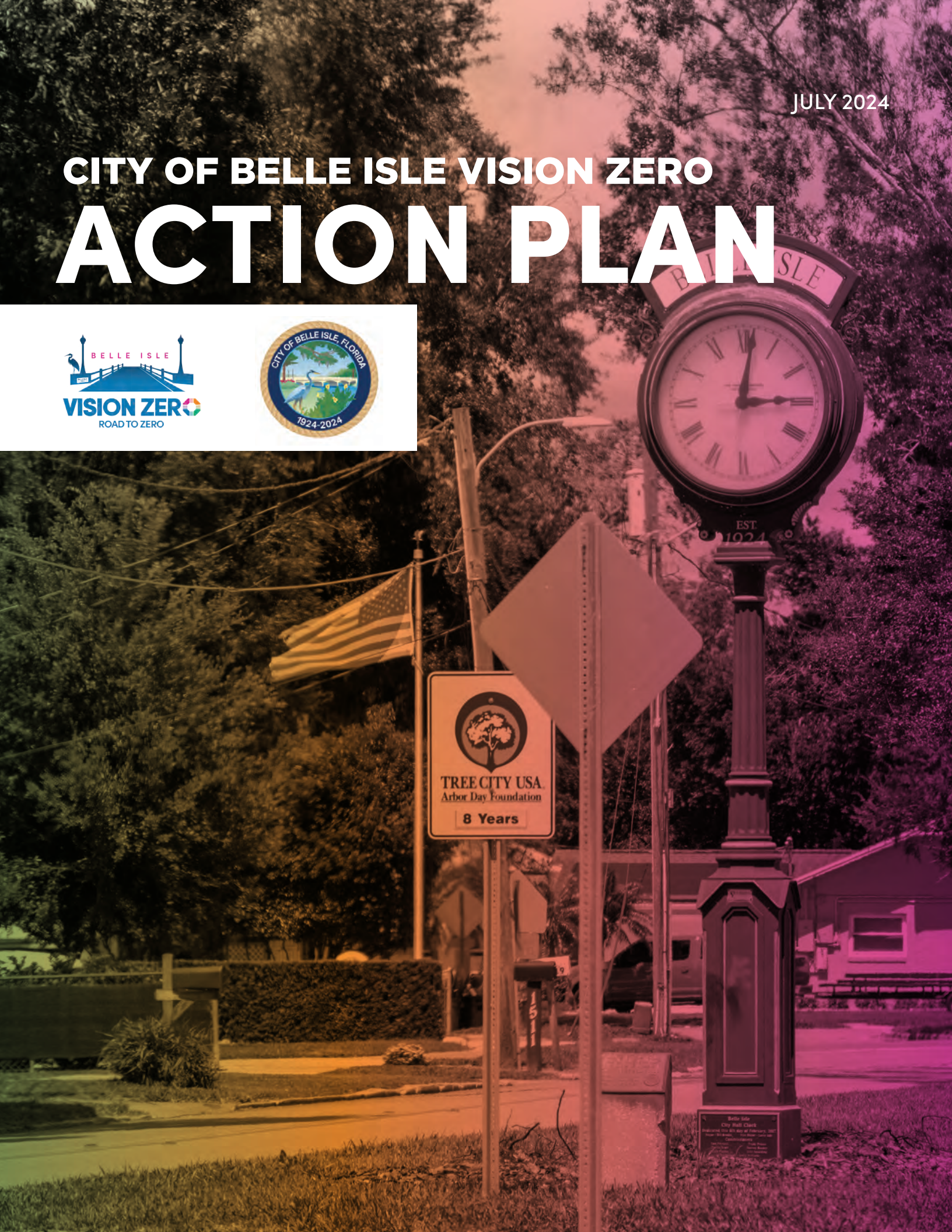
JULY 2024

CITY OF BELLE ISLE VISION ZERO ACTION PLAN

BELLE ISLE VISION ZERO ROAD TO ZERO

CITY OF BELLE ISLE, FLORIDA 1924-2024



Final Draft

City of Belle Isle Vision Zero Action Plan

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Statement of Protection of Data from Discovery and Admissions

SECTION 148 OF TITLE 23, UNITED STATES CODE REPORTS DISCOVERY AND ADMISSION INTO EVIDENCE OF CERTAIN REPORTS, SURVEYS, AND INFORMATION —

Notwithstanding any other provision of law, reports, surveys, schedules, lists, or data compiled or collected for any purpose relating to this section, shall not be subject to discovery or admitted into evidence in a Federal or State court proceeding or considered for other purposes in any action for damages arising from any occurrence at the location identified or addressed in the reports, surveys, schedules, lists, or other data.

Executive Summary

EXECUTIVE SUMMARY

During a typical week in the Central Florida region, which includes **Orange, Osceola, and Seminole Counties**, **5 people** are killed and **35 people** are seriously injured in traffic crashes on our roads.

In 2023, MetroPlan Orlando secured a $3.9 million federal Safe Streets for All (SS4A) grant to address serious safety concerns within the Central Florida 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-county region. Through funding by the SS4A grant, the City of Belle Isle has developed its own Vision Zero Action Plan (VZAP), with the goal of reducing traffic fatalities and severe injuries and creating safer roads both locally for the over 7,000 residents of Belle Isle and regionally for the 2.2 million central Florida residents and 75 million tourist 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).

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, Belle Isle's Vision Zero Action Plan 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 acknowledges 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 is provided in **Chapter 1**.

Vision Zero seeks to eliminate traffic fatalities and serious injuries on the transportation system by providing a proactive and preventive approach to integrate safety principles during the planning and implementation of transportation programs Citywide.

Through these efforts Belle Isle's Goal is to **reduce the number of fatalities and severe injuries on the transportation system to zero by 2040.**

What are the Transportation Safety Issues?

This Action Plan was developed using a data-driven analysis to understand where the City may strategically deploy its resources in order to attain our collective goal. This data analysis revealed that across the region, a large proportion of crashes where someone is killed or seriously 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. The data analysis for the City of Belle Isle reveals that KSI crashes are more likely to occur on 2-lane roads without presence of median. 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 a stakeholder working group, 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 Belle Isle 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 serious crashes. Data was compiled, analyzed, and mapped to identify causational relationships and then corresponding solutions to empower decision makers to understand safety concerns and take action to mitigate them. 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 is an important part of the process. On an annual basis, we will reflect on our progress towards 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 where strategies from across the region will be shared. Additional details are provided in Chapter 7.

What action does the City need to take?

This Action Plan is firmly grounded through the data-driven process and conversations with key stakeholders of the community, the City of Belle Isle has identified priority areas and design-appropriate safety countermeasures on the City's most dangerous corridors, as outlined in next table. By identifying specific countermeasures and focusing on high-incidence locations, the City of Belle Isle is well-equipped to pinpoint areas where investment of resources will have the most significant impact in terms of lives saved and injuries prevented.

PROPOSED ENGINEERING COUNTERMEASURES

	1. HOFFNER AVE (from Conway Rd to Avacado Ln)	2. JUDGE RD (from Conway Rd to Daetwyler Dr)	3. DAETWYLER DR (from Judge Rd to Prairie Fox Ln)	4. HANSEL AVE / SR 527 INTERSECTIONS (from Hoffner Ave to Wallace St)
Assess a reduction in posted speed limits	✓			
Install speed feedback signs	✓	✓		✓
Install speed humps, cushions, or tables				✓
Install textured pavement			✓	
Assess appropriate speed limits in conjunction with speed management strategies to accommodate all road users		✓	✓	
Install roundabouts or traffic circles	✓			
Provide landscaped medians with canopy trees	✓	✓	✓	
Reduce curb radii and install left and right turn lanes		✓		
Install guardrail and SafetyEdge			✓	
Proposed lane narrowing and/or road widening to accommodate multi-use path	✓			
Provide raised midblock crossings with high-visibility markings	✓	✓	✓	
Consider low-cost, quick-build opportunity with upgrades to high emphasis crosswalks				✓
Widen existing sidewalk to accommodate multi-use path		✓	✓	
Complete sidewalk gap		✓		
Provide green conflict striping though intersections for existing bicycle lane				✓
Provide leading bike or pedestrian interval recall signalization		✓		
Optimize leading bike or pedestrian interval recall signalization				✓
Install PHB, RRFB or other pedestrian signalization with high-visibility crosswalk	✓		✓	
Address gaps in roadway lighting and/or upgrade to LEDs		✓	✓	

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 Belle Isle's 7,000 residents deserve to travel safely.

The purpose of the Belle Isle Vision Zero Action Plan is to articulate its commitment towards achieving zero road fatalities and serious injuries. 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 decision-making 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 Belle Isle's Public Works Department, in partnership MetroPlan Orlando, and the Florida Department of Transportation. With this Vision Zero Action Plan, Belle Isle 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 Belle Isle will work with our regional partners to implement changes and monitor long-term progress on safety.

About MetroPlan Orlando and the City of Belle Isle

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 led 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 Belle Isle.

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.

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 Belle Isle by 2040.

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

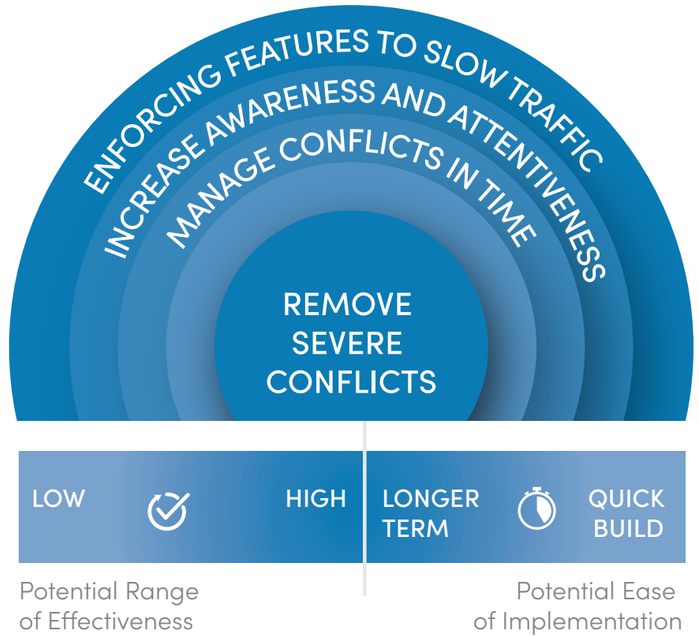
Use a multidisciplinary approach that induces drivers to travel at speeds appropriate for the context that will reduce injuries even when human error leads to crash.

Safe System Strategy

Consistent with the Safe System Approach Framework, the planning, design, and operation of facilities within the City of Belle Isle 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.



CHAPTER 2

Crash Trends and Analysis

CITY OF BELLE ISLE CRASH TRENDS

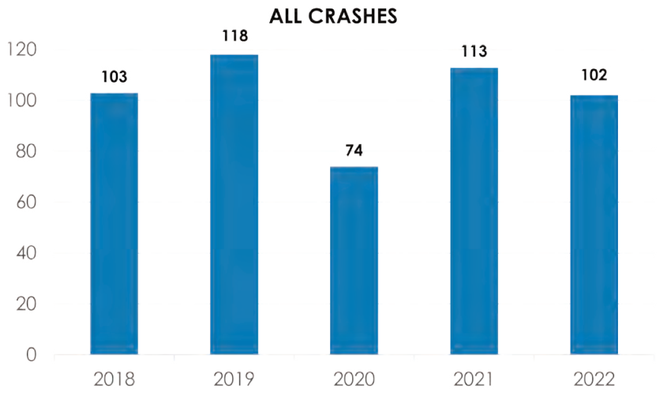
The following represents an overview of the crash trends on the roadway network in the City of Belle Isle:

YEARS OF CRASH DATA:	TOTAL CRASHES:	TOTAL FATAL CRASHES:	TOTAL SERIOUS INJURY CRASHES:
2018-2022	510	0	12

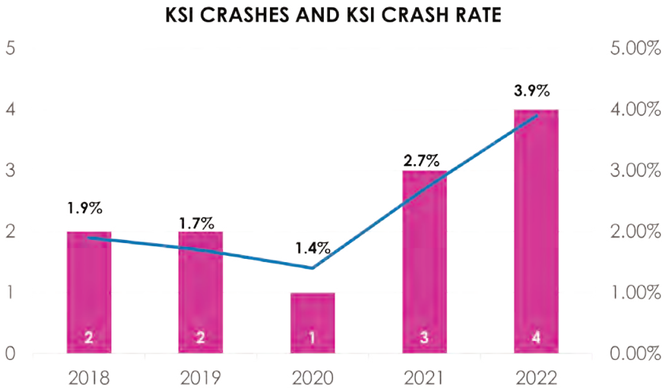
CRASHES BY YEAR:

Within the 5-year analysis period, the total number of crashes has remained consistent with the highest number of annual crashes (118) occurring in 2019. The lowest number of crashes (74) 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 (4) occurred in 2022 and the lowest number of KSI crashes occurred in 2020 (1). Despite the relative stability in both overall and KSI crashes, the rate of crashes resulting in serious injury has risen since the beginning of the analysis period. Where 1.9% of all crashes resulted in a serious injury in 2018, that trend rose to 3.9% in 2022.



There has been a 1.0% decrease in overall crashes in the five year period.



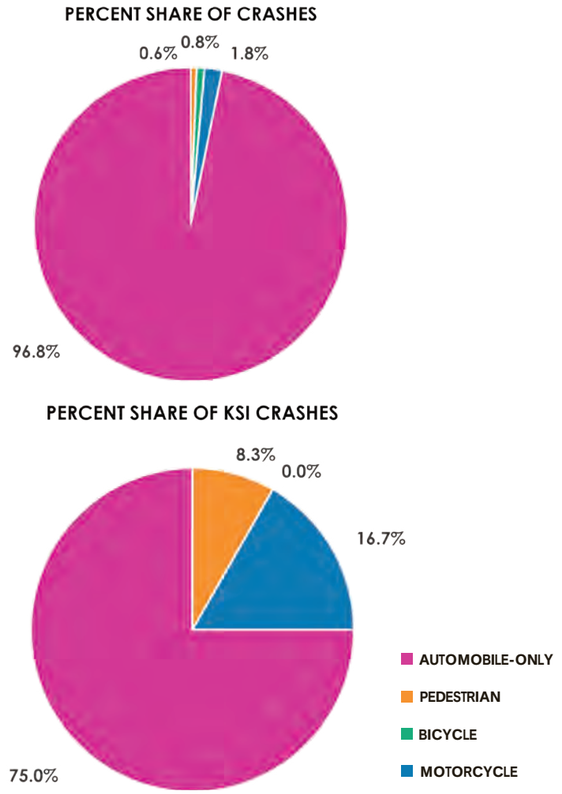
There has been a 50.0% increase in KSI crashes in the five year period.

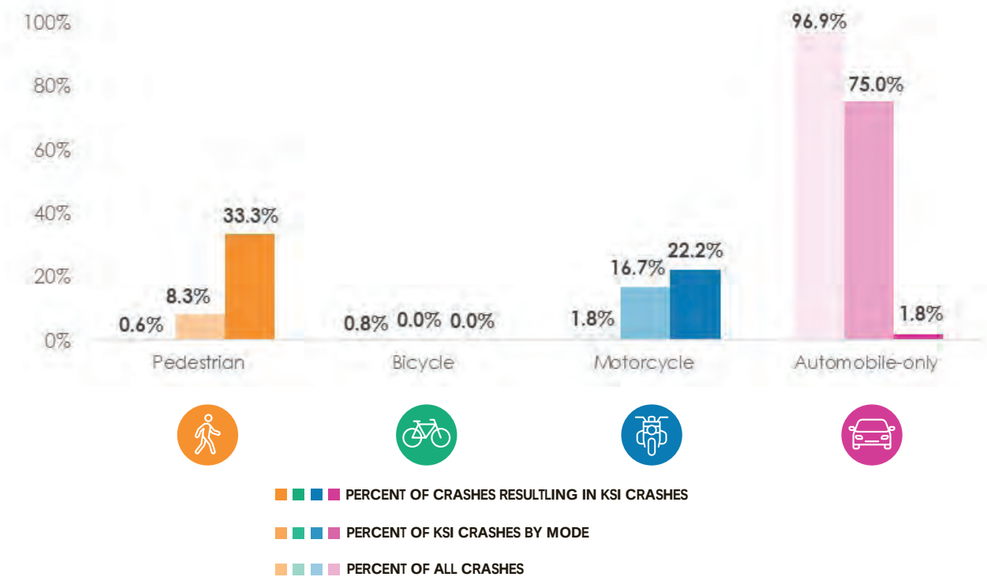
CRASHES BY INJURY SEVERITY:

KSI crashes accounted for just 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.

CRASHES BY MODE:

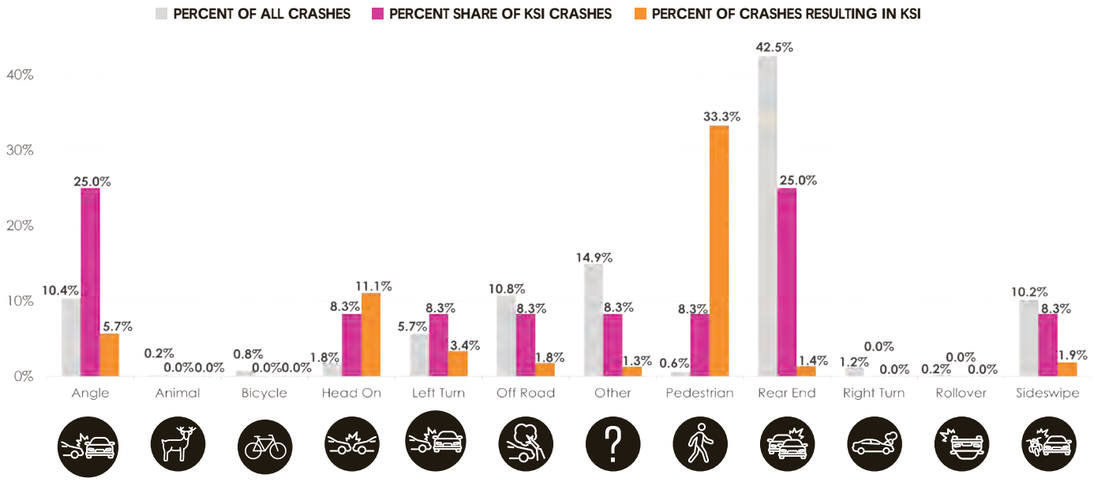
- **PEDESTRIAN:** Pedestrian crashes made up 0.6% of all crashes, and 8.3% of total KSI crashes, and 33.3% of every pedestrian crash resulted in serious injury.
- **BICYCLE:** Bicycle crashes made up 0.8% of all crashes, but there were no reported KSI crashes for this mode of travel.
- **MOTORCYCLE:** Motorcycle crashes made up 1.8% of all crashes, but 16.7% of total KSI crashes, and 22.2% of every motorcycle crash resulted in a serious injury.
- **AUTOMOBILE-ONLY:** Automobile-only crashes made up 96.8% of all crashes, 75% of total KSI crashes, and only 1.8% of every automobile-only crash resulted in a serious injury.





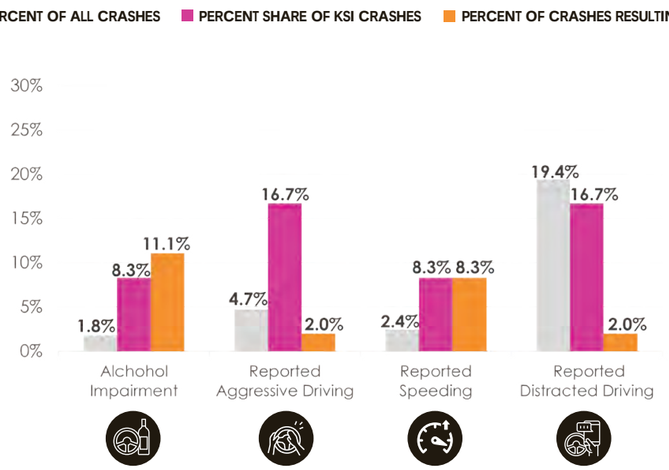
CRASHES BY TYPE:

Angle and left turn crashes, while comprising 15.7% of total crashes, were the most common to result in a serious injury, constituting 33.3% of all KSI. The second crash type most likely to result in a KSI crash were rear end crashes (25.0%) and pedestrian, off road, head on, sideswipe, and other crashes each accounted for a single KSI apiece (8.3%). The top two crash types to occur that result in a KSI are pedestrian and then head on crashes, with 33.3% and 11.1% of this crash type resulting in a KSI, respectively.



BEHAVIORAL FACTORS:

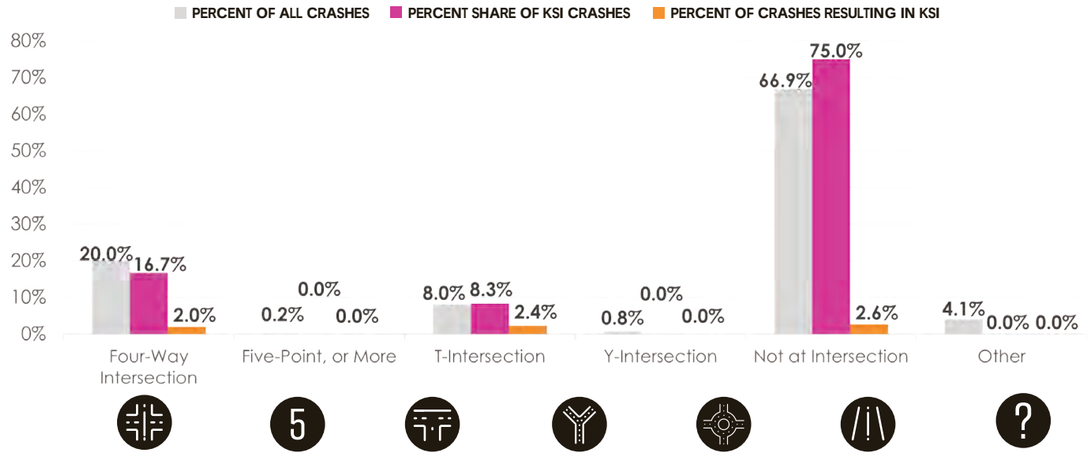
- **ALCOHOL IMPAIRMENT:** Crashes that involved alcohol impairment comprised 1.8% of all crashes, however, comprised 8.3% of KSI crashes, and 11.1% of every alcohol-involved crash resulted in a serious injury.
- **REPORTED AGGRESSIVE DRIVING:** Crashes that involved aggressive driving comprised 4.7% of all crashes, and 16.7% of KSI crashes.
- **REPORTED SPEEDING:** Crashes that involved speeding comprised 2.4% of all crashes, however, 8.3% of these crashes resulted in a KSI.



- **REPORTED DISTRACTED DRIVING:** Crashes that involved distracted driving comprised 19.4% of all crashes, and 16.7% of KSI crashes.

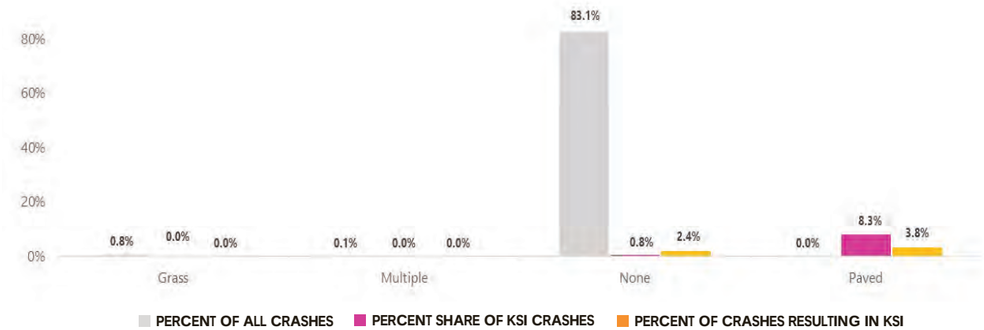
CRASHES BY LOCATION:

- **FOUR-WAY INTERSECTION:** 20.0% of crashes and 16.7% of total KSI crashes occurred at a 4-way intersection.
- **FIVE-POINT OR MORE INTERSECTION:** 1 non-KSI crash occurred at a five-way or more intersection.
- **T-INTERSECTION OR Y-INTERSECTION:** 8.0% of all crashes and 8.3% of total KSI crashes occurred at a T-intersection.
- **NOT AT INTERSECTION OR "SEGMENT":** 66.9% of total crashes and 75.0% of total KSI crashes occurred on a roadway segment.



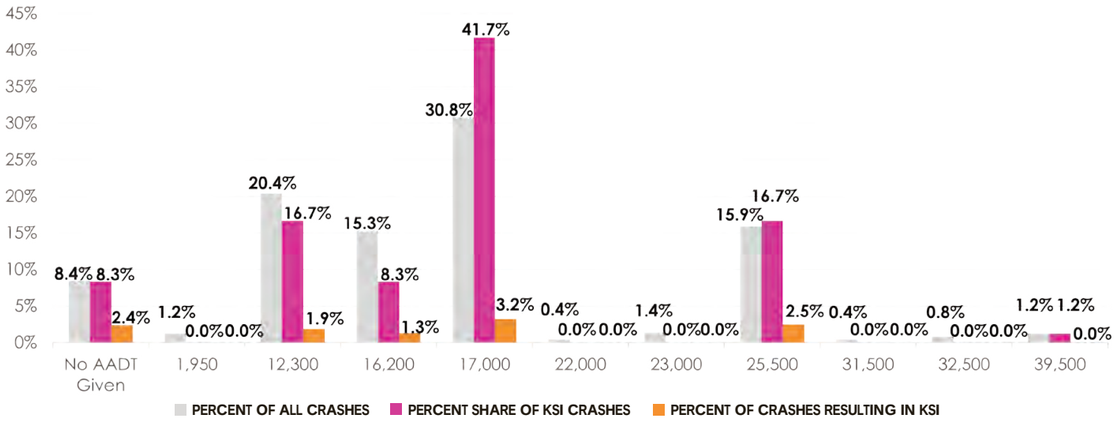
CRASHES BY MEDIAN TYPE:

Roadway segments where medians were present accounted for 83.1% of all crashes and 83.3% of KSI crashes. 8.3% of total KSI crashes occurred in locations with a paved median.



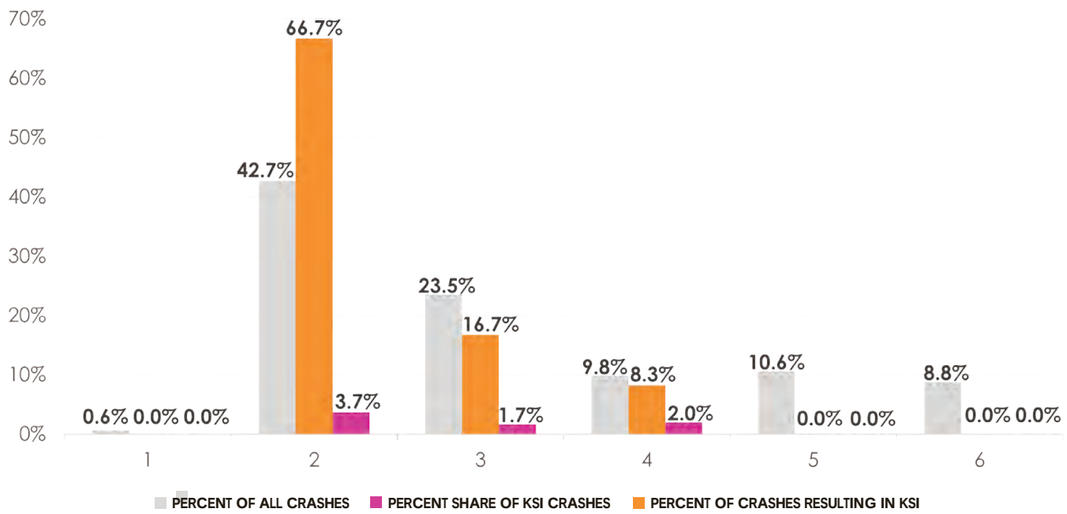
ROADWAY VOLUME (AADT):

67.7% of all crashes and 67.7% of KSI crashes occurred on roadways with traffic volumes less than 20,000 daily trips. 20.1% of crashes occurred on roadways with greater than 20,000 daily trips, resulting in 16.7% of KSI crashes.



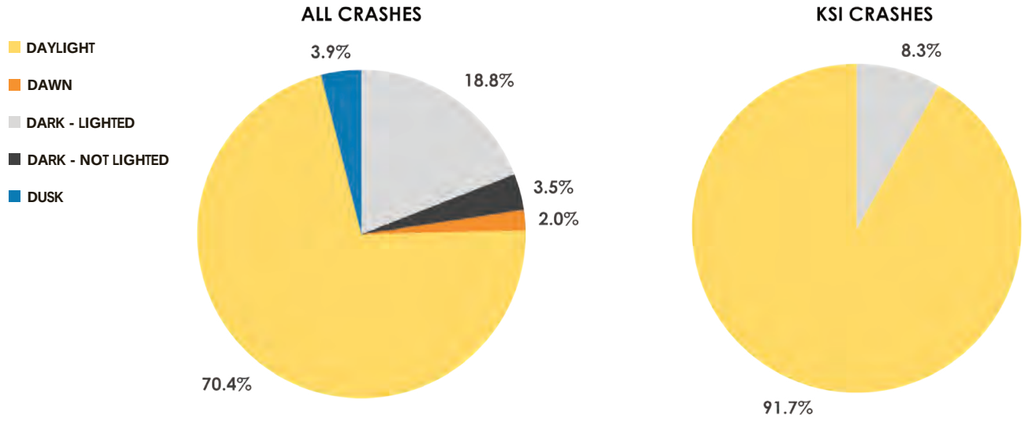
NUMBER OF LANES:

42.7% of all crashes and 66.7% of KSI crashes occurred on roadways with 2 through lanes. 4 and 6-lane roadways together accounted for 18.6% of total crashes and 8.3% of KSI crashes.



LIGHTING CONDITIONS:

Most crashes occurred during daylight conditions (70.4%) and resulted in the most reports of serious injury. Non-daylight conditions accounted for 29.6% of total crashes and 8.3% of KSI crashes.



POSTED SPEED LIMIT:

50.4% of total crashes and 50.4% of the KSI crashes occurred on roadways where the posted speed is 35 MPH and 28.3% of total crashes and 16.7% of KSI crashes occurred on roadways with a posted speed limit of 40 or 45 MPH. Roadways with speeds 25 MPH accounted for 17.5% crashes and 25.0% of KSI crashes.

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 Belle Isle. 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 for Belle Isle was based on a thorough 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 only on the roadway system instead of parking lots.

In total, the identified HIN covers approximately 2.9 centerline miles and includes 3 roadway corridors. These roadways account for approximately 58% of total KSI crashes in the City. Two High Injury Networks were developed for the City of Belle Isle 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 improvements implementation.

1. The All-Roads HIN identified 1 roadway totaling approximately 1.8 centerline miles. There were 136 total crashes reported on this roadway and 5 KSI crashes.
2. The Local Roads HIN analysis identified 2 roadway sections totaling approximately 1.0 centerline mile. There were 40 total crashes reported on these roadways and 2 KSI crashes.

Additionally, 7 high-priority intersections were identified where a disproportionate number of servere injury crashes were reported, and accounts for 146 total crashes and 7 KSI crashes.

In addition to the identification of the HIN, a supplementary analysis was completed based a combination of equity and crash factors to prioritize segments for future action. This establishes alignment with the ultimate goal of targeting solutions where they will have the most direct impact in reaching zero fatalities and serious injuries.

The top HIN corridors are identified below:

Overall Rank (Worst Segment)	Road Name	From	To	Length (mi)	Total Crashes (KSI Crashes)	Automobile Crashes (KSI Crashes)	Pedestrian Crashes (KSI Crashes)	Bicycle Crashes (KSI Crashes)	Motorcycle Crashes (KSI Crashes)
1	Hoffner Ave	Conway Rd	Belle Isle Ave	1.84	136 (5)	129 (4)	0	3 (0)	4 (1)
2	Judge Rd	Conway Rd	Daetwyler Dr	0.84	17 (2)	15 (1)	0	0	2 (1)
3	Daetwyler Dr	Judge Rd	Warren Park Rd	0.19	23 (0)	21 (0)	1 (0)	0	1 (0)
4	Hansel Ave Intersections	Waltham Ave	Fairlane Ave	NA	72 (2)	71 (2)	1 (0)	0	0

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 Belle Isle'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, Belle Isle 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:

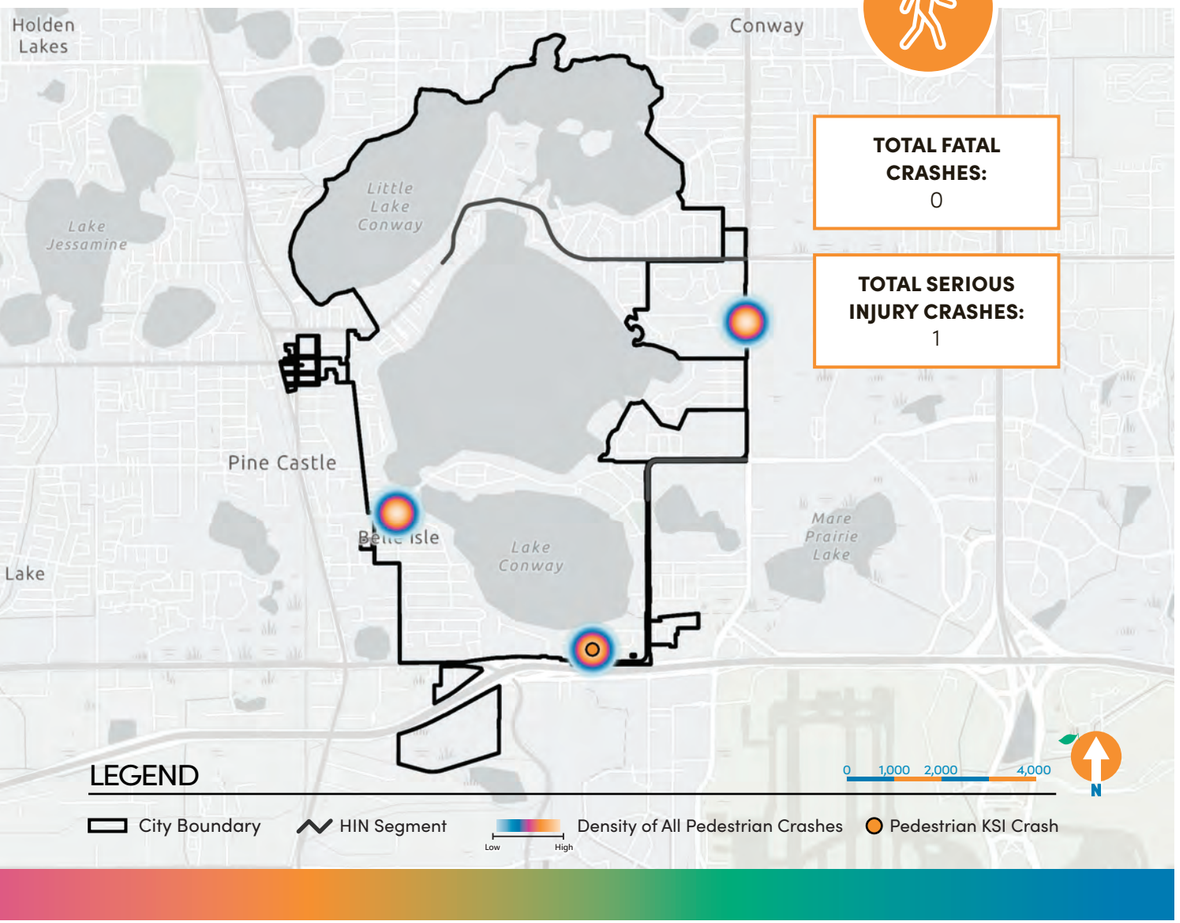
#	CRASH PROFILE	TOTAL CRASHES	% OF TOTAL CRASHES	KSI CRASHES	% OF TOTAL KSI CRASHES	% OF CRASHES RESULTING IN KSI
1	Angle	53	**10.4%**	3	**25.0%**	**5.7%**
2	Left Turn	29	**5.7%**	1	**8.3%**	**3.4%**
3	Off Road	55	**10.8%**	1	**8.3%**	1.8%
4	Rear End	217	**42.5%**	3	**25.0%**	1.4%
5	Sideswipe	61	**12.0%**	1	8.3%	1.6%
6	Motorcyclist	9	1.8%	2	**16.7%**	**22.2%**
7	Distracted Driving	99	**19.4%**	2	**16.7%**	2.0%
8	Aging Driver	77	**15.1%**	5	**41.7%**	**6.5%**
9	2 Through Lanes	378	**74.1%**	11	**91.7%**	**2.9%**
10	Minor Arterial	169	**33.1%**	5	**41.7%**	**3.0%**

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 **3** pedestrian-involved crashes that occurred in the City of Belle Isle.



TOTAL FATAL CRASHES: 0

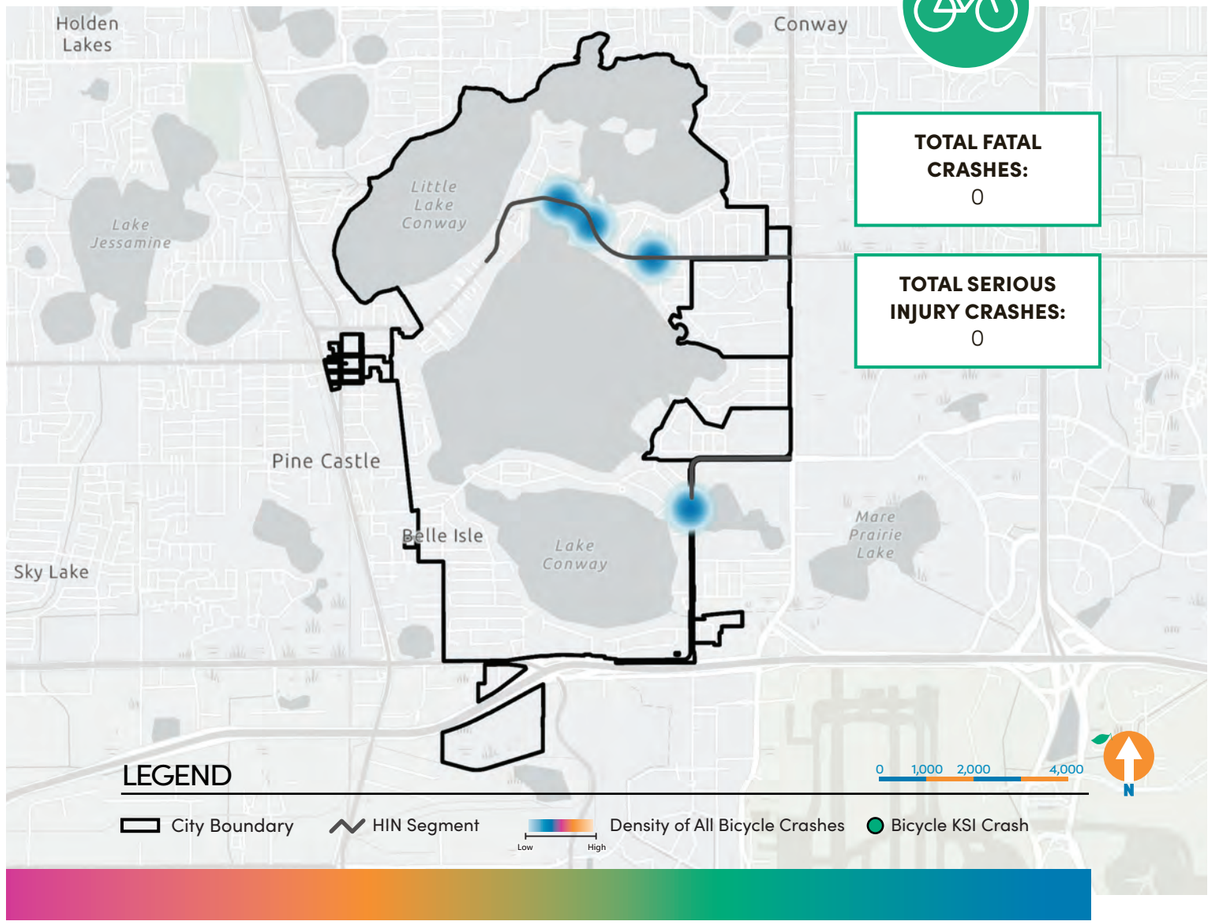
TOTAL SERIOUS INJURY CRASHES: 1

TOP CONTRIBUTING FACTORS FOR PEDESTRIAN-INVOLVED KSI CRASHES:

- In locations with posted speed limit of 25 mph, with **50.0%** of these crashes resulting in a KSI
- In locations without sidewalk, with **100%** of these crashes resulting in a KSI
- In daylight conditions, with **50.0%** of these crashes resulting in a KSI
- In two-lane roadways, with **50.0%** of these crashes resulting in a KSI
- On a roadway segment, comprising **33.3%** of these crashes resulting in a KSI
- On roadways with less than 10,000 daily trips, with with **50.0%** of these crashes resulting in a KSI

BICYCLE HIN AND CRASH TRENDS

The following represents an overview of the **4** bicycle-involved crashes that occurred in the City of Belle Isle.



TOTAL FATAL CRASHES: 0

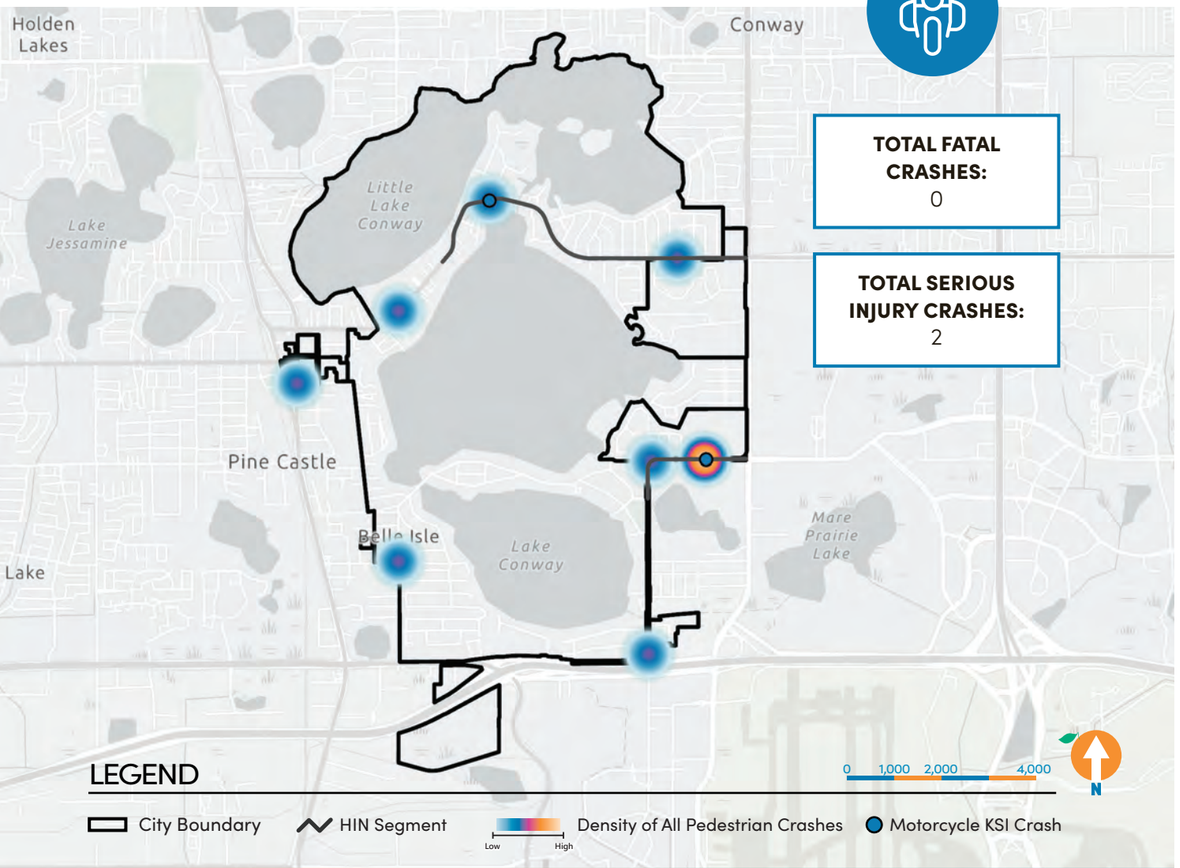
TOTAL SERIOUS INJURY CRASHES: 0

TOP CONTRIBUTING FACTORS FOR BICYCLE-INVOLVED KSI CRASHES

- In locations without bicycle lanes, comprising **100%** of all bicycle crashes
- On a roadway segment, comprising **75.0%** of all bicycle crashes
- In daylight conditions, comprising **100%** of all bicycle crashes
- In locations with posted speed limit of 35 mph, comprising **75.0%** of all bicycle crashes
- On roads with volumes less than 20,000 AADT, comprising **100%** of all bicycle crashes
- In locations without median, comprising **100%** of all bicycle crashes

MOTORCYCLE HIN AND CRASH TRENDS

The following represents an overview of the **9** motorcycle-involved crashes that occurred in the City of Belle Isle.



TOTAL FATAL CRASHES: 0

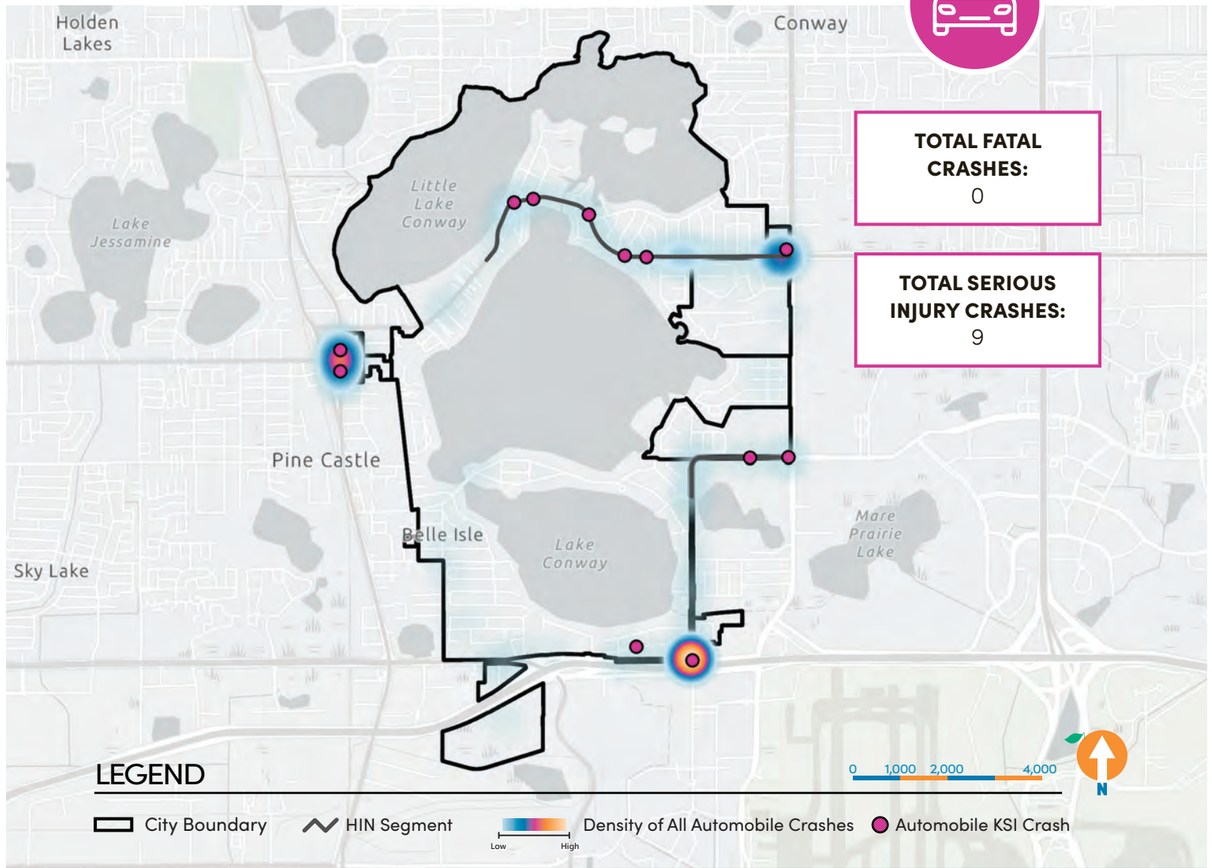
TOTAL SERIOUS INJURY CRASHES: 2

TOP CONTRIBUTING FACTORS FOR MOTORCYCLE-INVOLVED KSI CRASHES:

- As a result of an angle crash, with **33.3%** of these crashes resulting in a KSI
- On roads with volumes less than 20,000 AADT, with **28.6%** of these crashes resulting in a KSI
- On a roadway segment, comprising **50.0%** of all motorcycle KSI crashes
- Between the hours of 6 PM to 9 PM, with **33.3%** of these crashes resulting in a KSI
- In locations without medians, comprising **50.0%** of all motorcycle KSI crashes
- In locations with posted speed limit of 35 mph, with **16.7%** of these crashes resulting in a KSI

AUTOMOBILE-ONLY HIN AND CRASH TRENDS

The following represents an overview of the **494** automobile-only crashes that occurred in the City of Belle Isle.



TOTAL FATAL CRASHES: 0

TOTAL SERIOUS INJURY CRASHES: 9

TOP CONTRIBUTING FACTORS FOR AUTOMOBILE-ONLY KSI CRASHES

- In locations with posted speed limit of 35 mph, comprising **55.6%** of all automobile-only KSI crashes
- On a roadway segment, comprising **77.8%** of all automobile-only KSI crashes
- In locations without medians, comprising **88.9%** of all automobile-only KSI crashes
- In daylight conditions, comprising **88.9%** of all automobile-only KSI crashes
- As an head on crash, with **11.1%** of these crashes resulting in a KSI
- With reported distracted driving, comprising **22.2%** of all automobile-only KSI crashes

CHAPTER 3

Public Engagement

Photo credit: Michael Rivera

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 Belle Isle 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.

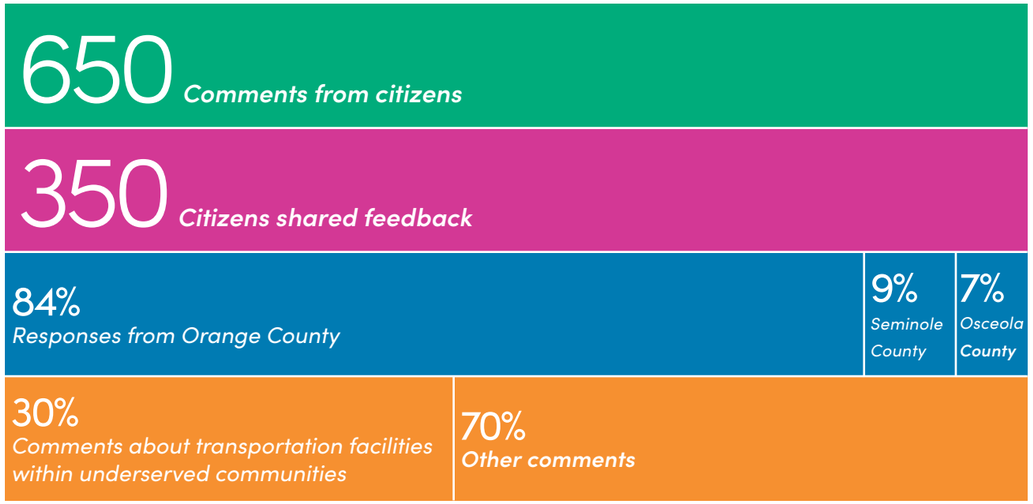
The Action Plan's **public engagement plan** was organized around an incremental and layered approach. **In-person engagement** was supplemented by **virtual and digital campaigns** designed to bring awareness to the plan itself, as well as engagement related activities.

Brand Development

The Vision Zero brand helps to generate visibility and familiarity in an effort to achieve campaign participation community wide. The Belle Isle 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 2040.**

Engagement Strategy

Starting with the Project Team, engagement with the Belle Isle 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.



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 Belle Isle 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 should include local agency staff, elected officials, and additional members that represent different perspectives and interests within the City of Belle Isle. The outcome of successful engagement strategy encourages ongoing commitment from key elected officials 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

Updates on Policy Review, Review of MetroPlan Orlando Countermeasures Toolkit, and Consideration of Draft Prioritization CriteriaPublic Engagement

Pop-up Events

Three (3) community "pop-up events" were where participants will be 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

- Light the Way - December 6
- Citywide Workshop - February 15
- OC District 3 Workshop - February 27

Virtual Events

Belle Isle Vision Zero Action Plan Brand & 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. This website will also be an important avenue for continued engagement with the public after plan implementation.

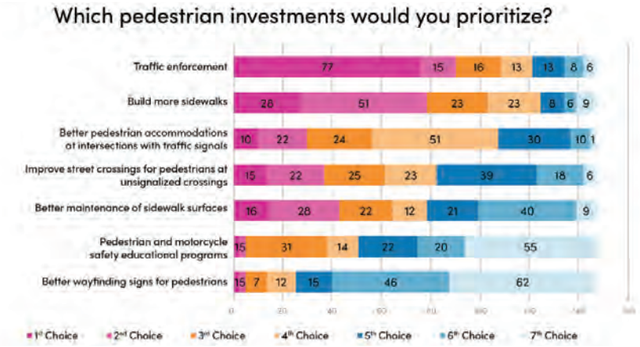
Social Media Marketing Campaign

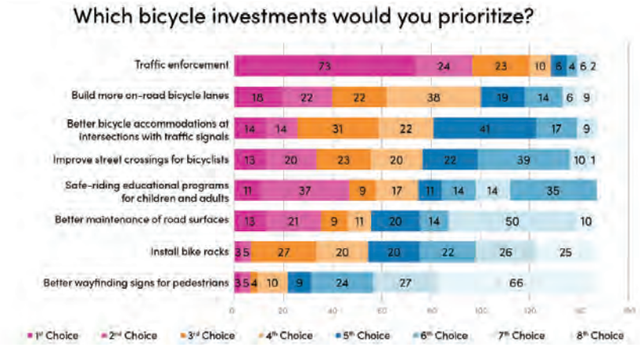
In coordination with the City of Belle Isle, social media content was generated for spreading awareness of the public meetings on the county's various outlets. Future use of these assets may include ongoing educational and awareness campaigns and notification of public on important project updates and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

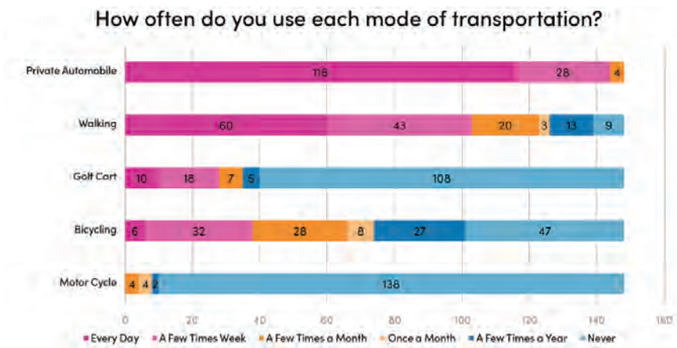
Summary of Feedback Collected in Public Survey

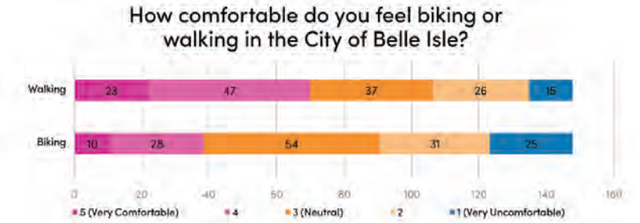
As a part of the public engagement campaign, a community survey with ten questions was released to learn about resident's safety issues and primary means of transportation in the City of Belle Isle. Of the 148 survey responses received, most of the roadway users depend on cars for transportation, but 70% of the respondents said that they walk in the City at least several times a week, as well as by bicycle (26%).

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. When asked to identify solutions to improve pedestrian and bicycle safety, residents wanted more enforcement and to build more sidewalks or bicycle lanes. The next two pages share the public survey results..









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 Belle Isle staff, the following documents were reviewed due to their relevancy to the current and future transportation conditions and challenges:

- Land Development Code
- Comprehensive Plan Transportation Element
- Transportation Master Plan
- Cornerstone Charter Academy Traffic Operations Analysis Study
- Golf Cart Guide for Citizens

The review process is comprised of the following steps:

1. Identify and review relevant documents and procedures
2. 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 Chapter 50 Review

In review of the Land Development Code, Chapter 50 primarily focuses on establishing standards for performance and design in urban development, with a specific emphasis on landscaping, parking, and building requirements. It addresses various aspects such as buffering, parking space allocation, impervious surface ratios, and setbacks for major streets. These policies aim to regulate development in a way that ensures functionality, aesthetics, and compliance with safety standards.

Comprehensive Plan Transportation Element Review

The Comprehensive Plan Transportation Element outline a strategy for developing and maintaining the city's transportation infrastructure. Key objectives include ensuring road safety, promoting efficient traffic flow, and enhancing multimodal transportation options. Specific policies, such as the integration of sidewalks and bikeways and developing access management controls, may be leveraged in developing a more holistic Safe Systems approach.

Transportation Master Plan Review

The Transportation Master Plan focuses on enhancing the transportation network through all modes, with an emphasis on improving safety, connectivity, and multimodal integration. The plan recommends 26 specific traffic calming, pedestrian, or bicycle improvements as well as proposes safety, speed management measures, and bicycle and pedestrian facilities on the city's four primary corridors of citywide or regional significance.

Cornerstone Charter Academy Traffic Operations Analysis Study Review

The Cornerstone Charter Academy Traffic Impact Assessment (TIA) evaluated the proposed expansion of Cornerstone Charter Academy, focusing on traffic operations, queueing, and adjacent roadway capacity to accommodate increased traffic volumes. It aims to ensure vehicular facilities maintain safety and traffic flow efficiency around the campus during and after construction. The expansion plans to increase student enrollment from 1479 to 2420, requiring shifts in drop-off/pick-up operations and recommends transportation improvements to mitigate congestion.

Golf Cart Guide for Citizens Review

The Golf Cart Brochure by the City of Belle Isle outlines regulations for golf cart or low speed vehicle usage within the city and includes safety requirements, inspection procedures, authorized driver criteria, operational hours, and designated areas for golf cart operation. The policy aims to ensure the safe integration of golf carts into the city's transportation system, specifying necessary equipment for golf carts, inspection fees, conditions for unlicensed drivers, operational restrictions based on time and safety equipment, and road usage guidelines.

Land Development Code Chapter 50 Review

Included Countermeasures:

- Parking and loading space design, which influences traffic flow and pedestrian movement.
- Landscaping and aesthetic standards, though not direct safety measures, contribute to a more orderly and potentially safer environment.

Leadership and Commitment: The document demonstrates an organized approach to land development, which is a foundational step in committing to safer community design.

Safe Roadways and Safe Speeds: The The regulations indirectly influence road safety through design standards.

Potential policy changes for this document include lowering the maximum block length to promote walking, providing specific speed management countermeasures, and considering a reduction or elimination of parking requirements. Additional policy changes include pedestrian friendly parking design standards, road classification updates, reducing roadway lane widths, and decreasing corner radii.

Comprehensive Plan Transportation Element Review

Included Countermeasures:

- Implementing access management to reduce conflicts and improve safety on busy roads.
- Establishing Level of Service standards to maintain traffic flow and indirectly influence safety.
- Requiring sidewalks and bikeways to enhance safety for non-motorized road users.

Leadership and Commitment: The plan shows commitment to safe and efficient transportation but lacks a direct commitment to Vision Zero's goal of eliminating traffic fatalities.

Safe Road Users: Encourages safe infrastructure but lacks specific user-centric safety strategies.

Safe Road and Safe Speeds: Policies support safer roadway design but does not provide specific focus on managing safe speeds.

Safe Roads: Promoted through multimodal infrastructure development.

The primary potential policy change to the Comprehensive Plan Transportation Element is to establish clear safety objectives and performance measures related to eliminating traffic fatalities and serious injuries. Other potential policy recommendations include integrating detailed safety data collection and analysis to proactively identify high-risk areas and developing explicit policies for speed management.

Transporation Master Plan Review

Included Countermeasures:

- Textured Pavement at Nela Avenue.
- Chicane on Trentwood Boulevard.
- Reduced Curb Radii among five critical locations.
- Crosswalk improvements and RRFB crosswalks throughout the network.
- Shared-use paths, bicycle route, and wayfinding infrastructure.

Leadership and Commitment: Demonstrated through the development of the extensive plan.

Equity and Engagment: The plan mentions public workshops but could further emphasize equity-focused approaches.

Safe Road Users: Recommended educational programming.

Safe Speeds: Directly addressed through multiple speed management and traffic calming measures.

Safe Roads: Directly addressed through multiple, specific roadway improvement recommendations.

Potential policy changes include developing quick-build or interim-design strategies to demonstrate benefits of certain countermeasures, identifying and utilizing low-cost interim materials, public amenities, and creative partnerships with local stakeholders, and assessing the contextual appropriateness of existing speed limits utilizing the MUTCD 2023 Update allowing for engineering judgement to override the 85th percentile rule.

Cornerstone Charter Academy Traffic Operations Analysis Study Review

Included Countermeasures:

- **On-Site Queuing:** Utilizing the parking lot on the property east of Randolph Avenue for on-site queuing for incoming traffic. This approach encourages drivers arriving early to wait within the school campus and provides stacking for incoming vehicles.
- **Traffic Direction and Control:** Implementing measures such as closing Randolph Avenue to traffic during pick-up/dismissal times, directing vehicles on Fairlane Avenue to exit right only onto Hansel Avenue, and suggesting signal changes at the intersection of Hansel Avenue and Fairlane Avenue.

Safe Roadways and Safe Speeds: This analysis was primarily focused on traffic volumes and circulation. The implied safety considerations of this analysis relate to avoiding queuing or traffic from backing up into a roadway and creating safety issues.

Data-Driven Approach: The trip generation in this study is performed utilizing data from the Institute of Transportation Engineers (ITE) Trip Generation Manual, 11th Edition. This data source is the industry norm and generally accepted as the basis for transportation studies. However, the ITE trip rates are widely known to be based on limited data points in contexts that may or may not be similar to where the data are being applied.

Potential policy changes discussed include ensuring future TIA methodology considers modal split, prioritizing the reduction of the share of vehicular trips to schools over accommodating automobile traffic volumes, and promoting non-vehicular trips through quick-build improvements and transportation demand strategies.

Additionally, it is suggested that there be a reconsideration of the TIA recommendation to convert the pedestrian pathway to automobile stacking space. Converting pedestrian infrastructure to automobile infrastructure may promote driving over walking, adding to the observed vehicular trips and traffic impacts to the surrounding area.

The expanded results of the benchmarking exercise, as well as the full benchmarking matrix, are provided in the appendix.

Golf Cart Guide for Citizens Review

Included Countermeasures:

- Requires installation of safety equipment on golf carts.
- Establishes restrictions on operation times for golf carts without specific safety equipment.
- Establishes designated areas and roads where golf carts are allowed, including speed limit adherence.

Safe Roadways and Safe Speeds: Specifications for equipment and designated areas align with creating safer road environments.

Data-Driven Approach: No data or related discussion was included in this this guide. However, requiring registration with the city allows for future measurement of low-speed vehicle use in the community over time.

Equity and Engagement: Addresses equity by allowing for more affordable transportation options in the community.

Safe Road Users: The guide provides citizen information on safe use of low-speed vehicles.

Safe Vehicles: Low-speed vehicles are safe due to their low speeds and low mass, reducing the potential energy released in crashes. However, they have fewer passenger protection features than automobiles and may be considered as a vulnerable road user, as done in this policy document restricting them from high-speed roads.

Potential policy changes discussed include coordination with neighboring jurisdictions to promote low-speed vehicle routes, continuous monitoring of data to revise policy and infrastructure as needed, and consideration of Traditional Neighborhood Development Criteria implementation for future development to ensure future low-speed vehicle use.

Additionally, further policy recommendations include consideration of traffic calming measures along Hoffner Avenue, Conway Road, Judge Road, and Daetwyler Drive to promote safe speeds and allow for the off-sidewalk use of low-speed vehicles.

CHAPTER: 5

Toolkit and Prioritization

The **Non-Engineering** and **Engineering Countermeasure Toolkits** were developed to help inform various safety solutions around the region. The toolkits are provided in the appendix with a high-level summary provided in this chapter.

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 events.

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:

1. Inform partner jurisdictions about safety treatment options and their appropriate uses and contexts,
2. Communicate safety tools using easy-to-understand language and graphics,
3. Facilitate coordination between staff, contractors, developers, and the community when discussing transportation safety improvements, and
4. Create a shared understanding and realistic expectations around safety treatments.

The Toolkit describes a variety of engineering countermeasures, how they can be applied to address safety, and their expected effectiveness i.e., crash reduction, when available. The expected crash reduction is based on Crash Modification Factors from the Federal Highway Administration's (FHWA) Crash Modification Clearinghouse or other published studies. The Toolkit also includes general information about each tool's application, typical placement, estimated costs, and delivery timelines. 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.

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 Belle Isle's streets.

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.

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, high-traffic 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.

Belle Isle Speed Management Safety Spotlight: Hoffner Avenue West Improvements

The Hoffner Avenue West improvements proposal includes building a wide multi-use trail, reducing turning radiuses, lowering the speed limit to 25mph, along with the building of a roundabout at the intersection of Hoffner Avenue and St Denis Court. These improvements are in line with goals to provide complete streets for all mobility users along with a safe and efficient flow of private vehicles.

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.

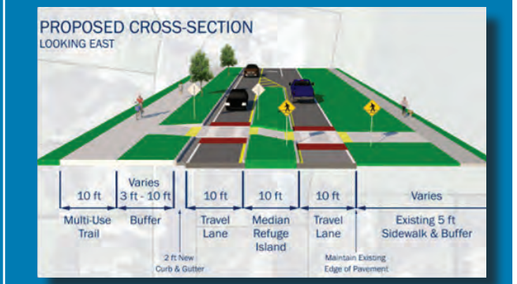
In an ideal scenario, the design speed and target speed should be closely aligned to ensure that the road infrastructure can safely cope with the speeds at which drivers choose to travel. However, if there's a significant disparity between the two, it may lead to increased risks of crashes, necessitating 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 significantly improve pedestrian safety on the city's streets.

Belle Isle Bicycle and Pedestrian Safety Spotlight: Daetwyler & Judge Multi-Use Trail

The Hoffner Avenue West improvements proposal includes building a wide multi-use trail, repaving sections of the road to brick, and creating median refuge islands along the road and multi-use trail. These improvements are in line with goals to provide complete streets along with a safe and accessible pedestrian/bicyclist network.



Bikeways

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 safer for all road users.

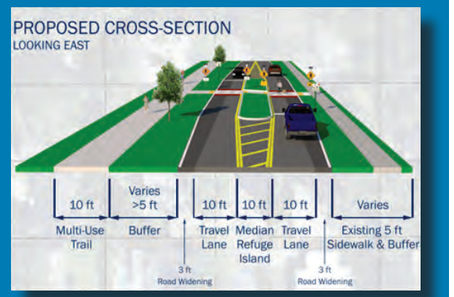
Intersection and Roadways

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.

Belle Isle Intersections and Roadways Safety Spotlight: Hoffner Avenue East Improvements

The Hoffner Avenue East improvements proposal includes building a wide multi-use trail and median refuge island along the road, along with the building of a roundabout at the intersection of Hoffner Avenue and St Germain Avenue. These improvements are in line with goals to provide complete streets and safe connectivity for pedestrians and bicyclists.



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

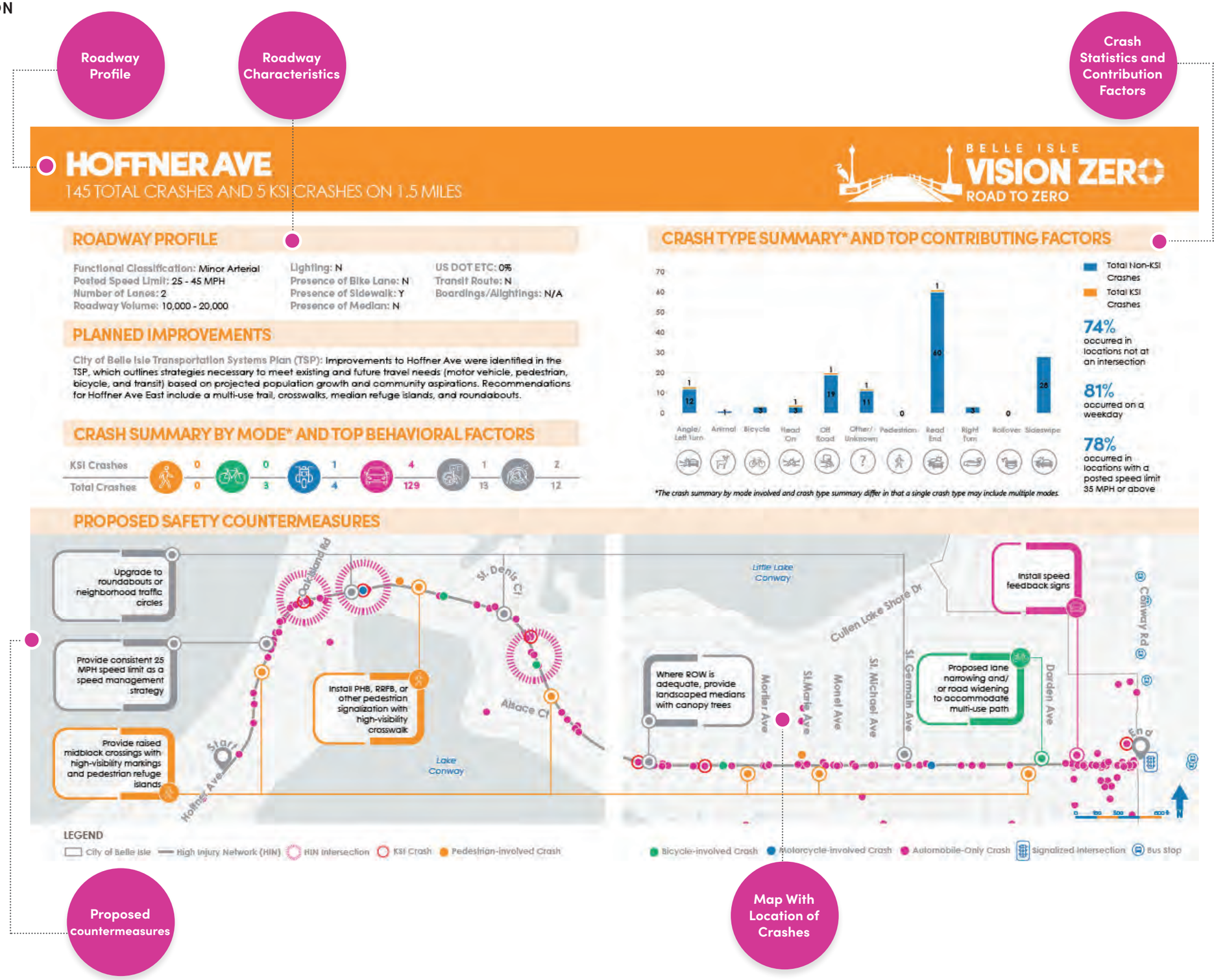
Mobile traffic sensors send real-time conditions to a traffic management center where conditions are evaluated to determine if a crash is likely based on past crash patterns in the region. Law enforcement or emergency response can be deployed before a crash occurs, which can prevent a crash from happening,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

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 cost-effective. 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. The profile pages are organized to reflect the rankings, a measure of corridor safety that takes into account various elements identiied 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.



CHAPTER: 6

Plan Recommendations

HOFFNER AVE

145 TOTAL CRASHES AND 5 KSI CRASHES ON 1.5 MILES

BELLE ISLE VISION ZERO ROAD TO ZERO

ROADWAY PROFILE

Functional Classification: Minor Arterial
Posted Speed Limit: 25 - 45 MPH
Number of Lanes: 2
Roadway Volume: 10,000 - 20,000

Lighting: N
Presence of Bike Lane: N
Presence of Sidewalk: Y
Presence of Median: N

US DOT ETC: 0%
Transit Route: N
Boardings/Alightings: N/A

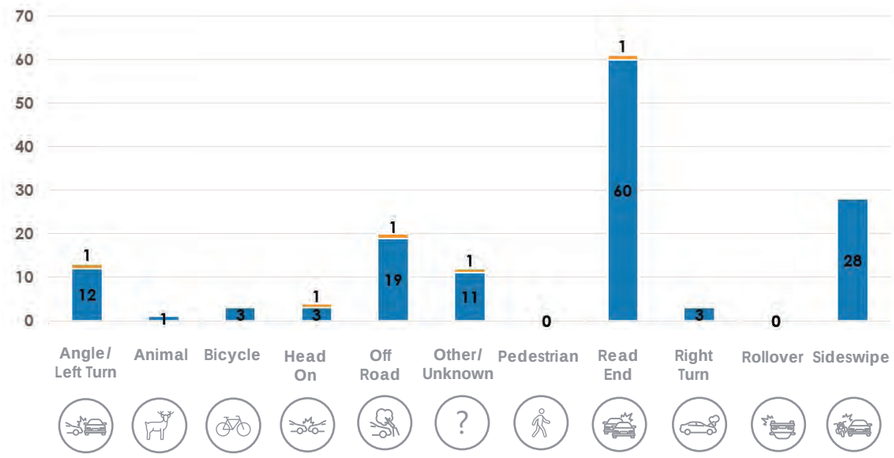
PLANNED IMPROVEMENTS

City of Belle Isle Transportation Systems Plan (TSP): Improvements to Hoffner Ave were identified in the TSP, which outlines strategies necessary to meet existing and future travel needs (motor vehicle, pedestrian, bicycle, and transit) based on projected population growth and community aspirations. Recommendations for Hoffner Ave East include a multi-use trail, crosswalks, median refuge islands, and roundabouts.

CRASH SUMMARY BY MODE* AND TOP BEHAVIORAL FACTORS

	Pedestrian	Bicycle	Motorcycle	Automobile	Heavy Vehicle	Other
KSI Crashes	0	0	1	4	1	2
Total Crashes	0	3	4	129	13	12

CRASH TYPE SUMMARY* AND TOP CONTRIBUTING FACTORS



Total Non-KSI Crashes
Total KSI Crashes

74% occurred in locations not at an intersection

81% occurred on a weekday

78% occurred in locations with a posted speed limit 35 MPH or above

*The crash summary by mode involved and crash type summary differ in that a single crash type may include multiple modes.

PROPOSED SAFETY COUNTERMEASURES

LEGEND

City of Belle Isle | High Injury Network (HIN) | HIN Intersection | KSI Crash | Pedestrian-involved Crash | Bicycle-involved Crash | Motorcycle-involved Crash | Automobile-Only Crash | Signalized Intersection | Bus Stop

JUDGE RD

17 TOTAL CRASHES AND 2 KSI CRASHES ON 0.3 MILES

BELLE ISLE VISION ZERO ROAD TO ZERO

ROADWAY PROFILE

Functional Classification: Major Collector
Posted Speed Limit: 35 MPH
Number of Lanes: 2
Roadway Volume: 10,000 - 20,000

Lighting: Y
Presence of Bike Lane: N
Presence of Sidewalk: Y
Presence of Median: N

US DOT ETC: 0%
Transit Route: N
Boardings/Alightings: N/A

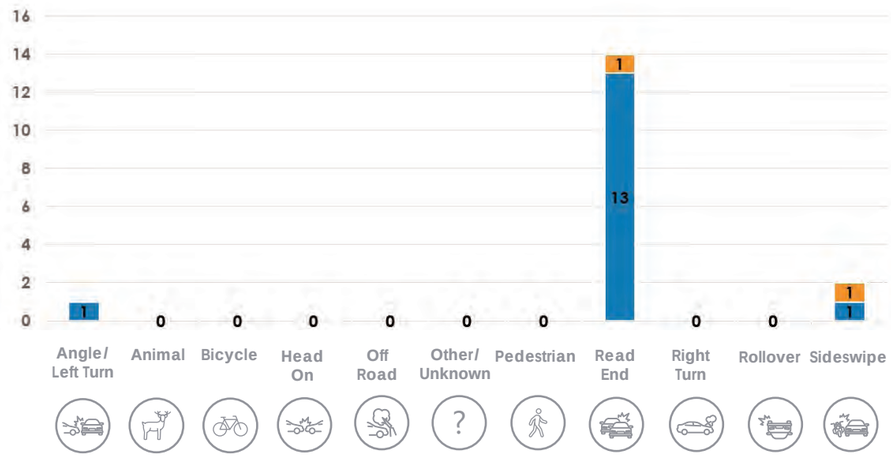
PLANNED IMPROVEMENTS

City of Belle Isle Transportation Systems Plan (TSP): Improvements to Judge Rd were identified in the TSP, which outlines strategies necessary to meet existing and future travel needs (motor vehicle, pedestrian, bicycle, and transit) based on projected population growth and community aspirations. Recommendations forJudge Rd include new curb and gutter, crosswalks, median refuge islands, and the addition of right and left turn lanes at the intersection of Conway Rd.

CRASH SUMMARY BY MODE* AND TOP BEHAVIORAL FACTORS

KSI Crashes	0	0	1	1	0	0
Total Crashes	0	0	2	15	4	3

CRASH TYPE SUMMARY* AND TOP CONTRIBUTING FACTORS



Total Non-KSI Crashes

Total KSI Crashes

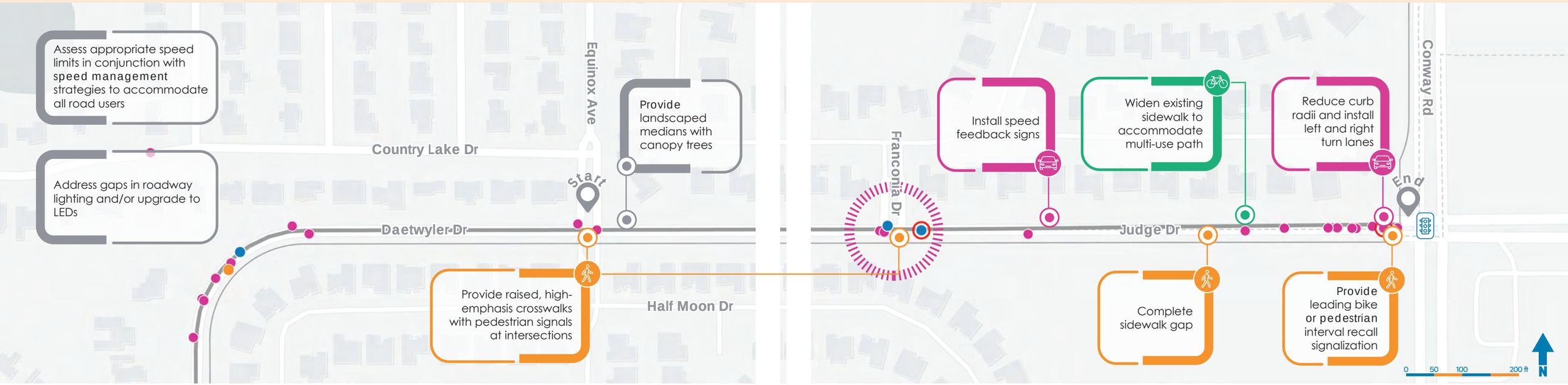
76% occurred in locations not at an intersection

76% occurred in locations with one turn lane

94% occurred in daylight

*The crash summary by mode involved and crash type summary differ in that a single crash type may include multiple modes.

PROPOSED SAFETY COUNTERMEASURES



LEGEND

City of Belle Isle | High Injury Network (HIN) | HIN Intersection | KSI Crash | Pedestrian-involved Crash | Bicycle-involved Crash | Motorcycle-involved Crash | Automobile-Only Crash | Signalized Intersection | Bus Stop

DAETWYLER DR

23 TOTAL CRASHES AND 0 KSI CRASHES ON 0.3 MILES

BELLE ISLE VISION ZERO ROAD TO ZERO

ROADWAY PROFILE

Functional Classification: Major Collector
Posted Speed Limit: 35 MPH
Number of Lanes: 2
Roadway Volume: 10,000 - 20,000

Lighting: Y
Presence of Bike Lane: N
Presence of Sidewalk: Y
Presence of Median: N

US DOT ETC: 0%
Transit Route: N
Boardings/Alightings: N/A

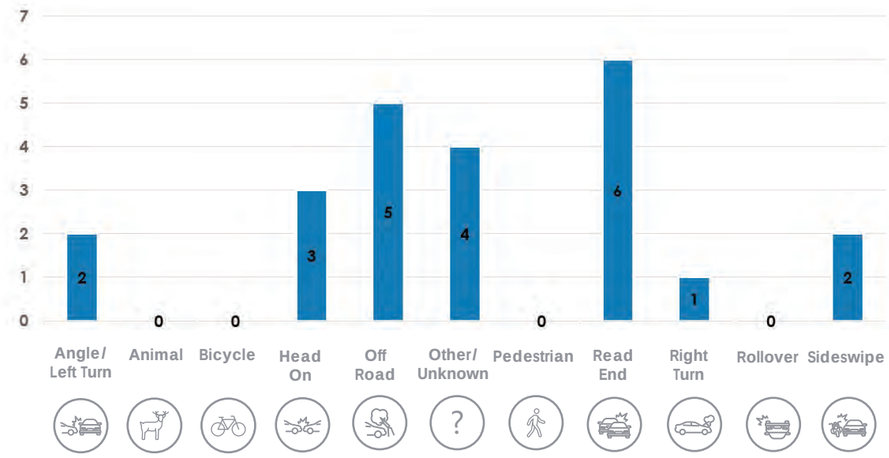
PLANNED IMPROVEMENTS

City of Belle Isle Transportation Systems Plan (TSP): Improvements to Deatwyler Dr were identified in the TSP, which outlines strategies necessary to meet existing and future travel needs (motor vehicle, pedestrian, bicycle, and transit) based on projected population growth and community aspirations. Recommendations for Deatwyler Dr include new curb and gutter, crosswalks, median refuge islands, utility relocation, and a guardrail and textured surfaces along the curve in the road.

CRASH SUMMARY BY MODE* AND TOP BEHAVIORAL FACTORS

KSI Crashes	0	0	0	0	0	0
Total Crashes	1	0	1	21	11	5

CRASH TYPE SUMMARY* AND TOP CONTRIBUTING FACTORS



Total Non-KSI Crashes

Total KSI Crashes

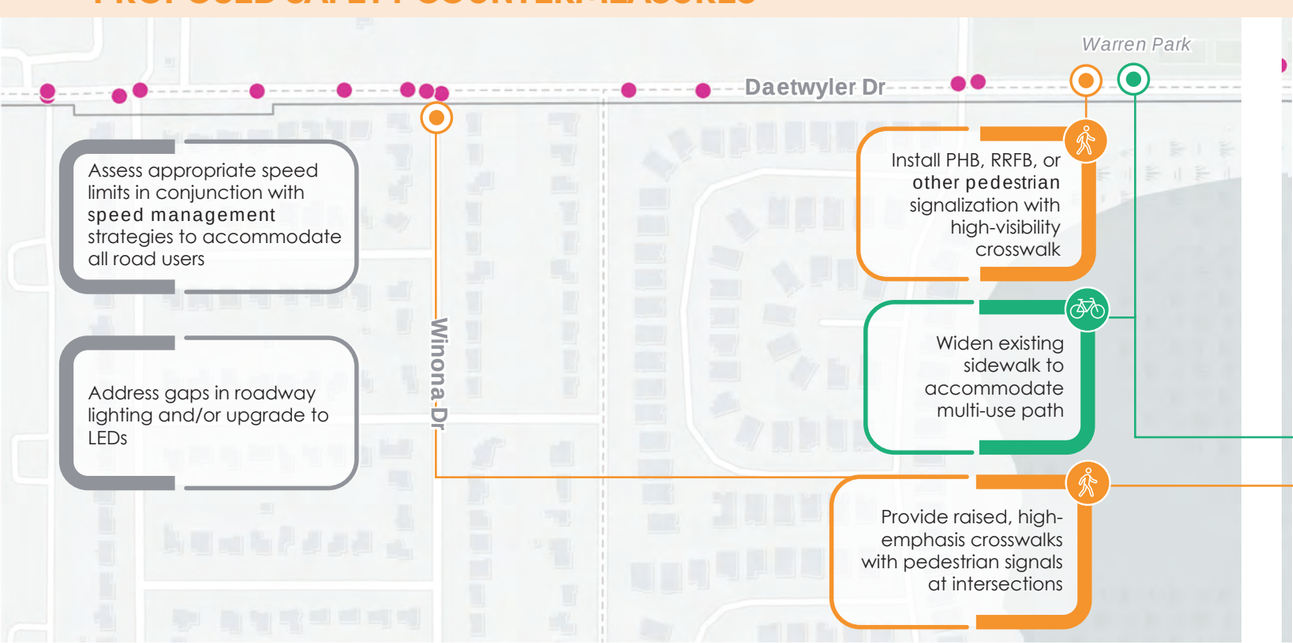
74% occurred in locations not at an intersection

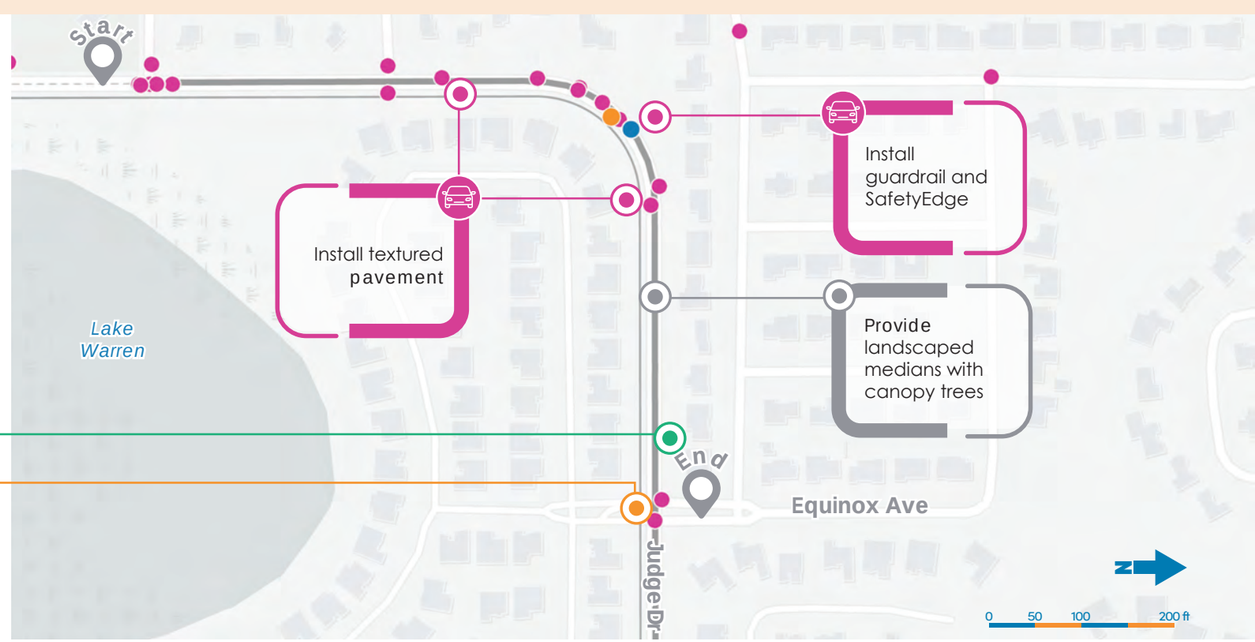
57% occurred in daylight

57% occurred in locations with an unpaved shoulder

*The crash summary by mode involved and crash type summary differ in that a single crash type may include multiple modes.

PROPOSED SAFETY COUNTERMEASURES





LEGEND

City of Belle Isle | High Injury Network (HIN) | HIN Intersection | KSI Crash | Pedestrian-involved Crash | Bicycle-involved Crash | Motorcycle-involved Crash | Automobile-Only Crash | Signalized Intersection | Bus Stop

HANSEL AVE/SR 527 INTERSECTIONS

72 TOTAL CRASHES AND 2 KSI CRASHES WITHIN 250' OF WALTHAM AVE ANDND FAIRLANE AVE

BELLE ISLE VISION ZERO ROAD TO ZERO

ROADWAY PROFILE

Functional Classification: Principal Arterial
Posted Speed Limit: 40 MPH
Number of Lanes: 2 (Part of One-way Pairs)
Roadway Volume: 20,000 - 30,000

Lighting: Y
Presence of Bike Lane: Y
Presence of Sidewalk: Y
Presence of Median: N

US DOT ETC: 0%
Transit Route: Y
Boardings/Alightings: LINKS 11 and 18 - S. Orange Ave.

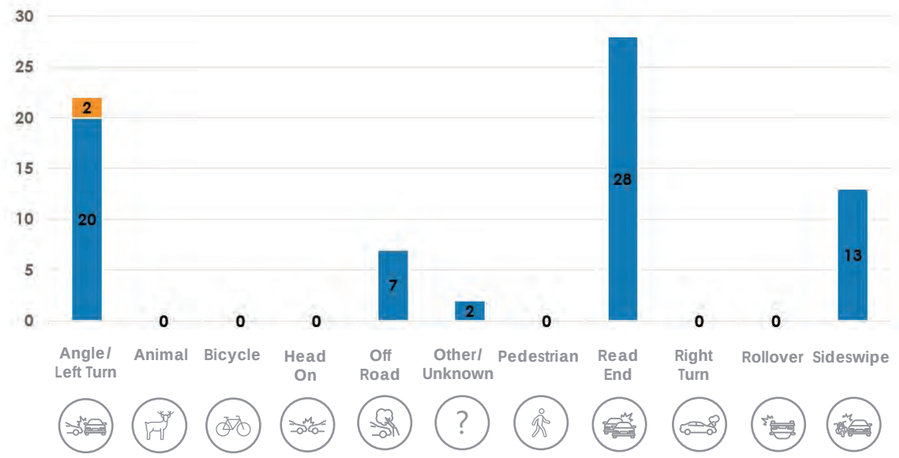
PLANNED IMPROVEMENTS

No Planned Improvements

CRASH SUMMARY BY MODE* AND TOP BEHAVIORAL FACTORS

KSI Crashes	0	0	0	2	0	0
Total Crashes	1	0	0	71	12	14

CRASH TYPE SUMMARY* AND TOP CONTRIBUTING FACTORS



Total Non-KSI Crashes

Total KSI Crashes

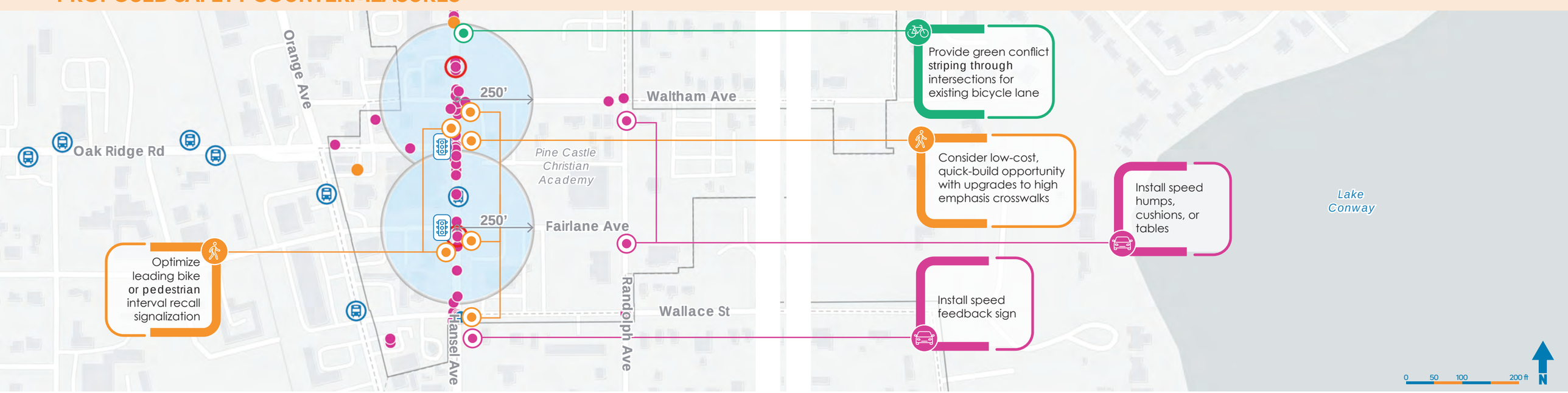
76% occurred on a weekday

46% occurred in locations not at an intersection

65% occurred in daylight

*The crash summary by mode involved and crash type summary differ in that a single crash type may include multiple modes.

PROPOSED SAFETY COUNTERMEASURES



LEGEND

City of Belle Isle | High Injury Network (HIN) | HIN Intersection | KSI Crash | Pedestrian-involved Crash | Bicycle-involved Crash | Motorcycle-involved Crash | Automobile-Only Crash | Signalized Intersection | Bus Stop


BELLE ISLE
vhb
ASHA
CAMBRIDGE
SYSTEMATICS
metroplan orlando
EST.
1924
TREE CITY USA
Arbor Day Foundation
8 Years

BELLE ISLE

VISION ZERO

ROAD TO ZERO

APPENDIX

VZAP COST ESTIMATES

Date: August 31, 2024

Prepared for: Raquel Lozano, City of Belle Isle, MetroPlan Orlando

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

INTRODUCTION

The City of Bell Isle 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 Belle Isle 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
Hoffner Ave	from Conway Rd to Avacado Ln	$3,681,600.00
Judge Rd	from Conway Rd to Daetwyler Dr	$825,600.00
Daetwyler Dr	from Judge Rd to Prairie Fox Ln	$906,000.00
Hansel Ave / SR 527 Intersections	from Hoffner Ave to Wallace St	$103,200.00
TOTAL		**$5,516,400.00**