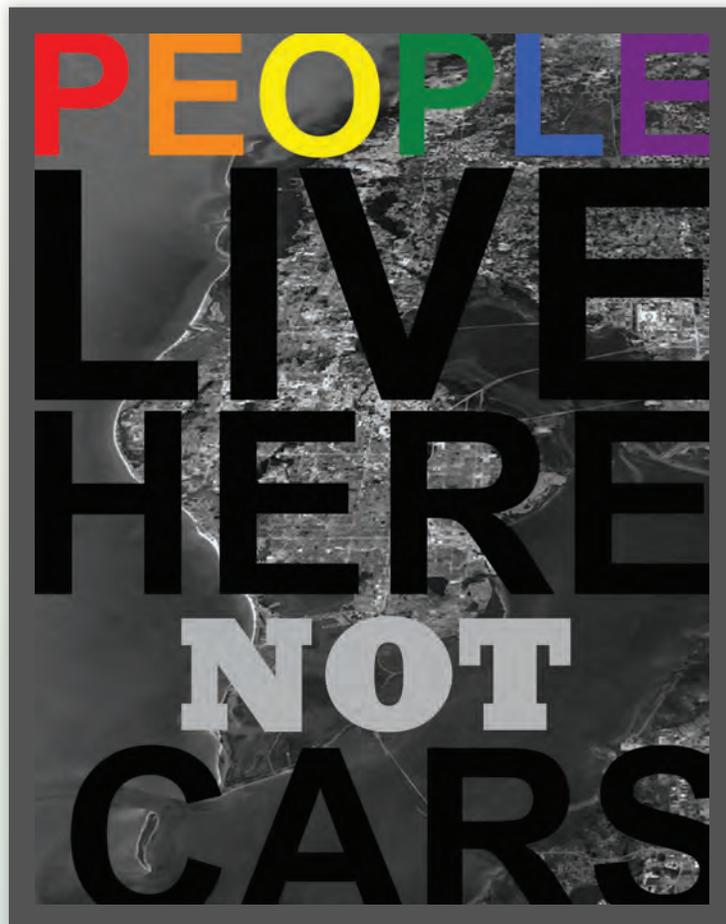




# SAFE STREETS PINELLAS

## Action Plan

Draft • February 2021





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*On the Cover.* As part of the Safe Streets Pinellas planning process we held a transportation safety community art contest. Over 40 submissions of drawings and photographs were received. The winning piece of artwork from the contest is shown as the central image on the cover, and other submissions are featured throughout this Action Plan. We appreciate the time our local artists took to share what transportation safety means to them!

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**I**dentify

**C**limate

**Y**outhful

**C**oast to Coast

**L**oop

**E**nergy

*AKA*  
8/27/20

Contest Runner-Up

# Introduction

1







## Dear Members of the Community,

Every day, two people are killed or seriously injured in traffic collisions in Pinellas County. Pedestrians, bicyclists and motorcyclists are much more likely to be killed or seriously injured in a crash than those traveling in an automobile. We are also finding that our minority and low income communities may be disparately impacted. Fatal and severe traffic collisions are preventable. Safe Streets Pinellas is focused on making the roadways in Pinellas County safer for everyone, no matter how they travel. We recognize that people make mistakes and our transportation system should be designed to minimize the consequences of these errors.

This Safe Streets Pinellas Action Plan is based on a data-driven analysis to identify a High Injury Network and Hot Spot locations. It includes a toolbox of engineering countermeasures and has non-engineering countermeasures, like education and technology.

Forward Pinellas recognizes that this requires a significant commitment from our agency but also our partners. In developing this Action Plan, we worked with citizens, the public health community, the business community, law enforcement, emergency management, public transportation, local governments and the Florida Department of Transportation to incorporate input from a wide range of stakeholders impacted by this serious problem in our community.

This Action Plan provides a path for Forward Pinellas and its partner agencies to work towards zero deaths and injuries by 2045. I hope you'll join us in this critically important mission!

Dave Eggers  
Chair, Safe Streets Pinellas Task Force  
Pinellas County Commissioner and Forward Pinellas Board Member



# How to Use This Document

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The purpose of this Safe Streets Action Plan is to establish implementable and measurable steps to help Pinellas County reach a goal of zero serious injuries and fatalities on our roadways by 2045. This document and associated actions will be reviewed and updated periodically by Forward Pinellas and partner agencies to assess progress towards zero, add new strategies that have proven effectiveness, and revise or eliminate strategies that are not working.

This report is organized into eight chapters, including this first Introduction chapter. The following summarizes what is contained in each section so readers can jump to sections of interest.

- **Chapter 2 – What is Vision Zero**  
This chapter provides an overview of Vision Zero, and how it differs from the traditional approach to transportation safety. The Safe Systems approach, a way to achieve Vision Zero, is outlined, in addition to equity and enforcement considerations in the Action Plan.
- **Chapter 3 – Community Outreach**  
The goal of Vision Zero cannot be achieved without the help of everyone in the community,

including people who live, work and visit Pinellas County, local government agencies, and other organizations. This chapter provides an overview of the outreach Forward Pinellas conducted as a part of this project.

- **Chapter 4 – Collision Trends**  
Collision data plays a crucial role in understanding and identifying who is being killed and seriously injured on our roadways and where. For this Action Plan, collision data from 2015 to 2019 was reviewed and analyzed to help understand collision trends. This analysis will help Forward Pinellas and partner agencies identify appropriate countermeasures for specific locations and corridors.
- **Chapter 5 – Demonstration Projects**  
Forward Pinellas partnered with several agencies throughout the course of this project to conduct demonstration projects of safety improvements that could be implemented in Pinellas County, including an educational outreach event, a near-miss assessment, and piloting of a new traffic safety device.



- **Chapter 6 – High Injury Network**

Following the collision analysis, a High Injury Network (HIN) was developed to identify roadways where the most serious and fatal collisions occur. This network represents approximately 3 percent of the roadway network, with 40 percent of the serious and fatal collisions. Focusing efforts to reduce severe and fatal collisions on these roadways can have an immediate benefit to improving transportation safety.

- **Chapter 7 – Safe Streets**

**Countermeasures** Forward Pinellas developed a toolbox of countermeasures that can help improve safety outcomes, including both non-engineering and engineering solutions that prioritize safety improvements in communities of Communities of Concern. Countermeasures are also paired with different types of collisions.

- **Chapter 8 – Safe Streets Strategies**

Forward Pinellas identified over 20 actions to implement in conjunction with local partners in the following categories:

- Safe Streets Program
- Data Collection, Monitoring and Analysis
- Education
- Street and Roadway Design
- Funding
- Legislation

Each action provides a summary of what Forward Pinellas intends to do, and specifies partners, timelines and performance measures.

- **Appendices** Several appendices are also provided for additional information, including more details on public feedback, a detailed collision assessment, the planning of demonstration projects, and an engineering countermeasure toolbox.





Contest 2nd Runner-Up

# What is Vision Zero?

# 2





# What is Vision Zero?

*Safe Streets Pinellas is the Vision Zero Effort led by Forward Pinellas to create a transportation system that is safe for everyone, with a goal that no one is killed or seriously injured while using the roadways in Pinellas County.*

Every year in Pinellas County, about 90 people lose their lives and 750 people are seriously injured on our streets.<sup>1</sup> These deaths and injuries are preventable and Forward Pinellas is committed to reducing the number of collisions that lead to fatality or injury, with an ultimate goal of zero fatalities or serious injuries on our roadways through a Vision Zero process.

Vision Zero seeks to eliminate all traffic fatalities and injuries while increasing healthy and equitable mobility for all road users. Vision Zero centers transportation planning, policy, and design around safety and public health as compared to more traditional approaches that focus primarily on expeditious vehicular mobility. Vision Zero also supports a multidisciplinary approach that brings together diverse stakeholders to address complex challenges and acknowledges that many factors such as infrastructure design, human behavior, policies, and technology contribute to safe mobility. A Vision Zero Plan sets clear actions in support of zero traffic deaths and serious injuries.

Roadway crashes are the eighth leading cause of death globally, and the leading

cause of death for people between the ages of 15 and 29.<sup>2</sup> Public health concerns related to roadway collisions are further compounded by concerns related to transportation emissions and time spent commuting, which have both been shown to worsen health outcomes. **On average, more than two people were killed or seriously injured on roadways in Pinellas County each day based on data between 2014 and 2019.** Furthermore, vulnerable roadway users (people biking, people walking, or people riding motorcycles) represent a disproportionate share of collisions that result in serious injury and death. Although 90 percent of collisions involve only automobiles, vulnerable roadway users account for 36 percent of collisions that result in a serious injury and 67 percent of collisions that result in a fatality in Pinellas County.

<sup>1</sup> On average, an additional 60 people per year die on interstate facilities. As the Forward Pinellas focus is on the non-interstate system, these roadways are excluded from the plan.

<sup>2</sup> World Health Organization (2020). Global Health Observatory Data. Accessed at [https://www.who.int/gho/road\\_safety/mortality/number\\_text/en/](https://www.who.int/gho/road_safety/mortality/number_text/en/)



## Words Matter

All too often our news media and collision reporting refer to preventable crashes as accidents. This word choice implies that nothing could have been done to prevent a collision. Research conducted at the University of South Florida<sup>3</sup> related to framing media reports in bicycle collisions found that news reports “largely functioned to remove blame from the motorist and to highlight the bicyclist’s actions. These linguistic strategies reflect the assumption that responsibility for safety rests on the bicyclist and detracts attention from potential social policy reform that would lead to fewer bicyclist fatalities.”

Forward Pinellas commits to using the word “crash” or “collision,” not “accident,” to acknowledge that roadway collisions can be systematically addressed and the reality is we can prevent these tragedies by taking a proactive, preventative approach which prioritizes transportation safety as a public health issue.

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<sup>3</sup> <https://journals.sagepub.com/doi/abs/10.1177/0361198119839348>



## Vision Zero Core Principles

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Vision Zero recognizes that humans make mistakes and therefore the transportation system should be designed to minimize the consequences of human error. The Vision Zero approach is fundamentally different from the traditional traffic safety approach in American communities in six key ways, as shown in [Figure 2](#).

The goals of this effort include addressing safety concerns throughout the County, providing data and information to our partner agencies, and working together to achieve zero deaths on our roadways.

The Vision Zero Network and the Institute of Transportation Engineers (ITE) collaboratively developed the Core Elements of Vision Zero in 2018.

The Core Elements set a national benchmark that includes ten core elements in three main categories:

1. Leadership and Commitment
2. Safe Speeds and Safe Roadways
3. Data-driven Approach, Transparency and Accountability

The national benchmark requires communities to commit to all ten core elements to be called a Vision Zero community – there is no picking and choosing or levels of commitment.<sup>4</sup>

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<sup>4</sup> More information on the *ITE Core Elements for Vision Zero Communities* is available at <https://visionzeronetwork.org/resources/vision-zero-core-elements/>.

**Figure 2** How is Vision Zero different?

**1** Reframes traffic deaths as **preventable**.

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

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

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

**5** Applies **data driven** decision making.

**6** Establishes road safety as a **social equity issue**.

The Advantage Pinellas 2045 Long Range Transportation Plan<sup>5</sup>, adopted in 2019, envisions a transportation network which provides safe multimodal transportation options for all residents and visitors to Pinellas County. This Vision Zero Plan, also known as Safe Streets Pinellas, is one of many implementation steps to achieve that goal along with other local, regional, and national efforts. For example, the Gulf Coast Safe Streets Summit, started in 2018, as a collaborative event between the MPO/TPOs of Hernando/Citrus, Hillsborough, Pasco, Pinellas, Sarasota/Manatee, and Polk Counties; the Florida Department of Transportation; the University of South Florida (USF) Center for Urban Transportation Research; and Bike/Walk Tampa Bay. The summit provides opportunities for regional knowledge sharing, education, and encouraging implementation of the complete streets

process throughout the region. These regional partnerships are supported by state-level directives from the Florida Department of Transportation, including strategies identified in the Florida Strategic Highway Safety Plan, the Florida Transportation Plan Policy Element, and the Complete Streets Implementation Plan. At the national level, cities are increasingly taking the pledge to become Vision Zero communities. The Federal Highway Administration (FHWA) provides resources and guidance to help communities develop safer transportation systems. Pinellas County is not alone in the challenge to eliminate all fatal injury collisions, and resources are increasingly available.

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<sup>5</sup> <https://www.forwardpinellas.org/advantagepinellas/>.

# Why Focus on Fatalities and Serious Injuries?

As Forward Pinellas and partner agencies seek to balance vehicle capacity and the need to provide safe access for all users of the transportation network, the focus on collisions that result in someone being killed or seriously injured (KSI) can provide the most meaningful benefit to the community.

Serious injuries resulting from a traffic crash have catastrophic impacts such as permanent disability, lost productivity and wages, and ongoing healthcare costs. Based on definitions provided by the Federal Highway Administration,<sup>6</sup> a collision is classified as a fatal collision if an injury sustained during a crash results in death within a 30-day period after the crash occurred. An injury includes the following:

- Broken or fractured bones
- Dislocated or distorted limbs
- Severe lacerations resulting in exposure of organs or tissue, or resulting in significant loss of blood
- Severe burns (second or third degree over 10 percent or more of the body)
- Skull, spinal, chest or abdominal injuries
- Unconsciousness at or when taken from the collision scene

Throughout the Plan, the acronym KSI is used to denote crashes where someone was killed or seriously injured.

<sup>6</sup> [https://safety.fhwa.dot.gov/hsip/spm/conversion\\_tbl/pdfs/kabco\\_ctable\\_by\\_state.pdf](https://safety.fhwa.dot.gov/hsip/spm/conversion_tbl/pdfs/kabco_ctable_by_state.pdf)





## Safe Systems Approach

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The Safe Systems approach, part of the Safe Roadways and Safe Speeds category, outlines strategies to reach the goal of zero KSIs. This approach acknowledges that people make mistakes and focuses on influencing system-wide practices, policies, and designs to lessen the severity of crashes. It has been employed effectively in many countries including Sweden, Norway, Finland, the Netherlands, Australia, and New Zealand for more than 30 years. These early adopter countries have seen marked decreases – at least a 50 percent reduction – in traffic fatalities across their roadway systems through a Safe System approach, with Oslo, Norway and Helsinki, Finland reporting no pedestrian fatalities in 2019. The key principles and elements of a Safe System approach, as defined by the Federal Highway Administration (FHWA), are presented in [Figure 3](#).<sup>7</sup>

Encouraging safer, more context-appropriate travel speeds and building “safety nets” into street design to prevent or mitigate serious and fatal collisions are key Safe System tools.

FDOT is shifting to a safe systems approach through updated context classification guidelines and Complete Streets policies that encourage safer street design., This is important since one of the most significant factors influencing the frequency and severity of collisions is vehicle speed, which directly affects the amount of kinetic energy transferred during a collision as shown in [Figure 4](#). The faster a vehicle is traveling upon impact the more likely the collisions will result in a serious injury or death.

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<sup>7</sup> <https://safety.fhwa.dot.gov/systemic/>

**Figure 3** Key Principles and Elements of the Safe Systems Approach



**Figure 4** Vehicle Speed Comparison to Chance of Pedestrian Fatality

**SPEED IS A FUNDAMENTAL PREDICTOR OF CRASH SURVIVAL.**

IF HIT BY A PERSON DRIVING AT



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

SOURCES: PROPUBLICA, VISION ZERO NETWORK

Lower speeds increase a driver's **[ field of vision ]** and allows for more time to react to unexpected situations in the roadway. The yellow circles above show how a driver's field of vision changes when they travel at various speeds



Another way to approach Vision Zero and systemic safety draws inspiration from Rand's Road to Zero report, which focuses on three key themes:<sup>8</sup>

- **Doubling down on what works**  
Focus on roadway design countermeasures that reduce conflicts and manage speeds, laws and enforcement, emergency response and trauma care, and more safety education and outreach.
- **Technology** Leverage and promote advanced driver assistance systems, which are increasingly featured on new vehicles to improve safety outcomes. Promote regional use of Intelligent Transportation System (ITS) technologies that can be used to predict collisions, improve emergency response times, and provide an improved travel experience.
- **Culture shift** A pervasive safety culture can be nurtured through a Safe Systems approach and the understanding that drivers will occasionally, but inevitably, make mistakes and that the overall transportation system could be designed to eliminate fatal outcomes.

Achieving zero deaths on Pinellas County roadways is no small goal and will require consistent focus and

effort, not only from local planners and engineers, but from others in the community including health care professionals, law enforcement, the media, and most importantly everyone who lives, works, and plays within the community. There are also strategies that are beyond the ability of local government to implement because they require state or federal legislative action to set vehicle safety standards or evaluate/approve some of the technological responses.

Safe Streets Pinellas will be an on-going process that includes systemic application of effective countermeasures, continual data-driven evaluation of progress toward zero, and equitable application of measures. In this process, the role of Forward Pinellas is to provide leadership in the local Vision Zero movement and guide a systemic approach throughout the County by providing an equitable approach to all municipalities and residents throughout the County through sharing of data, best practices, funding, and other resources to partner agencies that will implement safety improvements.

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<sup>8</sup> Rand's 2018 report *Road to Zero: A Vision for Achieving Zero Roadway Deaths by 2050*. Accessed at [https://www.rand.org/pubs/research\\_reports/RR2333.html](https://www.rand.org/pubs/research_reports/RR2333.html)



## Equity Considerations

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*What is Equity in the Vision Zero context? Vision Zero is based on the premise that all people have the right to move about their communities safely. If done well, Vision Zero can help transform broken systems into safe systems. This entails recognizing that many of our communities have been systemically discriminated against in transportation practices, and that not all communities are starting from the same place in terms of safety investments. In addition, problems of racial bias in policing raises urgent questions about how we must use Vision Zero to improve – not inadvertently exacerbate – negative, unintended consequences, particularly in communities of color and low-income communities.*

*The equity framework focuses on how to ensure that safety investments are made in Communities of Concern which typically experience higher rates of collisions that result in fatalities and serious injuries, and where transportation safety investments have historically not been made.*

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Serious and fatal collisions have an unequal impact upon the residents of Pinellas County. More KSI collisions occur in and around parts of the County that are classified as Communities of Concern, as defined in detail in Advantage Pinellas. Communities of Concern have high numbers of people of color and low-income populations. As documented in the 2045 Long Range Transportation Plan, transportation projects will be evaluated to ensure that Communities of Concern will not disproportionately experience adverse effects of transportation projects, and ensure these areas will

not be disproportionately excluded from receiving the benefits of transportation investments. Communities of Concern will also be targeted for additional public outreach activities to ensure that traditionally underrepresented groups are involved in the transportation process.

73 percent of the High-Injury Network is either within or runs through a Community of Concern even though these areas make up only 32 percent of Pinellas County's geographic area. The Action Plan includes several actions that focus on Communities of Concern.

**Contestant Artwork**



# Enforcement

Enforcement has traditionally been one of the key strategies to manage unlawful and undesirable behavior on our roadways. However, enforcement strategies can have unequal impacts, especially in Communities of Concern. There are three main types of activities provided by Law Enforcement related to traffic safety:

- **Deterrence** Preventative activities that seek to deter a traffic violation from occurring. This could include speed trailers or parking a police vehicle on a corridor of concern, or just the presence of police that can change behavior.
- **Compliance** involves law enforcement stopping a person suspected of a traffic safety violation.
- **Punishment** If a person is found guilty of having committed a violation there is typically a fine and, in some cases, imprisonment.

At the level of an individual officer, there is often a lot of discretion used in determining when someone should be stopped or cited.<sup>9</sup> National studies have shown that Black people and Hispanic people are more likely than white people to be stopped for traffic

safety violations and more likely to experience long-term financial burdens from these stops. For some violations, the punishment may not be severe enough to deter unwanted behavior, like driving under the influence. Fine structures and other punishments should be reviewed through an equity lens and the potential for non-monetary repayment, like community service, could be considered. Enforcement activities should also focus on the behaviors most likely to result in a fatal or serious injury crash, like driving under the influence, excessive speeding, and aggressive driving. Local law enforcement agencies can also review their hiring and training practices through an equity lens.

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<sup>9</sup> <https://www.bjs.gov/content/pub/pdf/cpp15.pdf>, <https://www.vox.com/identities/2017/8/4/16070664/police-racial-bias-speeding-ticket>, <https://www.sacbee.com/news/local/crime/article144743834.html>, <https://nyc.streetsblog.org/2020/05/07/nypds-racial-bias-in-jaywalking-tickets-continues-into-2020/>, <https://finesandfeesjusticecenter.org/articles/driving-while-black-and-latinx-stops-fines-fees-and-unjust-debts>.

While enforcement is a key component of traffic safety, there are ways to enforce traffic safety laws within an equitable framework while considering limited resources of our public safety agencies. For example, High Visibility Enforcement (HVE), which combines intensive enforcement of a specific traffic safety law with extensive communication, education, and outreach informing the public about the enforcement activity, has been shown to provide more equitable outcomes. A sobriety checkpoint stops everyone on a specific roadway regardless of race, age, or another characteristic. Another strategy is automated speed enforcement. There is no discretion with this approach since every vehicle driving over a certain speed is issued a citation. Forward Pinellas will continue

to evaluate the applicability of using Automated Speed Enforcement in Pinellas County.

It is unclear to what extent the unequal burden of enforcement might be having on Communities of Concern in Pinellas County as a detailed review of policing policies or outcomes was not conducted as part of the preparation of this Action Plan. However, Forward Pinellas also recognizes that it is not possible to solve all traffic safety issues through enforcement strategies. Targeted enforcement strategies coupled with engineering countermeasures, educational programs, and legislative change will be needed to reduce the number of serious and fatal injury collisions.



Contestant Artwork

# Community Outreach

# 3





## Community Outreach Summary

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Community outreach for Safe Streets Pinellas has taken many forms including regular meetings with a diverse Project Task Force, a public information and feedback campaign, on-line traffic safety quizzes, customized social media commitment frames, and an art contest. Project Ambassadors helped spread the word to the community and presentations to various Forward Pinellas advisory committees kept decision-makers informed about the overall project process. Opportunities for feedback on the overall Action Plan strategies were also offered at various key milestones during development of the Action Plan.

A formal Safe Streets Summit was planned for March 31, 2020. Over 125 participants had registered for the event scheduled to take place at the EpiCenter at St. Petersburg College. Numerous interactive workstations, including an existing conditions overview, educational components about Vision Zero, and opportunities for members of the public to provide feedback about transportation safety in their community were planned. Due to COVID-19 the summit was postponed indefinitely.

To keep the project moving forward, in-person activities and Task Force and Ambassadors meetings were transitioned to an on-line format using Zoom. Alternative approaches to the planned in-person Pinellas Summit elements were developed, including preparation of a project website<sup>10</sup> and detailed on-line mapping to share the collision analysis results with the public. There was an eight-week long social media blitz with weekly prize winners who interacted with the Safe Streets materials, took a Safe Streets Pinellas Pledge, watched videos prepared for the project, or shared feedback. Prizes ranged from tote bags and pens to a roadside emergency kit to a gift card to a local bicycle shop. Over 150 people took part in the safety quizzes and more than 250 people provided comments on the crowdsourcing map, an on-line map where people can provide feedback, review the feedback from others, and provide additional feedback on the comments provided by others. Overall, 1,700 people participated in this online engagement format.

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<sup>10</sup> <https://forwardpinellas.org/safestreets/about/>.

Contestant Artwork





## Task Force

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A Project Task Force was established with a goal of having a small group of members with diverse perspectives of traffic safety and the transportation network in Pinellas County. The Task Force included transportation engineers and planners, Forward Pinellas advisory committee members, public health staff, school staff, law enforcement, and a representative for the transportation disadvantaged. Everyone's contributions to the plan are greatly appreciated.

Members of the Task Force were:

- Pinellas County Commissioner Dave Eggers, Forward Pinellas Chair, 2020
- Julie Bond, Senior Research Associate, Center for Urban Transportation Research
- Stephanie Carrier, Pinellas County Schools
- Lt. Joseph Gerretz, Pinellas County Sheriff's Office
- Daphne Green, Pinellas Park
- Craig Hare, Pinellas County EMS and Fire Administration
- Alex Henry, FDOT District 7 Bicycle and Pedestrian Coordinator
- Gloria Lepik Corrigan, Disability Advocate
- Matt Lettelair, St. Petersburg Area Chamber of Commerce

- Caitlin Murphy, Pinellas County Planning<sup>11</sup>
- Amanda Payne, Amplify Clearwater
- Joan Rice, Pinellas County Public Works
- Brian Scott, Escot Bus Lines
- Ross Silvers, Pinellas Suncoast Transit Authority
- Officer Ron Wolfson, St. Petersburg Police Department
- Edith Wong, FDOT District 7 Traffic Safety Studies Engineer

The Task Force met five times throughout the course of the project and each meeting focused on a different element of the plan. Key meeting topics were

1. Introduction to the Core Elements of Vision Zero (April 2020)
2. Collision Landscape and Draft High-Injury Network (May 2020)
3. Non-Engineering Countermeasures (June 2020)
4. Engineering Countermeasures (August 2020)
5. Action Plan Review (November 2020)

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<sup>11</sup> The Pinellas County Planning Department has since become the Pinellas County Housing and Community Development Department.

Meetings were held virtually using the Zoom platform, and recorded so Task Force members who could not attend were able to watch the meeting at their convenience. During the virtual meetings, a range of opportunities were offered for Task Force members

to have small group conversations, interact with presentation materials, and provide critical feedback as shown in [Figure 5](#). Access to meeting recordings and minutes are available upon request from Forward Pinellas.

**Figure 5** Interactive Activities with the Task Force Meetings

The screenshot displays two main interactive activities from a virtual meeting. The top portion shows a 'Map Annotation' tool with a toolbar and a map of Pinellas County. The map is annotated with various colored shapes: a blue scribble, a red rectangle, a purple square, a yellow rectangle, a green circle, and several blue circles. Text annotations include 'Let's go swimming in the Gulf' with an arrow pointing to the coast and 'Hit Hello!' with a hand-drawn figure-eight shape. The bottom portion shows a Menti poll titled 'What surprised you about the preliminary collision analysis?'. The poll has six response boxes with the following text: 'Nothing', 'How spread out the collisions are', 'Nothing really surprised me', 'I've looked at this kind of data for FL communities before, so not too much. Maybe the 8am spike in DUIs', 'Not too many surprises: maybe that males are more likely victims.', 'Less fatal and severe crashes involving people crossing the road', 'It was surprising how universally widespread everything was across the county.', 'Nothing, it's about where I expected it to be', and 'Larger number of young people are involved in crashes compared to population age ranges'. A 'Pause scroll' button is visible at the bottom of the poll. On the right side of the poll, a grid of 11 video thumbnails shows participants in the meeting, including names like 'Rin Wolfson', 'Glenn Lopez Corrigan', 'Sarah Caper', 'Dave Eggert', 'Scott', 'Caitlin Murphy', 'Wendy', and 'Will Blanton'. The 'SAFE STREETS PINELLAS' logo is present in the bottom right corner of the poll area.



## Project Ambassadors

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A Project Ambassador program was also established. Project Ambassadors are community members, agency staff, and others who are interested in the project. An Ambassador orientation was provided to educate the group about core elements of Vision Zero, the draft collision assessment, public engagement strategy, and overall project goals. As new materials were

posted to the project website and social media, our Ambassadors helped spread the word through their networks. It is expected that Project Ambassadors will continue to champion Vision Zero in their communities and help continue the momentum.

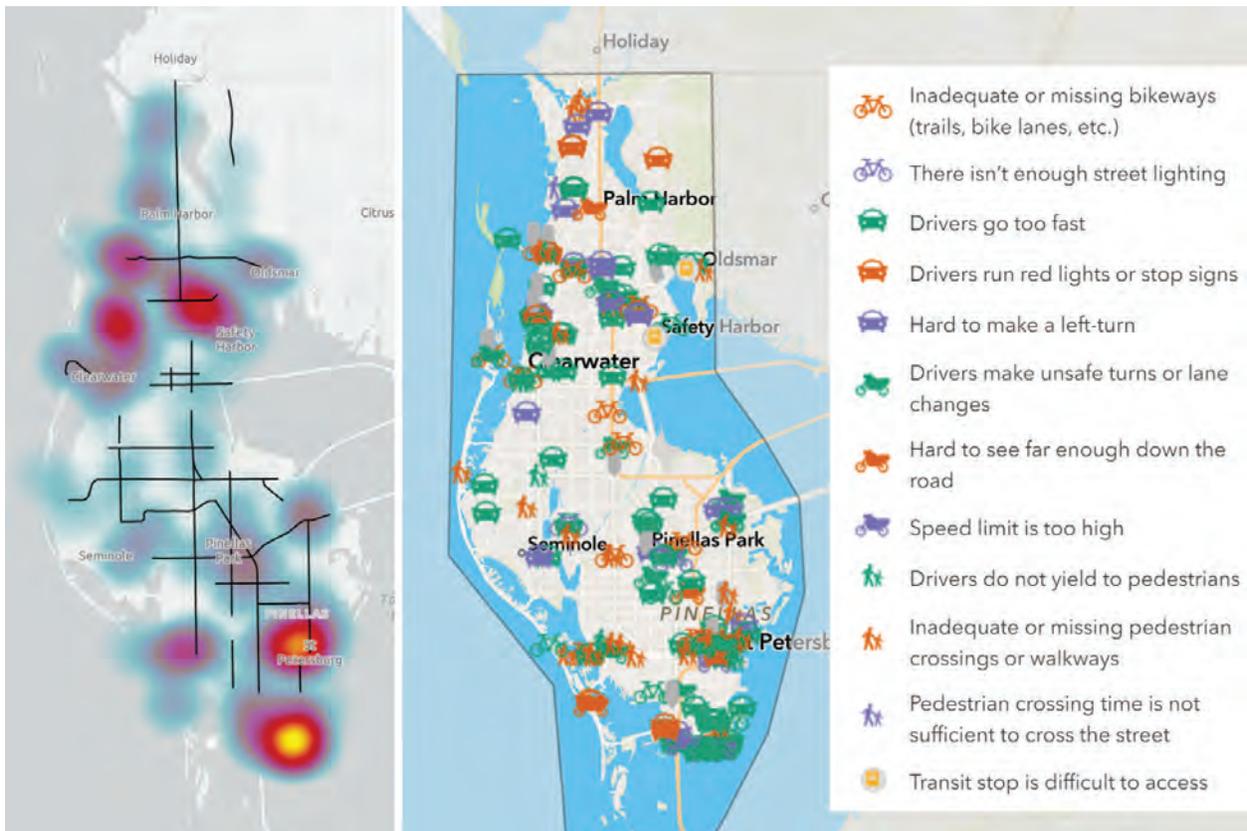
## Public Feedback

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Collision data alone does not tell the full story about safety concerns on our roadways so an on-line Crowdsourcing Map was used to collect feedback from the general public about transportation issues in their communities, as shown in [Figure 6](#). Respondents could pick from a series of typical concerns and provide detailed comments on specific issues they have witnessed or experienced in their communities or at locations they travel regularly. Other respondents had the ability to “vote up” comments made by others and/or add additional details. Overall, 225 unique comments and 200 additional comments/vote-ups on original comments were received. In total, 60 percent of the comments

were related to behaviors of other roadway users (speeding, running red-lights or stop-signs, drivers not yielding to pedestrians) and 40 percent of the comments were related to physical design features of the transportation network (missing sidewalks, lacking street lights, hard to see on-coming vehicles, or speed limits that are too high). Roadway design features have a direct influence on driver behavior, including driver speeds. This feedback was used during the development of this plan to identify demonstration project locations and reinforce the need for both engineering and non-engineering countermeasures to make streets safer in Pinellas County.

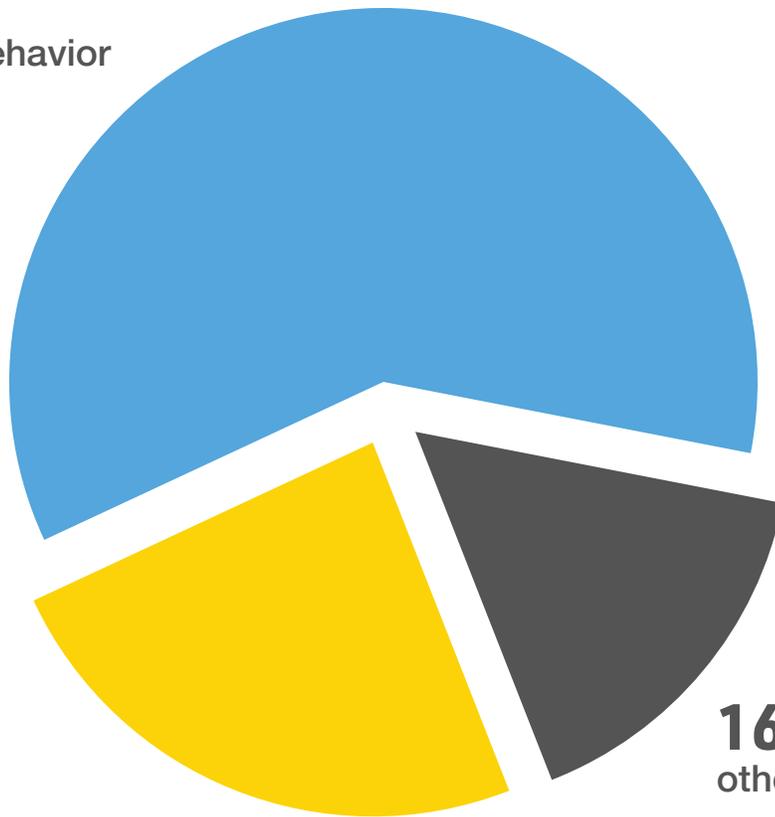
**Figure 6** Distribution of Public Comments Received



# Comment Summary

- 36%** speed
- 5%** unsafe lane changes
- 6%** not following intersection control
- 10%** not yielding to pedestrians
- 3%** not sharing roads with bicyclists

**60%**  
driver behavior



- 24%**  
bike, pedestrian, and transit infrastructure
- 14%** gaps in pedestrian network
- 7%** gaps in bicycle network
- 2%** insufficient crossing time
- 1%** inaccessible transit stop

- 16%**  
other design issues
- 9%** hard to turn left
- 2%** low visibility
- 1%** insufficient lighting
- 4%** other



## Comment Summary

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A summary of all the comments received is provided in [Appendix A](#). One location that received a number of comments is the intersection of Alternate US 19 at Curlew Road. Below are some of the comments submitted and most were related to bicycle and pedestrian safety:

*"We need an overpass at this intersection for pedestrians and bicycles."*

*"We need to move stop bars back, improve crosswalk visibility, provide pedestrian scale lighting and restrict right on red for all four approaches."*

*"Drivers continue to turn despite no turn on red signal, placing trail users in danger. Maybe if flashing red lights were added it would help."*

*"Westbound Curlew drivers frequently make right turns on red at Alt 19 northbound. Propose a lighted "no turn" sign similar to the one for North Bound Alt 19 and eastbound Curlew. The failure of drivers to obey the No Right on Red sign places users of the Pinellas trail at risk."*

*"The intersection of Curlew and the Causeway is highly trafficked and dangerous when crossing in any direction. Due to the Pinellas Trail crossing here as well the existing crosswalk system just isn't enough to leave pedestrians feeling safe when crossing."*

*"Intersection is EXTREMELY busy with traffic coming from all four directions, and bike/ped traffic on the Pinellas Trail as well as the Honeymoon Island Trail spur."*

Additional details about safety measures at this intersection can be found in the Demonstration Project portion of this report.



## Other Survey Data

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As part of the 2045 Long Range Plan a statistically valid survey was administered by the ETC Institute on behalf of Forward Pinellas. Over 800 survey responses were received on a broad range of planning topics including roadway safety and transportation planning priorities. Key survey results that relate to the goals of this project include:

- 57 percent of survey respondents are willing to trade lower speed limits for safe streets (26 percent responded "No" and 17 percent were undecided)
- 38 percent of respondents selected Crime and Personal Safety when traveling as one of the top three most pressing challenges facing Pinellas County (1st is traffic congestion and travel delays, and 2nd is lack of affordable housing options)
- 25 percent of respondents selected making streets safer for walking and bicycling as their top transportation priority – tied with expanding bus service (1st is better timing of traffic signals, and 2nd is creating rapid transit services)

- 74 percent of survey respondents strongly agreed with the statement “A public street serves the community best when people in cars, in bicycles, using public transportation, or walking all feel safe and welcomed” (18 percent agreed, 4 percent either disagreed or strongly disagreed)

These survey results indicate most people in Pinellas County are supportive of making changes to the transportation system to improve the safety of all roadway users. However, as specific projects are implemented, information related to the trade-offs between various modes of travel should be provided. For example, strategies that provide improved signal coordination implemented with lower speed limits on select corridors could result in minimal travel time changes along a corridor and improve travel time reliability, as well as improve safety outcomes. As Forward Pinellas works to implement the actions outlined in this and other planning documents, projects will be evaluated through a capacity lens as well as a safety lens.

Contestant Artwork



## Public Interaction

A variety of approaches were taken to engage the community with Safe Streets Pinellas including a series of on-line quizzes to test “street smarts” about traffic safety, safety pledges, and a community art contest.

**Bring Your Inner Artist:** A transportation safety-themed coloring book was prepared for the in-person event, complete with colored pencils and information about different transportation safety strategies. In addition to a Safe Streets Pinellas coloring book, a transportation safety community art contest was held. Over 40 submissions of drawings and photographs were received. The winning piece of artwork from the contest is displayed on the cover of this document with other submissions featured throughout. We appreciate the time our local artists took to participate and share their transportation safety images!

### CALLING ALL ARTISTS! WHAT DOES #SAFESTREETS MEAN TO YOU?

August 3, 2020 / Filed under [Bicycle Friendly Community](#), [Complete Streets](#), [Food Insecurity](#), [How We Develop](#), [Planning for the future](#), [Priorities](#), [Regional Transportation](#), [Safe Streets - Vision Zero](#), [Safety](#).

Author(s): [Sarah Caper](#)

**Calling artists of all ages! We need your help to design artwork for Safe Streets Pinellas.**

Now through August 31, 2020, create and submit your artwork depicting what #SafeStreets means to you. Artwork can include a drawing, painting, photo, computer graphic, or other piece of art. Get creative!



STRATEGY

# intersection tightening

# 01

**WHAT DOES IT LOOK LIKE?**

PAIN, PLASTIC BOLLARDS, and REFLECTIVE MARKERS that physically and visually narrow the street.

**WHAT DOES IT DO?**

Narrows the road to reduce the speed of turning vehicles, shorten the pedestrian crossing distance, and make pedestrians more visible to vehicles.



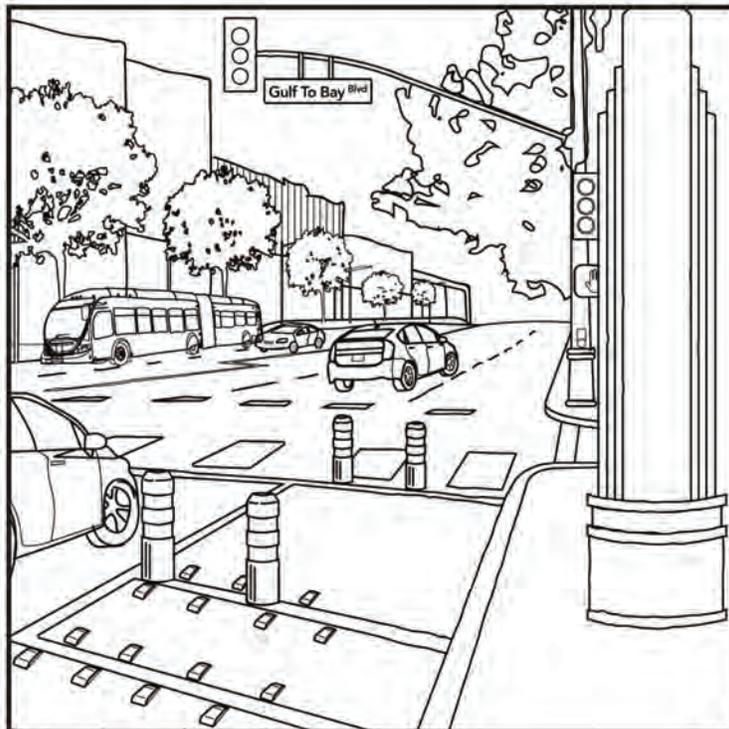
PAIN



PLASTIC BOLLARDS



REFLECTIVE MARKERS



## Test Your Street Smarts!

Test your knowledge and WIN PRIZES based on your Street Smarts. At the end of the quiz, provide your contact information to be entered into a prize drawing. Contact information is NOT REQUIRED to participate.



**Test Your Street Smarts:** Over 150 people participated in the on-line quizzes: the quizzes were originally intended to be flashcards at the in-person summit but were switched to an on-line platform. A variety of questions types were incorporated into the quizzes, including helmet laws for bicyclists, motorcycle regulations, and what to do when you approach a “dark” traffic signal. In total, quiz takers answered 68 percent of questions correctly. However, **quiz takers tended to score higher on questions about rules for drivers related to traffic signal operations and showed some room for improvement on knowledge about**

**yielding to pedestrians and interacting with bicyclists on our roadways.**

While the official Florida Driver License Handbook<sup>12</sup> was recently updated to include more robust sections on pedestrian and bicyclist laws, those who have not recently taken the written exam may not be as familiar with current laws such as the requirement of drivers to provide people riding bicycles a minimum of three feet of clearance when driving alongside or passing.

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<sup>12</sup> <https://www3.flhsmv.gov/handbooks/englishdriverhandbook.pdf>.

**Show Your Support:** A core element of a Vision Zero community is a commitment for elected officials and policy makers to prioritize and commit to safe streets. We provided an opportunity for others within the community to express their commitment to safer streets in Pinellas County. Options to complete a pledge on-line or print out a pledge board were provided. We will continue to encourage members of our community to take the pledge, even after the plan is adopted, to show support toward Safe Streets Pinellas. Take the pledge today by visiting <https://forwardpinellas.org/safe-streets-vision-zero/safestreets-starts-with-you-take-the-pledge-towards-zero/>



Other public outreach conducted during plan development included a variety of committee presentations, presentations to groups who requested additional information, and workshops. Additional events are anticipated and will continue with the establishment of a Safe Streets working group. If you are interested in receiving more information about upcoming events or ways to get involved, please contact Forward Pinellas.

STAY OFF  
YOUR PHONE



KEEP YOUR EYES  
ON THE ROAD

Contestant Artwork

# Collision Trends

# 4





## Collision Trends

---

Since 2015, 450 people have lost their lives, and thousands more have sustained life altering injuries in Pinellas County. Chances are you know someone who has been killed or seriously injured, or someone who has lost a close friend or family member. Traffic collisions place a high emotional and financial toll on the victims and their immediate family and friends, and impact our society as a whole in terms of increased medical costs, insurance, and increased travel times/delays due to congestion caused by collisions.

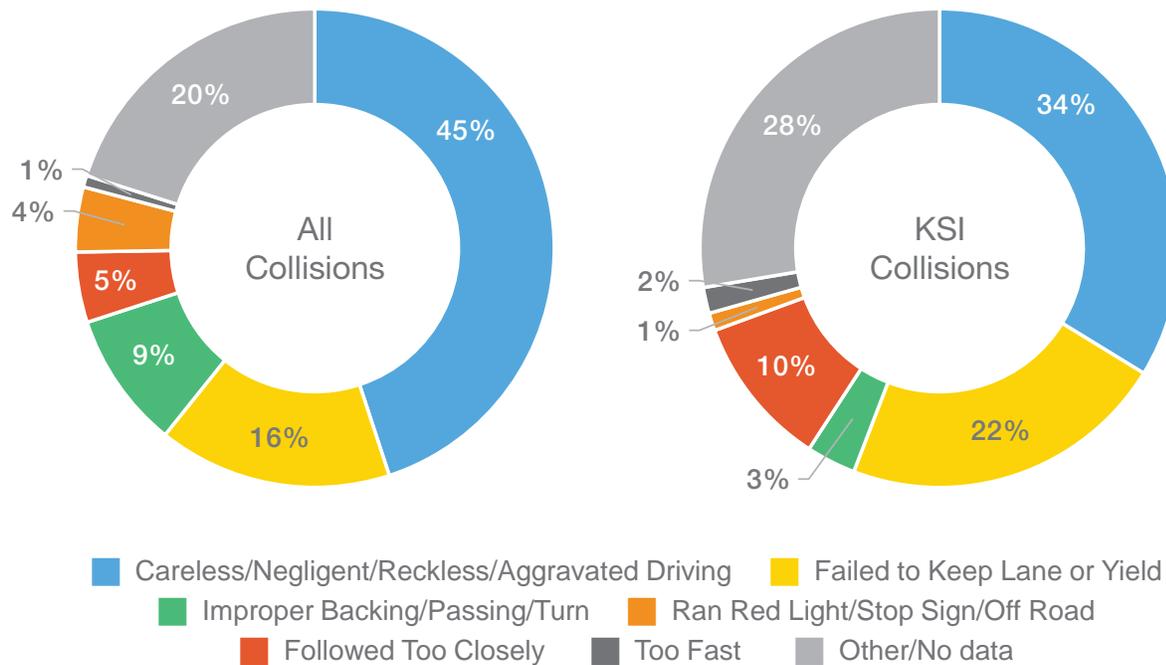
The collision assessment analyzed data from the Pinellas Crash Data Management System (CDMS). This assessment focuses on the five years between 2015 and 2019.<sup>13</sup> During that five-year period approximately 131,200 collisions were reported in Pinellas County, with three percent of those collisions resulting in fatalities or serious injuries. A detailed collision assessment is provided in [Appendix B](#) with the following key findings:

- On average, two people are killed or seriously injured on Pinellas County roadways each day.
- Overall collisions overwhelmingly involve automobiles (90 percent). Collisions that result in a KSI disproportionately include a vulnerable roadway user (people biking, people walking, people riding motorcycles), with pedestrians accounting for 40 percent of people killed on Pinellas County roadways.
- Alcohol is two or more times as likely to be involved in a KSI collision than a non-KSI collision.

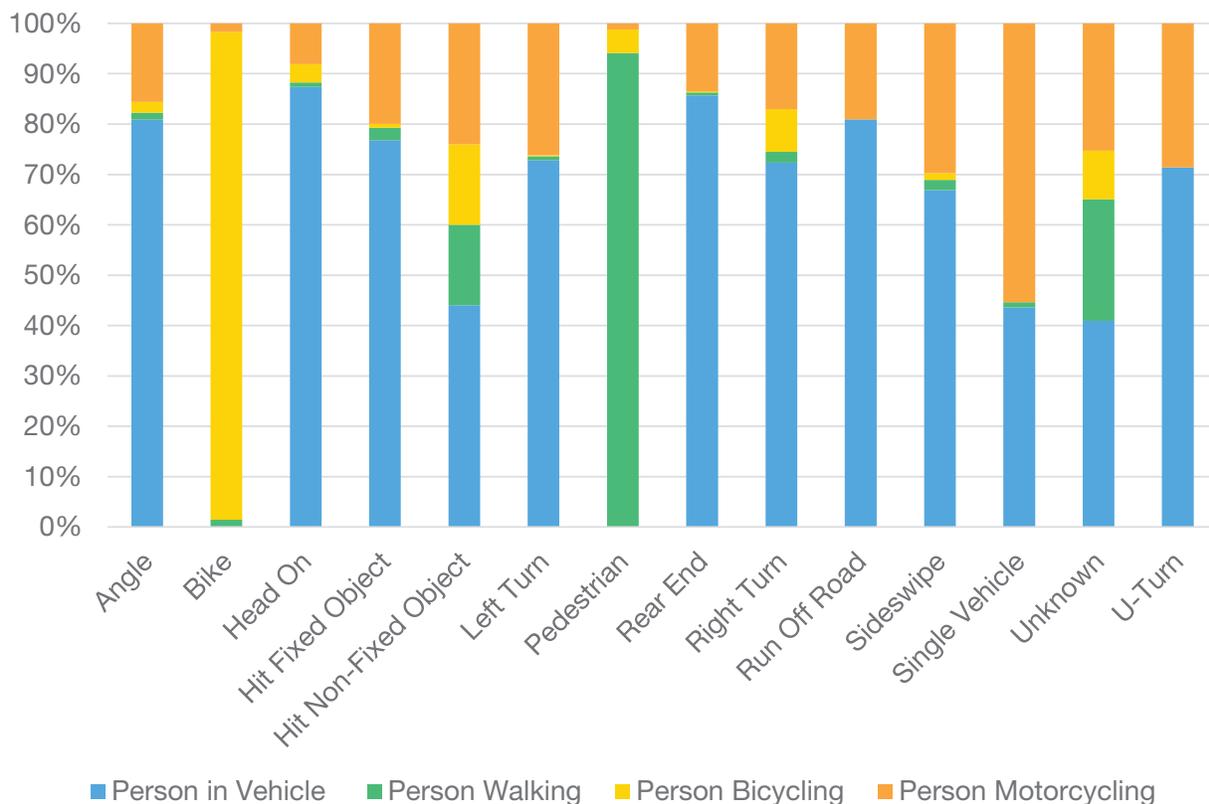
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<sup>13</sup> Data from the last few months of 2019 was being refined when this analysis was started. Therefore, the numbers presented in this analysis may slightly differ from other published data. However, none of the refinements changed the overall collision trends.

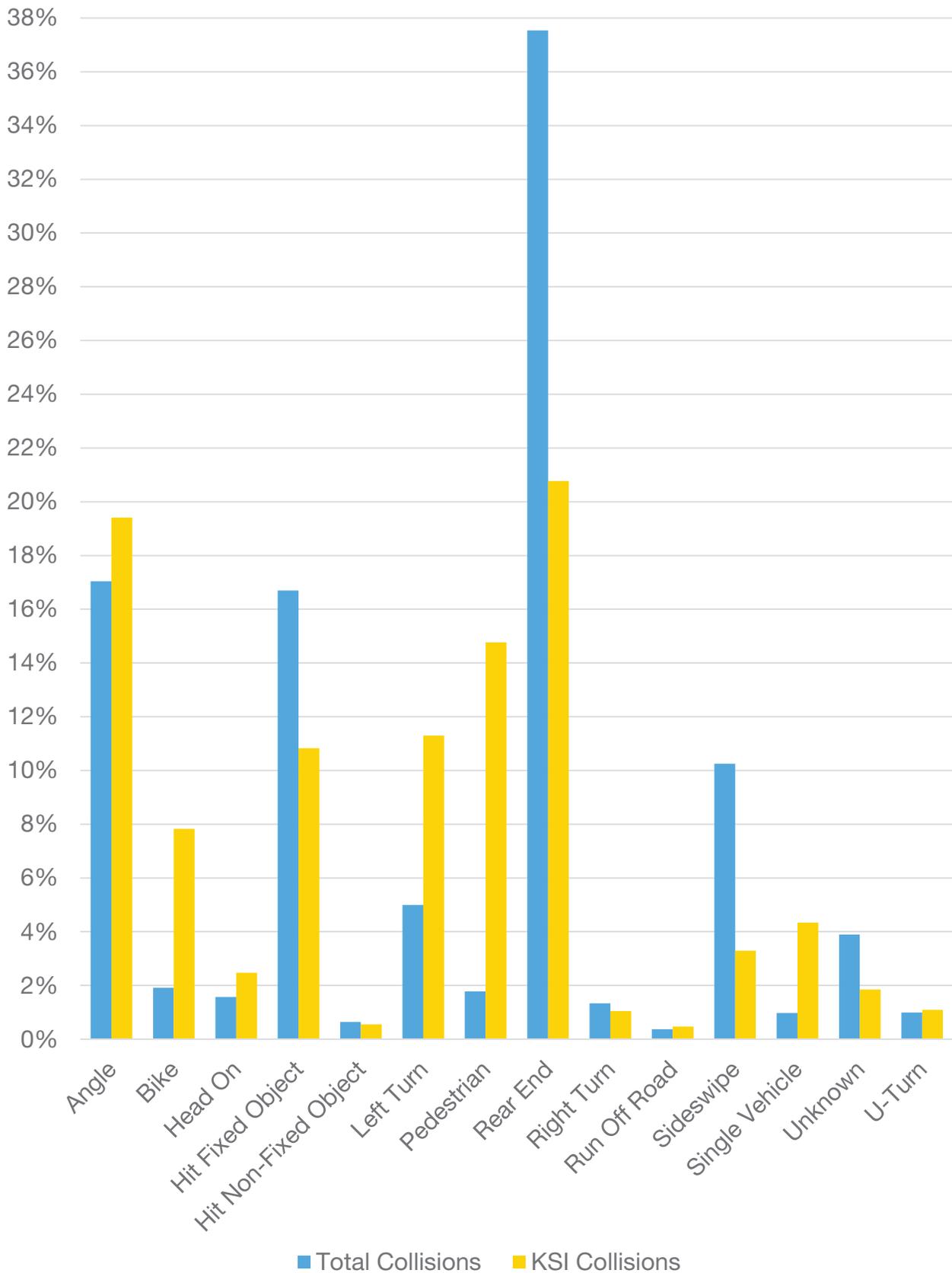
**Figure 7** Cause of Collision in Pinellas County, 2015-2019



**Figure 8** Mode of KSI Victims in Pinellas County 2015-2019 by Collision Type



**Figure 9** Severity of Collisions in Pinellas County 2015-2019 by Collision Type



- The highest share of overall collisions occurs between 3 and 6 PM, including KSI collisions. However, collisions that occur between 6 PM and 6 AM are more likely to result in a KSI than between 6 AM and 6 PM.
  - KSI collisions are slightly more likely to occur during winter and spring months (December through April) versus other months.
  - More than 60 percent of KSI collisions occur on less than 10 percent of roadways, including portions of US 19, Park Boulevard, Gulf to Bay Boulevard, Bay Drive, 4th Street and 38th Avenue.
- While men account for 48 percent of the Pinellas County population, they are behind the wheel in 61 percent of KSI collisions.
  - Drivers between the age of 20 and 29 are overrepresented in collisions that result in a fatality as compared to other age groups.
  - Rear-end collisions are the most frequent collision type but are less likely to result in a serious or fatal injury, while left-turn, head-on and single-vehicle collisions occur less frequently, but are more likely to result in a fatality or serious injury.

**ON AVERAGE,  
2 PEOPLE ARE  
KILLED OR  
SERIOUSLY  
INJURED  
IN TRAFFIC  
COLLISIONS  
IN PINELLAS  
COUNTY,  
EVERY DAY.**

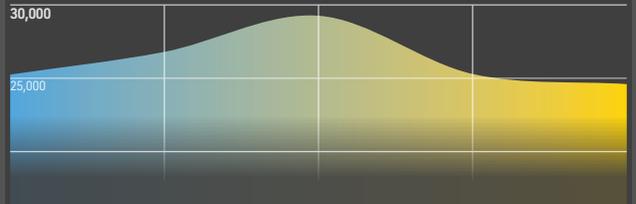
IN THE LAST 5 YEARS, THERE WERE NEARLY

**131,200**

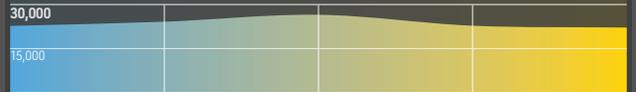
REPORTED TRAFFIC COLLISIONS  
IN PINELLAS COUNTY

TOTAL COLLISIONS ARE GOING DOWN

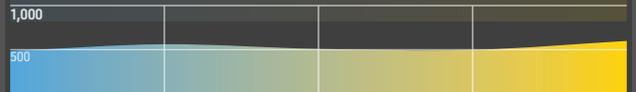
2015 2016 2017 2018 2019



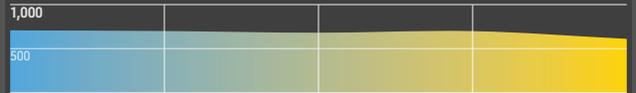
**AUTO COLLISIONS ARE STAYING CONSTANT** 118,630 TOTAL



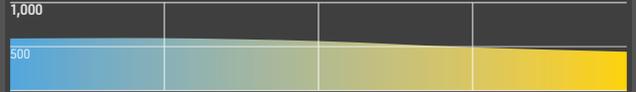
**PEDESTRIAN COLLISIONS ARE GOING UP** 2,640 TOTAL



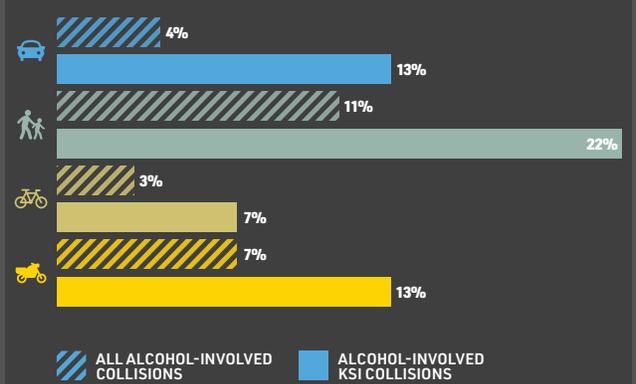
**BIKE COLLISIONS ARE GOING DOWN** 3,390 TOTAL



**MOTORCYCLE COLLISIONS ARE GOING DOWN** 2,690 TOTAL



ALCOHOL IS TWO OR MORE TIMES AS LIKELY  
TO BE A FACTOR IN KSI COLLISIONS

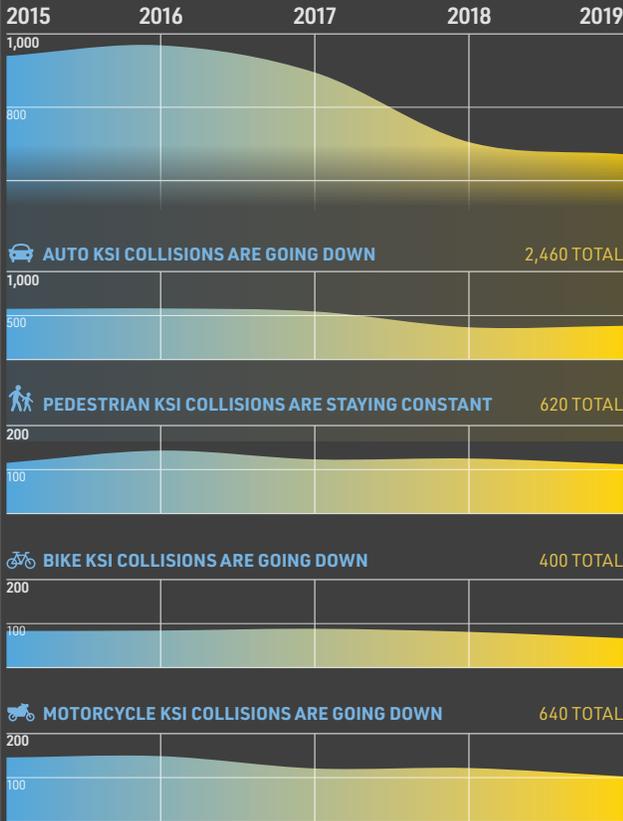


BUT NOT ALL CRASHES ARE ALIKE. IN FACT,

# 4,200

INVOLVED SOMEONE WHO WAS  
KILLED OR SEVERELY INJURED (KSI)

TOTAL KSI COLLISIONS ARE GOING DOWN

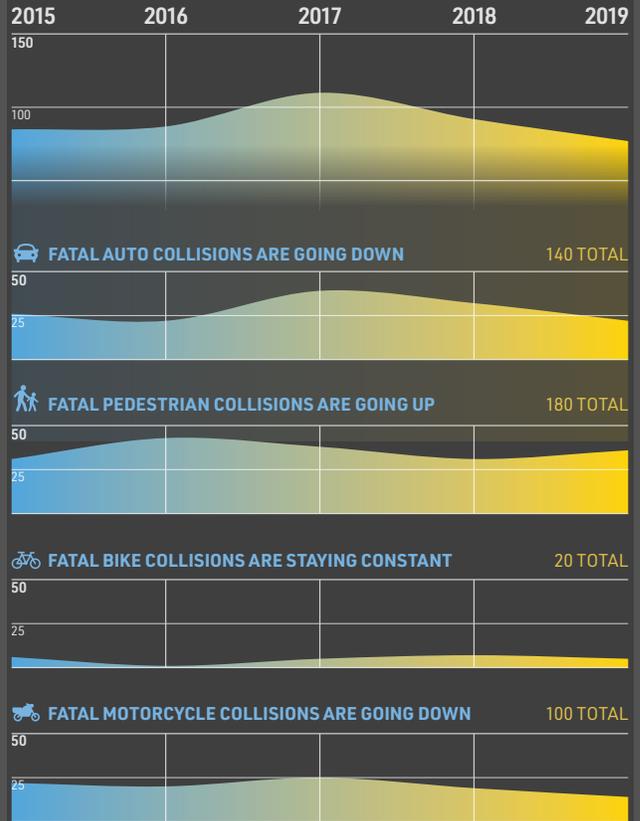


AND, TRAGICALLY,

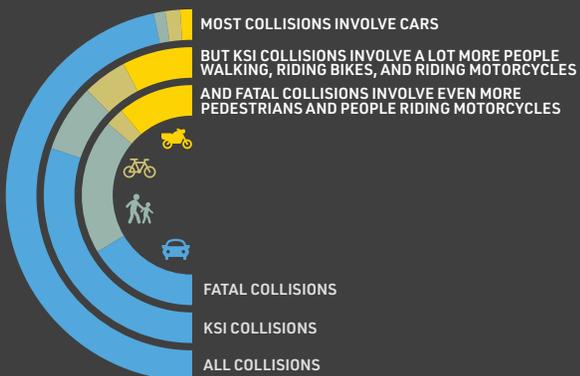
# 450

PEOPLE LOST THEIR LIVES  
IN A TRAFFIC COLLISION

TOTAL FATAL COLLISIONS ARE GOING DOWN



### PEDESTRIAN, BIKE, AND MOTORCYCLE COLLISIONS ARE DISPROPORTIONATELY KSIs



### PINELLAS COUNTY HAS THE 8TH MOST FATAL AND INJURY COLLISIONS IN OF ALL FLORIDA

MIAMI-DADE	163,040
BROWARD	121,500
ORANGE	103,700
HILLSBOROUGH	100,570
PALM BEACH	79,680
DUVAL	71,220
<b>PINELLAS</b>	<b>55,170</b>
POLK	36,930
LEE	36,280
PASCO	33,410

SOURCE: FLORIDA DEPARTMENT OF HIGHWAY SAFETY AND MOTOR VEHICLES (2014 - 2018)

# What are the Differences Between Collision Types?



**Angle** collisions occur when two vehicles impact at an angle, for example, the front of one vehicle impacting the side of another. Angle collisions are the second most common collision type in Pinellas County, accounting for 17 percent of all collisions and 19 percent of KSI collisions. It is also the collision type that affects people who ride motorcycles the most: over 130 people who ride a motorcycle were killed or seriously injured between 2014 and 2019 in angle collisions.



**Rear-end** collisions occur when a vehicle crashes into the vehicle in front of it. Contributing causes of rear-end collisions are driver inattention or distraction, tailgating, and reduced traction due to wet weather, worn pavement, or poorly maintained vehicles. Rear-end collisions are the most common collision type in Pinellas County, accounting for 38 percent of collisions; 21 percent of these collisions result in a serious injury or fatality, with 86 percent of those injuries or fatalities involving a vehicle occupant.



**Head-on** collisions occur when the front of one vehicle impacts the front end of another vehicle while the vehicles are traveling in the opposite direction. Head-on collisions account for about 1.5 percent of total collisions and 2.5 percent of KSI collisions. Almost 90 percent of victims of KSI head-on collisions are in vehicles in Pinellas County; eight percent are people riding motorcycles.



**Non-Fixed Object** collisions occur when a vehicle hits an object that is not fixed with the environment, like a vehicle, a person who is walking, or a person riding a bicycle. These account for very few collisions in Pinellas County, as collisions involving a person who is bicycling or walking are typically classified under pedestrian or bicycle collisions.



**Left-turn** collisions occur when the person driving, or a vulnerable roadway user, is making a left-turn at an intersection. In Pinellas County, these account for five percent of the total collisions, but over 11 percent of collisions resulting in a KSI. Over 125 motorcyclists were killed or seriously injured between 2014 and 2019 in left-turn collisions.



**Fixed Object** collisions occur when a vehicle hits an object that is fixed with the environment, like a light pole or tree. These accounted for 17 percent of total collisions and 11 percent of KSI collisions.



**Bike/Ped** collisions account for 25 percent of collisions resulting in a serious injury or fatality. Unfortunately, the root cause of these collision types are not easy to ascertain, as the majority of KSI collisions involving a pedestrian are classified as a pedestrian collision, and the majority of collisions involving a bicyclist are classified as bicycle collision, with limited information about the actions of the person driving.



**Sideswipe** collisions can occur between vehicles traveling in the same or opposite direction and involve an impact between the sides of the vehicles with no significant involvement of the front or rear of the vehicle. The impact swipes along the surface of the vehicle parallel to the direction of travel. Sideswipe collisions represent about ten percent of total collisions, and about three percent of KSI collisions. People who motorcycle are involved in about 33 percent of KSI sideswipe collisions.



**Right-turn** collisions occur when a person driving, or a vulnerable roadway user, is making a right-turn. In Pinellas County, these account for 1.3 percent of total collisions and one percent of KSI collisions.

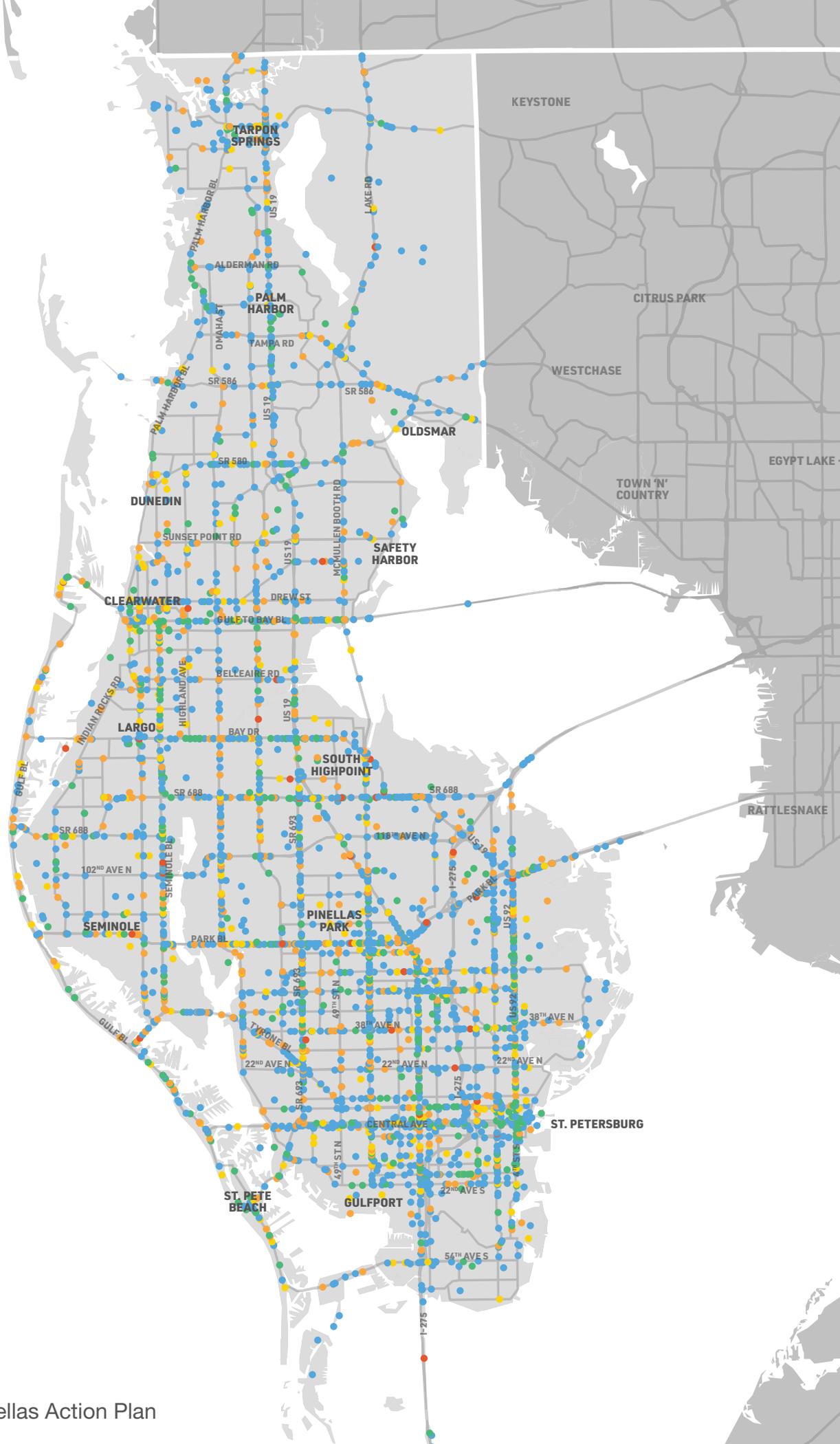


**Single-vehicle** crashes are collisions that involves only one vehicle. They account for about one percent of total collisions and four percent of KSI collisions. Almost 50 percent of victims of KSI single-vehicle collisions are people who ride motorcycles.

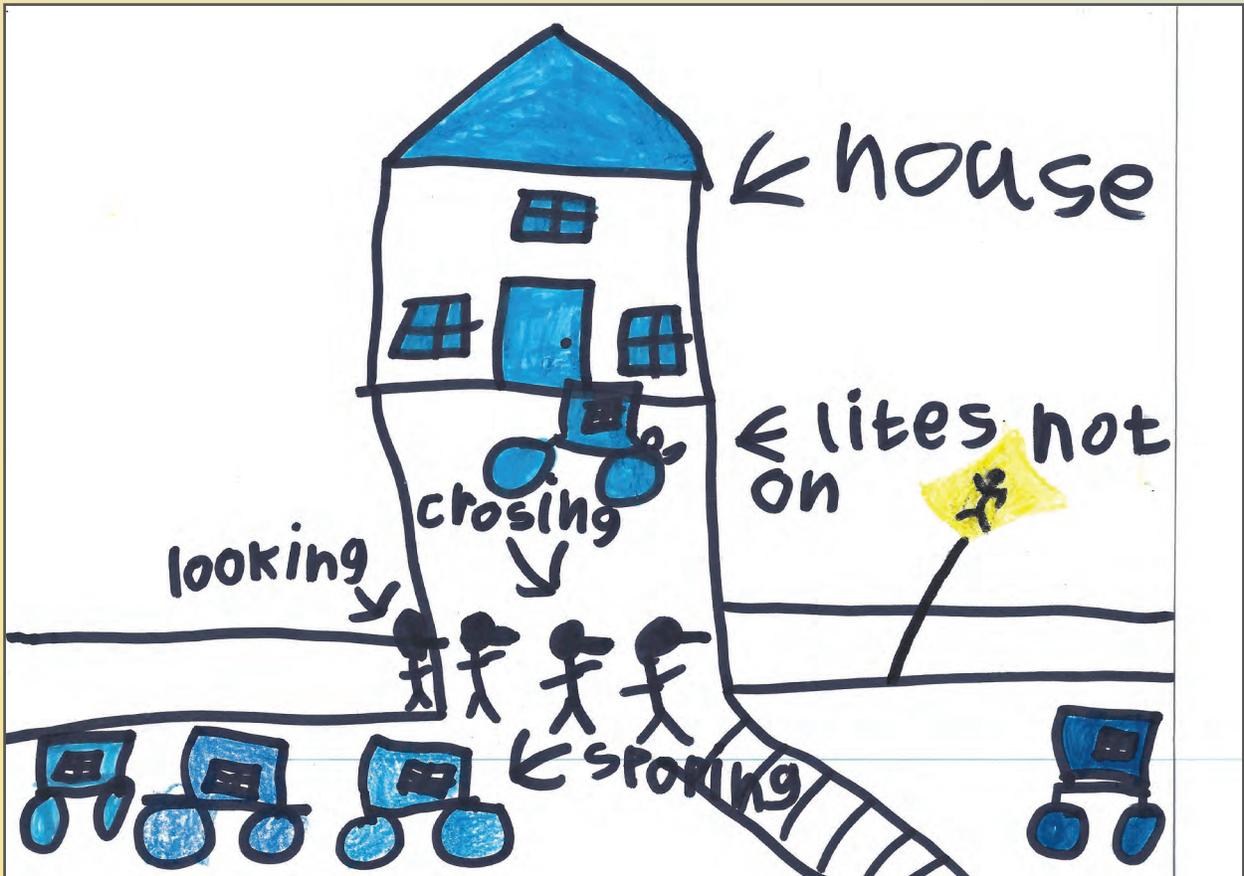
**Figure 10**

Map of all KSI Collisions by Mode

- Automobile
- Bicycle
- Pedestrian
- Motorcycle
- Truck







Contestant Artwork

# Demonstration Projects

5





## Demonstration Projects

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Four demonstration projects were developed and implemented as part of the Safe Streets Pinellas plan. The goal of demonstration projects is to build interest around Vision Zero by showcasing how different transportation safety projects and transportation safety campaigns can be implemented in Pinellas County and to learn from them to not only inform this plan and strategies, but subsequent updates. Demonstration projects can be temporary measures to test potential countermeasures for permanent installation and performance measure targets to see if a specific type of improvement has made positive movement toward zero KSIs.

Demonstration project options were developed based on the collision overview, community feedback, and discussions with the Task Force. After considering a wide range of options, four demonstration projects were facilitated: each demonstration project was developed around a key theme, but incorporated elements of other project types. For example, all demonstration projects included some level of education. The four demonstration projects were developed around these primary themes:

- Education
- Technology
- Treatment Pilot
- Speed Management



Contestant Artwork



# Educational Event

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Pinellas County and the City of Clearwater installed a rectangular rapid flashing beacon (RRFB) at the Duke Energy Trail crossing of Nursery Road using the County's standard design plans for RRFBs. This installation was identified after a May 2019 collision in which a person bicycling was killed while crossing Nursery Road at the Duke Energy Trail. As part of the research conducted to determine the appropriateness of an RRFB at this location, the County collected extensive data which includes video-based trail user counts by mode, motor vehicle speed, and volume data for Nursery Road at the trail crossing. Based on the crossing characteristics it was determined that an RRFB was the most appropriate trail crossing upgrade.

As part of the planned installation, Forward Pinellas partnered with Pinellas County and the City of Clearwater to create an educational campaign around how to use an RRFB from a pedestrian perspective. Educational materials included what to do as a driver when you approach a crossing with an RRFB and built upon previous educational campaigns in the County. Educational materials were posted on social media to promote the event held at the crossing on October 26 between 4 and 6 PM after the RRFB was installed. The three main elements of the event were:

- 1. Ceremony honoring the victim of a fatal collision at this location**  
Family members and friends of the crash victim, Carmen Charrez, attended the event and ceremony to unveil a roadside memorial.
- 2. Public engagement and education**  
This demonstration was an opportunity to provide education about proper use of an RRFB and general safety information for trail users.
- 3. Informal observations and data collection of trail users and motorists**  
Data collection and observations of traffic and trail user behavior were taken during the event and showed people driving yielded 89 percent of the time when the RRFB was activated.

Custom project stencils were created and installed with temporary chalk paint on the pavement approaching the crossing. Staff offered instruction on the correct use of an RRFB and used photographs and videos of the event to develop an instructional video. Other safety materials, like bike lights, were given to event attendees.

JOIN US AS WE CELEBRATE ANOTHER STEP **TOWARDS ZERO**



## **NURSERY ROAD AT DUKE ENERGY TRAIL DEMONSTRATION PROJECT**

As part of the Safe Streets Pinellas project, Forward Pinellas is hosting an educational event at the latest RRFB installation in collaboration with the City of Clearwater and Pinellas County.



### **LOCATION**

Nursery Rd &  
Duke Energy Trail,  
Clearwater, FL 33764



### **DATE & TIME**

Monday  
October 26, 2020  
4 pm - 6 pm



### **COVID-19**

Social distancing and  
other safety protocols  
will be followed



### **QUESTIONS?**

Sarah Caper, AICP  
scaper@forwardpinellas.org  
727-464-5695



Event will be postponed to  
**November 9** in the event  
of inclement weather

**Figure 12** Educational Flyer developed to provide to trail users

# WELCOME TO THE TRAIL !

Our latest **Rectangular Rapid Flashing Beacons (RRFBs)** have arrived to make it safer and easier for pedestrians & bicyclists to cross the road. [HERE'S HOW IT WORKS](#) >





**1** Pedestrians and bicyclists activate **FLASHING LIGHTS** by pressing the button.

**2** **FLASHING LIGHTS** alert drivers that pedestrians and bicyclists are waiting to cross.  
 →Pedestrians and bicyclists may cross after ensuring that motorists have stopped and it is safe to cross.  
 →It is good practice for pedestrians and bicyclists to make eye contact with drivers before starting to cross.

**3** **FLASHING LIGHTS** are set to flash long enough to give pedestrians and bicyclists time to cross.

**4** Pedestrians and bicyclists finish crossing. **FLASHING LIGHTS** turn off after the set time for pedestrians and bicyclists to cross.

### FAST FACTS

## 1



Did you know that the **RRFB was invented in Florida**, with the first installations in St. Petersburg?

## 2



Studies show that **RRFBs** increase driver yielding rates to between **73-96%** and reduce pedestrian collisions by **47%**.

SOURCE: NATIONAL ACADEMIES OF SCIENCE, FHWA

## 3



Although pedestrians are involved in **less than 2%** of all collisions, pedestrians disproportionately account for **40%** of people killed on Pinellas County roadways. **71%** of collisions involving a pedestrian that is seriously injured or killed do not occur at an intersection.

### SAFE CROSSING TIPS

**FLASHING LIGHTS** increase pedestrian & bicyclist visibility at crosswalks that don't have traffic signals or stop signs.

The lights are activated when a pedestrian or bicyclist pushes the button.



### PEDESTRIANS & BICYCLISTS

1. **Press the button** to activate the **FLASHING LIGHTS**
2. **Before you cross**, make sure all vehicles have stopped if the roadway has more than two lanes, check for stopped cars in each lane before proceeding
3. **FOR PEDESTRIANS**, **start crossing** after you have confirmed vehicles in both directions have stopped

**FOR BICYCLISTS**, when traveling on a street and approaching a crosswalk with a RRFB, ride in the direction of traffic and always yield to pedestrians

### DRIVERS

1. **Always yield to pedestrians—it's the law!**
2. **Pay attention** to the road and don't be distracted
3. **Obey the speed limit** so you don't need to make a dangerous stop







# Technology

Emerging technologies, like cameras installed at intersections, have the potential to help enforce traffic laws and deter behaviors such as red light running and speeding, identify potential collision risks prior to a serious or fatal collision occurring, and offer a more equitable manner of enforcing traffic laws. A demonstration project using near-miss technology was conducted at the intersection of Alternate US 19 and Curlew Road to assess the technology since it is continually evolving. A summary of data collected is below and additional details are provided in [Appendix C](#).

A near-miss technology vendor collected and evaluated high definition video of the intersection to identify specific types of near-misses that occurred over a four-day period in August 2020. Collection included Saturday, Sunday, and Monday operations. In total, the interactions between 91,900 people driving vehicles and 3,800 people walking and bicycling were captured.

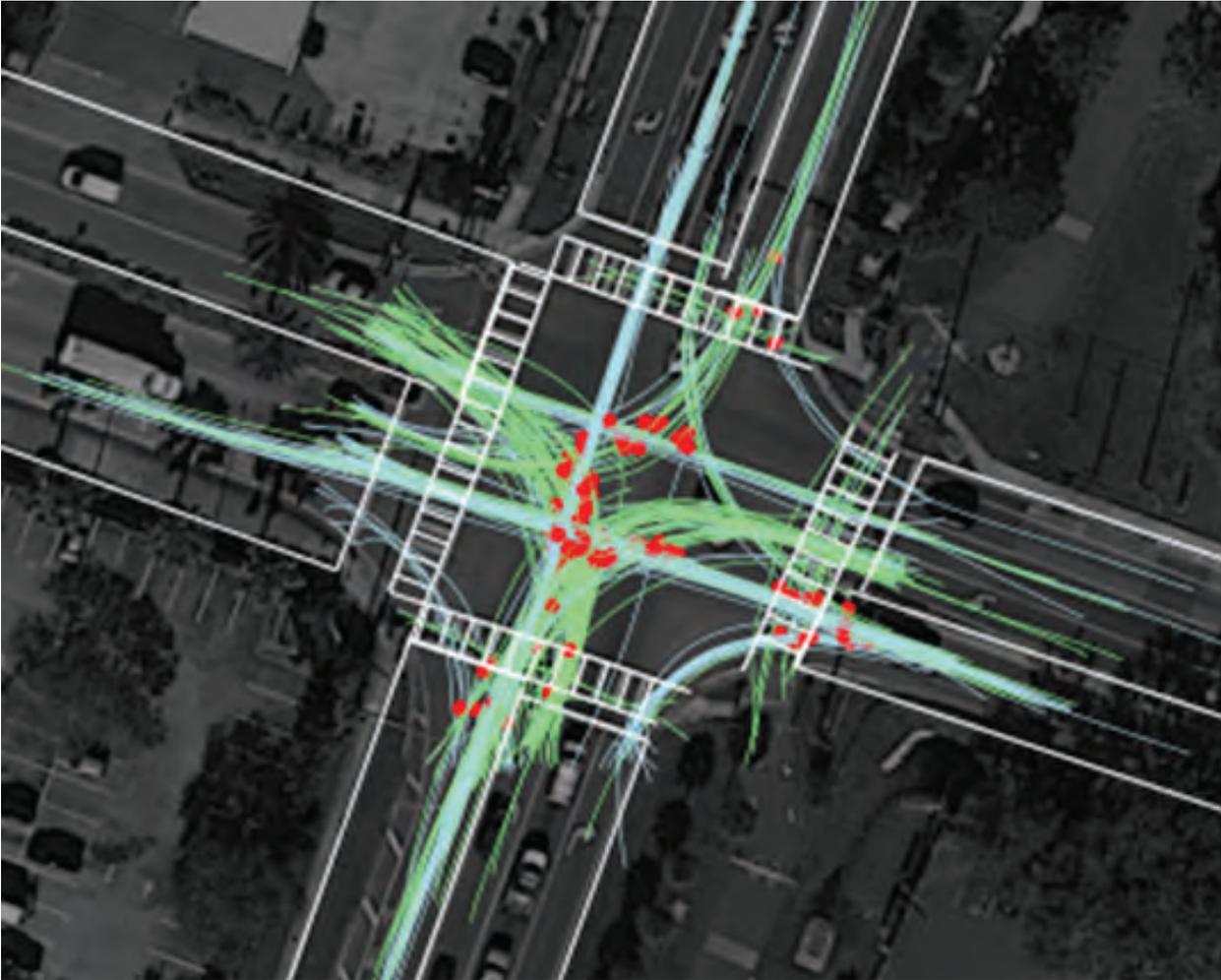
In addition to capturing the multimodal count of each roadway user by movement and mode of travel, the automated video analytics cataloged the speed of each roadway user, movements of roadway users traveling through or across the intersection when

they do not have the right-of-way (red-light running), every time two road users (bikes, pedestrians, or vehicles) crossed paths (i.e., an interaction) and recorded the following information:

- Time between the arrival of both road users at a common point. This is referred to as Post Encroachment Time (PET)
- Speed of each road user
- Count of interactions
- Which road user arrived first
- Video of potential near-miss interactions for further review

During the data collection window, 360 people were observed driving their vehicle through the intersection ten or more miles per hour (mph) in excess of the posted speed limit of 40 mph on Alternate US 19 and 35 mph on Curlew Road. Southbound and westbound through movements accounted for most speeding movements. 60 people who were driving ran the red light and 61 people who were bicycling, or walking crossed when they did not have the crossing signal. Of the drivers whose vehicle was classified as running the red light, all vehicles were able to travel through the intersection before other traffic received a green light. Many were traveling in excess of the posted speed limit.

**Figure 13** Locations and Travel Paths of Near-Misses



The PET value is an indicator of how close two roadway users were to occupying the same space at the same time. The smaller the PET value, the closer roadway users were to colliding.

Detailed review of the data indicates that permitted left-turn movements in front of opposing through movements experience the most frequent high-risk interaction. Details of this analysis are provided in [Appendix C](#).



## Treatment Pilot

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Forward Pinellas partnered with the City of St. Petersburg to test the effectiveness of a protected intersection concept in their Downtown area along the Pinellas Trail at the intersection of 1st Avenue S. and 2nd Street S. This intersection incorporates an urban crossing of the Pinellas Trail and has a high volume of bicycle and pedestrian travel that conflicts with turning vehicles. In 2008, the extension of the Pinellas Trail into downtown St. Petersburg opened using a repurposed travel lane along the south side of 1st Avenue S. and is Florida's first urban cycle track. This segment of the trail travels within an urban environment along a one-way street with on-street parking and dense intersection spacing. Collision history at this intersection is minimal, but near-misses occur frequently. Safety improvements along the trail are under consideration by the City and protected intersection treatments at 5th Street S. and 6th

Street S. have already been designed with initial concepts.

Protected intersections improve safety for bicyclists and pedestrians as they cross intersections. Corner islands, curb extensions, and colored paint are used to delineate the bicycle path across an intersection, parallel to the crosswalk, and can allow a two-stage left turn.

This demonstration project is intended to help inform City design standards for permanent protected intersections and provide proof of concept to City staff, decision-makers, and the public. It will also serve as an example for other communities in Pinellas County. The demonstration project will use non-permanent materials to install protected crossing elements at the southeast quadrant of the intersection at the location of the Pinellas Trail, and would not change the existing curb line.

**CROSS  
TRAFFIC  
DOES NOT**

---

**STOP**



**1 PUSH BUTTON  
to alert  
motorists**

---

**2 Wait for**

The project is planned to include, as shown on [Figure 14](#), physical barriers to slow turning vehicles, enhanced painted elements, and signal modifications.

To gauge the potential benefits of the treatment, data was collected before installation to document the yielding behavior of people driving to people crossing the street, as well as the speed at which people drive their vehicle through the crossing. Key observations include:

- Vehicles yielded to people walking and bicycling 87.5 percent of the time (caution small sample size).
- More than half of pedestrian groups started crossing the intersection either on the walk countdown or during a "do not walk" phase (58 percent).

- About 30 percent of bicycling groups started crossing the intersection on a red light (31 percent).
- Average vehicle speed through the intersection was 19 miles per hour, which is about the upper limit of survivability for a vulnerable roadway user who is hit by vehicle. Speed ranged from 14 to 32 miles per hour.
- Near-misses frequently occurred.

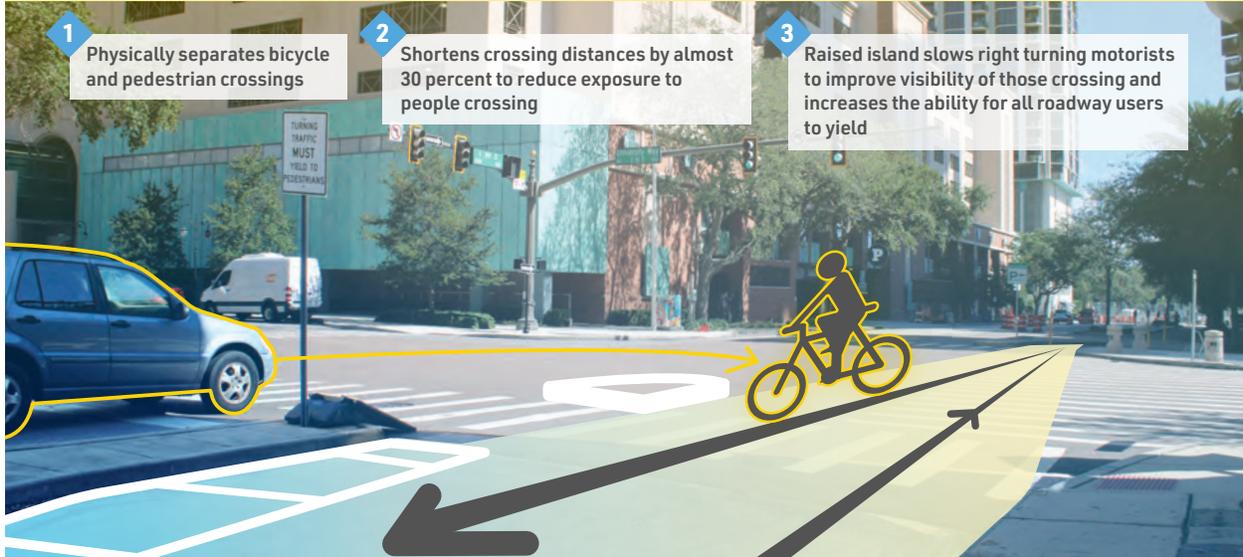
After installation of the protected intersection treatment, additional data will be collected to evaluate the effectiveness of the treatment on slowing the speed of drivers making the right-turn and whether any changes in behavior of people crossing the intersection occur.

**Figure 14** Traffic Control Device Pilot Educational Flyer

# WELCOME TO THE TRAIL!

We are piloting a **Protected Intersection** concept in downtown St. Pete to make it safer for pedestrians and bicyclists to cross the road. [HERE'S HOW IT WORKS](#)





**1** Physically separates bicycle and pedestrian crossings

**2** Shortens crossing distances by almost 30 percent to reduce exposure to people crossing

**3** Raised island slows right turning motorists to improve visibility of those crossing and increases the ability for all roadway users to yield

## FAST FACTS

1



The extension of the **Pinellas Trail** into downtown St. Petersburg opened in 2008 using a repurposed travel lane along the south side of 1st Avenue S and is **Florida's first urban cycle track**.

2



St. Petersburg has identified **197 crossing locations to upgrade** as part of the Complete Streets implementation plan.

3



Although **people bicycling and walking** are involved in less than **5%** of total collisions, they represent almost **25%** of people killed or seriously injured in roadway collisions in Pinellas County.

### SAFE CROSSING TIPS

People driving are required by law to yield to people using the bikeway and crosswalk.

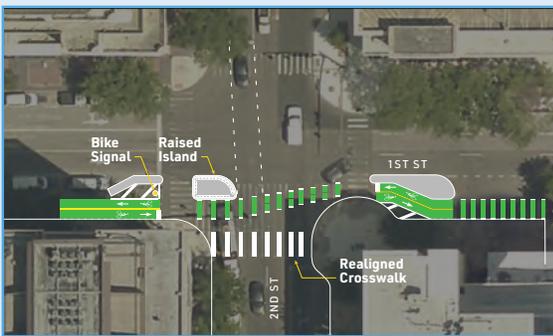
The City of St. Petersburg is piloting this protected intersection concept. Data has been collected to document existing roadway user behavior and the speeds of people driving through the intersection. Once installed, additional data will be collected to document the benefits of the treatment and determine its long-term applicability at other intersections along the trail.

To learn more about Complete Streets in St. Pete

[stpete.org/completestreets](http://stpete.org/completestreets)

### WHEN CROSSING

1. Wait for the walk sign or green light.
2. Before you cross, make sure people driving are yielding.
3. Be visible at night—wear reflective colors and if cycling, use bicycle lights.



To learn more about Safe Streets Pinellas

[forwardpinellas.org/safestreets](http://forwardpinellas.org/safestreets)

 [/ForwardPinellas](https://www.facebook.com/ForwardPinellas)  
  [@ForwardPinellas](https://www.instagram.com/ForwardPinellas)  


(hold for final demonstration project which is still under development)





Contestant Artwork

# High- Injury Network

6





# High-Injury Network

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In developing the Action Plan, Forward Pinellas analyzed all crashes that occurred in Pinellas County that were not on a freeway resulting in a fatality or serious injury for the years 2015 through 2019. Vision Zero work in other municipalities has shown that roadway characteristics, such as number of lanes, posted speed limit, and intersection control types, are very important to identify historic collision trends and help municipalities take a proactive approach to identify and improve high-risk locations. Vision Zero work has also highlighted the disproportionate burden traffic crashes have on vulnerable populations, such as seniors and Communities of Concern. Forward Pinellas incorporated roadway characteristic and demographic datasets into its collision analysis to understand how these patterns play out locally.

A High-Injury Network (HIN) which identifies transportation corridors with the highest levels of fatal and serious crashes for people walking, riding bikes, and in vehicles, was developed. In addition to the HIN, hot-spot locations were identified to allow for improvements to focus on roadway

segments and intersections where a high proportion of KSI collisions occur with the most frequency, with a focus on locations where vulnerable roadway users were involved in a KSI collision.

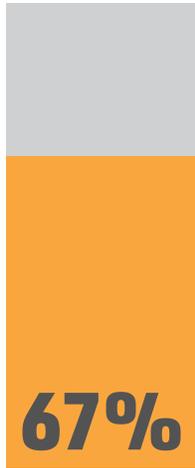
The High-Injury Network accounts for about 40 percent of all KSI crashes, which occur on about 2.7 percent of the roadway network in Pinellas County as measured by centerline miles. Most of the roadways on the HIN have a speed limit greater than 40 mph, and the majority are under FDOT jurisdiction (75 percent), as compared to Pinellas County (23 percent) and municipalities (3 percent).

Over one-third of the County's elementary, middle, and high schools are located along the HIN, which also tends to have speed limits greater than 40 miles per hour. When a vulnerable roadway user is involved in a collision with a person driving greater than 40 miles per hour, the chance of survival is very low. 73 percent of the HIN falls within or runs through a Community of Concern, which compromises only 32 percent of the County's geographic area.

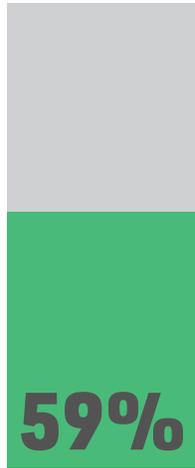
Pinellas County roadways with **speed limits of 40MPH or higher** were the site of:



All Collisions



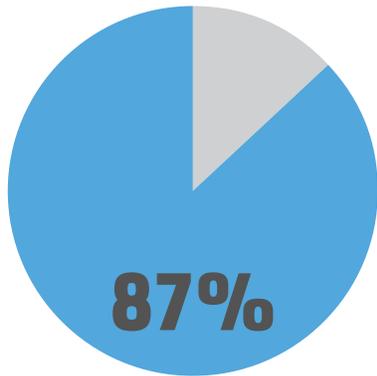
KSI Collisions



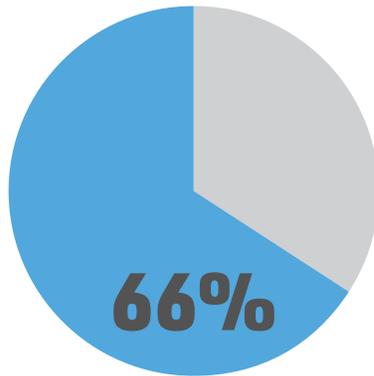
Bicycle KSI Collisions



Pedestrian KSI Collisions



of the HIN has speed limits of **40MPH** or higher



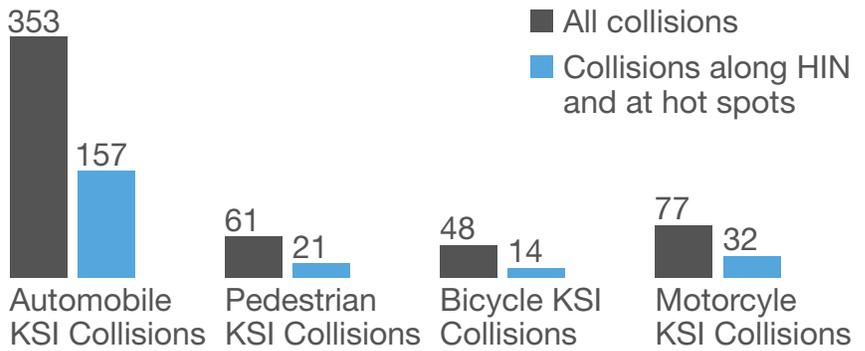
of the HIN has speed limits of **45MPH** or higher



**Figure 16**

High-Injury Network and Hot Spots: North County

- High-Injury Network
- Hot Spots
- KSIs



KSIs at Hot Spots:

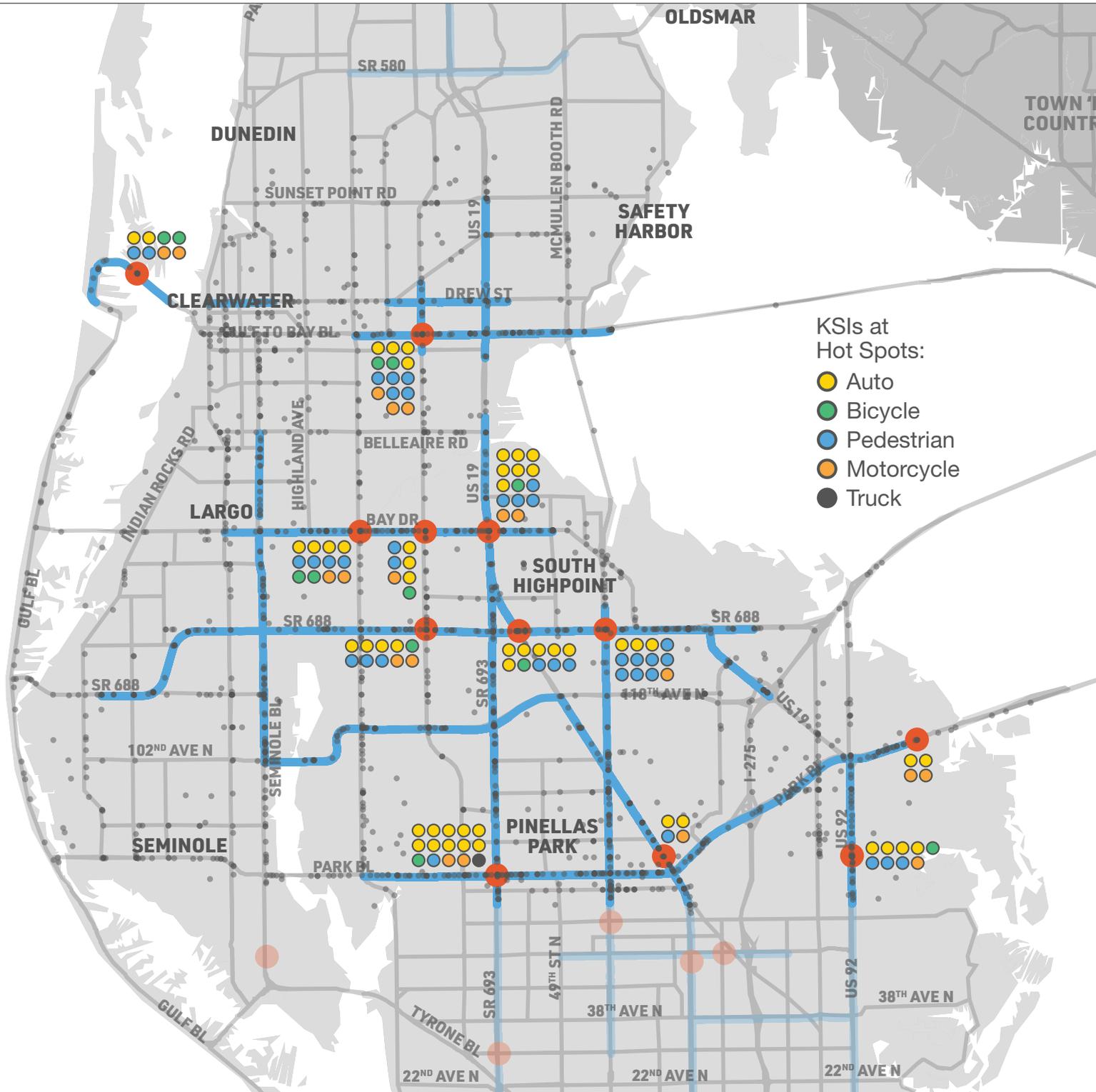
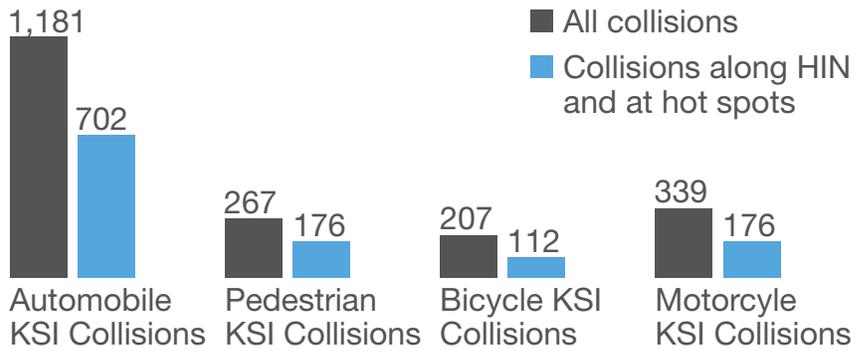
- Auto
- Bicycle
- Pedestrian
- Motorcycle
- Truck



**Figure 17**

High-Injury Network and Hot Spots: Central County

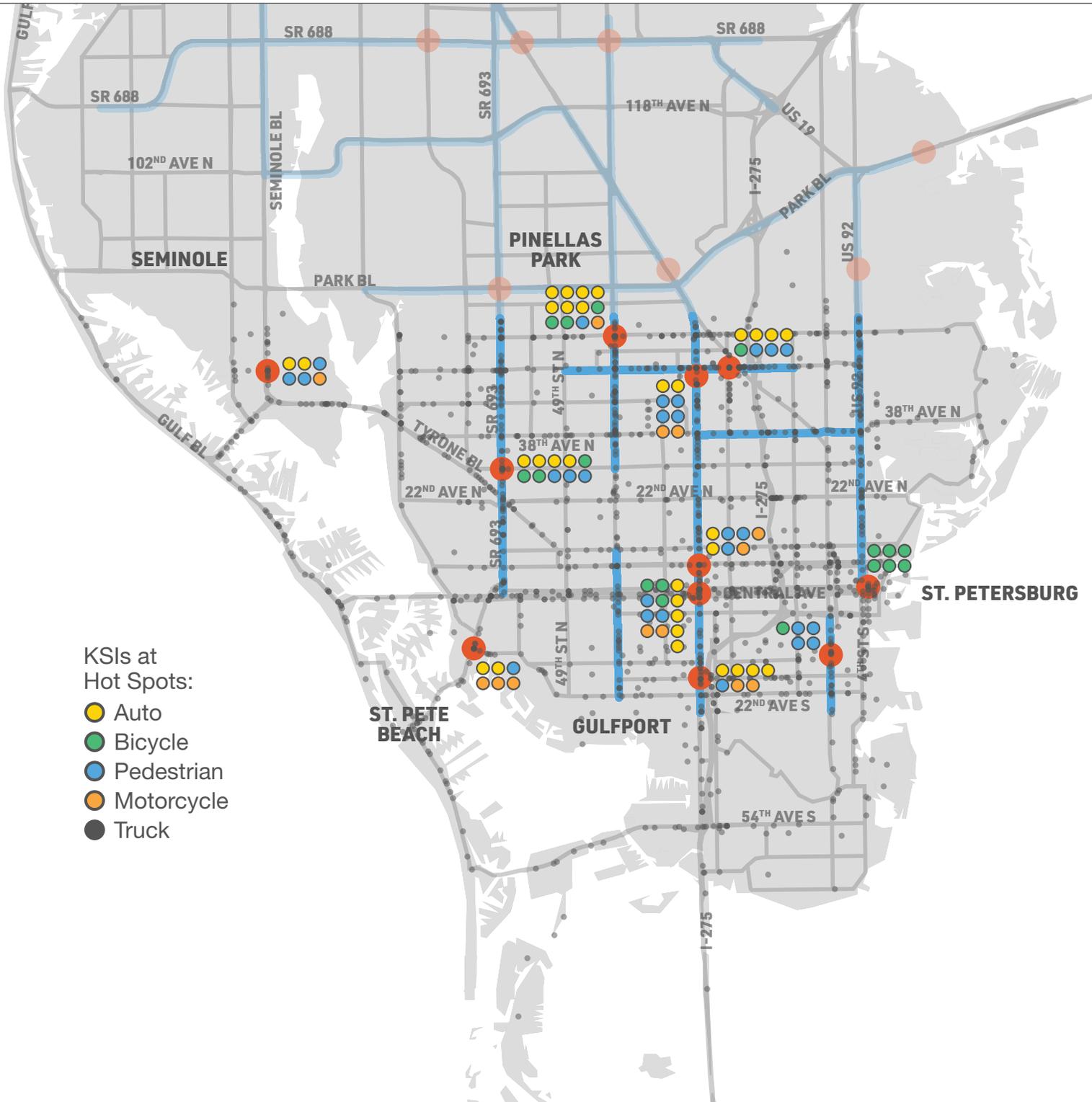
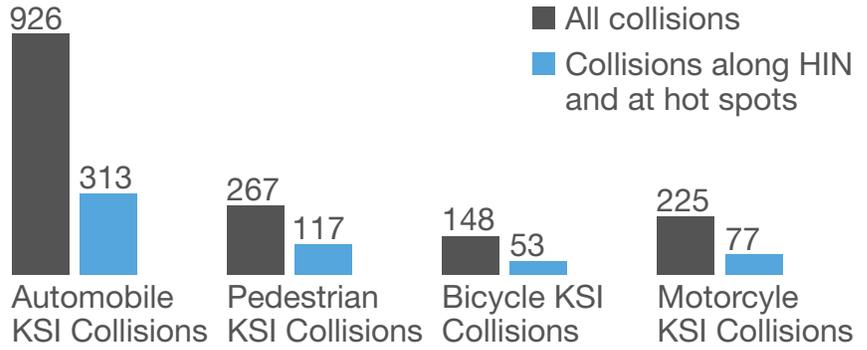
- High-Injury Network
- Hot Spots
- KSIs



**Figure 18**

High-Injury Network and Hot Spots: South County

- High-Injury Network
- Hot Spots
- KSIs



- KSIs at Hot Spots:
- Auto
  - Bicycle
  - Pedestrian
  - Motorcycle
  - Truck

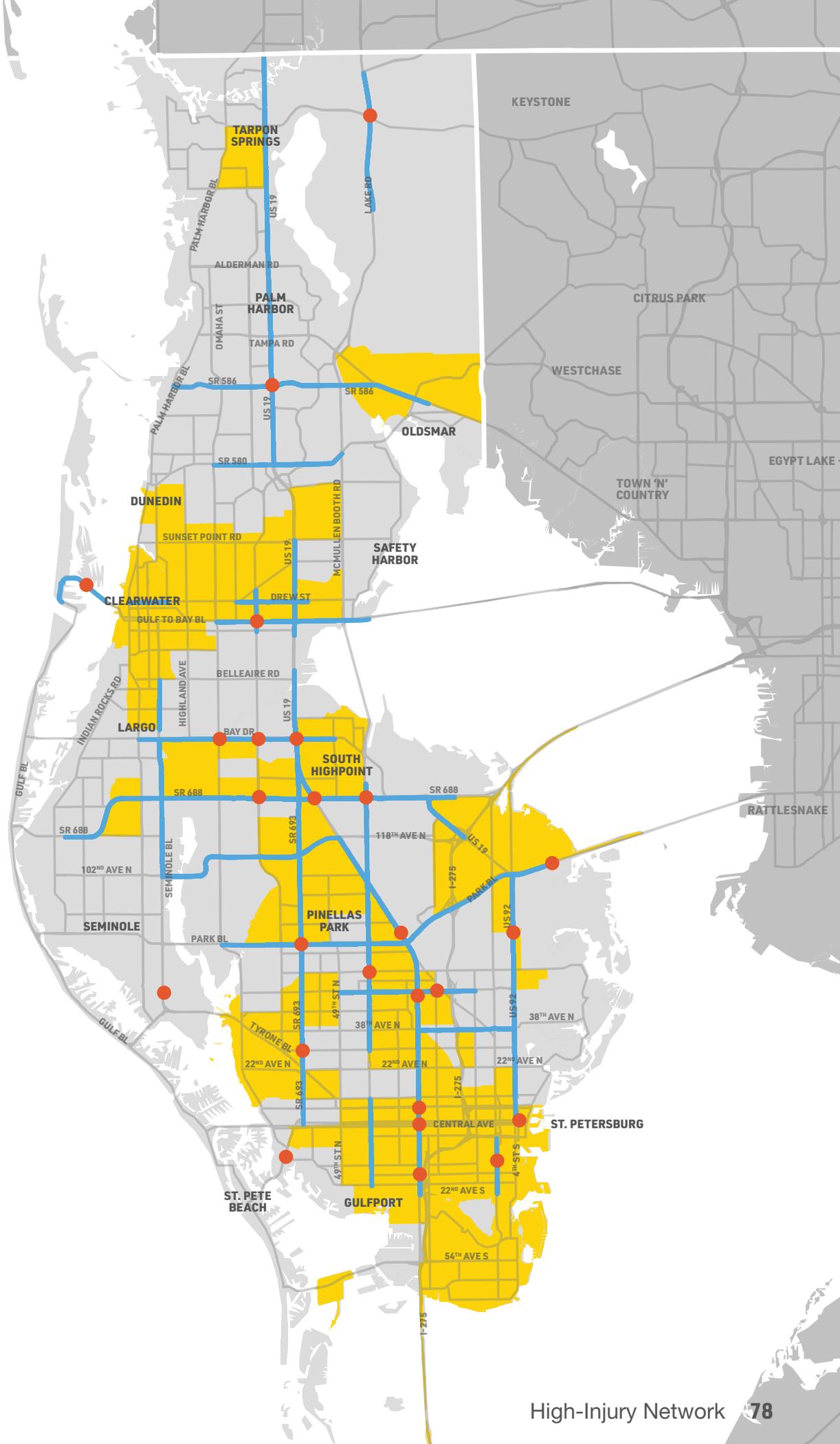


Contestant Artwork

**Figure 19**

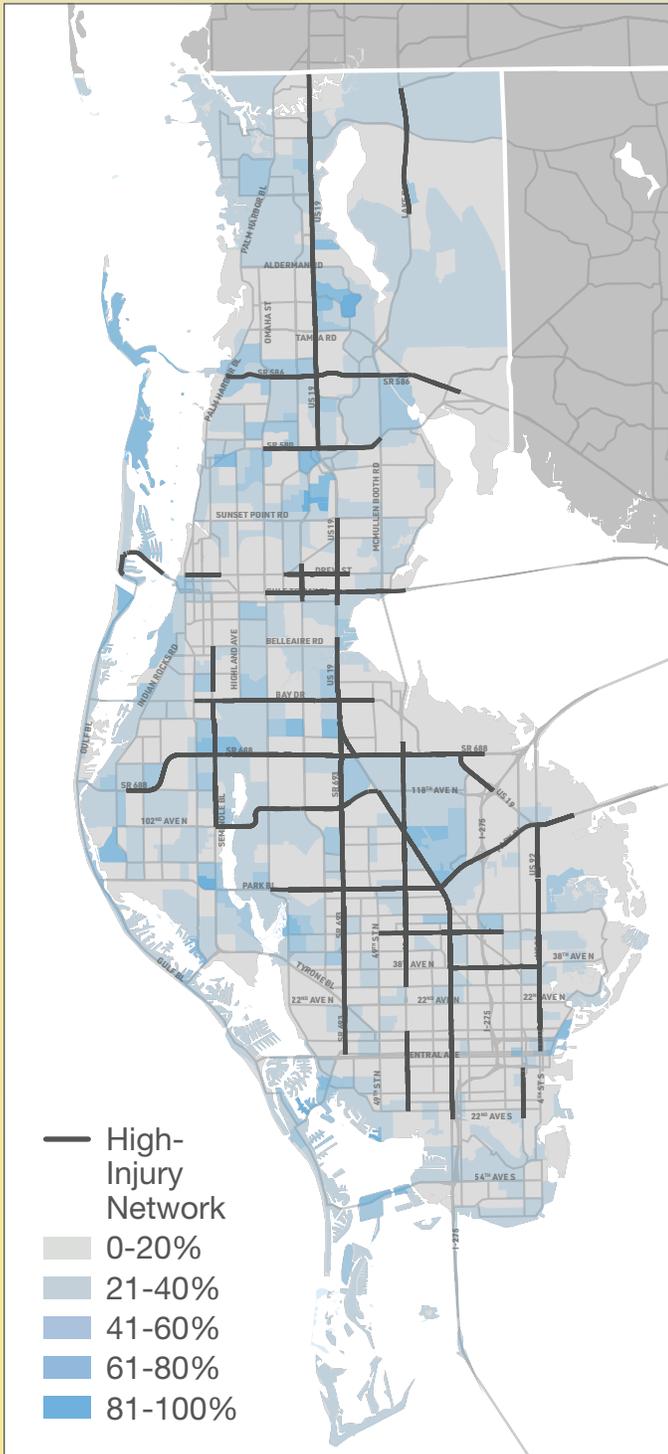
High-Injury Network and Communities of Concern

- High-Injury Network
- Hot Spots
- Communities of Concern



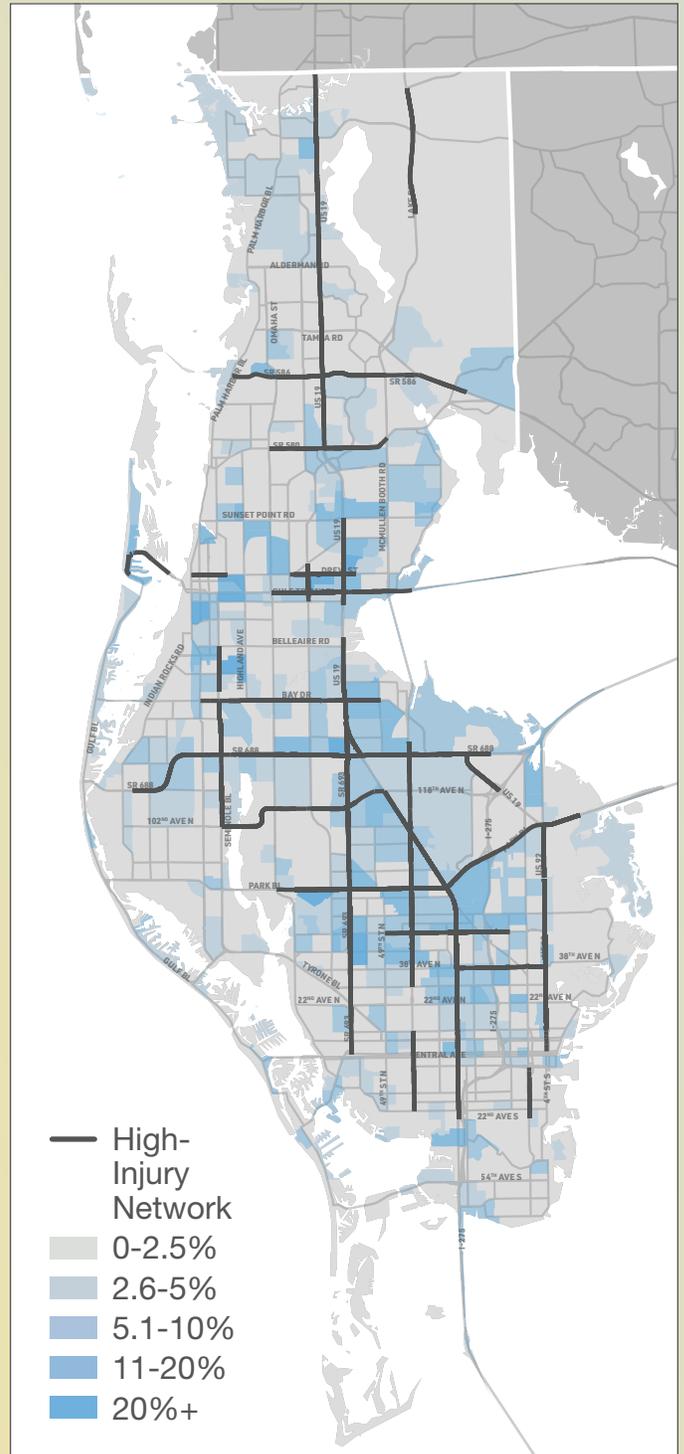
**Figure 20a**

Percent of People Who are 65+ and Older

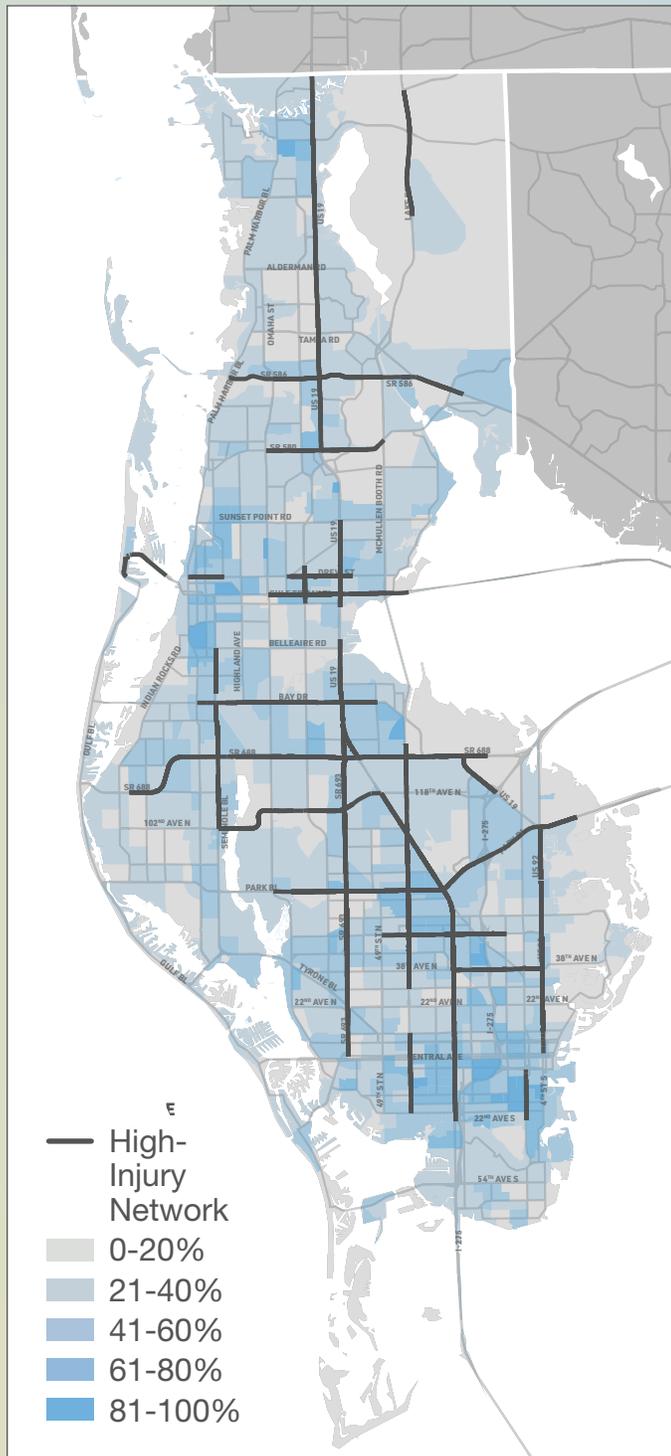


**Figure 20b**

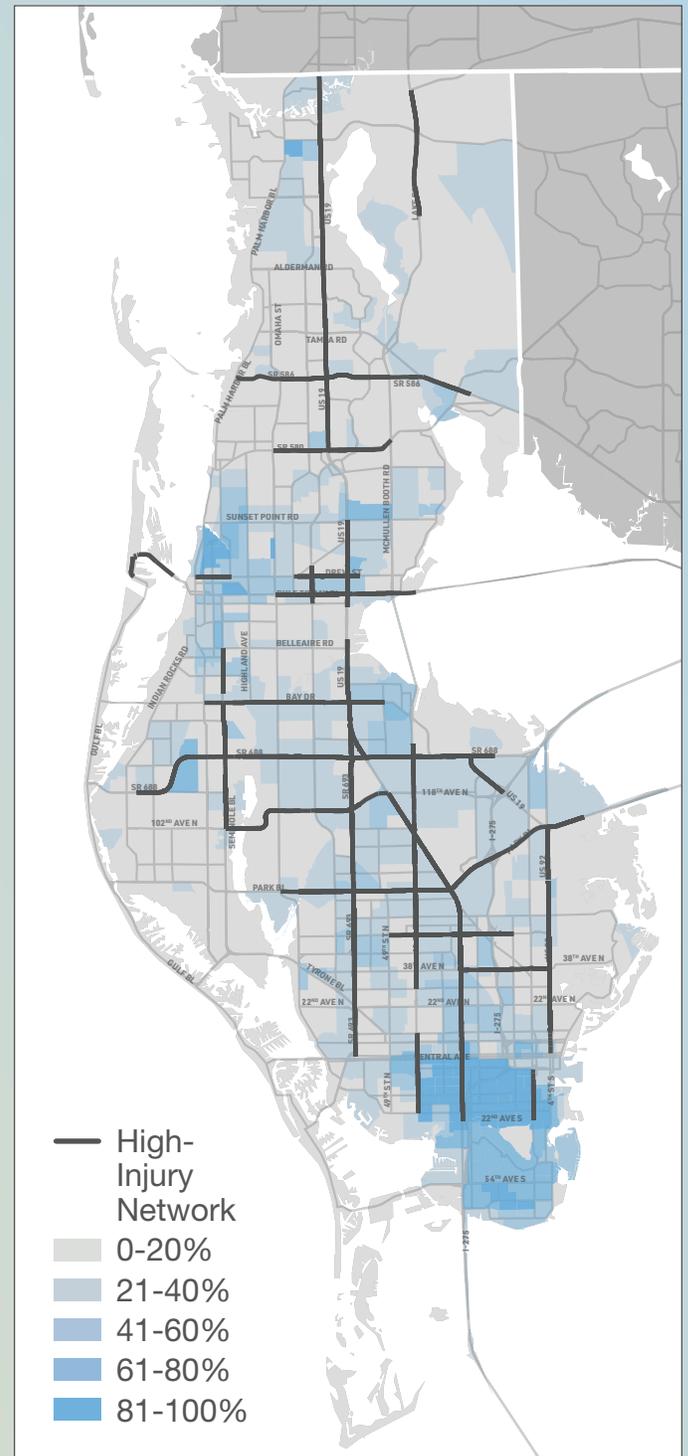
Percent of People Who are Language-Isolated



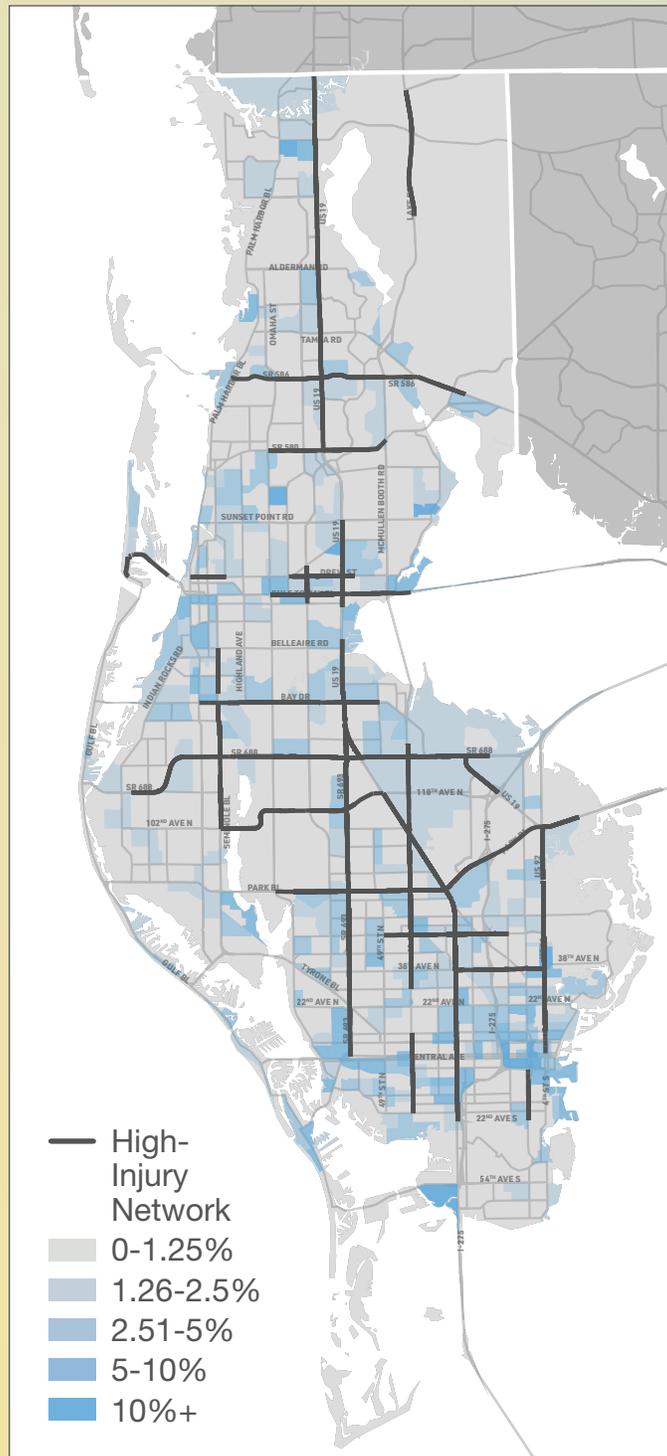
**Figure 20c**  
Percent of People  
Who are Low-Income



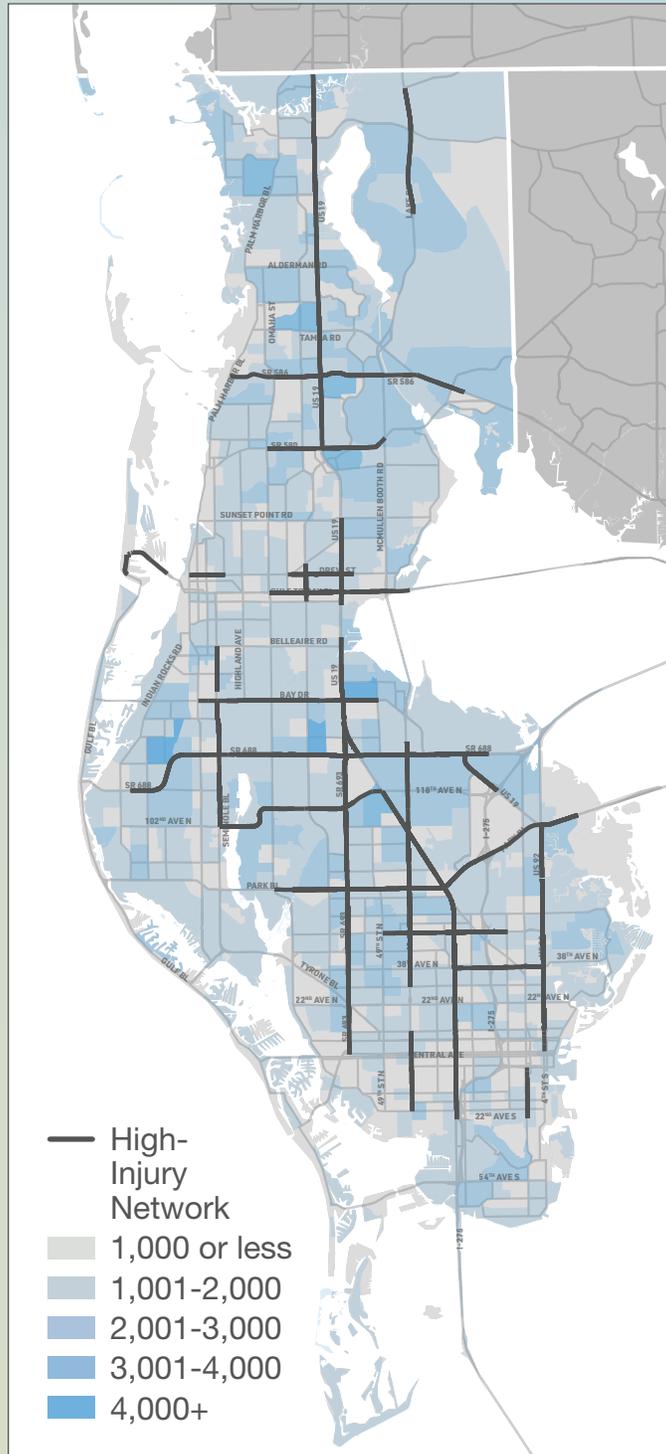
**Figure 20d**  
Percent People  
of Color



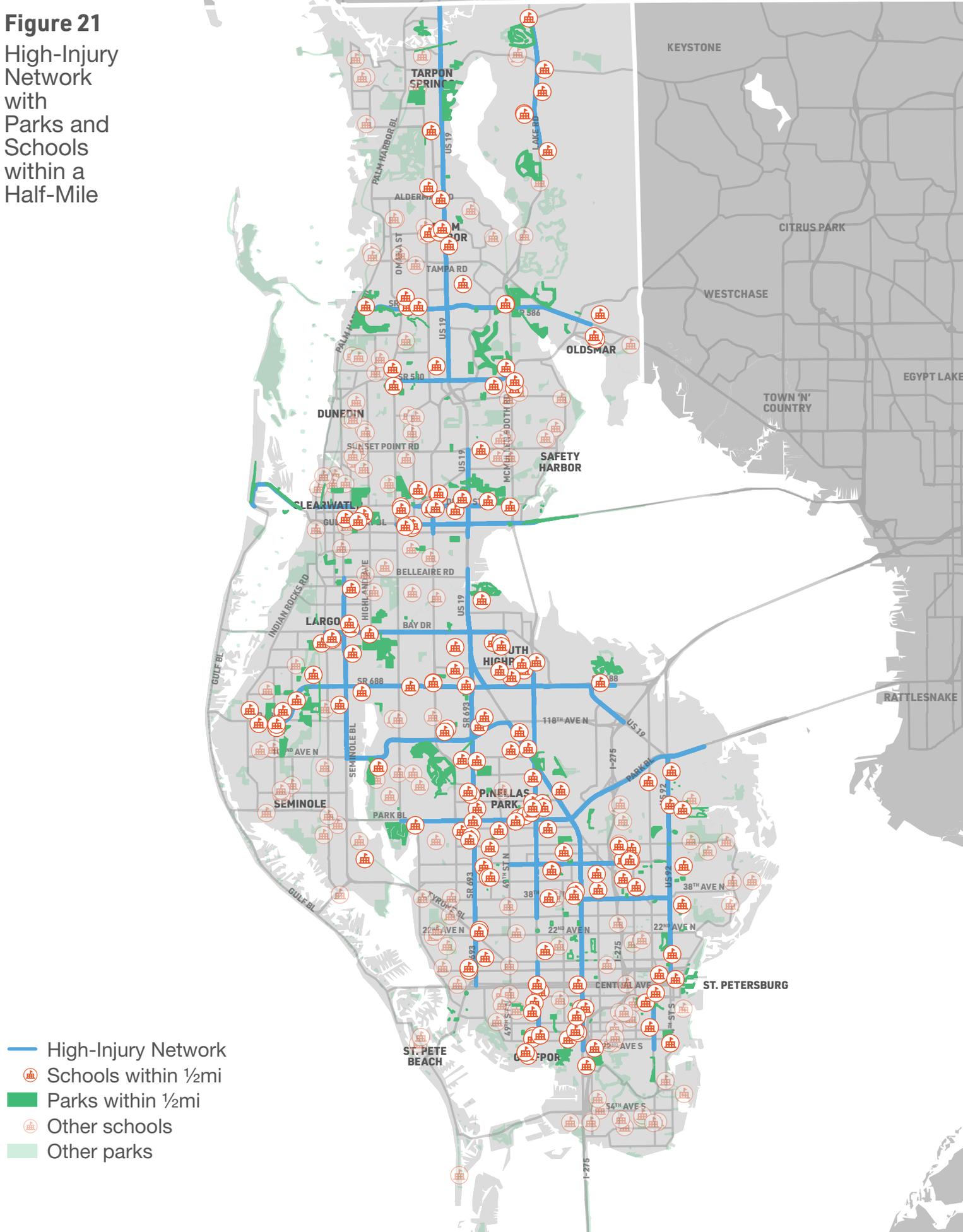
**Figure 20e**  
 Percent of People  
 Walking or Biking



**Figure 20f**  
 Total  
 Population



**Figure 21**  
 High-Injury Network  
 with  
 Parks and  
 Schools  
 within a  
 Half-Mile





## Schools and Parks

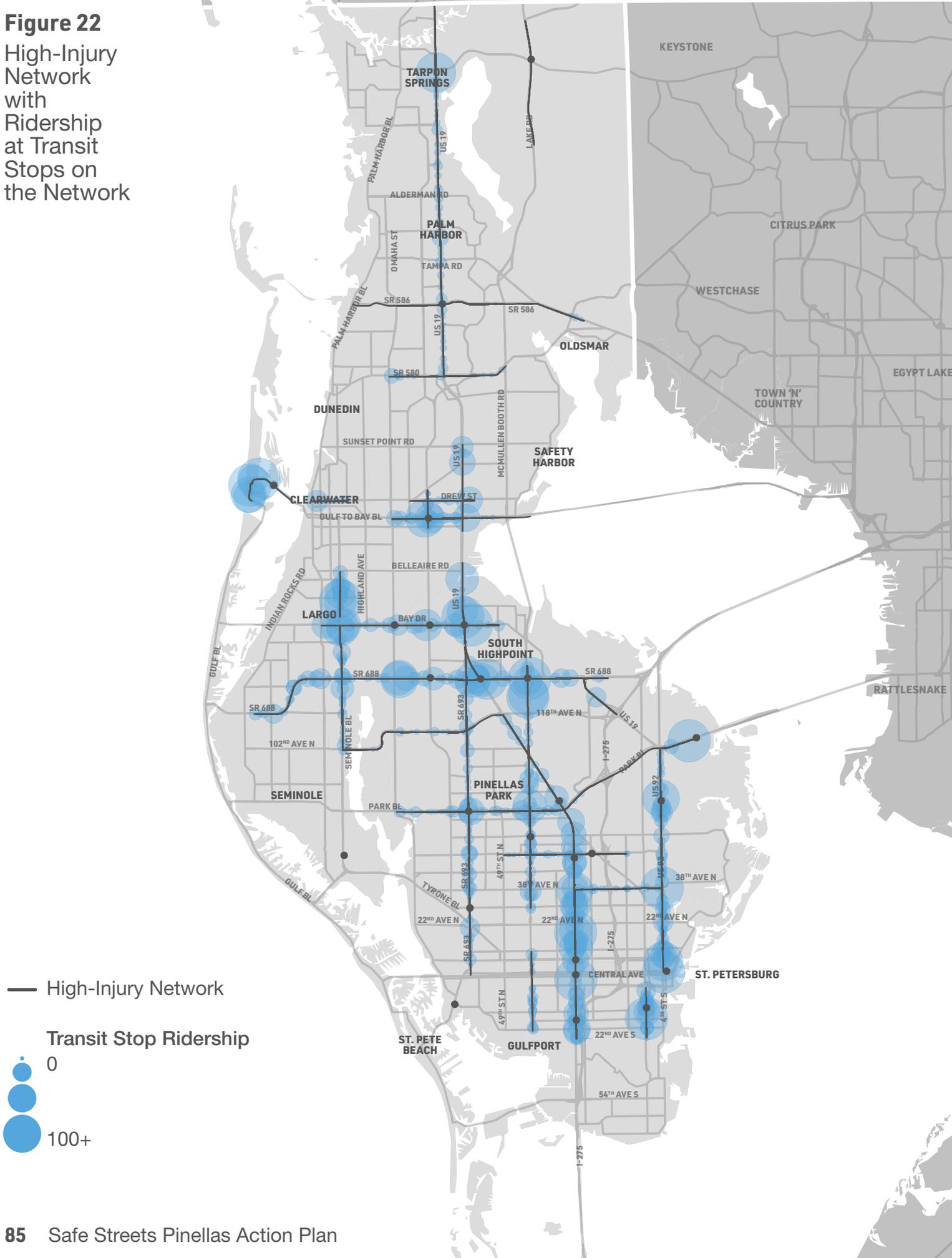
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Over a third of the elementary, middle, and high schools in Pinellas County are within a quarter-mile of the HIN, resulting in a large proportion of school trips necessitating travel on a portion of the HIN. This indicates potential safety challenges and concerns for students walking or bicycling to school and resulting in more people choosing to drive their student to school. As more people opt to drive a vehicle for trips that could be made by walking or bicycling, the potential for congestion increases, especially at peak school times. This in turn increases the likelihood of conflicts between those driving and those walking or bicycling to school.

The Pinellas County School District has about 150 schools in the County and provides Safe Routes to School resources to schools. Pinellas County Schools also serves as the coordinating body to the Pinellas STEPS (School

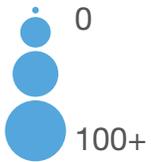
Transportation & Enhanced Pedestrian Safety) committee which is comprised of individuals who represent law enforcement, traffic, planning and safety staff from all major municipalities in Pinellas County, as well as members representing All Children's Hospital, FDOT, and Pinellas County Schools. Forward Pinellas hosts a School Transportation Safety Committee (STSC), which is made up of local elected officials and school board members that meet to address school-related transportation access and safety issues while also working to improve communication and coordination between transportation agencies and the Pinellas County School Board. Many partner agencies and private schools in the community also have Safe Routes to School programs. Maps and data in this plan help identify potential barriers, such as crossing the HIN or navigating a HIN hot spot location, for students walking and bicycling to school.

**Figure 22**  
 High-Injury Network  
 with  
 Ridership  
 at Transit  
 Stops on  
 the Network



— High-Injury Network

Transit Stop Ridership





## Transit Ridership

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There is a connection between transit ridership and the HIN: 14 percent of Pinellas Suncoast Transit Authority (PSTA) stops are sited on the HIN, with 17 percent of systemwide ridership. There is a strong correlation between hot spot locations and high ridership areas. While there is not sufficient data to determine how many people

involved in a KSI collision were using transit at some point during their trip, there are a number of locations in the County where KSI collisions involving a vulnerable roadway user occur in the vicinity of a mid-block transit crossing where the closest signalized crossing on a four- or six-lane roadway is more than one-half mile away.



## Land Use and Urban Design

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Land use strategies are an important component to improving transportation safety. When people must drive long distances for daily needs such as employment, education, food, and medical care, it not only increases the average length of vehicle trips and adds cars to the roadway network, but people driving can become impatient when experiencing congestion. Increased travel time and delays can increase undesirable driver behaviors, such as speeding and aggressive driving. When travel times are already long, people may be unwilling to accept even a modest increase in travel time to improve transportation safety outcomes.

Goals in the 2045 Advantage Pinellas Plan call for creating 20-minute

neighborhoods which support walking and bicycling as realistic travel options for daily activities. By placing complementary land uses in close proximity and providing direct transportation connections, people who drive may be willing to accept a ten percent increase in travel time on a ten-minute drive during peak travel hours if it means better bicycle and pedestrian connections and safety outcomes at all times of the day.

Forward Pinellas will work with local government planners to encourage new developments that enhance access to destinations for all residents and improve accessibility for all travel modes.

To be truly effective, local agencies need to consider pairing land use strategies with urban design strategies. Urban design relates to the process of shaping the physical features of our communities, including how roadways, buildings, landscaping, and other human-made and natural features are connected. As areas redevelop, there are opportunities to improve transportation safety through common urban design elements that can contribute to safer streets:

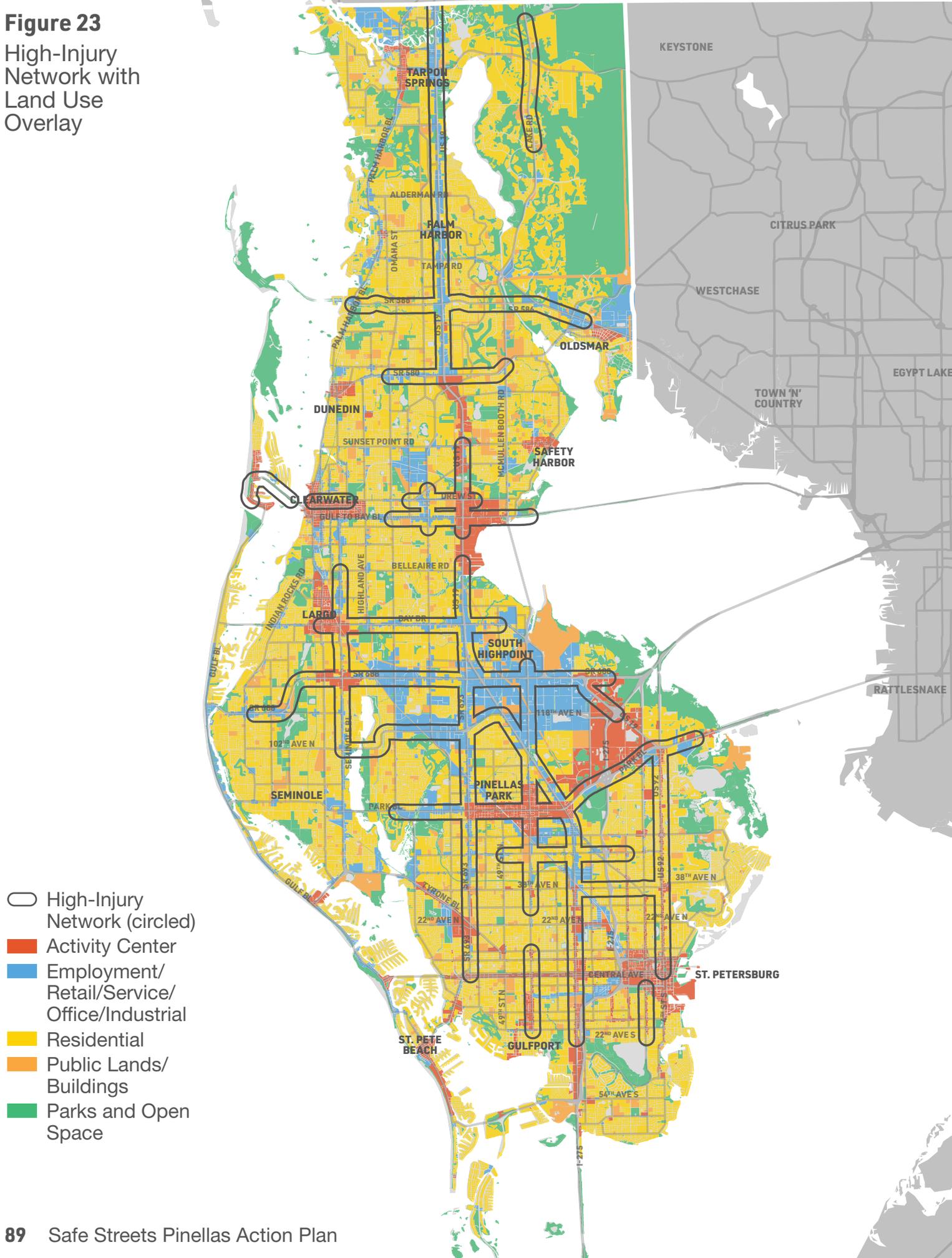
- **Building placement** Placing buildings and their primary entrances/storefronts at the sidewalk can encourage more active transportation and transit use as people do not have to walk across a parking lot to reach building entrances. The transitional space between buildings and the curb can be activated with uses such as outdoor dining facilities, landscaping, and pedestrian scale lighting.
- **Parking requirements and location** Flexible parking requirements, such as setting parking maximums as

opposed to parking minimums, can promote more efficient use of scarce land, as current regulations may require more space to be devoted to vehicle storage than for the building. This can be a deterrent to in-fill development, and a barrier to creating communities that are less reliant on vehicle travel.

- **Connectivity and Street Design** Built environments that have a high level of intersection density make destinations more accessible for all travel modes. Grid networks provide opportunities to connect streets at regular intervals and offer the most direct routes for all travel modes. Meanwhile, street networks characterized by cul-de-sacs and loop roadways tend to increase average trip length, decrease the potential for walking, bicycling and transit modes to constitute a significant share of travel, concentrate vehicle traffic onto a smaller number of roadway facilities, and exacerbate the potential for vehicle congestion.

**Figure 23**

High-Injury Network with Land Use Overlay



Land use patterns that discourage cross-parcel access further concentrate travel onto the regional street network and create circuitous movements. Improved safety outcomes can be realized for all travel modes when there is reciprocal access. Strategies include consolidating driveways, installing signalized access, requiring cross-access easements, and constructing median islands.

Streets and buildings that are designed for people, not automobiles, tend to generate a larger share of travel from non-automobile modes. Providing supporting facilities, such as secure bicycle parking, shaded walkways, pedestrian-scale lighting, and transit shelters with connecting sidewalks can also contribute the safer streets for everyone.

- **Street enclosure** Creating streets that are comfortable for people also relates to building heights and the width of streets. Research shows that wide streets and single-

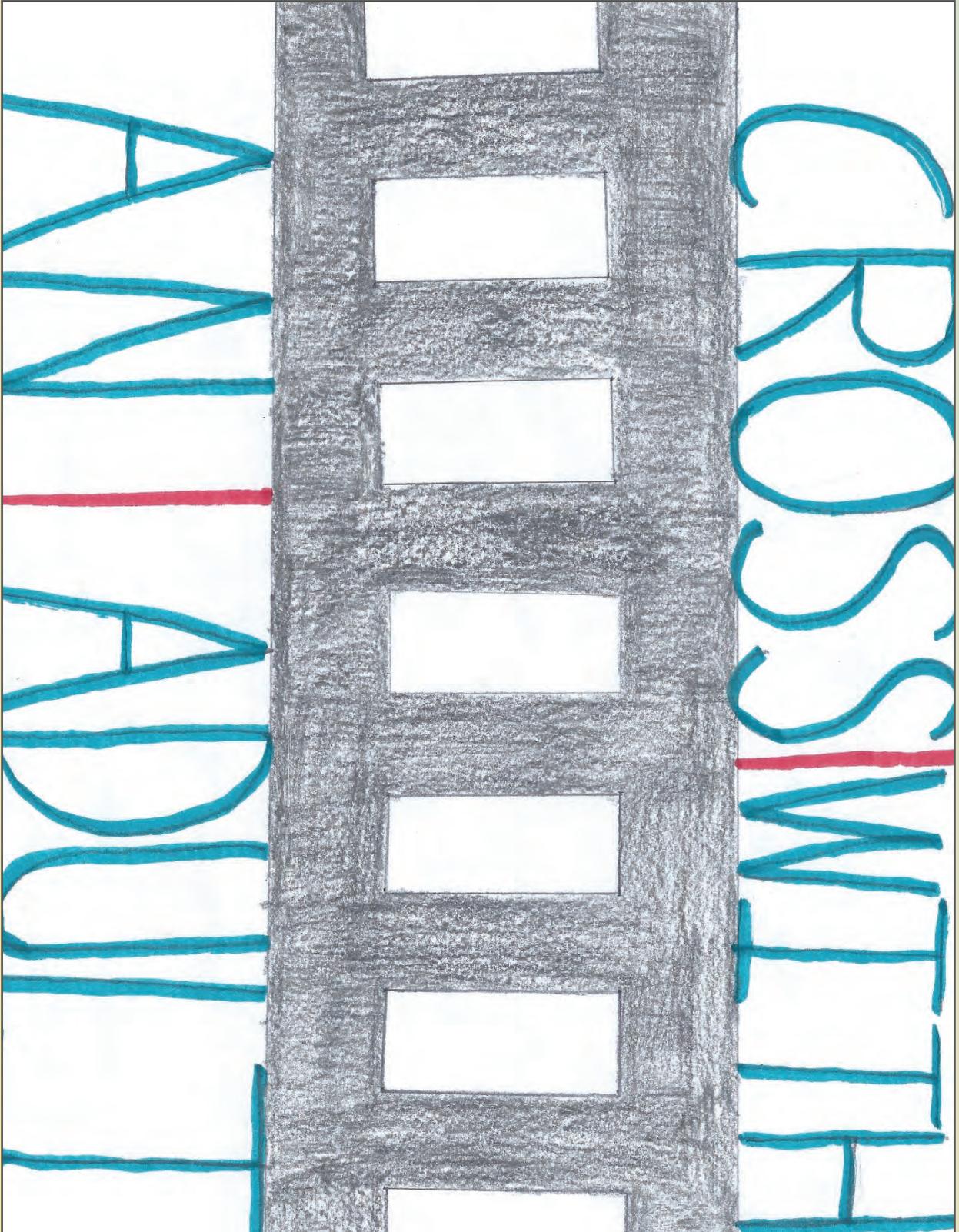
story buildings set-back from the street can make people walking feel uncomfortable and encourage people to drive in excess of posted speed limits. Balancing building heights, roadway widths, and other design features can improve pedestrian comfort, and context appropriate speeds for people driving.

- **Landscaping** Well-placed landscaping can serve several needs, such as providing shade, buffering pedestrian realms from vehicle travel, and slowing vehicles.

The FDOT Context Classification Guide<sup>14</sup> provides additional information about built environment factors and street design guidance.

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<sup>14</sup> <https://fdotwww.blob.core.windows.net/sitefinity/docs/default-source/roadway/completestreets/files/fdot-context-classification.pdf>.



Contestant Artwork

# Safe Streets Counter- measures

# 7





## Non-Engineering Countermeasures

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Countermeasures for human behaviors are intended to inform communications and campaigns across the region. These countermeasures are not a substitute for creating safe systems but are a critical component of Vision Zero efforts. They provide a framework to inform educational campaigns, promote changes in legislation, provide equitable enforcement, and when collisions do occur, provide rapid emergency response and medical care.

**Legislation** Legislation at multiple levels — including at municipal, countywide, or statewide scale — can help address human behaviors that result in crashes which cause death or serious injury. Speed limit setting is one example of legislation used to influence behaviors that result in speeding. Several cities in the United States have recently adopted 20 mph residential speed limits through “Twenty is Plenty” campaigns. Legislation can also be used to affect the penalties associated with unsafe behaviors and further discourage those types of behaviors, such as texting and driving.

While wearing motorcycle helmets is not required in Florida, studies have shown that helmets are estimated to be 37 percent effective in preventing fatal injuries to people who drive motorcycles, and 41 percent effective for motorcycle passengers. For every 100 people killed in Pinellas County not wearing a helmet while riding a motorcycle, 37 of them could still be alive today had they been wearing a helmet.<sup>15</sup> This is an example of legislation enacted at the state level.

**Education** Educational campaigns can be implemented from the local level through the national level. Effective Vision Zero campaigns use a sophisticated, data-driven approach to ensure the right message reaches the right audience at the right time. Successful campaigns have focused on the people affected by traffic crashes and individual choices that cause crashes while avoiding victim blaming.

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<sup>15</sup> Traffic Safety Facts 2017 Data, National Highway Traffic Safety Administration, May 2019

**Enforcement** Successful Vision Zero enforcement strategies focus on enforcing the most dangerous behaviors in the most important places, including along the regional High-Injury Network. Using traffic safety cameras to automate enforcement is a strategy gaining traction, and has been used successfully by Vision Zero communities around the world. Equity and empathy are critical considerations in a Vision Zero-aligned enforcement campaign to ensure that people already burdened by unsafe transportation infrastructure, including low-income populations and people of color, are not further burdened by unreasonable enforcement. **The Safe Streets Action Plan includes strategies to partner with local law enforcement agencies to provide training on best practices for collision reporting, and to better understand who is being stopped by law enforcement agencies in Pinellas County, and where and why.**

**Emergency Response** The speed of emergency response and quality of care is critical to the outcome of a collision. Delays accessing the scene of a collision, either due to congestion or distance of available first responders, can mean life or death in many situations. Some cities use predictive analytics to identify where collisions are likely to occur based on data from past events such as weather, congestion, or a special event. This allows first responders to access collision locations faster and improve outcomes for some crash victims. Ensuring the appropriate level of staffing, training, and capacity for emergency medical services (EMS) and hospitals can improve safety outcomes. Hospitals also have a role in providing data related to collision outcomes and cost of care to help inform overall strategies and better document the cost of collisions on our communities.

## Equity Strategies

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Equity is a foundational Vision Zero concept. Low-income communities and communities of color are disproportionately affected by fatal and serious-injury crashes. In Pinellas County, 73 percent of the regional HIN bounds or touches a Community of Concern, while only 32 percent of the County's area is within a designated Community of Concern.

The Vision Zero Network published Equity Strategies for Practitioners to assist communities in implementing Vision Zero with a focus on equity. Key strategies from the guide are:

- **Commit to the work** Ensure that Vision Zero or traffic safety leadership reflects the diversity of the community; agree that equity issues are a focus of Vision Zero and make a strong and firm commitment from the start.
- **Use data to focus efforts** Incorporate demographic, social, public health, and economic datasets as well as qualitative data into crash analysis and project prioritization.

- **Enforcement with empathy** Enforcement must not have a disproportionate effect on low-income communities and communities of color, nor should it damage police-community relationships. Since safe infrastructure is lacking in many low-income communities and communities of color, these communities are already unfairly burdened by the transportation system. Strategies to integrate equity into enforcement include community policing, officer training, careful application of automated enforcement, transparency in traffic stop data, diversion programs that focus on education rather than punishment, and graduated fines.
- **Community engagement** Programs and associated staff should build sustaining relationships with the community and partners. Leaders must listen and demonstrate that they value the experiences of people affected by inequitable conditions. Hosting engagement meetings in locations people can attend conveniently and reducing barriers to participation are key elements of Vision Zero-focused community engagement.





# Engineering Countermeasures

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When thinking about the causes of collisions, many are the result of undesirable or illegal behavior, such as speeding, texting while driving, running red lights, tailgating, and reckless driving. However, we need to recognize that no educational campaign will be 100 percent effective in eliminating undesirable or illegal behavior, and that enforcement mechanisms cannot be in place on every roadway 24 hours a day. That is where engineering countermeasures come into play, as changes to roadway design and operations can be effective in reducing vehicle speeds, conflict points, and the severity of collisions so that fewer people die or are seriously injured.

Engineering strategies are organized into seven categories:

- Signals
- Intersection and Roadway Design
- Signs and Markings
- Bikeway Facilities
- Pedestrian Facilities
- Other
- Low-cost and Quick Build

Since there are so many countermeasures, the general categories are described below, with a Safety Countermeasures

Toolbox provided in [Appendix D](#).

The Countermeasures presented in this document do not represent all countermeasures that could be appropriate for implementation in Pinellas County. Agencies implementing safety projects in the County should refer to the most current guidance from the Federal Highway Administration, National Highway Traffic Safety Administration, National Cooperative Highway Research Program, Vision Zero Network, Institute of Transportation Engineers, and others.

The mode of travel whose safety is most improved by each countermeasure is noted. However, none of the countermeasures specifically apply to collisions involving motorcyclists. Collisions involving motorcyclists most commonly occur with lane changing and turning, when the motorcyclist is in the driver's blind spot. Many countermeasures can help reduce the frequency and severity of collisions involving motorcyclists, but motorcyclist education, licensing, and proper helmet use are also a large component to reducing motorcyclist KSIs.

**Signals** Under the signal timing and phasing category, strategies relate

Contestant Artwork



to changing signal timing based on local context, such as extending the pedestrian time if there are large volumes of pedestrians, or if pedestrians are not able to cross the intersection within the time allotted. Extending yellow and red time can help clear the intersection and reduce the potential for red light running. In locations where there are high pedestrian and bicycle volumes, right-turning vehicles may not be able to turn when they have a green light due to pedestrians in the crosswalk. Providing a separate right-turn phase could help clear right-turning vehicles and reduce conflicts with pedestrians.

Sometimes giving pedestrians a head start can make them more visible to drivers. Installing a new traffic signal or pedestrian signal can help allocate the right-of-way, reduce conflicting movements, and provide pedestrians a protected crossing. In heavy pedestrian areas, installing a pedestrian scramble where all vehicles must stop so that pedestrians can cross diagonally can be a more efficient way to operate the intersection and reduce vehicle conflicts with pedestrians.

Other strategies such as converting permissive lefts to protected lefts can be highly effective in reducing conflicts with pedestrians. Reducing cycle length can decrease pedestrian delay which reduces the occurrence of pedestrians crossing against the signal and red-light running.

### Intersection and Roadway Design

Changing intersection and roadway design features — such as eliminating slip lanes to slow vehicle turning movements, narrowing travel lanes to promote slower speeds, and constructing sidewalks — are some effective methods. Many intersection and roadway design measures may require public outreach and detailed analysis. For example, partially closing a roadway could result in community concerns about increased traffic on other streets or the need to make improvements at other locations.

Some improvements, such as a protected intersection, can be expensive and might need to be programmed as a capital improvement project. There are often opportunities to take advantage of reallocating right-of-way, especially as part of planned resurfacing projects. For instance, lane eliminations to add/enhance bicycle and pedestrian facilities are good candidates for inclusion with other planned roadway projects.

**Signs and Markings** Installing additional signs and pavement markings can be a low-cost way to improve safety outcomes. However, to be effective, they often need to be implemented with other roadway modifications for maximum effectiveness, and sign clutter should be avoided. These types of projects can often be implemented with planned Resurfacing, Restoration and Rehabilitation (RRR) projects.

# Speed Reduction Strategies

Speed is a contributing factor to many fatal and serious-injury crashes across all collision types, as there is a high level of correlation between vehicle speed and the survivability of a collision. While vehicle safety improvements have improved collision outcomes for vehicle occupants, the chance of a person walking or a person bicycling surviving a collision drops dramatically at vehicle speeds in excess of 20 miles per hour. Safe travel speed is a core Vision Zero principle given the documented relationship between speed and crash severity. A variety of proven techniques can be applied to reduce travel speed.

**Traffic calming** Vertical devices such as speed humps and speed tables, horizontal devices such as bulbouts, chicanes, or mini traffic circles/roundabouts all have documented speed-reduction effects. These treatments are typically limited to local and sometimes collector roads.

**Signal coordination** Traffic signal coordination can maintain desired operating speeds along corridors.

## **Realigning skewed intersections**

Broad, wide-radius turns can be made at high speeds. Tighter turns, closer to 90 degrees with a small radius, are made at lower speeds.

**Reducing travel lane widths** Narrower travel lanes encourage lower vehicle speeds. Recent updates to the American Association of State Highway Transportation Officials' (AASHTO) A Policy on Geometric Design of Highways and Streets included allowances for narrow travel lanes in recognition of safety research.

**Removing travel lanes** Reducing the number of travel lanes on a street enables the slowest driver to set the operating speed on a street, rather than the fastest driver.

**Roundabouts** By introducing horizontal deflection onto otherwise straight roadways, roundabouts can reduce operating speeds. Additionally, roundabouts have proven safety benefits compared to standard intersections.

**Bikeway Facilities** In Pinellas County, bicyclists are overrepresented in KSI collisions. Providing dedicated space for cyclists separate from high speed vehicle traffic can improve safety outcomes. One of the most effective measures is a dedicated pathway separate from vehicle travel. While bike lanes also help to reduce the potential for a collision, they are not as effective as a separate path especially on higher speed roadways. Bicyclists are particularly vulnerable in conflict zones. Some countermeasures aim to increase cyclist visibility in conflict zones and provide clear direction to other roadway users. In areas where there is constrained right-of-way, signing and pavement markings can be effective. However, like most strategies these are context-specific. For example, shared lane markings are appropriate on roadways with vehicle travel speeds of less than 25 mph and daily traffic volumes of less than 2,000. As speeds and traffic volumes increase, additional separation should be provided between vehicles and cyclists.

**Pedestrian Facilities** Pedestrians are also overrepresented in KSI collisions in Pinellas County. Providing more visible crossings, decreasing pedestrian crossing distance, and extending the amount of time to cross the street can help to reduce collisions. Many of these strategies also benefit other modes of travel although the primary benefit is to pedestrians. Lighting at the appropriate scale is also a key element and can

improve visibility of all roadway users. Pedestrian detection can be used at trail crossings where users might not activate the signal. Installing a median barrier can be a way to discourage pedestrian crossings; however, a review of the pedestrian patterns in the area should be conducted as there may be a reason, such as a bus stop on one side of the street and a shopping center or apartment complex on the other side. It is unlikely and unrealistic to expect pedestrians to walk a long distance out of their way to use a protected crossing, especially in Florida weather. Typically, people are not willing to walk more than 400 feet to a crossing and while it may not be practical to install a pedestrian crossing every 400 feet, other strategies such as relocating a bus stop could also be part of the solution.

**Other** Several other strategies are not focused on a singular mode. For example, consolidating driveways can benefit all roadway users. Curbside management strategies can reduce passenger loading from travel lanes, reduce doubled parked delivery vehicles, and increase transit reliability.

**Low-cost and Quick-build** This category was created to identify countermeasures that can be installed at a lower cost and faster timeline than more traditional improvement projects. Several low-cost and quick-build items can be used as a part of a pilot project before installation of a more permanent improvement.



# Countermeasure Pairing with Collision Types

As discussed in the collision profile section, collisions classified as angle, bicyclist involved, pedestrian involved, left-turn, rear-end, right-turn, sideswipe, and U-turn accounted for 64 percent of

total collisions and over 75 percent of KSI collisions. Based on the glossary of the specific strategies provided in [Appendix D](#), these collision types were paired with potential countermeasures.

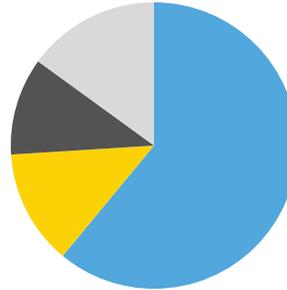
	Total Collisions	KSI Collisions	Person in Vehicle	Person Walking	Person Bicycling	Person Motorcycling
Rear End	37.54%	20.8%	86%	1%	0%	13%
Angle	17.0%	19.4%	81%	1%	2%	16%
Pedestrian	1.8%	14.8%	0%	94%	5%	1%
Left Turn	5.0%	11.3%	73%	1%	0%	26%
Hit Fixed Object	16.7%	10.8%	77%	2%	1%	20%
Bike	1.9%	7.8%	0%	1%	97%	2%
Single Vehicle	1.0%	4.3%	44%	1%	0%	55%
Sideswipe	10.3%	3.3%	67%	2%	1%	30%
Head On	1.6%	2.5%	87%	1%	4%	8%
Unknown	3.9%	1.8%	41%	24%	10%	25%
U-Turn	1.0%	1.1%	71%	0%	0%	29%
Right Turn	1.3%	1.0%	72%	2%	9%	17%
Hit Non-Fixed Object	0.6%	0.6%	44%	16%	16%	24%
Run Off Road	0.4%	0.5%	81%	0%	0%	19%



# Pedestrian Collisions

This crash profile includes all crashes that are classified as pedestrian or crashes when a person walking is harmed during a collision. While crashes involving people walking account for just two percent of total crashes, they represent 40 percent of all fatal crashes. As speeds increase the likelihood of a serious injury or fatality increases exponentially for pedestrians. The data shows that for the vast majority of pedestrian involved KSI collisions, there was either no contributing action, or the contributing action was unknown. In about 13 percent of KSI collisions, there was a failure to yield the right-of-way, which could be either a failure on the part of the person walking or the person driving. In 11 percent of KSI collisions, the person driving was found to be careless or negligent.

## Top Contributing Factors



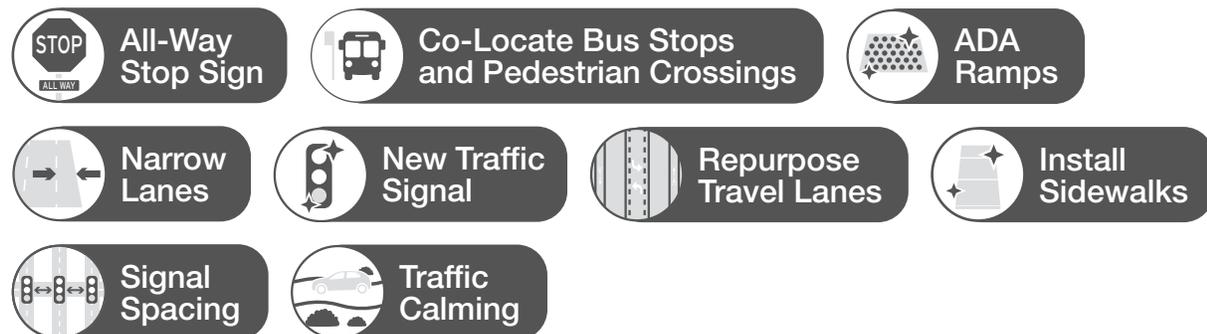
- **61%** no contributing action
- **13%** failed to yield right-of-way
- **11%** careless or negligent driving
- 15% other factors

## Potential Engineering Countermeasures

### Signalized Intersections

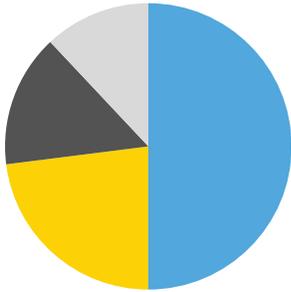


### Non-Signalized Intersections / Corridors



# Bicyclist Collisions

## Top Contributing Factors



- **50%** no contributing action
- **23%** failed to yield right-of-way
- **15%** careless or negligent driving
- **12%** other factors

This crash profile includes all crashes that are classified as bike, or crashes when a person bicycling is harmed during a collision. While crashes involving people bicycling account for only three percent of total crashes, they represent ten percent of all KSI crashes, and five percent of all fatal crashes. The data show that for the vast majority of bicyclist involved KSI collisions, there was either no contributing action, or the contributing action was unknown. In about 23 percent of KSI collisions, there was a failure to yield the right-of-way, which could be either a failure on the part of the person bicycling or the person driving. In 15 percent of KSI collisions, the person driving was found to be careless or negligent.

## Potential Engineering Countermeasures

### Intersections

Automatic Recall Signal Timing	Bike Box	Bike Conflict Zone Markings
Extend Bike Lane to Intersection	Extend Signal Clearance Time	Partial Closure/Diverter
Prohibit Left Turn	Prohibit Right Turn on Red	New Traffic Signal
Shorten Signal Cycle Length	Slow Green Wave	Traffic Signal Bike Detection

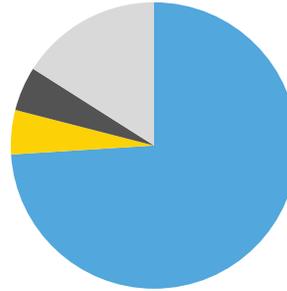
### Non-Intersections / Corridors

Bike Conflict Zone Markings	Narrow Lanes	Prohibit Left Turn
Protected/Separated Bikeway	Road Diet	Traffic Calming

# Rear-End Collisions

The rear-end crash profile includes all crashes classified as rear-end or crashes when a person driving one vehicle impacted the rear-end of another vehicle. Rear-end collisions are the most prevalent type of crash in Pinellas County and account for the most serious injuries and fatalities on the roadway system.

## Top Contributing Factors



- **74%** careless or negligent driving
- **5%** other contributing action
- **5%** followed too closely
- **16%** other factors

## Potential Countermeasures

### Signalized Corridors



Advanced Dilemma Zone Detection



Appropriate Yellow/ All Red Signal Timing



Improve Sight Distance



Incident Management Protocol



Signal Coordination



Traffic Calming



Variable Message Sign

### Non-Signalized Corridors



Improve Sight Distance



Incident Management Protocol



Traffic Calming



Variable Message Sign

### Distracted Driving / Careless or Reckless Driving (Tailgating) / Speeding



Targeted Enforcement



Speed Strategies



Education

# Turning Collisions

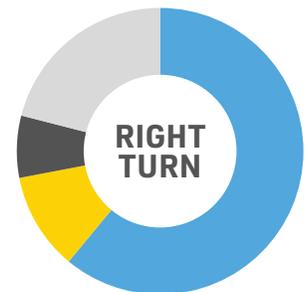
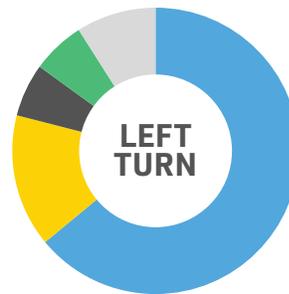
Left-turn, U-turn and right-turn collisions account for about seven percent of total collisions and 13 percent of KSI collisions. Left-turn movements resulted in more fatal and serious injury collisions than right- or U-Turn collisions. People riding motorcycles represent more than 25 percent of the victims of KSI collisions for both left- and U-turn collisions, which combined, represent the movement that causes the greatest number of KSI collisions involving motorcyclists.

For all collisions involving a turning movement, the most prevalent contributing factors were failure to yield right-of-way, operating the motor vehicle in a careless or negligent manner, improper turning and red light running.

Angle collisions have similar contributing factors as turning collisions since they involve roadway users colliding at an angle. Accounting for 17 percent of all collisions and 19 percent of KSI collisions, collisions classified as angle collision also disproportionately affect people who motorcycle. People who motorcycle are most likely to be killed or seriously injured from angle collisions (19 percent of all motorcycle KSIs are angle collisions, followed by 18 percent left-turn, and 17 percent rear-end).

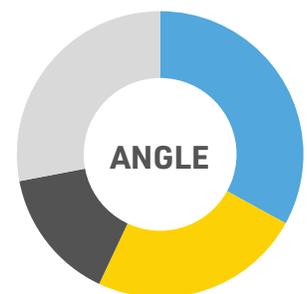
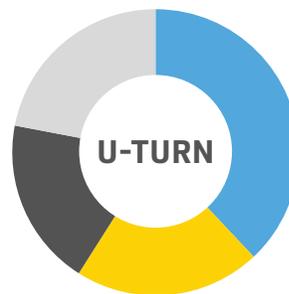
## Top Contributing Factors

- **64%** failed to yield right-of-way
- **15%** careless or negligent driving
- **6%** ran a red light
- **6%** improper turn
- 10% other factors



- failed to yield right-of-way **61%**
- ran a red light **15%**
- careless or negligent driving **6%**
- other factors 18%

- **38%** failed to yield right-of-way
- **21%** careless or negligent driving
- **19%** improper turn
- 22% other factors



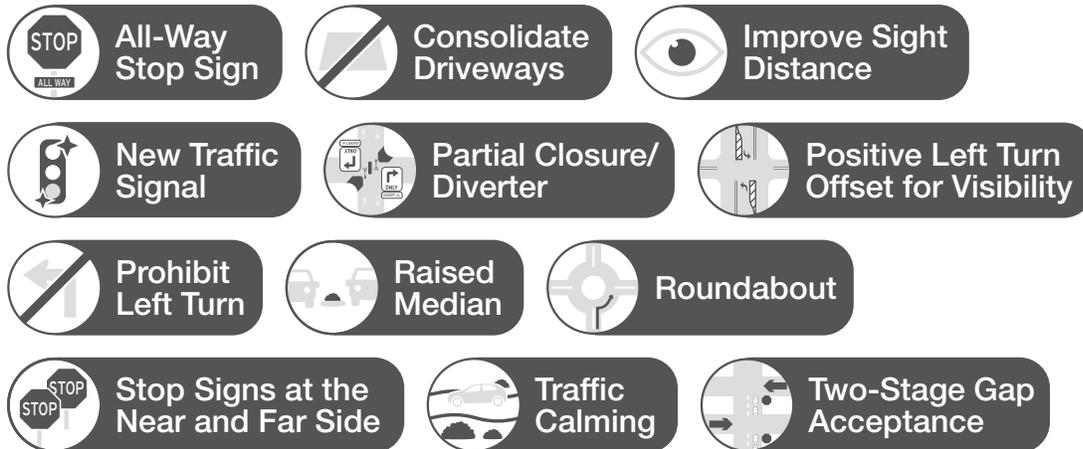
- failed to yield right-of-way **33%**
- ran a red light **14%**
- careless or negligent driving **15%**
- other factors 38%

## Potential Engineering Countermeasures

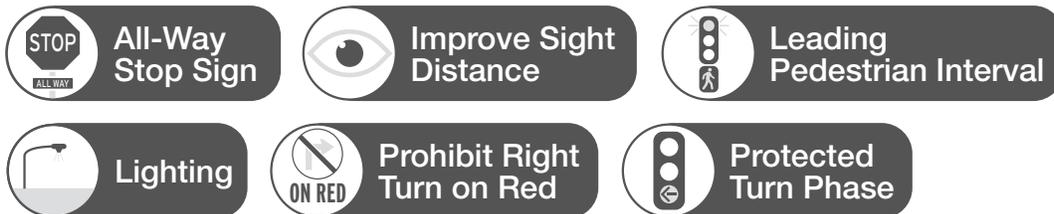
### Left Turns at Signalized Intersections



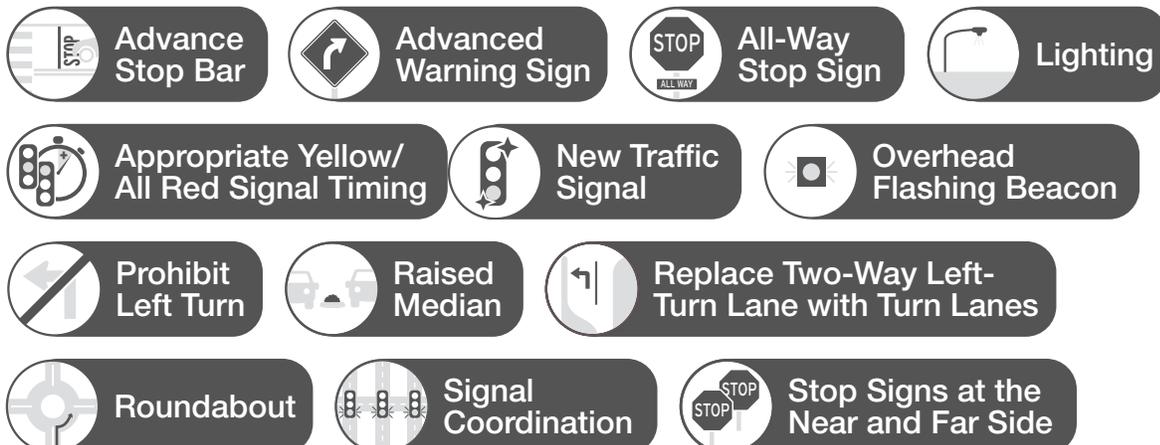
### Left Turns at Unsignalized Intersections



### Right Turns



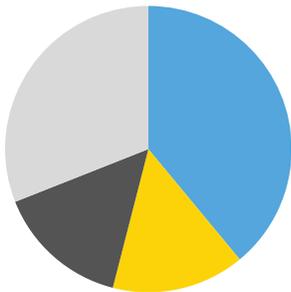
### Angle Collisions



# Sideswipe Collisions

Sideswipe collisions are one of the collision types least likely to result in a serious injury or fatality; however, motorcyclists represent about a third of people who are seriously injured or killed. Although not a primary collision factor as noted in the collision reports, failure to keep in the proper lane, improper passing, and improper turning collectively account for about 15 percent of the primary contributing action, in addition to the factors listed to the right.

## Top Contributing Factors



- **39%** careless or negligent driving
- **15%** failed to yield right-of-way
- **15%** other contributing action
- 31% other factors

## Potential Countermeasures

### Departure to Left

Also see the speeding countermeasures

- Advanced Warning Sign
- Barrier
- No Passing Zone
- Pavement Markings
- Raised Median
- Rumble Strips

### Departure to Right

Also see the speeding countermeasures

- Advanced Warning Sign
- Barrier
- Clear Distance
- Pavement Markings
- Raised Median
- Rumble Strips

### Sideswipe

Also see the speeding countermeasures

- Advanced Warning Sign
- Pavement Markings

### At Night

- Lighting
- Variable Speed Limit

### Impaired Driving

- Targeted Enforcement
- Education

## Other Collisions

The remaining 24 percent of collisions are classified as hitting fixed-object, single-vehicle, head-on, unknown, hit non-fixed object, and run off-road. Single vehicle and head-on collisions are more likely to result in a KSI that the other collision types. Single vehicle collisions disproportionately result in a KSI for people riding a motorcycle (55 percent). At a national level, a primary cause of single-vehicle collisions is excessive speed and driving under the influence. In about ten percent of the single-vehicle KSI collisions involving a person motorcycling, the person riding the motorcycle was under the influence, and in about five percent of cases excessive speed was shown to be a factor.

### Potential Countermeasures

#### Fixed Object

*Also see the speeding countermeasures*



Advanced  
Warning Sign



Barrier



Pavement  
Markings



Rumble  
Strips

#### At Night



Advanced  
Warning Sign



Lighting



Pavement  
Markings



Variable  
Speed Limit

#### Impaired Driving



Targeted  
Enforcement



Education

Don't Get  
Crushed!



Using your  
Cell...

Contestant Artwork

# Safe Streets Pinellas Strategies

# 8





# Safe Streets Pinellas Strategies

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The Safe Streets Pinellas Action Plan was developed in consultation with the Task Force and is intended to be implemented in concert with countermeasures to create a systemic, data-driven approach to Vision Zero. Some of these actions require partnerships and collaboration across City/County departments, with local organizations, and with the public to be successful. Actions have been developed in six categories around the core elements of Vision Zero using a systemic approach. Several strategies

have been identified in each category in addition to the party responsible for leading the action and supporting agencies. A timeline for implementation is provided, as well as performance metrics. It is intended for these actions to be periodically revisited, and actions that have been successful could be expanded; actions that have not been successful would be eliminated and replaced with other strategies. As conditions and strategies evolve, the Action Plan and supporting elements will as well.



# Action Plan Elements



**Safe Streets Program** Establishing a Safe Streets program provides a mechanism to advance Vision Zero beyond one project, an individual staff person, or an individual elected official. The Safe Streets program calls for formation of a Safe Streets Working Group that will be responsible for advancing the remaining actions and continue efforts to work toward zero in perpetuity.



**Legislation** Legislative changes are needed to move toward Vision Zero. While Forward Pinellas does not have the ability to lobby the state government for change, there are opportunities to support the efforts of others, and propose ideas through local representatives, such as increasing funding streams for safety projects and actions that allows funds to be directly received by local governments.



**Education** Different educational strategies are identified for Pinellas County populations, including the general public, local agency staff, law enforcement, and schools. Each group requires varying and on-going educational materials to help build agency capacity and critical levels of public support.



**Funding** Without funding, nothing is accomplished. Forward Pinellas has a Complete Streets grant program that provides up to \$100,000 for planning and \$1,000,000 in construction costs. Forward Pinellas has also set aside funding to support implementation of actions identified in this plan, including staff time to support efforts and on-going programs. One source of funding for safety programs is the Highway Safety Improvement Program (HSIP). Applying for grants can be a large effort for local governments and Forward Pinellas can help streamline efforts by having readily available data, sample applications, and other support to elevate the chance of securing HSIP funding for projects in Pinellas County.



### Data Collection, Monitoring and Analysis

Forward Pinellas maintains a crash database management system and routinely provides summary information to partner agencies. Part of this strategy would be to perform routine collision analysis, make data more accessible to the public and decision-makers, and investigate how currently collected data can be combined with other sources of data, such as hospital records, to make sure key data sets are being used to make more accurate decisions. This is especially important to ensure equity goals are met, given the potential underreporting of collision data.

Some actions also include partnering with local law enforcement agencies to provide best practice training on collision reporting, since a review of the collision data reveals inconsistencies in how data are reported by different officers, as well as inconsistent data within a collision record, such as when a collision is noted as occurring in daylight conditions, when the time of collision and time of year suggests it may have occurred in the dark. The goal here is not to add to law enforcement's workload but provide additional resources to improve the data so the most appropriate countermeasure can be implemented to reduce collisions. By periodically conducting detailed analysis, updating maps, and providing progress updates, Forward Pinellas can keep the Vision Zero effort front of mind for the community and maintain project momentum.



**Street and Roadway Design** Street design standards play a large role in the ability of local governments to implement roadway projects that advance Vision Zero. For example, in the design of roadway facilities, a design speed of 10 miles per hour over the posted speed limit is typically used to accommodate drivers that may be speeding. However, this practice encourages and accommodates drivers speeding as the roadway is designed for higher speeds. Providing local agencies with resources to develop context-sensitive design solutions which improve safety outcomes is critical to achieving Vision Zero.

This strategy is different from specific engineering countermeasures in the previous section, like a lane elimination, or crosswalk enhancements. This strategy would inform overall design guidelines that specify general design parameters, such as lane widths.



# The Action Plan

## Safe Streets Program

### 1

Establish a Safe Streets Working Group, expanding on the Task Force, that will share updates on crash data, resources, current activities, policy evolution, funding opportunities, equity data, traffic safety performance, emerging issues, and other information. Allied Organizations will be invited to participate in the Safe Streets Working Group, including but not limited to public health, social services, economic development, homelessness, the faith community, and other community-based organizations.

#### Partners

Forward Pinellas, Member Governments, Allied Organizations

#### Timeline

Within three months of plan adoption

#### Performance Measures

Meet quarterly; Numerical (#) safety goals making progress

### 2

Encourage adoption of Vision Zero locally at the member government level, and provide resources to assist, such as sample comprehensive plan policies and/or resolutions.

#### Partners

Member Governments, Forward Pinellas

#### Timeline

Begin within three months of plan adoption, and on an as-needed basis

#### Performance Measures

Number of local governments that formally adopt Vision Zero

### 3

Reach out to established victim support networks<sup>16</sup> to determine steps for the creation of a network in Pinellas County; investigate if there are barriers to the establishment of a support network in Pinellas County.

#### Partners

Forward Pinellas

#### Timeline

Within one year of plan adoption

#### Performance Measures

Progress made toward the establishment of a support network

<sup>16</sup> For example, <https://www.transalt.org/familiesforsafestreets>.



## Data Collection, Monitoring & Analysis

### 4

Conduct and prepare annual crash analysis, including preparing crash profiles and comparison of various time periods to better identify trends and progress toward Vision Zero. Analysis should layer available demographic and environmental justice data. Periodically update the HIN and Action Plan to reflect progress being made or develop new strategies if current actions are not achieving desired results.

#### Partners

Forward Pinellas

#### Timeline

Annual (review progress),  
Five Years (Major Plan Update)

#### Performance Measures

Report to the Forward Pinellas Board on safety improvements constructed on an annual basis, and progress toward Vision Zero; Reduction in KSIs from prior year

### 5

Partner with local law enforcement agencies and healthcare providers to provide collision reporting and crash-related injury coding best practices to improve value of data analysis, emphasizing data collection on speed, impairment, distractions and use of emerging mobility options like e-scooters and ride sharing at KSI crash locations. Hospital data could be used to determine extent of underreporting of traffic collisions that result in a KSI.

#### Partners

Forward Pinellas, FDOT, Local Law Enforcement, FHP, Public Health Department, Healthcare Providers and Collaboratives

#### Timeline

Within two years of plan adoption

#### Performance Measures

Number of training sessions held with Law Enforcement and Public Health, and incorporation of additional data into crash analysis



## Data Collection, Monitoring & Analysis

6

Work with the Public Health Department to determine how hospital data could be obtained to develop more comprehensive collision records. As Hospital Data becomes available, incorporate into the Safe Streets database and Safe Streets Program objectives to develop performance measures tied to health equity outcomes.

### Partners

Public Health Department, Healthcare Providers and Collaboratives, Forward Pinellas

### Timeline

Within two years of plan adoption

### Performance Measures

Incorporation of Public Health Data in collision analytics

7

Leverage technology to better understand core collision factors, including collecting automated speed data, and conducting near-miss analysis at hot spots on the High-Injury Network. Develop and maintain database.

### Partners

Forward Pinellas, FDOT, Member Agencies

### Timeline

Within one year of plan adoption

### Performance Measures

Conduct at least one near-miss assessment and collect speed data at ten locations annually



## Education

8

Maintain Safe Streets Pinellas media kit. As a part of the media kit, provide information and resources and offer educational opportunities to media outlets and to member governments about Vision Zero to promote consistent messaging and crash reporting language. As collision updates are developed, and partner agencies adopt Vision Zero locally, promote achievements, as well as work that continues.

### Partners

Forward Pinellas, Local Governments, FDOT

### Timeline

Ongoing

### Performance Measures

Number of safety focused news articles, reduction in the use of the word “accident” in the reporting of collisions, number of transportation safety related social media posts

9

Work with FDOT and other local and regional agencies to share and promote educational resources and strategies, including training aimed at fleet drivers in the community such as bus drivers, truck drivers, and taxi drivers. Action could include participating in regional Safe Streets Summits, Safe Streets Pinellas updates at Member Agency meetings, coordinating changeable message signs with safety messages throughout the region, and community engagement events.

### Partners

Forward Pinellas, FDOT, Local Governments, Regional Agencies, Community Groups, Bike/Walk Tampa Bay or similar groups

### Timeline

Ongoing. Coordinate with Safe Streets Working Group activities

### Performance Measures

Number of events held; number of participants at events; level of engagement at events



## Education

### 10

Collaborate with the public school district and interested charter and private schools to provide additional transportation safety resources, and targeted engagement for middle and high school students, with a focus on empowering youth leadership to promote safe transportation in their own school communities, prioritizing Communities of Concern.

#### Partners

Pinellas County Schools, Forward Pinellas, STEPS Committee, School Transportation Safety Committee

#### Timeline

Ongoing. Coordinate with Safe Streets Working Group activities

#### Performance Measures

Number of Safe Routes to School projects implemented around the HIN or hot-spot locations

### 11

Facilitate a police department Working Group on High-Injury Network, crash profiles, contributing violations and behaviors, and equity and empathy.

#### Partners

CTST, FHP, Forward Pinellas

#### Timeline

Within one year of plan adoption

#### Performance Measures

Number of meetings held; Share of law enforcement officers participating in training events



## Street and Roadway Design

### 12

Collaborate with Pinellas County and other local agencies to develop model Safe Street Design guidelines, policies, and resolutions for the Forward Pinellas region addressing safety-related aspects of street design, incorporating Vision Zero and Safe Systems design principles, and including guidance for establishing safe design controls (e.g., establishing a safe design speed).

Develop and implement Vision Zero training aimed at local agency staff and elected officials to help encourage adoption and incorporation of core elements within City programs and processes.

#### Partners

Forward Pinellas, Local Governments, FDOT

#### Timeline

Start guideline development within one year of plan adoption

#### Performance Measures

Implementation of new design standards and monitoring of use; Checklist maintained by MPO

### 13

Provide feedback to FDOT on routine updates of FDOT Design Manual and other design-related documents to support context-sensitive safety design solutions.

#### Partners

Forward Pinellas, FDOT

#### Timeline

Annual basis

#### Performance Measures

If feedback is provided; Evolution of FDOT Design Manual

### 14

Conduct safety demonstration/pilot projects to test innovative safety interventions and implement quick build projects.

#### Partners

Forward Pinellas, Local Governments, FDOT

#### Timeline

At least one demonstration project per year

#### Performance Measures

Number of demonstration projects implemented, including share in Communities of Concern.

### 15

Collaborate with PSTA to conduct a detailed analysis of transit stop locations on the HIN to identify stop locations that could be contributing to collisions, especially involving a vulnerable roadway user.

#### Partners

Forward Pinellas, PTSA

#### Timeline

Start analysis within one year of plan adoption

#### Performance Measures

Preparation of report that identifies potential transit stop improvements



## Funding

### 16

Modify Forward Pinellas funding prioritization criteria to prioritize safety projects on the HIN that address key crash profiles, hot spots, or otherwise reduce KSI crashes; evaluate effectiveness of current funding criteria.

#### Partners

Forward Pinellas

#### Timeline

Completed; Action included in plan to measure progress

#### Performance Measures

Percent of available funding awarded to projects on HIN

### 17

Modify Forward Pinellas funding criteria to prioritize safety projects within Communities of Concern.

#### Partners

Forward Pinellas

#### Timeline

Completed; Action included in plan to measure progress

#### Performance Measures

Percent of available funding awarded to projects in Communities of Concern

### 18

Provide grant writing support to member governments for safety-related funding, such as HSIP.

#### Partners

Forward Pinellas

#### Timeline

Within one year of plan adoption

#### Performance Measures

Develop list of transportation safety-related grant funding opportunities for jurisdictions in Pinellas County, and share resources



## Legislation

### 19

Support legislation to increase funding available for safety projects and to establish a reliable, dedicated funding stream that allows funds to be directly received by local governments.

#### Partners

Forward Pinellas, Local Governments

#### Timeline

Within one year of plan adoption

#### Performance Measures

Number of additional funding streams identified for safety projects in Pinellas County

### 20

Through the implementation of other Safe Streets actions, identify potential legislative barriers to achieving better safety outcomes, and identify steps to reduce or eliminate.

#### Partners

Forward Pinellas

#### Timeline

As needed

#### Performance Measures

Report back to Working Group the status of legislation that supports/ impedes Vision Zero, and bring to the attention of Allied Organizations that lead legislative change

### 21

Support legislation that allows for deployment of safety devices, like RRFBs, and oppose legislation that prevents the deployment of safety devices, or piloting new safety devices through active participation in the Metropolitan Planning Organization Advisory Council (MPOAC).

#### Partners

Forward Pinellas, Local Governments, MPOAC

#### Timeline

Forward Pinellas staff attend quarterly meetings

#### Performance Measures

Number of meetings attended; Report back to Working Group the status of legislation that supports/impedes Vision Zero

### 22

Evaluate use of remote speed enforcement for select locations on the HIN, in concert with education to emphasize the purpose is KSI crash reduction, not revenue generation.

#### Partners

CTST, FHP, Forward Pinellas, MPOAC

#### Timeline

Annually

#### Performance Measures

Report to Working Group the status of remote enforcement in Florida



# How Local Governments Can Stay Engaged

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Forward Pinellas has made a Vision Zero commitment and is dedicated to the action initiatives detailed in this plan to achieve zero severe injury or fatal collisions by 2045. Local governments can use Forward Pinellas as a resource and participate in the future of Vision Zero in the region by:

- **Participating in the Safe Streets Pinellas Working Group**  
Local governments can have key representatives join the working group.
- **Participating in Training Opportunities**  
Local governments can inform and encourage their staff and residents to participate in training opportunities communicated by Forward Pinellas.

- **Collecting and Sharing Data**  
The continuous improvement and availability of crash data and traffic safety information is a priority for Forward Pinellas. Local governments should consult with Forward Pinellas for data questions and assistance understanding and applying the data within the regional High-Injury Network.
- **Applying for Grants**  
Using Forward Pinellas as a resource, local governments can track updates on available funding and grants for safety projects and apply for funding for safety projects or programs.
- **Joining the Vision Zero Network**  
Local governments can join the Vision Zero Network, become a Vision Zero community and stay involved with evolving research and training on Vision Zero through this national group.





## Data Disclaimer

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The data source for this plan is the Crash Data Management and Analysis System (CDMS) which was developed and maintained by Tindale – Oliver & Associates, Inc. This database represents the best available transportation collision data source for the summary and evaluation of collisions in Pinellas County. Collision data in CDMS is continually updated as collisions occur; for some collisions, preliminary information is entered into the system, and then updated as more information is available. For example, a collision could have initially been classified as a serious injury. If the person later died from the injuries that occurred during that collision, the collision record would be updated to report a fatal collision. Data entered into the system is taken directly from

collision reports prepared by various public safety agencies throughout the County. As many different people have responsibility to complete crash reports, there may be some discrepancies in the reporting and description of collision factors. Additionally, there may also be human error related to the entry of the data into the system. While there are checks to ensure quality data, errors could occur. There may also be gaps in the data, as most of the crashes do not have all detailed fields available. For example, the age of the person associated with a crash may be available for one crash but not for another. All numbers in this report were derived from available data. Readers are encouraged to consider data constraints while reading the Safe Streets Action Plan.

# Acknowledgements

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Forward Pinellas would like to thank everyone who was involved in this effort including the project Task Force, Project Ambassadors, agencies involved in the demonstration projects (Pinellas County, Florida Department of Transportation, and the cities of St. Petersburg, Clearwater, Indian Rocks Beach, and Dunedin), the Charrez family, and members of the public who provided feedback, participated in various online engagement activities, and submitted transportation safety related art, which is featured throughout this document.



# Appendices





# Crowdsource Summary

## Appendix

# A





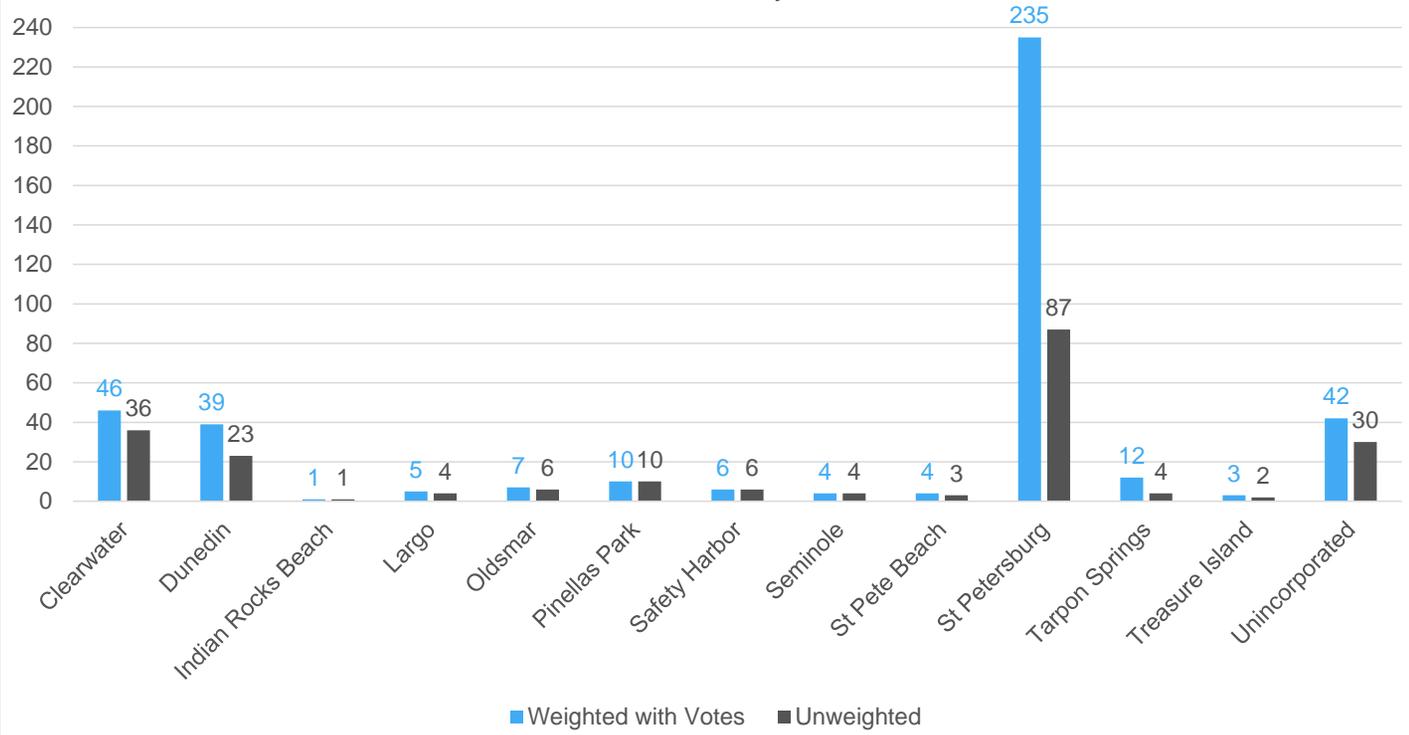
OBJECTID	Type	Votes	Comment
7212	Drivers go too fast		Vehicles use this to bypass the Curlew Rd/US 19 intersection and speed down the streets.
7225	Drivers go too fast		Drivers going the speed limit are passed by cars weaving in and out of lanes going at least 10 miles an hour faster.
7227	Drivers go too fast		Cars weaving in and out of lanes passing cars that are keeping the speed limit.
7230	Drivers go too fast		Most drivers are exceeding 35 MPH speed limit, some drivers use this section of Landmark Dr as a race track. This is a school area and mostly residential area.
7233	Drivers go too fast	3	Many vehicles speeding on Pinellas Point Drive S. including city buses as well as private vehicles and work vehicles
7235	Drivers go too fast	3	No sidewalks, streetlights
7237	Drivers go too fast	1	I travel this street every time I gout and I always go the speed limit. Almost all the time, cars pass me, which means they are all speeding.
7241	Drivers go too fast	5	School bus stops and lots of bicyclists on this route, too many drivers speeding, tailing cars doing the speed limit, aggressive drivers.
7242	Drivers go too fast		Our neighborhood has an increasing number of small children. The speed limit is 30 mph, which can be lowered to 25 mph, but this is still too fast. Many motor vehicles drive much too fast through the neighborhood, and many do not stop at stop signs!
7246	Drivers go too fast		The drivers are speeding constantly on 137th/Antilles even though this is a school zone. Yesterday a 10 year old girl was nearly hit by a speeder trying to cross the street on her bike where I put the dot on the map. Maybe speed bumps especially in front of the school would help slow the drivers down.
7251	Drivers go too fast		Countryside Blvd going through from Main Street to Curlew. It is a race track, people easily doing 20 mph over the speed limit. This is a neighborhood and children are playing! This road needs sped bumps.
7256	Drivers go too fast		We need warning signs of the construction to slow drivers on the ramp from I-275.
7258	Drivers go too fast		Default 30mph speed limit is Way too fast for this and other streets with children playing and dogs been walked. If nearby 137th, a major street is 25 MPH, these more residential streets should be 20
7263	Drivers go too fast		We live on a lake with ducks, walkers and kids everywhere. Drivers use Paloma as a cut off from Alt 19 to get downtown. WE NEED SPEEDBUMPS and decreased speed. Speeding tickets before someone gets hit
7264	Drivers go too fast		Speeding drivers use Grove St. during rush hours as an alternate to Drew. Evenings and late night patrons of Drifters Sports Pub use it to avoid being noticed by police on Drew.
7269	Drivers go too fast		dangerous and inefficient intersection. Good candidate for roundabout analysis. The street south to Main St needs more crosswalks and parking
7271	Drivers go too fast		Drivers fly down this road doing 45 in a 25
7272	Drivers go too fast		
7273	Drivers go too fast	4	Speeding from 4th St S/Pinellas Point drive onto 62nd Ave S has increased incrementally over the past month and I see no police presence/speed traps. This is a residential area with 35 mph and cars are going well above that speed limit.

OBJECTID	Type	Votes	Comment
7274	Drivers go too fast	11	Cars cannot see around the bend - there are many bicyclists on this stretch
7277	Drivers go too fast		Need enforcement. There is no respect for the bike lanes, stop signs, and any signs in general, speed limits and pedestrian crosswalk. Large semi trucks constantly take the non truck roads.
7278	Drivers go too fast		Drivers speed trying to beat the light at intersection with Curlew Road.
7279	Drivers go too fast	1	Drivers leaving light at Curlew going east on Tampa Rd. go too fast and nearly hit drivers turning south onto Oakleaf.
7280	Drivers go too fast	4	Speed limit on this street is ridiculous, cars often in excess of 60 mph in a 35 zone.
7281	Drivers go too fast		Drivers race on this stretch of road
7282	Drivers go too fast	4	Passing buses, crossing double line, drifting into bike lane
7283	Drivers go too fast	5	Between 68th Ave S and PPDS, speeding thru neighborhood
7284	Speed limit is too high	6	Motorcyclist extreme high speed everyday
7285	Drivers go too fast	3	
7286	Drivers go too fast		Drivers drive over the speed limit and in wrong direction. It is a one-way street heading south. Just about everyday I see a driver headed in opposite direction of one way.
7289	Drivers go too fast		Need traffic calming and better enforcement of speed limits
7290	Drivers go too fast		We need traffic calming or better enforcement of speed limits
7293	Drivers go too fast	2	Regardless of the speed bumps vehicles and motorcycles are dangerously speeding at high speed. There are children that play on this street! There are no sidewalks! Families walk and also walk their dogs! Please.
7294	Drivers go too fast		
7295	Drivers go too fast	8	While there are speed bumps located on Fairway Ave S, there is a long stretch of roadway between two of the speed bumps where people are going up to 45-50 mph.
7300	Drivers go too fast		Place speed humps on this road. Cars/motorcycle later exceed the speed limit in a dangerous manner daily. There are children riding bikes, people walking their dogs, joggers etc
7301	Drivers go too fast	15	Place speed humps on this road. Cars/motorcycle later exceed the speed limit in a dangerous manner daily. There are children riding bikes, people walking their dogs, joggers etc
7302	Drivers go too fast	4	Speeding from mlk to the country club. Vehicles going well over the speed limit
7303	Drivers go too fast	3	We need speed control here
7304	Drivers go too fast	4	We need speed control here
7305	Drivers go too fast	7	We need speed control someone is going to be killed if we don't get it.
7306	Speed limit is too high	2	Speed is out of control on PPD
7308	Drivers go too fast		Need speed control ppl are almost hit daily
7309	Drivers go too fast	3	Very high speeds at peak rush hours, also very late at night. Some speed traps at visible times would be a great deterrent!
7345	Drivers go too fast		Even though we have speed bumps people go 40 mph through here!
7346	Drivers go too fast		Drivers speed through in between the speed bumps
7348	Drivers go too fast	3	
7349	Speed limit is too high	1	
7350	Speed limit is too high		

OBJECTID	Type	Votes	Comment
7353	Drivers go too fast	2	Every single day there are people driving way too fast (over 10 mph above posted speed limit). I live right off this road and see it first hand. There is very little police activity to deter this problem. I understand there are bigger issues. But when we've had to call 911 multiple times to report wrecks, something has to be done. My kids ride their bikes. This can't be ignored any longer.
7354	Drivers go too fast		The speed limit on this stretch needs to be reduced from higher speeds on 4 lane like MLK and also 31st
7356	Speed limit is too high	1	The once speed is lowered it needs to stay consistent. Right now people coming to Pinellas Point Dr S From the highway use this road as a high speed zone
7363	Speed limit is too high	3	Northbound drivers often will not merging traffic from the NB on ramp at Roy Hanna Drive or Pinellas Point Drive. I'm not sure what it's called there. It's near Maximo Park. It causes very dangerous situations.
7364	Drivers go too fast	1	I-175 should be removed to create an at-grade boulevard with bike lanes and mid-block pedestrian crossings.
7365	Drivers go too fast	1	This intersection would likely be better suited with a four way stop versus a signaled intersection.
7415	Drivers go too fast	6	Maybe they could speed trap more often, or park an empty cruiser like they do on the Bayway and St. Pete Beach.
7416	Drivers go too fast		The speed limit should be lowered on this road. A consistent speed limit of 25 or 30 MPH would be helpful rather than the changing speed limits.
7421	Drivers go too fast		A Stop sign at this corner would slow traffic using Beltrees as a cut-through and improve safety.
7423	Drivers go too fast		People speed and aggressively pass to get into the left lane and get on the hwy before the light changes, because they know it is a long light. This is a pedestrian area next to the dog park.
7424	Drivers go too fast		More patrolling. I drive to work at night around 730, and people are flying past me, weaving in and out of traffic. They have to be driving 15+ mph over the speed limit
7435	Drivers go too fast		Too many speeders on a street with walkers, joggers, children
7437	Drivers go too fast	1	Traffic calming is needed.
7446	Drivers go too fast		Lots of speeding
7448	Drivers go too fast		Drivers Will not yield to let us out and if we take a right we can't get into the left lane to go south because there's no lane changing there if we turn right to use the red light to go south on McMullen booth there is a no U-turn sign
7450	Drivers go too fast		Drivers too fast and crosswalk needed
7451	Drivers go too fast	1	Drivers use this street as a cut through and drive very fast....over 45mph
7463	Drivers go too fast		Drivers exit 19SB and speed on Frontage Rd and then re-enter 19. Frontage Rd is being used as a passing lane. Frontage Rd is 35 MPH with driveways.
7464	Drivers go too fast		NOISE ISSUE AT NIGHT UNDER OVERPASS
7489	Drivers go too fast		Someone is going to get killed
7490	Drivers go too fast		Someone is going to get killed
7496	Drivers go too fast		

OBJECTID	Type	Votes	Comment
7500	Drivers go too fast		On Douglas Ave, south of Mainstreet, the speed limit is 15 and then goes to 25. Cars & trucks speed on the road constantly. It is a safety issue as there are lots of pedestrians in Downtown Dunedin. I've seen many close calls.
7501	Drivers go too fast		This area is a small section of 4 lanes with a visibility issue. Drivers speed and often drag race at all hours. There are been several wrecks and near misses.
7502	Drivers go too fast		We need traffic calming! Cars see a long strait wide uninterrupted view of road. Spending is constant. Many bikers and walkers and people crossing the streets. Please do something to slow the cars down.
7505	Drivers go too fast		There is an opportunity to remove this stoplight (79th St @ Central Ave) and replace with roundabout to slow traffic. Traffic often exceeds 45+mph on this stretch.
7510	Drivers go too fast		Drivers exceed speed by up to 40 mph
7511	Drivers go too fast		Drivers exceed speed by up to 40 mph
7512	Drivers go too fast		Drivers exceed speed by up to 40 mph
7514	Drivers go too fast		Speed bumps needed at east end of 102nd Ave to slow down the speeders. Speeding cars make it difficult for cars to exit Tulip St and 52nd St and to enhance the safety of bicyclists.

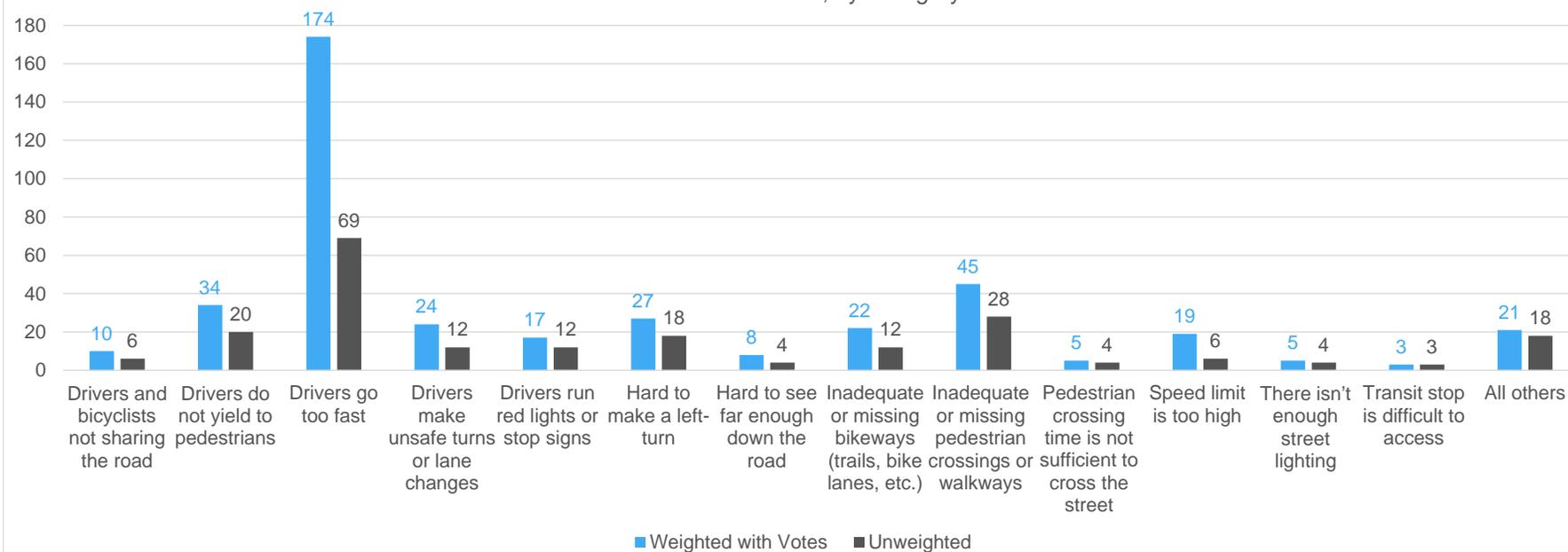
Public Comments, by Location



WEIGHTED	
NAME	Total
CLEARWATER	46
DUNEDIN	39
INDIAN ROCKS BEACH	1
LARGO	5
OLDSMAR	7
PINELLAS PARK	10
SAFETY HARBOR	6
SEMINOLE	4
ST PETE BEACH	4
ST PETERSBURG	235
TARPON SPRINGS	12
TREASURE ISLAND	3
UNINCORPORATED	42
(blank)	
Grand Total	414

UNWEIGHTED	
NAME	Total
CLEARWATER	36
DUNEDIN	23
INDIAN ROCKS BEACH	1
LARGO	4
OLDSMAR	6
PINELLAS PARK	10
SAFETY HARBOR	6
SEMINOLE	4
ST PETE BEACH	3
ST PETERSBURG	87
TARPON SPRINGS	4
TREASURE ISLAND	2
UNINCORPORATED	30
(blank)	
Grand Total	216

Public Comments, by Category



WEIGHTED	
Type	Total
Another issue	3
Another issue	18
Drivers and bicyclists not sharing the road	10
Drivers do not yield to pedestrians	34
Drivers go too fast	174
Drivers make unsafe turns or lane changes	24
Drivers run red lights or stop signs	17
Hard to make a left-turn	27
Hard to see far enough down the road	8
Inadequate or missing bikeways (trails, bike lanes, etc.)	22
Inadequate or missing pedestrian crossings or walkways	45
Pedestrian crossing time is not sufficient to cross the street	5
Speed limit is too high	19
There isn't enough street lighting	5
Transit stop is difficult to access	3
(blank)	
<b>Grand Total</b>	<b>414</b>

UNWEIGHTED	
Type	Total
Another issue	3
Another issue	15
Drivers and bicyclists not sharing the road	6
Drivers do not yield to pedestrians	20
Drivers go too fast	69
Drivers make unsafe turns or lane changes	12
Drivers run red lights or stop signs	12
Hard to make a left-turn	18
Hard to see far enough down the road	4
Inadequate or missing bikeways (trails, bike lanes, etc.)	12
Inadequate or missing pedestrian crossings or walkways	28
Pedestrian crossing time is not sufficient to cross the street	4
Speed limit is too high	6
There isn't enough street lighting	4
Transit stop is difficult to access	3
(blank)	
<b>Grand Total</b>	<b>216</b>

Type	Votes	Weight	Comment	Jurisdiction
Drivers do not yield to pedestrians		1	Drivers run at a high rate of speed off the memorial bridge and pedestrians are in danger of getting hit. There is a pedestrian crossing there but it is hard to see coming around the corner or in the afternoon sun.	CLEARWATER
Inadequate or missing pedestrian crossin	2	3	Drivers go too fast on this section of Landmark Dr. Pedestrians struggle to cross all corners of this intersection safely.	CLEARWATER
Drivers do not yield to pedestrians		1	Even when pedestrians use lighted crossings drivers have often "almost" hit pedestrians.	CLEARWATER
Drivers go too fast	1	2	I travel this street every time I gout and I always go the speed limit. Almost all the time, cars pass me, which means they are all speeding.	CLEARWATER
Another issue		1	The sidewalk on the north side of Drew is inches away from the road. This sidewalk is used by many pedestrians, including families with strollers. It is also used by bicyclists unwilling to risk the road, but come barreling down the sidewalk when heading west. This is a dense neighborhood with many, many walkers. Their safety should be considered.	CLEARWATER
Drivers go too fast		1	Countryside Blvd going through from Main Street to Curlew. It is a race track, people easily doing 20 mph over the speed limit. This is a neighborhood and children are playing! This road needs sped bumps.	CLEARWATER
Drivers go too fast		1	Speeding drivers use Grove St. during rush hours as an alternate to Drew. Evenings and late night patrons of Drifters Sports Pub use it to avoid being noticed by police on Drew.	CLEARWATER
Drivers do not yield to pedestrians		1	We need a pedestrian refuge or better protection for pedestrians crossing SR 580	CLEARWATER
Drivers go too fast		1	Need traffic calming and better enforcement of speed limits	CLEARWATER
Drivers go too fast		1	We need traffic calming or better enforcement of speed limits	CLEARWATER
Drivers do not yield to pedestrians		1	The intersection of the Pinellas Trail and Sunset Point Rd has no pedestrian activated signal to stop automobiles on Sunset Point Rd. Drivers at this location tend to be driving fast. The lack of a pedestrian signal is not consistent with most other busy intersections on the Trail.	CLEARWATER
Drivers do not yield to pedestrians	1	2	The intersection of the Pinellas Trail and Sunset Point Rd has no pedestrian activated signal to stop automobiles on Sunset Point Rd. Drivers at this location tend to be driving fast. The lack of a pedestrian signal is not consistent with most other busy intersections on the Trail.	CLEARWATER
Inadequate or missing bikeways (trails, bi	1	2	West bound Highway 60 & the bridge over the intercoastal. The bike lane abruptly ends as you cross over the bridge. There are no signs to warn drivers or bike riders. After the bridge the bikes are squeezed over to the sidewalk without warning.	CLEARWATER
Drivers go too fast		1	Even though we have speed bumps people go 40 mph through here!	CLEARWATER
Drivers go too fast		1	Drivers speed through in between the speed bumps	CLEARWATER
Inadequate or missing pedestrian crossings or walkways		1	We need sidewalks like the rest of the neighborhood! More patrolling. I drive to work at night around 730, and people are flying past me, weaving in and out of traffic. They have to be driving 15+ mph over the speed limit	CLEARWATER
Drivers go too fast		1	North bound bike lane ends at Court ST. is replaced between Court and Franklin by 2 lightly used parking places. When parking spaces are being used it forces bikes into travel lane prior to Franklin St. A safer situation would be to extend the bike lane to Franklin St. Then mark Franklin and S. Garden Ave as a bike route.	CLEARWATER
Inadequate or missing bikeways (trails, bike lanes, etc.)	1	2	Lots of speeding	CLEARWATER
Drivers go too fast		1	Pedestrians in traffic not in crosswalks	CLEARWATER
Another issue		1	Pedestrians crossing on RED	CLEARWATER
Another issue		1	Drivers have difficulty exiting round-about safely	CLEARWATER
Drivers make unsafe turns or lane changes		1	Drivers exit 19SB and speed on Frontage Rd and then re-enter 19. Frontage Rd is being used as a passing lane.	CLEARWATER
Drivers go too fast		1	Frontage Rd is 35 MPH with driveways.	CLEARWATER
Drivers go too fast		1	This area is a small section of 4 lanes with a visibility issue. Drivers speed and often drag race at all hours. There are been several wrecks and near misses.	CLEARWATER
Inadequate or missing pedestrian crossin	3	4	Need a north-south pedestrian crossing across Gulf to Bay Blvd at McMullen Booth Rd. Only one would suffice as there is currently no close pedestrian connection to Bayview Park and area shops. Pedestrians occasionally jaywalk across here due to lack of options.	CLEARWATER
Drivers do not yield to pedestrians		1	People making left turns are racing the light to make their turn and so not look for the (allowed) pedestrians in the crosswalks going straight across.	CLEARWATER
Drivers do not yield to pedestrians	1	2	People making left turns from Eastland onto McMullen Booth are racing the light to make their turn and so not look for the (allowed) pedestrians in the crosswalks going straight across.	CLEARWATER
Inadequate or missing pedestrian crossings or walkways		1	There is no midblock crossing on Village Drive and pedestrians from Inverness Park regularly walk across dodging traffic.	CLEARWATER
Drivers do not yield to pedestrians		1	People making left turns from Village to Enterprise are racing the light to make their turn and so not look for the (allowed) pedestrians in the crosswalks going straight across.	CLEARWATER
Drivers do not yield to pedestrians		1	People making left turns are racing the light to make their turn and so not look for the (allowed) pedestrians in the crosswalks going straight across.	CLEARWATER
Hard to make a left-turn		1	Left turns onto Countryside from Village are very difficult because cars are driving very fast on Countryside.	CLEARWATER
Drivers do not yield to pedestrians		1	Most drivers will not stop for flashing signals at trail. Please add caution sign "Stop when crosswalk flashing" to flashing pedestrian crossings.	CLEARWATER

Type	Votes	Weight	Comment	Jurisdiction
Hard to make a left-turn		1	Traffic is very heavy and between traffic coming from McMullen Booth & Enterprise, you have people making turns in and out of Weatherstone & Shady Oak Farms, plus illegal U-turns. It is very dangerous at high traffic hours.	CLEARWATER
Hard to make a left-turn		1	Traffic is very heavy and between traffic coming from McMullen Booth & Enterprise, you have people making turns in and out of Weatherstone & Shady Oak Farms, plus illegal U-turns. It is very dangerous at high traffic hours.	CLEARWATER
Inadequate or missing pedestrian crossings or walkways		1	Sidewalks are needed. This section of Overbrook street is heavily used by pedestrians and bicyclists including elementary school children.	CLEARWATER
Another issue		1	Pedestrians crossing early a.m. in the dark, not using crosswalk.	CLEARWATER
Drivers do not yield to pedestrians	2	3	We need an overpass at this intersection for pedestrians & bicycles	DUNEDIN
Drivers go too fast		1	We live on a lake with ducks, walkers and kids everywhere. Drivers use Paloma as a cut off from Alt 19 to get downtown. WE NEED SPEEDBUMPS and decreased speed. Speeding tickets before someone gets hit it's a ped only phase. Need to time to cross two legs or	DUNEDIN
Pedestrian crossing time is not sufficient to cross the street		1	scramble this is a ped only phase, need to add scramble or add time	DUNEDIN
Pedestrian crossing time is not sufficient	1	2	for two crossings need for directional median. Large amount of crashes, only	DUNEDIN
Hard to make a left-turn		1	property damage crashes, so far dangerous and inefficient intersection. Good candidate for roundabout analysis. The street south to Main St needs	DUNEDIN
Drivers go too fast		1	more crosswalks and parking	DUNEDIN
Inadequate or missing bikeways (trails, bi	1	2	NO BIKE LANES. LANES NEED TO BE NARROWED	DUNEDIN
Drivers go too fast		1	Drivers race on this stretch of road metal railing at NE corner condos obstructs southbound	DUNEDIN
Hard to make a left-turn		1	traffic on Douglas.	DUNEDIN
Drivers run red lights or stop signs	1	2	West bound Curlew drivers frequently make right turns on red at Alt 19 north bound. Propose a lighted "no turn" sign similar to the one for North Bound Alt 19 and East bound Curlew. The failure of drivers to obey the No Right on Red sign places users of the Pinellas trail at risk.	DUNEDIN
Inadequate or missing bikeways (trails, bi	1	2		DUNEDIN
Another issue		1	Intersection is EXTREMELY busy with traffic coming from all four directions, and bike/ped traffic on the Pinellas Trail as well as the Honeymoon Island Trail spur.	DUNEDIN
Another issue		1	Intersection of Skinner Blvd. and the Pinellas Trail is dangerous, despite the crossing lights. Motorists sometimes blow right through this intersection even when the lights for the trail crossing are flashing. Many accidents and injuries have occurred here. Hopefully the planned streetscaping will	DUNEDIN
Another issue		1	alleviate some of these issues.	DUNEDIN
Drivers go too fast	6	7	The speed limit should be lowered on this road. A consistent speed limit of 25 or 30 MPH would be helpful rather than the changing speed limits.	DUNEDIN
Another issue	1	2	UNSAFE BEACH -Dogs, power boats and barbecues -- ALL FORBIDDEN (by poor signage) endanger swimmers and beach goers in area East of Causeway Bridge. Please don't wait for an accident to enforce existing commonsense	DUNEDIN
Drivers go too fast		1	laws.	DUNEDIN
Drivers go too fast		1	Drivers too fast and crosswalk needed	DUNEDIN
Drivers go too fast	1	2	Drivers use this street as a cut through and drive very fast....over 45mph	DUNEDIN
Another issue	1	2	Need stop sign heading east	DUNEDIN
Drivers run red lights or stop signs		1	need more detailed easier to see stop signs and someone to ticket stop sign runners in autos	DUNEDIN
Drivers go too fast		1	On Douglas Ave, south of Mainstreet, the speed limit is 15 and then goes to 25. Cars & trucks speed on the road constantly. It is a safety issue as there are lots of pedestrians in Downtown Dunedin. I've seen many close calls.	DUNEDIN
Drivers run red lights or stop signs		1	Drivers continue to turn despite no turn on red Signal, placing trail users in danger. Maybe if flashing red lights were added it would help	DUNEDIN
Drivers do not yield to pedestrians	1	2	We need to move stop bars back, improve crosswalk visibility, ped scale lights and restrict right on red all four approaches at intersection.	DUNEDIN
Inadequate or missing pedestrian crossings or walkways		1	Pedestrians crossing north and south take their lives in their hands with motor vehicles speeding on the Causeway. Also, motor vehicles traveling east on the Causeway have fairly limited sight lines as they come over the small bridge and right into a congested area.	DUNEDIN
Inadequate or missing pedestrian crossings or walkways		1	There needs to be a pedestrian crossing at 15th and Gulf as there is a lot of pedestrian traffic there and no pedestrian crossings for 3 blocks in each direction.	INDIAN ROCKS BEACH
Drivers make unsafe turns or lane change	1	2	Median causes drivers exiting Walmart and US-19 to unsafely attempt to merge and switch lanes from either left to right or vice versa. Cars either swerve to merge or sit and wait to be let over, which causes huge back ups	LARGO
Drivers go too fast		1	Default 30mph speed limit is Way too fast for this and other streets with children playing and dogs been walked. If nearby 137th, a major street is 25 MPH, these more residential streets should be 20	LARGO
Drivers do not yield to pedestrians		1	Drivers making right hand turns are not looking for pedestrians and bikes in the crosswalk. They look left, see it's clear and turn, barely missing anyone in the crosswalk with the right of way.	LARGO
Drivers go too fast		1		LARGO
Drivers go too fast		1	Drivers fly down this road doing 45 in a 25	OLDSMAR
Drivers go too fast		1		OLDSMAR
Drivers go too fast		1	Drivers speed trying to beat the light at intersection with Curlew Road.	OLDSMAR

Type	Votes	Weight	Comment	Jurisdiction
Drivers go too fast Inadequate or missing pedestrian crossings or walkways Transit stop is difficult to access	1	2	Drivers leaving light at Curlew going east on Tampa Rd. go too fast and nearly hit drivers turning south onto Oakleaf.	OLDSMAR
		1	pedestrians hit here a lot	OLDSMAR
		1	Needs a train station	OLDSMAR
Drivers make unsafe turns or lane changes Inadequate or missing bikeways (trails, bike lanes, etc.) Inadequate or missing pedestrian crossings or walkways Inadequate or missing bikeways (trails, bike lanes, etc.)		1	People continue to try to cut into the left turn lane, and are not paying attention in this intersection causing rear end and other accidents.	PINELLAS PARK
		1	Need wider sidewalks or bike path	PINELLAS PARK
		1	Need a mid block ped crossing for SPC and Walmart	PINELLAS PARK
		1	Need trail along Gandy Blvd	PINELLAS PARK
There isn't enough street lighting		1	Not enough street lighting for amount of pedestrian activity	PINELLAS PARK
			When driving up 49th St toward 82nd to turn onto 78th Ave, when a car is in the opposite left turn lane, it is difficult to see the southbound traffic and determine when it is safe to	
Hard to make a left-turn Another issue Drivers go too fast Drivers go too fast		1	turn left when the light is green	PINELLAS PARK
		1	Bicyclists rarely yield to traffic safety signals	PINELLAS PARK
		1	NOISE ISSUE AT NIGHT UNDER OVERPASS	PINELLAS PARK
			Speed bumps needed at east end of 102nd Ave to slow down the speeders. Speeding cars make it difficult for cars to exit Tulip St and 52nd St and to enhance the safety of bicyclists.	PINELLAS PARK
Drivers go too fast		1	The left turn off of 580 to 590 needs a no u turn sign. When the left turn light is green there is a green right turn light from 590 to 580 so there is going to be an accident there eventually. But it just needs the no u turn signage	SAFETY HARBOR
Another issue		1	Groups of cyclists blocking a full lane of traffic and not letting cars by	SAFETY HARBOR
Drivers and bicyclists not sharing the road Transit stop is difficult to access Transit stop is difficult to access		1		SAFETY HARBOR
		1	No room for bicyclists to ride on McMullen Booth Rd safely with cars.	SAFETY HARBOR
Inadequate or missing bikeways (trails, bike lanes, etc.)		1		SAFETY HARBOR
Hard to make a left-turn		1	At peak hours, it is virtually impossible to get across the lanes of traffic to make a left turn, then once in the median, there is traffic from various places to work around.	SAFETY HARBOR
Drivers go too fast		1	Cars weaving in and out of lanes passing cars that are keeping the speed limit.	SEMINOLE
			I live in Largo, Seminole area, with lots of senior citizens, and crossing time needs to be evaluated and increased, there is lots of stores and small shopping centers in the area and lots of people do not own cars.	SEMINOLE
Pedestrian crossing time is not sufficient to cross the street Hard to make a left-turn		1	2nd turn lane or longer left turn light would be nice	SEMINOLE
			Extremely dark segment with residential areas across from convenience stores. Pedestrian cross at night and drivers are unable to see them. Crossing locations spaced too far from each other.	SEMINOLE
There isn't enough street lighting Drivers run red lights or stop signs Drivers run red lights or stop signs		1	Need enforcement	ST PETE BEACH
		2	Need enforcement	ST PETE BEACH
Hard to see far enough down the road Drivers make unsafe turns or lane change Inadequate or missing pedestrian crossin	1	2	Utility pole blocks view when turning from 64th Ave. onto Gulf Boulevard.	ST PETE BEACH
	3	4	Frequent accident area and needs a stop light	ST PETERSBURG
	1	2	We need pedestrian crossing here	ST PETERSBURG
Another issue		1	There are no crosswalks anywhere near this intersection, so it's nearly impossible for pedestrians and bicyclists to compete with cars.	ST PETERSBURG
Drivers go too fast	3	4	Many vehicles speeding on Pinellas Point Drive S. including city buses as well as private vehicles and work vehicles	ST PETERSBURG
Drivers go too fast	5	6	School bus stops and lots of bicyclists on this route, too many drivers speeding, tailing cars doing the speed limit, aggressive drivers.	ST PETERSBURG
Drivers go too fast		1	Our neighborhood has an increasing number of small children. The speed limit is 30 mph, which can be lowered to 25 mph, but this is still too fast. Many motor vehicles drive much too fast through the neighborhood, and many do not stop at stop signs!	ST PETERSBURG
Drivers make unsafe turns or lane changes Another issue		1	Cars turning left have blind spot and get stuck in oncoming traffic from the N. Bound lane...should NOT be able to turn left	ST PETERSBURG
		1	Speeding from 4th St S/Pinellas Point drive onto 62nd Ave S has increased incrementally over the past month and I see no police presence/speed traps. This is a residential area with 35 mph and cars are going well above that speed limit.	ST PETERSBURG
Drivers go too fast	4	5	Cars cannot see around the bend - there are many bicyclists on this stretch	ST PETERSBURG
Drivers go too fast	11	12	Bike lane is very narrow; cars often drive in the bike lane.	ST PETERSBURG
Drivers and bicyclists not sharing the road Drivers run red lights or stop signs	2	3	Stop sign runners!	ST PETERSBURG
	1	2	Need enforcement. There is no respect for the bike lanes, stop signs, and any signs in general, speed limits and pedestrian crosswalk. Large semi trucks constantly take the non truck roads.	ST PETERSBURG
Drivers go too fast		1	Speed limit on this street is ridiculous, cars often in excess of 60 mph in a 35 zone.	ST PETERSBURG
Drivers go too fast	4	5	Passing buses, crossing double line, drifting into bike lane	ST PETERSBURG
Drivers go too fast	5	6	Between 68th Ave S and PPDS, speeding thru neighborhood	ST PETERSBURG
Drivers go too fast Speed limit is too high Drivers go too fast	6	7	Motorcyclist extreme high speed everyday	ST PETERSBURG
	3	4	Drivers drive over the speed limit and in wrong direction. It is a one-way street heading south. Just about everyday I see a driver headed in opposite direction of one way.	ST PETERSBURG
Drivers go too fast		1	Pickups hauling boats, some of them very large, use this stretch of Pinellas Point Drive as a speedway on their way to Bay Vista Park. We need to lower the speed limit on Pinellas Point Drive and also introduce traffic calming infrastructure	ST PETERSBURG
Another issue		1		ST PETERSBURG

Type	Votes	Weight	Comment	Jurisdiction
Drivers go too fast	2	3	Regardless of the speed bumps vehicles and motorcycles are dangerously speeding at high speed. There are children that play on this street! There are no sidewalks! Families walk and also walk their dogs! Please.	ST PETERSBURG
Drivers go too fast		1		ST PETERSBURG
Drivers go too fast	8	9	While there are speed bumps located on Fairway Ave S, there is a long stretch of roadway between two of the speed bumps where people are going up to 45-50 mph.	ST PETERSBURG
Inadequate or missing pedestrian crossin	2	3	Martin Luther King Jr Street South from 54th Avenue South to PINELLAS Point Drive South (zip code 33705)- Reckless speeding at all hours, mainly during daylight hours when Lakewood High school and Bay Vista Elementary Students and walkers with pets are crossing MLK. We need Pedestrian crosswalks with flashing lights.	ST PETERSBURG
Drivers and bicyclists not sharing the road		1	26th Ave is a new entrance point for Osgood trail. Drivers are going way too fast for the increased bicycle use on this road. We need a few speed bumps to slow them down. Place speed humps on this road. Cars/motorcycle later exceed the speed limit in a dangerous manner daily. There are children riding bikes, people walking their dogs, joggers	ST PETERSBURG
Drivers go too fast		1	etc	ST PETERSBURG
Drivers go too fast	15	16	Place speed humps on this road. Cars/motorcycle later exceed the speed limit in a dangerous manner daily. There are children riding bikes, people walking their dogs, joggers	ST PETERSBURG
Drivers go too fast	4	5	etc	ST PETERSBURG
Drivers go too fast	3	4	Speeding from mlk to the country club. Vehicles going well over the speed limit	ST PETERSBURG
Drivers go too fast	4	5	We need speed control here	ST PETERSBURG
Drivers go too fast	4	5	We need speed control here	ST PETERSBURG
Drivers go too fast	7	8	We need speed control someone is going to be killed if we don't get it.	ST PETERSBURG
Speed limit is too high	2	3	Speed is out of control on PPD	ST PETERSBURG
Drivers and bicyclists not sharing the road	1	2	Bicyclists big road up to 5 wide	ST PETERSBURG
Drivers go too fast	3	4	Very high speeds at peak rush hours, also very late at night. Some speed traps at visible times would be a great deterrent!	ST PETERSBURG
Drivers do not yield to pedestrians	6	7	Heavily trafficked pedestrian crossing. Line of sight between waiting pedestrians and passing traffic blocked by off-street parked cars. Cars generally drive fast and do not stop for pedestrian traffic.	ST PETERSBURG
Drivers do not yield to pedestrians	2	3	Frequent pedestrian crossing. Line of sight blocked entirely between waiting pedestrians and passing cars. Cars frequently speeding through this intersection. Busier than most other nearby residential intersections. Four way stop needed here.	ST PETERSBURG
Drivers go too fast	3	4		ST PETERSBURG
Speed limit is too high	1	2		ST PETERSBURG
Speed limit is too high		1		ST PETERSBURG
Drivers make unsafe turns or lane change	3	4	The right lane jogs awkwardly here and then becomes RTO. Drivers routinely cross and cut off left lane drivers bike lane ends abruptly right before the jog in the road. I	ST PETERSBURG
Inadequate or missing bikeways (trails, bi	4	5	have been nearly run over here several times. Every single day there are people driving way too fast (over 10 mph above posted speed limit). I live right off this road and see it first hand. There is very little police activity to deter this problem. I understand there are bigger issues. But when we've had to call 911 multiple times to report wrecks, something has to be done. My kids ride their bikes.	ST PETERSBURG
Drivers go too fast	2	3	This can't be ignored any longer.	ST PETERSBURG
Drivers go too fast		1	The speed limit on this stretch needs to be reduced from higher speeds on 4 lane like MLK and also 31st	ST PETERSBURG
Another issue		1	The once speed is lowered it needs to stay consistent. Right now people coming to Pinellas Point Dr S From the highway use this road as a high speed zone	ST PETERSBURG
Speed limit is too high	1	2	Difficult to see stop sign at 7th St N when heading eastbound on 34th Ave N. Blocked by trees	ST PETERSBURG
Drivers make unsafe turns or lane changes		1	Northbound drivers often will not merging traffic from the NB on ramp at Roy Hanna Drive or Pinellas Point Drive. I'm not sure what it's called there. It's near Maximo Park. It causes very dangerous situations.	ST PETERSBURG
Hard to make a left-turn		1	They don't realize the loop is dropping traffic in their lane plus they are going too fast.	ST PETERSBURG
Inadequate or missing pedestrian crossin	2	3	Actually its hard to merge. Not enough actual merge space is allowed and traffic from Bradenton is coming way too fast	ST PETERSBURG
Inadequate or missing pedestrian crossin	3	4	There should be a sidewalk on 30th Ave between 4th st and Coffee Pot Blvd NE	ST PETERSBURG
Speed limit is too high	3	4	There should be a crosswalk here. There is on crosswalk between MLK and 13th Street along 1st Ave N. Four blocks is too long without a safe crossing.	ST PETERSBURG
Drivers go too fast	1	2	I-175 should be removed to create an at-grade boulevard with bike lanes and mid-block pedestrian crossings.	ST PETERSBURG
Drivers go too fast	1	2	This intersection would likely be better suited with a four way stop versus a signaled intersection.	ST PETERSBURG
Drivers go too fast	1	2	Maybe they could speed trap more often, or park an empty cruiser like they do on the Bayway and St. Pete Beach. I-375 should be removed to increase walkability and bikability to downtown. This hard barrier destroyed the street grid, is hindering property values in Uptown and Methodist town, and is taking up valuable developable land in which we desperately need as we only have a little over 50% of land to increase density on. Please completely remove this	ST PETERSBURG
Drivers run red lights or stop signs	1	2	highway.	ST PETERSBURG
Inadequate or missing bikeways (trails, bi	1	2	drivers going west (straight) running the red light at the Eckerd College crosswalk, even with pedestrians in the crosswalk	ST PETERSBURG
Drivers run red lights or stop signs	1	2	We need a protected bike lane on this road, it is very narrow and drivers go way too fast on this road. I live off this road and feel my life is threatened daily just leaving my house. I witness a driver running a red light here at least one a week.	ST PETERSBURG

Type	Votes	Weight	Comment	Jurisdiction
Hard to see far enough down the road		1	Drivers turning off of 19th St N on to 9th Ave to would benefit from a mirror to see farther down the road to the east. Currently a building blocks the view.	ST PETERSBURG
Drivers run red lights or stop signs		1	Drivers run stops signs throughout the neighborhood and also speed. This is both a resident and visitor issue. Solution is traffic tickets.	ST PETERSBURG
Drivers make unsafe turns or lane change	3	4	left turn lanes need to be clearly marked, drivers cut into the wrong lane when turning nearly every light cycle when turning out of 110, multiple drivers enter island at same time creating conflicts and blocking vision. single lane raised barrier needed.	ST PETERSBURG
Hard to make a left-turn	1	2	when turning out of 110, multiple drivers enter island at same time creating conflicts and blocking vision. single lane raised barrier needed.	ST PETERSBURG
Hard to make a left-turn	1	2	People speed and aggressively pass to get into the left lane and get on the hwy before the light changes, because they know it is a long light. This is a pedestrian area next to the dog park.	ST PETERSBURG
Drivers go too fast		1	no-one knows what there doing here, its the wild wild west. Almost everyone turning left wants to merge right, and the few that need to be in the left lanes to go on Gandy have much more space to do that while everyone else panics and drifts into the wrong lane without realizing what they are doing.	ST PETERSBURG
Drivers make unsafe turns or lane change	2	3	Too many speeders on a street with walkers, joggers, children	ST PETERSBURG
Drivers go too fast		1	Drivers not watching for people walking in street	ST PETERSBURG
Drivers do not yield to pedestrians		1	No pedestrian crossing between 4th and Highlands on 9th Ave	ST PETERSBURG
Inadequate or missing pedestrian crossings or walkways		1	Sidewalks are narrow and very close to traffic along 9th Ave	ST PETERSBURG
Inadequate or missing pedestrian crossings or walkways		1	Drivers run yellow flashing lights	ST PETERSBURG
Drivers do not yield to pedestrians		1	Drivers run yellow flashing lights	ST PETERSBURG
Drivers do not yield to pedestrians		1	Pedestrians enter the crosswalk without stopping. Driver signaling and entering intersection before pedestrians enter, but driver has to stop in the middle of the intersection, blocking all car lanes, to wait for pedestrians to cross. In the mean time, more pedestrians enter the crosswalk, never stopping or even pausing.	ST PETERSBURG
Hard to make a left-turn		1	Heading east: Base of bridge forces bicyclists to make quick left turn while coming down the bridge because of a wall. Dangerous. Should straighten the sidewalk and move the on-street parking spot elsewhere.	ST PETERSBURG
Inadequate or missing bikeways (trails, bi	1	2	Pedestrians cross from bus stop at unmarked crossings.	ST PETERSBURG
Inadequate or missing pedestrian crossings or walkways		2	No pedestrian crosswalks between 38th Ave and 54th Ave	ST PETERSBURG
Inadequate or missing pedestrian crossin	1	2	There is a stop sign on the opposite corner for the bicycle path but not on this corner (at the roundabout.) Therefore cyclists just ignore it going both ways.	ST PETERSBURG
Another issue		1	There is a stop sign on the opposite corner for the bicycle path but not on this corner (at the roundabout.) Therefore cyclists just ignore it going both ways.	ST PETERSBURG
Another issue		1	Someone is going to get killed	ST PETERSBURG
Drivers go too fast		1	Someone is going to get killed	ST PETERSBURG
Drivers go too fast		1	Someone is going to get killed	ST PETERSBURG
Drivers do not yield to pedestrians	1	2	There are 3 crosswalks and cars rarely stop for pedestrians, especially for pedestrians walking across the one without lights (going across the one-way road) However, even when lights are are pushed for the other 2, cars rarely notice/stop. I'm not sure of a solution since the lights don't seem to help.	ST PETERSBURG
Inadequate or missing pedestrian crossings or walkways		1	Bulb outs are needed to shorten the distance so pedestrians can safely cross. The intersection is very wide and breaks up the very pedestrian friendly Central Avenue. Pedestrian safety enhancements would improve continuity. We need traffic calming! Cars see a long strait wide uninterrupted view of road. Spending is constant. Many bikers and walkers and people crossing the streets. Please do something to slow the cars down.	ST PETERSBURG
Drivers go too fast		1	High use pedestrian walking/biking crossing and no safe crossing options.	ST PETERSBURG
Inadequate or missing pedestrian crossings or walkways		1	There is an opportunity to remove this stoplight (79th St @ Central Ave) and replace with roundabout to slow traffic.	ST PETERSBURG
Drivers go too fast		1	Traffic often exceeds 45+mph on this stretch.	ST PETERSBURG
Inadequate or missing pedestrian crossings or walkways		1	Existing crosswalk needs upgrades. Pedestrians must walk through the grass to reach the crosswalk in the south side. There are no flashing lights to warn car traffic. Signs are often not visible to car traffic due to plant growth.	ST PETERSBURG
Inadequate or missing pedestrian crossin	1	2	No crosswalks across Beach Dr between 8th Ave and 13th Ave	ST PETERSBURG
Drivers make unsafe turns or lane changes		1	Constantly see accidents at this on-ramp, cars recklessly changing lanes, backing off the one way ramp (!) etc. just an awful intersection	ST PETERSBURG
Inadequate or missing pedestrian crossings or walkways		1	There is no sidewalk on the south side of 1st (from 58th to 53rd) despite having bus stops there.	ST PETERSBURG
Inadequate or missing pedestrian crossings or walkways		1	it's tough to get from the bus stop here to SPC Gibbs, a mid block crossing or some better bus stop locations are needed here.	ST PETERSBURG
Hard to make a left-turn	2	3	When turning left, north, into Walmart parking lot it is hard to see traffic coming. There should be a turn signal at this intersection for both north and south directions.	TARPON SPRINGS
Inadequate or missing pedestrian crossin	1	2	Awkward intersection with no clear right of way priorities For several days per year the rising sun blinds east bound drivers on E Live Oak St where the Pinellas Trail crosses E Live Oak St. Suggest a pedestrian activated light. Care must be taken on the placement of the lights on the east bound sign to permit viewing when the rising sun is blinding drivers.	TARPON SPRINGS
Inadequate or missing pedestrian crossings or walkways		1	Headed north on Alt 19, there should be a left turn arrow on to Meres. Additionally there should absolutely be a right turn lane when headed East on Meres on to Alt 19.	TARPON SPRINGS
Hard to make a left-turn	5	6	No/inadequate sidewalk	TREASURE ISLAND
Inadequate or missing pedestrian crossin	1	2	No/inadequate sidewalk	TREASURE ISLAND

Type	Votes	Weight	Comment	Jurisdiction
Drivers and bicyclists not sharing the road There isn't enough street lighting			Protected bike lane needed here. Connect the TI bike lane with the Madeira Beach bike lane. Via personal experience, many drivers are aggressive and dangerous to bicyclists through this stretch where they are forced to share the road via "sharrows." 1 Lighting is poor on Starkey and hazardous. Drivers going the speed limit are passed by cars weaving in and out of lanes going at least 10 miles an hour faster.	TREASURE ISLAND UNINCORPORATED
Drivers go too fast Drivers go too fast	3		4 No sidewalks, streetlights The drivers are speeding constantly on 137th/Antilles even though this is a school zone. Yesterday a 10 year old girl was nearly hit by a speeder trying to cross the street on her bike where I put the dot on the map. Maybe speed bumps especially in front of the school would help slow the drivers down.	UNINCORPORATED
Drivers go too fast			We need warning signs of the construction to slow drivers on the ramp from I-275.	UNINCORPORATED
Drivers go too fast			There needs to be a traffic light on Belleair and Clearwater Largo intersection. Left turns are dangerous with all the traffics coming from downtown Clearwater.	UNINCORPORATED
Hard to make a left-turn			1 West bound Klosterman Rd E & North bound Palm Harbor Blvd. Cars on west bound Klosterman make right turns on red despite signage. Suggest "No Turn" light similar to light on North Bound Palm Harbor Blvd and East Bound	UNINCORPORATED
Drivers run red lights or stop signs			1 Klosterman Rd E West bound Klosterman Rd E & North bound Palm Harbor Blvd. Cars on west bound Klosterman make right turns on red despite signage. Suggest "No Turn" light similar to light on North Bound Palm Harbor Blvd and East Bound	UNINCORPORATED
Drivers run red lights or stop signs	1		2 Klosterman Rd E Drivers who make right turn from Lansbrook Parkway onto East Lake Road often barely pause for stop sign and do not check for bikers/pedestrian crossing Lansbrook Parkway	UNINCORPORATED
Drivers run red lights or stop signs	2		3 from Pinellas Trail. There is not enough visibility of 28th st when stopped at the sign on 46th Ave.	UNINCORPORATED
Hard to see far enough down the road			1 No sidewalk on Ridge Road from 110th to Walsingham.	UNINCORPORATED
Inadequate or missing pedestrian crossings or walkways Drivers and bicyclists not sharing the road Drivers go too fast	1		1 Many pedestrians on road and babies in strollers. 2 Needs bike lane on 46th. 1 Traffic calming is needed. Bike lanes along Ulmerton from 7100 block to at least 49th street are very rough and full of gravel and other debris. The intersection at 66th is especially full of gravel which makes quick stops impossible for bikes. The gravel also hides tire-damaging items. I had a finish nail puncture my tire at this intersection but also saw broken glass and a box knife blade hidden among the gravel.	UNINCORPORATED UNINCORPORATED UNINCORPORATED
Another issue			1 Drivers Will not yield to let us out and if we take a right we can't get into the left lane to go south because there's no lane changing there if we turn right to use the red light to go south on McMullen booth there is a no U-turn sign	UNINCORPORATED
Drivers go too fast			1 US19 drivers cross solid white line, cutting off frontage road drivers, to make the right turn at Hammock Pine Blvd. - very dangerous.	UNINCORPORATED
Drivers make unsafe turns or lane changes			1 Southbound US-19 drivers cutting across 3 lanes of oncoming traffic to make a left turn - high crash risk -	UNINCORPORATED
Hard to make a left-turn			1 CLOSE THE LEFT TURN LANES ASAP Drivers make dangerous left turn across 3 north bound lanes of US-19 - during rush traffic. PLEASE CLOSE THIS	UNINCORPORATED
Hard to make a left-turn			1 LEFT TURN LANE ASAP.	UNINCORPORATED
Inadequate or missing bikeways (trails, bi	1		2 We need a bike lane along Belleair Road to ensure a safe ride to Eagle Lake Park or to the connection off of Belleair Road for the Duke Energy Trail up to the Ream Wilson Trail This is a well-known location for difficulty asking 1. A left hand turn from southbound Alt US 19 on to Nebraska Ave., and w. making a left hand turn from Nebraska Ave. on to S	UNINCORPORATED
Hard to make a left-turn			1 Alt US 19. Lights for crosswalk occur at the same time as the green light. Two near misses for me. Know someone who was hit at this crossroads.	UNINCORPORATED
Pedestrian crossing time is not sufficient to cross the street			1 This intersection has a hospital, and cemetery there with no stop light, a lot of the time people who are driving are not in a clear state of mind. Then they have to make a left turn onto very busy 49th Street. Also emergency vehicles have to make those left turns too. Some times people get frustrated from waiting so long and turn right then make a u-	UNINCORPORATED
Drivers make unsafe turns or lane changes			1 turn. A NON-flashing yellow left hand turn signal. Should be fixed	UNINCORPORATED
Hard to see far enough down the road Drivers go too fast Drivers go too fast Drivers go too fast	3		4 when to turn 1 Drivers exceed speed by up to 40 mph 1 Drivers exceed speed by up to 40 mph 1 Drivers exceed speed by up to 40 mph	UNINCORPORATED UNINCORPORATED UNINCORPORATED UNINCORPORATED
Inadequate or missing pedestrian crossings or walkways			1 Frequent number of pedestrians crossing at night. No lighting and speed is posted at 45mph. Most likely drivers are going faster since adjacent signals are spaced 0.5 miles apart. There is an emergency signal at this location. This could be upgraded to allow for pedestrian actuation.	UNINCORPORATED
Drivers do not yield to pedestrians			1 People making left turns are racing the light to make their turn and so not look for the (allowed) pedestrians in the crosswalks going straight across. there is a dangerous school bus stop on Roosevelt because the kids have no publicly available pathway to get to a spot that could have a safer bus stop, like 62nd st N. Consider building this section of trail across the creek and work with the school board on a safer stop.	UNINCORPORATED
Inadequate or missing bikeways (trails, bike lanes, etc.) There isn't enough street lighting	1		1 No sidewalks, bike lanes, streetlights, heavy, high speed traffic.	UNINCORPORATED

# Collision Assessment

## Appendix

# B







# Collision Assessment

Date: April 14, 2020

To: Sarah Caper, Forward Pinellas

From: Kathrin Tellez, Fehr & Peers

**Subject: Safe Streets Pinellas Initial Collision Assessment**

## Introduction

This memorandum presents initial findings from the collision analysis conducted on reported crashes from January of 2015 to December of 2019 in Pinellas County. The collision analysis identifies how contextual factors such as time of day, driving under the influence, and age and gender influence the number of fatal and severe collision in Pinellas County. Collisions from 2015 to 2019 were analyzed with a focus on collisions involving those killed or severely injured (KSI). Severe injury collisions are those which result in extreme and long-term consequences, including permanent disability, lost productivity and wages, and other life altering impacts. Throughout this memo, KSI is used to signify collisions where someone was killed or severely injured while driving, walking, biking, or traveling on a motorcycle.

This collision analysis is the first step in the data-driven Vision Zero process to address fatal and severe injuries for people who are walking, biking, or driving; identify high-risk roadway characteristics and locations; develop countermeasures to address these crashes; and ultimately, devise a Vision Zero Action Plan for Pinellas County to eliminate traffic-related deaths and severe injuries.

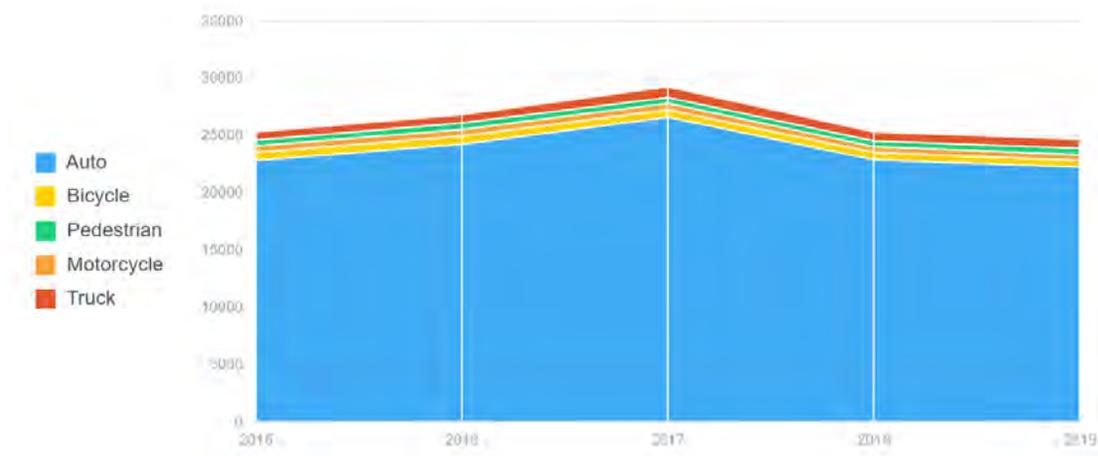
## Collision Landscape Summary

The collision assessment analyzed data from the Pinellas Crash Data Management System (CDMS). This assessment focuses on the five years between 2015 and 2019. In that five year period, a total of 131,193 collisions were reported in Pinellas County, with 3 percent of those collisions resulting in fatalities or serious injuries. Data from the last few months of 2019 is still being refined, and some small shifts in collision details may occur in the coming months as the 2019 data

is finalized. Therefore, the numbers presented in this assessment may be refined over time, or conflict with other published data for 2019.

Most collisions involved only automobiles (118,627 collisions), representing 90 percent of all collisions. Trucks and bicyclists were each involved in three percent of crashes (3,850 truck-involved collisions and 3,389 bicyclist-involved collisions), and pedestrians and motorcyclists were each involved in two percent of all crashes (2,641 pedestrian-involved collisions and 2,686 motorcyclist-involved collisions), as displayed on Chart 1.

**Chart 1**  
**Collisions in Pinellas County (2015-2019)**



Over the last 5-year period, reported collisions peaked in 2017 with the number of total collisions on the decline since 2017; although the total number of collisions is trending down, collisions involving pedestrians are increasing. Key Findings of our collision assessment include:

- Overall collisions overwhelmingly involve automobiles (90 percent), collisions that result in a KSI disproportionately include a vulnerable (bicyclist, pedestrian or motorcyclist) roadway user (40 percent), with pedestrians accounting for 40 percent of people killed on Pinellas County roadways.
- Alcohol is two or more times as likely to be involved in a KSI collision than a non-KSI collision.
- The highest share of overall collisions occurs between 3 and 6 PM, including collisions that result in a KSI. However, collisions that occur between 6 PM and 6 AM are more likely to result in a KSI than between 6 AM and 6 PM.
- The majority of collisions in Pinellas County do not take place at an intersection.
- KSI collisions are slightly more likely to occur during winter and spring months (December through April) versus other months.
- More than 60 percent of KSI collisions occur on less than 10 percent of roadways, including portions of US 19, Park Boulevard, Gulf to Bay Boulevard, Bay Drive, 4th Street and 38th Avenue.
- On average, two people are killed or severely injured on Pinellas County roadways each day.

## How does Pinellas County Compare?

Florida has the unfortunate distinction of having 8 of the 10 most dangerous metropolitan areas for pedestrians, as documented in the [Dangerous by Design](#) 2019 report, with the Tampa/St. Petersburg-Clearwater area placing 9th on the list. When looking at the total number of collisions that resulted in a fatality or injury, Pinellas County ranks 7th in the state, behind Miami-Dade, Broward, Orange, Hillsborough, Palm Beach and Duval counties based on data representing 2014 through 2018 (Source: <https://www.flhsmv.gov/>). However, when normalized by population, Pinellas County drops to 45th in the state (meaning 44 Florida counties have a collision rate per capita higher than Pinellas County) with the surrounding Counties of Hillsborough, Pasco, and Manatee having lower rates of fatal and injury collisions per capita than Pinellas County.

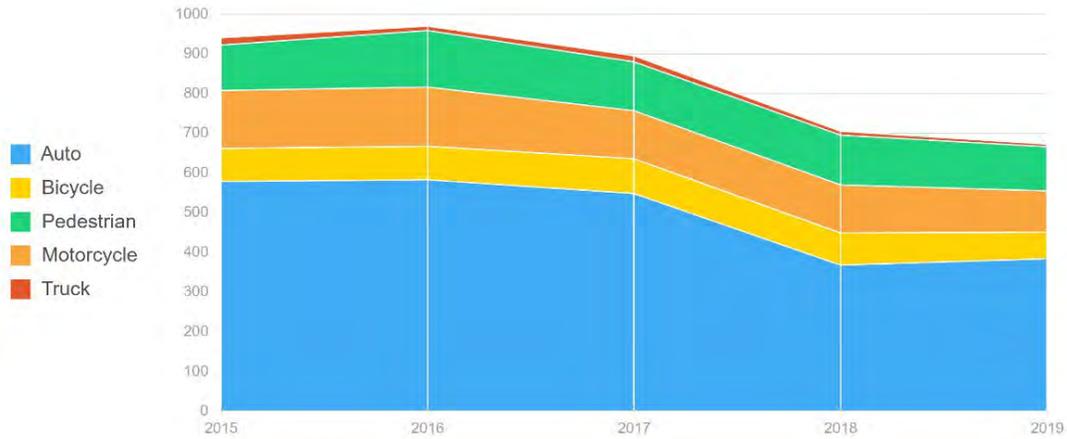
When considering only fatal crashes, Pinellas County has one of the lower rates in the State, slightly less than the surrounding communities. Based on 2018 data, the motor vehicle crash death rate in Pinellas County was 13.1 persons per 100,000 of population, as compared to a state-wide average of 15.5 (<http://www.flhealthcharts.com/>). Vehicle collisions are one of the leading non-health related causes of death within Pinellas County, and severe injury collisions can significantly degrade the quality of life for residents.

## Killed or Severely Injured (KSI) Collision by Mode of Travel

Within Pinellas County, a total of 4,181 collisions resulted in a death or serious injury between 2015 and 2019, or 3 percent of overall collisions. Of those collisions, 60 percent involved vehicles as the only mode of travel involved. Motorcycle and pedestrian crashes resulted in the second highest number of collisions at 15 percent each. Bicycle collisions account for 10 percent of KSI crashes. Similar to overall collisions, KSI collisions have decreased over the past five years with KSI collisions decreasing for all modes except pedestrians, as shown in Chart 2.

Since 2015, pedestrians are disproportionately more likely to be involved in a KSI collision. In 2015, pedestrians were involved in approximately 12 percent of KSI collisions, with that percentage increasing to almost 17 percent in 2019. The representation of bicyclists in KSI collisions has remained somewhat constant at about 9 to 10 percent of KSI, similarly motorcyclists remained at about 15 percent representation. Motor vehicle occupants, including automobiles and trucks, declined from approximately 63 percent of KSIs to 58 percent.

**Chart 2**  
**Killed or Severely Injured Collisions in Pinellas County (2015-2019)**

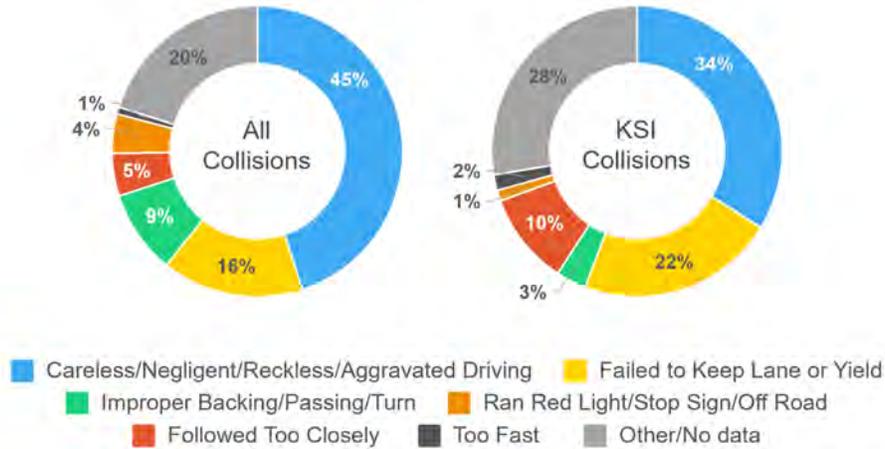


Further refining the data to only collisions that result in a fatality show that pedestrians are disproportionately represented and comprise 40 percent of fatalities. Motorcyclists comprise 22 percent of fatalities, and bicyclists 5 percent of fatalities. The remaining 33 percent of fatalities are in a motor vehicle. Roadway safety improvements targeted at improving pedestrian safety would yield the largest potential to reduce overall fatal collisions. For the purposes of the collision assessment, trucks are defined as vehicles with a weight of more than 10,000 pounds.

## High-Level Collision Causes

There are many reasons why collisions occur – such as speeding, aggressive driving, or failure to yield the right-of-way. As shown in Chart 3, careless/negligent driving and reckless/aggravated driving account for 45 percent of total collisions during this period, as compared 34 percent of KSI collisions. Failure to keep in proper lane and yield to the-right-of-way account for the second highest cause of collisions with 16 percent of all crashes in Pinellas County, but 22 percent of KSIs. Speed was a primary factor in 1 percent of all collisions, but 2 percent of KSI collisions.

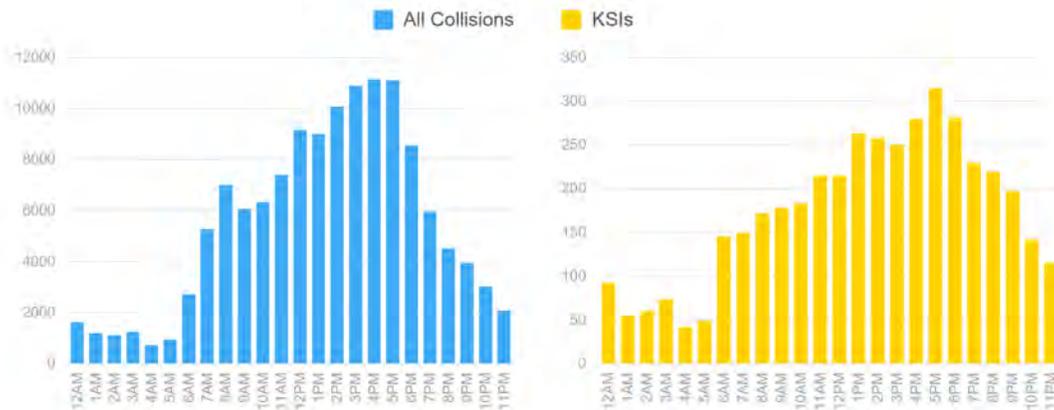
**Chart 3**  
**Cause of Collision (2015-2019)**



## Time of Day

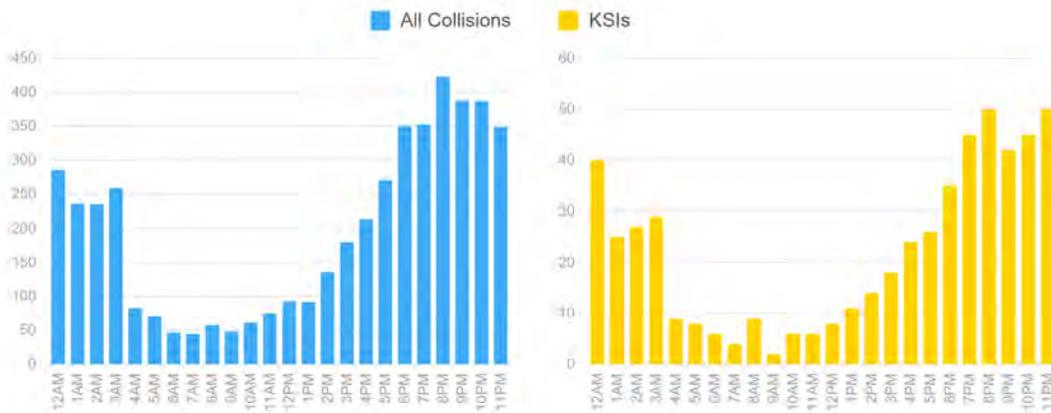
Evaluating the timing of collisions can provide context about the surrounding traffic and lighting conditions, which informs the selection of countermeasures. Almost 60 percent of all collisions occur between noon and 7 PM, with 25 percent of collisions occurring between 3 and 6 PM, coinciding with the typical peak travel times for automobile travel (Chart 4). While most KSI collisions occur between 4 and 7 PM (Chart 4), KSI collisions represent a greater proportion of overall collisions between 9 PM and 6 AM.

**Chart 4**  
**Collisions by Time of Day (2015-2019)**



Collisions that involve a driver under the influence (which is defined by a blood alcohol level over the legal limit, or under the influence of illegal drugs or other medication) time of day were are shown in Chart 5. When evaluating DUI collisions by time of day, collisions peak between 6 PM and 3 AM, accounting for 69 percent of all DUI collisions. After 3 AM, collisions decrease and remain relatively even distributed until 6 PM. The peak in DUI collisions between 6 PM and 3 AM is likely due to drivers attending social venues, like bars or festivities in evenings and night. The peak in DUI collisions decreasing after 3AM also corresponds with patronages at bars which are not allowed to serve alcohol past 2 AM.

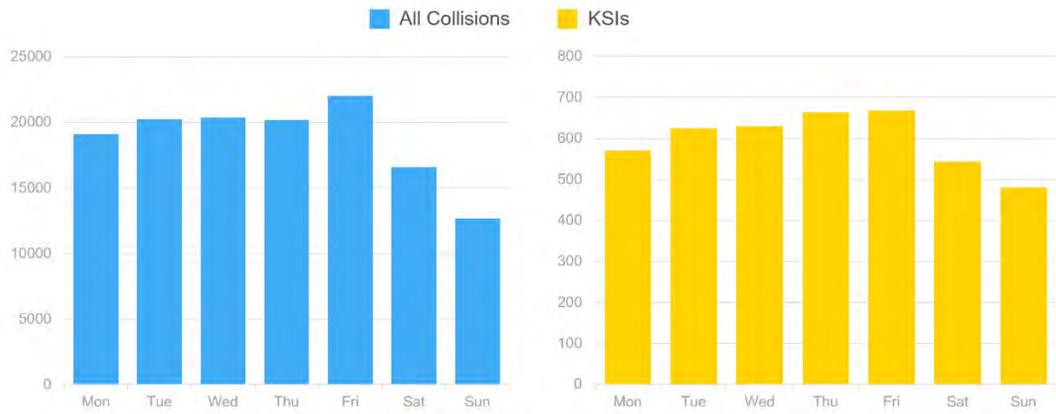
**Chart 5**  
**DUI Collisions by Time of Day (2015-2019)**



## Day of Week

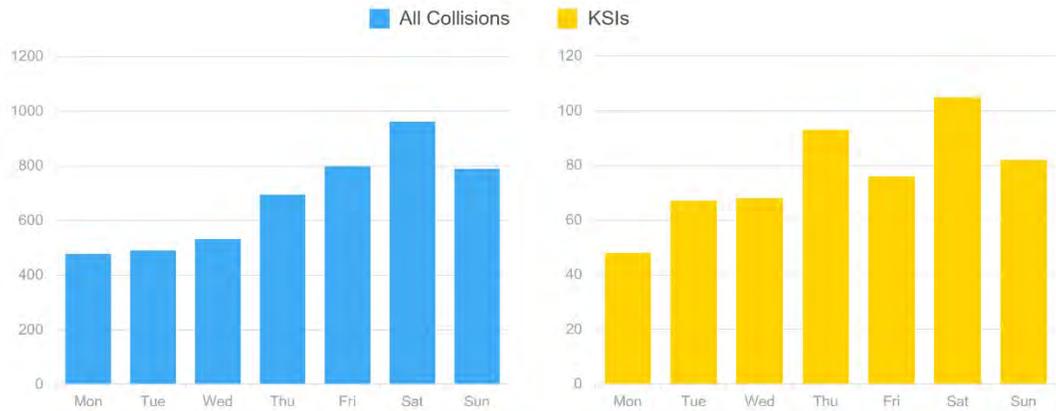
The distribution of all collisions is relatively evenly distributed Monday through Thursday, with a peak on Friday (Chart 6). Sundays have the lowest number of average collisions of any day of the week. Review of traffic count data from the Florida Department of Transportation Traffic Monitoring Site indicates that travel on Saturdays and Sundays is typically less than on weekdays by 10 to 25 percent, depending on location, with roadways closer to beach communities having less variation in weekday versus weekend travel. KSI collisions follow a relatively similar distribution as all collisions with a peak in KSI collisions on Thursday and Fridays (Chart 7). KSI collisions are lowest on Sundays, similar to all collisions, partially attributable to less people driving on Sundays.

**Chart 6**  
**Collisions by Day of Week (2015-2019)**



When assessing DUI collisions by day of the week, collisions peak on Saturdays with 20 percent of DUI collisions happening that day. DUI collisions begin to rise on Thursdays with a 4 percent increase between Wednesday and Thursday and peak with the highest collisions of the week on Saturdays. Mondays and Tuesdays have the lowest DUI collisions.

**Chart 7**  
**DUI Collisions by Day of Week (2015-2019)**



## Month of Year

Collisions by month of year are relatively evenly distributed throughout the year as shown on Chart 9, with the most collisions occurring in March. KSI collisions decline as compared to average during the summer months (July, August and September), as shown in Chart 10. KSI collisions peak in winter and early spring, indicative of changes in collisions with seasonal populations and activities, such as Spring Break.

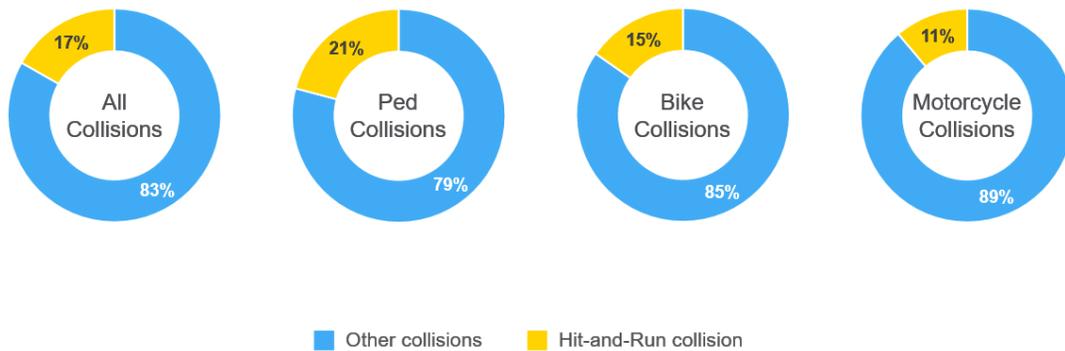
**Chart 8**  
**Collisions in Pinellas County by Month of Year (2015-2019)**



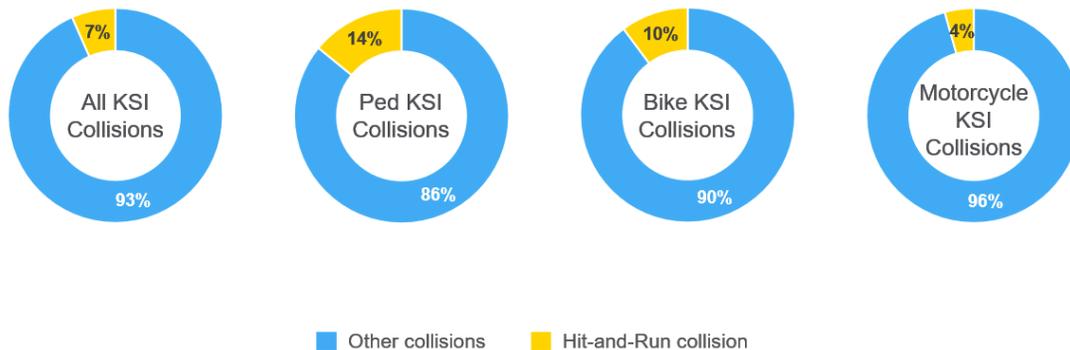
## Hit and Run

Hit and run collisions, or collisions where a party to the collision does not remain at the scene, account for 17 percent of overall reported collisions in Pinellas County, as shown in Chart 11. For all collisions, pedestrians are more likely to be involved in a hit and run than other travel modes. For KSI collisions, 7 percent were hit and run, with pedestrians and bicyclists overrepresented, with 14 percent of KSI hit and run collisions involving a pedestrian and 10 percent involving a bicyclist.

**Chart 9**  
**Hit and Run Collisions in Pinellas County (2015-2019)**



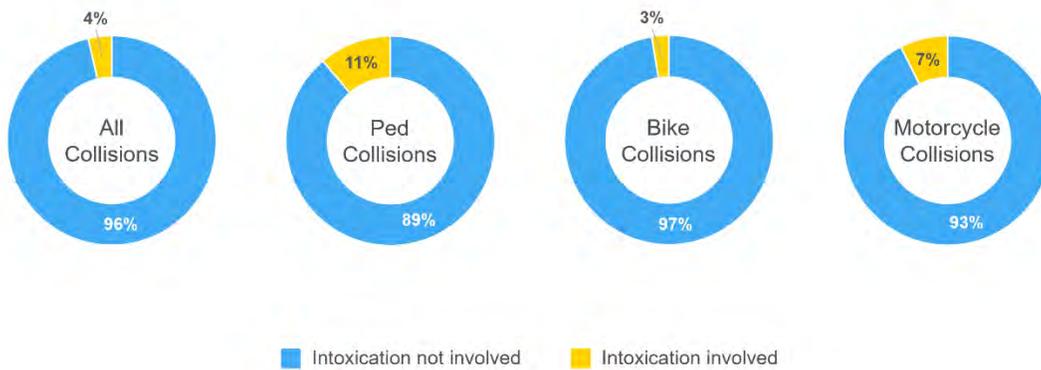
**Chart 10**  
**Hit and Run KSI Collisions in Pinellas County (2015-2019)**



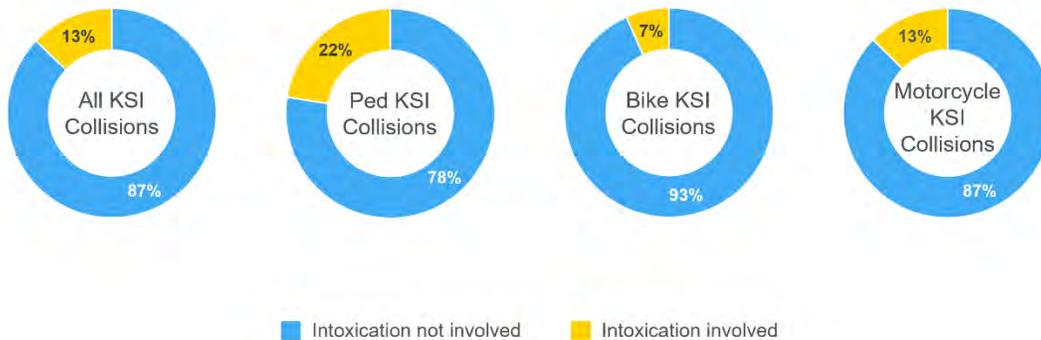
## Under the Influence

Driving under the influence of alcohol and/or drugs increases the likelihood of a collision resulting in serious injury or a fatality. From 2015 to 2019, four percent of collisions involved a driver under the influence, as shown in Chart 11. For collisions that resulted in someone being killed or severely injured, the percentage triples to 13 percent, with pedestrians disproportionately being the victim, as shown in Chart 12. For the purposes of this analysis, intoxication refers to alcohol use over the legal limit, or under the influence of illegal drugs or other medication, and this analysis refers only to the condition of the driver.

**Chart 11**  
**Collisions with Drivers Intoxicated (2015-2019)**



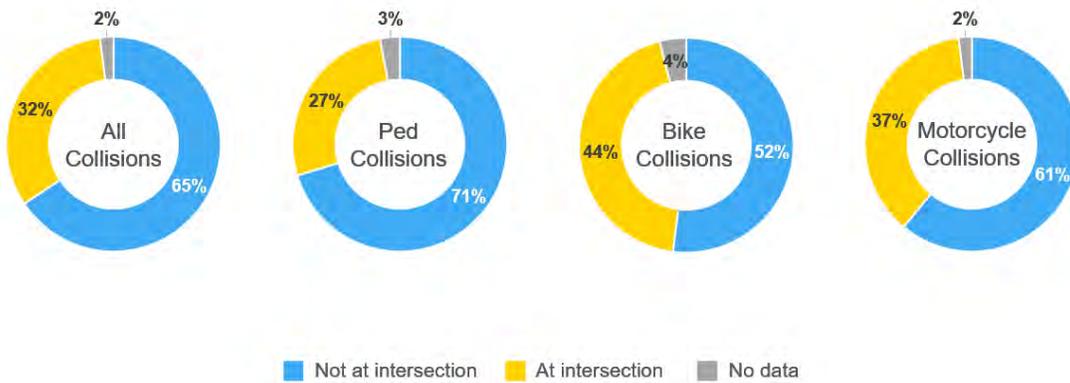
**Chart 12**  
**KSI Collisions with Drivers Intoxicated(2015-2019)**



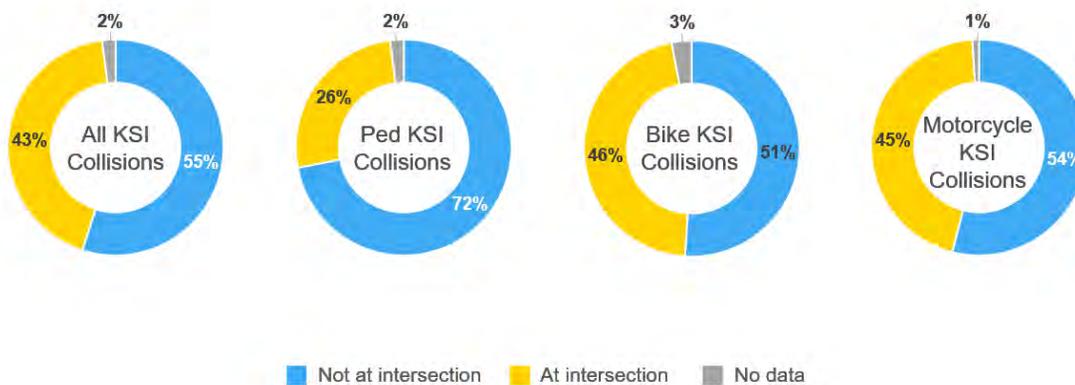
## Location Type

The majority (65 percent) of collisions in Pinellas County did not occur within the limits of an intersection, as shown on Chart 16. A collision is defined as being at an intersection if the first harmful event occurs within the limits of one. Pedestrian collisions disproportionately (71 percent) do not take place at intersections. For collisions involving someone killed or severely injured, pedestrian collisions (72 percent) disproportionately do not occur at intersections, as shown on Chart 17.

**Chart 14**  
**All Collisions by Location (2015-2019)**



**Chart 15**  
**KSI Collisions by Location (2015-2019)**



## Pedestrian Location

Pedestrians are more likely than any other roadway user group to be killed in a roadway collision in Pinellas County. The reported location of pedestrians at the time of collision is summarized in Table 1 for all collisions and KSI collisions, as this location information could help inform countermeasures. As compared to all pedestrian-involved collisions, pedestrians are more likely to be killed or severely injured while waiting to cross a street, walking along a roadway with traffic, walking on the sidewalk and working in the roadway.

**Table 1. Pedestrian Location at Time of Collision (2015-2019)**

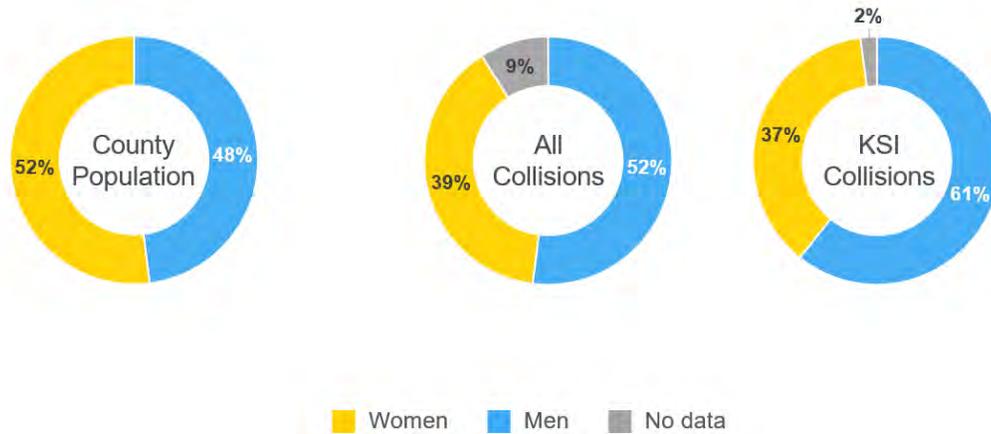
Location	All Collisions	KSI Collisions
Crossing	49%	37%
Waiting to cross	9%	<b>16%</b>
Walking along roadway with traffic	8%	<b>15%</b>
Walking in sidewalk	6%	<b>8%</b>
Walking along roadway against traffic	4%	4%
In road	1%	1%
K-12 going to or from school	1%	0%
Working in road	1%	<b>3%</b>
Shoulder/median/adjacent to roadway	1%	0%
Other/unknown/no data	19%	16%

Source: CDMS, 2015-2019 and Fehr & Peers.

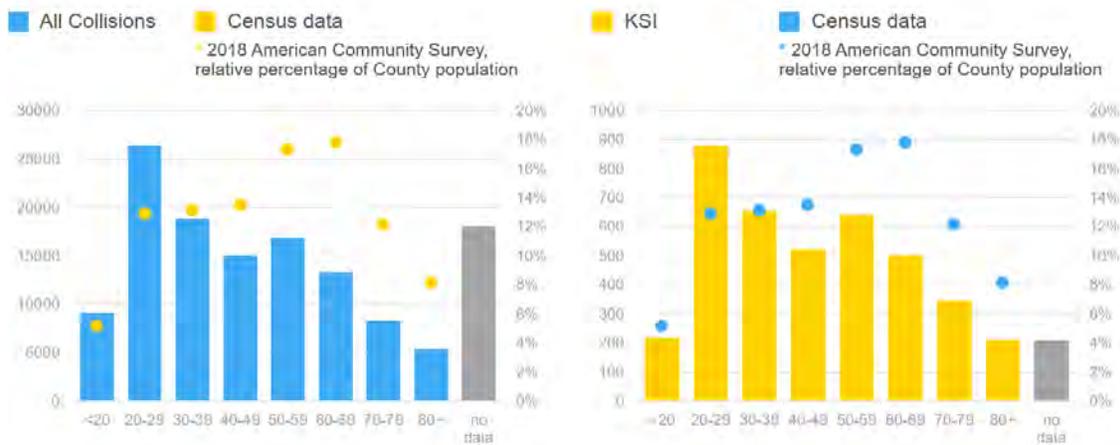
## Collisions by Sex and Age

Men are more likely to be involved in a collision than women, and significantly more likely to be involved in a KSI collision than women, as shown on Chart 17. Drivers between the ages of 20 and 29 are also more likely to be involved in a collision, with drivers over 40 less likely to be involved in a collision, as shown on Chart 18.

**Chart 16**  
**Collisions by Sex of Driver (2015-2019)**



**Chart 17**  
**Collisions by Age of Drive (2015-2019)**



## High Injury Network and Next Steps

An outcome of this project is the development of a high injury network. The high injury network highlights streets with a high concentration of severe injuries and deaths. To develop the network, we recommend a two-step process based on the 2015 to 2019 data, the first step being data-driven and the second manual. In the first step, we will use an automated GIS tool to identify collision clusters and select nearby street segments. Because collisions are typically concentrated, the purely data-driven tool tends to identify short, discontinuous street segments near intersections or hot-spots. These segments provide a helpful indication of where collisions are occurring but stop short of creating a connected network that can guide planning decisions.

The next would be to manually refine the raw segments into a more continuous, final high-injury network consisting of *corridors* and *hot spots*. For corridors, we propose identifying a linear patterns in collisions, with a threshold of a continuous string of intersections that had more than 1 KSI collision per intersection. A threshold of distance between collisions, such as a 1/4-mile or 1/2-mile should be identified.

Hot spots are intersections where a higher density of KSI collisions occurred. Based on the preliminary data analysis, a threshold of three or more KSI collisions per intersection is a likely starting point to identify a hot spot, although different weights could be applied to different collision types (severe injury vs. fatal) or modes.

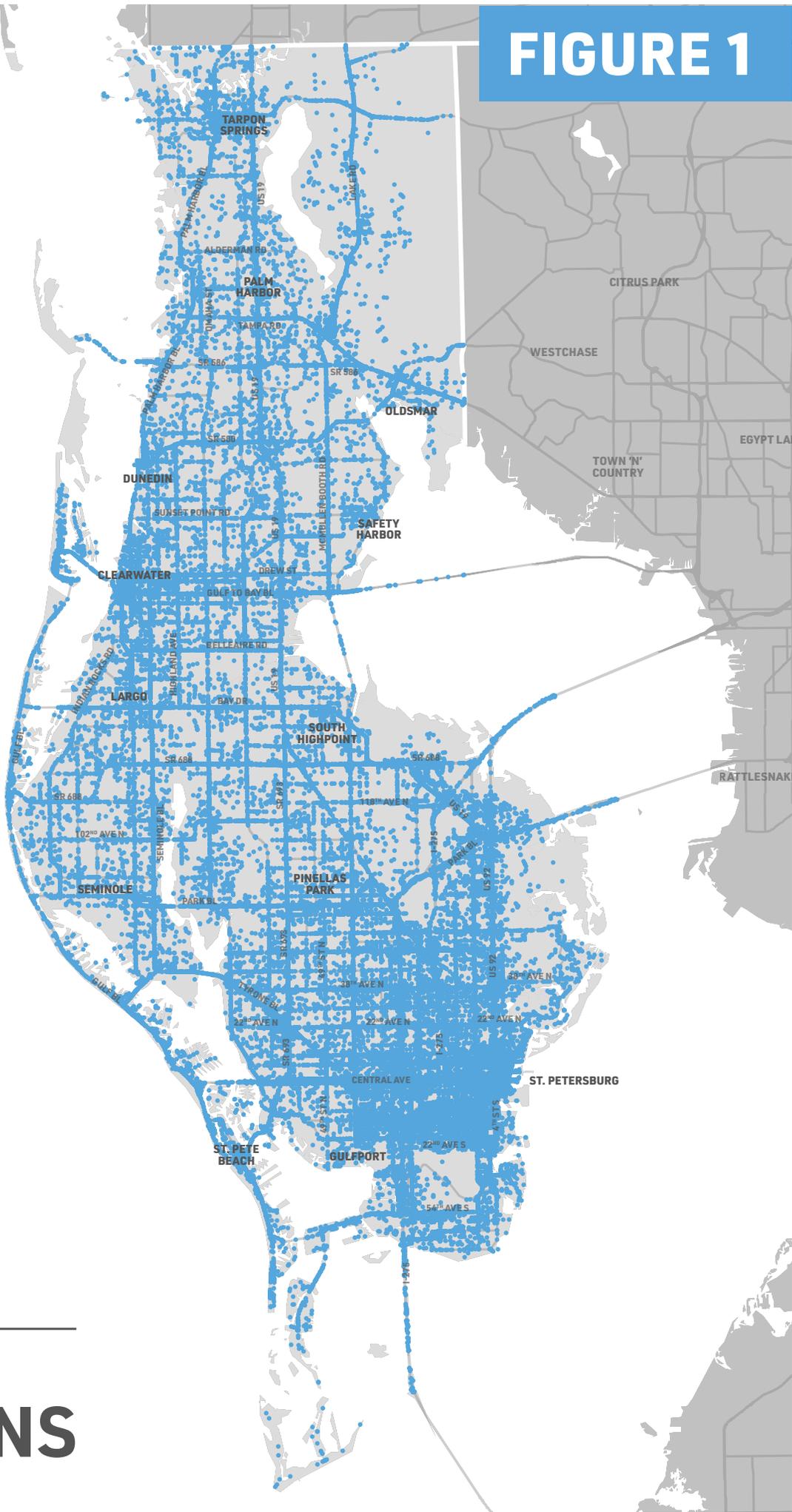
The collision data above will also be assessed by demographics to assess if any one group is being disproportionately affected by collisions in Pinellas County, with preliminary analysis presented on Figure 6. Figure 7 shows the top 25 KSI locations within the County.

Once we develop both the high injury network and have an assessment of demographics in the County, we can begin to prepare safety countermeasures in conversation with Forward Pinellas.

## Attachments

- |          |  |
|----------|--|
| Figure 1 | Total Collisions from 2015 – 2019              |
| Figure 2 | KSI Collisions from 2015 – 2019                |
| Figure 3 | Pedestrian KSI from 2015 – 2019                |
| Figure 4 | Bicyclist KSI from 2015 – 2019                 |
| Figure 5 | Motorcyclist KSI from 2015 – 2019              |
| Figure 6 | KSI Locations and Demographic Data 2015 – 2019 |
| Figure 7 | Top 25 KSI Collision Locations 2015 – 2019     |

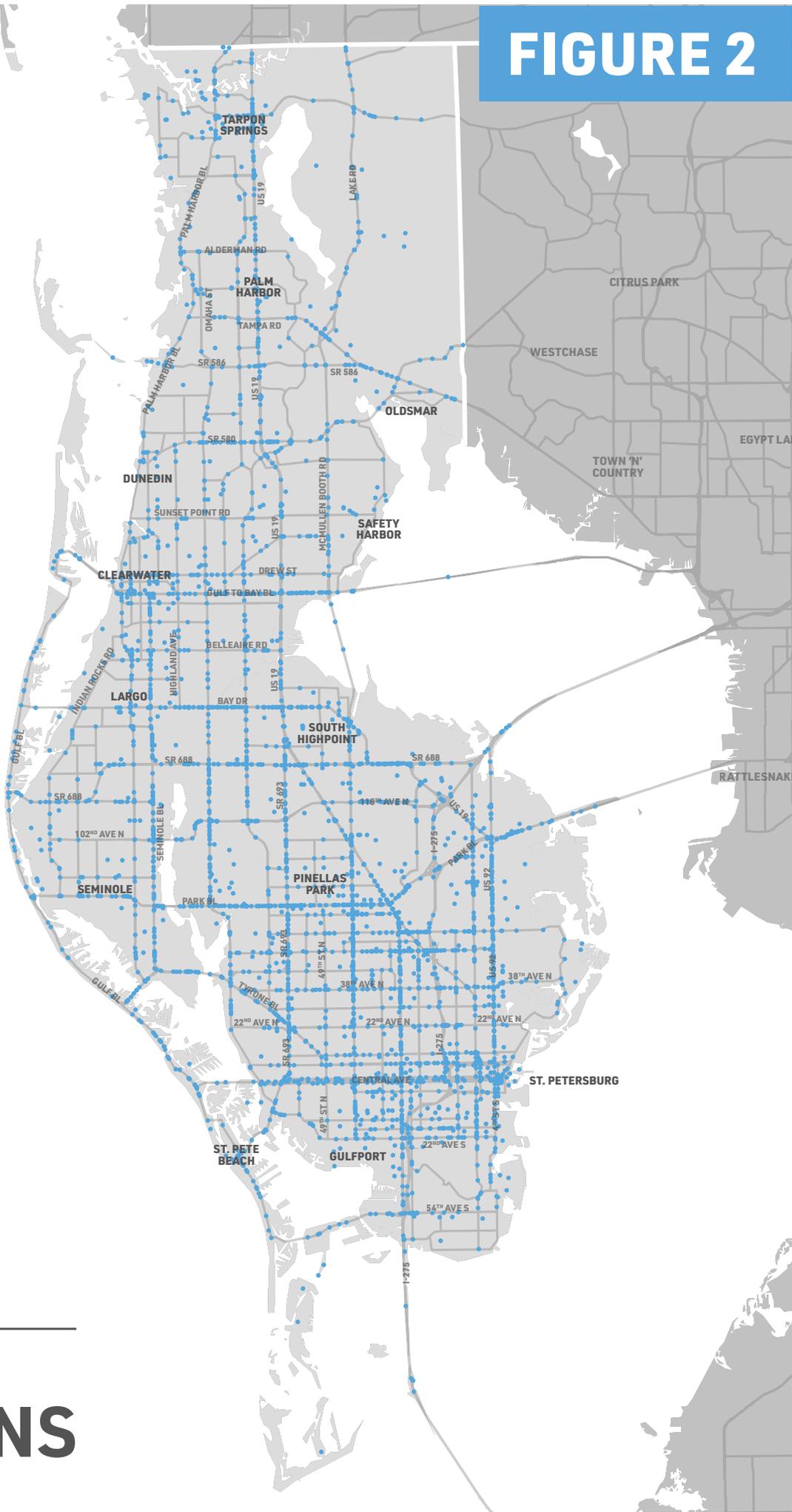
**FIGURE 1**



# ALL COLLISIONS

2015 - 2019

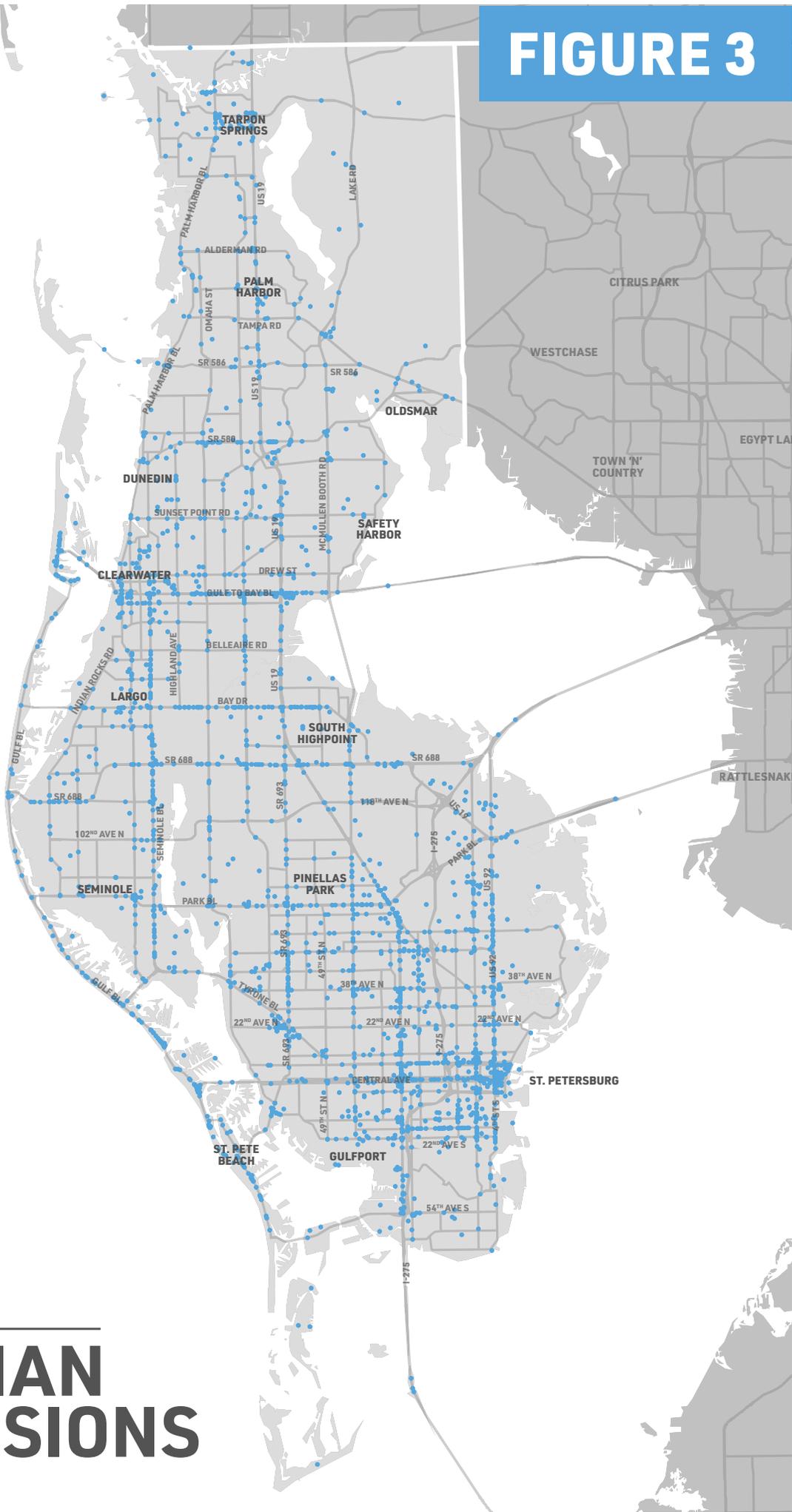
**FIGURE 2**



# KSI COLLISIONS

2015 - 2019

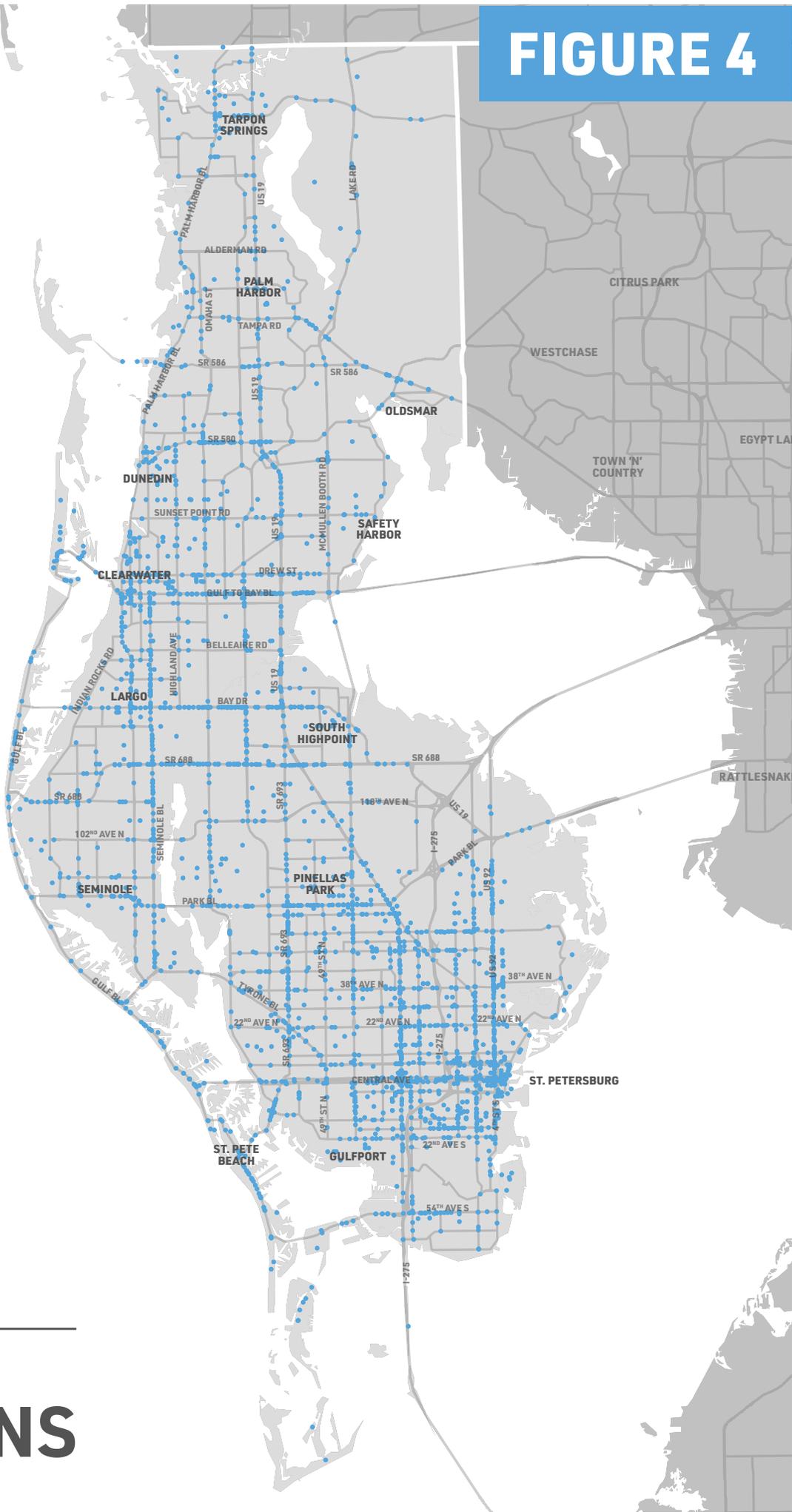
**FIGURE 3**



# PEDESTRIAN KSI COLLISIONS

2015 - 2019

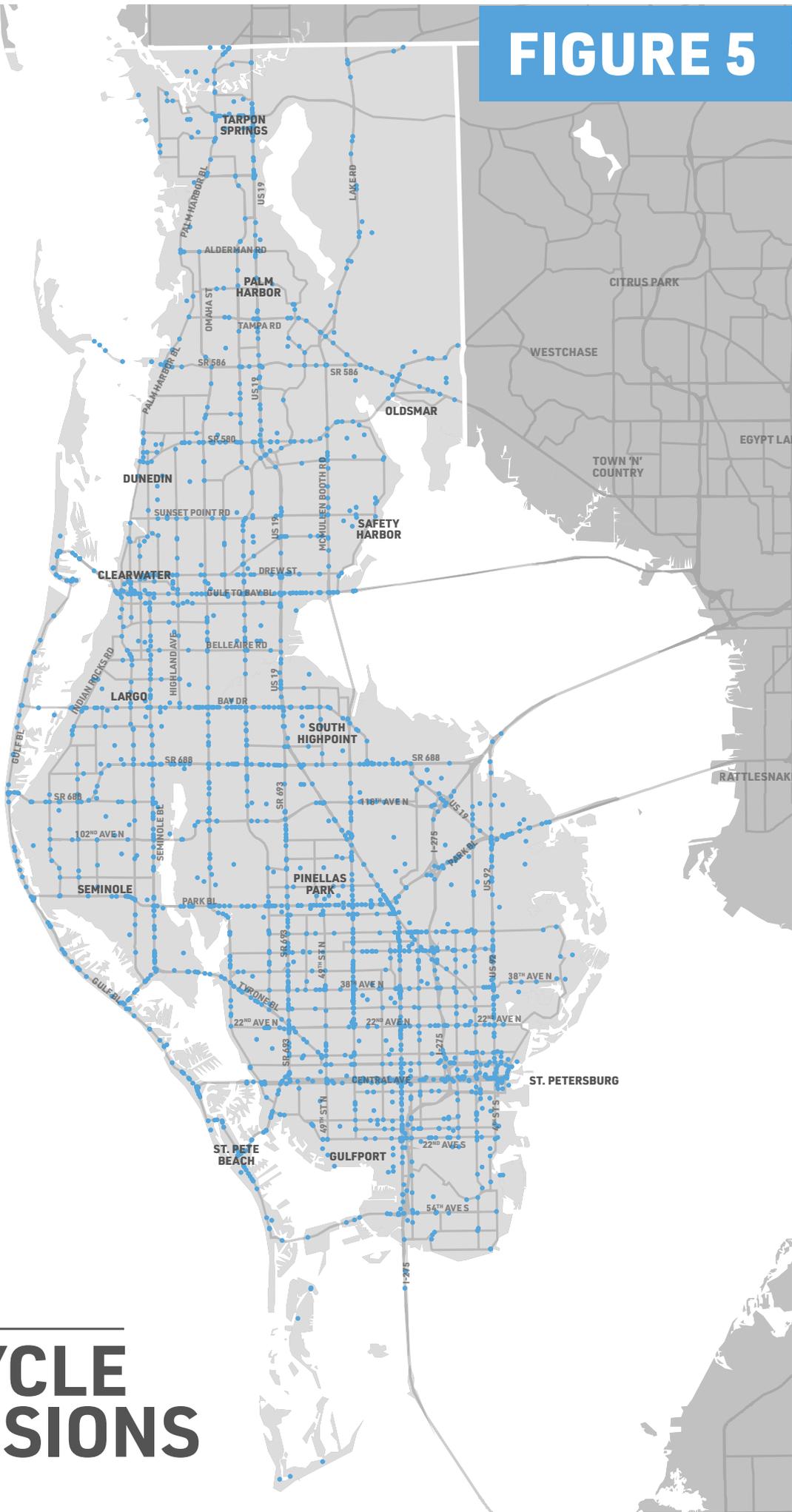
**FIGURE 4**



# BIKE KSI COLLISIONS

2015 - 2019

**FIGURE 5**

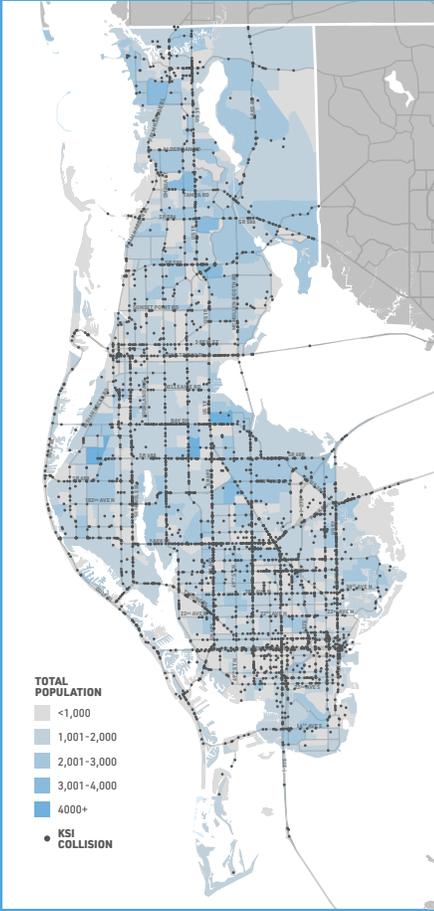


# MOTORCYCLE KSI COLLISIONS

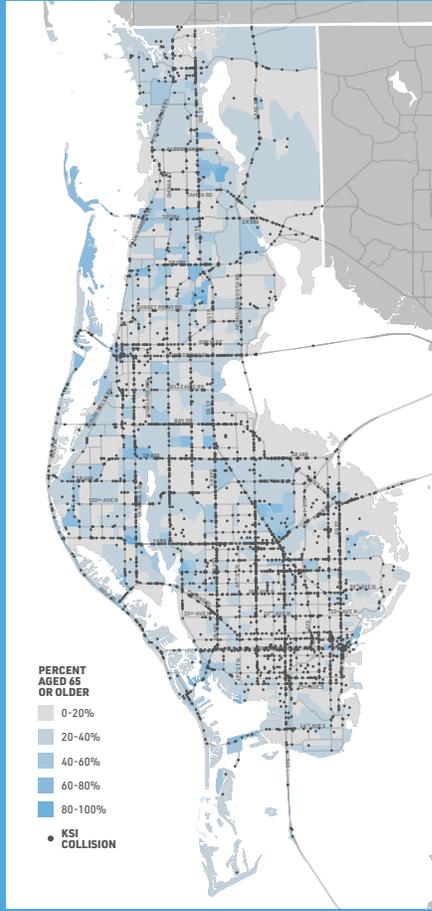
2015 - 2019

# FIGURE 6

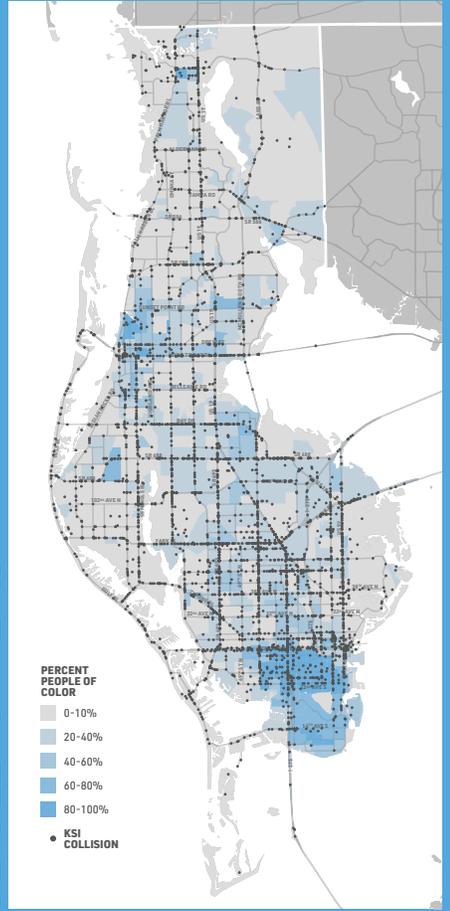
## TOTAL POPULATION



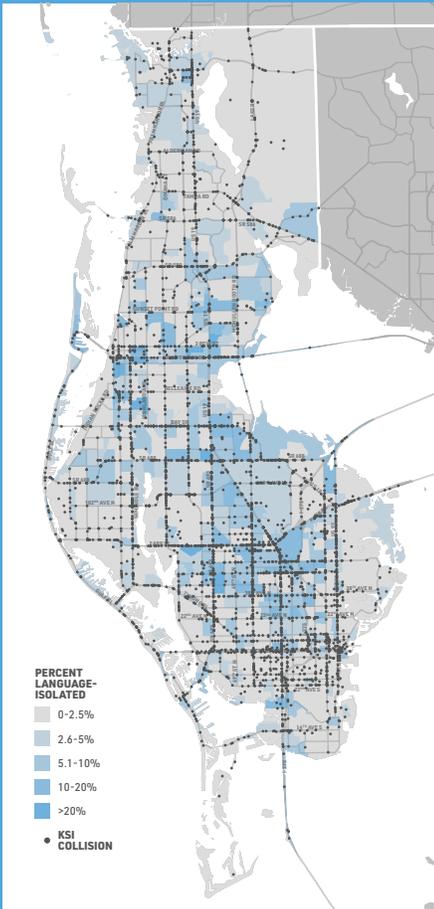
## SENIORS



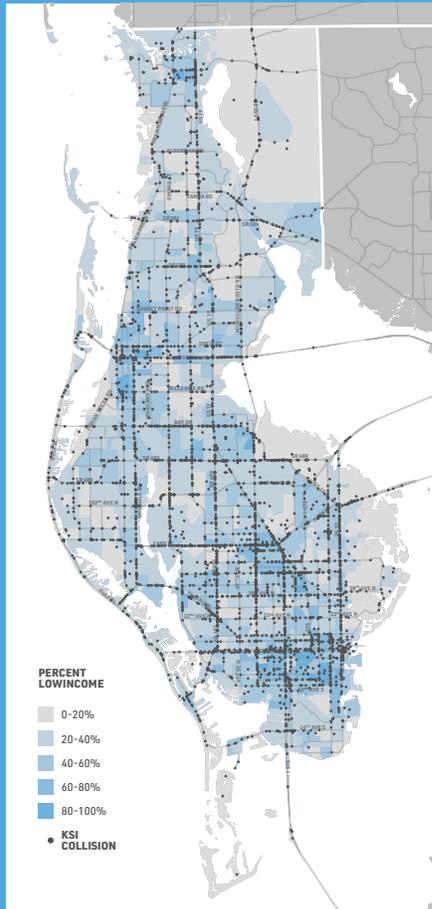
## PEOPLE OF COLOR



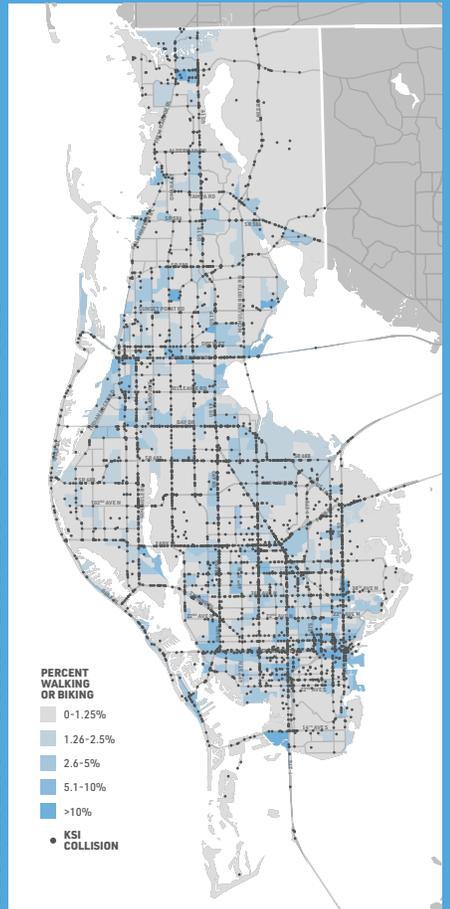
## LANGUAGE ISOLATION



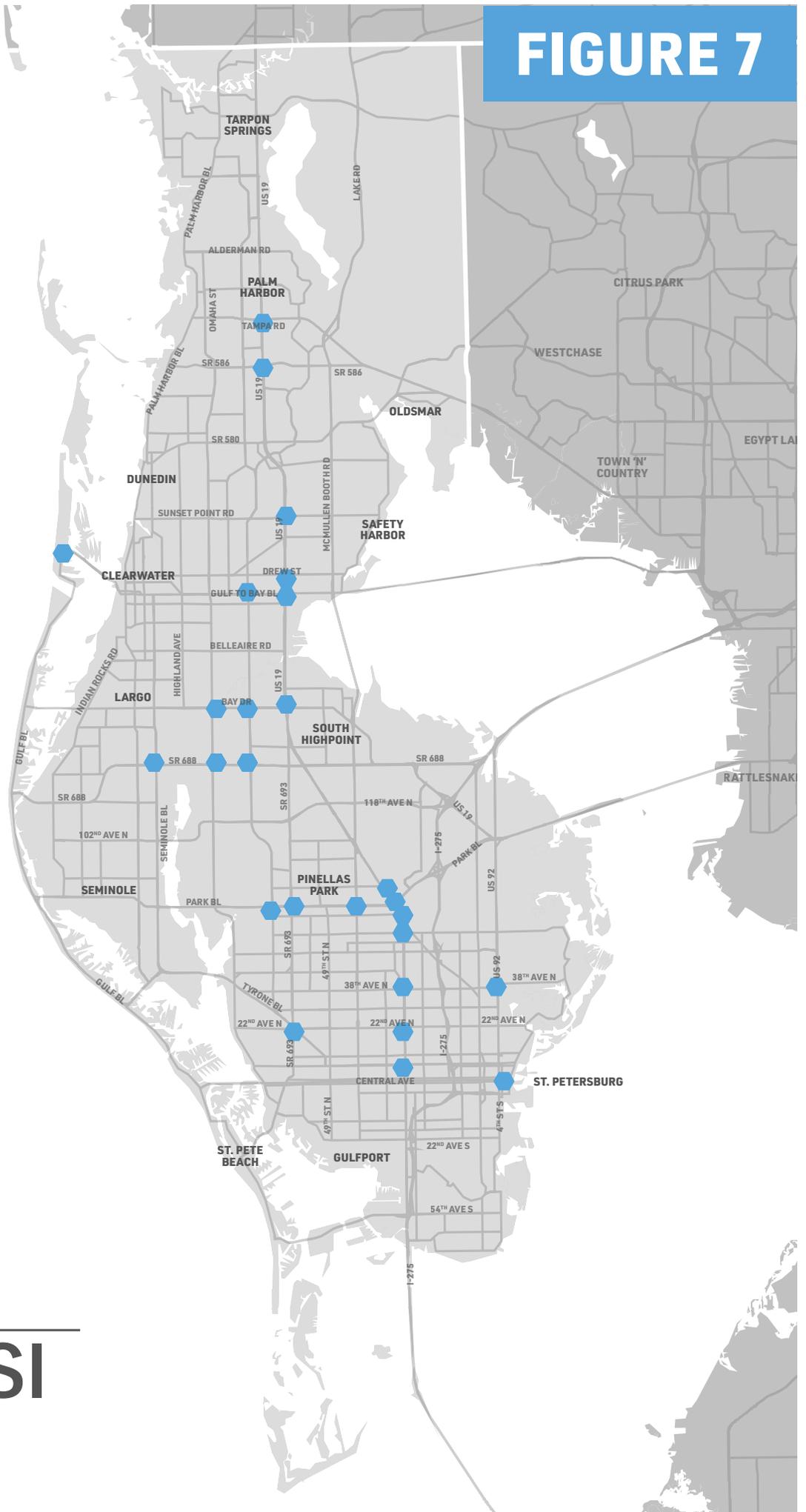
## LOW-INCOME COMMUNITIES



## WALKING AND BIKING TO WORK



# FIGURE 7



## TOP 25 KSI

### COLLISION LOCATIONS

2015 - 2019



# Demonstration Project Planning

## Appendix

# C





# Memorandum

Date: November 16, 2020

To: Sarah Caper, AICP, Forward Pinellas

From: Kathrin Tellez, AICP, PTP, Fehr & Peers  
Laura Herrscher, AICP, PGA

**Subject: Safe Streets Pinellas  
Nursery Road/Duke Energy Trail Demonstration Summary**

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## Introduction

Several demonstration projects are being developed and implemented as part of the Safe Streets Pinellas project, which is the Vision Zero effort for Pinellas County. The goal of these demonstration projects is to build interest around Vision Zero by showcasing how transportation safety projects, including transportation safety campaigns, can be implemented in Pinellas County and to test countermeasures that could be included in the Vision Zero Action Plan. The nature of the demonstration projects varies and incorporates a range of elements. The concept, process followed, and intended performance measures for each demonstration will be documented in a series of memos and the final Action Plan.

This memorandum summarizes an educational event that was held at the Nursery Road crossing of the Duke Energy Trail and serves as an update to our technical memorandum dated July 14, 2020 (attached for reference). As the demonstration projects also serve as a guide to future collaborations between Forward Pinellas and partner agencies, the following describes pre-event activities, day-of-event activities, and an event summary.

## Event Preparation

Pinellas County and the City of Clearwater had planned to install a rectangular rapid flashing beacon (RRFB) at the Duke Energy Trail crossing on Nursery Road, which was identified as a potential safety device that could be installed at the crossing after a May 2019 collision in which a bicyclist was killed while crossing the roadway at this location. Numerous factors are considered in the identification of identify candidate locations for RRFB installations, including the posted speed limit and prevailing travel speeds, amount of vehicle travel, amount of bicycle and pedestrian travel, expected yielding rates, number of travel lanes and crossing distance, and presence of parking. Additional details are provided in the July 14, 2020 memorandum.

Installation of the RRFB was scheduled for October 2020. Since RRFBs are not new to Pinellas County, the demonstration project was centered around honoring the crash victim, Carmen Charrez, as well as education around how to correctly use the device as both a person who is driving, or a person who is walking or bicycling.

## Prior to the event

Prior to the event, there were several coordination calls between Forward Pinellas, City of Clearwater, and Pinellas County staff to finalize the construction schedule and other event details. Field visits were also conducted around the time the RRFB was being installed to document the process. The following specific items were conducted in preparation for the event:

- Create Save the Date notice to disseminate via e-mail, social media, and website to communicate date, time, location, and event details sent two weeks prior to event (see Figure 1)

JOIN US AS WE CELEBRATE ANOTHER STEP **TOWARDS ZERO**

**NURSERY ROAD AT DUKE ENERGY TRAIL  
DEMONSTRATION PROJECT**

As part of the Safe Streets Pinellas project, Forward Pinellas is hosting an educational event at the latest RRFB installation in collaboration with the City of Clearwater and Pinellas County.

 <b>LOCATION</b> Nursery Rd & Duke Energy Trail, Clearwater, FL 33764	 <b>DATE &amp; TIME</b> Monday October 26, 2020 4 pm - 6 pm	 <b>COVID-19</b> Social distancing and other safety protocols will be followed
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**QUESTIONS?**  
Sarah Caper, AICP  
scaper@forwardpinellas.org  
727-464-5695

**SAFE  
STREETS  
PINELLAS**

Event will be postponed to  
**November 9** in the event  
of inclement weather

Figure 1 Save the Date Announcement

- Outreach to the family of the crash victim to coordinate their participation as well as installation of a memorial
- Outreach to local media with press release and invitation to the event
- Coordinate with Task Force, Ambassadors and local government staff
- Develop COVID-19 protocols and plan for social distancing, sanitizing, etc.
- Develop materials list for day of event, including tables, table clothes, tents, pens, garbage bags, clip boards, tape, tape measure, easels, safety vests, sanitizing items, velocity reader, Safe Streets Pinellas stencils and spray chalk, water, and snacks, and identify team member responsible for bringing each item
- Develop informational materials, such as the collision summary board (See Figure 2)
- Develop survey instrument and QR code with printed cards and QR code displays to obtain feedback from trail users and event attendees
- Develop/source educational materials (Figure 3) and other items, such as the Safe Streets Pinellas coloring books, pins, and logo bags
- Prepare name tags for elected officials, local government staff, and project team staff attending event

Staff from Forward Pinellas and the consulting team arrived a few hours early to set-up the tables, place Safe Streets Pinellas logos on the trail surface, and prepare for the event.



Figure 2 Collision Trends Board

In addition to honoring the crash victim, Carmen Charrez, another focus of the event was to raise awareness of the purpose of RRFBs and the correct usage for all roadway users. Custom educational materials were developed and are available as a 5 X 7 flyer, as well as electronically for use on social media.



Figure 3 RRFB Educational Flyer

# Event Summary

The event was held on Monday, October 26, 2020 from 4:00 – 6:00 PM and consisted of three main elements.

## 1. Ceremony honoring the victim of a fatal collision at this location

Family members and friends of the crash victim, Carmen Charrez, attended the event and ceremony to unveil a roadside memorial. Commissioner Dave Eggers began by acknowledging how safety improvements such as RRFBs will increase roadway safety and underscored the importance of the Safe Streets Pinellas project because there is much more work to be done in driving down fatal and serious injury crashes on the transportation system. The victim's sister spoke on behalf of the family and expressed their hope that other lives will be saved because of the attention and recognition that improvements must be made. Whit Blanton, Forward Pinellas Executive Director, concluded the ceremony by discussing the importance of creating a safety-focused culture of all users of the transportation system. The roadside memorial was unveiled.

## 2. Public engagement and education

This demonstration was an opportunity to provide education about proper use of an RRFB and general safety information for trail users. A tent and table on either side of the road were set up with educational materials, a feedback survey with QR code to access, comment forms, and staff to answer questions and discuss the Safe Streets Pinellas project with trail users. Forward Pinellas Staff were also interviewed by local media outlets, and video of use of the RRFB was collected for use in developing a public safety video.

On this day, there were about 25 trail users during the two-hour event, which is in the range of recorded trail users for other days (15 to 35 users in a 2-hour period). The record high temperatures on this day may have deterred some from using the trail during the event time period. Comments were collected and some included concerns about speeding, high truck traffic, and a lack of regard for safety around the trail crossing. Suggestions included speed bumps to enhance traffic calming. Comment forms and completed surveys are included in the final plan documentation.

## 3. Informal observations and data collection of trail users and motorists

Data collection and observations of traffic and trail user behavior were taken during the event. A velocity reader was used to gauge the speed of vehicles approaching the RRFB; vehicle, pedestrian, and bicyclist counts were taken, correct use and yielding to the RRFB were observed and recorded, as well as other data and general observations. General summary of data and observations during the demonstration event:

- 12 pedestrians
- 9 bicyclists
- All pedestrians activated RRFB to cross
- 2 bicyclists activated RRFB to cross
- Vehicle yield rate to RRFB was 89 percent
- Speeds captured ranged from 15-55 mph (posted speed is 35 mph)
  - Average speed – 37 mph
  - 50<sup>th</sup> percentile – 50 mph
  - 85<sup>th</sup> percentile – 43 mph
  - Average speeds were higher for vehicles traveling eastbound on Nursery Road

## Lessons Learned

This was the first collaboration of Forward Pinellas with the City of Clearwater and Pinellas County to host an educational event at a new RRFB. While the event overall was a success, there were elements that could be improved and other elements that were unexpected, like record temperatures in October.

### Successes

- RRFB was installed and operational as scheduled prior to the event
- Memorial sign was installed prior to the event to family specifications
- Materials developed for this event are available for future events
- High yield rate suggests a positive impact of the RRFB, and is consistent with other published data on the benefits of RRFBs

### Opportunities for Refinement

- Event activities and visibility may have impacted speed and behaviors; vehicles may have traveled slower and yielded at higher rates due to the level of activity during the event, meaning that the observed yielding rates may not reflect typical conditions, and more typical travel speeds could be higher than documented. Plan for data collection to occur separate from a large event that could skew results.
- Low use of RRFB by bicyclists may indicate the placement of the buttons may not be convenient to the travel path of the trail. Push buttons are typically placed to maximize visibility by people driving (near-side of crossing) which is a less convenient place for people who are bicycling to activate. At other crossings, installation of dual push buttons could be considered as well as passive activation, meaning the trail user does not need to push the button. However, these design treatments tend to significantly add to the cost of device installation and could reduce the number of locations where safety devices are installed.
- Other treatments that could be considered paired with an RRFB include speed feedback signs, additional pavement markings and advanced warning signs, and the potential for targeted enforcement. A more expansive treatment would be to widen the roadway in the vicinity of the crossing to provide a median refuge as a way to introduce horizontal deflection in the path of vehicle travel, and allow people who bicycle and walk to cross one lane of travel at a time. However, those types of improvements can often require reconstruction of the roadway.

## Event Photos



This completes our summary of the Nursery Road demonstration project. Please call Kathrin Tellez at (321) 754-9902 if you have questions.



# Memorandum

Date: July 14, 2020

To: Sarah Caper, Forward Pinellas

From: Kathrin Tellez, Fehr & Peers  
Laura Herrscher, PGA  
Peyton McLeod, PGA

**Subject: Safe Streets Pinellas Nursery Road Demonstration Project Concept**

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## Introduction

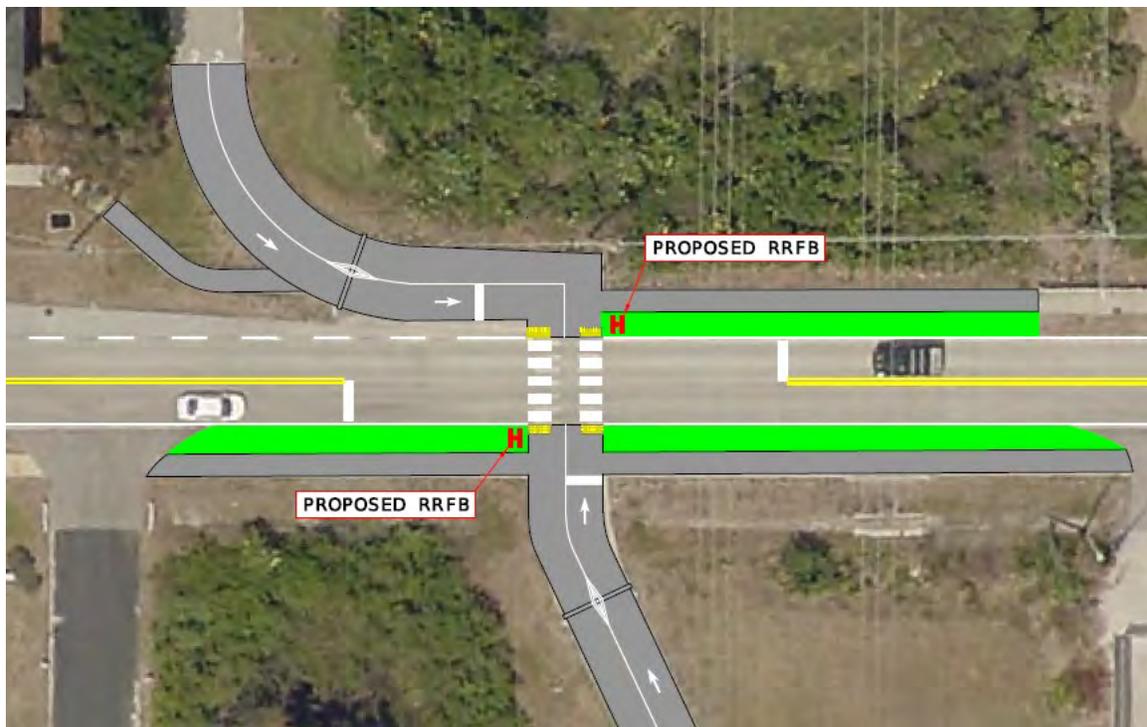
Up to four demonstration projects are scheduled to be developed and implemented as part of Safe Streets Pinellas. The goal of these demonstration projects is to build interest around Vision Zero by showcasing different transportation safety projects and transportation safety campaigns can be implemented in Pinellas County, and to test potential countermeasures that could be included in the Vision Zero Action Plan. The nature of the demonstration projects will be varied and incorporate a range of elements. Discussion with the project Task Force and Forward Pinellas staff, and review of historical collision data, led to interest in conducting a demonstration project at trail crossings. Based on a review of the collision data, and conversations with Pinellas County and City of Clearwater staff, the Duke Energy Trail crossing of Nursery Road (Figure 1) was identified as a candidate demonstration project location.

**Figure 1. Duke Energy Trail Crossing at Nursery Road**



Pinellas County and the City of Clearwater are planning to install a rectangular rapid flashing beacon (RRFB) at this location using the County's standard design plans for RRFBs. This installation was identified after a May 2019 collision in which a bicyclist was killed while crossing Nursery Road at the Duke Energy Trail. As part of the research conducted to determine the appropriateness of an RRFB at this location, the County collected extensive data that includes video-based trail user counts by mode, motor vehicle speed, and volume data for Nursery Road at the trail crossing. Preliminary discussions with County staff indicate installation of the RRFB could be coordinated with the demonstration project. A concept plan of the standard RRFB design at the crossing is shown as Figure 2.

**Figure 2. Preliminary RRFB Concept**



The following summarizes an evaluation of the crossing to identify if an RRFB is the most appropriate crossing treatment, and if there are other crossing treatments that could be paired with installation of an RRFB. Following the evaluation, two demonstration project options are outlined for consideration by Forward Pinellas, Pinellas County and the City of Clearwater, followed by a discussion of next steps.

## Crossing Evaluation

As shown on Figure 1, Nursery Road is a two-lane roadway. It has a posted speed limit of 35 miles per hour, and based on data collected in 2019, the average daily traffic volumes on Nursery Road at the crossing are approximately 6,500 vehicles per day. Average speeds for vehicles approaching the crossing are in-line with the speed limit of 35 miles per hour; however, the 85th percentile speed of vehicles approaching the crossing is 40 miles per hour. On a typical summer

day, between 20 and 50 pedestrians and between 20 and 75 bicyclists cross Nursery Road at the Duke Energy Trail (variation due to day of week and weather).

Operations of the trail crossing were evaluated to confirm the appropriateness of the previously identified RRFB and identify other potential candidate crossing treatments. For this assessment, we used the Xwalk+ tool developed by Fehr & Peers based on research from the National Cooperative Highway Research Program, Federal Highway Administration, Institute of Transportation Engineers' (ITE) Pedestrian/Bicycle Council, and interviews with various cities throughout the country. The tool combines academic research on crosswalk treatment effectiveness with national best practices. Key inputs for the tool are noted below, with the inputs used for this analysis noted in parenthesis:

- speed limit (or observed speed if available) (40 miles per hour)
- crossing volume (15 pedestrians/bicyclists in peak hour)
- roadway volumes (650 vehicles in peak hour)
- crossing distance (20 feet)
- number of lanes (2 lanes)
- presence of bicyclists (yes)
- presence of transit (no)
- presence of a median (no)
- presence of on-street parking (no)
- expected motorist compliance (yielding) (moderate)

Based on the results of the assessment (analysis worksheet is attached), the level of service (LOS) for pedestrians and bicyclists crossing Nursery road is poor (LOS F), primarily due to the prevailing speed of vehicles traveling on Nursery Road. Results of the analysis indicate that a RRRB is an appropriate crossing treatment, that could also be paired with high visibility crosswalk markings, advance yield lines and advance signage for maximum benefit. A demonstration project on Nursery Road at the Duke Energy Trail could incorporate some or all of these elements, in addition to an educational component.

## Demonstration Project Options

Two options are proposed for a demonstration project at this location. Option 1 would tie the demonstration project to the installation of the RRFB and include educational and awareness components. Option 2 includes temporary installation of safety countermeasures and an educational event to raise awareness of pedestrian and bicyclist safety. The second option is provided in the event that installation of the RRFB is scheduled beyond the 2020 calendar year with Option 1 being the preferred demonstration project option.

## Option 1 - Coincides with RRFB Installation

Based on the initial conversation with staff from Forward Pinellas, Pinellas County, and City of Clearwater, installation of the RRFB could occur within the next three to six months. An education and awareness campaign centered on the installation itself would raise awareness about the proper use of RRFBs. Since observational data was recently collected, this option offers an opportunity to conduct a before and after study of data.

### Phase 1 (before RRFB installation)

- Review and summarize previously collected volume (trail and road) and speed data, including notable findings such as speed by direction, trail volume, and time of day user counts to identify nighttime and use of the trail after closing hours.
- Conduct a motorist yielding study by reviewing existing video footage using an established protocol for what constitutes appropriate yielding behavior.
- Assist with potential refinement of the standard RRFB plan such as identifying other crossing enhancements, additional trail signage and markings, roadway signage and markings, and crossing treatments.
- Coordinate with Pinellas County and City of Clearwater to determine feasibility of temporary enhancements to test during Phase 2. Some temporary features could be:
  - an extended barrier along the north side of the trail to better channelize pedestrian and bicycle movements to the crosswalk
  - a mirror for southbound trail users to aid in the crossing
  - temporary lighting
  - refreshed trail pavement markings if not part of planned improvements
- Prepare a detailed logistics plan for remaining Phase 1 and Phase 2 activities.
- Share pre-event information on social media platforms to raise awareness.
- Encourage Task Force and project ambassadors to share event information with their networks.
- Conduct outreach with Bike/Walk Tampa Bay and other interested advocacy groups.
- Inquire whether family members of the crash victim would like to participate in the event and share their story.
- Invite media to attend and participate.
- Encourage members of these groups, Task Force members, and others to gather at the event to demonstrate a visible presence at the site.

### Phase 2 (with RRFB installation)

- Convene a team of event facilitators on site to coordinate the event, collect data, take photos, coordinate social media messaging, and support other needs of the event. Depending on the complexity of the final event, and the number of temporary crossing elements, a minimum of 6 people would be needed to stage the event. For an event with more temporary elements that require set-up, monitoring, and removal, approximately 10-12 people would be needed. It is expected that the event would include Forward Pinellas staff, local government staff, task force members, and consultant staff members.
- Prepare and disseminate educational materials about how to use the RRFB. Other related educational materials could also be handed out.
- Conduct trail volume counts while on-site to supplement existing data, use for event documentation, and inform elements of the before and after study.
- Prepare a trail user survey to gather input and feedback
- Prepare and staff an “energizing station”

- Stock table with water, snacks, Safe Streets Pinellas project information, and general safety materials.
- Hand out survey cards with website and information about completing the survey. Survey responses will provide useful information such as origin and destination of trail trips, trip purpose, demographics, user knowledge of RRFBs, desired trail system improvements, other safety concerns, etc.

### Phase 3 (after RRFB installation)

- Conduct a second motorist yielding study and compare results to Phase 1 findings. It is not recommended to conduct this task during Phase 2 to avoid effects related to the awareness event.
- Prepare report summarizing before and after study findings, notable trends, event participation with performance measurements, and survey results.

## Option 2 - Temporary Demonstration Project

Option 2 describes temporary features that can be installed prior to the RRFB if it appears the timing of Pinellas County's project will not coincide with the schedule and pace of the Safe Streets Pinellas project. Many elements are the same as Option 1 and will inform the final Safe Streets Pinellas improvement plan.

### Phase 1

- Review and summarize previously collected volume (trail and road) and speed data, including notable findings such as speed by direction, trail volume, and time of day user counts to identify nighttime and use of the trail after closing hours.
- Conduct a motorist yielding study by reviewing existing video footage using an established protocol for what constitutes appropriate yielding behavior.
- Assist with potential refinement of the standard RRFB plan such as identifying other crossing enhancements, additional trail signage and markings, roadway signage and markings, and crossing treatments.

Through the course of contributing to the design, we would identify crossing elements that could be installed on a temporary basis, including advanced stop markings, Safe Streets Pinellas logo on the crossing approach, additional trail channelizers to discourage street crossings outside of the crossing, median signage indicating that vehicles must yield to pedestrians within the crosswalk.

Pending the resources of partner agencies, a speed trailer could be staged on Nursery Road in advance of the crossing to alert drivers to their travel speed during the event. If available, temporary signage could also be installed for the duration of the demonstration. All materials for the demonstration project would be selected to be temporary in nature and allow for an evaluation for a more permanent installation.

- Prepare a detailed logistics plan for remaining Phase 1 and Phase 2 activities, based on the final design of temporary crossing elements.
- Share pre-event information on social media platforms to raise awareness.
- Encourage Task Force and project ambassadors to share event information with their networks.
- Conduct outreach with Bike/Walk Tampa Bay and other interested advocacy groups.
- Inquire whether family members of the crash victim would like to participate in the event and share their story.

- Invite media to attend and participate.
- Encourage members of these groups, Task Force members, and others to gather at the event to demonstrate a visible presence at the site.

### Phase 2 (without RRFB installation)

- Convene a team of event facilitators on-site to implement the temporary design identified in Phase 1. As more elements are expected to be temporary in nature, it is expected that up to 10-12 people might be needed to stage the event and will include Forward Pinellas staff, local government staff, task force members, and consultant staff.
- Share information about permanent improvements planned for the crossing.
- Conduct trail volume counts while on site to supplement existing data, use for event documentation, and inform elements of the before and after study.
- Prepare a trail user survey to gather input and feedback
- Prepare and staff an “energizing station”
  - Stock table with water, snacks, Safe Streets Pinellas project information, and general safety materials.
  - Hand out survey cards with website and information about completing the survey. Survey responses will provide useful information such as origin and destination of trail trips, trip purpose, demographics, user knowledge of RRFBs, desired trail system improvements, other safety concerns, etc.

### Phase 3 (Design Feedback)

- Prepare report summarizing event participation with performance measurements, survey results, and assessment of effectiveness of temporary crossing elements.
- Contribute to the final design of crossing treatments based on feedback from the demonstration project.

## Next Steps

We welcome discussion about each demonstration project option. Once an option has been selected, we will begin with Phase 1 planning.

The schedule for Option 1 will largely depend on coordination with Pinellas County and City of Clearwater staff, availability of preliminary design plans, and the potential schedule of RRFB installation. The schedule for Option 2 would be dependent on partner availability to select a date, and provide feedback on temporary measures, but could be implemented within 2 months.

Following review and discussion with partner agencies a final plan with details on needed materials, volunteers and event logistics will be prepared.

Attachment:

Trail Crossing Assessment



Type Uncontrolled Intersection

◀ 1 of 2 Recommendations ▶

Input Parameters	Value	Intersection Characteristics	Yes	No
Speed Limit	40	Frequent at-grade transit?	<input type="radio"/>	<input checked="" type="radio"/>
Peak Hour Pedestrian Vol	15	Bicycle lanes?	<input type="radio"/>	<input checked="" type="radio"/>
Major Road Peak Hour Volume Total	650	Heavy bicycle traffic?	<input checked="" type="radio"/>	<input type="radio"/>
Major Road Peak Hour Vol Dir 1	300	Major/minor road intersection?	<input type="radio"/>	<input checked="" type="radio"/>
Major Road Peak Hour Vol Dir 2	350	Midblock/off-set intersection?	<input checked="" type="radio"/>	<input type="radio"/>
Avg Pedestrian Walking Speed	3	Heavy truck traffic?	<input type="radio"/>	<input checked="" type="radio"/>
15th Percentile Crossing Speed	3	Existing infrastructure limit treatments?	<input type="radio"/>	<input checked="" type="radio"/>
Ped start-up/end clearance time	5	On-street parking?	<input type="radio"/>	<input checked="" type="radio"/>
Pedestrian Crossing Distance	20	Downtown area?	<input type="radio"/>	<input checked="" type="radio"/>
1st Half Crossing Distance	10	Built-up area of an isolated community?	<input type="radio"/>	<input checked="" type="radio"/>
2nd Half Crossing Distance	10	Median refuge island?	<input type="radio"/>	<input checked="" type="radio"/>
Number of Lanes	2	Sufficient width for a median?	<input type="radio"/>	<input checked="" type="radio"/>
Actual Total Pedestrian Delay	0			
Expected Motorist Compliance	Moderate			

## Overhead Flashing Beacon or In-Pavement Flashers

TREATMENT IDENTIFICATION MATRIX FOR UNCONTROLLED LOCATIONS			
PEDESTRIAN LEVEL OF SERVICE	EXPECTED MOTORIST COMPLIANCE		
	LOW (or Speed > 35 MPH)	MODERATE	HIGH
LOS A-D (average delay up to 30 seconds)	<b>LEVEL 3</b> 2 Lane Road: In-Pavement Flashers, Overhead Flashing Beacons Multi-Lane Road: RRFB Plus LEVELS 1 and 2	<b>LEVEL 2</b> Curb Extensions, Bus Bulb, Reduced Curb Radii, Staggered Pedestrian Refuge Plus LEVEL 1	<b>LEVEL 1</b> High Visibility Crosswalk Markings, Advanced Yield Lines, Advance Signage
LOS E-F (average delay greater than 30 seconds)	<b>LEVEL 4</b> PHB*, RRFB, or Direct Pedestrians to Nearest Safe Crossing Plus LEVELS 1, 2, and 3	<b>LEVEL 3</b> 2 Lane Road: In-Pavement Flashers, Overhead Flashing Beacons Multi-Lane Road: RRFB Plus LEVELS 1 and 2	<b>LEVEL 2</b> Curb Extensions, Bus Bulb, Reduced Curb Radii, Staggered Pedestrian Refuge Plus LEVEL 1

Signalized or Unsignalized Crossing?	Unsignalized Crossing
Pedestrian LOS	F
Candidate Pedestrian Treatment Identified	<b>Overhead Flashing Beacon or In-Pavement Flashers</b>
Candidate for Median Refuge Island?	NO
Candidate for Road Diet?	NO
Other Treatments for Consideration**	RRFB
Paired Treatments for Consideration**	Curb Extensions, Bus Bulb, Reduced Curb Radii, Staggered Pedestrian Refuge, High Visibility Crosswalk Markings, Advance Yield Lines, Advance signage



# Memorandum

Date: February 8, 2021

To: Sarah Caper, Forward Pinellas

From: Kathrin Tellez, Fehr & Peers

**Subject: Safe Streets Pinellas Alt Route 19 at Curlew Road Near-Miss Analysis**

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## Introduction

This memorandum presents the results of a near-miss analysis conducted for the intersection of Alt Route 19 at Curlew Road in Dunedin. Near misses are defined as potentially high-risk interactions between roadway users that did not result in a crash. Combined with collision data, near-miss information can provide additional insights in understanding intersection safety concerns and identifying countermeasure strategies that not only address the observed collision causes, but underlying causes. The near-miss analysis was conducted as part of the Safe Streets Pinellas Vision Zero effort to provide proof of concept for near-miss technology, as well as help inform safety countermeasures that could be implemented at the intersection.

## Existing Conditions

Alt Route 19 (also known as State Route 595) is a two-lane undivided highway with a posted speed limit of 40 miles per hour. There are bicycle lanes in both directions on Alt Route 19. Daily traffic volumes on this roadway are approximately 21,500 south of Curlew Road, and 16,000 north of Curlew Road. The Fred Marquis Pinellas Trail parallels Alt Route 19. This trail connects to the larger Pinellas Trail Loop and connects the area to Pasco County in the north as well as to the southern parts of Pinellas County.

Curlew Road is a two-lane divided highway with a center left-turn lane with a posted speed limit of 35 miles per hour. At the approach to Alt Route 19, a transition starts for westbound traffic to add a second travel lane. To the west of Alt Route 19, Curlew Road continues as Causeway Boulevard, a four-lane divided roadway with added turn lanes at intersections and a landscaped median. Typical daily traffic volumes on Curlew Road are approximately 14,200, and on Causeway Boulevard, daily volumes are approximately 10,000. Vehicle volumes are slightly lower on Saturdays and slightly higher on Sundays as compared to weekdays.

Recent bicycle/pedestrian counts collected at the intersection, which includes the Fred Marquis Pinellas Trail, indicate that based on 8-hours of data collection, at least 700 bicyclists and pedestrian cross the intersection on a weekday, 950 on a Saturday and 1,400 on a Sunday. This bicycle / pedestrian data was collected prior to the COVID-19 stay at home orders. Trail counts (permanent trail count station is located about 3/4<sup>th</sup> of a mile south of intersection on Alt Route 19 at Michigan Boulevard) from August 2020 show about 1,400 bicyclist and pedestrian crossings on weekends, and between 550 to 1,000 bicyclist and pedestrian crossings on weekdays, with lower volumes during periods of inclement weather.

The intersection of Alt Route 19 at Curlew Road is signalized, with the northbound, eastbound and westbound left-turns operating with permitted/protected phasing. To improve safety for Fred Marquis Pinellas Trail users, the southbound left-turn movement operates with protected phasing only, meaning that the left-turn movement does not operate concurrently with the trail crossing. There are also blank out “no right-turn arrow” signs for both the northbound and eastbound right-turn movement.

On average, there are between 30 and 45 reported collisions at the intersection each year, with five to six collisions per year resulting in severe injuries. Feedback from the community related to transportation safety at the intersection are mainly on the theme of bicyclist and pedestrian conflicts with people who drive, including:

- We need an overpass at this intersection for pedestrians and bicycles
- We need to move stop bars back, improve crosswalk visibility, provide pedestrian scale lighting and restrict right on red for all four approaches
- Drivers continue to turn despite no turn on red signal, placing trail users in danger. Maybe if flashing red lights were added it would help
- Westbound Curlew drivers frequently make right turns on red at Alt 19 northbound. Propose a lighted "no turn" sign similar to the one for North Bound Alt 19 and eastbound Curlew. The failure of drivers to obey the No Right on Red sign places users of the Pinellas trail at risk.
- The intersection of Curlew and the Causeway is highly trafficked and dangerous when crossing in any direction. Due to the Pinellas Trail crossing here as well the existing crosswalk system just isn't enough to leave pedestrians feeling safe when crossing
- Intersection is EXTREMELY busy with traffic coming from all four directions, and bike/ped traffic on the Pinellas Trail as well as the Honeymoon Island Trail spur.

Existing collision data was reviewed for the intersection, representing all reported collisions at or within 50-feet of the intersection between 2015 and September 2020 (data available as of November 2, 2020). Not all collisions that occur within the intersection influence area (can be several hundred feet from the intersection) are included in the summary tables below as the near-miss analysis only includes potential collisions within the physical bounds of the intersection. This may result in the numbers reported below not matching the number of collisions at the intersection reported in other documents.

During this time period, a total of 88 collisions were reported at the intersection, including four that resulted in severe or incapacitating injuries, as shown on **Table 1**, with a collision diagram shown on **Figure 1**. Of the severe injuries, two were people riding motorcycles and two were people within a vehicle. Four collisions involved a person riding a bicycle, and one collision involved a person walking; injuries were not reported in those collisions. Collision types are presented in **Table 2**, which shows that rear-end collision are the most frequent collision types at the intersection (42 percent), followed by angle (14.8 percent), sideswipe (11.4 percent), and left-turn (10.2 percent). A rear-end collision is when the rear of one vehicle impacts the rear of another. An angle crash occurs when two vehicles impact at an angle – for example, the front of one vehicle impacts the side of another vehicle. Sideswipe collisions are when two vehicles traveling in the

same direction impact where the initial engagement does not overlap the corner of either vehicle. The impact swipes along the surface of the vehicle parallel to the direction of travel. Left-turn collision involve at least one vehicle turning left. In most instances, the other vehicle is traveling straight. **Table 3** presents contributing factors, which primarily include people driving in a negligent manner (41 percent), unknown or no information (28 percent), failing to yield right-of-way (10 percent), and following too closely (9 percent).

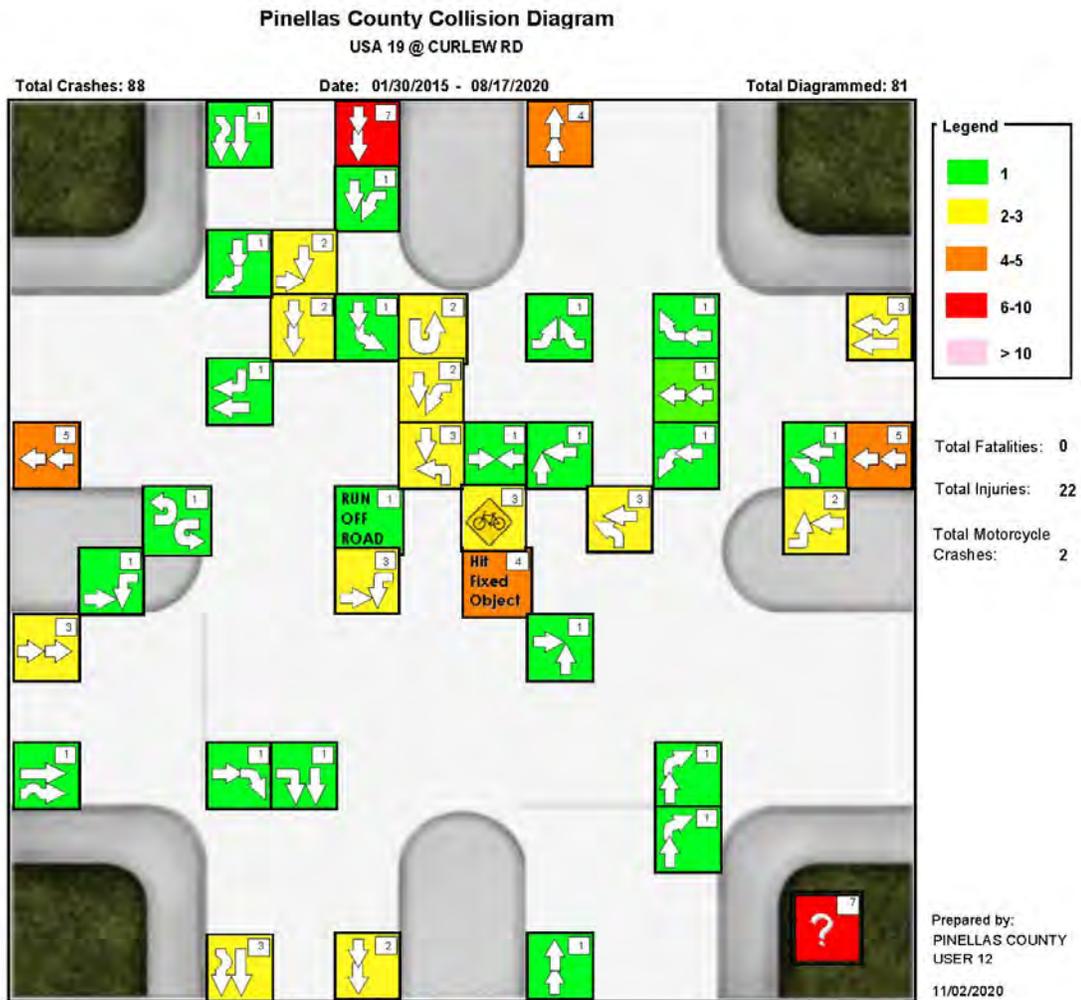


Figure 1 – Alt Route 19 at Curlew Road Collision Diagram (2015 – September 2020)

**Table 1. Alt Route 19 at Curlew Road Collision Summary (January 2015 – September 2020)**

Total	Fatal	Incapacitating	Possible Injury	Non-Incapacitating	None	Bicyclist	Pedestrian	Motorcycle
88	0	4	20	10	54	4	1	2 (both incapacitating)

Source: Fehr & Peers, Pinellas County CDMS.

**Table 2. Alt Route 19 at Curlew Road Collision Type Summary (January 2015 – September 2020)**

Angle	Bike	Head-on	Hit Fixed Object	Left-turn	Rear-end	Right-turn	Run off Road	Sideswipe	Single vehicle	Unknown	U-turn
13	3	3	4	9	37	2	1	10	1	2	3
14.8%	3.4%	3.4%	4.5%	10.2%	42.0%	2.3%	1.1%	11.4%	1.1%	2.3%	3.4%

**Table 3. Alt Route 19 at Curlew Road Collision Contributing Factor Summary (January 2015 – September 2020)**

Disregard Signs	Failed to keep in lane	Failed to yield ROW	Followed too Closely	Improper Backing	Improper Turning	Operated Vehicle in Negligent Manner	Run Off Road	Ran Red Light	Other	None	Unknown
1	2	9	8	1	1	36	1	4	5	13	7
1.1%	2.3%	10.2%	9.1%	1.1%	1.1%	40.9%	1.1%	4.5%	5.7%	14.8%	8.0%

Source: Fehr & Peers, Pinellas County CDMS.

While the collision data provides useful information related to the types of collisions that are occurring at the intersection, over 25 percent of reported collisions do not have information related to factors that contributed to the collision, and over 40 percent of collisions had driver behavior as a contributing factor. The near-miss data provides an opportunity to determine if there are more nuanced casual factors that could help inform intersection countermeasures.

## Near Miss Analysis

To better inform the types of safety improvements that could be implemented at the intersection, a near-miss technology vendor was retained to collect and evaluate high definition video of the intersection to identify specific types of near-misses that are occurring. The firm [Street Simplified](#) collected video count data at the intersection over an approximately 4-day period in August 2020, including Saturday, Sunday and Monday operations. In total, the interactions between 91,900 people driving vehicles and 3,800 people walking and bicycling was captured. An additional 24-hours of weekday data was collected in October 2020, which captured the interaction between 28,2300 people driving vehicles and 880 people walking and bicycling. Between the August and October data collection windows, cycle lengths at the intersection were reduced by about 25 percent.

In addition to capturing the multi-modal count of each roadway user by movement, the automated video analytics catalog the speed of each roadway users, roadway user traveling through or across intersection when they do not have the right-of-way (red-light running), and every time two road users (bikes, pedestrians, or vehicles) cross paths (i.e., an interaction) and records the following information:

- Time between the arrival of both road users at a common point; this is referred to as Post Encroachment Time (PET)
- Speed of each road user
- Count of interactions
- Which road user arrived first
- Video of the interaction for further review

During August the data collection window, 360 people, representing about 0.75 percent of people driving through the intersection, were observed driving their vehicle through the intersection 10 or more miles in excess of the speed limit of 40 miles per hour on Alt Route 19 and 35 miles per hour on Curlew Road (with the southbound and westbound through movements accounting for the majority of speeding movements), 60 people who were driving ran the red light (0.07 percent of people driving), and 61 people who were bicycling or walking crossed when they did not have the crossing signal (1.6 percent of people walking or bicycling). Of the drivers whose vehicle was classified as running the red light, all vehicles were able to clear the intersection during the all-red phase. Many were traveling in excess of the posted speed limit. During the October data collection window, fewer people were observed driving through the intersection 10 or more miles in excess of the posted speed limit with 0.24 percent. The number of people driving, walking and bicycling who were classified as running the red light was similar to the August data collection period.

The PET value is an indicator of how close two roadway users were to occupying the same space at the same time. The smaller the PET value, the closer roadway users were to colliding. Within the observed data for Alt Route 19 at Curlew Road, the lowest PET value documented was 0.3 seconds for the data collection window. There were 3,003 roadway user interactions with an observed PET value between 0.3 and 5 seconds, or about 3.1 percent of roadway movements. A review of select videos with a PET value between 2 and 5 indicates that many of these

interactions were within expected gap acceptance given the movement, and that interactions with a PET of less than 2 were more problematic. Interactions with a PET less than 2 represent about 0.42 percent of travel through the intersection. The movement and frequency associated with the interactions where the PET is less than 2 is presented in **Table 4**. **Figures 2 through 4** highlight some of the movement trajectories for movements with the highest potential for near-miss interactions to result in a collision. The data in Table 4 also notes if the roadway user was a person driving a vehicle or a vulnerable roadway user (for this analysis, vulnerable roadway user only includes people who walk or bicycle as the technology was not able to consistently identify people riding motorcycles), as vulnerable roadway users are more likely suffer severe or fatal injuries if involved in a collision with a vehicle.

When reviewing the data in this table it is important to keep in mind the order of roadway user arrival. Take for example the interaction with the highest number of near misses, the southbound through movement and the opposing northbound left (107 interactions). As the southbound through movement occurred first and the northbound left-occurred second, most of these near-misses were left-turning vehicles waiting for a gap in traffic and turning after the opposing through movements cleared the intersection and created a gap. This is a similar circumstance for the other interactions where the through movement precedes the left-turn movement. No countermeasures were identified for these near misses.

For this same movement pair (southbound through and northbound left), there were 16 instances when the northbound left-turn movement was the first motion, and the southbound through was the second motion, meaning that a through vehicle almost collided with a left-turning vehicle. Should a collision occur, the average vehicle speed of 40 miles per hour for the vehicles making the southbound through movement indicates that there is a high likelihood for the collision to result in a severe injury or fatality for vehicle occupants. This is similar for the eastbound and westbound lefts. Since the southbound left-turn phase is protected, no vehicle-vehicle near misses were reported. There was a vehicle-vulnerable roadway user near-miss; however, in that instance, the vulnerable roadway user started crossing behind the vehicle and was not at risk for being struck.

Comparing the location of actual collisions to the location of near-misses, nine of the reported collisions involved a permitted left-turn movement and a through movement, meaning that the near-miss analysis is reflective of observed collision data. For collisions involving permissive left-turn movements, no severe or fatal injuries occurred. Other observed near-misses correlate to angle collisions, especially in the southeast and southwest corners of the intersection.

Comparison of the interactions between the August 2020 and October 2020 with problematic PETs shows the same top-three movement conflicts as presented in Table 4. Numerous problematic interactions that were observed August 2020 were not observed in October 2020. This is likely due to the smaller sample size in October versus a change in behavior as a result of the signal timing change. Additionally, as the October data was reflective of weekday conditions and August data was primarily reflective of weekend conditions, there could also be differences in weekday and weekend travel patterns, like more non-recurring trips through the intersection on weekends that may not be as familiar with intersection operations, and less congestion that could encourage higher travel speeds on weekends. Although the length of the traffic signal cycle was reduced between the August and October data collection periods, it is difficult to draw any conclusions about the effect of that change. For future studies where calculating effect of the change is desired, it is recommended that multiple days of data be collected and that data is collected on the similar days of the week (compare weekday conditions to weekday conditions).

**Table 4. Alt Route 19 at Curlew Road Near-Miss Interaction Summary – PET < 2 seconds (Various Days in August 2020)**

Count of Interaction	Motion 1		Motion 2		Average PET	Lowest PET	Average Speed Motion 1	Average Speed Motion 2
	Movement	Mode	Movement	Mode				
107	Bayshore Blvd (SB)-Through	Vehicle	Bayshore Blvd (NB)-Left	Vehicle	1.57	0.30	35.0	14.4
83	Causeway Blvd (EB)-Through	Vehicle	Curlew Rd (WB)-Left	Vehicle	1.52	0.50	27.9	14.2
51	Curlew Rd (WB)-Through	Vehicle	Causeway Blvd (EB)-Left	Vehicle	1.50	0.90	32.0	14.5
19	Bayshore Blvd (NB)-Right	Vehicle	Causeway Blvd (EB)-Through	Vehicle	1.54	0.60	17.3	30.6
16	Bayshore Blvd (NB)-Left	Vehicle	Bayshore Blvd (SB)-Through	Vehicle	1.56	0.50	16.2	40.4
14	Causeway Blvd (EB)-Left	Vehicle	Curlew Rd (WB)-Through	Vehicle	1.72	1.20	16.2	36.2
14	Curlew Rd (WB)-Left	Vehicle	Causeway Blvd (EB)-Through	Vehicle	1.73	0.80	15.8	31.9
13	Bayshore Blvd (NB)-Right	Vehicle	Bayshore Blvd (SB)-Left	Vehicle	1.79	1.10	17.8	20.0
10	Curlew Rd (WB)-Right	Vehicle	Causeway Blvd (EB)-Left	Vehicle	1.62	0.90	15.3	17.4
9	Bayshore Blvd (NB)-Right	Vehicle	East Crosswalk	Vulnerable <sup>1</sup>	1.58	0.40	17.4	7.4
8	Causeway Blvd (EB)-Right	Vehicle	Curlew Rd (WB)-Left	Vehicle	1.78	1.60	15.9	20.1
8	Causeway Blvd (EB)-Through	Vehicle	East Crosswalk	Vulnerable	1.40	0.90	31.2	8.0
5	Bayshore Blvd (SB)-Right	Vehicle	Bayshore Blvd (NB)-Left	Vehicle	1.84	1.60	15.5	18.3
5	Curlew Rd (WB)-Left	Vehicle	South Crosswalk	Vulnerable	1.68	0.90	17.1	10.8

Count of Interaction	Motion 1		Motion 2		Average PET	Lowest PET	Average Speed Motion 1	Average Speed Motion 2
	Movement	Mode	Movement	Mode				
4	Bayshore Blvd (SB)-Left	Vehicle	East Crosswalk	Vulnerable	1.75	1.50	19.1	9.1
3	Bayshore Blvd (SB)-Right	Vehicle	Curlew Rd (WB)-Through	Vehicle	1.90	1.90	16.7	26.6
3	Causeway Blvd (EB)-Left	Vehicle	North Crosswalk	Vulnerable	1.83	1.70	18.2	8.6
2	Causeway Blvd (EB)-Right	Vehicle	Bayshore Blvd (SB)-Through	Vehicle	1.55	1.30	17.1	28.9
2	Causeway Blvd (EB)-Right	Vehicle	Curlew Rd (WB)-Left	Vulnerable	1.20	0.60	14.3	12.7
2	Curlew Rd (WB)-Right	Vehicle	Bayshore Blvd (NB)-Through	Vehicle	1.35	1.20	18.8	24.9
2	Curlew Rd (WB)-Through	Vehicle	East Crosswalk	Vulnerable	1.70	1.40	43.5	10.3
1	Bayshore Blvd (NB)-Left	Vehicle	South Crosswalk	Vehicle	1.20	1.20	19.5	7.1
1	Bayshore Blvd (NB)-Through	Vehicle	North Crosswalk	Vulnerable	1.90	1.90	36.0	10.5
1	Causeway Blvd (EB)-Through	Vehicle	Bayshore Blvd (SB)-Through	Vehicle	2.00	2.00	24.6	13.7
1	East Crosswalk	Vulnerable	Bayshore Blvd (NB)-Right	Vehicle	2.00	2.00	15.0	18.1
1	Curlew Rd (WB)-Right	Vehicle	North Crosswalk	Vulnerable	2.00	2.00	16.5	7.3
1	Curlew Rd (WB)-Through	Vehicle	Bayshore Blvd (NB)-Through	Vulnerable	0.50	0.50	31.5	9.9

Note: 1. For this analysis, vulnerable roadway user only includes people who walk or bicycle  
 Source: Fehr & Peers, Street Simplified.



Figure 2 All Near Misses with PET < 2.0 (August 23 and 24)



Figure 3 Northbound Right-Turn Near Misses with PET < 2.0 (August 23 and 24)



**Figure 4 Eastbound Right-Turn Near Misses with PET < 2.0 (August 23 and 24)**

Based on our review of the reported collision data, feedback from the public and near-miss analysis, we offer the following key findings and recommendations:

- Long cycle lengths may be a contributing factor to people driving, people walking and people bicycling running red lights. Consider reducing cycle length (In October 2020, the County reduced average cycle lengths by approximately 24 percent, reducing delay for people walking or bicycling, as well as for many for vehicle movements).
- Permitted left-turn movement conflicts with opposing through movements is one of the most prevalent near-miss interactions and represents about 10 percent of collisions. Consider eliminating permitted phasing, especially during off-peak hours, when bicycle and pedestrian volumes are the highest, and at night when the added capacity of the permitted-protected phasing is not needed, and sight distance can be limited.
- Northbound right-turn vehicles turning in front of eastbound through vehicles and southbound left-turn vehicles is also a prevalent near-miss. Given the northbound right-turn prohibitions during portions of the northbound through green phase, people who drive may be accepting smaller gaps to complete the northbound right-turn movement. Consider adding a northbound right-turn overlap that runs concurrent with the westbound left-turn movement (westbound U-turn movements are already prohibited).
- Vehicles traveling Westbound on Curlew Road and Southbound on Bayshore Boulevard are five times more likely to be traveling more than 10 miles per hour over the speed limit as they travel through the intersection than the northbound or eastbound through movements. There are a variety of contributing factors, including the distance from other signalized intersections and the widening of Curlew Road to provide two westbound travel lanes about 900 feet east of the intersection. Consider the installation of advanced signage alerting people who drive that a signalized intersection is ahead, or solar powered speed feedback signs to alert people who drive that they are traveling in excessive of the posted speed limit.

This concludes our near-miss assessment of the Alt Route 19 at Curlew Road intersection. Please contact Kathrin Tellez at (321) 754-9902 if you have questions.



# Memorandum

Date: July 23, 2020

To: Sarah Caper, Forward Pinellas

From: Kathrin Tellez, Fehr & Peers

**Subject: Safe Streets Pinellas Alt Route 19 at Curlew Road Demonstration Project Concept**

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## Introduction

Up to four demonstration projects are scheduled to be developed and implemented as part of Safe Streets Pinellas. The goal of these demonstration projects is to build interest around Vision Zero by showcasing how different transportation safety projects and transportation safety campaigns can be implemented in Pinellas County, and to test potential countermeasures that could be included in the Vision Zero Action Plan. The nature of the demonstration projects will be varied and incorporate a range of elements.

Discussions with the project Task Force, Forward Pinellas staff, and FDOT staff, as well as feedback from the community, led to interest in conducting a near miss assessment of the intersection of Alt Route 19 at Curlew Road in Dunedin, which also includes a trail crossing of the Fred Marquis Pinellas Trail. Although this intersection is not on the draft High Injury Network developed as part of the Safe Streets Pinellas Project, there are 5 to 6 collisions at the intersection each year that result in severe injuries and multiple reports of near-miss collisions involving vulnerable roadway users.

FDOT previously evaluated the provision of an exclusive pedestrian phase at this intersection, and based on the level of vehicle, bicycle and pedestrian volumes, as well as the intersection crossing patterns, FDOT concluded that a pedestrian only phase would not be the most effective treatment at the intersection to improve safety and that other treatments would be evaluated.

The purpose of this memo is to outline steps that could be taken as part of a Safe Street Pinellas Demonstration Project to identify other improvements that could be implemented as well as pilot the use of near miss technology in the County to better identify safety strategies as specific locations. The following describes the existing conditions at the intersection, and outlines the steps that would be taken to conduct the near miss analysis and conduct additional analysis to identify a range of safety improvements, and assess the operational effects of those potential counter measures on overall intersection operations.

## Existing Conditions

Alt Route 19 (also known as State Route 595) is a two-lane undivided highway with a posted speed limit of 40 miles per hour. There are bicycle lanes in both directions on Alt Route 19. Daily traffic volumes on this roadway are approximately 21,500 south of Curlew Road, and 16,000 north of Curlew Road.

Curlew Road is a two lane divided highway with a center left-turn lane. At the approach to Alt Route 19, a transition starts for westbound traffic to add a second travel lane. To the west of Alt Route 19, Curlew Road continues as Causeway Boulevard, a four-lane divided roadway with turn-pockets at intersections and a landscaped median. Typical daily traffic volumes on Curlew Road are approximately 14,200, and on Causeway Boulevard, daily volumes are approximately 10,000.

Recent bicycle/pedestrian counts collected at the intersection, which includes the Fred Marquis Pinellas Trail, indicate that based on 8-hours of data collection, at least 700 bicyclists and pedestrian cross the intersection on a weekday, 950 on a Saturday and 1,400 on a Sunday. This data was collected prior to the COVID-19 stay at home orders. During the stay at home period, trail use increased in the Dunedin area by over 100 percent.

The intersection of Alt Route 19 at Curlew Road is signalized, with the northbound, eastbound and westbound left-turns operating with permitted/protected phasing. The southbound left-turn movement operates with protected phasing only. There are also blank out "no right-turn arrow" signs for the both the northbound and eastbound right-turn movement.

On average, there are between 30 and 45 reported collisions at the intersection each year, with five to six collisions per year resulting in severe injuries. Feedback from the community related to transportation safety at the intersection are mainly on the theme of bicyclist and pedestrian conflicts with drivers, including:

- We need an overpass at this intersection for pedestrians and bicycles
- We need to move stop bars back, improve crosswalk visibility, provide pedestrian scale lighting and restrict right on red for all four approaches
- Drivers continue to turn despite no turn on red Signal, placing trail users in danger. Maybe if flashing red lights were added it would help
- West bound Curlew drivers frequently make right turns on red at Alt 19 northbound. Propose a lighted "no turn" sign similar to the one for North Bound Alt 19 and eastbound Curlew. The failure of drivers to obey the No Right on Red sign places users of the Pinellas trail at risk.
- The intersection of Curlew and the Causeway is highly trafficked and dangerous when crossing in any direction. Due to the Pinellas Trail crossing here as well the existing crosswalk system just isn't enough to leave pedestrians feeling safe when crossing
- Intersection is EXTREMELY busy with traffic coming from all four directions, and bike/ped traffic on the Pinellas Trail as well as the Honeymoon Island Trail spur.

Preliminary analysis was conducted based on traffic volumes collected by FDOT in February/ March 2020, including bicycle, pedestrian and vehicle volumes through the intersection. Based on an initial review of the data, Sunday afternoon is when there are the highest levels of bicycle and pedestrian travel through the intersection. During the Sunday peak hour, the intersection operates at a high LOS D/low LOS E for vehicles, mostly due to long cycle lengths. Implementing a leading pedestrian interval, permanent prohibition of right-turns on red or changing signal phasing to convert one or more protected-permitted left-turns to protected would increase average intersection delay, but could yield safety benefits to other roadway users.

## Near Miss Analysis

To better inform the types of safety improvements that could be implemented at the intersection, a near miss technology vendor will be retained to collect and evaluate high definition video of the intersection to identify specific types of near misses that are occurring such that appropriate countermeasures can be identified. The firm [Street Simplified](#) has been identified to collect video count data at the intersection for a 48-hour period to include a weekday and a weekend day, and employ their suite of safety analytics to identify potential near miss collisions, red-light running, speeding, and bicycle/pedestrian interactions. Motorcyclists and other roadway users (like scooters and golf-carts) would also be accounted for in the analysis. These analytics are intended to provide insights about what intersection features are potentially contributing to collisions, and what countermeasures might be appropriate for deployment.

Based on the results of the near miss analytics, we will conduct a detailed operations analysis of the intersection based on the higher volume of the count data collected between the prior data collection effort in February/March 2020, and data collected during the near miss data collection reflecting a peak weekday hour and a peak weekend hour for both vehicles and pedestrians/bicyclists. It is expected that data collected in February/March 2020 could be more representative of typical conditions for vehicles, but July/August 2020 conditions could have higher levels of pedestrian and bicycle activity. We will provide a comparison of February/March and July/August vehicle and non-motorized counts for stakeholder buy-in prior to conducting detailed analysis. Based on the results of the near miss analysis and the intersection operations analysis, we will evaluate the effect of a range of potential counter measures both in terms of the expected safety benefit and their effect on intersection operations.

Based on the results of the assessment, we will develop two sets of countermeasure recommendations – the first would be strategies that could be implemented through signal timing and phasing adjustments such that they could be implemented immediately. The second would be longer-term improvements that may require some level of curb modification, restriping, or other reconfiguration of the intersection.

Should the signal timing and/or phasing adjustments be implemented within a two months of the completion of the assessment, we would then retain Street Simplified to conduct an after assessment to determine if the counter measures were effective in reducing the number of potential near-misses, and to assess if there were unintended consequences associated with the signal timing and/or phasing modification. This evaluation of near-miss technology is intended to serve as a proof-of-concept to deploy near miss technologies at a larger scale as part of the Safe Street Pinellas Action Plan implementation, and other safety related projects in Pinellas County.

## Next Steps

Our next steps are to authorize Street Simplified to commence with the data collection, such that the near miss analysis can be completed in combination with the detailed analysis of intersection operations. We expect that we will share the initial results of the near miss analysis with interested stakeholders as we conduct the operations analysis such that the evaluated countermeasures consider a wide range of potential improvements that are of interest to Forward Pinellas, FDOT and Pinellas County.

This completes our initial outline for the near miss demonstration project for Alt Route 19 at Curlew Road.



# Memorandum

Date: October 9, 2020

To: Sarah Caper, Forward Pinellas

From: Kathrin Tellez, Fehr & Peers  
Laura Lockwood-Herrscher, Patel, Greene, and Associates

**Subject: Safe Streets Pinellas  
1<sup>st</sup> Avenue S at 2<sup>nd</sup> Street Protected Intersection Demonstration  
Project Concept**

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## Introduction

Several demonstration projects will be developed and implemented as part of the Safe Streets Pinellas project. The goal of these demonstration projects is to build interest around Vision Zero by showcasing how transportation safety projects and transportation safety campaigns can be implemented in Pinellas County and to test safety countermeasures that may be included in the Vision Zero Action Plan. The nature of the demonstration projects is expected to vary and incorporate a range of elements. The concept, process followed, and intended performance measures for each demonstration will be documented in a series of memos and the final Action Plan.

## Project Context

The City of St. Petersburg has identified the intersection at 1<sup>st</sup> Avenue S and 2<sup>nd</sup> Street S as a location to test the effectiveness of protected intersection concepts, as the intersection incorporates an urban crossing of the Pinellas Trail and has a high volume of bicycle and pedestrian travel that conflicts with turning vehicles. In 2008, the extension of the Pinellas Trail into downtown St. Petersburg opened using a repurposed travel lane along the south side of 1<sup>st</sup> Avenue S and is Florida's first urban cycle track. This segment of the trail travels within an urban environment along a one-way street with on-street parking and dense intersection spacing. Collision history at this intersection is minimal, but as bicyclists and users of the trail have increased, the potential for additional conflicts with vehicular traffic is rising and numerous close calls have been observed at several intersections along 1<sup>st</sup> Avenue S. Safety improvements along the trail are under consideration by the City and protected intersection treatments at 5<sup>th</sup> Street S and 6<sup>th</sup> Street S have already been designed with initial concepts. A street level Google Maps image of the intersection is provided in Figure 1.



Figure 1

Source: [Google Maps](#)

Protected intersections improve safety for bicyclists and pedestrians as they cross intersections. Corner islands, curb extensions, and colored paint are used to delineate the bicycle path across an intersection, parallel to the crosswalk and can allow a two-stage left turn. Figure 2 is an example of a protected intersection.



Figure 2

Source: [John Greenfield](#)

## Approach

This demonstration project is intended to help inform City design standards for permanent protected intersections, and provide proof of concept to City staff, decision makers and the public. It will also serve as an example for other communities in Pinellas County. The demonstration project would use nonpermanent materials to install protected crossing elements at the southeast quadrant of the intersection at the location of the Pinellas Trail, and would not change the existing curb line.

Elements are planned to include:

- Physical barriers consisting of temporary curbing (Tuff curb), flexisticks, delineator posts and other approved materials
- Shape, size, and location of curb extensions and corner refuge islands
- Painted elements, such as forward stop bars and colored paint for the crossings
- Signal timing modifications, such as leading bicycle intervals
- Relocation of existing bicycle signal

Several meetings have been held amongst Forward Pinellas Staff, City transportation and engineering staff, and staff from the Safe Streets Pinellas consultant team to further develop the design concept, materials to be used, and duration of the temporary installation. Forward Pinellas and the consultant team will be responsible for developing scaled concept plans with materials specifications. City of St. Pete staff will be responsible for signing and sealing (if needed) the concept plan into a construction document and coordinating with other City departments and/or a contractor to install the demonstration project elements.

## Performance Measures

Part of the demonstration project is the collection/documentation of before and after data to determine if the temporary design treatments yield the expected safety benefits. As part of the demonstration, we plan to collect and summarize the following information:

### Before Installation

- Review and summarize overall collision history (2015 – 2019)
- Observe driver yielding behavior
- Observe bicyclist and pedestrian behavior
- Conduct spot speed survey of drivers turning from eastbound 1<sup>st</sup> Avenue S to 2<sup>nd</sup> Street S

### Within Six-Weeks of Installation

- Observe driver yielding behavior
- Observe bicyclist and pedestrian behavior
- Conduct spot speed survey of drivers turning from eastbound 1<sup>st</sup> Avenue S to 2<sup>nd</sup> Street S
- Develop user-survey in collaboration with St. Pete and Forward Pinellas staff to solicit feedback from community

## Longer-Term Performance Measures

- Review and summarize overall collision history post installation
- Track/monitor frequency of repair and replacement of elements, including the curb elements, delineators, and pavement markings

It is expected that the consultant team will partner with St. Pete and Forward Pinellas Staff for the before and near-term documentation of performance measures, with St. Pete responsible for the documentation of longer-term performance measures, if that information is desired. The before and short-term after performance measures findings will be summarized in a technical memorandum and incorporated into the final Action Plan.

## Next Steps

A draft concept plan was presented and discussed on October 1, 2020. Based on that discussion and the feedback received, a refined concept plan is being prepared and will be provided to Forward Pinellas and St. Pete in advance of our next scheduled discussion on October 20, 2020. We expect one final round of revisions to finalize the concept plan and associated materials list.

The before installation performance measures documentation will be scheduled to occur within the next four weeks, with a goal for the consultant team to observe at least 100 interactions and obtain 100 vehicle speeds. A detailed data collection plan will be prepared and shared with St. Pete and Forward Pinellas prior to the commencement of data collection.

The after installation performance measures will be scheduled within six weeks of installation, provided installation occurs prior to December 31, 2020.



# Memorandum

Date: January 18, 2021

To: Sarah Caper, AICP, Forward Pinellas

From: Kathrin Tellez, AICP, PTP, Fehr & Peers  
Laura Herrscher, AICP, PGA

**Subject: Safe Streets Pinellas Demonstration Project  
1<sup>st</sup> Ave S @ 2<sup>nd</sup> St S – St. Petersburg**

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## Introduction

As part of the demonstration projects developed and implemented as part of the Safe Streets Pinellas project, the installation of a protected intersection concept was identified for the intersection at 1<sup>st</sup> Avenue S and 2<sup>nd</sup> Street S in St. Petersburg. The City of St. Petersburg plans to construct the improvement in the next few months. Details of the process and intersection treatment are documented in a technical memorandum dated October 9, 2020. The purpose of this memorandum is to document initial “Before” installation roadway user behavior to compare to “After” installation data.

## Data Collection

The Pinellas Trail operates as a two-way cycle track through the urban downtown area in St. Petersburg where there is a high volume of bicycle and pedestrian travel that conflicts with vehicles turning right from 1<sup>st</sup> Ave S to 2<sup>nd</sup> St S. On Saturday, November 7, 2020 data and observations were taken between 9 – 10:30 am at the southeast quadrant of the intersection of 1<sup>st</sup> Ave S and 2<sup>nd</sup> St S where the improvements will be installed. Data were subsequently collected during several weekday periods throughout December 2020 for a total of approximately three hours. A copy of the data collection instrument is attached.

Collecting this information before the improvement is constructed will provide base level data to compare against after the improvement has been open for use. During the data collection windows, approximately 300 vulnerable roadway users were observed crossing the intersection, and 95 people driving vehicles were observed making the eastbound right-turn. Several near misses were also observed. These are defined as an incident that could have resulted in a collision, but one or more roadway users took evasive action.

Key observations include:

- People driving yielded to people walking and bicycling 92 percent of the time.
- More than half of pedestrian groups started crossing the intersection either on the walk countdown or during a do not walk phase (53 percent)
- About 30 percent of bicycling groups started crossing the intersection on red light
- The mode split between bicyclists and pedestrians is notably different on the weekend (64 percent bicycles) than on weekdays (15 percent bicycles)

### Vulnerable User Counts (on Pinellas Trail Crossing 2<sup>nd</sup> St S)

User Type	Count (Total)	Count (Weekend)	Count (Weekday)
Bicycle	153	144	10
Pedestrian	139	82	57
Scooter	10	8	2

### Crossings by Signal Phase – Total

Pedestrian Signal Phase	# Incidents (groups crossing)	Bicycle Signal Phase	# Incidents (groups crossing)
Walk	40	Green	44
Don't Walk	32	Red	20
Flashing/Countdown	14		

### Crossings by Signal Phase – Weekend

Pedestrian Signal Phase	# Incidents (groups crossing)	Bicycle Signal Phase	# Incidents (groups crossing)
Walk	19	Green	39
Don't Walk	20	Red	18
Flashing/Countdown	6		

### Crossings by Signal Phase – Weekday

Pedestrian Signal Phase	# Incidents (groups crossing)	Bicycle Signal Phase	# Incidents (groups crossing)
Walk	21	Green	5
Don't Walk	12	Red	2
Flashing/Countdown	8		

### Eastbound Right Turn Speed (1<sup>st</sup> Ave S to 2<sup>nd</sup> St S)

Characteristic	Speed (mph) - Total	Speed (mph) - Weekend	Speed (mph) - Weekday
Sample Size	95	35	60
Low Speed	5	14	5
High Speed	32	32	32
Mean Speed	17	21	16
50 <sup>th</sup> Percentile	16	19	14
85 <sup>th</sup> Percentile	23	28	19

### Vehicle Yield on Green to Bike/Peds Crossing

Yield	Total	Weekend	Weekday
Yes	44	7	37
No	4	1	3



### Summary of Conflicts/Near Misses

Trail User Mode	Mode in Conflict	Observation of Conflict
Bicycle	Vehicle	Very close call with a WB bicyclist and EB motor vehicle turning right. Signal was green for both, but driver failed to see bicyclist in the crosswalk. Both came to a complete stop facing each other in the crosswalk
Pedestrian	Vehicle	EB vehicle turning right on green signal stopped in crosswalk for 3 pedestrians
Bicycle and Scooter	Vehicle	2 bikes and 1 scooter crossing on red signal stopped midway in crosswalk when vehicle traveling NB on 2 <sup>nd</sup> St approached and had green signal (vehicle had right of way)
Bicycle	Pedestrian	Pedestrian traveling SB crossing 1 <sup>st</sup> Ave with “walk” signal (right of way) had near miss with bike traveling WB on trail with red signal. Bike swerved to miss pedestrian
Bicycle	Vehicle	Near miss for group of 3 bicyclists crossing on red signal with vehicle traveling SB on 2 <sup>nd</sup> St with green light
Pedestrian	Vehicle	Near miss for 2 pedestrians crossing on “don’t walk” signal with vehicle traveling NB on 2 <sup>nd</sup> St. Vehicle came to a halt and waited for them to finish crossing.
Bicycle	Vehicle	EB cyclist yielded to vehicle turning right on green (both had green)
Bicycle	Vehicle	2 bicyclists waited in crosswalk for SB vehicle with green signal to pass – close
Bicycle	Bus	Bus turning right on green signal did not yield to 6 bicyclists also with green signal
Pedestrian	Vehicle	2 EB pedestrians crossing against the signal almost hit by motorist
Vehicle	Vehicle	Near rear end collision related to first motorist yielding to trail user
Bicycle	Vehicle	Bicyclist crossing against the signal had to brake hard to avoid collision
Pedestrian	Vehicle	Motorist had to brake hard to avoid collision with pedestrian crossing against the signal

## Key Findings

The observations and data collection result in the following key-findings:

- Average vehicle speed through the intersection was 17 miles per hour, which is about the upper limit of survivability for a vulnerable roadway user who is hit by vehicle. Speed ranged from 5 to 32 miles per hour.
- Low compliance of vulnerable road users (VRUs) with bicycle and pedestrian signals
  - Compliance seemed to depend on whether the signal was red or already green upon arrival.
  - Only two instances of VRUs waiting for a green/walk signal were noted.
- Two incidents with bus:
  - Bus did not come to complete stop for red light, slowing to 14 mph, no VRUs present in crosswalk.
  - Bus did not yield to bicyclists using trail crossing when light was green for both vehicles and trail users. Bus slowed to 20 mph for turn.
  - Speed of buses observed turning were faster than one would have expected.
- Near misses:
  - Multiple near misses due to non-compliance of signals by VRUs
- Observed NB bicyclists using general use lanes and not complying with traffic signal.
  - One observation of a bicyclist having to stop in the middle of the intersection to avoid oncoming traffic from the opposite direction.

This completes our initial data collection summary. Please contact Kathrin Tellez at (321) 754-9902 if you have questions.







## Instructions to Record Data and Observations (Please read before going out into the field, and bring a copy)

Users of this survey instrument should have the ability to identify correct and incorrect behaviors of drivers, pedestrians, bicyclists and other roadway users. Basic knowledge and understanding of traffic laws pertaining to bicycle and pedestrians, vehicular traffic, traffic control devices, and general roadway safety are required. Information and observations should be recorded accurately and factually. Use the recommendations below as a guide to effectively collect data. See images on the following pages for guidance on where to stand and the focus of the observation efforts.

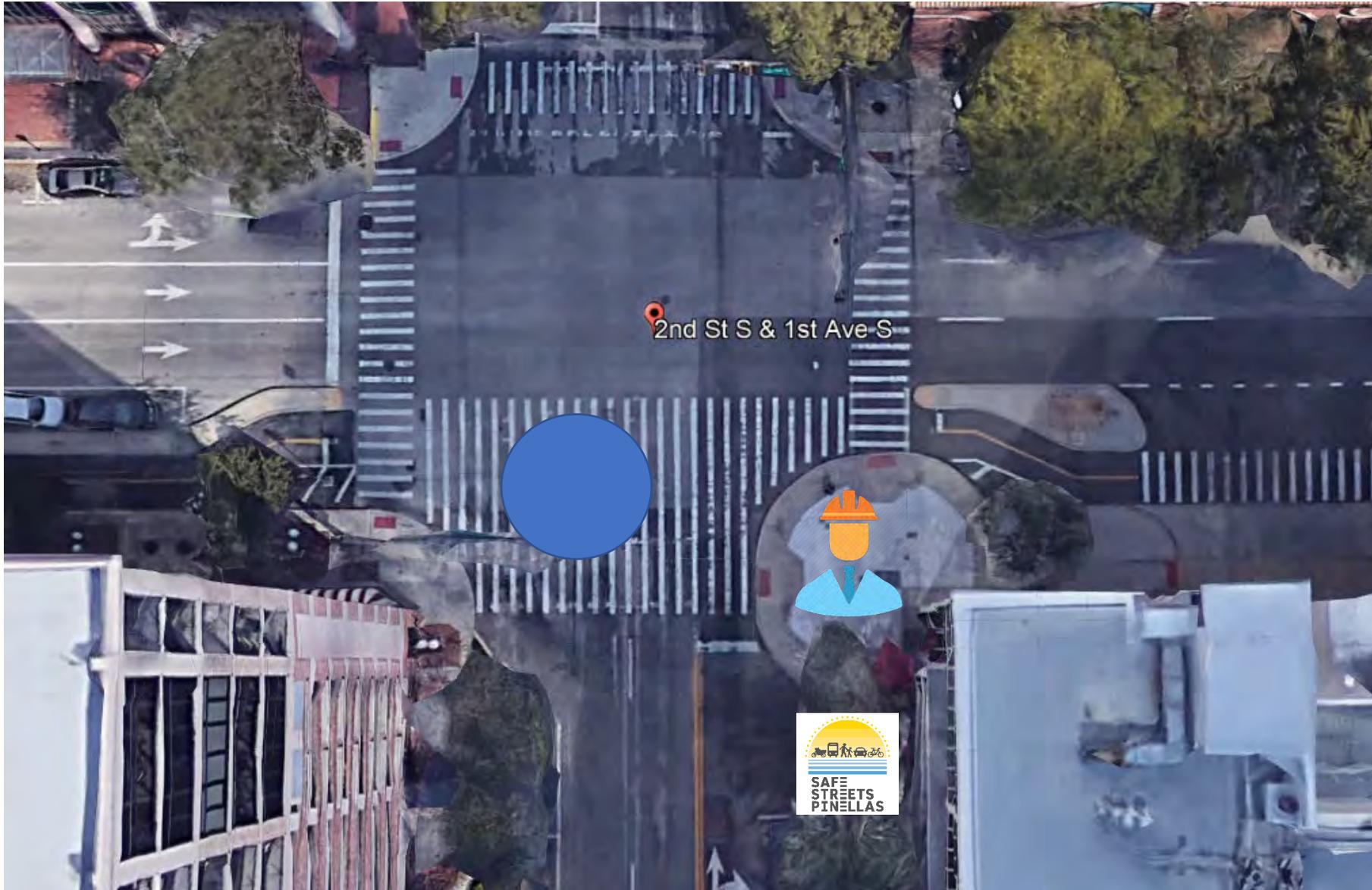
Column:

1. Vulnerable Roadway User – count of people using bicycles, people walking, people skateboarding, people using scooters, or people using other mobility devices. Count how many of each. P = Person Walking; B = Person Bicycling; SK = Person Skateboarding; SC = Person Scooting; O = Other, please note; for remainder of data collection element, please treat all persons using non-auto wheeled mobility devices except wheelchairs and strollers as bicycles. Treat all persons walking, persons in wheelchairs or persons in strollers as pedestrians.
2. Walk Sign On? – Y (yes) or N (no). The pedestrian phase at this intersection is set to recall, meaning that pedestrians do not have to push the button to activate the walk signal as the phase is automatically provided each cycle.
3. Did crossing start during Countdown Interval - Please note here if crossing started when the countdown timer was on. Please note if crossing was completed during the remaining crossing time.
4. Bike Signal On (WB/EB)? – Y (yes) or N (no). Westbound bicycles have a separate signal that is active with the east-west pedestrian phase as well as the eastbound vehicle/bicycle phase. For EB travel, note if signal was green.
5. Vehicle Only – Check this if this was a vehicle only event to document approximate speed drivers take the turn.
6. Driver Action – Note if the driver made a right-turn on red (RTOR), or if they had a green light to proceed.
7. If RTOR, complete stop behind stop bar – if the person driving made a right-turn on red, please note if the vehicle came to a full stop behind the stop bar. If not, please note in additional observations where the vehicle stopped if they stopped but not behind the stop bar.
8. Driver Proper Yield – Y (yes) or N (no) the driver yielded properly to the traffic control device and/or person in crosswalk. Did the driver come to a complete stop behind the stop bar? Did the driver give the right of way to the person in the crosswalk? Put NA if there was no interaction between the driver of a vehicle and other roadway user.
9. Vehicle Speed – If recording vehicle speeds using the speed gun, record approximate speed (mph) in this column when the vehicle is in the crosswalk (see blue area on attached maps). Should a collision occur, this would provide an approximation of how fast vehicles would be traveling at the point of impact. Take some sample measurements before formal data collection to identify best location in the field to collect speed data, as perpendicular readings may not be accurate. Aim at the center of the vehicle.
10. If there was a second vehicle following the first, note if the driver had to brake hard to avoid a collision. Otherwise, N/A. (EBR/EBT, if appropriate)
11. Conflict involving invasive action – was there a potential conflict or near-miss that required invasive action by any roadway user? Describe situation.
12. Additional observations – provide brief detail about user behavior. Include both positive and negative behaviors that may not have been covered by other data fields.

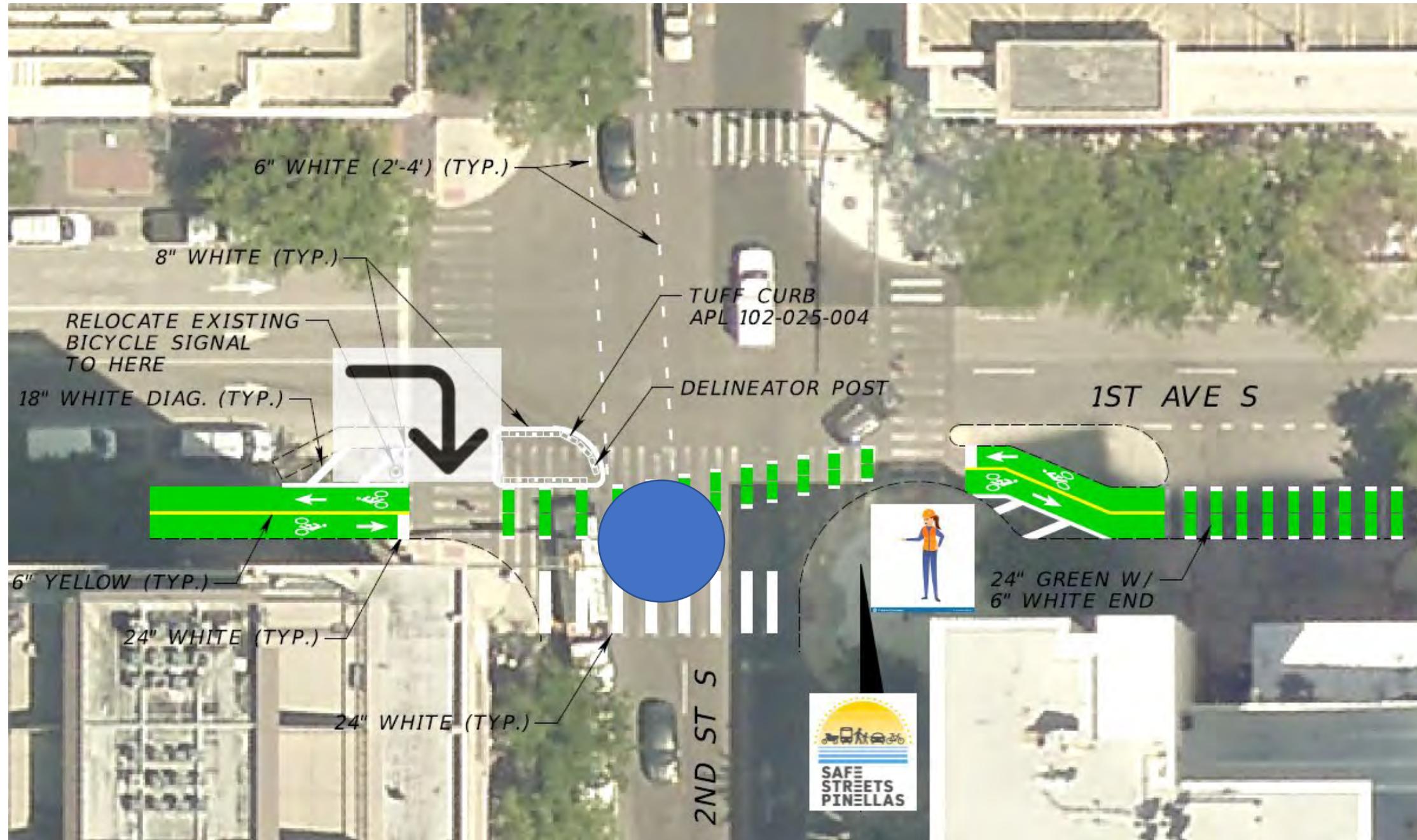
	Vulnerable Roadway User Type (P,B,SK,SC,O)	Walk sign on? (Y/N)	Did crossing start during countdown Interval (Y/N)	Bike Signal On (WB/EB)?	Veh. Only (EBR)	Driver Action (RTOR/Green)	If RTOR,, complete stop behind stop bar (Y/N)?	Driver Yield? (Y/N/NA)	Approx. Driving Speed (EBR)	Following Driver Brake Hard? (EB/EBR)	Conflict involving invasive action?	Additional Observations
1.	2 P	N				Green		Y	8	Y	Y	Ped crossing on red; driver stopped
2.	1 B		Y - WB			RTOR	Y	Y	6			
3.				X		Green	N/A	N/A	14			

It is recommended that the observer locate on the southeast corner of the intersection as the focus of the data collection effort is the eastbound right-turn movement with a primary focus on driver speeds across the crosswalk (see blue area) for right-turning vehicles, and overall roadway user behavior. There are bollards that could be used as informal seating (or bring a chair), or if you are lucky, you might snag the prime parking spot where the Safe Streets logo is placed (don't forget to pay for parking!) Please take some pictures to share, and bring business cards as people may stop and ask what you are doing. You can direct people to contact Cheryl Stacks at 727-892-5328 or [cheryl.stacks@stpete.org](mailto:cheryl.stacks@stpete.org) with questions. Please coordinate your data collection time periods with Cheryl so she can inform their Downtown Police Offices to the activity.

Before device installation configuration:



After device installation configuration:



# Engineering Counter- measure Toolbox

## Appendix

# D



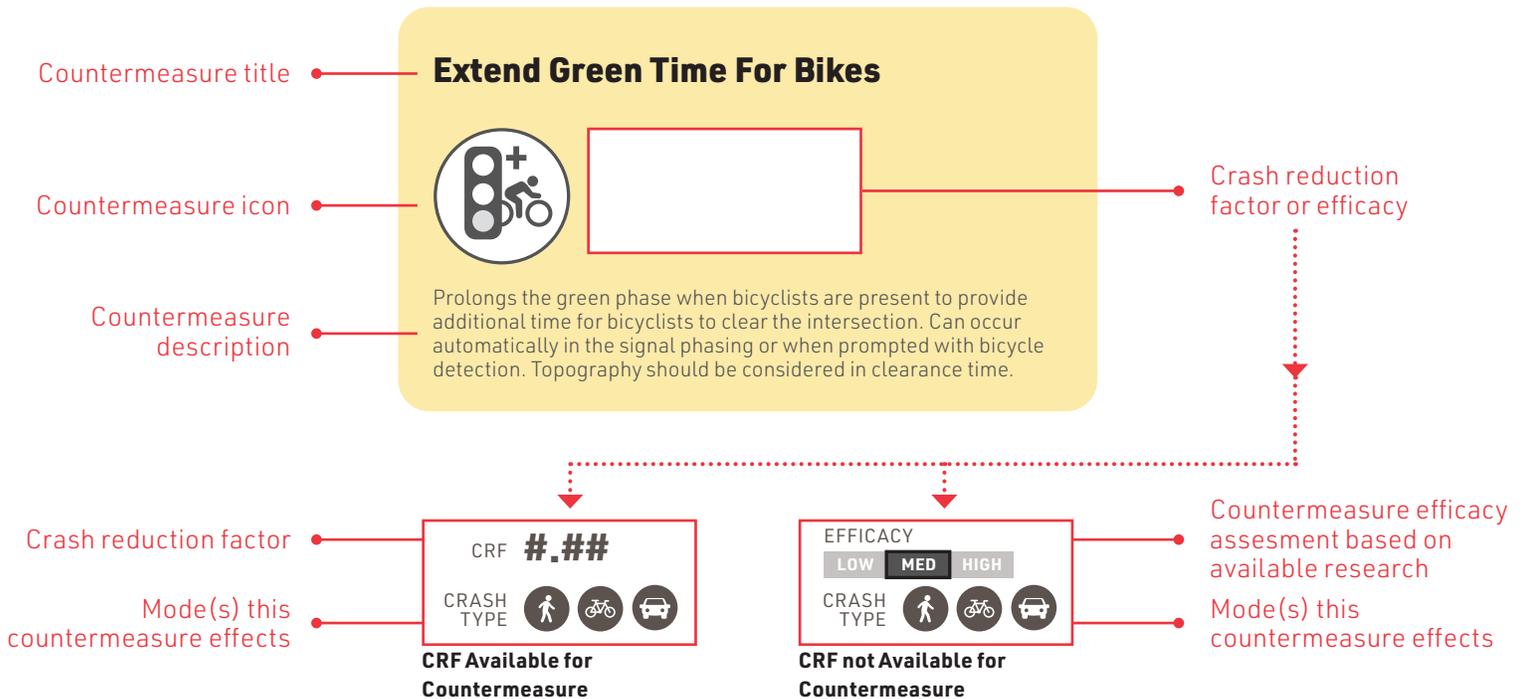


# Safety Countermeasures Toolbox

## This Toolbox Presents Safety Countermeasures Applicable in Different Roadway Contexts Across Pinellas County

Many of the countermeasures are FDOT-approved, with an associated **Crash Reduction Factor (CRF)** and crash type (i.e., all modes, bicycle and pedestrian crashes only, etc.) as documented by the Federal Highway Administration. The higher the CRF (1 being the highest), the greater the expected reduction in crashes. Countermeasures without a CRF are scored on a “low-medium-high” efficacy scale based on proven safety studies; otherwise, denoted as “N/A” when limited safety studies are available. The higher the efficacy rating, the greater the expected reduction in crashes. Crash Reduction Factors shown here represent an average reduction for comparison purposes. As CRFs can be context specific and new data is continually being added, the user should consult the FHWA’s Crash Modifications Factors Clearinghouse (<http://www.cmfclearinghouse.org/>) for the most current guidance and to identify other potential treatments that may not be documented here.

### What You’ll See Inside



#### Safety Efficacy Sources

- Application of Pedestrian Crossing Treatments for Streets and Highways, NCHRP, 2016.
- Development of Crash Modification Factors for Uncontrolled Pedestrian Crossing Treatments, NCHRP, 2017.
- Evaluation of Bicycle-Related Roadway Measures, Pedestrian and Bicycle Information Center, 2014.
- Evaluation of Pedestrian-Related Roadway Measures, Pedestrian and Bicycle Information Center, 2014.
- 2015 FDOT Highway Safety Manual Users Guide
- Highway Safety Manual, AASHTO
- USDOT FHWS Office of Safety

# Summary of Countermeasures

## A. Signal Timing & Phasing

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Additional Signal Heads  
Advanced Dilemma-Zone Detection  
Automatic Recall Signal Timing  
Extend Green Time For Bikes  
Extend Pedestrian Crossing Time  
Extend Yellow and All Red Time  
Flashing Yellow Turn Phase  
Green Wave  
Leading Pedestrian Interval  
New Traffic Signal  
Pedestrian Phase Recall  
Pedestrian Scramble  
Permissive Lefts To Protected  
Reduce Cycle Lengths  
Separate Right-Turn Phasing

## B. Intersection & Roadway Design

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Close Slip Lane  
Convert 2-Way Stop to All-Way Stop  
Lane Narrowing  
Multi-Lane Roundabout  
New Sidewalk  
No Passing Zone  
Partial Closure/Diverter  
Positive Left-Turn Off-Set  
Protected Intersection  
Raised Intersection  
Raised Median  
Realign Intersection to 90 Degrees  
Repurpose Extra Travel Lanes  
Road Diet  
Roundabout  
Speed Humps or Speed Tables  
Splitter Island  
Widen Shoulder  
Two-Stage Gap Acceptance

## C. Signs & Markings

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Advance Stop Bar  
Advance Warning Sign  
Advance Yield Markings  
Bicycles May Use Full Lane Sign  
No Right Turn On Red  
Parking Restrictions/Daylighting  
Speed Feedback Sign  
Time-Based Turn Restriction  
Turn Prohibition  
Variable Message Sign  
Wayfinding  
Yield To Pedestrians Sign

## D. Bikeway Design

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Bicycle Crossing (Solid Green Paint)  
Bicycle Ramps  
Bicycle Signal/Exclusive Bike Phase  
Bike Box  
Bike Detection

## D. Bikeway Design, Cont.

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Bike Friendly Drains  
Bicycle Path Or Trail  
Bike Lane  
Separated Bikeway  
Floating Transit Island  
Green Bike Lane Conflict Zone Markings  
Mixing Zone  
"On Roadway" Bicycle Sign  
Parking Buffer  
Shared Sidewalk Sign  
Signage and Striping in Support of Bicycle Boulevard  
Traffic Calming in Support of Bicycle Boulevard  
Trail Crossing  
Two-Stage Turn Queue Bike Box  
Widen Sidewalk

## E. Pedestrian Crossings

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ADA Ramps & Audible Push Button Upgrades  
Curb Extensions  
Extended Time Pushbutton  
High-Visibility Crosswalk  
Pedestrian Countdowns  
Pedestrian Detection  
Pedestrian Hybrid Beacon  
Pedestrian Lighting  
Pedestrian Median Barrier  
Pedestrian Refuge Island  
Raised Crosswalk  
Remove Crossing Prohibition  
Restripe Crosswalk  
Rectangular Rapid Flashing Beacon  
Straighten Crosswalks  
Upgrade Curb Ramp

## F. Other

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Access Management/Close Driveway  
Automated Speed Enforcement  
Context-Sensitive Speed Limits  
Curbside Management  
Development-Related ROW Improvements  
Far-Side Bus Stop  
Incident Management Protocols  
Intersection, Street-Scale Lighting  
Keep Roadway Clear Of Debris  
Speed Feedback Sign  
Targeted Enforcement  
Traffic Incident Management  
Remove Obstructions For Sightlines  
Variable Speed Limit

## G. Low-Cost & Quick-Build

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Hardened Centerline  
Left Turn Enhanced Daylighting/Slow Turn Wedge  
Paint and Plastic Curb Extension  
Paint and Plastic Median  
Paint and Plastic Mini Circle  
Paint and Plastic Pedestrian Refuge Area  
Paint and Plastic Separated Bikeway  
Traffic Diverter

# A. SIGNAL TIMING & PHASING

## Additional Signal Heads



CRF **0.15**  
 CRASH TYPE   

Additional signal heads allow drivers to anticipate signal changes farther away from intersections, decreasing the likelihood of driver error resulting in a collision.

## Advanced Dilemma-Zone Detection



CRF **0.39**  
 CRASH TYPE 

Enhances safety at signalized intersections by adjusting traffic signal timing on the fly to reduce the number of people driving that may have difficulty deciding whether to stop or proceed during a yellow phase. This may reduce rear-end crashes associated with unsafe stopping and angle crashes due to red-light running.

## Automatic Recall Signal Timing



EFFICACY  
**LOW** MED HIGH  
 CRASH TYPE   

Signals can be put in "recall" all the time or for key time periods of the day. The "walk" and/or corresponding green signal would be displayed every signal cycle without prompting by a person walking or from vehicle detection. This can ensure bicyclists get a green signal every cycle and discourages red-light running by people biking.

## Extend Green Time For Bikes



CRF **0.15**  
 CRASH TYPE   

Prolongs the green phase when bicyclists are present to provide additional time for bicyclists to clear the intersection. Can occur automatically in the signal phasing or when prompted with bicycle detection. Topography should be considered in clearance time.

## Extend Pedestrian Crossing Time



CRF **0.15**  
 CRASH TYPE   

Increases time for pedestrian walk phases, especially to accommodate vulnerable populations such as children and the elderly.

## Extend Yellow and All Red Time



CRF **0.15**  
 CRASH TYPE   

Extending yellow and all red time allows drivers and bicyclists to safely cross through a signalized intersection before conflicting traffic movements are permitted to enter the intersection.

## Flashing Yellow Turn Phase



CRF **N/A**  
 CRASH TYPE 

Flashing yellow turn arrow alerts drivers to proceed with caution and decide if there is a sufficient gap in oncoming traffic to safely make a turn. To be used only when a pedestrian walk phase is not called. Protected only phases should be used when pedestrians are present.

## Green Wave



CRF **0.15**  
 CRASH TYPE   

Occurs when a series of traffic signals are coordinated to allow for uninterrupted bicycle traffic flow through those intersections in at least one direction. Coordinating signals to allow for bicyclist progression gives bicyclists and pedestrians more time to safely cross through the 'green wave' intersections.

# A. SIGNAL TIMING & PHASING

## Leading Pedestrian Interval



CRF **0.15**  
 CRASH TYPE   

Gives people walking a head start, making them more visible to drivers turning right or left. "WALK" signal comes on a few seconds before the cars get their green light. May be used in combination with No Right Turn on Red restrictions.

## New Traffic Signal



CRF **0.25**  
 CRASH TYPE   

New traffic signals can help to organize travel of all modes at an intersection, limiting interactions between vehicles, pedestrians, and bicyclists with conflicting movements.

## Pedestrian Phase Recall



EFFICACY  
 LOW MED **HIGH**  
 CRASH TYPE 

Signals can be put in "recall" for key time periods of day such as peak business hours or school drop-off/pick-up times. During these periods the "WALK" signal would be displayed every signal cycle without prompting by a pedestrian push button.

## Pedestrian Scramble



CRF **0.15**  
 CRASH TYPE   

This is a form of pedestrian 'walk' phase at a signalized intersection in which all vehicular traffic is required to stop, allowing pedestrians to safely cross through the intersection in any direction, including diagonally, if marked and signed accordingly.

## Permissive Lefts to Protected



CRF **0.30-0.55**  
 CRASH TYPE   

Provides a protected green arrow phase for left turning vehicles while showing a red light for both on-coming traffic and parallel pedestrian crossings. Eliminates conflicts between pedestrians and left-turning vehicles.

## Reduce Cycle Lengths



CRF **0.15**  
 CRASH TYPE   

Traffic signal cycles should be kept short (preferably 90 seconds maximum) to reduce pedestrian delay. When delay is significant, pedestrians are more inclined to ignore signal indications.

## Separate Right-Turn Phasing



EFFICACY  
 LOW MED **HIGH**  
 CRASH TYPE   

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

## B. INTERSECTION & ROADWAY DESIGN

### Close Slip Lane



EFFICACY

LOW MED HIGH

CRASH TYPE   

Modifies the corner of an intersection to remove the sweeping right turn lane for vehicles. Results in shorter crossings for pedestrians, reduced speed for turning vehicles, better sight lines, and space for landscaping and other amenities.

### Convert 2-Way Stop to All-Way Stop



CRF **0.50**

CRASH TYPE   

Converting 2-way stops to all-way stops prevents motorists, bicyclists, and pedestrians from having to cross free-flowing lanes of traffic at a side-street stop-controlled intersection and reduces the risk of collision.

### Lane Narrowing



CRF **0.30**

CRASH TYPE   

A reduction in lane width produces a traffic calming effect by encouraging motorists to travel at slower speeds, lowering the risk of collision with bicyclists, pedestrians, and other motorists.

### Multi-Lane Roundabout



CRF **varies**

CRASH TYPE   

Similar to a single-lane roundabout but on a multi-lane road. Studies have shown total increases in collisions but decreases in collisions where someone is killed or seriously injured with multi-lane roundabouts.

### New Sidewalk

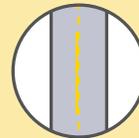


CRF **0.35**

CRASH TYPE  

Sidewalks and walkways are "pedestrian lanes" that provide people with space to travel within the public right-of-way that is separated from roadway vehicles. They are associated with reduced crashes where pedestrians were walking along the roadway.

### No Passing Zone



EFFICACY

LOW MED HIGH

CRASH TYPE 

Converting a passing zone (where a vehicle uses the opposing lane of traffic to pass another vehicle) to a no-passing zone may reduce head-on or run-off-the-road crashes.

### Partial Closure/Diverter



CRF **0.50**

CRASH TYPE   

A roadway treatment that restricts through vehicle movements using physical diversion while allowing bicyclists and pedestrians to proceed through an intersection in all directions.

### Positive Left-Turn Off-Set



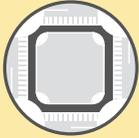
CRF **0.34**

CRASH TYPE 

Sifting left-turn lanes so they are not aligned directly across from the opposing left-turn lane and adjacent to the through travel lane can improve sight distance at intersections where permitted left-turn phasing is employed.

## B. INTERSECTION & ROADWAY DESIGN

### Protected Intersection



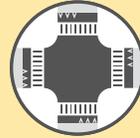
EFFICACY

LOW MED **HIGH**

CRASH TYPE   

Protected intersections use corner islands, curb extensions, and colored paint to delineate the bicycle path across an intersection and allow a two-stage left-turn for bicycles parallel to the crosswalk. Provides space for drivers to yield outside the travel lane.

### Raised Intersection



CRF **0.35**

CRASH TYPE  

Elevates the intersection to bring vehicles to the sidewalk level. Serves as a traffic calming measure by extending the sidewalk context across the road.

### Raised Median



CRF **0.25-0.50**

CRASH TYPE   

A concrete or landscaped area, between the two directions of travel. Reduces vehicular speeding and discourages risky turning movements.

### Realign Intersections to 90 Degrees



EFFICACY

**LOW** MED HIGH

CRASH TYPE   

By eliminating acute or obtuse angles between intersection roadways, intersection sight distance may be improved, allowing motorists to see pedestrians more easily.

### Repurpose Extra Travel Lanes



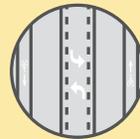
EFFICACY

LOW MED **HIGH**

CRASH TYPE   

Repurposing travel lanes at spot locations, such as extra receiving lanes at an intersection, is a strategy used to make space for other safety improvements such as, widening sidewalks, creating space for bicycle, pedestrian, or transit lanes, and other improvements.

### Road Diet



CRF **0.30**

CRASH TYPE   

Depending on the street, road diets may change the number of lanes, turn lanes, center turn lanes, bike lanes, parking lanes, and/or sidewalks. Road diets optimize street space to benefit all users by improving the safety and comfort of pedestrians and bicyclists, and reducing vehicle speeds and the potential for rear end collisions.

### Roundabout



CRF **varies**

CRASH TYPE   

Roundabouts are circular intersections designed to eliminate left turns by requiring traffic to travel in a counter-clockwise direction and exit to the right. Installed to manage vehicular speeds, reduce pedestrian exposure, improve safety at intersections through eliminating angle collisions, and help traffic flow more efficiently.

### Speed Humps or Speed Tables



EFFICACY

LOW MED **HIGH**

CRASH TYPE   

These traffic calming devices use vertical deflection to raise the entire wheelbase of a vehicle and encourage motorists to travel at slower speeds to avoid damage to the undercarriage of an automobile.

## B. INTERSECTION & ROADWAY DESIGN

### Splitter Island



CRF **0.25**

CRASH TYPE 

A raised area that separates the two directions of travel on the minor street approach at an unsignalized intersection or roundabout. Helps channelize traffic in opposing directions of travel. Typically installed at skewed intersections or where speeds on minor roads are high.

### Two-Stage Gap Acceptance



EFFICACY

LOW MED **HIGH**

CRASH TYPE 

Two-stage gap acceptance provides a refuge in the median for vehicles making a left turn onto a busy street in two stages. This design allows people driving to focus on finding a gap in traffic in one direction of travel instead of both.

### Widen Shoulder



CRF **0.30**

CRASH TYPE 

Widened shoulders create a separated space for bicyclists and also provide motor vehicle safety benefits, such as space for inoperable vehicles to pull out of the travel lane.

## C. SIGNS & MARKINGS

### Advance Stop Bar



CRF **0.15**  
 CRASH TYPE  

A stop bar placed 5 to 7 feet ahead of the crosswalk at stop signs and signals reduces instances of vehicles encroaching on the crosswalk.

### Advance Warning Sign



CRF **0.36**  
 CRASH TYPE   

A sign placed to warn a person driving of an upcoming curve, stop sign, traffic signal, roundabout, pedestrian crossing, or other potential point of conflict where a person driving may need to slow down or use caution. Signs can include flashing beacons to enhance awareness.

### Advance Yield Markings



CRF **0.25**  
 CRASH TYPE   

Yield lines are placed 20 to 50 feet in advance of pedestrian crossings to increase visibility of pedestrians. Can reduce the likelihood of a multiple-threat crash at unsignalized midblock crossings.

### Bicycles May Use Full Lane Sign



CRF **0.15**  
 CRASH TYPE   

A sign placed on roads with lanes that are too narrow to allow safe side-by-side passing to indicate that bicyclists may occupy the full lane. This discourages unsafe passing by motorists.

### No Right Turn On Red



EFFICACY  
 LOW MED **HIGH**  
 CRASH TYPE   

Can help prevent crashes between vehicles turning right on red from one street and through vehicles on the cross street, and crashes involving pedestrians. Should be considered where exclusive pedestrian "WALK" phases, LPIs, sight distance issues, or high pedestrian volumes are present.

### Parking Restrictions/Daylighting



EFFICACY  
 LOW MED **HIGH**  
 CRASH TYPE   

By restricting parking at curbs in front of intersection crosswalks, sight lines are cleared between pedestrian crossings and oncoming motorists, reducing the risk of collision.

### Speed Feedback Sign



CRF **0.30**  
 CRASH TYPE   

A roadway treatment that uses radar to alert drivers to their actual speed relative to the posted speed limit, encouraging drivers who exceed to the speed limit to slow down.

### Time-Based Turn Restriction



EFFICACY  
 LOW MED **HIGH**  
 CRASH TYPE   

Restricts left-turns or right-turns during certain time periods when there may be increased potential for conflict (e.g., peak periods, school hours).

## C. SIGNS & MARKINGS

### Turn Prohibition



EFFICACY

LOW **MED** HIGH

CRASH TYPE



Bans left or right turns at locations where a turning vehicle may conflict with pedestrians in the crosswalk or where opposing traffic volume is high. Reduces pedestrian interaction with vehicles when crossing. Important tool when road diets are infeasible and a grid network of streets is present.

### Wayfinding



CRF **N/A**

CRASH TYPE



A network of signs that highlight nearby pedestrian and bicycle facilities. Can help to reduce crossings at locations with poor sight distance or limited crossing enhancements.

### Yield To Pedestrians Sign



CRF **0.15**

CRASH TYPE



The "Yield Here to Pedestrians" (e.g. R1-5, R1-5a) signs alert drivers about the presence of pedestrians. These signs are required with Advance Yield Lines. Other sign types (e.g. R1-6) can be placed on the centerline in the roadway.

### Variable Message Sign



EFFICACY

LOW **MED** HIGH

CRASH TYPE



Variable message signs are electronic signs that allow for varying messages. Variable message signs can be used to warn people driving of slowdowns ahead, decreasing rear-end crashes.

## D. BIKEWAY DESIGN

### Bicycle Crossing (Solid Green Paint)



EFFICACY

LOW MED HIGH

CRASH TYPE

Solid green paint across an intersection that signifies the path of the bicycle crossing. Increases visibility and safety of bicyclists traveling through an intersection.

### Bicycle Ramps



CRF **N/A**

CRASH TYPE

Connects bicyclists from the road to the sidewalk or a shared use path.

### Bicycle Signal/Exclusive Bike Phase



CRF **0.30**

CRASH TYPE

A traffic signal directing bicycle traffic across an intersection. Separates bicycle movements from conflicting motor vehicle, streetcar, light rail, or pedestrian movements. May be applicable for separated or buffered facilities when the bikeway is brought up to the intersection.

### Bike Box



CRF **0.15**

CRASH TYPE

A designated area at the head of a traffic lane at a signalized intersection that provides bicyclists with a safe and visible way to get ahead of queuing traffic during the red signal phase.

### Bike Detection



CRF **N/A**

CRASH TYPE

Bike detection is used at signalized intersections, either through use of push-buttons, in-pavement loops, or by video or infrared cameras, to call a green light for bicyclists and reduce delay for bicycle travel. Discourages red light running by bicyclists and increases convenience of bicycling.

### Bike Friendly Drains



EFFICACY

LOW MED HIGH

CRASH TYPE

Bike friendly drains avoid placing grating in the right-of-way that may pose a hazard to bicyclists by increasing their risk of falling.

### Bicycle Path or Mixed Use Trail



CRF **0.80**

CRASH TYPE

Provides a completely separate right of way that is designated for the exclusive use of people riding bicycles and walking with minimal cross-flow traffic. Paths and trails offer opportunities for the lowest stress bicycle travel.

### Bike Lane



CRF **0.35**

CRASH TYPE

Using designated lane markings, pavement legends, and signage, bike lanes provide dedicated street space for bicyclists, typically adjacent to the outer vehicle travel lane.

## D. BIKEWAY DESIGN

### Separated Bikeway



CRF **0.35**  
 CRASH TYPE

Space on the roadway set aside for the exclusive use of bicycles and physically separated from vehicle traffic. Types of separation may include, but are not limited to, grade separation, flexible posts, physical barriers, or on-street parking.

### Floating Transit Island



CRF **N/A**  
 CRASH TYPE

An in-street transit boarding island is used in conjunction with a separated bikeway, separating transit traffic from bicycle traffic, reducing conflict between the two modes and lowering the risk of collision.

### Green Bike Lane Conflict Zone Markings



EFFICACY  
**LOW** MED HIGH  
 CRASH TYPE

Green pavement within a bicycle lane to increase visibility of bicyclists and to reinforce bicycle priority. The green pavement can be either as a corridor treatment or as a spot treatment in conflict areas such as frequently used driveways.

### Mixing Zone



EFFICACY  
 LOW **MED** HIGH  
 CRASH TYPE

Places a suggested bike lane within the inside portion of a dedicated motor vehicle turn lane. Lane markings delineate space for bicyclists and motorists within the same lane and indicate the intended path for bicyclists to reduce conflict with turning motor vehicles.

### "On Roadway" Bicycle Sign



CRF **0.15**  
 CRASH TYPE

Street sign that communicates to drivers that bicyclists are on the road. Signs enhance visibility for bicyclists, reminding drivers that they are on the road.

### Parking Buffer



CRF **N/A**  
 CRASH TYPE

Pavement markings denoting door zone of parked vehicles to help bicyclists maintain safe positioning on the roadway.

### Shared Sidewalk Sign



EFFICACY  
**LOW** MED HIGH  
 CRASH TYPE

Signs communicate to pedestrians that bicyclists may also use the sidewalk and that bicyclists must yield to pedestrians.

### Signing and Striping in Support of Bicycle Boulevard



CRF **0.35**  
 CRASH TYPE

Bicycle boulevards are roads that encourage low automobile traffic volumes and speeds through signing and striping while giving bicyclists priority and encouraging non-motorized travel.

## D. BIKEWAY DESIGN

### Traffic Calming in Support of Bicycle Boulevard



EFFICACY

LOW MED **HIGH**

CRASH TYPE



Traffic calming includes measures that encourage slower speeds to bring automobile speeds closer to those of bicyclists. This has the effect of reducing in-lane passing, improving driver perception and reaction time, and reducing the severity of collisions.

### Trail Crossing



CRF **N/A**

CRASH TYPE



A continental crosswalk with a bike stamp in the middle, placed at locations where trails intersect with or cross the roadway.

### Two-Stage Turn Queue Bike Box



EFFICACY

**LOW** MED HIGH

CRASH TYPE



This roadway treatment provides bicyclists with a means of safely making a left or right turn at a multi-lane signalized intersection from a bike lane or cycle track on the opposite side of the lane. In this way, bicyclists are protected from the flow of traffic while waiting to turn.

### Widen Sidewalk



CRF **N/A**

CRASH TYPE



Wide sidewalks can provide space for both pedestrians and bicyclists to use a shared facility. Wide sidewalks can be important for locations with high volumes of pedestrians.

## E. PEDESTRIAN CROSSINGS

### ADA Ramps & Audible Push Button Upgrades



CRF **0.25**  
 CRASH TYPE  

Curb ramps and push buttons must comply with Americans with Disability Act (ADA) standards for accessibility. Pushbuttons should be visible and conveniently located for pedestrians waiting at a crosswalk. Accessible pedestrian signals, including audible push buttons, improve access for pedestrians who are blind or have low vision.

### Curb Extensions



EFFICACY  
 LOW MED HIGH  
 CRASH TYPE   

Widens the sidewalk at intersections or midblock crossings to shorten the pedestrian crossing distance, to make pedestrians more visible to vehicles, and to reduce the speed of turning vehicles.

### Extended Time Pushbutton



CRF **0.25**  
 CRASH TYPE  

A pushbutton that can be pressed to request extra time for crossing the crosswalk, beyond the standard crossing time. Ideal near senior-serving land uses.

### High-Visibility Crosswalk



CRF **0.25-0.35**  
 CRASH TYPE   

A crosswalk that is designed to be more visible to approaching drivers. Crosswalks should be designed with continental markings, also known as ladder markings, and use high-visibility material such as inlay tape or thermoplastic tape instead of paint.

### Pedestrian Countdowns



CRF **0.25**  
 CRASH TYPE  

Displays "countdown" of seconds remaining on the pedestrian signal. Countdown indications improve safety for all road users, and are required for all newly installed traffic signals where pedestrian signals are installed.

### Pedestrian Detection



CRF **0.25**  
 CRASH TYPE  

An intersection treatment that relies on sensors to detect when a pedestrian is waiting at a crosswalk and automatically trigger the pedestrian 'walk' phase.

### Pedestrian Hybrid Beacon



CRF **0.55**  
 CRASH TYPE  

Pedestrian-activated beacon used at mid-block crosswalks and side-street stop controlled crossing locations to notify oncoming motorists to stop with a series of red and yellow lights.

### Pedestrian Lighting

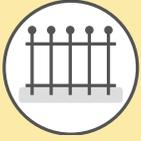


CRF **0.35-0.40**  
 CRASH TYPE    NIGHT TIME

At pedestrian crossings, research indicates pedestrian lighting should be placed 10 feet from the crosswalk, in between the approaching vehicles and the crosswalk. At intersections, pedestrian lighting should also be placed before the crosswalk on the approach into the intersection.

## E. PEDESTRIAN CROSSINGS

### Pedestrian Median Barrier



CRF **0.35**  
 CRASH TYPE  

Pedestrian median barriers restrict pedestrians from crossing the median at locations where nearby crossings are available and midblock crossings may have poor sight distance or insufficient crossing enhancements for the conditions.

### Pedestrian Refuge Island



CRF **0.25-0.45**  
 CRASH TYPE   

Pedestrian refuge islands provide a protected area for pedestrians at the center of the roadway. They reduce the exposure time for pedestrian crossing the intersection. They simplify crossings by allowing pedestrians to focus in one direction of traffic at a time.

COUNTERMEASURE

### Raised Crosswalk



CRF **0.35**  
 CRASH TYPE  

The crosswalk is elevated to match the sidewalk to make pedestrians more visible to approaching vehicles. Typically located at midblock crossings, they encourage motorists to yield to pedestrians and reduce vehicle speed.

### Remove Crossing Prohibition



CRF **0.25**  
 CRASH TYPE  

Removes existing crossing prohibitions and provides marked crosswalk and other safety enhancements for pedestrians to cross the street.

### Restripe Crosswalk



CRF **0.25**  
 CRASH TYPE  

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

### Rectangular Rapid Flashing Beacon



CRF **0.35**  
 CRASH TYPE  

Pedestrian-activated flashing lights and additional signage enhance the visibility of marked crosswalks and alert motorists to pedestrian crossings.

### Straighten Crosswalks



EFFICACY  
 LOW MED HIGH  
 CRASH TYPE 

Straightening crosswalks improves sight lines, making people walking more visible to oncoming people driving, and may shorten the crossing distance, reducing the length of time required for people walking to cross an intersection.

### Upgrade Curb Ramp



CRF **N/A**  
 CRASH TYPE 

Curb ramps must follow Americans with Disabilities Act (ADA) design guidelines. Tactile warning devices must be detectable to visually impaired pedestrians.

## F. OTHER

### Access Management/Close Driveway



CRF **N/A**  
 CRASH TYPE   

Vehicles entering and exiting driveways may conflict with pedestrians and with vehicles on the main road, especially at driveways within 250 feet of intersections. Closing driveways near intersections with high crash rates related to driveways may reduce potential conflicts.

### Automated Speed Enforcement



CRF **0.48**  
 CRASH TYPE   

Speed cameras are a type of automated enforcement that use cameras as well as radar or in-ground sensors to detect speed and identify the associated vehicle. Speed cameras can substantially reduce speed-related crashes.

### Context-Sensitive Speed Limits



CRF **Varies**  
 CRASH TYPE   

Reducing speed limits in combination with roadway design changes to encourage lower speeds can help reduce the severity of collisions when they do occur. Arbitrarily reducing speed limits without corresponding roadway design changes can be counterproductive.

### Curbside Management



CRF **N/A**  
 CRASH TYPE   

Curbside management can better prioritize reliable transit and safe bicycling infrastructure, freight deliveries, passenger pick-ups/drop-offs, green stormwater infrastructure, public spaces, and parking management.

### Development-Related ROW Improvements



CRF **N/A**  
 CRASH TYPE   

Request or require that developers help fund pedestrian, bicycle, and transit access infrastructure improvements around their developments.

### Far-Side Bus Stop



CRF **N/A**  
 CRASH TYPE  

Far-side bus stops are located immediately after an intersection, allowing the bus to pass through the intersection before stopping for passenger loading and unloading. Far-side stops encourage pedestrians to cross behind the bus for greater visibility, and can improve transit service reliability. Should be combined with crossing treatments at intersections. Also appropriate for school bus stops.

### Incident Management Protocols



EFFICACY  
**LOW** MED HIGH  
 CRASH TYPE 

Use protocols to quickly move queue causing vehicles including those that are disabled or were involved in a minor crash.

### Intersection, Street-Scale Lighting



CRF **0.40**  
 CRASH TYPE    **NIGHT TIME**

Street and intersection lighting helps make other road users or hazards more visible to motorists at night, improving driver perception and reaction time and reducing the risk of collision.

## F. OTHER

### Keep Roadway Clear of Debris



CRF **N/A**  
 CRASH TYPE

A smoothly paved surface free of debris enhances safety for vehicles and bicyclists.

### Remove Obstructions For Sightlines



CRF **0.20**  
 CRASH TYPE

Remove objects that may prevent drivers and pedestrians from having a clear sightline. May include installing red curb at intersection approaches to remove parked vehicles (also called "daylighting"), trimming or removing landscaping, or removing or relocating large signs.

### Speed Feedback Sign



CRF **0.05**  
 CRASH TYPE

A roadway treatment that uses radar to alert people driving to their actual speed relative to the posted speed limit, encouraging people driving who exceed to the speed limit to slow down.

### Targeted Enforcement



EFFICACY **LOW MED HIGH**  
 CRASH TYPE

Targeted enforcement is used to reduce the most dangerous behaviors (such as speeding, distracted driving, aggressive driving, impaired driving, and red-light and stop sign running), particularly at locations with a history of such behaviors. People driving are less likely to participate in dangerous behaviors when they know there is a higher likelihood they will be caught.

### Traffic Incident Management



EFFICACY **LOW MED HIGH**  
 CRASH TYPE

Traffic incident management is a planned and coordinated multidisciplinary process to detect, respond to and clear traffic incidents so that traffic flow may be restored as safely.

### Variable Speed Limit



EFFICACY **LOW MED HIGH**  
 CRASH TYPE

Speed limit signs that can be adjusted depending on roadway conditions. Reducing the speed limit when conditions are less optimal such during inclement weather, poor road conditions or when there is heavy traffic can reduce the likelihood of severe crashes.

## G. LOW-COST & QUICK-BUILD

### Hardened Centerline



CRF **0.10**  
 CRASH TYPE   

Uses paint to widen left-turn radii and rubber curb with plastic bollards on the receiving roadway's centerline to modify the angle of motorists turning left. Widening the turning radii of left-turning vehicles expands the field of vision for drivers and increases the visibility of pedestrians.

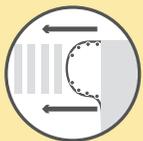
### Left Turn Enhanced Daylighting/ Slow Turn Wedge



CRF **0.10**  
 CRASH TYPE   

Uses paint and bollards to extend the curb and slow left turns at intersections of one-way to one-way or two-way streets. Widening the turning radii of left-turning vehicles expands the field of vision for drivers and increases the visibility of pedestrians.

### Paint and Plastic Curb Extension



EFFICACY  
 LOW MED HIGH  
 CRASH TYPE   

Widens the sidewalk at intersections or midblock crossings to shorten the pedestrian crossing distance, to make pedestrians more visible to motorists, and to reduce the speed of turning vehicles.

### Paint and Plastic Median



CRF **0.25**  
 CRASH TYPE   

A painted median with plastic posts, between the two directions of travel. Reduces vehicular speeding and discourages risky turning movements.

### Paint and Plastic Mini Circle



EFFICACY  
 LOW MED HIGH  
 CRASH TYPE   

Mini circles use paint and soft hit posts to replace stop-controlled intersections with a circular design that calms traffic and eliminates left turns. Installed to reduce vehicular speeds, improve safety at intersections by reducing severe collisions, and help traffic flow more efficiently.

### Paint and Plastic Pedestrian Refuge Area



CRF **0.25-0.45**  
 CRASH TYPE   

Paint and plastic post pedestrian refuge spaces provide a designated area for pedestrians at the center of the roadway. Pedestrian refuge areas constructed from paint and plastic should be implemented in conjunction with additional safety projects, such as an Rectangular Rapid Flashing Beacon (RRFB) or road diet, to reduce pedestrian exposure.

### Paint and Plastic Separated Bikeway



CRF **0.35**  
 CRASH TYPE  

A lane on the roadway dedicated to bicycles that is physically separated from vehicles by a raised barrier of plastic posts and painted pavement.

### Traffic Diverter



EFFICACY  
 LOW MED HIGH  
 CRASH TYPE   

Traffic diverters use paint, plastic posts, and/or planters to divert auto traffic from a residential street. The diverters do allow bicycles to enter the approach, reducing conflict between bicyclists and vehicles.



Developed by Forward Pinellas in its role as the Metropolitan Planning Organization and Planning Council for Pinellas County



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