

# Thank you to everyone who helped with this plan!

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#### **Key terms**

**Crash** – An occurrence where a road user collides with another road user, such as a car or truck, motorcyclist, bicyclist, pedestrian, animal, road debris, or other moving or stationary obstruction, such as a tree, pole, or building, that may result in injury or loss of life, trauma, and/or property damage. Crashes can involve a single-party or multiple parties.

**High Injury Network** - A collection of streets where a disproportionate number of crashes that result in someone being seriously injured or killed occur.

**Kinetic Energy** -In the safety context, Kinetic Energy refers to the combination of mass and speed of a vehicle or other road user, like a bicyclist, involved in a collision. Depending on the angle of the crash, the higher the combination of mass and speed, the more likely the crash is to result in a serious injury or death, with the impact severity increasing exponentially as the speed o vehicle is driven increases.

#### **Disadvantaged Community** – A US

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

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

**Serious injury** – May also be referred to as an incapacitating injury. Serious injuries may include broken bones, severed limbs, etc. These injuries usually require hospitalization and transport to a medical facility.

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

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

#### List of abbreviations

**ADA** – Americans with Disabilities Act

**ATP** – Active transportation plan

**CAC** – Community advisory committee

**CAV** - Connected and autonomous vehicle

**CBO** – Community-based organization

CIP - Capital improvement plan

**DUI** - Driving under the influence

**EMS** - Emergency medical services

**ETC** – Equitable Transportation Community

**FDOT** – Florida Department of Transportation

FHP – Florida Highway Patrol

**FHWA** – Federal Highway Administration

HIN - High-Injury Network

ITS – Intelligent transportation systems

**KSI** - Fatal or serious injury crash

**LPI** – Leading pedestrian interval

**NHTSA** – National Highway Traffic Safety Administration

PHB – Pedestrian hybrid beacon

**RRFB** – Rectangular rapid-flashing beacon

**SRTS** - Safe Routes to School

TAC - Technical advisory committee

**USDOT** – United States Department of Transportation

## **Final Draft**

City of Maitland Vision Zero

## Action Plan

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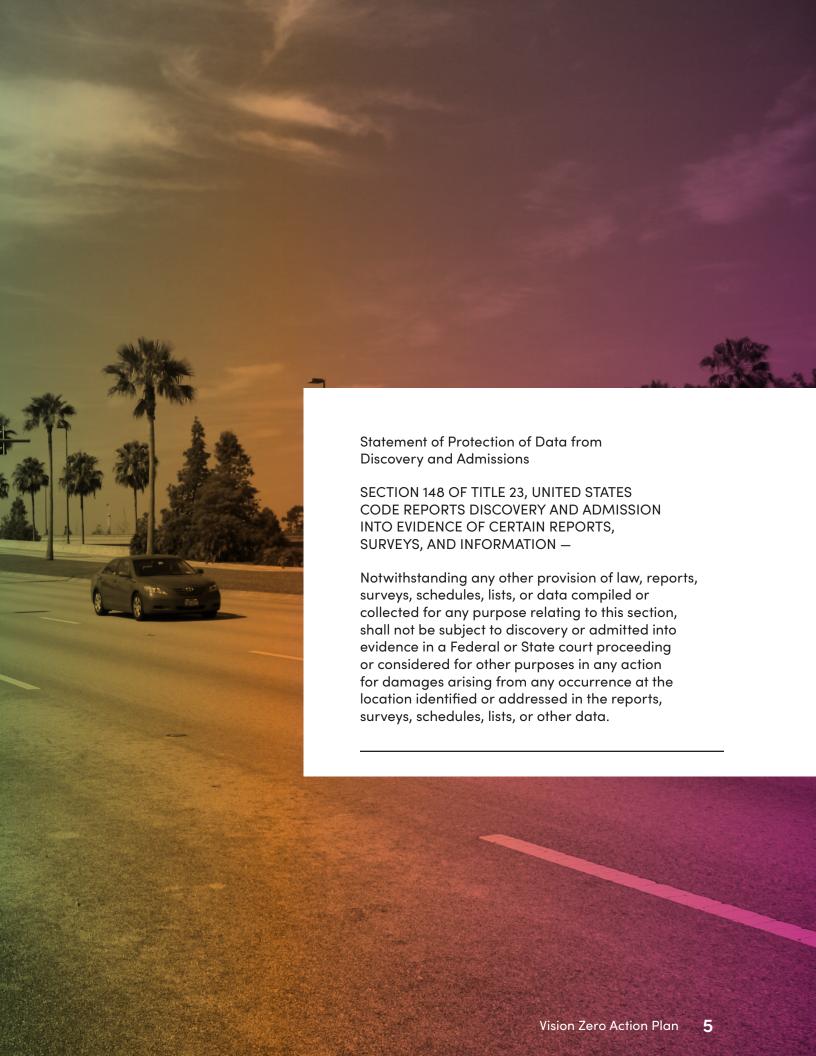
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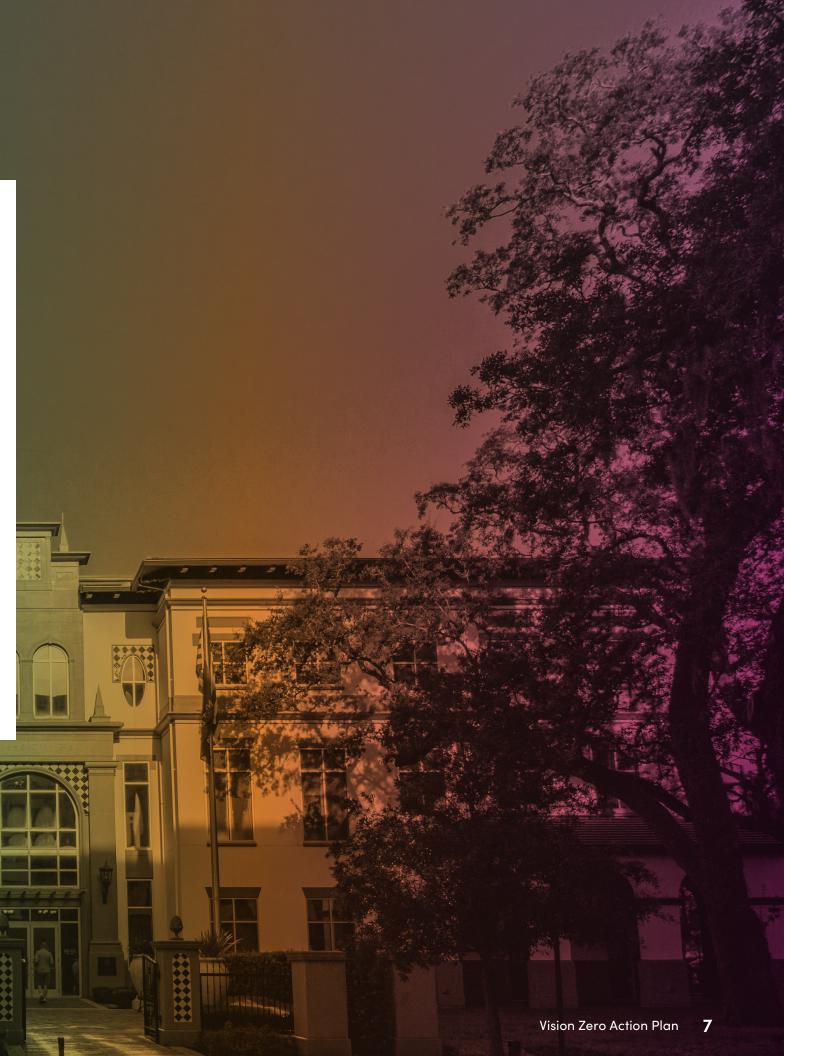




EXECUTIVE SUMMARY

# **Executive Sumary**





#### **EXECUTIVE SUMMARY**

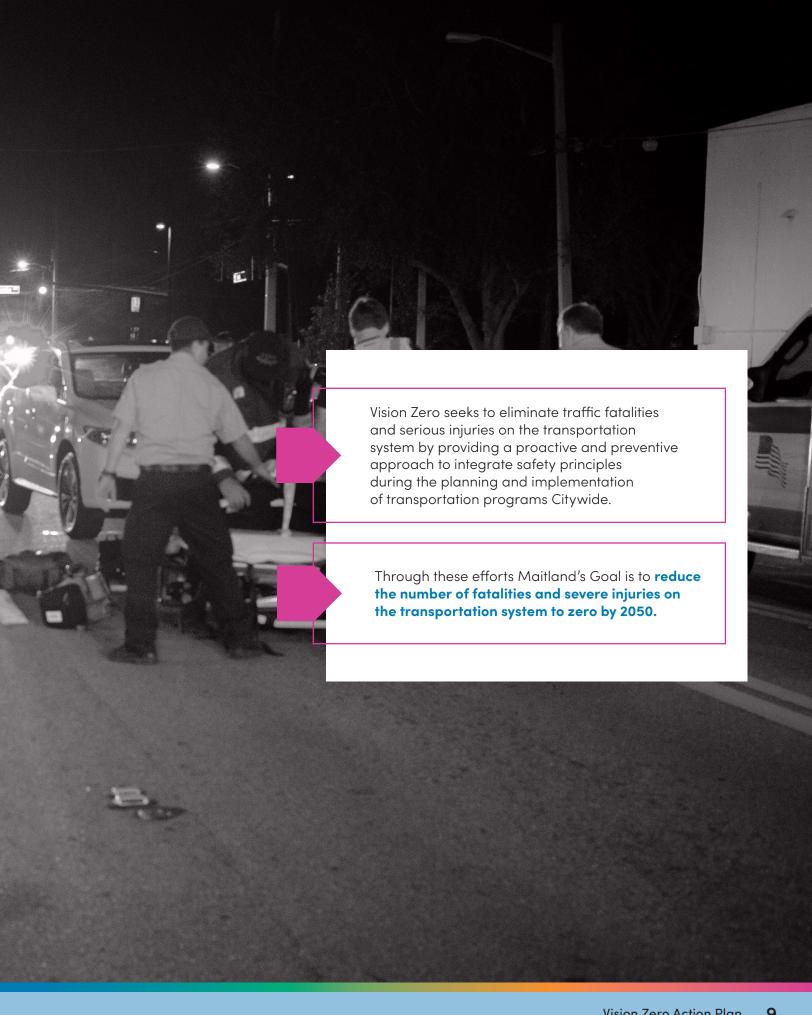
In 2023, MetroPlan Orlando secured a \$3.9 million federal Safe Streets for All (SS4A) grant to address serious safety concerns within the region. These funds are being utilized to cover the cost of coordinated Vision Zero Action Plans in their three-county service area along with local Vision Zero Action Plans for cities and municipalities within the three-counties.

The **City of Maitland** is located five miles north of Orlando in Orange County, Florida. The city is **6-square miles** with over **19,000 residents**.

Through funding by the SS4A grant, the City of Maitland is developing its own Vision Zero action plan, with the goal of reducing traffic fatalities and severe injuries and creating safer roads both locally for the over 19,000 residents of Maitland and regionally for the 2.2 million central Florida residents and 75 million tourists who visit the region annually.

The Orange-Kissimmee-Sanford metro area—one of the fastest growing metros in the country—continues to rank as one of the deadliest areas, and the average yearly deaths continue to rise (Dangerous by Design, 2022). **Between 2018-2022 there were 3,875 crashes, including 9 fatalities and 42 serious injuries on Maitland roadways.** (**Signal 4 Analytics**) 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, Maitland Vision Zero Action Plan (VZAP) has been developed, rooted in the core elements of **Vision Zero** and the Federal Highway Administration (FHWA) **Safe System Approach.** 

Vision Zero is a road safety philosophy which states that no loss of life or serious injury due to traffic crashes is acceptable. The core elements of Vision Zero and the Safe System Approach, acknowledge the vulnerability of the human body when designing and operating a transportation network, seeking solutions to minimize the most serious consequences of crashes. Creating a Safe System means shifting some responsibility from road users to those who plan and design the transportation system. More information about Vision Zero and the Safe System Approach (SSA) is provided in **Chapter 1.** 



## What are the Transportation Safety Issues?

This Action Plan was developed using a datadriven analysis to understand where the City may strategically deploy its resources in order to attain our collective goal. This data analysis revealed that a large proportion of crashes where someone is killed or severely injured, referred to as KSI crashes, happen on a small percentage of our overall roadway network. Roads where KSI crashes disproportionately occur tend to have more than 6 vehicle travel lanes, posted speeds between 40 and 55 mph, and have active land uses, such as shopping centers, apartments, transit stops and other uses that generate trips made by people walking, bicycling and taking transit. While most crashes only involve people in motor vehicles, crashes that result in a fatality or severe injury disproportionately involve someone walking, bicycling, or riding a motorcycle. Additional details about crash trends in the region are provided in Chapter 2.

Community outreach was a core component of identifying transportation safety issues within the City and developing a consistent foundation for all local agencies needed to establish comprehensive changes to transportation safety. City staff, along with law enforcement, and members of the Transportation Advisory Board and Planning & Zoning Board, advocated for the Vision Zero Action Plan by supporting the plan development process and educating the public about the importance of traffic safety and the goal of reducing traffic fatalities to zero. Chapter 3 describes the community outreach that was conducted as a part of this plan, and how that feedback was incorporated.

## How will we get to Zero Traffic Deaths and Serious Injuries?

There is no one solution to reach zero traffic deaths and serious injuries. Rather, it will require a multidisciplinary and collaborative approach. Chapters 4, 5 and 6 provide details on the recommended engineering and non-engineering countermeasures such as enforcement and engagement that the City will implement to help reach its goal. These chapters also outline an implementation plan to understand where improvements will be prioritized, and specific actions that Maitland will take in collaboration with other agencies in the region.

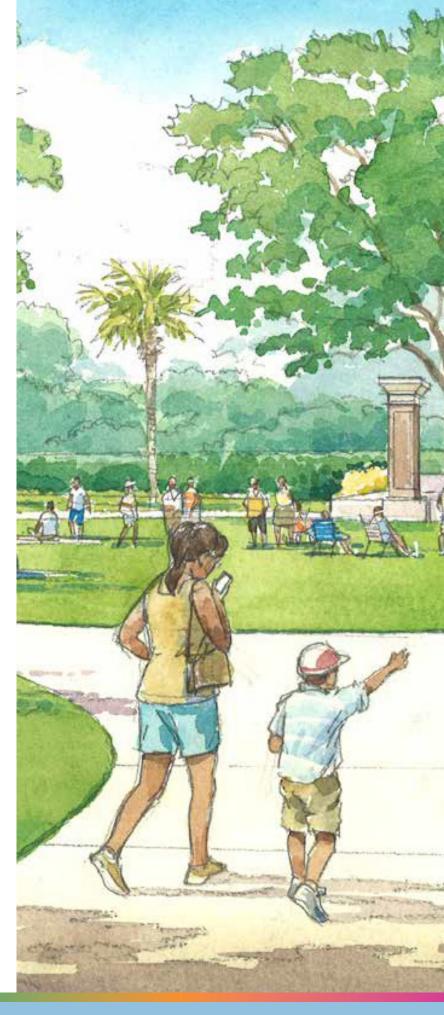
This Action Plan is firmly grounded on a rigorous and comprehensive data-driven approach and vetted in feedback received from regional partners community stakeholders. A foundational element of developing this plan lies in analyzing crash trends, community and roadway characteristics to understand road user behavior and elements of the built environment that are leading to severe crashes. Data was compiled, analyzed, and mapped to identify causational relationships and then corresponding solutions to empower decision makers to thoroughly understand safety concerns and take action to mitigate them. By identifying and focusing on high-incidence locations or recurring types of accidents, Maitland can pinpoint areas where investment of resources will have the most significant impact in terms of lives saved and injuries prevented. In addition to physical changes to the roadway system including lighting upgrades, intersection improvements, pedestrian or bicycle improvements, additional behavioral interventions like public safety campaigns are shared in this report.

#### How will we track our Progress?

Monitoring our progress will be an important part of the process. On an annual basis, the City of Maitland will reflect on our progress towards reaching zero traffic fatalities through an assessment of the crash trends from the prior year and comparing them to the trends documented in the Action Plan. Progress will be shared at an Annual Safety Summit hosted by MetroPlan Orlando where best practices and lessons learned from across the region will be shared.

## What action does the City need to take?

Through the data-driven process and conversations with key stakeholders of the community, the City of Maitland has identified priority areas and designappropriate safety countermeasures across the state roadway system's most dangerous corridors, as outlined in next table. By identifying specific countermeasures and focusing on high-incidence locations, the City of Maitland is well-equipped to pinpoint areas where investment of resources will have the most significant impact in terms of lives saved and injuries prevented. These solutions will help empower decision makers to thoroughly understand safety concerns and take action to mitigate them.



#### **Proposed Engineering Countermeasures for Consideration**

Posted speed limit reduction

Speed feedback signs

Lane narrowing or lane reduction

Speed sensitive traffic signals

Speed safety cameras

Rumble strips

Chevron signs or curve advanced warning signs with rumble strips

Consolidate driveways

Median installation

Curb radii / turning radii reduction

Backplates with retroflective borders

Intersection reconstruction

East/west crossing evaluation at Maitland Blvd

Median nose extention into crosswalk at non-signalized and signalized locations

Warrants for a signal with crosswalks

Crosswalk reconfiguration or high-emphasis crosswalks at intersections

Crosswalks at all signalized intersections, side streets, and major driveways

Midblock crossings with visibility enhancements and pedestrian refuge islands with key community assets

Audible push button pedestrian crossing signals

Midblock crosswalks at bus stop locations or relocation of bus stops to far side of signalized intersections

Prohibit turn when pedestrian signal is activated signage

Leading pedestrian intervals

Shared use path

· Green bicycle lanes at intersections with bike boxes

Lighting upgrades

Road Safety Audit

Pavement marking upgrades





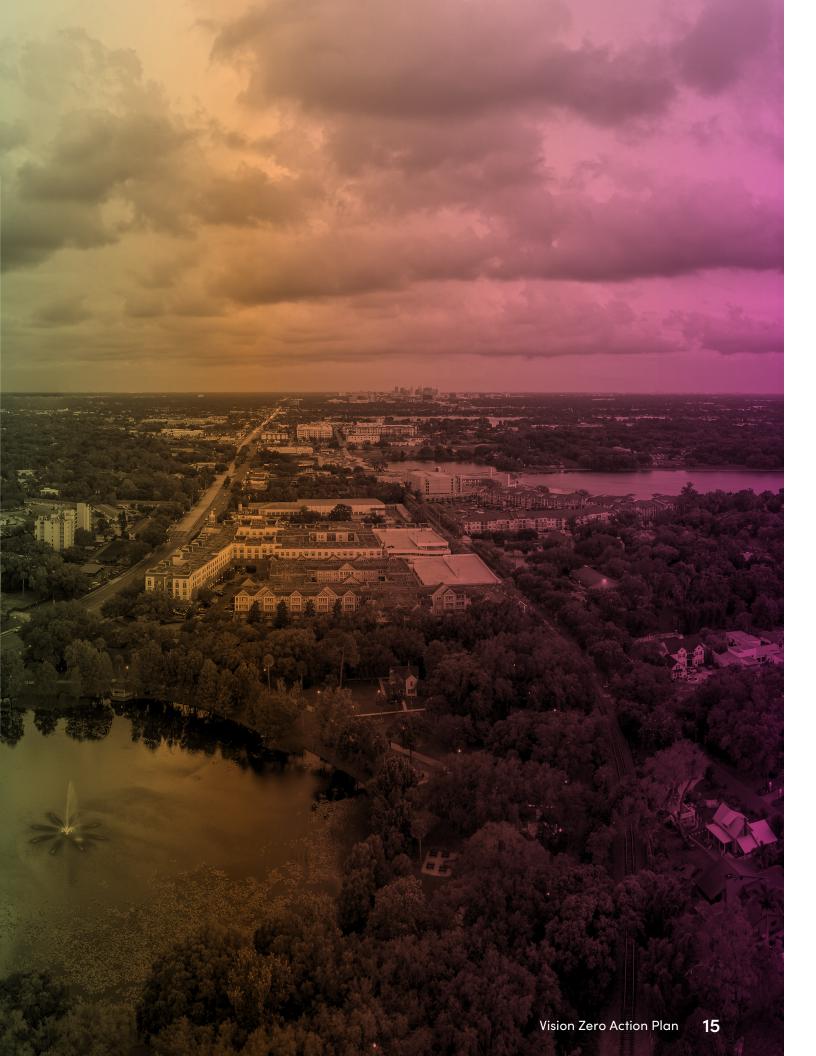
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CHAPTER 1

## Introduction





**SAVING LIVES.** That's what it's all about. The only acceptable number for traffic deaths is zero, because the City of Maitland's 19,000+ residents deserve to travel safely.

The purpose of the Maitland Vision Zero Action Plan is to articulate its commitment towards achieving zero road fatalities and serious injuries. This plan outlines a comprehensive, data-driven approach to improving road safety for all users, utilizing the Safe System approach. We acknowledge that every life is valuable, and no loss of life is acceptable on our roads. Our vision is not just to reduce but to systematically eliminate fatalities and serious injuries (KSI) caused by road traffic crashes. We pledge to put safety at the core of our decisionmaking processes, working collaboratively with local partners, stakeholders, and the community to achieve our collective goal.

No one entity or agency can fix road safety problems alone. This Vision Zero Action Plan results from a coordinated planning effort led by Maitland's Public Works Department, in partnership MetroPlan Orlando, and the Florida Department of Transportation. With this Vision Zero Action Plan, Maitland has joined communities around the world that are working to stop traffic deaths through the Safe System Approach. This plan:

- **Identifies High Injury Networks** roads with the highest risk of death and serious injury crashes.
- Accounts for transportation underserved communities that have been disproportionately affected by traffic crashes.
- **Prioritizes feasible projects** that will have the greatest safety impacts. The City of Maitland will work with our regional partners to implement changes and monitor long-term progress on safety.

## About MetroPlan Orlando and the City of Maitland

MetroPlan Orlando is the metropolitan planning organization for Orange, Osceola, and Seminole counties within Central Florida with a primary responsibility to help the region create a vision for transportation 25 years into the future, with an emphasis on safety for all Central Floridians. To help create that vision, MetroPlan Orlando is leading the preparation of this regional Vision Zero Action plan in collaboration with all the jurisdictions in the region that have their own unique transportation safety challenges, including the City of Maitland.

The Central Florida region is known for high rates of tourism to theme parks as well as a wide range of other recreational amenities. Most of the travel demand in the region from residents as well as visitors is accommodated via motor vehicles, with multimodal traffic safety being a growing concern due to suburban land use patterns and the concentration of activities on major roads that are intended to serve not only commuter and regional through traffic, but local walking, bicycling and transit trips.

Historic auto-oriented land use patterns and a focus on reducing vehicle delay/ congestion over multimodal accessibility and comfort have led to environments throughout the region where walking and bicycling are uncomfortable and safety concerns have arisen. To that end, this plan focuses on holistic interventions to decrease KSI crashes on all non-limited access roads through the region.

#### Safe System Principles

The Safe System Approach acknowledges the vulnerability of the human body when designing and operating a transportation network to minimize serious consequences of crashes. Creating a Safe System means shifting some responsibility from road users to those who plan and design the transportation system. While road users are responsible for their own behavior, there is a shared responsibility with those who design, operate, and maintain the transportation network, including the automotive industry, law enforcement, elected officials, and government agencies. In a Safe System, road system designers and operators take on the highest level of ethical responsibility to design and build our transportation system in a way that encourages safer behavior and provides redundancies.

The Safe System Is Built On The Following Principles:

### DEATH AND SERIOUS INJURY ARE UNACCEPTABLE

This plan focuses on eliminating crashes resulting in death and serious injuries in Maitland by 2050.

#### **HUMANS MAKE MISTAKES**

Everyone (people walking, bicycling, driving, etc.) makes mistakes that can lead to a crash. The goal of the SSA is to design and operate our transportation system to ensure these mistakes don't have life-altering impacts.

#### **HUMANS ARE VULNERABLE**

Human bodies can only withstand a limited amount of impact from a crash before death or serious injuries occur.

#### **RESPONSIBILITY IS SHARED**

Every person in the transportation system, from elected officials to everyday users, to planners and engineers, has a role to play in reaching zero fatalities and serious injuries.

#### **SAFETY IS PROACTIVE**

Rather than waiting for a crash to occur, transportation agencies should seek to proactively identify and address dangerous situations.

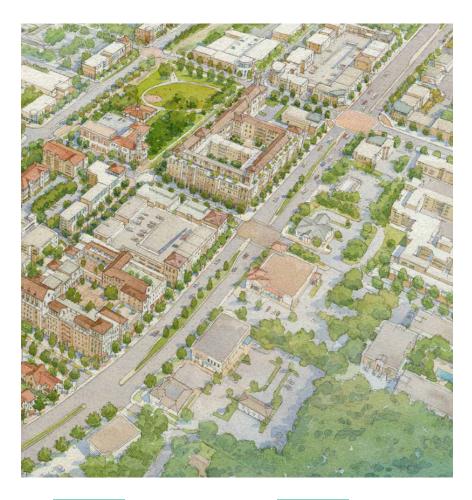
#### **REDUNDANCY IS CRUCIAL**

Redundancy means making sure there are multiple layers of the transportation system working together towards safer outcomes so that if one layer fails, people are still protected.



#### Five Elements of the Safe System Approach

The SSA addresses the five elements of a safe transportation system—safer people, safer vehicles, safer speeds, safer roads, and post-crash care—in an integrated manner, through a wide range of interventions.





#### **SAFER PEOPLE**

Encourage safe, responsible driving and behavior by people who use our roads and create conditions that prioritize their ability to reach their destination unharmed.



#### **SAFER VEHICLES**

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



#### **POST-CRASH CARE**

Partner with law enforcement and emergency response to identify strategic investments in crash response, crash assessment, and crash reporting.



#### **SAFER ROADS**

Prioritize roadway design changes throughout the MetroPlan Orlando region that address the factors contributing to severe injury and fatal crashes.



#### **SAFER SPEEDS**

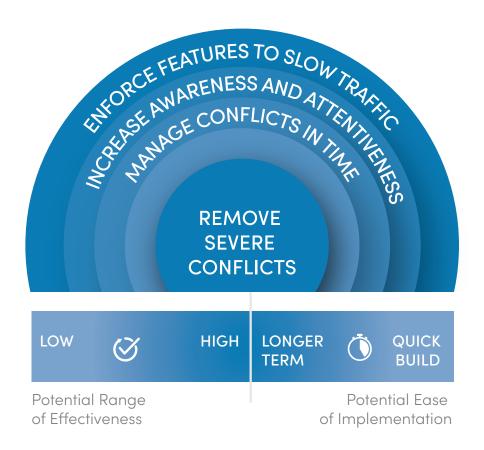
Use a multidisciplinary approach that induces drivers to travel at speeds appropriate for the context that will reduce injuries even when human error leads to crash.

#### Safe System Strategy

Consistent with the Safe System Approach Framework, the planning, design, and operation of facilities within the City of Maitland should anticipate human error and consider human vulnerabilities. The Institute of Transportation Engineers (ITE) and the Road to Zero Coalition's Safe Systems Explanation and Framework articulate that to anticipate human mistakes, a Safe System seeks to:

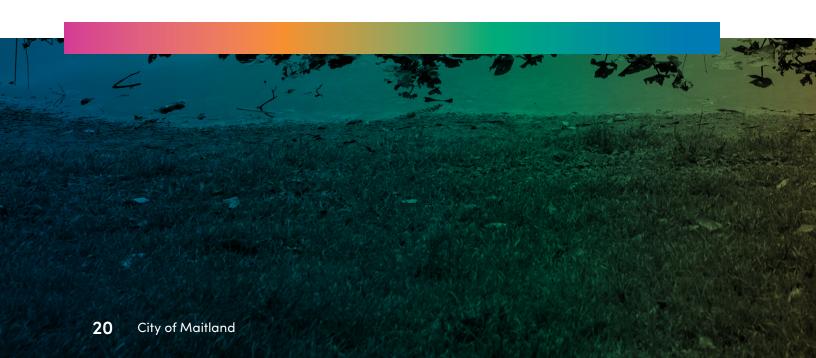
- Separate users in space by providing road users moving at different speeds or different directions, such as turning vehicles, dedicated space to minimize conflicts with other road users.
- Separate users in time when road users need to occupy the same space on the roadway, such as an
  exclusive pedestrian crossing phase or a dedicated turn phase.
- Alert users to potential hazards through strategies that increase visibility and increase attentiveness, as well as reducing impairment.
- Accommodate human injury tolerance through interventions that reduce speed or impact force, like physical design treatments and occupant protection.

These elements 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 timeframes. FHWA has further developed a draft Safe Systems Solutions Hierarchy (January 2024) within the Safe System elements of Safe Roads. Following this framework, the most effective strategies are those that remove severe conflicts and minimize conflict and speed, providing adequate reaction time for drivers to make adjustments and save lives.





# Crash Trends and Analysis





### **CITY OF MAITLAND CRASH TRENDS**

The following represents an overview of the crash trends on the roadway network in the City of Maitland:

YEARS OF CRASH DATA: 2018-2022 TOTAL CRASHES: 3,875

TOTAL FATAL CRASHES:

TOTAL SERIOUS
INJURY CRASHES:
42

#### **CRASHES BY YEAR:**

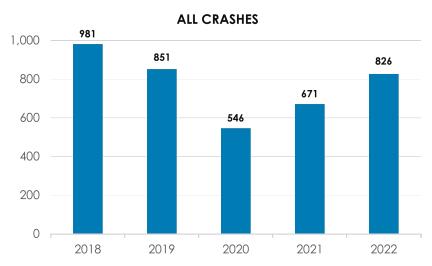
Overall, the city has seen tremendous progress toward reaching its Vision Zero goal.

Within the 5-year analysis period, the total number of crashes has remained consistent with the highest number of annual crashes (981) occurring in 2018. The lowest number of crashes (546) was in 2020, likely due to the lower number of trips that occurred in the pandemic year.

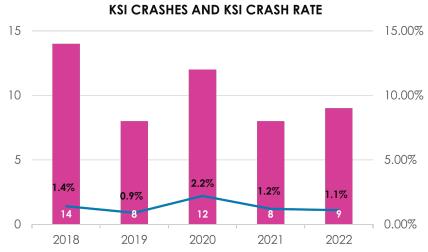
In review of KSI crashes, the highest number of KSI crashes (14) occurred in 2018 and the lowest number of KSI crashes occurred in 2019 and 2021 (8). The rate of total crashes, as well as KSI crashes and KSI crash rate has fluctuated throughout the analysis period. However, all of these trends have decreased from 2018 – 2022, with a 15.8% decrease of crashes overall, and a 35.7% decrease of KSI crashes.

#### **CRASHES BY INJURY SEVERITY:**

KSI crashes accounted for just 1.3% of all crashes in the City; however, as shared in the crash analysis by mode of transportation, people walking, bicyclilng, or travelling via motorcycle are much more at risk of a fatality or serious injurty in instance of a crash.



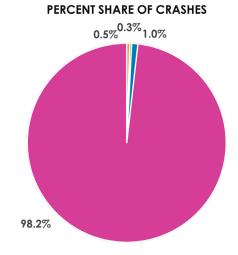
There has been a 15.8% decrease in overall crashes in the five year period.



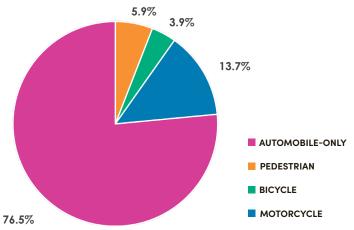
There has been a 35.7% decrease in KSI crashes in the five year period.

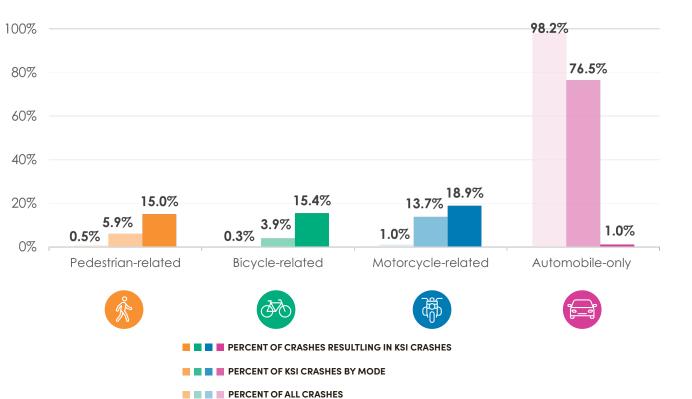
#### **CRASHES BY MODE:**

- PEDESTRIAN-INVOLVED: Pedestrian-involved crashes made up 0.5% of all crashes, but 5.9% of total KSI crashes, and 15.0% of every pedestrianinvolved crash resulted in a fatality or serious injury.
- BICYCLE-INVOLVED: Bicycle-involved crashes made up 0.3% of all crashes, but 3.9% of total KSI crashes, and 15.4% of every bicycle- involved crash resulted in a fatality or serious injury.
- MOTORCYCLE-INVOLVED: Motorcycle-involved crashes made up 1.0% of all crashes, but 13.7% of total KSI crashes, and 18.9% of every motorcycle-involved crash resulted in a fatality or serious injury.
- AUTOMOBILE-ONLY: Automobile-only crashes made up nearly 98.2% of all crashes, 76.5% of total KSI crashes, and only 1.0% of every automobile-only crash resulted in a fatality or serious injury.





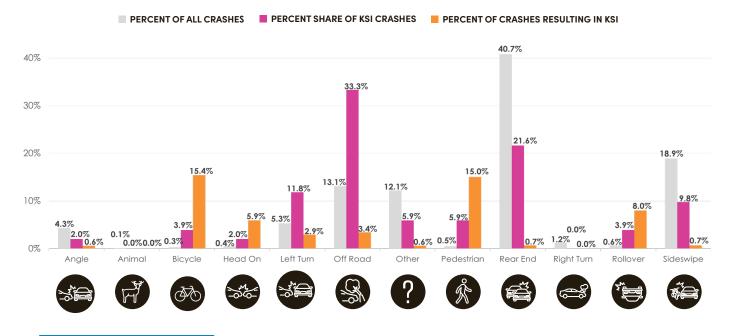




#### **CHAPTER 2: CRASH TRENDS AND ANALYSIS**

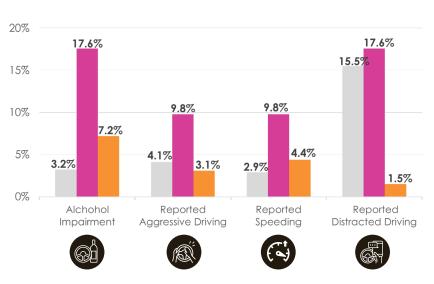
#### **CRASHES BY TYPE:**

Rear end crashes were the most common type of crash with 40.7% of the crashes. Off road crashes, while comprising 13.1% of total crashes, were the most common to result in a fatality or serious injury, constituting 33.3% of all KSI. The second and third crash types most likely to result in a KSI crash were rear end crashes (21.6%) and angle/left turn crashes (13.8%). The top two crash types to occur that result in a KSI are both bicycle and then pedestrian crashes, which have an increased likelihood of resulting in a KSI, with 15.4% and 15.0% of this crash type resulting in a KSI, respectively.



#### **BEHAVIORAL FACTORS:**

- ALCOHOL IMPAIRMENT: Crashes that involved alcohol impairment comprised 3.2% of all crashes, however, comprised 17.6% of KSI crashes, and 7.2% of every alcoholinvolved crash resulted in a fatality or serious injury.
- REPORTED AGGRESSIVE DRIVING: Crashes that involved aggressive driving comprised 4.1% of all crashes, however, 3.1% of these crashes resulted in a KSI.
- REPORTED SPEEDING: Crashes that involved speeding comprised 2.9% of all crashes, however, 4.4% of these crashes resulted in a KSI.

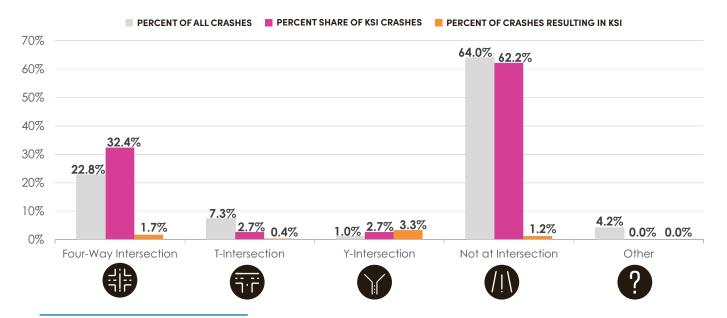


■ PERCENT OF ALL CRASHES ■ PERCENT SHARE OF KSI CRASHES ■ PERCENT OF CRASHES RESULTING IN KSI

• REPORTED DISTRACTED DRIVING: Crashes that involved distracted comprised 15.5% of all crashes, however, 1.5% of these crashes resulted in a KSI.

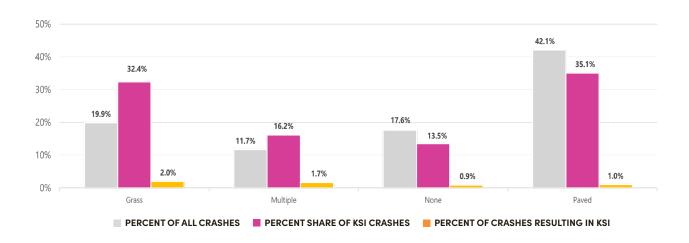
#### **CRASHES BY LOCATION:**

- FOUR-WAY INTERSECTION: 22.8% of crashes and 32.4% of total KSI crashes occurred at a 4-way intersection.
- T-INTERSECTION OR Y-INTERSECTION: Nearly 7.3% of all crashes and 0.1% of total KSI crashes occurred at a T-intersection.
- NOT AT INTERSECTION OR "SEGMENT": Nearly 64% of total crashes and 62.2% of total KSI crashes occurred on a roadway segment.



#### **CRASHES BY MEDIAN TYPE:**

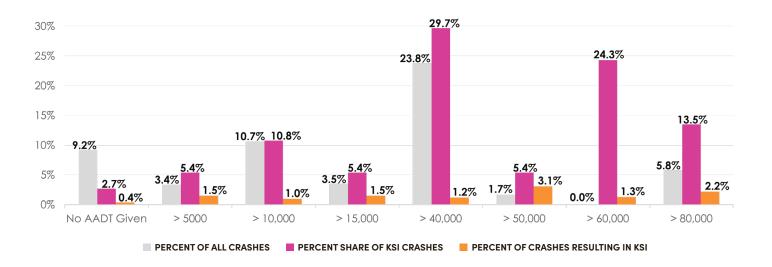
The median type with the most reported KSI crashes was paved medians, with 42.1% of all crashes and 35.1% of KSI crashes. The number of crashes that occurred on roadway segments with a grass median was also high, consisting of 19.9% of all crashes and 32.4% of KSI crashes.



#### **CHAPTER 2: CRASH TRENDS AND ANALYSIS**

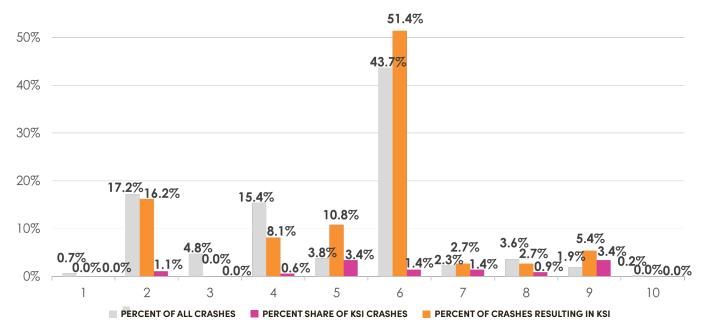
#### **ROADWAY VOLUME (AADT):**

23.8% of all crashes and 29.7% of KSI crashes occurred on roadways with traffic volumes between 30,000 and 40,000 daily trips. Overall, roadways with higher volumes, greater than 30,000 AADT, accounted for increased number of crashes and KSI crashes.



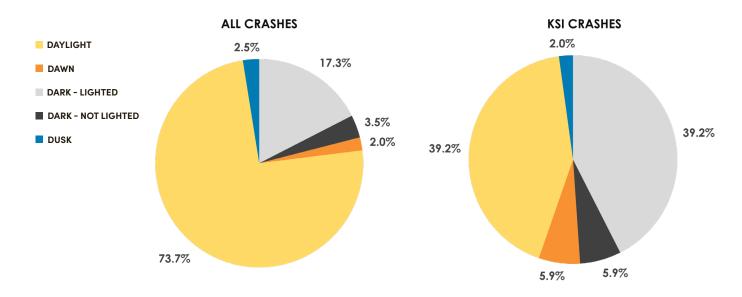
#### **NUMBER OF LANES:**

43.7% of all crashes occurred on roadways with 6 through lanes. 51.4% of KSI crashes occured on roadways with 6 lanes. 2 and 4-lane roadways together accounted for 32.6% of total crashes and 24.3% of KSI crashes.



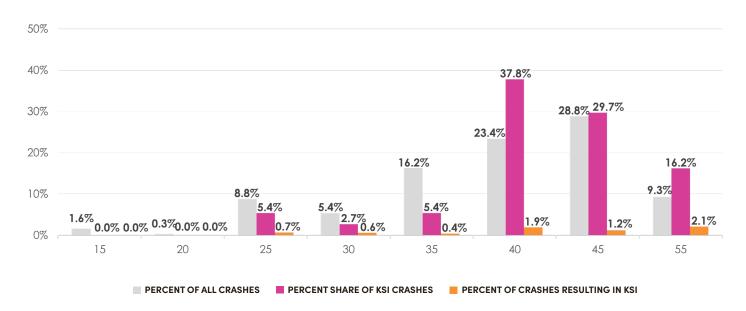
#### **LIGHTING CONDITIONS:**

Most crashes occurred during daylight conditions (73.7%); however, crashes that occurred during dark conditions were more likely to result in a serious injury or fatality. This holds true for both dark-lighted or dark-unlighted conditions. Dark – lighted conditions were reported for 39.2% of KSI crashes, and dark – not lighted conditions were reported for 5.9% of KSI crashes that occurred within the city limits.



#### **POSTED SPEED LIMIT:**

23.4% of total crashes and 37.8% of the KSI crashes occurred on roadways where the posted speed is 40 MPH and 28.8% of total crashes and 29.7% of KSI crashes occurred on roadways with a posted speed limit of 45 MPH. Roadways with speeds 40 MPH or higher accounted for 61.5% crashes and 83.8% of KSI crashes.



#### **CHAPTER 2: CRASH TRENDS AND ANALYSIS**

#### **High Injury Network**

The next step in creating the Vision Zero Action Plan was to identify the High-Injury Network (HIN) for the roadways in Maitland. A High Injury Network (HIN) is a collection of corridors and intersections where a disproportionate number of crashes that result in someone being killed or severely injured (KSI) occur. The HIN was based review and analysis of crash data to identify locations with a high number of severe injuries and fatalities in the past five years (2018–2022). The Project Team also checked the quality and accuracy of crash citation records to verify the location of crashes occurred on the roadway system instead of parking lots. The approach to developing the HIN, as well as the associated collision profiles from the crash analysis, intentionally excludes limited access (LA) facilities such as Interstate 4.

In total, the identified HIN covers 6.8 centerline miles, 7 roadway corridors, and 202 separate segments. These roadways account for approximately 47% of total KSI crashes in the City. Two High Injury Networks were developed for the City of Maitland based on all roads within the jurisdiction regardless of ownership, and all local roads maintained by the City. This approach allows all roadway-responsible entities an easier determination on jurisdiction for improvement implementation.

- 1. The All-Roads HIN identified 3 roadway segments totaling approximately 4.9 centerline miles. There were 1,471 total crashes reported on these roadways and 21 KSI crashes.
- 2. The Local Roads HIN analysis identified 4 roadway sections totaling approximately 1.9 centerline miles. There were 242 total crashes reported on these roadways and 3 KSI crashes.

Additionally, 16 high-priority intersections were identified where a disproportionate number of fatal and serve injury crashes were reported, and accounts for 2,777 total crashes and 22 KSI crashes.

The top 7 HIN corridors are identified below:

Overall Rank (Worst Segment)	Road Name	From	<b>6</b>	Length (mi)	Total Crashes (KSI Crashes)	Automobile Crashes (KSI Crashes)	Pedestrian Crashes (KSI Crashes)	Bicycle Crashes (KSI Crashes)	Motorcycle Crashes (KSI Crashes)
1	Orlando Ave	Monroe Ave	Seminole County Line	2.02	624 (10)	613 (7)	5 (1)	5 (2)	1 (0)
2	Maitland Blvd	1-4	Orlando Ave	1.58	544 (7)	544 (7)	0	0	10 (2)
3	Lake Ave*	Grove St	Orlando Ave	0.55	34 (1)	31 (0)	1 (0)	1 (0)	1 (1)
4	N Keller Rd*	Maitland Blvd	Maitland Summit Blvd	0.31	77 (1)	74 (0)	0	0	3 (1)
5	Maitland Ave*	Orlando Ave	Sandspur Rd	0.79	121 (1)	116 (1)	1 (0)	0	2 (0)
6	Maitland Blvd	Unincorprated Seminole County	Lake Destiny Road	1.29	303 (4)	303 (4)	0	0	0
7	Maitland Summit Blvd*	Maitland Summit Blvd	N Keller Rd	0.29	10 (0)	40 (0)	0	0	0

<sup>\*</sup> Indicates City of Maitland local roadway segments

#### **Crash Profiles**

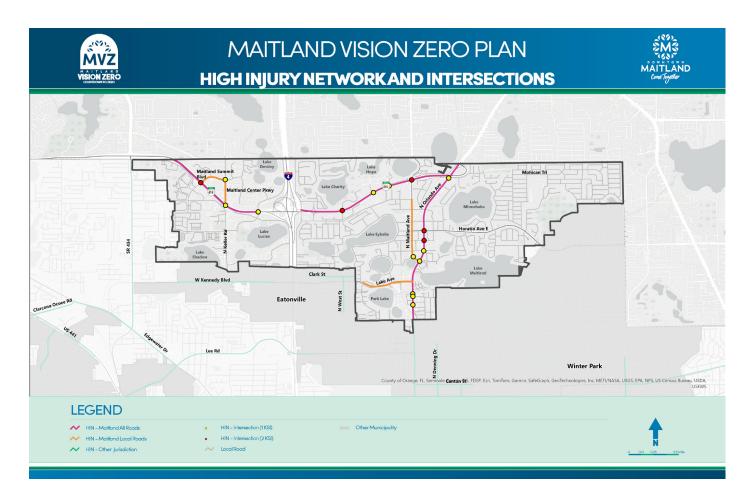
After analyzing the crash trends and the HIN, 10 collision profiles were identified that show the primary causes of fatal and serious injuries on Maitland's roadways. A decision tree analysis was used to examine other factors that contributed to the specific cases of KSI crashes for each of the collision profiles identified. By finding common elements and situations that cause severe crashes, Maitland can better recognize patterns and trends that allow us to focus on and address specific behaviors, locations, types of road users, and/or times that have higher risks. Instead of treating crashes as separate incidents, the collision profiles show where dangerous collisions are a conjoining of a multitude of factors, allowing the of use resources effectively to deal with systemic issues and offer targeted solutions.

The collision profiles are:

#	Crash Profile	Total Crashes	% of Total Crashes	KSI Crashes	% of Total KSI Crashes	% of Crashes Resulting in KSI
1	Left Turn	207	5.3%	6	11.8%	2.90%
2	Off Road	507	13.1%	17	33.3%	3.35%
3	Rear End	1,576	40.7%	11	21.6%	0.70%
4	Sideswipe	733	18.9%	5	9.8%	0.68%
5	Bicycle	13	0.3%	2	3.9%	15.38%
6	Pedestrian	20	0.5%	3	5.9%	15.00%
7	Motorcycle	37	1.0%	7	13.7%	18.92%
8	Distract Driving	600	15.5%	9	17.6%	1.50%
9	Aging Driver	631	16.3%	8	15.7%	1.27%
10	Speed 40-45 MPH	1,606	41.4%	25	49.0%	1.56%

#### **Modal Crash Trends**

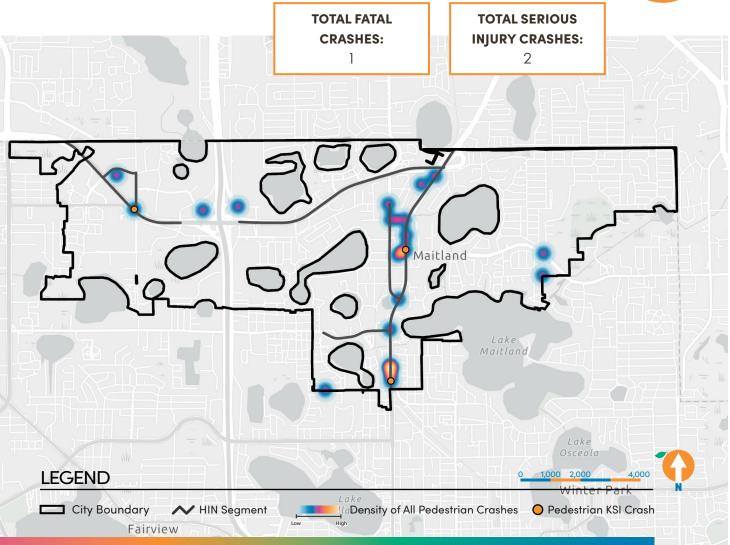
This section provides an overview of crash trends by mode that occurred in the city, revealing the most common factors specific to pedestrian, bicycle, motorcycle, and automobile-only crashes, with emphasis placed on identifying the contributing factors most likely to result in a fatality or serious injury. The maps on the following pages share an HIN specific to each mode, as well as the top contributing factors leading to these crashes.



#### PEDESTRIAN HIN AND CRASH TRENDS

The following represents an overview of the 20 pedestrian-involved crashes that occurred in the City of Maitland.





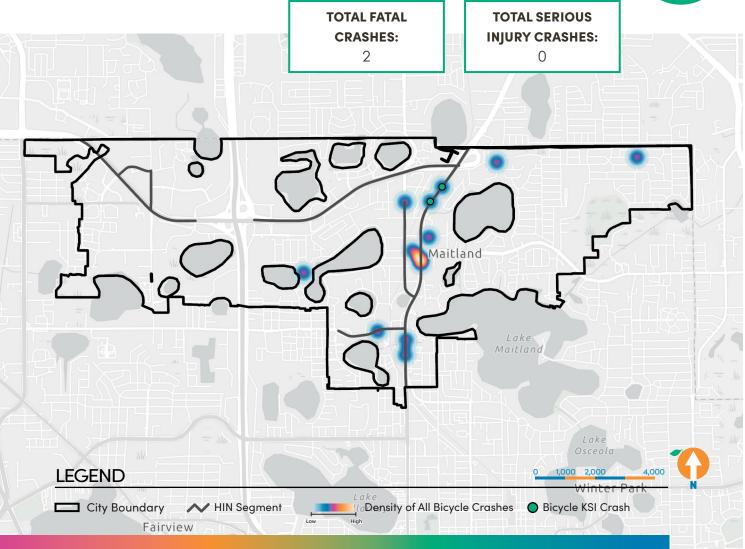
#### TOP CONTRIBUTING FACTORS FOR PEDESTRIAN-INVOLVED KSI CRASHES:

- In locations with posted speed limit of 55 mph, with 100% of these crashes resulting in a KSI
- In locations without sidewalk, with 100% of these crashes resulting in a KSI
- As a result of the pedestrian failing to yield, with 100% of these crashes resulting in a KSI
- In dark-not lighted conditions, with 100% of these crashes resulting in a KSI
- In locations with posted speed limit of 40 mph, comprising **66.7%** of all pedestrian KSI crashes
- On a roadway segment, comprising **66.7%** of all pedestrian KSI crashes

#### **BICYCLE HIN AND CRASH TRENDS**

The following represents an overview of the 13 bicycle-involved crashes that occurred in the City of Maitland.





#### TOP CONTRIBUTING FACTORS FOR BICYCLE-INVOLVED KSI CRASHES

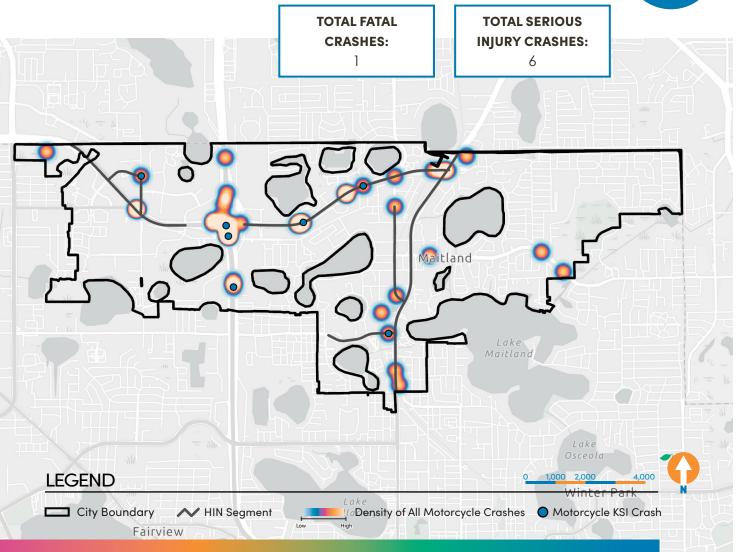
- In locations without bicycle lanes, comprising 100% of all bicycle KSI crashes
- On a non-intersection roadway segment, comprising 100% of all bicycle KSI crashes
- In the C3C Context Classification, comprising 100% of all bicycle KSI crashes
- ullet In locations with posted speed limit of 45 mph, comprising 100% of all bicycle KSI crashes
- On roads with volumes between 30,000-40,000 AADT, comprising 100% of all bicycle KSI crashes
- ullet In locations without median, comprising 100% of all bicycle KSI crashes

#### **CHAPTER 2: CRASH TRENDS AND ANALYSIS**

#### MOTORCYCLE HIN AND CRASH TRENDS

The following represents an overview of the 37 motorcycle-involved crashes that occurred in the City of Maitland.





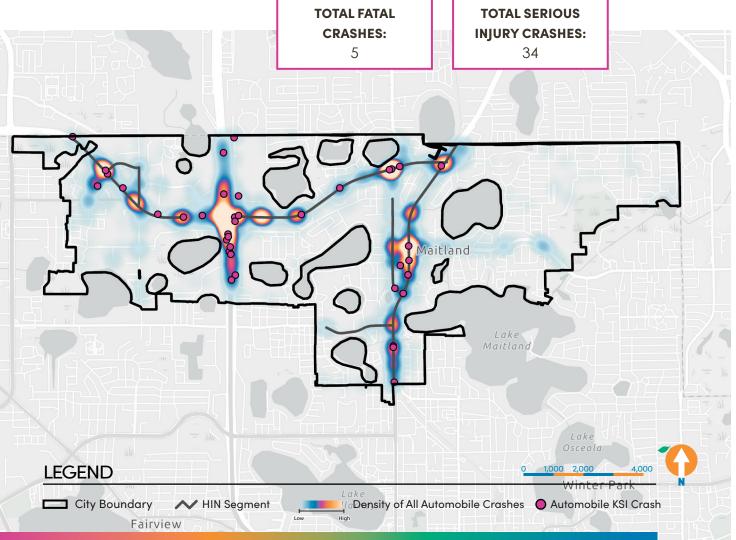
#### TOP CONTRIBUTING FACTORS FOR MOTORCYCLE-INVOLVED KSI CRASHES:

- As a result of a left turn maneuver, with 100% of these crashes resulting in a KSI
- On roads with volumes between 10,000-15,000 AADT, with 100% of these crashes resulting in a KSI
- On a non-intersection roadway segment, comprising **71.4%** of all motorcycle KSI crashes
- Between the hours of 6 AM to 9 AM, with 66.7% of these crashes resulting in a KSI
- In locations with posted speed limit of 40 mph, with 50.0% of these crashes resulting in a KSI

#### **AUTOMOBILE-ONLY HIN AND CRASH TRENDS**

The following represents an overview of the 3,805 automobile-only crashes that occurred in the City of Maitland.





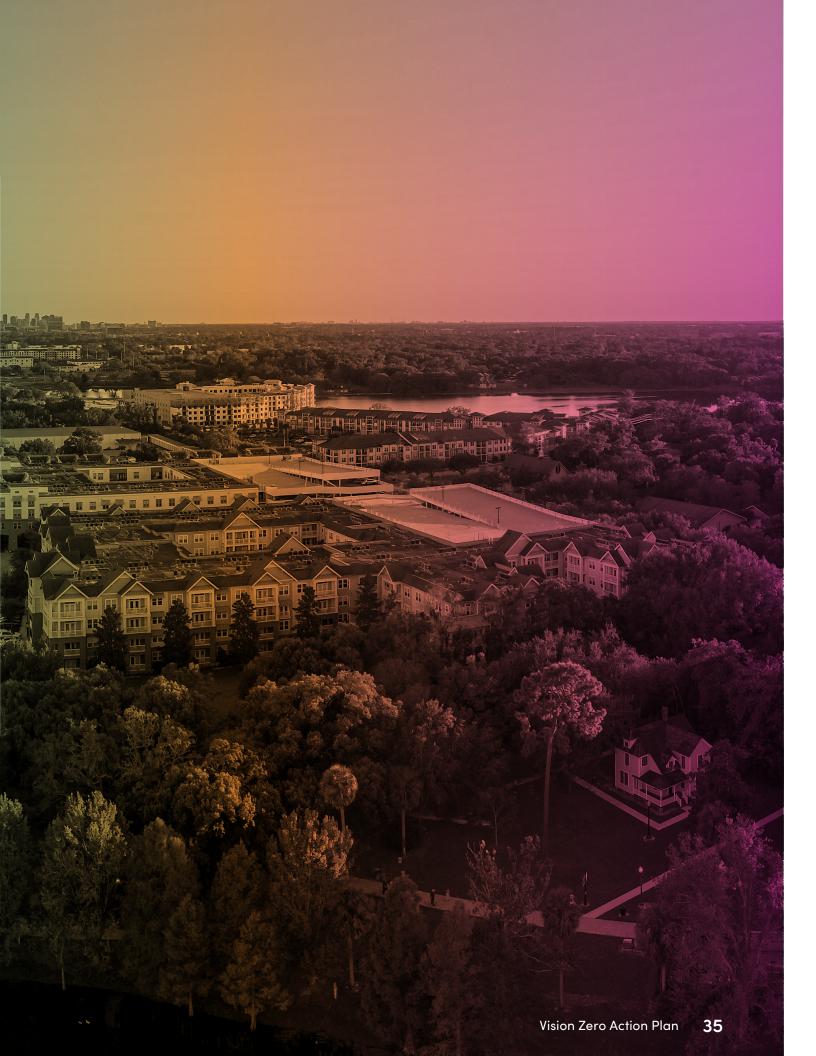
#### TOP CONTRIBUTING FACTORS FOR AUTOMOBILE-ONLY KSI CRASHES

- In locations without bicycle lanes, comprising **69.2%** of all automobile-only KSI crashes
- On a non-intersection roadway segment, comprising **69.2%** of all automobile-only KSI crashes
- In locations with posted speed limit of 40-55 mph, comprising **58.9%** of all automobile-only KSI crashes
- In dark-lighted conditions, comprising **43.6%** of all automobile-only KSI crashes
- As an off road crash, comprising **38.5%** of all automobile-only KSI crashes
- With reported alcohol impairment, comprising **23.1%** of all automobile-only KSI crashes



# Public Engagement





#### **CHAPTER 3: PUBLIC ENGAGEMENT**

Vision Zero is a strategy to eliminate all traffic fatalities and severe injuries, while increasing safe, healthy, equitable mobility for all. The purpose of the Maitland Vision Zero Action Plan is to identify projects, programs, and strategies that will achieve these outcomes for the City's roadways. Vision Zero is a multidisciplinary approach, bringing together diverse and

necessary stakeholders to address this complex problem. Cross-disciplinary collaboration is required to ensure all aspects of the problem are engaged in a meaningful and equitable manner. To that end, successful development and implementation of the Plan will rely upon robust involvement from the community, leadership, and a variety of local stakeholders.

The action plan's **public engagement plan** is organized around an incremental and layered approach. **In-person engagement** was supplemented by **virtual and digital campaigns** designed to bring awareness to the plan itself, as well as engagement related activities.

#### **Brand Development**

The Vision Zero brand helps to generate visibility and familiarity in an effort to achieve campaign participation community wide. The Maitland brand is easily recognizable, incorporating the character of the city into the larger vision zero goal: to reduce the number of fatalities and severe injuries on the transportation system to zero by 2050.

#### **Engagement Strategy**

Starting with the Project Team, engagement with the Maitland Vision Zero Action Plan initiated with the establishment of a VZ Working Group which paved the way for ongoing training and awareness campaigns following plan implementation.



650 Comments from citizens						
350 Citizens shared feedback						
84% Responses from Orange County		9% Seminole County	<b>7%</b> Osceola County			
30% Comments about transportation facilities within underserved communities	70% Other comments					

Source: Central Florida Regional Vision Zero Action Plan

# **Project Team**

The Project Team was responsible for facilitating the development of the Action Plan and initiating the ongoing implementation of the plan. The Project Team was comprised of City leadership and key staff along with the Consultant Team, creating a successful platform for coordinated efforts and cross-collaboration from a diverse range of perspectives.

# **Vision Zero Working Group**

The Maitland Working Group consisted of a core group of stakeholders tasked with guiding the implementation of the VZAP and acting as plan ambassadors to ensure the principles of Vision Zero are at the forefront of future transportation planning decisions. These stakeholders were appointed by city council to be the members of the City's Transportation Advisory Board (TAB) and Planning & Zoning Board (P&Z.). Local agency staff, elected officials, and additional members that represent different perspectives and interests within the City of Maitland. The outcome of successful engagement strategy encourages ongoing commitment from key elected official and local agency leaders.

The Vision Zero Working Group members are key champions who:

- Provide overall guidance on the VZAP's development
- Facilitate engagement with community members, advocacy groups, and other relevant stakeholders
- Collaborate with the project team to develop strategies and polices that align with Vision Zero goals
- Take ownership of Final VZAP to ensure ongoing commitment and coordination in the implementation of the action plan.



The Working Group convened in four interactive working sessions over the course of the plan development process, providing insight on the following topics:

# **Meeting 1**

Introductions and Overview of the Scope, Vision Zero, and Safe System Approach

# Meeting 2

Review of Crash Trends, Draft High Injury Network, and Public Engagement Activities

# **Meeting 3**

Review of Revised High Injury Network and Collision Profiles, and Updates on Public Engagement

# **Meeting 4**

Review of Draft Action Plan

# Pop-up Events

Three (3) community "pop-up events" were organized where participants were asked to provide feedback on maps and visual data that reflect

the results of the transportation safety analysis.

# **Virtual Events**

- Project Website
- Social Media Campaign, Newsletter & Event Flyers
- Community Survey (March/April)

# "Pop-Up" Events

- Maitland PD Fun Day January 27
- Farmers Market February 10
- First Friday- March 1



# **Virtual Events**

# Maitland Vision Zero Action Plan Website

As part of the Public Engagement Process, a website was created for the Vision Zero Action Plan. The website details project background, data analysis and links, and provides important project updates.

# Social Media Marketing Campaign

In coordination with the City of Maitland Communications Department, social media content was generated for spreading awareness of the public meetings on the county's various outlets. Future use of these assets may include ongoing educational and awareness campaigns and notification of public on important project updates and implementation measures.

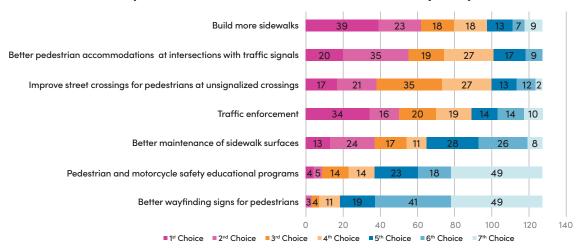


# Summary of Feedback Collected in Public Survey

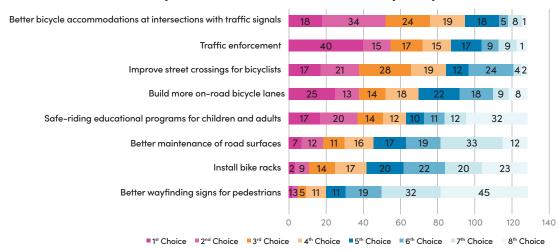
A community survey with eight questions was conducted to learn about resident's safety issues as non-car users. Most of the roadway users depend on cars for transportation in Maitland, but 73% of the respondents said that they walk in the City at least several times a week. A smaller percentage of respondents reported frequent use of bicycles (27.5%), motorcycles (1.6%), and golf carts (3.9%).

In general, respondents felt safer walking than biking in the city and said that driver behaviors were the most worrisome factor while walking and biking in the city. US 17-92 and Horatio Avenue were the most common roadways where users felt unsafe, mainly due to speeding and high traffic volumes. Other neighborhood roadways were also mentioned because of driver behavior for shortcut traffic or lack of pedestrian infrastructure. Moreover, several intersections on 17-92 and Maitland Avenue were seen as unsafe by respondents. When asked to identify solutions, residents wanted more sidewalks, improved crosswalks, and stronger traffic enforcement to protect pedestrians and bicyclists.

# Which pedestrian investments would you prioritize?



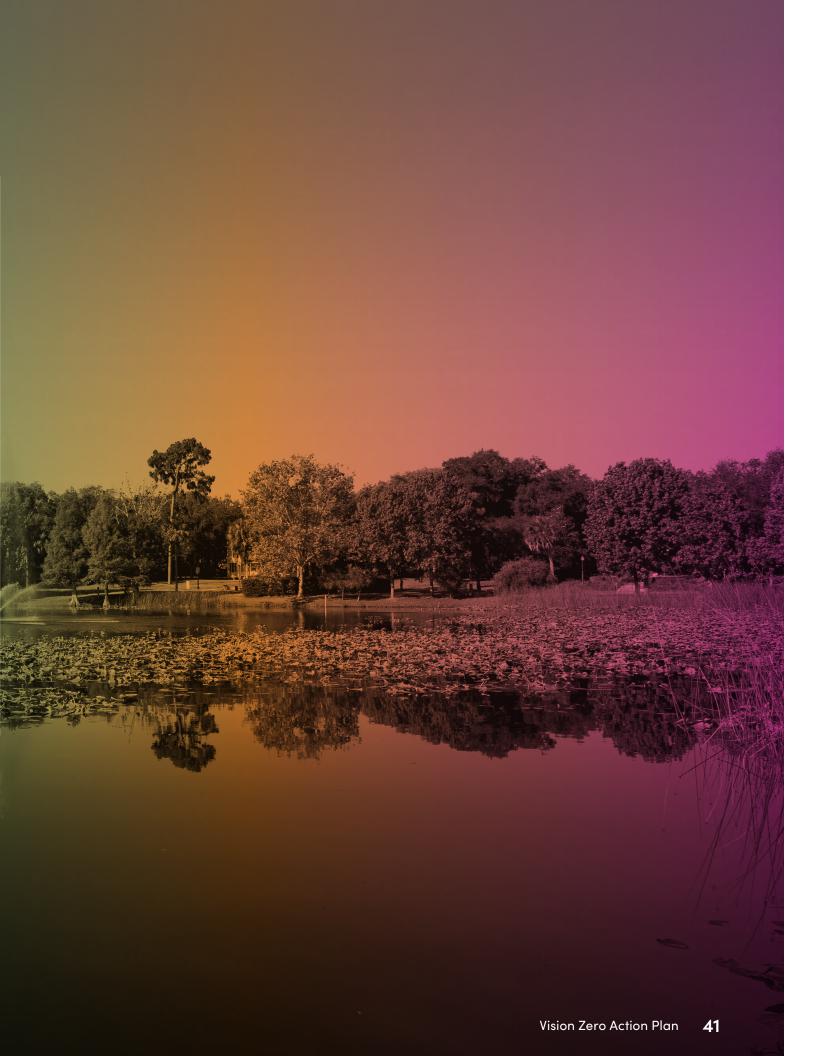
# Which bicycle investments would you prioritize?





# Policy Review & Benchmarking





#### CHAPTER 4: POLICY REVIEW & BENCHMARKING

There can be policy and procedural barriers to achieving Vision Zero, such as vehicle delay-based requirements that encourage streets to be designed and operated to accommodate high speed vehicle traffic. To facilitate a policy review for each jurisdiction in the region, a policy review guide was developed by MetroPlan Orlando and used in each jurisdiction to help inform action plan strategies. The policy review was conducted and helps inform the various strategies outlined in Chapter 6.

In coordination with City of Maitland staff, the following documents were reviewed due to their relevancy to the current and future transportation conditions and challenges:

- Land Development Code
- O Downtown Master Plan
- Bicycle-Pedestrian Master Plan
- Northeast Neighborhoods Speed and Cut-Through Traffic Analysis

# The review process is comprised of the following steps:

- 1. Identify and review relevant documents and procedures
- Review and refine review matrix as relevant to Vision Zero
- 3. Conduct initial review
- 4. Facilitate focused discussion with stakeholders with knowledge of planning, engagement, project delivery and other elements contained within the review matrix
- 5. Identify opportunities for policy enhancements and barriers to change
- 6. Incorporate findings into Action Plan

The City's existing policies and programs were reviewed in relation to the previously described Vision Zero Core Elements, with the benchmarks informed by the policy review. Each element is assigned one of the following benchmarks:

- Institutionalized Practice The city has already adopted policies or practices that address the element's intent.
- Occasional/Partially Institutionalized Practice The city has adopted policies or practices that address components of the element's intent. These are opportunities to strengthen or expand the practices.
- Not an Existing Practice The city has not adopted policies or practices that implement the intent of the element. These are opportunities to develop new policies or programs as an outcome of the VZAP.
- **Unknown** These are areas where the presence of implementing policies or programs is unclear. These are opportunities for further engagement with city staff.

# Land Development Code Review

In review of the Land Development Code, certain sections and appendices contain policies that ensure a coordinated multimodal transportation system, a balanced need for adequate parking and walkable urbanism practices, and addresses various aspects of street arrangement, intersections, easements, block design, additional right-of-way requirements, access provisions, and specifications for improvements.

# **Downtown Master Plan Review**

The Maitland Downtown Master Plan focuses on revitalizing the downtown area through comprehensive urban development. Key aspects include transportation improvements, pedestrian and cyclist infrastructure, Complete Streets framework, and revitalization of distinct districts within the downtown area. The plan emphasizes creating a vibrant, multi-use environment with a strong focus on enhancing the pedestrian experience, improving transportation networks, and fostering economic development.

# Bicycle-Pedestrian Master Plan Review

The Bicycle-Pedestrian Master Plan is a targeted initiative to expand and improve the city's bike lane and sidewalk network, aimed at promoting safer, more accessible, and interconnected active transportation options. The plan details a prioritized list of infrastructure enhancements, outlining specific bike lane and sidewalk projects slated for funding and construction. This document supports the city's commitment to fostering a pedestrian and cyclist-friendly environment through carefully planned development and revitalization of key transportation corridors, improving transportation networks, and fostering economic development.

# Northeast Neighborhood Speed and Cut-Through Traffic Analysis

The Northeast Neighborhoods Speed and Cut-Through Traffic Analysis addresses concerns expressed by residents about excessive speeding and cut-through traffic in their neighborhood. The document uses data from various sources including City of Maitland Traffic Count Program, previous studies, and a mobility analytics provider, StreetLight Data, to assess these concerns. The study area, primarily residential, is defined as east of Orlando Avenue, north of Horatio Avenue, west of Temple Trail, and south of the Seminole County line.

#### CHAPTER 4: POLICY REVIEW & BENCHMARKING

# Land Development Code Review



#### **Included Countermeasures:**

- Establishment of vehicular and pedestrian cross-access between developments
- Implementation of connectivity indices and street layout standards
- Provisions for bicycle parking to encourage cycling as a safe transportation mode.
- Guidelines for street jogs, cul-de-sacs, street grades, and sight distances to mitigate risks.



# **Leadership and Commitment:**

The LDC requires developers to provide necessary transportation infrastructure, reflecting a commitment to safety at the development level.



**Safe Roadways and Safe Speeds:** The section contributes to safer roadways by managing off-street parking and promoting bicycle use, potentially influencing safe vehicular speeds.



**Data-Driven Approach:** The use of standard measurements and requirements indicates a data-informed approach to road safety.



**Safe Speeds:** By integrating various transportation modes and promoting connectivity, the LDC indirectly supports safe speed management. Greater emphasis on specific speed management countermeasures could be included.



**Safe Road Users:** The section's focus on efficient parking and loading area design considers the safety of all road users, including pedestrians and cyclists.



**Safe Roads:** Directly addressed through specific design standards for offstreet parking and loading facilities.

Potential policy changes for this document include explicitly integrating safe speed management strategies, incorporating policies that promote small block length, and requiring enhanced pedestrian crossings. Additional policy changes include variable parking standards, parking maximums, shared parking, lane width reduction.

# Downtown Master Plan Review



#### **Included Countermeasures:**

- Embraces the Complete Streets framework, which aims to design roads that are safe and accessible for all users, including pedestrians, cyclists, and motorists.
- Focuses on urban street design with features like short blocks and reduced speed limits to facilitate safe, multimodal transportation.
- The plan emphasizes pedestrian safety in the Downtown Core, proposing infrastructure improvements like wider sidewalks and safe crosswalks.
- Proposes an extensive network to enhance connectivity for cyclists and pedestrians, linking key destinations within and beyond the downtown area.



# **Leadership and Commitment:**

Demonstrates commitment to creating safe and accessible streets, although specific commitments from local leaders are not detailed.



**Authentic Engagement:** The plan was developed with extensive community engagement which included a public kick-off meeting, stakeholder interviews, and a three-day charrette.



**Safe Road Users:** Encourages varied modes of transportation and prioritizes pedestrian safety.



**Safe Speeds:** Advocates for lower speeds in downtown areas to enhance safety.



Safe Roads: Implementation of Complete Streets and road diets.

Potential policy changes to the Downtown Master Plan include incorporating detailed safety data and analysis, including metrics to track the progress of the policy recommendations, and continually assess the success of the traffic calming and pedestrian measures applied in the Downtown Plan to the entire city to create a more integrated multimodal network.

# Bicycle-Pedestrian Master Plan Review



#### Included Countermeasures:

- Proposals to close gaps in sidewalk networks, especially in critical areas like Downtown and near schools.
- Development of bike lanes, multi-use trails, and designated bike routes to improve network connectivity.
- Proposals for enhancing pedestrian and cyclist safety at intersections.
- Development of trails that accommodate various user types, enhancing safety and accessibility.



**Equity and Engagement:** Focus on serving all ages and abilities and improving connectivity in family-oriented neighborhoods.



# Safe Roadways and Safe Speeds:

Emphasis on creating safe travel routes for pedestrians and cyclists, including speed management in neighborhoods.



**Data-Driven Approach:** Utilization of inventory and assessments to inform the development of the network.



# **Transparency and Accountability:**

The comprehensive plan and its public availability demonstrate a commitment to these principles.



**Safe Road Users:** Addressing the needs of bicyclists and pedestrians of all ages and abilities.



**Safe Speeds:** Inferred through the design of bike lanes and trails in low-speed, low-traffic areas.



**Safe Roads:** Directly addressed through the design and proposal of safe pedestrian and bicycle networks.

Potential policy changes include implementation of additional safety measures at critical pedestrian crossings and high-traffic areas, development of periodic reviews of the bike and pedestrian network to identify and address new safety concerns and broadening of the scope of existing policies to include more comprehensive speed management strategies in residential and school areas.

# Northeast Neighborhood Speed and Cut-Through Traffic Analysis



**Leadership and Commitment:** The study reflects commitment by local leadership to address community concerns, aligning with the Vision Zero principle of leadership responsibility.



**Equity and Engagement:** The study's initiation in response to resident concerns shows an element of community engagement.



**Safe Speeds:** The analysis concludes that it should be expected that some road users exceed posted speed limits, and that reduction of posted speed limits are unlikely to impact this without traffic calming measures.

Potential policy changes discussed include implementing a regular community engagement initiative to gauge ongoing resident concerns and exploring the feasibility of traffic calming measures in specific areas where higher speeds are recorded.

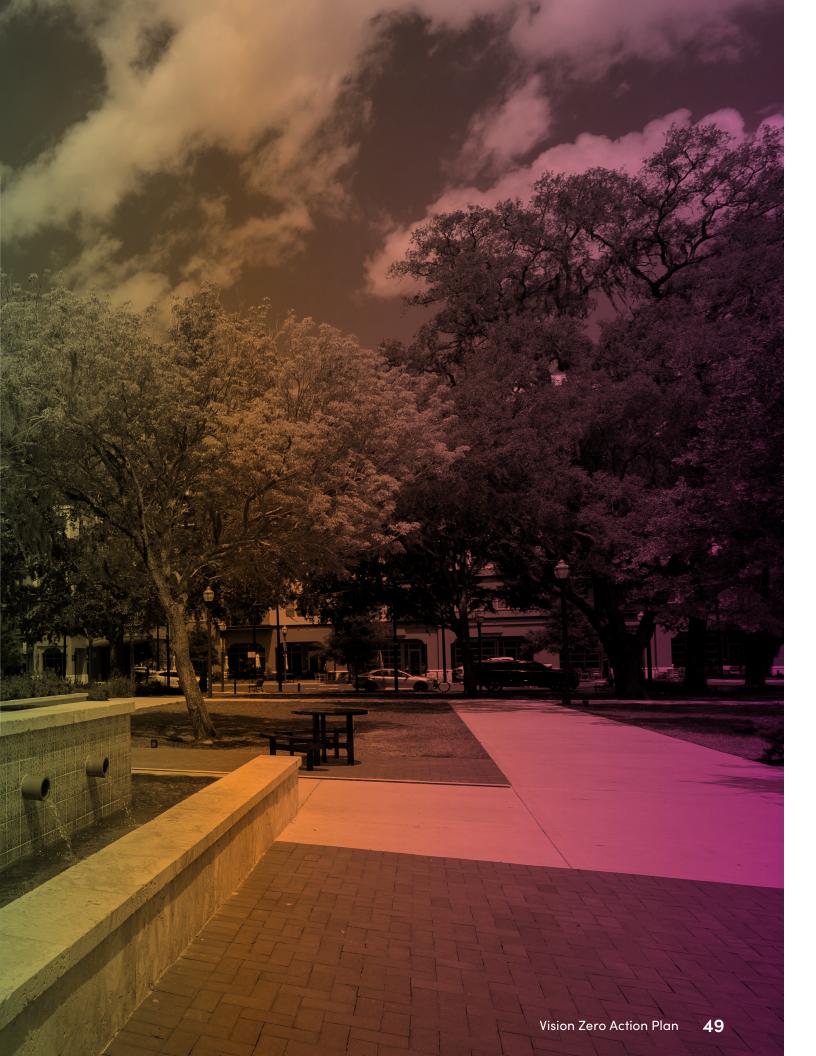




CHAPTER: 5

# Toolkit and Prioritization





# The **Non-Engineering** and **Engineering Countermeasure Toolkits** were developed to help inform various safety solutions around the region.

## **NON-ENGINEERING COUNTERMEASURES**

aim to influence users by changing the social environment to encourage or enforce the desired behavior. Strategies can be employed at scale to influence large segments of the community via marketing campaigns, high-visibility enforcement and publicized educational materials.

The toolkit presents non-engineering countermeasures organized into the five categories of the Safe System Approach, which include Safe Road Users, Safe Speeds, Safe Roads, Post Crash Care, and Safe Vehicles.

The non-engineering countermeasures included in the toolkit are not intended to be an exhaustive list of strategies but serve as a framework for identification of non-engineering countermeasures as a part of Action Plan development. As agencies implement non-engineering countermeasures, they should consider how they will reach the most vulnerable populations. The toolkit provides references to source documents and users of the guide are encouraged to review applicable source documents related to their specific safety issues and goals.

# Non-engineering countermeasure toolkit organization



# Safer people

- Public information, social marketing, and educational campaigns
- Enforcement



# Safer speeds

- Speed limit setting
- High-visibility enforcement
- Automated enforcement



# Safer vehicles

- Emergency technology
- Vehicle maintenance



# Safer roads

- Improved data sharing
- Pilot and demonstration projects
- Road maintenance and maintenance of traffic
- · Policies and standards
- Grant opportunities



# Post-crash care

- Emergency medical services
- Trauma care
- Fatal crash response team
- Traffic incident management
- Post-crash strategies

#### **ENGINEERING COUNTERMEASURES**

The purpose of the 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 strategy. The key objectives of the Toolkit are to:

- Inform partner jurisdictions about safety treatment options and their appropriate uses and contexts,
- 2. Communicate safety tools using easy-tounderstand 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. The Engineering Countermeasure Toolkit is not intended to be a menu from which community members can request safety tools for their street. Before a specific countermeasure is selected, analysis must be conducted to understand the existing safety issue and feasibility.

# Signing and Striping

Pedestrian safety countermeasures are crucial in creating safe roadways for all users. The implementation of engineering solutions such as crosswalk enhancements (high-visibility crosswalk markings), signal improvements (pedestrian countdown timers, lead pedestrian intervals) together will help to save lives. The introduction of suitable signage and striping to enhance visibility and integration of advanced technology can also support ongoing pedestrian and bicycle safety. Alongside these, education programs and enforcement of traffic laws contribute to cultivating safer behaviors. These countermeasures, when executed in a comprehensive and context-sensitive manner, can significantly improve vulnerable roadway user safety on City of Maitland's streets.

# MAITLAND SIGNING AND STRIPING SAFETY SPOTLIGHT: MAITLAND AVENUE COMPLETE STREETS PROJECT

The Maitland Avenue Complete Streets Project intends to connect downtown Maitland to local neighborhoods for all modes of transportation in a safe manner, all while serving a growing, vibrant street-front pedestrian environment in the heart of the community. The project considers the narrowing and reallocation of lanes (road diet), as well as adding other safety improvements such as street trees, lighting, protected bike lanes, and lower speed limits.



#### **CHAPTER 5: TOOLKIT AND PRIORITIZATION**



# **Speed Management**

Addressing speed is fundamental to the Safe System Approach to making streets safer, and a growing body of research shows that speed limit changes alone can lead to measurable declines in speeds and crashes. The first step to identifying appropriate speeds involves identifying potential conflicts on the road, which may include sharp bends, hightraffic zones, location of community assets such as schools, or areas with a large number of vulnerable roadway users. Once these potential safety concerns have been identified, comprehensive analyses need to be carried out to identify appropriate design speed and target speed.

Determined safe speeds can be implemented through continuous observation of roads, conditions, and speeds, and making necessary adjustments, thus ensuring careful and considerate driving. Continuous monitoring and enforcement may be undertaken, making sure that the selected speed is suitable for the circumstances. Regular reviewing of the effectiveness of the speed choice is essential, as it will assist in identifying necessary amendments to be made.

# Other Engineering Strategies

Other engineering strategies represent cross-cutting transportation safety countermeasures that apply a broad approach to enhance safety across multiple modes of transport, addressing the needs of motorists, cyclists, and pedestrians alike. These countermeasures, implemented in an integrated manner, can contribute significantly to making transportation systems safer and more efficient such as lighting and access management.

Design speed and target speed are two critical terms that come into play when considering traffic safety and road design. Both design speed and target speed play a key role in promoting safe, efficient, and user-friendly transportation systems for all roadway users.

Design speed is essentially the maximum safe speed that can be maintained on a particular section of the roadway when conditions are most favorable. It is the speed used by engineers during the geometric design of a roadway. This encompasses the determination of features such as horizontal and vertical alignment, lane width, and separation distances.

On the other hand, target speed, also known as 'operating speed', refers to the speed at which drivers feel comfortable driving on a certain road segment under normal conditions. It is not necessarily the legal speed limit, but rather, is based on factors such as the route's physical characteristics, surrounding environment, and the vehicle's capabilities.

While design speed ensures the road is constructed to cater to a certain speed, the target speed is essential to understand driver behavior and safety. Therefore, the setting of appropriate target speeds must consider the road environment, roadside development, vulnerable road users, and the function of the road to help traffic move smoothly and safely.

In an ideal scenario, the design speed and target speed should be closely aligned to ensure that the road infrastructure can safely cope with the speeds at which drivers choose to travel. However, if there's a significant disparity between the two, it may lead to increased risks of crashes, necessitating modifications to the road design or adjustments to speed limits and other traffic management measures to enhance safety.

#### **Pedestrian Facilities**

Pedestrian safety countermeasures are crucial in creating safe roadways for all users. The implementation of engineering solutions such as crosswalk enhancements (high-visibility crosswalk markings, raised crosswalks, pedestrian refuge islands), signal improvements (pedestrian countdown timers, lead pedestrian intervals) together will help to save lives. The introduction of suitable signage and lighting to enhance visibility and integration of advanced technology can also support ongoing pedestrian safety. Alongside these, education programs and enforcement of traffic laws contribute to cultivating safer behaviors among drivers and pedestrians alike. These countermeasures, when executed in a comprehensive and context-sensitive manner, can

# MAITLAND BIKEWAY SAFETY SPOTLIGHT: LAKE LUCIAN BOARDWALK

significantly improve pedestrian safety on the city's streets.

The proposed Lake Lucian Boardwalk would create a continuous loop around Lake Lucien, connecting surrounding office uses with Lake Destiny Soccer Field, Lake Harvest Natural Resources Areas, the I-4 MUT bridge, and the recommended Maitland Center Loop Multiuse Trail. This project intends to improve east to west & interdistrict connectivity all while providing opportunities for passive recreation removed from automobile traffic.



# **Bikeways**

safer for all road users.

Ensuring bicycle safety is an essential part of building safer roads. Deploying countermeasures such as the creation of dedicated bike lanes, bike boxes, and bicycle-specific traffic signals can help cater to the need of cyclists on the road and better protect them from harm. Intersection improvements, enhanced signage, and protected paths particularly along popular biking routes are important to ensure good visibility for both cyclists and motorists. Innovative technology and regular road maintenance together can also help to ensure direct, smooth and obstacle-free bike travel to substantially foster safer bike travel. By incorporating these bicycle safety improvements in a comprehensive transportation safety framework, the city can become more bike-friendly and

#### **CHAPTER 5: TOOLKIT AND PRIORITIZATION**

# **Intersection and Roadways**

Intersection enhancements are a crucial aspect of enhancing road safety since intersections frequently serve as points of conflict among pedestrians, cyclists, and motorized vehicles. Measures such as enhancing lighting, using larger or reflective signage, creating high visibility crosswalks, and removing sight obstructions at intersections can significantly minimize collisions. The geometric design of the intersection, too, plays a pivotal role in road safety. Configurations such as roundabouts, traffic islands, raised intersections, and adequate turning lanes streamline traffic flow and minimize points of conflict.

Roadway countermeasures can be designed specifically to prevent roadway departures, where a vehicle unintentionally strays away from its designated lane. Roadway departures account for over half of all traffic fatalities in the United States. If drivers cannot clearly identify the edge of the travel lanes and see the road alignment ahead, the risk of roadway departure may be greater. Tools such as roadside barriers, which include guardrails and median barriers, play an essential role in preventing vehicles from colliding with fixed objects or veering off steep slopes. Furthermore, the utilization of rumble strips or wider edge lines offer effective methods to alert possibly distracted or fatigued drivers when their vehicle begins to divert out of its lane and space to react accordingly.

# MAITLAND INTERSECTION SAFETY SPOTLIGHT: CROSSING IMPROVEMENTS FOR ORLANDO AVENUE

The city has identified the need for pedestrian crossing improvements for Orlando Avenue (US 17-92), given rising safety concerns and perceived barriers and lack of general comfort in crossing Orlando Avenue. The city proposes continued coordination with FDOT to provide additional crosswalks between intersections on long blocks, speed reductions, added refuge islands, and operational signal changes such as leading or lagging pedestrian phases.



# **Signals**

Improvements in signalization are a significant factor in ensuring safer roadways. Enhancing elements of traffic control can considerably impact driver behavior, reducing confusion, uncertainty, and errors that may lead to accidents. Safe roadways rely heavily on clear, visible signage and signalization. Updated signs providing drivers with information about road conditions, speeds, and directions are crucial in helping them make informed decisions. Implementing dynamic signs that change based on real-time conditions, such as digital warning signs can further enhance safety.



# A focus on technology

Technology plays an important role in improving transportation safety, preventing crashes from happening, contributing to faster emergency response times, and providing more detailed analytics about why crashes are happening. This all helps identify and apply the most appropriate crash countermeasures. Some examples of safety technology in the region include:

- Wrong-way detection
- Emergency vehicle preemption
- Near-miss analysis
- Red light camera
- Automated speed enforcement
- Automated school bus enforcement
- IP targeted safety messaging
- Ignition interlock devices
- Traffic incident management programs

The MetroPlan Orlando
Transportation Systems
Management & Operations
(TSM&O) Master Plan
identifies specific technologies
that are being planned for
in the region, with this plan
periodically updated to
evaluate and incorporate
new technologies.

As more autonomous and connected vehicles join the region's vehicle fleet, there are opportunities for **ADDITIONAL SAFETY TECHNOLOGIES** to be implemented:



# **PedSafe**

This pedestrian and bicycle crash avoidance system is designed to operate via connected vehicle technologies. Drivers will be alerted when a pedestrian or cyclist is in the area. Also, traffic signals will be designed to become aware of pedestrians crossing the road or intersection.



# Speed harmonization

Mobile traffic sensors send real-time conditions at a congested location to a traffic management center. A computer uses this information to calculate optimal speeds for vehicles approaching congestion and sends the speeds to connected vehicles. The drivers receive the recommended speeds and can adjust accordingly, or, in an automated vehicle, the vehicle could adjust to the recommended speed automatically.



# Crash prediction and response deployment

Mobile traffic sensors send real-time conditions to a traffic management center where conditions are evaluated to determine if a crash is likely based on past crash patterns in the region. Law enforcement or emergency response can be deployed before a crash occurs, which can prevent a crash from happening, or place a first responder in closer proximity to improve response times.



CHAPTER: 6

# Plan Recommendations





## **CHAPTER 5: TOOLKIT AND PRIORITIZATION**

# Project Prioritization: HIN Corridor Profiles and Proposed Countermeasures

Road safety interventions are more effective when they are strategically planned to optimize the use of resources. Corridor prioritization is essential as it helps to achieve the highest possible crash reduction, which in turn saves more lives, reduces more injuries, and lowers economic losses due to crashes. The prioritization of specific corridors for safety projects helps ensure that countermeasures are both meaningful and costeffective. Moreover, a focus on corridors with high crash rates along with considerations for vulnerable populations can significantly improve community well-being and ensure that the benefits of improved safety are fairly distributed.

The following roadway profile pages provide a comprehensive summary of the characteristics, crash data, rankings, and prioritized countermeasures identified in this Vision Zero Action Plan. The pages highlight specific elements of each corridor, such as length, location, design, traffic volume, and other physical characteristics. An overview of crash type data and crash profile data offers vital insight into the frequency, type and severity of accidents that have occurred on these corridors, along with determining high-risk zones. For the purpose of characterizing crash trends along these corridors and identifying appropriate safety countermeasures, the crash data reflected on the HIN profile sheets includes crashes located within a short proximity of the HIN segment where other roads intersect. Recorded crash data specific to the HIN corridor is provided as a sub-set to the more comprehensive crash profile analysis. The profile pages are organized to reflect the rankings, a measure of corridor safety that takes into account various elements identified in the corridor prioritization framework. Lastly, a prioritized list of countermeasures has been identified for future improvement of safety along each corridor.

The crash data visualized on these cut sheets, combined with the available roadway information, helps to visualize what specific interventions will be most valuable as well as where they should be located.

Roadway Profile and HIN Ranking

# HIGH CRASH CORRIDOR FACT SHEET - MAITLAND LAKE AVENUE

from Grove Street to Orlando Avenue (U.S. 17/92) CORRIDOR RANK 3

# CRASH STATISTICS (2018-2022)



34 OTAL CRASHE









# **CRASHES BY YEAR**



## **TOP7 CRASH TYPES**

	KSI	NON-KSI	TOTAL
1. REAR END	0	18	18
2. SIDESWIPE	0	4	4
3. OTHER	0	4	4
4. OFF ROAD	1	2	3
5. LEFT TURN	0	2	2
6. BICYCLE	0	1	1
7. HEAD ON	0	1	1

Non-KSI — TOTAL — LIGHTING

**CRASH** 

TIME OF

BEHAVIC



Crash
Statistics and
Contribution
Factors







# 17 92 Lake Ave Orlando Ave

FUNCTIONAL CLASSIFICATION

CONTEXT CLASSIFICATION

**URBAN MAJOR COLLECTOR** 



Traffic Signal

KSI Crashes by Mode

Bicycle

Motorcycle



**LEGEND** 

Pedestrian

Motor Vehicle

# **CONTRIBUTION FACTORS**



CONDITION

łT

HTED

Non-KSI — 2

**D DRIVING** 

I — 0 KSI — 0 AL — 0

TOTAL - 3

**RAL FACTORS** 







**NON-LIGHTED** 

**DISTRACTED DRIVING** 

KSI - 0 Non-KSI — 4 TOTAL — 4

Non-KSI — 0

TOTAL - 0

# SUBURBAN COMMERCIAL (C3C)

CORRIDOR LENGTH

JURISDICTION

**MAITLAND** 

#### **0.54 MILES**

AVERAGE POSTED SPEED

#### **35 MPH**

AVERAGE PREVAILING SPEED

#### **39 MPH**

% OF CORRIDOR IN TRANSPORTATION DISADVANTAGED AREA

HIGH INJURY NETWORK (HIN) FACTS

TRANSIT ROUTES /ANNUAL BOARDINGS & ALIGHTINGS (2022)

#### LINK 1, LINK 9 / 8,139

TRAVEL LANES / MEDIAN TYPE **2 LANES / UNDIVIDED** 

#### **POTENTIAL SAFETY COUNTERMEASURES**



#### **SIGNALS**

- Install leading pedestrian intervals (\$)
  Install retroreflective back plates (\$)
- Prohibit turns when ped signal is activated (\$)



#### **INTERSECTION AND ROADWAYS**

- Consider intersection reconstruction and tightening at Orlando Avenue (\$\$\$)
- Install dedicated medians (\$\$\$)



# PEDESTRIAN/BICYCLE FACILITIES

- Install high visibility midblock crosswalks with rectangular rapid flashing beacons at attractors/generators near transit stops (\$\$\$)
  Colocate bus stops with crosswalks (\$)
- Install green bicycle lanes at intersections with bike



# **OTHER ENGINEERING STRATEGIES**

- » Conduct Road Safety Audit to identify safety countermeasures (\$)
- » Lighting upgrades at segments and intersections (\$)

Note: Not for construction purposes. All projects will require more detailed planning, engineering and community engagement.

Roadway **Characteristics** 

**Proposed** Countermeasures



# ORLANDO AVENUE

from Monroe Avenue to Seminole County Line CORRIDOR RANK1



# **CRASH STATISTICS (2018-2022)**



TOTAL CRASHES























6

# **CRASHES BY YEAR**



KSI = Killed and Seriously Injured

Source: Signal 4 Analytics

# CRASH CONTRIBUTION FACTORS

# TIME OF DAY



DAYLIGHT KSI – 4

KSI — 4 Non-KSI — 590 TOTAL — 594



DUSK-DAWN

KSI — 1 Non-KSI — 30 TOTAL — 31



NIGHT KSI – 5

KSI — 5 Non-KSI — 98 TOTAL — 103

# **TOP7 CRASH TYPES**

	KSI	NON-KSI	TOTAL
1. REAR END	2	347	349
2. SIDESWIPE	1	137	138
3. LEFT TURN	3	87	90
4. OTHER	1	40	41
5. OFF ROAD	0	31	31
6. ANGLE	0	30	30
7. UNKNOWN	0	20	20

# LIGHTING CONDITION

# KSI – 4 Non-KSI – 88 TOTAL – 92



# **BEHAVIORAL FACTORS**



# **IMPAIRED DRIVING**

KSI — 1 Non-KSI — 14 TOTAL — 15



# DISTRACTED DRIVING

KSI — 0 Non-KSI — 118 TOTAL — 118

# HIGH INJURY NETWORK (HIN) FACTS

**JURISDICTION** 

# **MAITLAND**

**FUNCTIONAL CLASSIFICATION** 

# **URBAN PRINCIPAL ARTERIAL**

**CONTEXT CLASSIFICATION** 

# SUBURBAN COMMERCIAL (C3C)

**CORRIDOR LENGTH** 

# **2.02 MILES**

**AVERAGE POSTED SPEED** 

## **40 MPH**

AVERAGE PREVAILING SPEED

# **50 MPH**

% OF CORRIDOR IN TRANSPORTATION DISADVANTAGED AREA 0%

TRANSIT ROUTES /ANNUAL BOARDINGS & ALIGHTINGS (2022)

# LINK 102/48,492

TRAVEL LANES / MEDIAN TYPE

# **6 LANES / VEGETATION**

# POTENTIAL SAFETY COUNTERMEASURES



# **INTERSECTION AND ROADWAYS**

- » Consolidate driveways (\$)
- » Curb radii / turning radii reduction



# PEDESTRIAN/BICYCLE FACILITIES

- » Crosswalk reconfiguration or high-emphasis crosswalks at intersections (\$\$\$)
- » Crosswalks at all signalized intersections, side streets, and major driveways (\$)
- » Midblock crossings with visibility enhancements and pedestrian refuge islands with key community assets (\$)
- » Audible push button pedestrian crossing signals (\$)
- » Midblock crosswalks at bus stop locations or relocation of bus stops to far side of signalized intersections (\$)



#### SPEED MANAGEMENT

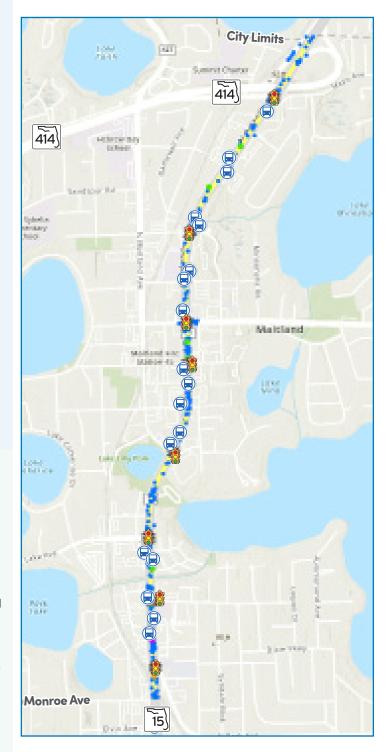
- » Posted speed limit reduction (\$)
- » Speed sensitive traffic signals (\$)



# SIGNING AND STRIPING

» Pavement marking upgrades (\$)

Note: Not for construction purposes. All projects will require more detailed planning, engineering and community engagement.



# **LEGEND**

HIN Corridor

Motorcycle

**J** Bu

**Bus Stop** 

Motor Vehicle



Traffic Signal

KSI Crashes by Mode

Pedestrian

Bicycle



# S.R. 414 / MAITLAND BOULEVARD



from Interstate 4 to S.R.15/S.R. 600 CORRIDOR RANK 2

# **CRASH STATISTICS (2018-2022)**







**551** 













# **CRASHES BYYEAR**



KSI

2

0

0

0

KSI = Killed and Seriously Injured

1. REAR END

2. SIDESWIPE

3. OFF ROAD

**5. LEFT TURN** 

6. UNKNOWN

7. RIGHT TURN

4. OTHER

**TOP7 CRASH TYPES** 

Source: Signal 4 Analytics

**NON-KSI** 

334

117

32

23

13

12

**TOTAL** 

338

117

24

14

12

9

# **CRASH CONTRIBUTION FACTORS**

# TIME OF DAY



DAYLIGHT KSI — 2

Non-KSI — 427 TOTAL — 429



DUSK-DAWN KSI - 1

KSI — 1 Non-KSI — 22 TOTAL — 23



NIGHT KSI — 3 Non-KSI — 103

**TOTAL — 106** 

# LIGHTING CONDITION

# LIGHTED KSI – 3

Non-KSI — 87 TOTAL — 90

# NON-LIGHTED KSI – 0



# **BEHAVIORAL FACTORS**



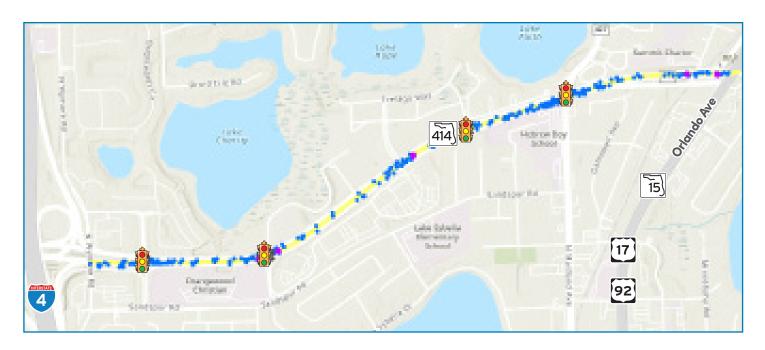
# IMPAIRED DRIVING

KSI — 1 Non-KSI — 12 TOTAL — 13



# DISTRACTED DRIVING

KSI — 4 Non-KSI — 93 TOTAL — 97



# **↑**

# **LEGEND**

HIN Corridor

**Bus Stop** 



Traffic Signal

KSI Crashes by Mode

- Pedestrian
- Bicycle

- Motorcycle
- Motor Vehicle

# **HIGH INJURY NETWORK (HIN) FACTS**

**JURISDICTION** 

# **MAITLAND**

**FUNCTIONAL CLASSIFICATION** 

# **URBAN PRINCIPAL ARTERIAL**

**CONTEXT CLASSIFICATION** 

# SUBURBAN COMMERCIAL (C3C)

**CORRIDOR LENGTH** 

# **1.72 MILES**

**AVERAGE POSTED SPEED** 

# **45 MPH**

**AVERAGE PREVAILING SPEED** 

# **63 MPH**

% OF CORRIDOR IN TRANSPORTATION DISADVANTAGED AREA  $\mathbf{0}\%$ 

TRANSIT ROUTES /ANNUAL BOARDINGS & ALIGHTINGS (2022)

# **NONE**

TRAVEL LANES / MEDIAN TYPE

# **6 LANES / VEGETATION**

Note: Not for construction purposes. All projects will require more detailed planning, engineering and community engagement.

# POTENTIAL SAFETY COUNTERMEASURES



# **INTERSECTION AND ROADWAYS**

- » Curb radii / turning radii reduction
- » Warrants for a signal with crosswalks (\$\$\$)



## PEDESTRIAN/BICYCLE FACILITIES

- » Crosswalks at all signalized intersections, side streets, and major driveways (\$)
- » Audible push button pedestrian crossing signals (\$)
- » Shared use path (\$)



#### **SPEED MANAGEMENT**

- » Posted speed limit reduction
- » Lane narrowing or lane reduction
- » Speed sensitive traffic signals (\$)
- » Speed safety cameras (\$)



#### **BIKEWAYS**

» Lighting upgrades



#### **OTHER ENGINEERING STRATEGIES**

» Road Safety Audit

# HIGH CRASH CORRIDOR FACT SHEET - MAITLAND

from Grove Street to Orlando Avenue (U.S. 17/92) **CORRIDOR RANK 3** 



# **CRASH STATISTICS (2018-2022)**















# **CRASHES BY YEAR**



KSI = Killed and Seriously Injured

Source: Signal 4 Analytics

# **TOP7 CRASH TYPES**

	KSI	NON-KSI	TOTAL
1. REAR END	0	18	18
2. SIDESWIPE	0	4	4
3. OTHER	0	4	4
4. OFF ROAD	1	2	3
5. LEFT TURN	0	2	2
6. BICYCLE	0	1	1
7. HEAD ON	0	1	1

# **CRASH CONTRIBUTION FACTORS**

# TIME OF DAY



**DAYLIGHT** KSI - 0

Non-KSI - 29 **TOTAL** — 29



**DUSK-DAWN** KSI - 0

Non-KSI — 2 TOTAL - 2



KSI-1Non-KSI — 2 TOTAL - 3

# LIGHTING CONDITION

# **LIGHTED** KSI-1Non-KSI — 2 TOTAL — 3



# **BEHAVIORAL FACTORS**



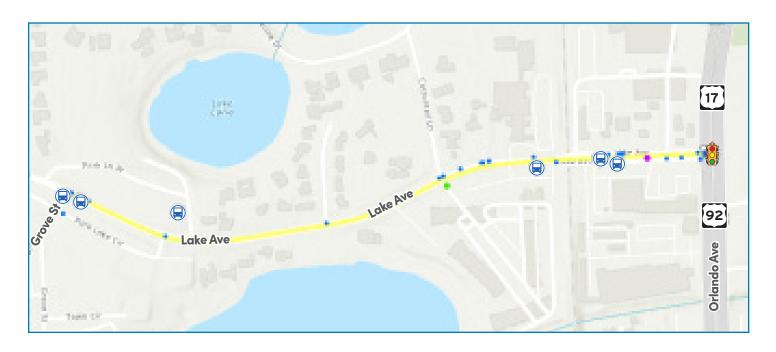
# **IMPAIRED DRIVING**

KSI - 0Non-KSI - 0 TOTAL - 0



# **DISTRACTED DRIVING**

KSI - 0Non-KSI — 4 TOTAL-4





# **LEGEND**

HIN Corridor

🗐 Bu

**Bus Stop** 



Traffic Signal

KSI Crashes by Mode

- Pedestrian
- Bicycle

Motorcycle

Motor Vehicle

# HIGH INJURY NETWORK (HIN) FACTS

**JURISDICTION** 

# **MAITLAND**

**FUNCTIONAL CLASSIFICATION** 

# **URBAN MAJOR COLLECTOR**

CONTEXT CLASSIFICATION

# **SUBURBAN COMMERCIAL (C3C)**

CORRIDOR LENGTH

# **0.54 MILES**

**AVERAGE POSTED SPEED** 

#### **35 MPH**

**AVERAGE PREVAILING SPEED** 

# **39 MPH**

% OF CORRIDOR IN TRANSPORTATION DISADVANTAGED AREA  $\mathbf{0}\%$ 

TRANSIT ROUTES /ANNUAL BOARDINGS & ALIGHTINGS (2022) **LINK 1, LINK 9 / 8,139** 

TRAVEL LANES / MEDIAN TYPE

2 LANES / UNDIVIDED

# POTENTIAL SAFETY COUNTERMEASURES



# **INTERSECTION AND ROADWAYS**

- » Median installation (\$\$\$)
- » Backplates with retroflective borders
- » Intersection reconstruction (\$\$\$)



# PEDESTRIAN/BICYCLE FACILITIES

- Midblock crossings with visibility enhancements and pedestrian refuge islands with key community assets (\$\$\$)
- » Midblock crosswalks at bus stop locations or relocation of bus stops to far side of signalized intersections (\$)
- » Prohibit turn when pedestrian signal is activated signage
- » Leading pedestrian intervals



#### **BIKEWAYS**

- » Green bicycle lanes at intersections with bike boxes (\$)
- » Lighting upgrades



# **OTHER ENGINEERING STRATEGIES**

» Road Safety Audit (\$)

Note: Not for construction purposes. All projects will require more detailed planning, engineering and community engagement.

#### HIGH CRASH CORRIDOR FACT SHEET - MAITLAND

# **NORTH KELLER ROAD**

from Maitland Boulevard (S.R. 414) to Maitland Summit Boulevard CORRIDOR RANK 4



# **CRASH STATISTICS (2018-2022)**



TOTAL CRASHES





39

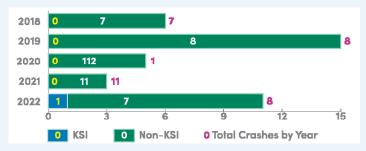
1







# **CRASHES BY YEAR**



KSI = Killed and Seriously Injured

Source: Signal 4 Analytics

# **CRASH CONTRIBUTION FACTORS**

# TIME OF DAY



DAYLIGHT KSI — 1 Non-KSI — 31 TOTAL — 32



DUSK-DAWN

KSI - 0

Non-KSI - 0

TOTAL - 0



NIGHT KSI — 0 Non-KSI — 8 TOTAL — 8

# **TOP6 CRASH TYPES**

	KSI	NON-KSI	TOTAL
1. REAR END	0	15	15
2. LEFT TURN	1	11	12
3. ANGLE	0	7	7
4. SIDESWIPE	0	3	3
5. OTHER	0	2	2
6. OFF ROAD	0	1	1

# LIGHTING CONDITION

# KSI – 0 Non-KSI – 7 TOTAL – 7



# **BEHAVIORAL FACTORS**



KSI — 0 Non-KSI — 0 TOTAL — 0



KSI — 0 Non-KSI — 4 TOTAL — 4

# HIGH INJURY NETWORK (HIN) FACTS

**JURISDICTION** 

# **MAITLAND**

**FUNCTIONAL CLASSIFICATION** 

# **URBAN MAJOR COLLECTOR**

**CONTEXT CLASSIFICATION** 

# **SUBURBAN COMMERCIAL (C3C)**

**CORRIDOR LENGTH** 

# **0.31 MILES**

**AVERAGE POSTED SPEED** 

# **40 MPH**

**AVERAGE PREVAILING SPEED** 

# **43 MPH**

% OF CORRIDOR IN TRANSPORTATION DISADVANTAGED AREA 0%

TRANSIT ROUTES /ANNUAL BOARDINGS & ALIGHTINGS (2022)

# LINK 1/813

TRAVEL LANES / MEDIAN TYPE

# 2-4 LANES / RAISED TRAFFIC SEPARATOR

# POTENTIAL SAFETY COUNTERMEASURES



# **INTERSECTION AND ROADWAYS**

- » Backplates with retroflective borders (\$)
- » Intersection reconstruction (\$\$\$)
- » East/west crossing evaluation at Maitland Blvd (\$)
- » Median nose extention into crosswalk at non-signalized and signalized locations (\$)



#### PEDESTRIAN/BICYCLE FACILITIES

- Crosswalks at all signalized intersections, side streets, and major driveways (\$)
- » Audible push button pedestrian crossing signals (\$)
- Prohibit turn when pedestrian signal is activated signage
   (\$)
- » Leading pedestrian intervals (\$)



# **SPEED MANAGEMENT**

- » Posted speed limit reduction (\$)
- » Speed sensitive traffic signals (\$)



#### **BIKEWAYS**

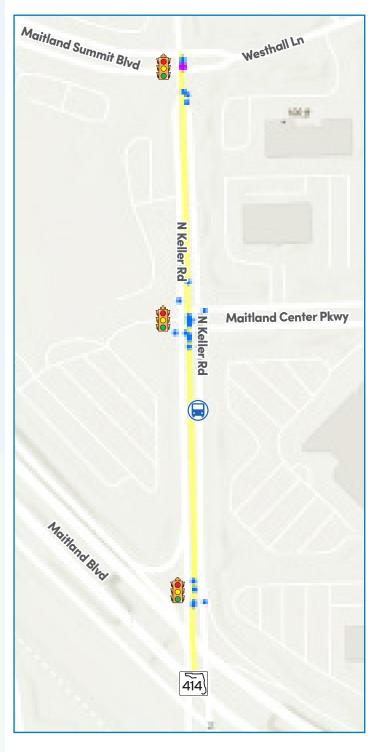
- » Green bicycle lanes at intersections with bike boxes (\$)
- » Lighting upgrades (\$\$)



#### **SIGNING AND STRIPING**

Pavement marking upgrades (\$)

Note: Not for construction purposes. All projects will require more detailed planning, engineering and community engagement.



# **LEGEND**

HIN Corridor

Motorcycle

Bus Stop

Traffic Signal

KSI Crashes by Mode

Pedestrian

Bicycle



**Motor Vehicle** 

from Orlando Avenue (U.S. 17/92) to Sandspur Road **CORRIDOR RANK 5** 



# **CRASH STATISTICS (2018-2022)**





133







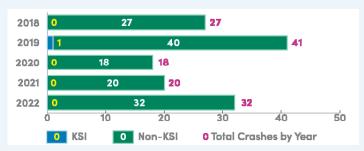




**FATALITY** 



# **CRASHES BYYEAR**



KSI = Killed and Seriously Injured

Source: Signal 4 Analytics

# **TOP7 CRASH TYPES**

	KSI	NON-KSI	TOTAL
1. REAR END	0	50	50
2. ANGLE	0	19	19
3. LEFT TURN	0	19	19
4. OFF ROAD	1	15	16
5. OTHER	0	15	15
6. SIDESWIPE	0	9	9
7. UNKNOWN	0	6	6

# **CRASH CONTRIBUTION FACTORS**

# **TIME OF DAY**



KSI - 0Non-KSI — 113 **TOTAL** — 113



**DUSK-DAWN** KSI - 0Non-KSI — 4 TOTAL - 4



KSI-1Non-KSI — 20 **TOTAL** — 21

# LIGHTING CONDITION

# LIGHTED KSI-1Non-KSI — 18 **TOTAL** — 19



# **BEHAVIORAL FACTORS**



IMPAIRED DRIVING

KSI-1Non-KSI - 0 TOTAL - 1



DISTRACTED DRIVING

KSI - 0Non-KSI - 27 **TOTAL — 27** 

# HIGH INJURY NETWORK (HIN) FACTS

**JURISDICTION** 

# MAITLAND

**FUNCTIONAL CLASSIFICATION** 

# **URBAN MINOR ARTERIAL**

**CONTEXT CLASSIFICATION** 

# **SUBURBAN COMMERCIAL (C3C)**

**CORRIDOR LENGTH** 

## **0.79 MILES**

**AVERAGE POSTED SPEED** 

## **35 MPH**

**AVERAGE PREVAILING SPEED** 

# **48 MPH**

% of corridor in transportation disadvantaged area  $\ensuremath{\mathbf{0}\%}$ 

TRANSIT ROUTES /ANNUAL BOARDINGS & ALIGHTINGS (2022)

# **NONE**

TRAVEL LANES / MEDIAN TYPE

# 4 LANES / RAISED TRAFFIC SEPARATOR

# POTENTIAL SAFETY COUNTERMEASURES



## **INTERSECTION AND ROADWAYS**

- » Backplates with retroflective borders (\$)
- » Intersection reconstruction (\$\$\$)



# PEDESTRIAN/BICYCLE FACILITIES

- » Crosswalks at all signalized intersections, side streets, and major driveways (\$)
- » Midblock crossings with visibility enhancements and pedestrian refuge islands with key community assets (\$\$\$
- » Audible push button pedestrian crossing signals) (\$)
- » Prohibit turn when pedestrian signal is activated signage (\$)
- » Leading pedestrian intervals \$)



#### **SPEED MANAGEMENT**

- » Speed feedback signs (\$)
- » Lane narrowing or lane reduction (\$)



#### **BIKEWAYS**

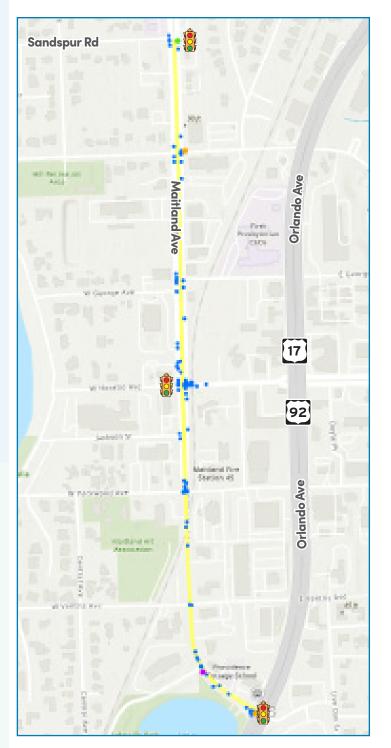
» Lighting upgrades (\$)



#### **SIGNING AND STRIPING**

» Pavement marking upgrades (\$)

Note: Not for construction purposes. All projects will require more detailed planning, engineering and community engagement.



# **LEGEND**

HIN Corridor

Motorcycle

Bus Stop

Motor Vehicle



Traffic Signal

KSI Crashes by Mode

Pedestrian

Bicycle



# S.R. 414 / MAITLAND BOULEVARD



from Altamonte Springs City Limits to Lake Destiny Road CORRIDOR RANK 6

# **CRASH STATISTICS (2018-2022)**







**378** 

2





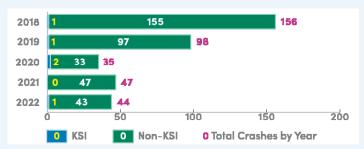
1





4

# **CRASHES BYYEAR**



KSI

0

3

0

0

KSI = Killed and Seriously Injured

1. REAR END

2. SIDESWIPE

3. OFF ROAD

4. OTHER

5. ANGLE

6. UNKNOWN

7. LEFT TURN

**TOP7 CRASH TYPES** 

Source: Signal 4 Analytics

**NON-KSI** 

165

97

37

29

21

12

**TOTAL** 

165

97

29

22

12

**CRASH CONTRIBUTION FACTORS** 



TIME OF DAY



KSI — 2 Non-KSI — 261 TOTAL — 263



DUSK-DAWN KSI - 0

KSI — 0 Non-KSI — 23 TOTAL — 23



NIGH I KSI — 2 Non-KSI — 91 TOTAL — 93

# LIGHTING CONDITION

# LIGHTED



# NON-LIGHTED

KSI — 0 Non-KSI — 30 TOTAL — 30

# **BEHAVIORAL FACTORS**



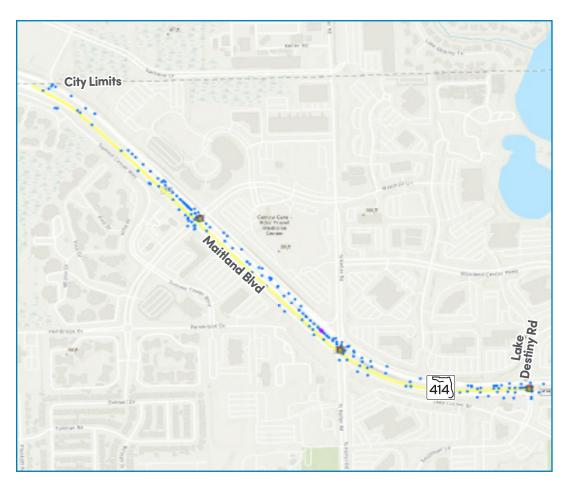
## **IMPAIRED DRIVING**

KSI — 2 Non-KSI — 11 TOTAL — 13



# DISTRACTED DRIVING

KSI — 0 Non-KSI — 54 TOTAL — 54



# **LEGEND**

**HIN Corridor** 



**Bus Stop** 



Traffic Signal

# KSI Crashes by Mode

- Pedestrian
- Bicycle
- Motorcycle
- Motor Vehicle



# HIGH INJURY NETWORK (HIN) FACTS

JURISDICTION

# **MAITLAND**

**FUNCTIONAL CLASSIFICATION** 

# **URBAN PRINCIPAL ARTERIAL**

**CONTEXT CLASSIFICATION** 

# SUBURBAN COMMERCIAL (C3C)

**CORRIDOR LENGTH** 

# **1.16 MILES**

AVERAGE POSTED SPEED

# **55 MPH**

AVERAGE PREVAILING SPEED

# **63 MPH**

% OF CORRIDOR IN TRANSPORTATION DISADVANTAGED AREA 0%

TRANSIT ROUTES /ANNUAL BOARDINGS & ALIGHTINGS (2022)

# **NONE**

TRAVEL LANES / MEDIAN TYPE

# **6 LANES / VEGETATION**

# POTENTIAL SAFETY COUNTERMEASURES



#### **INTERSECTION AND ROADWAYS**

» Curb radii / turning radii reduction



# **SPEED MANAGEMENT**

- » Posted speed limit reduction (\$)
- » Speed feedback signs (\$)
- » Lane narrowing or lane reduction (\$)
- » Speed safety cameras (\$)
- » Rumble strips
- » Chevron signs or curve advanced warning signs with rumble strips

Note: Not for construction purposes. All projects will require more detailed planning, engineering and community engagement.

# MAITLAND SUMMIT BOULEVARD



from Maitland Boulevard (S.R. 414) to North Keller Road CORRIDOR RANK 6

# **CRASH STATISTICS (2018-2022)**



10 TOTAL CRASHES

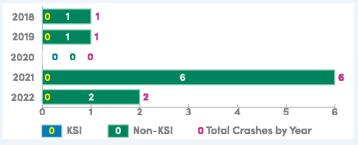


10





# **CRASHES BY YEAR**



KSI = Killed and Seriously Injured

Source: Signal 4 Analytics

# **TOP5 CRASH TYPES**

	KSI	NON-KSI	TOTAL
1. REAR END	0	4	4
2. ANGLE	0	2	2
3. UNKNOWN	0	2	2
4. SIDESWIPE	0	1	1
5. OTHER	0	1	1

# **CRASH CONTRIBUTION FACTORS**

# **TIME OF DAY**



DAYLIGHT KSI — 0

Non-KSI — 9 TOTAL — 9



DUSK-DAWN

KSI — 0 Non-KSI — 0 TOTAL — 0



NIGHT

KSI — 0 Non-KSI — 1 TOTAL — 1

# LIGHTING CONDITION

# KSI – 1 Non-KSI – 2 TOTAL – 3



# **BEHAVIORAL FACTORS**



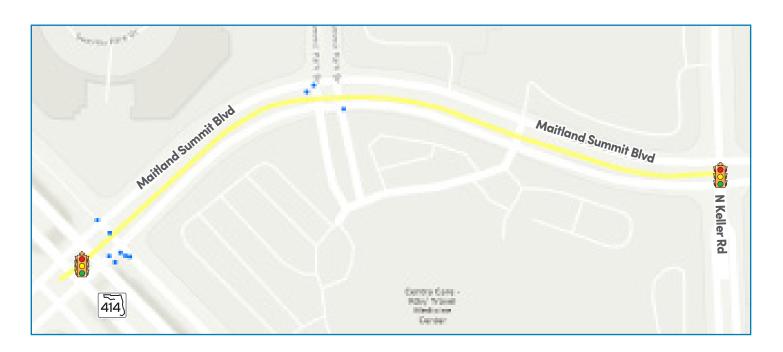
KSI – 0

Non-KSI — 0 TOTAL — 0



## **DISTRACTED DRIVING**

KSI — 0 Non-KSI — 1 TOTAL — 1





# **LEGEND**

— Н

**HIN Corridor** 



**Bus Stop** 



Traffic Signal

KSI Crashes by Mode

- Pedestrian
- Bicycle

- Motorcycle
- Motor Vehicle

# **HIGH INJURY NETWORK (HIN) FACTS**

**JURISDICTION** 

# **MAITLAND**

**FUNCTIONAL CLASSIFICATION** 

# **URBAN MINOR COLLECTOR**

**CONTEXT CLASSIFICATION** 

# SUBURBAN COMMERCIAL (C3C)

**CORRIDOR LENGTH** 

#### **0.29 MILES**

**AVERAGE POSTED SPEED** 

## **40 MPH**

AVERAGE PREVAILING SPEED

# **35 MPH**

% OF CORRIDOR IN TRANSPORTATION DISADVANTAGED AREA 0%

TRANSIT ROUTES /ANNUAL BOARDINGS & ALIGHTINGS (2022)

TRAVEL LANES / MEDIAN TYPE

4 LANES / CURB & VEGETATION

# POTENTIAL SAFETY COUNTERMEASURES



#### **INTERSECTION AND ROADWAYS**

- » Curb radii / turning radii reduction (\$\$\$)
- » Backplates with retroflective borders (\$)
- » Intersection reconstruction (\$\$\$)



#### PEDESTRIAN/BICYCLE FACILITIES

- » Crosswalks at all signalized intersections, side streets, and major driveways (\$)
- » Midblock crossings with visibility enhancements and pedestrian refuge islands with key community assets (\$\$\$)
- » Prohibit turn when pedestrian signal is activated signage (\$)
- » Leading pedestrian intervals (\$)



# **SPEED MANAGEMENT**

- » Posted speed limit reduction (\$)
- » Lane narrowing or lane reduction (\$)



#### **BIKEWAYS**

» Lighting upgrades (\$\$)



#### **SIGNING AND STRIPING**

» Pavement marking upgrades (\$)

Note: Not for construction purposes. All projects will require more detailed planning, engineering and community engagement.





# **APPENDIX**

# VISION ZERO ACTION PLAN COST ESTIMATES

Date: August 20, 2024

Prepared for: Alyssa Eide, Maitland

Mark Reggentin, Maitland

Subject: City of Maitland Vision Zero Action Plan (VZAP) – Cost Estimates

# INTRODUCTION

The City of Maitland Vision Zero Action Plan places a focused effort to address the top High Injury Network corridors, where the frequency of traffic-related serious injuries and fatalities is notably high. The VZAP considers diverse infrastructure enhancements, such as sidewalk improvements and pedestrian crossings, the implementation of bicycle infrastructure, other traffic calming measures like speed feedback signs and curb extensions, signalization and lighting upgrades. Each of these countermeasures are proposed in light of for future Safe Streets and Roads for All (SS4A) implementation grant funding. **Table 1** in this Appendix outlines the order of magnitude cost estimates for these proposed improvements to guide budgeting and planning needs.

Proposed cost estimates are provided in alignment with those proposed by the larger MetroPlan Orlando regional Vision Zero effort. Each estimate includes a 20% contingency cost to accommodate potential variances in material costs, labor rates, unforeseen site conditions, and design modifications. The inclusion of this contingency cost is vital as it addresses uncertainties and ensures adequate funding allocation to cover all potential expenditures, aligning with best practices in project management and financial planning. It provides a necessary buffer to manage cost overruns and project complexities, ensuring project timelines and quality standards are maintained while mitigating risks effectively. These cost estimates serve as a foundational basis for future budgeting and planning efforts as the City of Maitland progresses towards achieving its Vision Zero goals.

Table 1: Order of Magnitude Present Day Cost Estimates for Plan Recommendations

HIN Segment	From / To	Planning Level Cost for Proposed Improvements
Orlando Ave	from Monroe Ave to Seminole County Line	\$1,382,000.00
Maitland Blvd	from Interstate 4 to S.R.15/S.R. 600	\$2,070,000.00
Lake Ave	from Grove St to Orlando Ave	\$692,000.00
N Keller Rd	from Maitland Blvd to Maitland Summit Blvd	\$834,000.00
Maitland Ave	from Orlando Avenue to Sandspur Road	\$1,416,000.00
Maitland Blvd	from Altamonte Springs City Limits to Lake Destiny Rd	\$1,252,000.00
Maitland Summit Blvd	from Maitland Boulevard to North Keller Road	\$944,000.00
TOTAL		\$8,590,000.00

