%	0.0%	0.0%	5.7%	3.3%
Time of Day	12-3 AM	1.6%	2.0%	1.2%	1.6%	2.8%	0.4%	0.4%	1.2%	1.6%	1.6%	0.0%	2.0%	1.2%	0.8%	0.0%	0.0%	0.8%	1.0%	1.9%	1.9%	0.0%	0.0%	0.0%	2.5%	0.0%
	3-6 AM	2.4%	1.2%	1.2%	2.8%	1.6%	0.4%	0.8%	1.2%	2.4%	0.4%	0.0%	2.0%	0.4%	0.8%	0.4%	0.0%	1.2%	1.4%	1.0%	1.9%	0.0%	0.0%	0.0%	3.3%	0.0%
	6-9 AM	6.1%	7.3%	4.1%	4.5%	10.9%	2.0%	1.6%	4.9%	9.8%	1.2%	0.0%	5.3%	3.2%	6.1%	0.4%	0.0%	2.4%	4.8%	5.3%	7.7%	0.0%	0.0%	0.0%	13.9%	1.6%
	9-Noon	4.5%	5.7%	5.3%	4.0%	10.1%	1.2%	1.6%	4.1%	9.0%	0.8%	0.0%	5.3%	4.9%	2.8%	0.8%	0.4%	1.2%	5.8%	2.4%	8.2%	0.0%	0.0%	0.0%	14.8%	1.6%
	Noon-3 PM	4.5%	6.1%	2.9%	3.2%	8.5%	2.0%	2.0%	3.7%	6.5%	1.2%	0.0%	4.9%	3.2%	3.2%	0.8%	0.0%	1.6%	3.4%	3.8%	7.2%	0.0%	0.0%	0.0%	12.3%	0.8%
	3-6 PM	5.3%	6.5%	4.5%	7.3%	8.9%	0.4%	2.9%	3.7%	9.0%	0.8%	0.0%	5.7%	2.4%	3.6%	0.4%	0.4%	4.0%	2.9%	4.8%	7.2%	0.0%	0.0%	0.0%	11.5%	1.6%
	6-9 PM	5.3%	9.0%	3.7%	5.7%	9.7%	2.4%	2.4%	2.9%	11.4%	1.2%	0.0%	5.7%	4.5%	4.5%	0.4%	0.4%	2.4%	3.8%	7.2%	7.2%	0.0%	0.0%	0.0%	13.1%	2.5%
	9-Midnight	3.3%	3.7%	2.4%	2.8%	5.3%	1.2%	1.6%	2.0%	4.5%	0.8%	0.4%	2.8%	2.4%	1.6%	0.8%	0.0%	1.6%	2.4%	2.9%	3.8%	0.0%	0.0%	0.0%	4.9%	3.3%
Lighting Conditions	Dark - Lighted	5.3%	9.0%	7.8%	6.1%	13.0%	2.8%	1.6%	4.9%	13.1%	2.4%	0.0%	10.1%	5.3%	2.8%	1.2%	0.4%	2.0%	3.4%	7.7%	12.5%	0.0%	0.0%	0.0%	14.8%	2.5%
	Dark - Not Lighted	3.7%	3.7%	0.8%	3.6%	3.6%	0.8%	0.8%	1.6%	4.5%	0.8%	0.4%	2.0%	1.6%	2.0%	0.8%	0.0%	1.6%	2.9%	2.9%	1.9%	0.0%	0.0%	0.0%	6.6%	1.6%
	Dark - Unknown Lighting	0.4%	0.4%	0.0%	0.4%	0.4%	0.0%	0.4%	0.0%	0.4%	0.0%	0.0%	0.0%	0.4%	0.0%	0.0%	0.0%	0.4%	0.0%	0.5%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Dawn	1.2%	1.6%	0.0%	0.4%	1.6%	0.8%	0.4%	1.2%	1.2%	0.0%	0.0%	0.0%	0.4%	1.2%	1.6%	0.0%	0.0%	1.4%	1.0%	1.0%	0.0%	0.0%	0.0%	1.6%	0.0%
	Daylight	21.2%	26.5%	15.9%	21.1%	37.7%	5.3%	9.8%	15.5%	33.5%	4.9%	0.0%	20.6%	13.8%	15.8%	2.0%	0.8%	10.9%	16.8%	16.8%	28.8%	0.0%	0.0%	0.0%	50.8%	7.4%
	Dusk	0.8%	0.4%	0.4%	0.4%	0.8%	0.4%	0.4%	0.0%	1.2%	0.0%	0.0%	0.4%	0.0%	0.8%	0.0%	0.0%	0.4%	0.5%	0.5%	0.5%	0.0%	0.0%	0.0%	1.6%	0.0%
	Other	0.0%	0.0%	0.4%	0.0%	0.4%	0.0%	0.0%	0.0%	0.4%	0.0%	0.0%	0.4%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.5%	0.0%	0.0%	0.0%	0.8%	0.0%
	Unknown	0.4%	0.0%	0.0%	0.0%	0.4%	0.0%	0.0%	0.4%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.4%	0.0%	0.0%	0.5%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

**Attachment C-7
Orange County
Percent of All KSI Crashes Involving Bicyclist 2018-2022**

Mode:	All Collisions	Context Classification				Bike Lane/Paved Shoulder > 4 ft			Bike Slots			Sidewalks			Median Presence					
All		C4	C5	C6	None	None	One Side	Both Sides	None	One Side	Both Sides	None	One Side	Both Sides	None	Grass	Multiple	Paved	Other	
Type	Angle	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Animal	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Bicycle	12.3%	0.0%	0.0%	0.0%	65.3%	11.0%	23.7%	90.6%	7.8%	1.6%	9.0%	6.9%	84.1%	38.8%	32.2%	0.4%	26.9%	1.6%	
	Head On	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Left Turn	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Off Road	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Other	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Pedestrian	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Rear End	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Right Turn	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Rollover	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Sideswipe	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Unknown	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Alcohol Related	Y	0.0%	0.0%	0.0%	0.0%	1.2%	0.4%	0.0%	1.2%	0.4%	0.0%	0.0%	0.0%	1.6%	0.8%	0.4%	0.0%	0.4%	0.0%	
	N	12.3%	0.0%	0.0%	0.0%	64.1%	10.6%	23.7%	89.4%	7.3%	1.6%	9.0%	6.9%	82.4%	38.0%	31.8%	0.4%	26.5%	1.6%	
Hit and Run	Y	2.5%	0.0%	0.0%	0.0%	12.7%	5.3%	5.3%	18.8%	1.2%	0.4%	2.4%	1.6%	16.3%	8.6%	5.7%	0.0%	5.7%	0.4%	
	N	9.8%	0.0%	0.0%	0.0%	52.7%	18.4%	18.4%	71.8%	6.5%	1.2%	6.5%	5.3%	67.8%	30.2%	26.5%	0.4%	21.2%	1.2%	
Aggressive Driving	Y	0.0%	0.0%	0.0%	0.0%	0.0%	0.4%	0.4%	0.4%	0.0%	0.0%	0.0%	0.0%	0.4%	0.4%	0.0%	0.0%	0.0%	0.0%	
	N	12.3%	0.0%	0.0%	0.0%	65.3%	23.3%	23.3%	90.2%	7.8%	1.6%	9.0%	6.9%	83.7%	38.4%	32.2%	0.4%	26.9%	1.6%	
Distracted Driving	Y	0.8%	0.0%	0.0%	0.0%	13.5%	4.1%	4.1%	17.1%	1.6%	0.4%	0.8%	0.8%	17.6%	6.1%	4.5%	0.0%	8.2%	0.4%	
	N	11.5%	0.0%	0.0%	0.0%	51.8%	19.6%	19.6%	73.5%	6.1%	1.2%	8.2%	6.1%	66.5%	32.7%	27.8%	0.4%	18.8%	1.2%	
Intersection Related	Y	5.7%	0.0%	0.0%	0.0%	29.0%	11.0%	11.0%	40.4%	4.5%	0.4%	3.3%	2.9%	39.2%	20.0%	13.9%	0.4%	10.6%	0.4%	
	N	6.6%	0.0%	0.0%	0.0%	36.3%	12.7%	12.7%	50.2%	3.3%	1.2%	5.7%	4.1%	44.9%	18.8%	18.4%	0.0%	16.3%	1.2%	
Drug Related	Y	0.0%	0.0%	0.0%	0.0%	1.2%	0.0%	0.0%	1.2%	0.4%	0.0%	0.0%	0.0%	1.6%	0.8%	0.4%	0.0%	0.4%	0.0%	
	N	12.3%	0.0%	0.0%	0.0%	64.1%	23.7%	23.7%	89.4%	7.3%	1.6%	9.0%	6.9%	82.4%	38.0%	31.8%	0.4%	26.5%	1.6%	
Aging Driver	Y	2.5%	0.0%	0.0%	0.0%	8.2%	1.2%	1.2%	10.2%	0.8%	0.0%	0.4%	0.0%	10.6%	5.3%	2.0%	0.0%	3.7%	0.0%	
	N	9.8%	0.0%	0.0%	0.0%	57.1%	22.4%	22.4%	80.4%	6.9%	1.6%	8.6%	6.9%	73.5%	33.5%	30.2%	0.4%	23.3%	1.6%	
Teenage Driver	Y	0.0%	0.0%	0.0%	0.0%	4.1%	0.8%	0.8%	4.9%	1.2%	0.0%	0.0%	0.0%	6.1%	2.0%	2.0%	0.0%	1.6%	0.4%	
	N	12.3%	0.0%	0.0%	0.0%	61.2%	22.9%	22.9%	85.7%	6.5%	1.6%	9.0%	6.9%	78.0%	36.7%	30.2%	0.4%	25.3%	1.2%	
Day of the Week	Monday	0.8%	0.0%	0.0%	0.0%	11.6%	2.2%	2.2%	14.7%	2.4%	0.8%	1.2%	1.6%	15.1%	9.0%	2.0%	0.4%	5.7%	0.8%	
	Tuesday	2.5%	0.0%	0.0%	0.0%	7.6%	5.8%	5.8%	15.9%	0.4%	0.0%	0.8%	1.6%	13.9%	4.9%	6.9%	0.0%	4.1%	0.4%	
	Wednesday	0.0%	0.0%	0.0%	0.0%	6.9%	3.6%	3.6%	11.8%	0.4%	0.4%	0.8%	1.2%	10.6%	5.3%	4.9%	0.0%	2.0%	0.4%	
	Thursday	1.6%	0.0%	0.0%	0.0%	5.4%	4.3%	4.3%	10.6%	1.2%	0.4%	2.4%	1.2%	8.6%	3.7%	6.5%	0.0%	2.0%	0.0%	
	Friday	2.5%	0.0%	0.0%	0.0%	9.4%	1.4%	1.4%	13.9%	1.6%	0.0%	1.2%	0.4%	13.9%	6.9%	4.1%	0.0%	4.5%	0.0%	
	Saturday	2.5%	0.0%	0.0%	0.0%	9.1%	2.2%	2.2%	12.7%	0.8%	0.0%	1.6%	0.8%	11.0%	4.5%	3.3%	0.0%	5.7%	0.0%	
	Sunday	2.5%	0.0%	0.0%	0.0%	8.0%	1.4%	1.4%	11.0%	0.8%	0.0%	0.8%	0.0%	11.0%	4.5%	4.5%	0.0%	2.9%	0.0%	
Time of Day	12-3 AM	1.6%	0.0%	0.0%	0.0%	2.9%	0.4%	0.4%	4.5%	0.4%	0.0%	0.4%	0.0%	4.5%	2.0%	1.6%	0.0%	1.2%	0.0%	
	3-6 AM	0.0%	0.0%	0.0%	0.0%	2.5%	1.4%	1.4%	4.5%	0.0%	0.4%	0.4%	0.8%	3.7%	2.4%	0.8%	0.4%	0.4%	0.8%	
	6-9 AM	0.8%	0.0%	0.0%	0.0%	9.8%	5.1%	5.1%	16.7%	0.4%	0.4%	1.6%	2.9%	13.1%	5.7%	5.3%	0.0%	6.1%	0.4%	
	9-Noon	1.6%	0.0%	0.0%	0.0%	8.7%	3.3%	3.3%	13.1%	2.0%	0.4%	0.4%	0.4%	14.7%	5.3%	4.9%	0.0%	4.9%	0.4%	
	Noon-3 PM	2.5%	0.0%	0.0%	0.0%	7.2%	2.5%	2.5%	11.0%	2.0%	0.4%	0.8%	1.2%	11.4%	6.1%	4.1%	0.0%	3.3%	0.0%	
	3-6 PM	1.6%	0.0%	0.0%	0.0%	9.4%	3.3%	3.3%	15.1%	1.2%	0.0%	1.6%	1.6%	13.1%	6.1%	8.6%	0.0%	1.6%	0.0%	
	6-9 PM	1.6%	0.0%	0.0%	0.0%	9.8%	4.7%	4.7%	16.7%	1.2%	0.0%	1.6%	0.0%	16.3%	7.3%	5.3%	0.0%	5.3%	0.0%	
	9-Midnight	2.5%	0.0%	0.0%	0.0%	7.6%	0.4%	0.4%	9.0%	0.4%	0.0%	2.0%	0.0%	7.3%	3.7%	1.6%	0.0%	4.1%	0.0%	
Lighting Conditions	Dark - Lighted	5.7%	0.0%	0.0%	0.0%	13.8%	3.3%	3.3%	20.8%	0.8%	0.4%	1.2%	0.0%	20.8%	7.8%	6.5%	0.4%	6.9%	0.4%	
	Dark - Not Lighted	0.0%	0.0%	0.0%	0.0%	4.7%	1.8%	1.8%	7.3%	0.4%	0.4%	2.0%	0.8%	5.3%	3.7%	2.0%	0.0%	2.0%	0.4%	
	Dark - Unknown Lighting	0.0%	0.0%	0.0%	0.0%	0.4%	0.4%	0.4%	0.8%	0.0%	0.0%	0.0%	0.0%	0.8%	0.0%	0.4%	0.0%	0.0%	0.4%	
	Dawn	0.0%	0.0%	0.0%	0.0%	2.2%	0.0%	0.0%	2.4%	0.4%	0.0%	0.4%	0.0%	2.4%	1.6%	0.0%	0.0%	1.2%	0.0%	
	Daylight	6.6%	0.0%	0.0%	0.0%	35.1%	15.2%	15.2%	56.7%	6.1%	0.8%	4.9%	6.1%	52.7%	24.9%	22.9%	0.0%	15.5%	0.4%	
	Dusk	0.0%	0.0%	0.0%	0.0%	1.1%	0.4%	0.4%	1.6%	0.0%	0.0%	0.0%	0.0%	1.6%	0.4%	0.0%	0.0%	1.2%	0.0%	
	Other	0.0%	0.0%	0.0%	0.0%	0.4%	0.0%	0.0%	0.4%	0.0%	0.0%	0.0%	0.0%	0.4%	0.0%	0.4%	0.0%	0.0%	0.0%	
Unknown	0.0%	0.0%	0.0%	0.0%	0.4%	0.0%	0.0%	0.4%	0.0%	0.0%	0.4%	0.0%	0.0%	0.4%	0.0%	0.0%	0.0%	0.0%		

**Attachment C-8
Orange County
Percent of All KSI Crashes Involving Pedestrians 2018-2022**

Mode:	All Collisions	Number of Lanes			Turn Lanes			Posted Speed					Roadway Classification						AADT (2022)			Context Classification				
		3 Lanes or Less	4-5 Lanes	6+ Lanes	None	1 to 2	3+	25 or less	30-35	40-45	50-55	60+	Principal Arterial	Minor Arterial	Major Collector	Minor Collector	Local	None	< 15000	15,000-30,000	30,000+	C1	C2	C2T	C3C	C3R
								0-25	30-35	40-45	50-55	60+														
		2-3	4-5	6-8																						
Type	Angle	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Animal	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Bicycle	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Head On	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Left Turn	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Off Road	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Other	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Pedestrian	23.1%	37.9%	39.0%	27.8%	61.8%	10.4%	10.0%	20.1%	59.8%	10.1%	0.0%	42.9%	28.4%	15.7%	1.7%	0.1%	11.1%	15.3%	30.9%	53.9%	0.0%	0.7%	0.0%	68.9%	6.3%
	Rear End	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Right Turn	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Rollover	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Sideswipe	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Unknown	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Alcohol Related	Y	0.7%	1.4%	0.4%	1.0%	1.3%	0.3%	0.1%	1.0%	1.2%	0.3%	0.0%	1.1%	0.7%	0.6%	0.0%	0.0%	0.1%	0.6%	1.4%	0.6%	0.0%	0.2%	0.0%	1.9%	0.2%
	N	22.4%	36.4%	38.6%	26.8%	60.5%	10.1%	9.8%	19.1%	58.7%	9.8%	0.0%	41.8%	27.7%	15.1%	1.7%	0.1%	11.0%	14.6%	29.4%	53.2%	0.0%	0.5%	0.0%	67.0%	6.1%
Hit and Run	Y	6.9%	6.6%	7.1%	6.3%	12.7%	1.6%	3.0%	4.5%	11.8%	1.3%	0.0%	7.8%	6.1%	2.9%	0.3%	0.0%	3.4%	3.5%	6.8%	9.0%	0.0%	0.0%	0.0%	11.5%	1.2%
	N	16.2%	31.2%	31.9%	21.5%	49.1%	8.8%	6.9%	15.6%	48.0%	8.8%	0.0%	35.1%	22.3%	12.8%	1.4%	0.1%	7.7%	11.7%	24.1%	44.9%	0.0%	0.7%	0.0%	57.4%	5.2%
Aggressive Driving	Y	0.6%	0.7%	1.0%	0.6%	1.6%	0.1%	0.3%	0.6%	1.3%	0.1%	0.0%	1.4%	0.3%	0.3%	0.0%	0.0%	0.3%	0.3%	0.6%	1.3%	0.0%	0.0%	0.0%	1.4%	0.0%
	N	22.5%	37.1%	38.0%	27.2%	60.2%	10.3%	9.7%	19.5%	58.5%	10.0%	0.0%	41.5%	28.1%	15.4%	1.7%	0.1%	10.8%	15.0%	30.2%	52.6%	0.0%	0.7%	0.0%	67.4%	6.3%
Distracted Driving	Y	3.5%	3.5%	3.2%	3.1%	6.4%	0.9%	1.4%	2.2%	6.4%	0.1%	0.0%	3.6%	2.6%	1.9%	0.1%	0.0%	2.3%	1.8%	2.9%	4.5%	0.0%	0.2%	0.0%	5.4%	0.7%
	N	19.7%	34.4%	35.8%	24.7%	55.3%	9.6%	8.5%	17.9%	53.5%	10.0%	0.0%	39.4%	25.8%	13.8%	1.6%	0.1%	8.8%	13.5%	28.0%	49.4%	0.0%	0.5%	0.0%	63.5%	5.6%
Intersection Related	Y	7.9%	10.1%	11.4%	5.4%	19.5%	4.3%	2.9%	7.1%	16.8%	2.7%	0.0%	11.4%	8.3%	5.4%	0.7%	0.1%	3.3%	5.5%	8.4%	15.3%	0.0%	0.2%	0.0%	18.0%	2.1%
	N	15.2%	27.7%	27.6%	22.4%	42.2%	6.1%	7.1%	13.0%	43.1%	7.4%	0.0%	31.5%	20.1%	10.3%	1.0%	0.0%	7.8%	9.8%	22.5%	38.6%	0.0%	0.5%	0.0%	50.8%	4.2%
Drug Related	Y	0.3%	1.0%	0.7%	0.6%	1.1%	0.3%	0.1%	0.3%	1.4%	0.1%	0.0%	0.7%	0.9%	0.1%	0.0%	0.0%	0.3%	0.0%	1.0%	1.0%	0.0%	0.0%	0.0%	0.9%	0.2%
	N	22.8%	36.8%	38.3%	27.2%	60.6%	10.1%	9.8%	19.8%	58.4%	10.0%	0.0%	42.2%	27.5%	15.5%	1.7%	0.1%	10.8%	15.3%	29.9%	52.9%	0.0%	0.7%	0.0%	67.9%	6.1%
Aging Driver	Y	1.9%	2.7%	2.6%	2.3%	4.9%	0.3%	0.9%	1.4%	4.3%	0.6%	0.0%	3.1%	2.3%	1.0%	0.1%	0.0%	0.9%	1.3%	2.4%	3.7%	0.0%	0.0%	0.0%	5.9%	0.2%
	N	21.2%	35.1%	36.4%	25.5%	56.9%	10.1%	9.1%	18.6%	55.5%	9.5%	0.0%	39.8%	26.1%	14.7%	1.6%	0.1%	10.3%	14.0%	28.5%	50.2%	0.0%	0.7%	0.0%	63.0%	6.1%
Teenage Driver	Y	1.0%	1.6%	2.5%	1.6%	3.1%	0.3%	0.6%	1.0%	2.9%	0.6%	0.0%	1.9%	2.0%	0.6%	0.0%	0.0%	0.6%	0.6%	0.6%	3.7%	0.0%	0.0%	0.0%	3.7%	0.0%
	N	22.1%	36.3%	36.6%	26.2%	58.6%	10.1%	9.4%	19.1%	56.9%	9.5%	0.0%	41.1%	26.4%	15.1%	1.7%	0.1%	10.6%	14.6%	30.2%	50.2%	0.0%	0.7%	0.0%	65.1%	6.3%
Day of the Week	Monday	3.3%	4.3%	5.3%	4.0%	7.7%	1.3%	1.7%	1.9%	7.4%	2.0%	0.0%	5.8%	3.3%	2.0%	0.3%	0.0%	1.6%	1.9%	3.5%	7.4%	0.0%	0.0%	0.0%	9.6%	1.2%
	Tuesday	3.3%	5.5%	6.4%	5.0%	8.8%	1.4%	1.4%	3.3%	8.8%	1.6%	0.0%	6.1%	4.6%	2.3%	0.3%	0.0%	2.0%	2.6%	3.9%	8.5%	0.0%	0.0%	0.0%	11.9%	0.7%
	Wednesday	3.6%	5.1%	5.6%	4.3%	8.3%	2.0%	1.7%	2.9%	8.7%	1.0%	0.0%	6.1%	3.3%	2.4%	0.6%	0.0%	2.1%	2.6%	4.0%	7.4%	0.0%	0.2%	0.0%	8.9%	1.2%
	Thursday	3.0%	5.8%	5.8%	2.7%	9.8%	2.0%	1.3%	3.3%	8.2%	1.7%	0.0%	6.6%	3.9%	2.3%	0.3%	0.1%	1.4%	1.8%	4.2%	8.7%	0.0%	0.2%	0.0%	10.1%	0.7%
	Friday	3.8%	6.9%	6.2%	4.1%	11.4%	1.4%	0.9%	3.6%	10.8%	1.6%	0.0%	7.3%	5.8%	2.3%	0.3%	0.0%	1.3%	3.2%	5.5%	9.0%	0.0%	0.2%	0.0%	10.3%	1.6%
	Saturday	3.2%	6.4%	5.1%	4.7%	8.7%	1.0%	1.9%	2.9%	8.8%	1.0%	0.0%	6.0%	4.4%	2.4%	0.0%	0.0%	1.6%	1.6%	5.9%	6.9%	0.0%	0.0%	0.0%	8.2%	0.7%
	Sunday	2.9%	3.9%	4.6%	3.0%	7.0%	1.3%	1.0%	2.2%	7.1%	1.2%	0.0%	5.0%	3.1%	2.0%	0.0%	0.0%	1.1%	1.6%	3.9%	5.9%	0.0%	0.0%	0.0%	9.8%	0.2%
Time of Day	12-3 AM	2.3%	3.5%	4.9%	3.7%	5.1%	1.9%	1.2%	2.2%	5.9%	1.4%	0.0%	5.7%	2.4%	1.3%	0.0%	0.0%	1.3%	1.1%	3.2%	6.3%	0.0%	0.0%	0.0%	8.2%	0.5%
	3-6 AM	2.6%	2.9%	2.6%	2.3%	4.3%	1.4%	0.6%	2.0%	4.5%	1.0%	0.0%	3.4%	2.1%	1.6%	0.1%	0.0%	0.7%	1.6%	3.1%	3.5%	0.0%	0.0%	0.0%	5.6%	0.5%
	6-9 AM	2.5%	4.2%	3.9%	2.6%	7.3%	0.7%	1.2%	2.3%	6.4%	0.7%	0.0%	3.6%	3.1%	2.1%	0.6%	0.0%	1.1%	1.9%	3.2%	5.5%	0.0%	0.0%	0.0%	6.3%	1.2%
	9-Noon	2.2%	2.2%	2.3%	1.9%	4.1%	0.6%	1.7%	1.2%	3.2%	0.6%	0.0%	2.3%	1.4%	1.0%	0.0%	0.1%	1.7%	1.0%	1.3%	3.2%	0.0%	0.0%	0.0%	3.3%	0.7%
	Noon-3 PM	2.2%	3.2%	1.6%	2.9%	3.7%	0.4%	0.9%	2.5%	3.5%	0.1%	0.0%	1.6%	2.6%	1.7%	0.0%	0.0%	1.1%	1.4%	2.9%	2.3%	0.0%	0.2%	0.0%	3.0%	0.9%
	3-6 PM	3.0%	3.2%	3.3%	3.4%	5.8%	0.6%	1.7%	1.7%	5.5%	0.6%	0.0%	2.9%	2.7%	2.3%	0.1%	0.0%	1.9%	2.6%	2.3%	4.2%	0.0%	0.0%	0.0%	5.4%	0.2%
	6-9 PM	3.9%	11.0%	10.4%	6.0%	17.0%	2.3%	1.2%	4.8%	16.6%	2.7%	0.0%	13.1%	6.6%	3.3%	0.6%	0.0%	1.7%	2.4%	8.7%	15.3%	0.0%	0.5%	0.0%	19.7%	0.9%
	9-Midnight	4.5%	7.8%	10.0%	5.1%	14.4%	2.6%	1.6%	3.5%	14.3%	2.9%	0.0%	10.4%	7.4%	2.4%	0.3%	0.0%	1.6%	3.2%	6.3%	13.7%	0.0%	0.0%	0.0%	17.3%	1.4%
Lighting Conditions	Dark - Lighted	6.6%	18.2%	23.1%	10.8%	31.1%	6.1%	2.7%	8.5%	31.5%	5.2%	0.0%	26.1%	13.0%	5.3%	0.4%	0.0%	3.3%	4.7%	14.5%	31.4%	0.0%	0.0%	0.0%	36.5%	1.9%
	Dark - Not Lighted	5.9%	6.1%	4.0%	5.1%	9.0%	1.7%	1.4%	3.3%	8.7%	2.6%	0.0%	5.8%	4.6%	3.4%	0.1%	0.0%	1.9%	3.5%	5.8%	6.4%	0.0%	0.5%	0.0%	12.9%	1.4%
	Dark - Unknown Lighting	0.0%	0.0%	0.1%	0.0%	0.1%	0.0%	0.0%	0.0%	0.1%	0.0%	0.0%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.2%	0.0%	0.0%	0.0%	0.0%	0.0%
	Dawn	0.3%	1.0%	1.0%	0.6%	1.6%	0.1%	0.1%	0.6%	1.3%	0.3%	0.0%	0.7%	1.0%	0.1%	0.3%	0.0%	0.1%	0.2%	0.6%	1.6%	0.0%	0.0%	0.0%	1.4%	0.2%
	Daylight	9.0%	11.4%	9.5%	9.7%	18.4%	1.9%	5.3%	6.6%	16.0%	1.9%	0.0%	8.8%	8.7%	6.1%	0.6%	0.1%	5.6%	6.3%	8.5%	12.7%	0.0%	0.2%	0.0%	15.5%	2.8%
	Dusk	1.0%	1.0%	1.0%	1.4%	1.3%	0.4%	0.3%	0.7%	1.9%	0.1%	0.0%	1.1%	1.0%	0.4%	0.3%	0.0%	0.3%	0.3%	1.4%	1.3%	0.0%	0.0%	0.0%	2.1%	0.0%
	Other	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	0.0%	0.3%	0.1%	0.0%	0.0%	0.1%	0.1%	0.1%	0.0%	0.0%	0.0%	0.2%	0.0%	0.3%	0.0%	0.0%	0.0%	0.5%	0.0%
Unknown	0.1%	0.0%	0.0%	0.0%	0.1%	0.0%	0.0%	0.0%	0.1%	0.0%	0.0%	0.0%	0.0%	0.1%	0.0%	0.0%	0.0%	0.2%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	

**Attachment C-8
Orange County
Percent of All KSI Crashes Involving Pedestrians 2018-2022**

Mode:	All Collisions	Context Classification				Bike Lane/Paved Shoulder > 4 ft			Bike Slots			Sidewalks			Median Presence					
All		C4	C5	C6	None	None	One Side	Both Sides	None	One Side	Both Sides	None	One Side	Both Sides	None	Grass	Multiple	Paved	Other	
Type	Angle	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Animal	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Bicycle	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Head On	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Left Turn	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Off Road	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Other	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Pedestrian	20.6%	1.9%	1.6%	0.0%	66.5%	13.0%	20.5%	87.1%	11.7%	1.2%	5.9%	8.1%	86.0%	37.1%	30.5%	1.6%	30.3%	0.4%	
	Rear End	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Right Turn	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Rollover	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Sideswipe	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Unknown	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	
Alcohol Related	Y	0.5%	0.0%	0.0%	0.0%	1.7%	0.1%	0.7%	2.3%	0.1%	0.1%	0.4%	0.4%	1.7%	1.4%	0.7%	0.0%	0.4%	0.0%	
	N	20.1%	1.9%	1.6%	0.0%	64.7%	12.9%	19.8%	84.8%	11.6%	1.0%	5.5%	7.7%	84.2%	35.7%	29.8%	1.6%	29.9%	0.4%	
Hit and Run	Y	4.4%	0.2%	0.7%	0.0%	15.6%	3.5%	3.5%	19.5%	1.2%	0.0%	1.2%	2.5%	17.1%	10.4%	4.0%	0.3%	5.8%	0.1%	
	N	16.2%	1.6%	0.9%	0.0%	50.9%	17.1%	17.1%	67.6%	10.5%	1.2%	4.8%	5.6%	68.9%	26.7%	26.4%	1.3%	24.6%	0.3%	
Aggressive Driving	Y	0.9%	0.2%	0.0%	0.0%	1.0%	0.7%	0.7%	1.7%	0.6%	0.0%	0.3%	0.1%	1.9%	1.2%	0.6%	0.0%	0.6%	0.0%	
	N	19.7%	1.6%	1.6%	0.0%	65.5%	19.8%	19.8%	85.4%	11.1%	1.2%	5.6%	7.9%	84.1%	36.0%	29.9%	1.6%	29.8%	0.4%	
Distracted Driving	Y	1.9%	0.2%	0.0%	0.0%	7.5%	1.9%	1.9%	9.5%	0.6%	0.0%	1.0%	0.4%	8.7%	4.2%	2.7%	0.3%	2.7%	0.1%	
	N	18.7%	1.6%	1.6%	0.0%	59.0%	18.6%	18.6%	77.6%	11.1%	1.2%	4.9%	7.7%	77.3%	32.9%	27.7%	1.3%	27.6%	0.3%	
Intersection Related	Y	6.1%	0.9%	1.4%	0.0%	19.8%	4.6%	4.6%	25.0%	4.0%	0.4%	0.9%	2.0%	26.6%	10.3%	7.7%	0.3%	11.3%	0.0%	
	N	14.5%	0.9%	0.2%	0.0%	46.7%	15.9%	15.9%	62.1%	7.7%	0.7%	5.1%	6.1%	59.4%	26.9%	22.8%	1.3%	19.1%	0.4%	
Drug Related	Y	0.7%	0.0%	0.0%	0.0%	1.6%	0.1%	0.1%	1.6%	0.3%	0.1%	0.1%	0.1%	1.7%	0.6%	0.6%	0.0%	0.9%	0.0%	
	N	19.9%	1.9%	1.6%	0.0%	64.9%	20.4%	20.4%	85.5%	11.4%	1.0%	5.8%	7.9%	84.2%	36.6%	29.9%	1.6%	29.5%	0.4%	
Aging Driver	Y	1.6%	0.0%	0.0%	0.0%	4.8%	2.0%	2.0%	6.8%	0.3%	0.1%	0.1%	0.6%	6.5%	2.9%	2.0%	0.0%	2.2%	0.1%	
	N	19.0%	1.9%	1.6%	0.0%	61.7%	18.5%	18.5%	80.3%	11.4%	1.0%	5.8%	7.5%	79.5%	34.2%	28.5%	1.6%	28.2%	0.3%	
Teenage Driver	Y	0.7%	0.0%	0.0%	0.0%	3.6%	1.0%	1.0%	4.5%	0.4%	0.1%	0.1%	0.9%	4.0%	1.7%	1.4%	0.3%	1.6%	0.0%	
	N	19.9%	1.9%	1.6%	0.0%	62.9%	19.5%	19.5%	82.7%	11.3%	1.0%	5.8%	7.2%	81.9%	35.4%	29.0%	1.3%	28.8%	0.4%	
Day of the Week	Monday	3.5%	0.0%	0.0%	0.0%	8.1%	2.3%	2.3%	11.0%	1.9%	0.1%	0.9%	0.9%	11.3%	4.2%	4.6%	0.6%	3.6%	0.0%	
	Tuesday	2.1%	0.0%	0.0%	0.0%	8.9%	3.5%	3.5%	13.7%	1.4%	0.0%	1.0%	1.2%	13.0%	6.2%	4.8%	0.1%	4.0%	0.0%	
	Wednesday	3.3%	0.0%	0.0%	0.0%	9.9%	1.3%	1.3%	12.3%	1.7%	0.3%	0.7%	1.6%	12.0%	5.8%	3.0%	0.0%	5.5%	0.0%	
	Thursday	3.3%	0.9%	0.0%	0.0%	7.5%	3.9%	3.9%	12.1%	2.3%	0.1%	0.7%	1.6%	12.3%	5.1%	4.2%	0.1%	5.1%	0.1%	
	Friday	4.7%	0.2%	0.2%	0.0%	10.6%	3.0%	3.0%	14.5%	2.2%	0.3%	0.7%	1.0%	15.2%	6.4%	5.5%	0.1%	4.9%	0.0%	
	Saturday	2.8%	0.2%	0.9%	0.0%	9.7%	2.7%	2.7%	13.3%	1.2%	0.1%	1.0%	0.9%	12.7%	5.3%	4.8%	0.3%	4.0%	0.1%	
	Sunday	0.9%	0.5%	0.5%	0.0%	7.1%	2.4%	2.4%	10.3%	1.0%	0.1%	0.9%	1.0%	9.5%	4.2%	3.6%	0.3%	3.2%	0.1%	
Time of Day	12-3 AM	2.3%	0.5%	0.2%	0.0%	7.1%	1.2%	1.2%	9.0%	1.6%	0.1%	0.7%	0.6%	9.4%	3.6%	3.5%	0.0%	3.6%	0.0%	
	3-6 AM	1.4%	0.2%	0.2%	0.0%	4.8%	1.3%	1.3%	6.8%	1.3%	0.0%	1.2%	0.6%	6.4%	3.6%	2.0%	0.0%	2.5%	0.0%	
	6-9 AM	1.9%	0.9%	0.0%	0.0%	6.9%	1.9%	1.9%	9.2%	1.3%	0.0%	0.6%	1.6%	8.4%	3.5%	4.0%	0.4%	2.6%	0.0%	
	9-Noon	1.6%	0.0%	0.2%	0.0%	5.0%	0.9%	0.9%	6.4%	0.3%	0.0%	0.3%	0.3%	6.1%	2.5%	1.4%	0.1%	2.6%	0.0%	
	Noon-3 PM	1.2%	0.0%	0.2%	0.0%	4.7%	1.2%	1.2%	6.5%	0.4%	0.0%	0.3%	0.9%	5.8%	3.2%	1.7%	0.0%	1.9%	0.1%	
	3-6 PM	2.8%	0.0%	0.0%	0.0%	6.7%	1.5%	1.5%	8.8%	0.6%	0.1%	0.6%	0.6%	8.4%	4.5%	1.7%	0.4%	2.9%	0.0%	
	6-9 PM	5.6%	0.0%	0.2%	0.0%	14.5%	5.5%	5.5%	21.5%	3.5%	0.3%	0.9%	1.6%	22.8%	8.4%	7.9%	0.4%	8.4%	0.1%	
	9-Midnight	3.7%	0.2%	0.5%	0.0%	12.1%	5.5%	5.5%	18.9%	2.7%	0.6%	1.4%	2.0%	18.8%	7.9%	8.1%	0.1%	5.9%	0.1%	
Lighting Conditions	Dark - Lighted	11.9%	1.4%	1.2%	0.0%	28.5%	9.1%	9.1%	40.9%	6.4%	0.7%	1.2%	2.0%	44.8%	15.5%	14.3%	0.7%	17.2%	0.3%	
	Dark - Not Lighted	1.2%	0.0%	0.0%	0.0%	8.7%	3.6%	3.6%	13.0%	2.7%	0.3%	3.0%	2.5%	10.5%	6.9%	6.5%	0.3%	2.3%	0.0%	
	Dark - Unknown Lighting	0.2%	0.0%	0.0%	0.0%	0.1%	0.0%	0.0%	0.1%	0.0%	0.0%	0.0%	0.0%	0.1%	0.0%	0.0%	0.0%	0.1%	0.0%	
	Dawn	0.0%	0.2%	0.0%	0.0%	1.3%	0.5%	0.5%	2.0%	0.3%	0.0%	0.1%	0.4%	1.7%	0.7%	0.7%	0.0%	0.9%	0.0%	
	Daylight	6.8%	0.2%	0.5%	0.0%	21.0%	5.0%	5.0%	28.0%	1.7%	0.1%	1.4%	2.6%	25.9%	12.9%	7.7%	0.6%	8.7%	0.1%	
	Dusk	0.5%	0.0%	0.0%	0.0%	1.9%	0.8%	0.8%	2.7%	0.3%	0.0%	0.1%	0.4%	2.5%	0.9%	1.2%	0.0%	1.0%	0.0%	
	Other	0.0%	0.0%	0.0%	0.0%	0.1%	0.0%	0.0%	0.1%	0.3%	0.0%	0.0%	0.1%	0.3%	0.1%	0.1%	0.0%	0.1%	0.0%	
Unknown	0.0%	0.0%	0.0%	0.0%	0.1%	0.0%	0.0%	0.1%	0.0%	0.0%	0.0%	0.0%	0.1%	0.1%	0.0%	0.0%	0.0%	0.0%		

What Is Vision Zero Central Florida & Why Do We Need to Take Action?

Every week, 5 people die and 35 people are seriously injured in Central Florida crashes. Vision Zero is an international movement to reach zero traffic fatalities.

Vision Zero Central Florida's goal is simple: saving lives. Zero traffic deaths. Everyone should be able to travel safely around Central Florida without the fear of death or serious injury.

This coordinated planning effort led by MetroPlan Orlando in partnership with local agencies will result in a comprehensive **Vision Zero Safety Action Plan** for our three-county region (Orange, Osceola, Seminole), as well as additional action plans tailored for each county and city.



metroplan orlando
A REGIONAL TRANSPORTATION PARTNERSHIP

This work is being funded by a \$3.79 million Safe Streets and Roads for All federal grant.

What will the Vision Zero Safety Action Plan Include?

The regional plan and each county or city action plan will include the following:

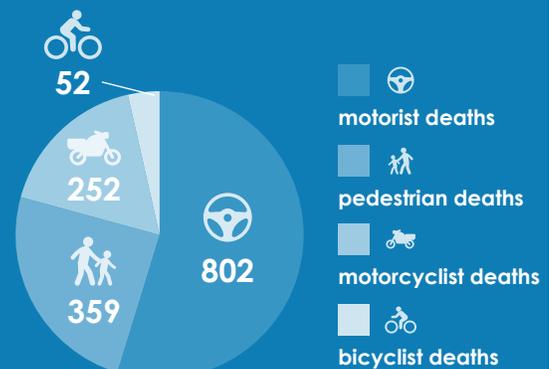
- **High Injury Network:** Analyzing data to identify places on the transportation system with the highest risk for fatal and serious injury crashes so that we can focus on our most important problem areas.
- **Equity Component:** Identifying and prioritizing efforts in disadvantaged communities that are disproportionately affected by traffic crashes.
- **List of Priority Streets and Intersections:** Producing a list of feasible projects that have the most safety impact for the region.
- **Educational and Enforcement Programs:** Identifying key behavioral changes needed to reduce crashes and methods for encouraging those changes.
- **Sustained Effort:** Establishing a defined process and identifying an organization responsible for carrying out, updating, and monitoring progress.
- **Public Meetings:** Public engagement is a key part of the study.
- **Outcome:** Identified projects will be included in MPO or local jurisdiction priority projects list for funding/implementation.

3-COUNTY REGION (2018-2022)

327,500 total crashes

9,500 serious injuries

1,465 deaths including:



41% of our traffic deaths occur on 2% of our roadways.

HOW CAN YOU GET INVOLVED?

This planning initiative encourages participation from people of all ages across our region, including community leaders, residents, and visitors. Join us in this quest to eliminate deaths and serious injuries on Central Florida's roads. We can save lives when each of us does our part and we all work together.



Visit our website to review crash data, learn more about safety, provide feedback and get details for upcoming events:

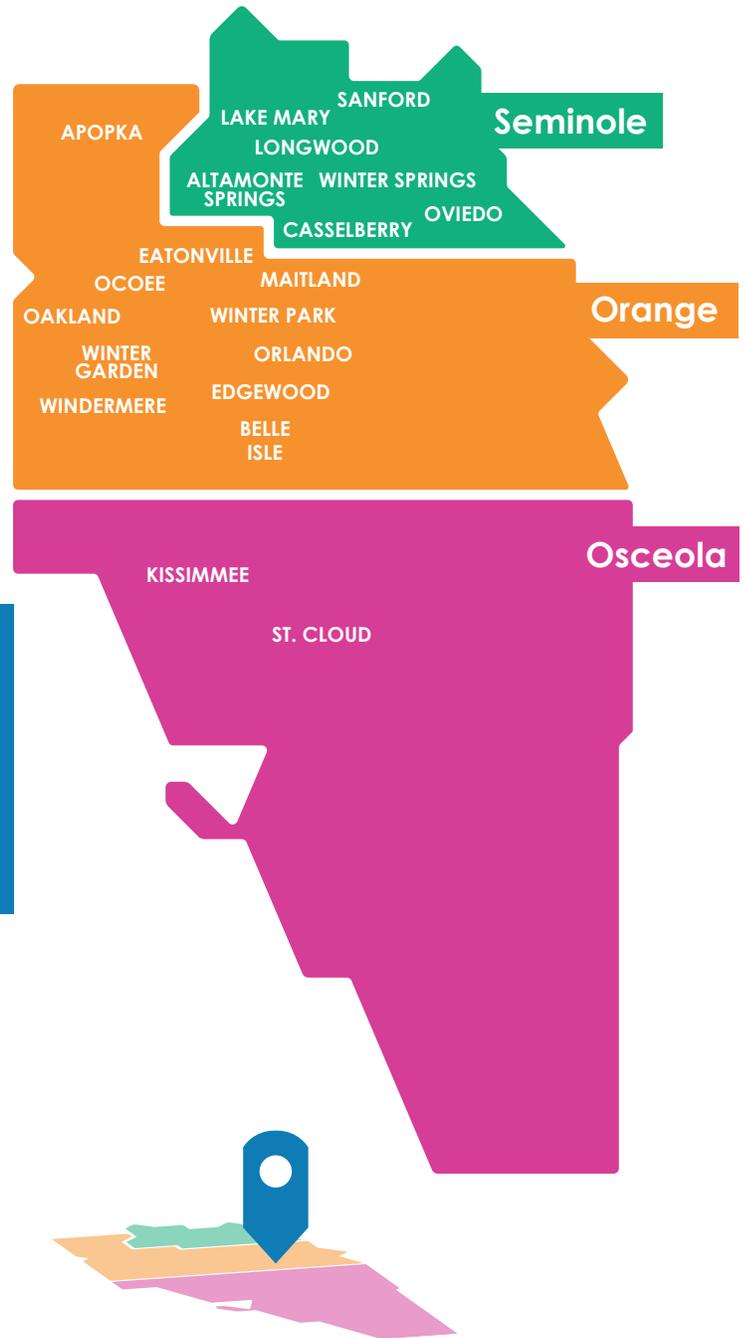
[VisionZeroCFL.gov](https://www.visionzerocfl.gov)



HEAR FROM YOUR NEIGHBORS

Central Floridians know firsthand why we need Vision Zero. Hear what they said by watching a short video and share the need for safer roads:

<https://bit.ly/VZCFvideo>



HELP IDENTIFY SAFETY PROBLEMS

Sometimes crash data doesn't tell the whole story - and that's where you can help make transportation safer! Go to the "Help Identify Safety Problems" tab on [VisionZeroCFL.gov](https://www.visionzerocfl.gov) to tell us about areas where you feel unsafe traveling.

Questions? Email
VisionZero@MetroPlanOrlando.gov

Memorandum

Date: April 25, 2024

To: Vision Zero Central Florida Partners – Public Information Officers

From: Mary Ann Horne, MetroPlan Orlando
Kathrin Tellez, Fehr & Peers

Subject: **Vision Zero Central Florida – Social Media Post Guidance**



Introduction

A core element of Vision Zero action plans is **authentic engagement**. While engagement can come in many forms—including in-person workshops and meetings, safety audits, surveys, and newsletters—social media plays a special role. It can bring awareness to the issue, provide educational materials, and serve as a call to action—all to a broad audience that might not otherwise be aware of efforts to improve safety on our streets.

Social Media Messages

A series of social media messages have been developed that pivot from messages prepared by the National Highway Traffic Safety Administration (NHTSA – [trafficsafetymarketing.gov](https://www.nhtsa.gov/traffic-safety/traffic-safety-marketing)). The messages have been tailored with statistics relevant to our local crash patterns, and they apply the Vision Zero Central Florida branding. Social media posts have been developed to highlight the:

- High fatal crash rate in Central Florida
- Dangers of driving under the influence of drugs and/or alcohol
- Importance of seatbelt use
- Importance of helmet use
- Importance of following traffic rules
- Dangers of distracted driving
- Special circumstances of teen driving
- Disproportionate impact to vulnerable road users
- Dangers of hit-and-run crashes

Local jurisdictions can customize the posts with their logo and additional local information if desired. For example, posts related to driving under the influence could be paired with information about how to get a safe ride home in a local community. Posts can also be timed with other traffic safety campaigns for greater effect. Sample posts for each potential campaign are presented in **Table 1** and the 2024 NHTSA Traffic Safety Campaigns are summarized in **Table 2**.

Table 1: Draft Posts

Topic	Caption	Image
High fatal crash rate in Central Florida	<p>Join us on our quest to reach zero traffic deaths on Central Florida roads.</p> <p>To learn about what's being done to improve road safety and how you can help, visit VisionZeroCFL.gov. #VisionZero</p>	
Dangers of driving under the influence of drugs and/or alcohol	<p>If you think getting high makes you a better driver, you're wrong – dead wrong. If You Feel Different, You Drive Different.</p> <p>Or</p> <p>Think driving yourself home after drinking is cheaper? Think again!</p> <p>Average rideshare ? \$25</p> <p>Average DUI ? \$10,000</p> <p>The choice is simple — if you've been drinking, call a sober friend, rideshare, or taxi to get you home safely.</p> <p>Or</p> <p>Would you ruin the day? Ruin a year? Ruin a family? Drunk driving ruins lives. If you've been drinking, call a sober friend, rideshare, or taxi to get you home safely.</p> <p>Or</p> <p>Be the life of the party. And the next one. Don't drive drunk or high.</p> <p>To learn about what's being done to improve road safety and how you can help, visit VisionZeroCFL.gov. #VisionZero</p>	
Importance of seatbelt use	<p>While we are doing our part to make our roads safer, we need you to do yours by always wearing your seatbelt and making sure all your passengers are secured.</p> <p>Buckle Up. Every Trip. Every Time.</p> <p>Or</p> <p>Click it or Ticket.</p> <p>To learn about what's being done to improve road safety and how you can help, visit VisionZeroCFL.gov. #VisionZero</p>	

Topic	Caption	Image
Importance of helmet use	<p>While we are doing our part to make our roads safer, we need you to do yours by always wearing a helmet.</p> <p>To learn about what's being done to improve road safety and how you can help, visit VisionZeroCFL.gov. #VisionZero</p>	
Importance of following traffic rules	<p>Think you don't have time to stop for a red light? You are dead wrong.</p> <p>Or</p> <p>Stop on Red</p> <p>Or</p> <p>To learn about what's being done to improve road safety and how you can help, visit VisionZeroCFL.gov. #VisionZero</p>	
Dangers of distracted driving	<p>While we are doing our part to make our roads safer, we need you to do yours by paying attention.</p> <p>Don't drive distracted. Eyes Forward.</p> <p>Or</p> <p>Put the Phone Away or Pay</p> <p>To learn about what's being done to improve road safety and how you can help, visit VisionZeroCFL.gov. #VisionZero</p>	
Special circumstances of teen driving	<p>Targeted to parents:</p> <p>Your teen looks up to you more than you think. Set a good example when you're behind the wheel—don't drive distracted or impaired, don't speed and always wear a seat belt. #TeenDriver</p> <p>#Parents: We all know parenting #teens can be challenging. While some battles aren't worth fighting, protecting your teen behind the wheel is. Before you hand over the car keys, make sure they know the rules of the road in Florida.</p> <p>Targeted to teens:</p> <p>Hey teens! Drive like your friends' lives depend on it! Take it slow. #TeenDriver</p> <p>You're in the driver's seat now. Be Safe. Everyone buckles up. #TeenDriver</p> <p>To learn about what's being done to improve road safety and how you can help, visit VisionZeroCFL.gov. #VisionZero</p>	

Topic	Caption	Image
Vulnerable Road Users	<p>Safer speeds save lives. Watch out for others on our roads.</p> <p>To learn about what's being done to improve road safety and how you can help, visit VisionZeroCFL.gov. #VisionZero</p>	
Dangers of hit-and-run crashes	<p>If you are involved in a crash, stay at the scene and call for help. It's not just the law – you could save a life.</p> <p>Or</p> <p>Just stop. Stay at the scene and call for help.</p> <p>To learn about what's being done to improve road safety and how you can help, visit VisionZeroCFL.gov. #VisionZero</p>	

Source: Fehr & Peers and MetroPlan Orlando, Based on NHTSA Safety Campaigns

Table 2: 2024 NHTSA Traffic Safety Campaigns

Month	Monthly Campaign	Other Campaigns
January		<ul style="list-style-type: none"> Impaired Driving – Buzzed Driving is Drunk Driving National Passenger Safety Week (January 24-27)
February		<ul style="list-style-type: none"> Impaired Driving – Fans Don't Let Fans Drive Drunk
March		<ul style="list-style-type: none"> Vehicle Safety Recall Week (March 4-10) Impaired Driving – Buzzed Driving is Drunk Driving
April	<ul style="list-style-type: none"> National Distracted Driving Month 	<ul style="list-style-type: none"> Distracted Driving (April 1-8) – U Drive. U Text. U Pay. Pay Attention or Pay the Price Drug Impaired Driving Campaign (April 20) – If you feel different, you drive different Alcohol Awareness month (National Institute of Health)
May	<ul style="list-style-type: none"> National Youth Traffic Safety Month National Bicycle Safety Month Motorcycle Awareness Month 	<ul style="list-style-type: none"> National Heatstroke Prevention Day (May 1) Click it or Ticket (May 13-June 2)
June		<ul style="list-style-type: none"> Tire Safety Week (dates not determined yet) Secure your Load Day (June 6)
July	<ul style="list-style-type: none"> Vehicle Theft Prevention Month 	<ul style="list-style-type: none"> Impaired Driving/Drug Impaired Driving (July 4) – Buzzed Driving Is Drunk Driving Speed Campaign (July 8-31)
August		<ul style="list-style-type: none"> Impaired Driving/Drug Impaired Driving (August 14–September 2) – Drive Sober or Get Pulled Over
September		<ul style="list-style-type: none"> Child Passenger/Occupant Protection Safety Week – (September 15-21) National Seat Check Saturday (September 21)

Month	Monthly Campaign	Other Campaigns
October	<ul style="list-style-type: none"> • Pedestrian Safety Month 	<ul style="list-style-type: none"> • Teen Driver Safety Week/Teen Driving Issues (October 20-26) • National School Bus Safety Week (October 21-25) • Impaired Driving (October 31) – Buzzed Driving is Drunk Driving
November		<ul style="list-style-type: none"> • Drunksgiving/Blackout Wednesday/Thanksgiving (November 23-30) – Buzzed Driving is Drunk Driving • Occupant Protection (November 23-December 1) – Buckle Up. Every Trip. Every Time
December	<ul style="list-style-type: none"> • National Drunk & Drug-Impaired Driving Prevention Month 	<ul style="list-style-type: none"> • Impaired Driving/Drug Impaired Driving (December 1–December 10) – Buzzed Driving Is Drunk Driving / If You Feel Different, You Drive Different • Older Driver Safety Week (December 2–6) • Impaired Driving Drug-Impaired Driving (December 11–January 1, 2025) Drive Sober or Get Pulled Over / If You Feel Different, You Drive Different / Drive High, Get a DUI • TV Bureau of Advertising Roadblock (December 26–January 1, 2025) – Buzzed Driving Is Drunk Driving

Source: <https://www.trafficsafetymarketing.gov/sites/tsm.gov/files/2024-03/communications-calendar-2024-15962-v7-tag.pdf> and https://www.trafficsafetymarketing.gov/sites/tsm.gov/files/2023-12/events-calendar-2024-15963_v8-tag.pdf

Draft posts are provided as an attachment, and the original files are available for customization. Agency Public Information Officers are encouraged to look at the resources available from NHTSA as well as the Florida Department of Transportation (FDOT – [fdot.gov/Safety](https://www.floridadot.com/Safety)) for additional messages.

Content Sharing

Once your social media message has been refined to reflect your community, be sure to tag MetroPlan Orlando as well as other Vision Zero Partners. For example, if you are a city, consider tagging your County as well. District 5 of the Florida Department of Transportation has a social media presence and can help amplify your message.

Consider cross posting on several social media platforms and translating messages into languages prevalent in your community to reach a wider demographic. The platforms most used in the region include:

- Facebook
- Instagram
- X (formerly twitter)
- LinkedIn
- TikTok
- NextDoor

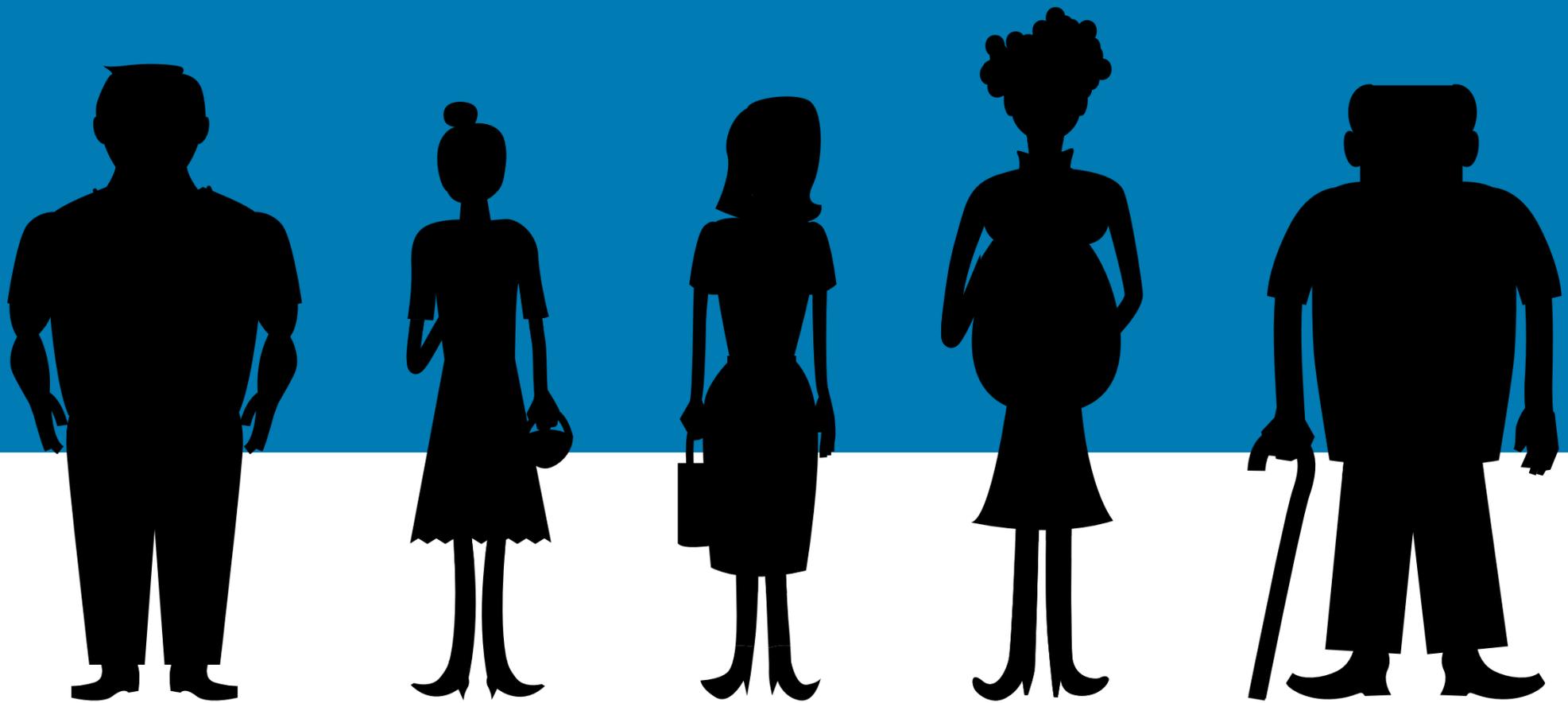
Once content is shared, please let us know if you find these templates useful or have suggestions for future templates. If you have a success story, please let us know so we can highlight your agencies' efforts in a future MetroPlan Orlando Newsletter. For maximum benefit, each post should include a hyperlink to the Vision Zero Central Florida hub site where people can find additional information,

provide feedback, and learn how to get involved – [VisionZeroCFL.gov](https://www.visionzerocfl.gov) as well as link to Vision Zero resources in your community, such as your Action Plan as well as any upcoming activities.

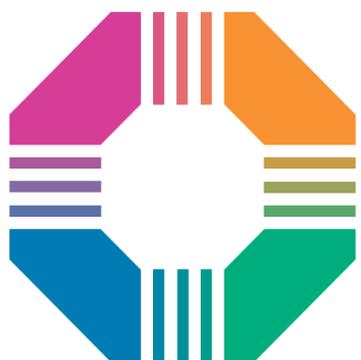
This completes our Social Media Post Guidance. If you have questions or feedback, please contact Mary Ann Horne at MaryAnn.Horne@metroplanorlando.gov.

Attachments: PDF of Campaigns

5 people are killed on Central Florida roads every week.



**THAT'S 15% HIGHER THAN THE
NATIONAL AVERAGE.**



VISION ZERO
CENTRAL FLORIDA

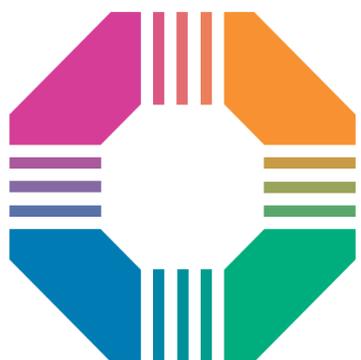
VisionZeroCFL.gov



1 in 5 deadly crashes
on Central Florida roads
involves **drunk driving**.
1 in 6 involves **drugs**.



SAVE A LIFE. DON'T DRIVE DRUNK OR HIGH.

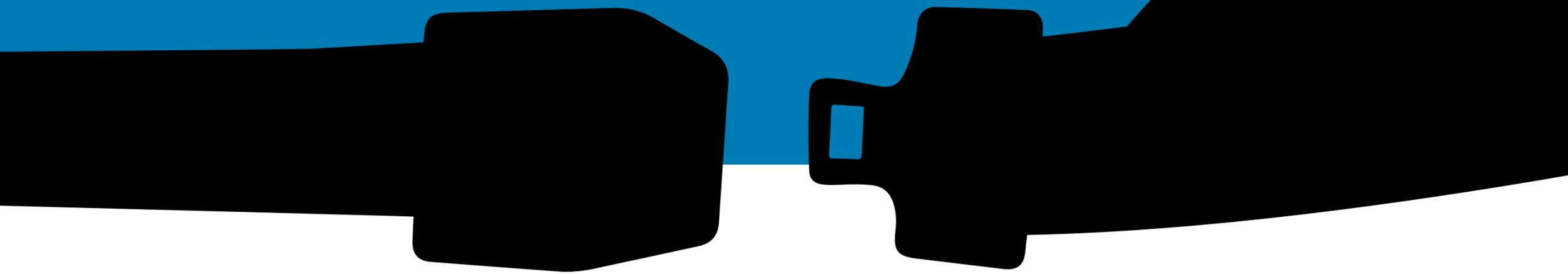


VISION ZERO
CENTRAL FLORIDA

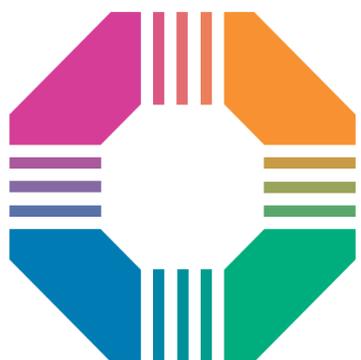
VisionZeroCFL.gov



1 in 3 people who die
in Central Florida car
crashes are not
wearing a **seatbelt.**



WEARING A SEATBELT CAN SAVE YOUR LIFE.



VISION ZERO
CENTRAL FLORIDA

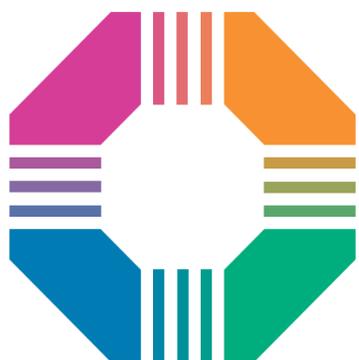
VisionZeroCFL.gov



Almost half the people
killed on motorcycles
in Central Florida were
not wearing **helmets.**



WEARING A HELMET CAN SAVE YOUR LIFE.

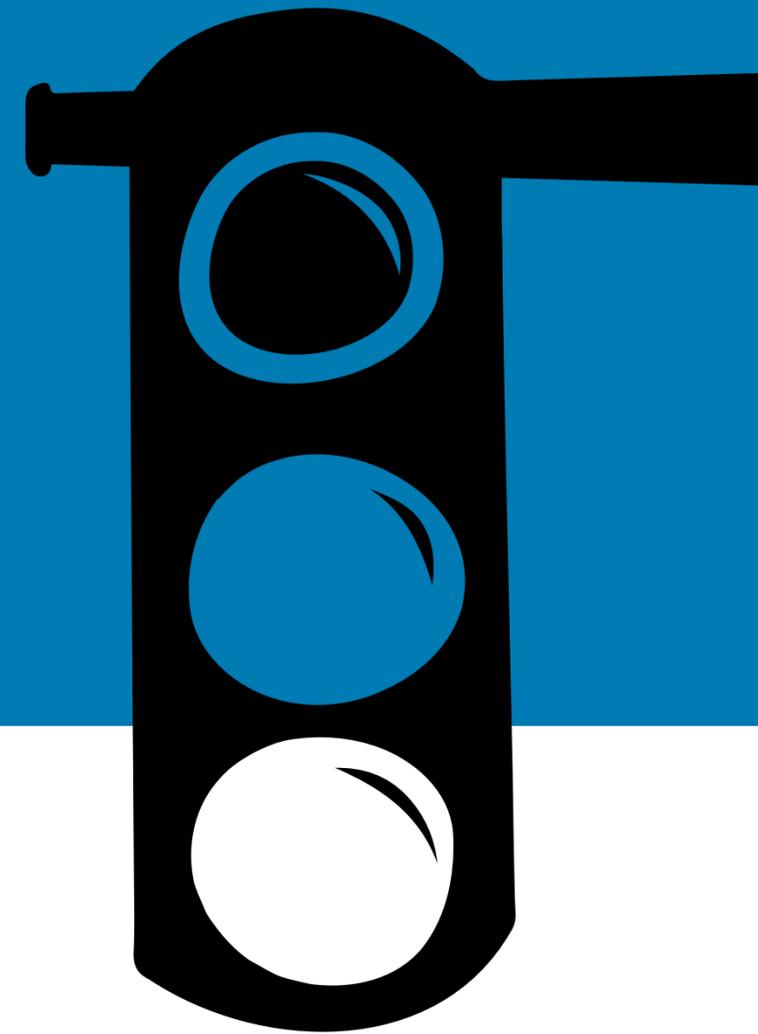


VISION ZERO
CENTRAL FLORIDA

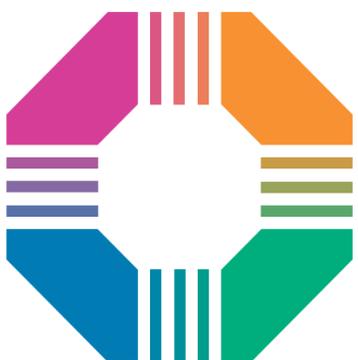
VisionZeroCFL.gov



Red light running killed
or seriously injured over
300 people in our
community in the
past 5 years.



STOPPING ON RED SAVES LIVES.



VISION ZERO
CENTRAL FLORIDA

VisionZeroCFL.gov

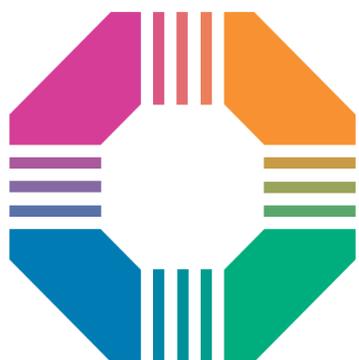


**1 in 3 serious injury
crashes in Central
Florida involves**

**distracted
driving.**



PAYING ATTENTION CAN SAVE A LIFE.



VISION ZERO
CENTRAL FLORIDA

VisionZeroCFL.gov



Only 6% of drivers
in Central Florida
are **teens**. But
they're in 13% of
serious injury
crashes.



TEACH YOUR TEENS SAFE DRIVING!



VISION ZERO
CENTRAL FLORIDA

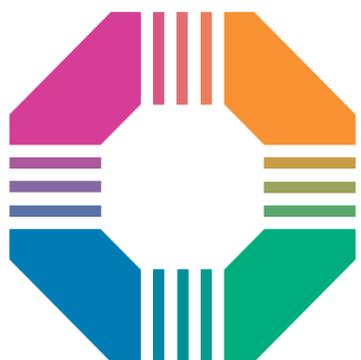
VisionZeroCFL.gov



About 3% of all crashes involve people walking, biking, or motorcycling. But those make up half the fatal crashes in Central Florida.



**MAINTAIN SAFE SPEEDS AND
SHARE THE ROAD WITH OTHERS.
THEY BELONG THERE TOO.**



VISION ZERO
CENTRAL FLORIDA

VisionZeroCFL.gov



10% of all serious injury crashes are **hit-and-runs**.
That number doubles when the person hit is walking or biking in Central Florida.



**IF YOU HIT SOMEONE, DON'T RUN!
PULL OVER AND MAKE SURE THEY'RE OK.**



VISION ZERO
CENTRAL FLORIDA

VisionZeroCFL.gov





CHAPTER 9

Technical Appendix

E- Local Engagement Plan



Image of Plant Street in the City of Winter Garden



Memorandum

Date: December 11, 2023

To: City of Winter Garden

From: Ryan Mansfield, Kittelson & Associates

Subject: City of Winter Garden Safety Action Plan - Public Engagement Strategy



Introduction

The MetroPlan Orlando region has an overall fatal crash rate 15 percent higher than the national average and 10 percent higher than the statewide average. MetroPlan Orlando, the Metropolitan Planning Organization, is preparing a Regional Vision Zero Action Plan to understand where crashes are most likely to occur, why crashes result in fatalities and serious injuries, and how to reduce the severity and frequency of these crashes. This effort will be rooted in the core elements of Vision Zero and the Safe System approach. The purpose of the Action Plan is to identify projects, programs, and strategies to eliminate fatalities and serious injuries on the region's roadways.

In coordination with the Regional Vision Zero Action Plan, the City of Winter Garden will prepare its own Vision Zero Action Plan, which will also be rooted in the core elements of Vision Zero and the Safe System approach. The purpose of the Action Plan is to identify projects, programs, and strategies to eliminate roadway related fatalities and serious injuries within the City.

The following memorandum outlines potential stakeholder and public engagement opportunities for the City of Winter Garden to further Vision Zero efforts in Central Florida that complement the regional strategies.

Funding for this effort is provided by the U.S. Department of Transportation's Safe Streets for All (SS4A) grant program. The SS4A grant program is funding the preparation of regional, county, and all local agency Vision Zero action plans in the MetroPlan Orlando region.

Core Elements of Vision Zero

The [Vision Zero Network](#) has established ten core elements that communities must meet to become a designated Vision Zero community. Meeting these elements opens the way to pursue supplemental planning and implementation funds through the USDOT's SS4A program. The ten core elements are structured in three primary categories, as summarized in **Table 1** along with their applicability to the Plan Approach. The elements noted in *blue italics* directly relate to Stakeholder and Public Engagement.

Table 1 | Core Elements of Vision Zero and Applicability to Regional and Local Plans

General Strategy	Strategy Details	Plan Approach
Category: Leadership and Commitment		
Public, High-Level, and Ongoing Commitment	<i>Key elected officials and leaders within public agencies, including transportation, public health, and police, commit to the goal of eliminating traffic fatalities and serious injuries within a specific timeframe. Leadership across these agencies consistently engages in prioritizing safety via a collaborative working group and other resource sharing efforts.</i>	Resolution guidance will be provided to support adoption. All agencies in the region are expected to adopt a Vision Zero Resolution.
Authentic Engagement	<i>Meaningful and accessible community engagement toward Vision Zero strategy and implementation is employed, with a focus on equity.</i>	<i>A variety of engagement activities have been identified as part of the regional and local Vision Zero action plans, as described in this document.</i>
Strategic Planning	A Vision Zero Action Plan is developed, approved, and used to guide work. The Plan includes explicit goals and measurable strategies with clear timelines, and it identifies responsible stakeholders.	The primary product of this process is a Vision Zero Action Plan.
Project Delivery	Decision-makers and system designers advance projects and policies for safe, equitable multimodal travel by securing funding and implementing projects, prioritizing roadways with the most pressing safety issues.	The primary components of project identification and prioritization will include safety and equity.
Category: Safe Roadways and Safe Speeds		
Complete Streets for All	Complete Streets concepts are integrated into communitywide plans and implemented through projects to encourage a safe, well-connected transportation network for people using all modes of transportation. This prioritizes safe travel of people over expeditious travel of motor vehicles.	Safety projects will be developed through the Complete Street lens to balance the competing needs of all roadway users, prioritizing the most vulnerable.
Context-Appropriate Speeds	Travel speeds are set and managed to achieve safe conditions for the specific roadway context and to protect all roadway users, particularly those most at risk in crashes. Proven speed management policies and practices are prioritized to reach this goal.	Speed is one of the leading contributors to fatal crashes in the region and identifying appropriate target speeds on high crash corridors will be a key strategy.

General Strategy	Strategy Details	Plan Approach
Category: Data-driven Approach, Transparency, and Accountability		
Equity-Focused Analysis and Program	<i>Commitment is made to an equitable approach and outcomes, including prioritizing engagement and investments in traditionally under-served communities and adopting equitable traffic enforcement practices.</i>	<i>Equity factors will be incorporated into the analysis and project prioritization.</i>
Proactive, Systemic Planning	A proactive, systems-based approach to safety is used to identify and address top risk factors and mitigate potential crashes and crash severity.	A detailed crash analysis will be conducted to identify top crash locations and causes.
Responsive, Hot Spot Planning	A map of the community's fatal and serious injury crash locations is developed, regularly updated, and used to guide priority actions and funding.	The mapped data will help inform project prioritization and will be used in the prioritization of improvements.
Comprehensive Evaluation and Adjustments	Routine evaluation of the performance of all safety interventions is made public and shared with decision makers to inform priorities, budgets, and updates to the Vision Zero Action Plan.	MetroPlan Orlando will take the lead on updating crash data in a safety dashboard annually and reevaluating the high injury network every 3 to 5 years.

Note: The elements noted in *blue italics* directly relate to Stakeholder and Public Engagement.
Source: Vision Zero Network, 2023

Stakeholder Engagement Strategies

The City of Winter Garden will identify representatives from local agency staff and safety partners to take part in a Local Agency Working Group. **Local Agency Working Group meetings** will be organized around the topics of Vision Zero and Safe Systems Approach, Community Crash Profiles, Policy Assessment and Countermeasures, and Priority Projects. Members of the Working Group may also participate in the following:

- **Stakeholder conversations** with stakeholders that may not be in the Working Group.
- **Presentations to City Boards and Commissions** will provide opportunities for feedback from jurisdictional leaders as the plan progresses to ensure political support.

The City of Winter Garden will reach out to residents and business owners using the following tools:

- **Post project materials** and a link to the Regional Safety Dashboard with local safety information on the **City's website**; this will provide access to the regional feedback map and online survey.
- Have a project information booth at up to two local community events or other venues where large groups of people are expected. These **Pop-up Events** will host engaging and interactive activities to inform, educate and receive feedback.

Within the Action Plan, a summary of public engagement activities and feedback received throughout the process will be provided, as well as a summary of how that feedback was incorporated into the plan. Additional information about stakeholder and public engagement strategies is provided in **Table 2** and a schedule is provided in **Table 3**.

Table 2 | Stakeholder and Public Engagement Strategies

Strategy	Description	Goal	Considerations
Working Group	The working group will include staff from key departments that have responsibility for some aspect of the transportation system, with periodic feedback from elected officials.	Obtain feedback on plan analyses and materials as they are prepared to understand concerns and perspectives of others in the local jurisdiction.	The consultant team will lead four Working Group meetings.
Project Website	A project link on the City's website that can be linked to the MetroPlan Orlando SS4A site developed for the project.	Website can serve as a landing page for project materials, links to resources, and links to on-line mapping and survey.	MetroPlan Orlando is developing a regional website which includes a Crash Database with information for all jurisdictions in the region, online mapping tool, and online surveys. The City can use their local website to host local documents and link to the regional website for additional information.
Pop-up Event	Host engaging and interactive activities at key community locations. Examples could include a sidewalk pop-up with a community input activity adjacent to a park or in a major pedestrian serving commercial area.	Reach people where they are and reach those who are not typically engaged in the planning process.	The consultant team will attend up to two pop-up events.
Social Media Posts	A series of project branded social media posts, including a variety of materials and messages, posted on the City's social media platforms.	Reach people through social networks, encourage residents to share with their social network.	Using a diversity of platforms to maximize reach. The City can consider posting on social media platforms about the project.
Passive Engagement Opportunities	Passive engagement opportunities such as flyers at community centers and libraries, social media posts directing the public to the project website, branded comment boxes that allow community members to submit their concerns, sidewalk decals/stickers temporary installed at high pedestrian generator locations.	Meet people where they are and provide project information.	The consultant team will develop a flyer describing overall project goals and links to the website for the City.

Source: MetroPlan Orlando, 2023

Table 3 | Stakeholder and Public Engagement Schedule

Strategy	October	November	December	January	February	March	April	May	June
Kick-Off Meeting									
Working Group #1: Vision Zero & Safe Systems Approach									
Working Group #2: Community Crash Profiles									
Working Group #3: Policy Assessment & Countermeasures									
Working Group #4: Priority Projects									
Project Website									
Pop-up Events									
Social Media Posts									
Passive Engagement Opportunities									
Regional Online Mapping									



CHAPTER 9

Technical Appendix

F- Local Engagement Materials



Image of Plant Street in the City of Winter Garden



Zero deaths and serious injuries on our roads is our goal



What is Vision Zero?

Vision Zero is Winter Garden's approach to eliminate traffic-related fatalities and serious injuries:

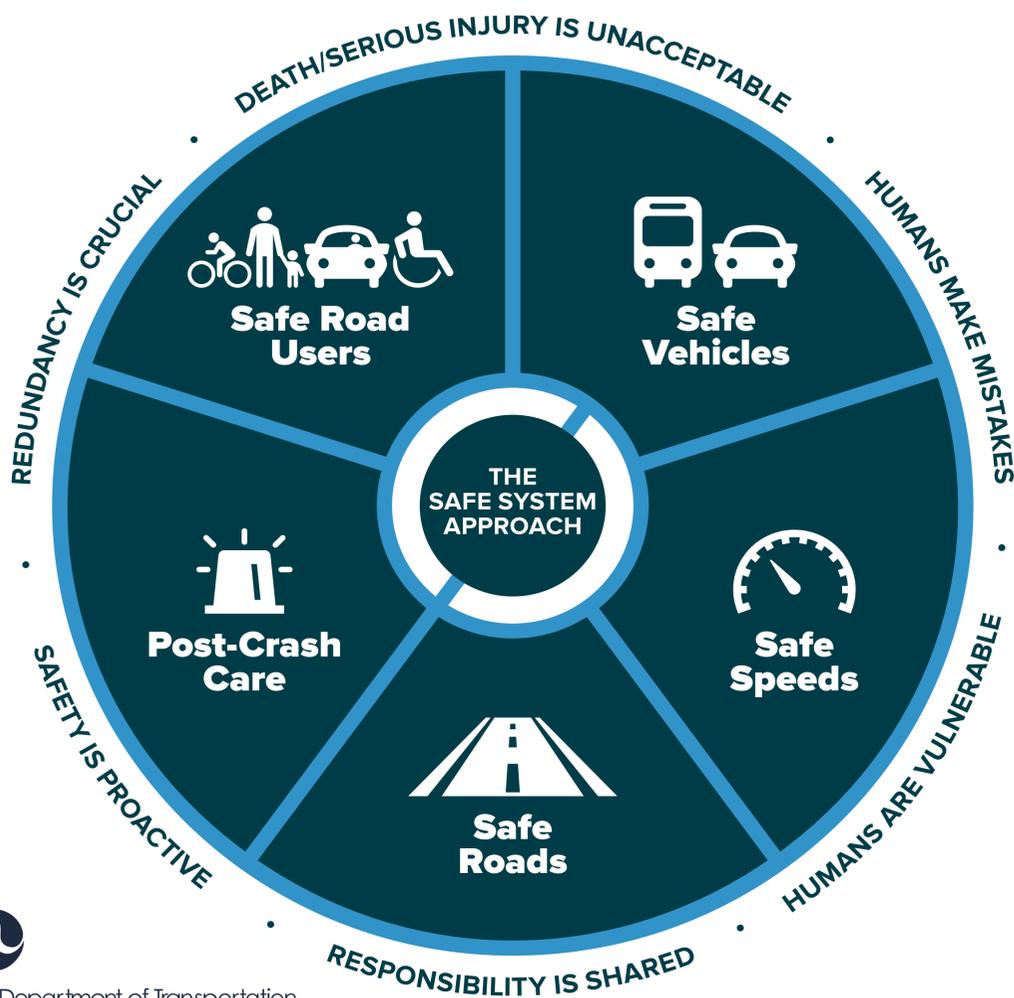
- Reframes traffic deaths as **preventable**.
- Integrates **human failings** into the approach.
- Focuses on preventing **fatal and severe crashes** rather than eliminating all crashes.
- Aims to establish **safe systems** rather than relying on individual responsibility.
- Applies **data-driven** decision making.
- Establishes road safety as a **social equity issue**.

What are we doing?

Developing a Comprehensive Safety Action Plan to eliminate traffic related fatalities and serious injuries.

- Data-driven analysis to identify the High Injury Network, which is where serious and fatal crashes are occurring.
- Public outreach to identify issues and possible solutions.
- Recommendations to reduce serious and fatal crashes, including:
 - Systemic countermeasure to reduce crashes
 - Specific road projects to reduce crashes
 - Actionable, measurable strategies and policy changes

Elements of a Vision Zero Plan




U.S. Department of Transportation
Federal Highway Administration

Questions?

Contact information:

Kelly Carson: kcarson@cwdgn.com

Sarah Larsen: sarah.larsen@metroplanorlando.gov

Ryan Mansfield: rmansfield@kittelton.com

Help us develop a vision zero plan so we can all travel safely!



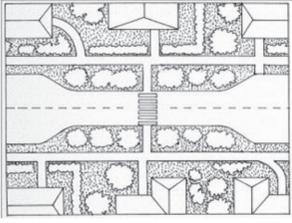
Visit our interactive map to identify existing safety problems or tell us how you would improve the city streets



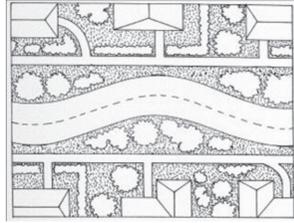
Visit the Vision Zero Website to learn more

Traffic Safety Toolbox

Speed Management



Chokers



Chicanes



Bike Lanes



Crosswalks



Traffic Signals



Lighting



Roundabouts



Raised Crosswalks



Rumble strips

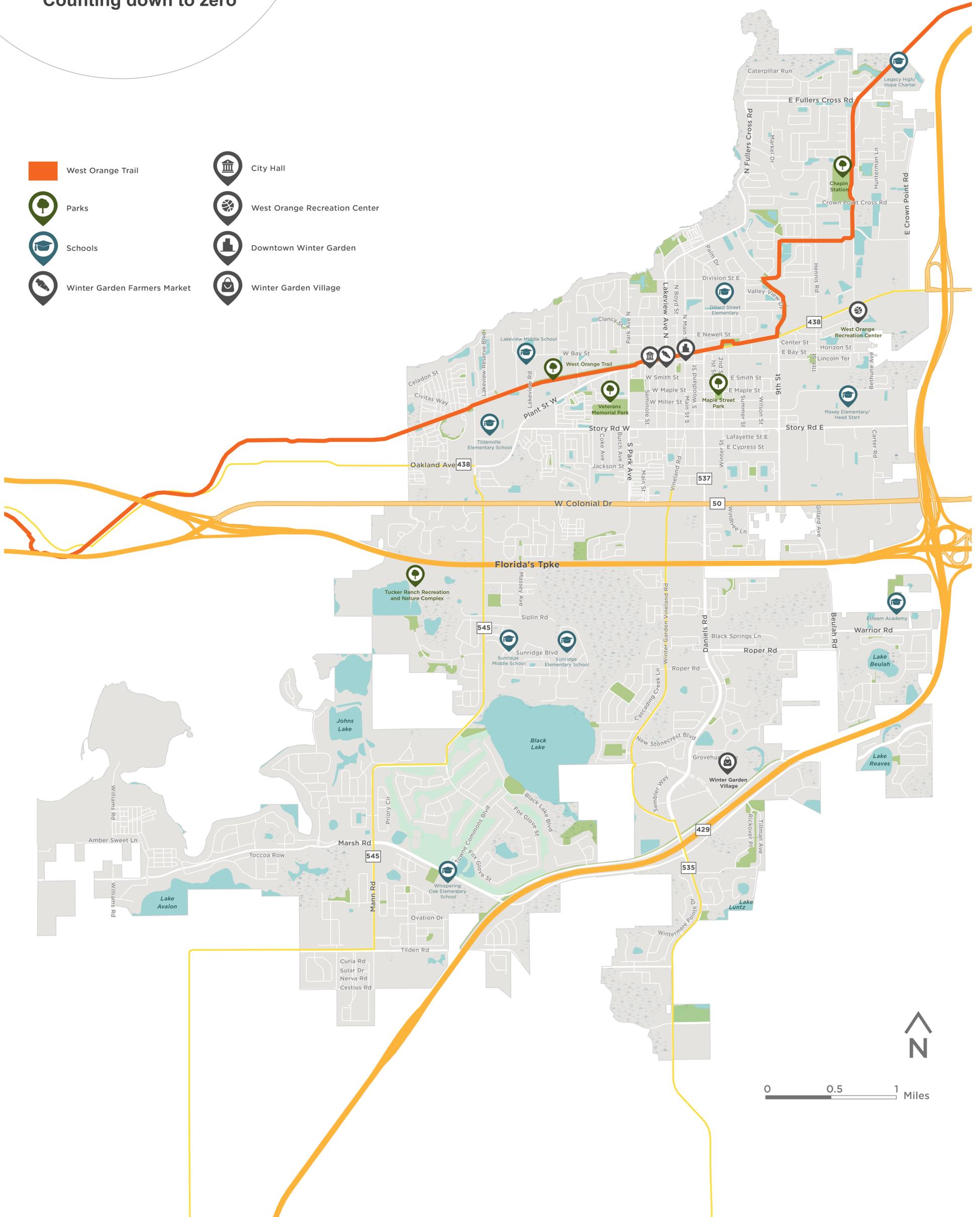


WINTER GARDEN

VISION ZERO

Counting down to zero

-  West Orange Trail
-  Parks
-  Schools
-  Winter Garden Farmers Market
-  City Hall
-  West Orange Recreation Center
-  Downtown Winter Garden
-  Winter Garden Village



Zero deaths and serious injuries on our roads is our goal



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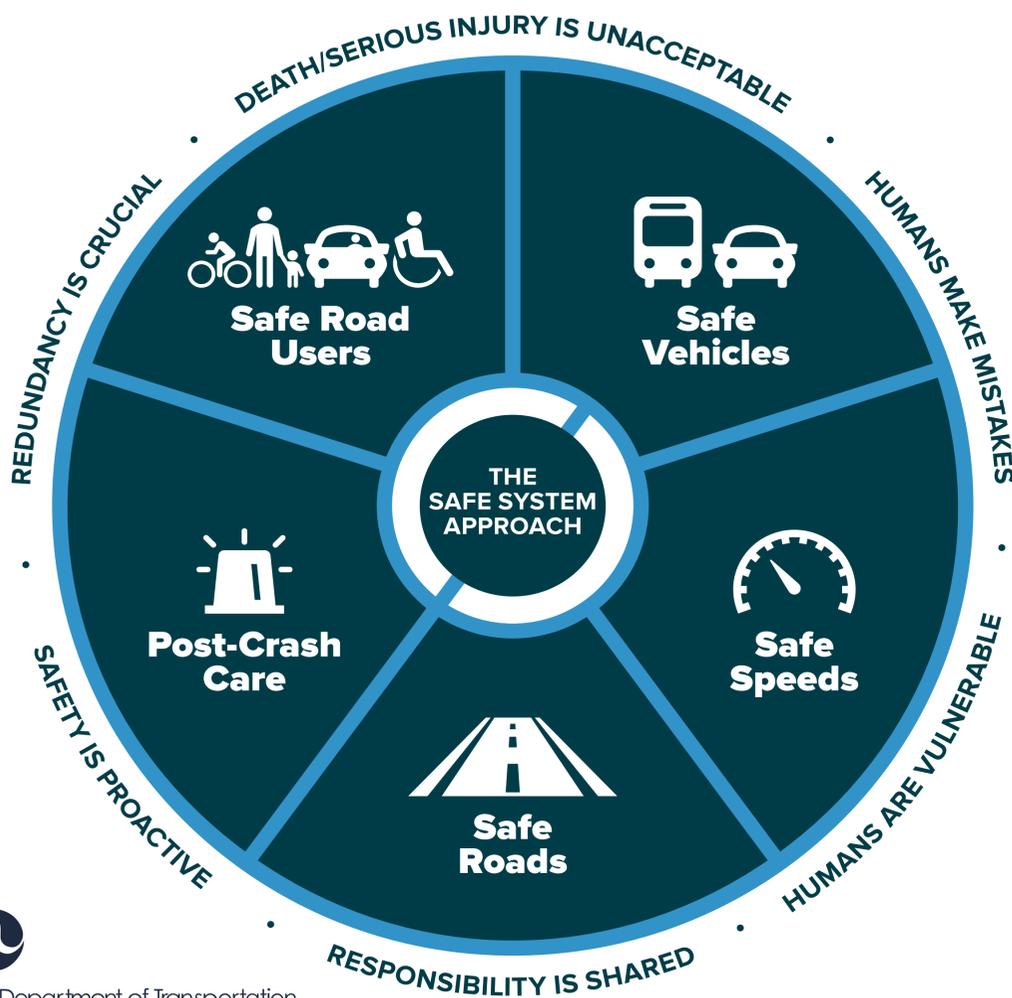
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Elements of a Vision Zero Plan



U.S. Department of Transportation
Federal Highway Administration

Questions?

Contact information:

Sarah Larsen: sarah.larsen@metroplanorlando.gov

Ryan Mansfield: rmansfield@kittelsohn.com

Help us develop a vision zero plan so we can all travel safely!



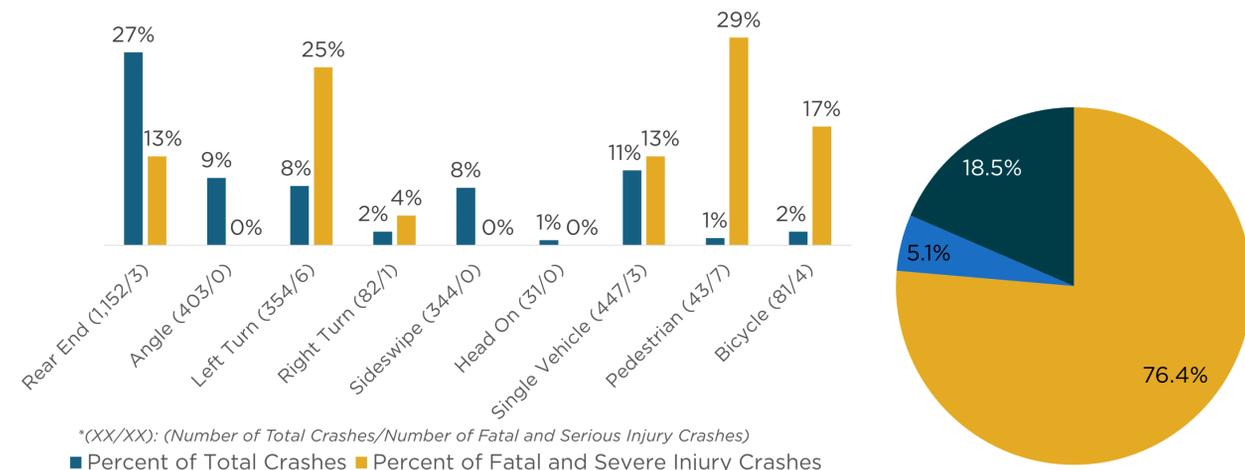
Visit our interactive dashboard to observe local crash trends



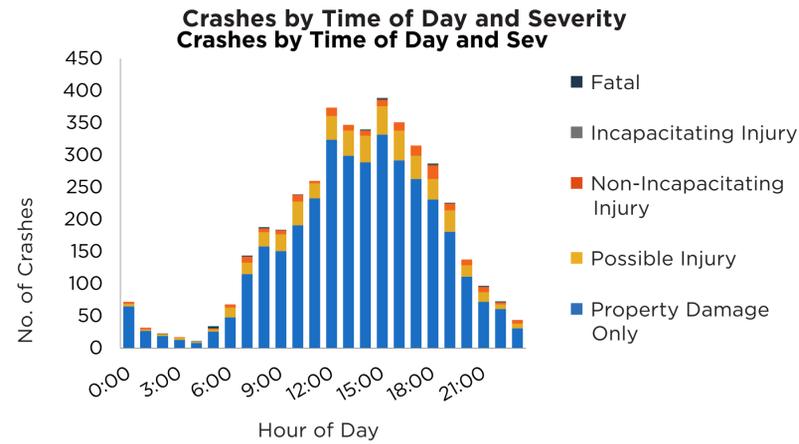
Visit the Vision Zero Website to learn more

Crash Summary | 2018-2022

Winter Garden | 24 Fatal and Severe Crashes



*(XX/XX): (Number of Total Crashes/Number of Fatal and Serious Injury Crashes)
 ■ Percent of Total Crashes ■ Percent of Fatal and Severe Injury Crashes



33% of serious injury and fatal crashes involved distracted driving

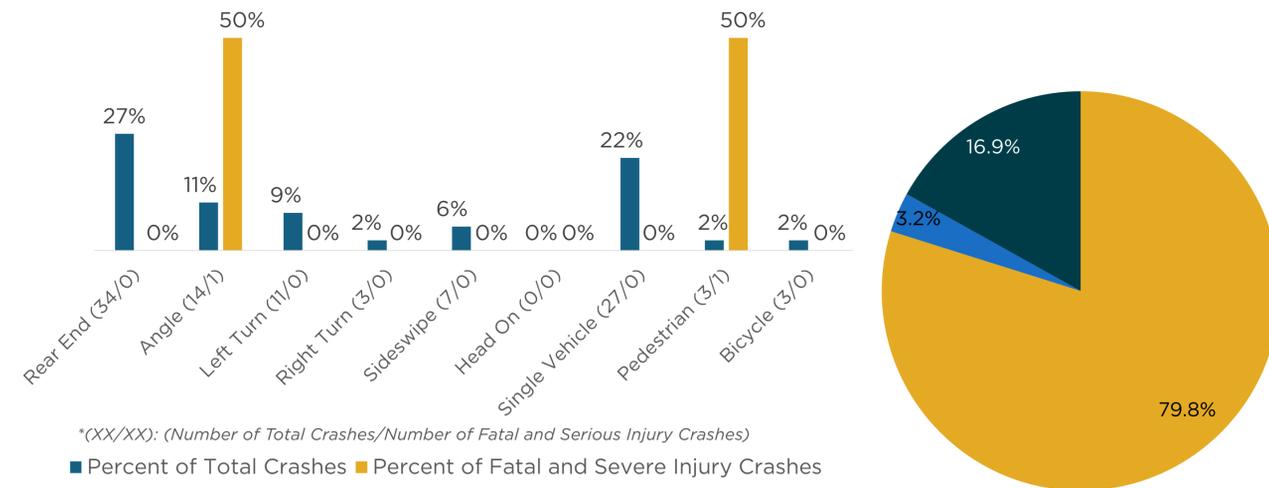


46% of serious and fatal injury crashes involved pedestrians and bicyclists

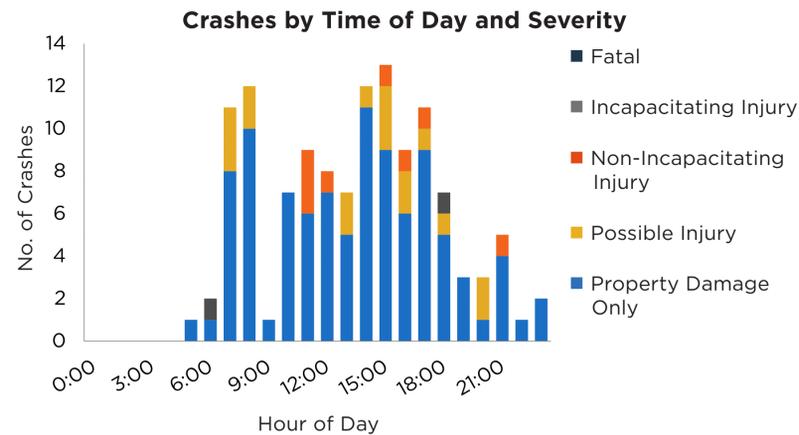


100% of fatal crashes occurred on roadways posted at 35 mph or above

Oakland | 2 Fatal and Severe Crashes



*(XX/XX): (Number of Total Crashes/Number of Fatal and Serious Injury Crashes)
 ■ Percent of Total Crashes ■ Percent of Fatal and Severe Injury Crashes



0% of serious injury crashes involved distracted driving



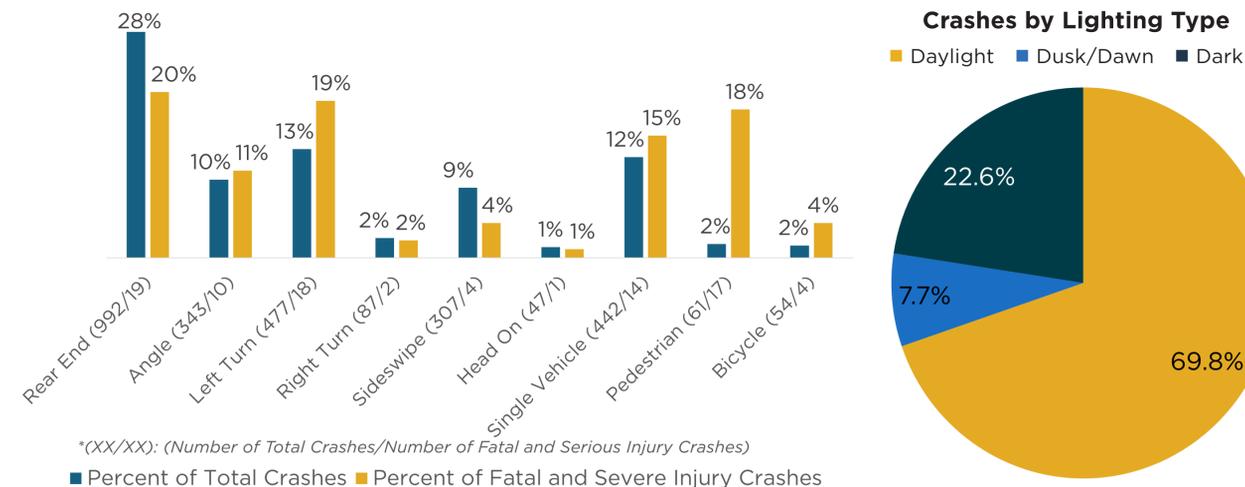
50% of serious injury crashes involved pedestrians



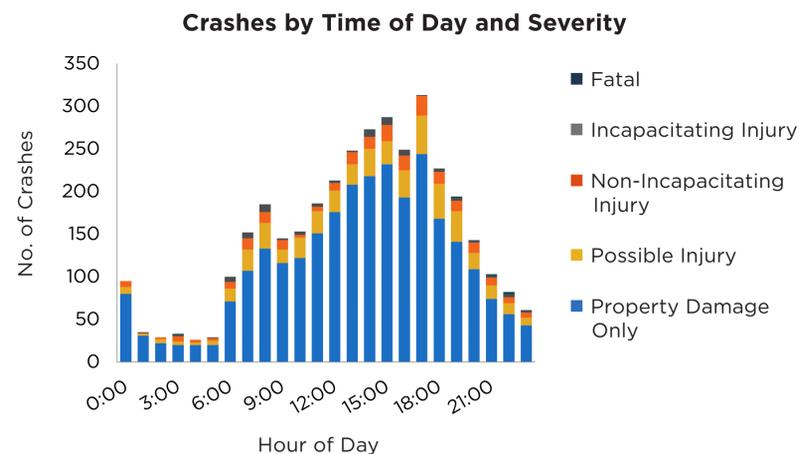
50% of serious injury crashes occurred on roadways posted at 35 mph or higher

**No fatal crashes occurred from 2018-2022 in Oakland*

Ocoee | 89 Fatal and Severe Crashes



*(XX/XX): (Number of Total Crashes/Number of Fatal and Serious Injury Crashes)
 ■ Percent of Total Crashes ■ Percent of Fatal and Severe Injury Crashes



26% of serious injury and fatal crashes involved distracted driving



30% of fatal crashes involved pedestrians



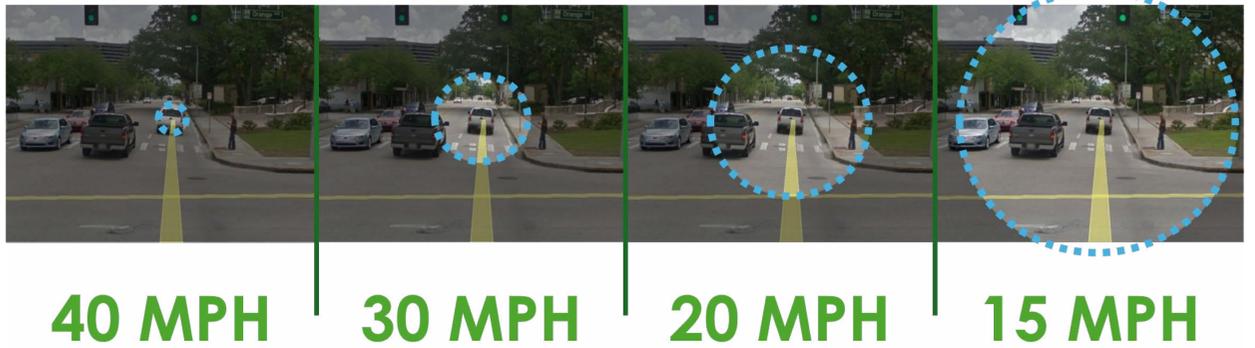
90% of fatal crashes occurred on roadways posted at 35 mph or higher

Oakland



Higher Speed Risks and Countermeasures

Speed Influences Drivers' Cone of Vision

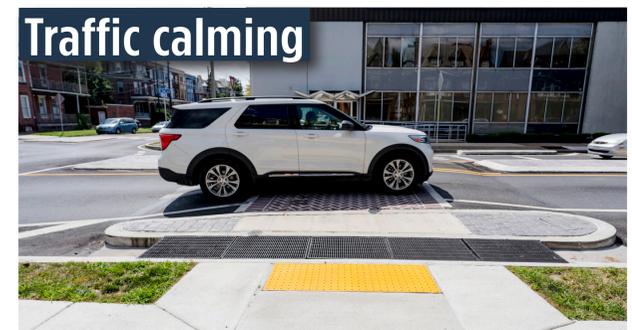


Pedestrian's Risk of Death or Serious Injury



Countermeasures you would like to see

Vote for Intersection and Corridor Potential Countermeasures



Vote for Pedestrian/Bicycle Potential Countermeasures



High Injury Network

Municipality	% of Severe Injury Crashes Covered by the High Injury Network	% of Fatal Crashes Covered by the High Injury Network
Town of Oakland	100%	N/A*
City of Winter Garden	59%	86%
City of Ocoee	54%	100%

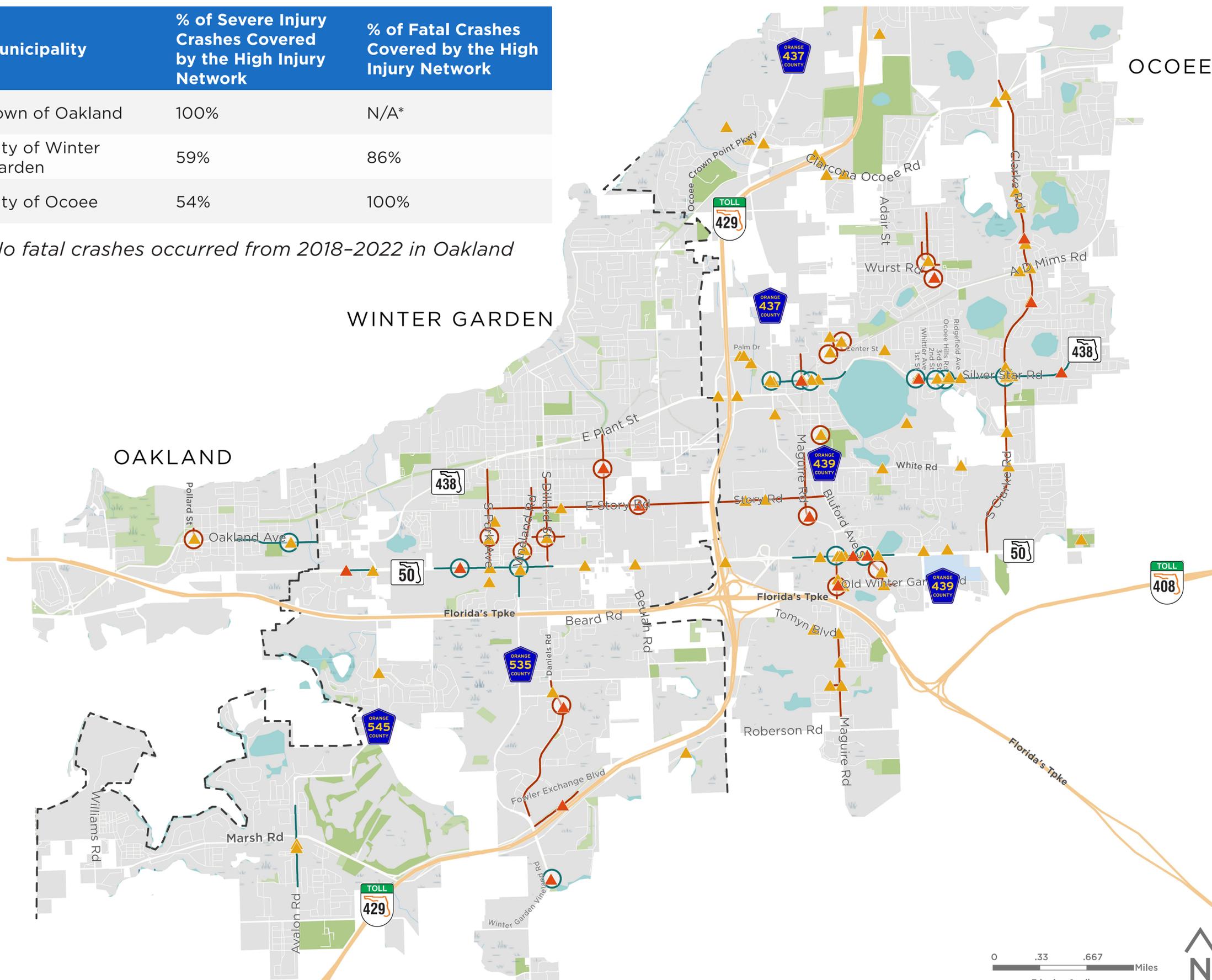
*No fatal crashes occurred from 2018-2022 in Oakland

LEGEND

- State and County Road High Injury Network
- Local Road High Injury Network
- State and County Road High Injury Network Intersection
- Local Road High Injury Network Intersection
- Fatal Crash
- Severe Injury Crash
- City/Town Boundary

The High Injury Network is a collection of roadways where a disproportionate number of fatal and severe injury crashes occur.

Focusing efforts on these roadways can have a large impact on reducing severe injuries and fatalities on our roadway system.



Elected Officials Guide



VISION ZERO

CENTRAL FLORIDA

Counting down to zero traffic deaths

Why We Need Vision Zero



More people die on Central Florida roads each year, outpacing even the rapid population growth in our region. Traditional ways of addressing transportation safety clearly are not working, and we need a culture shift. **The good news is we can eliminate traffic deaths**, if we make safety a part of all we do. Vision Zero is a global movement to end traffic deaths and serious injuries by taking a systemic approach to road safety. Traffic deaths and injuries are unacceptable -- and preventable. **We CAN reach our goal of zero deaths** and serious injuries, if we all work together. As elected officials, you have an important role. This guide offers background data, along with some ways you can help Central Florida get to zero.

In Our Region

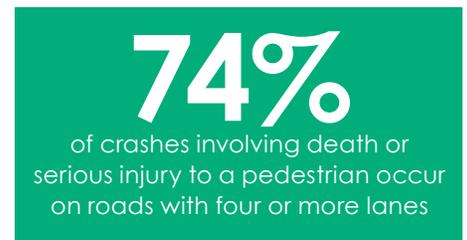
CRASHES ON HIGH-SPEED ROADS



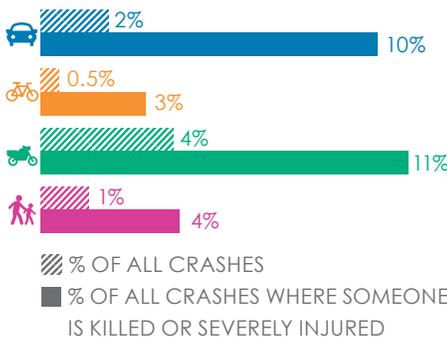
LATE NIGHT CRASHES



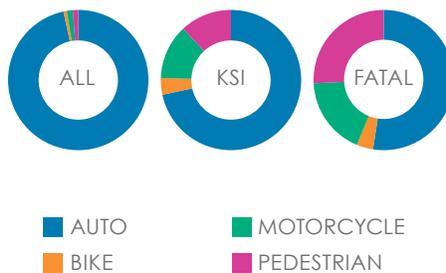
CRASHES ON MULTI-LANE ROADS



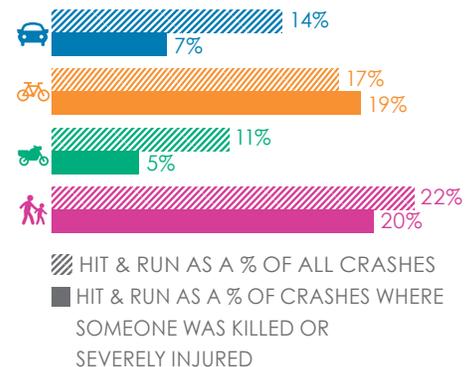
ALCOHOL-INVOLVED CRASHES



ALL CRASHES BY MODE



HIT AND RUN CRASHES



How Vision Zero Approaches Crashes

TRADITIONAL APPROACH

- Traffic deaths are inevitable
- Human behavior needs to be perfect
- We should prevent all crashes
- Individual responsibility is the key to saving lives
- Incorporating safety improvements is too expensive



VISION ZERO APPROACH

- Traffic deaths are preventable
- Plans should anticipate human mistakes
- We should concentrate on preventing fatal and severe crashes
- A safe systems approach is the key to saving lives
- Eliminating deaths and serious injuries is not expensive

Your Role as an Elected Official



How do we get to Vision Zero?

Vision Zero is **holistic and includes a variety of strategies**, including behavior, infrastructure, legislative, and policy changes.

Vision Zero evaluation **establishes a high injury network (HIN)** where most serious crashes happen and identifying root causes of crashes that may be infrastructure or behavior based.

Vision Zero also **identifies short-term fixes and strategies** where they're most needed, along with long-term projects that will transform infrastructure.

What is your part in the solution?

You are a community influencer. Share the Vision Zero message with the media, your constituents, community groups and at community events and encourage people to tell their stories.

You set local policy and strategic direction. Actively participate in creation of your jurisdiction's plan and look for ways to infuse Vision Zero into all actions (ordinances, development review, long range plans, etc.).

You can advocate at the state level for legislative changes that will give local governments more tools in the safety toolbox.

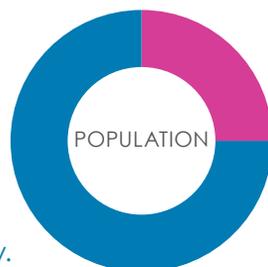
Different Populations Face Different Impacts

Constituents in your community may face the effects of crashes in very different ways or more profoundly than others, leading to social equity issues which elected officials should be prepared to address. One way to understand this issue is through the lens of **transportation disadvantaged communities**, which are designated through consideration and analysis of many factors, including poverty rates, motor vehicle ownership, and access to destinations.

Although only

25%

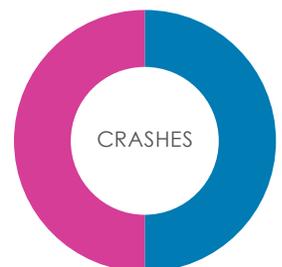
of the regional population lives in a designated transportation disadvantaged community.



Almost

50%

of all crashes and 54% of fatal crashes occur within or adjacent to these communities.



Tools to Help You Support Safety



Hub Site

View local crash statistics for your jurisdiction and see who the contact person is for your Vision Zero Action Plan: visionzerocfl.gov



Fact Sheets and Communication Tools

Download studies, one-pagers, and other tools for the region at-large and for each county: visionzerocfl.gov/pages/project-resources

What Is Vision Zero Central Florida & Why Do We Need to Take Action?

Every week, 5 people die and 35 people are seriously injured in Central Florida crashes. Vision Zero is an international movement to reach zero traffic fatalities.

Vision Zero Central Florida's goal is simple: saving lives. Zero traffic deaths. Everyone should be able to travel safely around Central Florida without the fear of death or serious injury.

This coordinated planning effort led by MetroPlan Orlando in partnership with local agencies will result in a comprehensive Vision Zero Safety Action Plan for our three-county region (Orange, Osceola, Seminole), as well as additional action plans tailored for each county and city.

This work is being funded by a \$3.79 million Safe Streets and Roads for All federal grant.

What will the Vision Zero Safety Action Plan include?

The regional plan and each county or city action plan will include the following:

- High Injury Network: Analyzing data to identify

3-COUNTY REGION (2018-2022)

Safety Videos

Understand the perspectives of locals impacted by crashes, and learn what we can do next as a region: youtube.com/@metroplan_orlando



Story Sharing

Encourage constituents to share personal stories online of loss or survival: drivingdownheartache.org/

Share Your Story

Have you been personally affected by a traffic crash? The statistics on this website aren't just numbers. Each crash is a traumatic experience. Individuals and families endure long-lasting pain and heartache, especially those who suffer serious injury or the death of a loved one.

Vision Zero Central Florida is partnering with a memorial site called DrivingDownHeartache.org to honor people whose lives are forever changed by traffic crashes. If you're ready and willing to share your story of loss or survival, we encourage you to visit DrivingDownHeartache.org to add an entry.

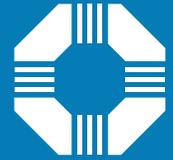
QUESTIONS?

MetroPlan Technical Project Manager: Mighk Wilson - Mighk.Wilson@MetroPlanOrlando.gov

MetroPlan Community Outreach Strategist: Mary Ann Horne - MaryAnn.Horne@MetroPlanOrlando.gov

General Inquiries: VisionZeroCFL@MetroPlanOrlando.gov

Take Action



VISION ZERO
CENTRAL FLORIDA
Counting down to zero traffic deaths



Step Up as a Safety Champion

Commit to supporting the **Vision Zero principles** for eliminating traffic deaths and serious injuries by the year 2050. More information is provided on the next page and at <https://visionzeronetwerk.org/>

Learn more about safety by attending a Vision Zero **speaker series webinar**. More information is provided at <https://www.visionzerocfl.gov/pages/project-resources>

Familiarize yourself with the parts of your jurisdiction that lie within or close to the **High-Injury Network**.

Promote traffic safety to your constituency through email messages, newsletters, social media, speaking engagements, etc.

Support your jurisdiction's Vision Zero Resolution and **Vision Zero Action Plan**.

Pledge to use the word crash or collision **instead of Accident**.

Familiarize yourself with the Vision Zero Action plan for **the entire region**.



Be a Voice for Change

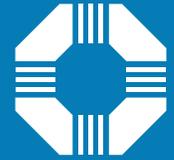
Support a **Vision Zero event** sponsored by MetroPlan Orlando or your local jurisdiction – or organize one of your own!

Hold conversations with residents about the fundamentals and benefits of Vision Zero – particularly among underserved communities along the High Injury Network.

Submit a **guest column** to your community paper or other local media outlet.

Incorporate **Vision Zero messages** when you speak to community groups.

More About Vision Zero



VISION ZERO
CENTRAL FLORIDA
Counting down to zero traffic deaths

DEFINITION

Vision Zero is an international movement to reach zero traffic fatalities. Vision Zero Central Florida's goal is simple: saving lives. Zero traffic deaths. Everyone should be able to travel safely around Central Florida without the fear of death or serious injury.

Vision Zero recognizes that humans make mistakes and therefore the transportation system should be designed to minimize the consequences of human error. The Vision Zero approach is fundamentally different from the traditional traffic safety approach in American communities in

six key ways.

SOURCE: VISION ZERO NETWORK

1 Reframes traffic deaths as **preventable**.

2 Integrates **human failing** into the approach.

3 Focuses on preventing **fatal and severe crashes** rather than eliminating all crashes.

4 Aims to establish **safe systems** rather than relying on individual responsibility.

5 Applies **data driven** decision making - using facts and metrics to guide strategic choices aligned with goals.

6 Establishes road safety as a **social equity issue**, identifying the need for improved impartiality, fairness and justice.

How Speed Affects Traffic Crashes



SPEED IS A FUNDAMENTAL PREDICTOR OF CRASH SURVIVAL.

IF HIT BY A PERSON DRIVING AT...



DEATH RISK
10%



DEATH RISK
50%



DEATH RISK
90%

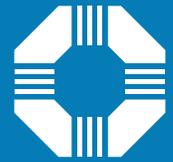
RESEARCH SHOWS

Increasing vehicle speeds from **20 MPH** to **40 MPH** increases the likelihood of a pedestrian death when hit from **10%** to **90%**.

Lower speeds increase a driver's [field of vision] and allow for more time to react to unexpected situations in the road.

SOURCES: PROPUBLICA, VISION ZERO NETWORK

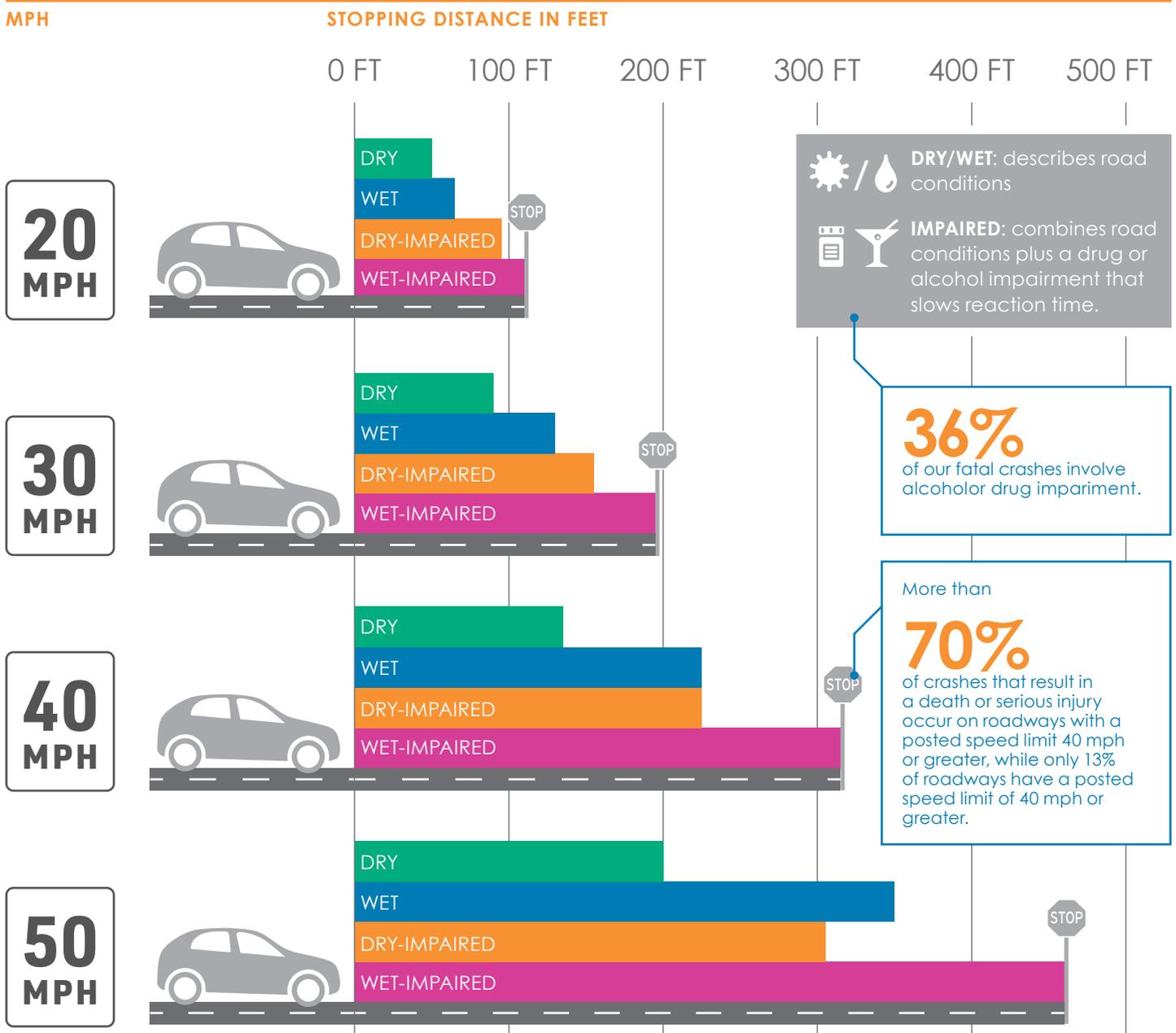
Vehicle Stopping Distances

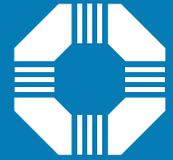


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CONDITIONS PLUS SPEED IMPACT CHANCE OF CRASH.

Depending on speed and roadway conditions, the distance needed to fully stop and prevent a crash can vary. Note that this distance includes perception or reaction time; actual distances will also vary based on the type of vehicle and its condition.





All too often our news media and crash reporting refer to **preventable crashes as accidents**. This word choice implies that nothing could have been done to prevent a crash.

Let's commit to using the word "crash" or "collision" not "accident" to acknowledge that roadway crashes can be systematically addressed as the reality is that we can prevent these tragedies by taking a proactive, preventative approach which prioritizes transportation safety as a public health issue.

Changing How We Speak Based on the Data

Research conducted at the University of South Florida¹ related to framing of media reports in bicycle crashes found that news reports:

"...largely functioned to **remove blame from the motorist** and to highlight the bicyclist's actions. These linguistic strategies reflect the **assumption that responsibility for safety rests on the bicyclist** and detracts attention from potential social policy reform that would lead to fewer bicyclist fatalities."

Rethinking Traditional Approaches

"Before the labor movement, factory owners would say 'it was an accident' when American workers were injured in unsafe conditions.

Before the movement to combat drunk driving, intoxicated drivers would say 'it was an accident' when they crashed their cars.

Planes don't have accidents. They crash. Cranes don't have accidents. They collapse. And as a society, we expect answers and solutions."²

¹ [HTTPS://JOURNALS.SAGEPUB.COM/DOI/ABS/10.1177/0361198119839348](https://journals.sagepub.com/doi/abs/10.1177/0361198119839348)

² [HTTPS://CRASHNOTACCIDENT.COM/](https://crashnotaccident.com/)

Vision Zero Key Terms



High Injury Network (HIN) A collection of streets where a disproportionate number of crashes that result in someone being killed or severely injured (KSI) occur.

KSI An acronym that refers to crashes where someone was killed or suffered a serious injury.

Safe System Approach The Safe System approach aims to eliminate death and serious injuries for all roadway users. It takes a holistic view of the transportation system that anticipates human mistakes and seeks to keep impacts of crashes at levels the human body can withstand.

Serious Injury Crash A crash that results in severe laceration, broken or distorted extremities, crush injuries, significant burns, unconsciousness when taken from crash scene, suspected skull, chest, or abdominal injury or paralysis.

Signal Four Analytics Source of crash data for the region, based on data received from the Florida Department of Highway Safety and Motor Vehicles (FLHSMV). Also known as Signal4.

SS4A The Bipartisan Infrastructure Law (BIL) established the Safe Streets and Roads for All (SS4A) discretionary program with \$5 billion in appropriated funds over 5 years, 2022-2026. The SS4A program funds regional, local, and Tribal initiatives through grants to prevent roadway deaths and serious injuries. Preparation of this plan is funded with a \$3.79 million SS4A grant.

Underserved Community As defined by the USDOT, disadvantaged communities experience a disproportionate burden as a result of underinvestment in transportation, based on the following five components: Transportation Insecurity, Climate and Disaster Risk Burden, Environmental Burden, Health Vulnerability, and Social Vulnerability.

Vision Zero A strategy to eliminate all traffic fatalities and severe injuries, while increasing safe, healthy, equitable mobility for all.

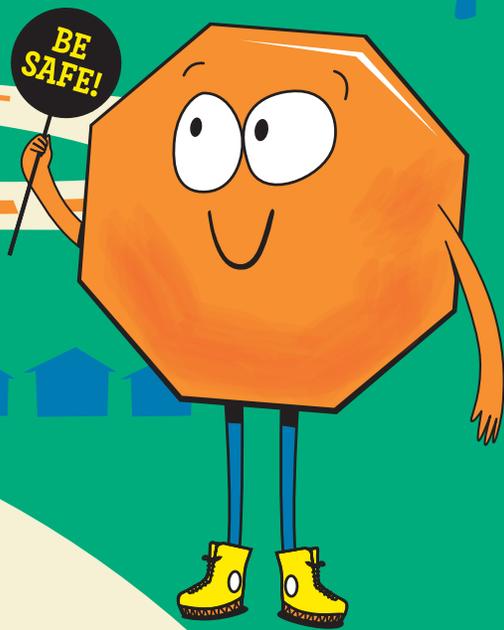
Vulnerable Road User (VRU) A term used to describe those unprotected by an outside shield as they sustain greater risk of injury in any crash with a vehicle, e.g., people walking, people bicycling and people motorcycling.



Path to Safety

Central Florida

A Transportation Activity Book



BE SAFE!

BROUGHT TO YOU BY:



metroplan orlando
A REGIONAL TRANSPORTATION PARTNERSHIP



VISION ZERO
CENTRAL FLORIDA

Keep Our
Region

Safe

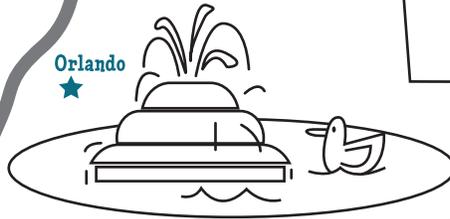
ZERO Traffic Deaths

★ Sanford

EIOE
COUNTY

RNE
COUNTY

★ Orlando



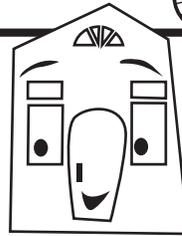
Go
Slow

No One
Gets Hurt

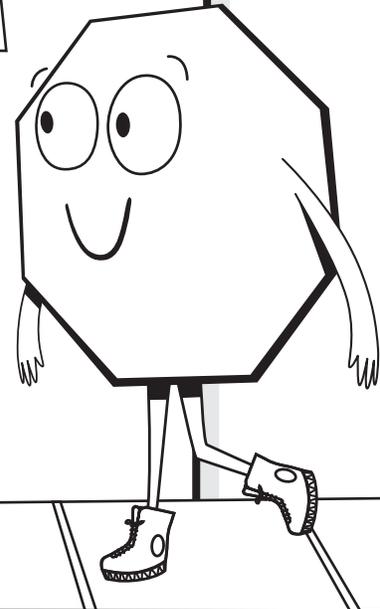


★ Kissimmee

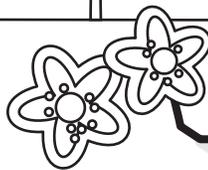
OCOA
COUNTY



Avoid Crashes



Look
Both Ways



Vision Zero:

Let's All Do Our Part for Safety

Everybody in Central Florida is going somewhere, and we all want to arrive safely. Nobody should die or get badly hurt just trying to get around - even if they make a mistake. This is what we mean by **Vision Zero**: Zero deaths or serious injuries on our roads.

To do this we need vehicles, drivers, and roads that are all as safe as possible. We are all responsible for making sure that everyone stays safe -- whether we are driving, walking, riding a bicycle, or zipping along on a scooter. This book will show you some ways you can be a Vision Zero Hero and make Central Florida safer.



What do these signs mean?

Have you ever seen one of these beside the road? It is called a memorial marker.

These round signs say "DRIVE SAFELY" and then the name of a person who died in a traffic crash. Sometimes there are flowers or other things near them. Memorial markers are put there by people who want us to know about and remember loved ones who died on the roads - and to ask us all to be careful.



Can you do the safety math?



A crash happens about every 8 minutes in Central Florida.

How many crashes happen in an hour?*

(Hint: 1 hour = 60 minutes)
60 minutes \div 8 minutes = _____
(# of crashes per hour)

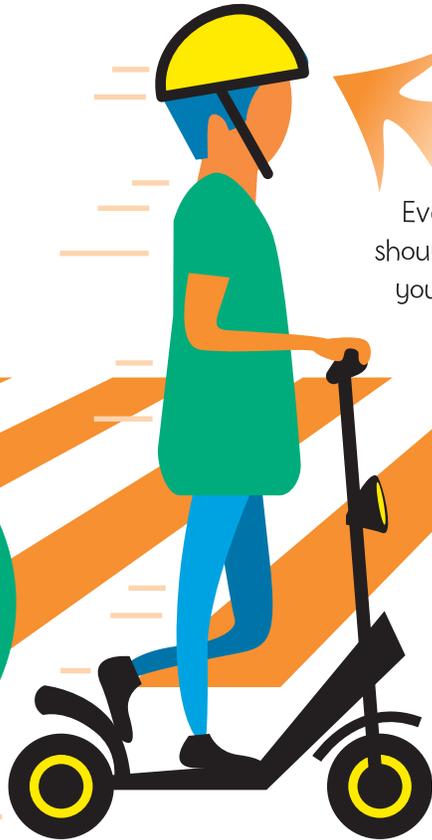
How many crashes happen in a day?***

_____ (# of crashes in an hour)
X 24 hours in a day = _____
(# of crashes in a day)



Build **Good** Safety

Pay Attention to What You're Doing



Helmets

Everyone who rides a bike or scooter should wear a good-fitting helmet, and if you are younger than 16, **it's the law.**

Face it:

Your head is no match for the pavement on the road or sidewalk. If you fall, you'll get hurt.

Fill in the Box

How can you pay more attention and be safer at each of these times?

When going to school

When playing in the neighborhood

When traveling with your family

Habits Now

and What's Going on Around You

Watch the Road

You need to keep eyes and ears on the road at all times. Don't get distracted by devices or conversations. **Keep the earphones off** until you have safely arrived.



Seatbelts

Drivers and passengers must buckle up on the road -- no matter how short the trip or where you sit in the vehicle. When crashes happen, **your seatbelt can save your life**. Many people who aren't wearing seatbelts when a crash happens get badly injured!



Safety is important for **everyone** — everywhere we go. Even before you learn to drive, you need to know how to stay safe when walking or riding a bicycle, skateboard or scooter.

Safety

It's Our #1 Priority

Identify & match the traffic sign graphic

Draw a line from the picture to the matching definition.

1.  **STOP**
 Stop, and look both ways. Continue only when safe.

2.  **YIELD**
 Slow down. Be ready to stop for other traffic.

3.  **WALK**
 You can cross the street in this direction.

4.  **DON'T WALK**
 Don't cross yet. Wait for a "Walk" signal.

5.  **RAILROAD CROSSING**
 Tracks are nearby. Watch for trains, and stay clear.

Word Search

See if you can find these words in the puzzle:

- CAUTION
- HELMET
- YIELD
- CROSS
- LIGHT
- GUARD
- SIGNAL

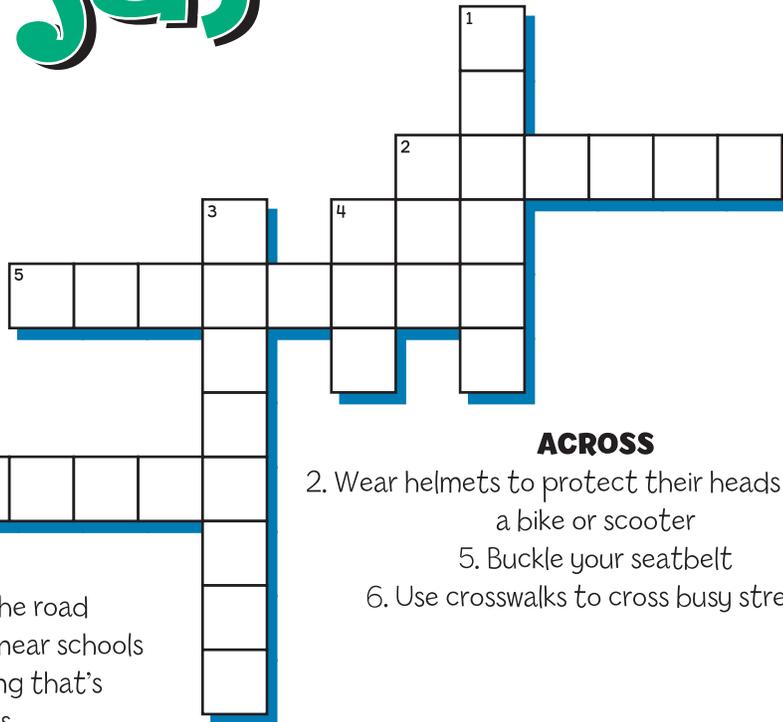
H	E	D	U	T	G	L	N
L	E	X	L	U	I	O	S
I	L	L	A	E	I	S	S
G	I	R	M	T	I	R	O
H	D	W	U	E	P	Y	R
T	Q	A	C	Q	T	L	C
U	C	S	I	G	N	A	L

Who Does This to Stay Safe?

Use the clues to fill in the words on the puzzle

Look for:

CROSSING RIDERS
 DRIVER WALKERS
 EVERYONE YOU



DOWN

1. Obey the speed limit on the road
3. _____ guards stop traffic near schools
4. Pay attention to everything that's happening at all times

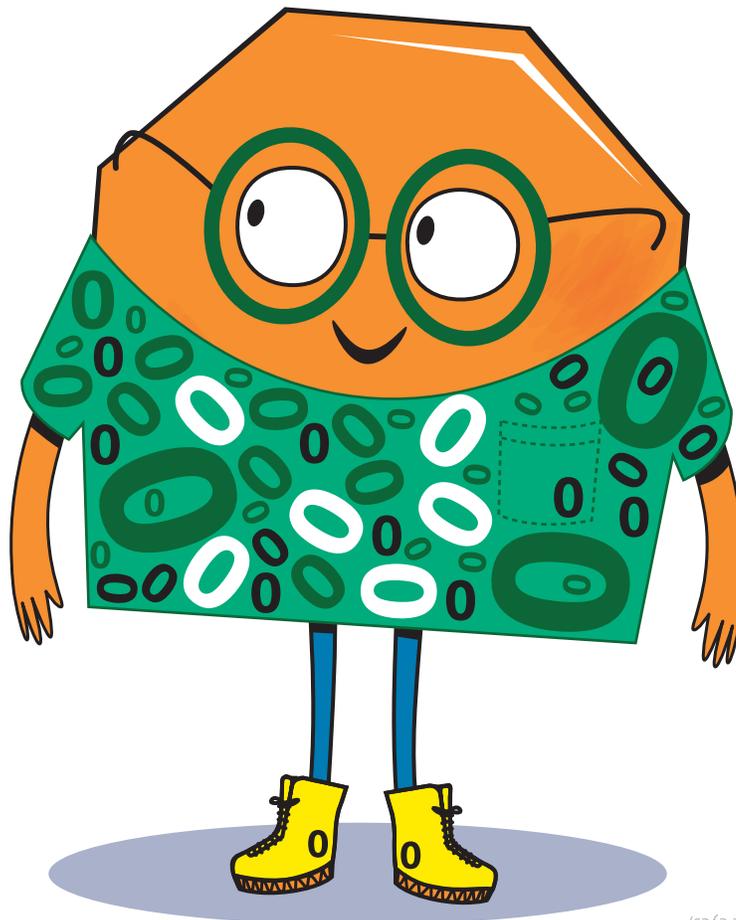
ACROSS

2. Wear helmets to protect their heads when on a bike or scooter
5. Buckle your seatbelt
6. Use crosswalks to cross busy streets

Answers: Driver; 2. Riders; 3. Crossing; 4. You; 5. Everyone; 6. Walkers

Count The Zeros

Zero (0) is an important number, even though it means none. Zero (0) is our goal for traffic deaths in Central Florida - because we want none. So, always keep zero (0) in mind. How many zeros (0) can you find in this picture?



Answer: 52 zeros (not counting the eyes)



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VISION ZERO
CENTRAL FLORIDA

Contact Us



VisionZeroCFL.gov
VisionZero@MetroPlanOrlando.gov

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What Is Vision Zero Central Florida & Why Do We Need to Take Action?

Every week, 5 people die and 35 people are seriously injured in Central Florida crashes. Vision Zero is an international movement to reach zero traffic fatalities.

Vision Zero Central Florida's goal is simple: saving lives. Zero traffic deaths. Everyone should be able to travel safely around Central Florida without the fear of death or serious injury.

This coordinated planning effort led by MetroPlan Orlando in partnership with local agencies will result in a comprehensive **Vision Zero Safety Action Plan** for our three-county region (Orange, Osceola, Seminole), as well as additional action plans tailored for each county and city.



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CENTRAL FLORIDA
Counting down to zero traffic deaths



This work is being funded by a \$3.79 million Safe Streets and Roads for All federal grant.

What will the Vision Zero Safety Action Plan Include?

The regional plan and each county or city action plan will include the following:

- **High Injury Network:** Analyzing data to identify places on the transportation system with the highest risk for fatal and serious injury crashes so that we can focus on our most important problem areas.
- **Equity Component:** Identifying and prioritizing efforts in disadvantaged communities that are disproportionately affected by traffic crashes.
- **List of Priority Streets and Intersections:** Producing a list of feasible projects that have the most safety impact for the region.
- **Educational and Enforcement Programs:** Identifying key behavioral changes needed to reduce crashes and methods for encouraging those changes.
- **Sustained Effort:** Establishing a defined process and identifying an organization responsible for carrying out, updating, and monitoring progress.
- **Public Meetings:** Public engagement is a key part of the study.

Outcome: Identified projects will be included in MPO or local jurisdiction priority projects list for funding/implementation.

3-COUNTY REGION (2018-2022)

325,775 total crashes

1,466 deaths

9,500 serious injuries

WINTER GARDEN (2018-2022)

7 people were killed on our roadways, including:



3 motorist deaths



1 pedestrian deaths



1 motorcyclist deaths



2 bicyclist deaths

excludes limited access facilities

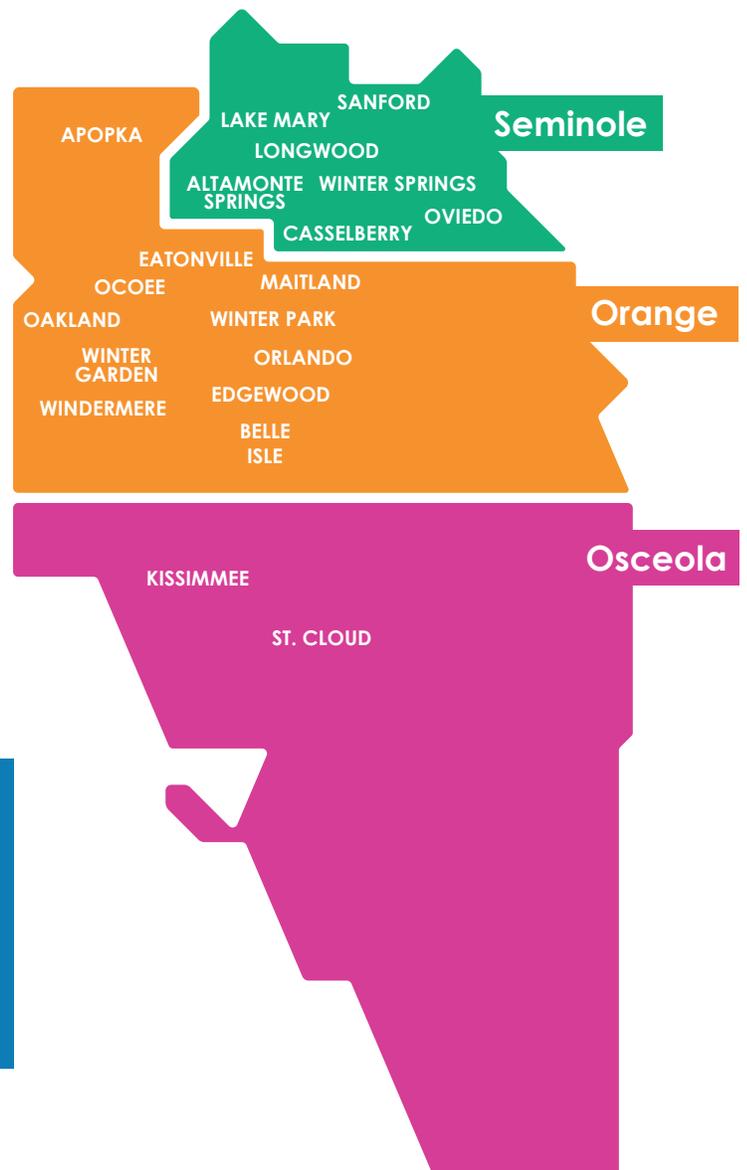
Orange County Vision Zero Action Plan Schedule



HOW CAN YOU GET INVOLVED?

This planning initiative is designed to encourage participation from all members of our region, including community leaders, residents, visitors, and people both young and old. Join us in this quest to eliminate deaths and serious injuries on Central Florida's roads.

We can make progress and save lives in the fight for safety by working together and each doing our part.



Visit our website to review crash data, learn information about the study, and find out about upcoming events:
VisionZeroCFL.gov

What is Vision Zero?

Vision Zero is Winter Garden's approach to eliminate traffic-related fatalities and serious injuries:

- Reframes traffic deaths as **preventable**.
- Integrates **human failings** into the approach.
- Focuses on preventing **fatal and severe crashes** rather than eliminating all crashes.
- Aims to establish **safe systems** rather than relying on individual responsibility.
- Applies **data-driven** decision making.
- Establishes road safety as a **social equity issue**.



Help us develop a vision zero plan so we can all travel safely!



Visit the Vision Zero website to learn more!

<https://www.visionzerocfl.gov/>

Questions?

Contact information:

Kelly Carson
kcarson@cwdgn.com

Sarah Larsen
sarah.larsen@metroplanorlando.gov

Ryan Mansfield
rmansfield@kittelton.com



CHAPTER 9

Technical Appendix

G- Working Group Meeting Notes



Image of Plant Street in the City of Winter Garden





City of Winter Garden – Vision Zero Action Plan

Working Group 1 Meeting Notes

Date: October 26, 2023

Time: 9:00 – 10:30 AM

Meeting Location: Winter Garden City Hall, 3rd Floor

Attendees:

- Kelly Carson (Winter Garden Planning Director)
- Jon Williams (Winter Garden City Manager)
- Steve Graham (Winter Garden Police Chief)
- Steve Pash (Asst. City Manager for Public Services – Winter Garden)
- Jim Monahan (Winter Garden City Engineer)
- Amy Martello (Executive Assistant to the City Manager – Winter Garden)
- Jose Gainza (Winter Garden Fire Chief)
- Jason Sartorio (MetroPlan Orlando)
- Ryan Mansfield (Kittelson & Associates)
- Patty Hurd (Kittelson & Associates)
- Andrew Garrison (Kittelson & Associates)

Meeting Notes:

Vision Zero:

- City of Winter Garden staff noted multiple barriers to reaching zero serious injury and fatal crashes including:
 - Cost for projects.
 - Driver behavior.
 - Public perception of project impacts.
 - Explosive growth (especially to the west near Lake County).
 - Outdated infrastructure.
 - Congestion from surrounding cities and counties.
 - Lack of coordination with surrounding jurisdictions.
 - Natural barriers like lakes limit connectivity.
 - Old paradigms of high-speed, high-volume corridors like SR 50.

Crash Trends:

- City staff noted several crash trends they have encountered including:
 - Pedestrians crossing wide roadways at mid-block locations.
 - No lighting along portions of SR 50.

Public Engagement:

- City staff asked what methods of public engagement Kittelson will be using. These methods will include physical maps/boards and online surveys.
- City staff shared public engagement methods they have used in the past including:
 - Working with private community groups.
 - Utilizing community meetings.
 - A citywide citizen survey conducted biannually.
 - Social media.
 - MainStar community commenting platform.
 - City of Winter Garden staff will provide transportation related data from this platform.
- City staff noted that the Spring Fever in the Garden event will have many visitors so the pop-up event will have to be targeted to obtain feedback from local residents.

High Injury Network:

- City staff noted the following safety topics they would like studied including:
 - The crash trends on Marsh Road where traffic calming measures have been introduced.
 - Speeding concerns throughout the City and the impacts of using speed tables and cushions throughout the City.
 - The impacts of Schofield Road connecting US 27 to SR 429.
 - Local roadways where speed reductions should be considered, such as Crown Point Cross Road.
- City staff noted that they have additional safety data that can be provided including:
 - Speed studies.
 - Citation reports from the Winter Garden Police Department.
 - Recent survey results on transportation related topics.
- City staff noted that Dillard Street from SR 50 to Plant Street is a high priority road diet/pedestrian-bicycle project that is ongoing. The City sees this as a prime candidate for implementation grants.

Miscellaneous:

- City staff had several questions about the use of implementation grants. MetroPlan Orlando staff will reply with more clarification on these topics:
 - What federal requirements must be met to receive the implementation grant funds?
 - Can certain roles or requirements from these grants be filled by consultants or would City staff have to meet each requirement themselves?
- Kittelson staff will coordinated to include Vision Zero project information on the City of Winter Garden website.

Next Steps:

- City staff will provide the following data:
 - MainStar survey data.
 - Details on the traffic calming measures used on Marsh Road.
 - Speed studies.
 - Citation reports from Winter Garden Police Department.
 - Plans from the Dillard Street road diet.
- Kittelson staff will continue the crash analysis and coordinate with Kelly Carson to schedule the second working group meeting in December.



City of Winter Garden – Vision Zero Action Plan

Working Group 2 Meeting Notes

Date: January 22, 2024

Time: 1:30 – 3:00 PM

Meeting Location: Winter Garden City Hall, 3rd Floor

Attendees:

- Kelly Carson (Winter Garden Planning Director)
- Jon Williams (Winter Garden City Manager)
- Steve Graham (Winter Garden Police Chief)
- Steve Pash (Asst. City Manager for Public Services – Winter Garden)
- David Livingston (Winter Garden)
- Amy Martello (Executive Assistant to the City Manager – Winter Garden)
- Jose Gainza (Winter Garden Fire Chief)
- Sarah Larsen (MetroPlan Orlando)
- Ryan Mansfield (Kittelson & Associates)
- Patty Hurd (Kittelson & Associates)
- Andrew Garrison (Kittelson & Associates)

Meeting Notes:

HIN:

- The HIN meets the City's expectations
- These are the roads known to be experiencing congestion

Crash Profiles

- Off road crashes are crashes where the vehicle departs to roadway
- Intersection of Stoneybrook W Pkwy and Avalon Rd was recently reconstructed in late 2023 to extend turn lanes. This location is likely not a good project location since the crash data precedes the reconstruction.
- A lot of parking crashes occur in Winter Garden Village, but this study will focus on roadways
- W Story Rd and Vineland Rd is an all way stop control intersection

Crash Trends

- Review crash data by age and incorporate into the next working group meeting
- Winter Garden investigates Oakland's traffic homicides

- Oakland's crash data is not included in the Winter Garden data set
- Some minor injury crashes or PDO may not be reported to S4 if the those involved did not report the crash
- Noted that distracted driving is high
 - This is self reported and may be higher than what is reported

Policy Framework

- Tool Design is developing a Traffic Calming Plan and Safety Plan
 - Winter Garden will send Kittelson a draft of these plans to reference in the Safety Action Plan

Pop up

- Conduct last pop-up event at Spring Fever during the first weekend in April
 - Coordinate with Kelly

Next Steps:

- City staff will provide the following data:
 - Policy, standards, and guidelines that they would like to have reviewed for safety
 - Drafts of the Traffic Calming Plan and Safety Plan developed by Toole Design
- Kittelson staff will work on identifying appropriate countermeasures and reviewing policies for safety improvements.



City of Winter Garden – Vision Zero Action Plan

Working Group 3 Meeting Notes

Date: March 28, 2024

Time: 9:30 – 11:00 AM

Meeting Location: Winter Garden City Hall, 3rd Floor

Attendees:

- Kelly Carson (Winter Garden Planning Director)
- Jon Williams (Winter Garden City Manager)
- Jim Monahan (Winter Garden City Engineer)
- Steve Graham (Winter Garden Police Chief)
- Steve Pash (Asst. City Manager for Public Services – Winter Garden)
- David Livingston (Winter Garden)
- Amy Martello (Executive Assistant to the City Manager – Winter Garden)
- Sarah Larsen (MetroPlan Orlando)
- Ryan Mansfield (Kittelson & Associates)
- Patty Hurd (Kittelson & Associates)
- Andrew Garrison (Kittelson & Associates)

Meeting Notes:

Corridor Projects:

- Daniels Road
 - Remove delineators from recommendations or replace with RPMs.
- Stoneybrook W Parkway
 - Ideally the off-ramp would be located further east. Speed management may be more applicable along the roadway.

Intersection Projects:

- Story Road
 - Roundabouts are difficult for crossing guards to stop traffic. Incorporate school locations in recommendations.
- Dillard Street
 - The recommendations in this study should align with the Dillard Street improvements to increase opportunity for grant funding.
- Stoneybrook W Parkway at Avalon Road and SR 50 at Vineland Road

- The intersection of Stoneybrook W Parkway and Avalon Road was recently reconstructed. The City will send over design plans for Stoneybrook W Parkway. The crash data is prior to the reconstruction and so the intersection should be removed from the HIN.
- Winter Garden Vineland Road at Lakeshore Grove Drive
 - This is a county road. Consider speed management through this section instead of roundabout due to ROW limitations.
- Daniels Road at Lost Grove Circle
 - The City is installing flashing beacons on the existing Hidden Driveway sign. Remove roundabout due to insufficient ROW.

Ped/Bike Projects:

- SR 50
 - Add roadway lighting due to pedestrians crossing at night.
- Vineland Road
 - The context of the roadway is changing due to many existing single family homes being converted to commercial businesses, and this will continue to happen over time.
 - The City would like to reduce the speed from 35 to 30 mph. Add speed management.
- Avalon Road
 - Verify that the pedestrian crash was on the roadway and not a parking lot crash. This is a low pedestrian volume corridor. Remove the PHB recommendation and add speed management.
- 9th Street
 - The City would like to conduct a complete street treatment along this corridor.
 - The City owns the west side which has sidewalk. The County owns the east side which is missing sidewalk.

Next Steps:

- Kittelson will work on finalizing the project list and developing project prioritization criteria.



City of Winter Garden – Vision Zero Action Plan

Working Group 4 Meeting Notes

Date: May 21, 2024

Time: 2:00 – 3:30 PM

Meeting Location: Winter Garden City Hall, 3rd Floor

Attendees:

- Kelly Carson (Winter Garden Planning Director)
- Jon Williams (Winter Garden City Manager)
- Frank Gilber (Winter Garden Asst. City Manager)
- Steve Pash (Winter Garden Asst. City Manager for Public Services)
- Jim Monahan (Winter Garden City Engineer)
- Steve Graham (Winter Garden Police Chief)
- Amy Martello (Winter Garden Executive Assistant to the City Manager)
- Sarah Larsen (MetroPlan Orlando)
- Ryan Mansfield (Kittelson & Associates)
- Patty Hurd (Kittelson & Associates)
- Andrew Garrison (Kittelson & Associates)

Meeting Notes:

Engineering Projects:

- Daniels Road
 - High Friction Surface Treatment (HFST) is an aggregate that is bonded to the roadway surface to increase friction. The roadway is often resurfaced, but is not required.
- Stoneybrook W Parkway
 - Verified crash count is 78 crashes (50 rear end, 19 sideswipe, and 9 other crashes)
 - Access management would focus on restricting driveway access along Stoneybrook W Pkwy.
 - The merging study and access management would be conducted to determine if the SR 429 off-ramp should be relocated.
- Dillard Street
 - Verify the underserved communities score for the roadway due to local flooding issues.

- The climate and disaster risk burden scoring criteria is intended to capture abnormal weather impacts such as sea level rise. As a result, the underserved communities score is expected to remain the same, receiving 75% of the points.
- SR 50 and Vineland Road
 - The existing signal is protected only eastbound/westbound and permitted/protected northbound/southbound. Due to heavy northbound traffic and significant queuing, the recommendation to convert the northbound/southbound approaches to protected only will be removed as this would worsen capacity issues.
 - Subsequently, the recommendation of striping through the intersection alone will not address the left turn and angle crash issue.
 - This project will be removed as applicable countermeasures would be expected to create other issues.
- SR 50 Ped/Bike
 - Incorporate FDOT lighting bundle into recommendations if applicable.
- 9th Street from Story Rd to Plant St
 - Add lighting as a countermeasure
 - Add complete streets study recommendation
 - Consider adding the section from SR 50 to Story Road
 - Countermeasures could include street lighting and sidewalk
- Check if Orange County has any projects on SR 50 and Avalon Road between SR 50 and Tilden Road.
- Project Ranking
 - Ranking will be separated into two lists. City projects and state/county projects.
 - City project priorities:
 - Dillard Street
 - 9th Street
 - Avalon Road

Next Steps

- Commission Meeting:
 - Kittelson will coordinate with MetroPlan to identify someone to present at the City Commission meeting.
 - Will plan for a 5-minute presentation.
 - Target commission meeting on June 27th.
 - Elise will help coordinate to get on the meeting agenda.

Technical Appendix

H- Non-Engineering Countermeasure Toolkit

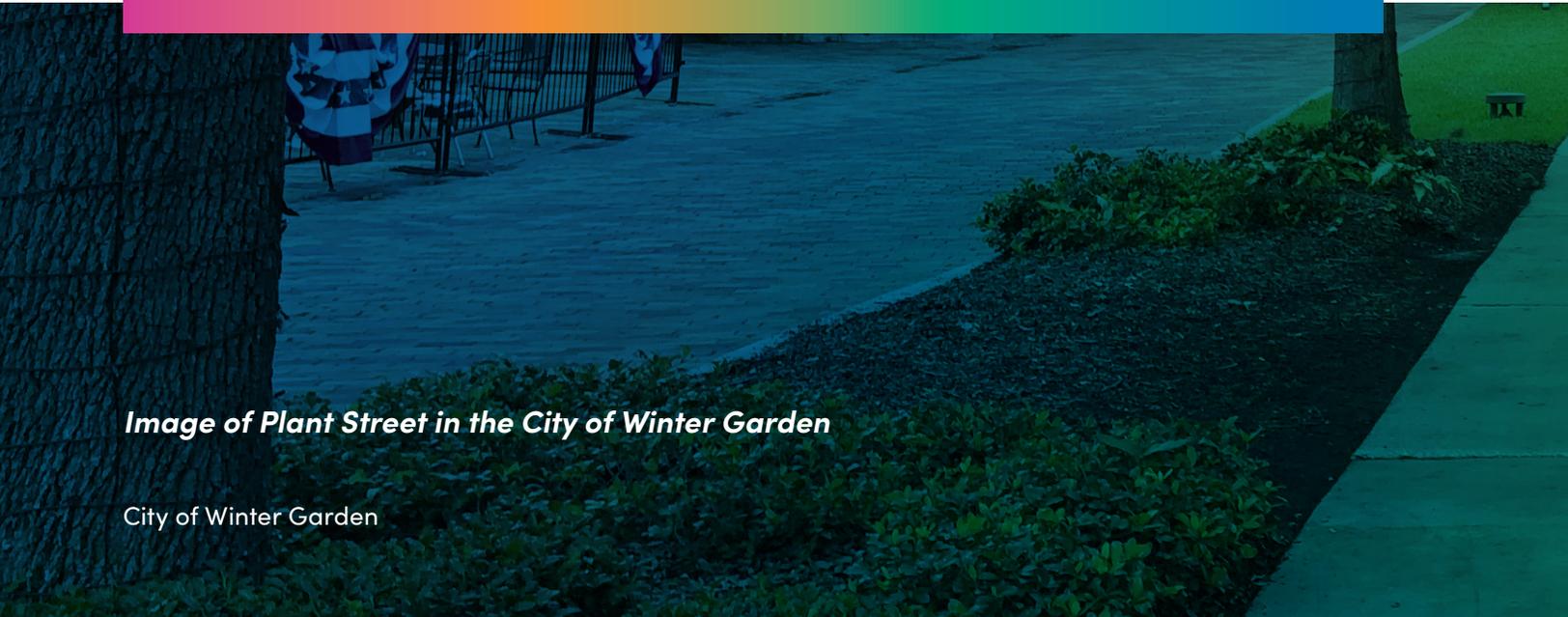


Image of Plant Street in the City of Winter Garden



Non-Engineering Countermeasures Toolkit

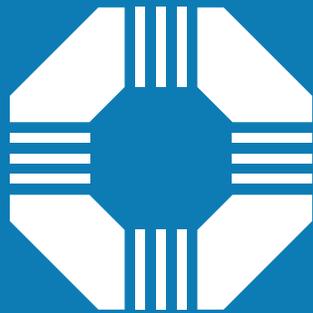


VISION ZERO

CENTRAL FLORIDA

Counting down to zero traffic deaths

Updated April 2024



VISION ZERO
CENTRAL FLORIDA
Counting down to zero traffic deaths

Overview

Introduction & How to Use this Toolkit

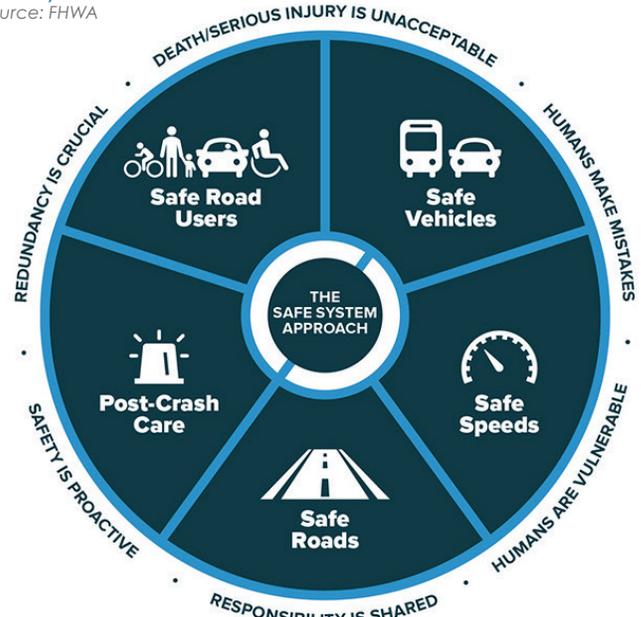
The MetroPlan Orlando Regional Vision Zero Action Plan identifies engineering and non-engineering countermeasures to implement around the region to reach the goal of zero traffic fatalities or serious injuries on our roadways by 2050. Engineering countermeasures aim to change roadway features to remove hazards, manage speeds, separate roadway users in space and time, and increase visibility and awareness. An **Engineering Countermeasure Toolkit** was developed as a part of this process and will aid in the selection of appropriate engineering countermeasures throughout the region.

Non-engineering countermeasures aim to influence users by changing the social environment to encourage or enforce the desired behavior. Strategies can be employed at scale to influence large segments of the community, like through marketing campaigns, and high-visibility enforcement and publicized sobriety checkpoints that affect the social environment by increasing the perceived risk of being caught, or can be focused on specific roadway user types, like teen drivers or motorcyclists. Non-engineering countermeasures fall under the Vision Zero Core Elements of **Authentic Engagement, Strategic Planning, Project Delivery, Equity Focused Analysis and Program, and Proactive, Systemic Planning**.

This toolkit presents non-engineering countermeasures organized into the five categories of the Safe System approach, which include **Safe Road Users, Safe Speeds, Safe Roads, Post Crash Care, and Safe Vehicles**. The non-engineering countermeasures outlined below are not intended to be an exhaustive list of strategies but serve as a framework for identification of non-engineering countermeasures as a part of Action Plan development. As agencies implement non-engineering countermeasures, they should consider how they will reach the most vulnerable populations. References to source documents are provided and users of this guide are encouraged to review applicable source documents related to their specific safety issues and goals.

Safe System Framework

Source: FHWA



ORGANIZATION OF THE TOOLKIT

A. SAFE ROAD USERS

- Public Information Campaigns/Social Marketing Campaigns/Educational Campaigns
- Enforcement

B. SAFE SPEEDS

- Speed Limit Setting
- High Visibility Enforcement
- Automated Enforcement

C. SAFE ROADS

- Improve and Share Data
- Pilot/Demonstration Projects
- Road Maintenance/Maintenance of Traffic
- Policy/Standards
- Grant Opportunities

D. POST CRASH CARE

- Emergency Medical Services
- Trauma Care
- Fatal Crash Response Team
- Traffic Incident Management
- Post Crash Strategies

E. SAFE VEHICLES

- Emerging Technology
- Vehicle Maintenance

A. Safe Road Users

Transportation safety education plays an important role in shaping and shifting behavior. Many jurisdictions across the country are increasing community engagement and education to make streets safer for all. For example, the Florida Department of Transportation (FDOT) has educational campaigns centered on their Target Zero framework under the slogan of **Arrive Alive** that includes TV, radio, social media and in-person outreach.

Strategies included in this section are:

1. Public Information Campaigns / Social Marketing Campaigns / Educational Campaigns
2. Enforcement

Public Information Campaigns / Social Marketing Campaigns / Educational Campaigns

Public Information Campaigns focusing on discouraging risky behavior like drinking and driving and/ or speeding can complement the engineering countermeasures that are designed to target primary risk factors in the MetroPlan Orlando region. These types of campaigns should also be used to encourage positive behaviors such as seat belt usage, increased awareness of pedestrians and bicyclists, and appropriate crosswalk behaviors.

Targeted education, such as on buses and bus shelters, on billboards, at movie theaters, or on local radio stations, may be directed at vulnerable populations with the help of local partners, and at certain behaviors of drivers, pedestrians, and bicyclists to deter risky behaviors that result in specific collision types. Specific locations on the high-injury network, as well as partner agency campaigns with FDOT may also be appropriate for concentrated educational messages. MetroPlan Orlando will consider joint efforts with FDOT and other local partners to develop outreach campaigns focusing on discouraging common violations leading to fatalities and severe injuries on our roadways, based on the collision profiles identified in the Safety Analysis. Education and outreach campaigns should target the behaviors that are most likely to result in crashes where someone is killed or severely injured (referred to as KSI crashes), and/or vulnerable populations including:

1. **Reducing driving under the influence** as 6% of KSI crashes involve someone driving under the influence of alcohol, 3% of KSI crashes involve someone driving under the influence of drugs, 21% of fatal crashes involve someone driving under the influence of alcohol and 16% of fatal crashes involve someone driving with a drug impairment.
2. **Enforcing seatbelt laws and encouraging helmet use** as 9% of KSI crashes included a vehicle occupant not wearing a seatbelt, while 38% of motor vehicle occupants who died were not wearing a seatbelt. For motorcycle crashes, 5% of KSI crashes and 43% of fatal crashes involved a motorcyclist not wearing a helmet.
3. **Providing education around driver behavior**, as 24% of KSI collisions were caused by a failure to yield the right-of-way, with another 10% caused by running a redlight or stop sign; aggressive driving was a factor in 5% of KSI crashes; distracted driving was a factor in 29% of KSI crashes; and speeding was a factor in 4% of KSI crashes.
4. **Teens** are disproportionately represented in KSI crashes – they comprise 5.5% of licensed drivers and are involved in 12.5% of KSI crashes.
5. **Education focused on people outside of cars and trucks**, sometimes referred to as ‘vulnerable road users’, since crashes involving **pedestrians, bicyclists and motorcyclists** accounted for about 3% of overall crashes, 25% of serious injury crashes and 48% of fatal crashes in the region.
6. **Almost 20% of pedestrian KSI and 19% of bicyclist KSI crashes were hit and run**, as compared to 9% of all crashes.

Some examples of educational programs include:

Partner with Local Schools on Transportation Safety

Partnering with local school districts to promote safe road user behavior. Programs can provide education to students based on grade level to teach safe walking and biking strategies, as well as safe driving strategies to older students. The importance of wearing seatbelts and bicycle helmets could also be included in the curriculum. There could be opportunities for schools to support walking school buses, bike rodeos and other strategies that teach students how to walk and bike to school safety, based on the context surrounding their school.

Education campaigns could also **involve students** promoting safer driving to their parents by holding signs during pick-ups and drop-offs, and providing educational materials aimed at parents who might not be aware of seatbelt, cell phone and move-over laws.

Expanding existing **youth programs** presents an opportunity to provide ongoing Safe Routes to School education to all students each year. There are a variety of existing resources available that could be promoted through schools to students taking on-line driver education, including the Teen Driver Challenge (<https://www.flsheriffs.org/law-enforcement-programs/teen-driver-challenge>), free and low cost behind the wheel training provided by the Florida Safety Council (<https://www.floridasafetycouncil.org/categories>), as well as resources that teens can provide to others to promote safe driving (<https://flteensafedriver.org/>). There are also other programs available to high school students to teach them about the dangers of alcohol and driving, including Every 15 Minutes, Sober Graduation, and DUI mock trials, which provide opportunities for local agencies and law enforcement to partner with schools to deliver educational campaigns.

Educational Materials on New Roadway Design Changes

Temporary demonstrations, like pop-up installations, can physically showcase proposed safety infrastructure and emergency response to the public in a tangible way. Using social media platforms and neighborhood community groups to promote materials and videos focused on new types of roadway designs and the region's major violation issues could direct community conversations for meaningful outcomes.

Educational Materials on Traffic Safety Laws

Partnering with the Florida Highway Safety and Motor Vehicles department as well as FDOT to develop materials to send to drivers upon renewal of their driver's license or vehicle registration related to new traffic safety laws, how to use traffic control devices, and sharing the dangers of driving under the influence of drugs or alcohol, or not wearing seatbelts or helmets. These materials could be customized at the regional level based on the most pressing crash issues.

Partner with Local Experts

Local partners should serve as community liaisons between MetroPlan Orlando, counties and cities, and the public. Working with community partners and public institutions that have relationships with residents strengthens the engagement process by building trust and drawing on an established base of stakeholders. Local partners could help tailor the engagement process or incorporate engagement into existing programs and resources to educate people more effectively about roadway safety. These local experts could share information about how to report a crash to law enforcement, how to file an insurance claim, provide bicycle lights and reflective gear to communities who ride in dark conditions, provide helmet fittings and car seat installations, and identify alternative transportation options for aging people or people with disabilities who are no longer able to drive.



Share the Road/Bicyclists May Use Full Lane Awareness Programs

The purpose of these programs is to increase drivers' awareness of bicyclists' rights and the need for mutual respect of bicyclists on the roadway. Educational efforts are intended to improve the safety of all road users, including bicyclists, and to enhance understanding and compliance with relevant traffic laws. These programs should be coupled with providing the appropriate signage and pavement markings depending on the roadway characteristics. **Bicycles May Use Full Lane** signs have been shown to be effective in conveying to motorists that bicyclists may use the travel lane. Placement of road signs and pavement markings along roads that do not have separated bicycle facilities should consider the road context, traffic volumes and prevailing speeds.



Promote Motorcyclist Safety Programs

Motorcyclist safety includes motorcycle safety awareness for non-motorcyclists, such as **Look Twice** campaigns as well as education, including classroom and on-roadway training to help motorcyclists ride more defensively and develop the skills to operate their motorcycle under a variety of conditions, including evasive maneuvers. More information can be found here: <https://www.fdot.gov/Safety/motorcyclesafety.shtm> and <https://www.flhsmv.gov/driver-licenses-id-cards/motorcycle-rider-education-endorsements/florida-rider-training-program-courses/>.

DUI Strategies and Considerations

Crashes involving someone driving under the influence are more likely to result in a fatality or serious injury. As detailed in the Crash Analysis, 21% of fatal crashes involve someone driving under the influence of alcohol and 16% of fatal crashes involve someone driving under the influence of drugs. Considerations for addressing DUI collisions also extend beyond the transportation profession and increasing funding for efforts that focus on prevention and education, such as alcohol problem assessment and treatment programs, would support less-punitive measures to reduce DUI collisions. Strategies generally fall under three categories:

1. **Deterrence policies** focus on raising the actual and perceived risk of detection of driving under the influence. These policies should be highly visible to increase awareness of the risks of driving under the influence. Publicized sobriety checkpoints, saturation patrols, and other forms of high-visibility enforcement are effective for safety outcomes.
2. **Prevention and education policies** focus on mobilizing and educating the community and intervening before driving under the influence takes place. According to NHTSA research, drug use problem assessment and treatment programs, as well as alcohol intervention in settings such as a doctor's office, are highly effective strategies for improving safety outcomes. NHTSA educational campaigns include materials for driving under the influence of alcohol, marijuana, and other drugs, including prescription drugs.
3. **Limited access** policies focus on making underage access to alcohol and drugs more difficult and seek to limit excessive alcohol consumption.

Additionally, there are organizations who provide free rides or tows to people who are impaired, such as the **AAA Tow to Go Program** (<https://www.acg.aaa.com/drivers-safety/tow-to-go.html>). NHTSA has developed a **SaferRide App** (<https://youth.gov/federal-links/saferide-app-could-save-your-life>) that allows users to call a taxi or pre-programmed friend. In some communities, there are also organizations and businesses that provide free or subsidized rides, like the Drunk Driving Prevention Program that serves military bases (<https://www.ddpp.us/>) and local law firms that offer tow service and free ride shares around holidays. When communities have events that include drinking, like around St. Patrick's Day, Fourth of July and New Years, consider partnering with local organizations that can pay for and promote free rides.

Enforcement

When educational campaigns do not yield the desired behavior change, there is a role for the **enforcement of traffic safety laws consistently and fairly**, focused on behaviors that are most likely to result in a severe injury or fatality. In many instances, the enforcement activity can be coupled with education and support, like providing bike lights to people seen riding bikes at night without lights, or people under seen riding a bike without a helmet can be provided with a free helmet along with educational material (people under the age of 16 are required to wear a helmet).

A data driven approach can be used to identify roadways and time of day/days of week when people may be more likely to speed or engage in other undesired behaviors, like driving under the influence. This allows for law enforcement to focus their limited resources, such as along a high injury network corridor or around a cluster of alcohol serving establishments. Additional information about high visibility enforcement and automated enforcement is provided in subsequent sections.



BEST FOOT FORWARD PROGRAM

Best Foot Forward (BFF) focuses on one simple, measurable goal: to get more drivers to yield and stop for pedestrians in marked crosswalks, as Florida law requires. Best Foot Forward works to accomplish this goal using the proven, "Triple-E" approach of combining community education with low-cost engineering changes and high-visibility enforcement.

Within the MetroPlan Orlando Region, the BFF program has resulted in increased yielding rates for pedestrians at 100's of crosswalks and has worked to improve dozens of crossing locations in partnership with local agencies.

For more information visit: <https://www.iyield4peds.org/>.

B. Safe Speeds

Streets and roads within the MetroPlan Orlando region should address the safety of all road users, including those who walk, bike, roll, drive, and take transit. Although engineering countermeasures such as lane narrowing, road diets, and speed feedback signs, can reduce the travel speeds of most drivers to appropriate levels, they should be accompanied by policy and enforcement strategies.

Strategies included in this section are:

1. Speed Limit Setting
2. High Visibility Enforcement
3. Automated Enforcement

Speed Limit Setting

Speed limits and operating speeds are connected, so speed limits are a relevant factor in traffic safety outcomes. As part of the previous version of MUTCD (Section 2B.13), speed limits on roadways were generally set by the 85th percentile travel speed based on an engineering study; the 85th percentile speed represents the speed at which 85 percent of people are driving at or below. The latest version of the MUTCD (Section 2B.21) and the Manual on Speed Zoning for Highways, Roads, and Streets in Florida (Chapter 9) provide some flexibility in setting speed limits where the context of the roadway plays a greater role in setting speed limits that are consistent with the surrounding land use. According to FHWA's Safe System Approach for Speed Management, lowering the speed limit on high-speed roads has a greater effect on mean operating speeds than lowering the speed limits on low-speed roads (even for the same reduction in speed limit). However, even changes in lower speed environments can produce safety benefits, especially for vulnerable road users.

Setting appropriate speed limits for roadways based on their context, accompanied by the appropriate engineering and non-engineering countermeasures, will have the greatest potential to reduce fatal and severe injury outcomes. A holistic approach throughout the region should be employed such that drivers in the region become accustomed to driving at slower speeds. Changes in how traffic signals are operated can help maintain overall travel times along corridors, even when people are driving slower between intersections. Collaboration between agencies, including MetroPlan Orlando, FDOT, counties and local agencies is a critical component.

High Visibility Enforcement

According to National Highway Traffic Safety Administration (NHTSA) research, **High Visibility Enforcement** (HVE) is one of the most effective enforcement strategies for safety outcomes. The goal of HVE is to promote voluntary compliance with traffic laws by providing a multifaceted approach to enforcement that garners public attention through highly visible patrols, such as checkpoints, saturation patrols, or message boards. FDOT provides resources related to HVE through the **Alert Today** initiative. More information and how to apply for HVE activities is provided here: <https://alerttodayflorida.com/HVE>.



Automated Enforcement

Automated enforcement uses cameras and other technology to detect when someone has committed a roadway violation. A strictly data-driven approach to automated enforcement places cameras in locations on the HIN with the highest number of severe collisions. In Florida, the following forms of automated enforcement are legal:

Red-light Cameras

Detects when a vehicle has entered an intersection on a red-light and a citation is mailed to the registered owner of the vehicle, who may not have been the person driving. The first notice of violation does not result in points on your license provided the citation is paid. Angle crashes are the most common crash type related to red-light running, with a disproportionate number resulting in a severe injury or fatality.



School Bus Cameras

Detects when a person illegally passes a school bus in a vehicle. This law went into effect in July 2023, as detailed in Senate Bill 766 (<https://www.flsenate.gov/Session/Bill/2023/766>). Several jurisdictions and school districts are piloting the technology.

School Zone Speed Cameras

Detects people speeding in school zones. This law went into effect in July 2023, as detailed in HB 657 (<https://www.flsenate.gov/Session/Bill/2023/657>). Tickets are sent in the mail to the registered owner of vehicles captured traveling more than 10 miles per hour over the posted school zone limit while the school zone is activated. Several communities and school districts are piloting the technology.

Wrong Way Detection

Detects when a vehicle enters a limited access facility against the flow of traffic. FDOT has deployed wrong way driving technology at numerous off-ramps throughout the region. The system detects when a vehicle is traveling the wrong way on a facility and starts a cascading series of actions, including alerting the driver to their mistake using flashing lights, notifying law enforcement, and notifying other drivers through message boards along the freeway.

Automated speed enforcement outside of school zones is not currently allowed in the State of Florida. Other states have passed legislation to allow for automated speed enforcement in specific circumstances, such as on high crash corridors where speeding is a contributing factor. MetroPlan Orlando will continue to monitor potential changes to state legislation for future use of speed cameras outside of school zones.

C. Safe Roads

Safe Road strategies are typically related to engineering countermeasures (see Engineering Toolkit for details related to engineering countermeasures). However, a non-engineering framework can support implementation of appropriate engineering countermeasures. Strategies that can help supplement road improvements are included in this section.

Strategies included in this section are:

1. Improve and Share Data
2. Pilot/Demonstration Projects
3. Road Maintenance/Maintenance of Traffic
4. Policy/Standards
5. Grant Opportunities

Improve and Share Data

Numerous pieces of data can help inform appropriate engineering and non-engineering countermeasures, including crash data, roadway system data, and population and land use data. Incomplete or inconsistent datasets can also affect the ability of countermeasures to be deployed equally throughout the region. Collaboration with local law enforcement and providing feedback to the Office of Safety, such as noting additional data needs (e.g. better data on scooter or wheelchair usage) can help improve the quality of data collected as part of crash reports. Maintaining a regional Geographic Information System (GIS) database with transportation system information can help identify the characteristics of roadways where a disproportionate number of KSI crashes occur. Near-miss analyses can also help provide a more nuanced review of safety issues at specific locations. Connected vehicle data can also provide regional speed and other roadway system operations data, such as locations of hard braking, that could be used to further identify root causes of crashes or identify locations for enforcement of speeding.

Pilot/Demonstration Projects

There may be unique or innovative transportation safety solutions proposed in some communities where the public and/or elected officials are hesitant to implement a solution new to the community. By implementing a project on a pilot basis (one to three years, with before, during and after evaluations) or a demonstration basis (a very short timeframe ranging from a few hours to a few months), the public and elected officials can learn more about the potential benefits of a treatment before a more permanent installation is completed. Pilots and demonstration projects can also help identify design changes or educational outreach that should be included in the final implementation.

Before and After Studies

Understanding the actual safety benefits of engineering countermeasures deployed across the region can help communities deploy limited resources to strategies that work best to reduce fatal and severe injury crashes.

Road Maintenance/Maintenance of Traffic

Improperly maintained roads can lead to crashes, with vulnerable roadway users disproportionately impacted, such as loose gravel on a roadway that could affect the turning and stopping ability of someone on a motorcycle, or debris in the bike lane that causes a bicyclist to potentially lose control or veer into an adjacent travel lane to avoid a bike lane hazard. Heaved/sinking sidewalks can also pose a trip hazard for pedestrians.

When a roadway or lane closure is required for a land development project, a roadway project, or maintenance, maintenance of traffic (MOT) plans are typically prepared. In some instances, bike lanes and sidewalks are closed with no advance warning, or the detours may be excessively long and then not used, which can lead to negative safety outcomes. Chapter 6 of the 11th Edition of the Manual on Uniform Traffic Control Devices includes additional guidance for how to accommodate bicyclists and pedestrians in work zones.



Policy/Standards

A change in policies and standards may be necessary to change transportation safety outcomes. A separate policy benchmarking process was conducted to identify MetroPlan Orlando policies that could be a barrier to Vision Zero. In some jurisdictions, changing roadway design standards, level of service policies, site development policies and parking policies, may be needed. As Action Plans across the region are adopted and implemented, there will be opportunities to measure progress, identify strategies that are working, and identify new strategies for implementation.

Grant Opportunities

Funding will be a limiting factor in the implementation of engineering countermeasures. Understanding what grant programs are available and their respective requirements can help to provide additional safety funding in addition to the Safe Streets and Roads for all (SS4A) program. [Appendix B](#) provides preliminary information on available transportation safety funding sources.

D. Post Crash Care

Post-crash care is more than just medical care. It also includes the training of personnel, design of roadway infrastructure, and availability and location of emergency vehicles. Post-crash care also includes providing additional resources to the victims and their families such as resources for physical and mental rehabilitation. People who have a traumatic injury are more likely to survive if they receive an appropriate level of care within one hour, and positive outcomes diminish significantly after that hour.

Strategies included in this section are:

1. Emergency Medical Services
2. Trauma Care
3. Fatal Crash Response Team
4. Traffic Incident Management
5. Post Crash Strategies

Emergency Medical Services

People involved in a collision have a higher chance of survival if they can quickly receive medical care. In many cases, law enforcement officers and fire department staff are the first responders to arrive at a collision location. Collisions can also put the lives of first responders and other road users at risk due to increased congestion during the crash response, which may lead to secondary crashes.

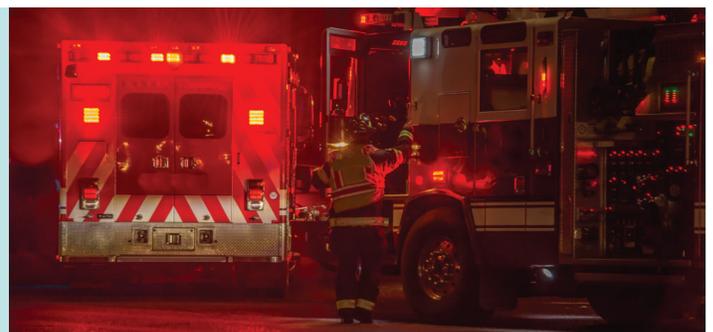
MetroPlan Orlando could coordinate with local partners to improve response times and ensure safety in both arriving and attending to patients at the scene. Strategies include ensuring emergency vehicles are highly visible (e.g., retroreflective striping and chevrons, high-visibility paint, and built-in passive lights) and implementing emergency vehicle signal preemption, which allows emergency vehicles to break a normal signal cycle and proceed through an intersection.

Trauma Care

Effective emergency trauma care coordination can significantly increase crash survival rates and reduce fatalities. MetroPlan Orlando could work with local partners to identify funding sources to improve their existing infrastructure to be able to provide the highest care for victims. Recommended strategies to improve trauma care include providing funding for appropriate first responder equipment (e.g., hydraulic, and pneumatic extrication tools), research for and adoption of technology aimed at reducing triage time (e.g., automatic vehicle reporting of severe crashes to EMS, EMS vehicle collision avoidance systems, and geolocation of nearest EMS vehicles), and promotion of federal- and state-certified training programs.

STOP THE BLEED

Orlando Health offers a community training class called Stop the Bleed that is designed for bystanders who have little or no medical training but who may be called upon as immediate responders to provide initial trauma care and bleeding control to a victim of traumatic injury prior to the arrival of emergency medical services (EMS).



D. Post Crash Care

Fatal Crash Response Team

In the event of a traffic fatality, analysis and evaluation of relevant contributing factors are crucial in reducing the risk of a severe crash at that location. One strategy would be for the formation of a cross-agency group that mobilizes after each fatal crash, including law enforcement, transportation professionals, and public health officials. This would assist with accurate investigation and documentation of potentially relevant infrastructural and environmental crash factors, while identifying additional factors that may have contributed to the fatal crash outcome. It can also expedite interventions to improve the crash location/circumstances and address similar risk factor locations and situations. The selection of appropriate engineering countermeasures should consider emergency response time; however, a slight potential increase in emergency vehicle response time would need to be considered in context with the potential to reduce crash frequency and severity, which could reduce overall calls for service in the region.

Traffic Incident Management

Traffic crashes increase the likelihood of secondary crashes and pose a threat to the safety of incident responders as well as the traveling public. Crashes also affect travel reliability, commerce, and transportation system performance. **Traffic Incident Management (TIM)** consists of a planned and coordinated multi-disciplinary process to detect, respond to, and clear traffic incidents so that traffic flow may be restored as safely and quickly as possible. Effective TIM reduces the duration and impacts of traffic incidents; improves the safety of motorists, crash victims, and emergency responders; and reduces the frequency of secondary crashes. TIM is an integral component of the United States Department of Transportation (USDOT) National Roadway Safety Strategy (NRSS), and is specifically called out as a key element for the **post-crash care** objective.

FDOT is primarily responsible for TIM in the region and utilizes their traffic management centers (TMCs) in each of their districts to manage traffic on the state highway system. Several local jurisdictions also have traffic management centers. The incorporation of TIM on additional high crash corridors where systems are not currently deployed could also be considered. FDOT and the University of Central Florida are also working

on traffic incident predictions that could provide advanced warnings to first responders when a crash may be imminent based on conditions to allow for first responders to stage closer to potential crash locations or to deploy enforcement teams to prevent the crash.

Post Crash Strategies

When individuals are injured in collisions, they rely on first responders to quickly locate them, stabilize their injuries, and transport them to medical facilities. Post-crash care also includes forensic analysis at the crash site and traffic incident management, so that traffic flow may be restored as safely and quickly as possible. Policy action through the justice system and appropriate design of roadways to lessen the risk of future crashes can also help inform safety programs.

Crash reporting practices, such as complete data collection and documentation of road user behavior and infrastructure, and sharing data across agencies or organizations (e.g., law enforcement, health officials, transportation officials, and hospitals) can help lead to a greater understanding of the holistic safety landscape, and thus lead to improved investments in safety.

To ensure a crash survivor receives the care needed to recover and restore body and mind to an active life within society, they require medical rehabilitation with specialists that can range from orthopedics, neurosurgery, physical and occupational therapy, and prosthetics to psychology and neuropsychology.

Severe and fatal collisions not only affect the victim involved, but their family and friends as well. Across the nation and in Canada, there are chapters of Families for Safe Streets. Individual chapters advocate at their state capitol and work with lawmakers and non-profits like Mothers Against Drunk Driving to share their stories and testify before legislative committees and congress. Supporting victims' families can come in many forms. World Day of Remembrance for Road Traffic Victims is an annual event held on the third Sunday in November in remembrance of those who have died or have been affected by motor vehicle collisions, and to draw attention to the goal of Vision Zero.



E. Safe Vehicles

Safe vehicles are another element of the Safe System approach and will increasingly add more redundancy or avoidance features to the system. MetroPlan Orlando and its local partners do not have an influence on vehicle design but could keep vehicle technology advances in mind as part of their future policy and design considerations. For example, smart signal technology, which communicates with devices embedded in newer vehicles, will allow agencies to collect data at multiple intersections, providing a better understanding of how people are using the network in real time.

Strategies included in this section are:

1. Emerging Technology
2. Vehicle Maintenance

Emerging Technology

Leveraging **connected and autonomous vehicle (CAV)** technology and crash-avoidance systems are a key part of the "Safe Vehicles" category. Connected vehicles wirelessly communicate with other vehicles and infrastructure (like signals) to provide data for instantaneous decision-making (e.g., reporting driver speed or collisions). Data from signals in combination with data from vehicles could allow the agencies within the MetroPlan Orlando area to deploy real time speed-related signal operations, allowing for enhanced safety through adaptable systems. The City of Lakeland is using a red-light running detection system to identify when a person driving is likely to run a red light, and the traffic signal automatically extends the all-red time at the intersection to prevent a crash.

Some states are exploring requirements that new vehicles sold after a certain date must include **speed limiter systems** that electronically prevent drivers from driving more than 10 miles per hour over the posted speed limit. The National Transportation Safety Board (NTSB) has also issued a recommendation that speed assistance technology be deployed more widely. The Federal Motor Safety Carrier Safety Administration (FMCSA) is exploring a potential speed limiter mandate for heavy duty trucks. While there are not currently national or State of Florida speed limiter technology requirements, this could change in the future as the technology evolves, and if more traditional approaches to transportation safety (engineering and behavioral strategies) do not yield the desired outcomes.



Vehicle Maintenance

Vehicle maintenance issues can also contribute to traffic crashes, including:

Cracked Windshields

Cracked windshields can obstruct a driver's vision. In a crash situation, seconds count and even a small obstruction can make a difference in the driver's response time.

Lights and Wipers

Light and wipers play a role in safe driving. If you cannot see or be seen, your chances of being involved in a crash increase.

Faulty Brakes

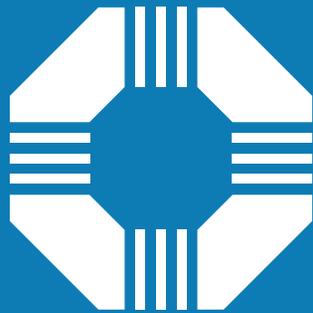
Faulty brakes can increase the distance it takes a person to slow or stop a vehicle.

Improperly Maintained Tires

Improperly maintained tires can increase your chance of roll over crash, especially for trucks and sport utility vehicles. Balding tires can also reduce friction between the tire and roadway surface, increasing the stopping distance, which can be exacerbated on wet pavement.

Approximately 18 people outside of a vehicle were killed on our highways between 2018 and 2022, with most of these people outside a disabled vehicle. The Federal Motor Carrier Safety Administration is conducting a research study on the impact of vehicle maintenance on traffic crashes (<https://www.fmcsa.dot.gov/research-and-analysis/research/impact-vehicle-maintenance-safety>). Community based organizations can be a resource to provide low and no-cost vehicle maintenance to people who are not able to afford basic vehicle maintenance and repairs but are reliant on a vehicle to get to work and provide care for family members.





VISION ZERO
CENTRAL FLORIDA
Counting down to zero traffic deaths

Appendix A - Resources and References

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3. <https://fteensafedriver.org/>
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Appendix B - Federal Funding Opportunities

Grant Name	Awarding Entity	Website	Typical Projects Funded	Standalone	Available Funding	Matching Requirements	Most recent/ Upcoming NOFO Dates	Notes of Interest
Rebuilding American Infrastructure with Sustainability and Equity (RAISE)	USDOT	https://www.transportation.gov/RAISEgrants/raise-nofo	Surface transportation projects that have significant local or regional impact; could include projects with a safety component.	No	\$2.2B 2022-26; \$113.75M was for planning, preparation, or design of projects last round	20% match	Nov-23	https://www.transportation.gov/sites/dot.gov/files/2022-09/RAISE%202022%20Award%20Fact%20Sheets_1.pdf
Infrastructure for Rebuilding America Discretionary Grant Program (INFRA)	USDOT	https://www.transportation.gov/grants/infra-grants-program	Primarily freight related.	No	awards range from \$9M to \$150M. Average award is \$40M.	20% match	Mar-23	For projects that improve safety, generate economic benefits, reduce congestion, enhance resiliency, and hold the greatest promise to eliminate freight bottlenecks and improve critical freight movements.
Reconnecting Communities Pilot Program (RCP)	USDOT	https://www.transportation.gov/grants/reconnecting-communities	Highway removal projects, through disadvantaged communities. Would fund replacement infrastructure and includes safety components.	No	\$1B 2022-2026; \$250M for planning; \$750M capital construction	20% match	Sep-23	
Safe Streets and Roads for All (SS4A)	USDOT	https://www.transportation.gov/grants/SS4A	Transportation safety projects.	Yes	\$5B 2022-2026	20% match	Feb-24	Projects must be identified in a comprehensive safety action plan to receive implementation funding.
Federal Transit Administration Capital Funds (FTA)	Federal Transit	https://www.transit.dot.gov/funding/grants/urbanized-area-formula-grants-5307	Funds safe access to transit projects	Yes	\$6.9B in 2022	20% match		See Bicycles and Transit, Flex Funding for Transit Access, the FTA Final Policy Statement on the Eligibility of Pedestrian and Bicycle Improvements Under Federal Transit Law, and FTA Program & Bicycle Related Funding Opportunities
Areas of Persistent Poverty Program (AoPP)	Federal Transit	https://www.transit.dot.gov/grant-programs/areas-persistent-poverty-program	Funds projects that provide access to transit in disadvantaged communities, including safety improvements.	Yes	\$20 M	Minimum federal share is 90%	Jan-23	
Carbon Reduction Program (CRP)	FHWA	https://www.fhwa.dot.gov/environment/sustainability/energy/	Planning, bicycle and pedestrian facilities, bike share programs, road diets, etc.	Yes	Around \$1.2B per year (2022-2026)			Project must be part of the state TIP and consistent with LRSTP and Metropolitan Transportation Plan; does not fund recreational trails
Congestion Mitigation and Air Quality Improvement Program (CMAQ)	FHWA	https://www.fhwa.dot.gov/environment/air_quality/cmaq/	Projects, including bicycle and pedestrian facilities, that reduce emissions.	Yes	Around \$2.4B per year (2022-2026). 2022 Funding for Florida was \$148M			Project for planning, feasibility analyses, and revenue forecasting associated with the development of a project that would subsequently be eligible to apply for assistance under the BIP
Highway Safety Improvement Program (HSIP)	FHWA	https://highways.dot.gov/safety/hsip/shsp	Safety projects on the highway system.	Yes*	\$3B per year (2022-2026)			Projects must be consistent with a state's Strategic Highway Safety Plan, funding is only for Highway projects, public transportation, and port facilities, Small local agencies also eligible

Appendix B - Federal Funding Opportunities

Grant Name	Awarding Entity	Website	Typical Projects Funded	Standalone	Available Funding	Matching Requirements	Most recent/ Upcoming NOFO Dates	Notes of Interest
Railway-Highway Crossings (Section 130) Program (RHCP)	FHWA	https://highways.dot.gov/safety/hsip/xings/railway-highway-crossing-program-overview	Railroad crossing improvements.	Yes*	\$245 M per year			Set aside from HSIP, Small local agencies also eligible
National Highway Performance Program (NHPP)	FHWA	Implementation Guidance for the National Highway Performance Program (NHPP) as Revised by the Bipartisan Infrastructure Law (dot.gov)	Could include safety improvements as part of other improvements.	Yes	\$29B per year (2022-2026)	No match required		Only for Highway projects; Administered by the State
Promoting Resilient Operations for Transformative, Efficient, and Cost Saving Transportation (PROTECT)	FHWA	https://www.fhwa.dot.gov/environment/sustainability/resilience/	Protecting transportation facilities from flooding.	No	\$1.4B (2022-2026)	20% match, can be combined		Funds can only be used for activities that are primarily for the purpose of resilience or inherently resilience related. With certain exceptions, the focus must be on supporting the incremental cost of making assets more resilient.
Surface Transportation Block Grant Program (STBG)	FHWA	https://www.fhwa.dot.gov/specialfunding/stp/	Planning, bicycle and pedestrian facilities, bike share programs, road diets, etc.	Yes	Around \$14B per year (2022-2026)			If called a bicycle facility, it must be primarily for transportation instead of recreation, but recreational trails are also permitted, Small local agencies also eligible
Transportation Alternatives (TA) Set-Aside	FHWA	https://www.fhwa.dot.gov/environment/transportation_alternatives/	Planning, bicycle and pedestrian facilities, bike share programs, road diets, etc.	Yes	Around \$1.4B per year (2022-2026)	20% match		Part of STBG; Administered by the State, Local agencies also eligible
Recreational Trails Program (RTP)	FHWA	https://www.fhwa.dot.gov/environment/recreational_trails/	Recreational trails	Yes	2022 Funding for Florida was \$2.6M	20% match; Flexibility may apply		Part of STBG; Administered by the State
Safe Routes to School Program (SRTS)	FHWA	https://www.fhwa.dot.gov/environment/safe_routes_to_school/	Projects that improve safety for students going to school	No		20% match; Flexibility may apply		Part of STBG; Administered by the State

Appendix C - FDOT Funding Opportunities

Grant Name	Website	Typical Projects Funded	Standalone	Available Funding	Matching Requirements	Anticipated Solicitation	Notes of Interest
Transportation Alternatives Program (TAP)	https://www.fdot.gov/planning/systems/tap/default.shtm	Bicycle/pedestrian facilities, recreational trails, SRTS projects	Yes	\$49M annually	FDOT covers 20% match with toll credits	District 5 To be determined and announced	Part of the Federal TA set aside of the STBG https://fdotwww.blob.core.windows.net/sitefinity/docs/default-source/planning/systems/systems-management/document-repository/tap/ta_set-aside-program_fl_overview-highlights_2015-2021.pdf?sfvrsn=7c0d8522_2
Shared-Use Nonmotorized (Sun) Trail Program	https://www.fdot.gov/planning/systems/suntrail/guidance.shtm	Shared use trails	Yes	\$25M annually		Likely September 2024	Project must be within the Suntrail network, a priority of the applicable jurisdiction, and consistent with applicable plans. Local agency must commit to operation and maintenance of trail. Separate Request for Funding, but must be included in FDOT Work Plan https://fdotwww.blob.core.windows.net/sitefinity/docs/default-source/planning/systems/suntrail/guidance/suntrail_guidanceforsubmittaloffundingrequest_ppt.pdf?sfvrsn=3ac9b7ba_2
Highway Safety Improvement Program	Reports and Plans (fdot.gov)	Transportation safety projects	Yes	\$148M in 2022		Jan-24	Must show how project improves safety; part of FHWA HSIP funding
Safe Routes to School	https://www.fdot.gov/Safety/programs/safe-routes.shtm	Transportation safety projects that improve safety for student going to/from school	No	\$7M annually	100% funded, cost-reimbursement	Jan-24	Funded through HSIP



CHAPTER 9

Technical Appendix

I- Benchmarking Evaluation



Image of Plant Street in the City of Winter Garden



Memorandum

Date: April 30, 2024
To: Vision Zero Central Florida Partners
From: Patty Hurd, PE, AICP, Kittelson and Associates,
Ryan Mansfield, PE, Kittelson and Associates
Subject: City of Winter Garden – Policy Review and
Benchmarking



Overview

This memorandum summarizes the results of a policy review and benchmarking assessment of the City of Winter Garden transportation policies, plans, and programs against a framework of Vision Zero and Safe System elements for the City of Winter Garden Vision Zero Action Plan. The review identified potential policy barriers to reaching zero serious injuries and fatalities on roads throughout the City and identified specific actions and policy changes that could be integrated into other planning documents.

As a part of the Regional Vision Zero Action Plan, Policy Benchmarking Guidance was developed, which is provided as an Attachment. This policy review and benchmarking follows the guidance outlined in that document, which consists of the following steps:

1. Identify relevant documents and establish framework for policy review and benchmarking.
2. Review documents and conduct policy review.
3. Apply benchmarking tool.
4. Incorporate findings into Action Plan.

The outcomes of the first three steps are documented in this technical memorandum along with preliminary Action Plan strategies; these strategies are based on discussions with the City Working Group. Each potential action is organized around the Core Elements of Vision Zero, with the Safe System strategy that the action is aligned with identified. Implementation timing and resource needs are also noted.

Core Elements of Vision Zero

The [Vision Zero Network](#) has established 10 core elements, as summarized in [Table 1](#). They provide a framework for what an effective safety program encompasses. Evaluating existing policies, programs, and projects against these core elements will help local agencies understand what is working to reduce severe crashes and what the gaps are in their existing safety programs. This information can then be used to inform stronger safety-related policies and programs as part of each agency's Action Plan.



Table 1 | Core Elements of Vision Zero

General Strategy	Strategy Details
Category: Leadership and Commitment	
Public, High-Level, and Ongoing Commitment	Key elected officials and leaders within public agencies, including transportation, public health, and police, commit to the goal of eliminating traffic fatalities and serious injuries within a specific timeframe. Leadership across these agencies consistently engages in prioritizing safety via a collaborative working group and other resource sharing efforts.
Authentic Engagement	Meaningful and accessible community engagement toward Vision Zero strategy and implementation is employed, with a focus on equity.
Strategic Planning	A Vision Zero Action Plan is developed, approved, and used to guide work. The Plan includes explicit goals and measurable strategies with clear timelines, and it identifies responsible stakeholders.
Project Delivery	Decision-makers and system designers advance projects and policies for safe, equitable multimodal travel by securing funding and implementing projects, prioritizing roadways with the most pressing safety issues.
Category: Safe Roads and Safe Speeds	
Complete Streets for All	Complete Streets concepts are integrated into communitywide plans and implemented through projects to encourage a safe, well-connected transportation network for people using all modes of transportation. This prioritizes safe travel of people over expeditious travel of motor vehicles.
Context-Appropriate Speeds	Travel speeds are set and managed to achieve safe conditions for the specific roadway context and to protect all roadway users, particularly those most at risk in crashes. Proven speed management policies and practices are prioritized to reach this goal.
Category: Data Driven Approach, Transparency, and Accountability	
Equity-Focused Analysis and Program	Commitment is made to an equitable approach and outcomes, including prioritizing engagement and investments in traditionally under-served communities and adopting equitable traffic enforcement practices.
Proactive, Systemic Planning	A proactive, systems-based approach to safety is used to identify and address top risk factors and mitigate potential crashes and crash severity.
Responsive, Hot Spot Planning	A map of the community’s fatal and serious injury crash locations is developed, regularly updated, and used to guide priority actions and funding.
Comprehensive Evaluation and Adjustments	Routine evaluation of the performance of all safety interventions is made public and shared with decision makers to inform priorities, budgets, and updates to the Vision Zero Action Plan.

Source: Vision Zero Network, 2023

Policy Review and Benchmarking

The following presents the results of the policy review and benchmarking as applied to the plans, policies and programs developed by the City of Winter Garden.

Identify and Review Relevant Documents and Establish Review Framework

The following documents were identified in consultation with City staff to be included in the policy review:

- Comprehensive Plan 2010-2020, Multimodal Transportation Element
- Design Standards and Guidelines Manual, December 2009
- Code of Ordinances, Chapter 62, Streets and Sidewalks (2024)
- Five Year Capital Improvements Plan (FY 2021/2022)
- East Winter Garden Plan Update (December 2022)
- Plant Street Character Area Design Plan
- West State Road 50 Commercial Corridor
- Traffic Calming Manual of Practice (Draft)
- Dillard Street Reconstruction
- SR 50/UCF Connector Alternatives Analysis
- Healthy West Orange Trails Initiative
- Transportation Plan (Draft Outline, ongoing effort)

The documents listed above were then reviewed and relevant pieces of information from the review framework were documented.

Policy Review

Each document noted above was reviewed and information from the review framework categories was documented. The framework tool was used to collect information, by category, from each document. This review was documented in a table summarizing the key content from each document by category, as summarized in [Table 1](#).

Benchmarking

Based on the policy review summary, the benchmarking tool was used to provide a high-level assessment of the overall status of how safety is incorporated and prioritized within existing policies and processes. The assessment aims to identify strengths of the existing safety program, and opportunities for enhancements aligned with Vision Zero and Safe System Approach best practices.

The policy review and benchmarking assessment are summarized in [Table 2](#). Some notable successes from the benchmarking and policy review include:

- The City of Winter Garden has multiple policies that align with Vision Zero best practices and prioritize safety, multimodal enhancements, and vulnerable road users.
- The City is beginning the efforts of developing a new Transportation Plan that will include a Vision Zero Policy, speed management and traffic calming tools, a Complete Streets Policy, and a Safe Routes to School plan. This plan will fulfill most of the benchmarks that are not currently in the Institutional Practice column and amplify others that are already incorporated.

The policy scan and benchmarking assessment also identified opportunities for enhanced alignment with Vision Zero and Safe System Approach best practices. The key opportunities City of Winter Garden and the Comprehensive Safety Action Plan could consider are:

- Update the Bicycle and Pedestrian Master Plan.
- Consider the following updates the Comprehensive Plan:
 - Including other best practice elements such as the Public Right-of-Way Accessibility Guidelines (PROWAG), Americans with Disability Act (ADA), AASHTO Roadside Design Guides, NACTO Urban Street Design Guide, NACTO Urban Bikeway Design Guide, NACTO Don't Give Up at the Intersections
 - Adopting multimodal Quality of Service standards, such as level of traffic stress

Vision Zero Action Items

Based on the policy benchmarking and subsequent discussions, potential actions to incorporate in the Action Plan were developed, as summarized on the following pages by the core elements of Vision Zero. Also noted with each potential action is which Safe System strategy it aligns with. The actions presented below may be refined and modified as they are incorporated into the Action Plan document; should there be differences between this document and the Action Plan, the Action Plan action items should take precedence.

The initial time frame for implementation was identified for three time periods, assuming actions in the plan would be implemented over a 5-year period:

1. **Immediate** (within one year) – Action is expected to be implemented within one year.
2. **Near-term** (within two to three years) – Action is expected to be implemented within two to three years. These are actions that may require additional resources and collaboration with other agencies.
3. **Longer-term** (within four to five years) – These longer-term actions may be contingent on the completion of prior actions, require additional staffing and other resources, and require significant collaboration with other agencies. Depending on the progress of immediate and near-term actions, some longer-term actions could be accomplished earlier or could be moved beyond five years.

The expected level of staff time/resources was also identified for each action with the following assumptions:

- **Low** – Estimated to be less than 40 hours total time that could be incorporated into existing processes with currently available resources. No additional staffing/funding resources are expected to be required for low effort strategies.
- **Medium** – Estimated to be between 40 and 120 hours of effort. While an individual medium- effort strategy could likely be accomplished with existing resources, it may be difficult to accomplish multiple concurrent medium-effort actions.
- **High** – Estimated to be over 120 hours of effort and additional outside resources, such as data, IT infrastructure, and/or collaboration with outside agencies. While an individual high-effort strategy could be accomplished with existing resources, it may be difficult to accomplish multiple concurrent medium and high-effort actions. Additional staff or consultant support may be needed to accomplish these items within the 5-year time, which could require additional funding resources.

For some actions, it may be a one-time occurrence, and for other activities it may be recurring action that is incorporated into an existing or new process. This is noted as one-time or on-going.

It is expected that the Safety Action Plan would be updated at least every five years and the

effectiveness of various strategies assessed, with new actions developed, actions that are successful retained, and actions that did not yield the expected results discontinued. Actions that are deemed not to be feasible for implementation in this plan may be considered for subsequent plan updates.

For each potential action item, the time frame, level of effort, and if it is a one-time occurrence or an on-going program are noted in the following format.

Summary of Action (Safe System Element) [Time Frame/Staff time and Resources/Duration]

As the following actions are further refined for inclusion in the Action Plan, performance measures will also be developed.

Public, High-Level Commitment

1. Adopt a Vision Zero Resolution that specifies a target date to reach zero or set a specific target goal to reduce fatal and severe injuries (All Safe System Elements). **[Immediate/Low/One-time]**
2. Adopt a Complete Streets policy (Safe Road Users, Safe Speeds). **[Immediate/Low/One-time]**
3. Coordinate with regional Traffic Incident Management (TIM) staff to provide training and resources to local first responders (EMS, Fire and Police) related to Vision Zero and Safe System (Post-crash Care). **[Longer-term/High/On-going]**

Authentic Engagement

1. Incorporate meaningful engagement as part of the development of the Transportation Plan. **[Immediate/Medium/On-going]**

Strategic Planning

1. Update the Regional Vision Zero Action Plan at least every 5 years (All Safe System Elements).

[Longer-term/High/On-going]

2. Implement transportation system performance metrics in Comprehensive Plan and Transportation Plan that better align with goals of vision zero, including quality of service (i.e. bicycle level of traffic stress and pedestrian level of traffic stress), accessibility, efficiency metrics (i.e. 24-hour capacity framework, 16-hour efficiency, total hours below capacity, hourly demand-to-capacity) and other potential metrics (Safe Roads, Safe Speeds). **[Near-term/Medium/One-time]**
3. Develop a Safe Routes to School plan to address barriers to walking or biking to school (Safe Roads, Safe Speeds and Safe Road Users). **[Longer-term/High/On-going]**

Project Delivery

1. Incorporate inclusion on the HIN into project prioritization process (Safe Roads and Safe Speeds). **[Longer-term/Medium/On-going]**

Complete Streets for All

1. Apply tools presented in Central Florida's Vision Zero Engineering Countermeasures Toolkit to all roadway design projects (Safe Roads and Safe Speeds). **[Longer-term/Medium/On-going]**
2. Provide Central Florida's Vision Zero Engineering Countermeasures Toolkit to developers as they prepare road plans for new developments. Consider including the Central Florida's Vision Zero Engineering Countermeasures Toolkit in the Design

Standards and Guidelines Manual (Safe Roads and Safe Speeds). **[Longer-term/Medium/On-going]**

3. Consider including best practice elements such as the Public Right-of-Way Accessibility Guidelines (PROWAG), Americans with Disability Act (ADA), AASHTO Roadside Design Guides, NACTO Urban Street Design Guide, NACTO Urban Bikeway Design Guide, NACTO Don't Give Up at the Intersections (Safe Roads and Safe Speeds) in City design standards. **[Near-term/low/One-time]**

Context Appropriate Speeds

1. Evaluate potential to include target speed reductions as part of roadway improvements (Safe Speeds). **[Near-term/High/On-going]**
2. Develop traffic calming program (Safe Speeds). **[Near-term/Medium/On-going]**
3. Identify corridors where traffic signal timing strategies could be used to control speeds and conduct a pilot project in partnership with FDOT and Orange County (Safe Speeds). **[Near-term/High/One-time]**

Equity Focused Analysis & Programs

1. Track crash outcomes by disadvantaged community status (Safe Road Users). **[Near-term/High/On-going]**

Proactive/Systemic

1. Develop traffic calming program (Safe Speeds). **[Near-term/Medium/On-going]**
2. Develop speed management plan (Safe Speeds). **[Near-term/Medium/On-going]**

Responsive/Hot Spot

1. Monitor MetroPlan Orlando's annual update of crash dashboard, report on progress and if new focus areas/crash trends are emerging (All Safe System Elements). **[Near-term/High/On-going]**

Evaluation and Adjustment

1. Develop process to conduct before and after studies for City roadway projects (Safe Roads). **[Immediate/High/On-going]**

The final action plan items will be reflected in the Vision Zero Action Plan.

Table 1 | Document Review Summary

Document Name	Description	Safety Policies and Goals	Safety Data and Analysis	Counter measures	VZ Core Element Link	Notes / Opportunities for Policy/Process Refinement
Comprehensive Plan 2010-2020, Multimodal Transportation Element	To provide the development of an overall multimodal transportation system which provides for the needs of the City by providing alternative travel choices and integrating with land use to work towards reduced vehicle trips and/or shorter trip lengths while protecting established residential areas, environmentally sensitive areas, and historically significant sites.	Objective 2-1.1: The City shall, in cooperation with area wide and State agencies, provide for a safe, convenient, multimodal and energy efficient motorized and non-motorized transportation system. Amended by Ordinance 00-10, 07/27/2000		Complete Streets Safety Improvements	Complete Streets for All	
Design Standards and Guidelines Manual, December 2009	Urban Design Standards, did not speak to roadway design					
Transportation Plan (Draft)	The goal of the City of Winter Garden's Transportation Plan is to help evolve the streets, trails, and paths to be increasingly safe, convenient, connected, comfortable, engaging, legible, equitable, and accessible for all users, including persons walking, persons riding bicycles, motorists, persons with disabilities, users and operators of public transit, seniors, children, and movers of commercial goods.	Safety Action Plan provides a framework for municipalities to: i) identify, analyze, and prioritize roadway safety improvements throughout their transportation network; ii) develop a phasing schedule for the implementation of the safety measures; and iii) identify potential funding sources to implement the programs and projects.			Complete Streets for All	
	Vision Zero Policy				Complete Streets for All	
	SS4A Action Plan				Strategic Planning	
	Speed Management	As part of a broader strategy, speed management will help the City of Winter Garden: 1. Reduce traffic-related fatalities and serious injuries. 2. Increase safety and comfort for non-motorized modes of travel. 3. Improve the user experience for people walking, biking, and taking transit, which translates into higher overall vibrancy for the city. Speed Management is also an essential element of Vision Zero, Complete Streets, and the Safety Action Plan.		Speed Management	Context-Appropriate Speeds	
	2. Design and Discussion (See Speed Management Matrix) a. Consider Network Changes (e.g., additional connections, removing confluences, proximate interchanges if highway interchanges are involved). b. Consider role and operational changes (e.g., supporting roles as per the vision, 2-way restorations). c. Consider Potential Transfer Effects onto Other Streets. d. Determine the Desired Operating Speed(s). e. Develop Cross-Sections for streets. f. Develop Gateway Features and Transitions.			Complete Streets		

Document Name	Description	Safety Policies and Goals	Safety Data and Analysis	Counter measures	VZ Core Element Link	Notes / Opportunities for Policy/Process Refinement
		<p>g. Determine Special Features, Special Areas (e.g., Exceptions, Main Street Intersection, Trail Crossings, Historic sites, Schools, Major Pedestrian Generators, etc.).</p> <p>h. Consider Changes to Form-Based Code, Rights-of-Way, Land Uses, and Parking.</p> <p>i. Consider Lighting, Stormwater, and Other Utilities.</p> <p>j. Consider Implementation Plan, Staging (due to MOT, budgets, coordination with other work...).</p> <p>k. Define Roles & Responsibilities, Jurisdiction Issues/Changes/Maintenance Agreements, Access Changes, etc.</p> <p>l. Evolve the above iteratively and collaboratively until there is an "informed consensus."</p>				
	Traffic Calming	<p>Traffic calming is the combination of mainly physical measures that:</p> <p>i) Reduce the negative effects of motor vehicle use,</p> <p>ii) Alter driver behavior; and</p> <p>iii) Improve conditions for non-motorized street users.</p>		Speed Management	Context-Appropriate Speeds	
	Complete Streets	Developing and implementing a Complete Streets policy		Complete Streets	Public, High-Level, and Ongoing Commitment	
	Context-Sensitive Design	By adopting a context-sensitive design approach, the City's planners and engineers can create roads and streets that better reflect the needs and values of the community, promote safety and accessibility for all users, and contribute to the overall livability and sustainability of the area.		Complete Streets	Complete Streets for All	
	Safe Routes to School	<p>As part of a broader strategy, implementing an SRTS program will help Winter Garden to:</p> <ol style="list-style-type: none"> 1. Enhance comfort and safety for students who walk and bike to school. 2. Promote physical activity among school-age children. 3. Reduce transportation costs for school districts and families without personal vehicles. 4. Improve the comfort and safety of streets for people of all ages and abilities. 		Complete Streets Safety Improvements	Complete Streets for All	
Code of Ordinances, Chapter 62, Streets and Sidewalks (2024)		Sec. 62-166. Conventional sidewalks shall be required on all real property with new construction and in all zoning districts except planned unit developments (sidewalks in this district shall be considered under site plan review), to be a minimum width and thickness and constructed in accordance with plans and specifications approved by the city engineer pursuant to the manual in appendix A to this Code.		Complete Streets Safety Improvements	Complete Streets for All	

Document Name	Description	Safety Policies and Goals	Safety Data and Analysis	Counter measures	VZ Core Element Link	Notes / Opportunities for Policy/Process Refinement
Five Year Capital Improvements Plan (FY 2021/2022)	Identifies 5-year list of multimodal improvements	Wayfinding Signage (2022)			Complete Streets for All	
	Street and Sidewalk Resurfacing/Improvements	\$1,000,000 per year FY 2023-2026		Complete Streets Safety Improvements	Context-Appropriate Speeds	
East Winter Garden Plan Update (December 2022)	Focus of update is towards improving the heart of East Winter Garden at the intersection of 10th and Center streets.	Enable pedestrians and cyclists to move freely throughout the area. Add shopfronts and awnings along the streets. Use high visibility crosswalks at intersections. Provide bike infrastructure (especially for those who cannot afford to drive), as well as bike routes for recreation.			Complete Streets for All	
		Proposes new street sections for Center Street and 10th Street that includes sidewalks, and streetscaping.		Complete Streets Safety Improvements	Complete Streets for All	
		Identified in Implementation Plan: create a plan to repair existing sidewalks; improve pathways to elementary school; Install a sidewalk and high visibility crosswalks on 9th street; extend pedestrian path along 11th Street to Sory Road; select location for pilot traffic calming device; reconnect Plant Street with 10th Street and North Street; Identify key streets to target new sidewalks; add a new link to the West Orange Trail; extend bike paths and trails into the neighborhood along Center and/or Bay Street; expand the use of small intersection roundabouts throughout the neighborhood;		Complete Streets Safety Improvements	Complete Streets for All	
Plant Street Character Area Design Plan	The Plant Street Character Area is part of the Winter Garden – Ocoee SR 429 Land Use + Economic Development Study and Master Plan (Master Plan) that was developed in 2014 that created an Economic Development Plan and Strategy for the cities of Winter Garden and Ocoee creating vibrant multi-use development with a strong pedestrian environment, an orientation toward streets and public spaces, and densities that generate a higher level of activity.	Define cross-section for Oakland/Plant Connector and Silver Star Extension that includes sidewalks, a shared use path or a cycle path, streetscaping, and lighting.		Complete Streets Safety Improvements	Complete Streets for All	
		Identifies new local streets, defines maximum block perimeter, and recommends cross-section for new street		Complete Streets Safety Improvements	Complete Streets for All	
West State Road 50 Commercial Corridor	The West SR 50 Commercial Corridor overlay was adopted with the intent to provide direction for the beautification of the corridor and provide for quality development and redevelopment along with maximizing traffic circulation opportunities as well as encouraging alternative modes of transportation. The SR 50 Commercial Corridor Overlay ordinance may be found here.			Complete Streets Safety Improvements	Complete Streets for All	

Document Name	Description	Safety Policies and Goals	Safety Data and Analysis	Counter measures	VZ Core Element Link	Notes / Opportunities for Policy/Process Refinement
Traffic Calming Manual of Practice (Draft)	The Traffic Calming Manual of Practice is a living document that provides practical guidance for normal traffic calming planning, design, and day-to-day practice. It is in support of all the chapters within the Transportation Plan with highest degrees of applicability to those that apply to safety, quality of life, connectivity, and complete streets.	To achieve a desired speed of 20 mph, on non-framework streets (page 1)		Speed Management	Context-Appropriate Speeds	
		Defines spacing of traffic calming elements on framework and non-framework streets.	As the City implements projects, consideration should be given to periodically conducting before and after speed studies to learn how local drivers alter their speeds in accordance with the spacing between the measures.	Speed Management	Comprehensive Evaluation and Adjustments	
		Speed Management Matrix included in Table 1		Speed Management	Strategic Planning	
Dillard Street Reconstruction	South Dillard Street from W. Colonial Drive to Plant Street will be reconstructed and redesigned, replacing underground utilities and creating a more inviting and functional streetscape. Some of the design goals include the following:	The comfortable accommodation of all modes of travel (walking, bicycling, motor vehicle)		Complete Streets Safety Improvements	Complete Streets for All	
Healthy West Orange Trails Initiative	Identifies future trails system	Improved connection among adjacent neighborhoods and downtown		Complete Streets Safety Improvements	Strategic Planning	
SR 50/UCF Connector Alternatives Analysis	Recommended alternative includes Bus Rapid Transit (BRT) service traveling in mixed-traffic along SR 50 from Oakland in west Orange County into Downtown Orlando to connect to LYNX Central Station and then on to Alafaya Trail, then up Alafaya Trail to UCF.	Identified pedestrian and bicycle safety and mobility challenges along SR 50. Recommends queue jumps at specific intersections and station locations.			Complete Streets for All	

Table 2 | Benchmarking Assessment Tool

Strategy	Benchmarks	Not a Current Practice	Occasional Practice	Institutional Practice	Notes / Opportunities for Policy/Process Refinement
Category: Leadership and Commitment					
Public, High-Level, and Ongoing Commitment	Agency leadership has made a public commitment to the goal of eliminating traffic fatalities and serious injuries within a specific timeframe.			X	Adopted Vision Zero Resolution 24-02 on January 11, 2024
	Agency leadership is consistently engaged in prioritizing safety via collaborative efforts.		X		Including input from Community Meetings.
	Key stakeholders have made a clear, public statement in support of Vision Zero efforts and timeline.			X	Via Vision Zero Resolution 24-02
	An interdepartmental safety working group regularly coordinates with leadership to discuss progress.			X	Vision Zero process and Traffic Calming Plan
Authentic Engagement	The agency conducts outreach to specific communities, interests, and populations.		X		As necessary, per project.
	Public meetings and workshops are hosted regularly and at times and locations convenient for the community.			X	Community Meetings are a regular practice to discuss proposed projects and initiatives.
	The community, including historically disadvantaged communities, trust and feel engaged by the agency.		X		Community outreach and meetings to discuss East Winter Garden.
	The stakeholder groups are representative of the community at large.		X		
	The agency engages regularly with community-based organizations and leaders.		X		
	The agency recognizes the value of community input by providing grant opportunities made in partnership with community-based organizations and nonprofits supporting Vision Zero work.				X
Strategic Planning	Crash data is collected regularly and used to inform decisions before plan development.			X	PD & Signal Four
	The agency augments traditional crash data from police data with data from other sources, such as hospitals.	X			

Strategy	Benchmarks	Not a Current Practice	Occasional Practice	Institutional Practice	Notes / Opportunities for Policy/Process Refinement
	The agency has established an appropriate timeline to reach zero traffic fatalities.			X	Vision Zero Resolution
	The agency has established near-term and interim goals for achieving zero traffic fatalities.	X			
	The agency has delineated clear action items to achieve each goal.	X			
	A lead department or position has been established for each action item.	X			
	The lead agency for each action item identifies partners to help complete the action.	X			
	The agency has determined appropriate funding needs for each action item.	X			
	The agency has maintained a Vision Zero website to inform the public about the initiative's progress; this could include a link to regional resources from the agency's home page.		X		Posted the regional Vision Zero effort on the website
	A third-party audits Vision Zero progress and reports outcomes on the website.	X			
	Departments and staff are provided resources for safety related training and staff development.	X			
	Staff at multiple levels and in multiple departments are safety champions to ensure continuity when a safety champion departs.	X			
	Adequate policies related to equitable transportation have been formulated.	X			
	The agency has determined suitable performance measures to assess equitable transportation.	X			
	Adequate policies related to multimodal transportation have been formulated.			X	Will be part of the Comprehensive Plan update that is planned to begin later 2024

Strategy	Benchmarks	Not a Current Practice	Occasional Practice	Institutional Practice	Notes / Opportunities for Policy/Process Refinement
	Suitable performance measures to assess multimodal transportation have been established.		X		
	The agency has developed policies to maintain bicycle and pedestrian facilities during construction projects that affect roadway operations.		X		We typically establish alternate routes of travel if projects impact a major ped or bike route
	The agency has established an efficient citizen request process and a methodology for evaluating requests.			X	Field citizen concerns through a system called MaintStar
Project Delivery	Adequate policies related to transportation safety have been formulated.		X		Under development with the Traffic Calming Plan and Vision Zero efforts
	The agency has determined suitable performance measures to assess transportation safety.	X			
	Transportation safety is incorporated into every Capital Improvement Project to the extent applicable.		X		
	FHWA's proven countermeasures are implemented in projects.	X			
	The agency implements NHTSA's Countermeasures that Work.	X			
	The agency shares project outcomes and effectiveness with the public.	X			
	The agency provides funding for projects that reduce fatal and serious injury collisions.			X	

Strategy	Benchmarks	Not a Current Practice	Occasional Practice	Institutional Practice	Notes / Opportunities for Policy/Process Refinement
	There is sufficient funding allocated for future projects that may reduce fatal and serious injury collisions.		X		Continue to flesh out the traffic calming and vision zero plans, more funds will be allocated for related projects
	The agency applies for grants to fund safety projects from traditional sources.	X			
	The agency applies for grants to fund safety projects from non-traditional sources.	X			
	Projects incentivizing transit, biking, walking, and carpooling over single-occupant vehicles are prioritized and implemented.		X		
Category: Safe Roadways and Safe Speeds					
Complete Streets for All	The agency has allocated adequate funding for complete streets projects.		X		
	The agency has a complete streets plan.	X			
	Complete Street elements have been incorporated into planning documents.		X		East Winter Garden Plan and the East Plant Street Character Area Overlay include complete street components
	Vulnerable users are prioritized in project planning and implementation.		X		
	The agency actively coordinates with neighboring member agencies and neighboring municipalities to provide connections for people walking and biking.		X		The City is part of the Healthy West Orange Trails Initiative in partnership with adjacent West Orange County jurisdictions
	Appropriate practices are followed to set speed limits based on context.				X

Strategy	Benchmarks	Not a Current Practice	Occasional Practice	Institutional Practice	Notes / Opportunities for Policy/Process Refinement
Context Appropriate Speed	The agency suggests specific rules to set speed limits near schools and areas with a high number of vulnerable road users.			X	
	Appropriate procedures are followed to enforce speed limits.			X	
	There are ongoing education programs/campaigns related to traffic speeds.		X		City's new "Slow Down Winter Garden" initiative
	The agency follows proper methods to modify existing roadways to achieve safe speeds.			X	Speed studies are typically conducted on any roadway of concern
Category: Data Driven Approach, Transparency and Accountability					
Equity Focused Analysis and Programs	The agency has developed effective programs and strategies to help people without housing, and low-income individuals access jobs and services.			X	Currently working on carrying out strategies from our East Winter Garden plan.
	Equity is a factor in project prioritization.			X	East Winter Garden Plan
	Equity is reflected in the agency's vision and goals for safety.			X	
	Geographic inequity is considered in the agency's data analysis.			X	
	The agency reports safety outcomes demographically.	X			
	Data on distribution of stops and ticketing is analyzed demographically.	X			
	The agency has formulated effective policies to mitigate the disproportionate impact of fines for minor violations on low-income individuals.	X			
	Important information and education materials are provided in common languages spoken by residents whose first language is not English.	X			
The agency uses data to identify and systematically address trends and risk factors to prevent severe collisions.	X				

Strategy	Benchmarks	Not a Current Practice	Occasional Practice	Institutional Practice	Notes / Opportunities for Policy/Process Refinement
Proactive / Systemic	Common collision patterns have been matched with adequate countermeasures.	X			
	The agency works to continuously improve the accuracy of crash reports.		X		PD has systems in place for this.
	The agency uses the High Injury Network (HIN) in project prioritization.	X			
Reactive / Hot Spot	A demographic analysis of the HIN has been conducted.	X			
	The agency routinely monitors and reports collision data to the public.	X			
Evaluation and Adjustment	Intersection design and control decisions are evaluated to reduce kinetic energy transfer to vulnerable users.		X		Stoneybrook redesign took this into consideration
	Demonstration projects are used to test the strategies and get feedback from the public.		X		Pilot programs like speed cushion implementation are underway
	The agency has a process to address underreporting of collisions, especially for vulnerable road users.	X			

Attachments



Final Memorandum

Date: October 10, 2023

To: Vision Zero Central Florida Consultants

From: Mighk Wilson, MetroPlan Orlando
Nicole Waldheim and Kathrin Tellez, Fehr & Peers

Subject: **Vision Zero Central Florida – Policy Benchmarking Guidance**



Introduction

The MetroPlan Orlando region has an overall fatal crash rate 15 percent higher than the national average and 10 percent higher than the statewide average. MetroPlan Orlando is preparing a Regional Vision Zero Action Plan to understand where crashes are most likely to occur, why crashes result in fatalities and serious injuries, and how to reduce the severity and frequency of these crashes. This effort will be rooted in the core elements of Vision Zero and the Safe System approach. The purpose of the Action Plan is to identify projects, programs, and strategies to eliminate fatalities and serious injuries on the region's roadways.

Funding for this effort is provided by the U.S. Department of Transportation's Safe Streets for All (SS4A) grant program. The SS4A grant program is funding the preparation of regional, county, and local agency Vision Zero action plans in the MetroPlan Orlando region.

This memorandum outlines a process to benchmark existing policies and guidelines against the Vision Zero core elements to meet the Safe Street for All requirement to review existing regional policies and guidelines.

Core Elements of Vision Zero

The Vision Zero Network has established 10 core elements, as summarized in [Table 1](#). They provide a framework for what an effective safety program encompasses. Evaluating existing policies, programs, and projects against these core elements will help local agencies understand what is working to reduce severe crashes and what the gaps are in their existing safety programs. This information can then be used to inform stronger safety-related policies and programs as part of each agency's Action Plan.

Table 1 | Core Elements of Vision Zero

General Strategy	Strategy Details
Category: Leadership and Commitment	
Public, High-Level, and Ongoing Commitment	Key elected officials and leaders within public agencies, including transportation, public health, and police, commit to the goal of eliminating traffic fatalities and serious injuries within a specific timeframe. Leadership across these agencies consistently engages in prioritizing safety via a collaborative working group and other resource sharing efforts.
Authentic Engagement	Meaningful and accessible community engagement toward Vision Zero strategy and implementation is employed, with a focus on equity.
Strategic Planning	A Vision Zero Action Plan is developed, approved, and used to guide work. The Plan includes explicit goals and measurable strategies with clear timelines, and it identifies responsible stakeholders.
Project Delivery	Decision-makers and system designers advance projects and policies for safe, equitable multimodal travel by securing funding and implementing projects, prioritizing roadways with the most pressing safety issues.
Category: Safe Roads and Safe Speeds	
Complete Streets for All	Complete Streets concepts are integrated into communitywide plans and implemented through projects to encourage a safe, well-connected transportation network for people using all modes of transportation. This prioritizes safe travel of people over expeditious travel of motor vehicles.
Context-Appropriate Speeds	Travel speeds are set and managed to achieve safe conditions for the specific roadway context and to protect all roadway users, particularly those most at risk in crashes. Proven speed management policies and practices are prioritized to reach this goal.
Category: Data Driven Approach, Transparency, and Accountability	
Equity-Focused Analysis and Program	Commitment is made to an equitable approach and outcomes, including prioritizing engagement and investments in traditionally under-served communities and adopting equitable traffic enforcement practices.
Proactive, Systemic Planning	A proactive, systems-based approach to safety is used to identify and address top risk factors and mitigate potential crashes and crash severity.
Responsive, Hot Spot Planning	A map of the community's fatal and serious injury crash locations is developed, regularly updated, and used to guide priority actions and funding.
Comprehensive Evaluation and Adjustments	Routine evaluation of the performance of all safety interventions is made public and shared with decision makers to inform priorities, budgets, and updates to the Vision Zero Action Plan.

Source: Vision Zero Network, 2023

Benchmarking Process

The benchmarking process is typically comprised of the following steps, each of which are described in more detail within this memorandum.

1. Identify and review relevant documents and procedures
2. Review and refine benchmarks
3. Conduct initial benchmarking by consultant team and agency staff project manager
4. Facilitate focused benchmarking discussion with stakeholders with knowledge of planning, engagement, project delivery and other elements contained within the benchmarking matrix
5. Identify opportunities for policy enhancements and barriers to change
6. Incorporate findings into Action Plan

Step 1 – Identify and Review Relevant Documents and Procedures

The first step of the benchmarking process is to **identify all relevant local policies, plans, programs, and projects that have a role in transportation safety** and conduct a review.

Documents to review may include, but are not limited to:

- Comprehensive Plan
- Transportation Plans, including active transportation plans
- Capital Improvement Program
- Design policies (multimodal, complete streets, speed, other), standards and guidelines, and land development code requirements
- Department Standard Operating Procedures

As a part of the benchmarking process, clear documentation of critical information from each plan is important. For each document reviewed, it is recommended that the following information, at a minimum, be documented. Each summary element is defined below, and an example summary is provided in **Table 2**.

Document Name: Name of document (and link to where the document can be found).

Document Description: One to three sentence description of the purpose of the document.

Goals and Policies: Documentation of what is intended to be achieved with transportation safety and supporting guidance, rules, procedures to achieve it.

Data and Analysis: Documentation of existing safety data/analysis or known challenges (if any).

Countermeasures: Documentation of proposed or programmed safety solutions to address key needs.

Vision Zero Link: How the document addresses one or more of the Vision Zero core elements (see Table 1).

Table 2 | Example Plan Documentation

						Notes/
CIP	Identifies 5-year list of multimodal improvements	Zero fatalities and serious injuries is stated as one of the primary goals for capital projects.	CIP projects are scored, in part, based on equity criterion.	Separated bike lanes	Project Delivery: Working to advance projects and policies for safe, equitable multimodal travel	Start tracking total funding spend on safety projects.
		Project prioritization approach includes safety criteria.	Regional High Injury Network is referenced in the document.	Speed studies Traffic calming Restriping		

Step 2 – Review and Refine Benchmarks

The next step is to determine how your existing policies and program align with the Vision Zero core elements and where gaps may exist. Potential Vision Zero benchmarks, centered around the core elements of Vision Zero and the Safe System approach, have been developed as presented in **Table 3**, and provided as an excel spreadsheet, and are intended to help assess what agencies are currently doing well related to Vision Zero and where potential changes to policies, programs and practices could be considered as a part of the development of their Vision Zero Action Plan. Not all benchmarking criteria will apply to all agencies, and some agencies may wish to develop additional criteria.

A process to follow in conducting the benchmarking is provided in the next section.

Table 3 | Vision Zero Benchmarks

Category: Leadership and Commitment	
Public, High-Level, and Ongoing Commitment	Key elected officials and leaders have made a public commitment to the goal of eliminating traffic fatalities and serious injuries within a specific timeframe.
	Key elected officials are consistently engaged in prioritizing safety via collaborative efforts.
	Key stakeholders have made a clear, public statement in support of Vision Zero efforts and timeline.
	An interdepartmental safety working group regularly coordinates with leadership to discuss progress.
	Public meetings and workshops are hosted regularly and at times and locations convenient for the community.
Authentic Engagement	The agency conducts outreach to specific communities, interests, and populations.
	The community, including historically disadvantaged communities, trust and feel engaged by the agency.
	The stakeholder group is representative of the community at large.
	The agency engages regularly with community-based organizations and leaders.
	The agency recognizes the value of community input by providing grant opportunities made in partnership with community-based organizations and nonprofits supporting Vision Zero work.
	Crash data is collected regularly and used to inform decisions before plan development.

Strategy	Benchmarks	Not a Current Practice	Occasional Practice	Institutional Practice
Strategic Planning	The agency augments traditional crash data from police data with data from other sources, such as hospitals.			
	The agency has established an appropriate timeline to reach zero traffic fatalities.			
	The agency has established near-term and interim goals for achieving zero traffic fatalities.			
	The agency has delineated clear action items to achieve each goal.			
	A lead department or position has been established for each action item.			
	The lead agency for each action item identifies partners to help complete the action.			
	The agency has determined appropriate funding needs for each action item.			
	The agency has maintained a Vision Zero website to inform the public about the initiative's progress; this could include a link to regional resources from the agency's home page.			
	A third-party audits Vision Zero progress and reports outcomes on the website.			
	Departments and staff are provided resources for safety related training and staff development.			
	Staff at multiple levels and in multiple departments are safety champions to ensure continuity when a safety champion departs.			
	Adequate policies related to equitable transportation have been formulated.			
	The agency has determined suitable performance measures to assess equitable transportation.			
	Adequate policies related to multimodal transportation have been formulated.			
	Suitable performance measures to assess multimodal transportation have been established.			
	Non-transportation policies support transportation safety, such as land use, open space, parks, etc.			
	The agency has developed policies to maintain bicycle and pedestrian facilities during construction projects that affect roadway operations.			
	The agency has developed policies to maintain bicycle and pedestrian facilities during construction projects that affect roadway operations.			
	The agency has established an efficient citizen request process and a methodology for evaluating requests.			

Strategy	Benchmarks	Not a Current Practice	Occasional Practice	Institutional Practice
Project Delivery	Adequate policies related to transportation safety have been formulated.			
	The agency has determined suitable performance measures to assess transportation safety.			
	Transportation safety is incorporated into every Capital Improvement Project to the extent applicable.			
	FHWA's proven countermeasures are implemented in projects.			
	The agency implements NHTSA's Countermeasures that Work.			
	The agency shares project outcomes and effectiveness with the public.			
	The agency provides funding for projects that reduce fatal and serious injury collisions.			
	There is sufficient funding allocated for future projects that may reduce fatal and serious injury collisions.			
	The agency applies for grants to fund safety projects from traditional sources.			
Category: Safe Roadways and Safe Speeds				
Complete Streets for All	The agency has allocated adequate funding for complete streets projects.			
	The agency has a complete streets plan.			
	Complete Street elements have been incorporated into Comprehensive Plans and other planning documents.			
	Vulnerable users are prioritized in project planning and implementation.			
	The agency actively coordinates with neighboring municipalities to provide connections for people walking and biking.			
	Appropriate practices are followed to set speed limits based on context.			

Strategy	Benchmarks	Not a Current Practice	Occasional Practice	Institutional Practice
Context Appropriate Speed	The agency uses specific rules to set speed limits near schools and areas with a high number of vulnerable road users.			
	Appropriate procedures are followed to enforce speed limits.			
	There are ongoing education programs/campaigns related to traffic speeds.			
	The agency follows proper methods to modify existing roadways to achieve safe speeds.			
	The agency follows proper methods to modify existing roadways to achieve safe speeds.			
Category: Data Driven Approach, Transparency and Accountability				
Equity Focused Analysis and Programs	The agency has developed effective programs and strategies to help people without housing, and low-income individuals access jobs and services.			
	Equity is a factor in project prioritization.			
	Equity is reflected in the agency's vision and goals for safety.			
	Geographic inequity is considered in the agency's data analysis.			
	The agency reports safety outcomes demographically.			
	The police department policy for traffic stops consider equity			
	Data on distribution of stops and ticketing is analyzed demographically.			
	The agency has formulated effective policies to mitigate the disproportionate impact of fines for minor violations on low-income individuals.			
Proactive / Systemic	Common collision patterns have been matched with adequate countermeasures.			
	The agency works to continuously improve the accuracy of crash reports.			
	The agency uses the High Injury Network (HIN) in project prioritization.			

Strategy	Benchmarks	Not a Current Practice	Occasional Practice	Institutional Practice
Reactive / Hot Spot	A demographic analysis of the HIN has been conducted.			
	The agency routinely monitors and reports collision data to the public.			
Evaluation and Adjustment	Intersection design and control decisions are evaluated to reduce kinetic energy transfer to vulnerable users.			
	Demonstration projects are used to test the strategies and get feedback from the public.			
	The agency has a process to address underreporting of collisions, especially for vulnerable road users.			

Steps 3 through 5 – Using the Benchmarks

The following describes how to use the Vision Zero benchmarks to assess your agency's safety program.

Identify Stakeholders: Determine who participates in the benchmarking assessment. This can be done with the Task Force, Steering Committee or Working Group assembled to develop the local agency safety plan, or with a subset of stakeholders who represent transportation and safety interests and have knowledge about the agency's practices. At a minimum, participants should include representatives from Engineering, Planning/Community Development, and Enforcement.

Review and Customize Benchmarks: The benchmarks listed for each of the Vision Zero core elements represent strategies to make improvements and adjustments to a safety program. It is recommended to consider all of these when assessing a safety program, but not required. In coordination with the review committee, review the benchmarks to determine which should be included in the benchmarking assessment, which should not, and any customizations to the language. The strategies provide a starting point but can be revised based on the goals of your safety program.

Populate the Benchmarks: Using the results of the plan review, the consultant team should complete an initial pass through the Table 3 matrices based on their review of various plans and documents, as well as initial discussions with agency staff, and populate and "x" in the appropriate column, denoting the level of institutionalization. A column documenting rationale or notes can be added. In addition to using the plan review to populate the matrix, a discussion with the local agency project manager can be another resource to populate the level of institutionalization columns. An example is summarized in **Table 4**.

Table 4 | Example of Populating the Benchmarks

Strategy	Benchmarks	Not a Current Practice	Occasional Practice	Institutional Practice	Notes
Project Delivery	The agency has determined suitable performance measures to assess transportation safety.		x		The Comprehensive Plan includes performance measures for severe crashes.
Project Delivery	FHWA's proven countermeasures are implemented in projects.		x		The CIP includes some of the FHWA proven countermeasures including bike lanes and road diets.
Proactive / Systemic	The agency uses the High Injury Network (HIN) in project prioritization.	x			A HIN will be developed as part of the Action Plan and incorporated into future project prioritization.

Stakeholder Workshop: To obtain feedback and input on the benchmarking assessment matrix, a virtual or in-person stakeholder workshop can be held. The goals for the workshop are to:

- Provide education on a Vision Zero safety program and benchmarks.
- Obtain feedback on the already populated benchmarks (based on the inputs from the plan review).
- Finalize the level of institutionalization for all the benchmarks.
- Identify gaps and the associated challenges in the current safety program.

The workshop can be an hour and a half in length and follow this format:

- Overview of safety planning with a focus on Vision Zero and the Safe System Approach. (5 minutes)
- Describe the 10 core Vision Zero elements. (5 minutes)
- Break into three groups – the groups are organized around the Vision Zero categories of 1) Leadership and Commitment 2) Safe Roads and Speeds 3) Data Driven Approach, Transparency and Accountability. Participants will rotate through three groups and spend 25 minutes in each one.

Facilitators will capture the following information:

- Confirm the x's are in the proper institutionalization categories for each benchmark (2 minutes)
- For any benchmarks without an “x” obtain feedback from the group (5 minutes)
- For the benchmarks marked as “occasional” or “not a current practice,” discuss why. Obtain feedback on the challenges and solutions. These conversations will form the basis of policy recommendations to be included in the Action Plan (18 minutes)

Table 5 summarizes how to obtain the information. In total this portion of the agenda will be 75 minutes.

- Wrap Up. (5 minutes)

Table 5 | Example of Capturing Feedback on Benchmarks

Strategy	Benchmarks	Status	Notes	Challenges	Ideas
Project Delivery	The agency has determined suitable performance measures to assess transportation safety.	Occasional Practice	The Comprehensive Plan includes performance measures for severe crashes.	Do not have staff resources to track performance measures beyond severe crashes.	Speed is an emphasis area so develop metrics to track this issue. Coordinate with FDOT and MetroPlan Orlando to track outcomes on regional roadways.
Project Delivery	FHWA's proven countermeasures are implemented in projects.	Occasional Practice	The CIP includes some of the FHWA proven countermeasures including bike lanes and road diets.	Not all of the proven countermeasures have political support.	Identify which of the other proven countermeasures could be implemented locally; consider educating elected officials and the public.
Proactive / Systemic	The agency uses the High Injury Network (HIN) in project prioritization.	Not a Current Practice	A HIN will be developed as part of the Action Plan and incorporated into future project prioritization.	May not have resources to periodically update HIN.	Incorporate HIN and safety analysis into Comprehensive Plan Updates and other planning processes.

Alternative: If a stakeholder workshop is not possible, focused interviews with key stakeholders can be held to obtain input on the benchmarks, areas of success, and gaps/challenges. Identify key stakeholders and set up individual interviews. Provide background on the benchmarks and walk through each one to obtain their input on level of institutionalization. Use the successes and challenges tabs, summarized in Table 5 to capture feedback.

Step 6 – Develop the Action Plan

Based on the benchmarking effort and findings, actions and next steps can be identified to enhance the local safety program.

Drawing from the challenges and ideas generated at the workshop (or interviews), the consultant team will develop a set of next steps to be completed as part of the safety planning process or be included in the plan for further consideration. **Table 6** summarizes how to develop the next steps (in matrix format) related to identified policy, programmatic, and policy changes.

Table 6 | Example Action Plan Template

Strategy	Actions	Near Term Action	Action to be Included in Plan	Longer Term Consideration
Project Delivery	Make better use of FHWA countermeasure resources	x	x	
Project Delivery	Develop policy to consider FHWA proven countermeasures first in project prioritization		x	x
Project Delivery	Develop metrics to evaluate speed-related severe crashes	x	x	
Proactive / Systemic	Develop HIN and incorporate into project prioritization criteria.	x	x	

Have any questions?

If you have questions related to the policy review, or if you have an approach not included in the list, please contact Mighk Wilson at mwilson@metroplanorlando.org.



CHAPTER 9

Technical Appendix

J- Engineering Countermeasure Toolkit



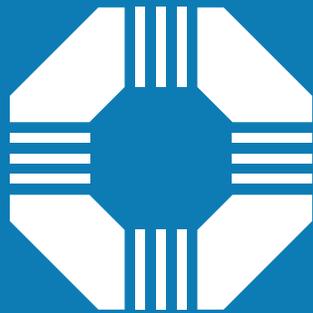
Image of Plant Street in the City of Winter Garden



Engineering Countermeasures Toolkit



VISION ZERO
CENTRAL FLORIDA
Counting down to zero traffic deaths



VISION ZERO
CENTRAL FLORIDA
Counting down to zero traffic deaths

Overview

Introduction and How to Use this Toolkit

MetroPlan Orlando will complete its first comprehensive Vision Zero Action Plan in Spring 2024. The Plan outlines actions that MetroPlan Orlando, including its 3 counties and incorporated cities, will take in the next five years and beyond to eliminate deaths and serious injuries on the region's roadways by 2050. The purpose of this Engineering Countermeasure Toolkit is to establish a shared understanding of key strategies available to address roadway safety issues in our community that align with the Safe System Approach. The key objectives of this Toolkit are to:

1. Inform partner jurisdictions about safety treatment options and their appropriate uses and contexts,
2. Communicate safety tools using easy-to-understand language and graphics,
3. Facilitate coordination between staff, contractors, developers, and the community when discussing transportation safety improvements, and
4. Create a shared understanding and realistic expectations around safety treatments.

The Toolkit describes a variety of engineering countermeasures, how they can be applied to address safety, and their expected effectiveness i.e., crash reduction, when available. The expected crash reduction is based on Crash Modification Factors from the Federal Highway Administration's (FHWA) Crash Modification Clearinghouse or other published studies. The Toolkit also includes general information about each tool's application, typical placement, estimated costs, and delivery timelines.

This Toolkit is meant to provide guidance for engineering countermeasures applicable to crashes and safety concerns identified in the MetroPlan Orlando region; it does not provide an exhaustive list of all safety countermeasures. This Toolkit is not meant to replace engineering investigation, feasibility evaluation, and design. The selection of engineering countermeasures for a specific location is always subject to professional judgement and context-sensitive design.

The Engineering Countermeasure Toolkit is also not intended to be a menu from which community members can request safety tools for their street. Before staff consider a tool or tools to use in a certain situation, they must first conduct an analysis to understand the existing safety issue. Therefore, to achieve desired safety benefits, community-reported concerns should focus on

Safe System Framework



Sou,

observing and communicating safety issues rather than asking for specific tools. Non-engineering countermeasures are identified in a separate document.

Systemic Treatments

The implementation of systemic treatments is a common Vision Zero approach that implements low-cost safety measures on a network level to reduce the risk of severe and fatal crashes. The treatments that are typically considered for systemic implementation are relatively effective, lower cost, and well-suited for implementation at multiple locations. Some systemic treatments can be implemented with limited study and design, such as retroreflective signal backplates, high-visibility crosswalks or curb extensions created with paint, bollards, and turn wedges. Although systemic treatments are often discussed in contrast with spot treatments, some treatments may be useful in both spot and systemic safety.

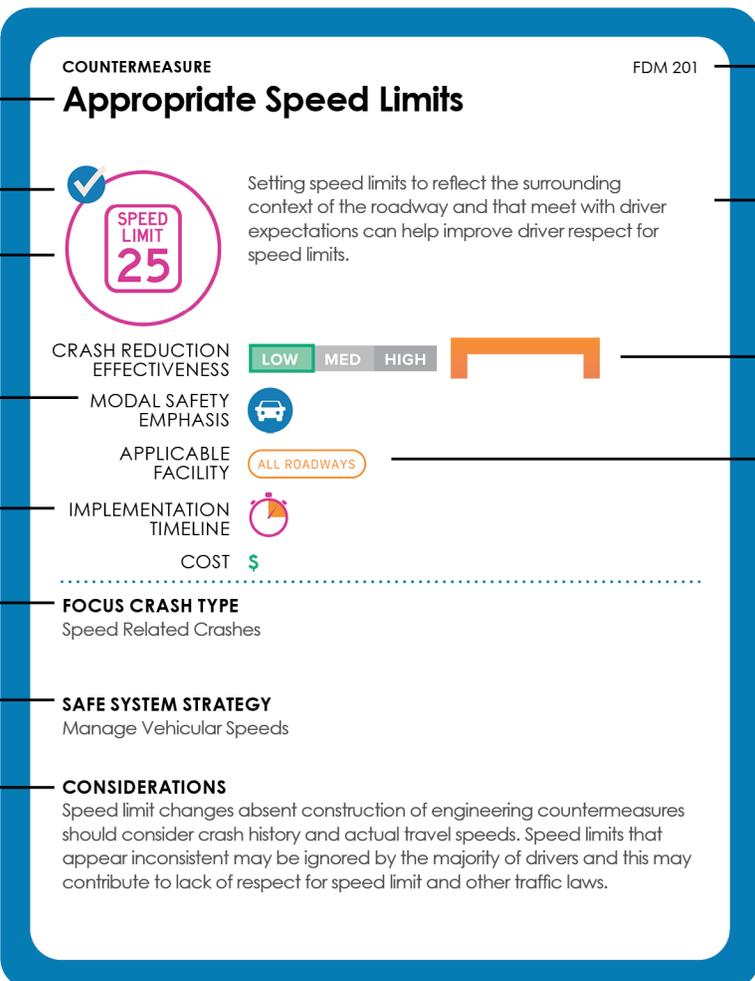
Organization of the Toolkit

The countermeasures are organized into the following categories:

- A. Signals
- B. Signing and Striping
- C. Bikeways
- D. Pedestrian Facilities
- E. Intersections and Roadways
- F. Speed Management
- G. Other Engineering Strategies

For each engineering countermeasure, the following information is provided, with a description of select sections provided below.

What You'll See Inside:



The diagram shows a sample countermeasure card for "Appropriate Speed Limits" (FDM 201). The card includes the following sections and callouts:

- COUNTERMEASURE:** Appropriate Speed Limits (FDM 201)
- Countermeasure title:** Appropriate Speed Limits
- FHWA Proven Safety Countermeasure:** Indicated by a checkmark icon.
- Countermeasure icon:** A speed limit sign icon showing "SPEED LIMIT 25".
- Countermeasure description:** Setting speed limits to reflect the surrounding context of the roadway and that meet with driver expectations can help improve driver respect for speed limits.
- Crash Reduction Effectiveness:** A bar chart showing effectiveness levels: LOW (green), MED (grey), and HIGH (orange). The bar is positioned at the HIGH level.
- Mode(s) this countermeasure effects:** Indicated by a car icon.
- Modal Safety Emphasis:** Indicated by a car icon.
- Applicable Facility:** ALL ROADWAYS (indicated by an orange pill-shaped icon).
- Typical roadway application:** ALL ROADWAYS.
- Implementation Timeline:** Indicated by a clock icon.
- Cost:** Indicated by a dollar sign icon.
- Crash typologies this addresses:** FOCUS CRASH TYPE: Speed Related Crashes.
- Strategy related to FHWA Safe Systems Approach:** SAFE SYSTEM STRATEGY: Manage Vehicular Speeds.
- Additional considerations:** Speed limit changes absent construction of engineering countermeasures should consider crash history and actual travel speeds. Speed limits that appear inconsistent may be ignored by the majority of drivers and this may contribute to lack of respect for speed limit and other traffic laws.

Organization of the Toolkit

Modal Safety Emphasis

Closely related to the countermeasure categories is the "Modal Safety Emphasis" which represents the user group that predominantly benefits from the implementation of the countermeasure. The classification of user groups is not meant to include every possible mode with the understanding that certain countermeasures will benefit modes with closely related travel characteristics. For example, a countermeasure that is designed to reduce left-turn crashes at an intersection will benefit motor vehicles and motorcycles alike. The Modal Safety Emphasis areas include the following user groups:

-  **Pedestrians**
-  **Bicycles**
-  **Motor Vehicles**

Safe System Strategy

Within the Safe System Approach Framework, how we plan, construct, and operate our roadways should anticipate human error and consider human vulnerabilities. Strategies to achieve those goals are highlighted below.

Roads should be designed to encourage appropriate roadway user behavior for the context.

These principles provide a system with built-in redundancies to eliminate or greatly reduce the likelihood of death or serious injury when a crash occurs. However, strategies have varying levels of effectiveness, feasibility, and implementation time frames. FHWA has further developed a draft Safe Systems Solutions Hierarchy (as of July 2023) within the Safe System element of Safe Roads, as described below. Within that framework, the most effective strategies include removing



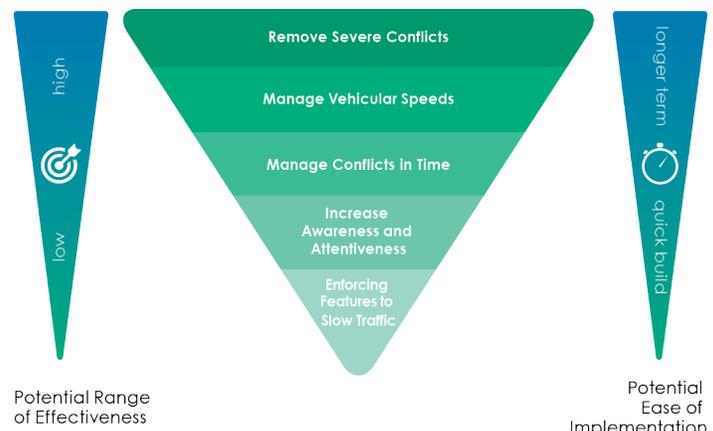
conflicts and minimizing hazards, and where that is not feasible, better management of the conflict through speed reductions and managing conflicts in time.

- **Remove Conflicts:** Eliminate the most severe conflicts between roadway users, such as through the relocation of a utility pole, construction of a roundabout or provision of a median barrier.
- **Manage Vehicular Speeds:** Reduce the speed of vehicles to align with the context of the roadway, the hazards, and conflicts between roadway users; includes horizontal and vertical deflection elements.
- **Manage Conflicts in Time:** Where conflicts cannot be removed, can they be separated in time, through signal timing strategies or providing dedicated space for other roadway users.
- **Increase Attentiveness and Awareness:** Where conflicts cannot be removed, improve the visibility of the conflicts.
- **Implement Enforcing Features to Slow Traffic:** Similar to managing vehicular speeds, these are roadway features that help enforce the desired speed, like speed feedback signs.

Applicable Facility Type

The applicable facility types represent general characteristics for land use and users where each countermeasure might be appropriate. The applicable facilities are categorized using a preliminary context classification system of:

- **Urban Streets** (FDOT Context Classification C4, C5, C6 and CT2)



Organization of the Toolkit

- **Suburban Streets** (C4, C3C and C3R)
- **Rural Roads** (C2)

For purposes of this toolkit, countermeasures for both urban and suburban roadways could be considered on C4 roadways. For strategies related to C1 facilities, please refer to the FDOT Context Classification Guide and the Florida Design Manual (FDM). Some treatments are more appropriate for use on urban arterial streets with higher traffic volumes and a mix of different users, while others are better used on rural roads where speeds tend to be higher. However, choosing the best tool for a location will depend on location-specific characteristics like number of travel lanes, geometry, vehicle speeds, and volumes. The selection of countermeasures should also consider the future roadway context.

Crash Reduction Effectiveness

The potential effectiveness of each countermeasure was based on published research, including information from FHWA's Crash Modification Factor (CMF) Clearinghouse, FHWA's Proven Safety Countermeasures, and other published references (see complete list of references at end of this section). The CMF Clearinghouse provides peer reviewed studies and a link to the applicable study. As this toolkit is intended to be a quick resource guide to help identify the range of potential countermeasures, the anticipated effectiveness of various treatments was summarized into the following categories:

- **Unknown:** No quantitative data is available
- **Low:** Expected Crash Reduction $\leq 30\%$
- **Medium:** $31\% \leq$ Expected Crash Reduction $\leq 60\%$
- **High:** Expected Crash Reduction $\geq 61\%$

The expected crash reduction represents a multiplicative factor indicating the proportion of crashes that are expected to be reduced after the implementation of a countermeasure with the reduction only applying to crashes affected by the countermeasure. For example, changing left-turn phasing would only apply to left-turn crashes on the approach where the countermeasure is being implemented. For locations where more than one countermeasure is being considered, the interaction between countermeasures should be considered. For more information on the application of multiple CMFs, refer to the

"Using CMFs" section of the Crash Modification Clearinghouse (https://www.cmfclearinghouse.org/using_cmf.php)

Some countermeasures may result in a decrease in some types of crashes and an increase in others. For example, installing a traffic signal may reduce fatal and serious injuries for motorists turning to/from the major roadway, but increase rear end crashes, which tend to result in fewer injuries.

Detailed crash analysis based on the most current crash modification factor is recommended as the intent of the factors provided in this document is to allow for a quick comparison of the expected effectiveness of specific countermeasures relative to their cost as well as highlight the need for additional data to document the effectiveness of specific improvements that may be implemented regionally. The estimated effectiveness of each tool is only applicable to the crash type being mitigated i.e., the Focus Crash Type.

Included in FHWA Proven Safety Countermeasures

This field refers to whether the countermeasure is included in FHWA's Proven Safety Countermeasures Initiative (PSCi). The PSCi is a collection of 28 countermeasures and strategies effective in reducing roadway fatalities and serious injuries. Each countermeasure addresses at least one safety focus area – speed management, intersections, roadway departures, or pedestrians/bicyclists – while others are crosscutting strategies that address multiple safety focus areas.

Cost

The cost information is meant to convey an overall order of magnitude to help compare potential strategies; the cost data does not necessarily reflect the cost of each improvement as a standalone construction project. Most countermeasures would not likely be implemented as a standalone project but incorporated into a larger intersection or corridor enhancement project. For example, many elements could be incorporated into routine resurfacing, restoration, and rehabilitation (RRR) projects. Additionally, costs do not include elements that might be unique to specific projects, such as right-of-way acquisition, need to upgrade drainage systems, retaining walls to facilitate sidewalk construction, need to upgrade other roadway elements to meet Americans with Disabilities Act (ADA) or Public Rights of Way

Organization of the Toolkit

Access requirements (PROWAG) requirements, and other factors. Therefore, actual costs could vary significantly.

The assigned cost ratings for countermeasures are as follows:

- **Low (\$):** Typically, \$10,000 or less
- **Medium (\$\$):** Typically, \$10,000 to \$100,000
- **High (\$\$\$):** Typically, \$100,000 +

The appendix provides more detailed cost estimates for some countermeasures where recent cost data is available from FDOT other local partners; not all countermeasures are included. These costs can be used to develop high-level cost estimates of projects for regional prioritization such that projects across the region can be compared.

Implementation Timeline

This field represents the typical time to implement the countermeasure. It should be noted that there may be some variability in implementation timeline based on whether the countermeasure can be implemented using "Quick Build" materials or permanent materials. The assigned timeline thresholds for implementation are as follows:

-  Quick Build; Typically, within 1 year
-  Short: Typically, within 1 to 3 years
-  Medium: Typically, 3 to 5 years
-  Long: Typically, 5 years and more

Considerations

This section provides some additional information about the countermeasure that need to be part of the evaluation about whether the countermeasure is appropriate for selection. For example, some countermeasures may affect drainage or require additional maintenance.

Where the countermeasure is included or mentioned in the FDOT Design Manual (FDM) or FDOT's Traffic Engineering Manual, the appropriate section is noted.

Additional sources of the countermeasures include:

- CMF Clearinghouse (Federal Highway Administration, 2023) (<http://www.cmfclearinghouse.org/>)
- Application of Pedestrian Crossing Treatments for Streets and Highways (NCHRP, 2016) (https://www.researchgate.net/publication/316091509_Application_of_Pedestrian_Crossing_Treatments_for_Streets_and_Highways)
- Development of Crash Modification Factors for Uncontrolled Pedestrian Crossing Treatments (NCHRP, 2017) (<https://www.nap.edu/catalog/24627/development-of-crash-modification-factors-for-uncontrolled-pedestrian-crossing-treatments>)
- Evaluation of Pedestrian-Related Roadway Measures (Pedestrian and Bicycle Information Center, 2014) (http://www.pedbikeinfo.org/cms/downloads/PedestrianLitReview_April2014.pdf)
- Evolution of the Protected Intersection (Alta Planning and Design, December 2015) (<https://altago.com/wp-content/>)

Target Speed

The selection of countermeasures should also consider the target speed of the roadway. To establish a target speed based on the roadway context and the goal of improving transportation safety outcomes, the FDOT Context Based Design Speeds for Arterials and Collectors should be used as a starting point, as presented in Table 1.

Table 1: Allowable Design Speed Range by Context Classification

Context Classification	Allowable Design Speed Range (MPH)	SIS Minimum (MPH)
C1 Natural	55-70	65
C2 Rural	55-70	65
C2T Rural Town	25-45	40
C3 Suburban	35-55	50
C4 Urban General	25-45	45
C5 Urban Center	25-35	35
C6 Urban Core	25-30	30

Source: FDOT Context Classification Guide, February 2022

Guidance from FDOT Central Office related to target speed setting recommends setting an initial target speed on the low end of the allowable range, and then providing justification for increases. From there, the following factors should be used to establish a recommended target speed:

- Fatal and severe injury collision history
- Potential crash risk
- Existing and potential future context classification
- Number of lanes
- Type and density of surrounding land uses
- Number of access points and signal spacing
- Presence and characteristics of on-street parking
- Total pavement width available

Different Types of Speed

Target Speed is the highest speed at which vehicles should operate on a thoroughfare in a specific context, consistent with the level of multi-modal activity generated by adjacent land uses, to provide both mobility for motor vehicles and a supportive environment for pedestrians, bicyclists, and public transit users.

Design Speed is the speed that is used to determine the geometric features of a road or street, such as curves, slopes, lane width, intersection spacing, sight distance and other features.

Speed Limits specify the maximum speed people are permitted to drive on a road, typically shown on signs along the road, and usually determined based on an engineering study that considers the prevailing travel speeds.

Operating Speed refers to the speed at which people are observed driving under free-flow conditions.

Under ideal conditions, target, design, posted and operating speeds all align. When there are discrepancies, roadway design elements may need to be changed to achieve the desired speed outcomes.

- Presence of transit, pedestrian generators, and bicycle activity
- Bicycle facility type
- Posted speeds on surrounding roadways
- Types of travelers (regional or local)
- Level of truck traffic

Additional guidance can be found in the FDOT Context Classification Guide, February 2022 as well as the Speed Management section of the 2024 FDOT Design Manual.

References

[uploads/Evolution-of-the-Protected-Intersection_ALTA-2015.pdf](#))

- Manual for Selecting Safety Improvements on High Risk Rural Roads (FHWA, 2014) (<https://safety.fhwa.dot.gov/hsip/hrrr/manual/>)
- Pedestrian Safety Guide and Countermeasure Selection System (FHWA) (<http://www.pedbikesafe.org/pedsafe/>)
- Proven Safety Countermeasures (FHWA), (<https://highways.dot.gov/safety/proven-safety-countermeasures>)

Transportation safety countermeasure information is quickly evolving and users of this document are encouraged to use the most current information available.

Cost information based on FDOT cost per mile model reports:

<https://www.fdot.gov/programmanagement/estimates/documents/costpermilemodelsreports>)

Countermeasure List

SUMMARY OF COUNTERMEASURES



A. SIGNALS

[Advanced Dilemma Zone Detection](#)
[Audible Push Button Upgrade](#)
[Bicycle Signal/Exclusive Bike Phase](#)
[Bike Detection](#)
[Extend Green Time For Bikes](#)
[Extend Pedestrian Crossing Time](#)
[Extend Yellow and All Red Time](#) ✓
[Extended Time Pushbutton](#)
[Flashing Yellow Turn Phase](#)
[Leading Pedestrian Interval and Pedestrian Recall](#) ✓
[Pedestrian Countdown Timer](#)
[Pedestrian Detection](#)
[Pedestrian Scramble](#)
[Prohibit Right-Turn-on-Red](#)
[Prohibit Turns During Pedestrian Phase](#)
[Protected Left Turns](#)
[Red Light Camera](#)
[Separate Right-Turn Phasing](#)
[Shorten Cycle Length](#)
[Signal Interconnectivity and Coordination / Green Wave](#)
[Signal Preemption](#)
[Supplemental Signal Heads](#)
[Traffic Signal](#)
[Upgrade Signal Head](#)

B. SIGNING AND STRIPING

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[Advance Yield Markings](#)
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[Curve Advance Warning Sign](#) ✓
[Flashing Beacon as Advance Warning](#)
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[Painted Centerline and Raised Pavement Markers at Curves](#)
[Pavement Speed Legends](#)
[Prohibit Left Turn](#)
[Striping Through Intersection](#)
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[Curb Extensions](#)
[High-Visibility Crosswalk](#)
[Install/Upgrade Pedestrian Crossing at Uncontrolled Locations](#)
[Pedestrian Hybrid Beacon](#) ✓
[Rectangular Rapid Flashing Beacon](#) ✓
[Restripe Crosswalk](#)
[Shared Use Path](#)
[Widen Sidewalk](#)

E. INTERSECTIONS AND ROADWAYS

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[Curb-Return Radius Reduction](#)
[Delineators, Reflectors, and/or Object Markers](#)
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[Doubled-up, Oversized Stop Signs](#) ✓
[Enhanced Daylighting/Slow Turn Wedge](#)
[Extend Bike Lane to Intersection](#)
[Gateway Treatments](#)
[Green Conflict Striping](#)
[Guardrail](#)
[Hardened Median Nose Extension](#)
[High Friction Surface Treatment](#) ✓
[Impact Attenuators](#)
[Intersection Reconstruction and Tightening](#)
[Lane Repurposing](#) ✓
[Median Barrier](#) ✓
[On-Street Parking](#)
[Paint and Plastic Median](#)
[Paint and Plastic Mini Circle/Mini Roundabout](#)
[Partial Closure/Diverter](#)
[Protected Intersection](#)
[Raised Crosswalk](#)
[Raised Intersection](#)
[Raised Median](#) ✓
[Reduced Left-Turn Conflict Intersection](#) ✓
[Refuge Island](#) ✓
[Retroreflective Signal Backplates](#) ✓
[Roundabout](#) ✓
[Rumble Strips](#) ✓
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F. SPEED MANAGEMENT

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[Lane Narrowing](#)
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G. OTHER ENGINEERING STRATEGIES

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[Far-Side Bus Stop](#)
[Intersection Lighting](#) ✓
[Relocate Select Hazardous Utility Poles](#)
[Remove Obstructions For Sightlines](#)
[Segment Lighting](#) ✓
[Upgrade Lighting to LED](#)

A. Signals

Under the signal timing and phasing category, strategies relate to changing signal timing based on local context, such as extending the pedestrian time if there are large volumes of pedestrians, or if pedestrians are not able to cross the intersection within the time allotted. Extending yellow and red time can help clear the intersection and reduce the potential for red light running. Additional signal heads can increase visibility. In locations where there are high pedestrian and bicycle volumes, right-turning vehicles may not be able to turn when they have a green light due to pedestrians in the crosswalk. Providing a separate right-turn phase could help clear right-turning vehicles and reduce conflicts with pedestrians.

Sometimes giving people walking a head start can make them more visible to people driving. Installing a new traffic signal or pedestrian signal can help allocate the right-of-way, reduce conflicting movements, and provide pedestrians a protected crossing. In heavy pedestrian areas, installing a pedestrian scramble where all vehicles must stop, and pedestrians can cross diagonally can be a more efficient way to operate the intersection and reduce vehicle conflicts with pedestrians. Pedestrian recall provides a WALK signal each cycle without pedestrians having to push buttons.

Other strategies such as converting permissive lefts to protected lefts (at least when the pedestrian crossing is activated) can be highly effective in reducing conflicts with pedestrians. Reducing cycle length can decrease pedestrian delay which can reduce the occurrence of pedestrians crossing against the signal and red-light running.

Strategies included in this section are:

1. Advanced Dilemma Zone Detection
2. Audible Push Button Upgrade
3. Bicycle Signal/Exclusive Bike Phase
4. Bike Detection
5. Extend Green Time For Bikes
6. Extend Pedestrian Crossing Time
7. Extend Yellow and All Red Time
8. Extended Time Pushbutton
9. Flashing Yellow Turn Phase
10. Leading Pedestrian Interval and Pedestrian Recall
11. Pedestrian Countdown Timer
12. Pedestrian Detection
13. Pedestrian Scramble
14. Prohibit Right-Turn-on-Red
15. Prohibit Turns During Pedestrian Phase
16. Protected Left Turns
17. Red Light Camera
18. Separate Right-Turn Phasing
19. Shorten Cycle Length
20. Signal Interconnectivity and Coordination / Green Wave
21. Signal Preemption
22. Supplemental Signal Heads
23. Traffic Signal
24. Upgrade Signal Head

Advanced Dilemma Zone Detection



System that adjusts the start time of the yellow-signal phase (i.e. earlier or later) based on observed vehicle locations and speed, improving safety by minimizing the number of drivers that are faced with the dilemma of determining if they should stop or drive through the intersection.

CRASH REDUCTION EFFECTIVENESS: LOW MED HIGH **CMF Available**

MODAL SAFETY EMPHASIS:

APPLICABLE FACILITY: **ALL ROADWAYS**

IMPLEMENTATION TIMELINE:

COST: \$\$

FOCUS CRASH TYPE
Angle crashes and red-light running crashes.

SAFE SYSTEM STRATEGY
Manage conflicts in time.

CONSIDERATIONS

[Home](#)

TEM 3.7

Audible Push Button (APB) Upgrade



Push buttons must comply with the Americans with Disability Act (ADA) standards and Public Right-of-Way Accessibility Guidelines (PROWAG) for accessibility. Accessible pedestrian signals, including audible push buttons, improve access for pedestrians who are blind or have low vision.

CRASH REDUCTION EFFECTIVENESS: **UNKNOWN**

MODAL SAFETY EMPHASIS:

APPLICABLE FACILITY: **ALL ROADWAYS**

IMPLEMENTATION TIMELINE:

COST: \$

FOCUS CRASH TYPE
Through vehicles at signalized intersection and pedestrian struck by turning vehicle.

SAFE SYSTEM STRATEGY
Manage conflicts in time, and increase attentiveness and awareness.

CONSIDERATIONS
Accessible Pedestrian Signals (APS) is now required on any new or modified traffic signal with a pedestrian crossing.

[Home](#)

FDM 223.2.4.5

Bicycle Signal/Exclusive Bike Phase



A separate bicycle signal or phase reduces conflicts between motor vehicle, transit vehicles, and pedestrian movements.

CRASH REDUCTION EFFECTIVENESS: LOW MED HIGH

MODAL SAFETY EMPHASIS:

APPLICABLE FACILITY: **URBAN** **SUBURBAN**

IMPLEMENTATION TIMELINE:

COST: \$\$\$

FOCUS CRASH TYPE
Motorist turns left in path of bicyclist, motorist turns right in path of bicyclist, and motorist failed to yield at signalized intersection.

SAFE SYSTEM STRATEGY
Manage conflicts in time.

CONSIDERATIONS
Signal phasing strategies should balance the trade-offs between comfort and convenience for bicyclists, pedestrians and motorists.

[Home](#)

FDM 223.2.1.5 , TEM 5.2.7.5

Bike Detection



Loops, cameras, or infrared cameras that call green lights for cyclists, discouraging red light running and reducing bicyclist delay.

CRASH REDUCTION EFFECTIVENESS: **UNKNOWN**

MODAL SAFETY EMPHASIS:

APPLICABLE FACILITY: **URBAN** **SUBURBAN**

IMPLEMENTATION TIMELINE:

COST: \$\$

FOCUS CRASH TYPE
Motorist turns left in path of bicyclist, motorist turns right in path of bicyclist, motorist failed to yield at signalized intersection and bicyclist violating signal.

SAFE SYSTEM STRATEGY
Manage conflicts in time.

CONSIDERATIONS
At large intersections, integrate with signal operations to extend all red time when bicyclists are detected.

[Home](#)

Extend Green Time For Bikes



Prolonged green light time for cyclists when detected, allowing for more time to cross.

CRASH REDUCTION EFFECTIVENESS **UNKNOWN**

MODAL SAFETY EMPHASIS

APPLICABLE FACILITY **URBAN** **SUBURBAN**

IMPLEMENTATION TIMELINE

COST \$

FOCUS CRASH TYPE
 Motorist turns left in path of bicyclist, motorist turns right in path of bicyclist, and motorist failed to yield at signalized intersection.

SAFE SYSTEM STRATEGY
 Manage conflicts in time.

CONSIDERATIONS
 When used in a coordinated system, different timing plans may be needed. Topography should be considered in clearance time.

[Home](#)

Extend Pedestrian Crossing Time



Increases time for pedestrian walk phases, especially to accommodate vulnerable populations, such as children and the elderly.

CRASH REDUCTION EFFECTIVENESS **LOW** **MED** **HIGH** **CMF Available**

MODAL SAFETY EMPHASIS

APPLICABLE FACILITY **URBAN** **SUBURBAN**

IMPLEMENTATION TIMELINE

COST \$

FOCUS CRASH TYPE
 Through vehicle at signalized intersection.

SAFE SYSTEM STRATEGY
 Manage conflicts in time.

CONSIDERATIONS
 May need to be implemented as part of an overall retiming project.

[Home](#)

Extend Yellow and All Red Time



Extending yellow and all red time provides additional time for drivers, bicyclists and pedestrians to cross through a signalized intersection before conflicting traffic movements are permitted.

CRASH REDUCTION EFFECTIVENESS **LOW** **MED** **HIGH** **CMF Available**

MODAL SAFETY EMPHASIS

APPLICABLE FACILITY **ALL ROADWAYS**

IMPLEMENTATION TIMELINE

COST \$

FOCUS CRASH TYPE
 Angle crashes and red light running crashes.

SAFE SYSTEM STRATEGY
 Manage conflicts in time.

CONSIDERATIONS
 May need to be implemented as part of an overall retiming project.

[Home](#)

Extended Time Pushbutton

FDM 232.6



A pushbutton that can be pressed to request extra time for using the crosswalk.

CRASH REDUCTION EFFECTIVENESS **UNKNOWN**

MODAL SAFETY EMPHASIS

APPLICABLE FACILITY **ALL ROADWAYS**

IMPLEMENTATION TIMELINE

COST \$

FOCUS CRASH TYPE
 Pedestrian struck by turning vehicle, and through vehicle at signalized intersection.

SAFE SYSTEM STRATEGY
 Manage conflicts in time.

CONSIDERATIONS
 May require education for full benefit. Candidate locations are in communities with high populations of people with mobility challenges.

[Home](#)

Flashing Yellow Turn Phase



Flashing yellow turn arrow alerts drivers to proceed with caution and decide if there is a sufficient gap in oncoming traffic to safely make a turn.

CRASH REDUCTION EFFECTIVENESS: **LOW** MED HIGH CMF Available

MODAL SAFETY EMPHASIS:

APPLICABLE FACILITY: **URBAN** **SUBURBAN**

IMPLEMENTATION TIMELINE:

COST: **\$\$**

FOCUS CRASH TYPE
Left turn crashes.

SAFE SYSTEM STRATEGY
Manage conflicts in time.

CONSIDERATIONS
Should only be used when a pedestrian walk phase is not called.

[Home](#)

TEM 3.11.5.2

Leading Pedestrian Interval and Pedestrian Recall



Signal timing that allows pedestrians to enter intersections before vehicles are given a green indication allowing them to better establish their presence and increase their visibility.

CRASH REDUCTION EFFECTIVENESS: **LOW** MED HIGH CMF Available

MODAL SAFETY EMPHASIS:

APPLICABLE FACILITY: **URBAN** **SUBURBAN**

IMPLEMENTATION TIMELINE:

COST: **\$**

FOCUS CRASH TYPE
Pedestrian struck by turning vehicle and motorist turns right in path of bicyclist.

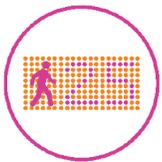
SAFE SYSTEM STRATEGY
Manage conflicts in time.

CONSIDERATIONS
If intersection is part of a coordinated system, consideration should be given to signal timing changes at upstream and downstream intersections.

[Home](#)

Pedestrian Countdown Timer

FDM 232.6



Displays "countdown" of seconds remaining on the pedestrian signal, discouraging pedestrians from starting a crossing with little time remaining.

CRASH REDUCTION EFFECTIVENESS: **LOW** MED HIGH CMF Available

MODAL SAFETY EMPHASIS:

APPLICABLE FACILITY: **ALL ROADWAYS**

IMPLEMENTATION TIMELINE:

COST: **\$\$**

FOCUS CRASH TYPE
Pedestrian struck by turning vehicle, and through vehicle at signalized intersection.

SAFE SYSTEM STRATEGY
Manage conflicts in time.

CONSIDERATIONS
Countdown timers are required for all newly installed traffic signals where pedestrian signals are installed.

[Home](#)

Pedestrian Detection

FDM 232.6, TEM 5.2.7.5



A device that detects when a pedestrian is waiting at a crosswalk and automatically triggers the pedestrian "WALK" phase.

CRASH REDUCTION EFFECTIVENESS: **UNKNOWN**

MODAL SAFETY EMPHASIS:

APPLICABLE FACILITY: **URBAN** **SUBURBAN**

IMPLEMENTATION TIMELINE:

COST: **\$\$**

FOCUS CRASH TYPE
Pedestrian struck by turning vehicle and through vehicle at signalized intersection.

SAFE SYSTEM STRATEGY
Manage conflicts in time.

CONSIDERATIONS
Selection of appropriate detection system that reduces the potential for false detection is recommended.

[Home](#)

TEM 3.11.3

Pedestrian Scramble



A form of pedestrian "WALK" phase at a signalized intersection in which all vehicular traffic is required to stop, allowing pedestrians to cross in any direction.

CRASH REDUCTION EFFECTIVENESS: LOW, **MED**, HIGH, **CMF Available**

MODAL SAFETY EMPHASIS:

APPLICABLE FACILITY: **URBAN**, **SUBURBAN**

IMPLEMENTATION TIMELINE:

COST: \$

FOCUS CRASH TYPE
Pedestrian crashes.

SAFE SYSTEM STRATEGY
Manage conflicts in time.

CONSIDERATIONS
Significant levels of crossing activity may be required to justify phasing type.

[Home](#)

Prohibit Right-Turn-on-Red



Prohibiting right-run-on-red movements can be used in locations where obstructions prevent right-turning vehicles from seeing on-coming traffic or where high pedestrian volumes are present.

CRASH REDUCTION EFFECTIVENESS: **UNKNOWN**

MODAL SAFETY EMPHASIS:

APPLICABLE FACILITY: **URBAN**, **SUBURBAN**

IMPLEMENTATION TIMELINE:

COST: \$

FOCUS CRASH TYPE
Pedestrian struck by turning vehicle, and motorist failed to yield at signalized intersection.

SAFE SYSTEM STRATEGY
Manage conflicts in time.

CONSIDERATIONS
May require provision of right-turn-only lane if there are conflicts between right-turning vehicles and pedestrians.

[Home](#)

FDM 232.2

Prohibit Turns During Pedestrian Phase



Restricts left or right turns during the pedestrian crossing phase at locations where a turning vehicle may conflict with pedestrians in the crosswalk.

CRASH REDUCTION EFFECTIVENESS: **UNKNOWN**

MODAL SAFETY EMPHASIS:

APPLICABLE FACILITY: **URBAN**, **SUBURBAN**

IMPLEMENTATION TIMELINE:

COST: \$

FOCUS CRASH TYPE
Pedestrian struck by turning vehicle, motorist turned left in path of bicyclist, and motorist failed to yield at signalized intersection.

SAFE SYSTEM STRATEGY
Manage conflicts in time.

CONSIDERATIONS
This restriction may be displayed with a blank-out sign. May affect operations for right-turn vehicles. May require extending storage to avoid spillback into adjacent through lane

[Home](#)

Protected Left Turns



Converting a permissive left-turn to a protected left turn phase can reduce angle crashes involving left turning, opposing through vehicles, and non-motorized road users.

CRASH REDUCTION EFFECTIVENESS: **LOW**, **MED**, HIGH, **CMF Available**

MODAL SAFETY EMPHASIS:

APPLICABLE FACILITY: **ALL ROADWAYS**

IMPLEMENTATION TIMELINE:

COST: \$

FOCUS CRASH TYPE
Left turn crashes, pedestrian struck by turning vehicle, and motorist turned left in path of bicyclist.

SAFE SYSTEM STRATEGY
Manage conflicts in time.

CONSIDERATIONS
May require an increase in left-turn queue storage or green time. If new or modified signal heads are required, or if traffic controller equipment needs to be upgraded, cost could be significantly higher.

[Home](#)

Red Light Camera

FDM 223.2.1.4



A red light camera enforces traffic signal compliance by capturing the image of a vehicle that has entered an intersection during the red phase with the photographic evidence used to issue a traffic violation to registered owner of vehicle.

CRASH REDUCTION EFFECTIVENESS: **LOW** MED HIGH **CMF Available**

MODAL SAFETY EMPHASIS:

APPLICABLE FACILITY: **URBAN** **SUBURBAN**

IMPLEMENTATION TIMELINE:

COST: **\$\$**

FOCUS CRASH TYPE
Angle crashes and left turn crashes.

SAFE SYSTEM STRATEGY
Increase attentiveness and awareness, and implement enforcing features to slow traffic.

CONSIDERATIONS

[Home](#)

Separate Right-Turn Phasing



Provides a green arrow phase for right-turning vehicles, reducing conflicts between right-turning traffic and bicyclists or pedestrians crossing the intersection.

CRASH REDUCTION EFFECTIVENESS: **UNKNOWN**

MODAL SAFETY EMPHASIS:

APPLICABLE FACILITY: **URBAN** **SUBURBAN**

IMPLEMENTATION TIMELINE:

COST: **\$\$\$**

FOCUS CRASH TYPE
Pedestrian struck by turning vehicle and motorist failed to yield at signalized intersection.

SAFE SYSTEM STRATEGY
Manage conflicts in time.

CONSIDERATIONS
May need to be implemented as part of an overall retiming project. U-Turns may need to be prohibited for movements affected by right-turn phasing.

[Home](#)

Shorten Cycle Length

TEM 3.11.4



Shorter cycle lengths can reduce the frequency of violations of the traffic control device.

CRASH REDUCTION EFFECTIVENESS: **UNKNOWN**

MODAL SAFETY EMPHASIS:

APPLICABLE FACILITY: **URBAN** **SUBURBAN**

IMPLEMENTATION TIMELINE:

COST: **\$**

FOCUS CRASH TYPE
Dart/dash.

SAFE SYSTEM STRATEGY
Manage conflicts in time.

CONSIDERATIONS
Should be implemented as part of a corridor or area wide traffic signal retiming program. Short cycle lengths of 60–90 seconds are ideal for urban areas.

[Home](#)

Signal Interconnectivity and Coordination/Green Wave

FDM 201.1.1



The emphasis of improving signal coordination for this countermeasure is to provide an opportunity for signal coordination for a desired speed outcome.

CRASH REDUCTION EFFECTIVENESS: **UNKNOWN**

MODAL SAFETY EMPHASIS:

APPLICABLE FACILITY: **URBAN** **SUBURBAN**

IMPLEMENTATION TIMELINE:

COST: **\$\$**

FOCUS CRASH TYPE
Speed related crashes.

SAFE SYSTEM STRATEGY
Manage vehicular speeds and implement enforcing features to slow traffic.

CONSIDERATIONS
Coordinating signals to allow for bicyclist progression, also known as a 'green wave,' gives bicyclists and pedestrians more time to safely cross through the 'green wave' intersections. Emergency vehicle preemption and phasing extensions under other strategies may need to be considered.

[Home](#)

Signal Preemption



Allows an authorized operator to override the normal operation of traffic lights, mostly used in the path of an emergency vehicle to reduce conflicts and decrease emergency vehicle response time.

CRASH REDUCTION EFFECTIVENESS UNKNOWN

MODAL SAFETY EMPHASIS

APPLICABLE FACILITY ALL ROADWAYS

IMPLEMENTATION TIMELINE

COST \$\$

FOCUS CRASH TYPE
Varies depending on application context.

SAFE SYSTEM STRATEGY
Manage conflicts in time.

CONSIDERATIONS
Other applications include at railroad crossings as well as school zones where there can be high volumes of pedestrians/bicyclists for short periods of time.

[Home](#)

FDM 232.1.6, FDM 232.2

Supplemental Signal Heads



Additional signal heads allow drivers to anticipate signal changes farther away from intersections or when there are visibility issues, such as a curve or bridge structure.

CRASH REDUCTION EFFECTIVENESS UNKNOWN

MODAL SAFETY EMPHASIS

APPLICABLE FACILITY ALL ROADWAYS

IMPLEMENTATION TIMELINE

COST \$\$

FOCUS CRASH TYPE
Angle crashes and left turn crashes.

SAFE SYSTEM STRATEGY
Increase attentiveness and awareness.

CONSIDERATIONS
When new signal heads are added, structural analysis may be required due to the added wind load. Supplemental traffic signals may be placed on the near side of an intersection, far-left, far-right, or very high.

[Home](#)

Traffic Signal

FDM 232



Traffic signals allocate the right-of-way to different traffic movements and provide controlled crossings for non-motorized users.

CRASH REDUCTION EFFECTIVENESS LOW MED HIGH CMF Available

MODAL SAFETY EMPHASIS

APPLICABLE FACILITY ALL ROADWAYS

IMPLEMENTATION TIMELINE

COST \$\$\$

FOCUS CRASH TYPE
Angle crashes and left turn crashes.

SAFE SYSTEM STRATEGY
Remove severe conflicts and manage conflicts in time.

CONSIDERATIONS
While traffic signals have been shown to reduce the most severe types of crashes, they can result in an increase in rear-end collisions.

[Home](#)

Upgrade Signal Head



Replacing 8-inch signal heads with 12-inch signal heads improves visibility of signals and aiding drivers' advanced perception of upcoming intersections.

CRASH REDUCTION EFFECTIVENESS LOW MED HIGH CMF Available

MODAL SAFETY EMPHASIS

APPLICABLE FACILITY ALL ROADWAYS

IMPLEMENTATION TIMELINE

COST \$

FOCUS CRASH TYPE
Angle crashes and left turn crashes.

SAFE SYSTEM STRATEGY
Increase attentiveness and awareness.

CONSIDERATIONS
Structural analysis may be required due to the added wind load.

[Home](#)

B. Signing and Striping

Installing additional signs and pavement markings can be a low-cost way to improve safety outcomes. However, to be effective, they often need to be implemented with other roadway modifications for maximum effectiveness, and sign clutter should be avoided. These types of projects can often be implemented with planned Resurfacing, Restoration and Rehabilitation (RRR) projects.

Strategies included in this section are:

1. Advance Stop Bar
2. Advance Yield Markings
3. Chevron Signs on Horizontal Curves
4. Curve Advance Warning Sign
5. Flashing Beacon as Advance Warning
6. LED-Enhanced Sign
7. Painted Centerline and Raised Pavement Markers at Curves
8. Pavement Speed Legends
9. Prohibit Left Turn
10. Striping Through Intersection
11. Time-Based Turn Restriction
12. Upgrade Intersection Pavement Markings
13. Upgrade Signs with Fluorescent Sheeting
14. Upgrade Striping
15. Upgrade to Larger Warning Signs
16. Wayfinding
17. Yield To Pedestrians Sign

FDM 230.6

Advance Stop Bar



Stop lines placed in advance of pedestrian crossings increasing visibility of pedestrians and reducing crossing encroachment.

CRASH REDUCTION EFFECTIVENESS **UNKNOWN**

MODAL SAFETY EMPHASIS

APPLICABLE FACILITY **URBAN** **SUBURBAN**

IMPLEMENTATION TIMELINE

COST **\$**

FOCUS CRASH TYPE
Multiple threat/trapped.

SAFE SYSTEM STRATEGY
Increase attentiveness and awareness.

CONSIDERATIONS
Creating a wider stop bar or setting the stop bar further back may be appropriate for locations with known crosswalk encroachment issues.

[Home](#)

FDM 230.6

Advance Yield Markings



A yield line placed in advance of pedestrian crossings to indicate where a vehicle stop is intended, increasing visibility of pedestrians and reducing crossing encroachment.

CRASH REDUCTION EFFECTIVENESS **UNKNOWN**

MODAL SAFETY EMPHASIS

APPLICABLE FACILITY **URBAN** **SUBURBAN**

IMPLEMENTATION TIMELINE

COST **\$**

FOCUS CRASH TYPE
Multiple threat/trapped.

SAFE SYSTEM STRATEGY
Increase attentiveness and awareness.

CONSIDERATIONS
Can be paired with other treatments, like RRFBs and/or high visibility crosswalks.

[Home](#)

TEM 4.5.4

Chevron Signs on Horizontal Curves



Signs that warn drivers of an approaching curve and provide tracking information.

CRASH REDUCTION EFFECTIVENESS **LOW** **MED** **HIGH** **CMF Available**

MODAL SAFETY EMPHASIS

APPLICABLE FACILITY **SUBURBAN** **RURAL**

IMPLEMENTATION TIMELINE

COST **\$**

FOCUS CRASH TYPE
Collision with fixed objects, and run off the road crashes.

SAFE SYSTEM STRATEGY
Increase attentiveness and awareness.

CONSIDERATIONS
Can be paired with other treatments, like rumble strips.

[Home](#)

TEM 2.41.3

Curve Advance Warning Sign



Signage that notifies drivers of an approaching curve providing additional reaction time to slow down.

CRASH REDUCTION EFFECTIVENESS **LOW** **MED** **HIGH** **CMF Available**

MODAL SAFETY EMPHASIS

APPLICABLE FACILITY **SUBURBAN** **RURAL**

IMPLEMENTATION TIMELINE

COST **\$**

FOCUS CRASH TYPE
Collision with fixed objects and run off the road crashes.

SAFE SYSTEM STRATEGY
Increase attentiveness and awareness.

CONSIDERATIONS
This warning sign is ideally combined with other infrastructure that alerts drivers of the curve, such as chevron signs, delineators, and flashing beacons.

[Home](#)

FDM 202.3.13, TEM 3.1

Flashing Beacon as Advance Warning



Device paired with signage can notify motorists of an upcoming intersection or crosswalk, providing additional reaction time.

CRASH REDUCTION EFFECTIVENESS: UNKNOWN

MODAL SAFETY EMPHASIS:

APPLICABLE FACILITY: ALL ROADWAYS

IMPLEMENTATION TIMELINE:

COST: \$\$

FOCUS CRASH TYPE
Angle crashes, through vehicle at signalized intersection, and right turn crashes.

SAFE SYSTEM STRATEGY
Increase attentiveness and awareness.

CONSIDERATIONS
Solar powered units can reduce construction costs associated with providing electricity. Beacon can also be used as an advance warning for red light ahead (typically when visibility to the signal is compromised by horizontal or vertical curve).

[Home](#)

LED-Enhanced Sign



Signage with LED lights embedded in the outline increasing sign visibility and are most effective at locations with visibility limitations or with a documented history of drivers failing to see or obey the sign.

CRASH REDUCTION EFFECTIVENESS: LOW MED HIGH CMF Available

MODAL SAFETY EMPHASIS:

APPLICABLE FACILITY: ALL ROADWAYS

IMPLEMENTATION TIMELINE:

COST: \$

FOCUS CRASH TYPE
Angle crashes, motorist failed to yield at unsignalized intersection, and through vehicle at unsignalized intersection.

SAFE SYSTEM STRATEGY
Increase attentiveness and awareness.

CONSIDERATIONS
The LEDs may be set to flash or operate in a steady mode.

[Home](#)

FDM 202.3.10

Painted Centerline and Raised Pavement Markers at Curves



A raised pavement marker is a small device attached to the road and used as a positioning guide for drivers.

CRASH REDUCTION EFFECTIVENESS: LOW MED HIGH CMF Available

MODAL SAFETY EMPHASIS:

APPLICABLE FACILITY: RURAL

IMPLEMENTATION TIMELINE:

COST: \$

FOCUS CRASH TYPE
Head on, collision with fixed objects, and run off the road crashes.

SAFE SYSTEM STRATEGY
Increase attentiveness and awareness.

CONSIDERATIONS

[Home](#)

Pavement Speed Legends



Speed legends are numerals painted on the roadway indicating the current speed limit in mph, usually placed near speed limit signposts.

CRASH REDUCTION EFFECTIVENESS: UNKNOWN

MODAL SAFETY EMPHASIS:

APPLICABLE FACILITY: URBAN SUBURBAN

IMPLEMENTATION TIMELINE:

COST: \$

FOCUS CRASH TYPE
Speed related crashes.

SAFE SYSTEM STRATEGY
Increase attentiveness and awareness.

CONSIDERATIONS

[Home](#)

Prohibit Left Turn



Prohibitions of left turns at locations where a turning vehicle may conflict with pedestrians in the crosswalk or where opposing traffic volume is high and there is not sufficient room for a separate turn lane.

CRASH REDUCTION EFFECTIVENESS: LOW, MED, **HIGH**, CMF Available

MODAL SAFETY EMPHASIS:

APPLICABLE FACILITY: **URBAN**, SUBURBAN

IMPLEMENTATION TIMELINE:

COST: \$

FOCUS CRASH TYPE
Left turn crashes, pedestrian struck by turning vehicle, and motorist turned left in path of bicyclist.

SAFE SYSTEM STRATEGY
Manage conflicts in time.

CONSIDERATIONS
U-turns may need to be accommodated elsewhere on the corridor.

[Home](#)

Striping Through Intersection



Pavement markings that guide vehicles through intersections which helps drivers remain in their lanes throughout an intersection.

CRASH REDUCTION EFFECTIVENESS: UNKNOWN

MODAL SAFETY EMPHASIS:

APPLICABLE FACILITY: **URBAN**, SUBURBAN

IMPLEMENTATION TIMELINE:

COST: \$

FOCUS CRASH TYPE
Sideswipes.

SAFE SYSTEM STRATEGY
Increase attentiveness and awareness.

CONSIDERATIONS

[Home](#)

Time-Based Turn Restriction



Restricts left-turns or right-turns during certain time periods when there may be increased potential for conflict (e.g., peak periods, school hours).

CRASH REDUCTION EFFECTIVENESS: UNKNOWN

MODAL SAFETY EMPHASIS:

APPLICABLE FACILITY: **ALL ROADWAYS**

IMPLEMENTATION TIMELINE:

COST: \$

FOCUS CRASH TYPE
Pedestrian struck by turning vehicle, motorist turned left in path of bicyclist, and motorist turned right in path of bicyclist.

SAFE SYSTEM STRATEGY
Manage conflicts in time.

CONSIDERATIONS
If not enforced, could limit effectiveness.

[Home](#)

Upgrade Intersection Pavement Markings



Upgrading intersection pavement markings can improve safety by increasing the visibility of intersections for drivers approaching and at the intersection.

CRASH REDUCTION EFFECTIVENESS: UNKNOWN

MODAL SAFETY EMPHASIS:

APPLICABLE FACILITY: **ALL ROADWAYS**

IMPLEMENTATION TIMELINE:

COST: \$

FOCUS CRASH TYPE
Angle crashes, through vehicle at unsignalized intersection, and motorist failed to yield at unsignalized intersection.

SAFE SYSTEM STRATEGY
Increase attentiveness and awareness.

CONSIDERATIONS
Upgrading intersection pavement marking can include "Stop Ahead" markings and the addition of centerlines and stop bars.

[Home](#)

Upgrade Signs with Fluorescent Sheeting



Upgrading to signs with retroreflective sheeting improves safety by increasing visibility of signs to drivers at night.

CRASH REDUCTION EFFECTIVENESS: LOW MED HIGH CMF Available

MODAL SAFETY EMPHASIS: Car, Pedestrian, Bicycle

APPLICABLE FACILITY: ALL ROADWAYS

IMPLEMENTATION TIMELINE: [Clock icon]

COST: \$

FOCUS CRASH TYPE
Nighttime crashes.

SAFE SYSTEM STRATEGY
Increase attentiveness and awareness.

CONSIDERATIONS
Depending on sign locations, a structural/wind analysis may need to be conducted.

[Home](#)

Upgrade Striping



Restripe lanes with reflective striping to improve striping visibility and clarify lane assignment, especially where the number of lanes changes.

CRASH REDUCTION EFFECTIVENESS: UNKNOWN

MODAL SAFETY EMPHASIS: Car

APPLICABLE FACILITY: ALL ROADWAYS

IMPLEMENTATION TIMELINE: [Clock icon]

COST: \$

FOCUS CRASH TYPE
Sideswipes.

SAFE SYSTEM STRATEGY
Increase attentiveness and awareness.

CONSIDERATIONS

[Home](#)

Upgrade to Larger Warning Signs



Upgrading to larger warning signs improves safety by increasing visibility of the information provided, particularly for older drivers.

CRASH REDUCTION EFFECTIVENESS: UNKNOWN

MODAL SAFETY EMPHASIS: Car

APPLICABLE FACILITY: ALL ROADWAYS

IMPLEMENTATION TIMELINE: [Clock icon]

COST: \$

FOCUS CRASH TYPE
Crashes involving older drivers.

SAFE SYSTEM STRATEGY
Increase attentiveness and awareness.

CONSIDERATIONS

[Home](#)

Wayfinding

FDM 223.6, TEM 2.36



A network of signs that highlight nearby pedestrian and bicycle facilities and guide users to the most appropriate crossing locations.

CRASH REDUCTION EFFECTIVENESS: UNKNOWN

MODAL SAFETY EMPHASIS: Pedestrian, Bicycle

APPLICABLE FACILITY: URBAN SUBURBAN

IMPLEMENTATION TIMELINE: [Clock icon]

COST: \$

FOCUS CRASH TYPE
Pedestrian and bicycle crashes.

SAFE SYSTEM STRATEGY
Increase attentiveness and awareness.

CONSIDERATIONS

[Home](#)

TEM 2.39

Yield To Pedestrians Sign



"Yield Here to Pedestrians" signs alert drivers about the presence of pedestrians. These signs are required with advance yield lines. Other sign types can be placed on the centerline in the roadway.

CRASH REDUCTION EFFECTIVENESS **LOW** MED HIGH **CMF Available**

MODAL SAFETY EMPHASIS  

APPLICABLE FACILITY **ALL ROADWAYS**

IMPLEMENTATION TIMELINE 

COST **\$**

FOCUS CRASH TYPE

Through vehicle at unsignalized intersection, motorist failed to yield at unsignalized intersection.

SAFE SYSTEM STRATEGY

Increase attentiveness and awareness.

CONSIDERATIONS

May need to be paired with education and enforcement.

[Home](#)

C. Bikeways

In the MetroPlan Orlando region, people bicycling are overrepresented in collisions where someone is seriously injured or killed. Providing dedicated space for cyclists separate from high-speed vehicle traffic can improve safety outcomes. Where dedicated space cannot be provided or there is a high density of conflict areas such as driveways or side streets, managing vehicle speeds, increasing visibility, and improving the predictability of roadway users can help to manage and reduce those conflicts and is critical to improving safety outcomes.

One of the most effective measures is a dedicated pathway separate from vehicle travel. While bike lanes may help to reduce the potential for a collision by making drivers aware of the likely presence of bicyclists, they are not as effective as a separate path with minimal conflicts with side-streets or driveways especially on higher speed roadways. People bicycling are particularly vulnerable in conflict zones.

Some countermeasures aim to increase cyclist visibility in conflict zones and provide clear direction to other roadway users. In areas where there is constrained right-of-way, signing and pavement markings can be effective. However, like most strategies these are context specific. For example, shared lane markings are appropriate on roadways with vehicle travel speeds of less than 25 mph and daily traffic volumes of less than 2,000. As speeds and traffic volumes increase, additional separation should be provided between vehicles and cyclists. The strategies below assume that other roadway design elements are incorporated to manage vehicle speeds to an appropriate level for the proposed bicycle facility.

Strategies included in this section are:

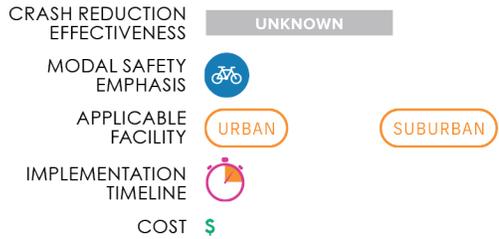
1. Bicycles May Use Full Lane Sign
2. Bike Lane/Buffered/Separated Bike Lane
3. Floating Transit Island
4. Mixing Zone
5. Parking Buffer
6. Separated Bikeway
7. Two-Stage Turn Queue Bike Box

Bicycles May Use Full Lane Sign

TEM 2.11.3



Signage that indicates cyclists may use the full lane, discouraging unsafe motorist passage.



FOCUS CRASH TYPE

Vehicle overtakes bicycle, motorist turns right in path of bicyclist, and bicycle crashes at driveways.

SAFE SYSTEM STRATEGY

Increase attentiveness and awareness.

CONSIDERATIONS

Volumes and number of conflicts need to be considered in the selection of this treatment.

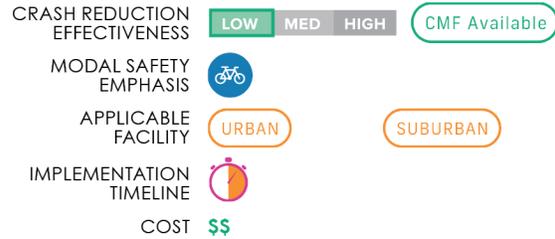
[Home](#)

Bike Lane/Buffered/Separated Bike Lane

FDM 223.2.1



Separate lanes marked with symbols and signs specifically for bicycles, reducing bike/vehicle conflicts and slowing vehicle speeds via the road-narrowing effect.



FOCUS CRASH TYPE

Vehicle overtakes bicycle.

SAFE SYSTEM STRATEGY

Remove severe conflicts.

CONSIDERATIONS

Consult FHWA Bikeway Selection Guide.

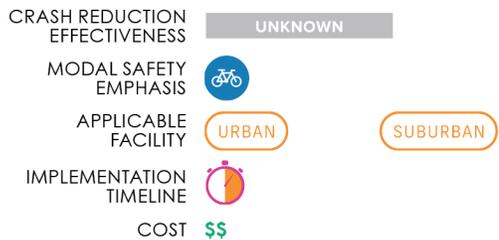
[Home](#)

Floating Transit Island

FDM 210.3.2.3



Separates the bike facility and transit boarding area, reducing conflict between the two modes, and lowering the risk of collision.



FOCUS CRASH TYPE

Bike/pedestrian crashes.

SAFE SYSTEM STRATEGY

Manage conflicts in time.

CONSIDERATIONS

Drainage and ADA requirements should be considered.

[Home](#)

Mixing Zone



Lane markings to delineate space for bicyclists and motorists within the same lane and indicate the intended path for bicyclists to reduce conflict with turning motor vehicles.



FOCUS CRASH TYPE

Motorist turns right in path of bicyclist.

SAFE SYSTEM STRATEGY

Manage conflicts in time, and increase attentiveness and awareness.

CONSIDERATIONS

May not be appropriate at intersections with very high peak automobile right turn demand.

[Home](#)

FDM 223.4

Parking Buffer



Pavement markings denoting door zone of parked vehicles to help bicyclists maintain safe positioning on the roadway



FOCUS CRASH TYPE
Dooring.

SAFE SYSTEM STRATEGY
Remove severe conflicts, manage conflicts in time, and increase attentiveness and awareness.

CONSIDERATIONS
Door zones should be a minimum of 3 feet.

[Home](#)

FDM 223.2.4

Separated Bikeway



A bikeway with physical separation (horizontal and vertical) from vehicle traffic, designated lane markings, pavement legends, and signage, which reduces conflicts between bicycles and vehicles on the road.



FOCUS CRASH TYPE
Vehicle overtakes bicycle.

SAFE SYSTEM STRATEGY
Manage conflicts in time.

CONSIDERATIONS
A raised barrier of plastic posts and painted pavement is a low-cost/quick build option. Special treatments may be needed at driveways/intersections.

[Home](#)

FDM 223.2.1.5

Two-Stage Turn Queue Bike Box



Roadway treatment for left turns at signalized intersections from the right-side bike lane protecting bicyclists from traffic.



FOCUS CRASH TYPE
Motorist failed to yield at signalized intersection, and bicyclist turned left into path of motorist.

SAFE SYSTEM STRATEGY
Manage conflicts in time and increase attentiveness and awareness.

CONSIDERATIONS
Prohibition of right turns on red may be required.

[Home](#)

D. Pedestrian Facilities

People walking are also overrepresented in collisions in the MetroPlan Orlando region where someone is killed or seriously injured. Providing more visible and frequent marked and controlled crossings, decreasing pedestrian crossing distance, and extending the amount of time to cross the street can help to reduce collisions. Many of these strategies also benefit other modes of travel although the primary benefit is to people walking.

Lighting is also a key element and can improve the visibility of all roadway users. Pedestrian detection can be used at trail crossings where users might not activate the crossing signal. Installing a median barrier can be a way to discourage pedestrian crossings, however a review of the pedestrian desire lines in the area should be conducted as there may be a reason, such as a bus stop on one side of the street and a shopping center or apartment complex on the other side. It is unlikely and unrealistic to expect pedestrians to walk a significant distance out of their way to use a protected crossing, especially in Florida weather. Typically, people are not willing to walk more than 300 to 400 feet to a crossing and while it may not be practical to install a pedestrian crossing every 600 to 800 feet (such that you are never farther than 300 to 400 feet from the nearest crossing), other strategies such as relocating a bus stop could also be part of the solution.

Strategies included in this section are:

1. Add Sidewalk
2. Co-Locate Bus Stops and Pedestrian Crossings
3. Curb Extensions
4. High-Visibility Crosswalk
5. Install/Upgrade Pedestrian Crossing at Uncontrolled Locations
6. Pedestrian Hybrid Beacon
7. Rectangular Rapid Flashing Beacon
8. Restripe Crosswalk
9. Shared Use Path
10. Widen Sidewalk

Add Sidewalk

FDM 222.2.1



Adding sidewalks provides a separated and continuous facility for people to walk along the roadway, and reduces the potential for people walking in the roadway, conflicting with vehicle travel.

CRASH REDUCTION EFFECTIVENESS: **LOW** **MED** **HIGH** CMF Available

MODAL SAFETY EMPHASIS:

APPLICABLE FACILITY: **ALL ROADWAYS**

IMPLEMENTATION TIMELINE:

COST: **\$\$**

FOCUS CRASH TYPE
Pedestrian walking along roadway.

SAFE SYSTEM STRATEGY
Remove severe conflicts.

CONSIDERATIONS
In combination with new sidewalks, appropriate marked and controlled crossing locations should be identified.

[Home](#)

Co-Locate Bus Stops and Pedestrian Crossings

FDM 222.2.8



Place bus stops and pedestrian crossings in close proximity to allow transit riders to cross the street safely.

CRASH REDUCTION EFFECTIVENESS: **UNKNOWN**

MODAL SAFETY EMPHASIS:

APPLICABLE FACILITY: **ALL ROADWAYS**

IMPLEMENTATION TIMELINE:

COST: **\$**

FOCUS CRASH TYPE
Dart/dash and multiple threat/trapped.

SAFE SYSTEM STRATEGY
Remove severe conflicts, and increase attentiveness and awareness.

CONSIDERATIONS
Could include relocation of existing bus stops, or installation of new crossing treatments.

[Home](#)

Curb Extensions

FDM 202.3.12, TEM 5.2.7.5



A traffic calming measure that extends the sidewalk for a short distance at a crossing location to reduce the crossing distance and increase visibility.

CRASH REDUCTION EFFECTIVENESS: **UNKNOWN**

MODAL SAFETY EMPHASIS:

APPLICABLE FACILITY: **URBAN** **SUBURBAN**

IMPLEMENTATION TIMELINE:

COST: **\$\$**

FOCUS CRASH TYPE
Dart/dash, multiple threat/trapped, pedestrian struck by turning vehicle, through vehicle at unsignalized intersection, and through vehicle at signalized intersection.

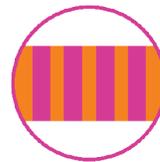
SAFE SYSTEM STRATEGY
Manage vehicular speeds, and increase attentiveness and awareness.

CONSIDERATIONS
Drainage and ADA requirements should be considered. Paint and plastic curb extensions are a low-cost/quick build option.

[Home](#)

High-Visibility Crosswalk

FDM 230.3.1



Crosswalks made from high-visibility material, such as thermoplastic tape, instead of paint, improving safety by increasing the visibility of marked crosswalks.

CRASH REDUCTION EFFECTIVENESS: **UNKNOWN**

MODAL SAFETY EMPHASIS:

APPLICABLE FACILITY: **ALL ROADWAYS**

IMPLEMENTATION TIMELINE:

COST: **\$**

FOCUS CRASH TYPE
Pedestrian struck by turning vehicle, and through vehicle at signalized intersection.

SAFE SYSTEM STRATEGY
Increase attentiveness and awareness.

CONSIDERATIONS
Crosswalk treatments should consider wear patterns and maintenance requirements.

[Home](#)

FDM 222.2.3

Install/Upgrade Pedestrian Crossing at Uncontrolled Locations (Signs and Markings Only)



Marked crossings can channelize pedestrian travel and alert drivers that people may be crossing the roadway.

CRASH REDUCTION EFFECTIVENESS: LOW MED HIGH **CMF Available**

MODAL SAFETY EMPHASIS:

APPLICABLE FACILITY: URBAN SUBURBAN

IMPLEMENTATION TIMELINE:

COST: \$

FOCUS CRASH TYPE

Pedestrian struck by turning vehicle, and through vehicle at unsignalized intersection.

SAFE SYSTEM STRATEGY

Manage conflicts in time, and increase attentiveness and awareness.

CONSIDERATIONS

Crossing locations should consider pedestrian destinations on both sides of roadway, pedestrian desire lines, as well as vehicle travel patterns.

[Home](#)

FDM 215.2.9, TEM 5.2.5.2

Pedestrian Hybrid Beacon



A pedestrian-hybrid beacon (PHB) notifies oncoming motorists to stop with a series of red and yellow lights. Unlike a traffic signal, the PHB rests in dark until a pedestrian activates it via pushbutton or other form of detection.

CRASH REDUCTION EFFECTIVENESS: LOW MED HIGH **CMF Available**

MODAL SAFETY EMPHASIS:

APPLICABLE FACILITY: URBAN SUBURBAN

IMPLEMENTATION TIMELINE:

COST: \$\$\$

FOCUS CRASH TYPE

Dart/dash, multiple threat/trapped, and through vehicle at unsignalized intersection.

SAFE SYSTEM STRATEGY

Manage conflicts in time.

CONSIDERATIONS

May require driver and pedestrian education.

[Home](#)

FDM 230.2.9, TEM 5.2.5.2

Rectangular Rapid Flashing Beacon



A rectangular rapid flashing beacon (RRFB) is a pedestrian-activated flashing light with signage to alert motorists of a pedestrian crossing. It improves safety by increasing the visibility of marked crosswalks and provides motorists a cue to slow down and yield to pedestrians.

CRASH REDUCTION EFFECTIVENESS: LOW MED HIGH **CMF Available**

MODAL SAFETY EMPHASIS:

APPLICABLE FACILITY: URBAN SUBURBAN

IMPLEMENTATION TIMELINE:

COST: \$\$

FOCUS CRASH TYPE

Through vehicle at unsignalized intersection, dart/dash, and multiple threat/trapped.

SAFE SYSTEM STRATEGY

Manage conflicts in time.

CONSIDERATIONS

RRFBs should be reserved for use at locations with pedestrian safety issues as their overuse could diminish the effectiveness.

[Home](#)

Restripe Crosswalk



Periodic restriping of crosswalks is necessary to ensure the traffic markings are visible. Crosswalk may be restriped with high visibility markings.

CRASH REDUCTION EFFECTIVENESS: UNKNOWN

MODAL SAFETY EMPHASIS:

APPLICABLE FACILITY: ALL ROADWAYS

IMPLEMENTATION TIMELINE:

COST: \$

FOCUS CRASH TYPE

Pedestrian struck by turning vehicle, through vehicle at signalized intersection, and through vehicle at unsignalized intersection.

SAFE SYSTEM STRATEGY

Increase attentiveness and awareness.

CONSIDERATIONS

Crosswalk treatments should consider wear patterns and maintenance requirements.

[Home](#)

FDM 224

Shared Use Path



A 12' foot facility that is separated from the vehicular travel way for use by bicyclists, pedestrians, skaters, wheelchair users, joggers, and other users. When adjacent to a travel lane, these are referred to as side paths.

CRASH REDUCTION EFFECTIVENESS

UNKNOWN

MODAL SAFETY EMPHASIS



APPLICABLE FACILITY

SUBURBAN

RURAL

IMPLEMENTATION TIMELINE



COST \$\$\$

FOCUS CRASH TYPE

Vehicle/pedestrian crashes and vehicle/bicyclist crashes.

SAFE SYSTEM STRATEGY

Remove severe conflicts.

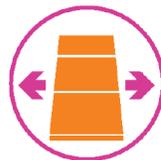
CONSIDERATIONS

May require right-of-way.

Home

FDM 222.2.1.1

Widen Sidewalk



Widening sidewalks provides a more comfortable space for pedestrians and provides space to accommodate people in wheelchairs.

CRASH REDUCTION EFFECTIVENESS

UNKNOWN

MODAL SAFETY EMPHASIS



APPLICABLE FACILITY

URBAN

SUBURBAN

IMPLEMENTATION TIMELINE



COST \$\$

FOCUS CRASH TYPE

Pedestrian walking along roadway.

SAFE SYSTEM STRATEGY

Remove severe conflicts.

CONSIDERATIONS

May require right-of-way.

Home

E. Intersections and Roadways

Changing intersection and roadway design features such as eliminating turn lanes where people driving do not have to stop (sometimes known as slip lanes) to slow vehicle turning movements, narrowing travel lanes to promote slower speeds, and constructing sidewalks are some effective methods. Many intersection and roadway design measures may require public outreach and detailed analysis. For example, partially closing a roadway could result in community concerns about increased traffic on other streets or the need to make improvements at other locations.

Some improvements such as a protected intersection where setbacks, dedicated lanes, and curbs protect people walking and bicycling, and force slow turns for people driving, can be expensive and might need to be programmed as a capital improvement project. There are often opportunities to take advantage of reallocating right-of-way, especially as part of planned resurfacing projects. For instance, lane repurposing to add/enhance bicycle and pedestrian facilities are good candidates for inclusion with other planned roadway projects. For many of the roadway design changes noted below, there are opportunities for cost savings when incorporated as part of routine maintenance projects, like resurfacing.

Strategies included in this section are:

1. All-Way Stop Control
2. Bicycle Crossing (Solid Green Paint)
3. Bike Box
4. Centerline Hardening
5. Close Slip Lane
6. Crosswalk Density
7. Curb-Return Radius Reduction
8. Delineators, Reflectors, and/or Object Markers
9. Directional Median Openings to Restrict Left Turns
10. Doubled-up, Oversized Stop Signs
11. Enhanced Daylighting/Slow Turn Wedge
12. Extend Bike Lane to Intersection
13. Gateway Treatments
14. Green Conflict Striping
15. Guardrail
16. Hardened Median Nose Extension
17. High Friction Surface Treatment
18. Impact Attenuators
19. Intersection Reconstruction and Tightening
20. Lane Repurposing
21. Median Barrier
22. On-Street Parking
23. Paint and Plastic Median
24. Paint and Plastic Mini Circle/Mini Roundabout
25. Partial Closure/Diverter
26. Protected Intersection
27. Raised Crosswalk
28. Raised Intersection
29. Raised Median
30. Reduced Left-Turn Conflict Intersection
31. Refuge Island
32. Retroreflective Signal Backplates
33. Roundabout
34. Rumble Strips
35. Safety Edge
36. Speed Hump, Speed Table or Speed Cushion
37. Straighten Crosswalk
38. Superelevation at Horizontal Curve Locations
39. Widen/Pave Shoulder

All-Way Stop Control

FDM 212.2.3



An all-way stop-controlled intersection requires all vehicles to stop before crossing the intersection and better allocates the right-of-way between roadway users.

CRASH REDUCTION EFFECTIVENESS: LOW MED **HIGH** CMF Available

MODAL SAFETY EMPHASIS:

APPLICABLE FACILITY: **ALL ROADWAYS**

IMPLEMENTATION TIMELINE:

COST: \$

FOCUS CRASH TYPE
Angle crashes.

SAFE SYSTEM STRATEGY
Manage conflicts in time.

CONSIDERATIONS
Consider incorporating with high visibility crosswalks. Advanced signage may be necessary depending on speed and other roadway characteristics. Installation of unwarranted AWSC can lower stopping compliance.

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Bicycle Crossing (Solid Green Paint)

FDM 223.2.1.4, TEM 5.2.7.1



Green paint across an intersection that enhances bicycle safety and visibility.

CRASH REDUCTION EFFECTIVENESS: LOW **MED** HIGH CMF Available

MODAL SAFETY EMPHASIS:

APPLICABLE FACILITY: **URBAN** **SUBURBAN**

IMPLEMENTATION TIMELINE:

COST: \$

FOCUS CRASH TYPE
Motorist turns left in path of bicyclist, motorist turns right in path of bicyclist, and motorist failed to yield at signalized intersection.

SAFE SYSTEM STRATEGY
Increase attentiveness and awareness.

CONSIDERATIONS
In high travel areas, green paint can degrade and a maintenance plan should be developed.

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Bike Box

FDM 233.2.1.5



An area at an intersection with a signal where cyclists can move ahead of stopped traffic providing a designated and visible way to get ahead of queuing traffic.

CRASH REDUCTION EFFECTIVENESS: **UNKNOWN**

MODAL SAFETY EMPHASIS:

APPLICABLE FACILITY: **URBAN** **SUBURBAN**

IMPLEMENTATION TIMELINE:

COST: \$

FOCUS CRASH TYPE
Motorist failed to yield at signalized intersection and bicyclist turned left into path of motorist.

SAFE SYSTEM STRATEGY
Increase attentiveness and awareness.

CONSIDERATIONS
In high travel areas, green paint can degrade and a maintenance plan should be developed.

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Centerline Hardening



Physical elements on the centerline, like bollards and rubber curbs, that encourage slower vehicle turns.

CRASH REDUCTION EFFECTIVENESS: **UNKNOWN**

MODAL SAFETY EMPHASIS:

APPLICABLE FACILITY: **URBAN** **SUBURBAN**

IMPLEMENTATION TIMELINE:

COST: \$

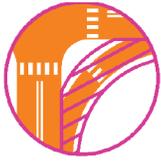
FOCUS CRASH TYPE
Pedestrian struck by turning vehicle.

SAFE SYSTEM STRATEGY
Manage vehicular speeds.

CONSIDERATIONS
Design should consider truck volumes and resulting wheel track in placement of hardening features.

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Close Slip Lane



Modification of an intersection to remove the sweeping right turn lane resulting in shorter pedestrian crossings, reduced turning speeds, and better sight lines.

CRASH REDUCTION EFFECTIVENESS: UNKNOWN

MODAL SAFETY EMPHASIS: Car, Pedestrian, Bicycle

APPLICABLE FACILITY: URBAN, SUBURBAN

IMPLEMENTATION TIMELINE: [Progress indicator]

COST: \$\$\$

FOCUS CRASH TYPE
Right turn crashes, pedestrian struck by turning vehicle, motorist turns left in path of bicyclist, and motorist turns right in path of bicyclist.

SAFE SYSTEM STRATEGY
Remove severe conflicts, manage vehicular speeds, and increase attentiveness and awareness.

CONSIDERATIONS
Drainage and ADA requirements should be considered.

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FDM 202.3.7

Crosswalk Density



Short blocks (500 feet or less) can manage speed by limiting driver acceleration distance between intersections. If used in conjunction with marked crosswalks, short blocks also create engagement. Where short-blocks do not exist, mid-block crosswalks can be used to simulate the short block effect.

CRASH REDUCTION EFFECTIVENESS: UNKNOWN

MODAL SAFETY EMPHASIS: Pedestrian, Bicycle

APPLICABLE FACILITY: URBAN, RURAL

IMPLEMENTATION TIMELINE: [Progress indicator]

COST: \$\$

FOCUS CRASH TYPE
Vehicle/pedestrian crashes and vehicle/bicyclist crashes.

SAFE SYSTEM STRATEGY
Manage conflicts and increase attentiveness and awareness.

CONSIDERATIONS
May be challenging to retrofit buildout areas. Policy framework that requires increased intersection/crossing density as areas redevelop could be considered.

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Curb-Return Radius Reduction

FDM TABLE 212.12.3



This refers to the curvature of the curb line when two streets intersect. Reducing the size of the curb return radius can decrease the speed of turning vehicles and reduce the length of crossings.

CRASH REDUCTION EFFECTIVENESS: LOW, MED, HIGH, CMF Available

MODAL SAFETY EMPHASIS: Car, Pedestrian, Bicycle

APPLICABLE FACILITY: URBAN, SUBURBAN

IMPLEMENTATION TIMELINE: [Progress indicator]

COST: \$\$

FOCUS CRASH TYPE
Speed related crashes, pedestrian struck by turning vehicle, and bicyclist struck by turning vehicle.

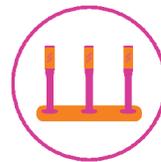
SAFE SYSTEM STRATEGY
Manage vehicular speeds.

CONSIDERATIONS
Can create drainage problems, emergency vehicles would need to be considered in design, and may be difficult for large trucks to navigate.

[Home](#)

Delineators, Reflectors, and/or Object Markers

FDM 230.2.7



Devices that warn drivers of an approaching curve or fixed object providing additional reaction time to slow down.

CRASH REDUCTION EFFECTIVENESS: LOW, MED, HIGH, CMF Available

MODAL SAFETY EMPHASIS: Car

APPLICABLE FACILITY: ALL ROADWAYS

IMPLEMENTATION TIMELINE: [Progress indicator]

COST: \$

FOCUS CRASH TYPE
Run off the road and collision with fixed objects.

SAFE SYSTEM STRATEGY
Increase attentiveness and awareness.

CONSIDERATIONS
The selection of adhesive should be carefully considered when installing delineators in hot climates.

[Home](#)

FDM 212.14.5

Directional Median Openings to Restrict Left Turns



A median with selective openings that limits the number of turning movement and reduces the number of conflict points.

CRASH REDUCTION EFFECTIVENESS: LOW MED HIGH **CMF Available**

MODAL SAFETY EMPHASIS:

APPLICABLE FACILITY: URBAN SUBURBAN

IMPLEMENTATION TIMELINE:

COST: \$\$

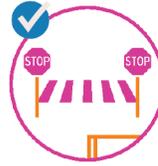
FOCUS CRASH TYPE
Angle crashes, and left turn crashes.

SAFE SYSTEM STRATEGY
Remove severe conflicts, and increase attentiveness and awareness.

CONSIDERATIONS
Need for U-Turns should be evaluated and accommodated along the corridor.

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Doubled-up, Oversized Stop Signs



Treatment provides for left and right, oversized advance intersection warning signs. Retroreflective sheeting on sign posts and enhanced pavement markings that delineate through lane edge lines are typically provided.

CRASH REDUCTION EFFECTIVENESS: LOW MED HIGH

MODAL SAFETY EMPHASIS:

APPLICABLE FACILITY: RURAL

IMPLEMENTATION TIMELINE:

COST: \$

FOCUS CRASH TYPE
Run off the road, collision with fixed objects, angle crashes, and motorist failed to yield at unsignalized intersection.

SAFE SYSTEM STRATEGY
Increase attentiveness and awareness.

CONSIDERATIONS
Can also be paired with flashing beacons.

[Home](#)

FDM 223.2.4.5

Enhanced Daylighting/Slow Turn Wedge



Paint and bollards that extend the curb and slow turns at intersections which increases safety by expanding driver field of vision and slowing vehicle travel.

CRASH REDUCTION EFFECTIVENESS: UNKNOWN

MODAL SAFETY EMPHASIS:

APPLICABLE FACILITY: URBAN SUBURBAN

IMPLEMENTATION TIMELINE:

COST: \$

FOCUS CRASH TYPE
Pedestrian struck by turning vehicle and motorist turns left in path of bicyclist.

SAFE SYSTEM STRATEGY
Increase attentiveness and awareness.

CONSIDERATIONS
Quick curb and other treatments can be used with minor impacts to drainage under quick build conditions.

[Home](#)

Extend Bike Lane to Intersection



Where a bike lane is dropped due to a right turn lane, the intersection approach is restriped to allow for bicyclists to move to the left side of right turning vehicles ahead of reaching the intersection.

CRASH REDUCTION EFFECTIVENESS: LOW MED HIGH **CMF Available**

MODAL SAFETY EMPHASIS:

APPLICABLE FACILITY: URBAN SUBURBAN

IMPLEMENTATION TIMELINE:

COST: \$

FOCUS CRASH TYPE
Motorist turns right in path of bicyclist.

SAFE SYSTEM STRATEGY
Manage conflicts in time.

CONSIDERATIONS
In locations with high right-turn volumes, consider bike ramp to sidewalk/ side path.

[Home](#)

Gateway Treatments

FDM 223.2.1.4



Gateway treatments are intended to alert roadway users that they are entering a different context and that they should expect pedestrians/bicyclists.

CRASH REDUCTION EFFECTIVENESS: UNKNOWN

MODAL SAFETY EMPHASIS: Car, Pedestrian, Bicyclist

APPLICABLE FACILITY: URBAN, SUBURBAN

IMPLEMENTATION TIMELINE: [Clock icon]

COST: \$

FOCUS CRASH TYPE
Vehicle/pedestrian crashes and vehicle/bicyclist crashes.

SAFE SYSTEM STRATEGY
Increase attentiveness and awareness, and implement enforcing features to slow traffic.

CONSIDERATIONS
Examples of gateway treatments include signage, delineators, curb extensions, roundabouts, textured pavements, or other treatments intended to visually signal a changed condition to drivers.

[Home](#)

Green Conflict Striping



Dashed green markings in bike lanes near or through intersections increasing bicyclist visibility and identifying potential conflict points so both bicyclists and motorists use caution when traversing the area.

CRASH REDUCTION EFFECTIVENESS: LOW, MED, HIGH, CMF Available

MODAL SAFETY EMPHASIS: Bicyclist

APPLICABLE FACILITY: URBAN, SUBURBAN

IMPLEMENTATION TIMELINE: [Clock icon]

COST: \$

FOCUS CRASH TYPE
Motorist turns left in path of bicyclist, motorist turns right in path of bicyclist, and motorist failed to yield at signalized intersection.

SAFE SYSTEM STRATEGY
Increase attentiveness and awareness.

CONSIDERATIONS
In high travel areas, green paint can degrade and a maintenance plan should be developed.

[Home](#)

Guardrail

FDM 215



A device that reduces the severity of lane departure crashes by redirecting a vehicle away from embankment slopes or fixed objects and dissipating the energy of an errant vehicle.

CRASH REDUCTION EFFECTIVENESS: LOW, MED, HIGH, CMF Available

MODAL SAFETY EMPHASIS: Car

APPLICABLE FACILITY: RURAL, SUBURBAN

IMPLEMENTATION TIMELINE: [Clock icon]

COST: \$\$

FOCUS CRASH TYPE
Run off the road crashes and collisions with fixed objects.

SAFE SYSTEM STRATEGY
Remove severe conflicts.

CONSIDERATIONS
There are several different types of guardrail designs that should be considered based on the area context.

[Home](#)

Hardened Median Nose Extension

FDM 210.3.3



An extension of the median nose can reduce pedestrian exposure and can improve the crossing experience of multi-lane roadways. Median noses that extend past the crosswalk protect people waiting in the median and slow turning drivers.

CRASH REDUCTION EFFECTIVENESS: LOW, MED, HIGH

MODAL SAFETY EMPHASIS: Pedestrian, Bicyclist

APPLICABLE FACILITY: URBAN, SUBURBAN

IMPLEMENTATION TIMELINE: [Clock icon]

COST: \$

FOCUS CRASH TYPE
Vehicle/pedestrian crashes, vehicle/bicyclist crashes, and left-turn crashes.

SAFE SYSTEM STRATEGY
Manage conflicts and increase attentiveness and awareness.

CONSIDERATIONS
Design should consider truck volumes and resulting wheel track in placement of median nose extension.

[Home](#)

High Friction Surface Treatment



High friction surface treatments can improve pavement friction under all conditions and help reduce the frequency of crashes by allowing motorists to stop faster than on non-treated pavement.

CRASH REDUCTION EFFECTIVENESS: LOW MED **HIGH** CMF Available

MODAL SAFETY EMPHASIS:

APPLICABLE FACILITY: **ALL ROADWAYS**

IMPLEMENTATION TIMELINE:

COST: **\$\$**

FOCUS CRASH TYPE
Run off the road crashes, and collisions with fixed objects.

SAFE SYSTEM STRATEGY
Remove severe conflicts.

CONSIDERATIONS
Treatments can last for 8-12 years so a maintenance schedule outside the RRR process may need to be developed.

[Home](#)

FDM 215.4.3

Impact Attenuators



A device that brings an errant vehicle to a more-controlled stop or redirects the vehicle away from a rigid object, typically used to shield rigid roadside objects such as concrete barrier ends, steel guardrail ends and bridge pillars.

CRASH REDUCTION EFFECTIVENESS: LOW MED **HIGH** CMF Available

MODAL SAFETY EMPHASIS:

APPLICABLE FACILITY: **RURAL**

IMPLEMENTATION TIMELINE:

COST: **\$\$**

FOCUS CRASH TYPE
Run off the road, and collision with fixed objects.

SAFE SYSTEM STRATEGY
Remove severe conflicts.

CONSIDERATIONS
Can be used in permanent or temporary (construction zone) applications. Attenuators should only be installed where it is impractical for the objects to be removed.

[Home](#)

Intersection Reconstruction and Tightening



Reconstructing irregular intersections should can provide better visibility for all road users, and may also reduce high speed turns and pedestrian crossing lengths.

CRASH REDUCTION EFFECTIVENESS: **UNKNOWN**

MODAL SAFETY EMPHASIS:

APPLICABLE FACILITY: **URBAN** **SUBURBAN**

IMPLEMENTATION TIMELINE:

COST: **\$\$\$**

FOCUS CRASH TYPE
Right turn crashes, pedestrian struck by turning vehicle, and motorist turns right in path of bicyclist.

SAFE SYSTEM STRATEGY
Increase attentiveness and awareness.

CONSIDERATIONS
Drainage and ADA requirements should be considered, in addition to the turn movements of trucks.

[Home](#)

FDM 202.1.1

Lane Repurposing



A right of way reallocation can modify the space dedicated to vehicle travel to create space for bicycle facilities, add a buffer to existing bicycle facilities, wider sidewalks, or center turn lanes.

CRASH REDUCTION EFFECTIVENESS: **LOW** MED **HIGH** CMF Available

MODAL SAFETY EMPHASIS:

APPLICABLE FACILITY: **URBAN** **SUBURBAN**

IMPLEMENTATION TIMELINE:

COST: **\$\$**

FOCUS CRASH TYPE
Speed related crashes, pedestrian walking along roadway, and vehicle overtaking bicycle.

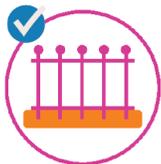
SAFE SYSTEM STRATEGY
Manage vehicular speeds and manage conflicts in time.

CONSIDERATIONS
There may be concerns about traffic diversion to other streets.

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Median Barrier

FDM 215.4.6.4



Barrier in the center of the roadway that physically separates opposing vehicular traffic and controls access to and from side streets and driveways, reducing conflict points.

CRASH REDUCTION EFFECTIVENESS: LOW MED HIGH **CMF Available**

MODAL SAFETY EMPHASIS:

APPLICABLE FACILITY: **ALL ROADWAYS**

IMPLEMENTATION TIMELINE:

COST: **\$\$\$**

FOCUS CRASH TYPE

Run off the road, collision with fixed objects, head on, and median crossover crashes.

SAFE SYSTEM STRATEGY

Remove severe conflicts.

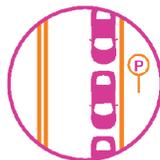
CONSIDERATIONS

Median breaks should be identified to allow maintenance and emergency vehicles to cross the median at appropriate locations. Consideration should also be given to potential diversion of pedestrians.

[Home](#)

On-Street Parking

FDM 202.3.2, FDM 210.2.3



On-street parking can provide a buffer between pedestrians/ bicyclists and the travel lane, increasing safety and comfort. It can also be used to manage speeds when adjacent to a travel lane as parking maneuvers and driving next to parked vehicles creates friction that slows drivers.

CRASH REDUCTION EFFECTIVENESS: LOW MED HIGH **CMF Available**

MODAL SAFETY EMPHASIS:

APPLICABLE FACILITY: **URBAN** **SUBURBAN**

IMPLEMENTATION TIMELINE:

COST: **\$\$\$**

FOCUS CRASH TYPE

Vehicle/pedestrian crashes.

SAFE SYSTEM STRATEGY

Implement enforcing features to slow traffic.

CONSIDERATIONS

If there are bike lanes or high volumes of bicyclists, a minimum of 3 feet should be provided to prevent "dooring". Providing the appropriate separation between the bicycle facility, travel way, and parking lane is critical.

[Home](#)

Paint and Plastic Median



A painted median with plastic posts between the two directions of travel, reducing vehicular speeding and discourages risky turning movements.

CRASH REDUCTION EFFECTIVENESS: **UNKNOWN**

MODAL SAFETY EMPHASIS:

APPLICABLE FACILITY: **URBAN** **SUBURBAN**

IMPLEMENTATION TIMELINE:

COST: **\$**

FOCUS CRASH TYPE

Pedestrian struck by turning vehicle and motorist turns left in path of bicyclist.

SAFE SYSTEM STRATEGY

Increase attentiveness and awareness, and implement enforcing features to slow traffic.

CONSIDERATIONS

If posts are routinely being knocked down, a different treatment may be warranted.

[Home](#)

Paint and Plastic Mini Circle/ Mini Roundabout



Mini circles use paint and soft hit posts to replace stop-controlled intersections with a circular design that slows traffic and eliminates left turns and reduces conflicts. Mini roundabouts use curb treatments for a more permanent installation.

CRASH REDUCTION EFFECTIVENESS: **UNKNOWN**

MODAL SAFETY EMPHASIS:

APPLICABLE FACILITY: **URBAN** **SUBURBAN**

IMPLEMENTATION TIMELINE:

COST: **\$\$**

FOCUS CRASH TYPE

Angle crashes and left turn crashes.

SAFE SYSTEM STRATEGY

Remove severe conflicts and implement enforcing features to slow traffic.

CONSIDERATIONS

These should only be considered on low volume, low speed streets where trucks are not routinely expected to be.

[Home](#)

Partial Closure/Diverter



A roadway treatment that restricts select vehicle movements using physical diversion while allowing bicyclists and pedestrians to proceed.

CRASH REDUCTION EFFECTIVENESS: UNKNOWN

MODAL SAFETY EMPHASIS:

APPLICABLE FACILITY: URBAN, SUBURBAN

IMPLEMENTATION TIMELINE:

COST: \$

FOCUS CRASH TYPE
Pedestrian and bicycle crashes.

SAFE SYSTEM STRATEGY
Remove severe conflicts and implement enforcing features to slow traffic.

CONSIDERATIONS
Should be implemented as part of a larger traffic calming plan to minimize effects of diverted traffic to residential streets.

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Protected Intersection



Protected intersections use corner islands, curb extensions, and colored paint to delineate bicycle and pedestrian movements across an intersection, slowing driving speeds and providing shorter crossing distances.

CRASH REDUCTION EFFECTIVENESS: UNKNOWN

MODAL SAFETY EMPHASIS:

APPLICABLE FACILITY: URBAN, SUBURBAN

IMPLEMENTATION TIMELINE:

COST: \$\$-\$\$\$

FOCUS CRASH TYPE
Pedestrian struck by turning vehicle, motorist turns right in path of bicyclist, and motorist failed to yield at signalized intersection.

SAFE SYSTEM STRATEGY
Remove severe conflicts, manage vehicular speeds, manage conflicts in time, and increase attentiveness and awareness.

CONSIDERATIONS
Drainage and ADA requirements should be considered.

[Home](#)

Raised Crosswalk

FDM 202.3.8, TEM 5.2.7.5



Raised crosswalks are typically elevated 3-6 inches above the road or at sidewalk level and improves safety by increasing crosswalk and pedestrian visibility and slowing down motorists.

CRASH REDUCTION EFFECTIVENESS: LOW, MED, HIGH, CMF Available

MODAL SAFETY EMPHASIS:

APPLICABLE FACILITY: URBAN, SUBURBAN

IMPLEMENTATION TIMELINE:

COST: \$\$

FOCUS CRASH TYPE
Through vehicle at signalized intersection, through vehicle at unsignalized intersection, and pedestrian struck by turning vehicle.

SAFE SYSTEM STRATEGY
Manage vehicular speeds, and increase attentiveness and awareness.

CONSIDERATIONS
Drainage and ADA requirements should be considered.

[Home](#)

Raised Intersection

FDM 202.3.8



Elevates the intersection to bring vehicles to the sidewalk level. Serves as a traffic calming measure by extending the sidewalk context across the road.

CRASH REDUCTION EFFECTIVENESS: UNKNOWN

MODAL SAFETY EMPHASIS:

APPLICABLE FACILITY: URBAN, SUBURBAN

IMPLEMENTATION TIMELINE:

COST: \$\$\$

FOCUS CRASH TYPE
Through vehicle at signalized intersection, through vehicle at unsignalized intersection, and pedestrian struck by turning vehicle.

SAFE SYSTEM STRATEGY
Manage vehicular speeds, and increase attentiveness and awareness.

CONSIDERATIONS
Drainage and ADA requirements should be considered.

[Home](#)

Raised Median

TEM 5.2.7.5



Curbed sections in the center of the roadway that are physically separated from vehicular traffic. Raised medians can also help control access to and from side streets and driveways, reducing conflict points.

CRASH REDUCTION EFFECTIVENESS: LOW MED **HIGH** CMF Available

MODAL SAFETY EMPHASIS:

APPLICABLE FACILITY: **URBAN** SUBURBAN

IMPLEMENTATION TIMELINE:

COST: \$\$

FOCUS CRASH TYPE
Angle crashes, head on, and dart/dash.

SAFE SYSTEM STRATEGY
Manage vehicular speeds.

CONSIDERATIONS
Need for U-Turns should be evaluated and accommodated along the corridor.

[Home](#)

Reduced Left-Turn Conflict Intersection

FDM 212.1.1



Geometric designs that alter how left-turn movements occur can simplify decisions and minimize the potential for related crashes.

CRASH REDUCTION EFFECTIVENESS: LOW MED **HIGH** CMF Available

MODAL SAFETY EMPHASIS:

APPLICABLE FACILITY: SUBURBAN **RURAL**

IMPLEMENTATION TIMELINE:

COST: \$\$\$

FOCUS CRASH TYPE
Left turn crashes and angle crashes.

SAFE SYSTEM STRATEGY
Manage conflicts in time, and increase attentiveness and awareness.

CONSIDERATIONS
Two highly effective designs that rely on U-turns to complete certain left-turn movements are known as the restricted crossing U-turn (RCUT) and the median U-turn (MUT). These treatments may require additional ROW.

[Home](#)

Refuge Island

FDM 210.3.2.3, TEM 5.2.7.5



Provides a raised barrier in the center of the roadway restricting certain turning movements and providing a place for pedestrians to wait if they are unable to finish crossing the intersection. It reduces the number of potential conflict points and the exposure of pedestrians crossing the roadway.

CRASH REDUCTION EFFECTIVENESS: LOW **MED** HIGH CMF Available

MODAL SAFETY EMPHASIS:

APPLICABLE FACILITY: **URBAN** SUBURBAN

IMPLEMENTATION TIMELINE:

COST: \$\$

FOCUS CRASH TYPE
Dart/dash, through vehicle at signalized intersection, and through vehicle at unsignalized intersection.

SAFE SYSTEM STRATEGY
Manage conflicts in time, and increase attentiveness and awareness.

CONSIDERATIONS
Pedestrian refuge areas can be constructed from paint and plastic as part of a low-cost/quick build project.

[Home](#)

Retroreflective Signal Backplates

FDM 232.1.5, TEM 3.9



Backplates added to a traffic signal head improve the visibility of the illuminated face of the signal by introducing a controlled-contrast background, which can be retroreflective.

CRASH REDUCTION EFFECTIVENESS: LOW MED **HIGH** CMF Available

MODAL SAFETY EMPHASIS:

APPLICABLE FACILITY: **ALL ROADWAYS**

IMPLEMENTATION TIMELINE:

COST: \$

FOCUS CRASH TYPE
Angle crashes and left turn crashes.

SAFE SYSTEM STRATEGY
Increase attentiveness and awareness.

CONSIDERATIONS
When an entire backplate is added, structural analysis may be required due to the added wind load.

[Home](#)

FDM 231.3.3

Roundabout



A circular non-signalized intersection where traffic flows in one direction that reduces conflict points.

CRASH REDUCTION EFFECTIVENESS: LOW MED HIGH **CMF Available**

MODAL SAFETY EMPHASIS:

APPLICABLE FACILITY: **ALL ROADWAYS**

IMPLEMENTATION TIMELINE:

COST: **\$\$\$**

FOCUS CRASH TYPE
Severe crashes, angle crashes, and left turn crashes.

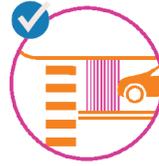
SAFE SYSTEM STRATEGY
Remove severe conflicts and manage vehicular speeds.

CONSIDERATIONS
Typically requires more right-of-way than traditional intersection and can be challenging for visually impaired people to navigate. Additional pedestrian treatments may be needed at some roundabouts.

[Home](#)

FDM 210.4.6 , TEM 5.2.7.5

Rumble Strips



Pavement treatments that create noise and vibration inside the vehicle that alert a driver as they cross the center or edge line to get the attention of a distracted or drowsy driver or under low visibility conditions.

CRASH REDUCTION EFFECTIVENESS: LOW MED HIGH **CMF Available**

MODAL SAFETY EMPHASIS:

APPLICABLE FACILITY: **RURAL**

IMPLEMENTATION TIMELINE:

COST: **\$**

FOCUS CRASH TYPE
Run off the road crashes and collisions with fixed objects.

SAFE SYSTEM STRATEGY
Increase attentiveness and awareness.

CONSIDERATIONS
Can create noise pollution and may not be appropriate near residential uses. May also pose problems for bicyclists and motorcyclists.

[Home](#)

FDM 202.3.8

Safety Edge



A safety edge is intended to minimize drop-off-related crashes as the shoulder pavement edge is sloped at an angle (30-35 degrees) to make it easier for a driver to safely reenter the roadway after inadvertently driving onto the shoulder.

CRASH REDUCTION EFFECTIVENESS: LOW MED HIGH **CMF Available**

MODAL SAFETY EMPHASIS:

APPLICABLE FACILITY: **RURAL**

IMPLEMENTATION TIMELINE:

COST: **\$**

FOCUS CRASH TYPE
Run off the road crashes and collisions with fixed objects.

SAFE SYSTEM STRATEGY
Remove severe conflicts.

CONSIDERATIONS
Drainage and added impervious surface would need to be evaluated.

[Home](#)

Speed Hump, Speed Table or Speed Cushion



Vertical deflection device to raise the entire wheelbase of a vehicle and encourage motorists to travel at slower speeds.

CRASH REDUCTION EFFECTIVENESS: LOW MED HIGH **CMF Available**

MODAL SAFETY EMPHASIS:

APPLICABLE FACILITY: **URBAN** **SUBURBAN**

IMPLEMENTATION TIMELINE:

COST: **\$**

FOCUS CRASH TYPE
Speed related crashes.

SAFE SYSTEM STRATEGY
Manage vehicular speeds and implement enforcing features to slow traffic.

CONSIDERATIONS
Drainage and emergency vehicle access will need to be considered. Speed cushions may be more appropriate on roadways with frequent emergency response vehicles.

[Home](#)

FDM 222.2.3

Straighten Crosswalk



Alignment of crosswalks to be perpendicular to the sidewalk, reducing pedestrian cross time and increasing sight lines.

CRASH REDUCTION EFFECTIVENESS **UNKNOWN**

MODAL SAFETY EMPHASIS

APPLICABLE FACILITY **ALL ROADWAYS**

IMPLEMENTATION TIMELINE

COST **\$**

FOCUS CRASH TYPE

Pedestrian crashes.

SAFE SYSTEM STRATEGY

Increase attentiveness and awareness.

CONSIDERATIONS

Location of drainage inlets may affect curb ramp placement.

[Home](#)

FDM 240.2.1.4

Superelevation at Horizontal Curve Locations



A rotation and rising of pavement as the road curves that offsets sideways vehicular momentum preventing motorists from losing control.

CRASH REDUCTION EFFECTIVENESS **UNKNOWN**

MODAL SAFETY EMPHASIS

APPLICABLE FACILITY **RURAL**

IMPLEMENTATION TIMELINE

COST **\$\$**

FOCUS CRASH TYPE

Run off the road crashes and collisions with fixed objects.

SAFE SYSTEM STRATEGY

Remove severe conflicts.

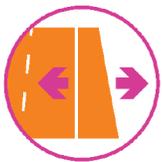
CONSIDERATIONS

Design speed should be evaluated as part of any geometric design change.

[Home](#)

FDM 210.4

Widen/Pave Shoulder



Widened and paved shoulders create a separated space for bicyclists and provide a breakdown lane. Paved shoulders can help to reduce run-off-road crashes and are most beneficial on rural roads without paved shoulders.

CRASH REDUCTION EFFECTIVENESS **LOW** **MED** **HIGH** **CMF Available**

MODAL SAFETY EMPHASIS

APPLICABLE FACILITY **RURAL**

IMPLEMENTATION TIMELINE

COST **\$\$**

FOCUS CRASH TYPE

Run off the road, collision with fixed objects, vehicle overtakes bicycle.

SAFE SYSTEM STRATEGY

Remove severe conflicts.

CONSIDERATIONS

Adding paved shoulders within horizontal curve sections may help agencies maximize benefits of the treatment while minimizing costs as opposed to adding paved shoulders to an entire corridor.

[Home](#)

F. Speed Management

Speed is an overarching contributing factor to many fatal and serious-injury crashes across all collision types in the region, with most fatal and severe injury crashes occurring on high-speed roadways. Therefore, a focus of engineering countermeasures is context appropriate speeds. A variety of proven techniques can be applied to reduce travel speed that are also considered as cross cutting strategies:

- Lane Repurposing – Reallocating the right-of-way to serve all roadway users can result in a reduction in the number of travel lanes on a street, which can enable the slowest driver to set the operating speed on a street, rather than the fastest driver. (See discussion in intersection and roadways)
- Traffic calming – Vertical devices such as speed humps and speed tables, horizontal devices such as bulbouts, chicanes, or mini traffic circles/roundabouts all have documented speed-reduction effects. These treatments are typically limited to local and collector roads, but sometimes are installed on arterial roadways depending on the context. (Traffic calming measures, such as speed humps and raised intersections are provided in the intersection and roadways section)
- Signal Coordination – Traffic signal coordination to maintain desired operating speeds along corridors. This strategy can reduce the incentive for people to drive more than the posted speed limit between intersections as it removes the potential for travel time savings. (See discussion in signals)
- Realigning skewed intersections – Broad, wide-radius turns can be made at high speeds. Tighter turns, closer to 90 degrees with a small radius are made at lower speeds. This strategy can also have the added benefit of reducing intersection crossing distances and increasing overall visibility. (See discussion in intersection and roadways)
- Reducing travel lane widths – Narrower travel lanes encourage lower vehicle speeds. Recent updates to the American Association of State Highway Transportation Official's (AASHTO) A Policy on Geometric Design of Highways and Streets included allowances for narrow travel lanes in recognition of safety research that showed little or no difference in crash history in a variety of contexts.
- Roundabouts – By introducing horizontal deflection onto otherwise straight roadways, roundabouts can reduce operating speeds. Additionally, roundabouts have proven safety benefits compared to standard intersections. (See information related to roundabouts in Intersection and roadway design)

Strategies included in this section are:

1. Appropriate Speed Limits
2. Chicane
3. Landscape Buffer
4. Lane Narrowing
5. Speed Cameras
6. Speed Feedback Sign
7. Speed Sensitive Rest on Red
8. Variable Speed Limits

Appropriate Speed Limits

FDM 201



Setting speed limits to reflect the surrounding context of the roadway and that meet with driver expectations can help improve driver respect for speed limits.

CRASH REDUCTION EFFECTIVENESS: **LOW** MED HIGH **CMF Available**

MODAL SAFETY EMPHASIS:

APPLICABLE FACILITY: **ALL ROADWAYS**

IMPLEMENTATION TIMELINE:

COST: **\$**

FOCUS CRASH TYPE
Speed related crashes.

SAFE SYSTEM STRATEGY
Manage vehicular speeds.

CONSIDERATIONS
Speed limit changes absent construction of engineering countermeasures should consider crash history and actual travel speeds. Speed limits that appear inconsistent may be ignored by the majority of drivers and this may contribute to lack of respect for speed limit and other traffic laws. Cost does not include implementation of engineering countermeasures to achieve desired speeds.

[Home](#)

Chicane

FDM 202.3.3



Uses centerline deflection within existing curb by placing vertical barriers (e.g., curbs, on-street parking) to require vehicle operators to make frequent horizontal movements, which typically reduces vehicular speeds.

CRASH REDUCTION EFFECTIVENESS: **UNKNOWN**

MODAL SAFETY EMPHASIS:

APPLICABLE FACILITY: **URBAN** **SUBURBAN**

IMPLEMENTATION TIMELINE:

COST: **\$\$**

FOCUS CRASH TYPE
Speed related crashes.

SAFE SYSTEM STRATEGY
Manage vehicular speeds, and implement enforcing features to slow traffic.

CONSIDERATIONS
Can create drainage problems. Potential for head-on collisions increases depending on context, May be difficult for large trucks to navigate

[Home](#)

Landscape Buffer

FDM 270.2



Landscape separating drivers from bicyclists and pedestrians increases space between the modes and can produce a traffic calming effect by encouraging drivers to drive at slower speeds.

CRASH REDUCTION EFFECTIVENESS: **UNKNOWN**

MODAL SAFETY EMPHASIS:

APPLICABLE FACILITY: **URBAN** **SUBURBAN**

IMPLEMENTATION TIMELINE:

COST: **\$\$**

FOCUS CRASH TYPE
Speed related crashes.

SAFE SYSTEM STRATEGY
Manage vehicular speeds and implement enforcing features to slow traffic.

CONSIDERATIONS
Maintenance plan for landscaping may need to be developed.

[Home](#)

Lane Narrowing

FDM 202.3.4



Lane narrowing can encourage motorists to travel at slower speeds, which can reduce the severity of crashes.

CRASH REDUCTION EFFECTIVENESS: **UNKNOWN**

MODAL SAFETY EMPHASIS:

APPLICABLE FACILITY: **URBAN** **SUBURBAN**

IMPLEMENTATION TIMELINE:

COST: **\$**

FOCUS CRASH TYPE
Speed related crashes.

SAFE SYSTEM STRATEGY
Manage vehicular speeds and implement enforcing features to slow traffic.

CONSIDERATIONS
Lane narrowing through restriping can provide opportunities to widen bike lanes.

[Home](#)

Speed Cameras



These devices can capture the speed of a vehicle and a license plate to supplement traditional methods of enforcement. Signage should be installed to warn drivers in advance of the first speed camera on a corridor.

CRASH REDUCTION EFFECTIVENESS: LOW MED HIGH CMF Available

MODAL SAFETY EMPHASIS:

APPLICABLE FACILITY: ALL ROADWAYS

IMPLEMENTATION TIMELINE:

COST: \$\$

FOCUS CRASH TYPE
Speed related crashes.

SAFE SYSTEM STRATEGY
Manage vehicular speeds and implement enforcing features to slow traffic.

CONSIDERATIONS
These are allowed in Florida in school zones.

[Home](#)

FDM 202.3.9

Speed Feedback Sign



Notifies drivers of their current speed, usually followed by a reminder of the posted speed limit, providing a cue for drivers to check their speed and slow down.

CRASH REDUCTION EFFECTIVENESS: LOW MED HIGH CMF Available

MODAL SAFETY EMPHASIS:

APPLICABLE FACILITY: ALL ROADWAYS

IMPLEMENTATION TIMELINE:

COST: \$

FOCUS CRASH TYPE
Speed related crashes.

SAFE SYSTEM STRATEGY
Implement enforcing features to slow traffic.

CONSIDERATIONS
Some units can collect data to identify the most prevalent times of day/week for speeding to aim in law enforcement activities.

[Home](#)

Speed Sensitive Rest on Red



At certain hours (e.g. late night) a signal remains red for all approaches or certain approaches until a vehicle approaches the intersection. If the vehicle is going faster than the desired speed, the signal will not turn green until after the vehicle stops. If the vehicle is going the desired speed the signal will change to green before the vehicle arrives.

CRASH REDUCTION EFFECTIVENESS: UNKNOWN

MODAL SAFETY EMPHASIS:

APPLICABLE FACILITY: URBAN SUBURBAN

IMPLEMENTATION TIMELINE:

COST: \$\$

FOCUS CRASH TYPE
Speed related crashes.

SAFE SYSTEM STRATEGY
Manage vehicular speeds and implement enforcing features to slow traffic.

CONSIDERATIONS
Can be paired with variable speed warning signs.

[Home](#)

SPEED ZONING 10.1

Variable Speed Limits



Variable speed limits (VSLs) can improve safety performance and traffic flow by reducing speed variance (i.e., improving speed harmonization). The speed limit changes according to the current environmental and road conditions and is displayed on an electronic traffic sign.

CRASH REDUCTION EFFECTIVENESS: LOW MED HIGH CMF Available

MODAL SAFETY EMPHASIS:

APPLICABLE FACILITY: ALL ROADWAYS

IMPLEMENTATION TIMELINE:

COST: \$\$

FOCUS CRASH TYPE
Speed related crashes, secondary crashes, and work zone.

SAFE SYSTEM STRATEGY
Manage vehicular speeds.

CONSIDERATIONS
VSLs may also improve driver expectation by providing information in advance of slowdowns and potential lane closures, which could reduce the probability for secondary crashes. VSLs can mitigate adverse weather conditions or slow faster-moving traffic as it approaches a queue or bottleneck. Particularly effective on rural freeways and high-speed arterials with posted speed limits greater than 40 mph.

[Home](#)

G. Other Engineering Strategies

Several other strategies are not focused on a singular mode and can benefit all roadway users. For example, consolidating driveways and improving lighting can benefit all roadway users. Curbside management is most commonly needed in urban areas where there is high competition for curb space, where effective management strategies can reduce passenger loading from travel lanes, reduce double parked delivery vehicles, and increase transit reliability.

Strategies included in this section are:

1. Access Management/Close Driveway
2. Create or Increase Clear Zone
3. Far-Side Bus Stop
4. Intersection Lighting
5. Relocate Select Hazardous Utility Poles
6. Remove Obstructions For Sightlines
7. Segment Lighting
8. Upgrade Lighting to LED

Access Management/Close Driveway

FDM 223.2.4.5



Driveway movements may create conflicts between pedestrians, bicyclists and vehicles, especially within 250 feet of intersections. Closing or modifying driveways, may reduce potential conflicts.

CRASH REDUCTION EFFECTIVENESS **LOW** **MED** **HIGH**

MODAL SAFETY EMPHASIS

APPLICABLE FACILITY **URBAN** **SUBURBAN**

IMPLEMENTATION TIMELINE

COST **\$\$**

FOCUS CRASH TYPE

Driveway related pedestrian crashes, angle crashes, left turn crashes, and right turn crashes.

SAFE SYSTEM STRATEGY

Remove severe conflicts, and increase attentiveness and awareness.

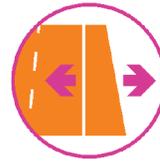
CONSIDERATIONS

Need for U-Turns should be evaluated and accommodated along the corridor, and reciprocal access may be required.

[Home](#)

Create or Increase Clear Zone

FDM 215.2.3



A clear zone is an unobstructed roadside area that allows a driver to regain control of a vehicle that has left the road.

CRASH REDUCTION EFFECTIVENESS **LOW** **MED** **HIGH** **CMF Available**

MODAL SAFETY EMPHASIS

APPLICABLE FACILITY **RURAL**

IMPLEMENTATION TIMELINE

COST **\$\$**

FOCUS CRASH TYPE

Run off the road and collision with fixed objects.

SAFE SYSTEM STRATEGY

Remove severe conflicts.

CONSIDERATIONS

Creating or increasing clear zones within horizontal curve sections may help agencies maximize benefits of the treatment while minimizing costs, as opposed to providing a clear zone throughout an entire corridor.

[Home](#)

Far-Side Bus Stop

FDM 225.3



Located immediately after an intersection, allowing the bus to pass through the intersection before stopping, encourages pedestrians to cross behind the bus for greater visibility and can improve transit service reliability.

CRASH REDUCTION EFFECTIVENESS **UNKNOWN**

MODAL SAFETY EMPHASIS

APPLICABLE FACILITY **URBAN** **SUBURBAN**

IMPLEMENTATION TIMELINE

COST **\$**

FOCUS CRASH TYPE

Dart/dash and multiple threat/trapped.

SAFE SYSTEM STRATEGY

Remove severe conflicts, and increase attentiveness and awareness.

CONSIDERATIONS

Bus stops should be located in proximity to marked and controlled crossings, especially in circumstances when destinations are on opposite side of the street. Coordination with transit agency is required.

[Home](#)

Intersection Lighting

FDM 231



Lighting improves safety by increasing visibility of all road users, and is most effective at reducing or preventing collisions at night.

CRASH REDUCTION EFFECTIVENESS **LOW** **MED** **HIGH** **CMF Available**

MODAL SAFETY EMPHASIS

APPLICABLE FACILITY **ALL ROADWAYS**

IMPLEMENTATION TIMELINE

COST **\$\$**

FOCUS CRASH TYPE

Nighttime crashes.

SAFE SYSTEM STRATEGY

Increase attentiveness and awareness.

CONSIDERATIONS

Location of landscaping that could affect lighting levels on the street should be evaluated.

[Home](#)

FDM 215.4.7

Relocate Select Hazardous Utility Poles



Relocating or removing utility poles from within the clear zone alleviates the potential for fixed-object crashes.

CRASH REDUCTION EFFECTIVENESS: LOW MED HIGH **CMF Available**

MODAL SAFETY EMPHASIS:

APPLICABLE FACILITY: **RURAL**

IMPLEMENTATION TIMELINE:

COST: **\$\$**

FOCUS CRASH TYPE

Run off the road and collisions with fixed objects.

SAFE SYSTEM STRATEGY

Remove severe conflicts.

CONSIDERATIONS

Public Right-of-Way Accessibility Guidelines (PROWAG) require 48-inch pedestrian clear zone which may accelerate the need to relocate utility poles within pedestrian paths of travel.

[Home](#)

Remove Obstructions For Sightlines



Remove objects that may prevent drivers and pedestrians from having a clear sightline, such as installing red curb at intersection approaches to remove parked vehicles (also called "daylighting"), trimming or removing landscaping, or removing or relocating large signs.

CRASH REDUCTION EFFECTIVENESS: LOW MED HIGH **CMF Available**

MODAL SAFETY EMPHASIS:

APPLICABLE FACILITY: **ALL ROADWAYS**

IMPLEMENTATION TIMELINE:

COST: **\$**

FOCUS CRASH TYPE

Angle crashes, pedestrian struck by turning vehicle, motorist failed to yield at unsignalized intersection, motorist failed to yield at signalized intersection, and bicycle sidewalk crashes.

SAFE SYSTEM STRATEGY

Increase attentiveness and awareness.

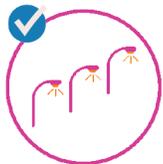
CONSIDERATIONS

Landscaping obstructions may require more routine maintained.

[Home](#)

FDM 231

Segment Lighting



Lighting along roadways that improves visibility at night.

CRASH REDUCTION EFFECTIVENESS: LOW MED HIGH **CMF Available**

MODAL SAFETY EMPHASIS:

APPLICABLE FACILITY: **ALL ROADWAYS**

IMPLEMENTATION TIMELINE:

COST: **\$\$**

FOCUS CRASH TYPE

Nighttime crashes.

SAFE SYSTEM STRATEGY

Increase attentiveness and awareness.

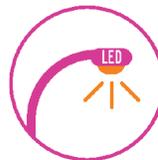
CONSIDERATIONS

Location of landscaping that could affect lighting levels on the street should be evaluated.

[Home](#)

FDM 231.3.2.1.1

Upgrade Lighting to LED



Replacing high-pressure sodium light bulbs with LED lights improves safety by increasing the visibility of pedestrians in crosswalks through greater color contrast and larger areas of light distribution.

CRASH REDUCTION EFFECTIVENESS: **UNKNOWN**

MODAL SAFETY EMPHASIS:

APPLICABLE FACILITY: **ALL ROADWAYS**

IMPLEMENTATION TIMELINE:

COST: **\$\$**

FOCUS CRASH TYPE

Nighttime crashes.

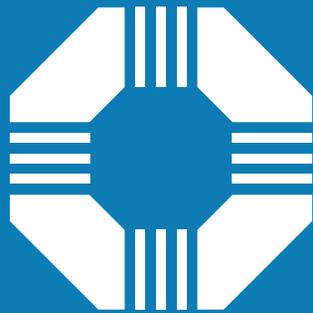
SAFE SYSTEM STRATEGY

Increase attentiveness and awareness.

CONSIDERATIONS

May require installation of additional lighting fixtures to meet lighting goals.

[Home](#)



VISION ZERO
CENTRAL FLORIDA
Counting down to zero traffic deaths

Appendix A - Cost Estimate Details

Primary Safe System Strategy	Secondary Safe System Strategy (if applicable)	Countermeasure	Cost Considerations	Cost Estimate Range
Remove severe conflicts	Enforcing feature to slow traffic	Roundabout/Mini Roundabout	Extent of overall roadway reconstruction, drainage, landscaping and pedestrian amenities can affect overall cost. Does not include Right of Way.	"Neighborhood: \$25-100K Collector: \$150-\$250k Arterial: \$250k+ Multilane: \$500k+"
Remove severe conflicts	Enforcing feature to slow traffic	Mini Traffic Circle	Drainage, landscaping and pedestrian amenities can affect overall cost.	\$8,000-\$15,000
Remove severe conflicts	-	Sidewalk Network Enhancements (close gaps)	Does not include utility relocation/drainage.	\$226,150/mile (5' one side, 4" depth)
Remove severe conflicts	Increase attentiveness and awareness	Corridor Access Management	Cost varies depending on strategies, such as median construction, closing/reconfiguring driveways, etc.	Varies
Remove severe conflicts	Increase attentiveness and awareness	Median U-turn	Costs of the lower end of range if a minor modification; costs on the upper end of the range roadway if reconstruction is required.	\$50,000-\$1,000,000
Remove severe conflicts	-	Shared Use Path	Depending on number of driveways, additional treatments may be necessary to increase visibility of people on path at conflict locations. May require right-of-way, drainage improvements, and a landscaping plan.	\$410,483/mile, 12' path, bidirectional
Remove severe conflicts	-	Buffered/Separated Bike Lanes	Cost of Paint Only; other treatments may be needed.	\$11.50/sf
Remove severe conflicts	-	Median Barriers	Depends on materials selected - cable barrier can be about a third of the cost as a concrete barrier	\$10,000-20,000 per 100 ft
	-	High Friction Surface Treatment	Depends on the overall composition of the overlay.	\$42,000-\$190,000/lane/mile
Manage speed	-	Appropriate Speed Limits	Cost considerations include engineering study to target speed, identifying appropriate countermeasures to achieve desired speed, and implementing engineering countermeasures as applicable.	Varies
Manage speed	Enforcing feature to slow traffic	Speed Cameras	Depends on existing infrastructure along corridor. Currently these are only allowed in school zones and upgrades to school zone extents, signage and other equipment may be necessary. Does not include educational outreach campaign costs.	\$60,000-\$80,000

APPENDIX A - COST ESTIMATE DETAILS

Primary Safe System Strategy	Secondary Safe System Strategy (if applicable)	Countermeasure	Cost Considerations	Cost Estimate Range
Manage speed	-	Variable Speed Limits	Often implemented as part of a TSMO program; cost for signage only. Should roadway reconstruction be required, cost could be significantly higher.	\$25,000-\$30,000/mile
Manage speed	Enforcing feature to slow traffic	Speed Hump	Drainage could affect overall cost.	\$1,500-5,500
Manage speed	Enforcing feature to slow traffic	Speed Table	Drainage could affect overall cost.	\$2,000-20,000
Manage speed	Enforcing feature to slow traffic	Chicanes	Drainage could affect overall cost.	\$2,500-16,000
Manage speed	-	Curb-Return Radius Reduction	Drainage and ADA requirements could affect overall cost.	\$15,000-40,000
Manage speed	Increase attentiveness and awareness	Raised Crossing	Drainage and ADA requirements could affect overall cost.	\$39,000 - \$45,500
Manage speed	Increase attentiveness and awareness	Raised Intersection	Drainage and ADA requirements could affect overall cost.	\$106,500 - \$124,000
Manage speed	Enforcing feature to slow traffic	Lane Narrowing	Based on cost to mill and restripe roadway to provide marked parking. Actual cost could be lower if milling and resurfacing are not required.	\$334,500/lane/mile
Manage speed	Enforcing feature to slow traffic	Landscape Buffer	Maintenance plan for landscaping may need to be developed. Cost considerations include right-of-way, drainage, irrigation, and maintenance.	Varies
Manage speed	Manage conflicts	Signal Retiming	Depends on existing signal hardware/software and if it is implemented as part of a larger retiming program.	\$0-\$5,440
Manage speed	Manage conflicts	Lane Repurposing	Cost could be significantly higher if curbs are being moved and drainage is affected.	\$334,500/lane/mile
Manage speed	-	Corner Radius Reduction	Drainage and ADA requirements can affect overall cost.	\$15,000-40,000
Manage speed	Increase attentiveness and awareness	Curb Extension	Materials (concrete vs asphalt), landscaping, drainage, ADA requirements, and extent of other required roadway changes can affect overall cost; cost is for one corner; may be economies of scale if constructed at all corners of the intersection.	\$2,000-20,000
Manage conflicts in time	Increase attentiveness and awareness	Crosswalk Density	If new RRFBs or other treatments are being considered, please consult those items for cost.	\$100 for a regular striped cross-walk, \$300 for a ladder crosswalk and \$3,000 for patterned concrete crosswalk.
Manage conflicts in time	Increase attentiveness and awareness	Medians and Pedestrian Refuge Islands	Materials (concrete vs asphalt), landscaping, drainage, ADA requirements, and extent of other required roadway changes can affect overall cost; cost is for one refuge; may be economies of scale if constructed at multiple locations along the same corridor.	\$10,000-\$40,000

APPENDIX A - COST ESTIMATE DETAILS

Primary Safe System Strategy	Secondary Safe System Strategy (if applicable)	Countermeasure	Cost Considerations	Cost Estimate Range
Manage conflicts in time	Increase attentiveness and awareness	Median Nose Extension	Cost can vary significantly depending on linear feet, materials (paint vs asphalt), drainage requirements, ADA requirements and other site specific factors. Cost is per leg.	\$500-20,000
Manage conflicts in time	-	Leading Pedestrian Intervals (LPI)	Depends on existing signal hardware/software and if it is implemented as part of a larger retiming program.	\$0-\$5,440
Manage conflicts in time	-	No Right Turn on Red blank-out signs	Cost depends on existing signal hardware/software. Cost per sign.	\$4,500-\$15,000
Manage conflicts in time	-	Pedestrian Hybrid Beacons (PHBs)	Depends on the size of crossing, type of mast arm required, and other site specific features.	\$75,000-\$265,000/unit
Manage conflicts in time	-	Rectangular Rapid Flashing Beacons (RRFBs)	Solar powered units can reduce cost of running electricity. Costs only include RRFB system. If implemented in conjunction with high visibility crosswalks, median refuge and other elements, costs would be higher.	\$4,500-\$52,000
Manage conflicts in time	Increase attentiveness and awareness	Restricted Crossing U-turn	Costs of the lower end of range if a minor modification; costs on the upper end of the range roadway if reconstruction is required.	\$50,000-\$1,000,000
Manage conflicts in time	Increase attentiveness and awareness	Hardened Centerlines and Turn Wedges	Cost depends on selected treatments/materials, size of intersection and number of approaches where countermeasure is installed. Cost is per approach.	\$1,000 - \$2,000
Manage conflicts in time	-	Retime Signals: Yellow Change Intervals	Depends on existing signal hardware/software and if it is implemented as part of a larger retiming program.	\$0-\$5,440
Increase attentiveness and awareness	Enforcing feature to slow traffic	Gateway Treatments	Cost depends on extent of treatments	\$10,000-65,000
Increase attentiveness and awareness	-	High Visibility Crosswalk	Depends on the size the size the crosswalk, and the paint used.	\$600-5,700
Increase attentiveness and awareness	-	Bike Box	Cost of Paint Only; other treatments may be needed.	\$11.50/sf
Increase attentiveness and awareness	-	Lighting	Cost depends on a number of variables, including type of fixtures, frequency of lighting,, and presence of electricity in corridor.	Varies
Increase attentiveness and awareness	-	Improving Sight Lines	Cost depends on type of strategy, such as landscaping maintenance, closing of slip lanes, removal of on-street parking or straightening of crosswalk.	Varies
Increase attentiveness and awareness	-	Backplates with Retroreflective Borders	A structural/wind analysis should be conducted.	"\$35/head to add reflective tape to existing backplates \$110/head to install new backplates with integrated retroreflective material"

APPENDIX A - COST ESTIMATE DETAILS

Primary Safe System Strategy	Secondary Safe System Strategy (if applicable)	Countermeasure	Cost Considerations	Cost Estimate Range
Increase attentiveness and awareness	-	Enhanced Signing and Pavement Markings	Cost depends on the types of signage and pavement marking treatments.	\$800 - \$1,300 per location
Increase attentiveness and awareness	Remove conflicts	Bicycle Lanes Enhancements	Cost depends on the range of treatments applied and if right-of-way is needed.	Varies
Increase attentiveness and awareness	-	Refresh pavement markings	Overall cost per location can be reduced when implemented along a corridor or areawide.	\$22-600 each (\$180 avg)
Increase attentiveness and awareness	-	Doubled-up (left and right), oversized advance intersection warning signs, with supplemental street name plaques (can also include flashing beacon).	Flashing beacon cost is not included.	\$50-150/sign
Increase attentiveness and awareness	-	Retroreflective sheeting on sign posts.	Depends on size of sign.	\$50-250/sign
Increase attentiveness and awareness	-	Enhanced pavement markings that delineate through lane edge lines.	Overall cost per location can be reduced when implemented along a corridor or areawide.	\$1-10/linear foot
Increase attentiveness and awareness	-	Doubled-up (left and right), oversized Stop signs.	Can also be paired with flashing beacons that are not included in cost estimate.	\$50-150/sign
Increase attentiveness and awareness	-	Properly placed stop bar / Advance stop bar	Not limited to stop control intersections.	\$500
Increase attentiveness and awareness	-	Removal of vegetation, parking, or obstructions that limit sight distance.	Similar to improving sight-lines. Cost can vary depending on elements included.	Varies
Increase attentiveness and awareness	-	Double arrow warning sign at stem of T-intersections.	Depends on size of sign.	\$50-150/sign
Increase attentiveness and awareness	-	Chevron Signs for Horizontal Curves or other advanced delineation.	Can be paired with other treatments, like rumble strips.	\$1-10/linear foot
Increase attentiveness and awareness	-	Longitudinal Rumble Strips and Stripes on Two-Lane Roads	Best when implemented as part of an overall resurfacing project for cost effectiveness.	\$5000-\$6,000/mile
Enforcing feature to slow traffic	-	Mobile Speed Feedback Signs	Solar powered units can reduce cost of running electricity.	\$7,000-18,000
Enforcing feature to slow traffic	-	On-Street Parking	Based on cost to mill and restripe roadway to provide marked parking. Actual cost could be lower if milling and resurfacing are not required.	\$334,500/lane/mile



CHAPTER 9

Technical Appendix

K- Project Details



Image of Plant Street in the City of Winter Garden



Winter Garden Vineland Road/Vineland Road from Palm Crossing Boulevard to Story Road

Total crashes: 251. Crash Focus: 10 Bicycle crashes (1 Serious Injury)
2 Pedestrian crashes (1 Serious Injury).

Project Prioritization	Safety Score	Underserved Communities	Safety Benefit	HIN	Implementation
Initial Score	0.75	0.00	1.00	0.00	1.00
Weighted Score	0.38	0.00	0.15	0.00	0.10
Total Score / Rank	0.63 / 1 st				
Opinion of Probable Cost	\$728,000*				

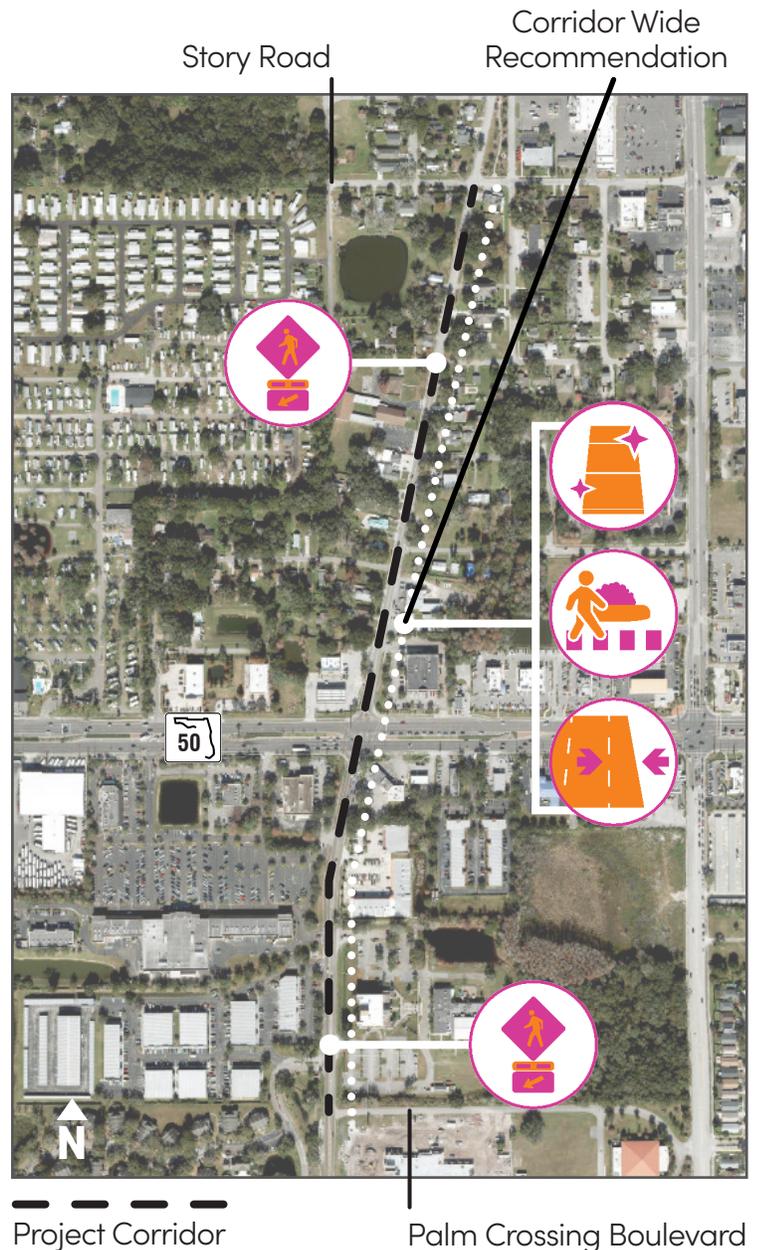
*Planning level estimate. Includes 20% CEI and 30% contingency. Does not include ROW, drainage, or utility impacts.

Short-Term Countermeasures:

-  Add Rectangular Rapid Flashing Beacons (RRFBs)

Mid-Term Countermeasures:

-  Add Sidewalk
-  Complete Streets Study
-  Lane Narrowing



Dillard Street Reconstruction

Total crashes: 573. Crash Focus: 35 crashes (28 left turn, 7 bicycle).

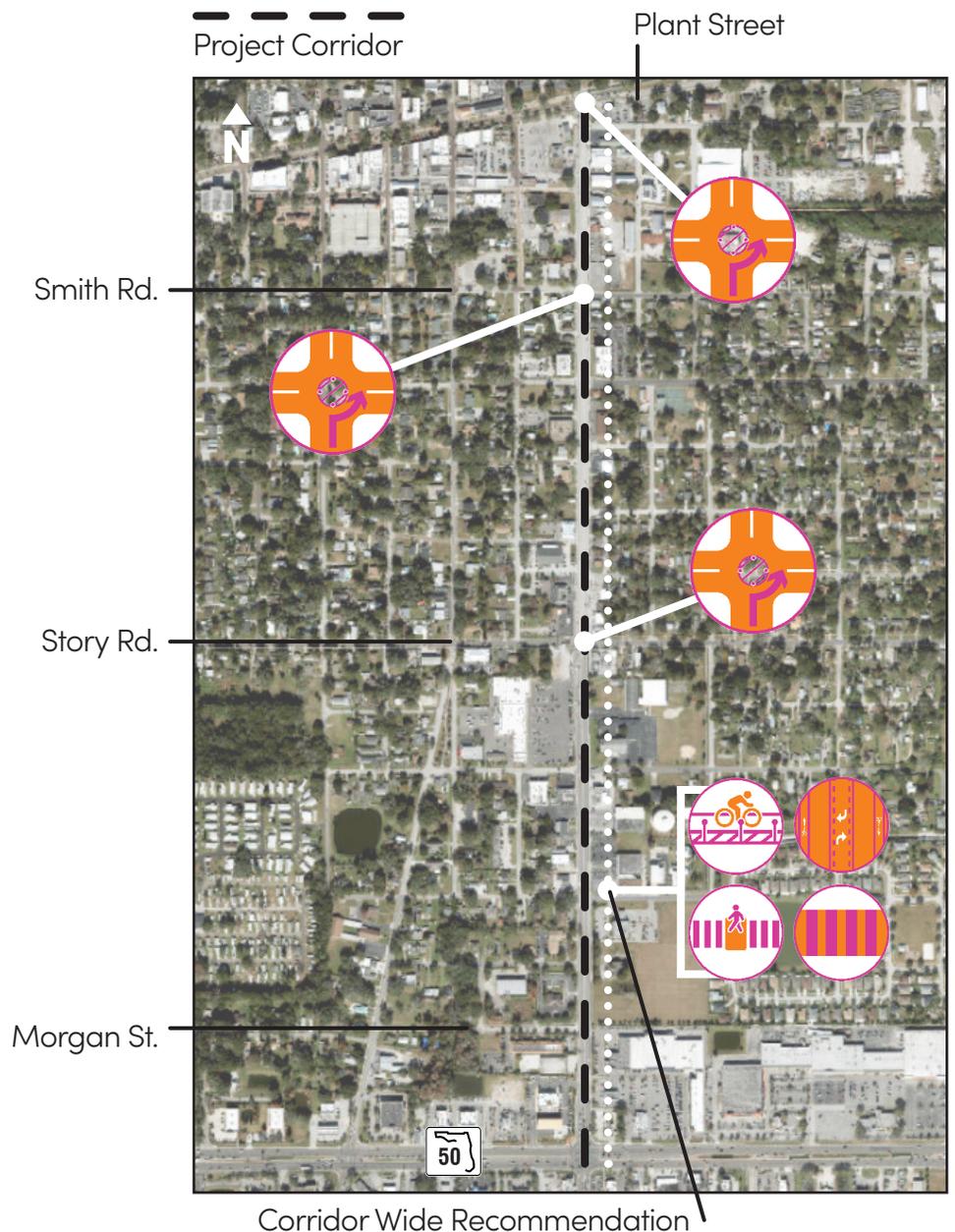
City Project

Project Prioritization	Safety Score	Underserved Communities	Safety Benefit	HIN	Implementation
Initial Score	0.25	1.00	1.00	0.50	1.00
Weighted Score	0.13	0.15	0.15	0.05	0.10
Total Score / Rank	0.58 / Tied for 2 nd				
Opinion of Probable Cost	\$40,000,000*				

*These countermeasures and associated cost were identified through the Dillard Street Reconstruction project design plans. The Vision Zero effort is in support of the existing Dillard Street project.

Project Countermeasures:

-  Separated Bike Path
-  Lane Repurposing
-  Refuge Island (multiple locations)
-  High Visibility Crosswalk
-  Roundabout



S.R. 50 from Tucker Oaks Boulevard to S.R. 429

Total crashes: 1,728. Crash Focus: 25 bicycle crashes (1 fatal)/ 9 pedestrian crashes (1 serious injury).

Project Prioritization	Safety Score	Underserved Communities	Safety Benefit	HIN	Implementation
Initial Score	0.25	1.00	1.00	0.50	1.00
Weighted Score	0.13	0.15	0.15	0.05	0.10
Total Score / Rank	0.58 / Tied for 2 nd				
Opinion of Probable Cost	\$1,474,000*				

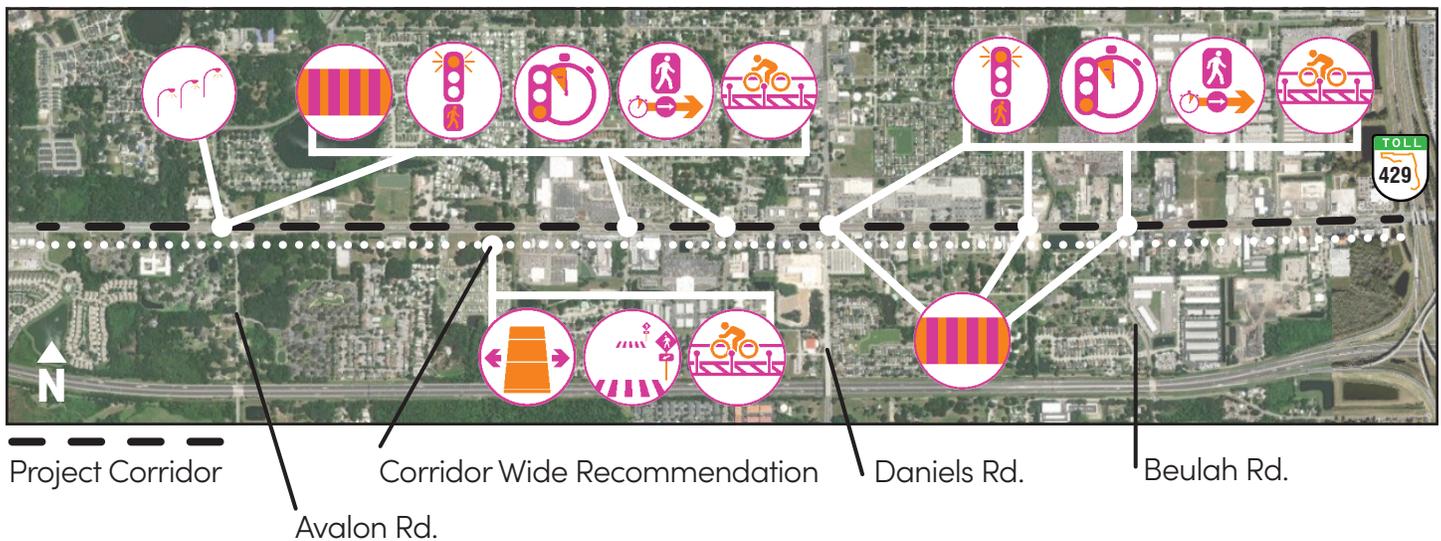
*Planning level estimate. Includes 20% CEI and 30% contingency. Does not include ROW, drainage, or utility impacts.

Short-Term Countermeasures:

-  Rest on Walk/ Pedestrian Recall
-  Shorter Cycle Length
-  Leading Pedestrian Interval
-  High Visibility Crosswalk

Mid-Term Countermeasures:

-  Two-Stage Turn Queue Bicycle Boxes
-  Widen Sidewalk
-  Mid-Block Crossing Study



9th Street from S.R. 50 to Plant Street.

Total crashes: 204 Crash Focus: 3 bicycle crashes (1 fatal)
1 pedestrian crash.

City Project

Project Prioritization	Safety Score	Underserved Communities	Safety Benefit	HIN	Implementation
Initial Score	0.25	1.00	1.00	0.50	1.00
Weighted Score	0.13	0.15	0.15	0.05	0.10
Total Score / Rank	0.58 / Tied for 2 nd				
Opinion of Probable Cost	\$2,016,000*				

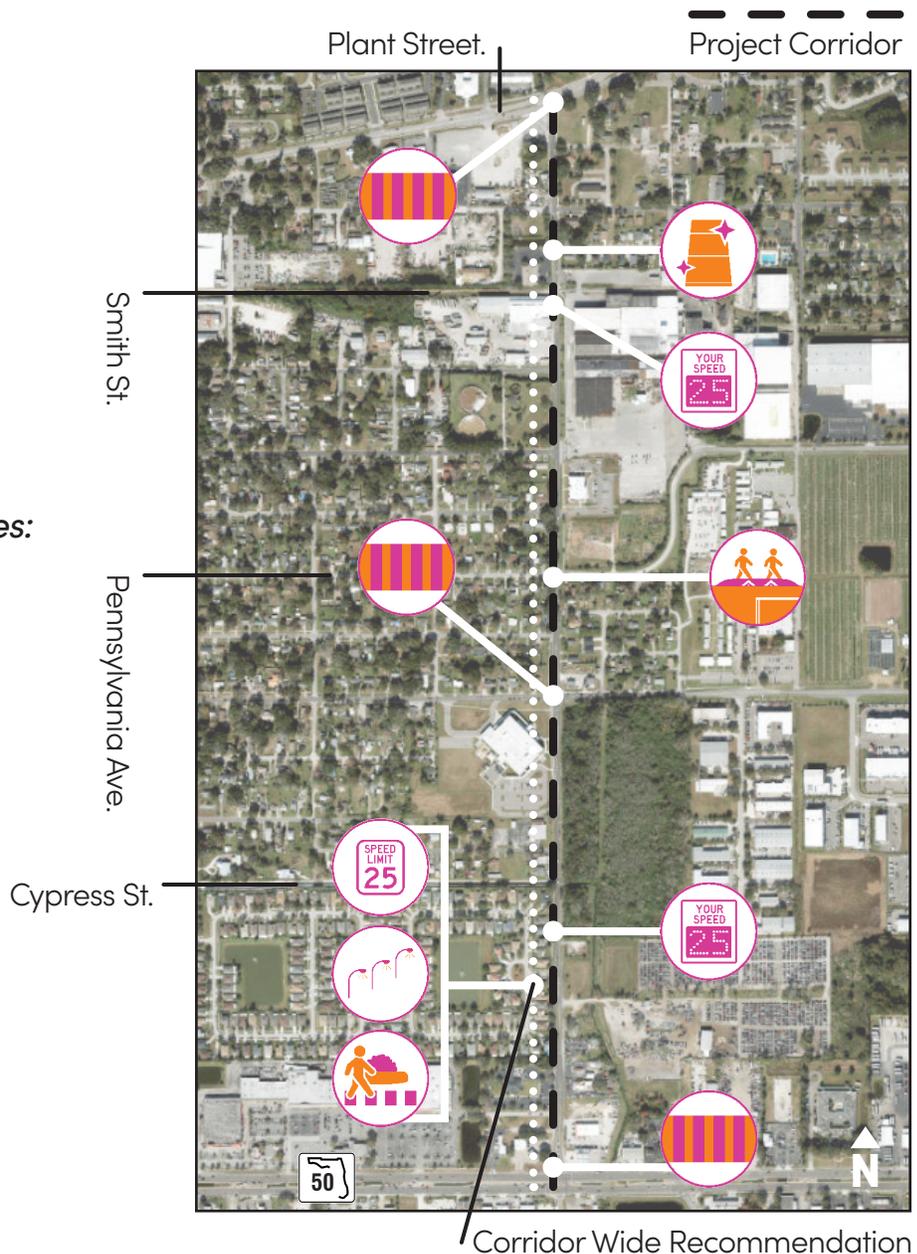
*Planning level estimate. Includes 20% CEI and 30% contingency. Does not include ROW, drainage, or utility impacts.

Short-Term Countermeasures:

-  Appropriate Speed Limits
-  Speed Feedback Sign
-  High Visibility Crosswalk

Mid/Long-Term Countermeasures:

-  Raised Intersection/ Crosswalk
-  Complete Streets Study
-  Add Sidewalk
-  Lighting



Story Road from S.R. 438 to S.R. 429

Total crashes: 220. Crash Focus: 82 angle crashes.

City Project

Project Prioritization	Safety Score	Underserved Communities	Safety Benefit	HIN	Implementation
Initial Score	0.25	1.00	1.00	0.50	0.00
Weighted Score	0.13	0.15	0.15	0.05	0.00
Total Score / Rank	0.48 / 5 th				
Opinion of Probable Cost	\$9,111,000*				

*Planning level estimate. Includes 20% CEI and 30% contingency. Does not include ROW, drainage, or utility impacts.

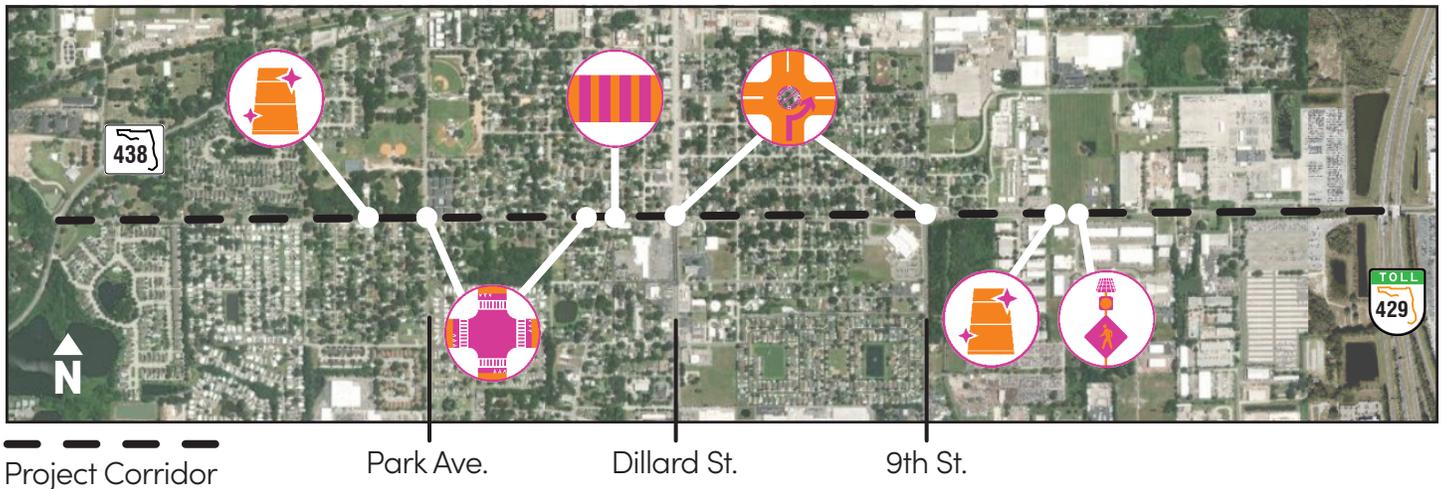
Short-Term Countermeasures:



Mid-Term Countermeasures:



Long-Term Countermeasures:



Daniels Road from Winter Garden Vineland Road to Fowler Grove Boulevard

Total crashes: 254. Crash Focus: 31 sideswipe crashes.

City project

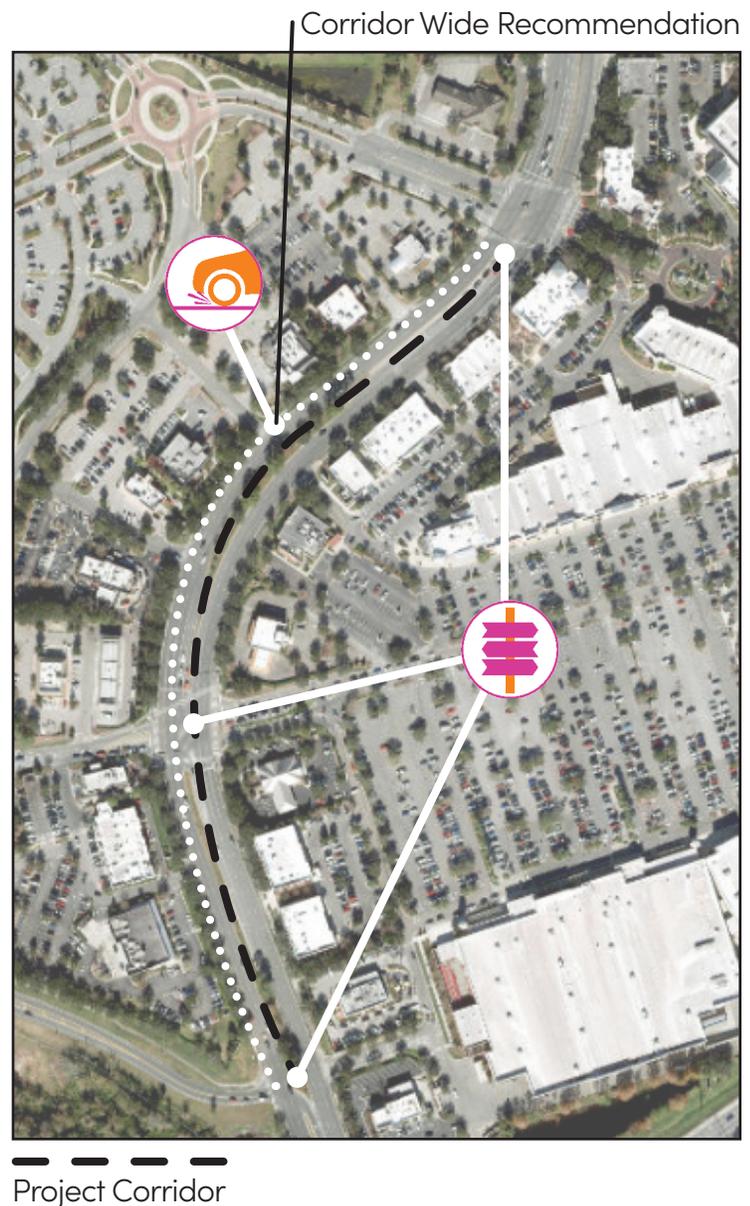
Project Prioritization	Safety Score	Underserved Communities	Safety Benefit	HIN	Implementation
Initial Score	0.25	0.00	1.00	0.50	1.00
Weighted Score	0.13	0.00	0.15	0.05	0.10
Total Score / Rank	0.43 / 6 th				
Opinion of Probable Cost	\$407,000*				

*Planning level estimate. Includes 20% CEI and 30% contingency. Does not include ROW, drainage, or utility impacts.

Short-Term Countermeasures:



Mid-Term Countermeasures:



Stoneybrook W Parkway from Winter garden Vineland Road to N Winter Garden Village Driveway

Total crashes: 238. Crash Focus: 78 crashes (50 rear end, 19 sideswipe, 9 other crashes).

City Project

Project Prioritization	Safety Score	Underserved Communities	Safety Benefit	HIN	Implementation
Initial Score	0.25	0.00	0.00	0.50	0.00
Weighted Score	0.13	0.00	0.00	0.05	0.00
Total Score / Rank	0.18 / 7 th				
Opinion of Probable Cost	\$374,000*				

*Planning level estimate. Includes 20% CEI and 30% contingency. Does not include ROW, drainage, or utility impacts.

Short-Term Countermeasures:



Flashing Beacon as Advance Warning

Mid-Term Countermeasures:



Merging Study



Access Management



City of Winter Garden - Estimate of Probable Cost for Safety Projects

Project Name	Project Type	Project Location (s)	Countermeasure Type	Countermeasure	Unit Cost	Count	Mileage (mi.)	Countermeasure Cost
Winter Garden Vineland Rd./Vineland Rd. Pedestrian Crash Mitigation	Pedestrian/Bicycle Facility Improvements	Palm Crossing Blvd. to Story Rd.	Short-Term	Add Rectangular Rapid Flashing Beacons (RRFBs)	\$4,850	2	-	\$9,700
			Mid-Term	Add Sidewalk	\$226,150/mile	-	0.78	\$176,397
				Lane Narrowing	\$334,500/lane/mile	-	0.78	\$260,910
				Complete Streets Study	\$25,000/mile	-	0.78	\$19,500
Initial Project Cost								\$466,507
CEI								20%
Contingency Costs								30%
Project Cost								\$728,000
Dillard St. Complete Streets	Complete Streets	S.R. 50 to Plant St.	<i>Project Costs Provided from Previous Analysis</i>					
Initial Project Cost								-
CEI								-
Contingency Costs								-
Project Cost								\$40,000,000
SR 50 Ped/Bike Treatments	Corridor Improvements	West City Boundary (Tucker Oaks Blvd.) to East City Boundary (SR 429)	Short-Term	Rest on Walk/Pedestrian Recall	\$5,440	6	-	\$16,320
				Shorter Cycle Length	\$5,440	6	-	\$16,320
				Leading Pedestrian Interval	\$5,440	6	-	\$16,320
				High Visibility Crosswalk	\$3,150	16	-	\$50,400
			Mid-Term	Two-Stage Turn Queue Bike Boxes	\$11.50/sf	1200	-	\$13,800
				Widen Sidewalk	\$226,150/mile	-	3.5	\$791,525
				Mid-Block Crossing Study	\$40,000	-	-	\$40,000
Initial Project Cost								\$944,685
CEI								20%
Contingency Costs								30%
Project Cost								\$1,474,000
9th St. Pedestrian/Bicycle Treatments	Pedestrian/Bicycle Facility Improvements	Story Rd. to Plant St.	Short-Term	Appropriate Speed Limits	\$30,000	-	-	\$30,000
				High Visibility Crosswalk	\$3,150	11	-	\$34,650
			Mid-Term	Speed Feedback Sign	\$12,500	2	-	\$25,000
				Raised Intersection/Sidewalk	\$115,000	1	-	\$115,000
				Lighting	\$720,000/mile	-	1.12	\$806,400
				Complete Streets Study	\$25,000/mile	-	1.12	\$28,000
	Add Sidewalk	\$226,150/mile	-	1.12	\$253,288			
Initial Project Cost								\$1,292,338
CEI								20%
Contingency Costs								30%
Project Cost								\$2,016,000

City of Winter Garden - Estimate of Probable Cost for Safety Projects

Project Name	Project Type	Project Location (s)	Countermeasure Type	Countermeasure	Unit Cost	Count	Mileage (mi.)	Countermeasure Cost
Story Road Angle Crash Mitigation	Intersection Improvements	S.R. 438 to S.R. 429	Short-Term	High Visibility Crosswalk	\$3,150	4	-	\$12,600
			Mid-Term	Add Rectangular Rapid Flashing Beacons (RRFBs)	\$4,850	1	-	\$4,850
			Long-Term	Roundabout with RRFB Crossings	\$2,500,000	2	-	\$5,000,000
				Raised Intersection	\$115,250	2	-	\$230,500
			Add Sidewalk	\$226,150/mile	-	2.62	\$592,513	
Initial Project Cost								\$5,840,463
CEI								20%
Contingency Costs								30%
Project Cost								\$9,111,000
Daniels Road Sideswipe Crash Mitigation	Corridor Improvements	Winter Garden Vineland Rd. to Fowler Grove Blvd.	Short-Term	Wayfinding Signage	\$1,050	3	-	\$3,150
			Mid-Term	High Friction Surface Treatment	\$42,000-\$190,000/lane/ mile	6	0.37	\$257,520
Initial Project Cost								\$260,670
CEI								20%
Contingency Costs								30%
Project Cost								\$407,000
Stoneybrook West Pkwy Merge Treatment	Corridor Improvements	Winter Garden Vineland Rd. to N Winter Garden Village Dwy.	Short-Term	Flashing Beacon as Advance Warning	\$4,850	2	-	\$9,700
			Mid-Term	Merging Study	\$30,000	-	-	\$30,000
				Access Management	\$200,000	-	-	\$200,000
Initial Project Cost								\$239,700
CEI								20%
Contingency Costs								30%
Project Cost								\$374,000



CHAPTER 9

Technical Appendix

L- Prioritization Criteria



Image of Plant Street in the City of Winter Garden



Memorandum

Date: April 26, 2024

To: Vision Zero Central Florida Partners

From: Mighk Wilson, MetroPlan Orlando
Kathrin Tellez, Fehr & Peers

Subject: **Vision Zero Central Florida – Project Prioritization**



Introduction

A core element of Vision Zero Action Plans is **Project Delivery** where decision-makers and system designers advance projects and policies for safe, equitable multimodal travel by securing funding and implementing projects, prioritizing roadways with the most pressing safety issues. As part of the Regional Vision Zero Action Plan, transportation safety countermeasures will be identified for the top 30 high injury network (HIN) segments, identified using the Safety Score, which is calculated based on the total number of crashes, the highest level of injury sustained in each crash, and the travel mode of victims. As a part of the County and jurisdictional action plans being prepared concurrently, transportation safety countermeasures will also be identified for their top corridors.

This document outlines the process to develop criteria that can be used to prioritize roadway improvements that have transportation safety benefits. The criteria will be used to identify projects to incorporate into the typical MetroPlan Orlando project funding process through the Metropolitan Transportation Plan (MTP), as well as select projects that could be a part of a regional implementation grant application through the U.S. Department of Transportation's Safe Streets and Roads for All (SS4A) grant program. This document summarizes prioritization criteria used by MetroPlan Orlando on other planning projects and presents Vision Zero Action Plan prioritization criteria.

Existing Criteria

As the regional planning agency, MetroPlan Orlando has developed evaluation criteria based on goals articulated in the 2045 MTP to prioritize transportation system improvements. Most recently, a prioritization process was completed for the Prioritized Project List (PPL) and the Active Transportation Plan (ATP) project. The criteria from the PPL is summarized in **Table 1** and the criteria from the ATP project is summarized in **Table 2**, along with its potential applicability to the regional Vision Zero Action Plan as the criteria used for Vision Zero project prioritization should have some alignment with the criteria used for other regional planning purposes. Based on the review, all criteria used in the PPL and ATP prioritization processes have some applicability to Vision Zero.

Table 1: Prioritized Project List Evaluation Criteria and Applicability to Vision Zero Action Plan

Goal Area / Weight	PPL Evaluation Criteria	Applicable to Vision Zero	Notes
Safety and Security / 33%	Crash Rate	Yes	Improving safety is the primary goal of the Vision Zero Action Plan.
	Fatal & Serious Injury Crash Rates	Yes	
	Number of Pedestrian & Bicycle Crashes	Yes	
	Evacuation Route Designation	Yes	Potential changes on designated evacuation routes would need to be reviewed to assess if changes could negatively affect the evacuation process.
Reliability and Performance / 13%	Travel Time Reliability (Auto)	Yes	While safety projects can reduce crashes, thereby reducing non-recurring congestion and increasing auto travel time reliability, these metrics are traditionally focused on congestion relief projects. As these metrics are not included as a part of the Vision Zero Action Plan, these effects may be best measured as part of the Congestion Management Process (CMP) or other auto-focused study.
	Unreliability on Constrained Corridor	Yes	
	Fiber Optic Presence	Yes	
	Segment Actively Monitored/Managed	Yes	
	Relative Change: Future Congested Speeds	Yes	
Access & Connectivity / 27%	Transit System Headways	Yes	Safety projects in areas with a high density of destinations have the potential to benefit multiple trip types.
	Population: ½ Mile of Non-Transit Corridor	Yes	
	Jobs: ½ Mile of Non-Transit Corridor	Yes	
	Food & Healthcare Locations: ½ Mile of Corridor	Yes	
	Cultural & Recreational Locations: ½ Mile of Corridor	Yes	
	MTP Centrality Analysis Score (Critical Sidewalk Need)	Yes	Closing sidewalk gaps could improve safety outcomes.

Goal Area / Weight	PPL Evaluation Criteria	Applicable to Vision Zero	Notes
Health & Environment / 7%	Bicycle Level of Traffic Stress (LTS)	Yes	Projects that improve the bicycle level of traffic stress would either have a separation component (such as a shared use path) or a speed reduction element. Would need to bring LTS into the analysis.
	Residential Density: ¼ Mile of Multimodal Facility	Yes	Projects in areas with a high density of destinations have the potential to benefit multiple trip types.
	Non-Residential Density: ¼ Mile of Multimodal Facility	Yes	Projects in areas with a high density of destinations have the potential to benefit multiple trip types.
	Public Health Indicator Rates	Yes	While safety projects are likely to improve public health outcomes, this can be difficult to measure.
	Intensity & Proximity: Environmental Justice Populations	Yes	Safety projects can improve mobility choices for Environmental Justice populations.
	Relative Change: Vehicle Miles Traveled (VMT) (2020 vs. 2045)	Yes	A reduction in VMT on a per capita basis could reduce per capita crash exposure. While safety projects and providing other transportation options are likely to reduce vehicle miles of travel on a per capita basis, this can be difficult to measure.
Investment & Economy / 20%	Percentage of Commercial Vehicle Traffic	Yes	Transportation safety projects on truck routes may need additional considerations.
	Statewide Truck Bottlenecks	Yes	Reducing or eliminating truck bottlenecks could have a safety benefit.
	Intensity & Proximity: Freight Intensive Land Uses	Yes	Transportation safety projects in the vicinity of freight intensive land uses may need additional considerations.
	Relative Change: Vehicle Hours Traveled	Yes	A reduction in total vehicle hours of travel could reduce crash exposure and improve crash outcomes.
	Cost Burdened Households: ¼ Mile of Corridor	Yes	Safety projects can improve mobility choices for cost burdened households.
	Percentage of Visitor Traffic	Yes	Transportation safety projects in high visitor areas may need additional considerations, like wayfinding.
	Cost of Congestion	Yes	Safety projects can reduce non-recurring congestion caused by traffic crashes.

Source: MetroPlan Orlando; Fehr & Peers, 2024

Table 2: Active Transportation Plan Evaluation Criteria and Applicability to Vision Zero Action Plan

Goal Area / Weight	ATP Evaluation Criteria	Applicable to Vision Zero	Notes
Transportation Disadvantaged / Historically Underserved Areas ¹ / 15%	Meets 4 or 5 of the ETC ¹ Criteria or in an area with > 18% of households identified as Zero Car Households	Yes	The effects of traffic crashes disproportionately affect people who live in transportation disadvantaged communities.
	Meets 2 or 3 of the ETC Criteria or in an area with ≥ 12% of households identified as Zero Car Households		
	Meets 1 of the ETC Criteria or in an area with ≥ 6.3% of households identified as Zero Car Households		
Bicycle and Pedestrian Safety / 30%	More than 5 crashes involving a person walking or biking or any pedestrian / bicycle fatalities	Yes	Improving safety outcomes is a key goal of the Vision Zero Action Plan, but not limited to bicyclists and pedestrians.
	4 - 5 bike/ped crashes		
	2 - 3 bike/ped crashes		
	1 bike/ped crash		
Accessibility and Connectivity, Comfort ⁴	Percent improvement in walking access to destinations	Yes	Safety projects in areas with a high density of destinations have the potential to benefit multiple trip types. However, these criteria may be difficult to consistently measure across the region. Would need to bring LTS into the analysis.
	Percent improvement in biking access to destinations.	Yes	
	Number of people for whom access is improved for walking trips.	Yes	
	Number of people for whom access is improved for biking trips.	Yes	
	New or improved PLOC ² for a walking facility	Yes	
	New or improved LTS ³ for a biking facility	Yes	
Jurisdictional Significance	Qualitative low/medium/high ranking by local jurisdiction on the proposed project's local significance	Yes	This factors local preferences and priorities.
Regional Impact	Facility eligible for inclusion in the SunTrail or Coast to Coast Network	No	

1. Additional information can be found on the US DOT Equitable Transportation Community (ETC) Explorer website:

<https://www.transportation.gov/priorities/equity/justice40/etc-explorer>

2. PLOC = Pedestrian Level of Comfort

3. LTS = Level of Traffic Stress

4. See Active Transportation Plan for additional details on how accessibility was evaluated.

Source: MetroPlan Orlando; Fehr & Peers, 2024

Draft Vision Zero Prioritization Criteria

Based on the priorities identified by the MetroPlan Orlando Board in various MetroPlan Orlando policy documents, the goals of the Vision Zero Action Plan and the criteria used in other recent projects, such as the Active Transportation Plan, an **initial** set of prioritization criteria was developed and shared with the Regional Task Force for feedback. Initial feedback from the Task Force was incorporated into an updated set of draft prioritization criteria that was then discussed with a subset of key stakeholders, including the consultant teams working on county and local plans, as well as representatives from Orange, Osceola and Seminole counties.

Potential evaluation criteria presented in **Table 3** primarily focus on safety and transportation disadvantage, with some additional prioritization criteria to consider, such as incorporation of the Federal Highway Administration's (FHWA) proven safety countermeasures, potential effectiveness, and regional impact. Some criteria presented in **Table 3** may be more applicable for a local agency to include as a part of their plan to differentiate between projects. Key considerations for each of the potential criteria include ease of analysis and replicability of the prioritization are provided to help inform the selection of the final prioritization criteria.

Table 3: Potential Evaluation Criteria Regional Vision Zero Action Plan

Performance Indicator	Description	Scoring Considerations
Transportation Underserv Communities	Meets 4 or 5 of the ETC Criteria	The effects of traffic crashes disproportionately affect people who live in transportation underserved communities. These criteria will also be a factor in future SS4A applications. However, this factor may not be relevant for state funding sources. As more than 50% of the HIN is through a transportation underserved community, disadvantage is accounted for in some of the other potential prioritization criteria. This data is readily available for all roadways in the region and can be consistently measured. The ETC criteria measure different aspects of transportation disadvantage and there are opportunities for jurisdictions to weigh different criteria as part of a local prioritization process, if desired.
	Meets 2 or 3 of the ETC Criteria	
	Meets 1 of the ETC Criteria	
Safety Score	Divide scores into quartiles, with the highest quartile receiving all points, second quartile receiving 75% of points, etc.	e Safety Score was the basis of the HIN/Top Intersection identification and weights crashes including people outside a vehicle higher than car and truck occupants. This data is readily available for all roadways in the region and can be consistently measured.

Performance Indicator	Description	Scoring Considerations
Do proposed improvements include FHWA's proven safety countermeasures?	Points allocated based on a proportion of project that includes proven safety countermeasures.	A focus on only FHWA proven safety countermeasures could limit application of innovative approaches as well as other countermeasures that have a proven crash reduction benefit. However, use of these proven strategies could result in projects that are eligible for additional funding sources. Use of this performance indicator would need to identify a method to consistently evaluate potential safety benefit of projects for comparison purposes.
Reduction in Target Speed/ Design Speed (for segment improvements)	Points allocated based on reduction in Target Speed.	Points would be allocated based on overall reduction in Target Speed within the allowable range for the context classification/ designation; projects with target speed already at the lowest end of the range would receive full points. At a planning stage, there may be insufficient information to set target speed that can be kept throughout the entirety of the planning, design and construction process. For new roadways, points could potentially be allocated on a sliding scale depending on target speed and context (100% for target speed at lowest end of allowable range).
Number of KSI crashes per mile linked to the safety concern that the countermeasure addresses.	Scaled point application based on the highest to lowest.	This criterion was in the 2023 SS4A Grant application. The criteria would ensure that identified improvements have a connection to the crashes on a corridor.
Project is on multiple high injury networks.	Scaled point application based on the overlap of networks, with a 100% overlap receiving all points.	A project on both the regional HIN and a county HIN, or county HIN and a local HIN would potentially have regional and local significance that could make it a good candidate for SS4A funding. This data is readily available and could measure the potential regional impact of an improvement.
Road already has planned improvements	Scaled point application based on level of planning/ construction readiness.	Could be an opportunity to leverage already committed funds to accelerate project delivery. May be difficult to measure consistently.
Would the proposed project provide secondary benefits to the community?	This performance standard would prioritize projects that could have co-benefits, such as providing reciprocal access that reduces trips on the regional network or creates a new connection between land uses.	The metric could include a discussion of land uses, surrounding community characteristics with clear connection to proposed improvement, and includes community input and support received. May be difficult to measure consistently at the regional scale.

Performance Indicator	Description	Scoring Considerations
Project includes vehicular capacity increasing elements.	Scaled point application based on the amount of vehicle capacity provided, with no additional capacity receiving 100% of points.	This performance indicator could penalize projects in rapidly growing areas where roadway expansions are needed to accommodate growth and have been planned for. To support development of safer streets in growing communities, criteria could include considerations for roadways developed with low Target Speeds that incorporate appropriate bicycling and pedestrian facilities for the context, frequent crossing locations, street lighting and other features that are shown to promote transportation safety. Could include considerations for providing new parallel facilities rather than widening existing corridors. Converting a conventional intersection to a roundabout would not count as adding capacity.
Improvements include low cost/quick build improvements of proven effectiveness	Points could be allocated based on how quickly improvements could be implemented (0-2 years, 2-5 and beyond 5 years)	One of the goals of SS4A is the implementation of low cost / quick build strategies. These should be implemented at a number of locations as there could be significant administrative costs if only implemented at a few locations.

Source: MetroPlan Orlando; Fehr & Peers, 2024

Based on the considerations presented in [Table 3](#), initial prioritization criteria, feedback from the Task Force, and focused conversations with stakeholders, prioritization criteria were developed and goal area weights established, as presented in [Table 4](#). The primary purpose of this criteria is to identify projects that could be included in a regional SS4A grant application or other safety-focused grant program. Once projects throughout the region are identified, they will be ranked for prioritization.

High priority safety improvements identified through this process may also be added to the 2050 MTP or incorporated into an already planned project in the PPL or TIP. Local jurisdictions can also use these criteria or a modified version for their own project prioritization process. For projects selected for inclusion in a regional SS4A grant application, additional information will be needed for the grant application, requiring a greater level of planning than is occurring for this initial screening. Information related to potential SS4A grant application criteria is provided at the end of this memorandum.

Table 4: Safety Project Evaluation Criteria Scoring and Weight

Performance Indicator	Description	Criteria Scoring	Goal Area Weight
Safety Score – Corridor Projects Source: Signal 4 Analytics, MetroPlan Orlando HIN Calculations. Analysis Notes: Reflects score weighted on a per mile basis for corridors. See notes below for scoring of intersections.	> 10,424 to 17,478	1.0	50%
	> 8,953 to 10,424	0.75	
	> 6,903 to 8,953	0.50	
	1,410 to 6,903	0.25	
Safety Score – Intersection Projects Source: Signal 4 Analytics, MetroPlan Orlando HIN Calculations.	> 1,050 to 10,140	1.0	
	> 299 to 1,050	0.75	
	> 36 to 299	0.50	
	1 to 36	0.25	
Transportation Underserved Source: Regional Equity Profiles, MetroPlan Orlando. Analysis Notes: A buffer of 100 feet should be applied to each corridor to identify if it is with a census tract that meets the criteria. For corridors that cross multiple census tracts, use data from census tract that at least 50% of corridor travels through.	Meets 4 or 5 of the ETC Criteria	1.0	15%
	Meets 2 or 3 of the ETC Criteria	0.75	
	Meets 1 of the ETC Criteria	0.50	
	Is within the top 50th percentile of the region but does not meet any of the ETC Criteria	0.25	
Safety Benefit Notes: Based on the FDOT context classification guidelines, where applicable. Where a context classification has not been set, use proposed reduction in speed or resulting target speed to determine scoring. Potential countermeasures to achieve the desired target speed would need to be conceptually identified.	Target Speed set for the lowest allowable for context classification or functional classification (corridor project).	1.0	15%
	Project is on a C3C, Principal Arterial, Minor Arterial, or Major Collector and includes major speed reduction elements (corridor project).	0.75	
	Project is on a C3C, Principal Arterial, Minor Arterial, or Major Collector and includes minor speed reduction elements (corridor project).	0.50	

Performance Indicator	Description	Criteria Scoring	Goal Area Weight
	Project includes features that slow vehicles through an intersection (roundabout, reduced curb radii, protected intersection elements, etc.) (intersection project).	1.0	
	Project primarily includes elements that are tied to safety history (such as lighting, high friction surface treatment, signal phasing modifications, outreach/engagement) (intersection or corridor project).	1.0	
Project is on multiple high injury networks [Regional, County (all roads), County (County roads), Local (all roads), Local (local roads) or high-risk network]	Project is on 2 networks	1.0	10%
	Project is on 1 network	0.5	
Notes: Overlapping HINs can be found on visionzeroocfl.gov .			
Implementation Timeline	Project primarily includes low-cost / quick build elements, or	1.0	10%
	A publicly available concept plan that included public engagement has been prepared; or	1.0	
	At least 50% of project extents are in an adopted plan that included public engagement specific to the project corridor; or	0.75	
	Project can be completed within 5-years; or	1.0	
Notes: assessment of implementation time should also consider agency coordination.	Project is identified as an unfunded need in the MTP.	0.5	

Source: MetroPlan Orlando; Fehr & Peers, 2024

Scoring Guidance

The following provides some scoring guidance to assist in the development of consistent prioritization scores across the region. The sample calculations are intended to capture a wide range of situations, but there may be circumstances that were not considered and consultation with MetroPlan Orlando staff is advised.

For the purposes of scoring guidance, sample projects were developed to serve as examples:

Example Corridor Project 1: Holden Avenue from Rio Grand Avenue S to Lake Holden Hill Drive (Regional HIN Corridor 31).

Example Project Description: Mark a crosswalk at Almark Drive at Holden Avenue and provide a raised crosswalk, median refuge and RRFB. Install Speed Feedback signs.

Example Corridor Project 2: Oak Ridge Road from S. Orange Blossom Trail to S Orange Avenue (Regional HIN Corridor 16).

Example Project Description: Install a raised median and add additional marked and controlled crossing locations, co-located with transit stops, improve lighting, and incorporate additional speed management strategies, such as travel lane narrowing. Widen sidewalks where feasible. Design for a target speed of 35 miles per hour (current posted speed is 45).

Safety Score

The Safety Score was calculated for each corridor and intersection based on the process outlined in the Regional High Injury Network memorandum dated February 29, 2024, with crash weights assigned based on the crash severity and if someone outside a car or truck was involved. Safety Scores for each HIN segment and top intersection are provided on the HIN factsheets developed for each jurisdiction.

Example Corridor Project 1 (Holden Avenue): This segment has a safety score of 10,402 and falls into the second quartile of the scoring criteria and is assigned **37.5 points** for the Safety Score criteria ($0.75 * 50$).

Example Corridor Project 2 (Oak Ridge Avenue): This segment has a safety score of 12,054 and falls into the first quartile of the scoring criteria and is assigned **50 points** for the Safety Score criteria ($1.0 * 50$).

Transportation Underserved

Transportation underserved data was developed as a part of the Regional Equity Profiles prepared by MetroPlan Orlando. A GIS layer with data by census tract is provided on the Vision Zero hub site

and at this link: [Equity Index_V2 | Tableau Public](https://public.tableau.com/app/profile/sigal.carmenate/viz/EquityIndex_V2/DisadvantagedIndicator)¹. A buffer of 100 feet should be applied to each corridor to identify if it is with a census tract that meets the criteria as this will capture roads that might be on the boundary of a transportation underserved community. For corridors that cross multiple census tracts, use data from census tract that at least 50 percent of corridor travels through. If the corridor is within 2 census tracts when considering the 100-foot buffer, use the data for the most underserved tract.

Example Corridor Project 1 (Holden Avenue): There are four census tracts that touch this road segment, as shown on **Figure 1**. Based on a review of the ETC data, data from the checked census tract should be used as it bounds the longest length of the corridor. The tract meets 2 of the 5 criteria and would receive **11.25 points** for the transportation underserved category ($0.75 * 15$).

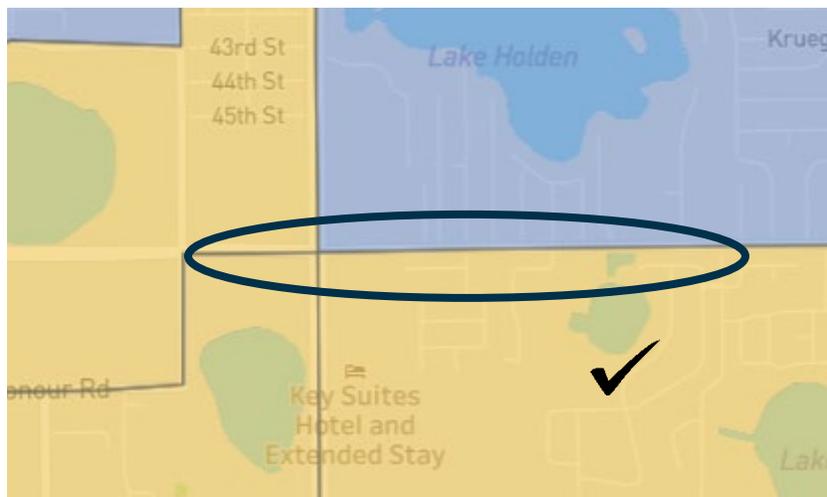


Figure 1: Example Corridor 1 ETC Calculations

Example Corridor Project 2 (Oak Ridge Avenue): This segment is adjacent to two transportation underserved tracts, as shown in **Figure 2**. One tract meets 4 of the 5 ETC criteria and the other meets 2 of the 5 criteria. This corridor would be assigned **15 points** for the Transportation Underserved criteria ($1.0 * 15$), based on using the data from the most underserved tract.

¹ https://public.tableau.com/app/profile/sigal.carmenate/viz/EquityIndex_V2/DisadvantagedIndicator



Figure 2: Example Corridor 2 ETC Calculations

Safety Benefit

The scoring for the Safety Benefit category is the most subjective of all the scoring criteria and should be based on a general description of safety elements that would be included in a corridor project. While it is understood that specific details might change in the final design, the overall goals of the project should be noted, such as speed reduction through physical roadway features or low/cost quick build speed management elements.

Example Corridor Project 1 (Holden Avenue): The project includes minor speed reduction elements (1 raised crosswalk) and some awareness countermeasures (speed feedback sign). The speed limit for the roadway is posted at 35 mph and the prevailing speed is 45 miles per hour based on connected vehicle data. More effective measures are likely needed to achieve a prevailing travel speed of 35 miles per hour. As the project includes minor speed reduction elements, it is assigned half the available points for this criterion and is assigned **7.5 points** for Safety Benefit ($0.5 * 15$).

Example Corridor Project 2 (Oak Ridge Avenue): The project includes significant speed reduction elements and would be designed to achieve a target speed at the lowest allowable speed for the context classification, which would allow for full points in this category to be assigned or **15 points** for Safety Benefit ($1.0 * 15$).

Regional Benefit

Projects on multiple HINs are expected to benefit a larger number of people, and these roads are likely to have more severe safety issues if they are on multiple HINs. The Regional HIN memorandum identifies the HIN overlap for the 118 regional HIN segments. The Vision Zero hub site has a web map that identifies all HINs to determine the overlap.

Example Corridor Project 1 (Holden Avenue): This segment is on three High Injury Networks, the regional HIN, the All-Roads Orange County HIN and the Orange County roads HIN. This segment would be assigned **10 points** for the Regional Benefit criteria ($1.0 * 10$).

Example Corridor Project 2 (Oak Ridge Avenue): This segment is on three High Injury Networks, the regional HIN, the All-Roads Orange County HIN and the Orange County roads HIN. This segment would be assigned **10 points** for the Regional Benefit criteria (1.0 * 10).

Implementation Timeline

Safety projects do not start to save lives until they are implemented, so prioritizing projects that have the greatest chance of being implemented within 5-years will provide a greater safety benefit while more complex projects are planned and designed. For the assessment of *if a project can be completed within 5-years*, considerations should be made for projects included in the MTP in the Plan Period II or III where additional funding could help accelerate the implementation timeframe. For projects within Plan Period I, is there sufficient time to incorporate additional safety elements into the design? If a project is about to be constructed or has recently had corridor improvements, the effectiveness of those improvements should be monitored for a few years after project completion to assess their effectiveness and relative need for additional countermeasures.

Example Corridor Project 1 (Holden Avenue): A portion of this corridor is identified in the 2045 MTP for an operational / safety project between US 17/92 and S. Orange Avenue with an estimated cost of \$6.5 million in 2020 dollars. This is an unfunded need. While the project is in an adopted plan that included some level of public engagement, it is likely that the engagement did not focus on the specific corridor or identify specific needs. However, proposed project elements include primarily low-cost and quick build elements that could be implemented on a pilot basis. Therefore, this corridor is assigned **10 points** for Implementation Timeline (1.0 * 10). Should the MTP project be considered for prioritization through this process, the points for this category would decrease, with the points for the safety benefit potentially increasing.

Example Corridor Project 2 (Oak Ridge Avenue): There is an unfunded project identified for the entire length of the corridor (MTP Project 7132) that would provide operational and safety improvements, with an estimated cost of \$8 million in 2020 dollars. While the project is in an adopted plan that included some level of public engagement, it is likely that the engagement did not focus on the specific corridor or identify specific needs. The project does not primarily include low cost/quick build elements as significant speed management is needed along the corridor, including access management. Therefore, this corridor is assigned **5 points** for Implementation Timeline as it is an unfunded need in the 2045 MTP (0.5 * 10).

Table 5 provides a summary of the scoring comparison, which shows that the example Holden Avenue project would score 76.25 points while the Oak Ridge Avenue project would score 95 points.

Table 5: Scoring Example Summary

Performance Indicator	Example Project 1 (Holden Avenue)	Example Project 2 (Oak Ridge Avenue)
Safety Score – Corridor Projects	37.5	50.0
Safety Score – Intersection Projects ¹	N/A	N/A
Transportation Underserved	11.25	15
Safety Benefit	7.5	15
Regional Benefit	10	10
Implementation Timeline	10	5
Total	76.25	95

1. For an intersection project, the intersection score would replace the corridor score.

Source: MetroPlan Orlando; Fehr & Peers, 2024

SS4A Implementation Grant Criteria

The following summarizes key aspects for the SS4A Implementation Grant criteria based on the 2024 Notice of Funding Opportunity (NOFO):

- **Safety Impact** – is the project likely to significantly reduce or eliminate roadway KSIs, employ low-cost high-impact strategies over a wide geographic area, and include evidence-based projects and strategies?
- **Equity, Engagement and Collaboration** – Includes investments in transportation underserved communities and outreach with a variety of public and private stakeholders.
- **Effective Practices and Strategies** – Projects are reflective of practices that promote systemic safety improvements.
- **Other USDOT Strategic Goals** – Projects also address other goals, such as sustainability and resilience, and support economic competitiveness.
- **Project Readiness** – Project can be completed within 5-years; includes outreach, environmental review, design, all agency approvals, ROW acquisition, all other needed activities, and construction.

While the funding criteria is likely to change with the 2025 NOFO, implementing agencies will need to be able to develop narratives and analysis to support the above criteria.

Next Steps

A rubric for tracking of projects on the regional, county and local roads HIN was developed and it is anticipated that as projects are developed, the relevant information will be included in a GIS layer of the various HIN/project segments for further prioritization and tracking at the regional level. The rubric includes the following data needs:

Project ID: to be developed based on municipality name.

Road Information: Road name and extents.

Project Description: Brief project description that provides overall goals of the project and some specific strategies that would be included, like lane narrowing, intersection treatments, midblock crossings, lighting, and other details that can help with a general understanding of the project. Avoid generic terms such as safety improvement.

Other Project IDs: MTP, FDOT or other project identification number for tracking purposes.

Prioritization Scores: Scores for each of the prioritization criteria.

Existing Posted Speed: Current posted speed - use weighted average if multiple posted speeds.

Target Speed: Proposed Target Speed; if the proposed target speed is not identified, it is assumed that the existing posted speed would remain.

Low Cost / Quick Build: Yes or no based on primary composition of project; if it includes utility relocation, curb reconstruction, drainage, ROW acquisition, etc., it is likely not quick build.

Planning Level Cost Estimate: High level planning costs based on information provided in the engineering toolkit and published FDOT information.

Notes: Any additional information that might be helpful to track, such as recently completed improvements where effectiveness should be monitored.



CHAPTER 9

Technical Appendix

M- Data Management Plan



Image of Plant Street in the City of Winter Garden



Memorandum

Date: November 10, 2023

To: Vision Zero Central Florida Partners

From: Mighk Wilson, MetroPlan Orlando
Stephen Spana, Fehr & Peers
PJ Smith, xGeographic

Subject: **Vision Zero Central Florida – Data Management Plan**



Introduction

This data management plan provides information that will assist MetroPlan Orlando in maintaining the Vision Zero Central Florida hub site on an annual and ongoing basis. Information is provided on critical GIS layers, associated instructional documents, and information on document storage, sources and methods of data management. Updates to crash data on the hub site are expected to occur in the third quarter of each calendar year as data within the Signal Four Analytics (S4) database becomes finalized for the prior calendar year.

Critical GIS Layers

The ArcGIS Hub Site will be refreshed annually with new crash data downloaded from the Signal Four Analytics online tools. As part of the annual process to refresh the crash data, numerous input files are used to transform the raw crash data into a formatted database that can be appended to the existing online layer. The GIS layers that are used to update the S4 database are described in this section of the report along with important metadata and data storage information. The listing below does not include municipality-specific files that were generated in 2023 and 2024.

Layer Listing

Layer	Source	Update Frequency	Next Refresh
Signal 4 Analytics Crashes File Name: S4.gdb	Signal 4 Analytics	Annual	June 2024
MetroPlan Coverage Area File Name: MetroPlan_Area.shp	F.G.D.L.	None	None
MetroPlan Jurisdictions File Name: MetroPlan_Juris.shp	MetroPlan Orlando	Annual	June 2024

Wave Roadways File Name: xWave.shp	xGeographic	Annual	June 2024
Federal Aid Highway System File Name: Federal_Aid_Highway_System_TDA.shp	F.H.W.A.	Annual	June 2024
ETC Indicator File Name: ETC_Indicator.shp	U.S.D.O.T.	Annual	June 2024

Additional Data

Crashes between rail vehicles and non-motorized vehicles are not included within the S4 database. The Florida Department of Transportation (FDOT) District 5 Rail Administration Manager (part of the Modal Development office) maintains a record of incidents that occur along rail lines and at railroad crossings in the region. The incidents from the prior calendar year will need to be requested and geocoded into the database for consideration in crash analysis. This information can also be supplemented by information from the Federal Railroad Administration (<https://safetydata.fra.dot.gov/OfficeofSafety/default.aspx>).

Data from the Florida Injury Surveillance System (FISS) dataset can be used to document deaths, emergency room visits and hospitalizations for people who were injured while walking and biking, including information for people who were injured or killed while walking or bicycling when a vehicle was not involved. While this information cannot be geocoded to a specific location, the overall trends should be documented.

Metadata

All of the GIS files that are used to generate the final Signal Four Analytics crash file are populated with important metadata. This includes information on how the data was created, what the layer data fields include (including field value descriptions), and update frequency information. The five GIS files described in the Layer Listing are already embedded with this necessary information, so Metadata does not need to be updated on an annual basis.

Data Storage Locations

The Signal Four Analytics crash file is stored on ArcGIS Online with a static geodatabase name of S4.gdb. This file can be downloaded for use from the ArcGIS Online account at any time by project team members and partnering organizations.

Source files, including the MetroPlan Coverage Area, MetroPlan Jurisdictions, Wave Roadways, Federal Aid Highway System and ETC Indicators are maintained by third parties and are stored in various locations. The four source (input) files that are updated annually can be found in the following locations or by contacting the following stakeholders:

- MetroPlan Coverage Area: This file is stored on the MetroPlan Orlando server. This file will not update unless the underlying MetroPlan Orlando coverage area changes in the future.

- MetroPlan Jurisdictions: This file is stored on the MetroPlan Orlando server. This file is updated semi-regularly by MetroPlan Orlando as municipal boundaries change.
- Wave Roadways: This file is stored by xGeographic and is updated four times annually, ensuring that road features, demographic data, and proximity data is as accurate as possible at the time that the crash data cross-reference is made. Contact pjsmith@xgeographic.com to obtain this file.
- Federal Aid Highway System: This file is stored online and is maintained by the Federal Highway Administration. The file can be downloaded by clicking on "Federal Aid Highway System Shapefile" at the following link: <https://www.fdot.gov/statistics/fedaid/default.shtm>
- ETC Indicator: This file is stored online and is maintained by the U.S. Department of Transportation. The file can be downloaded by following the instructions at the following link: <https://experience.arcgis.com/experience/0920984aa80a4362b8778d779b090723/page/Homepage/>

Critical Documents

Along with this data management plan, numerous documents are stored on the MetroPlan Orlando server that serve as critical analytical tools and data management files for the project team. These files are explained below.

- Regional Projects Data Directory
 - The regional projects data directory is an excel spreadsheet that provides instructions for municipalities to develop GIS files that can be easily merged to form a regional file. This includes field names and specific field values.
- S4.atbx (GIS Toolbox)
 - This toolbox file is used to generate formatted crash data to be appended to the existing crash data on ArcGIS Online.
- MetroPlan VZ Systemic Matrix
 - The systemic matrix includes detailed crash analytics that are used in official Vision Zero Central Florida plan documents. The project team will review the need to update these statistics in future years.
- Source Layer Information
 - The source layer information document provides more in-depth information in excel format pertaining to the input files used as part of this project.

Signal Four Data Update Procedures

On an annual basis, a GIS analyst will run the S4.atbx ArcGIS toolbox to generate a new set of crash data to be appended to the existing online layer. Steps to set up and run this toolbox are included

below. Note: It is critical that the steps outlined below are followed while running the tool, as certain manual data edits are made while the tool is executed.

Annual Data Integration Steps

1. Log into <https://signal4analytics.com/analysis>
2. Download the latest full year of crash data
 - a. Insert a custom date range (01/01/XXXX through 12/31/XXXX)
 - b. Set the geographic boundary to MetroPlan Orlando
 - c. Download the Crash Event csv and the GIS Geolocation
3. Conduct QA/QC of crash data:
 - a. Map all crash data within the geographic boundary of MetroPlan Orlando to identify crashes that are being mapped outside the region.
 - b. A list of crashes that resulted in a fatality or serious injury that are unmapped shall be prepared, and based on data within the crash report, the analyst shall attempt to identify the location for mapping. A list of all crashes in the region that are unmapped shall be prepared for forwarding to the agency for further review.
4. In ArcGIS, run models 1.01-1.03 in the S4 Toolbox (S4.atbx)
 - a. Model 1.01 removes crashes located outside of the MetroPlan geographic boundary
 - i. The MetroPlan_Area file, which is used to run Model 01.01, can be requested from PJ Smith at pjsmith@xgeographic.com
 - b. Model 1.02 removes fields which are unnecessary to the analysis.
 - c. Model 1.03 transforms the bicycle and pedestrian typing data from the download into a useable format (i.e., replaces numerical data categories with text descriptions)
5. In ArcGIS, run model 2.01 in the S4 Toolbox (S4.atbx) to join crash event, and bike/ped typing data to the crash locations.
6. In ArcGIS, run model 03.01 in the S4 Toolbox (S4.atbx) to append jurisdictions to the database.
 - a. The MetroPlan_Juris file, which is used to run Model 02.01, can be requested from MetroPlan Orlando.
 - b. If the Spatial Join is taking a long time to run, temporarily add MetroPlan_Juris to the working GDB file.
7. In ArcGIS, run model 03.02 in the S4 Toolbox (S4.atbx) to remove redundant fields.
8. In ArcGIS, run models 04.01 and 04.02 in the S4 Toolbox (S4.atbx) to tag crashes near the federal aid network.
 - a. Crashes selected within 100 feet of the Federal Aid network layer and populated with "Y" if within the radius, and a "N" if not within the radius. Roadways on "Private Road" or "Parking Lot" are provided a value of "N".
9. In ArcGIS, run model 05.01 in the S4 toolbox (S4.atbx). The output file is named S4_Crashes.
10. Run model 06.01 to add the KSI and MODE classifications to the crash data.

11. Run model 07.01. This flags all collisions occurring on Limited Access facilities (i.e., Interstates, Toll Roads) using the ROAD_SYSTEM_IDENTIFIER field in the Signal4 data (where ROAD_SYSTEM_IDENTIFIER = Interstate or Turnpike/Toll). After running this model, manually inspect the collisions where LIMITED_ACCESS_1 = 1, as some will be incorrectly classified as occurring on Interstates or Toll Roads. To do this, query the xGeographic Wave database to show roads where ROAD_TYPE = "FDOT – Limited Access". Change LIMITED_ACCESS_1 = 1 to LIMITED_ACCESS_1 = 0 for any of these cases (estimated time 1-2 hours).
12. Create field called LIMITED_ACCESS_2 (Type: Short Integer). The previous step will NOT capture all collisions occurring on Limited Access facilities, because some occurring on Interstates/Toll Roads are classified using ROAD_SYSTEM_IDENTIFIER = State or US. Since we cannot query Limited Access facility collisions using the State or US ROAD_SYSTEM_IDENTIFIER field (since many state or US roads are not limited access facilities) we need to flag them manually using the LIMITED_ACCESS_2 field. Set a Definition Query of LIMITED_ACCESS_1 = 0 (to view all collisions not deemed to be Limited Access collisions in the previous step) and visually inspect collisions occurring along Interstates/Toll roads. Any collisions occurring along these facilities with the ON_STREET_ROAD_HIGHWAY field representing the facility name (e.g. I-4, Interstate 4, I4, etc.) should be given a value of LIMITED_ACCESS_2 = 1.
13. Run model 07.02, which creates a final limited access field, LIMITED_ACCESS_FINAL, showing whether a collision occurs on a limited access facility (if LIMITED_ACCESS_1 = 1 OR LIMITED_ACCESS_2 = 1).
14. Run model 08.01, which flags all collisions occurring on private roadways and/or parking lots.
15. Run models 09.01 through 09.17. To obtain the xWave_Major and xWave_Minor files, contact PJ Smith at pjsmith@xgeographic.com. The ETC_Index file should be provided pre-formatted.
16. Create a new GDB titled "S4.gdb" in a folder marked with a year; for example, the folder name for the 2018-2022 data addition is titled "2022", and the folder for the appended 2023 data will be titled "2023". Export S4_Crashes into S4.gdb.
17. Append the S4.gdb file to the existing crash database on ArcGIS Online.

Winter Garden 2022 100 Million VMT Estimation Method

1. Orange County 2022 Daily VMT: 43,315,328
 - a. Source: <https://www.fdot.gov/statistics/mileage-rpts/default.shtm>
2. Winter Garden /Orange County BEBR Population Proportion: $49,711/1,492,951 = 0.03329$
 - a. <https://bebr.ufl.edu/population/population-data/>
3. Winter Garden Daily VMT Estimation: 1,473,872
4. Winter Garden Annual VMT Estimation: $1,473,872 * 365 = 537,963,277$
5. Winter Garden 100M VMT = 5.38

	CENTERLINE MILES								DAILY VEHICLE MILES TRAVELED							
	Inter-state	Turnpike & Freeways	Other Princ. Arterials	Minor Arterials	Major Collectors	Minor Collectors	Locals	Total	Inter-state	Turnpike & Freeways	Other Princ. Arterials	Minor Arterials	Major Collectors	Minor Collectors	Locals	Total
Miami-Dade																
Rural	0.000	0.000	68.417	11.385	14.631	55.282	93.843	243.558	0	0	1,287,407	54,250	132,642	205,108	33,092	1,712,498
Large Urbanized	28.370	111.448	236.137	405.438	543.583	39.699	5,786.680	7,151.355	5,519,326	12,870,328	9,332,961	9,440,130	5,126,577	269,566	10,079,814	52,638,702
County Total	28.370	111.448	304.554	416.823	558.214	94.981	5,880.523	7,394.913	5,519,326	12,870,328	10,620,368	9,494,379	5,259,219	474,673	10,112,906	54,351,201
Monroe																
Rural	0.000	0.000	32.934	15.636	4.005	15.274	58.079	125.928	0	0	498,590	47,786	2,645	10,606	29,353	588,980
Small Urban	0.000	0.000	84.708	6.161	37.348	17.012	457.304	602.533	0	0	1,817,784	84,043	130,658	29,399	344,565	2,406,448
County Total	0.000	0.000	117.642	21.797	41.353	32.286	515.383	728.461	0	0	2,316,374	131,828	133,302	40,005	373,918	2,995,427
Nassau																
Rural	12.902	0.000	51.751	3.813	120.285	26.384	50.051	265.186	759,273	0	498,173	30,789	270,391	35,060	32,783	1,626,469
Small Urban	0.000	0.000	11.612	38.134	37.866	5.662	524.686	617.960	0	0	164,188	650,531	264,120	10,634	407,635	1,497,108
County Total	12.902	0.000	63.363	41.947	158.151	32.046	574.737	883.146	759,273	0	662,360	681,320	534,512	45,694	440,419	3,123,577
Okaloosa																
Rural	17.546	0.000	27.784	76.234	19.786	32.533	152.200	326.083	489,442	0	506,347	582,479	60,746	18,214	100,216	1,757,444
Small Urban	7.008	0.000	10.680	5.509	12.672	0.000	225.035	260.904	197,366	0	314,147	83,812	100,894	0	174,852	871,071
Small Urbanized	0.000	0.000	48.090	30.925	42.381	0.000	877.826	999.222	0	0	1,868,487	730,619	331,730	0	896,260	3,827,096
County Total	24.554	0.000	86.554	112.668	74.839	32.533	1,255.061	1,586.209	686,808	0	2,688,981	1,396,910	493,370	18,214	1,171,328	6,455,611
Okeechobee																
Rural	0.000	7.472	61.331	3.795	64.370	15.338	120.725	273.031	0	225,654	379,388	27,530	80,944	8,432	79,075	801,023
Small Urban	0.000	0.000	29.987	0.986	21.045	1.100	209.587	262.705	0	0	390,571	7,167	67,904	917	162,849	629,407
County Total	0.000	7.472	91.318	4.781	85.415	16.438	330.312	535.736	0	225,654	769,959	34,697	148,847	9,349	241,924	1,430,431
Orange																
Rural	0.000	20.205	29.112	3.574	17.973	20.360	78.764	169.988	0	753,739	373,907	11,997	35,625	91,818	51,590	1,318,676
Small Urban	0.000	0.000	1.726	0.000	2.345	0.000	10.617	14.688	0	0	83,711	0	24,857	0	8,249	116,817
Large Urbanized	24.673	141.197	166.879	288.324	467.416	93.301	3,420.986	4,602.776	3,747,665	9,947,020	6,657,189	6,635,256	4,906,639	703,401	5,937,614	38,534,783
County Total	24.673	161.402	197.717	291.898	487.734	113.661	3,510.367	4,787.452	3,747,665	10,700,758	7,114,807	6,647,253	4,967,121	795,219	5,997,453	39,970,276
Osceola																
Rural	0.000	45.396	82.583	21.079	52.611	9.749	96.074	307.492	0	1,405,182	522,284	60,036	213,263	12,615	62,928	2,276,309
Small Urban	6.032	4.501	8.472	17.518	24.516	0.000	110.496	171.535	676,859	107,873	419,851	227,730	192,068	0	85,855	1,710,235
Large Urbanized	1.853	20.407	73.832	45.093	108.489	28.591	851.886	1,130.151	219,704	835,479	2,439,871	976,894	907,781	125,742	1,485,689	6,991,160
County Total	7.885	70.304	164.887	83.690	185.616	38.340	1,058.456	1,609.178	896,563	2,348,533	3,382,006	1,264,659	1,313,112	138,357	1,634,473	10,977,704
Palm Beach																
Rural	0.145	0.170	68.946	28.621	34.330	29.633	68.335	230.180	13,920	7,412	801,343	208,507	73,978	71,822	40,538	1,217,520
Small Urban	0.000	0.000	15.945	26.304	11.301	23.172	96.471	173.193	0	0	205,354	240,718	53,127	81,926	77,461	658,586
Large Urbanized	45.873	44.391	225.753	229.213	278.002	199.786	2,502.370	3,525.388	9,051,870	3,228,302	8,638,753	5,523,020	3,288,128	1,837,818	4,362,001	35,929,892
County Total	46.018	44.561	310.644	284.138	323.633	252.591	2,667.176	3,928.761	9,065,790	3,235,714	9,645,450	5,972,245	3,415,233	1,991,566	4,480,001	37,805,998
Pasco																
Rural	7.119	14.886	25.447	22.485	59.022	0.757	167.117	296.833	426,378	418,897	310,976	237,043	222,052	568	109,462	1,725,377
Small Urbanized	0.000	2.326	44.376	41.920	55.725	21.292	299.714	465.353	0	50,707	755,454	557,343	299,427	81,032	331,633	2,075,596
Large Urbanized	13.498	2.653	88.442	40.785	131.145	57.275	1,296.088	1,629.886	1,191,002	103,805	3,841,233	1,174,644	1,418,134	407,839	2,307,452	10,444,109
County Total	20.617	19.865	158.265	105.190	245.892	79.324	1,762.919	2,392.072	1,617,380	573,409	4,907,663	1,969,030	1,939,613	489,439	2,748,547	14,245,082
Pinellas																
Rural	0.000	0.000	0.000	0.000	0.000	0.000	8.203	8.203	0	0	0	0	0	0	5,373	5,373
Large Urbanized	31.287	1.102	135.873	280.180	272.881	54.314	2,880.152	3,655.789	3,127,684	9,477	6,496,341	5,018,399	1,850,395	280,165	5,022,985	21,805,446
County Total	31.287	1.102	135.873	280.180	272.881	54.314	2,888.355	3,663.992	3,127,684	9,477	6,496,341	5,018,399	1,850,395	280,165	5,028,358	21,810,819

	CENTERLINE MILES								DAILY VEHICLE MILES TRAVELED							
	Inter-state	Turnpike & Freeways	Other	Minor Arterials	Major Collectors	Minor Collectors	Locals	Total	Inter-state	Turnpike & Freeways	Other	Minor Arterials	Major Collectors	Minor Collectors	Locals	Total
			Princ. Arterials								Princ. Arterials					
Miami-Dade																
Rural	0.000	0.000	68.417	11.385	14.631	55.282	95.218	244.933	0	0	1,230,963	56,527	144,855	219,347	36,105	1,687,797
Large Urbanized	28.381	111.424	236.137	405.413	543.633	39.699	5,803.380	7,168.067	5,974,904	13,656,947	9,547,568	9,668,246	5,519,744	290,860	10,572,160	55,230,428
County Total	28.381	111.424	304.554	416.798	558.264	94.981	5,898.598	7,413.007	5,974,904	13,656,947	10,778,531	9,724,773	5,664,599	510,207	10,608,266	56,918,225
Monroe																
Rural	0.000	0.000	32.934	15.636	4.005	15.274	58.312	126.161	0	0	478,274	54,141	2,645	10,887	30,621	576,567
Small Urban	0.000	0.000	84.708	6.161	37.348	17.012	459.830	605.059	0	0	1,895,709	76,226	132,594	26,756	361,043	2,492,327
County Total	0.000	0.000	117.642	21.797	41.353	32.286	518.142	731.220	0	0	2,373,982	130,367	135,239	37,643	391,664	3,068,894
Nassau																
Rural	12.902	0.000	51.751	3.813	120.285	26.384	50.576	265.711	770,330	0	633,696	34,459	275,615	35,849	34,645	1,784,593
Small Urban	0.000	0.000	11.612	38.134	37.866	5.662	530.191	623.465	0	0	181,817	706,546	267,142	10,596	430,987	1,597,088
County Total	12.902	0.000	63.363	41.947	158.151	32.046	580.767	889.176	770,330	0	815,513	741,005	542,756	46,445	465,631	3,381,681
Okaloosa																
Rural	17.546	0.000	27.784	76.234	19.786	32.533	152.889	326.772	517,715	0	518,262	600,706	65,932	18,585	105,349	1,826,550
Small Urban	7.008	0.000	10.680	5.509	12.672	0.000	226.057	261.926	207,355	0	324,999	84,232	109,130	0	183,784	909,499
Small Urbanized	0.000	0.000	48.090	30.925	42.381	0.000	881.810	1,003.206	0	0	1,843,406	736,006	341,140	0	941,773	3,862,325
County Total	24.554	0.000	86.554	112.668	74.839	32.533	1,260.756	1,591.904	725,070	0	2,686,666	1,420,944	516,202	18,585	1,230,907	6,598,374
Okeechobee																
Rural	0.000	7.472	61.331	3.795	64.370	15.338	120.725	273.031	0	274,222	395,589	28,463	81,492	8,432	82,697	870,895
Small Urban	0.000	0.000	29.987	0.935	21.045	1.100	209.587	262.654	0	0	402,793	7,013	70,289	934	170,394	651,423
County Total	0.000	7.472	91.318	4.730	85.415	16.438	330.312	535.685	0	274,222	798,382	35,475	151,781	9,366	253,091	1,522,317
Orange																
Rural	0.000	20.205	29.112	3.574	17.973	20.360	79.366	170.590	0	1,156,465	446,185	11,804	35,480	95,062	54,366	1,799,361
Small Urban	0.000	0.000	1.726	0.000	2.345	0.000	10.699	14.770	0	0	89,007	0	24,388	0	8,698	122,093
Large Urbanized	24.673	142.053	166.879	288.324	467.088	93.207	3,446.073	4,628.297	4,216,047	11,403,751	6,529,252	7,042,893	5,248,607	705,662	6,247,662	41,393,874
County Total	24.673	162.258	197.717	291.898	487.406	113.567	3,536.138	4,813.657	4,216,047	12,560,216	7,064,444	7,054,697	5,308,475	800,724	6,310,726	43,315,328
Osceola																
Rural	0.000	45.396	82.583	21.079	52.611	9.749	97.386	308.804	0	1,636,089	568,507	52,336	305,704	14,871	66,709	2,644,215
Small Urban	6.032	4.501	8.472	17.518	24.516	0.000	112.006	173.045	772,557	135,179	444,353	260,140	206,533	0	91,061	1,909,823
Large Urbanized	1.853	20.407	73.832	45.093	108.489	28.591	863.524	1,141.789	231,348	977,736	2,554,721	998,892	936,166	124,898	1,575,068	7,398,828
County Total	7.885	70.304	164.887	83.690	185.616	38.340	1,072.916	1,623.638	1,003,905	2,749,004	3,567,580	1,311,368	1,448,403	139,769	1,732,838	11,952,867
Palm Beach																
Rural	0.145	0.170	68.946	28.621	34.330	29.633	68.368	230.213	13,268	8,959	940,358	222,460	38,471	69,174	42,303	1,334,992
Small Urban	0.000	0.000	15.945	26.304	11.301	23.172	96.471	173.193	0	0	229,429	254,438	38,877	76,059	81,087	679,889
Large Urbanized	45.873	44.391	225.753	229.213	278.236	199.786	2,503.893	3,527.145	9,281,613	3,583,092	8,929,438	5,685,375	3,239,649	1,782,698	4,564,772	37,066,636
County Total	46.018	44.561	310.644	284.138	323.867	252.591	2,668.732	3,930.551	9,294,880	3,592,051	10,099,225	6,162,273	3,316,996	1,927,931	4,688,162	39,081,518
Pasco																
Rural	7.119	14.886	25.447	22.485	59.022	0.757	173.207	302.923	440,616	495,997	316,804	239,184	227,240	568	118,647	1,839,055
Small Urbanized	0.000	2.326	44.376	41.920	55.725	21.292	310.575	476.214	0	61,174	746,449	572,200	298,164	81,317	357,469	2,116,773
Large Urbanized	13.498	2.653	88.442	40.785	131.145	57.275	1,343.447	1,677.245	1,237,178	123,279	3,886,423	1,106,770	1,393,444	407,293	2,495,410	10,649,796
County Total	20.617	19.865	158.265	105.190	245.892	79.324	1,827.229	2,456.382	1,677,794	680,450	4,949,677	1,918,154	1,918,847	489,177	2,971,526	14,605,624
Pinellas																
Rural	0.000	0.000	0.000	0.000	0.000	0.000	8.225	8.225	0	0	0	0	0	0	5,634	5,634
Large Urbanized	31.287	1.102	135.873	280.180	272.881	54.314	2,887.924	3,663.561	3,266,705	9,477	6,580,571	5,064,999	1,844,295	280,979	5,267,573	22,314,600
County Total	31.287	1.102	135.873	280.180	272.881	54.314	2,896.149	3,671.786	3,266,705	9,477	6,580,571	5,064,999	1,844,295	280,979	5,273,208	22,320,234

Estimates of Population by County and City in Florida: April 1, 2023

County, City, and State	Population Estimate April 1, 2023	Population Change 2020–2023	Census Count April 1, 2020	Revenue Sharing Use Only	
				Inmate Population April 1, 2023	Estimate less Inmates April 1, 2023
Okeechobee County	39,591	-53	39,644	1,846	37,745
Okeechobee	5,361	107	5,254	0	5,361
UNINCORPORATED	34,230	-160	34,390	1,846	32,384
Orange County	1,492,951	63,043	1,429,908	4,153	1,488,798
Apopka	58,293	3,420	54,873	0	58,293
Bay Lake	29	0	29	0	29
Belle Isle	7,239	207	7,032	0	7,239
Eatonville	2,370	21	2,349	0	2,370
Edgewood	2,631	-54	2,685	0	2,631
Lake Buena Vista	21	-3	24	0	21
Maitland	19,964	421	19,543	0	19,964
Oakland	5,402	1,886	3,516	0	5,402
Ocoee	49,711	2,416	47,295	0	49,711
Orlando	326,988	19,415	307,573	592	326,396
Windermere	3,041	11	3,030	0	3,041
Winter Garden	50,800	3,836	46,964	0	50,800
Winter Park	30,706	911	29,795	59	30,647
UNINCORPORATED	935,756	30,556	905,200	3,502	932,254
Osceola County	439,225	50,569	388,656	302	438,923
Kissimmee	82,714	3,488	79,226	191	82,523
St. Cloud	61,997	3,033	58,964	0	61,997
UNINCORPORATED	294,514	44,048	250,466	111	294,403
Palm Beach County	1,532,718	40,527	1,492,191	2,603	1,530,115
Atlantis	2,147	5	2,142	0	2,147
Belle Glade	17,286	588	16,698	0	17,286
Boca Raton	100,491	3,069	97,422	0	100,491
Boynton Beach	82,208	1,828	80,380	0	82,208
Briny Breezes	500	-2	502	0	500
Cloud Lake	140	6	134	0	140
Delray Beach	67,213	367	66,846	0	67,213
Glen Ridge	215	-2	217	0	215
Golf	281	26	255	0	281
Greenacres	45,476	1,486	43,990	0	45,476
Gulf Stream	959	5	954	0	959
Haverhill	2,193	6	2,187	0	2,193
Highland Beach	4,303	8	4,295	0	4,303
Hypoluxo	2,687	0	2,687	0	2,687
Juno Beach	3,883	25	3,858	0	3,883
Jupiter	61,333	286	61,047	0	61,333