

**VISION ZERO**  
CENTRAL FLORIDA

# Vision Zero **ACTION PLAN**

**SEMINOLE COUNTY**



## TECHNICAL APPENDIX





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# Vision Zero Flyer

# 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.



**VISION ZERO**  
CENTRAL FLORIDA  
Counting down to zero traffic deaths



**SEMINOLE COUNTY**  
FLORIDA'S NATURAL CHOICE

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

### SEMINOLE COUNTY (2018-2022)

**181** people were killed on our roadways, including:

 **123** motorist deaths

 **27** pedestrian deaths

 **21** motorcyclist deaths

 **4** bicyclist deaths

excludes limited access facilities



# Seminole County

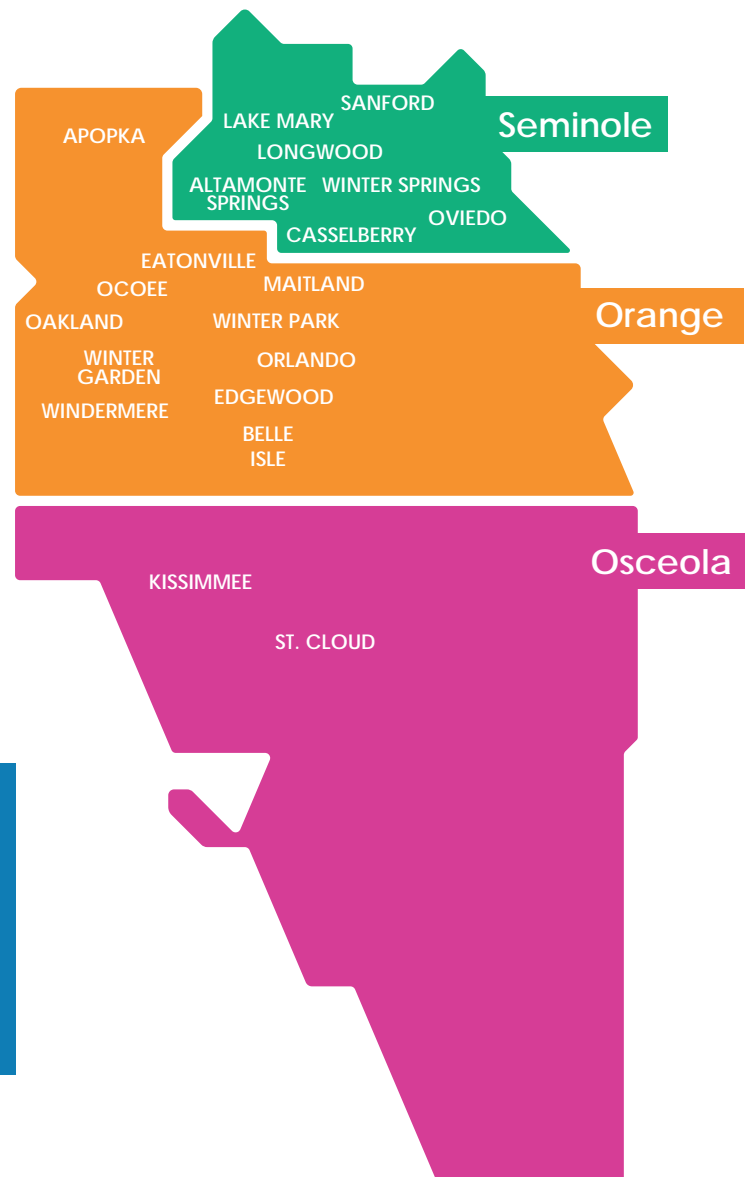
## Vision Zero Action Plan Schedule



## 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**

# How to Support Vision Zero



# How to Support Vision Zero in Seminole County

Vision Zero is a strategy to eliminate all traffic deaths and serious injuries while increasing safe, healthy, equitable mobility for all.

This Seminole County Vision Zero Safety Action Plan was developed from a coordinated planning effort led by MetroPlan Orlando, in partnership with local governments and the Florida Department of Transportation (FDOT).

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

## Seminole County Residents

Hearing concerns, in your own words, adds important context to crash data. Your continued engagement helps keep this plan relevant and useful. Practicing safety is a shared responsibility. Learn more about the safe system approach and send your thoughts, concerns, or questions to our project managers.

## County Department Leads and Staff

Implementing the Action Plan goes beyond Public Works and requires a multidisciplinary approach. As part of the agency team, review the **Action Plan Summary** and note the responsible party for each action. As an agency, ask that each person or department identified as a responsible party is at the table throughout the plan implementation.

## Elected Officials

As an elected community leader, review the Action Plan Summary and regularly collaborate with your team to move ideas forward. Continue to advocate for the identified **Priority Needed Projects** with regional and state transportation agency partners. In addition, review the **Elected Officials Guide** at [www.VisionZeroCFL.gov](http://www.VisionZeroCFL.gov).

## Interested Supporters

Interested in the advancement of Vision Zero within Seminole County? We invite you to stay connected with Seminole County and MetroPlan Orlando through the implementation of this Action Plan.



[www.seminolecountyfl.gov](http://www.seminolecountyfl.gov)  
[www.visionzerocfl.gov](http://www.visionzerocfl.gov)

To learn more about the international network, visit:  
[www.visionzeronetwork.org](http://www.visionzeronetwork.org)



## Vision Zero Contacts

Seminole County: Bill Wharton  
[wwharton@seminolecountyfl.gov](mailto:wwharton@seminolecountyfl.gov)

MetroPlan Orlando  
[VisionZero@MetroPlanOrlando.gov](mailto:VisionZero@MetroPlanOrlando.gov)

# Seminole County Action Plan Summary



## SAFER ROADS

- Prioritize Bicycle and Pedestrian Projects
- Implement Leading Pedestrian Intervals
- Conduct Traffic Signal Retiming to Match Target Speeds
- Implement Quick-Build Lane Repurposing
- Deploy Near-Miss Camera Technology
- Expand Rectangular Rapid Flashing Beacon Guidance in Engineering Standards Manual
- Develop Traffic Calming Plan and Travel Time Evaluation
- Enhance Transit Stop Crossings
- Coordinate Safety Improvements with Utility Projects



## SAFER SPEEDS

- Install Speed Feedback Signs
- Develop Target Speed Plan
- Prioritize Speed Management Countermeasures
- Pilot School Zone Speed Limit Cameras



## SAFER ROAD USERS

- Partner with Motorcycle Safety Organization, Emphasize Helmet Usage
- Coordinate Traffic Safety Presentations with Schools
- Consider Expanding Driver's Education Program in Public Schools
- Engage in Youth Traffic Safety Programs
- Conduct Targeted Enforcement and High Visibility Enforcement Operations
- Launch Vision Zero Outreach Campaign
- Recommend a Countywide "Do Not Disturb" Policy for Staff



## SAFER VEHICLES

- Collaborate with Professional Organizations Furthering Safe Vehicle Requirements
- Consider Emerging Vehicle Safety Systems when Purchasing New Fleet Vehicles
- Publicize the Availability of the "SAFERCAR" Phone Application for Recall Notifications



## POST CRASH CARE

- Meet with First Responders Regularly
- Track Response and Transport Times
- Supplement Crash Data with First Responder, Hospital, and Trauma Center Data
- Promote CPR / Emergency First Aid Training



## CONTINUING PROGRESS

- Develop Vision Zero Status Report
- Host Vision Zero Workshop Twice a Year
- Update Action Plan Every 5-Years
- Assign / Create Dedicated Transportation Safety Staff Position
- Convene a Fatal Crash Review Commission

# Steering Committee Meeting Notes

# Meeting Summary

Subject      **Seminole County Vision Zero Steering Committee Meeting  
#1 Summary – Kickoff**

Date & Time    October 27, 2023 1:30pm - 3:00pm

Location:      UF/IFAS Extension Seminole County  
250 W. County Home Road, Sanford FL, 32773



## Attendees

The attendees for Steering Committee #1 can be found in Table 1.

**Table 1: Steering Committee #1 Attendees**

Steering Committee Members	
Bill Wharton, Seminole County (Engineering)	Loreen Bobo, FDOT
Tony Nelson, Seminole County (County Engineer)	Lenny Barden, City of Altamonte Springs
Charlie Wetzel, Seminole County (Traffic Engineering)	Alisha Maraviglia, City of Altamonte Springs
Doug Robinson, Seminole County (Planning and Development)	
Jean Jreij, Seminole County (Public Works Director)	Consultant Staff / MetroPlan Orlando
Arturo Perez, Seminole County (Engineering)	Lara Bouck, MetroPlan Orlando
Bill Pandos, Seminole County (Parks and Rec)	Mighk Wilson, MetroPlan Orlando
Matt Kinley, Seminole County Fire Department	Megan Ferguson, HDR
Mark Mullins, Seminole County Public Schools	Jeff Arms, HDR
Cody Johnson, LYNX	Melissa Porcaro, HDR
Chris Carson, City of Lake Mary	Tyler Swafford, HDR
Shad Smith, City of Longwood	
Paul Yeargain, City of Oviedo	
Nick Tafelsky, City of Winter Springs	
Steve Fussell, Sanford Airport	
Patrick Panza, Bike/Walk Central Florida	



## Presentation Agenda

The intent of the Steering Committee kickoff was for the Vision Zero Seminole County Steering Committee to introduce the overall purpose and goals of the project, learn about the expertise each Task Force member brings to the project, provide a high-level overview of crash trends in the Seminole County region, review the core elements of Vision Zero and the Safe System approach, review public engagement strategies, create open discussion and share next steps.

The meeting followed this agenda:

1. Introductions
2. High Level Crash Trends
3. What is Vision Zero?
4. Safe System approach
5. Overview of Key Tasks
6. What we expect from the Plan
7. Project Schedule
8. Discussion
9. Next Steps



## Discussion and Feedback

During the presentation a series of discussion questions were asked to help gauge familiarity with Vision Zero and the Safe Systems approach as well as obtain overall feedback. All persons attending the meeting were invited to initiate in cooperative discussion as all attendees live in the region, are affected by transportation safety and have valuable insights to share.

The following summarizes the key takeaways from discussion created from the questions.

### Have you ever been in an injury crash or know someone who has been killed or seriously injured in a crash? How did it affect you?

One member of the Steering Committee was involved in a motorcycle crash when they were younger, and it changed their perspective of the road and how they approached road safety situations.

### Are there specific transportation safety questions you would like us to be able to answer?

It was noted during the presentation that the analysis will include identification of the high injury network, general crash trends, and a contextual analysis. Other suggestions for incorporation of specific questions the analysis include:

- Data including fatalities by age group? School zones, time zones, sidewalks?
- Micromobility, is this form of transportation being reported in these statistics?
- Consider VMTs during the 5-year analysis period - crash rates.
- Any data about e-bike involvement in KSIs? Is this increasing over time?
- Crashes by posted speed limit.
- What variability are we seeing related to lighting? Have there been any studies on what colors people are wearing and if/how that impacts crashes in low/no lighting situations.
- Tourists representation in our data.
- Focus more on factors and less on faults.
- Human nature should be taken into consideration.
- Not everyone has the same physical abilities as everyone else.
- The reason why Seminole County has a lower fatality rate than the other counties and region.

### What do you think are the biggest barriers to reaching zero traffic deaths and serious injuries?

- Perception that Complete Streets is the thought of taking things away.
- Creating a more pedestrian friendly community, ex. Letting pedestrians go first.
- Distracted driving.
- More enforcement from the law to reduce potential reckless driving.
- Human mindset, and changing from a personal to a more communal mindset.

- Financial costs to implement programs and initiatives to implement safer roads, finding the most efficient ways to maximize our potential.
- Regional awareness and coordinating efforts, creating communities where we build around pedestrians, to create a more welcoming area and to get communities acclimated.
- Roundabouts may potentially be a factor in slowing down emergency vehicles.



### How would you describe the roadway safety culture in your agency/community?

- In the City of Lake Mary, safety is important and there is a positive culture.
- The group is curious whether aggressiveness affects different pockets of the region.
- The City of Altamonte Springs elected officials/agency staff work to elevate the safety of pedestrians, however drivers may not have the same focus. There are a lot of aggressive drivers, implementing a safer mindset to the community is paramount.
- Roads and areas can create aggressive and reckless driving habits.
- Economic barriers have effect on driving behavior, one issue is participants of the communities are preoccupied with other thoughts than safety, and putting that in the forefront of their mind is key to safer roads.
- Education in putting safety first – 40% of car fatalities are a result of seat-belts not being worn. Teaching children at a young age to wear their seatbelts is important.

- A disconnect between agencies/staff and communities that has been seen is that communities want safety if it does not affect their daily lifestyle. Example being lighting or speed bumps specifically in their neighborhoods.
- Communities within Florida have shown that they each have their own opportunities of growth. Based on statewide research from FDOT, educational campaigns were launched for specific areas: Tampa (aggressive driving), Central Florida (distracted driving), and South Florida (fast driving).
- Residents of Seminole County may generally be less in a hurry, and may be more relaxed than other counties which is reflected by the lower crash rate data.

#### Do you have any ideas for discussion topics/speakers for our Safety Lunch series?

- Countermeasure Identification.
- Traffic calming actions and specific ways to slow vehicles down.
- Finding ways to accommodate all parts of our communities and including factors such as emergency services.
- Analysis such as general approaches for scale of cost and other types of implementation and improvements. It was noted that the action plans will include magnitude of costs.

#### Are there any roads that come to mind that make you hesitant to be on?

- SR 436 through Altamonte Springs, end to end.
- Maitland Avenue, busy roads, sidewalks are only five feet wide and do not feel safe.

#### What questions or comments do you have?

- How to approach adding safety features such as lights when residents fight the changes.
- If posted speed limits are any factor and what can we do to address them.
- Gathering speed data from available sources.
- Comparing speed from cars with OnStar with the posted speed limits in the same areas where high crash volumes take place.
- Do the roadways show where the major fatalities are? Can we have a map showcasing dots where major fatalities and crashes occur?



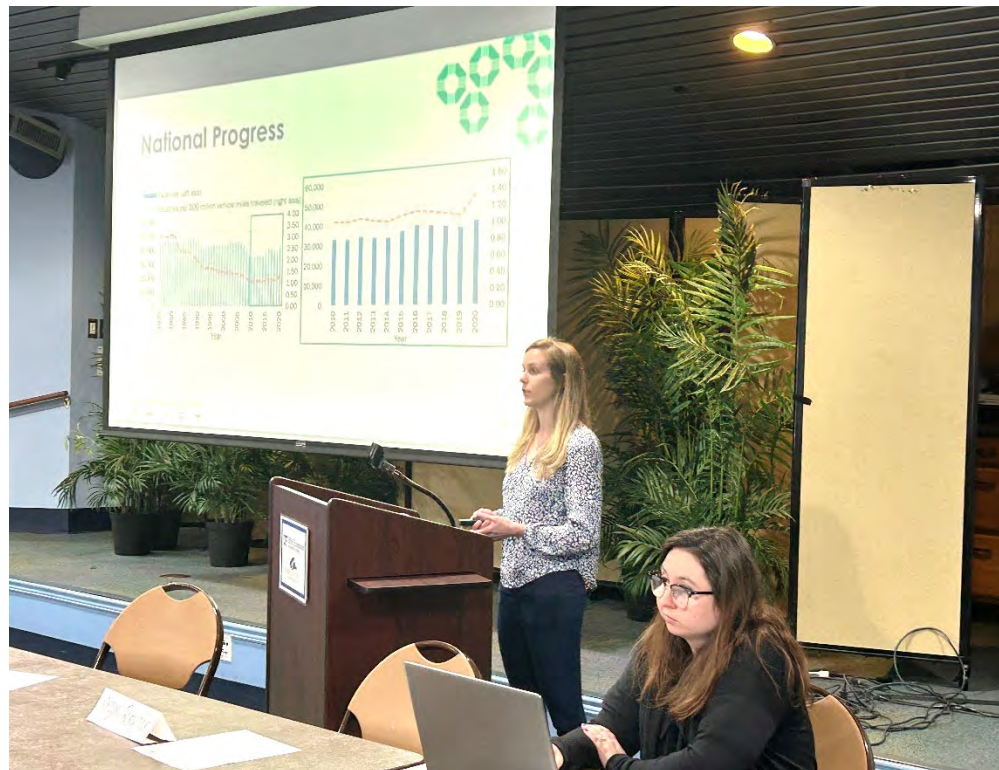


## Upcoming Meetings

The next Steering Committee meeting is slated for December 2023 (date to be announced). The next meeting will discuss the high-injury network and the preliminary crash analysis. Table 2 shows the tentative Steering Committee schedule for the duration of the Vision Zero Action Plan project.

**Table 2: Steering Committee Tentative Schedule**

Name	When	Purpose
<b>Steering Committee #2 – Crash Data</b>	December 2023	Review the High Injury Network (HIN) and other crash data as it relates to Seminole County and the Lake Mary area.
<b>Steering Committee #3 – Policy Review</b>	February 2024	Review city policies and plans, and changes to implement that will form more comprehensive, Vision Zero focused documents.
<b>Steering Committee #4 – Project Priority List</b>	April 2024	Identify potential safety projects and priorities.
<b>Steering Committee #5 – Next Steps</b>	May 2024	If needed, this meeting is to review next steps for the overall Vision Zero project, and how to implement the Vision Zero Action Plan.







# VISION ZERO SAFETY ACTION PLAN

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**STEERING COMMITTEE MEETING #1 – KICKING OFF VISION ZERO**

OCTOBER 27, 2023



# Agenda

1. Introductions
2. High Level Crash Trends
3. What Is Vision Zero?
4. Safe System Approach
5. Overview of Key Tasks
6. What to Expect from the Plan
7. Project Schedule
8. Discussion
9. Next Steps



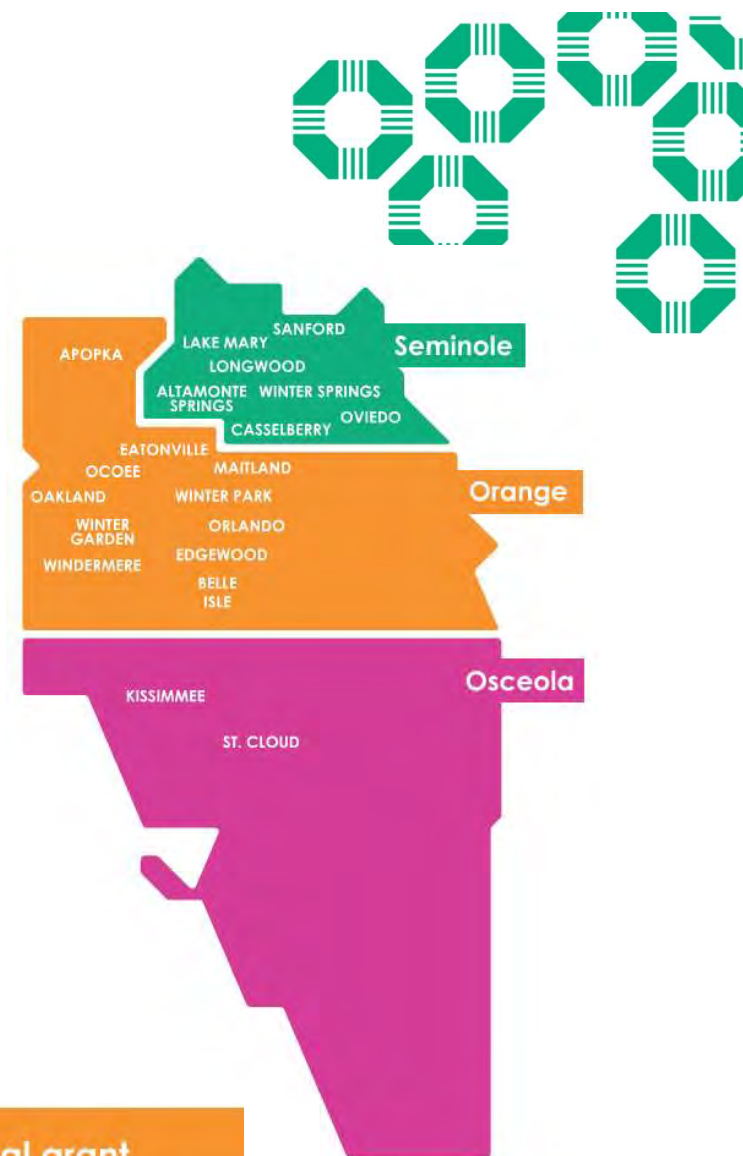
# INTRODUCTIONS

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# Purpose and Background

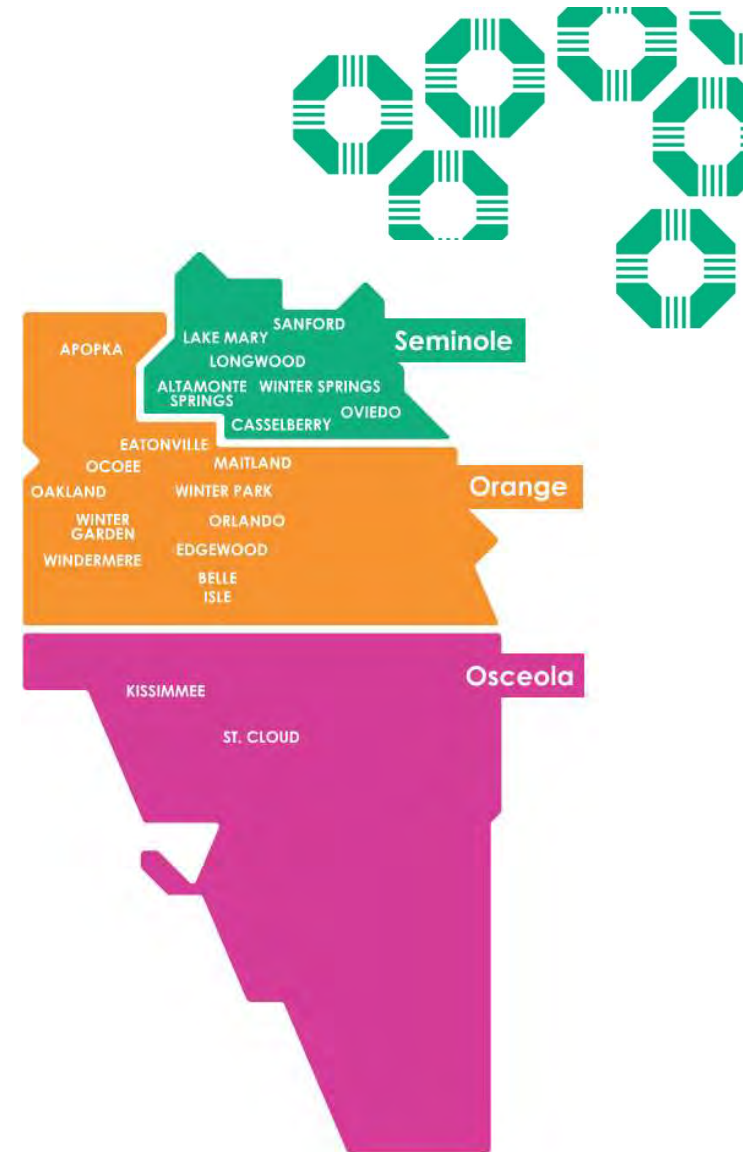
- Coordinated planning effort led by MetroPlan Orlando to identify **safety projects**
- MetroPlan Orlando and its government partners were awarded a **\$3.79 million federal grant**
- The Bipartisan Infrastructure Law (BIL) established the Safe Streets and Roads for All (SS4A) discretionary program
  - \$5 billion in appropriated funds over 5 years, 2022-2026.
  - Types of grants:
    - (1) Planning/demonstration
    - (2) Implementation (**must be a project in Action Plan**)



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

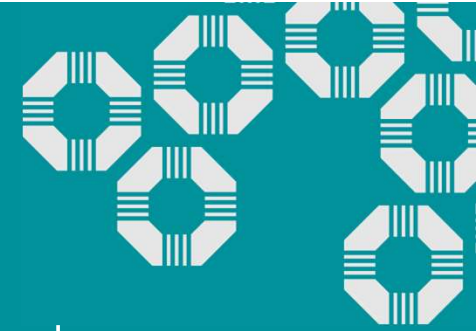
# Agency Roles

- **MetroPlan Orlando**
  - Regional plan (3-county)
  - Leading a Regional Task Force (County has representation)
  - Providing data and guidance
- **County**
  - County specific plan
  - Leading a Steering Committee (Cities have representation)
- **Cities**
  - City specific plan
  - Leading Working Groups



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# What do you think?

- Have you ever been in an injury crash or know someone who has been killed or seriously injured in a crash?
- How did it affect you?
- What is your understanding of the Vision Zero/Safe System approach to transportation safety?

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LOCAL

## Father, son in Orlando for UCF orientation killed in crash involving suspected repeat drunk driver



By [Raphael Pires, WFTV.com](#) and [Si](#)  
July 10, 2023 at 6:01 pm EDT

FHP: 2 dead, 1 injured in Orange County crash



## 24-year-old tow truck driver killed in Osceola County crash

Crash occurred on Poinciana Parkway and Marigold Avenue, troopers say




Updated: 11:39 PM EDT, Jul 9, 2023

## 1 person killed, 16 injured in three-vehicle crash near Orlando



Publisher:  
 

13-YEAR-OLD ST. CLOUD BOY INJURED IN FATAL ORLANDO CRASH INVOLVING STOLEN CAR SUNDAY MORNING, FHP REPORTS

Apr 24, 2023 | News, St. Cloud News | 

## 45-year-old bicyclist hit, killed in crash on US-192 in Kissimmee

Crash happened west of Hoagland Boulevard



Deanna Williams  
Digital Producer

2 dead in fiery wrong-way crash in Orlando

2 dead in fiery wrong-way crash in Orlando



## Kirkman Road reopens after 1 killed in crash



Sarah Wilson

June 12, 2023 · 1 min read

NEWS / FLORIDA

## Florida Highway Patrol mourns death of trooper after crash in Orlando

The accident involved a patrol car and a utility vehicle, according to police.



## Florida hit-and-run, wrong way crash leaves social media star 'Ali Spice' among 3 dead: officials

Florida Highway Patrol is continuing to investigate the crime and have not yet located a suspect

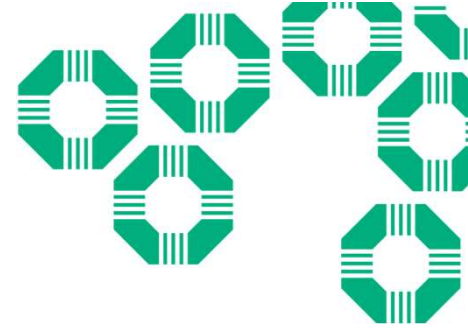
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# HIGH LEVEL CRASH TRENDS

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## By the Numbers

**1,350,000** lives lost globally  
each year

**42,795** lives lost in the  
U.S. in 2022

10% increase  
from 2020



**7,500** pedestrians killed  
in traffic crashes  
in the U.S. in 2022

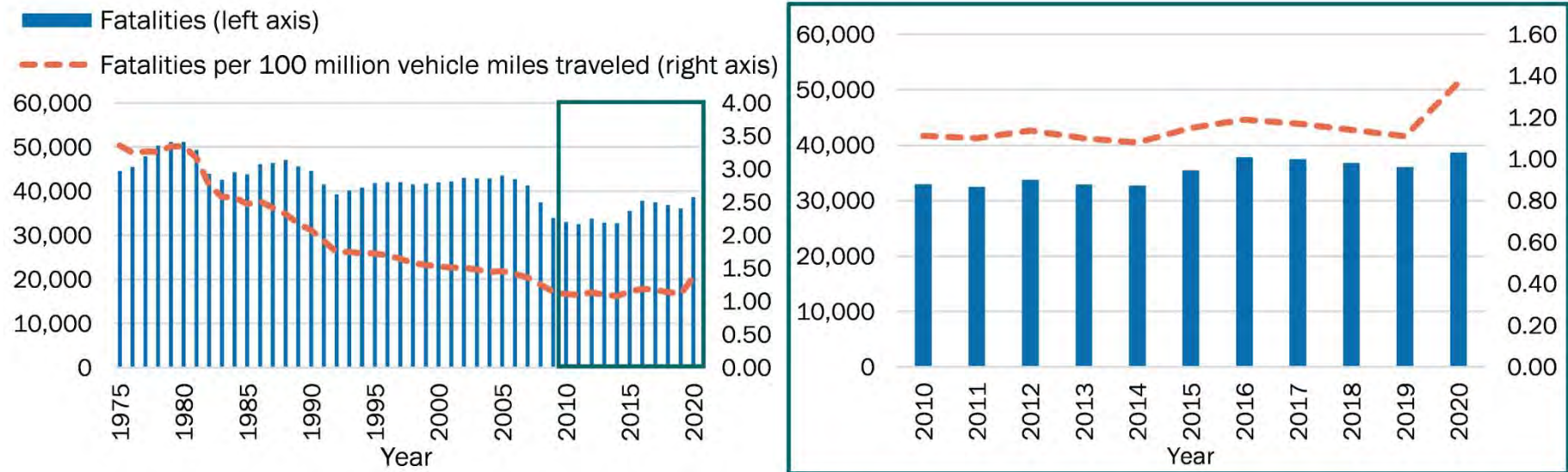
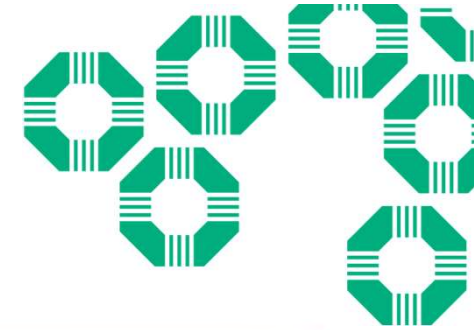
15% increase  
from 2020



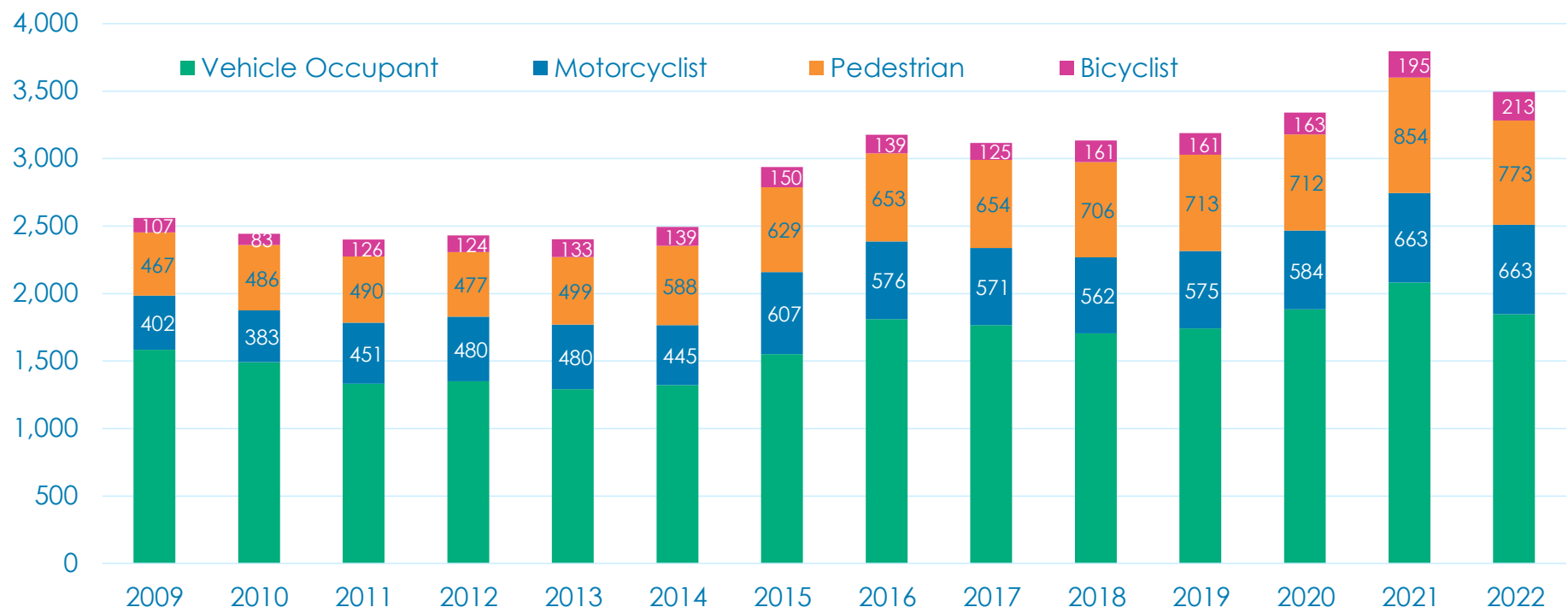
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# National Progress

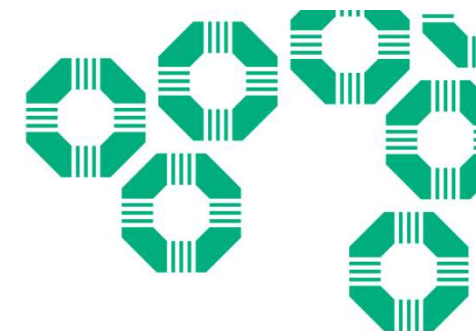


# What about Florida?

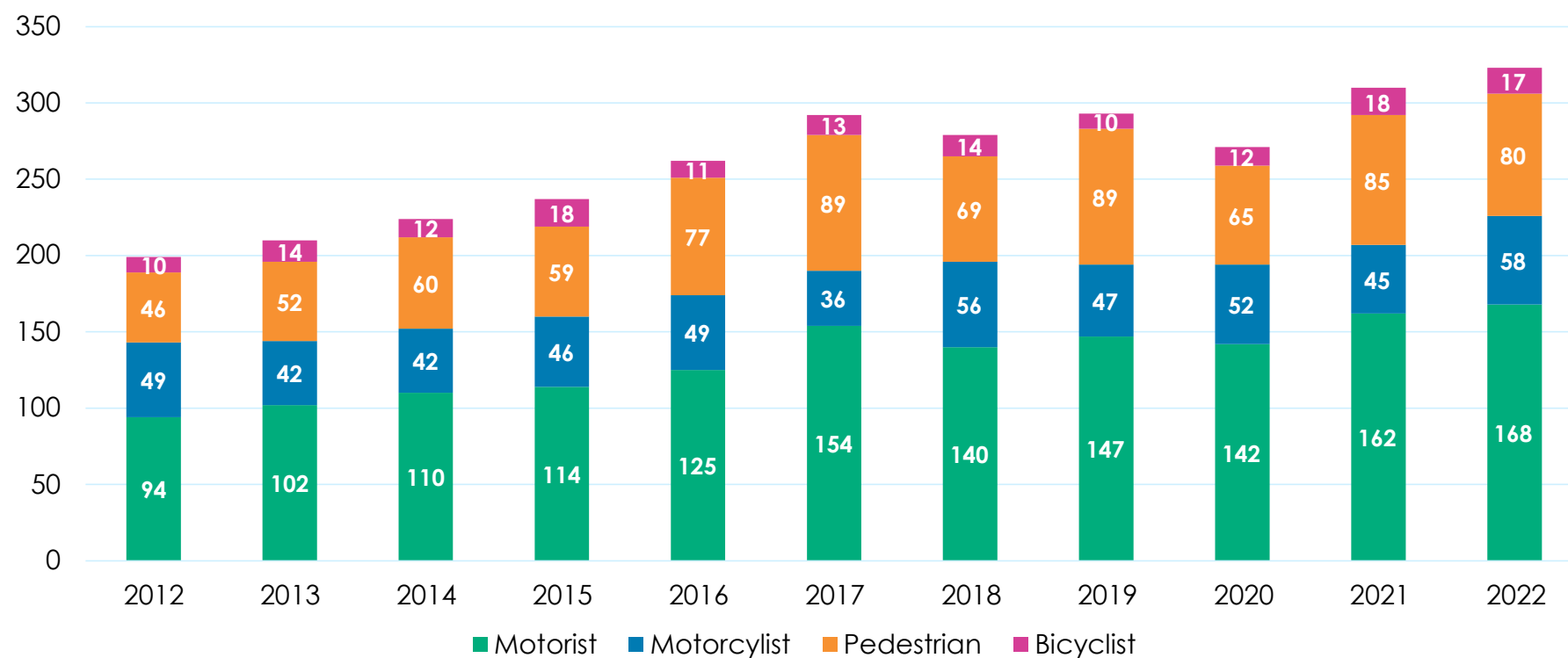


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# MetroPlan Orlando Region – Traffic Deaths

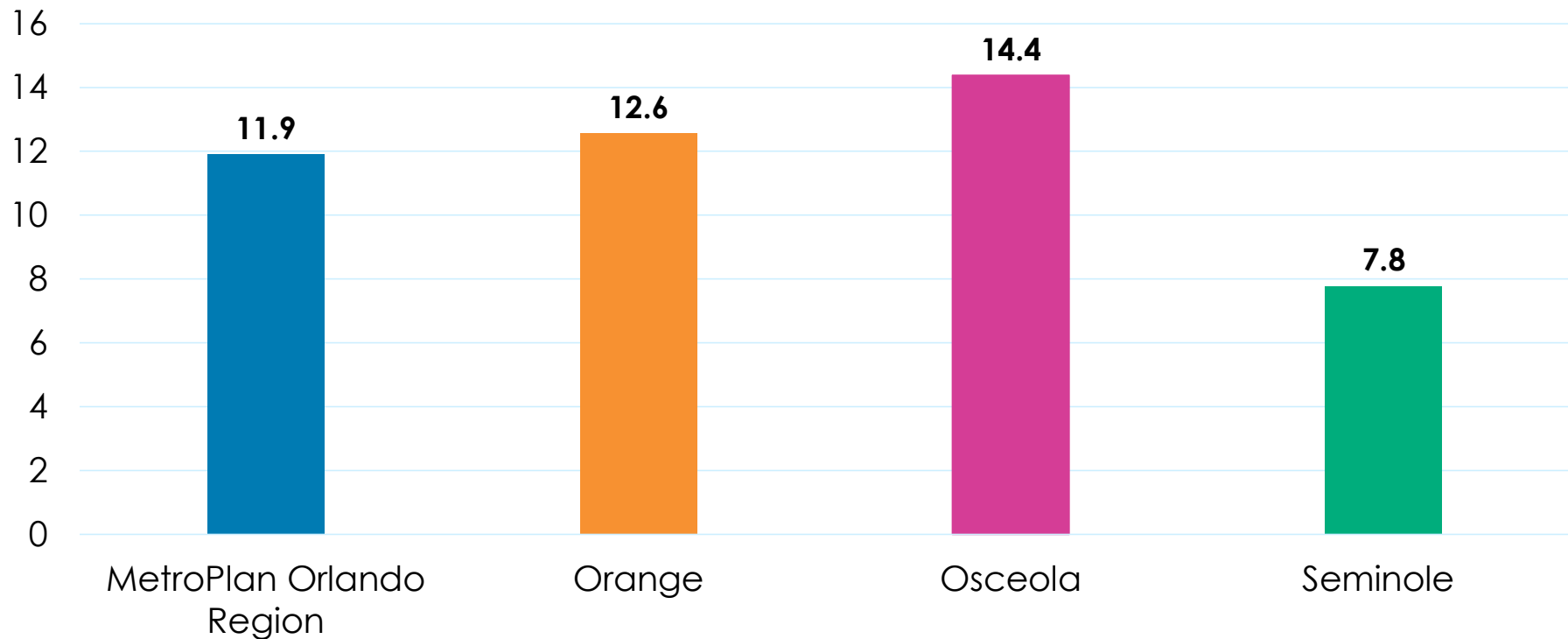
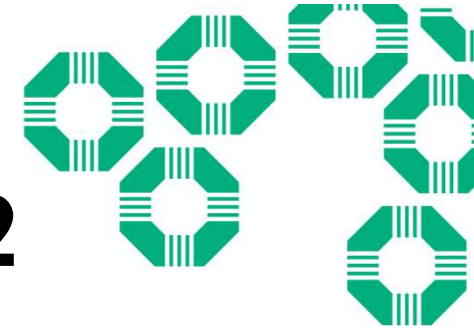


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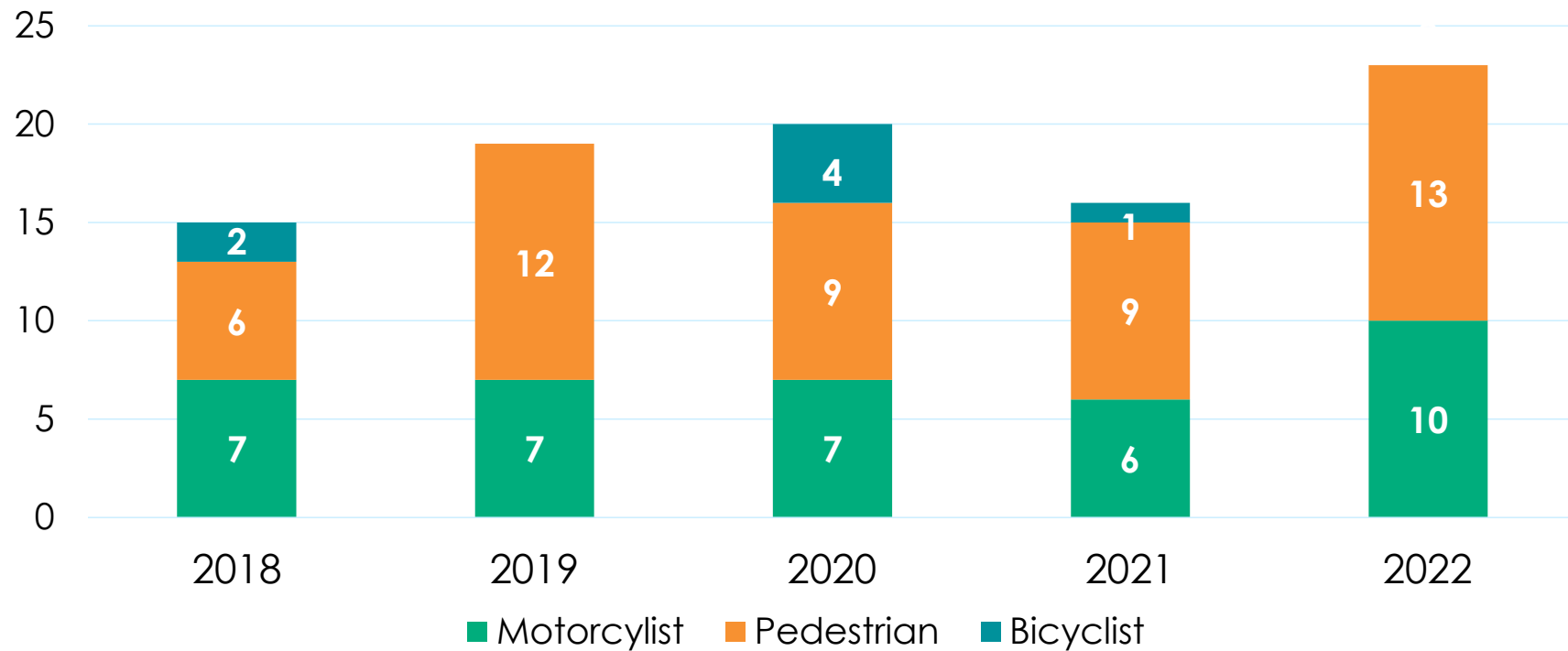
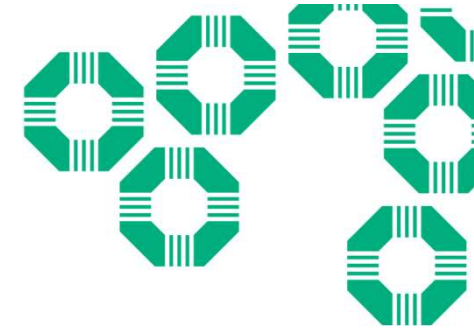
# Deadly Crashes per 100,000 Population – Average 2018-2022



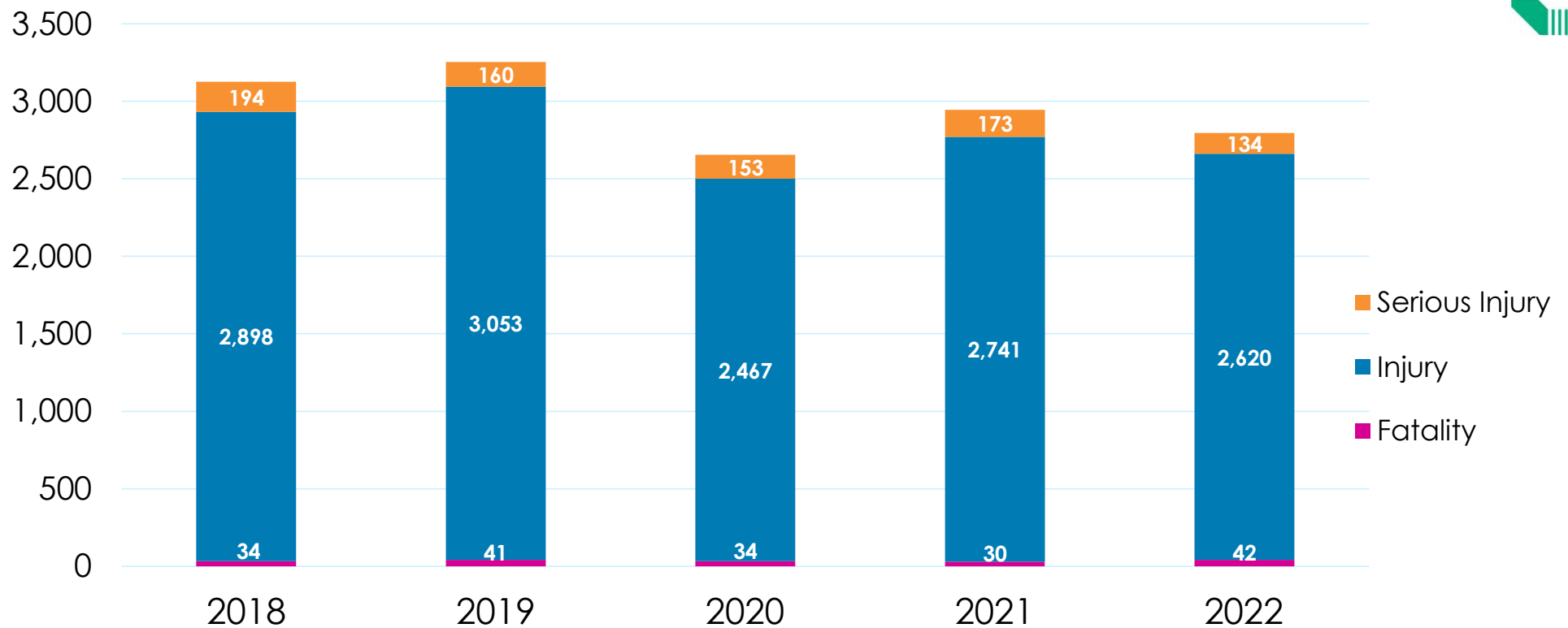
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# Non-Vehicle Occupant Deaths in Seminole County



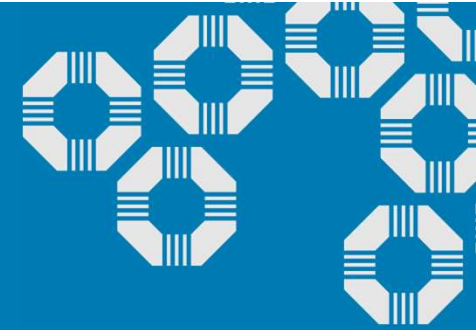
# Seminole County Crash Severity



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# What do you think?



- Our next meeting will focus on the crash analysis. Are there specific transportation safety questions you would like us to be able to answer?

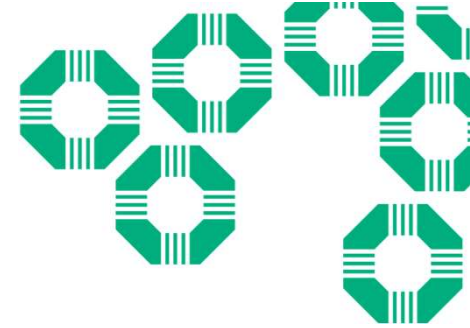
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# WHAT IS VISION ZERO?

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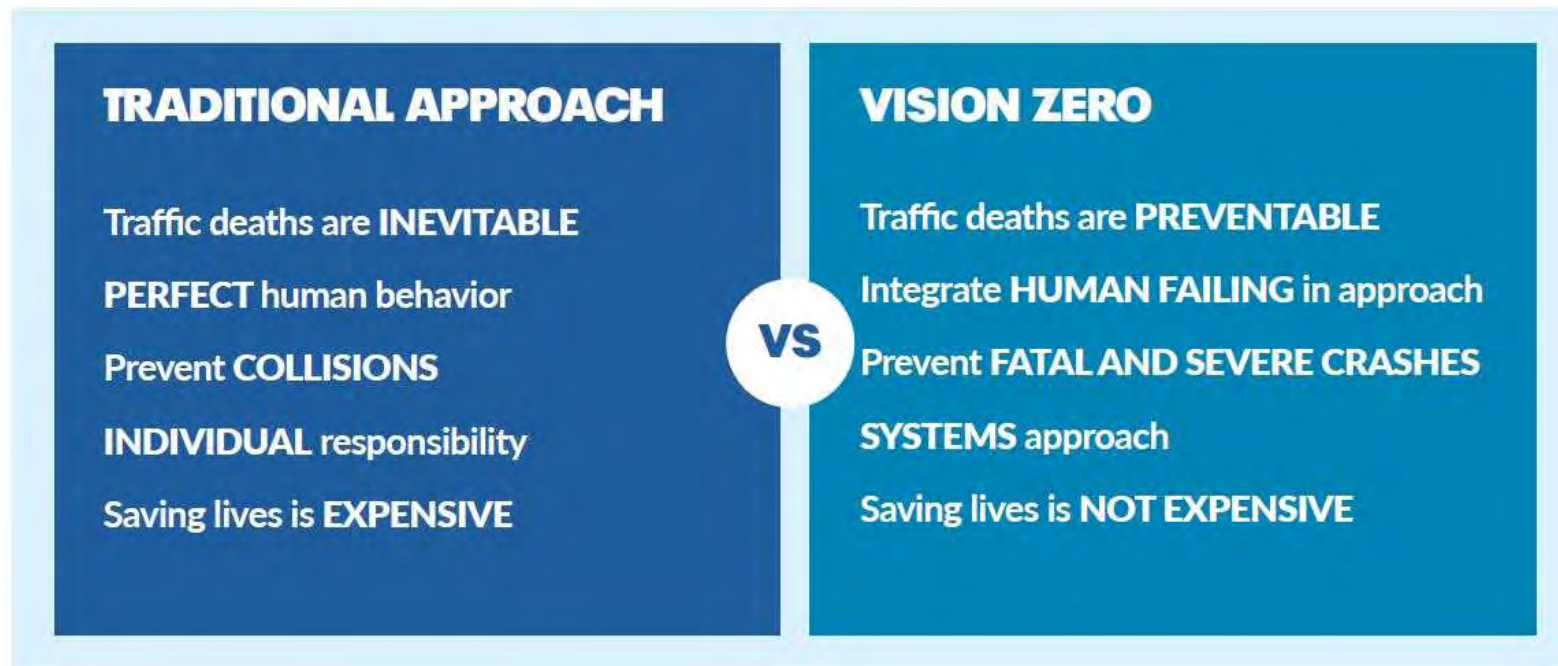
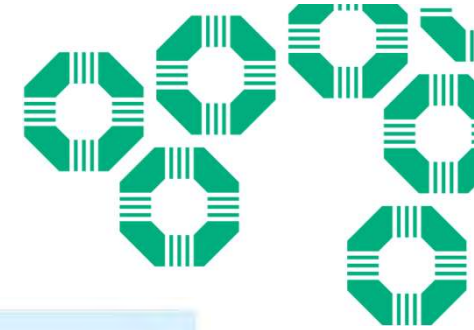
# What is Vision Zero?



*Memorial to people killed in traffic crashes. Source: Vision Zero Network*

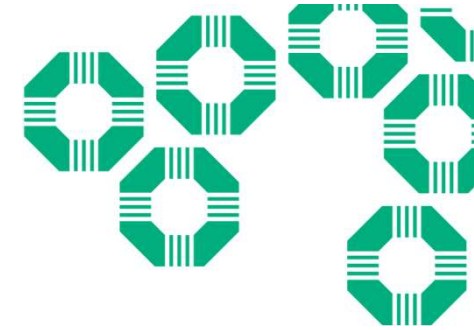
- Loss of life is not an acceptable price to pay for mobility.
- Eliminate traffic deaths and severe injuries on the transportation system.
- Proactive and preventive approach.

# Why It's Different



Source: Vision Zero Network

# Who has been doing it?



**Sweden**

Vision Zero – 1995 Launch

**65%**

Reduction in fatalities  
1997 – 2021  
Fatality rate of 2.2 per  
100,000 population (2016)

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**Netherlands**

Sustainable Safety

**50%**

Reduction in fatalities  
1996 – 2019  
Fatality rate of 3.8 per  
100,000 population  
(2016)



**Australia**

Safe System

**35%**

Reduction in fatalities  
1997-2019  
Fatality rate of 4.5 per  
100,000 population  
(2016)



**New Zealand**

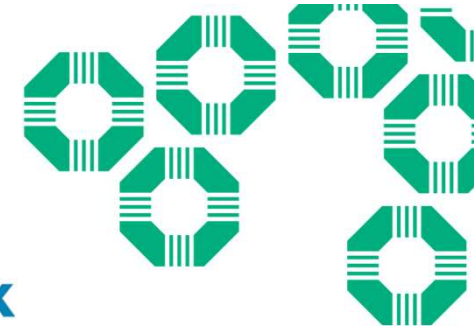
Safer Journeys

**25%**

Reduction in fatalities  
2000 – 2019  
Fatality rate of 7.8 per  
100,000 population  
(2016)



# Vision Zero in the US



VISION ZERO NETWORK



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Source: Vision Zero Network

# Core Elements of Vision Zero Communities

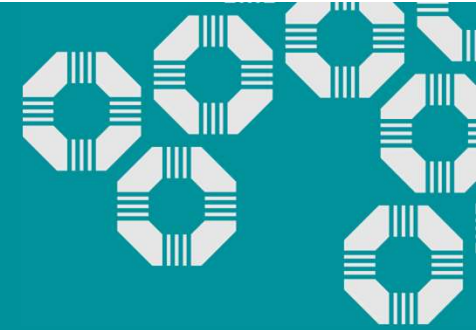
## Meets the following minimum standards:

- Set clear goal of **eliminating** traffic fatalities and severe injuries
- Elected officials have **committed publicly** to Vision Zero
- **Data driven** decision making
- **Actionable** Strategies are developed
- Key **agency departments** (including police, transportation, public health) are engaged
- **Data driven, equity-focused** decision making

## Core Elements:

- **Leadership and Commitment**
- **Safe Roadways and Safe Speeds**
- **Data-Driven Approach, Transparency and Accountability**

# What do you think?



- What do you think are the biggest barriers to reaching zero traffic fatalities and serious injuries in our region?

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# SAFE SYSTEM OVERVIEW

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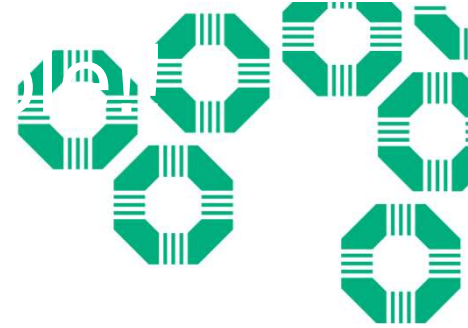
Zero is our goal.  
A Safe System is  
how we will get  
there.



U.S. Department of Transportation  
Federal Highway Administration

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**The Safe System/Vision Zero approach aims to eliminate fatal and serious injuries for all road users by:**



**Accommodating human mistakes.**



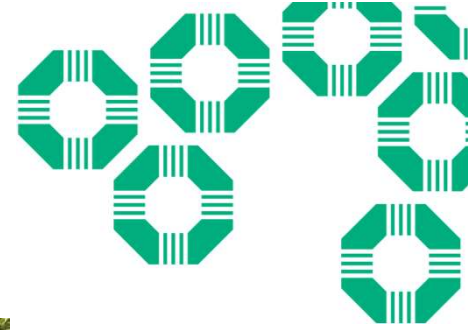
**Keeping impacts on the human body at tolerable levels.**



# The 6 Safe System Principles



# Death/Serious Injury is Unacceptable



Source: Massachusetts Bicycle Coalition

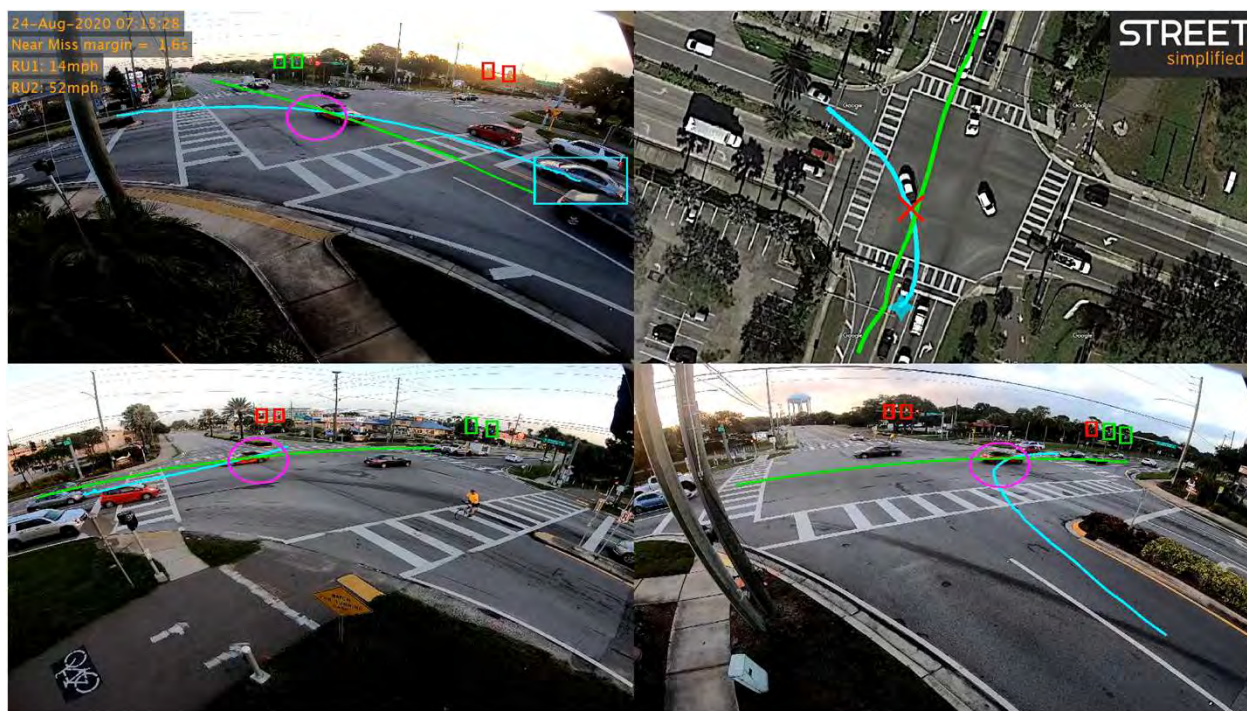
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# Humans Make Mistakes

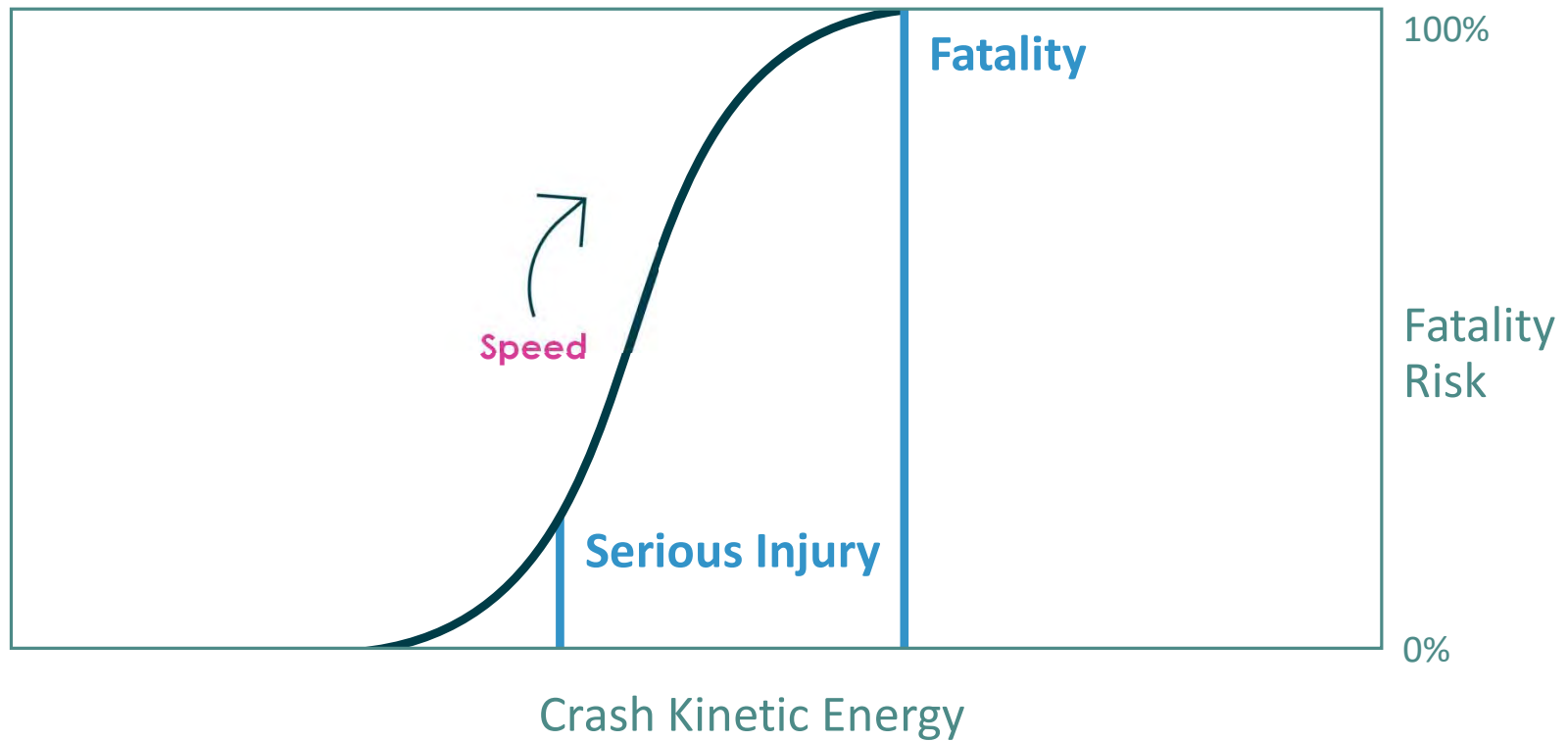


Source: Fehr & Peers and Forward Pinellas

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# Humans are vulnerable



# Responsibility is Shared



## System managers

Planners, designers, builders,  
operators, maintenance workers



## Vehicle manufacturers



## Law enforcement personnel



## Post-crash personnel



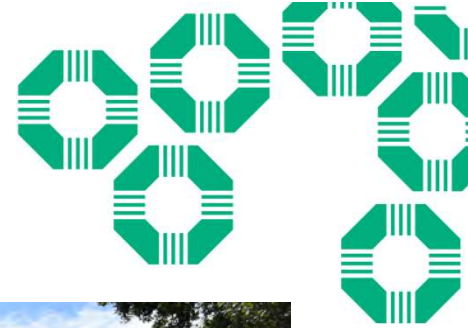
## System users

VISION ZERO CENTRAL FLORIDA



Source: City of Orlando

# Safety is Proactive



Identify Risks

Mitigate Risks



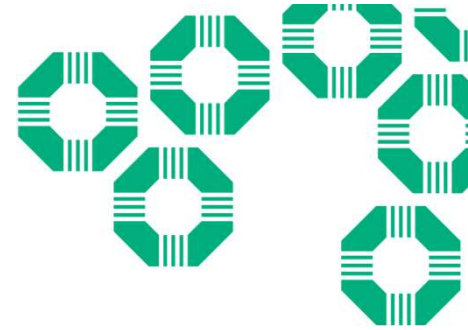
Source: Florida Department of Transportation

VISION ZERO CENTRAL FLORIDA

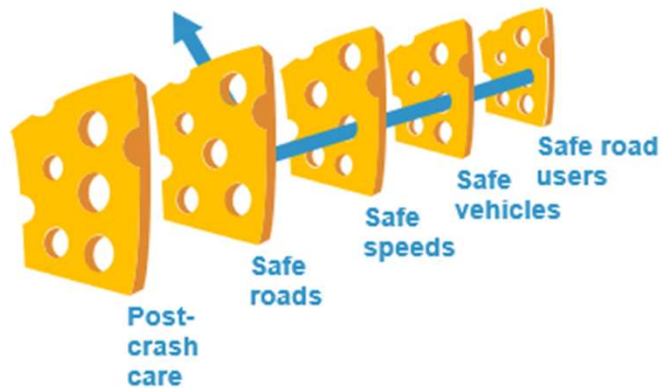




# Redundancy is Critical



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



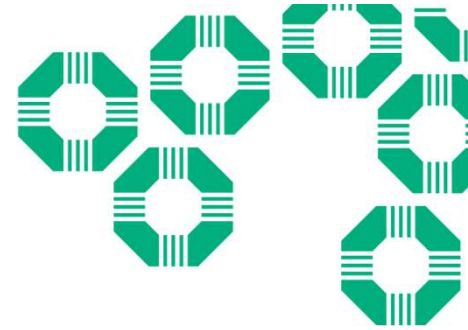
Death and serious injuries only happen when all layers fail



# The 5 Safe System Elements



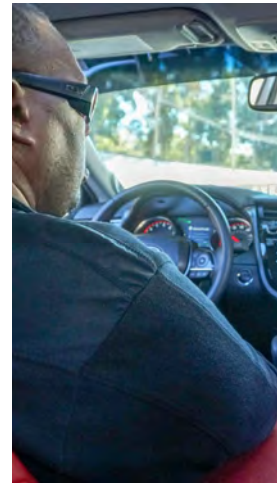
# Safe Road Users



**Walk**



**Bike**



**Drive**



**Transit**



**Other**

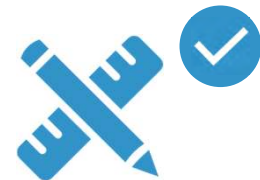
# Safe Road Users



**Not distracted  
or impaired**



**Follow laws**



**Act within the  
limits of the  
road design**



# Safe Vehicles



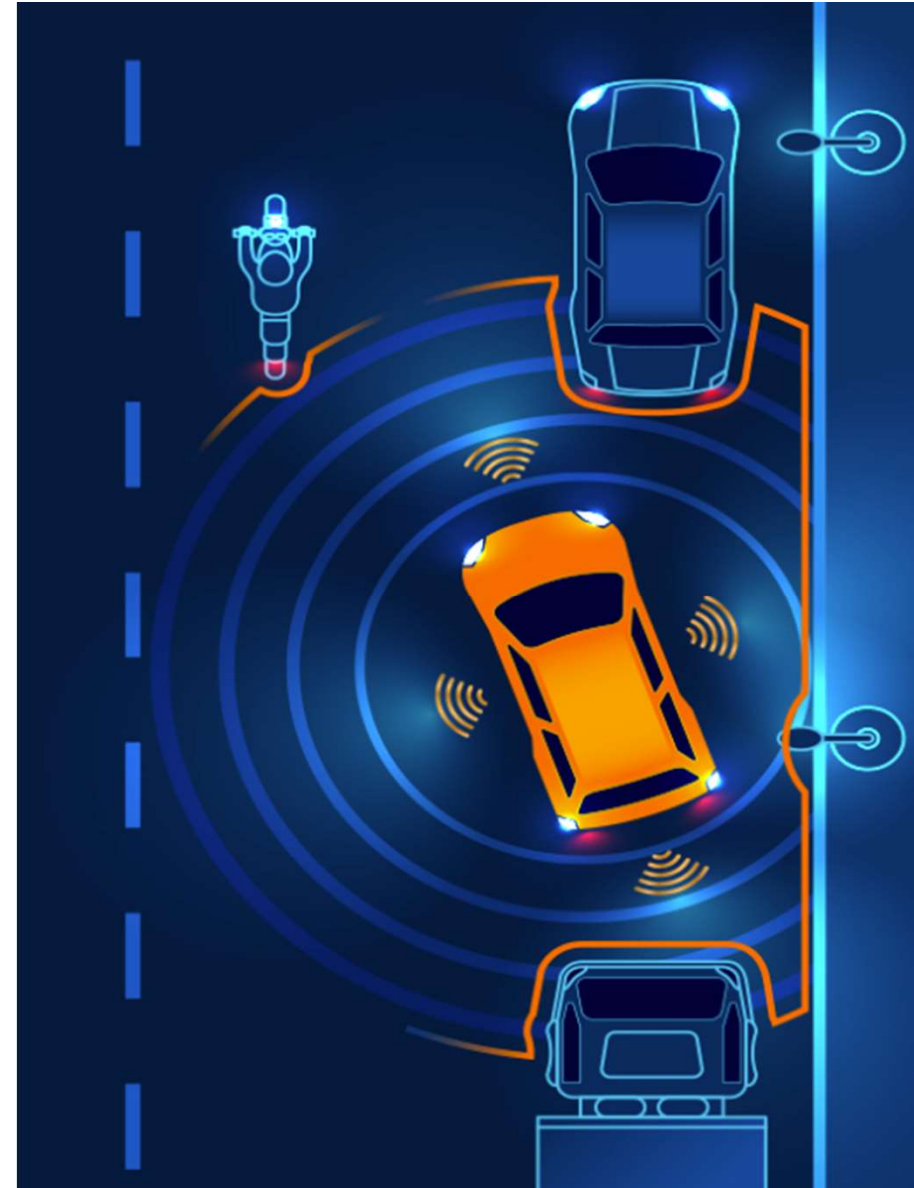
- Active safety



- Passive safety



VISION ZERO CENTRAL FLORIDA

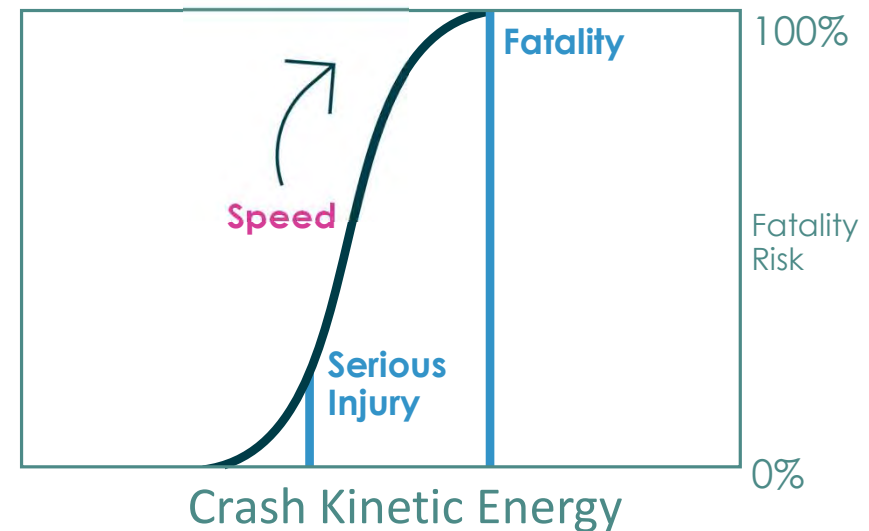


# Safe Speeds

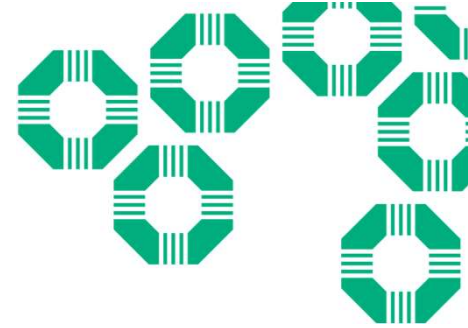


**“Speed is at the heart of a forgiving road transport system.** It transcends all aspects of safety: without speed there can be no movement, but with speed comes kinetic energy and with kinetic energy and human error come crashes, injuries, and even deaths.”

*-Organization for Economic Co-operation and Development-*



# Safe Roads



Safe roads are designed and operated to:

1. Prevent severe crashes
2. Keep impacts on the human body at tolerable levels



# Safe Roads



Managing crash kinetic energy involves:

**Managing Energy  
Crash Distribution**



**Managing Speed**



**Managing Mass**



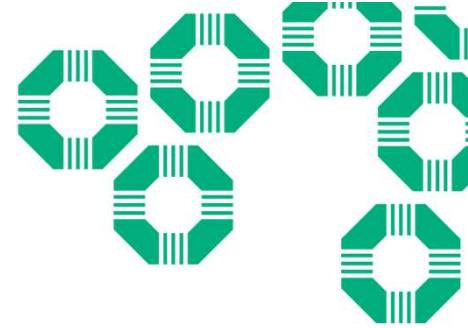
**Modifying Crash  
Angles**



VISION ZERO CENTRAL FLORIDA



# Post-Crash Care



Vital post-crash actions include:



**First  
responders**



**Medical care**



**Crash  
investigation**



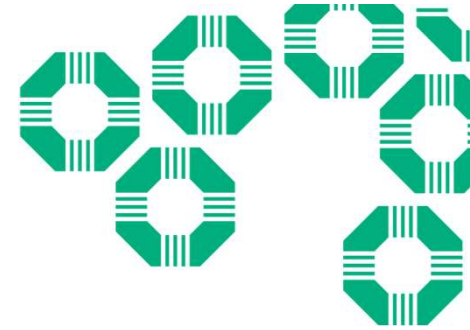
**Traffic  
incident  
management**



**Justice**

# Implementing Vision Zero/Safe System

...and we all have a role.



VISION ZERO CENTRAL FLORIDA



# What do you think?

- How would you describe the roadway safety culture in your agency/community?

Menti.com  
1927 0626

# OVERVIEW OF KEY TASKS

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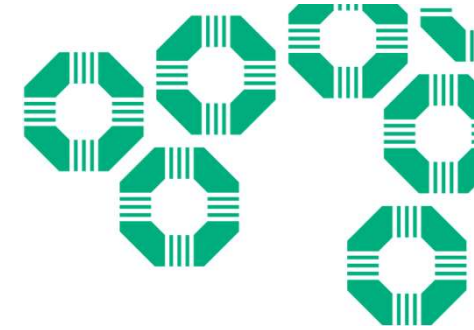




# KEY TASKS

- Public Engagement
- High Injury Network
- Crash Profiles
- Countermeasure Identification
- Project/Strategy Prioritization
- Action Plan Development
- Integration with Regional & City Vision Zero Plans

# KEY TASKS



## ● Public Engagement

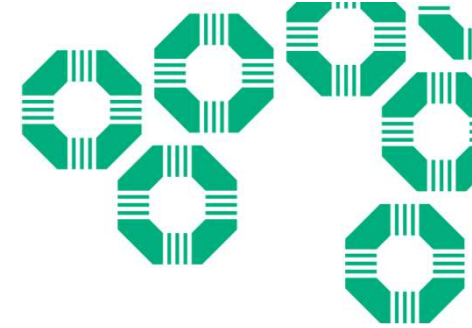
- High Injury Network
- Crash Profiles
- Countermeasure Identification
- Project/Strategy Prioritization
- Action Plan Development
- Integration w/ Regional & City VZ Plans

### Public Engagement includes:

- Steering Committee Meetings
- Board Presentations
- Public Meetings
- Elected Official Workshop
- Hub Site/Safety Dashboard
- Online Public Engagement



# KEY TASKS



- Public Engagement
- **High Injury Network**
- Crash Profiles
- Countermeasure Identification
- Project/Strategy Prioritization
- Action Plan Development
- Integration w/ Regional & City VZ Plans

## High Injury Network

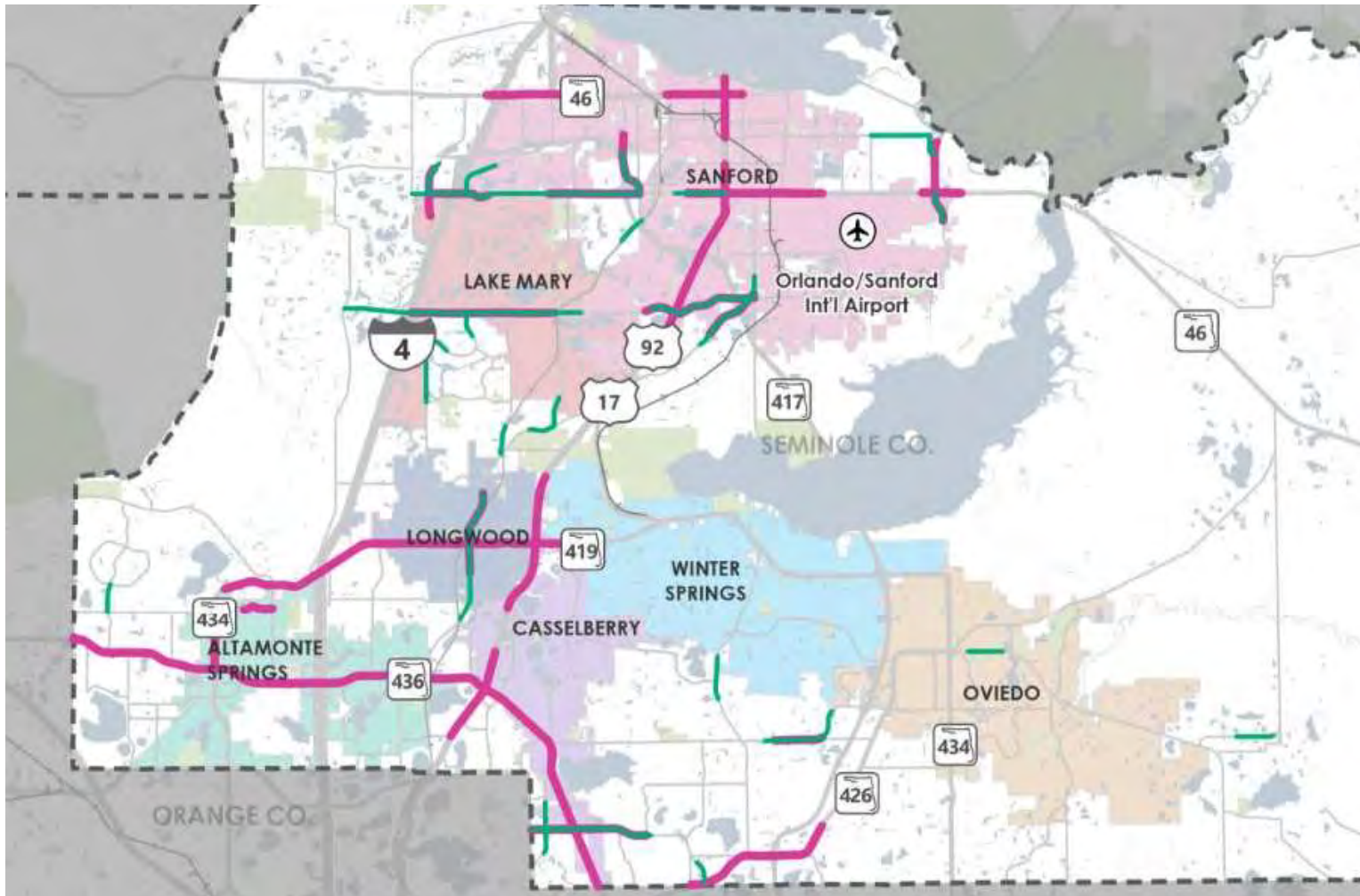
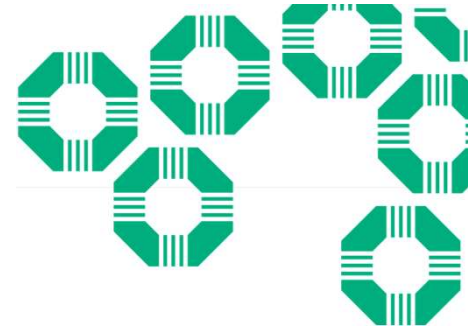
### By Geography

- Regional
- County
- Local

### By Travel Mode

- People walking/people with disabilities
- People biking/micromobility
- People motorcycling
- People in cars

# Preliminary High Injury Network



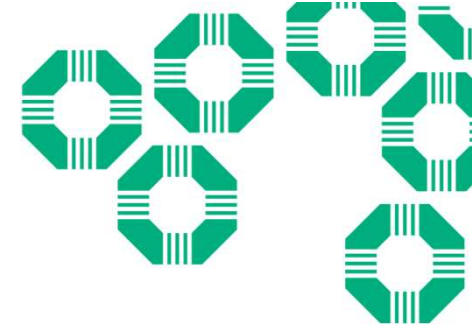
**47 percent** of all crashes that result in a fatality or severe injury occur on **2 percent** of the roadway network.

*\*\* does not include limited access facilities.*

## Legend

- High Injury Network (All Roads)
- High Injury Network (County Roads)

# KEY TASKS



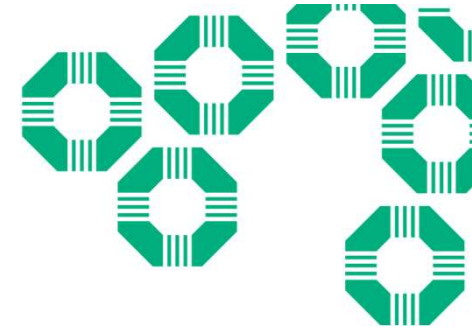
- Public Engagement
- High Injury Network
- **Crash Profiles**
- Countermeasure Identification
- Project/Strategy Prioritization
- Action Plan Development
- Integration w/ Regional & City VZ Plans

## Crash Profiles

Identify Risk Factors based on:

- Roadway Characteristics
- Environmental Conditions
- Behavior

# KEY TASKS



- Public Engagement
- High Injury Network
- Crash Profiles
- **Countermeasure Identification**
- Project/Strategy Prioritization
- Action Plan Development
- Integration w/ Regional & City VZ Plans

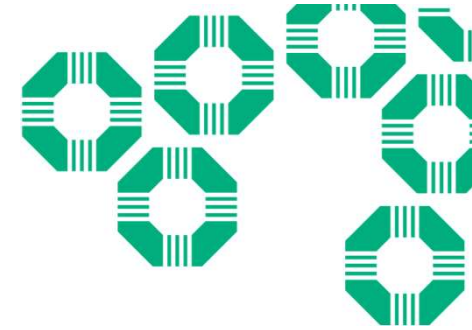
## Countermeasure Toolbox Engineering Measures

- By Crash Type
- Systemic
- Low Cost/Quick-Build

## Non-Engineering Measures

- Education
- Targeted enforcement
- Safety campaigns

# KEY TASKS

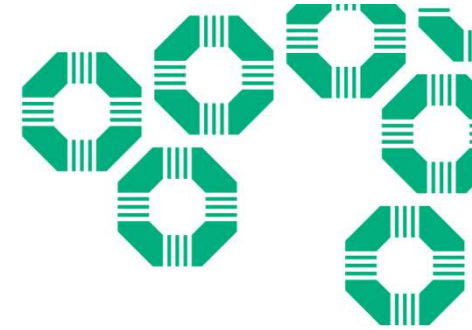


- Public Engagement
- High Injury Network
- Crash Profiles
- Countermeasure Identification
- **Project/Strategy Prioritization**
- Action Plan Development
- Integration w/Regional & City VZ Plans

Prioritization factors to be identified collaboratively, but could include:

- Crash Rates
- Equity
- Speed management network
- Vulnerable roadway users
- Regional or local significance

# KEY TASKS



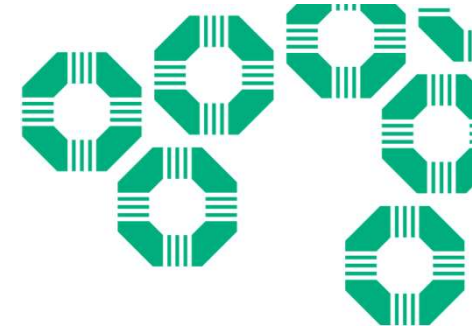
- Public Engagement
- High Injury Network
- Crash Profiles
- Countermeasure Identification
- Project/Strategy Prioritization
- **Action Plan Development**
- Integration w/County & City VZ Plans

## Action Plan Development

- Vision Zero Resolution
- Prioritized list of projects
- Policy and process changes



# KEY TASKS



- Public Engagement
- High Injury Network
- Crash Profiles
- Countermeasure Identification
- Project/Strategy Prioritization
- Action Plan Development

- **Integration w/Regional & City VZ Plans**

## Integration

Coordination with Regional and Local Plans for regional consistency and amplification

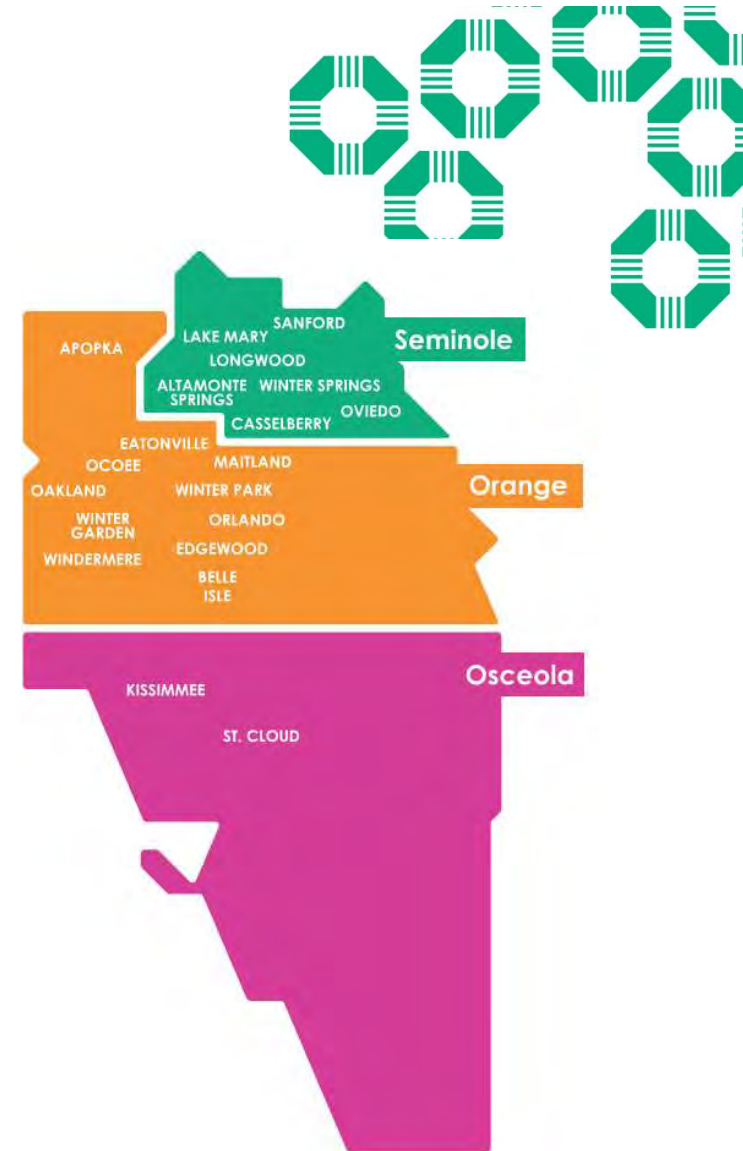
# Plan Outcomes

- **MetroPlan Orlando**

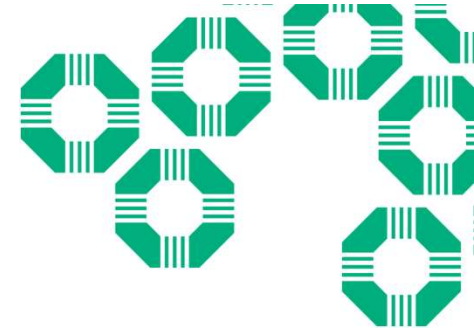
- Incorporate projects into 2050 Plan for prioritization and funding allocations
- Additional SS4A grant applications

- **County**

- Projects become grant eligible
- Ability to apply for SS4A implementation grant



# Next Steps





**VISION ZERO**  
**CENTRAL FLORIDA**  
Counting down to zero traffic deaths



# THANK YOU

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# OPEN DISCUSSION

OCTOBER 27, 2023



# Meeting Summary

Subject        **Seminole County Vision Zero Steering Committee Meeting  
#2 Summary – Crash Analysis**

Date & Time   January 12, 2024, 1:30pm - 3:00pm

Location:      UF/IFAS Extension Seminole County  
250 W. County Home Road, Sanford FL, 32773



## Attendees

The attendees for Steering Committee #2 can be found in Table 1.

**Table 1: Steering Committee #2 Attendees**

Steering Committee Members	Consultant Staff / MetroPlan Orlando
<b>Tony Nelson</b> , Seminole County (County Engineer)	<b>Lara Bouck</b> , MetroPlan Orlando
<b>Mike Blinn</b> , Seminole County (Traffic Engineering)	<b>Megan Ferguson</b> , HDR
<b>Doug Robinson</b> , Seminole County (Planning and Development)	<b>Jeff Arms</b> , HDR
<b>Jean Jreij</b> , Seminole County (Public Works Director)	<b>Melissa Porcaro</b> , HDR
<b>Arturo Perez</b> , Seminole County (Engineering)	
<b>Bill Pandos</b> , Seminole County (Parks and Recreation)	
<b>Matt Kinley</b> , Seminole County Fire Department	
<b>Kelly Brock</b> , City of Casselberry	
<b>Cody Johnson</b> , LYNX	
<b>Chris Carson</b> , City of Lake Mary	
<b>Shad Smith</b> , City of Longwood	
<b>Steve Fussell</b> , Sanford Airport	
<b>Loreen Bobo</b> , FDOT	
<b>Lenny Barden</b> , City of Altamonte Springs	
<b>James Miller</b> , Seminole State College	



## Presentation Agenda

The intent of the Steering Committee Crash Analysis meeting was to introduce the draft High Injury Network (HIN), show crash trends, introduce the Sanford Sub-Area, create open discussion, and share next steps with the Seminole County Vision Zero Steering Committee.

The planned meeting agenda included:

1. High Injury Network & Top Intersections
2. Break\*
3. Crash Trends & Types
4. Contributing Factors
5. Sanford Sub-Area Analysis\*
6. Next Steps

Items flagged with asterisks were removed from the agenda due to time constraints. The Sanford Sub-Analysis will be discussed at a separate meeting.





## Discussion and Feedback

During the presentation a series of discussion questions were asked to help gauge accuracy and understanding of the High Injury Network. However, this committee meeting was more conversational in nature and discussion happened in between presentation slides.

**Meeting #1 Recap** – Matt Kinley confirmed with the study team that the year 2010 was when the number of crashes started getting higher – Megan confirmed yes. Matt Kinley noted that was when cell phones started to become prevalent.

**High Injury Network & Top Intersections** – Matt Kinley confirmed with the study team that the year 2010 was when the number of crashes started getting higher – Megan Ferguson confirmed yes. Matt Kinley noted that was when cell phones started to become prevalent.

**Crash Weighting** - Jean Jreij asked how the 317 number for the KSI crash weight came to be. Megan Ferguson said that it was determined for the region. Shad Smith noted that the weighting for pedestrians is higher, does that mean there's more pedestrians? Megan Ferguson said the weight of 317 was multiplied by 3 for a pedestrian crash.

**Seminole County High Injury Network & Top Intersections** – Shad Smith asked how were top intersections determined? Megan said that all crashes within 250 feet of the intersections were multiplied by 317 and were summed for the total weight.

Mike Blinn asked how are traffic volumes and speeds included? Megan Ferguson said that volumes and speeds have been looked at but were not included in this presentation, however the study team noticed a correlation between higher crash rates in the northern part of the county. Jean Jreij asked if this effort would include the traffic report? Megan Ferguson said yes. Mike Blinn said that he can send what the county has on speed data collection and will work offline to gather that information.

Kelly Brock asked, in terms of design guidelines and standards, what should we be using at this point? He noted the recently released MUTCD updates. Loreen Bobo said that her initial response would be that FDOT works on including these updates every 6 months, and a future FDOT memo may be issued with guidance that will be available for municipalities to use. Mike Flynn asked if someone could send a link to new MUTCD guidelines? Loreen said she has seen advocacy groups post guidance, she can send out what she has gathered for Jeff and the team.

James Miller asked how much granular data is ideal and how much is too much? Is there a correlation between residential versus commercial versus something else? Bigger faster roads and more roads is a part of the problem, but development can't be stopped.

Tony Nelson said that at CR 427 and Lake Mary Boulevard, he noticed the issue with drivers being impatient, especially during AM Peak hours. Drivers will be running yellow and reds traffic signal lights to go southbound; he said the county wants to close the median in that area to see if it helps the area.

Mike Blinn noted at CR 46A and Hartwell Avenue, while it is in the City of Sanford, that intersection itself is County maintained and noted that the jurisdiction should put focus on this intersection through a traffic engineering scope. Megan Ferguson said the entire table shown is the County jurisdiction. The project team can add clarification with additional columns for geographic location (City) and jurisdictions. Jeff Arms noted the importance of cooperation with FDOT, county, and city.

Tony Nelson asked if Seminole County is competing in the Implementation Plan Grant with the other Central Florida counties? Lara Bouck clarified that Seminole County is competing with everyone who applies, not necessarily against whoever is in Florida.

Doug Robinson noted that Seminole County does not have a label for CR 427 and that change should be made in the map. The study team clarified where the label is but discussed adding another label.

Shad Smith asked for clarification on the HIN & Intersections, since there is a lot of overlap. Megan clarified that the pink lines are every road in the HIN, green lines are only the county roads. Megan also said that as the project team moves forward, the map will be segmented based on the final High Injury Network for projects. City roads would not show up on this map.

James Miller asked since Interstate 4 and SR 417 is not a part of this scope, who is looking at those roadways? FDOT? Loreen said she is leading the Strategic Safety Plan. I-4 is not included in this study because it dilutes the information. Shad confirmed that this decision was for the entire region, not just a Seminole County decision - Megan said yes, this is a regional decision.



## Crash Trends & Types -

**Deadly and Serious Crashes Trends by Mode** - Shad Smith asked if the project team looked at 2017 data and see if the 20 pedestrian KSIs in 2018 was an outlier? Megan Ferguson said no, but the project team has the data, and it can be looked at. Shad Smith said he would like to see it.

Mike Blinn confirmed that a vulnerable road user consists of pedestrians and cyclists – Megan Ferguson said yes, as well as motorcyclists.

**KSI Crashes by Mode – Bike** - Kelly Brock asked if the deepest area of the bike crash heat map is the intersection of Aloma Avenue and SR 426 – Megan Ferguson said yes. Charlie said they want to deploy a near miss camera at this intersection. Jeff said potential for diagonal ped crossing has been discussed. Loreen said yes, FDOT has been looking at that intersection and the potential for a scramble or Barnes Dance. Lenny noted that's a lot of red time.

Shad Smith noted how he did not realize there were so many bike crashes in the Longwood area – Megan noted that it is on the edge of a disadvantaged area too. Shad Smith confirmed, saying there are many cyclists in the area with few using the bike lane rather than the sidewalk. Drivers who make right turns on red traffic signal lights will not yield to pedestrians and cyclists. Jeff Arms suggested to adding disadvantaged areas to all pedestrian maps for future presentations.

Megan Ferguson noted that motorists made up the largest share of KSIs, with U.S. 17-92 having the most deaths.

It was asked regarding the disadvantaged areas, does that imply it is economically disadvantaged? Megan Ferguson said disadvantaged areas were determined by USDOT. Jeff Arms reminded the committee the disadvantaged areas were based on Census numbers, but unhoused people are not included.

Steve Fussell informed the study team that he had access to GIS homeless points, they will go out one night a year to collect data on current locations of unhoused people. The data is typically used for HUD grants. The information will be sent to the project team.

Shad Smith noted that the percentage of urbanized area of the county to disadvantaged area is a big difference. Jeff Arms said this was based on population and much of the county is more rural than people realize.

**Seminole County KSI Crashes and Transit** – Jeff Arms asked Cody Johnson if LYNX tracked crashes by bus stops. Cody Johnson said LYNX typically does not track other KSIs near bus stops if it doesn't involve a LYNX vehicle specifically, but they use Signal 4 frequently. He would recommend looking at a 100-foot buffer minimum to analyze trends "near" bus stops. Loreen Bobo said she would ask the FDOT modal group if they have captured crashes near bus stops and will get back with the project team if they have the data.

It was noted that SunRail was not shown on the transit map at all. Megan Ferguson said not on this transit map, and KSI crashes from SunRail and LYNX stops would be more 200 feet.

Jeff Arms asked Loreen Bobo if there was a database for lighting available - She said she will see what FDOT has considering they did 107 lighting projects last year with has specific locations. Jeff would be interested to see an analysis of crashes after the lighting was added. Loreen said they are completing an analysis on many different scenarios, not just lighting. Shad Smith would also be interested in seeing before and after projects. Kelly Brock noted that it is weird that the power companies won't give the project team the data since lighting/power outages are reportable on their website, implying it must exist. Shad noted that some areas of Seminole County have Florida Power and Lighting (FPL) and not all are serviced by Duke Energy.

Doug Robinson asked if there was data for sidewalk gaps on major roadways, and if sidewalk gaps were being looked at? Megan said that the project team has sidewalk layers, but it is not currently differentiated by sides of the roadway. However, this is something that can be looked at.

### Next Steps –

Steering Committee members should continue to send the project team any questions or concerns they have about the HIN before it is confirmed.





## Upcoming Meetings

The next Steering Committee meeting is scheduled for February 8, 2024. The next meeting will discuss the policy review of Seminole County documents, policies, and plans. Table 2 shows the tentative Steering Committee schedule for the duration of the Vision Zero Action Plan project.

**Table 2: Steering Committee Tentative Schedule**

Name	When	Purpose
Steering Committee #3 – Policy Review	February 8, 2024	Review city policies and plans, and changes to implement that will form more comprehensive, Vision Zero focused documents.
Steering Committee #4 – Project Priority List	April 2, 2024	Identify potential safety projects and priorities.
Steering Committee #5 – Next Steps	May 9, 2024	If needed, this meeting is to review next steps for the overall Vision Zero project, and how to implement the Vision Zero Action Plan.





# VISION ZERO SAFETY ACTION PLAN

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## STEERING COMMITTEE #2 – CRASH DATA

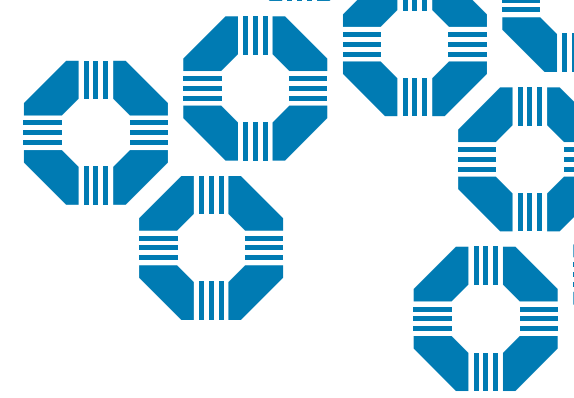
JANUARY 12, 2024





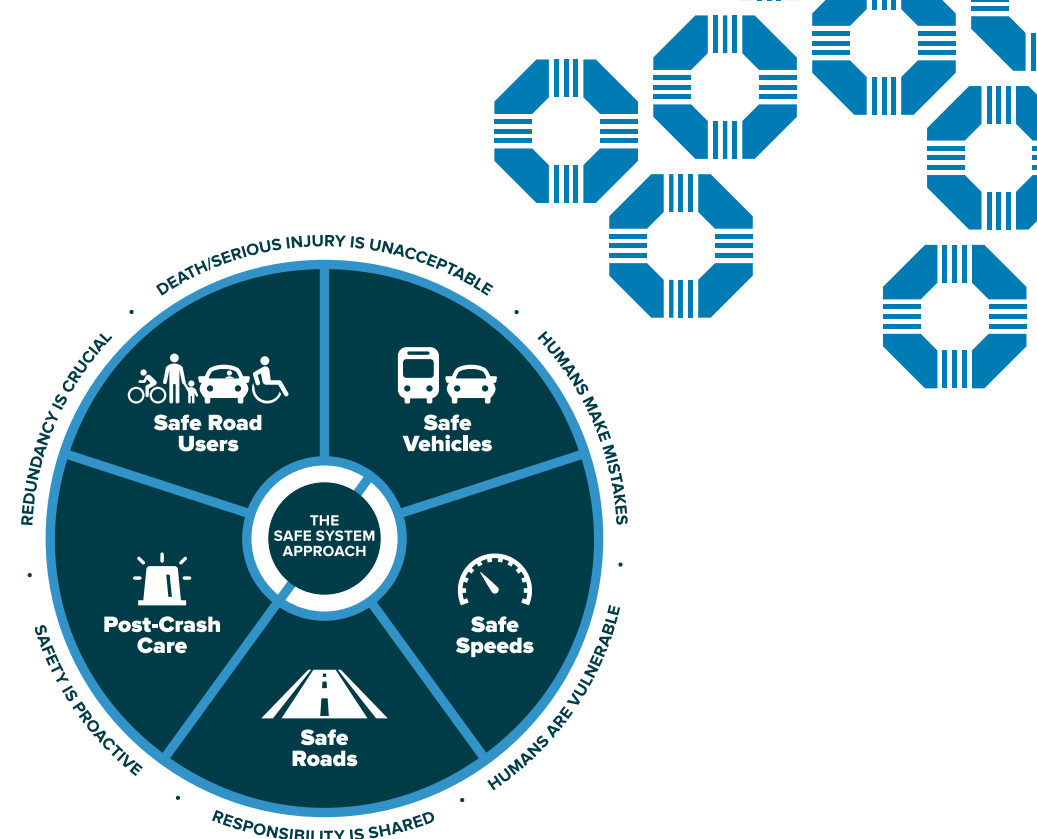
# Agenda

1. Meeting #1 Recap
2. High Injury Network & Top Intersections
3. Break
4. Crashes Trends & Types
5. Contributing Factors
6. Sanford Sub-Area Analysis
7. Next Steps



# Meeting #1 Recap

- Purpose & Background – Coordinated planning effort led by MetroPlan Orlando, \$3.79 million federal grant (SS4A)
- High Level Crash Trends
- What is Vision Zero?
- What to Expect from the Plan



## TRADITIONAL APPROACH

Traffic deaths are **INEVITABLE**

**PERFECT** human behavior

Prevent **COLLISIONS**

**INDIVIDUAL** responsibility

Saving lives is **EXPENSIVE**

VS

## VISION ZERO

Traffic deaths are **PREVENTABLE**

Integrate **HUMAN FAILING** in approach

Prevent **FATAL AND SEVERE CRASHES**

**SYSTEMS** approach

Saving lives is **NOT EXPENSIVE**

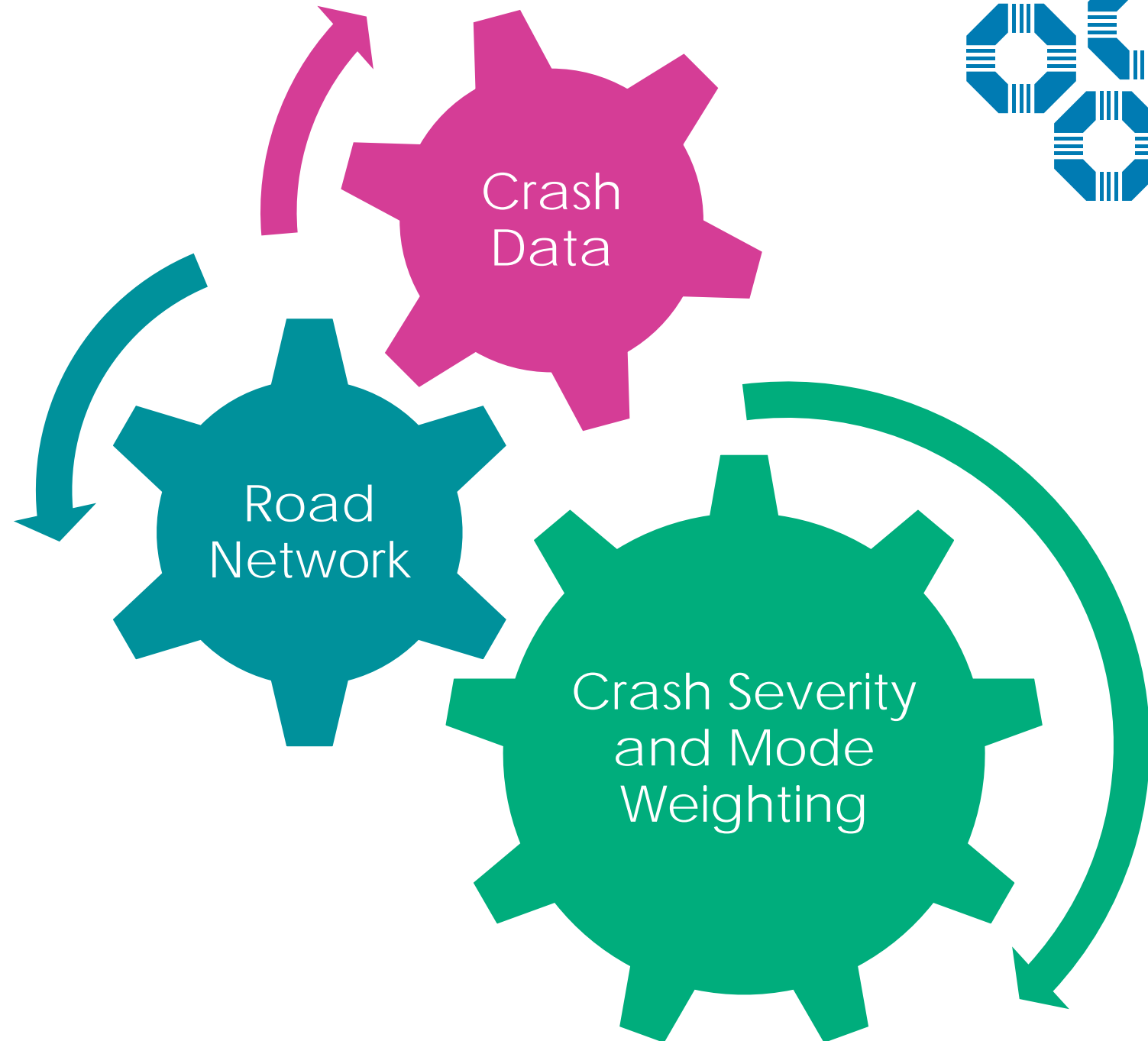
# HIGH INJURY NETWORK

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# What is a High Injury Network and How is it Developed?

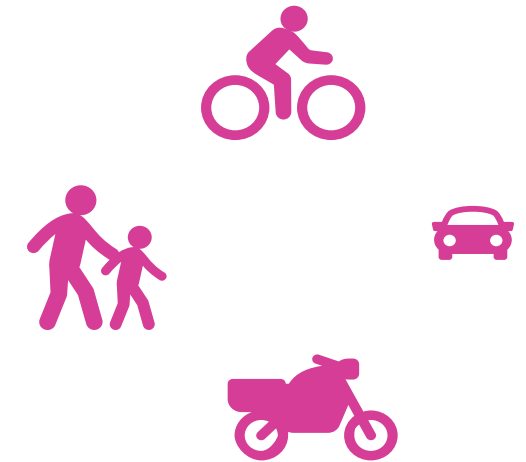
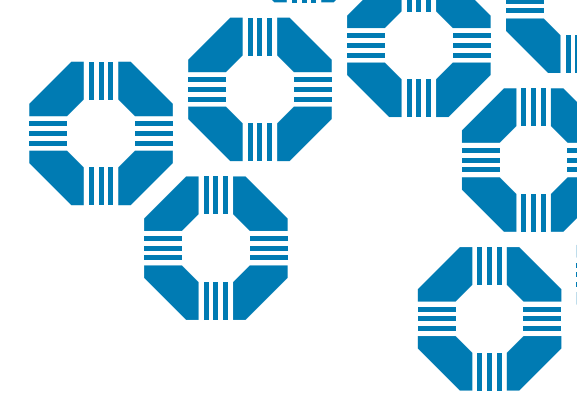
Crash analysis  
focused on deaths  
and serious injuries



# Crash Weighting

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

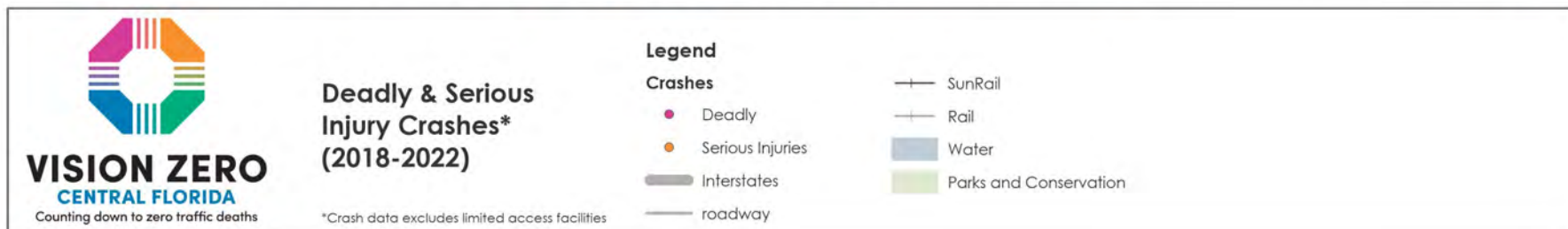
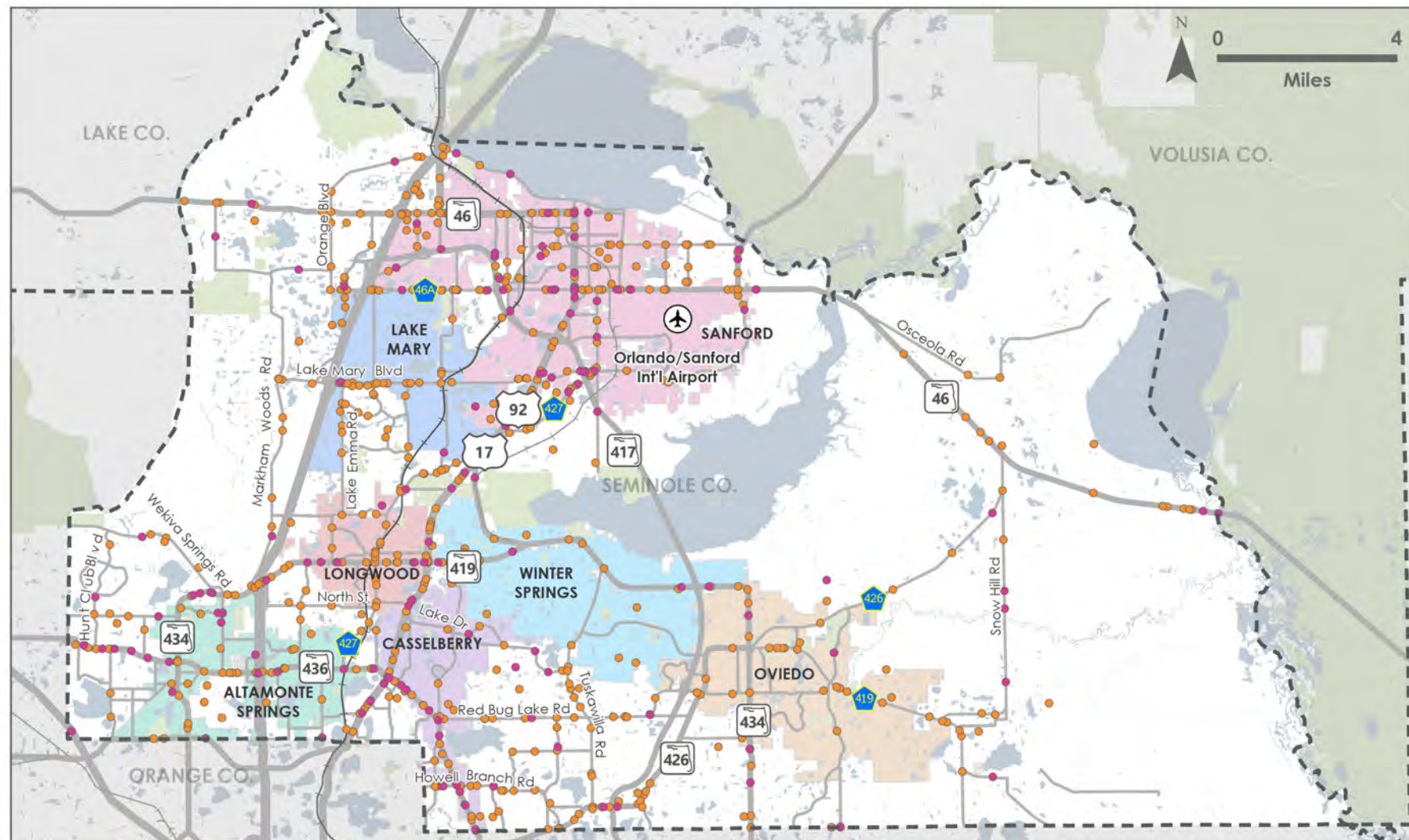
\*Based on crash severity (additional weighting added for travel mode)



All crashes involving a person walking, bicycling, or riding a motorcycle were weighed by a factor of 3

# Seminole County – KSI Crashes

181 Deaths  
814 Serious Injuries



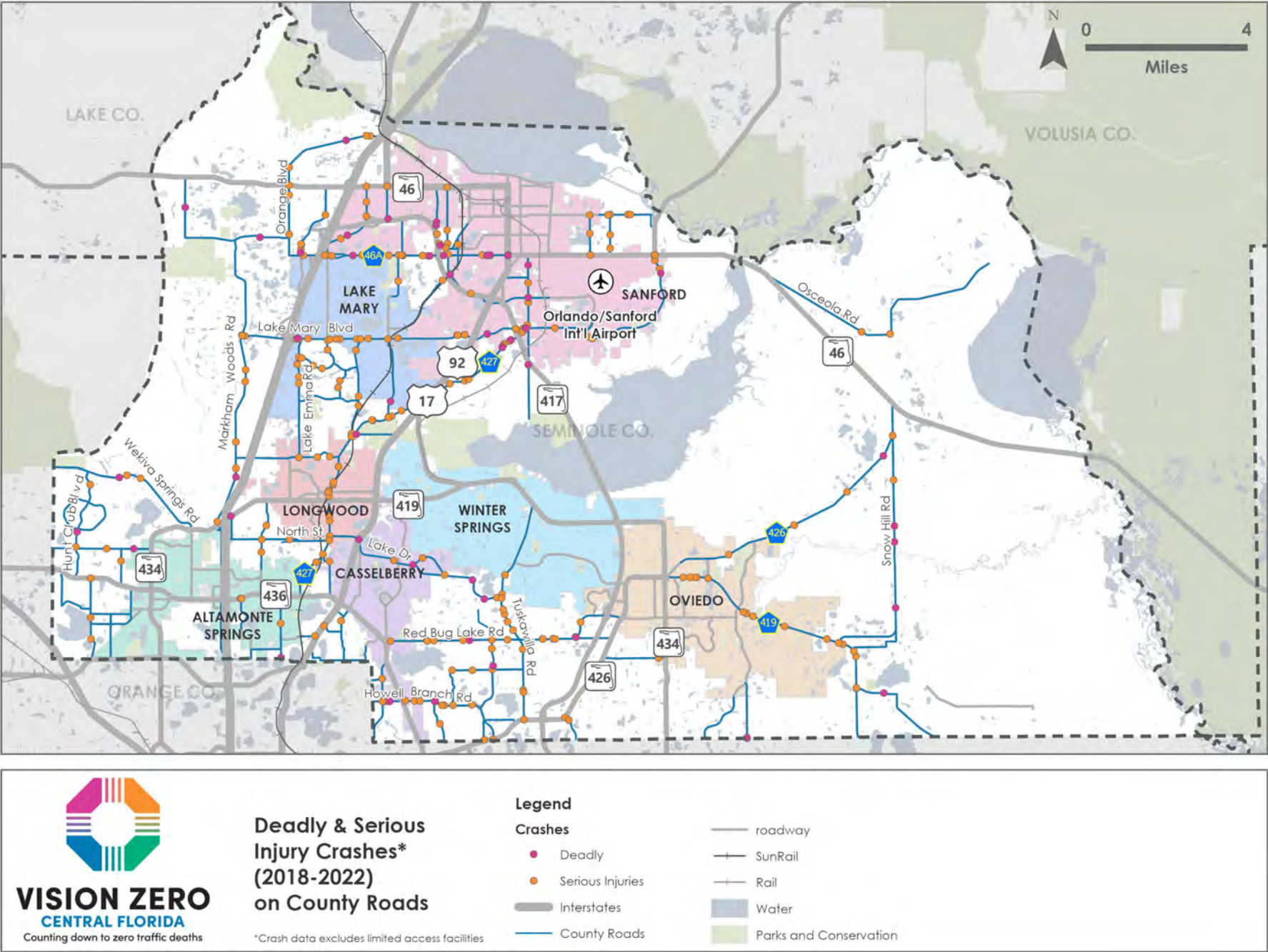
KSI = Killed or Severely Injured

Source: Signal 4 Analytics, 2018 – 2022; excludes limited access facilities.



# Seminole County – KSI Crashes on County Roads

298 KSIs within 50-feet of a County road



KSI = Killed or Severely Injured

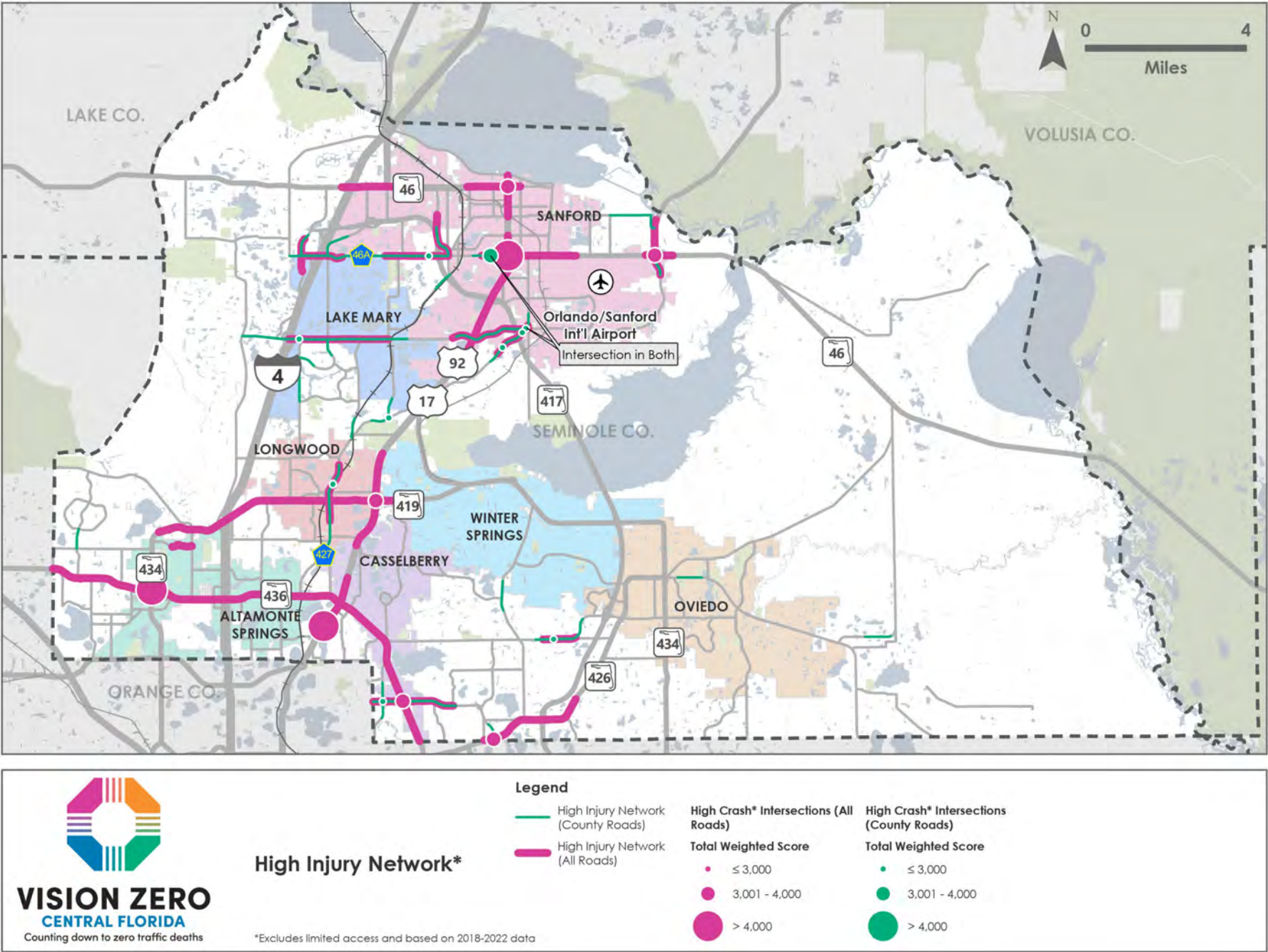
Source: Signal 4 Analytics, 2018 – 2022; excludes limited access facilities.



# Seminole County – High Injury Network & Top Intersections

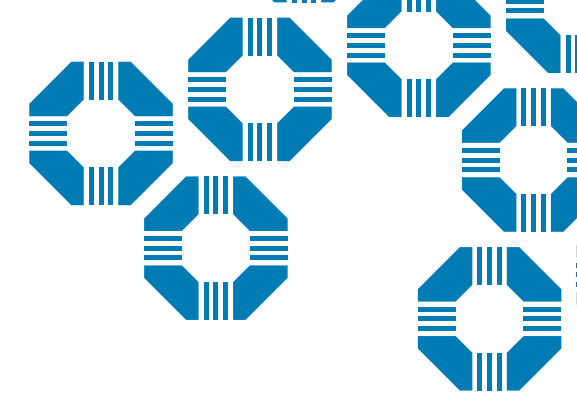
County Top Intersections

#	Intersection	Crash Weight
1	CR 46A & HARTWELL AVE	3391
2	CR-427 & LAKE MARY BLVD	2941
3	CR 46 & CASA VERDE BLVD	2165
4	LAKE MARY BLVD & FLAGG LN	2157
5	CR-427 & KEYES CT	2082
6	RED BUG LAKE RD & S CITRUS RD	2043
7	HOWELL BRANCH RD & LAKE HOWELL RD	2018
8	CR-427 & DOWNING ST	1964
9	CR-427 & ORANGE AVE	1964
10	CR-427 & CR-15/ S COUNTRY CLUB RD	1853



Source: Signal 4 Analytics, 2018 – 2022; excludes limited access facilities.

# Seminole County – Top Intersections



## Top 10 Intersections – Overall

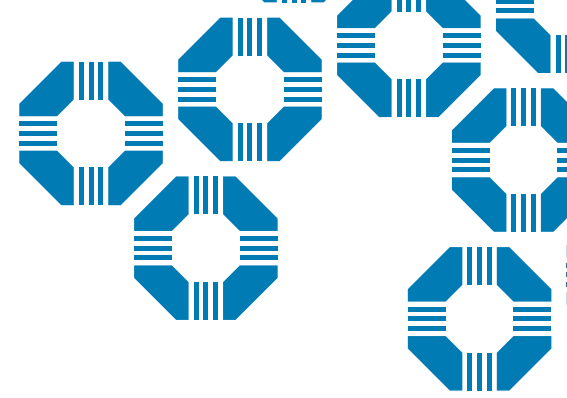
#	Intersection	Crash Weight	Owner
1	US-17/92 & CR 46A/W 25TH ST	5245	State
2	SR 426 & SR 434	4204	State
3	US-17/92 & LAKE OF THE WOODS BLVD	4049	State
4	SR 426 & HALL RD	3642	State
5	US-17/92 & SR 419	3533	State
6	CR 46A & HARTWELL AVE	3391	County
7	SR 46 & SR 415	3217	State
8	US-17/92 & SR46/W 1ST ST	3180	State
9	SR436 & HOWELL BRANCH ROAD	3057	State
10	CR-427 & LAKE MARY BLVD	2941	County

## Top 10 Intersections – County

#	Intersection	Crash Weight
1	CR 46A & HARTWELL AVE	3391
2	CR-427 & LAKE MARY BLVD	2941
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9	CR-427 & ORANGE AVE	1964
10	CR-427 & CR-15/ S COUNTRY CLUB RD	1853

Source: Signal 4 Analytics, 2018 – 2022; excludes limited access facilities.

# Seminole County – Top Intersections with KSIs by Mode



#	Intersection	Crash Weight	Location	Total KSIs	Ped KSIs	Bike KSIs	Motorcycle KSI	Veh KSIs
1	CR 46A & HARTWELL AVE	3391	Sanford	4	2	0	1	1
2	CR-427 & LAKE MARY BLVD	2941	Sanford	6	1	0	0	5
3	CR 46A & CASA VERDE BLVD	2165	Unincorporated	2	0	0	2	0
4	LAKE MARY BLVD & FLAGG LN	2157	Lake Mary	2	1	0	1	0
5	CR-427 & KEYES CT	2082	Sanford	2	0	0	2	0
6	RED BUG LAKE RD & S CITRUS RD	2043	Unincorporated	2	1	1	0	0
7	HOWELL BRANCH RD & LAKE HOWELL RD	2018	Casselberry	3	0	0	1	2
8	CR-427 & DOWNING ST	1964	Sanford	2	1	0	1	0
9	CR-427 & ORANGE AVE	1964	Longwood	2	2	0	0	0
10	CR-427 & CR-15/ S COUNTRY CLUB RD	1853	Unincorporated	3	1	0	0	2

Source: Signal 4 Analytics, 2018 – 2022; excludes limited access facilities.

# Break

- Did you expect other roads to be on the HIN?
- Would you like to see any changes to the High Injury Network?

# CRASH TRENDS & TYPES

---







# Data Included

## Crash Data

- Signal 4 Analytics (2018 – 2022)
- FDOT supplement for railroad crossings

KSI Crash =

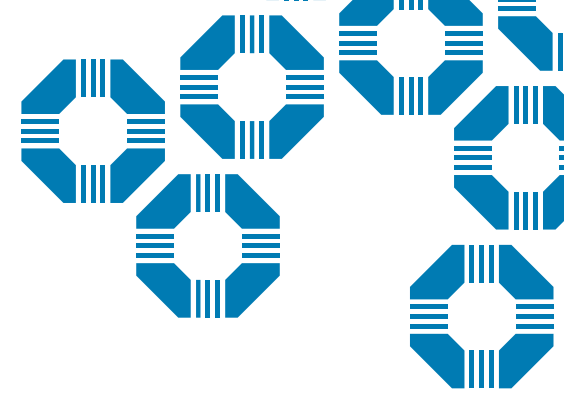
Killed or Severely Injured

## Road Data

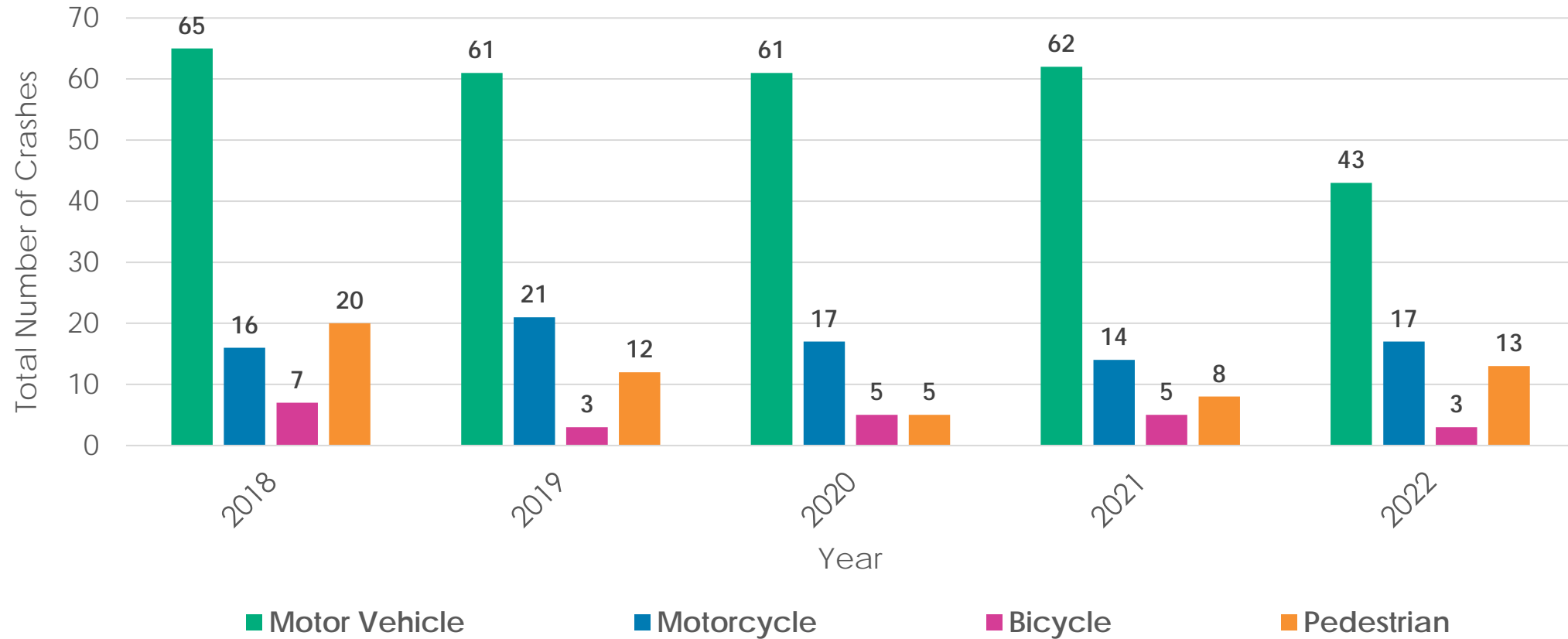
- Road network information
- Average Annual Daily Traffic (AADT)
- Posted speed
- Presence of walking and biking facilities
- Classification
- Crosswalk locations

## Contextual Data

- Land use information
- Transit stop locations
- Underserved community designation



# Deadly and Serious Crashes Trends by Mode Seminole County | 2018-2022



# Seminole County – KSI Crashes by Mode

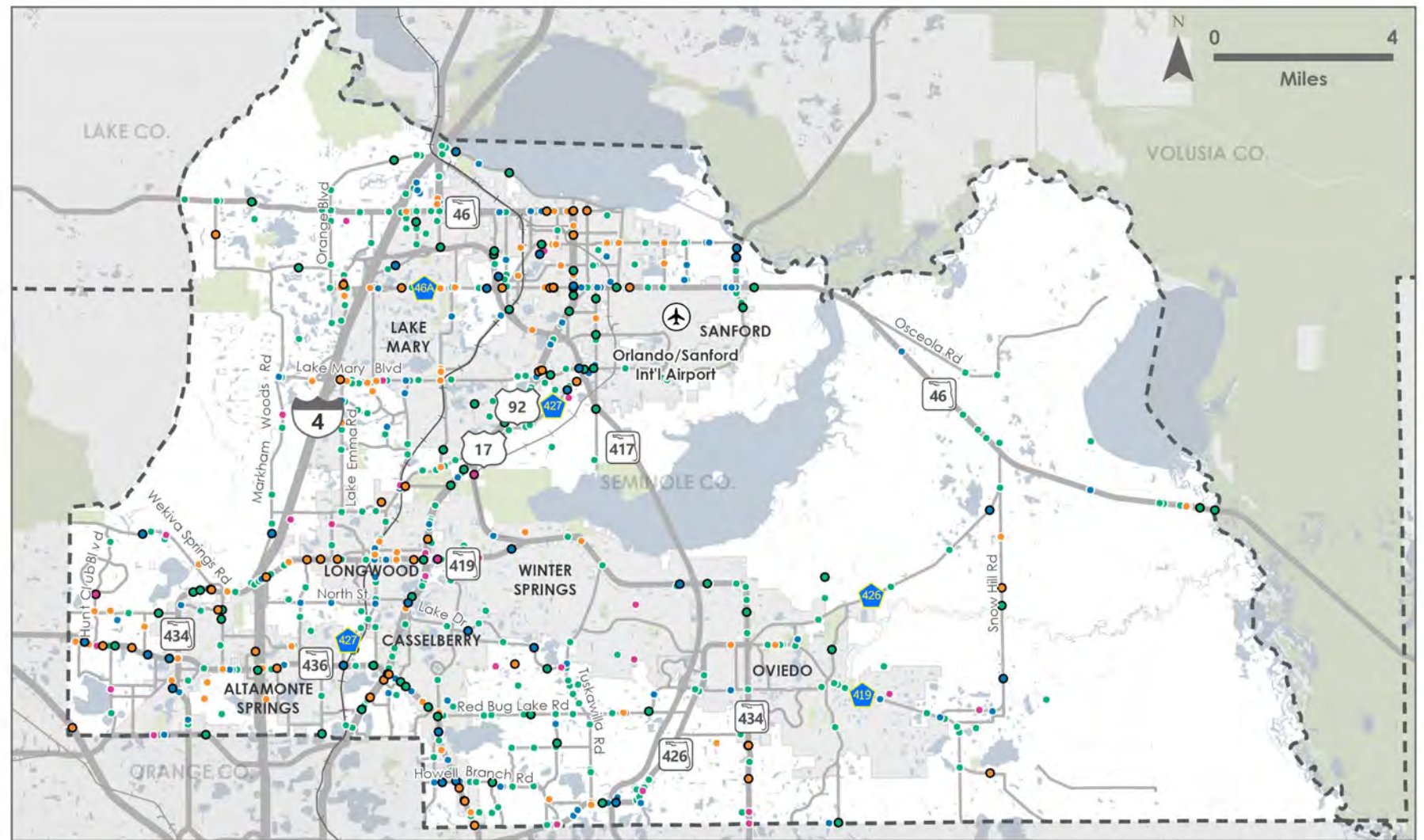
## Deaths:

45 Pedestrians

4 Bicyclists

31 Motorcyclists

68 Motorists



### Deadly & Serious Crashes\* by Mode (Years 2018-2022)

\*Crash data excludes limited access facilities

#### Legend

##### Serious Crashes By Mode

- Pedestrians
- Bicyclists
- Motorcyclists
- Motorist

##### Deadly Crashes by Mode

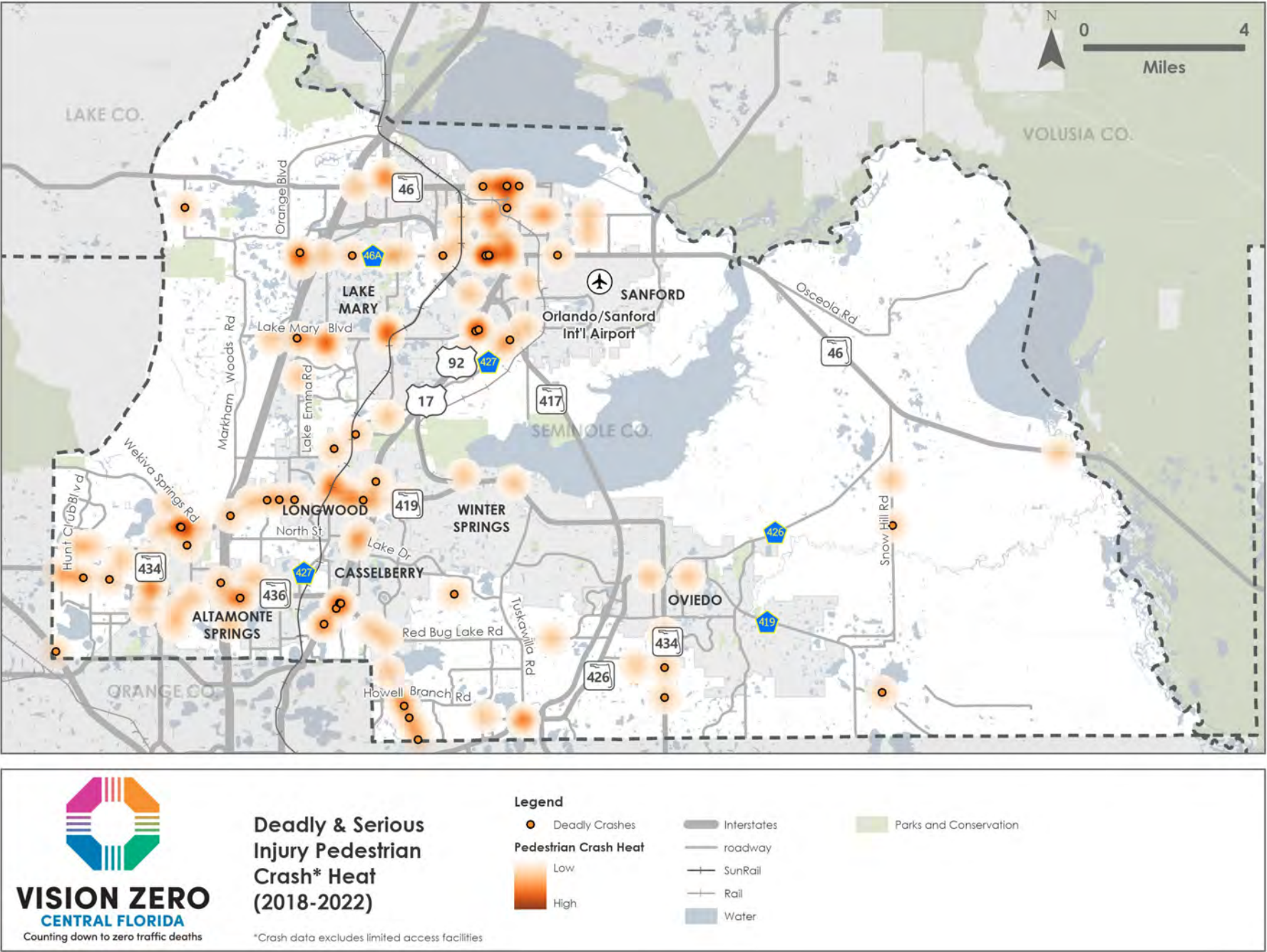
- Pedestrians
- Bicyclists
- Motorcyclists
- Motorists

KSI = Killed or Severely Injured

Source: Signal 4 Analytics, 2018 – 2022; excludes limited access facilities.



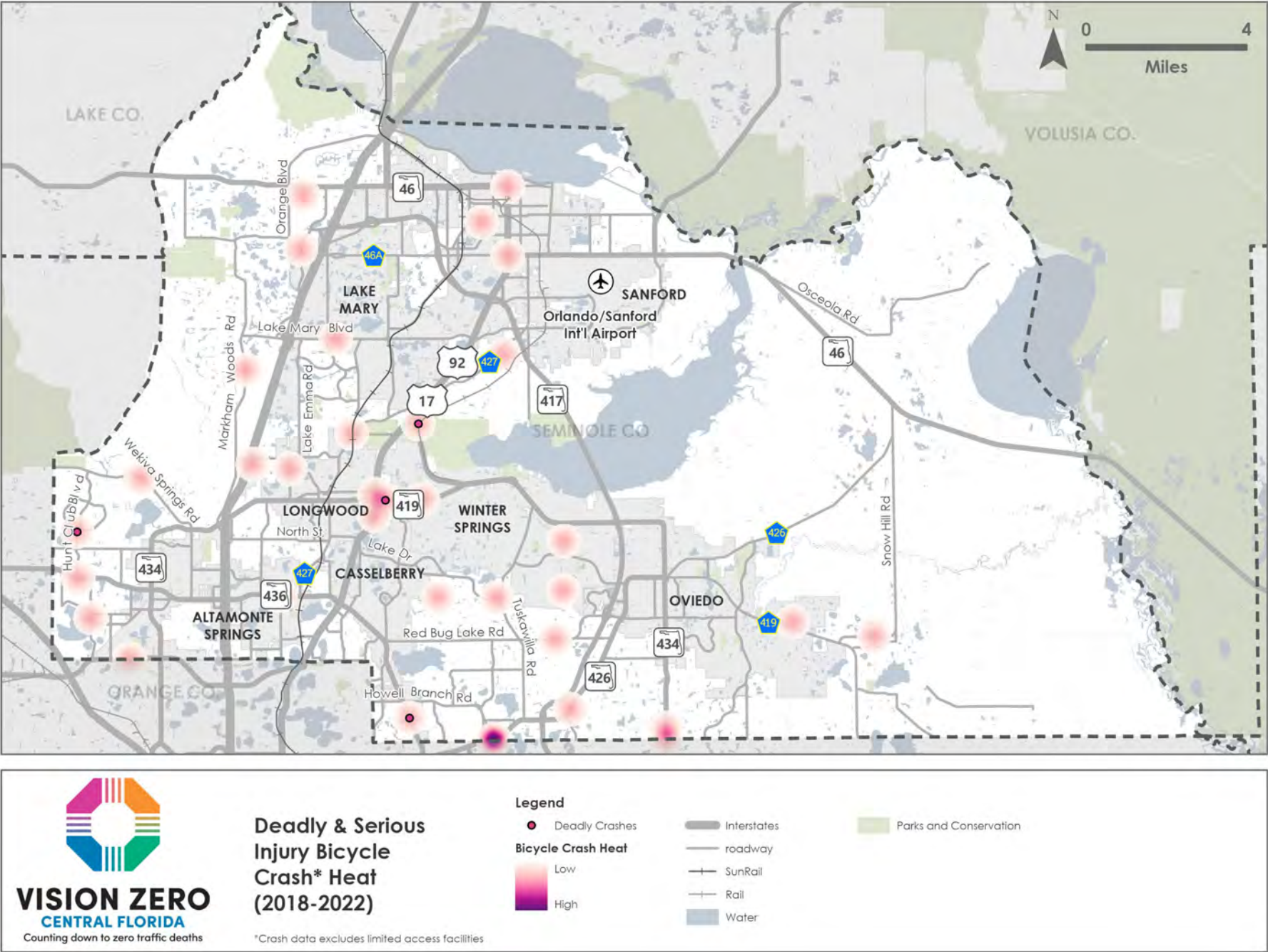
# KSI Crashes by Mode – Pedestrian



KSI = Killed or Severely Injured

Source: Signal 4 Analytics, 2018 – 2022; excludes limited access facilities.

# KSI Crashes by Mode – Bike

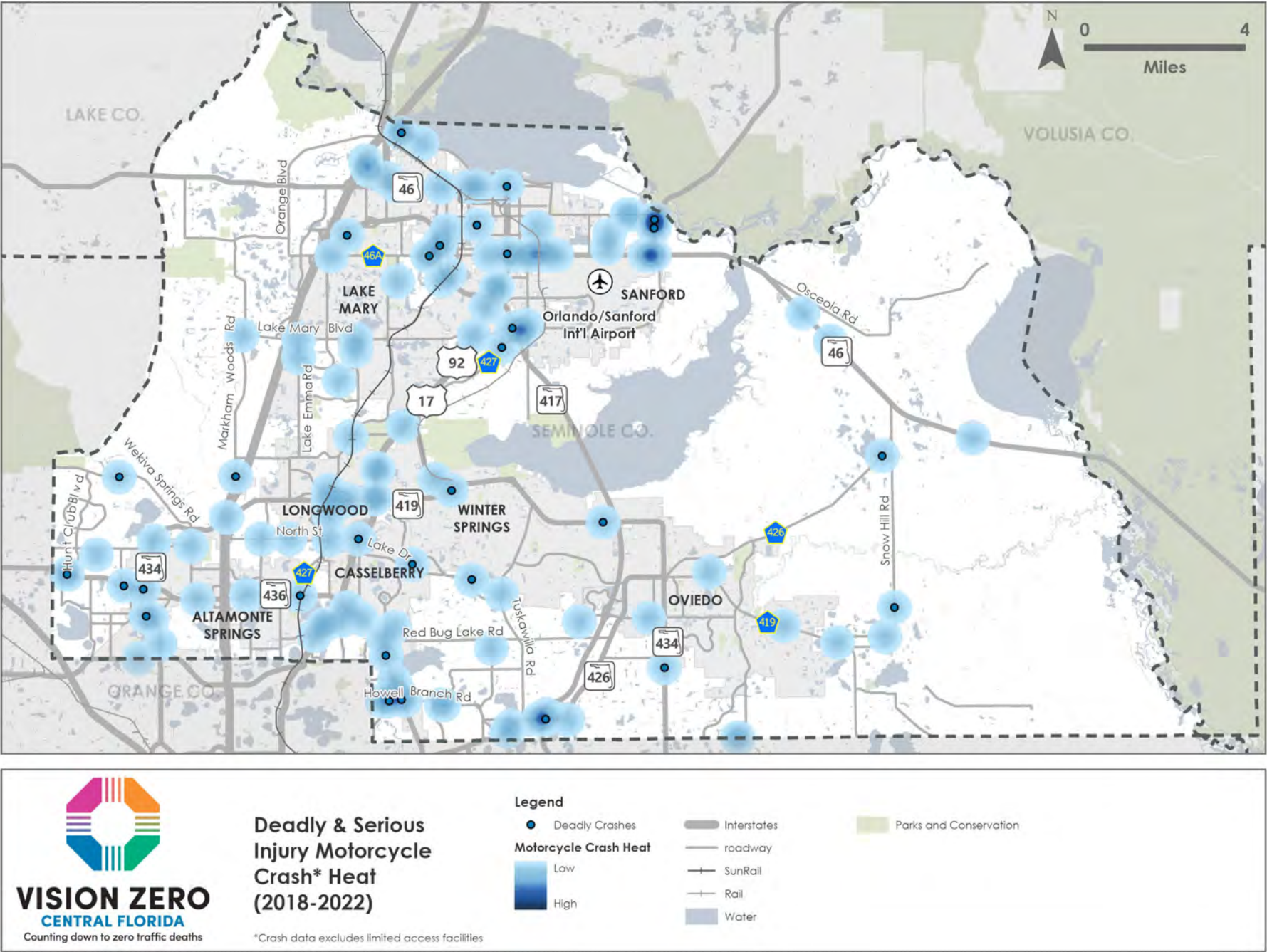


KSI = Killed or Severely Injured

Source: Signal 4 Analytics, 2018 – 2022; excludes limited access facilities.



# KSI Crashes by Mode – Motorcycle

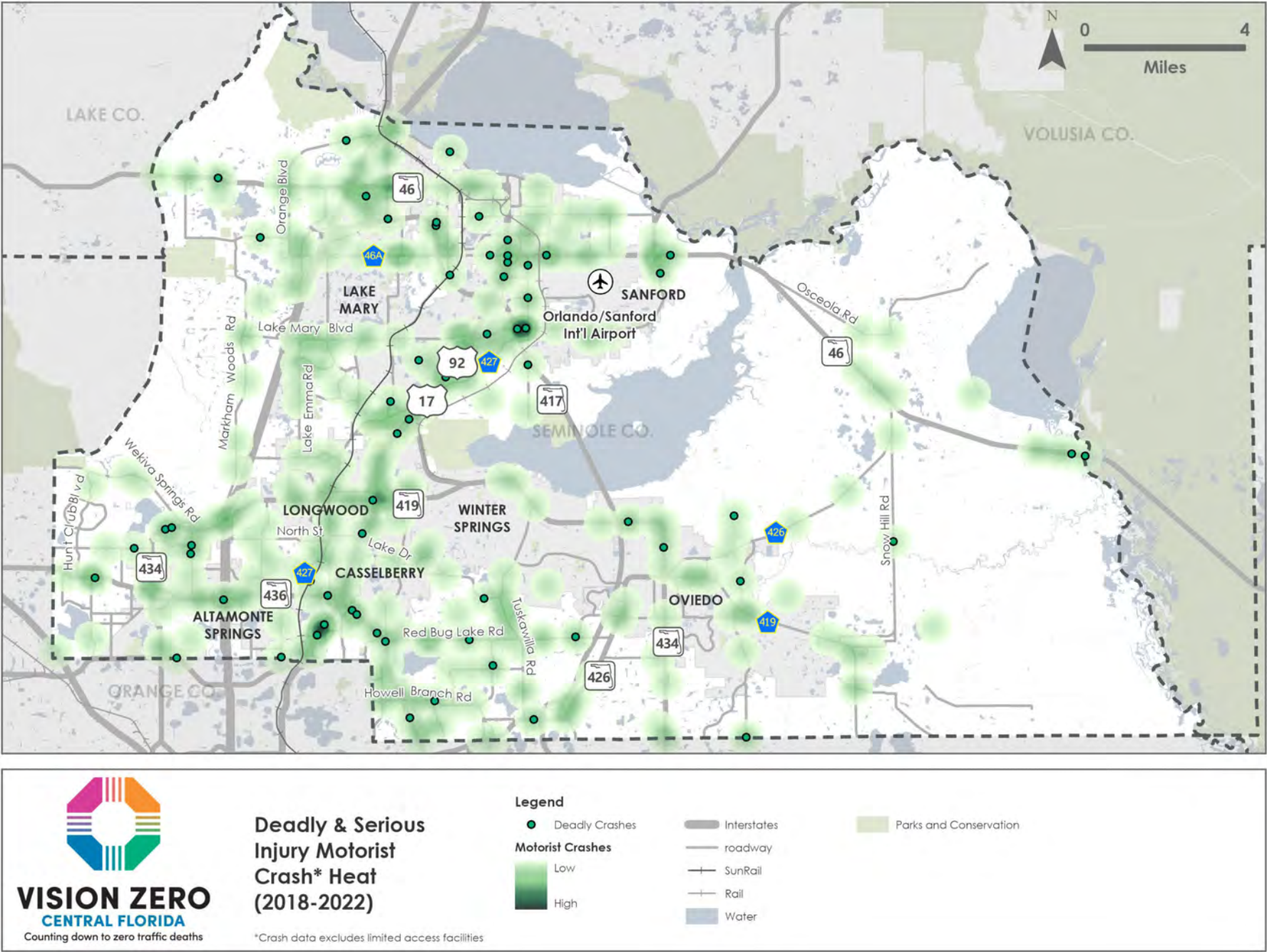


KSI = Killed or Severely Injured

Source: Signal 4 Analytics, 2018 – 2022; excludes limited access facilities.



# KSI Crashes by Mode – Motorist



KSI = Killed or Severely Injured

Source: Signal 4 Analytics, 2018 – 2022; excludes limited access facilities.



# Seminole County – KSI Crashes and Disadvantaged Areas

## Deaths:

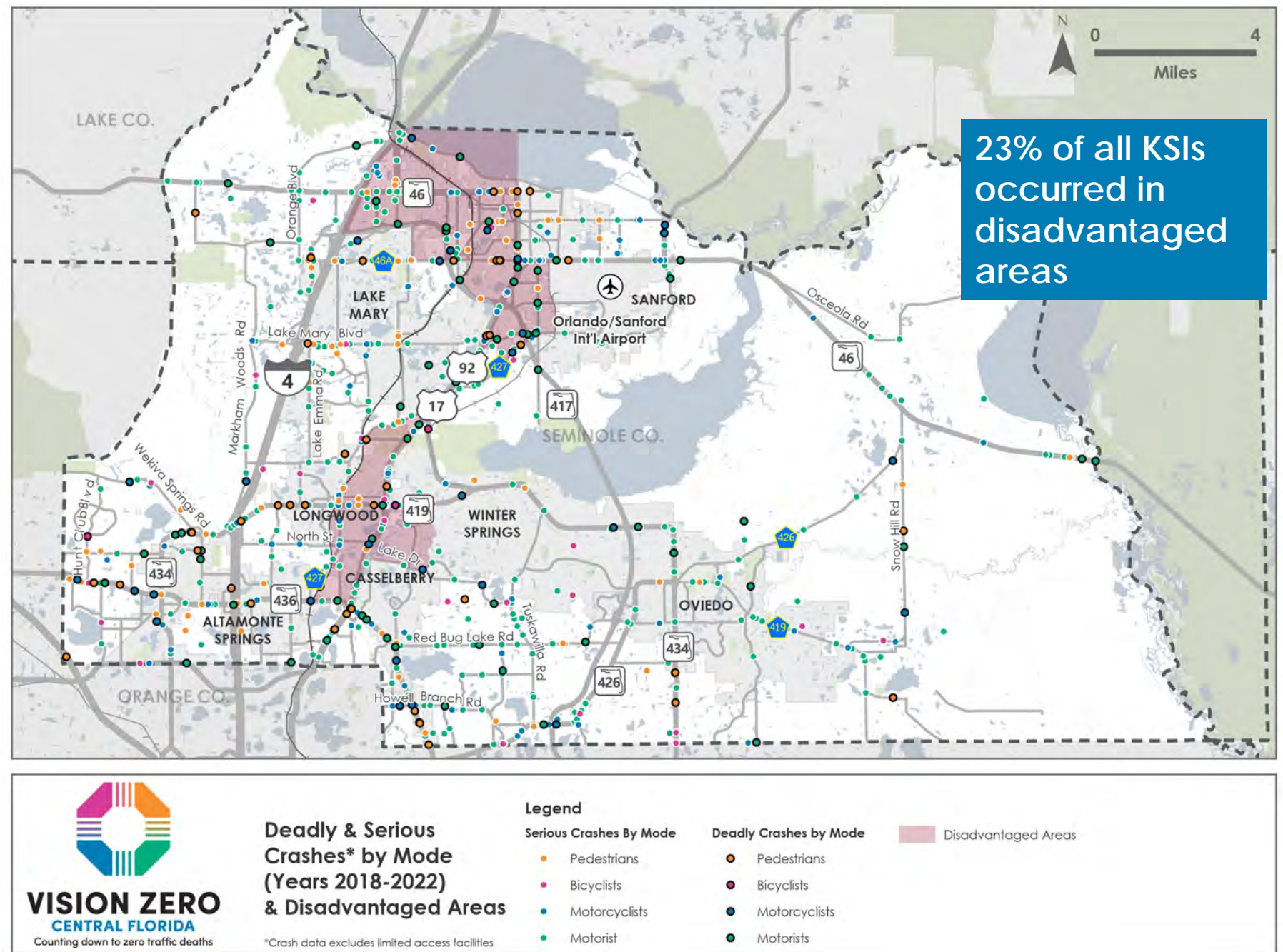
14 Pedestrians

1 Bicyclist

8 Motorcyclists

23 Motorists

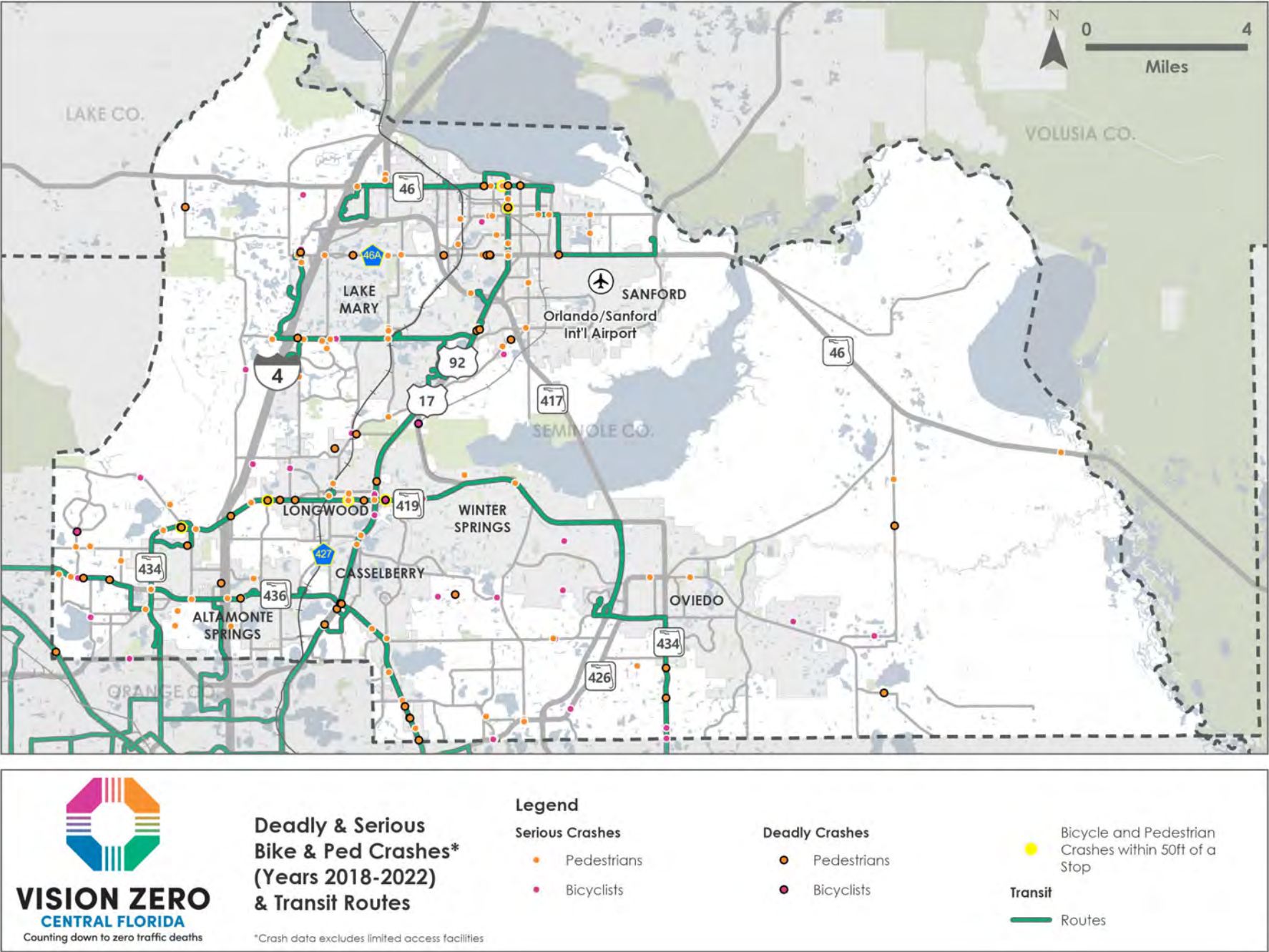
KSI = Killed or Severely Injured





# Seminole County – KSI Crashes and Transit

6 Bike/Ped KSIs within 50-feet of a bus stop



KSI = Killed or Severely Injured

Source: Signal 4 Analytics, 2018 – 2022; excludes limited access facilities.

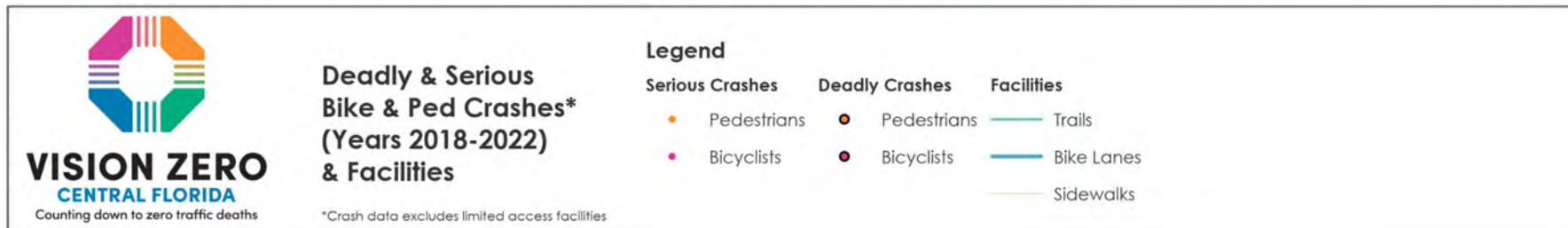
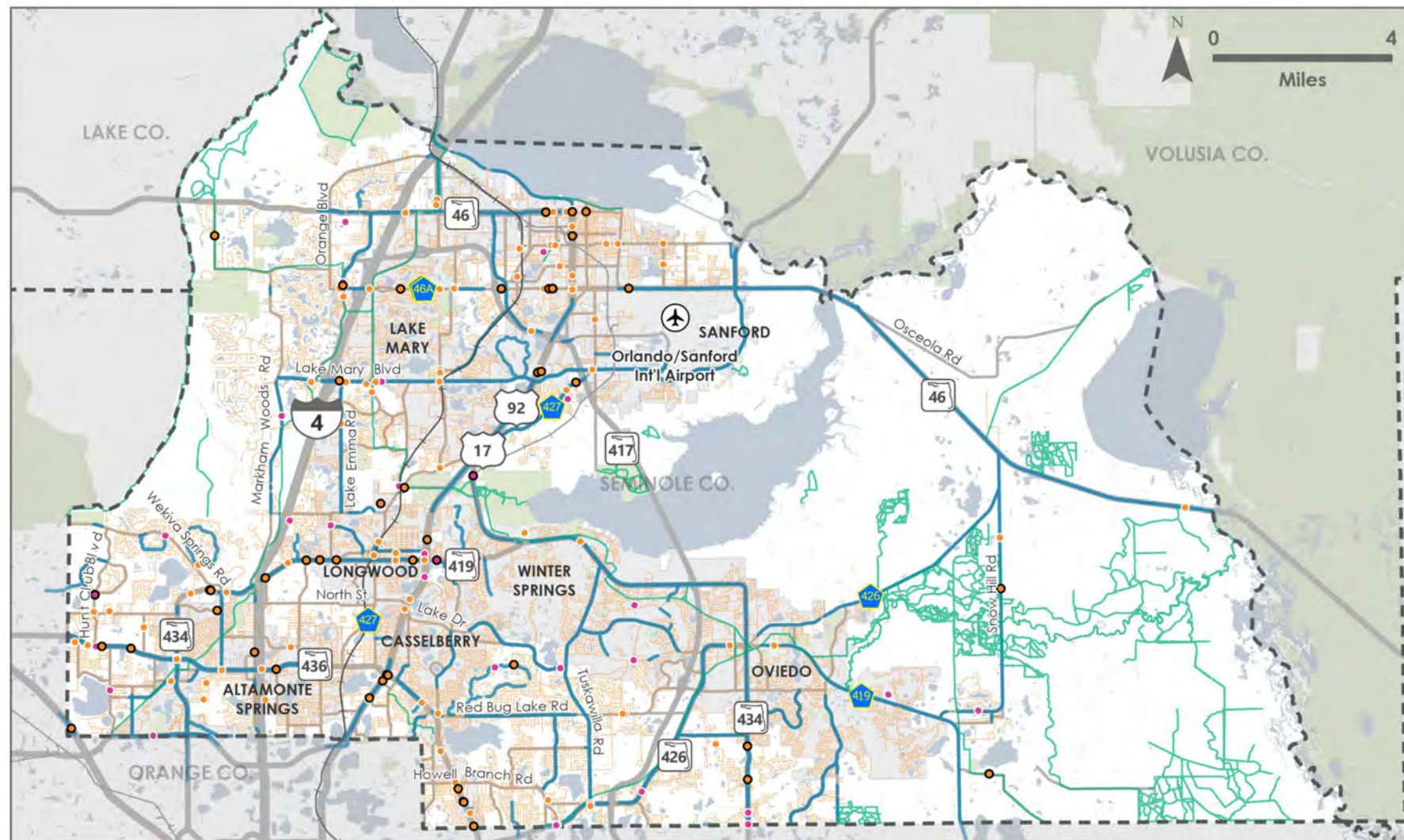


# Seminole County – KSI Crashes (Bike and Ped)

Deaths:

45 Pedestrians

4 Bicyclists



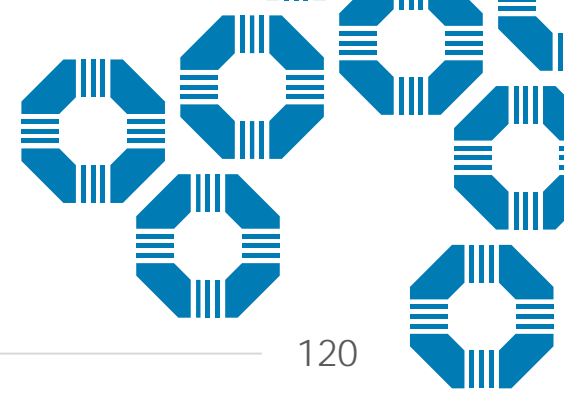
KSI = Killed or Severely Injured

Source: Signal 4 Analytics, 2018 – 2022; excludes limited access facilities.

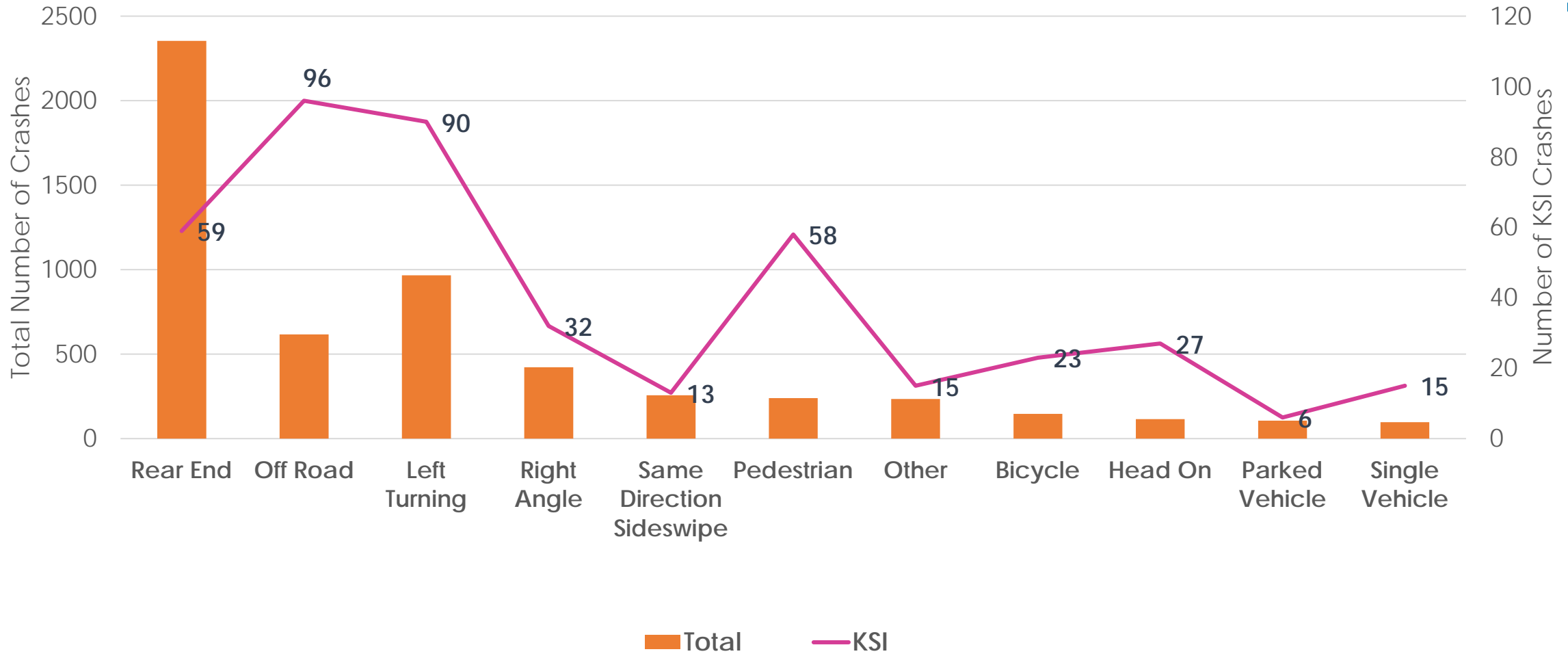
# TYPES OF CRASHES

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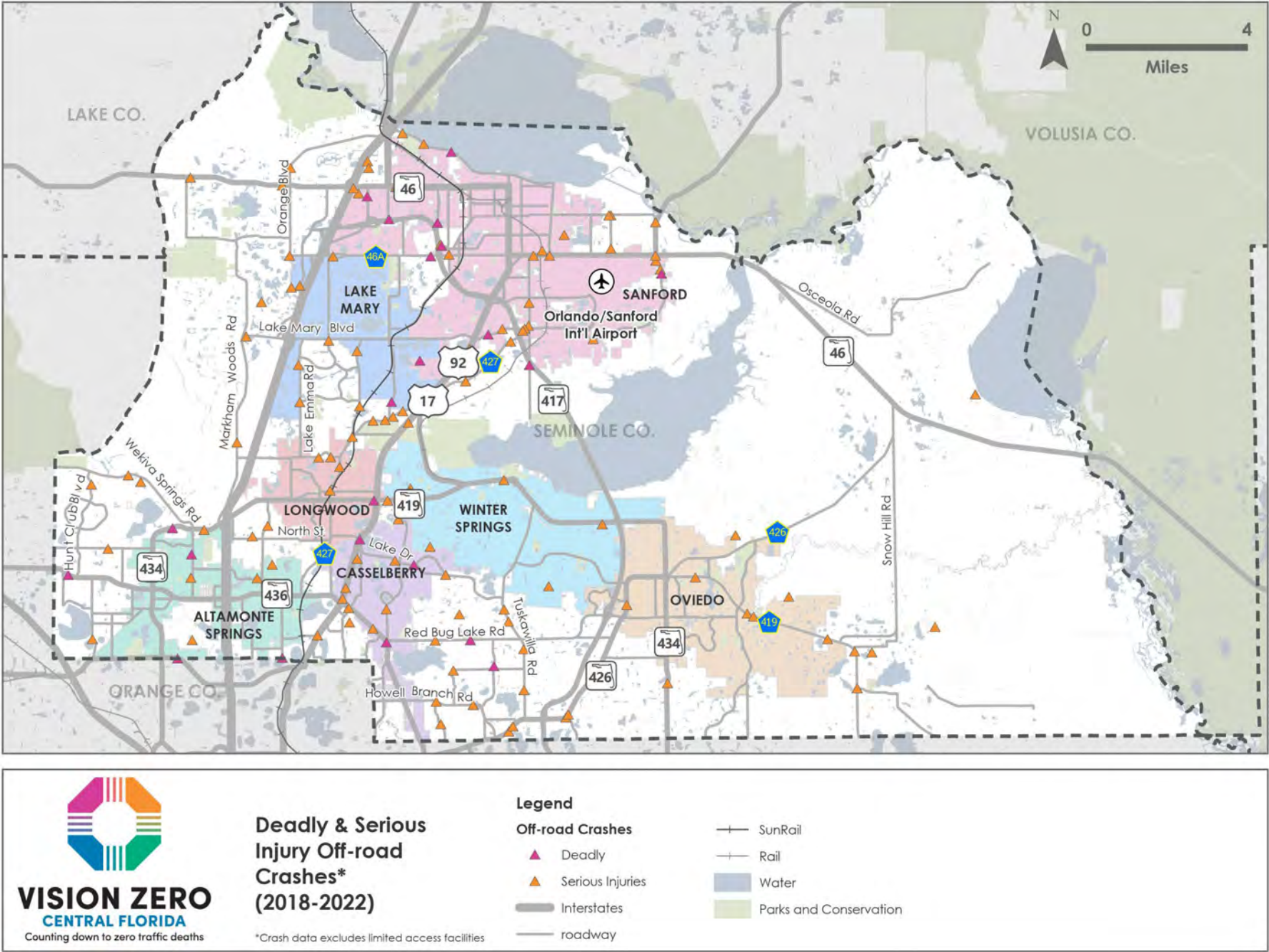
# KSI Crash Summary by Type Seminole County | 2018-2022





# Seminole County – KSI Crashes Off-Road Crashes

96 Off-Road KSIs



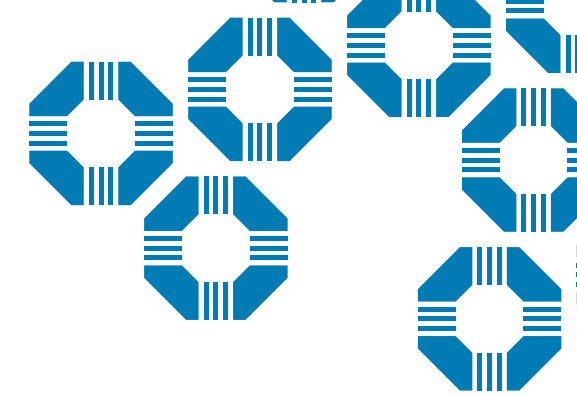
KSI = Killed or Severely Injured

Source: Signal 4 Analytics, 2018 – 2022; excludes limited access facilities.

# CRASH FACTORS

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# What are Crashes Factors?

## Roadway

- Driveway Access
- **Speed**
- Roadway Widths
- **Number of Lanes**
- Traffic Volumes
- Pavement Conditions
- **Lighting Conditions**

## Human

- Age
- Gender
- **Aggressive Driving**
- **Impaired Driving**
- Protective Gear
- **Driver Inattention**

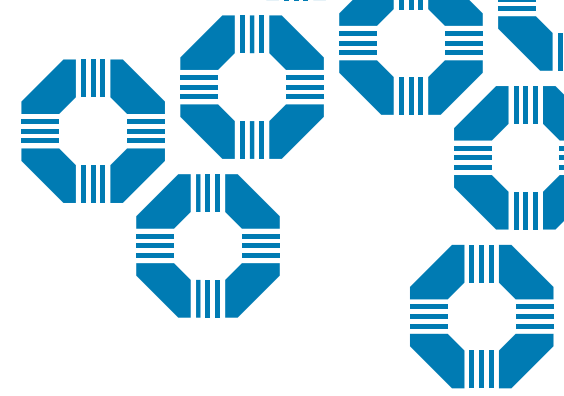
## Environmental

- **Time of Day**
- **Day of Week**

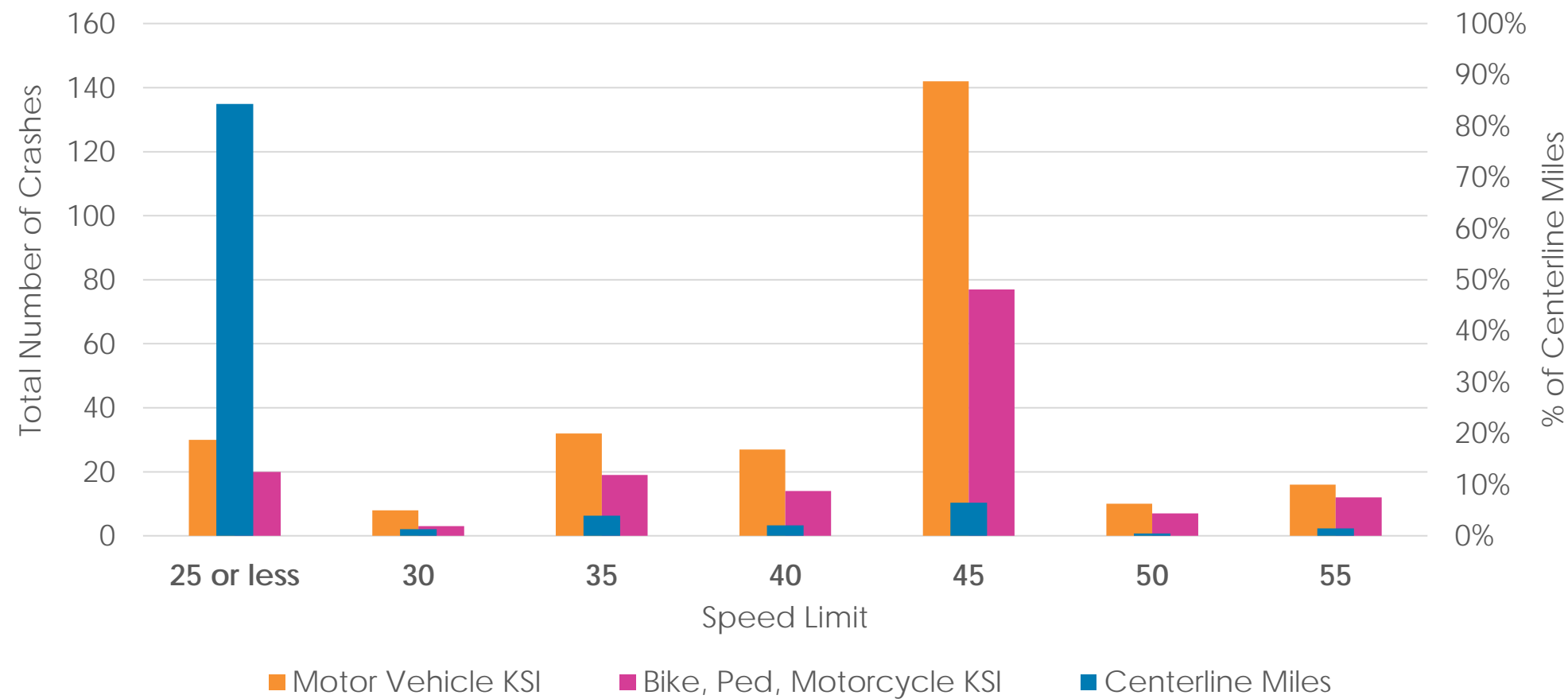
# ROADWAY FACTORS

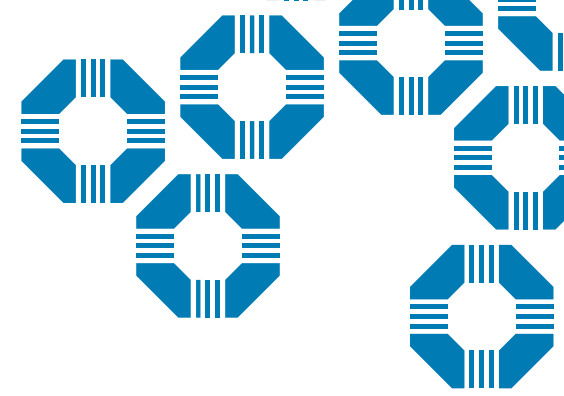
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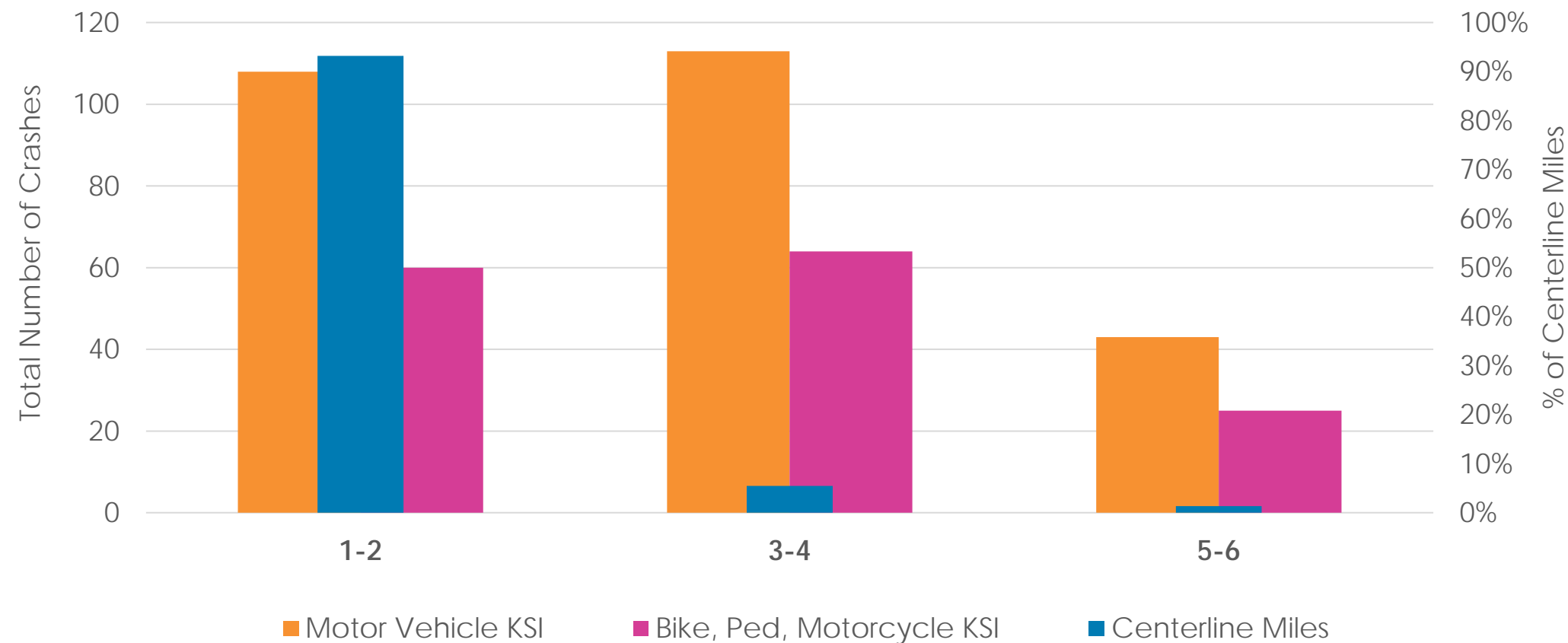


# Roadway Factor Crashes – Posted Speed Seminole County | 2018-2022

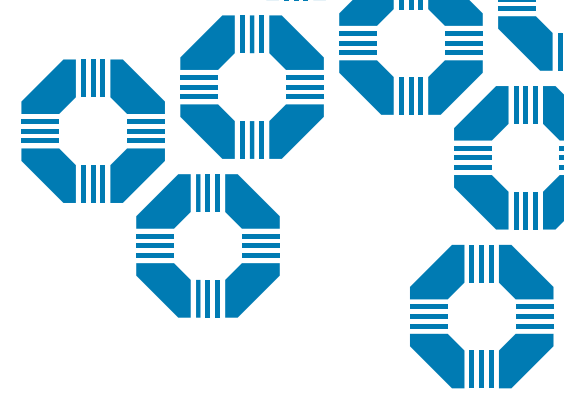




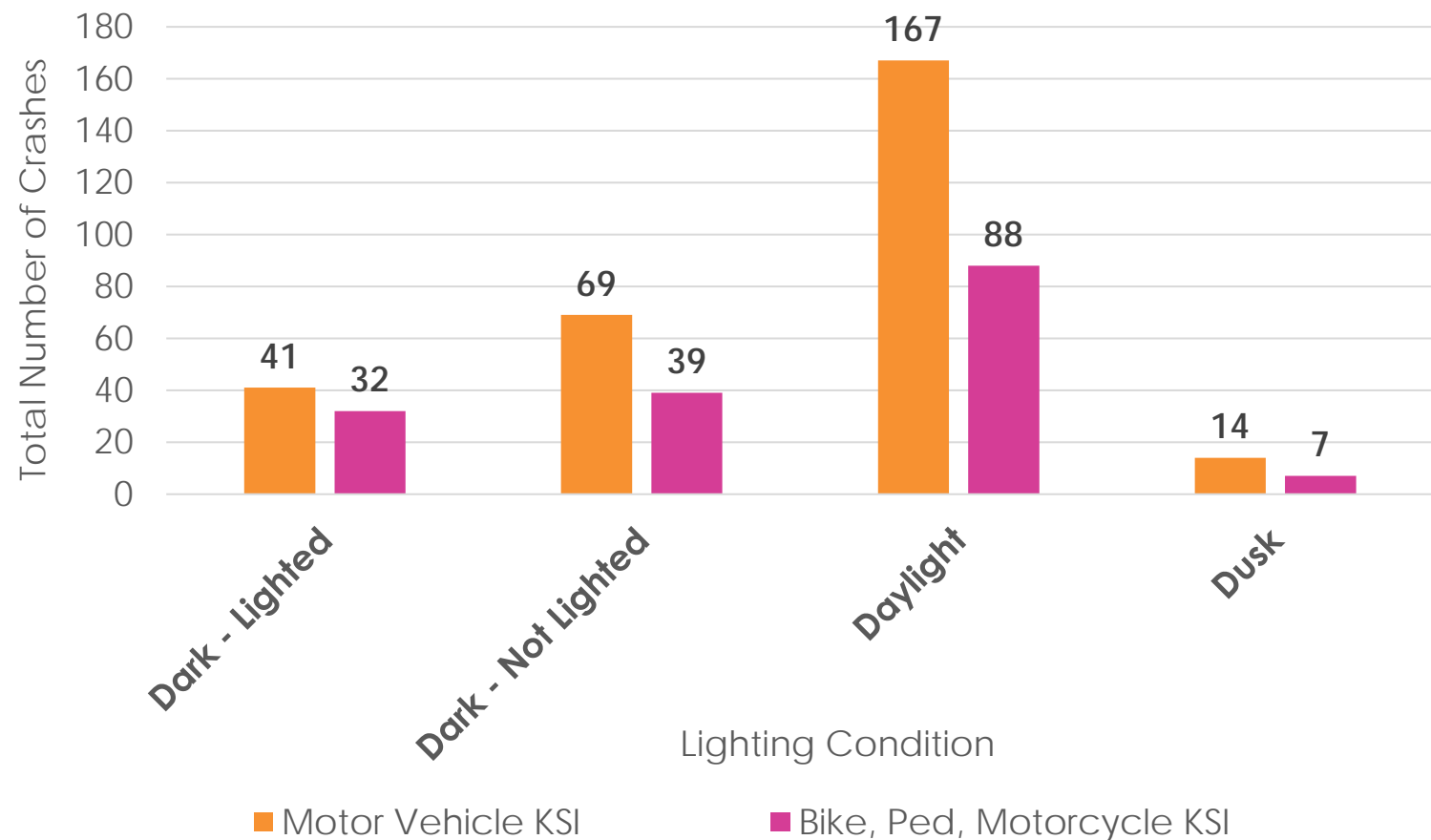
# Roadway Factor Crashes – Number of Lanes Seminole County | 2018-2022







# Roadway Factor Crashes – Lighting Seminole County | 2018-2022



**16% of Seminole County's KSI crashes occur in dark but lighted conditions**

# Seminole County – KSI Crashes by Lighting Condition

## Deaths:

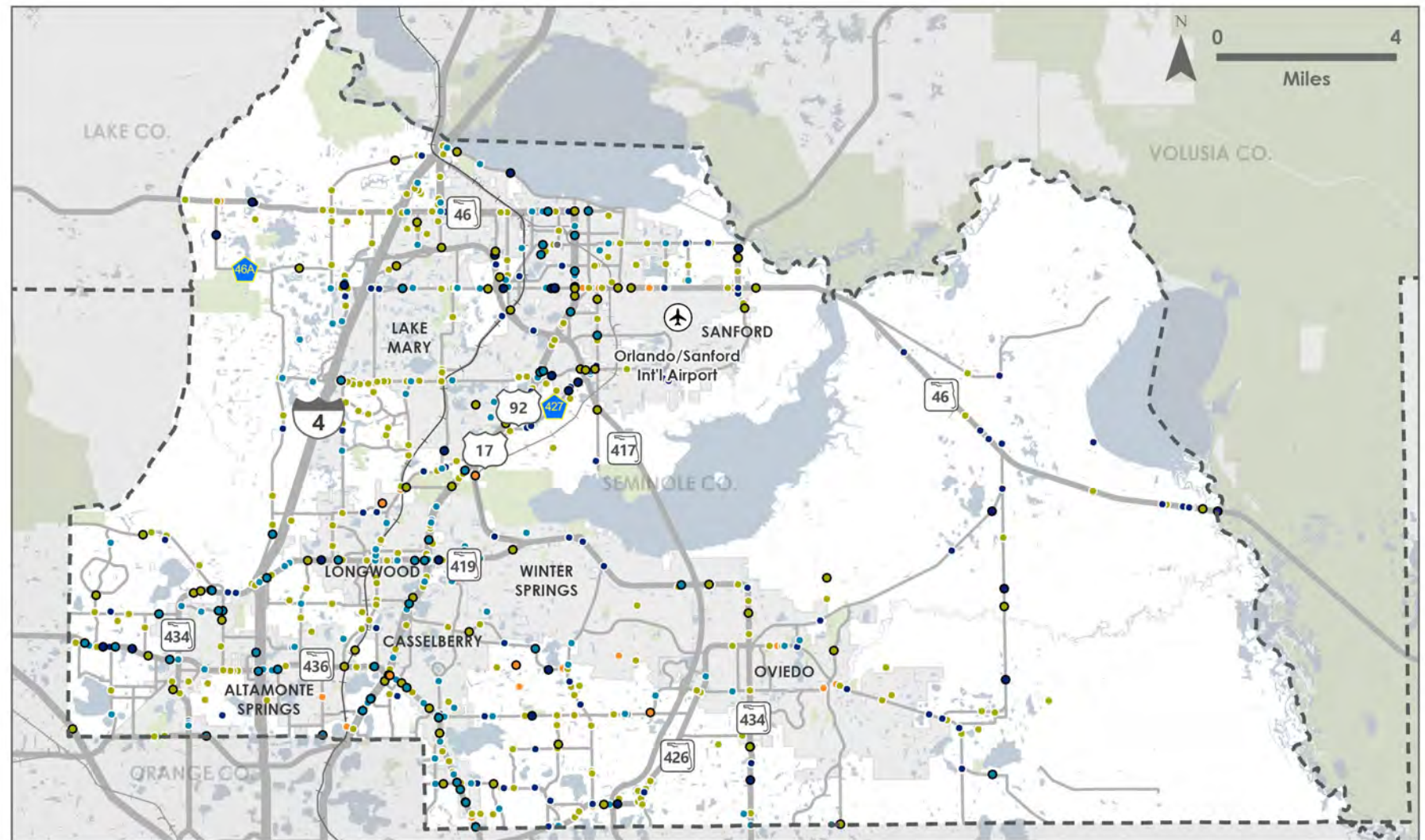
6 Dawn/Dusk

60 Daylight

51 Dark - Lighted

31 Dark – Not Lighted

KSI = Killed or Severely Injured



### Deadly & Serious Crashes\* and Time of Day (2018-2022)

\*Crash data excludes limited access facilities

#### Legend

##### Deadly Crashes

###### Time of Day

- Orange dot: Dawn / Dusk
- Yellow dot: Daylight
- Teal dot: Dark - Lighted
- Dark blue dot: Dark - Not Lighted

##### Serious Crashes

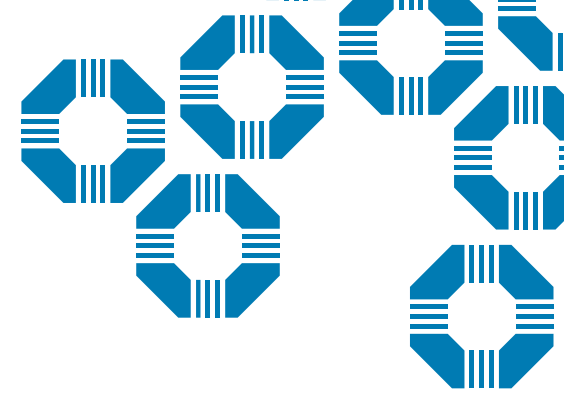
###### Time of Day

- Orange dot: Dawn / Dusk
- Yellow dot: Daylight
- Teal dot: Dark - Lighted
- Dark blue dot: Dark - Not Lighted
- Grey dot: Dark - Unknown Lighting

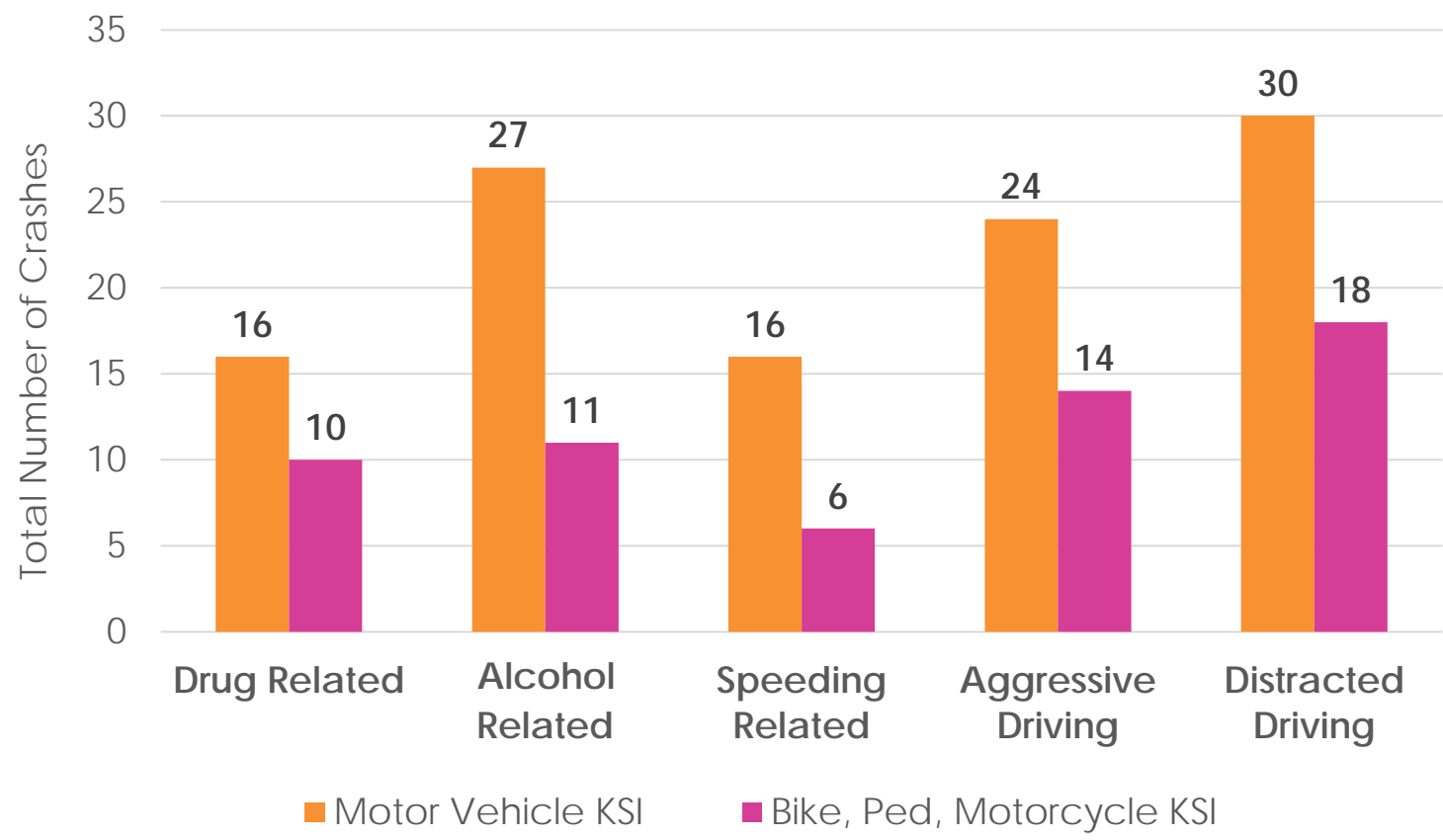
# HUMAN FACTORS

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# Road User Behavior Seminole County | 2018-2022

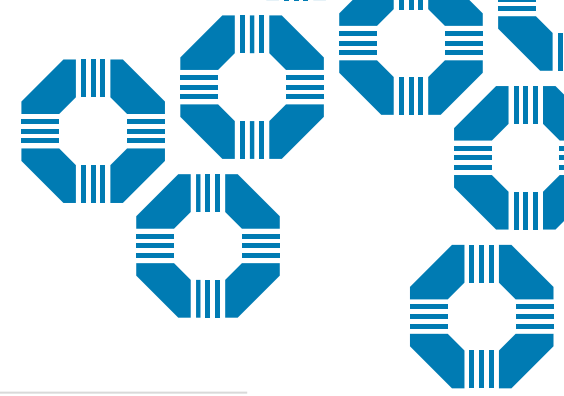


24% of KSI crashes reported speeding, aggressive, or distracted driving

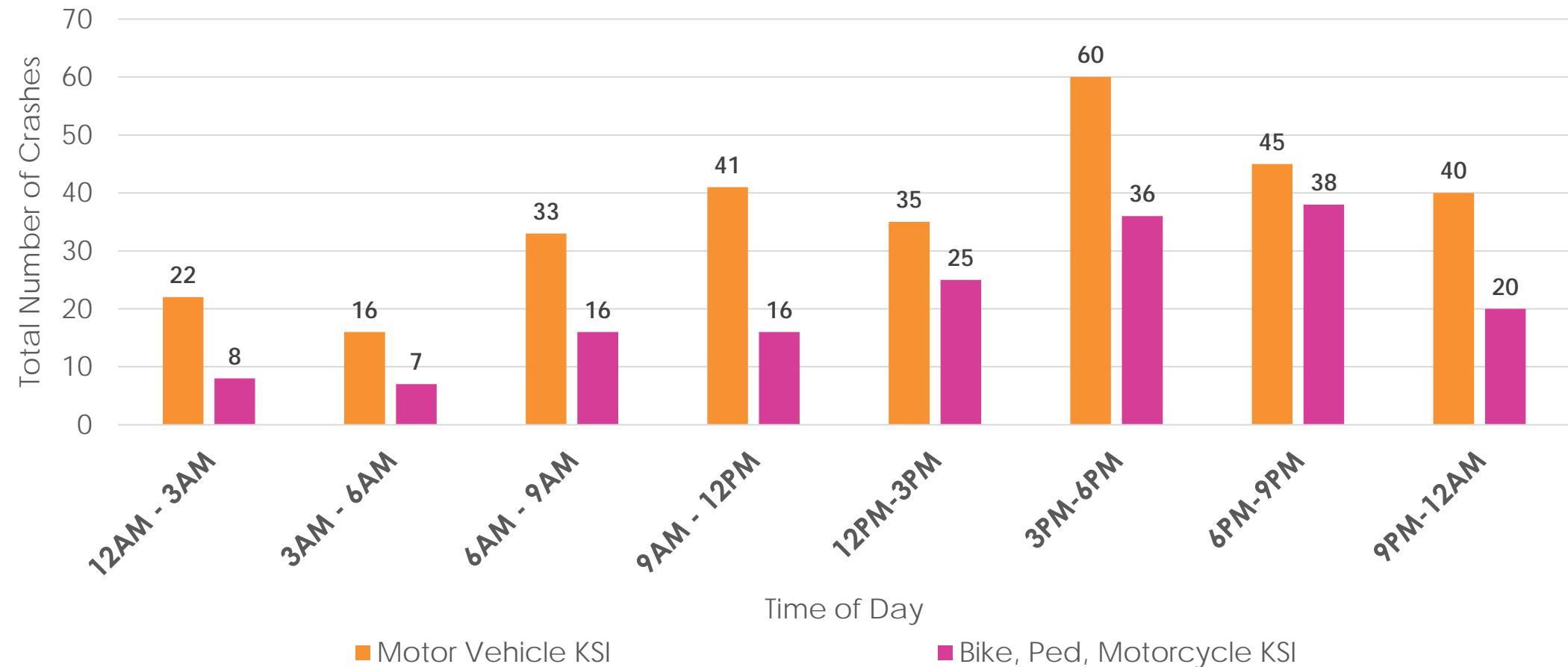
# ENVIRONMENTAL FACTORS

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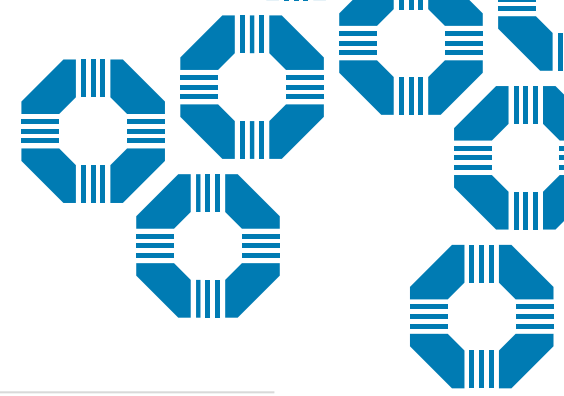




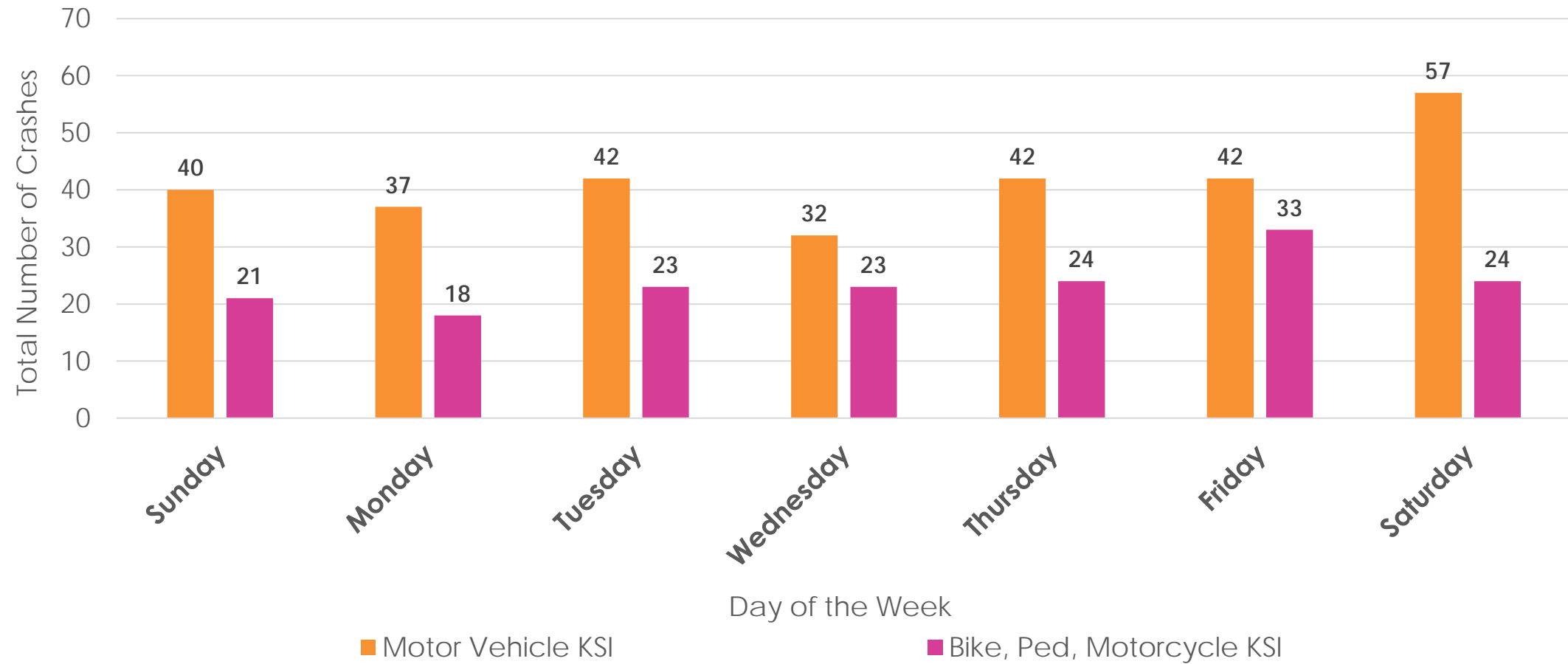
# Crashes by Time of Day - Seminole County | 2018-2022



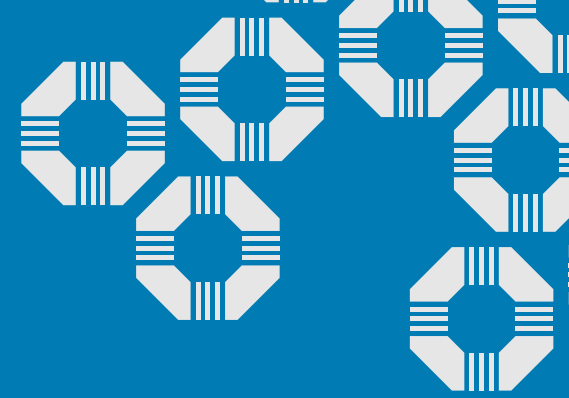




# Crashes by Day of Week - Seminole County | 2018-2022



# What do you think?



- Is this what you expected?
- Is there anything that you would like more information about?

# SANFORD – SUB AREA ANALYSIS

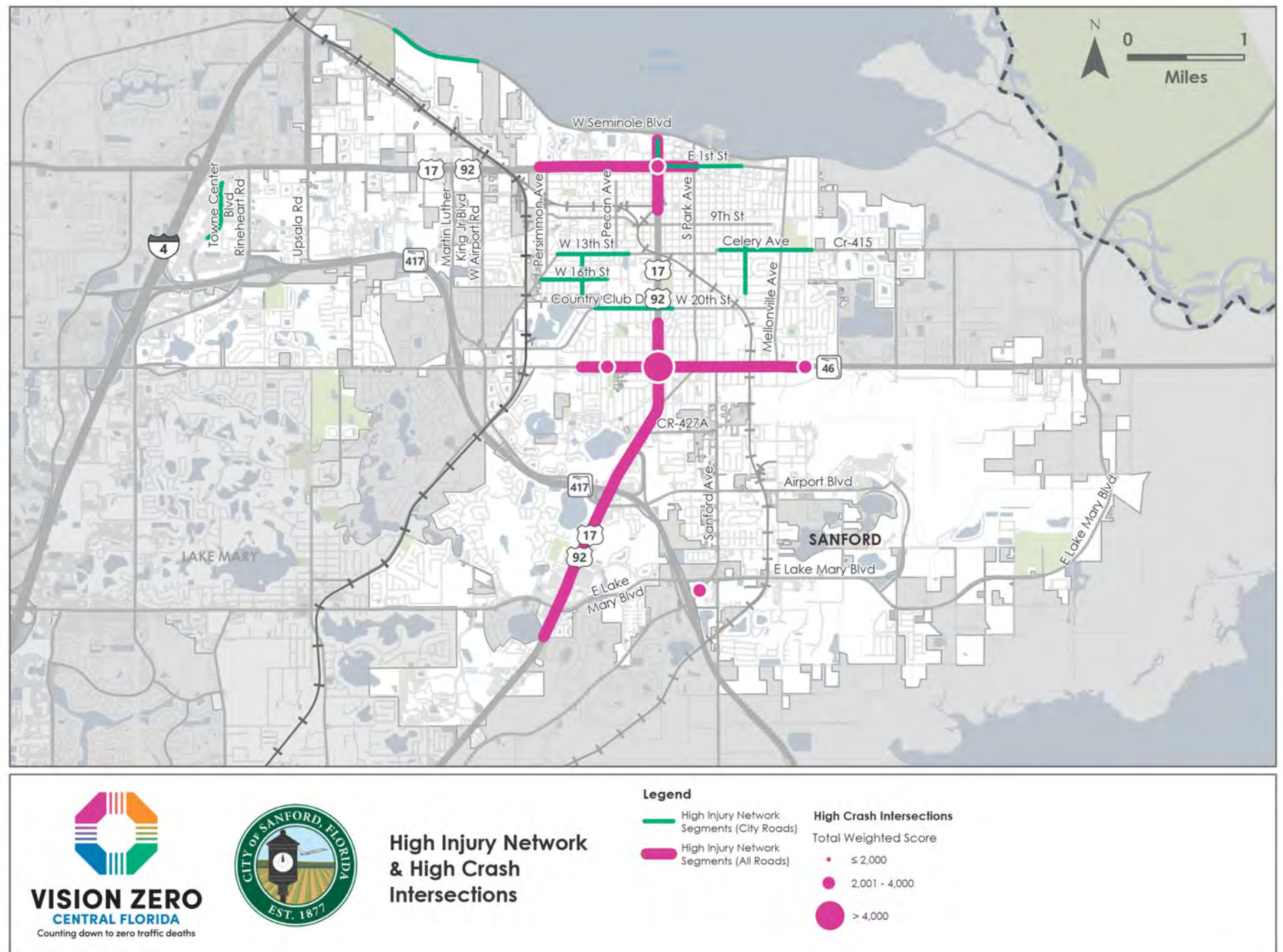
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# Sanford – HIN and Top Intersections

These intersections also show up on the County Top 10 (All Roads or County Only):

1. US-17/92 at CR 46A/W 25<sup>TH</sup> St
2. CR 46A at Hartwell Ave
3. US-17/92 at SR46/1<sup>ST</sup> St
4. CR-427 at Keyes Ct



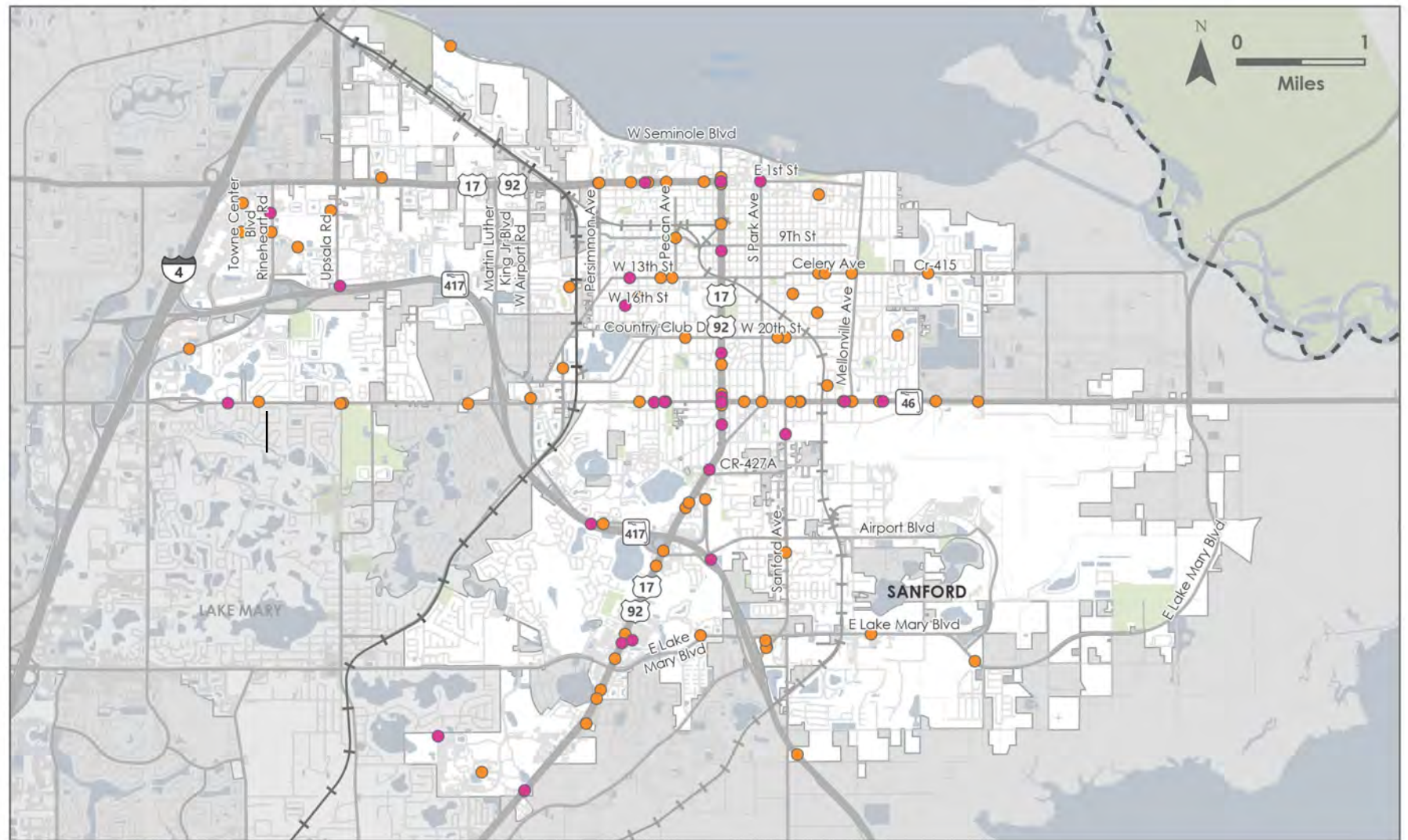
KSI = Killed or Severely Injured

Source: Signal 4 Analytics, 2018 – 2022; excludes limited access facilities.



# Sanford – KSI Crashes

27 Deaths  
81 Serious Injuries



## Deadly & Serious Injury Crashes\* (2018-2022)

\*Crash data excludes limited access facilities

### Legend

#### Crashes

- Deadly
- Serious Injuries
- Interstates
- roadway

- SunRail
- Rail
- Water
- Parks and Conservation

KSI = Killed or Severely Injured

Source: Signal 4 Analytics, 2018 – 2022; excludes limited access facilities.



# Sanford – KSI Crashes by Mode

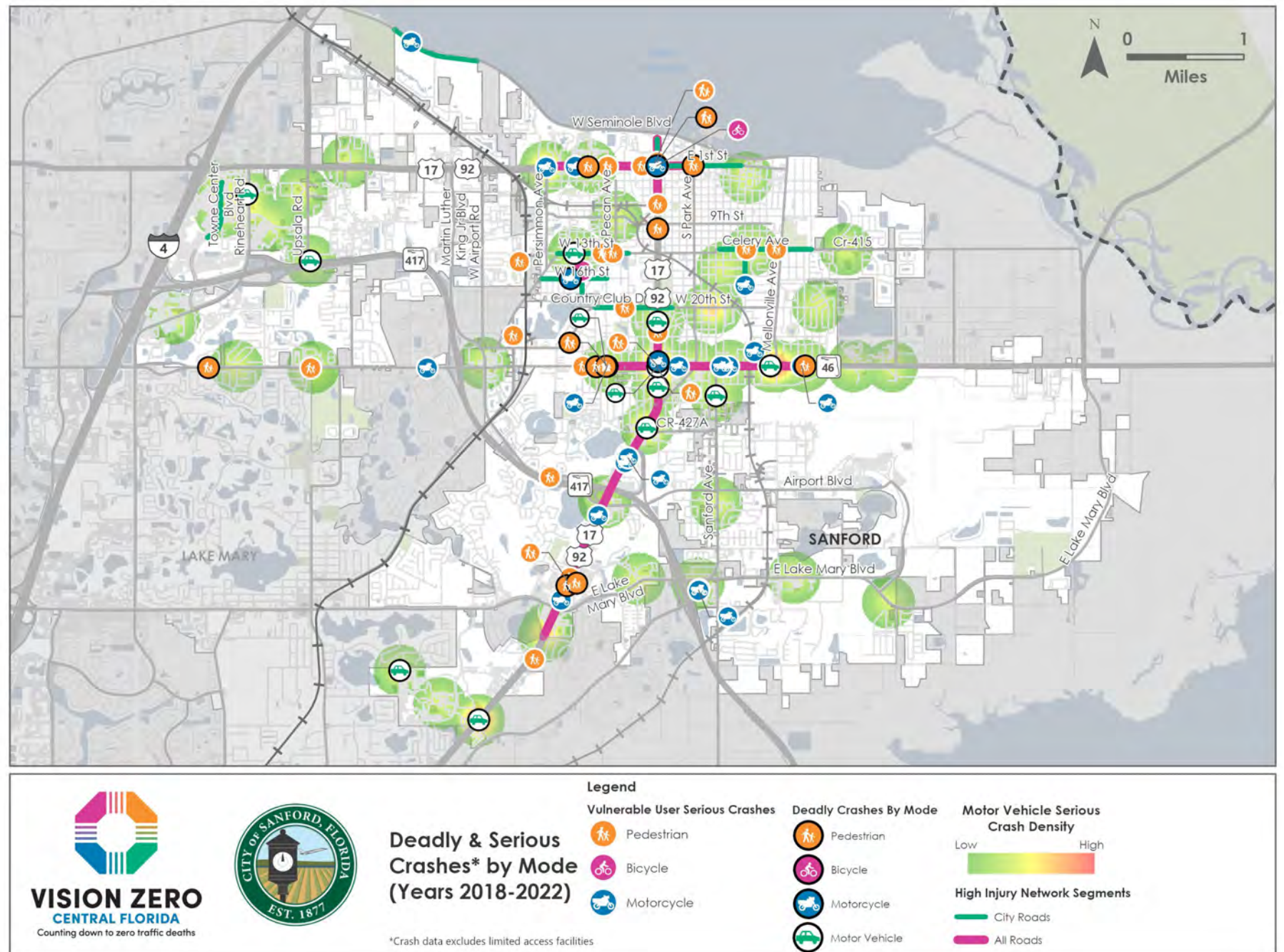
## Deaths:

11 Pedestrians

0 Bicyclists

3 Motorcyclists

13 Motorists



KSI = Killed or Severely Injured

Source: Signal 4 Analytics, 2018 – 2022; excludes limited access facilities.



# Sanford – KSI Crashes by Mode & Disadvantaged Area

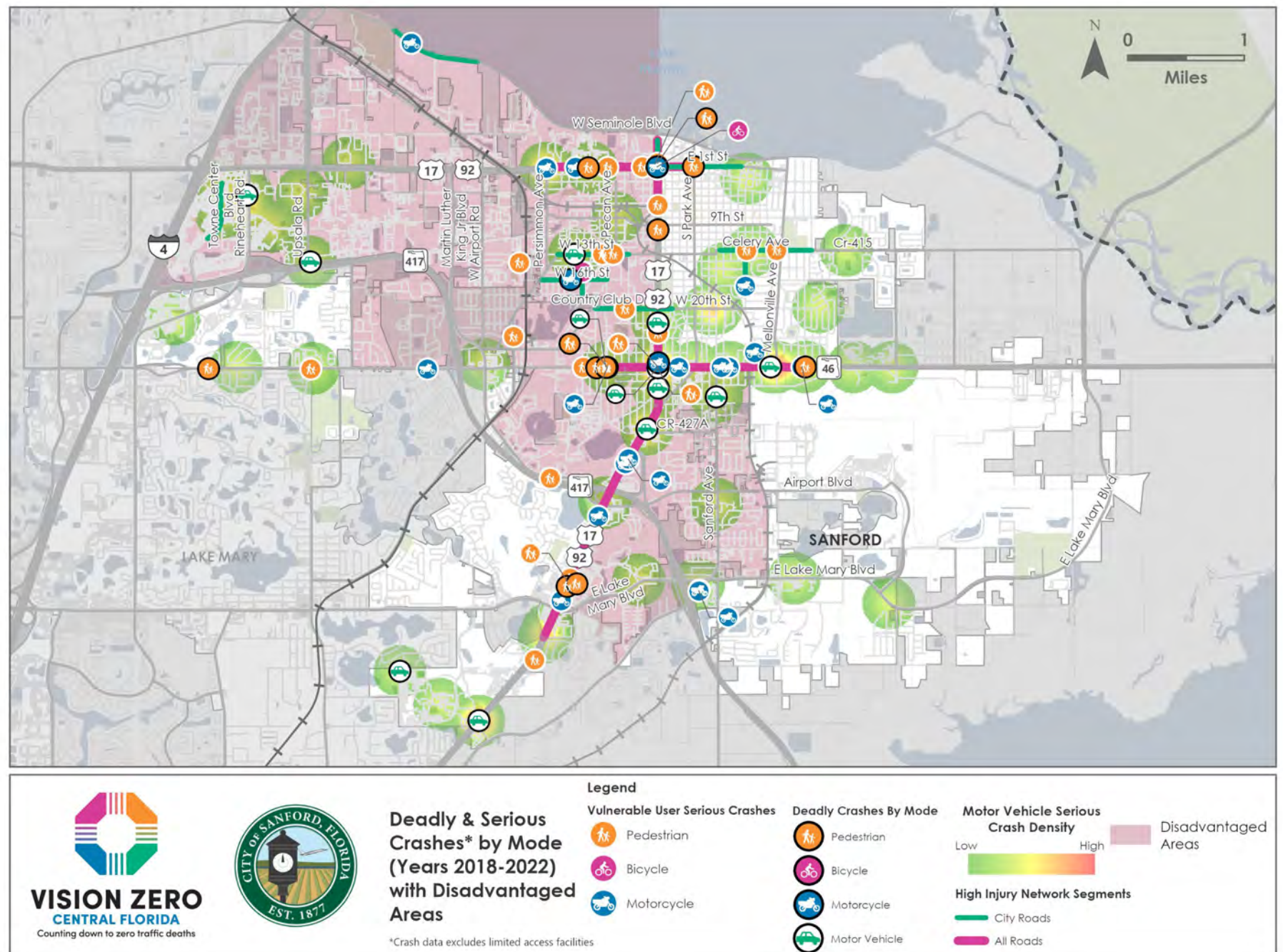
## Deaths:

8 Pedestrians

0 Bicyclists

3 Motorcyclists

10 Motorists



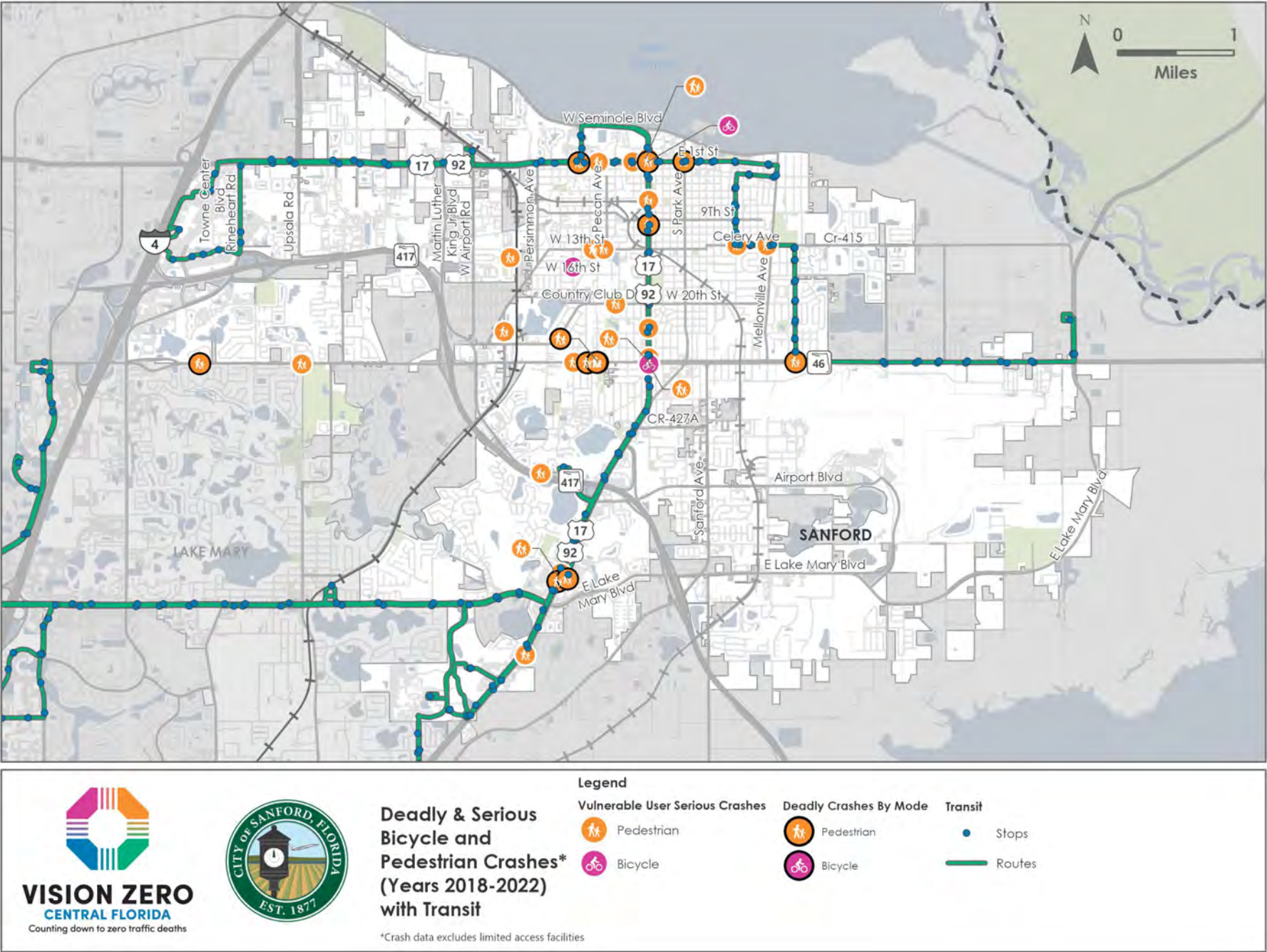
KSI = Killed or Severely Injured

Source: Signal 4 Analytics, 2018 – 2022; excludes limited access facilities.



# Sanford – KSI Crashes and Transit

2 KSIs within 50  
feet of a bus  
stop



**KSI = Killed or Severely Injured**

Source: Signal 4 Analytics, 2018 – 2022; excludes limited access facilities.

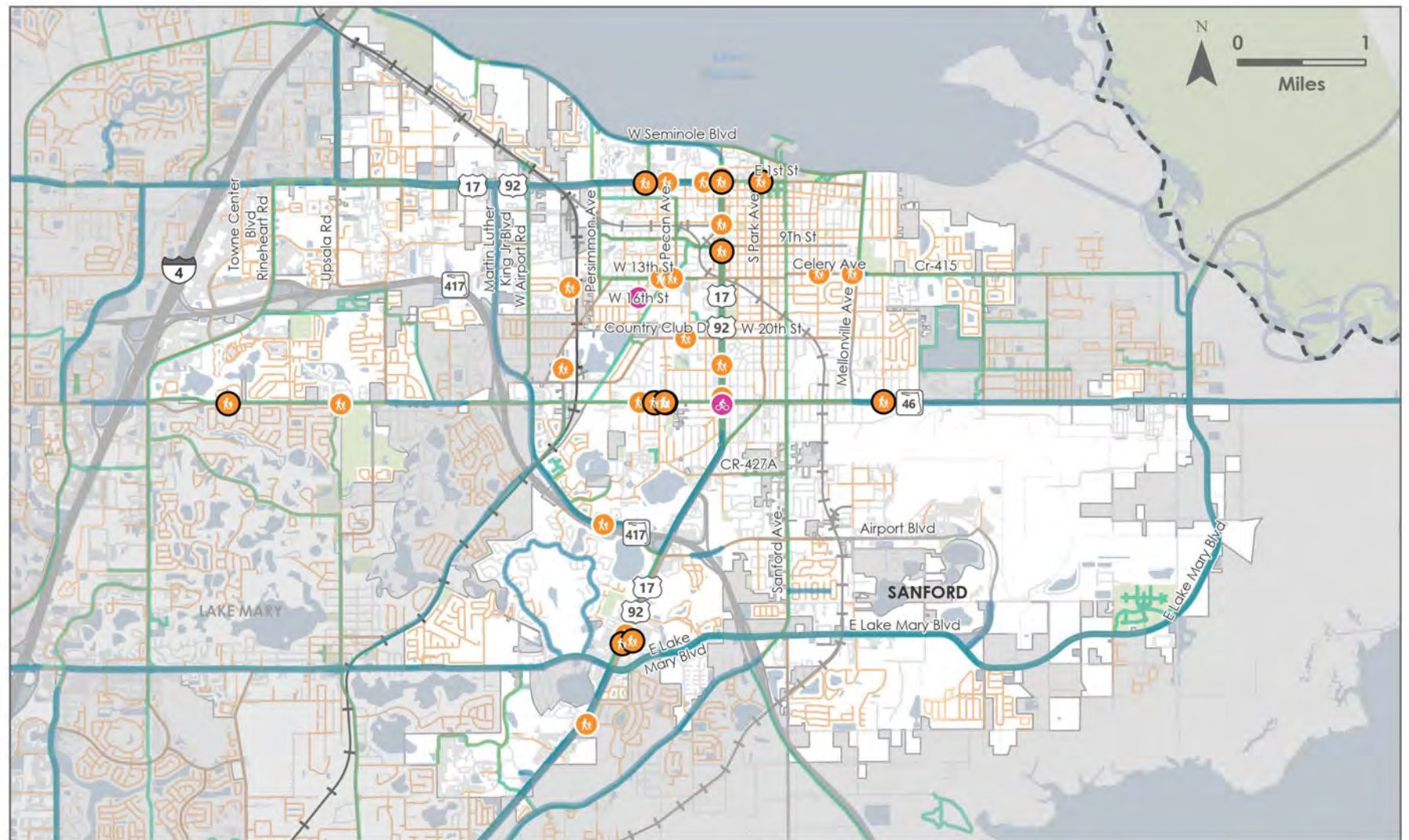


# Sanford – KSI Crashes (Bike and Ped)

Deaths:

11 Pedestrians

0 Bicyclists



**Deadly & Serious  
Bicycle & Pedestrian  
Crashes\* (2018-2022)**

\*Crash data excludes limited access facilities

#### Legend

**Bike/Ped Serious  
Crashes**

- Bicycle
- Pedestrian

**Bike/Ped Deadly  
Crashes**

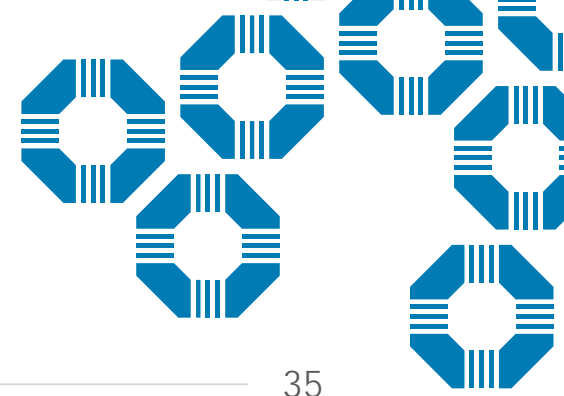
- Bicycle
- Pedestrian

**Facilities**

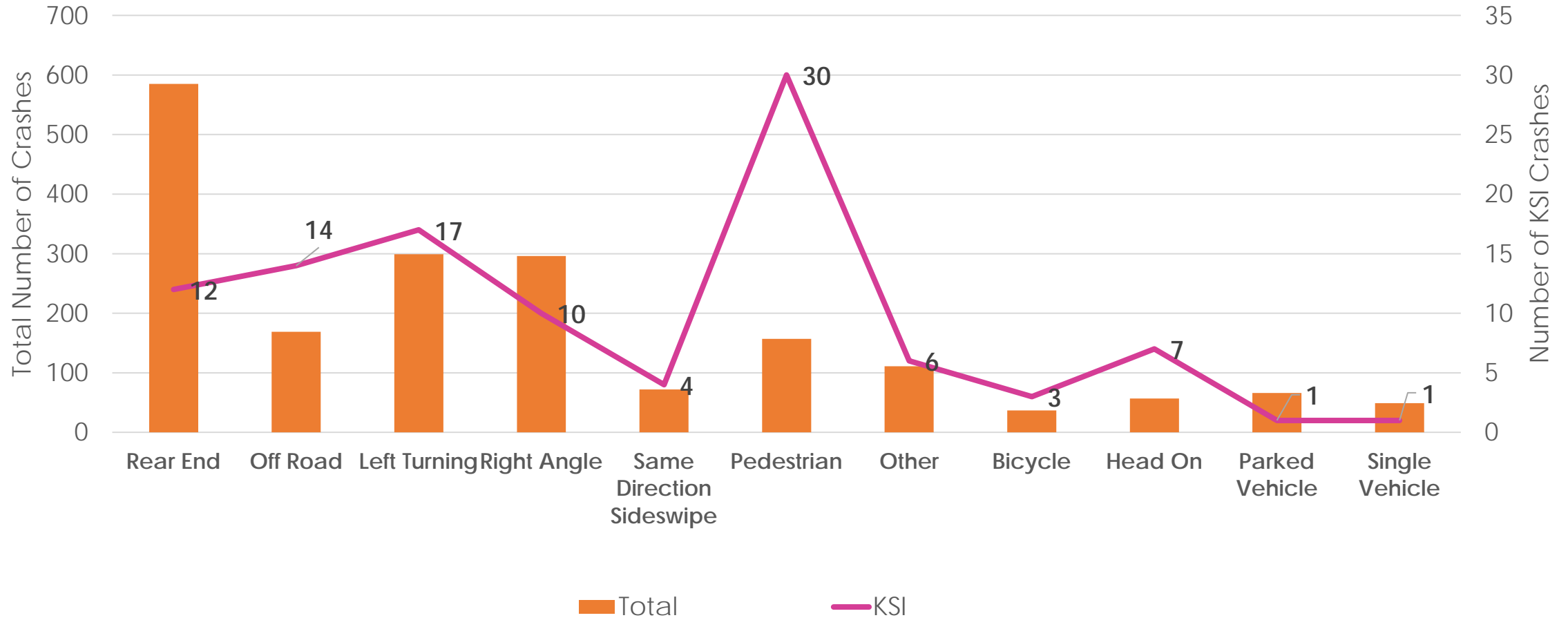
- Sidewalks
- Bike Lanes
- Trails

KSI = Killed or Severely Injured

Source: Signal 4 Analytics, 2018 – 2022; excludes limited access facilities.



# Crash Summary by Type Sanford | 2018-2022





# SANFORD - ROADWAY FACTORS

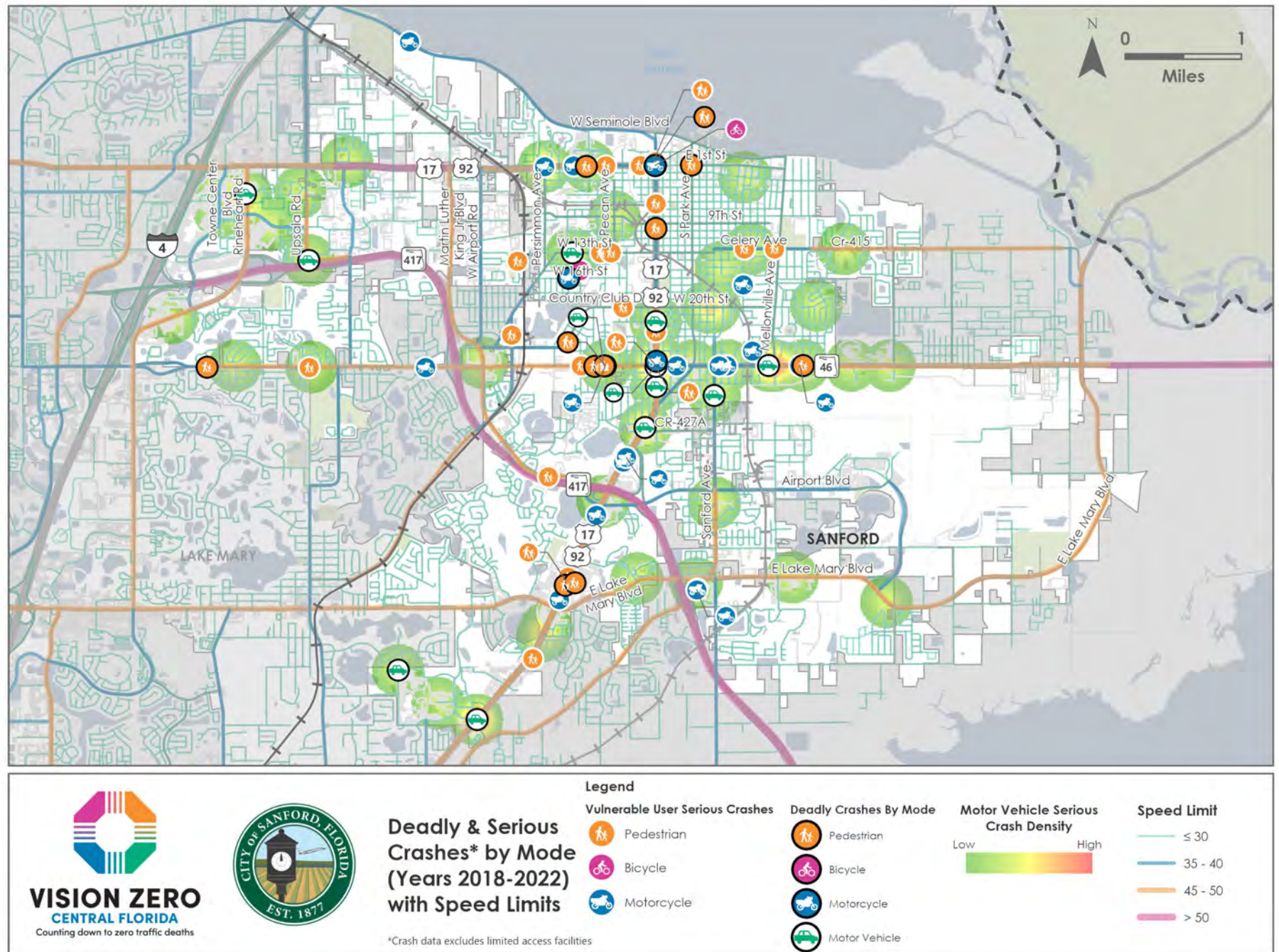
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# Sanford – Posted Speed

50% of KSIs  
occurred on  
roads posted 45  
mph or higher

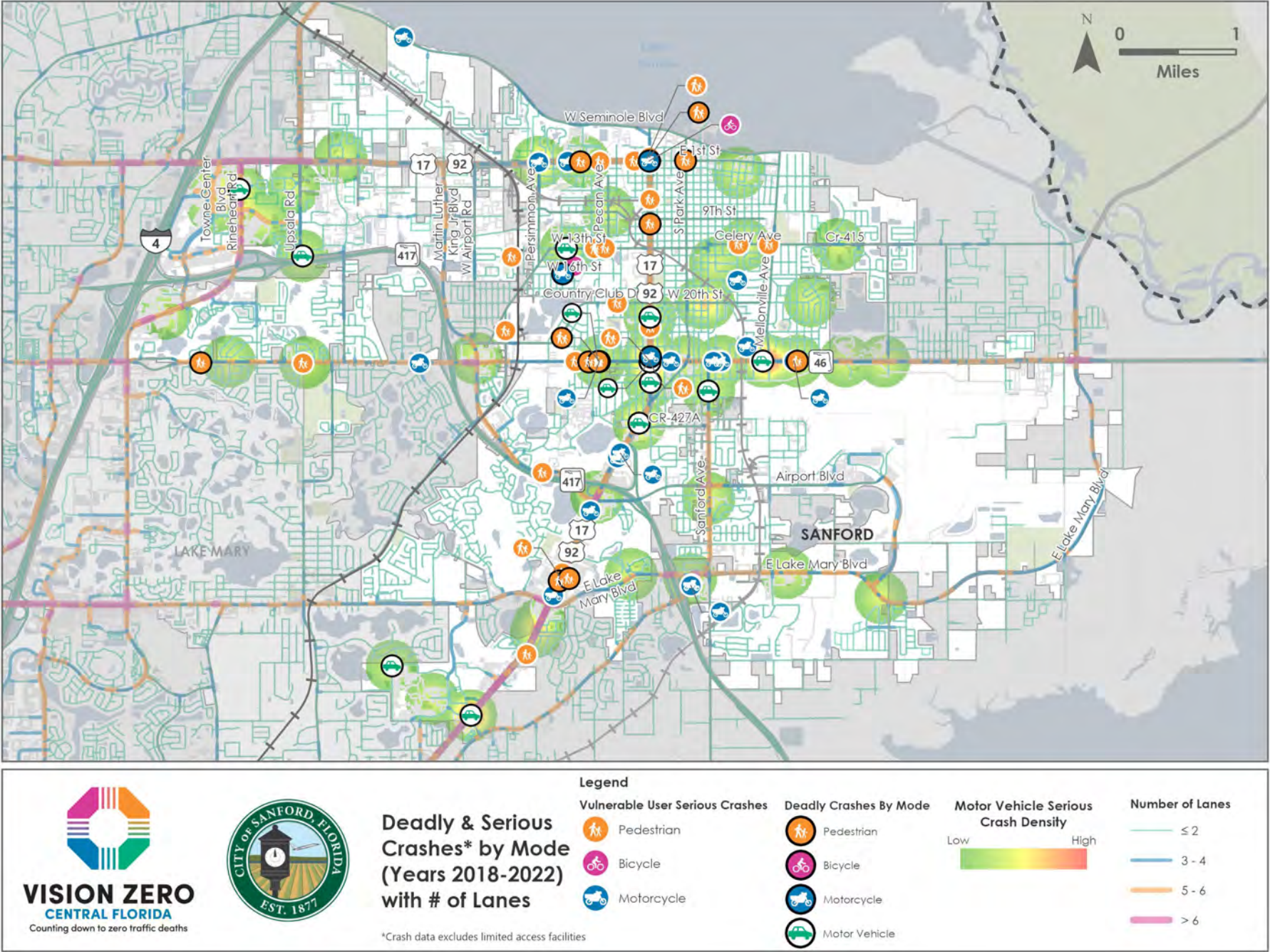
KSI = Killed or Severely Injured





# Sanford – Number of Lanes

30% of KSIs  
occurred on  
2-lane roads

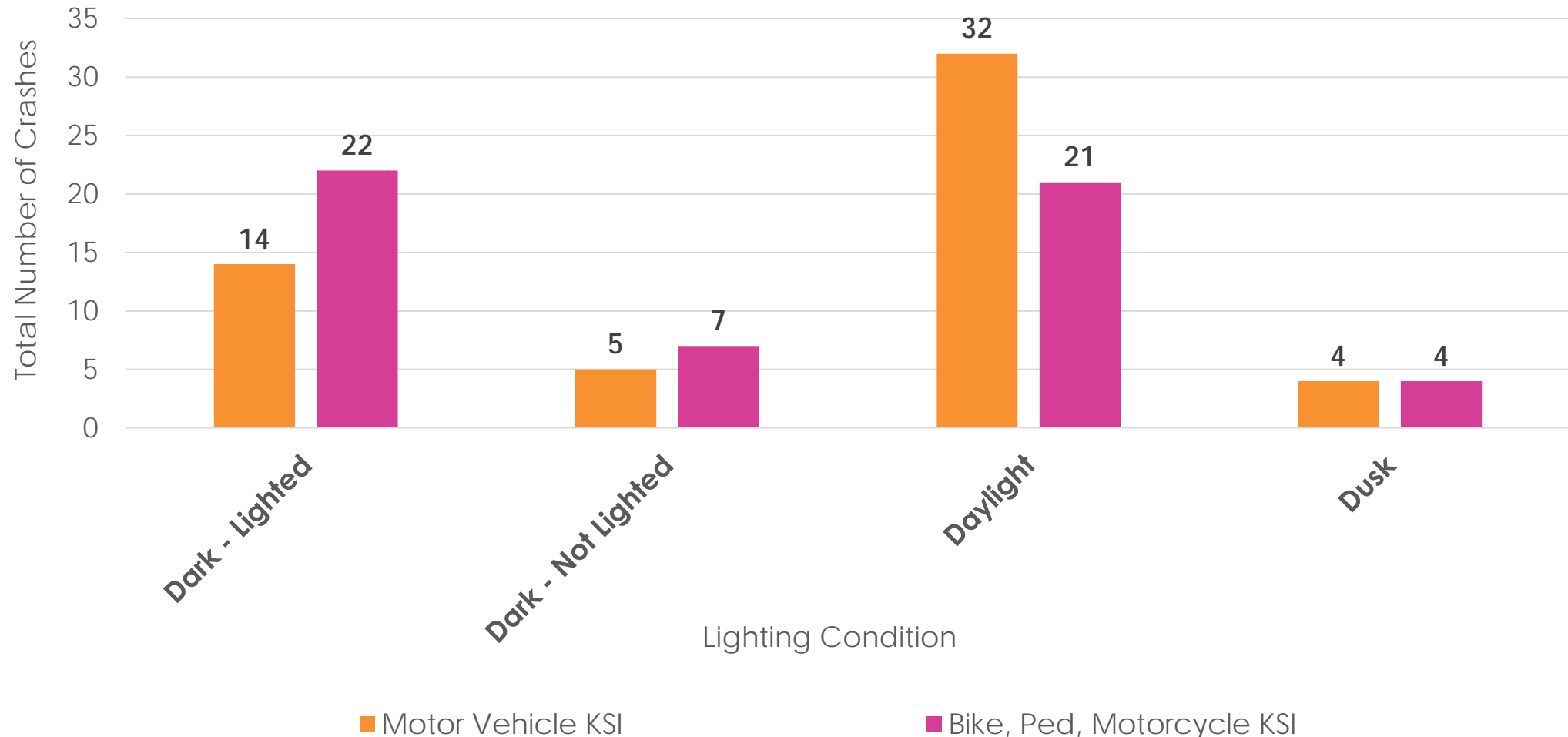


**KSI = Killed or Severely Injured**

Source: Signal 4 Analytics, 2018 – 2022; excludes limited access facilities.



# Roadway Factor Crashes – Lighting Sanford | 2018-2022

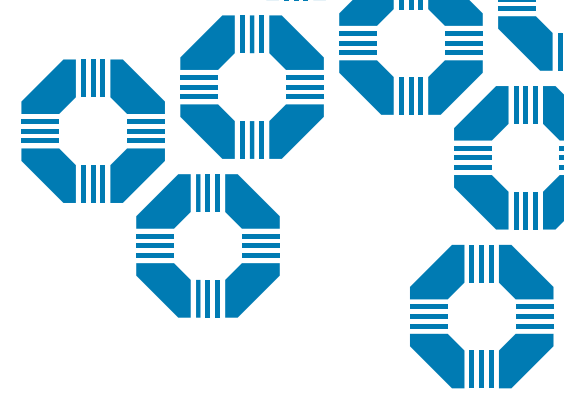


# HUMAN FACTORS

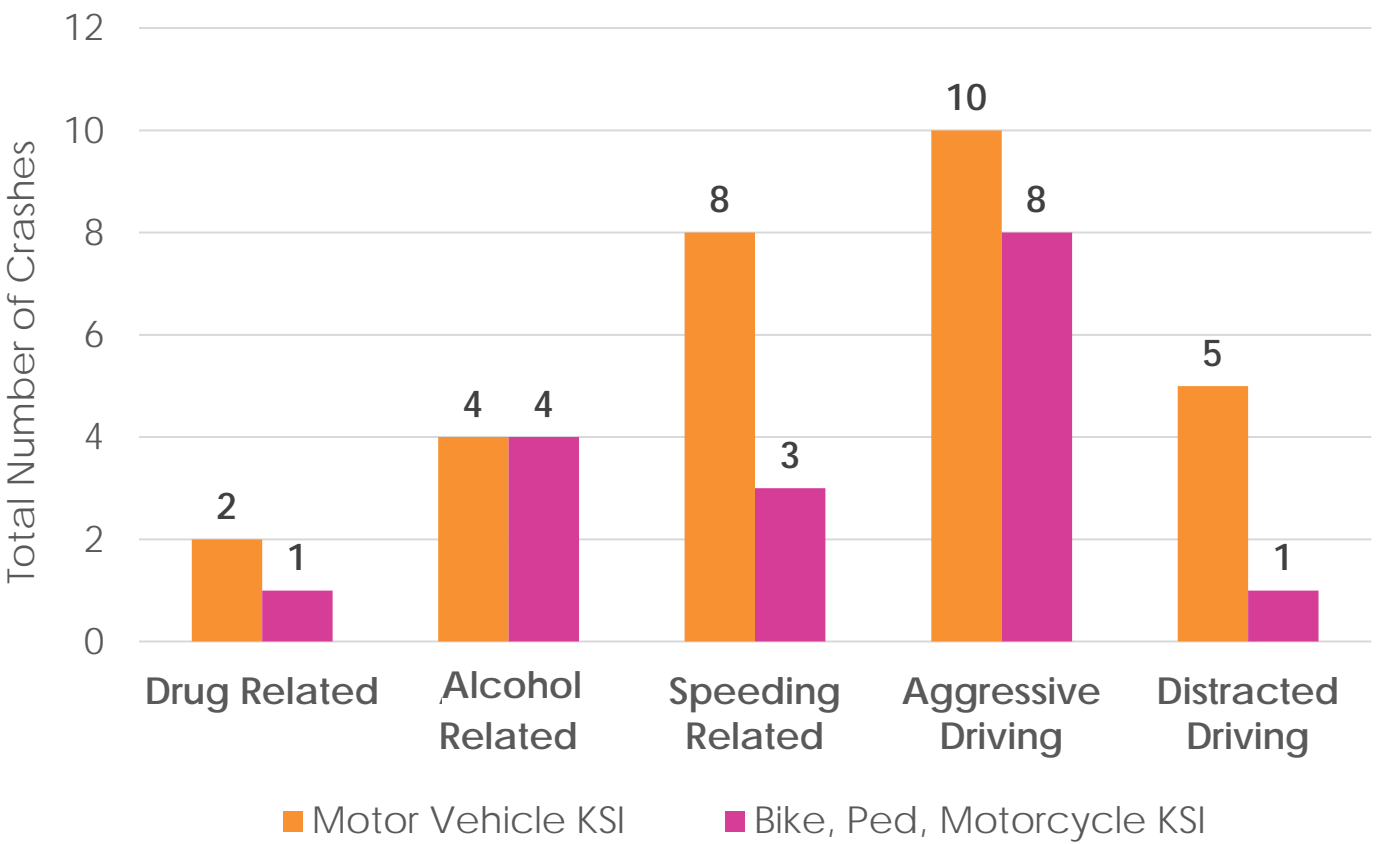
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# Road User Behavior Sanford | 2018-2022

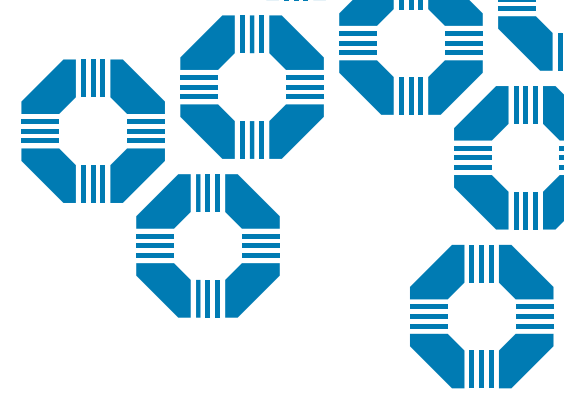


**32%** of KSI crashes reported speeding, aggressive, or distracted driving

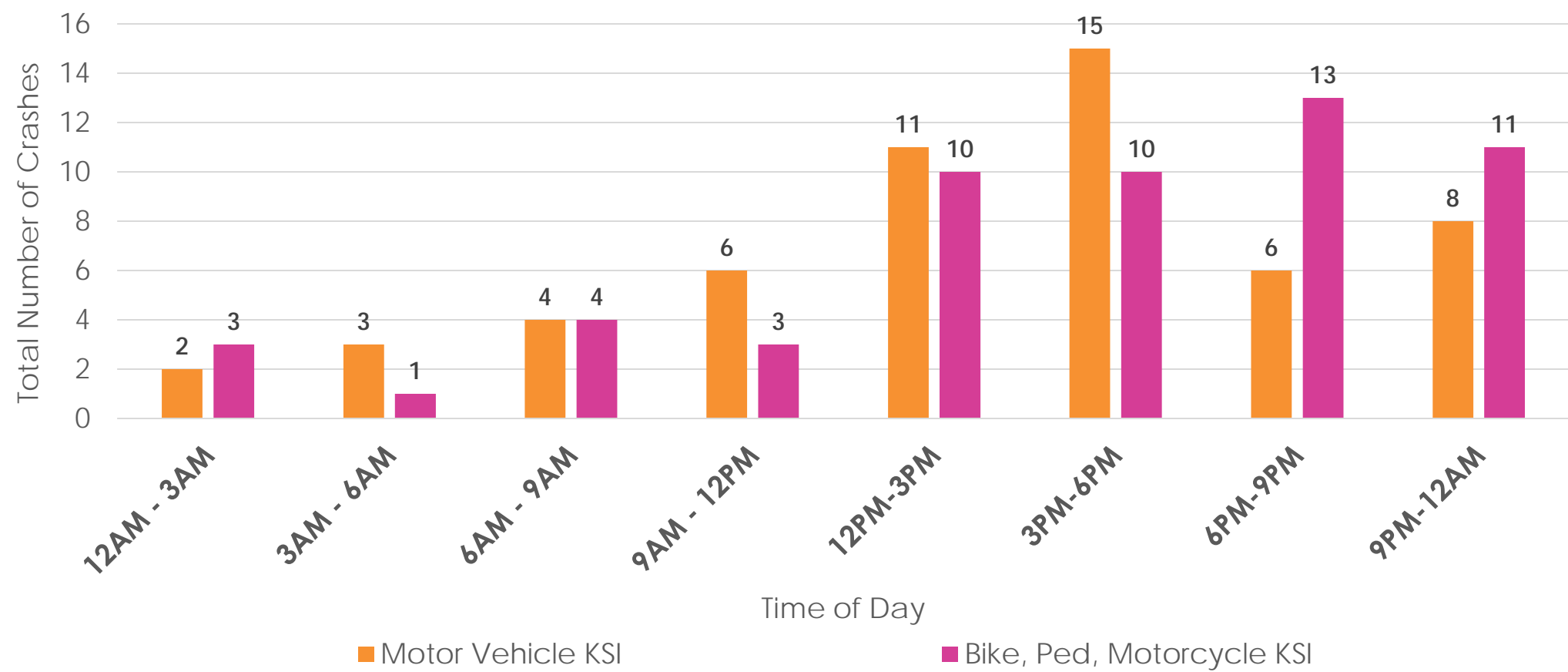
# ENVIRONMENTAL FACTORS

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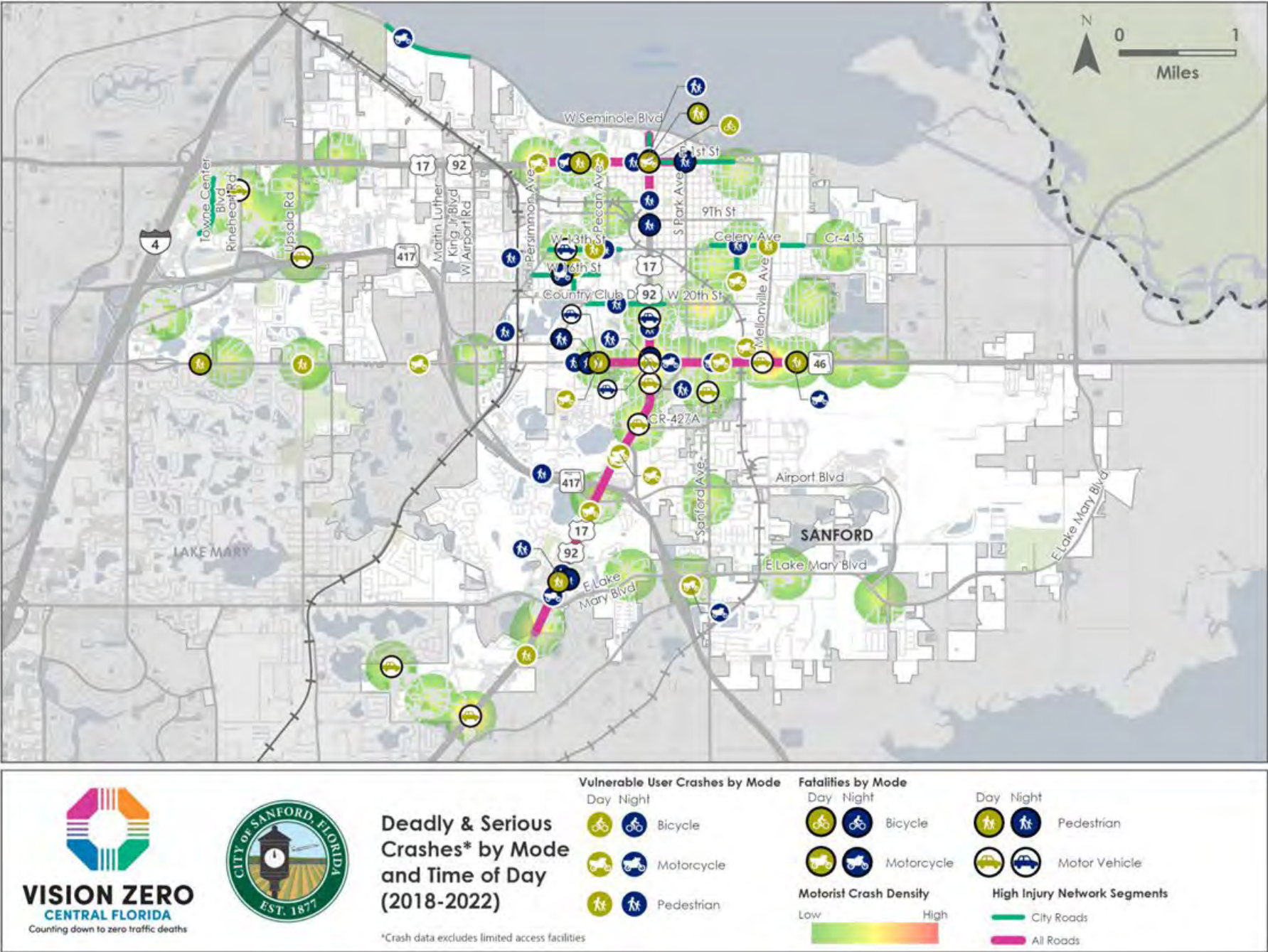




# Crashes by Time of Day - Sanford | 2018-2022

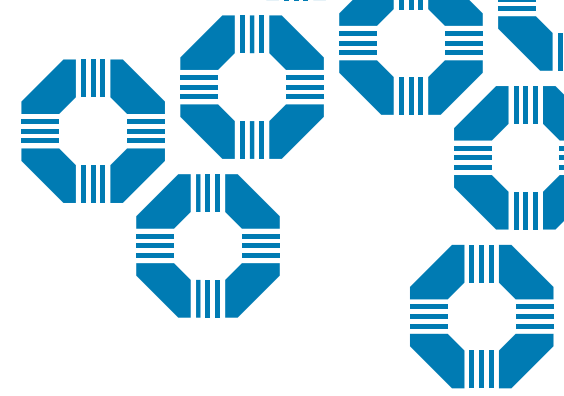


# Sanford – KSI Crashes by Time of Day

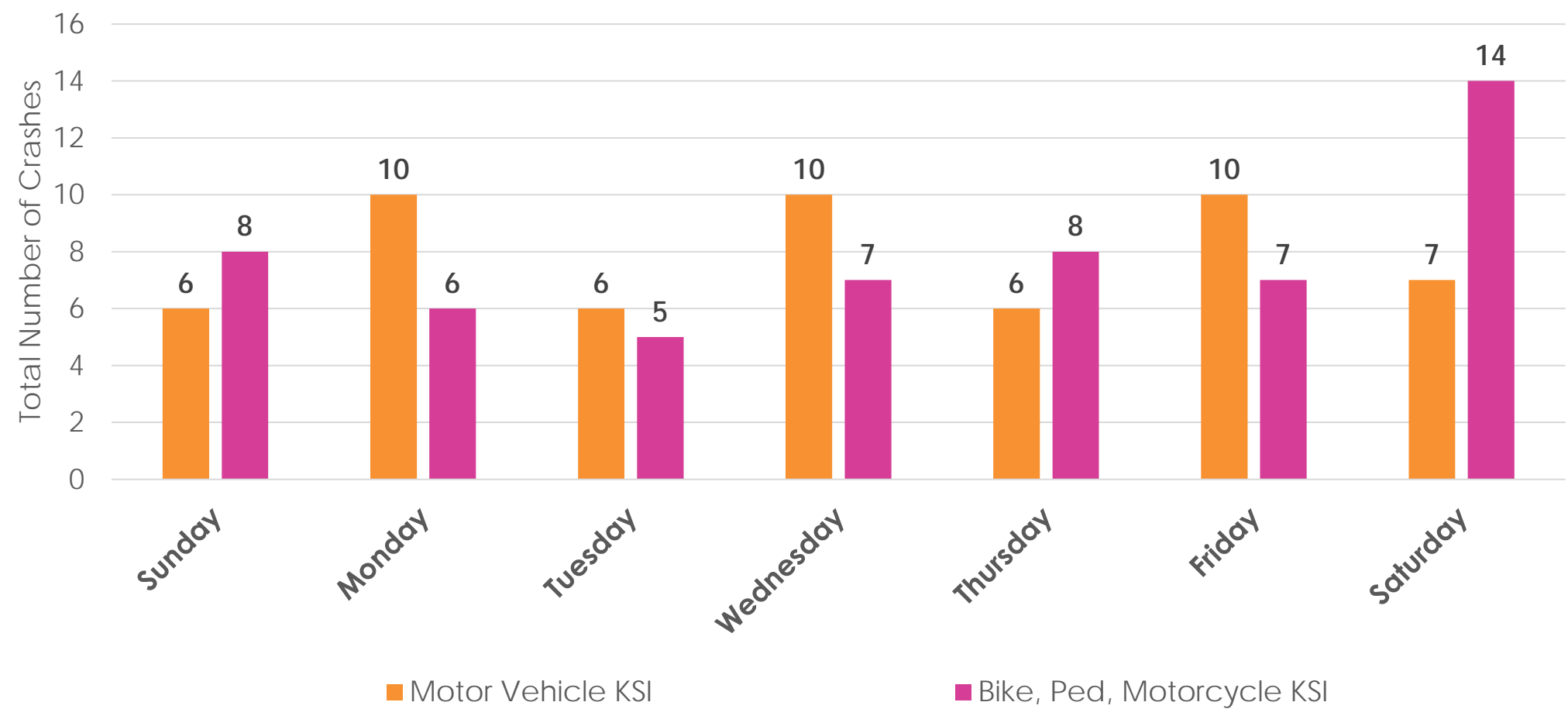


KSI = Killed or Severely Injured

Source: Signal 4 Analytics, 2018 – 2022; excludes limited access facilities.

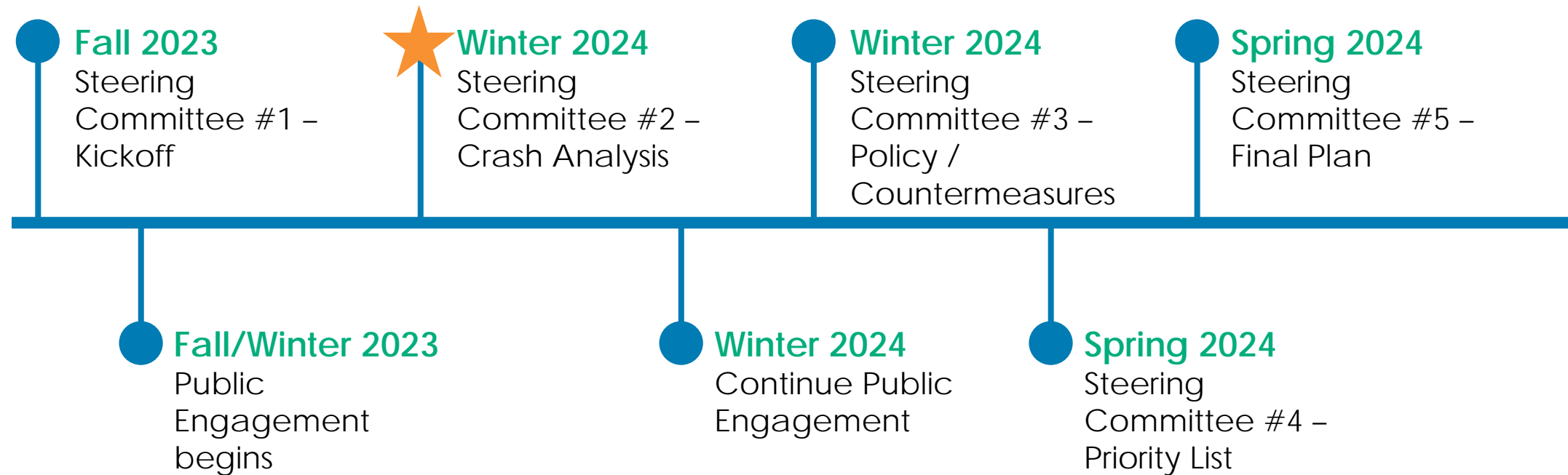
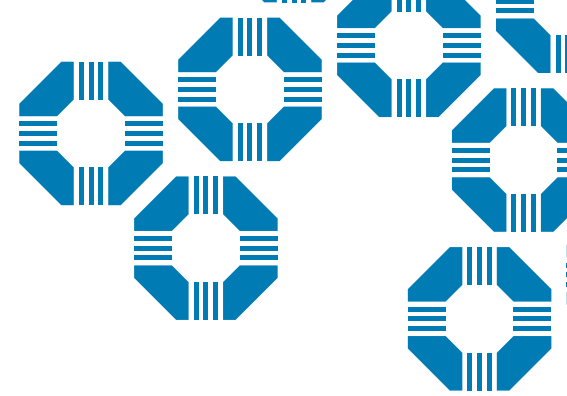


# Crashes by Day of Week - Sanford | 2018-2022





# Next Steps





**VISION ZERO**  
**CENTRAL FLORIDA**  
Counting down to zero traffic deaths



# THANK YOU



JANUARY 12, 2024

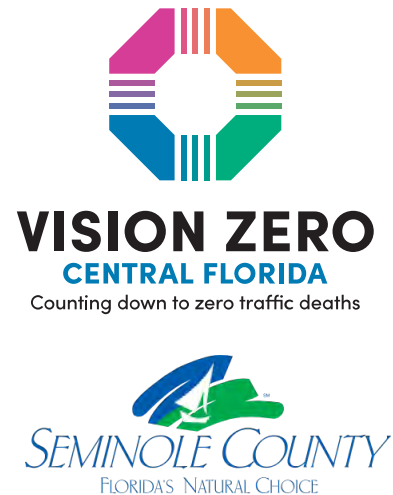


# Meeting Summary

Subject **Seminole County Vision Zero Steering Committee Meeting  
#3 Summary – Countermeasures & Policy**

Date & Time February 08, 2024, 1:00pm - 2:00pm

Location: Virtual – Microsoft TEAMS



## Attendees

The attendees for Steering Committee #3 can be found in Table 1.

**Table 1: Steering Committee #3 Attendees**

Steering Committee Members	
<b>Bill Wharton</b> , Seminole County (Engineering)	<b>Jason Burton</b> , City of Altamonte Springs
<b>Charlie Wetzel</b> , Seminole County (Traffic Engineering)	<b>Bruce Doig</b> , City of Altamonte Springs
<b>Arturo Perez</b> , Seminole County (Engineering)	<b>Jordan Smith</b> , Seminole County School Board
<b>Matt Kinley</b> , Seminole County Fire Department	<b>Janelle Dunn</b> , TrueHealth CEO
<b>Kelly Brock</b> , City of Casselberry	
<b>Cody Johnson</b> , LYNX	
<b>Chris Carson</b> , City of Lake Mary	
<b>Eric Nagowski</b> , City of Longwood	
<b>Summer Raines</b> , City of Longwood	
<b>Steve Fussell</b> , Sanford Airport	<b>Consultant Staff / MetroPlan Orlando</b>
<b>Loreen Bobo</b> , FDOT	<b>Lara Bouck</b> , MetroPlan Orlando
<b>Anneliese Battle</b> , FDOT	<b>Slade Downs</b> , MetroPlan Orlando
<b>Paul Yeargain</b> , City of Oviedo	<b>Megan Ferguson</b> , HDR
<b>James Miller</b> , Seminole State College	<b>Jeff Arms</b> , HDR
<b>Emily Bush</b> , Bike/Walk Central Florida	<b>Melissa Porcaro</b> , HDR
<b>Prince Bates</b> , City of Sanford	<b>Alexandra Laporte</b> , HDR
<b>Terrilyn Rolle</b> , City of Winter Springs	<b>Tyler Swafford</b> , HDR

## Presentation Agenda

The purpose of the third Steering Committee meeting was to reinforce the understanding of the countermeasures from a Safe System approach, specifically from an engineering standpoint. These countermeasures were then connected back to applicable policies.

The planned meeting agenda included:

1. Meeting #2 Recap
2. Countermeasures
3. Policy Benchmarking and Opportunities
4. Crash Reduction Scenarios and Timeline

## Discussion and Feedback

This presentation was shorter than other Steering Committee presentations in order to accommodate a MetroPlan Orlando Metropolitan Transportation Plan partner meeting – however, there was opportunity given by the project team for conversation and questions. Attendees were encouraged to use the chat feature.

**Meeting #2 Recap** – Megan Ferguson gave an overview of the analysis shown in Steering Committee #2 and reminded the committee members that the High Injury Network (HIN) adjustments were due tomorrow, February 9th, 2024. At the time of the meeting, the Seminole County HIN had been expanded to include additional top intersections and segments.

**Countermeasures** – Megan Ferguson asked the group who had read the countermeasures document that was sent out ahead of the meeting. Jason Burton and Matt Kinley raised their hands.

**Top Countermeasures and Crash Reduction Percentages** – The project team noted that the percentage for each countermeasure is the expected crash reduction by type, but some of the percentages are context specific. For example, some are only for specific severities of crashes such as Killed or Severely Injured (KSI) crashes. Expected crash reduction percentages shown are consistent with the factors used in the regional toolkit.

Arturo Perez asked if for the Speeding column, would putting a fake police car at a busy area be considered a countermeasure? Jeff Arms asked if that countermeasure was already in the toolkit – Megan Ferguson said no, this is not in the engineering toolkit, but may be added to the non-engineering toolkit.

Emily Bush asked regarding the Bicycle and Pedestrian top countermeasures, how were the top five measures determined. With Leading Pedestrian Interval (LPI) and Pedestrian Recall measures for

example, how is that considered a “low impact” measure when data they have seen looks at the high impact they have had on safety and reducing near misses? Megan Ferguson said that the impacts were based on crash modification factor (CMF) data provided in the toolkit. LPI could be noted for all crashes and not pedestrian crashes specifically, but Emily is right that these are not the only measures. Jeff Arms confirmed that there are many countermeasures, but the project team wanted to highlight as many of the main ones as possible for the matrix presented. Emily Bush confirmed that the countermeasures were based on CMF, and Megan Ferguson confirmed yes.

James Miller noted that lighting could be an issue for off road crashes. Megan Ferguson confirmed that they looked at time of day and lighting countermeasures with crash reduction percentages. Megan Ferguson gave a thank you to Mike Blinn, who gathered geographic locations for much of the county lighting data himself. The project team was looking at this lighting data to better understand where crashes in dark conditions are happening.

The steering committee discussed the variable speed limit countermeasure – typically variable speed limits have been used on highways (and in other countries) but FHWA advises they could be used on higher speed arterials. In Texas, they were used in pilot projects for icy roads. In Florida, they could be used for wet roads.

James Miller asked how variable speed limit signs work? Megan Ferguson explained that variable speed limit signs are typically digital signs, similar to dynamic message signs (DMS) boards used on freeways. They can be programmed to change the message displayed.

Loreen Bobo said that FDOT tried variable speed limit signs in the past. She will follow up with her project team on the history. Enforcement of variable speed limit signs can be difficult, since there would be additional staffing requirements.

Emily Bush confirmed that variable speed limit signs are tough to enforce and can be difficult for drivers to understand – it is already difficult to get drivers to follow the posted speed, which we know is not the design speed. Additionally, law enforcement is already short staffed. We should look at countermeasures with less effort and more impact. Jeff Arms counterpoint is that variable speed limit signs have had a 29% KSI reduction – Emily Bush asked if a countermeasure like variable speed limit signs would work on a road like S.R. 436 where the speed limit is 45 MPH and drivers already go 65 MPH. Jeff Arms discussed the potential for implementing a variable speed limit sign for S.R. 436 at night, see if there’s a reduction in crashes from a time of day perspective.

Megan Ferguson noted research studies showed that changing the variable speed limit signs led to less compliance. However, if there are specific conditions that drivers recognize, such as wet conditions, they are more likely to follow them. Emily Bush noted that school zones are variable speed limit areas that are already difficult to enforce. James Miller said that predictability would be beneficial for variable speed limit signs, similar to what Jeff Arms said about time of day. When drivers have a sense of familiarity with the road, you can feel the right speeds – even if variable speeds are implemented, there can still be consistency.

Loreen Bobo will continue to research variable speed limits, and sent a link to research in the chat: [FHWA Office of Operations - iFlorida Model Deployment Final Evaluation Report \(dot.gov\)](#)



Jeff Arms mentioned the implementation of additional education and pivoting it towards disadvantaged areas, provide more information for street rules, and explain why they are applied to street design and enforcement.

**Benchmarking and Policy** – Alexandra Laporte presented on the structure and approach of the benchmarking process. In total, there were 66 benchmarks split between three categories: Leadership and Commitment, Safe Roads and Safe Speeds, and Data-Drive Approach, Transparency, and Accountability. This benchmarking process was completed for Seminole County and all of the municipalities within the county. Based on these benchmarking exercises, there are general internal actions that can be implemented to communicate, build, establish, and update Vision Zero within policies and procedures.

**Crash Reduction Goals** – Kelly Brock asked if the project team could clarify the three scenarios. Are the three scenarios additive? For example, scenario 3 includes scenario 1 and 2. Megan Ferguson confirmed yes, they are additive.

Matt Kinley asked for when sending suggestions, is it okay to use email? Megan Ferguson said yes, emailing suggestions is okay.

Matt Kinley did note that he reviewed the countermeasures toolkit already, and on page 44 considerations include speed cushions which may be appropriate in some cases, but that is untrue. Jeff Arms noted that the speed cushions noted may include the ones with slots for larger vehicles, and the countermeasure is context dependent.

**Traffic Death Reduction Scenarios Seminole County** – Emily Bush emphasized she wants to get to zero fatalities and serious injuries as soon as possible, but some of the opportunities and goals may not make sense – for example, number of crosswalks in total should not be the goal, but potentially instead high visibility or raised crosswalks. Crosswalks are not always historically the best, such as ones that are on curves with low visibility or unlighted areas. Jeff Arms noted that these were indicators and that is something cities will often use, such as how many miles of bike lanes exist regardless of what type of bike lanes are implemented. That is why he emphasized the question of “how much money is being used for specific safety projects?” question. He wants to see the data on how much is spent on safety projects specifically.

Loreen Bobo noted that one effort of the FDOT Program Management Office is to identify where safety funds are going, for example District 5 receives 21 million dollars a year for all nine counties for safety projects. Federal funds are granted for projects with a good benefit to cost ratio, which we know is not nearly enough money. She does not want to discount the efforts that are being made for resurfacing projects that include safety features. She asked how do we begin to count how much money is spent on safety? Jeff Arms suggested looking at planning level estimates and to start at that level – not necessarily exact dollar amount, but both are good to look at.

**Next Steps** – Megan Ferguson informed the steering committee that the next meeting will be in early April to share the draft Project List. Additionally, public meetings are currently being coordinated. Megan Ferguson and Melissa Porcaro both shared survey information regarding opinions on the countermeasures. The survey was to gauge the Steering Committee’s understanding of the Federal Highway Administration’s (FHWA’s) countermeasures, which countermeasures they utilized or preferred, and which countermeasures they found unsuccessful. The link to the survey shared is here: [Voting \(menti.com\)](https://www.menti.com)

## Upcoming Meetings

The next Steering Committee meeting is scheduled for April 2, 2024. The next meeting will discuss the draft Vision Zero Project Priority List based on the finalized High Injury Network. Table 2 shows the tentative Steering Committee schedule for the duration of the Vision Zero Action Plan project.

**Table 2: Steering Committee Tentative Schedule**

Name	When	Purpose
Steering Committee #4 – Project Priority List	April 2, 2024	Identify potential safety projects and priorities.
Steering Committee #5 – Next Steps	May 9, 2024	If needed, this meeting is to review the next steps for the overall Vision Zero project, and how to implement the Vision Zero Action Plan.



# VISION ZERO SAFETY ACTION PLAN

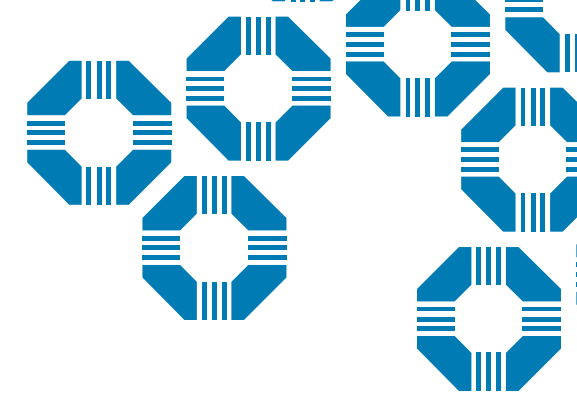
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## STEERING COMMITTEE #3 – COUNTERMEASURES AND POLICY

FEBRUARY 08, 2024





# Agenda

1. Meeting #2 Recap
2. Countermeasures
3. Policy Benchmarking and Opportunities
4. Crash Reduction Scenarios and Timeline

# Meeting #2

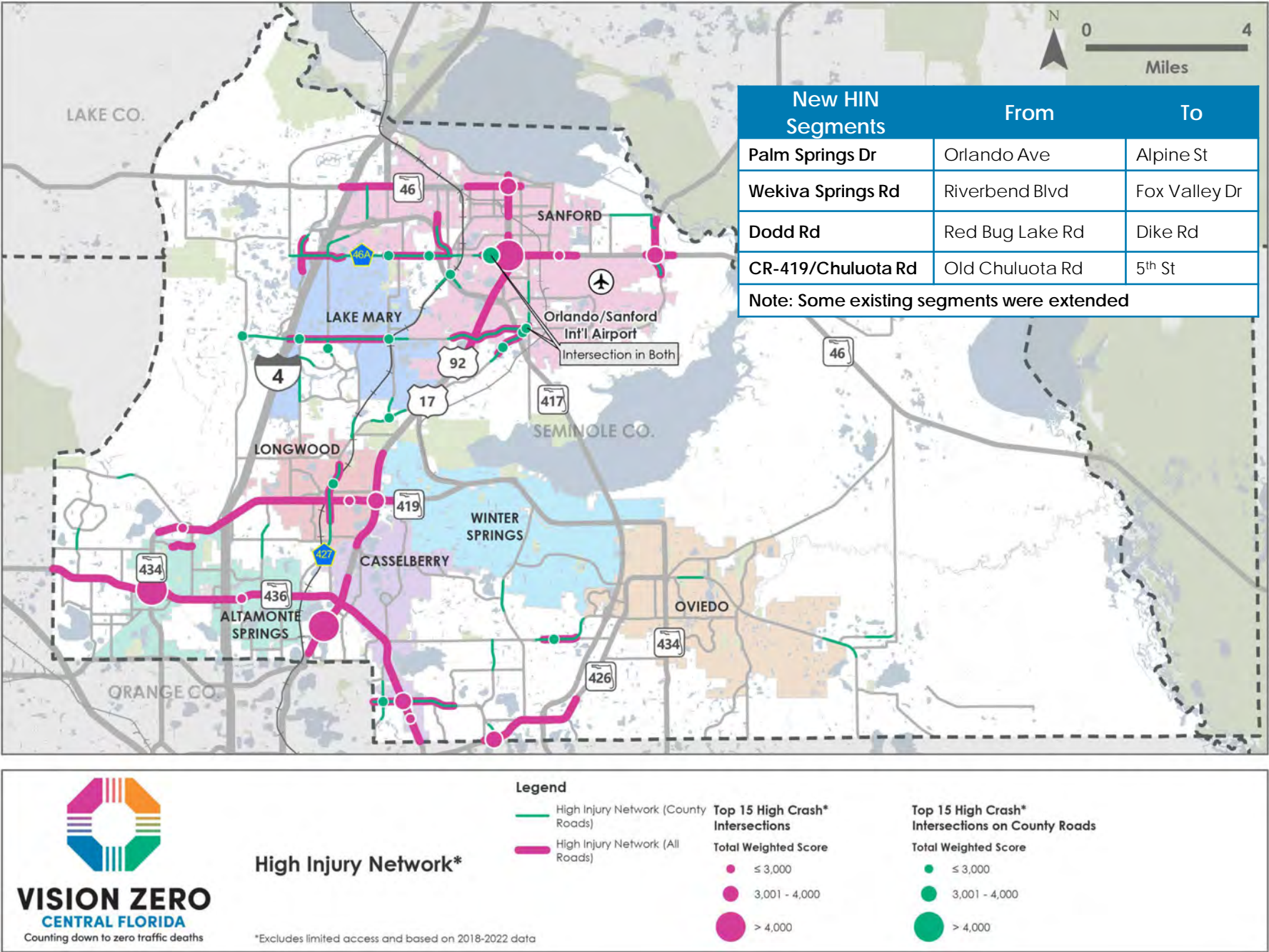
## Recap –

### HIN, Top

### Intersections

County Top Intersections

#	Intersection	Crash Weight
1	CR 46A & HARTWELL AVE	3391
2	CR-427 & LAKE MARY BLVD	2941
3	CR 46A & CASA VERDE BLVD	2165
4	LAKE MARY BLVD & FLAGG LN	2157
5	CR-427 & KEYES CT	2082
6	RED BUG LAKE RD & S CITRUS RD	2043
7	HOWELL BRANCH RD & LAKE HOWELL RD	2018
8	CR-427 & DOWNING ST	1964
9	CR-427 & ORANGE AVE	1964
10	CR-427 & CR-15/ S COUNTRY CLUB RD	1853
11	LAKE MARY BLVD & CR-15	1526
12	OLD LAKE MARY BLVD & AIRPORT BLVD	1467
13	LAKE MARY BLVD & MARKHAM WOODS RD	1467
14	GREENWOOD BLVD & SUN DR	1369
15	CR 46A & RANTOUL LN	1364

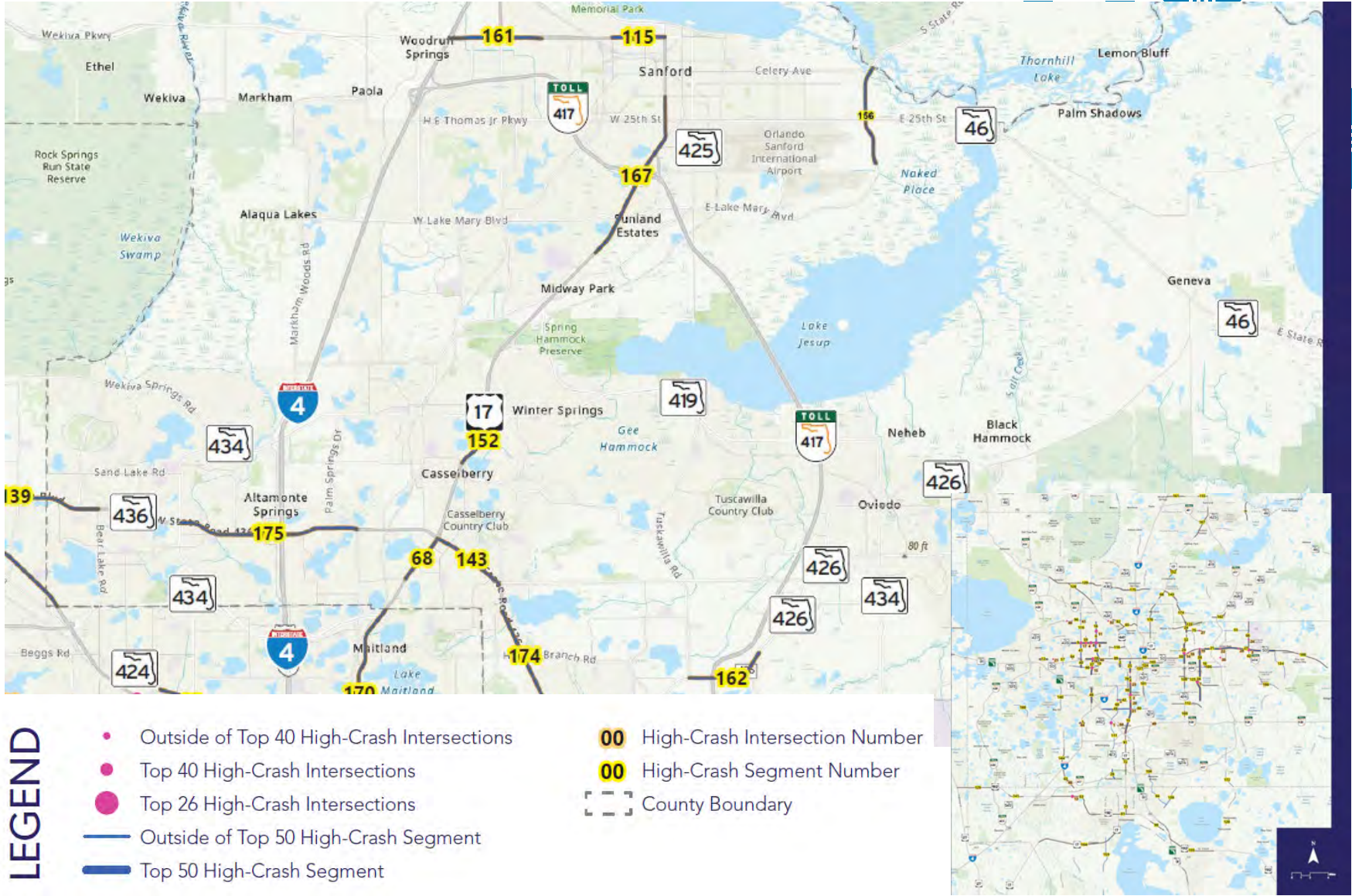


Source: Signal 4 Analytics, 2018 – 2022; excludes limited access facilities.

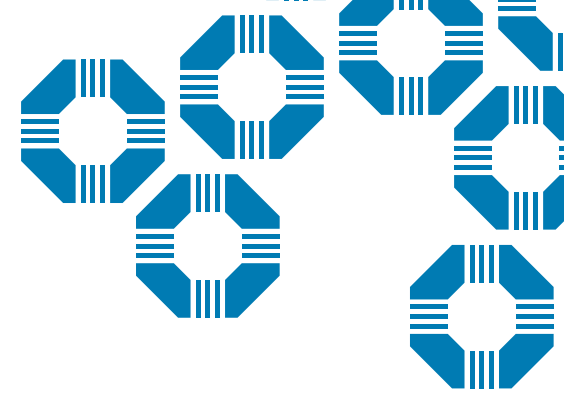


# FDOT High Crash Segments Map

#	Segment
68	US 17-92 South of Semoran Blvd**
115	W 1st Street *
139	E Semoran Blvd*
143	Semoran Blvd**
152	US 17-92 North of Semoran Blvd*
156	Lake Mary Blvd.*
161	W State Road 46*
162	W State 426*
167	S French Ave**
174	Semoran Blvd**
* Also on County's HIN All Roads	
** Extended segment on County's HIN All Roads	



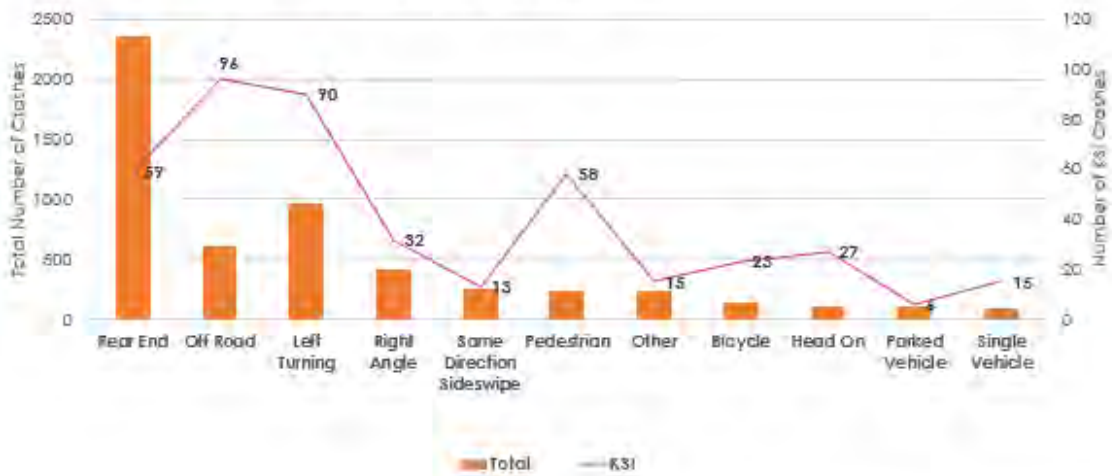
Source: FDOT



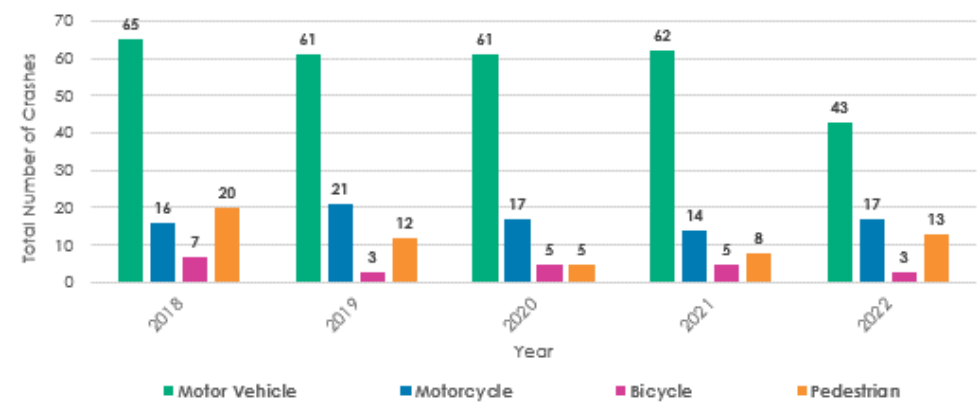
# Meeting #2 Recap – Trends

- Crash Trends

KSI Crash Summary by Type  
Seminole County | 2018-2022



Deadly and Serious Crashes Trends by Mode  
Seminole County | 2018-2022



Source: Signal 4 Analytics, 2018 – 2022; excludes limited access facilities.

# COUNTERMEASURES

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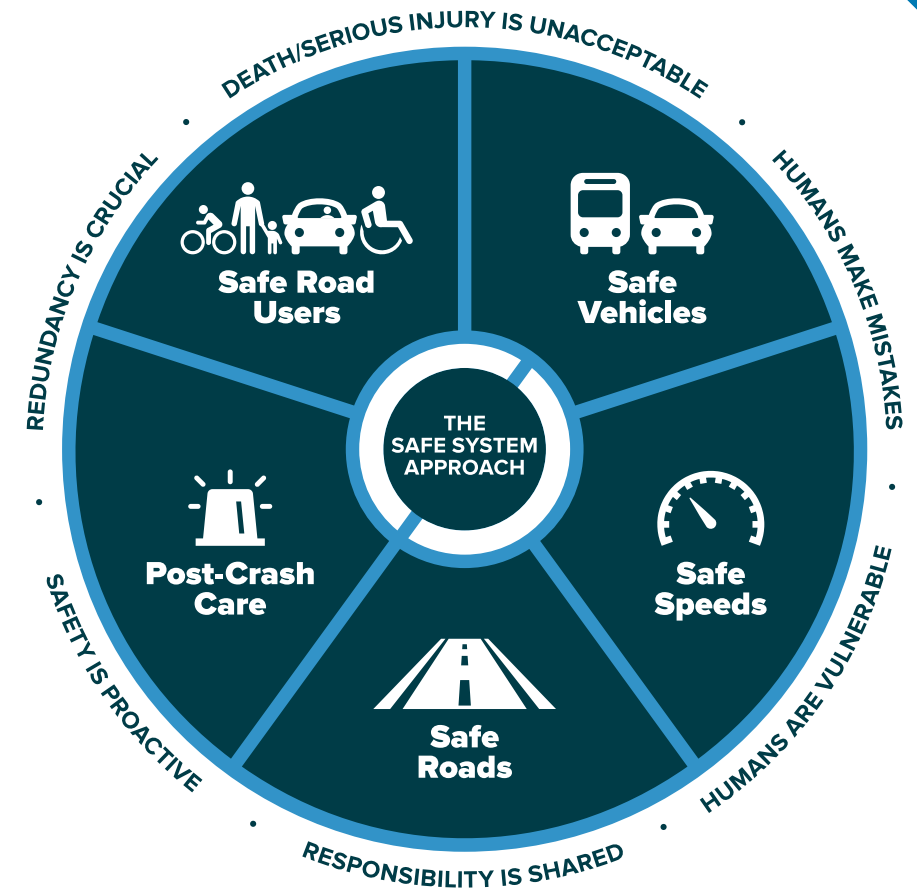
# Countermeasures in Safe System Framework

## Anticipate Human Error

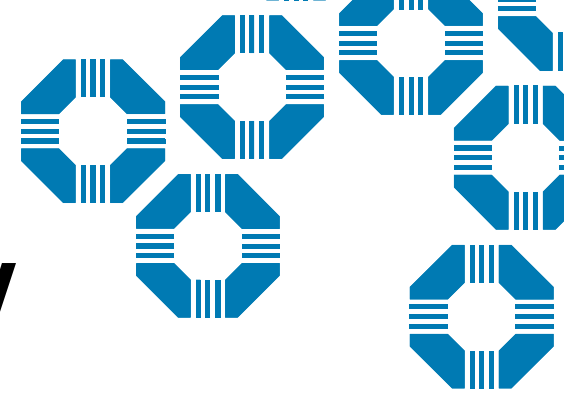
- Remove Severe Conflicts
- Manage Conflicts in Time
- Increase Awareness and Attentiveness

## Accommodate Human Injury Tolerance

- Manage Vehicular Speeds
- Implement Enforcing Features to Slow Traffic



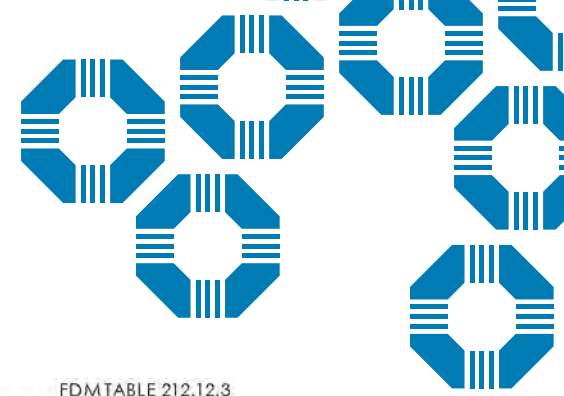
# Countermeasures in Safe Systems Solutions Hierarchy





# Engineering Strategy Countermeasure Toolkit

- Signals
- Signing and Striping
- Bikeways
- Pedestrian Facilities
- Intersections and Roadways
- Speed Management
- Other Engineering Strategies



FDMTABLE 212.12.3

## Curb-Return Radius Reduction



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.

EFFICACY **LOW** **MED** **HIGH** **CMF Available**

MODAL SAFETY EMPHASIS 

APPLICABLE FACILITY **URBAN**

IMPLEMENTATION TIMELINE 

COST

### FOCUS CRASH TYPE

Speed related crashes, Pedestrian struck by turning vehicle, Bicyclist struck by turning vehicle

### SAFE SYSTEM STRATEGY

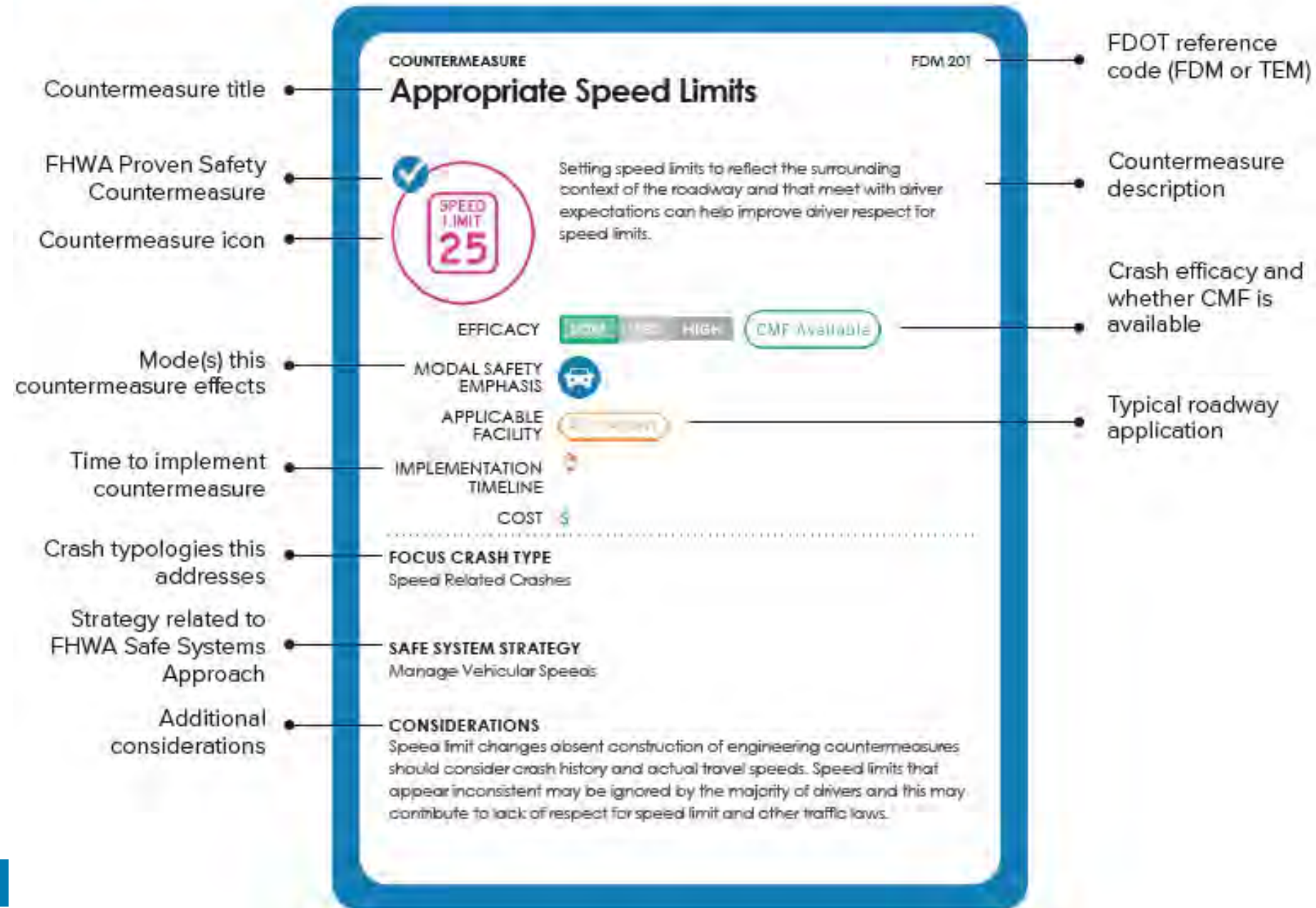
Manage Vehicular Speeds

### CONSIDERATIONS

Can create drainage problems; emergency vehicles would need to be considered in design; may be difficult for large trucks to navigate

# Safer Road Strategies Engineering Countermeasures

What You'll See Inside:



CMF = Crash Modification Factor

# SELECTING & APPLYING COUNTERMEASURES



# Countermeasures

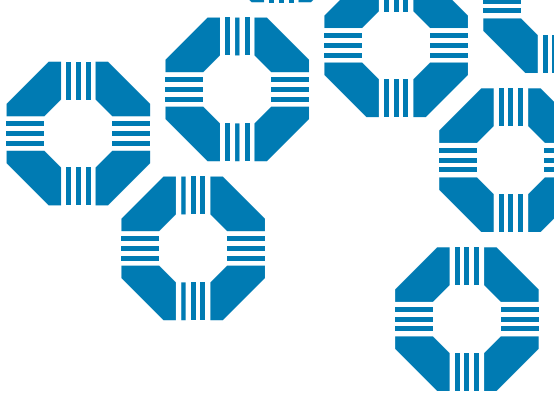
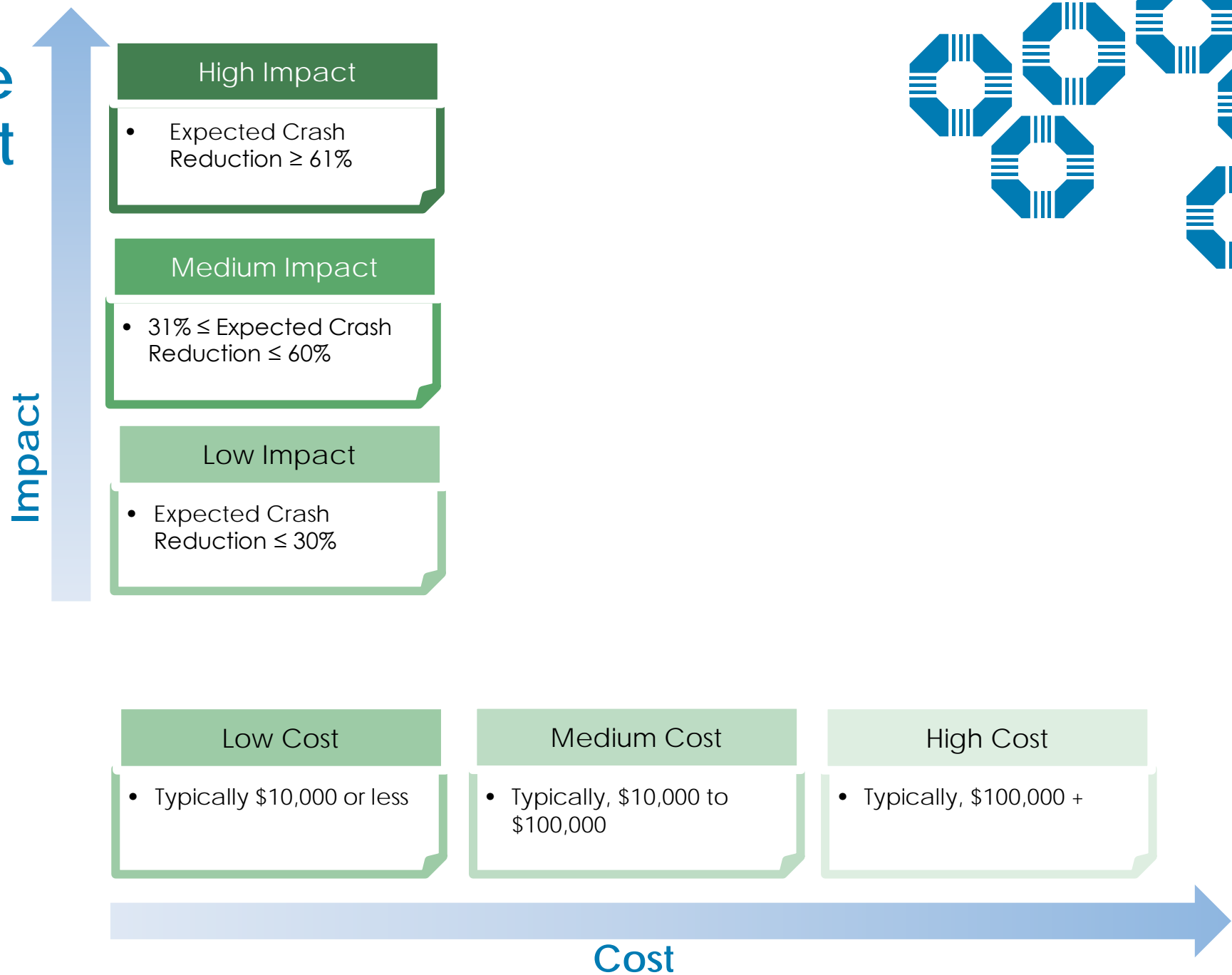
- FHWA Proven Safety Countermeasures
- Countermeasures with CMFs
- Unknown impact countermeasures



# Countermeasure Impact and Cost Defined

Unknown Impact

- No quantitative data is available





# Countermeasure Selection Guide

## Left-Turn, Angle, Right-Turn Crashes

Impact

Low Cost/ High Impact	Medium Cost/ High Impact	High Cost/ High Impact
<ul style="list-style-type: none"><li>Prohibit left turn</li><li>All-way stop control</li></ul>		<ul style="list-style-type: none"><li>Traffic signal</li></ul>
Low Cost/ Medium Impact	Medium Cost/ Medium Impact	High Cost/ Medium Impact
<ul style="list-style-type: none"><li>Upgrade signal head</li><li>LED-enhanced sign</li><li>Bicycle crossing (solid green paint)</li><li>Green conflict striping</li><li>Remove obstructions for sightlines</li></ul>	<ul style="list-style-type: none"><li>Raised median*</li><li>Raised crosswalk</li><li>Directional median openings</li><li>Curb-return radius reduction</li><li>See guide for full list</li></ul>	<ul style="list-style-type: none"><li>Roundabout*</li><li>Bicycle signal/exclusive bike phase</li></ul>
Low Cost/ Low Impact	Medium Cost/ Low Impact	High Cost/ Low Impact
<ul style="list-style-type: none"><li>Extend yellow &amp; all red time*</li><li>LPI and ped recall*</li><li>Retroreflective backplates*</li><li>See guide for full list</li></ul>	<ul style="list-style-type: none"><li>Flashing yellow turn phase</li><li>Pedestrian countdown timer</li><li>Red light camera</li></ul>	<ul style="list-style-type: none"><li>Reduced left-turn conflict intersection*</li></ul>

Note:

- Countermeasures may not apply to all modes, roadways, or crash severities.
- Countermeasures may apply to more crash types.

\* FHWA Proven Safety Countermeasure

Cost

# Countermeasure Selection Guide

## Left-Turn, Angle, Right-Turn Crashes

Note:

- Countermeasures may not apply to all modes, roadways, or crash severities.
- Countermeasures may apply to more crash types.

### Low Cost / Unknown Impact

- Extend green time for bikes
- Extend time pushbutton
- Prohibit right-turn-on-red
- Prohibit turns during pedestrian phase
- Time-based turn restriction
- Upgrade intersection pavement markings
- Bicycles may use full lane sign
- Mixing zone
- High-visibility crosswalk
- Restripe crosswalk
- Centerline hardening
- Enhanced daylighting/slow turn wedge
- Paint and plastic median

### Medium Cost / Unknown Impact

- Bike detection
- Pedestrian detection
- Supplemental signal heads
- Flashing beacon as advance warning
- Curb extensions
- Paint and plastic mini circle/mini roundabout

### High Cost / Unknown Impact

- Separate right-turn phasing
- Close slip lane
- Intersection reconstruction and tightening
- Protected intersection
- Raised intersection

Cost

# Countermeasure Selection Guide

## Off-Road

### Unknown Impact

- Medium Cost
  - Superelevation at horizontal curve locations

### Note:

- Countermeasures may not apply to all modes, roadways, or crash severities.
- Countermeasures may apply to more crash types.

Impact ↑

Low Cost/ High Impact	Medium Cost/ High Impact	High Cost/ High Impact
<ul style="list-style-type: none"><li>• -</li></ul>	<ul style="list-style-type: none"><li>• High friction surface treatment*</li><li>• Impact attenuators</li><li>• Widen/pave shoulder</li><li>• Create or increase clear zone</li></ul>	<ul style="list-style-type: none"><li>• -</li></ul>
Low Cost / Medium Impact	Medium Cost/ Medium Impact	High Cost/ Medium Impact
<ul style="list-style-type: none"><li>• Rumble strips*</li><li>• Safety edge*</li></ul>	<ul style="list-style-type: none"><li>• Guardrail</li><li>• Relocate select hazardous utility poles</li></ul>	<ul style="list-style-type: none"><li>• Median barrier*</li></ul>
Low Cost/ Low Impact	Medium Cost/ Low Impact	High Cost/ Low Impact
<ul style="list-style-type: none"><li>• Chevron signs on horizontal curves*</li><li>• Painted centerline and raised pavement markers at curves</li><li>• See guide for full list</li></ul>	<ul style="list-style-type: none"><li>• -</li></ul>	

Cost →

\* FHWA Proven Safety Countermeasure

# Countermeasure Selection Guide

## Head On, Sideswipe

Unknown Impact (Only Sideswipe)

- Low Cost
  - Striping through intersection
  - Upgrade striping

Note:

- Countermeasures may not apply to all modes, roadways, or crash severities.
- Countermeasures may apply to more crash types.

Impact

Low Cost/ High Impact	Medium Cost/ High Impact	High Cost/ High Impact
Low Cost/ Medium Impact	Medium Cost/ Medium Impact	High Cost/ Medium Impact
	<ul style="list-style-type: none"><li>• Raised median*</li></ul>	<ul style="list-style-type: none"><li>• Median barrier*</li></ul>
Low Cost/ Low Impact	Medium Cost/ Low Impact	High Cost/ Low Impact
<ul style="list-style-type: none"><li>• Painted centerline and raised pavement markers at curves</li></ul>		

Cost

\* FHWA Proven Safety Countermeasure

# Countermeasure Selection Guide

## Ped/Bike

Impact

Low Cost / High Impact

- Prohibit left turn

Medium Cost/ High Impact

- Rectangular rapid flashing beacon\*
- Variable speed limits\*
- See guide for full list

High Cost/ High Impact

- Traffic signal

Low Cost / Medium Impact

- Extend pedestrian crossing time
- Upgrade signs with fluorescent sheeting
- See guide for full list

Medium Cost/ Medium Impact

- Add sidewalk\*
- Raised median\*
- Curb-return radius reduction
- Raised crosswalk
- Refuge island\*
- Speed cameras\*

High Cost/ Medium Impact

- Pedestrian hybrid beacon\*
- On-street parking
- Separated bikeway\*
- Pedestrian hybrid beacon\*

Low Cost/ Low Impact

- Leading pedestrian interval and pedestrian recall\*
- Protected left turns
- See guide for full list

Medium Cost/ Low Impact

- Pedestrian countdown timer
- Red light camera
- Lane repurposing\*
- See guide for full list

High Cost/ Low Impact



Note:

- Countermeasures may not apply to all modes, roadways, or crash severities.
- Countermeasures may apply to more crash types.

\* FHWA Proven Safety Countermeasure

Cost



# Countermeasure Selection Guide

## Ped/Bike

Note:

- Countermeasures may not apply to all modes, roadways, or crash severities.
- Countermeasures may apply to more crash types.

### Low Cost / Unknown Impact

- Audible push button upgrade extend time pushbutton
- Prohibit right-turn-on-red
- Prohibit turns during pedestrian phase
- Shorten cycle length
- Advance stop bar
- Advance yield markings
- Pavement speed legends
- Time-based turn restriction
- Upgrade intersection pavement markings
- Wayfinding
- Co-locate bus stops and pedestrian crossings
- High-visibility crosswalk
- Restripe crosswalk
- Centerline hardening
- Enhanced daylighting/slow turn wedge
- Gateway treatments
- Paint and plastic median
- Partial closure/diverter
- Straighten crosswalk
- Lane narrowing
- Far-side bus stop
- Extend green time for bikes
- Bicycles may use full lane sign
- Mixing zone
- Parking buffer
- Two-stage turn queue bike box
- Bike box

### Medium Cost / Unknown Impact

- Pedestrian detection
- Signal interconnectivity and coordination/green wave
- Signal preemption
- Flashing beacon as advance warning
- Floating transit island
- Curb extensions
- Widen sidewalk
- Crosswalk density
- Chicane
- Landscape buffer
- Speed sensitive rest on red
- Upgrade lighting to LED
- Bike detection

### High Cost / Unknown Impact

- Separate right-turn phasing
- Shared use path
- Close slip lane
- Intersection reconstruction and tightening
- Protected intersection
- Raised intersection

# Countermeasure Selection Guide

## Rear End

### Unknown Impact

- Low Cost
  - Pavement speed legends
  - Lane narrowing
- Medium Cost
  - Signal interconnectivity and coordination/green wave
  - Chicane
  - Landscape buffer
  - Speed sensitive rest on red

### Note:

- Countermeasures may not apply to all modes, roadways, or crash severities.
- Countermeasures may apply to more crash types.

Impact

Low Cost/ High Impact	Medium Cost/ High Impact	High Cost/ High Impact
	<ul style="list-style-type: none"><li>• Variable speed limits*</li></ul>	
Low Cost/ Medium Impact	Medium Cost/ Medium Impact	High Cost/ Medium Impact
<ul style="list-style-type: none"><li>• Speed hump, speed table or speed cushion</li></ul>	<ul style="list-style-type: none"><li>• Curb-return radius reduction</li><li>• Speed cameras*</li></ul>	
Low Cost/ Low Impact	Medium Cost/ Low Impact	High Cost/ Low Impact
<ul style="list-style-type: none"><li>• Appropriate speed limits*</li><li>• Speed feedback sign</li></ul>	<ul style="list-style-type: none"><li>• Lane repurposing*</li></ul>	

Cost

\* FHWA Proven Safety Countermeasure

# Speed Management Countermeasures & Context

FDOT Design Manual

## Enclosure

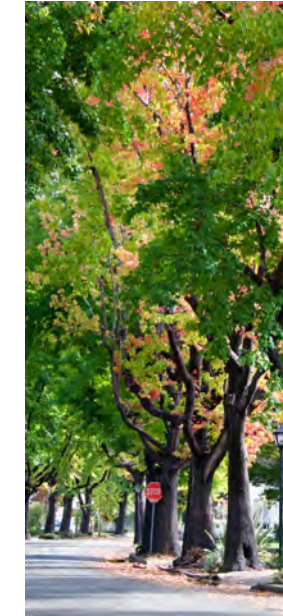
"[...] is the sense that the roadway is contained in an "outside room" rather than in a limitless expanse of space. Drivers' sense of speed is enhanced by providing a frame of reference in this space."

- Examples include:
- Street Trees
- Buildings closer to the street
- On-street Parking
- Terminated Vista

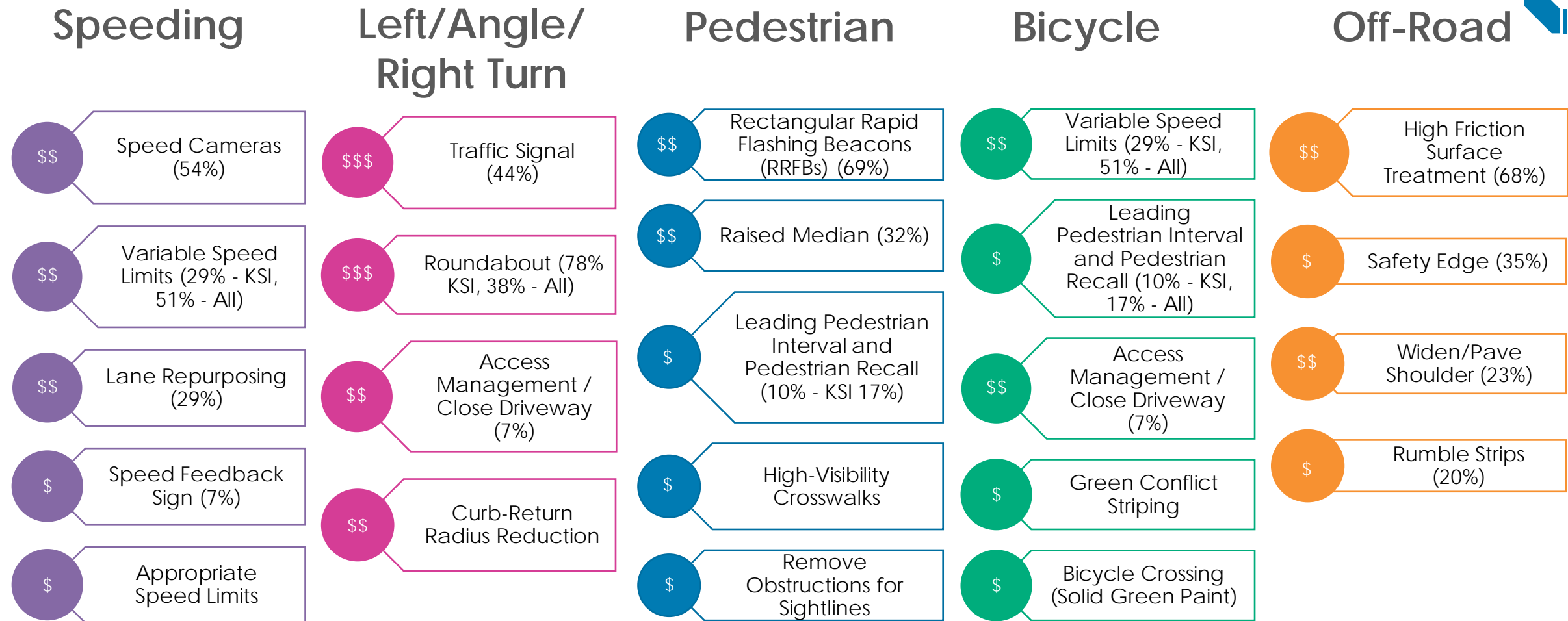
## Engagement

"[...] is the visual and audial input connecting the driver with the surrounding environment. (...) Uncertainty is one element of engagement – the potential of an opening car door, for instance, alerts drivers to drive more cautiously."

- Examples include:
- On-street parking
- Narrow-lanes
- Architecturally interesting buildings
- Pedestrians



# Top Potential Countermeasures and Crash Reduction Percentages



Note:

- Crash reduction percentages are consistent with the regional countermeasure toolkit.
- Countermeasures may not apply to all modes, roadways, or crash severities.
- Countermeasures may apply to more crash types.



# Time of Day Countermeasures and Crash Reduction Percentages



## Time of Day

\$\$

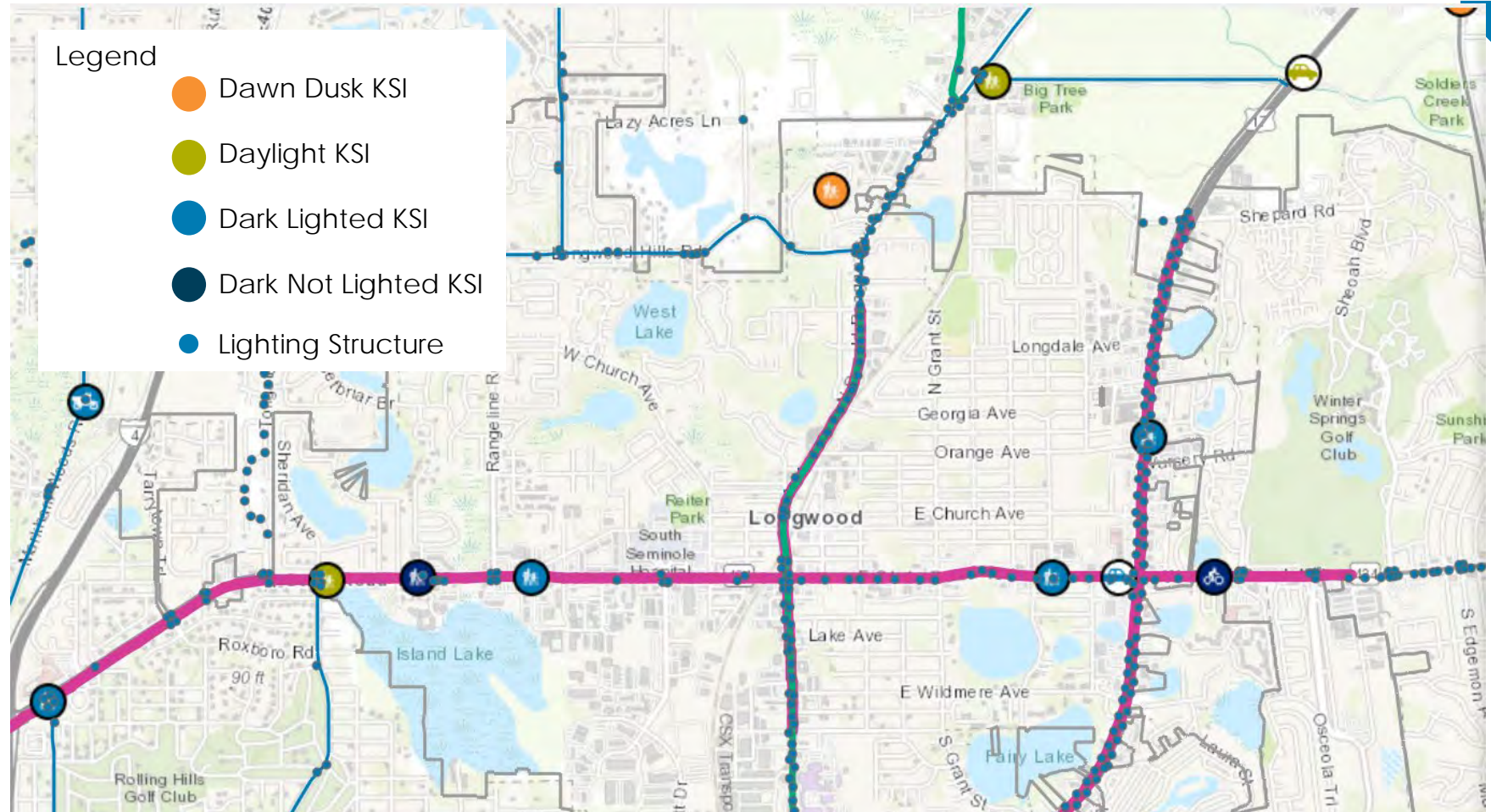
Segment Lighting  
(32%)

\$\$

Intersection  
Lighting (12%)

\$

Upgrade Signs  
with Fluorescent  
Sheeting





## A decorative graphic consisting of several blue octagons arranged in a cluster. Each octagon has four white horizontal lines of varying lengths positioned along its sides. The octagons are interconnected, with some overlapping or sharing sides. The lines within the octagons resemble a stylized representation of a DNA double helix or a molecular structure. The overall design is clean and modern, using a blue and white color scheme.

- [illegible]

# BENCHMARKING & POLICY

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# Benchmarking Process

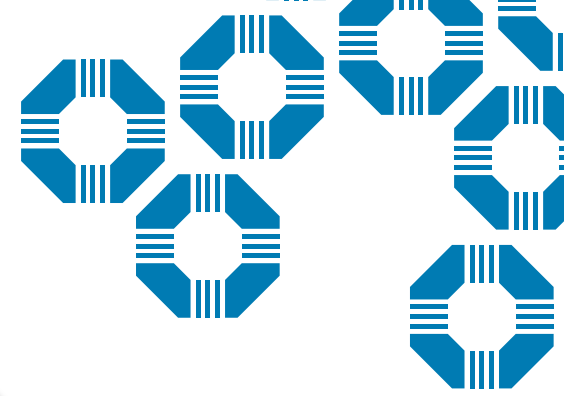
- 3 Categories

- Leadership and Commitment
- Safe Roads and Safe Speeds
- Data-Driven Approach, Transparency, and Accountability

- 66 Benchmarks

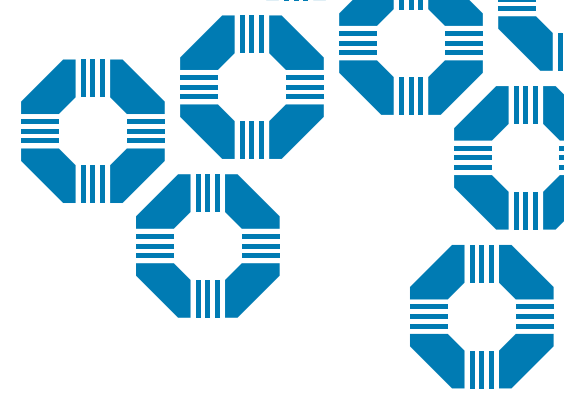
General Strategy <sup>a</sup>		Strategy Details <sup>a</sup>	
Category: Leadership and Commitment <sup>a</sup>			
Public, High-Level, and Ongoing Commitment <sup>a</sup>		Key elected officials and leaders within public agencies, including transportation, public health, and police, commit to the goal 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. <sup>a</sup>	
Authentic Engagement <sup>a</sup>		Meaningful and accessible community engagement toward Vision Zero strategy and implementation is employed, with a focus on equity. <sup>a</sup>	
Strategic Planning <sup>a</sup>		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. <sup>a</sup>	
Project Delivery <sup>a</sup>		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. <sup>a</sup>	
Category: Safe Roads and Safe Speeds <sup>a</sup>			
Complete Streets for All <sup>a</sup>		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. <sup>a</sup>	
Context-Appropriate Speeds <sup>a</sup>		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. <sup>a</sup>	
Category: Data-Driven Approach, Transparency, and Accountability <sup>a</sup>			
Equity-Focused Analysis and Programs <sup>a</sup>		Commitment is made to an equitable approach and outcomes, including prioritizing engagement and investments in traditionally underserved communities and adopting equitable traffic enforcement practices. <sup>a</sup>	
Proactive, Systemic Planning <sup>a</sup>		A proactive, systems-based approach to safety is used to identify and address top risk factors and mitigate potential crashes and crash severity. <sup>a</sup>	
Responsive, Hot Spot Planning <sup>a</sup>		A map of the community's fatal and serious injury crash locations is developed, regularly updated, and used to guide priority actions and funding. <sup>a</sup>	
Comprehensive Evaluation and Monitoring <sup>a</sup>		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. <sup>a</sup>	

# Benchmarking Process



## Relevant Plans Reviewed

- ✓ Comprehensive Plan
- ✓ ADA Transition Plan
- ✓ Land Development Code
- ✓ Code of Ordinances/ Traffic codes
  - ✓ Trails Master Plan
- ✓ Fire Department Strategic Plan
- ✓ 2045 Transportation Mobility Plan
  - ✓ Traffic Calming Guidelines
  - ✓ Envision Seminole 2045



# Benchmarking Process – Key Takeaways

- 40% of the benchmarks are institutional practices
- 50% of Safe Roadways and Safe Speeds benchmarks are institutional practices

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
	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
	Appropriate practices are followed to set speed limits based on context.	x	x	
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	
	The agency follows proper methods to modify existing roadways to achieve safe speeds.			x
Category: Data Driven Approach, Transparency and Accountability				
	The agency has developed effective programs and strategies to help people without housing, and low-income individuals access jobs and services.			x
	Equity is a factor in project prioritization.			x



# Action Plan Structure Approach



## Organize

### Strategy Structure

- To align with Safe Systems Approach

## Create

### Action Categories

- Direct Actions
- Supportive Actions
- Internal Actions

## Identify

Emphasis **Areas** based on top crashes

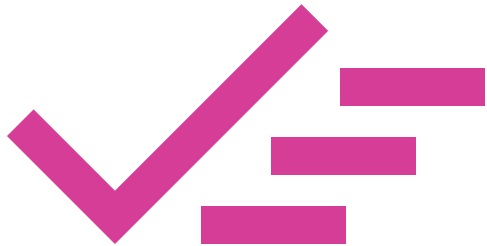
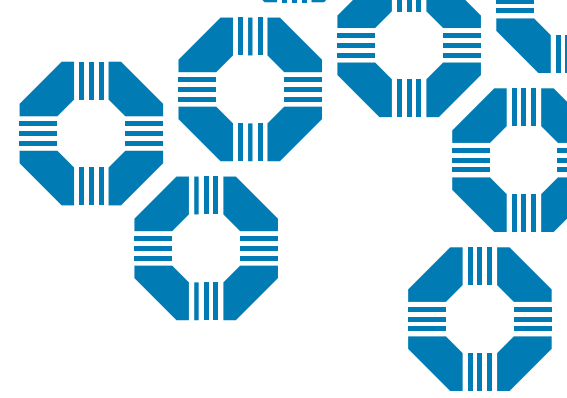
## Assign

Lead Departments or **Agency** for each action

# Potential Internal Actions

- **Communicate** about Vision Zero and events
- **Build** Vision Zero knowledge and awareness across all departments through trainings
- **Establish** ongoing Vision Zero advisory committee
- **Create** dashboard to measure progress towards target
- **Update** County policies and guidance documents to support Vision Zero goals.

# Potential Indicators of Success



# of users/interactions  
on social media



# of outreach events



# of trainings per year

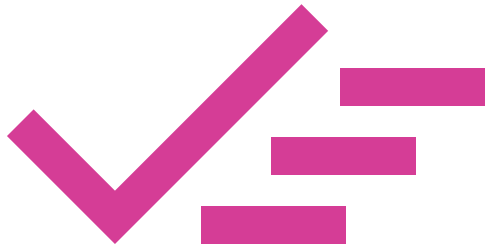
Note: A % may be more  
applicable in some  
cases

# Potential Supportive Actions

- **Partner** with other agencies to develop and support trainings, and integrate policies
- **Support** other municipalities' VZ efforts and coordinate projects when feasible to make seamless system wide improvements
- **Advocate** for laws that reduce crashes due to behavioral factors



# Potential Indicators of Success



# of trainings with partner agencies or departments



# of projects coordinated across departments or jurisdictions

Note: A % may be more applicable in some cases



# Potential Direct Actions

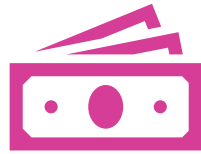
- **Install** improved lighting
- **Couple** other transportation funding investments with safety improvements that target HIN projects
- **Develop** targeted topic teams i.e. speed reduction, crash management
- **Construct and maintain** protected bike lanes
- **Install** more traffic calming measures
- **Install** additional crosswalks and/or mid-block crossing assistive devices



BIKE  
LANE



# Potential Indicators of Success



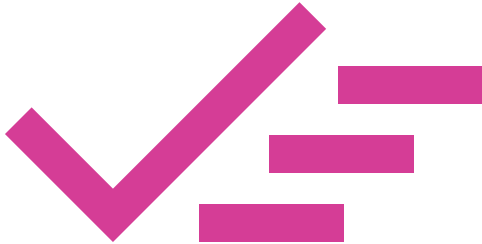
# projects with funding from other sources / funding dedicated



Improved miles of new or mitigated sidewalks



# of pedestrian crossings (mid-block, HAWK, etc.)



Note: A % may be more applicable in some cases



miles of protected bike lanes



# of new lighting structures

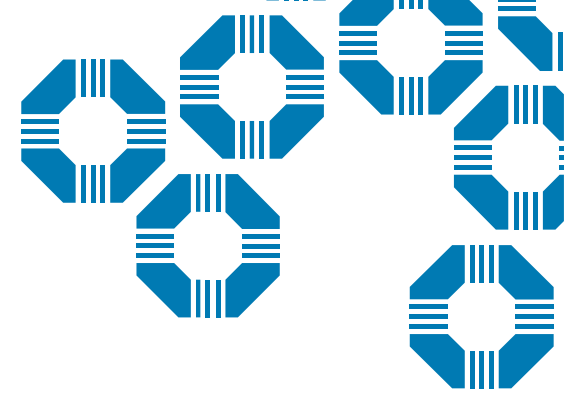
Should we track percentage and amount of capital spending on safety specific projects?

# CRASH REDUCTION GOALS

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# What kind of safety future do we envision?



## Scenario 1 – Business as Usual

- Focus on reductions for serious injury crashes
- Annual reduction in **1-4%** range

## Scenario 2 – Focused Safety

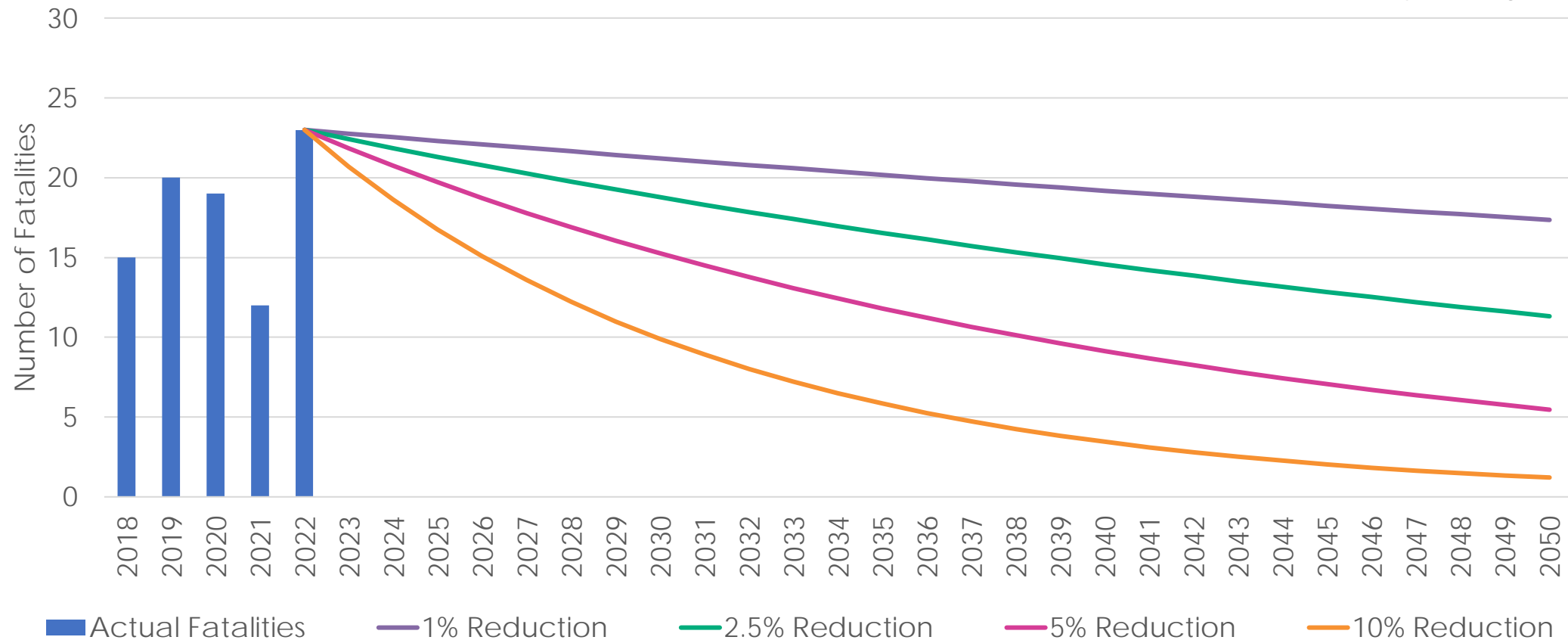
- Focus on fatal crash locations
- Acquire additional funding for capital projects (SS4A)
- Annual reduction in **4-6%** range

## Scenario 3 – Accelerated Safety

- Behavior change campaigns and enforcement
- Post crash care improvements
- Legislative changes
- Annual reduction in **6-10%** range

# Traffic Death Reduction Scenarios Seminole County

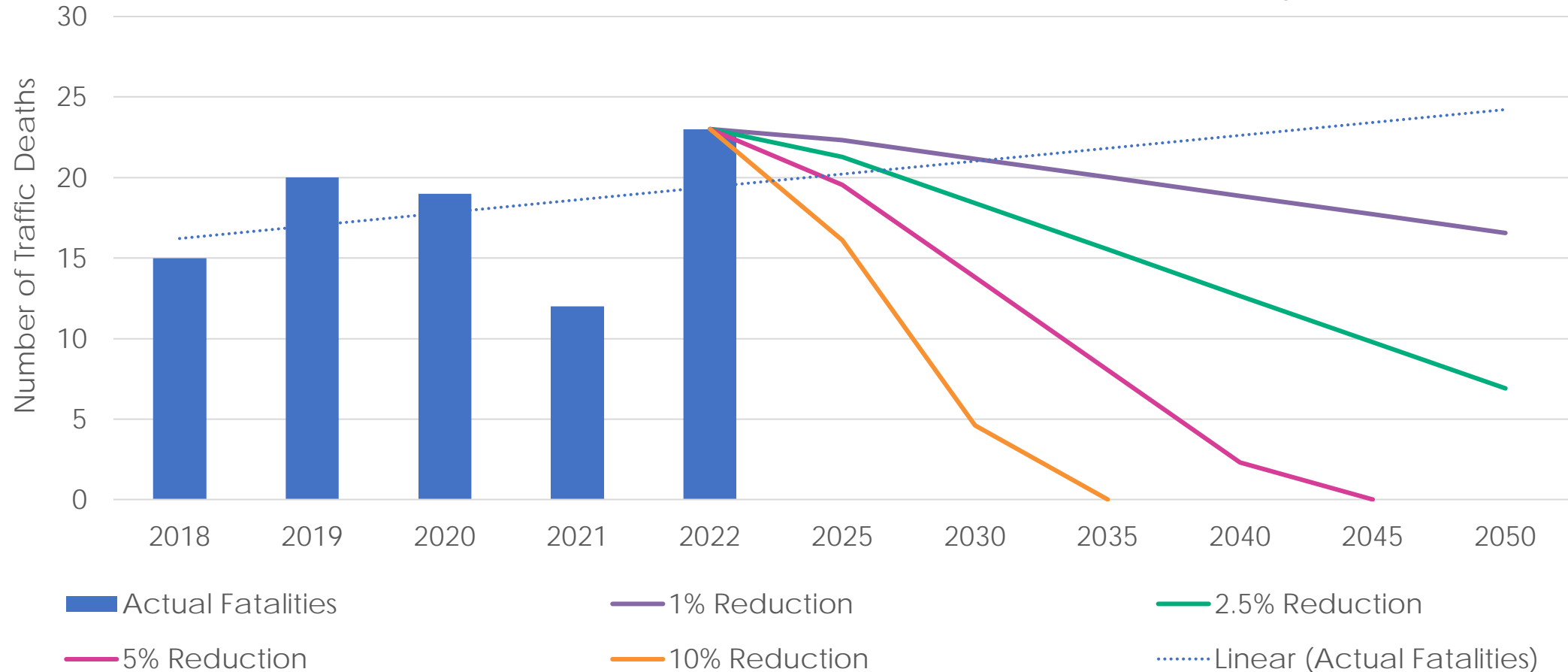
*Note: % reduction based on previous year*





# Traffic Death Reduction Scenarios Seminole County

*Note: % reduction based on linear decrease (5-year intervals) from 2022*

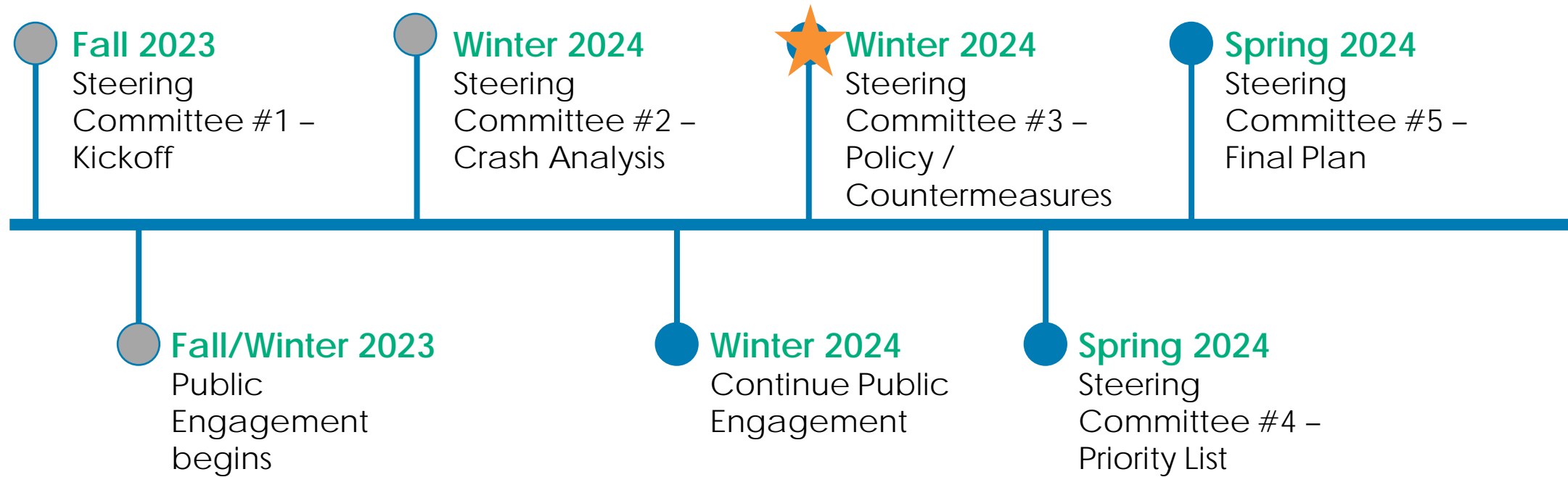
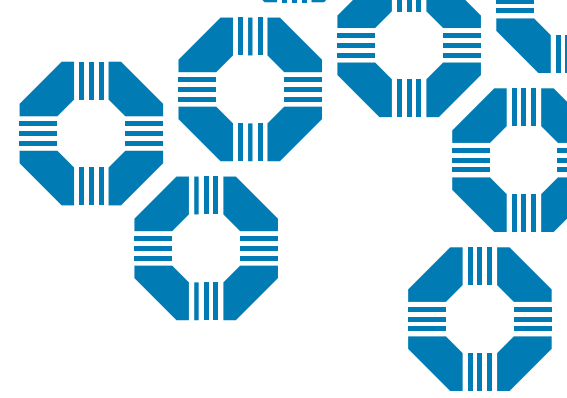


# Vision Zero Resolutions



- Local government **commits** to an eventual goal of zero traffic deaths and serious injuries
- **Sets target date** or targets to achieve significant declines
- Prepares/adopts an **Action Plan**
- Establishes intervals for **evaluating progress**
- Commits to broad and diverse **community engagement**

# Next Steps





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Counting down to zero traffic deaths



**Call to Action: Take the 5-minute mentimeter survey by 2/16**

**Access code: 5370 7130**

FEBRUARY 8, 2024



# Meeting Summary

Subject        **Seminole County Vision Zero Steering Committee Meeting  
#4 Summary – Potential Projects**

Date & Time   April 02, 2024, 10:30am - 12:00pm

Location:     UF / IAS Seminole County  
250 W County Home Road  
Sanford, FL 32773



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## Attendees

The attendees for Steering Committee #4 can be found in Table 1.

**Table 1: Steering Committee #4 Attendees**

Steering Committee Members	Consultant Staff / MetroPlan Orlando
<b>Bill Wharton</b> , Seminole County (Engineering)	<b>Lara Bouck</b> , MetroPlan Orlando
<b>Charlie Wetzel</b> , Seminole County (Traffic Engineering)	<b>Slade Downs</b> , MetroPlan Orlando
<b>Arturo Perez</b> , Seminole County (Engineering)	<b>Jeff Arms</b> , HDR
<b>Doug Robinson</b> , Seminole County (Planning and Development)	<b>Melissa Porcaro</b> , HDR
<b>Tony Nelson</b> , Seminole County (County Engineering)	
<b>Matt Hassan</b> , Seminole County (Public Works)	
<b>Matt Kinley</b> , Seminole County Fire Department	
<b>Shad Smith</b> , City of Longwood	
<b>Terrilyn Rolle</b> , City of Winter Springs	
<b>Jason Burton</b> , City of Altamonte Springs	
<b>Janelle Dunn</b> , TrueHealth CEO	
<b>Kelly Brock</b> , City of Casselberry	
<b>James Miller</b> , Seminole State College	
<b>Emily Bush</b> , Bike/Walk Central Florida	
<b>Adam Mendenhall</b> , City of Sanford	



## Presentation Agenda

The purpose of the fourth Steering Committee meeting was to discuss the planning considerations and methodology for developing projects to be incorporated into the Vision Zero Action Plan for Seminole County.

The planned meeting agenda included:

1. Meeting #3 Recap
2. Planning Considerations
3. Project Planning Process
4. Potential Projects
5. Next Steps for Action Plan

## Discussion and Feedback

The fourth Steering Committee was held in person, with opportunities for conversation and questions throughout the presentation. The Steering Committee can be seen in Figure 1. Crash data maps and online GIS web maps were available for the committee to view before and after the presentation.

**Figure 1. Steering Committee #4 Presentation**



**Meeting #3 Recap** – Following introductions, Jeff Arms reviewed the highlights from Steering Committee #3 such as the Federal Highway Administration (FHWA) Safety Countermeasures and the Mentimeter Survey results.

**Context Classification Slide** – Arturo Perez asked if the Vision Zero project team developed the classification shown. The project team said no, it was developed by the Florida Department of Transportation (FDOT) for state roads and by MetroPlan Orlando for off-system roads.

**Disadvantaged Areas Slide** – Bill Wharton asked how the Disadvantaged Areas were developed. Melissa Porcaro responded that the disadvantaged areas shown were based on the United States Department of Transportation (USDOT) Equitable Transportation Community (ETC) explorer data. While parts of Seminole County do not have disadvantaged areas, the project team acknowledged that the cities and county can develop their own criteria for what disadvantaged areas means since the USDOT ETC may not keep up with local changes at the same pace. Emily Bush asked if there was a way to provide USDOT more accurate data to reflect what is seen by our local municipalities. Lara Bouck said it can be investigated and there is a potential to provide updates.

**Homeless Encampments Slide** – Shad Smith was wondering if the data provided was accurate? Jeff Arms said it was data collected by Seminole County based off what they had seen. Homeless data could also be collected by the Sheriff's Office or nonprofit organizations. Emily Bush asked if the project team looked at the homeless encampment hotspots and look at where the transit stops are, where the crosswalks are, and other trip generators. This is something that her team had done with U.S. 441, looking at trip generators and target specific improvements where homeless people want to go. Jeff Arms said that this type of analysis was the next step for the project team.

**New MUTCD Highlights Slide** – It was noted that the MUTCD webinar had the date pushed back, with operation and design standards to be updated.

**Project Planning Process Slide** – Jeff Arms reviewed how the project team had developed their initial project planning process, and noted they are waiting for insight from the regional team. Part of the process included networkwide evaluations using qualitative reviews to identify where certain treatments - like adding medians or closing sidewalk gaps - might be both beneficial from a safety perspective and warranted. The team also considered speed data and speed management areas identified during previous studies to identify areas that may benefit from the implementation of speed reduction strategies. Additionally, even if a segment is not in the High Injury Network (HIN) a safety project can still be recommended and included into the final Vision Zero Action Plan if the project would mitigate existing unsafe behaviors or if the roadway segment exhibits a similar context to other corridors on the HIN.

**Roundabout Feasibility Slide** – Shad Smith asked why you want roundabouts at some of these locations presented. Jeff Arms explained that the locations were based on volumes of traffic only. There were also some discrepancies with the colors used on the legend. Matt Kinley asked why roundabouts were recommended where they are already signalized intersections, such as Lake Mary Blvd and SR 437. Jeff Arms reiterated that this was just a data pull based on volumes.

**Sidewalk Gaps Slide** – The project team had received good sidewalk data from MetroPlan Orlando.

**Lighting Gaps Slide** – With the Intersections with 2 or more Nighttime Deadly or Serious Injury Crashes map, Shad Smith asked what was happening with SR 436? Jeff Arms explained that the larger pink dots were the intersections with the crashes, and the smaller purple dots are intersections with planned FDOT Lighting 23/24 projects.

Janelle Dunn asked with lighting being controlled by utility companies, what potential solutions are there? Local governments pay the bill for the lighting, they just do not install it. They need to set up agreements but are unsure how FDOT makes those agreements. Kelly Brock says that on state roads, local governments will still pay for the lighting and are provided some money from FDOT.

**Ronald Reagan Blvd, Palmetto Ave to SR 434 Slide** – Shad Smith said there was a motorcycle fatality during a recent project improvement, the county is not narrowing the road and not adding bike lanes. Tony Nelson said the county was adding bike lanes.

**Howell Branch Road, South of Bear Gully Rd to SR 426 Slide** – Emily Bush said that they are working with FDOT to identify what is appropriate for an all-walk phase for consistent diagonal crossing. She loves that the LPI recommendation is there and believes it is a great interim solution. They need to connect the trail better but she's not sure if it is within the context of this area. The current intersection is a 3-to-5-minute wait for the pedestrian phase. Jeff Arms asked if it made sense to have the pedestrian crossing a little to the east? Emily Bush said that is something they are looking at for an alternative crossing or potentially a two-phase crossing.

**Lake Mary Blvd, I-4 to SR 15 Slide** – Emily Bush asked if bicycle lanes are part of the solution. Jeff Arms said it is a solution that can also be looked at, but there are a lot of driveways on this segment. It was noted there is a trailhead at Lake Mary Blvd at Rhinehart Road.

**CR46A & Hartwell Ave Slide** – Charlie Wetzel said there was one pedestrian death before the no left turn was implemented.

**Lake Mary Blvd & Flagg Ln Slide** – Emily Bush asked for the pedestrian fatalities in this area, and about what the generators may be for pedestrians to cross the road. Jeff Arms said for this area there is an office park, but there is no sidewalk on Lake Mary Blvd, which is why the Florida Scenic Trail has the overpass. Shad Smith thought there was supposed to be a diverging diamond near that area. Tony Nelson said that was not the plan.

**CR 427 & Keyes Ct** – Emily Bush agreed that a speed change would be appropriate here because the area outside of this intersection gets more dense, 40 MPH or lower would be appropriate.

**Next Steps** – Jeff Arms informed the Steering Committee that public meetings for Seminole County were occurring now and in May for all of Seminole County's cities. There will be one more Steering Committee meeting before the project ends.

Following the Next Steps, there was discussion going through previous slides within the presentation.

Jeff Arms asked the Steering Committee if they thought one page for the project details was enough. Overall there was agreement that one page was enough and they liked the format, but there is potential for additional details. Emily Bush suggested adding trip generators such as grocery stores to the project information and/or maps. This reminded Shad Smith that for **25th St, Hardy Ave to US 17-**



92, that segment is near a high school, which is a trip generator, and could also contribute to the number of crashes.

Lara Bouck said the Vision Zero Action Plan is something that Seminole County and the cities are meant to revisit in 3 to 5 years and is meant to have include safety projects and strategies on state roads as needed to achieve Vision Zero targets. The intent is for there to be coordination between the City and County plans as well as the regional plan to ensure safety planning efforts are consistent and coordinated.

Arturo Perez asked if the maps shown in the presentation could be shown by Seminole County Commission districts? Jeff Arms and Lara Bouck said that there was a presentation sent out previously with segments broken up by commissioner district, but removing the highlights of other districts and connections would not be the best idea, since it takes away the emphasis on connectivity and the priority needs for the overall system.

The Steering Committee and the additional crash data information can be seen in Figure 2.

**Figure 2. Steering Committee #4 Members**



## Upcoming Meetings

The final Steering Committee meeting is scheduled for May 9, 2024. The next meeting will discuss the Vision Zero Project Priority List based on the finalized High Injury Network and how to implement the Vision Zero Action Plan. Table 2 shows the tentative Steering Committee schedule for the duration of the Vision Zero Action Plan project.

Table 2: Steering Committee Tentative Schedule

Name	When	Purpose
Steering Committee #5 – Next Steps	May 9, 2024	This meeting is to review the next steps for the overall Vision Zero project, and how to implement the Vision Zero Action Plan.





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# VISION ZERO SAFETY ACTION PLAN

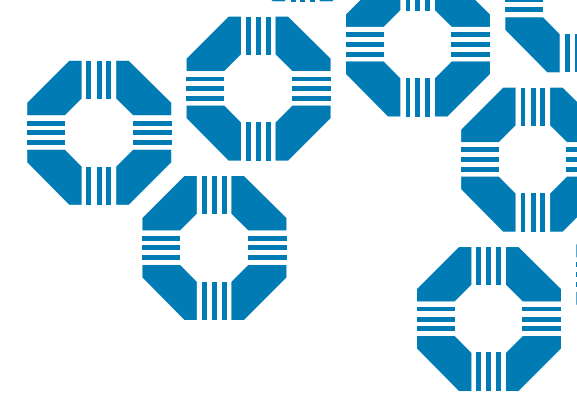
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## STEERING COMMITTEE #4 – POTENTIAL PROJECTS

APRIL 2, 2024





# Agenda

1. Meeting #3 Recap
2. Planning Considerations
3. Project Planning Process
4. Potential Projects
5. Next Steps for Action Plan

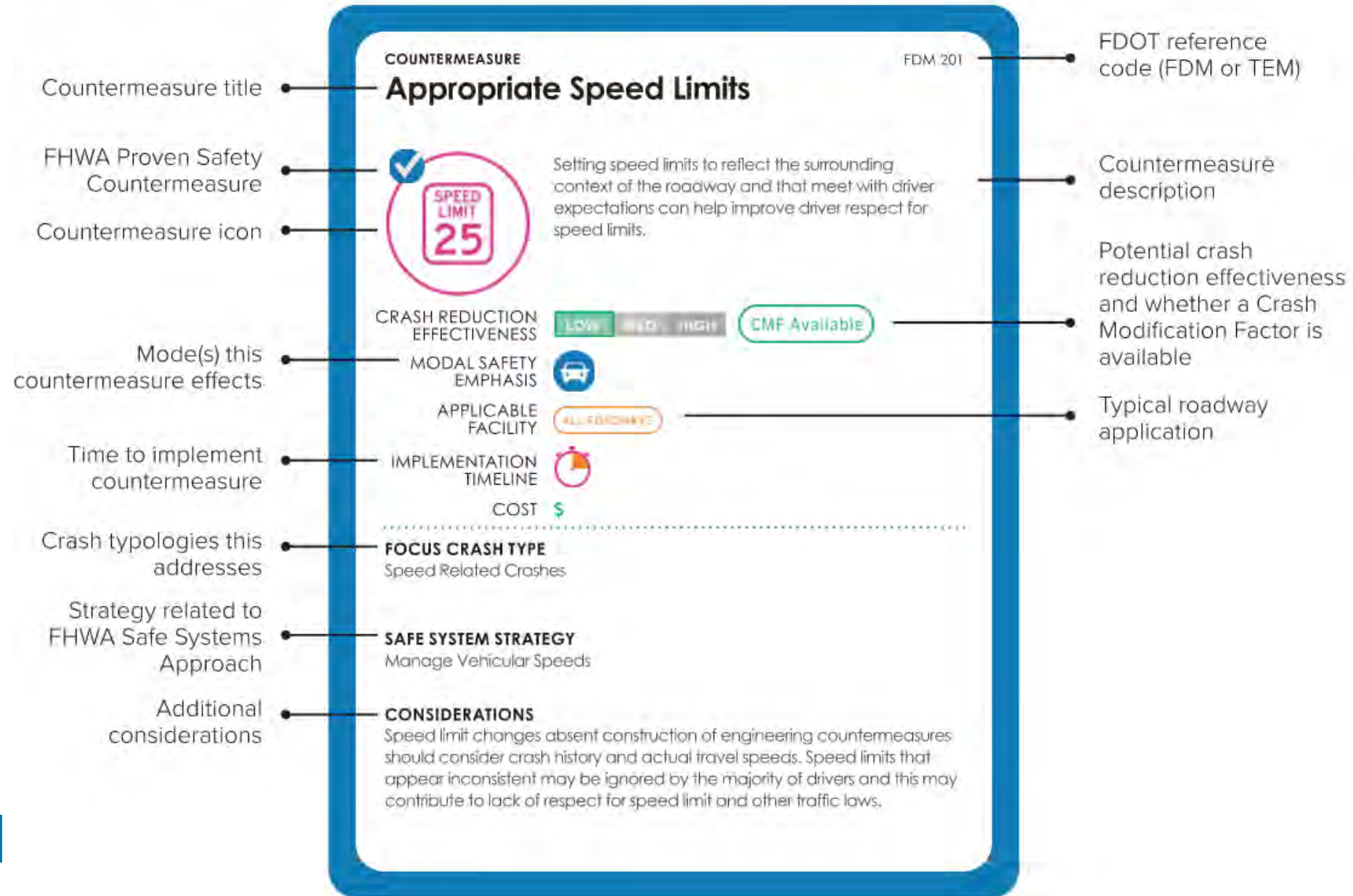
# MEETING #3 RECAP

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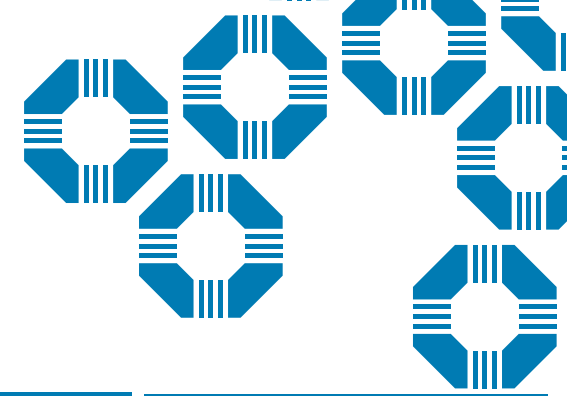
# Countermeasures and Policy
























## What You'll See Inside:








CMF = Crash Modification Factor

# FHWA Proven Safety Countermeasures



Signals	Speed Management	Pedestrian Facilities	Intersections and Roadways		Other Engineering Strategies
 Extend Yellow and All Red Time	 Appropriate Speed Limits	 Add Sidewalk	 Doubled-Up, Oversized Stop Signs	 Refuge Island	 Intersection Lighting
 Leading Pedestrian Interval	 Speed Cameras	 Pedestrian Hybrid Beacon	 High Friction Surface Treatment	 Retroreflective Signal Backplates	 Segment Lighting
Signing and Striping	 Variable Speed Limits	 Rectangular Rapid Flashing Beacon			 Access Management/Close Driveway
 Chevron Signs on Horizontal Curves		Bikeways	 Median Barrier	 Rumble Strips	
 Curve Advance Warning Sign		 Bike Lane/Buffered/Separated Bike Lane	 Raised Median		
		 Separated Bikeway	 Reduced Left-Turn Conflict Intersection		

VISION ZERO CENTRAL FLORIDA



5



# Survey Results

Which countermeasures have you had success with?

19 responses



# Survey Results



## Which countermeasures have been unsuccessful and why?

Pavement markings seem ineffective at getting drivers to yield.

Speed bumps are not allowed in our city. Primarily because of resistance from emergency services

I believe that it takes a combination of countermeasures in order to fix a high injury network issue.

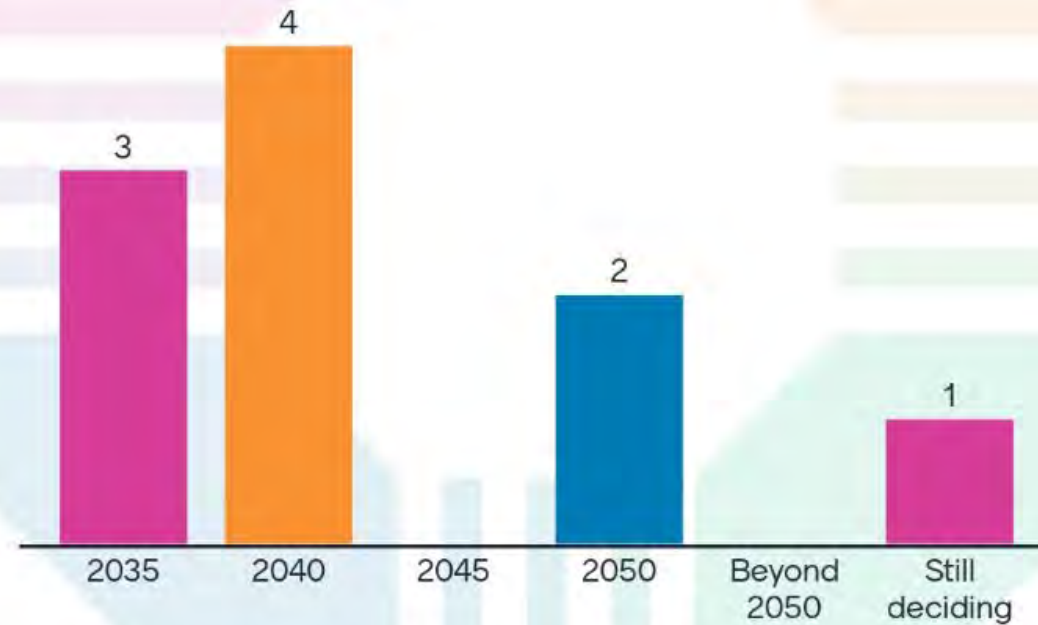
Crosswalks w/o pedestrian indicators, flashing lights, red lights, &c. W/o, motorists don't slow or stop until the pedestrian's crossing (in harm's way). The signal indicates the intention to cross.

Painted Centerline. Drivers tend to speed up. Red light camera- Drivers go faster to get through the yellow before a change.

None

# Survey Results

What safety future are you leaning towards pursuing for the County? Zero deaths by:



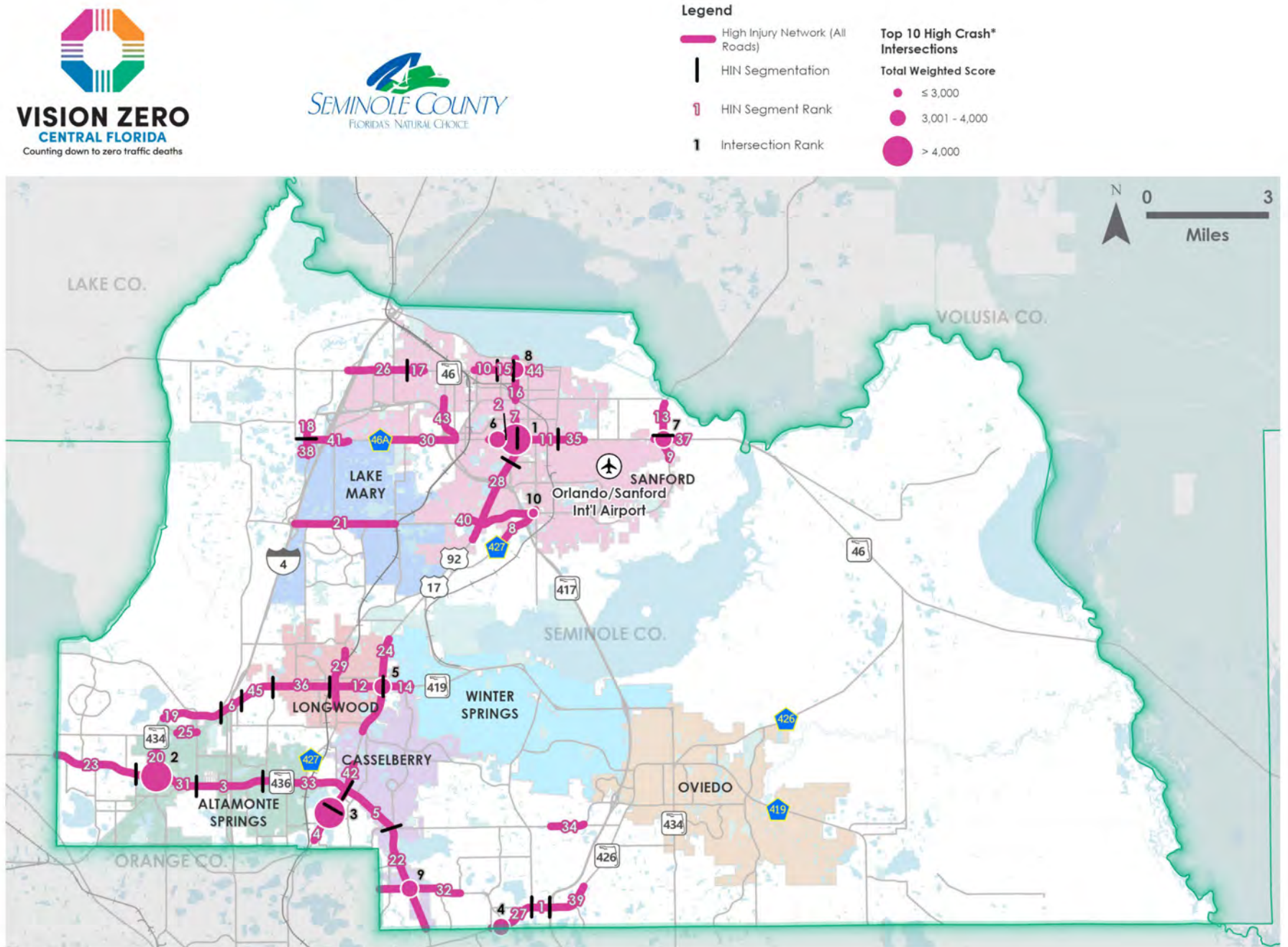


# High Injury Network (HIN) Segment & Top Intersection Rankings

## All Roads

- 45 segments
- 10 intersections

**Pink** – Highest scoring (or worst) of all segments and intersections

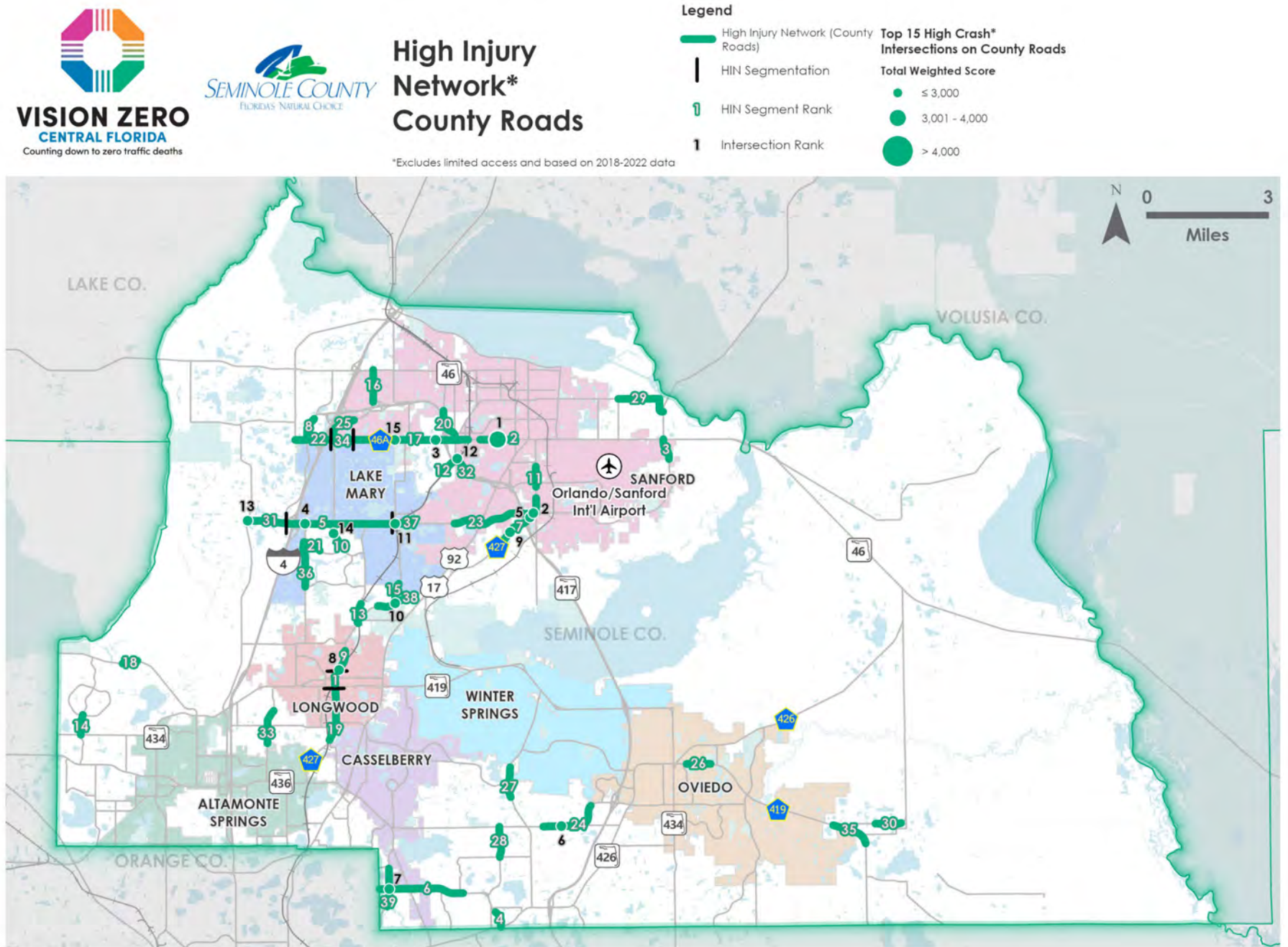


# High Injury Network (HIN) Segment & Top Intersection Rankings

## County Roads

- 39 segments
- 15 intersections

**Green** – Highest scoring county jurisdiction segments and intersections



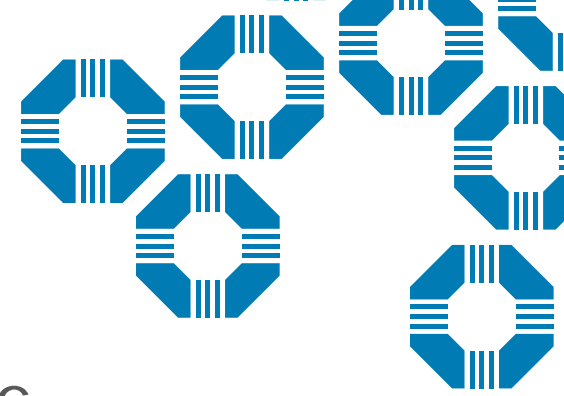
Source: Signal 4 Analytics, 2018 – 2022; excludes limited access facilities.



# PLANNING CONSIDERATIONS

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# Planning Considerations

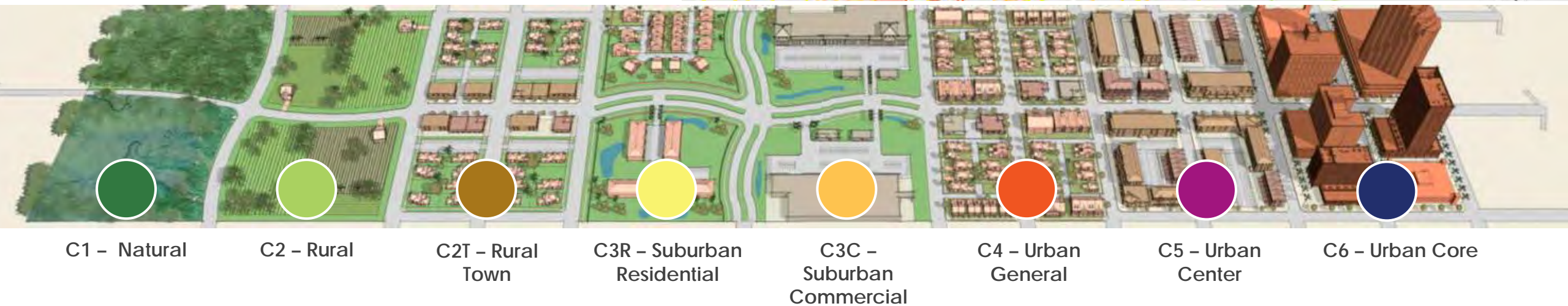
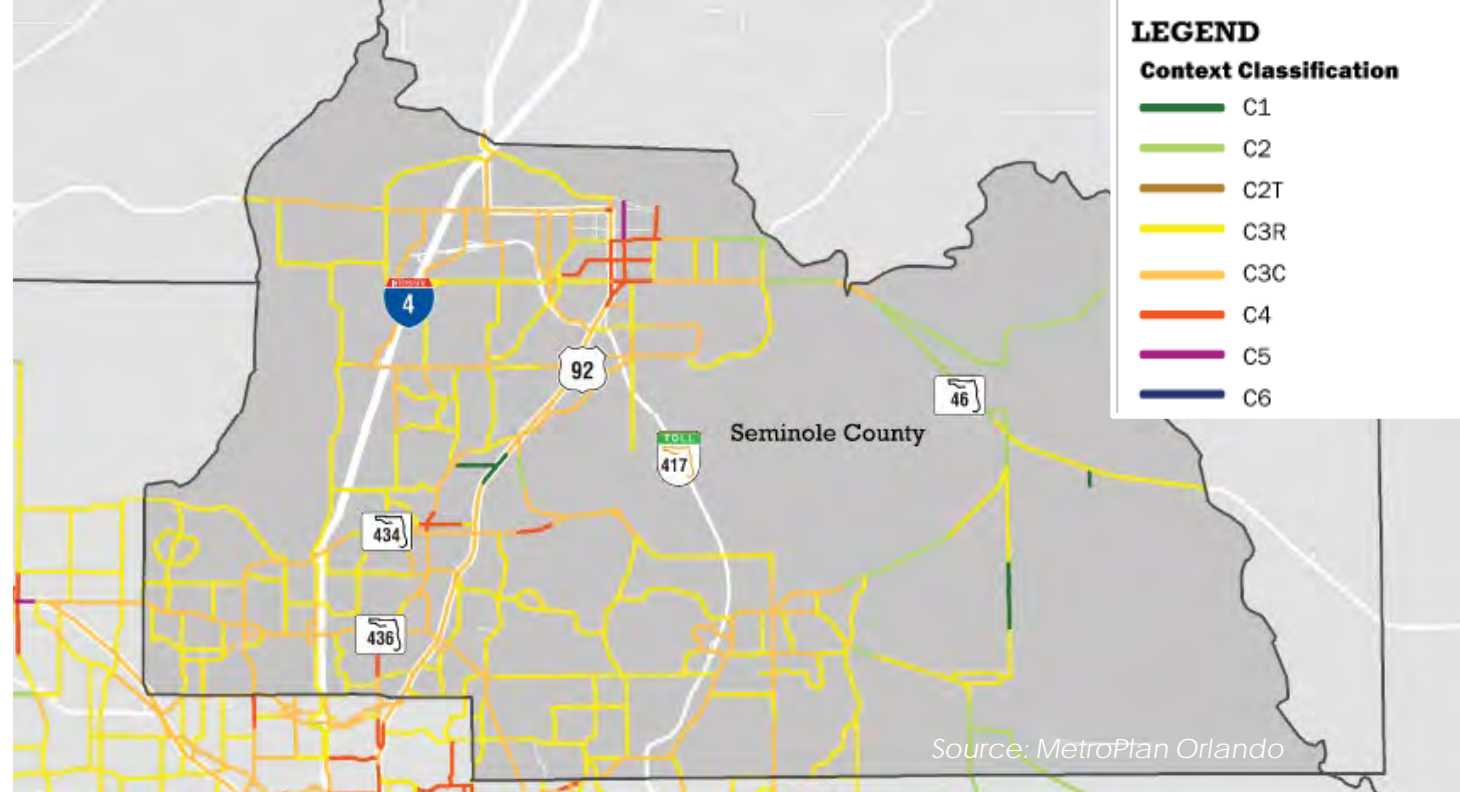
In addition to the HIN / Top Intersections...

- Context Classifications
- Addressing Speeds
- Disadvantaged Areas
- Updated MUTCD Guidance

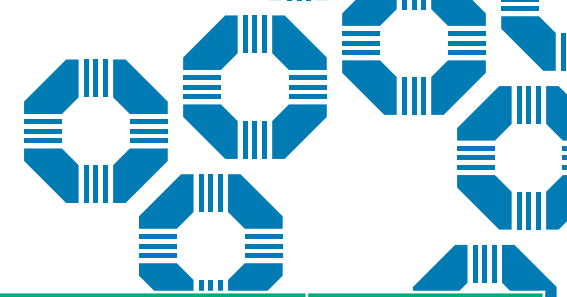
# Context Classification

Describes characteristics of:

- Land Use
- Development Patterns
- Roadway Connectivity



# Strategies and Context



Strategy	Context Classification	C2T				C3R, C3C		C4				C5			C6	
	Target Speed (mph) Cost	25	30	35	40-45	35	40-45	25	30	35	40-45	25	30	35	25	30
Roundabouts*	\$\$\$	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Lane Repurposing*	\$\$	✓	✓	✓		✓		✓	✓	✓		✓	✓	✓	✓	✓
Chicanes	\$\$	✓	✓					✓	✓			✓	✓		✓	✓
Lane Narrowing	\$	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Street Trees <sup>1</sup>	\$\$	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Speed Tables	\$\$	✓	✓					✓	✓			✓	✓		✓	✓
Raised Intersection	\$\$\$	✓	✓					✓	✓			✓	✓		✓	✓
Raised Crosswalk	\$\$	✓	✓					✓	✓			✓	✓		✓	✓
Speed Feedback Sign	\$	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Refuge Island*	\$\$	✓	✓	✓		✓		✓	✓	✓		✓	✓	✓	✓	✓
RRFB*	\$	✓	✓	✓		✓		✓	✓	✓		✓	✓	✓	✓	✓

\* FHWA Proven Safety Countermeasure

<sup>1</sup> In areas posted 35 MPH or higher, street trees only apply to roads with curb and gutter

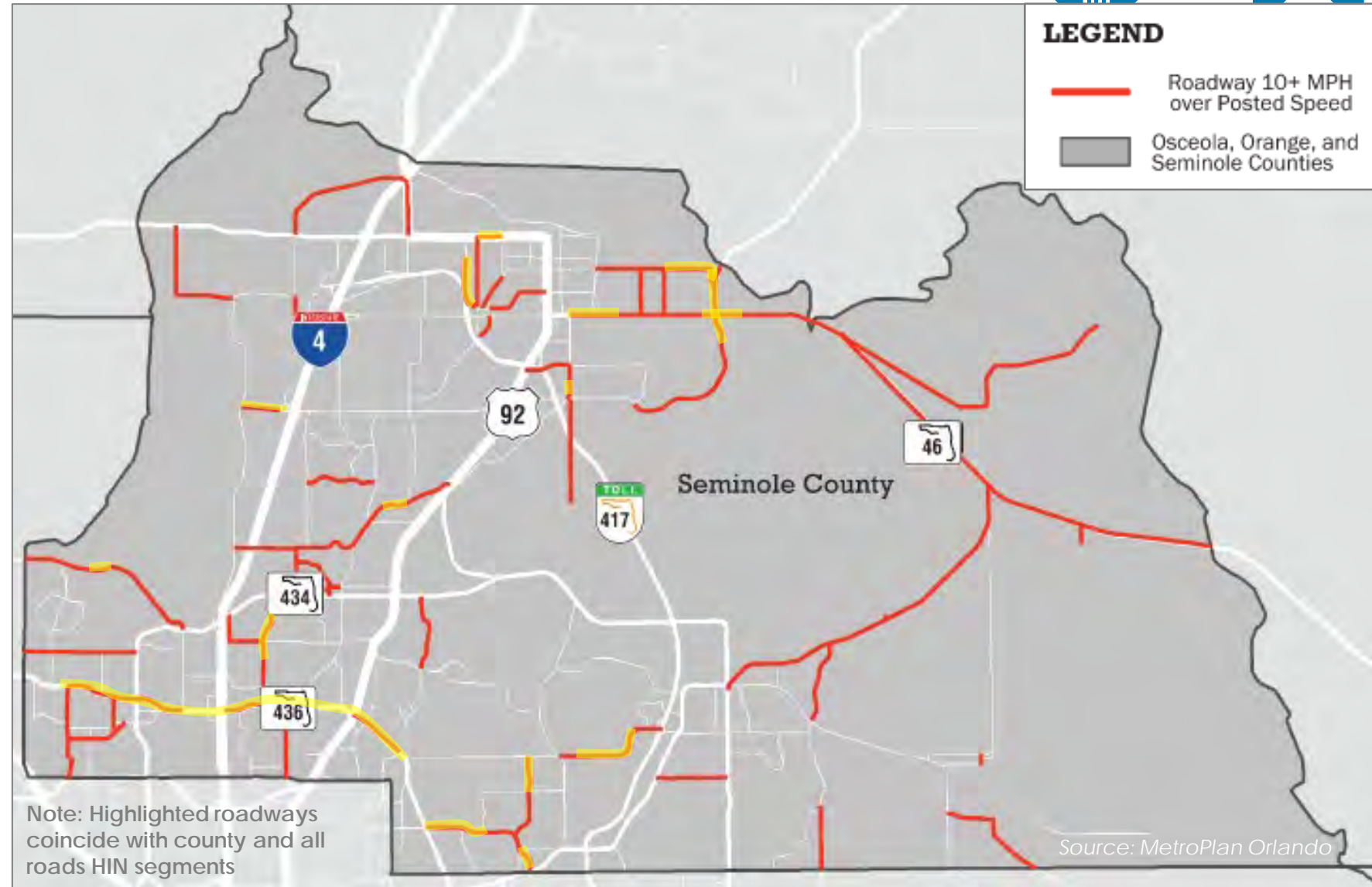
Table adapted from FDM Table 202.3.1

Note that C1 and C2 contexts are high-speed roadways where speed management strategies are not used

# Observed Speeds

HIN overlaid on excessive speeding segments (highlighted in yellow)

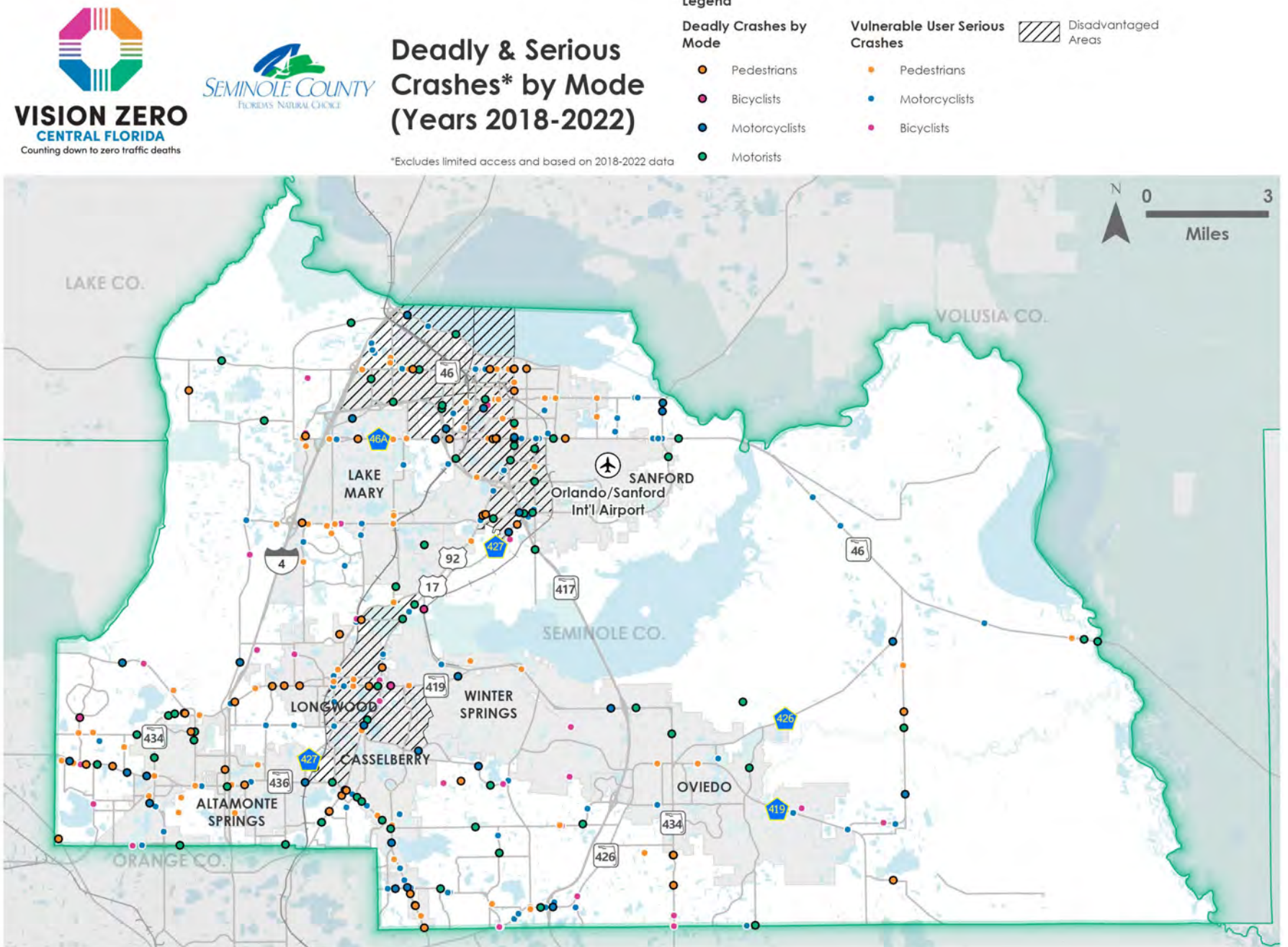
85th Percentile Speed 10+ MPH over Posted Speed





# Disadvantaged Areas

- Hatches show disadvantaged areas
- USDOT defines this by 5 different categories:
  - Transportation Insecurity
  - Environmental Burden
  - Social Vulnerability
  - Health Vulnerability
  - Climate and Disaster Risk Burden



Source: Signal 4 Analytics, 2018 – 2022; excludes limited access facilities.

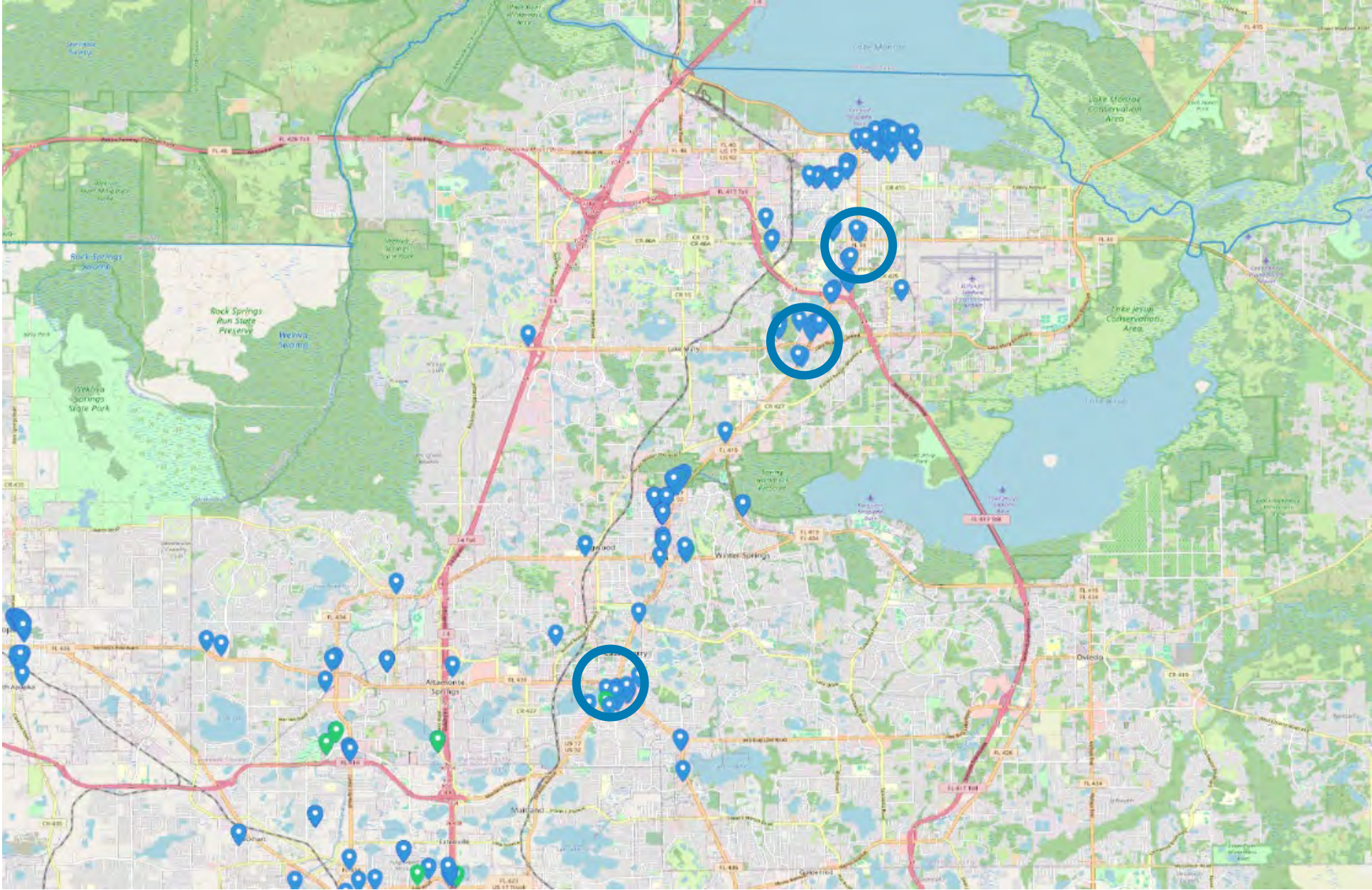


# Homeless Encampments

2024 Point in Time Survey

Hot Spots Coinciding with HIN:

- SR 436 at US 17-92
- US 17-92 at Lake Mary Blvd
- US 17-92 at SR 46



Source: Seminole County Community Services



# New MUTCD (Dec 2023) Highlights



- Improved and expanded criteria for setting appropriate speed limits in differing contexts and environments.
- Changes in warrants for traffic signals.
- Colored pavements for bike lanes and transit lanes.
- New specific service sign category for electric vehicle charging.
- A completely new part on automated vehicles.
- Part 4 is expanded to cover more signal applications.
- RRFBs are approved and included (they were previously not included, but allowable via an interim approval).

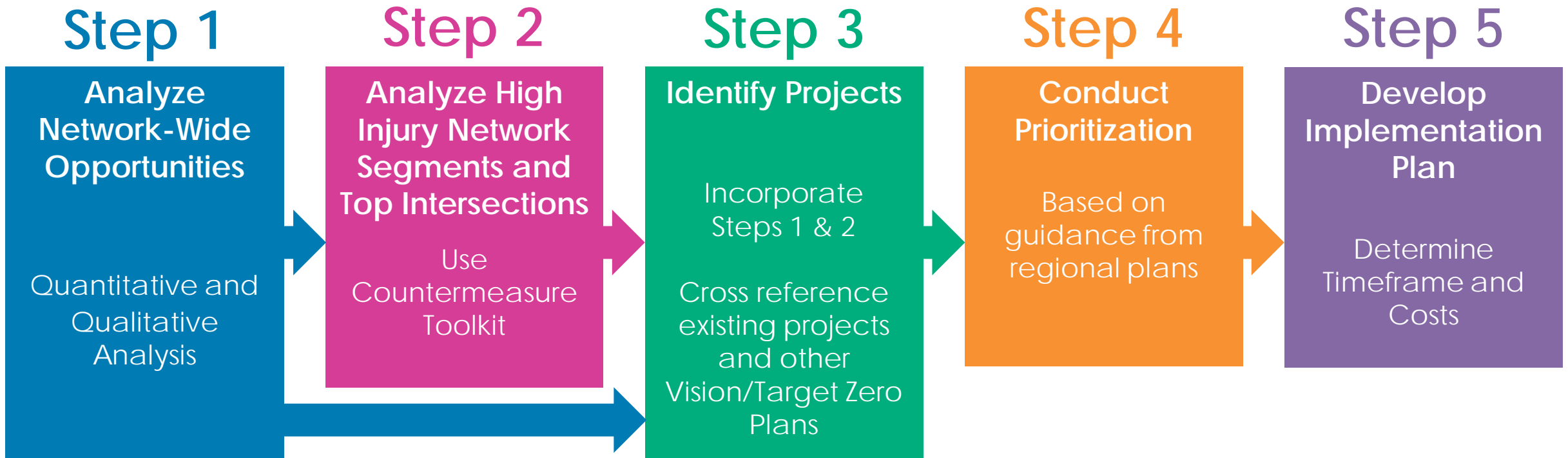
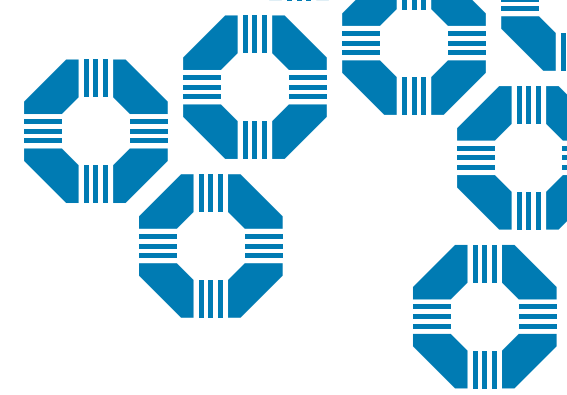
# PROJECT PLANNING PROCESS

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# Project Planning Process





# Project Identification Process



## Step 1

### Analyze Network-Wide Opportunities (Entire County)

- Quantitative
  - Roundabouts
  - Lane repurposing
  - Median opportunities
  - Sidewalk gaps
  - Speed management corridors
- Qualitative
  - Posted speed consistency and target speeds
  - Lighting gaps
  - High friction surface treatment (HFST) and rumble strips

# Roundabout Feasibility

- Global screening based on approach volumes only



## Sketch-Level Intersection Roundabout Eligibility Assessment

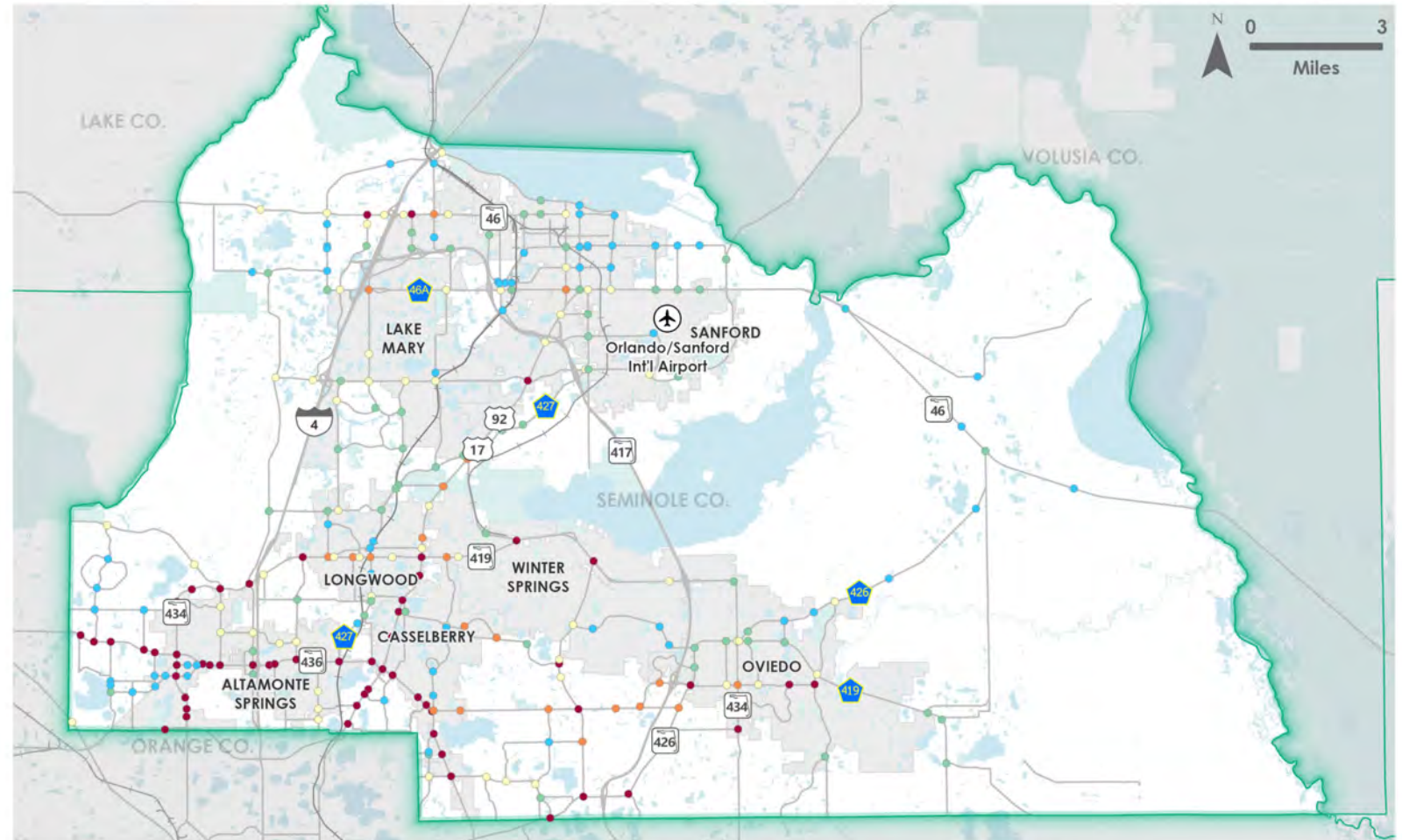
### Legend

#### Roundabout Feasibility and Total Entering Volume\*

- 1-Lane Feasible (<17,500)
- 1-Lane Sometimes Feasible (17,500 to 27,500)
- 2-Lane Sometimes Feasible (27,500 to 42,500)
- 2-Lane Not Likely Feasible (42,500 to 50,000)
- Not Feasible (> 50,000)

Source for AADT Thresholds: NCHRP 1043 and HCM 7

\*Based on AADT only. Does not consider geometric constraints, peak hour traffic analysis, or left-turn percentages.

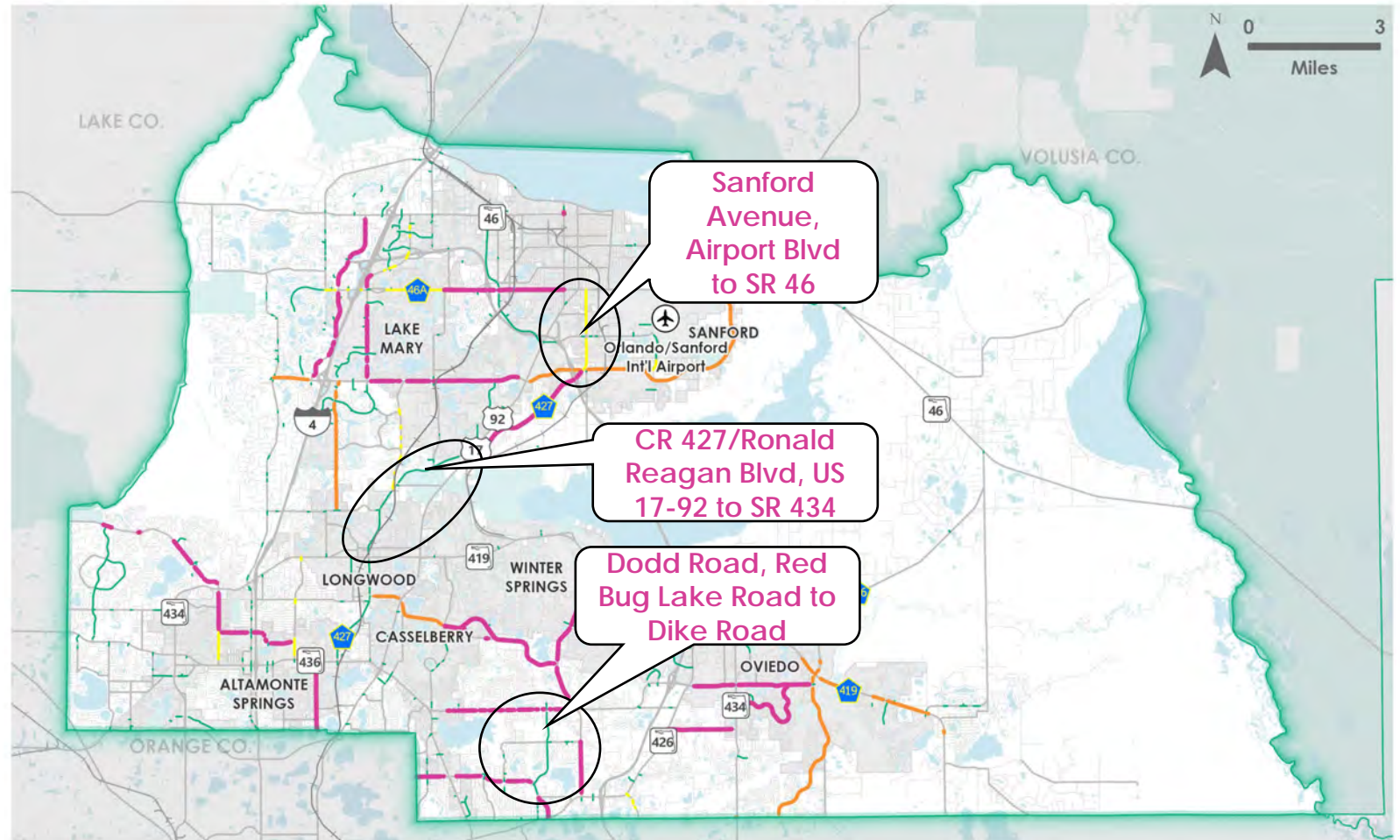


# Lane Repurposing

- Lane reduction can improve safety, calm traffic, and provide better mobility and access for all road users (FHWA)
- Four-lane roadways with AADT  $\leq 20,000$  are candidates



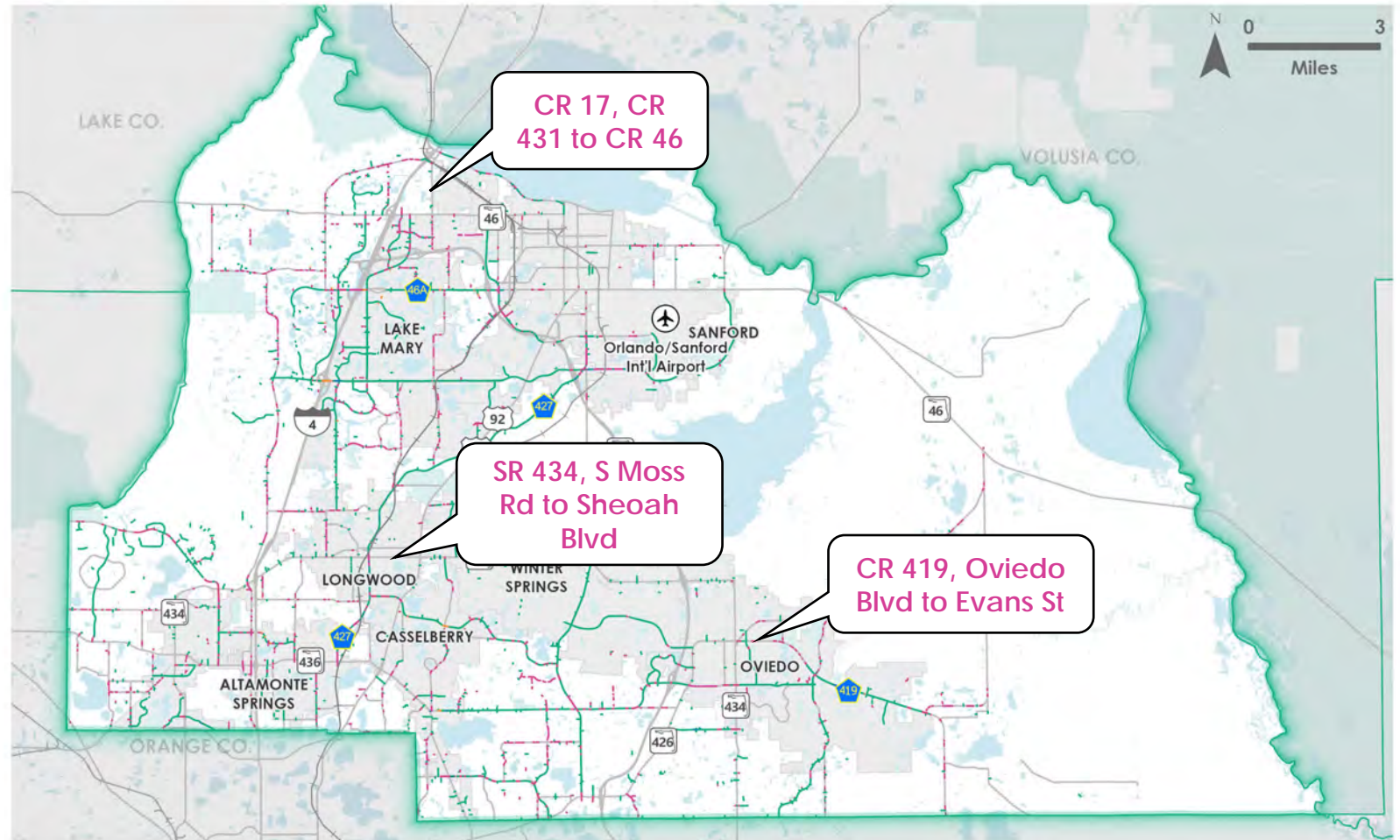
## 4 or 5 Lane Roads with Traffic Volume Thresholds





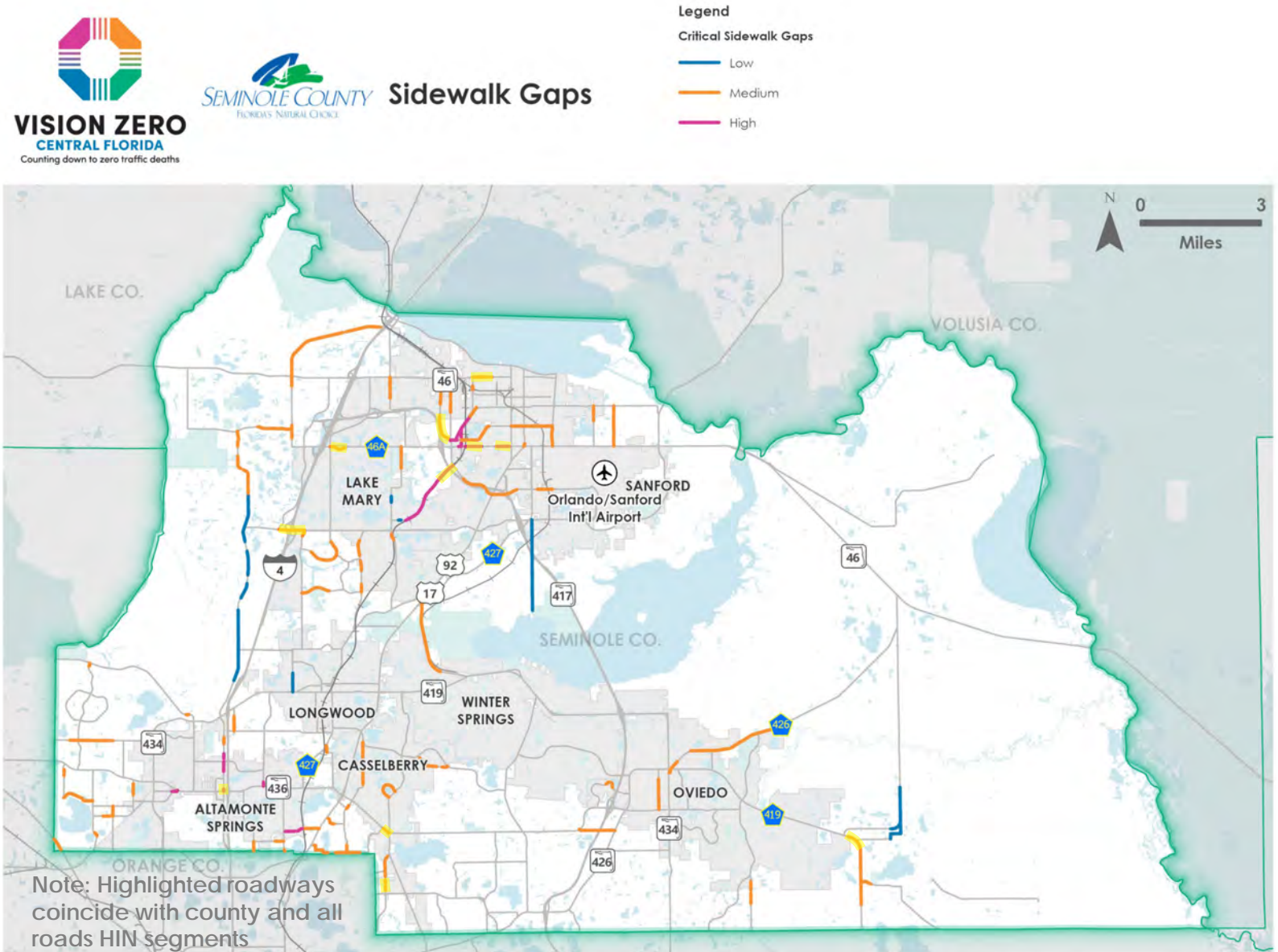
# Raised Medians

- Can eliminate left turn and angle conflicts
- Control access to side streets and driveways, reducing conflict points



# Sidewalks Gaps

- Adding sidewalks at critical points provides a separated and continuous facility to walk along the roadway

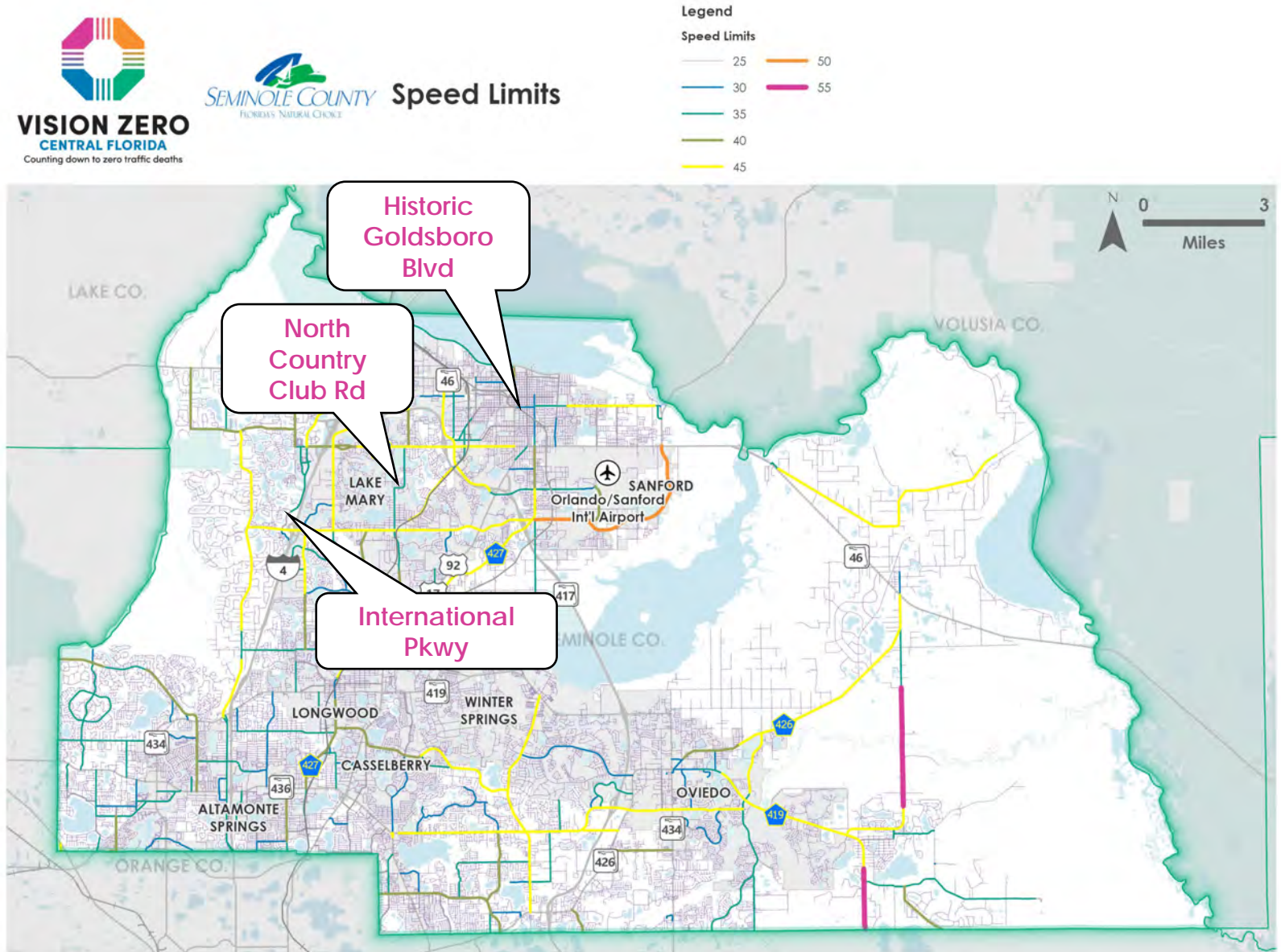


Source: MetroPlan Orlando



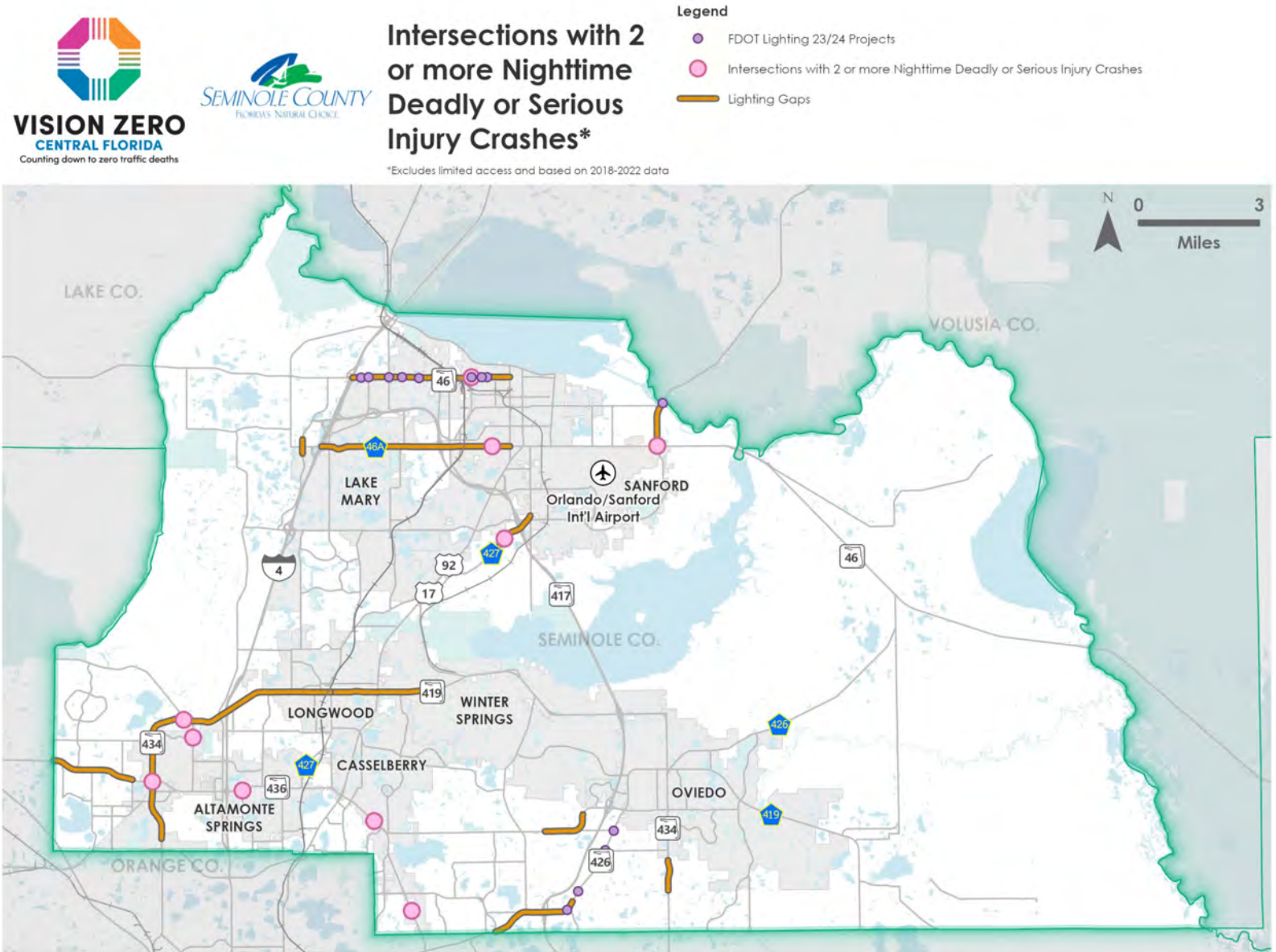
# Posted Speeds

- Recommend lower target speeds for those inconsistent with context and activity centers
- Lower speeds decrease driver reaction and braking distances, and improve visibility of pedestrians



# Lighting Gaps

- Segments with no lighting or substandard - in gold
- Intersections with two or more nighttime KSI - pink dots
- Consider additional lighting studies in these areas





# Lighting Gaps

- Overlaid on nighttime KSI heat map



## Nighttime Deadly & Serious Crashes with Lighting Gaps

\*Excludes limited access and based on 2018-2022 data

### Legend

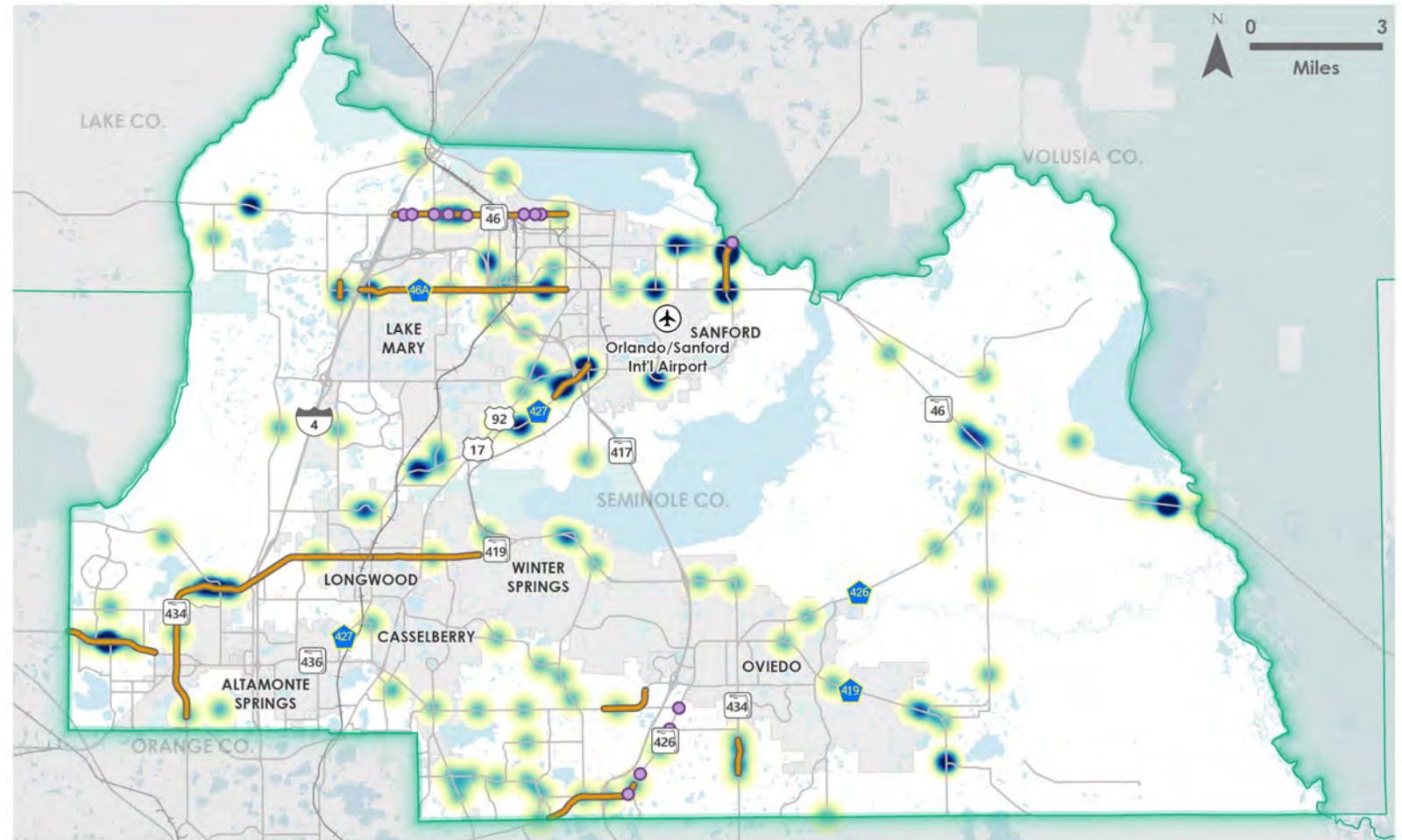
● FDOT Lighting 23/24 Projects

— Lighting Gaps

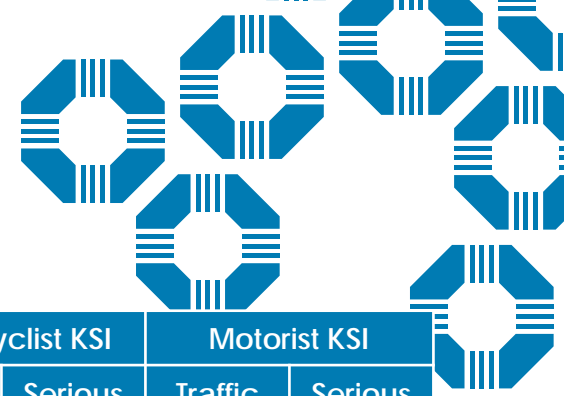
Nighttime Deadly & Serious Injury Crash Heat

Low

High



# Lighting Gaps

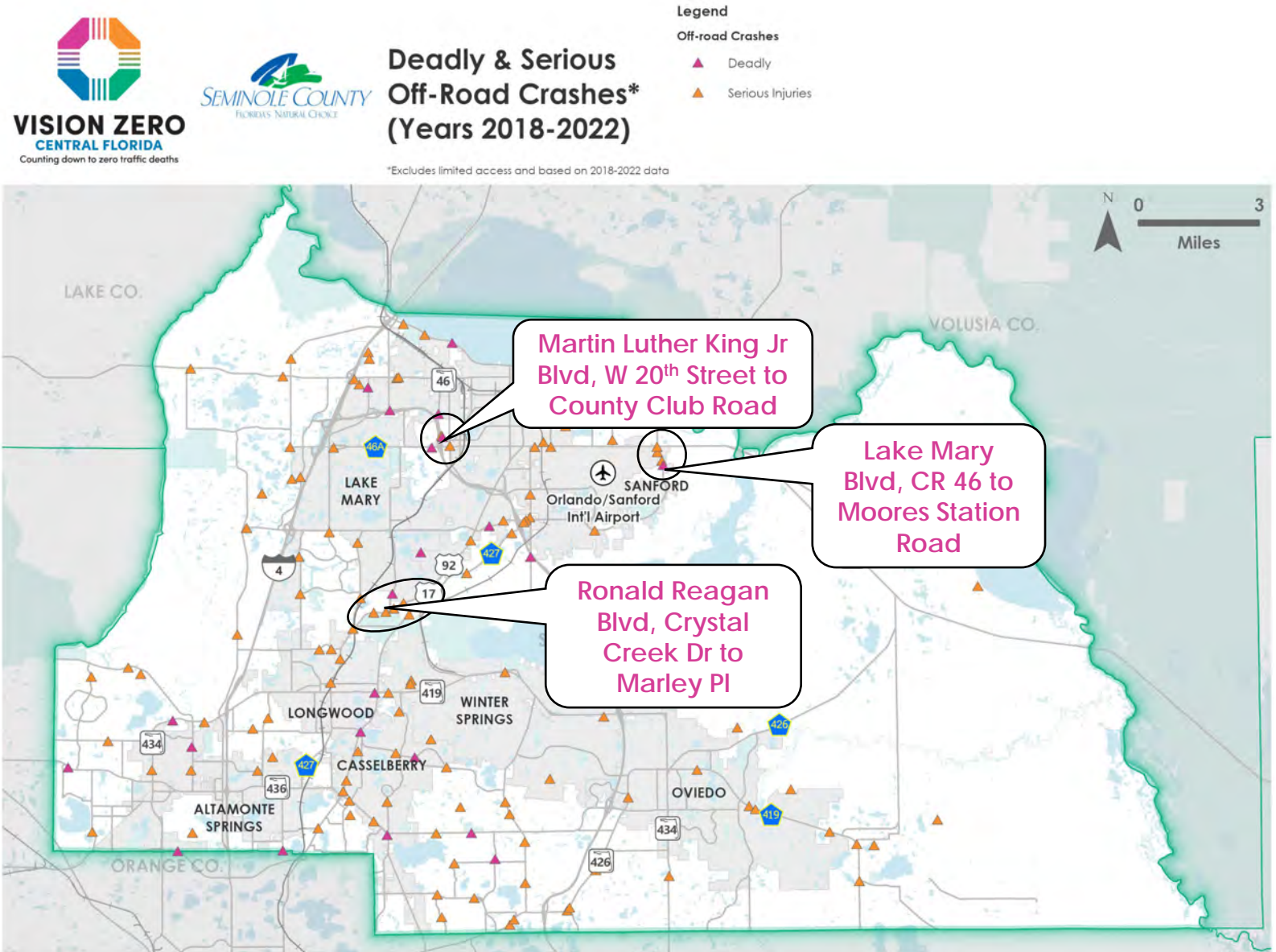


Roads	Limits	Jurisdiction	Pedestrian KSI		Bicyclist KSI		Motorcyclist KSI		Motorist KSI	
			Traffic Deaths	Serious Injuries	Traffic Deaths	Serious Injuries	Traffic Deaths	Serious Injuries	Traffic Deaths	Serious Injuries
SR 436	Orange County Line to N Pearl Lake Cswy	State	2	1	0	0	1	1	1	0
SR 434	Beasley Rd to Carrigan Ave	State	2	0	0	0	0	0	0	0
CR 427	Jones Ave to Carriage Cove Way	County	1	2	0	0	1	2	0	0
W 1 <sup>st</sup> St/US 17/SR 46	I-4 to French Ave/US 17-92	State	2	3	0	0	1	2	1	0
CR 46A	I-4 to French Ave/US 17-92	County	5	3	0	0	0	1	1	0
CR 415/Lake Mary Blvd	Volusia CL to SR 46	County	0	0	0	0	2	2	0	0
International Pkwy	Market Promenade Ave to Heathrow Center Ln	County/City *	1	1	0	1	0	0	0	0
SR 434	Gateway Dr to CR 427	State	5	7	0	0	0	2	1	0
SR 434	CR 427 to Moss Rd	State	1	2	1	1	0	0	1	0
SR 426	Howell Branch Rd to Elmhurst Circle	State	0	1	0	2	1	2	0	0
Red Bug Lake Rd	Rising Sun Blvd/Brooks Ln to Hollow Pine Dr	County	0	1	0	1	0	1	1	0
US 17-92	I-4 to 1 <sup>st</sup> St	State	0	0	0	0	0	2	1	0

\*County (Market Promenade Ave to CR 46A), City of Lake Mary (CR 46A to Heathrow Center Ln)

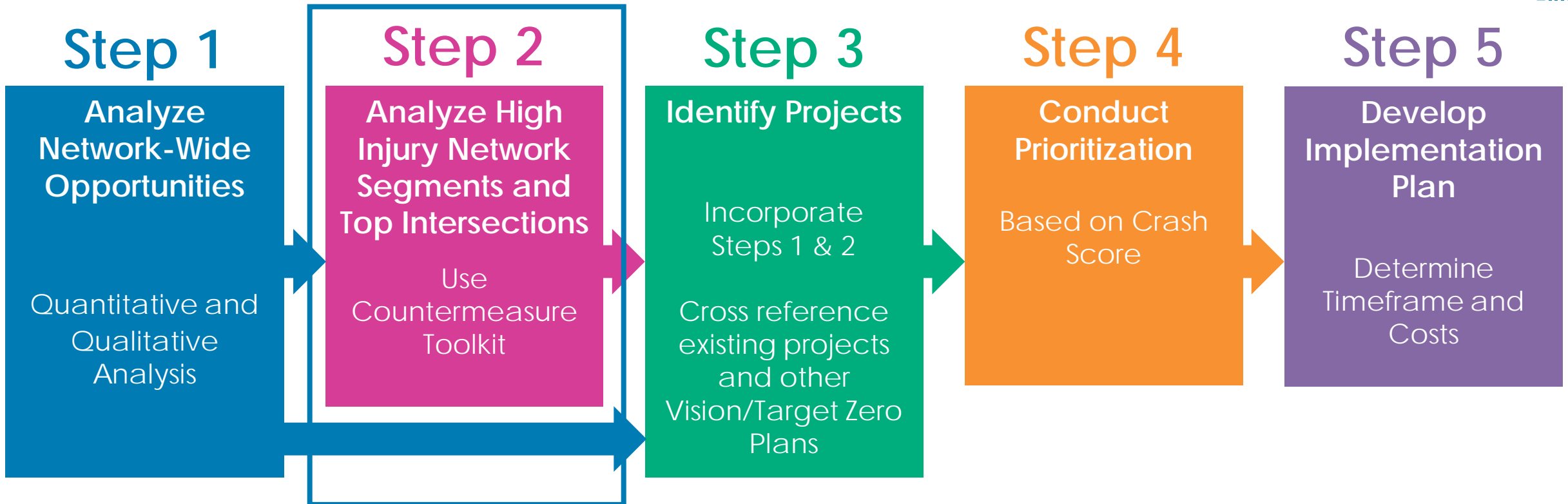
# HSFT & Shoulder Rumble Strips

- High Friction Surface Treatment (HFST) enhances skid resistance
- History of off-road or wet-weather crashes





# Project Planning Process

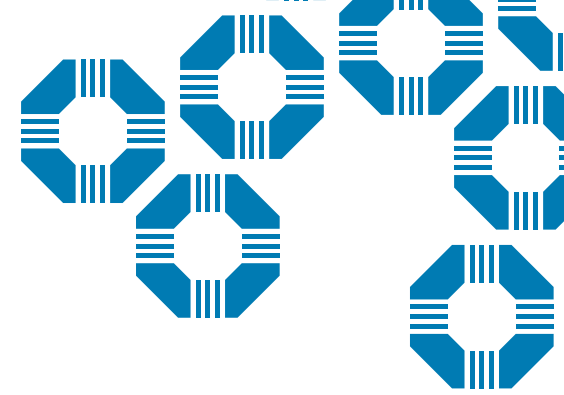


# Project Identification Process

## Step 2

### HIN SEGMENT AND INTERSECTION SPECIFIC ANALYSIS

- Use countermeasure toolkit
  - KSI crash types and crash conditions
  - Context classification
  - Network / connectivity considerations
  - Existing countermeasures in place



# 1. RONALD REAGAN BLVD, PALMETTO AVE TO SR 434

## Existing Conditions

C4 Context Classification

- 1 Pedestrian Serious Injury
- 2 Motorcyclist Serious Injuries
- 2 Motorist Serious Injuries
- 5 Total KSI

**Features** Street parking from Warren Ave to Palmetto Ave, bike lanes, parking buffer, retroreflective backplates

## Potential Solutions



Refuge  
Island at  
Church Ave  
Intersection



Increase  
Crosswalk  
Density



Raised  
Intersection  
at Church  
Ave



Landscaped  
Buffer and  
Median



Lane  
Narrowing

VISION ZERO CENTRAL FLORIDA



FHWA PROVEN SAFETY COUNTERMEASURE



## 2. 25th ST, HARDY AVE TO US 17-92



### Existing Conditions

C3R Context Classification

- |                             |                               |
|-----------------------------|-------------------------------|
| 3 Pedestrian Traffic Deaths | 1 Bicyclist Serious Injury    |
| 2 Motorist Traffic Deaths   | 1 Motorcyclist Serious Injury |
| 1 Pedestrian Serious Injury | 1 Motorist Serious Injury     |
| 9 Total KSI                 |                               |

Features Retroreflective backplates, high-visibility crosswalks

### Potential Solutions

- Refuge Island
- Segment Lighting
- Appropriate Speed Limits
- Raised Median
- Shared Use Path
- Chicanes (30 MPH Section Only)






# 3. LAKE MARY BLVD, SR 46 TO SOUTH OF CANYON PT


## Existing Conditions

- C3R Context Classification
- 1 Motorist Traffic Death
  - 2 Motorcyclist Serious Injuries
  - 5 Motorist Serious Injuries
  - 8 Total KSI
- Features Raised median, bike lanes


## Potential Solutions




High Friction Surface Treatment




Intersection Lighting



Segment Lighting



Landscaped Buffer and Median



Protected Left Turns





# 4. HOWELL BRANCH RD, SOUTH OF BEAR GULLY RD TO SR 426

## Existing Conditions

- C3R Context Classification
- 2 Bicyclist Serious Injuries
- 1 Motorist Serious Injury
- 3 Total KSI

**Features** Raised median, Cady Way Trail and Cross Seminole Trail at Howell Branch Rd and SR 426 intersection

Note: there is currently a study considering improvements at the Howell Branch Rd and SR 426 intersection

## Potential Solutions



Leading  
Pedestrian  
Interval



Curb-Return  
Radius  
Reduction

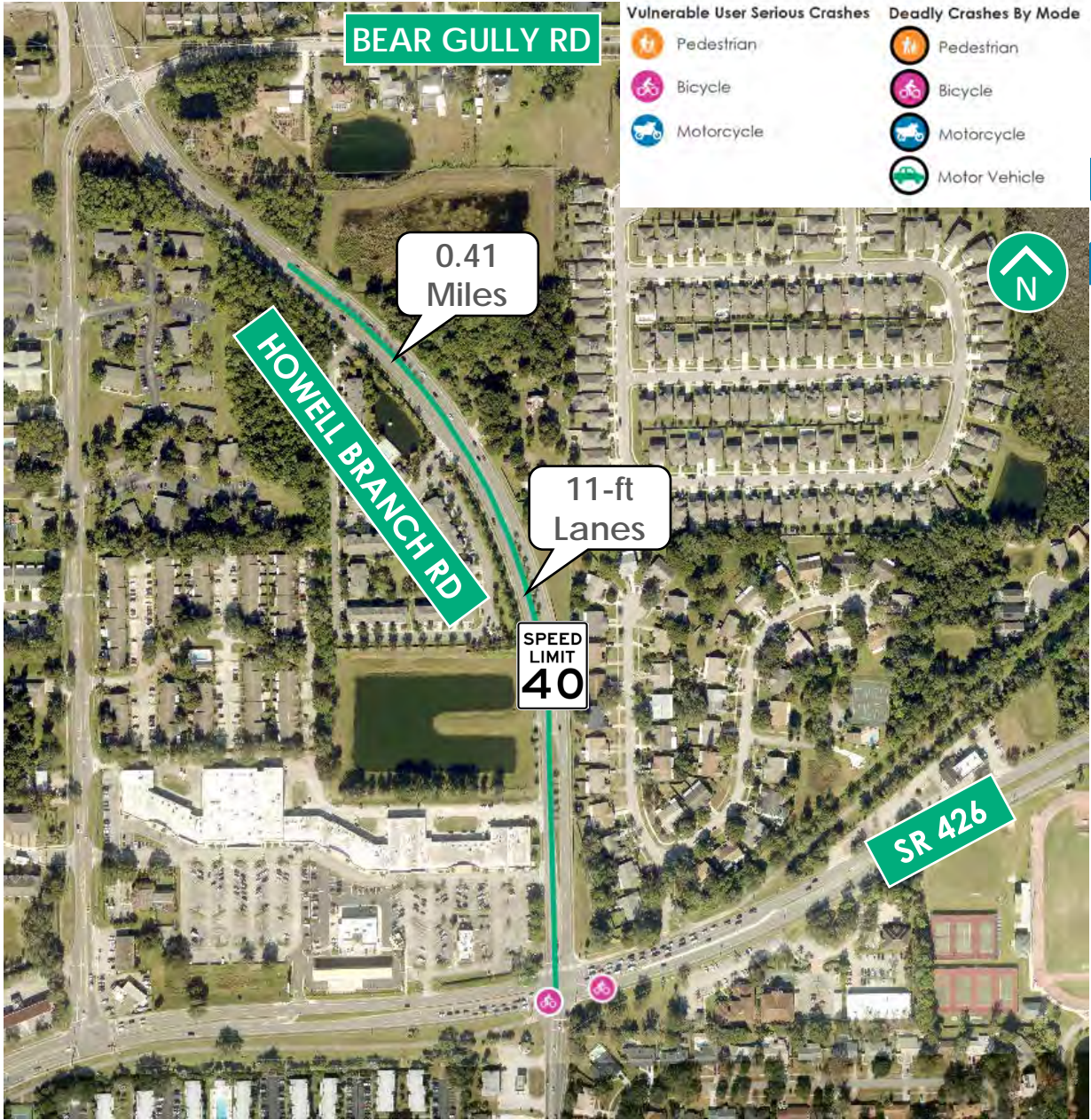


Bike Box



Bicycle  
Crossing

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FHWA PROVEN SAFETY COUNTERMEASURE



# 5. LAKE MARY BLVD, I-4 TO SR 15

## Existing Conditions

- C3C Context Classification
- 1 Pedestrian Traffic Death
  - 2 Motorcyclist Serious Injury
  - 3 Pedestrian Serious Injuries
  - 5 Motorist Serious Injuries
  - 1 Bicyclist Serious Injury
  - 12 Total KSI

Features Raised median, trailhead at Lake Mary Blvd and Rinehart Rd, striping through intersection, reduced left-turn conflict intersections

## Potential Solutions



Refuge Island



Reduced Left-Turn Conflict Intersection



Segment Lighting



Speed Feedback Signs



Landscaped Buffer and Median



High-Visibility Crosswalks

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# 1. CR46A & HARTWELL AVE



## Existing Conditions

- C3R** Context Classification
- 2 Pedestrian Traffic Deaths
  - 1 Motorist Traffic Death
  - 1 Motorcyclist Serious Injury
  - 3 Deaths occurred in dark conditions
  - 4 Total KSI

**Features** Retroreflective backplates, high-visibility crosswalks

## Potential Solutions

Intersection Lighting

Refuge Island

Leading Pedestrian Interval

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## 2. CR 427 & LAKE MARY BLVD



### Existing Conditions

- C3C** Context Classification
- 1 Pedestrian Serious Injury
  - 1 Motorist Traffic Death
  - 4 Motorist Serious Injuries
  - 6 Total KSI

**Features** Striping through intersection, high-visibility crosswalks

### Potential Solutions

Roundabout

Refuge Island

Retroreflective Signal Backplates

High-Visibility Crosswalk at WB Slip Lane

Intersection Reconstruction and Tightening





# 3. CR 46A & CASA VERDE BLVD



## Existing Conditions

C3R Context Classification

- 1 Motorcyclist Serious Injury
- 1 Motorcyclist Traffic Death
- 2 Total KSI

Features High-visibility crosswalks, intersection lighting, segment lighting

## Potential Solutions

Roundabout

High-Visibility Crosswalk on East Leg

Speed Feedback Sign

Lane Narrowing

Landscaped Buffer and Median





# 4. LAKE MARY BLVD & FLAGG LN



## Existing Conditions

- C3C Context Classification
- 1 Motorcyclist Serious Injury
  - 1 Pedestrian Traffic Death
  - 2 Total KSI

Features High-visibility crosswalks, intersection lighting, segment lighting

## Potential Solutions

Add Sidewalk, from Flagg Ln to Lake Emma Rd

Intersection Lighting

High-Visibility Crosswalks at Lake Emma Road

Speed Feedback Sign

Landscaped Buffer and Median





# 5. CR 427 & KEYES CT



## Existing Conditions

- C3C Context Classification
- 2 Motorcyclist Serious Injuries
- 2 Total KSI
- Features High-visibility crosswalks

## Potential Solutions

Appropriate and Consistent Speed Limits

Roundabout

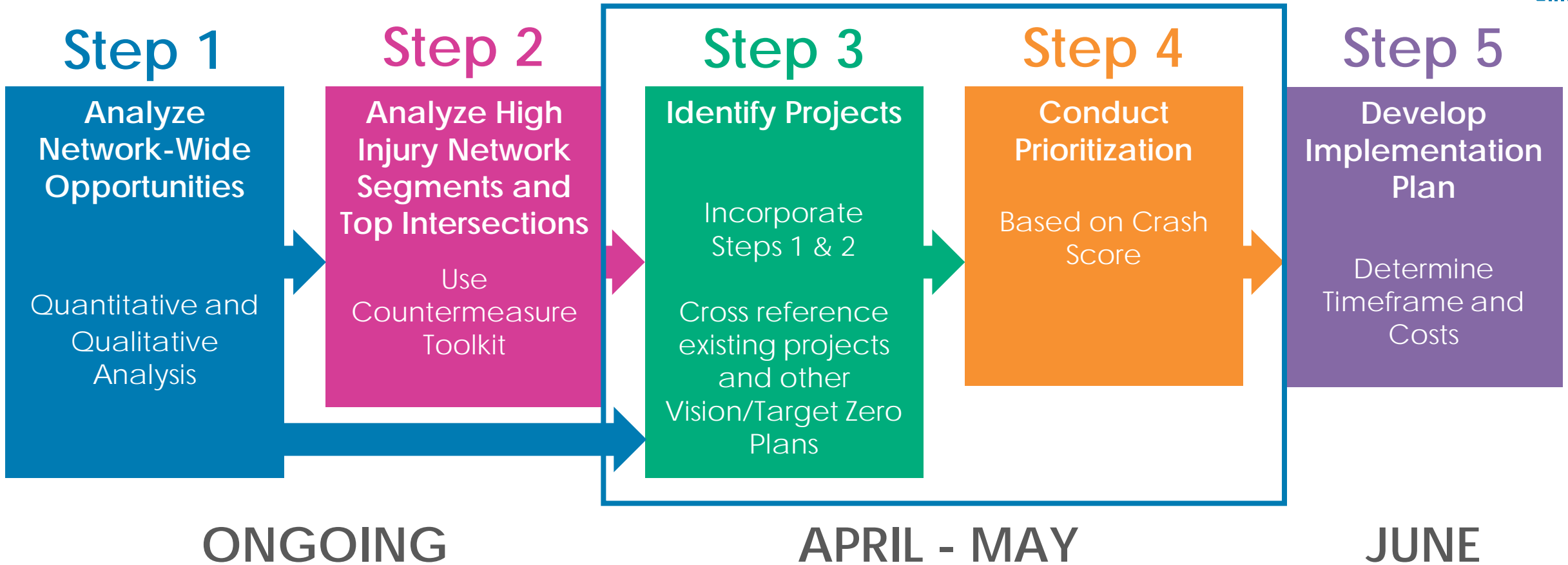
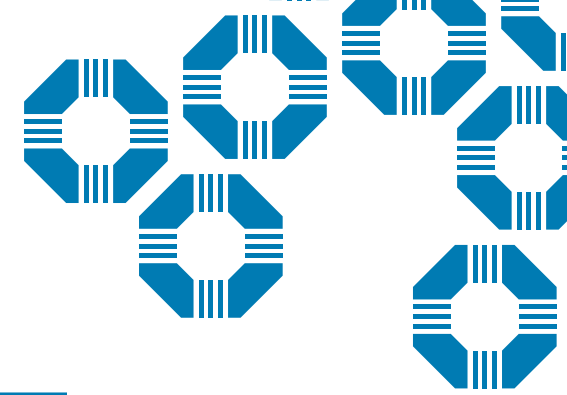
Speed Feedback Sign

Landscaped Buffer and Median

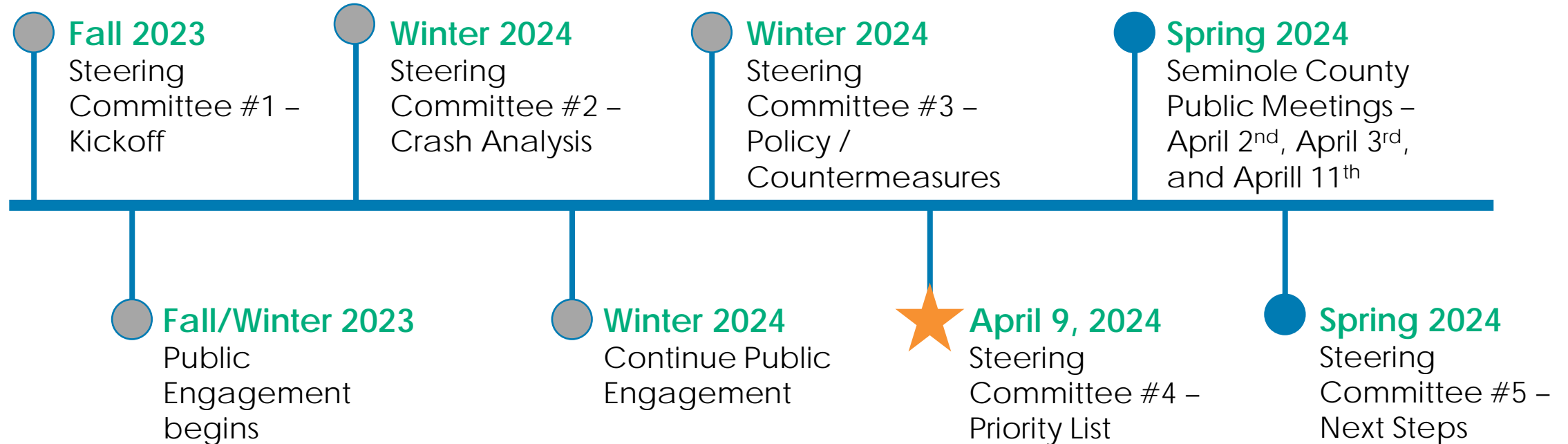
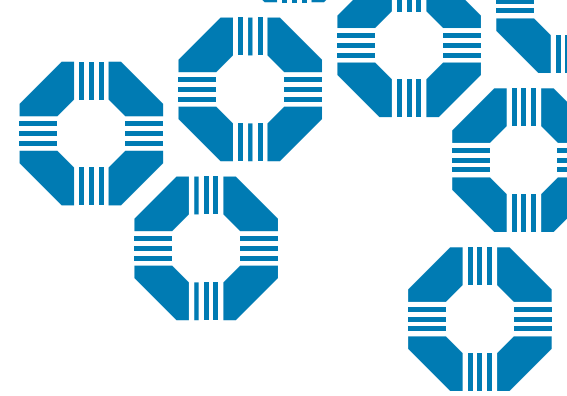
Lane Narrowing



# Project Planning Process



# Next Steps







**VISION ZERO**  
**CENTRAL FLORIDA**  
Counting down to zero traffic deaths



# THANK YOU



APRIL 2, 2024



# Meeting Summary

Subject        **Seminole County Vision Zero Steering Committee Meeting  
#5 Summary – Plan Reveal**

Date & Time   July 18, 2024, 1:00pm - 3:00pm

Location:      950 Calabria Drive, Altamonte Springs, FL 32714  
Public Works West Altamonte Operations Facility  
Lake Lotus Training Room



## Attendees

The attendees for Steering Committee #5 can be found in Table 1.

**Table 1: Steering Committee #5 Attendees**

Steering Committee Members	Consultant Staff / MetroPlan Orlando
Bill Wharton, Seminole County (Engineering)	Lara Bouck, MetroPlan Orlando
Tony Nelson, Seminole County (County Engineer)	Megan Ferguson, HDR
Arturo Perez, Seminole County (Engineering)	Jeff Arms, HDR
Bill Pandos, Seminole County (Parks and Recreation)	Melissa Porcaro, HDR
Chief Matt Kinley, Seminole County Fire Department	
Janelle Dunn, TrueHealth CEO	
Steve Fussell, Sanford Airport Authority	
Loreen Bobo, Florida Department of Transportation (FDOT)	
Bruce Doig, City of Altamonte Springs	
Lenny Barden, City of Altamonte Springs	
Kelly Brock, City of Casselberry	
Adam Mendenhall, City of Sanford	

## Presentation Agenda

The purpose of the fifth Steering Committee meeting was to discuss the draft plan, especially the actions, and next steps post adoption. The plan draft was sent to committee members in advance of the meeting.

The planned meeting agenda included:

1. Recap of Activity Since April / Regional Update
2. Walk Through Plan Actions
3. Walk Through Plan Projects
4. Discuss Comments / Revisions
5. Resolution and Adoption Process
6. Next Steps for Committee Members

## Discussion and Feedback

The fifth Steering Committee was held in person, with a short PowerPoint presentation. The Executive Summary with Action Plan Actions were printed and placed at each seat. Several copies of the draft plan were also printed for circulation. The Steering Committee members in attendance can be seen in Figure 1. Crash data maps and online GIS web maps were available for the committee to view before and after the presentation.

**Action items resulting from this meeting are in bolded green text throughout the notes.**

**Figure 1. Committee Members at Steering Committee #5**



## Introduction –

It was noted the Vision Zero Central Florida Regional Plan is out for public comment. The group noted Vision Zero presentations have been made to the Winter Springs City Commission and the Casselberry City Commission. No comments that would significantly impact either City's Action Plan were identified during the respective meetings.

## Action Plan Elements –

Arturo Perez asked how the actions in the plan relate back to the priority projects. Megan Ferguson replied that the HIN project list is separate from the actions, but some networkwide solutions (such as installation of speed feedback signs) may be included in the list of actions. The group discussed how to handle projects at County line. There is coordination between regional and county teams, so solutions are consistent. Lara Bouck noted all Vision Zero projects are being incorporated into MetroPlan Orlando's 2050 Metropolitan Transportation Plan (MTP).

Chief Matt Kinley noted Seminole County Fire serves the City of Altamonte Springs, Casselberry, and Winter Springs. **The study team will share the Vision Zero Safety Action Plans for these cities with the Fire Department.**

## Safer Roads Actions –

**Evaluating Implementation of Additional Leading Pedestrian Intervals (LPIs)** – Megan Ferguson noted that Charlie Wetzel shared that the County has approximately 15 locations in Seminole County with LPIs.

**Expanding Use of Rectangular Rapid Flashing Beacons (RRFBs)** – Chief Kinley expressed support for this countermeasure. Tony Nelson asked whether Charlie Wetzel has provided feedback on expanding RRFB guidance. Megan Ferguson confirmed this topic has been discussed with Charlie Wetzel. Jeff Arms noted safety features have been expanded in the December 2023 MUTCD update. Megan Ferguson confirmed RRFBs are approved in the MUTCD. Arturo Perez asked which Start Year this action is planned for. Year 1 is recommended.

**Coordinate Safety Improvements with Utility Improvements** – The group discussed the benefits and challenges of this action. Loreen Bobo noted FDOT is working toward this approach where possible. Challenges the group noted were aligning funding with utility schedules, encountering unforeseen delays (or advancements) with either the safety project or the utility project which misaligns the efforts, and general coordination challenges with utility providers. Bruce Doig noted the City of Altamonte Springs takes this approach since they own and maintain their own utilities.

**Deploy Near Miss Camera Technology** – Megan noted the County is deploying this technology as part of the County's SS4A demonstration project through June 2025. FDOT noted they have explored this technology and spoken to different providers but have not yet initiated a deployment. FDOT expressed interest in seeing the data from the County's demonstration project as it becomes available.



**Traffic Calming Plan and Travel Time Evaluation** – The group discussed developing a holistic plan. Chief Kinley noted the County has a traffic calming policy. The group identified this plan as a next step.

**Networkwide Projects** – The group discussed potential lighting projects and lane repurposing candidates such as Dodd Rd. Seminole County should continue to coordinate with FDOT on state road lighting projects. The group discussed the process/agreements needed for lighting projects. The cities must agree to maintain the lighting once installed. FDOT may have agreements with the utility providers such as Duke Energy which installs lighting and FDOT repays the cost over time.

**Prioritized Projects (County Roads)** – Megan Ferguson noted the updated numbering of the priority projects is the result of prioritization. One example of a project ranking higher than its crash score ranking is on Martin Luther King Jr Blvd due to it being in a USDOT disadvantaged area. Adam Mendenhall noted there are several multifamily projects on CR 46A in Sanford that are expected to impact traffic. Tony Nelson noted CR 46A at Rinehart Rd is currently being improved from the I-4 ramp to the intersection.

The group discussed the relationship between development agreements and safety improvements. The group noted design standard changes need to be in the Land Development Codes, and safety design must be a coordinated effort between developers, cities, counties, and transit agencies. Jeff Arms asked whether the group would be open to a training for staff performing development reviews. The focus of the training would be understanding pedestrian generators, land use context, and travel patterns to drive holistic safety improvements. FDOT expressed this would be a good statewide training and suggested a recorded session. **The group agreed to add a development review training focused on safety as an action (participation or support). MetroPlan Orlando will evaluate the potential to make this type of training available for local staff and will consider including this action in the regional safety action plan.**

**Prioritized Projects (State Roads)** – It was asked whether SR 434 in the City of Altamonte Springs should be on the HIN. It was discussed that the threshold was not met at the County level. Bruce Doig asked about project extents and the feasibility of implementing projects without the sales tax (on the ballot in November 2024). The group identified these projects as unfunded needs. Lara Bouck noted the project limits may be adjusted as they are incorporated into the 2050 MTP. Lara also noted SS4A implementation grants come out next year. This year the notice of funding opportunity was released in March. A question was asked whether non-project actions can be included in implementation grants. **Lara to confirm whether non-project actions can be included in implementation grants.**

## **Safer Speeds –**

**Pilot Speed Limit Cameras in School Zones** – Megan Ferguson noted these are now permitted in Florida and several agencies have approved their use. Loreen Bobo noted the City of Eustis has them operational. This can be used as an example to see how speeds are changing with this countermeasure in place.

## Safer Road Users –

**Partner with Motorcycle Safety Organizations, Emphasize Helmet Usage** – Megan Ferguson noted approximately 40% of all motorcycle deaths or serious injuries in the region occurred when the motorcycle driver did not wear a helmet. Chief Kinley shared his experience that almost every motorcycle crash that his team has responded to where the rider wore a helmet did not result in serious injury. Megan Ferguson asked what the barrier to more widespread helmet usage may be. Chief Kinley replied that helmets are not perceived as cool. Others agreed with this barrier and experienced similar findings with seatbelts. The group discussed that helmets are not required in Florida. Bruce Doig asked whether pursuing a change to the law should be an action item. Lara Bouck noted that identifying legislative priorities are included in the regional plan. The group also discussed the need for a hands-free law in Florida, which has been shown to work other places. **Lara will follow up with the regional team to confirm legislative priorities are included in the regional plan for a hands-free law and a helmet law.**

**Support the Expansion of Driver's Education** – The group asked whether the school board has provided feedback on this action yet. No comments have been received yet. Loreen Bobo noted this is also in the Central Florida Safety Strategic Plan. Seminole County Public Schools can coordinate with FDOT to partner.

**Conduct Traffic Safety Presentations / Initiate Youth Traffic Safety Groups** – Loreen Bobo noted there is an FDOT Teen Driving Safety Program, an FDOT Battle of the Belts Program, and the Florida Sheriff Association's Teen Driver Challenge. Ford Driving School also offers defensive driving courses. There is opportunity to engage these programs versus initiating new programs. **The study team will review rephrasing language in the action plan for the youth traffic safety actions.**

## Safer Vehicles –

The group discussed various safety features – such as a car not starting unless passengers are buckled, Volkswagen bringing back physical buttons to avoid distraction on screen and using the “do not disturb” feature while driving. The group discussed the importance of using the “do not disturb” feature to build an internal culture of safety. FDOT currently implements this. Lenny Barden noted it could be considered for the City of Altamonte Springs. **The study team will review adding a “do not disturb” policy action for County and City staff.**

A question was asked whether lobbying the federal government for safety features is included in the Plan. For the County plan, the action is to collaborate with professional organizations that support safe vehicle requirements. Lara Bouck noted the regional plan includes legislative priorities.

Loreen Bobo noted other states with hands-free laws have seen improvements in crash rates. The group noted Florida does not permit texting but does not have a hands-free law.

## Safer Post Crash Care –

There was discussion about best practices with response times. Janelle Dunn noted that County Fire has been proactive about learning best practices for getting into electric vehicles and cyber trucks. Chief Kinley noted there are some services that can send signals to phones or cars when an emergency responder is approaching and responding to a crash site. Waze and Google do.

Megan Ferguson asked if the Chief had any comments on the Post Crash Care actions. Chief Kinley replied that he supports them. He likes the expanding CPR and First Aid Training action. He asked what the thought was behind tracking response and transport times. The study team replied to better understand barriers such as traffic congestion and what roadway improvements could be made. The group noted new developments may cause traffic shifts and resulting changes in response times.

The group discussed the balancing act between traffic calming features and speedy response times. Chief Kinley shared that a Texas study found an impact to response times due to certain traffic calming measures. Kelly Brock noted Seminole County EMS response times are approximately twice as fast as in Orange County. He also noted Casselberry has multiple examples of vertical deflection, which indicates that Seminole County is still doing well with implemented traffic calming measures. Lenny Barden noted rubber speed cushions allow for more test scenarios.

### Continuing Progress –

**Convene a Fatal Crash Review Commission** – Loreen Bobo noted this is already happening in a form through the Community Traffic Safety Teams (CTST). Kelly Brock noted the participants are mostly law enforcement. Loreen Bobo encouraged the CTST to be molded how the local area prefers. Jeff Arms asked what the CTST format or agenda was. Lenny noted the format felt statistic-based versus discussing contributing causes. He noted a positive change with school traffic safety issues from CTST. Loreen Bobo noted FDOT has a staff member attend all CTST meetings and bring back details to the Safety Office for further review and potential next steps for countermeasure identification. More planners, engineers, and other disciplines can be encouraged to attend and bring back findings to the County / City departments. Adam Mendenhall asked about the details for the CTST meetings.

**Lara to send Adam the CTST information.**

The group discussed tracking statistics for KSIs on State, County, and City roads over time. Jeff Arms replied that the regional team should have these stats for the region.

The group discussed how to tackle a road like SR 434 or SR 436. Multiple cities and the County could consider organizing efforts to apply for an implementation grant.

Loreen Bobo gave an updated on the Central Florida Safety Strategic Plan. The task force will meet three times a year. Tentatively, the targeted months for meetings with the steering committee will September, January, and April, with a May Safety Summit similar to this past year.

**Updating Action Plan Every 5 Years** – Bill Wharton suggested keeping this plan update concurrent with their 5-year updates to the Transportation Mobility Plan. **The study team will update the timing of the Action Plan 5-year update.**

## Next Steps

The study team asked for any additional comments by July 24<sup>th</sup>. The goal is to update the action plan and share with the County Commissioners well in advance of the Commission Meeting on August 27<sup>th</sup>. The plan is going for adoption that date.

### Summary of Action Items

1. The study team will share the Vision Zero Safety Action Plans for these cities with the Fire Department.
2. The group agreed to add a development review training focused on safety as an action (participation or support). MetroPlan Orlando will evaluate opportunities to provide this training to local partners and may include this action in the regional plan.
3. Lara to confirm whether non-project actions can be included in implementation grants.
4. Lara will follow up with the regional team to confirm legislative priorities are included in the regional plan for a hands-free law and a helmet law.
5. The study team will review rephrasing language in the action plan for the youth traffic safety actions.
6. The study team will review adding a “do not disturb” policy action for County and City staff.
7. Lara to send Adam the CTST information.
8. The study team will update the timing of the Action Plan 5-year update.



Figure 2. Steering Committee #5 Study Team





**VISION ZERO**  
**CENTRAL FLORIDA**  
Counting down to zero traffic deaths



# VISION ZERO SAFETY ACTION PLAN

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**FINAL STEERING COMMITTEE MEETING**

JULY 18, 2024



**20+** Committee Members

**12** Months

**5** Meetings

**1** County Plan

VISION ZERO CENTRAL FLORIDA



# WHAT'S IN THE ACTION PLAN

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# The Action Plan Elements

## Timeframe, Relative Cost, Lead Department, Performance Measures

- Looks 5-years into the future
- Actions are proposed for year 1 through year 5
- As staff and financial resources allow
- Integration opportunities with existing County and partner efforts

## What You'll See in the Action Plan Document:

ACTION	DESCRIPTION	PERFORMANCE MEASURE	TARGET YEAR	RESPONSIBLE PARTY	RELATIVE COST	INTEGRATES WITH
Prioritize Bicycle and Pedestrian Projects	Building on the Seminole County Trails Master Plan and the Mobility Plan, projects on the HIN that coincide with these plans should be prioritized for implementation. The existing county plans have identified needs and connectivity opportunities. Streamlining these projects can advance safety and mobility. It is recommended that a formal process be evaluated to integrate coinciding projects into the 5-year capital improvement program.	Documented policy/ process	Start Year 2	Public Works Engineering Division (Lead), Parks and Recreation (Support), Board of County Commissioners (Support)	\$	2045 Mobility Plan, Trails Master Plan, Capital Improvement Program
Implement Leading Pedestrian Intervals	LPIs can reduce vehicle-pedestrian crashes by up to 13%. It is recommended the County and FDOT work together to implement LPIs as a system wide improvement, especially in each city's core downtown area.	Number of intersections evaluated for LPIs and number implemented	Start Year 1	Public Works Traffic Engineering Division	\$	
Conduct Traffic Signal Retiming to Match Target Speeds	Traffic signal timing is a combination of minimizing vehicle delay and optimizing safety for all users. Minor modifications to signal progression and timing settings should be reviewed for both high injury network segments and roadways of similar context as a proactive measure. It is recommended the progression speed be set to the target speed.	Number of corridors retimed with speed reduction	Start Year 2	Public Works Traffic Engineering Division	\$-\$\$	Travel Time and Delay Study
Implement Quick-Build Lane Repurposings	Excess roadway capacity lends itself to higher vehicle speeds. Lane repurposings should be targeted for 4-lane roadways with an average annual daily traffic volume less than 20,000. Historic and future growth should be considered for lane repurposing candidates. Truck traffic should also be considered.	Miles of roadway repurposed	Start Year 2	Public Works Engineering Division	\$-\$\$\$	FDOT Lane Repurposing Guidebook
Deploy Near-Miss Camera Technology	Monitoring technology can be deployed to proactively identify hotspots and apply countermeasures before crashes occur. The Vision Zero crash analysis has identified high-crash intersections. Near-miss camera technology can be deployed to these intersections and nearby intersections with similar contextual and signal timing characteristics. This data will inform which movements are in greatest conflict and provide an opportunity to assess effectiveness of low-cost signal timing countermeasures prior to any infrastructure projects.	Number of near miss hot spots identified	Start Year 2	Public Works Traffic Engineering Division	\$\$	Vision Zero Regional Action Plan



# Safer Roads

## The Action Plan for Safer Roads

### Start Year 1

- Implement Leading Pedestrian Intervals
- Expand RRFB Guidance in Engineering Standards Manual
- Coordinate Safety Improvements with Utility Projects
- Implement Quick-Build Lane Repurposings
- Deploy Near-Miss Camera Technology
- Prioritize Bicycle and Pedestrian Projects
- Expand RRFB Guidance in Engineering Standards Manual

### Start Year 2

- Conduct Traffic Signal Retiming to Match Target Speeds
- Develop Traffic Calming Plan and Travel Time Education
- Enhance Transit Stop Crossings

## THE GOAL

Design roadway environments to **mitigate human mistakes** and **account for injury tolerances**, to **encourage safer behaviors**, and to facilitate **safe travel** by the most **vulnerable users**.

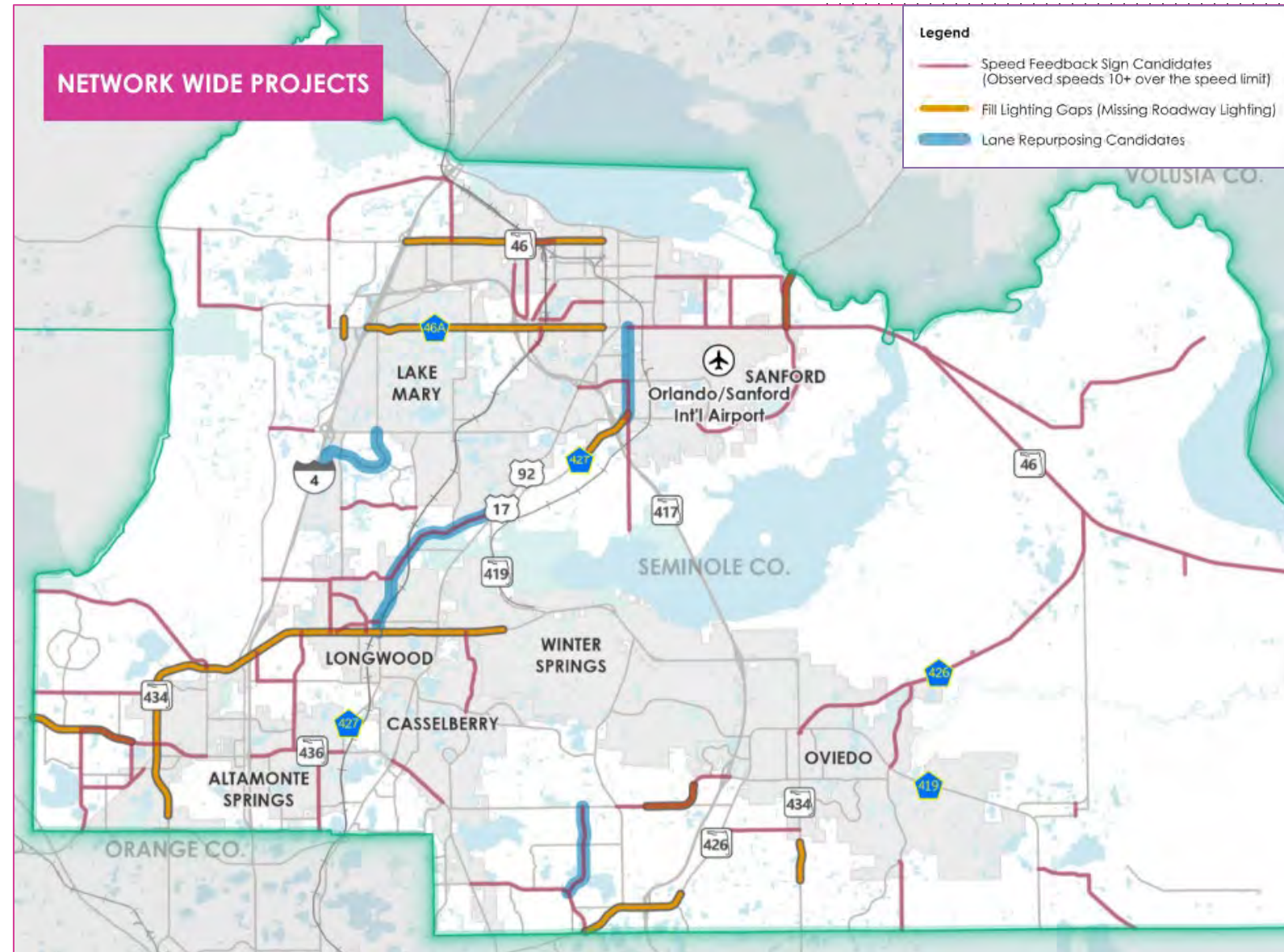


# Safer Roads – Network-Wide Projects

## Systemic Safety Projects

Proactive, network-level improvements based on existing conditions:

- Lighting
- Lane Repurposing
- Speed Feedback Signs



# Safer Roads – System-Wide Improvements

The following strategies are also recommended for evaluation on all principle, major, and minor arterials:

**Curb Radii Reduction** to reduce vehicle speeds and crossing length

**Leading Pedestrian Intervals** to give pedestrians a 'head start' and improve visibility

**RTOR Restrictions** to reduce pedestrian and through vehicle conflicts

**Signal Timing** to align with target speeds, enhance crossings and extend yellow and all-red phases

**Enhanced Transit Stops** that are co-located with pedestrian crossings

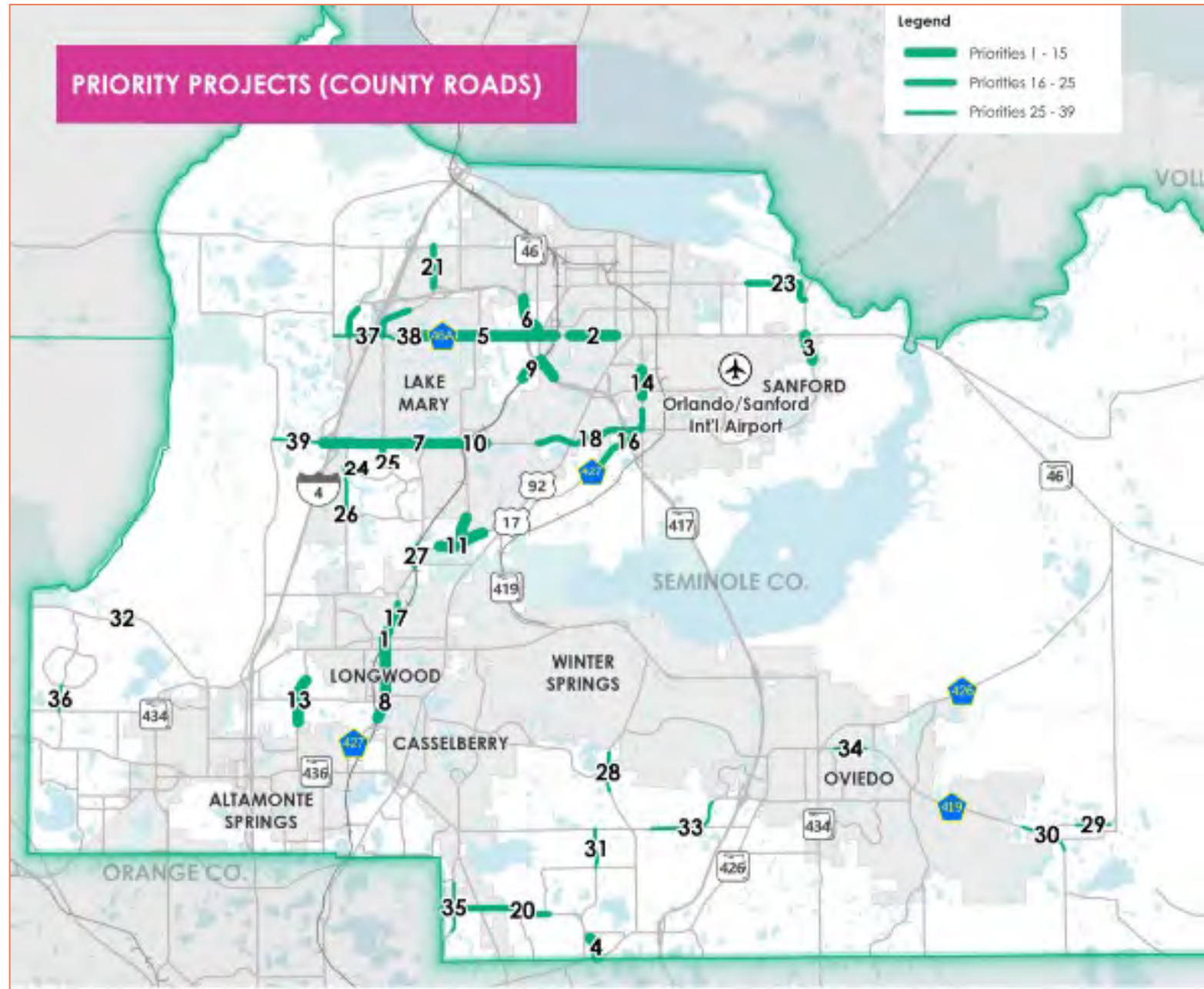




# Prioritized Projects

Corridors and Intersections on the HIN were prioritized according to:

- Crash scores (50%)
- Equity evaluation (15%)
- Safety benefit (15%)
- On multiple HINs (10%)
- Implementation time (10%)

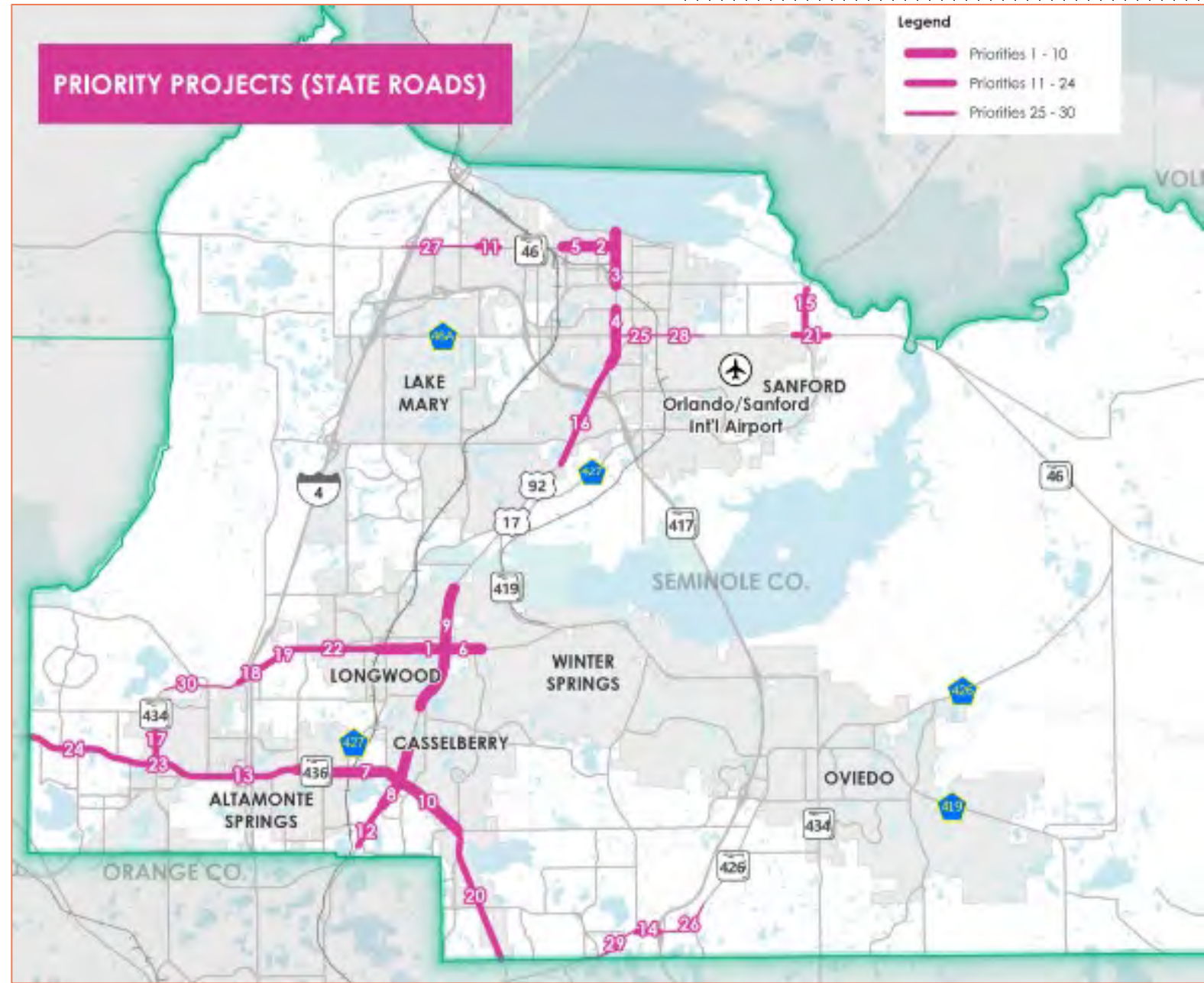




# Prioritized Projects

Corridors and Intersections on the HIN were prioritized according to:

- Crash scores (50%)
- Equity evaluation (15%)
- Safety benefit (15%)
- On multiple HINs (10%)
- Implementation time (10%)



# Safer Speeds

## The Action Plan:

### Start Year 1

- Install Speed Feedback Signs

### Start Year 2

- Develop Target Speed Plans
- Prioritize Speed Management Countermeasures
- Pilot School Zone Speed Limit Cameras

## THE GOAL

Promote safer speeds in all roadway environments through a combination of **thoughtful, equitable, context-appropriate** roadways design, **appropriate speed-limit** setting, **targeted education, outreach campaigns**, and **enforcement**

# Safer Road Users

## The Action Plan:

### Start Year 1

- Partner with Motorcycle Safety Organizations, Emphasize Helmet Usage

### Start Year 2

- Conduct Targeted / High-Visibility Enforcement Operations
- Launch Vision Zero Outreach Campaign
- Initiate Youth Traffic Safety Programs

### Start Year 3

- Coordinate Traffic Safety Presentations with Schools
- Consider Expanding Driver's Education Program in Public Schools

## THE GOAL

Safe road users means safe people. Encourage **safe, responsible driving** and behavior by people who use our roads and create conditions that **prioritize** their ability to reach their destination **unharm**ed



# Safer Vehicles

## The Action Plan:

### Start Year 1

- Collaborate with Professional Organizations Furthering Safe Vehicle Requirements
- Publicize the Availability of the "SAFECAR" Phone App for Recall Notifications across the County

### Start Year 3

- Consider Emerging Vehicle Safety Systems when Purchasing New Fleet Vehicles

## THE GOAL

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





# Post Crash Care

## The Action Plan:

### Start Year 2

- Meet with First Responders Regularly
- Track Response Time and Transport Times
- Supplement Crash Data with First Responder, Hospital, and Trauma Center Data
- Promote CPR / Emergency First Aid Training

## THE GOAL

Enhance the survivability of crashes through expedient access to emergency medical care, while creating a safe working environment for vital first responders and preventing secondary crashes through robust traffic incident management practices



# Continuing Progress

## Keeping momentum and accountability

### Start Year 1

- Develop Vision Zero Status Report to Track Progress
- Host Biannual County Vision Zero Committee Workshop
- Create / Assign Dedicated Transportation Safety Staff Position

### Start Year 2

- Convene a Fatal Crash Review Commission

### Start Year 5

- Update Action Plan Every 5 Years, Offset from Transportation Plan Updates

## THE GOAL

Maintaining momentum to zero traffic deaths and serious injuries requires a sustained effort. These overarching actions will help us get there



# Vision Zero Isn't Just About How Streets Are Designed

Vision Zero requires a Culture of Safety. To get to Zero:

- Roads need to be designed for safety first
- User safety is prioritized over speed
- Vulnerable users need to be protected and prioritized
- Post-crash care needs to be timely
- Conditions that commonly lead to crashes need to be mitigated.

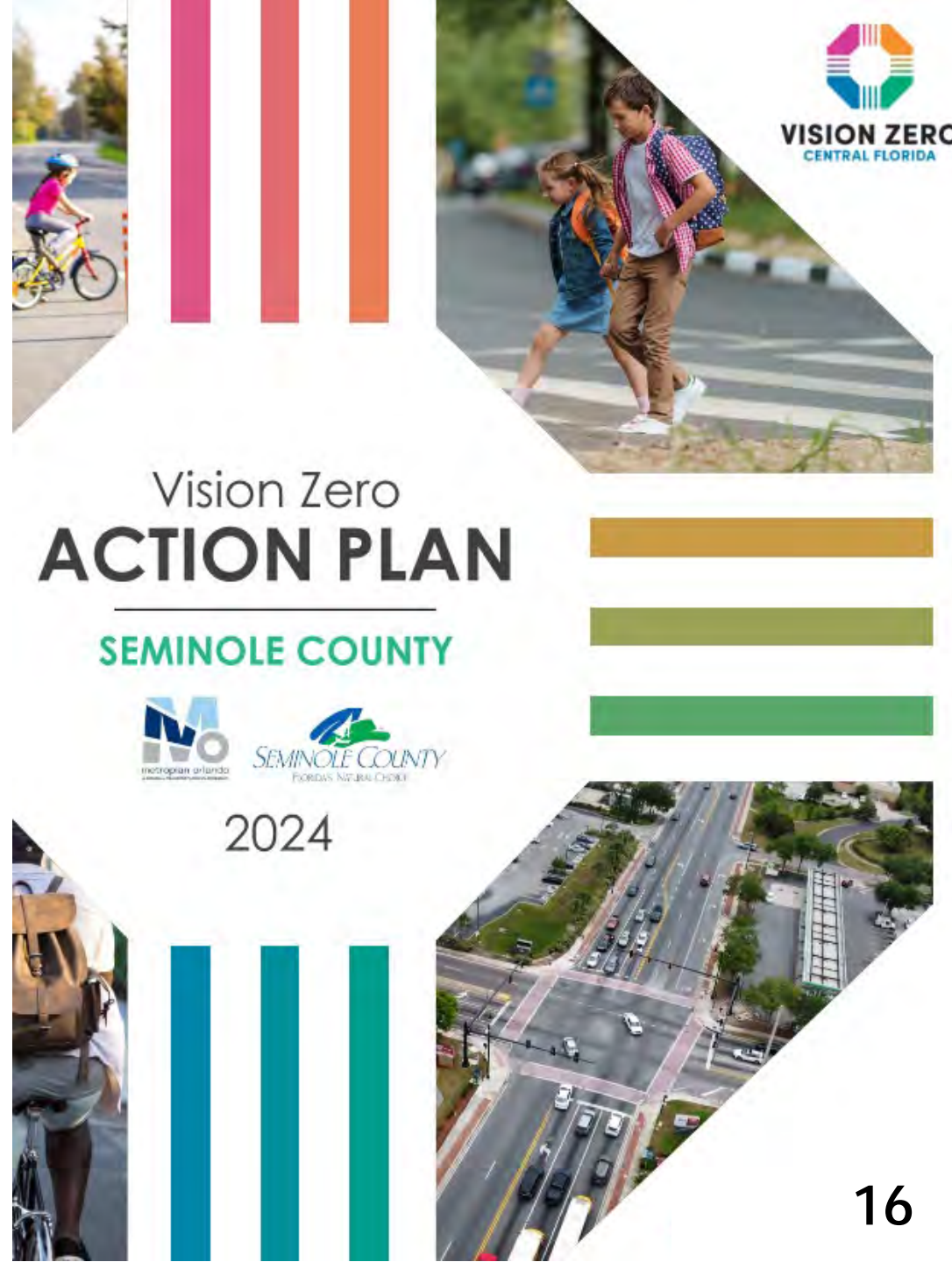
## CHANGING EXPECTATIONS

Residents all over the region will see changes on their roads.

- Wide-scale improvements will help to create a broad culture of safety in Central Florida

# Next Steps

- Seminole County BCC on August 27<sup>th</sup>
  - Adopt Resolution (2050)
  - Adopt Action Plan
- Initiate Year 1 Actions
- Pursue Federal SS4A Implementation Grants
- Regional Coordination
  - Regional Plan adoption planned for September





# High Injury Network Methodology

# Draft Memorandum



**VISION ZERO**  
**CENTRAL FLORIDA**

Counting down to zero traffic deaths

Date: August 31, 2023

To: Vision Zero Central Florida Partners

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

Subject: **Vision Zero Central Florida – High Injury Network**



## Introduction

The MetroPlan Orlando region has the unfortunate distinction of being one of the deadliest metropolitan areas for pedestrians in the country, and transportation safety affects 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 MetroPlan Orlando, 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). 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 3 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 Costs<sup>1</sup> and EPDO Weight Factors**

Severity	Crash Cost	EPDO Weight	Modified EPDO Weight <sup>2</sup>
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 HIN. 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 county-wide 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 ( $15 \times 1 + 10 \times 17 + 5 \times 317$ ), 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 ( $14 \times 1 + 1 \times 3 \times 1 + 7 \times 17 + 3 \times 3 \times 17 + 2 \times 317 + 3 \times 3 \times 317$ ).

## 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](#).

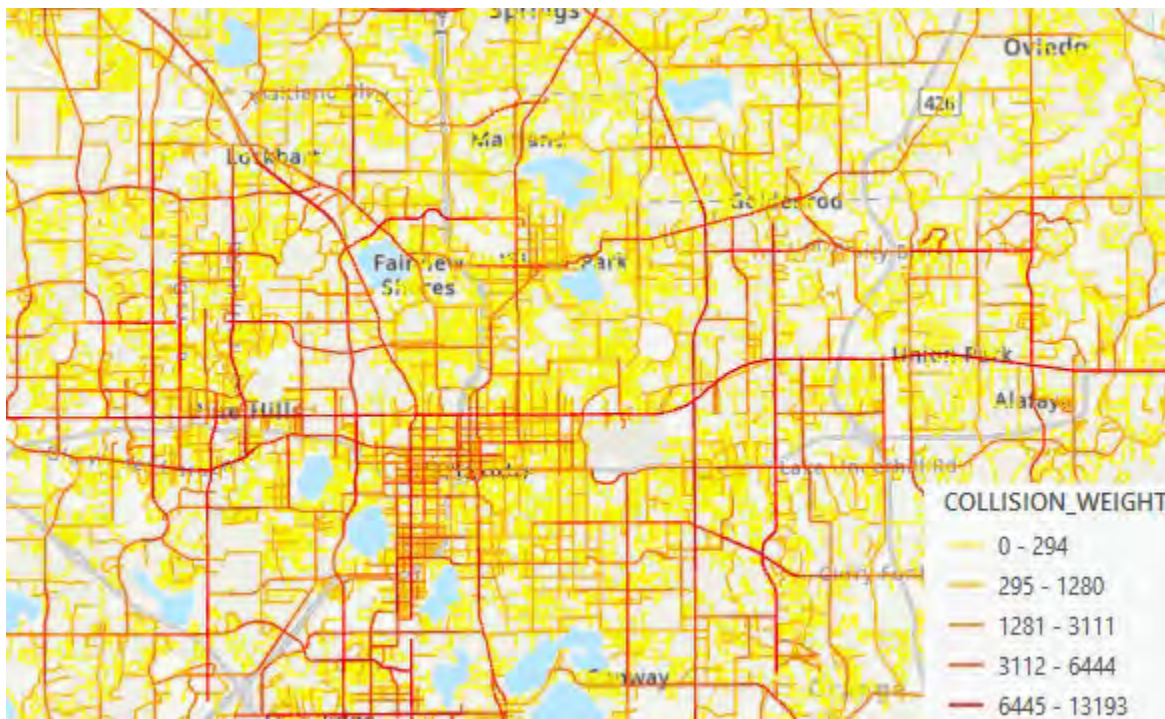


Figure 1: Initial visualization of Collision Weight Summaries Throughout Network

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 Corridors**

Roadway Name	From	To	Location	Total Weighted Score per Mile
John Young Parkway	SR 50	Orange Center Blvd.	Orlando	17,478
Sand Lake Road/ McCoy Road	Turkey Lake Rd.	University Blvd.	Orlando	17,104

Roadway Name	From	To	Location	Total Weighted Score per Mile
Chickasaw Trail	Frontage Rd.	Lake Underhill Rd.	Orange County	14,589
Hiawassee/Lake Stanley/Apopka Vineland/Clarcona	SR 438/Silver Star Rd.	SR 50	Orange County	14,547
Oakridge Road	Millenia Blvd.	S. Orange Blossom Trail	Orlando	14,296
SR 435/SR 482/SR 50	SR 50	Raleigh St.	Orange County	14,130
SR 551/SR 15/SR 426	SR 50	Lake Underhill Rd.	Orange County	14,129
SR 436	Lee Vista Rd.	TG Lee Blvd.	Orlando	14,088
Pine Hills Road	SR 50	Old Winter Garden Rd.	Orange County	13,941
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 the vehicle are noted in **bold italics**.

**Table 4: Top 30 Intersections**

Intersection	Total Weight	Intersection	Total Weight
1. John Young Parkway at Sand Lake Road	10,140	16. Colonial Drive at Econlockhatchee Trail	6,480
2. <b><i>Alfaya Trail at Colonial Drive</i></b>	<b>10,103</b>	17. Powers Drive at Silver Star Road	6,415
3. <b><i>Orange Blossom Trail at Holden Avenue</i></b>	<b>10,055</b>	18. Orange Blossom Trail at Conroy Road/Americana Boulevard	6,401
4. <b><i>Hiawassee Road at Silver Star Road</i></b>	<b>9,630</b>	19. <b><i>Old Cheney Highway at Colonial Drive</i></b>	<b>6,386</b>
5. <b><i>N Poinciana Boulevard at Irlo Bronson Memorial Highway</i></b>	<b>9,399</b>	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. <b><i>Semoran Boulevard at Old Cheney Hwy</i></b>	<b>8,509</b>	22. Semoran Boulevard at Curry Ford Road	5,504

Intersection	Total Weight		Intersection	Total Weight
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/Delaney Avenue</i>	<i>6,769</i>		26. Orange Blossom Trail at Michigan Street	4,924
12. N Kirkman Road at Bluford Avenue/Old Winter Garden Road	6,724		27. <i>Irlo Bronson Memorial Highway at Club Sevilla</i>	<i>4,812</i>
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/S 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: Intersections where a disproportionate share of the KSI crashes involved a person outside the vehicle are noted in *bold italics*.

## 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 most dangerous roadways in each county. 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 most dangerous roadways in each jurisdiction regardless of ownership. 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 most dangerous intersections in each jurisdiction.

If you have questions, please contact Stephen Spana at [s.spana@fehrandpeers.com](mailto:s.spana@fehrandpeers.com) or Kathrin Tellez at [k.tellez@fehrandpeers.com](mailto:k.tellez@fehrandpeers.com).

Attachments: Roadways in HIN



**Central Florida Vision Zero  
Draft Regional HIN Segments  
August 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/Lake Stanley/Apopka Vineland/Clarcona	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/SR 482/SR 50	Orange County	14,130	SR 50	Raleigh St.
7	SR 551/SR 15/SR 426	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 Trl/John Young Pkwy	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	Kissimmee Vinelnd Rd: Osceola-I-4	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/French Ave	Seminole County	9,853	South St.	Spartan Dr.

**Central Florida Vision Zero  
Draft Regional HIN Segments  
August 2023**

Corridor Number	Road Name	Location	Total Weighted Score per Mile	From	To
46	S Orange Blossom Trl/John Young Pkwy	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.
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	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	Bluford Ave/Old Winter Garden Rd	Orange County	8,868	N. Hiawassee 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	Bluford Ave/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/SR 424	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/Orlando Ave/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/Dean 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	Hiawassee 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.

**Central Florida Vision Zero  
Draft Regional HIN Segments  
August 2023**

Corridor Number	Road Name	Location	Total Weighted Score per Mile	From	To
88	S Orange Blossom Trl/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/Mt Plymouth Rd	Orange County	6,606	Faye St.	Welch Rd. E.
97	Semoran Boulevard	Orange County	6,531	Sheeler Ave. S.	Bear Lake Rd.
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	Semoran 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

# Policy Review and Benchmarking



# Policy Review Memo

Date: January 25, 2024

To: Seminole County

From: HDR

Subject: **Vision Zero Central Florida – Seminole County Policy Review  
Tech Memo**



**VISION ZERO**

**CENTRAL FLORIDA**

Counting down to zero traffic deaths



## Introduction

Every week, 5 people die and 35 people are seriously injured in Central Florida crashes. Vision Zero is an international movement to eliminate all traffic deaths and serious injuries through a set of strategies, while increasing safety for all roadway users. Vision Zero Central Florida's goal is simple: saving lives. Everyone should be able to travel safely without fear of death or serious injury.

The Vision Zero Central Florida Action Plan is a collaborative regional effort between MetroPlan Orlando, the three counties that reside within the MetroPlan Orlando region, Osceola, Orange, and Seminole Counties, and its municipalities. Seminole County will be collaborating with MetroPlan Orlando to promote Vision Zero. The project team reviewed available Seminole County documents - including the Comprehensive Plan, ADA Transition Plan, Land Development Code, Traffic Codes, Trails Master Plan, Fire Department Strategic Plan, 2045 Mobility Plan, Traffic Calming Measures and Guidelines, and Envision Seminole 2045. This document summarizes the elements within those plans that impact or may be impacted by Vision Zero efforts and highlights opportunities for policy or process refining/strengthening.

## Methodology

This policy review documents an array of existing transportation and land use policies, plans, guidelines, and standards within Seminole County. The memo classifies safety-related policies and goals that are related to at least one Vision Zero core element, and identifies opportunities to integrate data, contents, and recommendations into the Action Plan. This review focuses on documents under the purview of Seminole County based on guidance prepared by MetroPlan Orlando.

## Vision Zero Core Elements

The Vision Zero Network, with support from partners, developed this set of Vision Zero Core Elements to help communities set priorities, work toward tangible results in promoting safety, and benchmark

their progress relative to best practices (Table 1). The core elements for Vision Zero communities provide a framework for communities to approach safe mobility in a new way. By adopting these core elements, communities can work towards eliminating traffic fatalities and severe injuries for all road users.

Table 1: Core Elements for Vision Zero Communities

General Strategy	Strategy Details
<b>Category: Leadership and Commitment</b>	
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.
<b>Category: Safe Roads and Safe Speeds</b>	
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.
<b>Category: Data-Driven Approach, Transparency, and Accountability</b>	
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.

## Documents Reviewed

The following policy documents were reviewed to inform this Policy Benchmarking exercise.

- Comprehensive Plan
- ADA Transition Plan
- Land Development Code
- Code of Ordinances/ Traffic Codes
- Trails Master Plan
- Fire Department Strategic Plan
- 2045 Transportation Mobility Plan
- Traffic Calming Guidelines
- Envision Seminole 2045
- Seminole County 2040 Transportation Plan

Each document listed above was reviewed, with relevant information related to the core aspects of Vision Zero documented in **Attachment 1**. The policy benchmarking exercise identifies the overall status of the existing safety program, highlighting areas of success that can be built upon by the Action Plan as well as areas for policy enhancement, which have informed the Actions listed within the Action Plan. Finally, the Goals and Objectives of existing Policy Documents were used to define the Vision Zero-specific goals for Seminole County to align with existing policy direction and language.

## Policy Review and Benchmarking

Based on the policy scan, the policy benchmarking tool was used to provide an assessment of where existing policy aligns with Vision Zero core aspects and where there are opportunities for policy enhancement. Some areas of notable success include:

- Seminole County's Comprehensive Plan includes multiple policies that align with best practices, particularly in the realm of providing Complete Streets for All, prioritizing multimodal transportation and connecting land use to transportation systems.
- The Transportation Mobility Plan and Trails Master Plan provide a strong foundation for institutionalizing the Safe Systems approach through a focus on pedestrian and cyclists safety.
- Overall, Seminole County is strong in Public, High-Level commitments to safety, delivering authentic engagement and project delivery.
- Adoption and implementation of the Seminole County Vision Zero Action Plan will fulfill most of the Commitment and Strategic Planning Benchmarks.

The policy scan and benchmarking assessment also identified opportunities for enhanced alignment with Vision Zero and Safe System Approach best practices. These opportunities have been incorporated into the Vision Zero Action Plan.

- Develop a target speed plan to more closely align target speeds for roads with new guidance from the 11<sup>th</sup> edition of the MUTCD and to subsequently align design speeds to those target speeds to enhance safety for all users.
- Incorporate crash history and equity considerations into the prioritization of projects, with a focus on bicycle and pedestrian connectivity enhancements.
- Streamline the process for rapid-implementation road safety projects such as lane repurposing, leading pedestrian intervals, curb extensions etc.
- Track response times for first responders, and prioritize efforts that improve safety without diminishing access for first response efforts.
- Monitor and regularly communicate safety results, including the status of actions within the Action Plan.

## Goals and Objectives of Reviewed Plans

Action Plan Vision, Goals and Objectives were established in collaboration with the Vision Zero Steering Committee, building on the vision, goals and objectives established at the regional and county level. A summary of existing goals from existing county plans are below:

Plan	Goals	Objectives (If relevant)
<b>Comprehensive Plan</b>	<ol style="list-style-type: none"> <li>1. Countryside and conservation</li> <li>2. Centers and corridors</li> <li>3. Countywide</li> </ol>	<ol style="list-style-type: none"> <li>1. Safe, efficient, and livable transportation system</li> <li>2. Urban centers and corridors land use, performance frameworks, and mobility coordination</li> <li>3. Neighborhood enhancement and preservation</li> <li>4. Financing and programming transportation improvements</li> </ol>
<b>Trails Master Plan</b>	<ol style="list-style-type: none"> <li>1. Expand recreational opportunities and experience for residents and visitors.</li> <li>2. Create additional non-vehicular modes of transportation to help</li> </ol>	



	<p>users move around the community, whether to enjoy the natural beauty of the County, to commute to work, or to travel to nearby neighborhoods and cities.</p> <ol style="list-style-type: none"> <li>Better connect the County, its cities, its neighborhoods, and its businesses.</li> <li>Enhance the quality of life for all who visit or call Seminole County home.</li> </ol>	
<b>2045 Transportation Mobility Plan</b>	<ol style="list-style-type: none"> <li>Improve safety for all transportation users, especially pedestrians and bicyclists.</li> <li>Reduce congestion on constrained facilities and improve travel-time reliability.</li> <li>Increase convenient, multimodal travel choices for people of all ages and abilities.</li> <li>Boost access and economic opportunities for all users.</li> <li>Protect the environment and reduce greenhouse emissions.</li> <li>Plan for future population growth that supports the urban centers and corridors.</li> </ol>	
<b>Envision Seminole 2045</b>	<ol style="list-style-type: none"> <li>Protect wildlife</li> <li>Maintain rural places</li> <li>Grow walkable communities</li> <li>Get active</li> <li>Be green</li> </ol>	<ol style="list-style-type: none"> <li>Create mixed-use, walkable places</li> <li>Encourage a variety of transportation options</li> <li>Connect and expand the trail network</li> </ol>

<p><b>Seminole County 2040 Transportation Plan</b></p>	<ol style="list-style-type: none"> <li>1. Preserve and enhance the existing system's function and performance.</li> <li>2. Be consistent with the Florida Strategic Highway Safety Plan Traffic Safety Vision, Driving Down Fatalities, Towards Zero Death Initiative, and improve the region's ranking in Dangerous by Design by emphasizing bicycles and pedestrians safety improvement projects.</li> <li>3. Improve access to multi-modal options and advance public health.</li> <li>4. Protect and preserve the environment and quality of life and promote energy conservation.</li> <li>5. Support economic vitality, regional priorities, and the connectivity of the regional system for people and goods.</li> </ol>	<ol style="list-style-type: none"> <li>1. Encourage safe driving behavior by increasing education opportunities.</li> <li>2. Reduce roadway fatalities and serious injuries.</li> <li>3. Ensure the safety of all users and provide safe, comfortable access to transit for pedestrians and bicyclists, including safe mid-block crossings on arterial roadways.</li> <li>4. Discourage speeding and cut-through automobile traffic through traffic calming approaches such as road diets, median enhancements, and roundabouts especially in the rural areas.</li> <li>5. Improve safety for pedestrians and bicyclists at intersections and crossings, including trail crossings, by reducing conflicts, enhancing crossings (including mid-block crossing) and increasing lighting.</li> <li>6. Consider public safety in the development and preservation of the transportation system, including consideration of evacuation routes for emergencies and natural disasters.</li> </ol>
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These goals are meant to complement the county's current plans and initiatives. Based on the above, Seminole County will better connect the county and cities by improving access to multi-

modal options, expanding the trail network, and creating more mixed-use and walkable places. There will be a consistent emphasis on bicycles and pedestrians safety in improvement projects.

3 goals for Vision Zero (based on above findings)

1. Provide Safe, Efficient, and Livable Transportation System
2. Encourage Trail Facilities
3. Increase Education Opportunities

# Countermeasure Toolkit



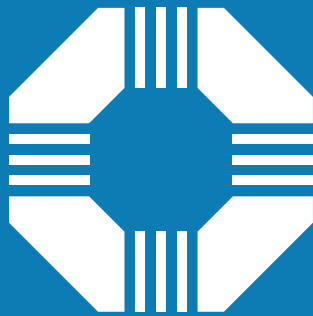
# Engineering Countermeasures Toolkit



# 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



Source: FHWA

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.

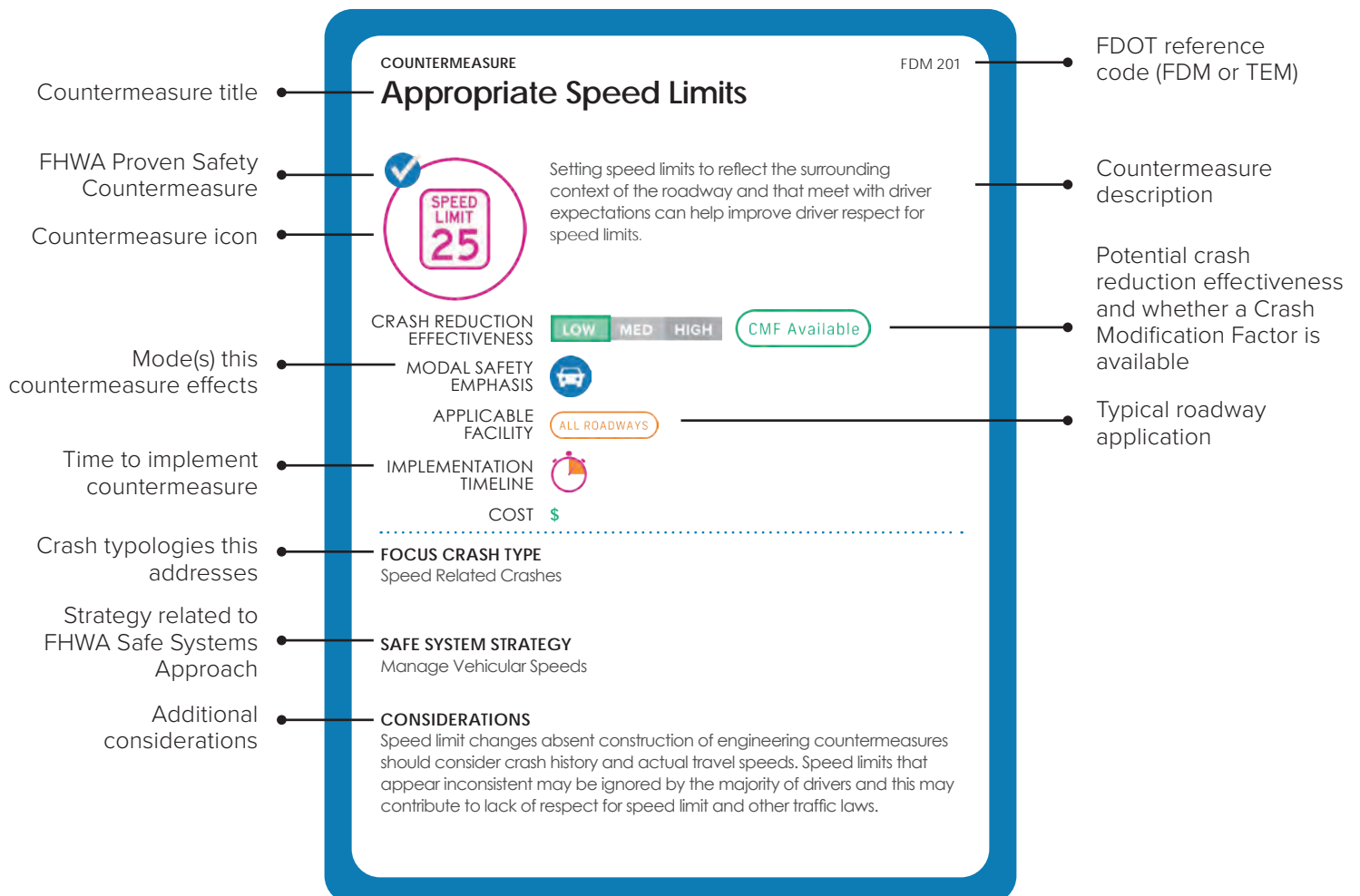
# Organization of the Toolkit

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:








# 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.*

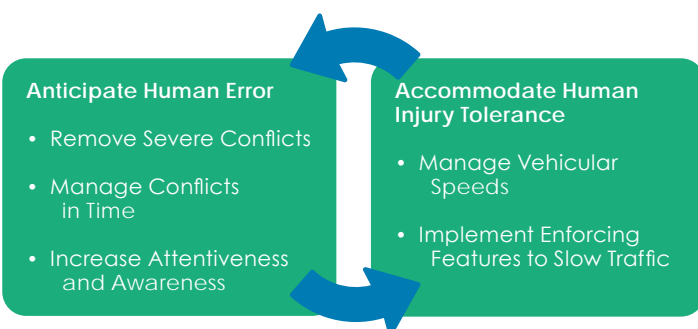
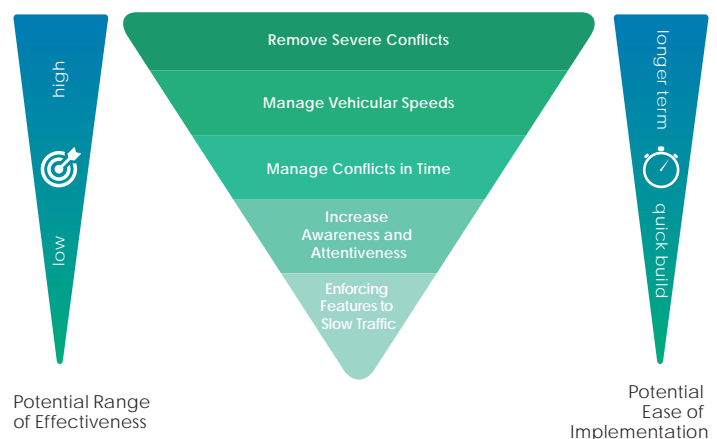
These principles provide a system with built-in redundancies to eliminate or greatly reduce the likelihood of death or serious injury when a crash occurs. However, strategies have varying levels of effectiveness, feasibility, and implementation time frames. FHWA has further developed a draft Safe Systems 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:



# Organization of the Toolkit

- **Urban Streets** (FDOT Context Classification C4, C5, C6 and CT2)
- **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\\_cmfs.php](https://www.cmfclearinghouse.org/using_cmfs.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

# Organization of the Toolkit

Americans with Disabilities Act (ADA) or Public Rights of Way 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](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](http://www.pedbikeinfo.org/cms/downloads/PedestrianLitReview_April2014.pdf))

# 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

- Evolution of the Protected Intersection (Alta Planning and Design, December 2015) ([https://altago.com/wp-content/uploads/Evolution-of-the-Protected-Intersection\\_ALTA-2015.pdf](https://altago.com/wp-content/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



FHWA PROVEN SAFETY COUNTERMEASURE

### 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

[Advance Stop Bar](#)  
[Advance Yield Markings](#)  
[Chevron Signs on Horizontal Curves](#) ✓  
[Curve Advance Warning Sign](#) ✓  
[Flashing Beacon as Advance Warning](#)  
[LED-Enhanced Sign](#)  
[Painted Centerline and Raised Pavement Markers at Curves](#)  
[Pavement Speed Legends](#)  
[Prohibit Left Turn](#)  
[Striping Through Intersection](#)  
[Time-Based Turn Restriction](#)  
[Upgrade Intersection Pavement Markings](#)  
[Upgrade Signs with Fluorescent Sheeting](#)  
[Upgrade Striping](#)  
[Upgrade to Larger Warning Signs](#)  
[Wayfinding](#)  
[Yield To Pedestrians Sign](#)

### C. BIKEWAYS

[Bicycles May Use Full Lane Sign](#)  
[Bike Lane/Buffered/Separated Bike Lane](#) ✓  
[Floating Transit Island](#)  
[Mixing Zone](#)  
[Parking Buffer](#)  
[Separated Bikeway](#) ✓  
[Two-Stage Turn Queue Bike Box](#)

### D. PEDESTRIAN FACILITIES

[Add Sidewalk](#) ✓  
[Co-Locate Bus Stops and Pedestrian Crossings](#)  
[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

[All-Way Stop Control](#)  
[Bicycle Crossing \(Solid Green Paint\)](#)  
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[Centerline Hardening](#)  
[Close Slip Lane](#)  
[Crosswalk Density](#)  
[Curb-Return Radius Reduction](#)  
[Delineators, Reflectors, and/or Object Markers](#)  
[Directional Median Openings to Restrict Left Turns](#)  
[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](#) ✓  
[Safety Edge](#) ✓  
[Speed Hump, Speed Table or Speed Cushion](#)  
[Straighten Crosswalk](#)  
[Superelevation at Horizontal Curve Locations](#)  
[Widen/Pave Shoulder](#)

### F. SPEED MANAGEMENT

[Appropriate Speed Limits](#) ✓  
[Chicane](#)  
[Landscape Buffer](#)  
[Lane Narrowing](#)  
[Speed Cameras](#) ✓  
[Speed Feedback Sign](#)  
[Speed Sensitive Rest on Red](#)  
[Variable Speed Limits](#) ✓

### G. OTHER ENGINEERING STRATEGIES

[Access Management/Close Driveway](#) ✓  
[Create or Increase Clear Zone](#)  
[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

## Audible Push Button (APB) Upgrade

TEM 3.7



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

## Bicycle Signal/Exclusive Bike Phase

FDM 223.2.4.5



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

## Bike Detection

FDM 223.2.1.5 , TEM 5.2.7.5



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](#)

## 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](#)

FDM 232.2

## 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

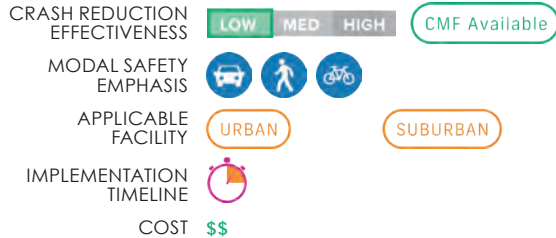
May require an increase in left-turn queue storage or green time. If new or modified signal heads are required, or if traffic controller equipment needs to be upgraded, cost could be significantly higher.

[Home](#)

## Red Light Camera



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.



### 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

FDM 223.2.1.4



Provides a green arrow phase for right-turning vehicles, reducing conflicts between right-turning traffic and bicyclists or pedestrians crossing the intersection.



### 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.

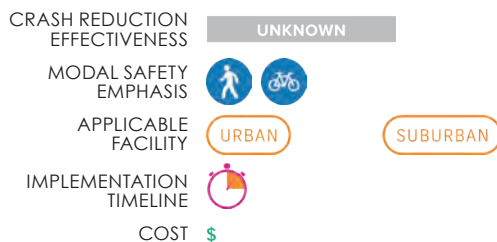
[Home](#)

## Shorten Cycle Length

TEM 3.11.4



Shorter cycle lengths can reduce the frequency of violations of the traffic control device.



### 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.

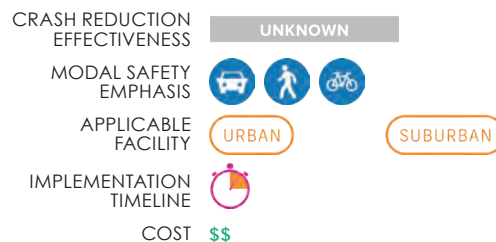
[Home](#)

## 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.



### 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 RRFs 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.

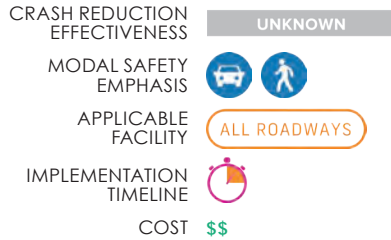
Home

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.



### FOCUS CRASH TYPE

Angle crashes, through vehicle at signalized intersection, and right turn crashes.

### SAFE SYSTEM STRATEGY

Increase attentiveness and awareness.

### CONSIDERATIONS

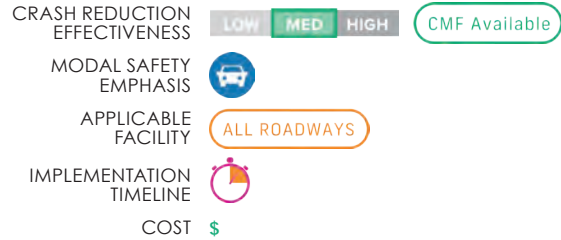
Solar powered units can reduce construction costs associated with providing electricity. Beacon can also be used as an advance warning for red light ahead (typically when visibility to the signal is compromised by horizontal or vertical curve).

[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.



### 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

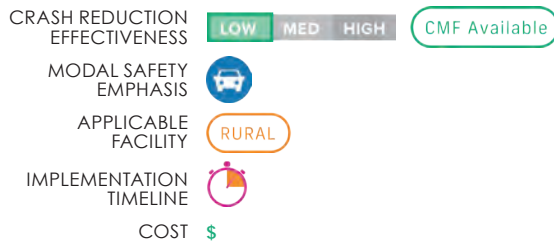
The LEDs may be set to flash or operate in a steady mode.

[Home](#)

## 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.



### FOCUS CRASH TYPE

Head on, collision with fixed objects, and run off the road crashes.

### SAFE SYSTEM STRATEGY

Increase attentiveness and awareness.

### CONSIDERATIONS

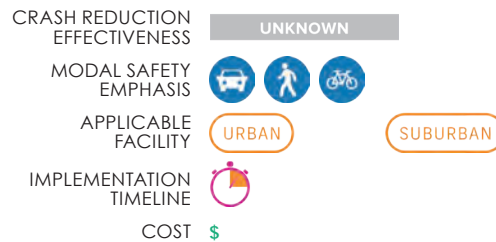
[Home](#)

## Pavement Speed Legends

FDM 202.3.10



Speed legends are numerals painted on the roadway indicating the current speed limit in mph, usually placed near speed limit signposts.



### 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

FDM 230



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

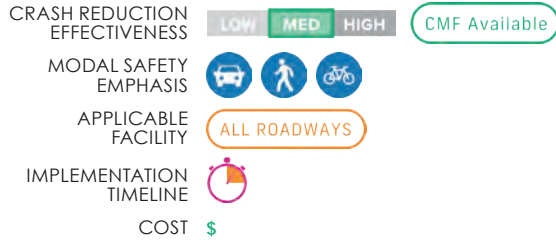
Upgrading intersection pavement marking can include "Stop Ahead" markings and the addition of centerlines and stop bars.

Home

## Upgrade Signs with Fluorescent Sheeting



Upgrading to signs with retroreflective sheeting improves safety by increasing visibility of signs to drivers at night.



**FOCUS CRASH TYPE**  
Nighttime crashes.

**SAFE SYSTEM STRATEGY**  
Increase attentiveness and awareness.

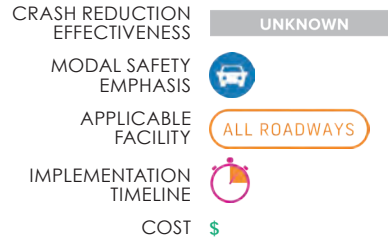
**CONSIDERATIONS**  
Depending on sign locations, a structural/wind analysis may need to be conducted.

[Home](#)

## Upgrade Striping



Restripe lanes with reflective striping to improve striping visibility and clarify lane assignment, especially where the number of lanes changes.



**FOCUS CRASH TYPE**  
Sideswipes.

**SAFE SYSTEM STRATEGY**  
Increase attentiveness and awareness.

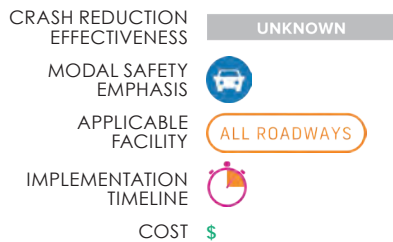
**CONSIDERATIONS**

[Home](#)

## Upgrade to Larger Warning Signs



Upgrading to larger warning signs improves safety by increasing visibility of the information provided, particularly for older drivers.



**FOCUS CRASH TYPE**  
Crashes involving older drivers.

**SAFE SYSTEM STRATEGY**  
Increase attentiveness and awareness.

**CONSIDERATIONS**

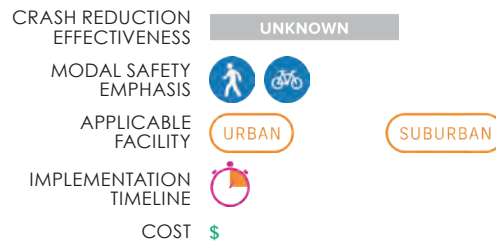
[Home](#)

## 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.



**FOCUS CRASH TYPE**  
Pedestrian and bicycle crashes.

**SAFE SYSTEM STRATEGY**  
Increase attentiveness and awareness.

**CONSIDERATIONS**

[Home](#)

# Yield To Pedestrians Sign

TEM 2.39



“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

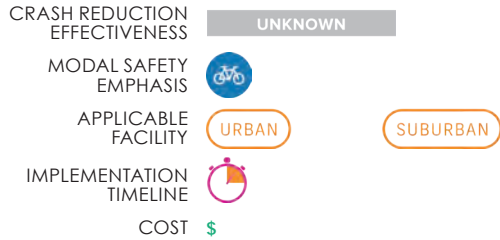


## Bicycles May Use Full Lane Sign

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.

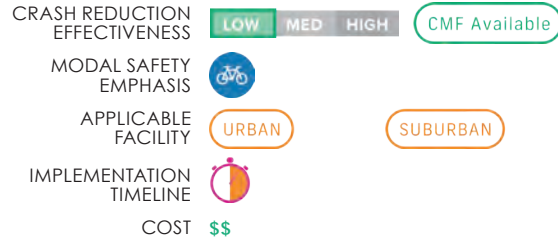
Home

## 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.

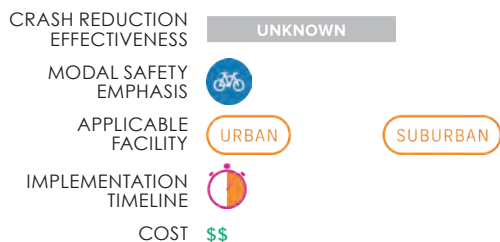
Home

## 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

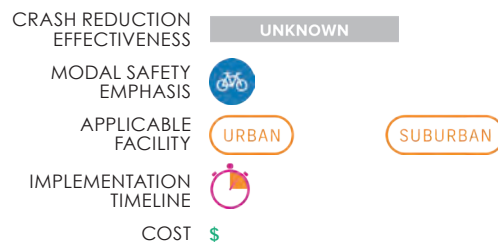
Drainage and ADA requirements should be considered.

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

CRASH REDUCTION  
EFFECTIVENESS

UNKNOWN

MODAL SAFETY  
EMPHASIS



APPLICABLE  
FACILITY

URBAN

SUBURBAN

IMPLEMENTATION  
TIMELINE



COST

\$

### 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.

CRASH REDUCTION  
EFFECTIVENESS

LOW MED HIGH

MODAL SAFETY  
EMPHASIS



APPLICABLE  
FACILITY

URBAN

SUBURBAN

IMPLEMENTATION  
TIMELINE



COST

\$\$\$

### 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.

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

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.

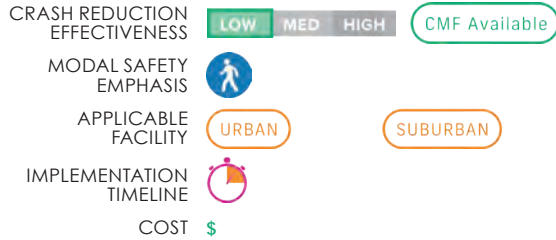
Home

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.



### 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.

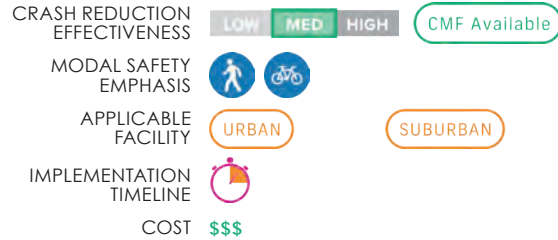
[Home](#)

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.



### 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.

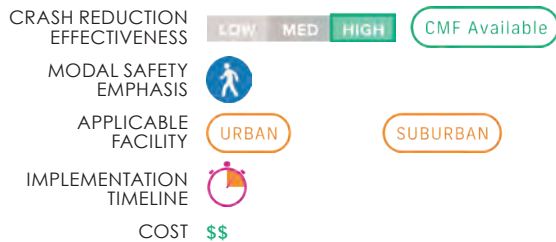
[Home](#)

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.



### FOCUS CRASH TYPE

Through vehicle at unsignalized intersection, dart/dash, and multiple threat/trapped.

### SAFE SYSTEM STRATEGY

Manage conflicts in time.

### CONSIDERATIONS

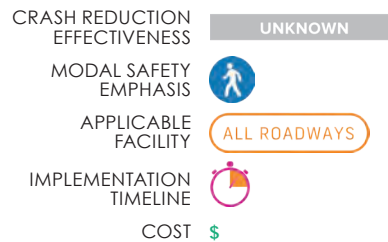
RRFBs should be reserved for use at locations with pedestrian safety issues as their overuse could diminish the effectiveness.

[Home](#)

## Restripe Crosswalk



Periodic restriping of crosswalks is necessary to ensure the traffic markings are visible. Crosswalk may be restriped with high visibility markings.



### 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](#)





## Shared Use Path

FDM 224



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

## Widen Sidewalk

FDM 222.2.1.1



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



FDM 212.2.3

## All-Way Stop Control



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.

Home

FDM 223.2.1.4, TEM 5.2.7.1

## Bicycle Crossing (Solid Green Paint)



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.

Home

FDM 233.2.1.5

## Bike Box



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.

Home

## 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

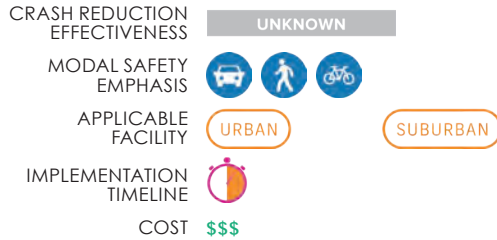
Design should consider truck volumes and resulting wheel track in placement of hardening features.

Home

## 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.



### 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.

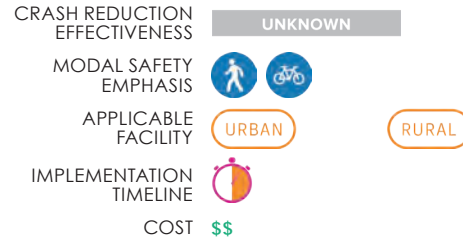
[Home](#)

## Crosswalk Density

FDM 202.3.7



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.



### 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.

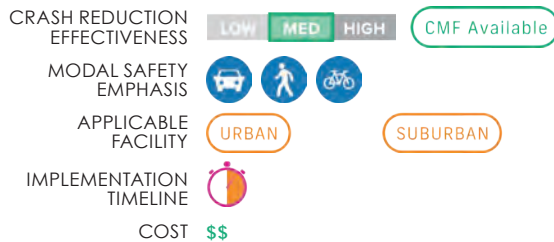
[Home](#)

## 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.



### 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.

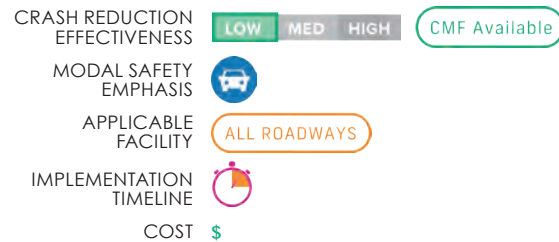
[Home](#)

## 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.



### 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.

[Home](#)

## 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](#)

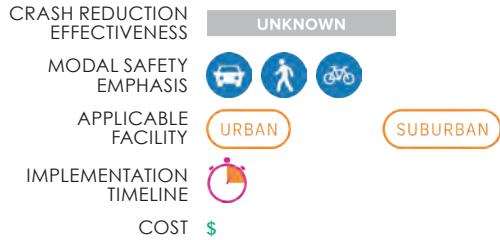


## Gateway Treatments

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.



### 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

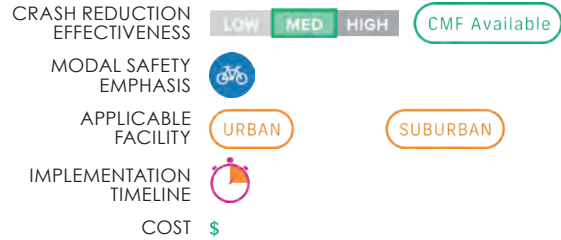
Examples of gateway treatments include signage, delineators, curb extensions, roundabouts, textured pavements, or other treatments intended to visually signal a changed condition to drivers.

[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.



### 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.

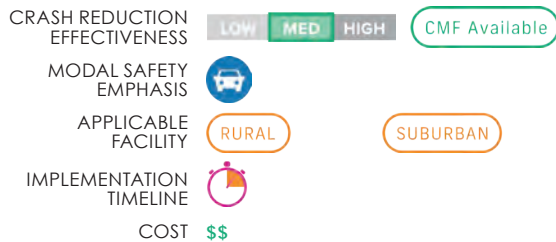
[Home](#)

## 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.



### 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.

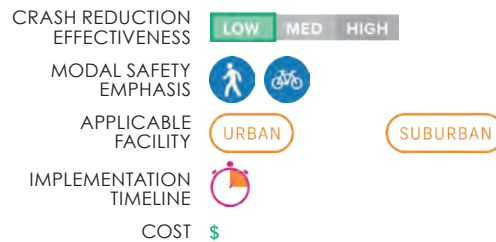
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## Hardened Median Nose Extension

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.



### 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

## Impact Attenuators

FDM 215.4.3



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

## Lane Repurposing

FDM 202.1.1



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.

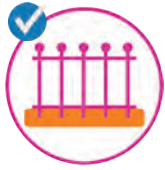
### CONSIDERATIONS

There may be concerns about traffic diversion to other streets.

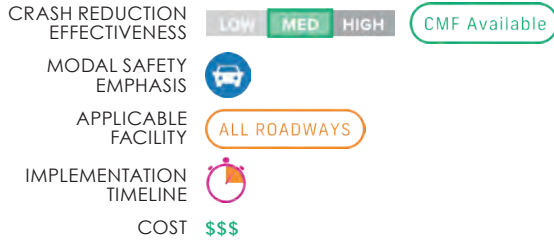
Home

## 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.



### 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.

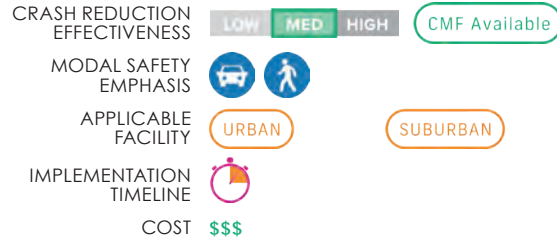
[Home](#)

## 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.



### FOCUS CRASH TYPE

Vehicle/pedestrian crashes.

### SAFE SYSTEM STRATEGY

Implement enforcing features to slow traffic.

### CONSIDERATIONS

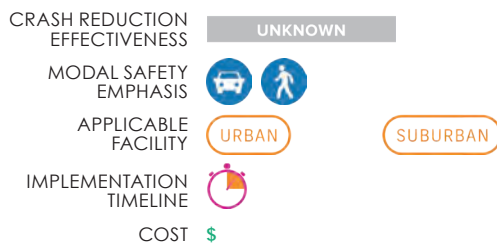
If there are bike lanes or high volumes of bicyclists, a minimum of 3 feet should be provided to prevent "dooring". Providing the appropriate separation between the bicycle facility, travel way, and parking lane is critical.

[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.



### 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

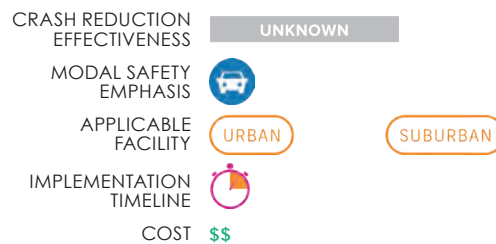
If posts are routinely being knocked down, a different treatment may be warranted.

[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.



### FOCUS CRASH TYPE

Angle crashes and left turn crashes.

### SAFE SYSTEM STRATEGY

Remove severe conflicts and implement enforcing features to slow traffic.

### CONSIDERATIONS

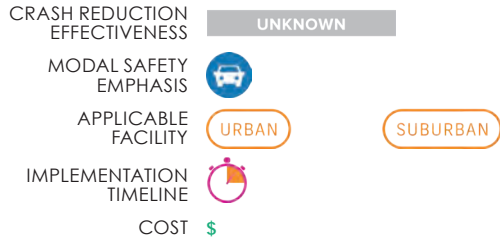
These should only be considered on low volume, low speed streets where trucks are not routinely expected to be.

[Home](#)

## Partial Closure/Diverter



A roadway treatment that restricts select vehicle movements using physical diversion while allowing bicyclists and pedestrians to proceed.



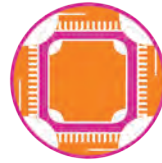
**FOCUS CRASH TYPE**  
Pedestrian and bicycle crashes.

**SAFE SYSTEM STRATEGY**  
Remove severe conflicts and implement enforcing features to slow traffic.

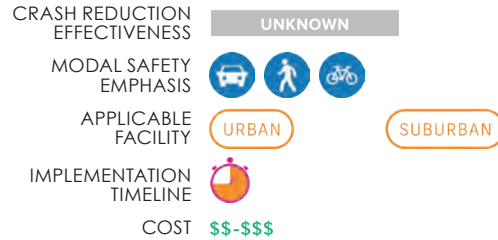
**CONSIDERATIONS**  
Should be implemented as part of a larger traffic calming plan to minimize effects of diverted traffic to residential streets.

[Home](#)

## 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.



**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.

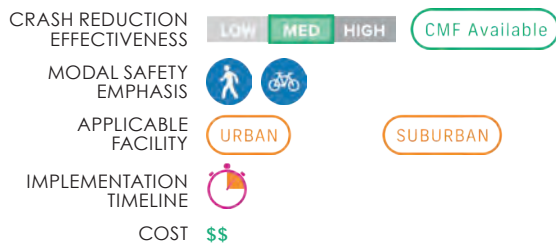
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## Raised Crosswalk

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.



**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.

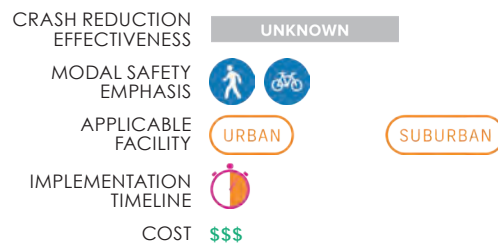
[Home](#)

## 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.



**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.

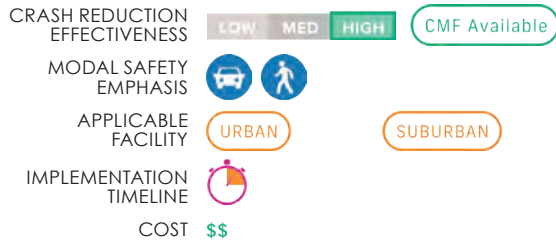
[Home](#)

## 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.



### 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.

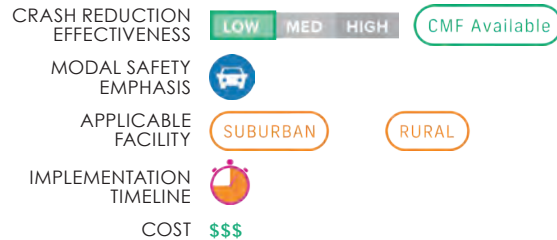
[Home](#)

## 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.



### 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.

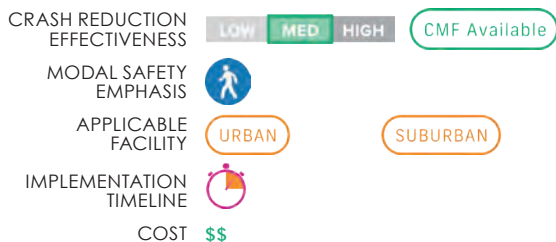
[Home](#)

## 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.



### 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.



### 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](#)





## Roundabout

FDM 231.3.3



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

## Rumble Strips

FDM 210.4.6 , TEM 5.2.7.5



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

## 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

FDM 202.3.8



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 Officials' (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.



### 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.

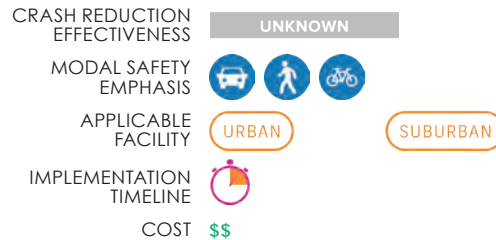
[Home](#)

## 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.



### 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

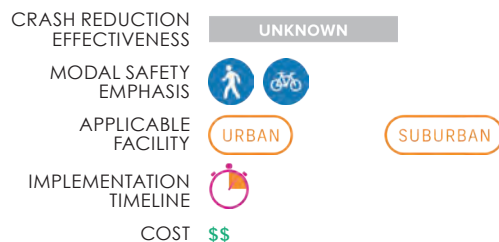
[Home](#)

## 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.



### 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.

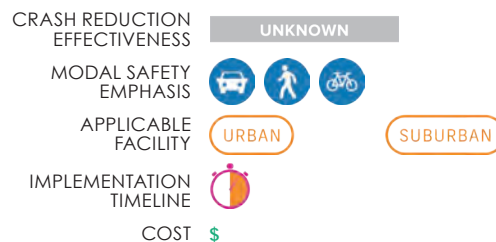
[Home](#)

## Lane Narrowing

FDM 202.3.4



Lane narrowing can encourage motorists to travel at slower speeds, which can reduce the severity of crashes.



### 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.



### 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](#)

## Speed Feedback Sign

FDM 202.3.9



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.



### 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.



### 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.

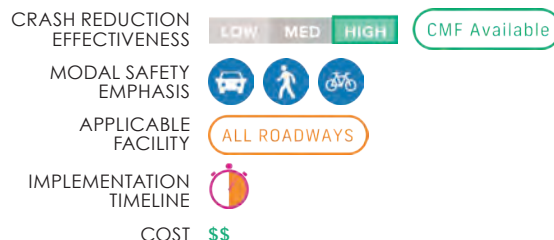
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## Variable Speed Limits

SPEED ZONING 10.1



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.



### 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 urban and 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.

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## 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.

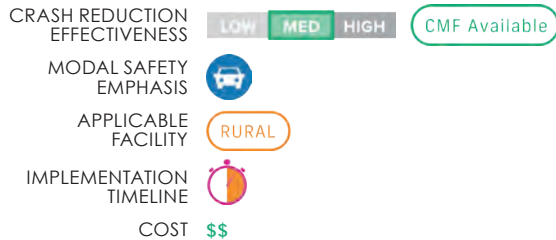
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FDM 215.4.7

## Relocate Select Hazardous Utility Poles



Relocating or removing utility poles from within the clear zone alleviates the potential for fixed-object crashes.



### 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.



### 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.

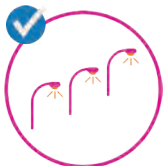
### CONSIDERATIONS

Landscaping obstructions may require more routine maintained.

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FDM 231

## Segment Lighting



Lighting along roadways that improves visibility at night.



### 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.

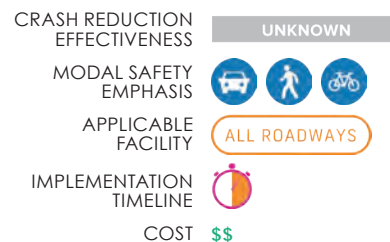
[Home](#)

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.



### FOCUS CRASH TYPE

Nighttime crashes.

### SAFE SYSTEM STRATEGY

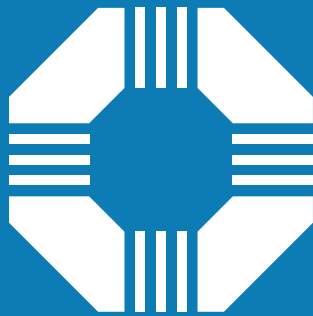
Increase attentiveness and awareness.

### CONSIDERATIONS

May require installation of additional lighting fixtures to meet lighting goals.

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# **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-\$52,00
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



# Project Prioritization Methodology

# 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 <sup>1</sup> / 15%	Meets 4 or 5 of the ETC <sup>1</sup> Criteria <b>or</b> in an area with > 18% of households identified as Zero Car Households Meets 2 or 3 of the ETC Criteria <b>or</b> in an area with ≥ 12% of households identified as Zero Car Households Meets 1 of the ETC Criteria <b>or</b> in an area with ≥ 6.3% of households identified as Zero Car Households	Yes	The effects of traffic crashes disproportionately affect people who live in transportation disadvantaged communities.
Bicycle and Pedestrian Safety / 30%	More than 5 crashes involving a person walking or biking <b>or</b> any pedestrian / bicycle fatalities 4 - 5 bike/ped crashes 2 - 3 bike/ped crashes 1 bike/ped crash	Yes	Improving safety outcomes is a key goal of the Vision Zero Action Plan, but not limited to bicyclists and pedestrians.
Accessibility and Connectivity, Comfort <sup>4</sup>	Percent improvement in walking access to destinations Percent improvement in biking access to destinations. Number of people for whom access is improved for walking trips. Number of people for whom access is improved for biking trips. New or improved PLOC <sup>2</sup> for a walking facility New or improved LTS <sup>3</sup> for a biking facility	Yes Yes Yes Yes Yes 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.
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 Underserved 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.	The 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	> 10,424 to 17,478	1.0	50%
Source: Signal 4 Analytics, MetroPlan Orlando HIN Calculations.	> 8,953 to 10,424	0.75	
Analysis Notes: Reflects score weighted on a per mile basis for corridors. See notes below for scoring of intersections.	> 6,903 to 8,953	0.50	
	1,410 to 6,903	0.25	
Safety Score – Intersection Projects	> 1,050 to 10,140	1.0	50%
	> 299 to 1,050	0.75	
Source: Signal 4 Analytics, MetroPlan Orlando HIN Calculations.	> 36 to 299	0.50	
	1 to 36	0.25	
Transportation Underserved	Meets 4 or 5 of the ETC Criteria	1.0	15%
Source: Regional Equity Profiles, MetroPlan Orlando.	Meets 2 or 3 of the ETC Criteria	0.75	
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 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	Target Speed set for the lowest allowable for context classification or functional classification (corridor project).	1.0	15%
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.	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%
Notes: Overlapping HINs can be found on <a href="http://visionzero.fl.gov">visionzero.fl.gov</a> .	Project is on 1 network	0.5	
Implementation Timeline  Notes: assessment of implementation time should also consider agency coordination.	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	
	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)<sup>1</sup>. 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 ( $0.75 * 15$ ).

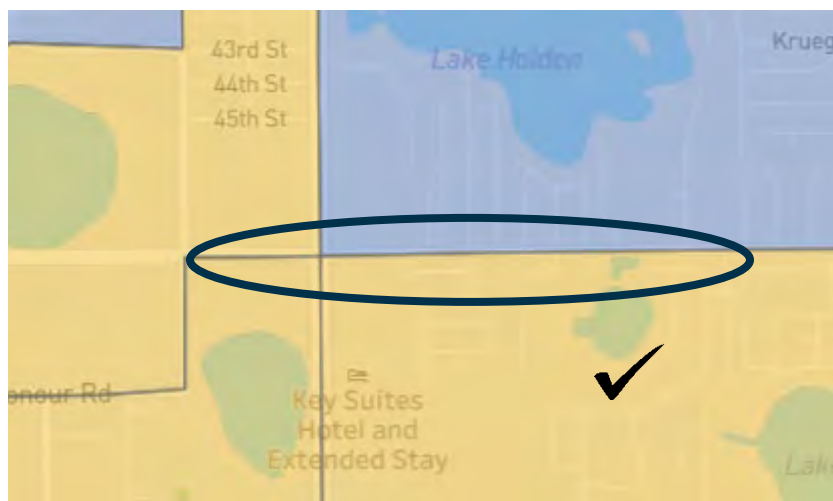


Figure 1: Example Corridor 1 ETC Calculations

**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.

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<sup>1</sup> [https://public.tableau.com/app/profile/sigal.carmenate/viz/EquityIndex\\_V2/DisadvantagedIndicator](https://public.tableau.com/app/profile/sigal.carmenate/viz/EquityIndex_V2/DisadvantagedIndicator)

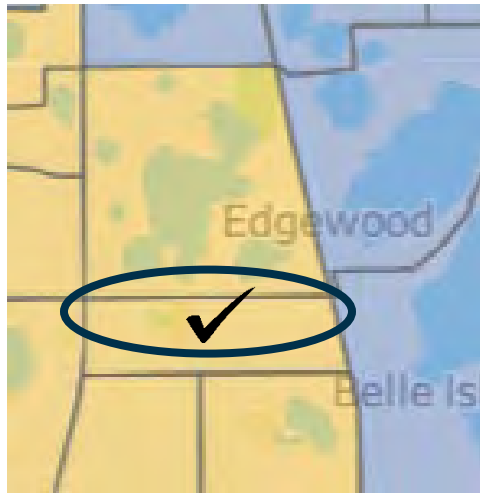


Figure 2: Example Corridor 2 ETC Calculations

## 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 <sup>1</sup>	N/A	N/A
Transportation Underserved	11.25	15
Safety Benefit	7.5	15
Regional Benefit	10	10
Implementation Timeline	10	5
<b>Total</b>	<b>76.25</b>	<b>95</b>

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.

# Cost Calculations

Road Name	From	To	City	Length (Miles)	Total Width (Feet)	Implementation	Existing Plans	Complexity	Intersecting (CM1, CM2, CM3, CM4, CM5, CM6, CM7, CM8, CM9, CM10)	CM1	CM2	CM3	CM4	CM5	CM6	CM7	CM8	CM9	CM10	CM11	CM12	CM13	CM14	CM15	CM16	CM17	CM18	CM19	CM20	CM21	CM22	CM23	CM24	CM25	CM26	CM27	CM28	CM29	CM30	CM31	CM32	CM33	CM34	CM35	CM36	CM37	CM38	CM39	CM40	CM41	CM42	CM43	CM44	CM45	CM46	CM47	CM48	CM49	CM50	CM51	CM52	CM53	CM54	CM55	CM56	CM57	CM58	CM59	CM60	CM61	CM62	CM63	CM64	CM65	CM66	CM67	CM68	CM69	CM70	CM71	CM72	CM73	CM74	CM75	CM76	CM77	CM78	CM79	CM80	CM81	CM82	CM83	CM84	CM85	CM86	CM87	CM88	CM89	CM90	CM91	CM92	CM93	CM94	CM95	CM96	CM97	CM98	CM99	CM100	CM101	CM102	CM103	CM104	CM105	CM106	CM107	CM108	CM109	CM110	CM111	CM112	CM113	CM114	CM115	CM116	CM117	CM118	CM119	CM120	CM121	CM122	CM123	CM124	CM125	CM126	CM127	CM128	CM129	CM130	CM131	CM132	CM133	CM134	CM135	CM136	CM137	CM138	CM139	CM140	CM141	CM142	CM143	CM144	CM145	CM146	CM147	CM148	CM149	CM150	CM151	CM152	CM153	CM154	CM155	CM156	CM157	CM158	CM159	CM160	CM161	CM162	CM163	CM164	CM165	CM166	CM167	CM168	CM169	CM170	CM171	CM172	CM173	CM174	CM175	CM176	CM177	CM178	CM179	CM180	CM181	CM182	CM183	CM184	CM185	CM186	CM187	CM188	CM189	CM190	CM191	CM192	CM193	CM194	CM195	CM196	CM197	CM198	CM199	CM200	CM201	CM202	CM203	CM204	CM205	CM206	CM207	CM208	CM209	CM210	CM211	CM212	CM213	CM214	CM215	CM216	CM217	CM218	CM219	CM220	CM221	CM222	CM223	CM224	CM225	CM226	CM227	CM228	CM229	CM230	CM231	CM232	CM233	CM234	CM235	CM236	CM237	CM238	CM239	CM240	CM241	CM242	CM243	CM244	CM245	CM246	CM247	CM248	CM249	CM250	CM251	CM252	CM253	CM254	CM255	CM256	CM257	CM258	CM259	CM260	CM261	CM262	CM263	CM264	CM265	CM266	CM267	CM268	CM269	CM270	CM271	CM272	CM273	CM274	CM275	CM276	CM277	CM278	CM279	CM280	CM281	CM282	CM283	CM284	CM285	CM286	CM287	CM288	CM289	CM290	CM291	CM292	CM293	CM294	CM295	CM296	CM297	CM298	CM299	CM300	CM301	CM302	CM303	CM304	CM305	CM306	CM307	CM308	CM309	CM310	CM311	CM312	CM313	CM314	CM315	CM316	CM317	CM318	CM319	CM320	CM321	CM322	CM323	CM324	CM325	CM326	CM327	CM328	CM329	CM330	CM331	CM332	CM333	CM334	CM335	CM336	CM337	CM338	CM339	CM340	CM341	CM342	CM343	CM344	CM345	CM346	CM347	CM348	CM349	CM350	CM351	CM352	CM353	CM354	CM355	CM356	CM357	CM358	CM359	CM360	CM361	CM362	CM363	CM364	CM365	CM366	CM367	CM368	CM369	CM370	CM371	CM372	CM373	CM374	CM375	CM376	CM377	CM378	CM379	CM380	CM381	CM382	CM383	CM384	CM385	CM386	CM387	CM388	CM389	CM390	CM391	CM392	CM393	CM394	CM395	CM396	CM397	CM398	CM399	CM400	CM401	CM402	CM403	CM404	CM405	CM406	CM407	CM408	CM409	CM410	CM411	CM412	CM413	CM414	CM415	CM416	CM417	CM418	CM419	CM420	CM421	CM422	CM423	CM424	CM425	CM426	CM427	CM428	CM429	CM430	CM431	CM432	CM433	CM434	CM435	CM436	CM437	CM438	CM439	CM440	CM441	CM442	CM443	CM444	CM445	CM446	CM447	CM448	CM449	CM450	CM451	CM452	CM453	CM454	CM455	CM456	CM457	CM458	CM459	CM460	CM461	CM462	CM463	CM464	CM465	CM466	CM467	CM468	CM469	CM470	CM471	CM472	CM473	CM474	CM475	CM476	CM477	CM478	CM479	CM480	CM481	CM482	CM483	CM484	CM485	CM486	CM487	CM488	CM489	CM490	CM491	CM492	CM493	CM494	CM495	CM496	CM497	CM498	CM499	CM500	CM501	CM502	CM503	CM504	CM505	CM506	CM507	CM508	CM509	CM510	CM511	CM512	CM513	CM514	CM515	CM516	CM517	CM518	CM519	CM520	CM521	CM522	CM523	CM524	CM525	CM526	CM527	CM528	CM529	CM530	CM531	CM532	CM533	CM534	CM535	CM536	CM537	CM538	CM539	CM540	CM541	CM542	CM543	CM544	CM545	CM546	CM547	CM548	CM549	CM550	CM551	CM552	CM553	CM554	CM555	CM556	CM557	CM558	CM559	CM560	CM561	CM562	CM563	CM564	CM565	CM566	CM567	CM568	CM569	CM570	CM571	CM572	CM573	CM574	CM575	CM576	CM577	CM578	CM579	CM580	CM581	CM582	CM583	CM584	CM585	CM586	CM587	CM588	CM589	CM590	CM591	CM592	CM593	CM594	CM595	CM596	CM597	CM598	CM599	CM600	CM601	CM602	CM603	CM604	CM605	CM606	CM607	CM608	CM609	CM610	CM611	CM612	CM613	CM614	CM615	CM616	CM617	CM618	CM619	CM620	CM621	CM622	CM623	CM624	CM625	CM626	CM627	CM628	CM629	CM630	CM631	CM632	CM633	CM634	CM635	CM636	CM637	CM638	CM639	CM640	CM641	CM642	CM643	CM644	CM645	CM646	CM647	CM648	CM649	CM650	CM651	CM652	CM653	CM654	CM655	CM656	CM657	CM658	CM659	CM660	CM661	CM662	CM663	CM664	CM665	CM666	CM667	CM668	CM669	CM670	CM671	CM672	CM673	CM674	CM675	CM676	CM677	CM678	CM679	CM680	CM681	CM682	CM683	CM684	CM685	CM686	CM687	CM688	CM689	CM690	CM691	CM692	CM693	CM694	CM695	CM696	CM697	CM698	CM699	CM700	CM701	CM702	CM703	CM704	CM705	CM706	CM707	CM708	CM709	CM710	CM711	CM712	CM713	CM714	CM715	CM716	CM717	CM718	CM719	CM720	CM721	CM722	CM723	CM724	CM725	CM726	CM727	CM728	CM729	CM730	CM731	CM732	CM733	CM734	CM735	CM736	CM737	CM738	CM739	CM740	CM741	CM742	CM743	CM744	CM745	CM746	CM747	CM748	CM749	CM750	CM751	CM752	CM753	CM754	CM755	CM756	CM757	CM758	CM759	CM760	CM761	CM762	CM763	CM764	CM765	CM766	CM767	CM768	CM769	CM770	CM771	CM772	CM773	CM774	CM775	CM776	CM777	CM778	CM779	CM780	CM781	CM782	CM783	CM784	CM785	CM786	CM787	CM788	CM789	CM790	CM791	CM792	CM793	CM794	CM795	CM796	CM797	CM798	CM799	CM800	CM801	CM802	CM803	CM804	CM805	CM806	CM807	CM808	CM809	CM810	CM811	CM812	CM813	CM814	CM815	CM816	CM817	CM818	CM819	CM820	CM821	CM822	CM823	CM824	CM825	CM826	CM827	CM828	CM829	CM830	CM831	CM832	CM833	CM834	CM835	CM836	CM837	CM838	CM839	CM840	CM841	CM842	CM843	CM844	CM845	CM846	CM847	CM848	CM849	CM850	CM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[illegible]

# Social Media Materials



## Vision Zero Central Florida – Social Media Posts (Developed for Seminole County and cities)

As a region (Orange, Osceola, and Seminole Counties), more than 5 people are killed and 35 people are seriously injured on our roadways every week - a higher than average rate than elsewhere in Florida and the Nation. **MetroPlan Orlando envisions a safe and connected transportation network where people regardless of their age, race, ability, and mode can safely travel.**

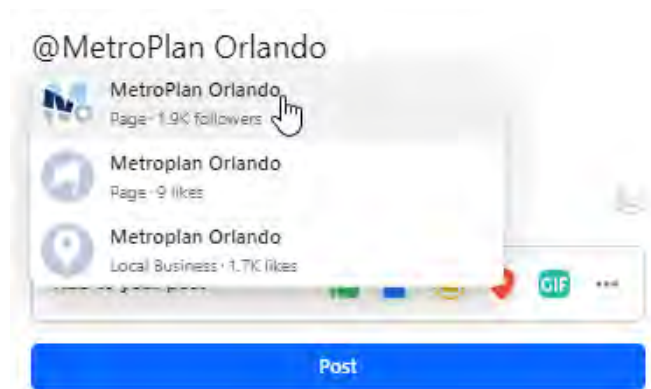
### Social Media's Role

In sharing informative and engaging content about Vision Zero and its goals with partner agencies across Central Florida, we aim to **bring awareness to the mission, educate the public, and encourage them to act.**

### Sharing Content on Your Pages

#### Social Media Tagging and Sharing Best Practices

- If tagging MetroPlan Orlando on Facebook, be sure to select our page from the suggested drop-down menu.





- Use only the graphic files provided by MetroPlan Orlando – attempting to download or screenshot graphics from this document will result in decreased quality.
- Add a location to your Instagram post – this will help ensure that drivers in your community see your post.


#### MetroPlan Orlando's Social Pages

- [Facebook](#)
- [Twitter/X](#)

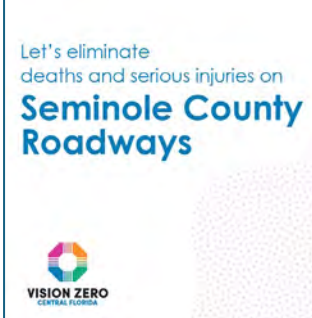


## Vision Zero Social Content


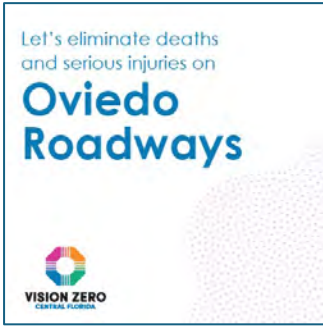
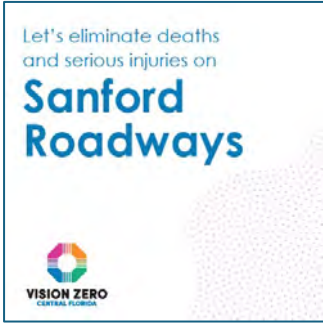
### Post 1 – Who is Vision Zero?



Platform	Caption	Graphic
Facebook	<p>Zero deaths or serious injuries on Central Florida roadways is our goal – but we need your help. 🚗</p> <p>Together with @MetroPlan Orlando, we're asking our community to join us on our quest to create safer Florida roadways through our Vision Zero initiative.</p> <p>To learn about crash danger zones near you and give feedback on improving safety on our roads, visit <a href="https://bit.ly/49dLNXc">https://bit.ly/49dLNXc</a></p> <p>#VisionZeroCentralFlorida</p>	 
Instagram	<p>Zero deaths or serious injuries on Central Florida roadways is our goal – but we need your help. 🚗</p> <p>Together with MetroPlan Orlando, we're asking our community to join us on our quest to create safer Florida roadways through our Vision Zero initiative.</p> <p>To learn about crash danger zones near you and give feedback on improving safety on our roads, visit the Vision Zero CFL website.</p> <p>#VisionZeroCentralFlorida</p>	<p><b>Image 1:</b> More than 5 people die and 35 are seriously injured on Central Florida roadways every week.</p> <p><b>Image 2:</b> Vision Zero Central Florida wants to change that.</p>

Twitter/X	<p>We're partnering with @MetroPlan_Orl to cut the number of deaths and serious injuries on Central Florida roadways down to zero – but we need your help.</p> <p></p> <p>Give feedback on improving safety on our roadways here: <a href="https://bit.ly/49dLNXC">https://bit.ly/49dLNXC</a></p> <p>#VisionZeroCentralFlorida</p>	<p><i>Image 1:</i> More than 5 people die and 35 are seriously injured on Central Florida roadways every week.</p> <p><i>Image 2:</i> Vision Zero Central Florida wants to change that.</p>
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## Post 2 – Community Feedback

Facebook	<p>Rapid growth and high speeds are both factors in traffic deaths and serious injuries on our roadways.</p> <p>Together with @MetroPlan Orlando we're working to improve safety through updated infrastructure, policy and education.</p> <p>Help us reach our goal of ZERO deaths by visiting the Vision Zero website and providing feedback. <a href="https://bit.ly/49dLNXC">https://bit.ly/49dLNXC</a></p> <p>#VisionZeroCentralFlorida</p>	  
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Instagram	<p>Rapid growth and high speeds are both factors in traffic deaths and serious injuries on our roadways.</p> <p>Together with MetroPlan Orlando we're working to improve roadway safety through updated infrastructure, policy and education.</p> <p>Help us reach our goal of ZERO deaths by visiting the Vision Zero website and providing feedback.</p> <p>#VisionZeroCentralFlorida</p>	<p>Let's eliminate deaths and serious injuries on <i>[Seminole County, Altamonte Springs, Lake Mary, Longwood, Oviedo, Sanford, Winter Springs]</i> roadways</p>

Twitter/X	<p>Rapid growth and high speeds are both factors in traffic deaths and serious injuries on our roadways.</p> <p>Help us reach our goal of ZERO deaths or serious injuries on Central Florida roadways by giving us your feedback.  <a href="https://bit.ly/49dLNXc">https://bit.ly/49dLNXc</a></p>	<p>Let's eliminate deaths and serious injuries on <i>[Seminole County, Altamonte Springs, Lake Mary, Longwood, Oviedo, Sanford, Winter Springs]</i> roadways</p>
Post 3 – Community Feedback/High Injury Network		
Facebook	<p>Together we can make zero deaths and serious injuries on Central Florida roadways a reality.</p> <p>Learn about crash hotspots and give important feedback on roadway safety on the Vision Zero website. It could save lives. <a href="https://bit.ly/49dLNXc">https://bit.ly/49dLNXc</a></p> <p>#VisionZeroCentralFlorida</p>	 
Instagram	<p>Together we can make zero deaths and serious injuries on Central Florida roadways a reality.</p> <p>Learn about crash hotspots and give important feedback on roadway safety on the Vision Zero CFL website. It could save lives.</p> <p>#VisionZeroCentralFlorida</p>	<p><i>Image 1:</i> Your feedback could save lives.</p> <p><i>Image 2:</i> Help us create a safer tomorrow for all Floridians.</p>



<p><b>Twitter/X</b></p>	<p>Together we can make zero deaths and serious injuries on Central Florida roadways a reality.</p> <p>Learn about crash hotspots and give feedback on roadway safety on the Vision Zero website. It could save lives.  <a href="https://bit.ly/49dLNXc">https://bit.ly/49dLNXc</a></p> <p>#VisionZeroCentralFlorida</p>	<p><i>Image 1:</i>  <b>Your feedback could save lives.</b></p> <p><i>Image 2:</i>          Help us create a safer tomorrow for all Floridians.</p>
<p><b>Post 4 – National Impact</b></p>		
<p><b>Facebook</b></p>	<p>Deadly traffic crashes are trending upward – both locally and nationally. Even one life lost is too many.</p> <p>Help us keep our quest to ZERO traffic deaths by providing life-saving feedback about Central Florida roadways.  <a href="https://bit.ly/49dLNXc">https://bit.ly/49dLNXc</a></p> <p>#VisionZeroCentralFlorida</p>	 <p>The National Highway Traffic Safety Administration</p>
<p><b>Instagram</b></p>	<p>Deadly traffic crashes are trending upward – both locally and nationally. Even one life lost is too many.</p> <p>Help us keep our quest to ZERO traffic deaths by providing life-saving feedback about Central Florida roadways on the Vision Zero website.</p> <p>#VisionZeroCentralFlorida</p>	<p><i>Image 1:</i>  <b>There were 42,795 traffic deaths in the United States 2022.</b></p> <p>The National Highway Traffic Safety Administration</p>
<p><b>Twitter</b></p>	<p>Deadly traffic crashes are trending upward – both locally and nationally. Even one life lost is too many.</p>	<p><i>Image 1:</i>  <b>There were 42,795 traffic deaths in the United States 2022.</b></p>

	<p>Help us keep our quest to ZERO traffic deaths by providing life-saving feedback about Central Florida roadways.</p> <p><a href="https://bit.ly/49dLNXc">https://bit.ly/49dLNXc</a></p> <p>#VisionZeroCentralFlorida</p>	<p>The National Highway Traffic Safety Administration</p>
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# 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-campaigns)). 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 <a href="https://VisionZeroCFL.gov">VisionZeroCFL.gov</a>. #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 <a href="https://VisionZeroCFL.gov">VisionZeroCFL.gov</a>. #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 <a href="https://VisionZeroCFL.gov">VisionZeroCFL.gov</a>. #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 <a href="http://VisionZeroCFL.gov">VisionZeroCFL.gov</a>. #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 <a href="http://VisionZeroCFL.gov">VisionZeroCFL.gov</a>. #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 <a href="http://VisionZeroCFL.gov">VisionZeroCFL.gov</a>. #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 <a href="http://VisionZeroCFL.gov">VisionZeroCFL.gov</a>. #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 <a href="https://VisionZeroCFL.gov">VisionZeroCFL.gov</a>. #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 <a href="https://VisionZeroCFL.gov">VisionZeroCFL.gov</a>. #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"> <li>Impaired Driving – Buzzed Driving is Drunk Driving</li> <li>National Passenger Safety Week (January 24-27)</li> </ul>
February		<ul style="list-style-type: none"> <li>Impaired Driving – Fans Don't Let Fans Drive Drunk</li> </ul>
March		<ul style="list-style-type: none"> <li>Vehicle Safety Recall Week (March 4-10)</li> <li>Impaired Driving – Buzzed Driving is Drunk Driving</li> </ul>
April	<ul style="list-style-type: none"> <li>National Distracted Driving Month</li> </ul>	<ul style="list-style-type: none"> <li>Distracted Driving (April 1-8) – U Drive. U Text. U Pay. Pay Attention or Pay the Price</li> <li>Drug Impaired Driving Campaign (April 20) – If you feel different, you drive different</li> <li>Alcohol Awareness month (National Institute of Health)</li> </ul>
May	<ul style="list-style-type: none"> <li>National Youth Traffic Safety Month</li> <li>National Bicycle Safety Month</li> <li>Motorcycle Awareness Month</li> </ul>	<ul style="list-style-type: none"> <li>National Heatstroke Prevention Day (May 1)</li> <li>Click it or Ticket (May 13-June 2)</li> </ul>
June		<ul style="list-style-type: none"> <li>Tire Safety Week (dates not determined yet)</li> <li>Secure your Load Day (June 6)</li> </ul>
July	<ul style="list-style-type: none"> <li>Vehicle Theft Prevention Month</li> </ul>	<ul style="list-style-type: none"> <li>Impaired Driving/Drug Impaired Driving (July 4) – Buzzed Driving Is Drunk Driving</li> <li>Speed Campaign (July 8-31)</li> </ul>
August		<ul style="list-style-type: none"> <li>Impaired Driving/Drug Impaired Driving (August 14–September 2) – Drive Sober or Get Pulled Over</li> </ul>
September		<ul style="list-style-type: none"> <li>Child Passenger/Occupant Protection Safety Week – (September 15-21)</li> <li>National Seat Check Saturday (September 21)</li> </ul>

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

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](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.flhwy.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

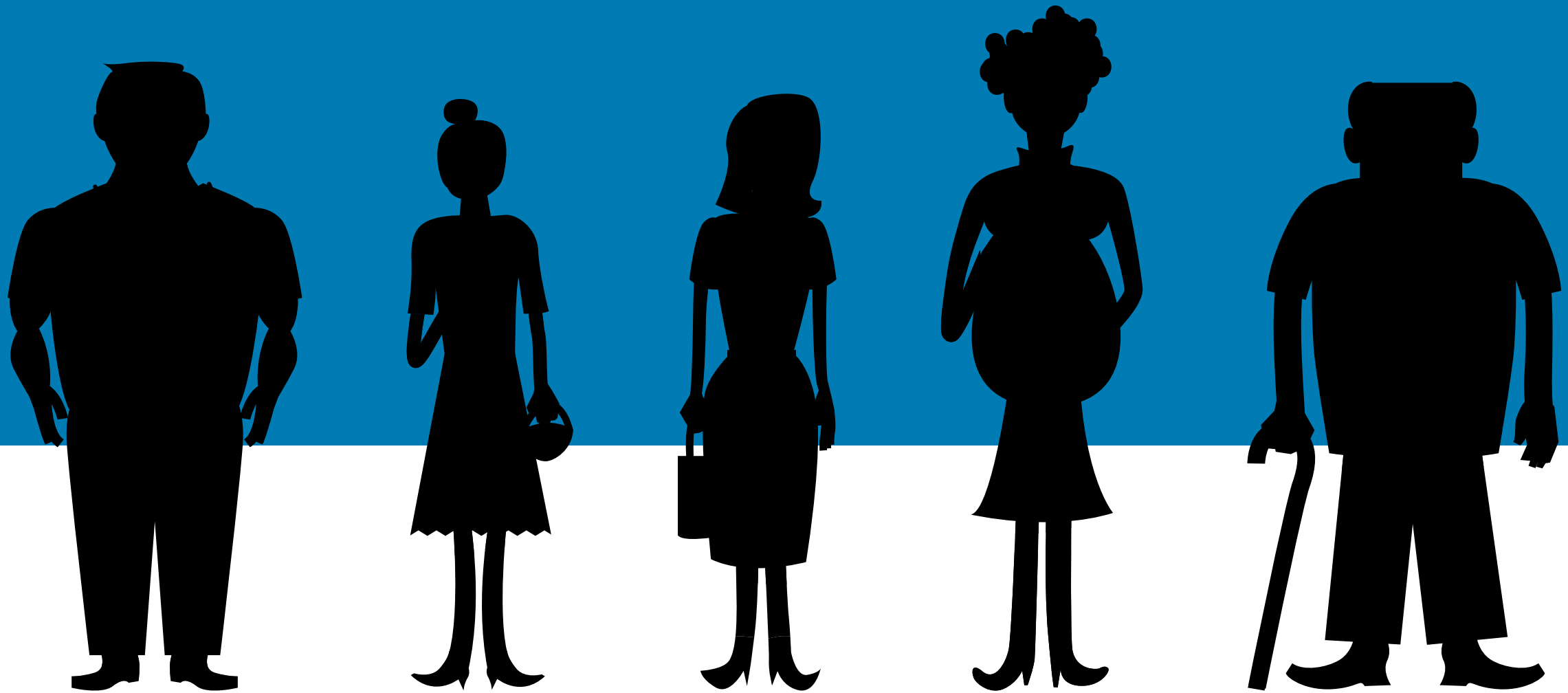
Once content is shared, please let us know if you find these templates useful or have suggestions for future templates. If you have a success story, please let us know so we can highlight your agencies' efforts in a future MetroPlan Orlando Newsletter. For maximum benefit, each post should include a 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.visionzero.org/central-florida) 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](mailto: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.**

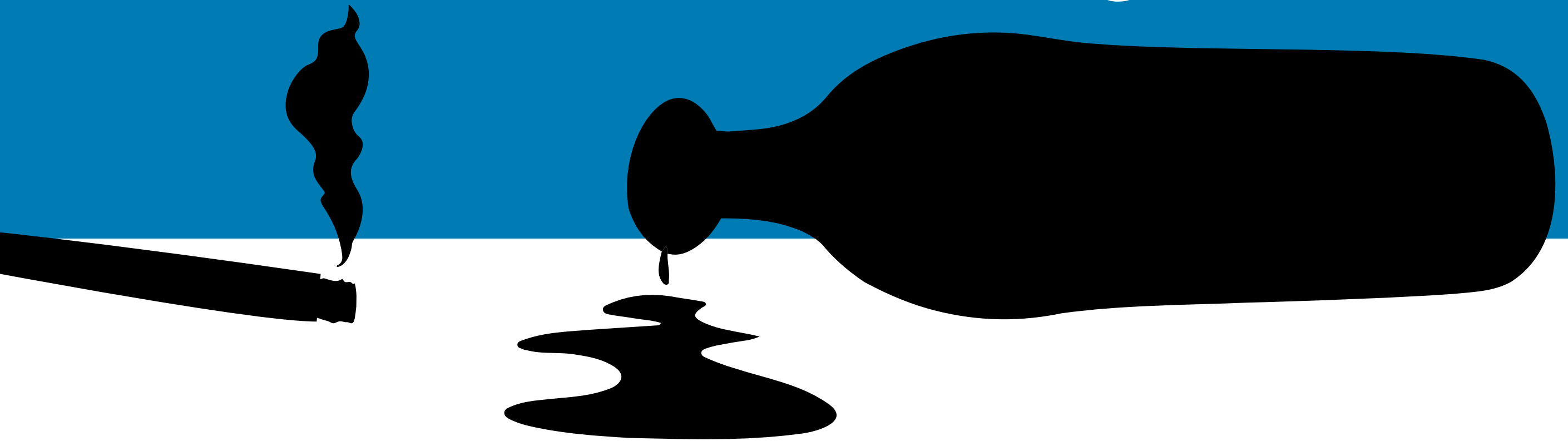


**VISION ZERO**  
CENTRAL FLORIDA

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.**

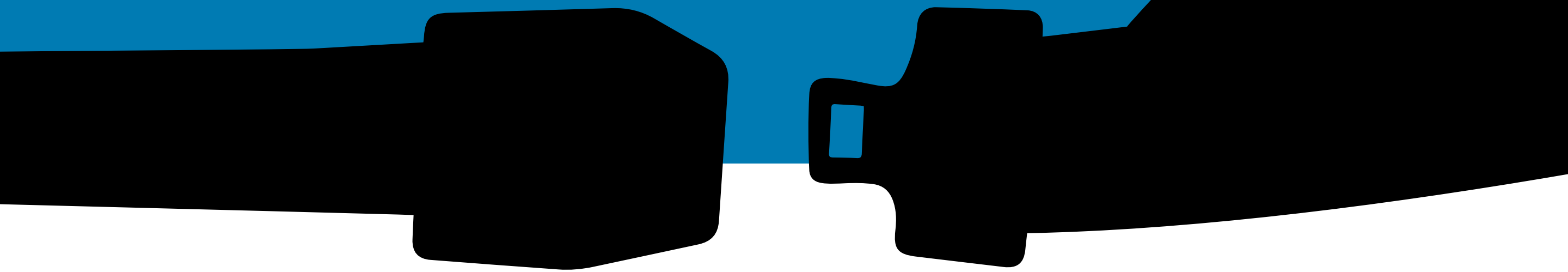


**VISION ZERO**  
CENTRAL FLORIDA  
[VisionZeroCFL.gov](http://VisionZeroCFL.gov)





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](http://VisionZeroCFL.gov)



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



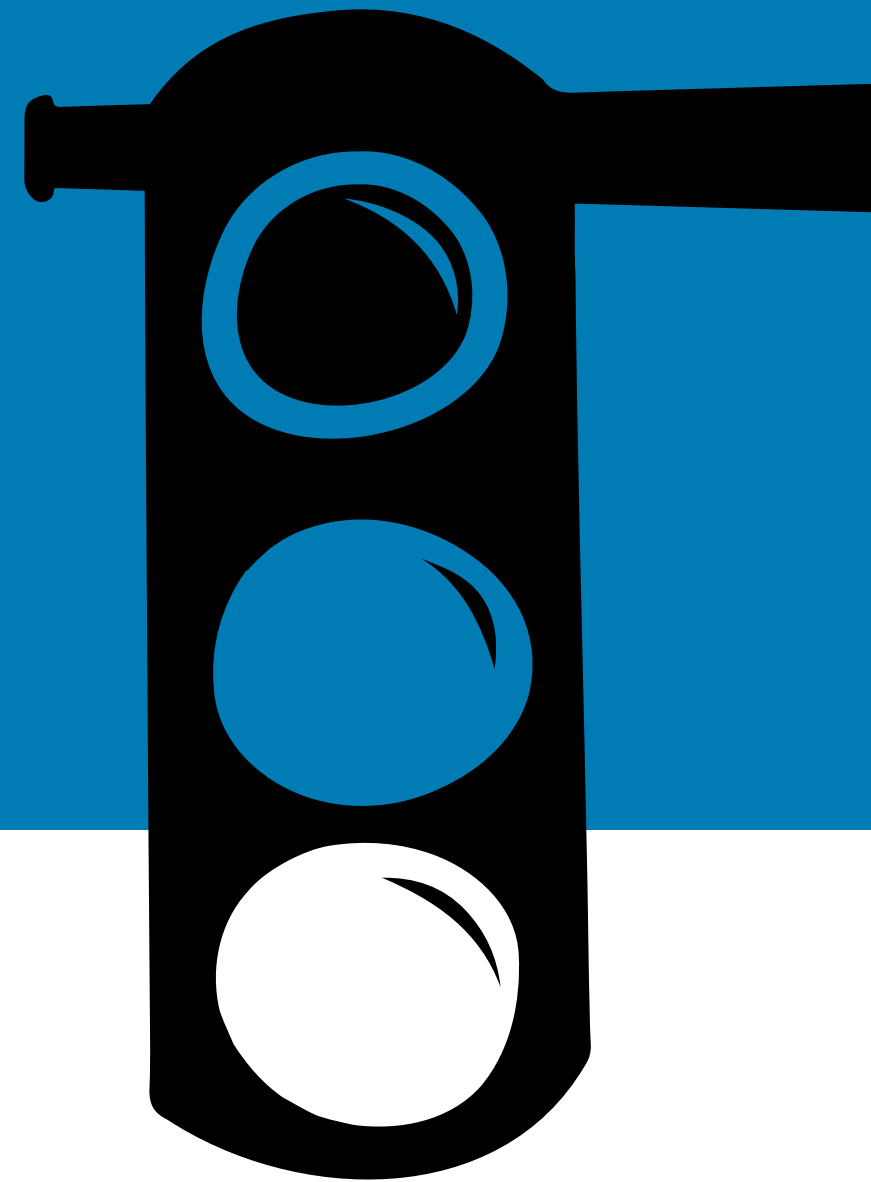
**WEARING A HELMET CAN SAVE YOUR LIFE.**



**VISION ZERO**  
CENTRAL FLORIDA  
[VisionZeroCFL.gov](http://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.**



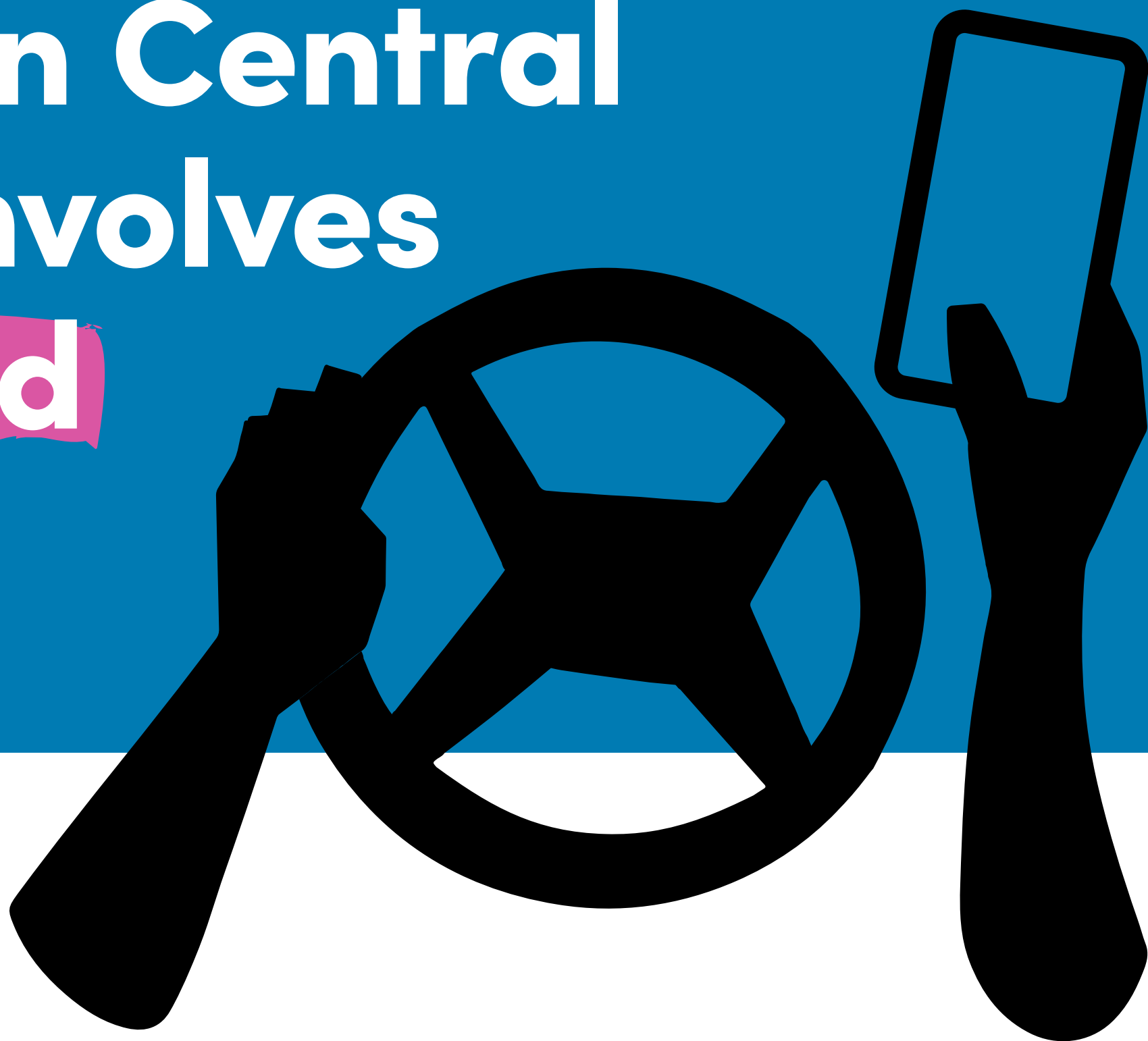
**VISION ZERO**  
CENTRAL FLORIDA

[VisionZeroCFL.gov](http://VisionZeroCFL.gov)

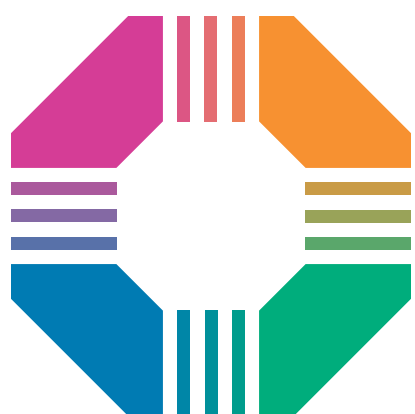


**1 in 3 serious injury  
crashes in Central  
Florida involves**

**distracted  
driving.**



**PAYING ATTENTION CAN SAVE A LIFE.**

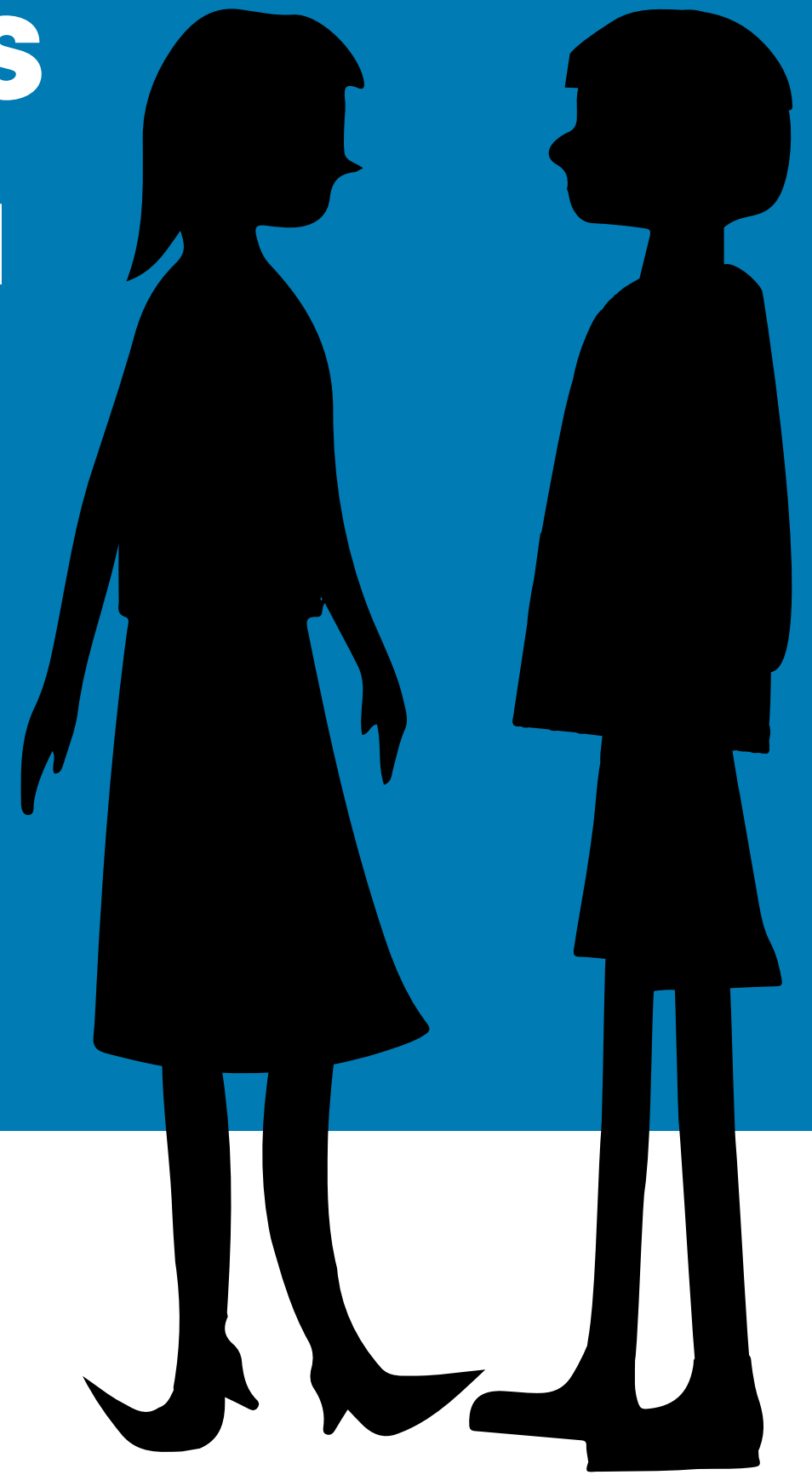


**VISION ZERO**  
**CENTRAL FLORIDA**

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!**



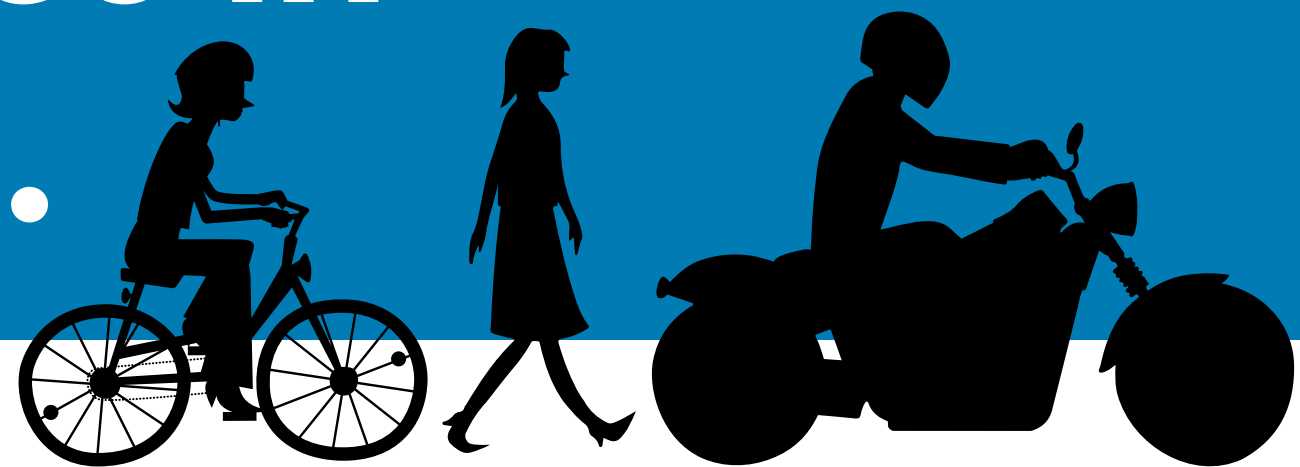
**VISION ZERO**  
CENTRAL FLORIDA

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.**

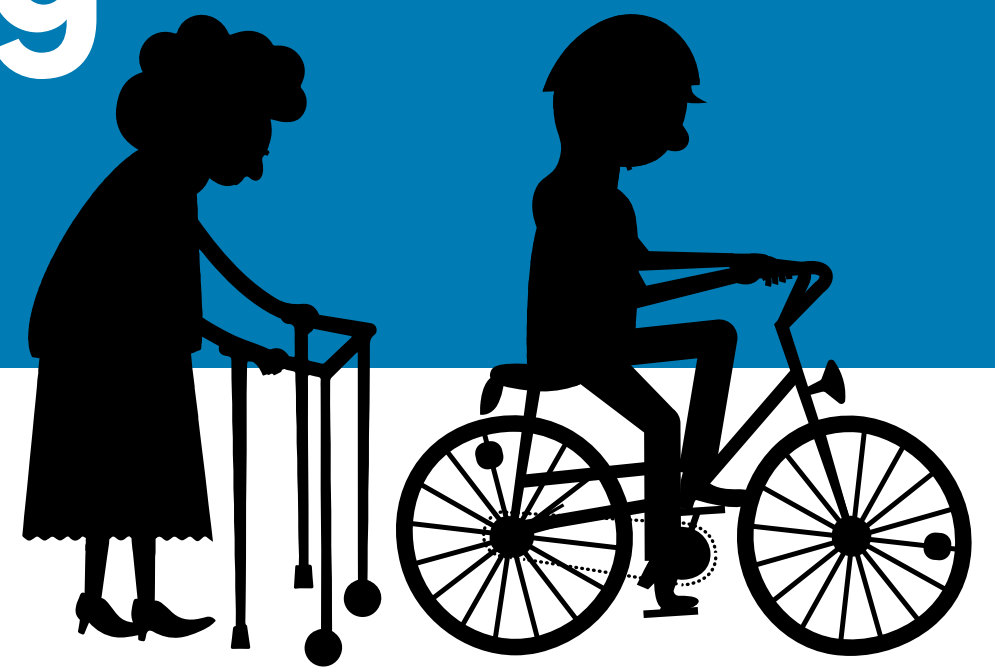


**VISION ZERO**  
CENTRAL FLORIDA

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](http://VisionZeroCFL.gov)



# SS4A Action Plan Checklist

# Safe Streets for All 2024



Date: September 17, 2024

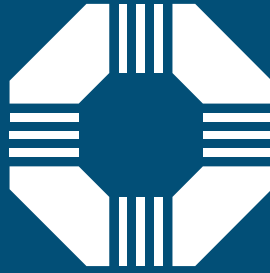


## Action Plan Component Checklist:

Item	Description	How It Is Achieved
1 – Leadership and Goal Setting	Governing body in the jurisdiction publicly committed to an eventual goal of zero road fatalities and serious injuries	Vision Zero Resolution and Action Plan adopted by Seminole County Board of County Commission on August 27, 2024. See Section "Vision Zero Resolution" of the VZAP.
	Set target to achieve significant decline in road fatalities and serious injuries	The Seminole County Vision Zero target resolution year was determined to be 2050. See Section "Vision Zero Resolution" of the VZAP.
2 – Planning Structure	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 Section "Getting to Zero" in the VZAP. Task Force included in Vision Zero Resolution.
3 – Safety Analysis	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 the section "Focusing on Our Users", as well as the Appendix, in the VZAP.
	Analysis of a systemic and specific safety needs is performed as needed (e.g. high risk)	
	Analysis of the location where there are crashes, the severity, as well as contributing factors and crash types	
	A geospatial identification (geographic or locational data using maps) or higher risk locations	

4 – Engagement and Collaboration	Engagement with the public and relevant stakeholders, including private sector and community groups	See sections “Getting to Zero” and “Talking to Our Community” in the VZAP.
	Incorporation of information received from the engagement and collaboration of the plan	
	Coordination that included inter- and intra-governmental and cooperation and collaboration into the plan	
	Considerations of equity using inclusive and representative processes	
5 – Equity Considerations	Considerations of equity using inclusive and representative processes	See the section “Focusing on Our Users”, as well as the Appendix, in the VZAP. USDOT ETC used to identify underserved communities.
	The identification of underserved communities through data	
	Equity analysis developed in collaboration with appropriate partners, including characteristics and equity impact assessments of proposed projects and strategies	
6 – Policy and Process Changes	Plan development included an assessment of current policies, plans, guidelines, and/or standards to identify opportunities to improve how to prioritize safety	See sections “Action Plan”, and “Benchmarking” in the Appendix, in the VZAP.
	Plan includes implementation through the adoption of revised or new policies, guidelines, and/or standards	
7 – Strategy and Project Selections	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 sections “Action Plan”, and the Appendix, in the VZAP. 20+ specific actions identified, organized around the Safe System Approach.
8 – Progress and Transparency	A description of how progress will be measured over time that includes, at a minimum, outcome data	See sections “Action Plan”, and the Appendix, in the VZAP.
	The plan is posted publicly online	
9 – Action Plan Date	The plan was finalized and/or updated between 2018 and 2024	See section “Vision Zero Resolution” in the VZAP. Adopted in August 2024.





# **VISION ZERO**

## **CENTRAL FLORIDA**

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