KENT COUNTY SAFETY ACTION PLAN

Making Kent County's Streets Safer for All

June 2025

DOVER KENT MPO
METROPOLITAN PLANNING ORGANIZATION

DOVER/KENT COUNTY MPO
METROPOLITAN PLANNING ORGANIZATION
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RESOLUTION APPROVING THE SAFE STREETS FOR ALL (SS4A) COMPREHENSIVE SAFETY ACTION PLAN

WHEREAS, the U.S. Department of Transportation has established the Safe Streets and Roads for All (SS4A) discretionary grant program to improve roadway safety by significantly reducing or eliminating roadway fatalities and serious injuries; and

WHEREAS, the SS4A program provides funding to develop a Comprehensive Safety Action Plan as a foundational step toward identifying and implementing strategies that will lead to safer streets for all users, including pedestrians, cyclists, transit riders, and motorists; and

WHEREAS, the Dover Kent Metropolitan Planning Organization has actively participated in the development of the Comprehensive Safety Action Plan, which includes data-driven analysis, public engagement, and equitable safety strategies aimed at achieving the goal of Vision Zero; and

WHEREAS, the Comprehensive Safety Action Plan outlines key actions, policies, and projects designed to improve transportation safety, with a focus on high-risk corridors and underserved communities; and

WHEREAS, the adoption of the Comprehensive Safety Action Plan is a requirement for eligibility to apply for future SS4A Implementation Grant funding and demonstrates the jurisdiction's commitment to a safe, multimodal transportation system;

NOW, THEREFORE, BE IT RESOLVED that the Dover Kent MPO Council hereby approves the **Safe Streets for All Comprehensive Safety Action Plan** and authorizes staff to submit the approved plan to the U.S. Department of Transportation and pursue further funding opportunities under the SS4A program.

PASSED AND ADOPTED by the Dover Kent MPO Council this 23rd day of June, 2025.

The effective date of this action is June 23, 2025.

DATE: 6/23/2025

Mayor Robin R. Christiansen, Chair
Dover/Kent County Metropolitan Planning Organization

/mmv

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Making Kent County's Streets Safer for All

Prepared for
Dover Kent Metropolitan Planning Organization

Prepared by
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June 2025

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United States Department of Transportation's Safe Streets and Roads for All program.

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INTRODUCTION

Kent County has developed a comprehensive Safety Action Plan (SAP) and is working towards a goal of reducing fatal and serious injury crashes by 50% by 2040. By 2050, the goal is to eliminate fatal and serious injury crashes. This goal is consistent with Delaware Department of Transportation's (DelDOT's) goal to reduce fatal and serious injury crashes established in their 2019 Long Range Transportation Plan. The purpose of Kent County's SAP is to identify countermeasures and prioritize safety-focused projects to reduce the risk of fatalities and serious injuries related to crashes within the county.

This Kent County SAP is funded by a Federal Safe Streets for All (SS4A) grant to the Dover Kent Metropolitan Planning Organization (DKMPO). It uses the Safe System Approach to address traffic safety issues in the county. This Kent County SAP evaluates crash trends and patterns on county and state roadways, identifies emphasis areas and locations for prioritizing capital improvements, provides a toolbox of systemic safety treatments, provides non-infrastructure action items, and provides an implementation matrix to track progress towards implementing the SAP and reducing fatal and serious injury crashes.

PLAN DEVELOPMENT PROCESS

The plan development process for this SAP was built upon several key elements, including:

- following the **Safe System Approach**,
- pursuing the mission of **Vision Zero**,
- developing a **Safety Working Group**,
- building upon **previous plans and studies,** and
- considering **statewide safety efforts**.

Safe System Approach

In January 2022, the United States Department of Transportation released its National Roadway Safety Strategy that adopts the Safe System Approach as its core practice.[1] As opposed to traditional road safety practices that attempt to modify human behavior and prevent crashes, the Safe System Approach focuses on modifying transportation system design to anticipate human errors and reduce crash severity to save lives.

The Safe System Approach acknowledges that the human body is vulnerable to the amount of kinetic energy transfer it can withstand. This vulnerability is considered when designing and operating a transportation network to minimize serious injuries and fatalities. Therefore, it is crucial that the responsibility is shared by those who design and operate the transportation system. In a Safe System, all stakeholders work together and include, but are not limited to, road users,

[1] United States Department of Transportation. *National Roadway Safety Strategy*. January 2022 https://www.transportation.gov/sites/dot.gov/files/2022-02/USDOT-National-Roadway-Safety-Strategy.pdf

transportation system managers, law enforcement, emergency responders, and vehicle manufacturers.

By applying the Safe System Approach (see Figure 1), roadway system managers use a proactive approach to safety to address safety concerns before crashes occur, contrasting with traditional road safety practices that are reactive after crashes occur. This involves using crash data and roadway design characteristics and employing a data-driven approach to identify crash patterns and trends associated with crash risk. Transportation system managers then systemically implement proven safety countermeasures at all locations matching those crash risk factors to mitigate against future crashes.

Figure 1 Safe System Approach

Finally, this approach assumes that redundancy is key to reducing crash frequency in a transportation system. All parts of the system should be strengthened so that if one part fails, other parts of the system still protect roadway users. A simple implementation of this would be rumble strips that protect people when their own ability to be safe road users is compromised by distractions or drowsiness.

Vision Zero

According to the Vision Zero Network, Vision Zero is a strategy for eliminating all fatal and suspected serious injury crashes on the transportation network. Vision Zero also aims to contribute to safe, healthy, and equitable mobility for all people.[2]

As shown in Figure 2 (sourced from the Vision Zero Network[2]), Vision Zero is different from the more traditional approach to thinking about transportation safety because it is proactive, integrated, multidisciplinary, and systematic. Vision Zero places critical value on the lives lost or permanently impacted by crashes and challenges agencies and communities to invest in prevention.

[2] Vision Zero Network. *What is Vision Zero?* 2025. https://visionzeronetwork.org/about/what-is-vision-zero/

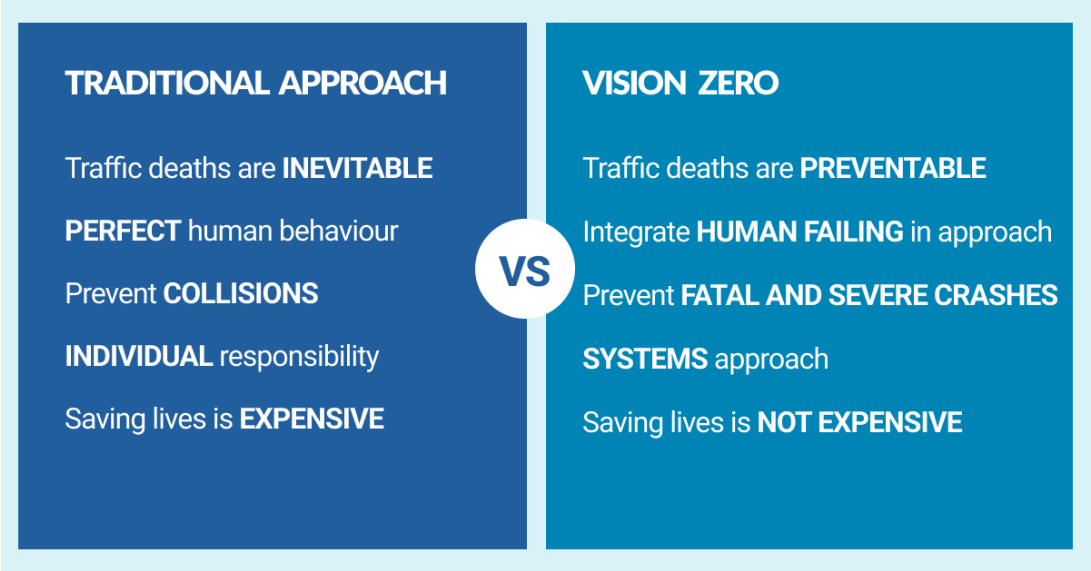


Figure 2 Traditional vs Vision Zero safety approach

The Vision Zero Network suggests that the following strategies are key to achieving Vision Zero, or elimination of fatal and serious injury crashes in Kent County by 2050. These are all core elements of this SAP.

- Building and sustaining partnerships
- Analyzing data
- Prioritizing community engagement
- Managing traffic speeds
- Setting implementation timelines
- Ensuring transparency

Safety Working Group

To guide the development of this SAP, a Safety Working Group was formed. This interdisciplinary team of agency staff and community leaders joined forces to help further the cause of reducing roadway fatalities and serious injuries by establishing collaboration and accountability. The Safety Working Group can continue to be leveraged during future implementation of the SAP.

The Safety Working Group convened for four meetings throughout the development process of the SAP, as described below. The purpose of these meetings was to introduce the principles of the SAP, provide status updates, seek suggestions on engagement approaches, present analysis results, and seek feedback on recommendations.

Meeting #1: Introducing the Safety Action Plan

The first Safety Working Group meeting, held on November 11, 2024, provided an explanation of the purpose and contents of a Safety Action Plan, including the tasks involved in developing it and the federal requirements that must be met for the SAP to be eligible for SS4A implementation funding. The meeting included a presentation of initial crash analysis results and a discussion of the potential Vision Zero goal.

Meeting #2: Presenting Crash Analysis Results

The second Safety Working Group meeting was held on January 9, 2025. This presentation included additional crash analysis results, introduction of the draft High Injury Network, review of upcoming engagement approaches, additional discussion of goals, and an introduction to safety countermeasures.

Meeting #3: Ideas for Improvement

In the third Safety Working Group meeting, held on March 20, 2025, a recap of the first round of engagement was presented. There was also a presentation of the revised High Injury Network and locations for improvement outside of the network. There was a presentation of the draft safety measure toolkit and application of safety countermeasures along key corridors. DelDOT's Equity Focus Areas were also presented. Lastly, the Group discussed the approach to the next round of community engagement.

Meeting #4: Refining Recommendations

The last Safety Working Group meeting was held on May 1, 2025. It included a discussion of the refined recommendations, including infrastructure and non-infrastructure solutions. There was also a recap of the second round of engagement and a discussion about implementation planning.

Table 1 List of Safety Working Group Members

Organization	Representative
City of Harrington	Norman Barlow
Delaware Department of Education, School Transportation	Tyler Bryan
Delaware Office of Highway Safety	Sharon Bryson
Kent County Fire Chiefs Association	Scott Bundek
Delaware Transit Corporation	Tremica Cherry-Wall
DelDOT Traffic Safety	Emily Hufnal
City of Dover	Dave Hugg
Delaware State University	Quiana Hutchins
Town of Smyrna	Torrie James
Town of Clayton	Paul Johnson
Kent County Planning Services	Sarah Keifer
DelDOT Planning	Chip Kneavel
AAA Mid-Atlantic Public Affairs	Jim Lardear
Delaware Association of Chiefs of Police	Chief Marvin Mailey Jr., Ret.
City of Harrington	Amanda Marlow
Kent County Farm Bureau	Jim Minner
DelDOT Traffic Safety	Scott Neidert
Kent Economic Partnership	Linda Parkowski
Delaware State Police	Heather Pepper
City of Milford	Rob Pierce
Delaware Greenways	Mary Roth
Town of Smyrna	Jeremy Rothwell
Bayhealth Hospital	Heather Saint
Delaware League of Local Governments	Kevin Spence
Town of Camden	Harold Scott
AAA Mid-Atlantic Public Affairs	Jana Tidwell
Kent County Department of Public Safety	John Tinger
City of Milford	Mark Whitfield
Bike Delaware	James Wilson

PREVIOUS PLANS AND STUDIES

Developing a comprehensive SAP requires a thorough review of previous plans and studies to ensure alignment with existing goals, avoid duplication of efforts, and build upon prior findings. Previous plans and studies relevant to Kent County were reviewed to identify transportation safety challenges and potential improvement strategies. These are summarized below.

Previous Plan	Key Recommendations or Projects
Innovations 2050: MPO Long Range Transportation Plan - 2025 A long range transportation plan created by the Dover Kent MPO to guide transportation investments throughout Central Delaware. The plan includes key traffic concerns identified by partner working groups and a goal for each of the five themes that supports the overall plan's vision. The key traffic concerns are listed below: • Roadway and sidewalk conditions • Economic development support • Transit • Truck movements • Speeding • Bicycle facilities • Street lighting Plan Link	**Key Goals** • Prioritize transportation investments with demonstrated minimized risk of failure due to climate change and extreme weather events • Prioritize investments designed to remain effective over time and reduce the need for future replacement or upgrades • Foster a transportation system that promotes all modes of travel and accommodates local, regional, and interstate travel
Cheswold US 13 Pedestrian Safety and Connectivity Study - 2024 This plan analyzed the existing conditions of US 13 within Cheswold and to the southern border, about a mile in length. While the study is not focused on engineering specifics of pedestrian safety treatments, it examines the feasibility of implementing sidewalk infrastructure. Plan Link	**Key Recommendations** • Remove channelized right turn lane at Fast Landing Rd and US 13 and replace with a shared-use path • Improve lighting along the corridor to help make pedestrians more visible to motorists

Previous Plan	Key Recommendations or Projects
Downtown Dover Pathways Plan – 2024 The Dover Kent MPO worked with the Downtown Dover Partnership to develop this plan. It focuses on better active transportation connections in the area. The goal of the plan is to create continuous accessible north-south and east-west bicycle facilities through Downtown Dover and fill gaps in the downtown pedestrian network. Plan Link	**Plan Objectives** • Create a continuous low stress bicycle network • Fill sidewalk and crosswalk gaps • Reduce vehicle speeds and eliminate pedestrian and bicyclist crashes **Key Recommendations** • Improve key intersections to include accessible pedestrian ramps, marked high-visibility crosswalks, and at some locations, curb extensions, pedestrian refuge islands, and flashing beacons. • Improve crossings of Division Street, Water Street, and South Street for pedestrian and bicyclist safety. • Install bicycle boulevard treatments along Reed Street, Bank Lane, Bradford Street, and Queen Street. • Redesign Loockerman Plaza by implementing parking-separated bike lanes, filling sidewalk gaps, and providing a marked mid-block crosswalk in the short term. In the long term, consider a festival street design. • Improve and better connect the Capital City Trail. • Connect the DSU campuses with dedicated multimodal infrastructure. • Implement programs and revise policies to maintain sidewalks, widen sidewalks, implement traffic calming, and expand education and enforcement.

Previous Plan	Key Recommendations or Projects
Dover Bicycle and Pedestrian Plan – 2020 This plan focuses on bicycle and pedestrian improvements throughout the City of Dover. Active transportation infrastructure and non-infrastructure improvements are combined to foster a connected multimodal network throughout the city. This plan was a response to the city's comprehensive plan in 2020 to reduce the level of stress for bicyclists and pedestrians traveling in Dover. Plan Link	**Plan Goals** • Using level of stress, the plan identifies gaps in the existing pedestrian and bicyclist network to improve safety **Key Recommendations** • Complete streets project along SR 8 between US 13 and US 1 to provide low stress bicycle and pedestrian travel • Shared use path on the south side of Bay Rd between South Little Creek Rd and Transportation Circle
Dover Kent MPO Regional Bike Plan – 2017 This plan focuses on improving bike and pedestrian safety throughout the county and updating progress from the original 2011 Regional Bike Plan. Plan Link	**Key Recommendations** • Include both the intersections within the project area and those that connect to it when designing bicycle projects
Smyrna Comprehensive Plan – 2020 The comprehensive plan for Smyrna guides land use development in the region from 2021 until 2026/2031. The section on Transportation Planning contains the projects that are relevant to the comprehensive safety action plan. Plan Link	**Key Projects** • US 13 sidewalk study to fill in sidewalk gaps in priority areas • Design right of way improvements and bike and pedestrian facilities from Glenwood Ave to Duck Creek Rd. In the mid-term, provide continuous shoulders along the corridor

Previous Plan	Key Recommendations or Projects
City of Milford Route 113 Pathway Project – 2023 The City of Milford is working with DelDOT to design and implement a shared use path along the east side of Route 113. This project is part of the city's larger pathways initiative to provide infrastructure for active transportation. Plan Link	**Key Projects** • Milford is planning to build a shared use path along the east side of Route 113 from the Milford Plaza Shopping Center to Buccaneer Blvd • Milford is planning to signalize the E Masten Circle and US 113 intersection and implement pedestrian improvements. High visibility crosswalks and pedestrian medians are part of the improvements.
Camden Comprehensive Plan – 2019 The comprehensive plan for Camden guides land use development in the region from 2019 until 2024/2029. The section on Transportation Planning contains the projects that are relevant to the comprehensive safety action plan. Plan Link	**Key Projects** • DelDOT is planning to expand US 13 from a four-lane to a six-lane highway. Additionally, DelDOT wants to improve pedestrian and bicycle safety along US 13
Milford Bicycle Master Plan – 2021 The goal of the plan is to give the City of Milford a connected active transportation system for all modes and that is safe for all levels of recreation. Another goal of the plan is to address the gaps in the existing active transportation network in Milford. Plan Link	**Key Recommendations** • The State Route 14/US 113 intersection was recommended by the plan for further study • Construct a shared-use path south along the east side of US 113 starting at the US 113/State Route 14 intersection

STATEWIDE SAFETY EFFORTS

State-supported safety initiatives also help set the stage for the safety action planning process in Kent County. DelDOT's Hazard Elimination Program (HEP) identifies high crash locations based on statistically high crash patterns or rates and recommends countermeasures to reduce the severity and frequency of crashes. The HEP and High Injury Network had overlapping corridors and intersections. Through conversations with DelDOT, the project team integrated recommendations from the HEP into the SAP.

HOW TO USE THE SAFETY ACTION PLAN

The SAP is organized into six sections. The following overview summarizes the content of each section and how it is intended to be used.

- **Section 1: Introduction** – This section provides an overview of the SAP's purpose and development.
- **Section 2: Public Engagement** – This section provides a summary and overview of the public engagement process during the SAP development.
- **Section 3: Crash Analysis** – This section provides a summary of the crash data analysis and highlights the top systemic crash profiles identified.
- **Section 4: Safety Countermeasure Toolkit** – This section provides a toolbox of safety countermeasures. The emphasis is on summarizing the solutions, providing planning level cost estimates, and highlighting the effectiveness of the strategies in reducing fatalities and injuries. This toolbox is meant to be referenced to identify appropriate solutions to address various safety issues throughout the county. In some cases, these treatments can be incorporated into roadway maintenance practices.
- **Section 5: High-Priority Locations** – This section summarizes the specific locations with an overrepresentation of severe injury crashes identified for safety treatments during the development of the SAP. It also recommends which toolkit measures can be applied at which locations.
- **Section 6: Non-Infrastructure Recommendations** – This section summarizes the educational, enforcement, programmatic, and policy action items developed to support the engineering recommendations of the SAP.
- **Section 7: Implementation** – This section summarizes the planning level costs, phasing timelines, and funding sources for the recommended safety countermeasures.
- **Conclusion** – This section summarizes the report and discusses next steps for implementation.

UPDATING THE SAFETY ACTION PLAN

Implementing the SAP's actions should result in measured decreases in fatal and serious injury crashes. Measuring safety benefits will require reassessing crash data to consider the effectiveness of the SAP and then generating revised programs to meet future identified safety performance needs. The SAP should be assessed in three to five years as new crash data becomes available and sufficient time has passed to measure the effectiveness of the various safety, land use, and transportation plans.

PUBLIC ENGAGEMENT

Public and stakeholder engagement was conducted throughout the development of the SAP. These engagement activities were critical to the identification of areas of concern and to the development of recommendations and strategies that address community needs. Community engagement was conducted in two phases:

- Phase 1: Identify Issues and Opportunities
- Phase 2: Seek Feedback on Draft Recommendations

Engagement activities included a range of in-person and virtual touchpoints, such as online surveys, an online interactive StoryMap, community meetings, and pop-up events. The online StoryMap served as the project website and provided information about the SAP, a timeline of engagement activities, historical crash data, draft recommendations, and links to online surveys.

The two phases of engagement are described in more detail below.

Phase 1 Outreach

Phase 1 of the public engagement process focused on introducing the SAP to the public, sharing initial safety analysis data, and gathering information on participants' traffic safety experiences. This round of the engagement process included a public open house, an online survey, and the online StoryMap.

Open House

The public open house was held on January 13, 2025, at Modern Maturity Center in the City of Dover. The goal of the event was to introduce the SAP process and purpose, provide high-level crash data results, present a draft of the High-Injury Network, and gather feedback on where people experience traffic safety issues and concerns in Kent County. Participants stated their priorities for traffic safety in Kent County as increasing active transportation infrastructure. They also shared that they felt unsafe traveling along US 13 south of the City of Dover.

Online Survey

The project team collected public feedback online through a survey and an interactive comment map. The survey ran from December 23, 2024 to February 10, 2025, with 131 total responses. Of survey respondents, 90% identified as white, 70% identified as women, 55% were 65 years old or more, and 50% lived in Smyrna. Figure 3 shows the top three traffic safety issues highlighted in orange. Aggressive driving, distracted driving, and drivers running red lights or stop signs where the top three concerns from the 117 respondents who answered the question, "What are the most important traffic safety concerns in Kent County?"

Additionally, the survey asked respondents to rate how safe they feel traveling in Kent County while biking, driving, walking, riding a motorcycle, or taking a school bus. Out of a total of 110 respondents to this question, 13% reported they felt "Somewhat Unsafe" and 25% reported feeling

"Very Unsafe" traveling by bike in Kent County. Comparatively, out of a total of 109 respondents, 21% reported feeling "Somewhat Unsafe" and 16% reported feeling "Very Unsafe" while walking. In summary, nearly 40% of respondents to this question felt some level of discomfort biking or walking in Kent County.

Almost 28% of survey respondents said that they or someone in their household had a disability or mobility challenge.

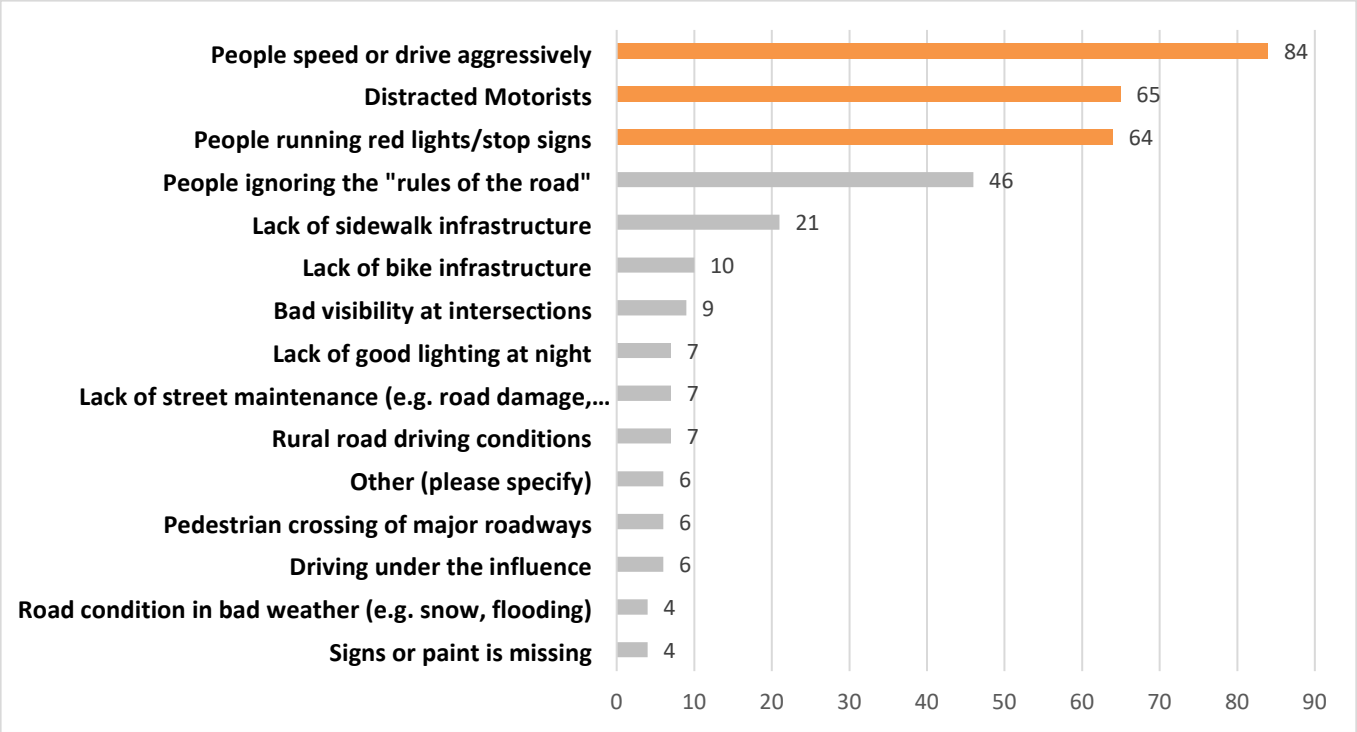


Figure 3 Top traffic safety concerns

Online StoryMap

The online StoryMap served as the project website and provided engagement event timelines, safety trend analysis, and a link to the online survey. The StoryMap was created on November 19, 2024 and continued to serve as the project website during the development of the SAP. Updates in the engagement process were reflected in the StoryMap, which was a hub of information during both phases of the engagement process. The StoryMap can be accessed by clicking on this link.

The StoryMap included an online map where people could provide specific feedback on safety concerns along corridors and at intersections in Kent County. There were 41 comments with locations concentrated along US 13, US 113, Dover, and Smyrna. Many comments were focused on speeding, and there was an emphasis on the intersection of Hickory Ridge Road and US 13 as key intersection of concern. These comments provided context to the recommendations and helped to validate the findings from the High Injury Network.

Phase 2 Outreach

Phase 2 of the public engagement process shared draft recommendations and countermeasures, as well as gathered feedback from participants about the toolkit and safety countermeasure recommendations. This phase of the engagement process used pop-up events, an online survey, and continued the use of the online StoryMap.

Community Pop-Up Events

The second round of public engagement kicked off with a series of pop-up events on Friday, April 25 and Saturday, April 26, 2025. The events took place along US Route 13 at two Redner's grocery store locations. The next day, there were two pop-up events at the Bug and Bud Festival in Milford and at Delaware State University's Downtown Spring Festival in Dover. On Saturday, May 3, 2025, there was a final pop-up event at the Dover Days Festival in Dover. These pop-up events raised awareness about the SAP and gave an overview of recommendations. Links to the online survey were distributed to gather feedback on the proposed recommendations, resulting in strong response to the survey.

Online Survey

Since the Phase 2 of outreach was centered on pop-up events where participants might only have a moment to consider the proposed recommendations, it was important to create a survey to capture their feedback. The Phase 2 online survey was open from April 2, 2025 – May 4, 2025. It focused on proposed recommendations, receiving 256 responses. The only demographic data for this survey was zip code information from participants.

Key issues raised during the survey included:

- Emphasis on safety of people bicycling and walking, such as improvements to pedestrian or bicycle infrastructure
- Installing red light cameras or automated speed enforcement
- Implementing traffic calming measures to reduce speeding
- Improving signal timing to improve the flow of traffic
- Increasing enforcement of traffic violations
- Improving pedestrian and driver scale lighting along the corridors
- Decreasing speed limits where appropriate and installing warning signs of upcoming intersections

OVERVIEW OF CRASH ANALYSIS

This section summarizes the crash analysis for Kent County and frames the findings within the Safe System Approach (SSA). Consistent with this philosophy, the crash analysis combines five years of crash data with roadway design characteristics to pinpoint patterns that elevate crash risk. This analysis was used to identify emphasis areas and opportunities for safety countermeasures and non-infrastructure recommendations to reduce crash risk throughout the county. Findings from these analyses have been vetted with the Safety Working Group and the community, and they have informed the development of safety countermeasures and strategies as well as the implementation plan.

DATA SOURCES

The project team obtained roadway and crash data from DelDOT's Open Data Portal and Dover Kent MPO. Crash data for Kent County was obtained from DelDOT's database for the most recent available five-year period at the time the project began, which was January 1, 2019 through December 31, 2023. DelDOT's crash database provides reported crash characteristics such as date, time, crash type, light conditions, and roadway conditions. These characteristics were used to analyze and document factors associated with crashes.

DelDOT's crash data summarizes severity into three categories, based on the highest severity injury associated with the crash:

- Fatality Crash
- Personal Injury Crash (ranging from serious to minor injury)
- Property Damage Only (PDO) Crash (no injury)

Much of the analysis for the SAP emphasizes fatal and personal injury crashes due to their severity and impact on the community, with the goal of reducing fatal and serious injury crashes on roadways within the county. These two crash types are referred to as FI in this document.

CRASH SEVERITY AND LOCATION

A total of 21,804 crashes were reported in Kent County from 2019 to 2023. Of the 21,804 crashes reported, one percent (115 crashes) were fatal and 22 percent (4,846 crashes) involved personal injury. Figure 4 shows where all of the fatal crashes occurred in Kent County between 2019 and 2023. For the Safe System Approach, identifying the locations and characteristics of fatal crashes is most critical. As shown in Figure 4, these fatal crashes have occurred throughout the county but are especially concentrated along US 13 and State Route 1.

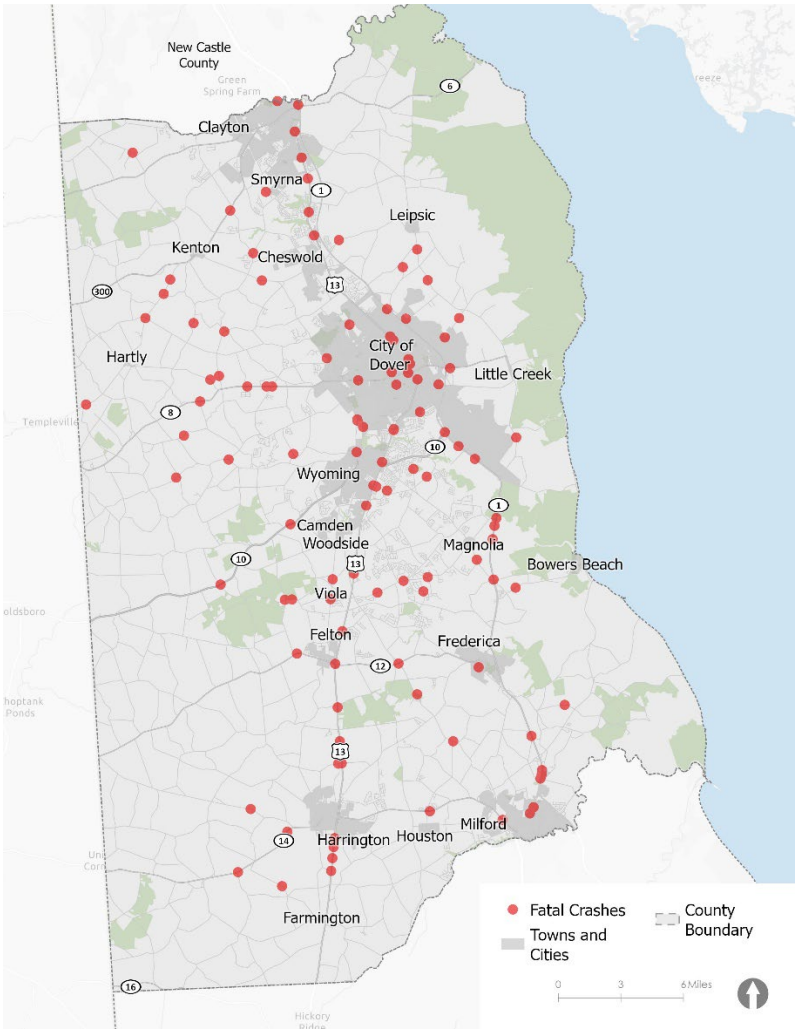


Figure 4 Location of fatal crashes

COLLISION TYPE, SEVERITY, AND TIME

Collision type is reported at two levels of detail in the crash database. The first, classified in the data as collision type, includes broad categories like rear-end or angle. The "not a collision between two vehicles" crash type refers to crashes involving a single vehicle, which could include overturn, hit fixed object, and hit non-fixed object crashes. For simplicity, these crashes are referred to as "Single Vehicle" (SV) crashes in this document. Secondly, crashes involving bicyclists and pedestrians are listed as a pedestrian-involved or bicycle-involved crash type. Pedestrian and bicycle crashes are further discussed in the section on Vulnerable Road Users (VRUs).

Collision Type

Figure 5 illustrates the number of reported crashes for each collision type and its share of fatality and injuries. The most common reported collision type for county and state roadways was rear end

crashes, accounting for over 30 percent of crashes. Fatal and injury crashes are over-represented in angle crashes (34 percent of them belong to FI category) and rear end crashes (23 percent of them belong to FI category). That is, those types of crashes constitute a higher proportion of injury crashes than other crash types, such as sideswipe crashes. On the other hand, SV, rear end, and angle crashes make up the 86 percent of all FI crashes.

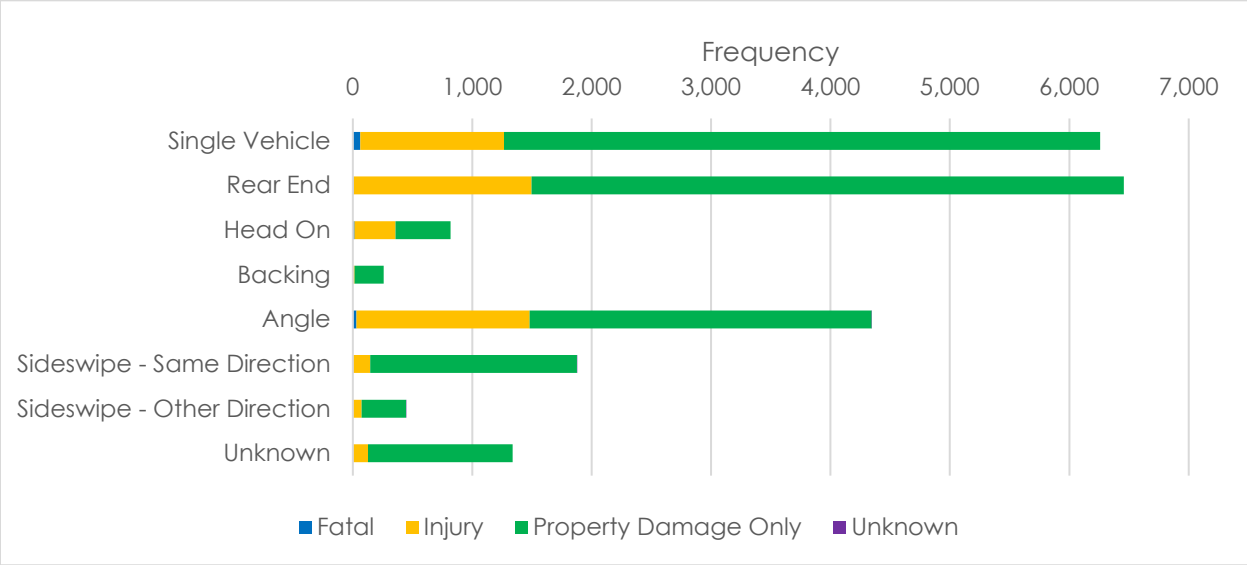
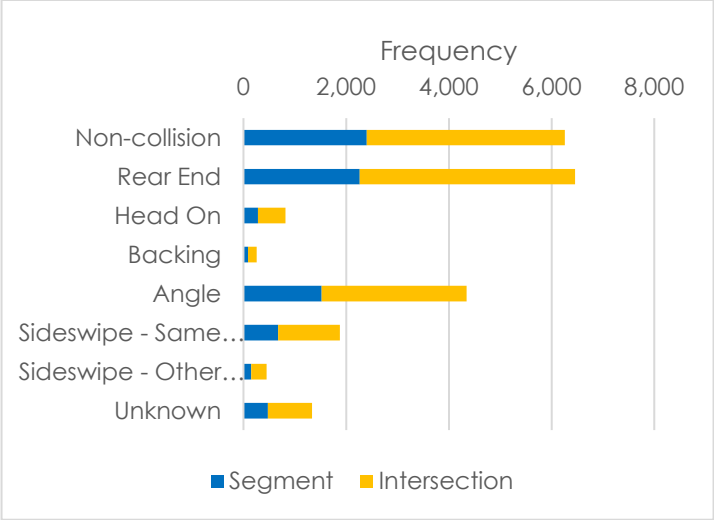


Figure 5 Crashes by type and severity (2019 - 2023)

Facility Type

Crashes that occur on road segments differ significantly in nature and contributing factors from those that happen within the influence zone of intersections. Understanding this distinction is critical for tailoring appropriate safety countermeasures. In Kent County, between 2019 and 2023, approximately 64 percent of reported crashes occurred at intersections, while the remaining 36 percent took place along midblock segments. Figure 6 illustrates the proportion of intersections and segments based on collision type and crash severity levels.



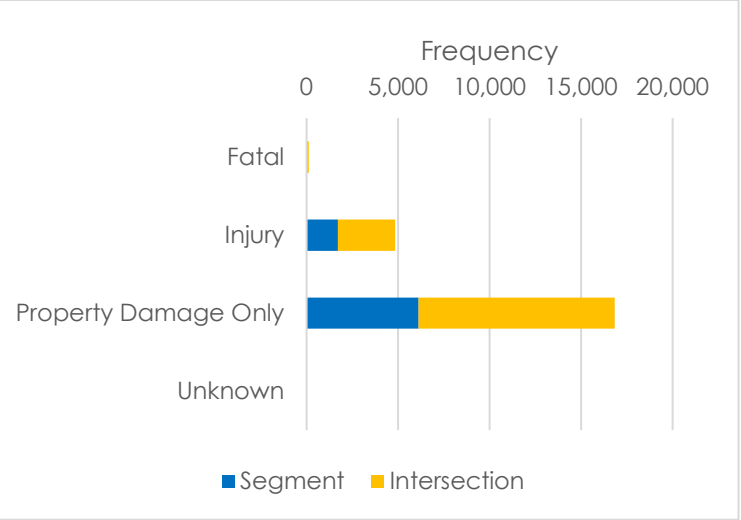


Figure 6 Crashes by facility type (2019 - 2023)

Contributing Factors

For each crash, the responding police officer codes a primary contributing circumstance. For example, a crash may be recorded as caused by reckless driving. Behavioral factors dominate the crash profile. The most common contributing factors are identified to be "Failed to yield right of way," "Following too close," and "Animal in Roadway – Deer."

"Failed to yield right of way" appears in 9 percent of crashes yet proves far more dangerous – 37 percent of crashes in this category resulted in FI. This high severity share indicates that intersection control and gap-acceptance errors remain a critical safety concern.

"Following too close" also accounts for 9 percent of crashes, and 21 percent of these collisions resulted in FI. Tailgating therefore not only raises crash frequency but also elevates the risk of harm when a collision occurs.

"Animal in Roadway – Deer" is the leading environmental factor, present in 7 percent of crashes. Only 4 percent of deer-related collisions led to FI outcomes, yet their sheer volume—and the unique challenge they pose for drivers— makes this crash type a significant concern.

Collectively, these three factors account for about one-quarter of the crash dataset.

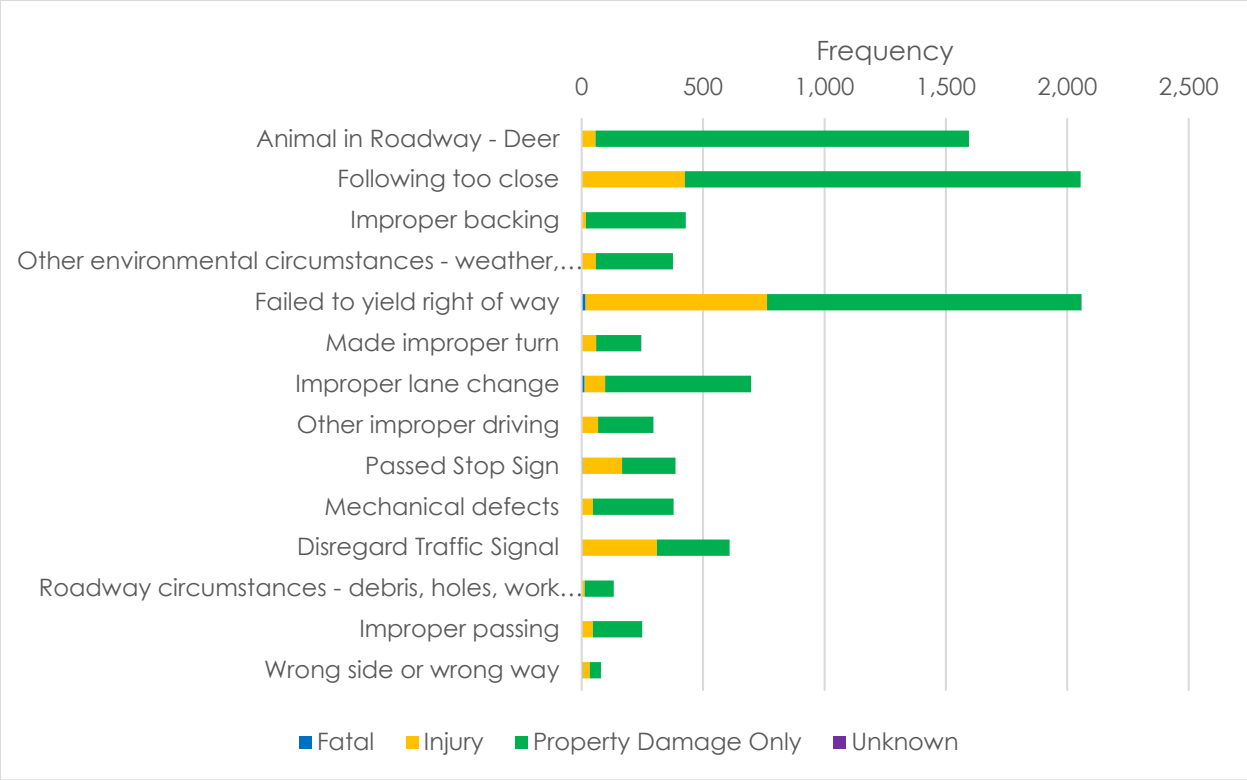


Figure 7 Crashes by contributing factors (2019 - 2023)

ROADWAY CHARACTERISTICS

This section summarizes light conditions and road surface conditions at the time of the reported crash.

Light Conditions

Lighting influences crash frequency and severity. Nearly two-thirds of all crashes (62 percent) and an even larger share of FI crashes (66 percent) occurred in daylight. The other third of all crashes (32 percent) happened in darkness, and half of those (15 percent of all crashes) took place where no street lighting was present. Night-time conditions were over-represented in the most serious outcomes with 54 percent of FI crashes occurring after dark, and with 37 percent of those happening on unlit road segments. These patterns highlight the safety benefits of providing adequate illumination, especially along corridors that currently lack lighting.

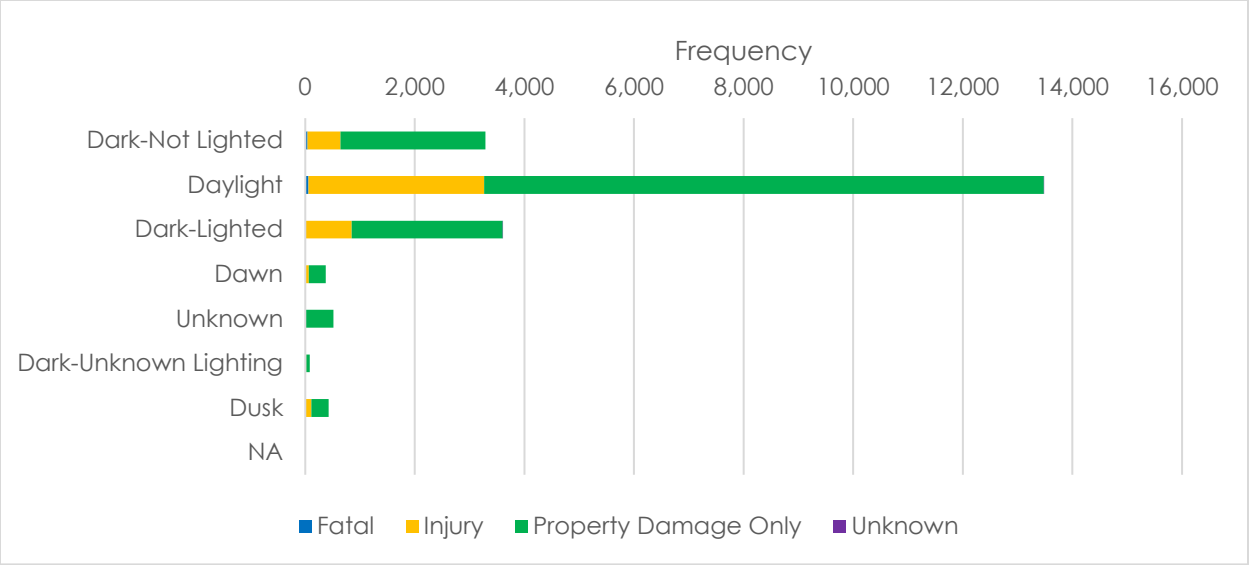


Figure 8 Crashes by lighting condition (2019 - 2023)

Road Surface Conditions

Crash patterns closely follow the surface states created by prevailing weather. Under conditions that generally leave pavement dry, 74 percent of all crashes and 76 percent of FI crashes occurred. Cloudy weather, which can introduce damp pavement, accounted for 12 percent of all crashes but showed higher FI share (23 percent resulted in FI), signaling that even moderate moisture can elevate severity. Rain-related events made up 10 percent of all crashes and contributed 10 percent of all FI crashes. Approximately 22 percent of the crashes in rainy conditions resulted in FI, underscoring the risks of wet surfaces. Winter precipitation was rare but consequential. Snow, sleet, or hail combined for about 1 percent of all crashes, yet their FI proportions ranged from 9 percent to 20 percent, reflecting the hazards of slick or slushy pavement. In sum, while dry conditions dominate total crash counts, any moisture from rain, clouds, or wintry mix amplifies the likelihood of severe outcomes.

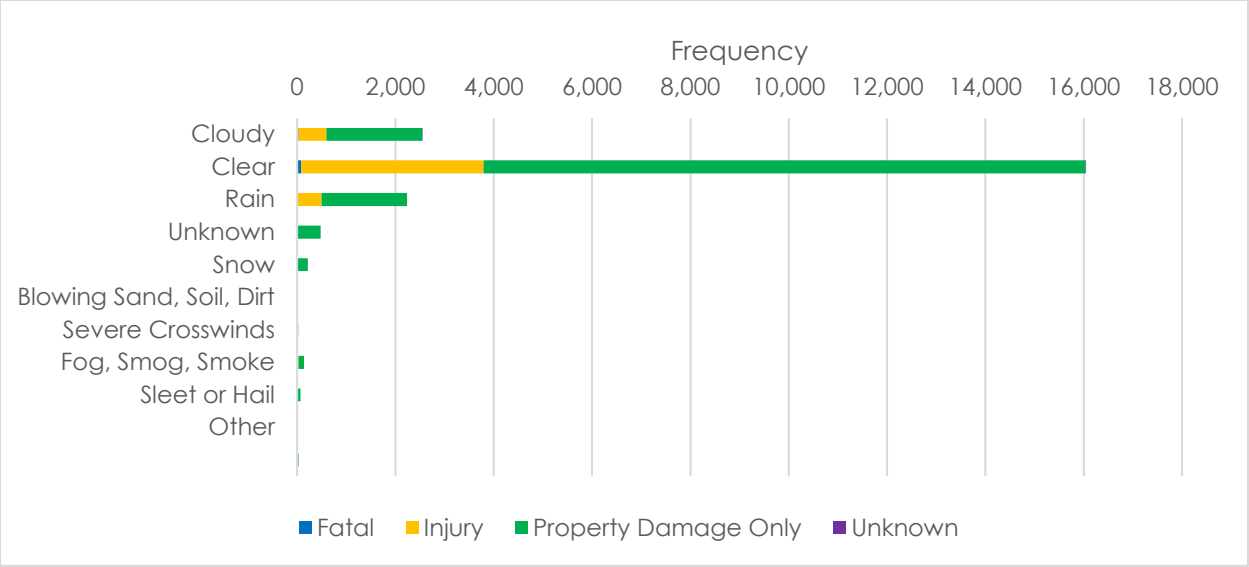


Figure 9 Crashes by weather (2019 - 2023)

BEHAVIORAL CHARACTERISTICS

This section summarizes crash characteristics associated with driver behavior or driver characteristics that include fatigue, speeding, and alcohol and drug use. Crashes involving a fatigued driver are based on inattention and distraction of the driver. The excessive speeding flag captures crashes that involved drivers exceeding the posted speed, driving too fast for conditions, or speed racing. The alcohol and/or drug use flag indicates whether an active participant in the crash had been using alcohol and/or drugs. An active participant is categorized as a person who was in the position of control during the crash and includes a driver, pedestrian, bicyclist, or other non-motorist.

Fatigued Driving

Fatigue is a significant behavioral risk on the network. Although non-fatigued drivers account for most collisions, fatigued drivers are involved in 26 percent of all crashes. These fatigued-driver events are noticeably more severe with 24 percent of them resulting in FI compared with 22 percent for crashes involving alert drivers. In absolute terms, fatigued operators were linked to 1,398 of the 4,961 FI crashes recorded (about 28 percent of all serious outcomes) while representing one-quarter of total crashes. The over-representation of fatigue in the most harmful collisions highlights the importance of countermeasures such as public-awareness campaigns aimed at drowsy driving.

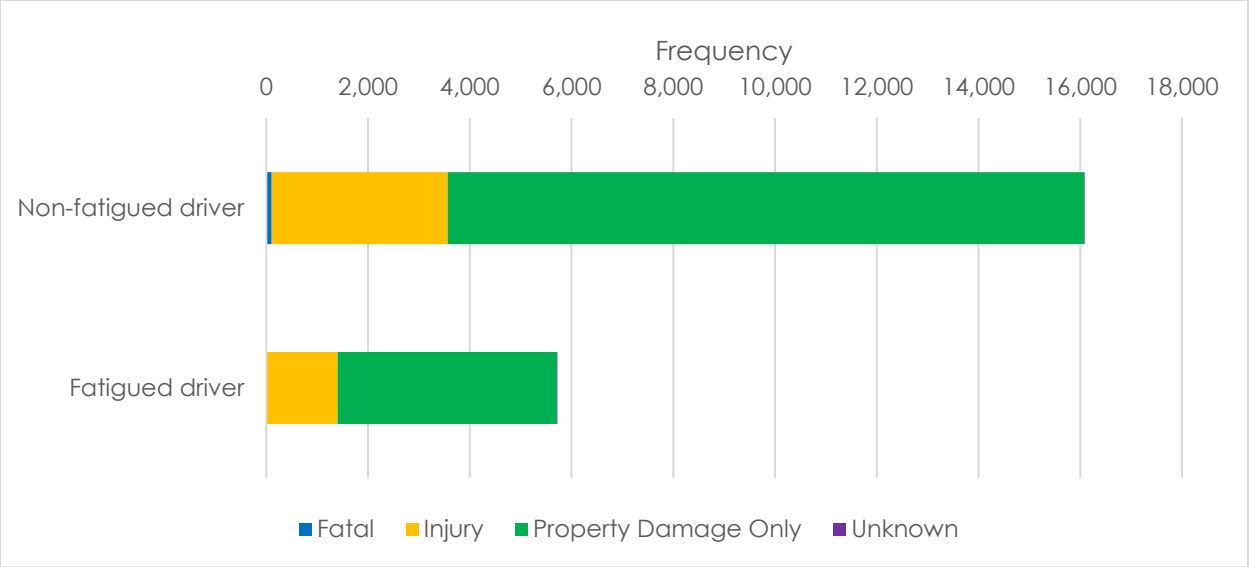


Figure 10 Crashes by fatigue (2019 - 2023)

Speeding

Speed-related crashes — defined here as cases in which the investigating police officer cited speeding as a contributing factor — are uncommon based on crash reports but markedly more severe than crashes without speeding as a factor. Only 155 of the 21,804 recorded crashes (about 1 percent) involved speeding, yet 43 percent of those collisions ended in a FI outcome, almost double the 23 percent rate observed in non-speeding crashes. Speeding contributed to 67 FI crashes, representing roughly 1 percent of all FI outcomes, and accounted for 14 of the 115 fatalities (12 percent of the total deaths) despite its small share of overall crash frequency. This stark imbalance underscores the outsized danger posed by even isolated speeding events.

Alcohol and/or Drug Use

Crashes involving an impaired driver are relatively uncommon. There were 1,310 total crashes involving an impaired driver (6 percent of all crashes), but these crashes are more lethal than those involving sober drivers. Impaired driver crashes resulted in 61 of the 115 recorded fatalities, meaning that 53 percent of all fatal crashes arose from a group that represents only one-sixteenth of total crashes. In terms of total severe outcomes, impaired driving was a factor in 478 FI crashes, about 10 percent of all FI events. The FI rate within this category was 39 percent, which is nearly twice the 22 percent rate observed when no impairment was reported. This disparity underscores the extreme risk posed by alcohol- or drug-related impairment.

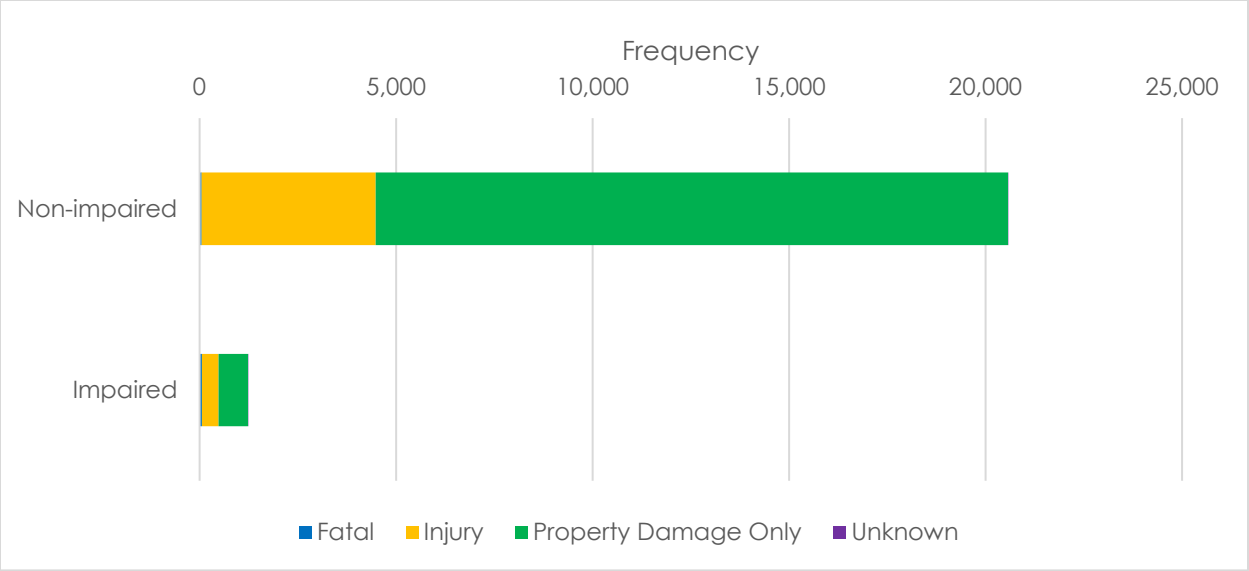


Figure 11 Crashes by impairment (2019 - 2023)

VULNERABLE ROAD USERS

Vulnerable road users (VRUs), including pedestrians and bicyclists, are more susceptible to fatalities and injuries than drivers. Pedestrian and bicyclist crashes account for a relatively low share of crashes analyzed. However, the likelihood that crashes involving VRUs result in a fatal or injury is high as compared to the likelihood of crashes involving only vehicles.

VRU collisions make up only 2 percent of the 21,804 reported crashes, yet they account for a disproportionately large share of FI outcomes. VRU crashes produced 21 of the 115 total fatalities (18 percent) and 264 of the 4,961 FI crashes (5 percent). Severity within each VRU category is striking, with 83 percent of pedestrian crashes and 75 percent of bicycle crashes resulting in a fatality or injury, compared to just 22 percent for crashes involving only vehicles.

Table 2 Crashes by severity and mode

Roadway User Type	Fatal	Injury	Property Damage Only	Unknown
Pedestrian	16	157	35	0
Bicycle	5	86	30	0
Vehicle	94	4,603	16,772	6
Total	115	4,846	16,837	6

Pedestrians

Pedestrian crashes remained steady in overall frequency between 2019 and 2023, but the mix of outcomes has shifted. FI counts oscillated between 24 and 39 per year, with a slight upward drift in injuries offset by a drop in fatalities. The year 2022 recorded the highest number of pedestrian injuries (36) and the largest FI total (39), even though fatalities stayed at 3. Fatalities fell to a five-year low of 1 in 2023, yet FI crashes remained high because injury counts stayed elevated (35). Property-damage-only events consistently represented a small minority (never more than 10 per year) indicating that most pedestrian collisions produce harm.

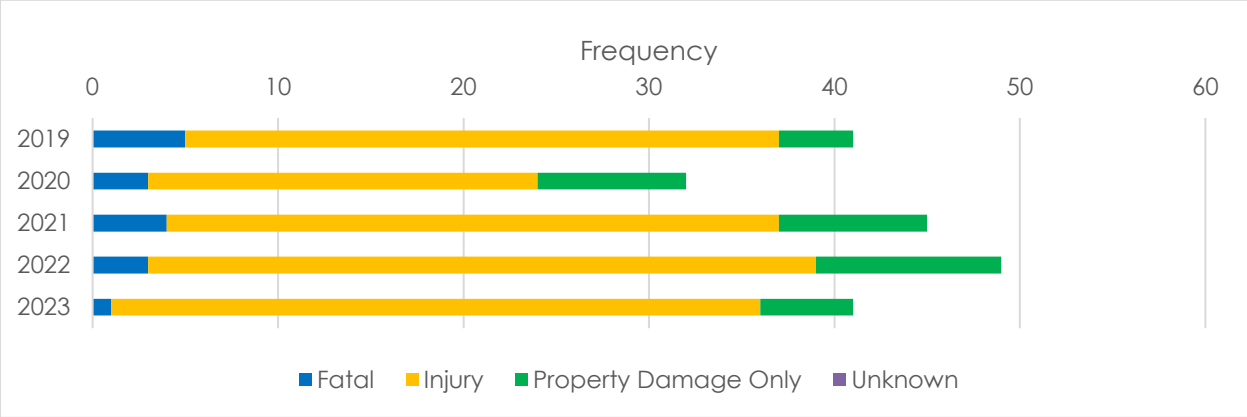


Figure 12 Pedestrian crashes by year

Bicyclists

Bicyclist crashes show a pronounced spike in severe outcomes in 2022 and sustained high injury counts thereafter. Fatal bicycle crashes increased to 4 deaths in 2022; in contrast, no bicyclist fatalities were recorded in 2020, 2021, or 2023. Injury counts increased from 10 in 2019 to 23 in both 2022 and 2023, doubling the initial baseline. Property-damage-only bicycle crashes fluctuated but remained lower than injury totals, reinforcing that most bicycle incidents involve personal harm. The 2022 fatality spikes and continuing high injury counts point to a vulnerability surge for cyclists.

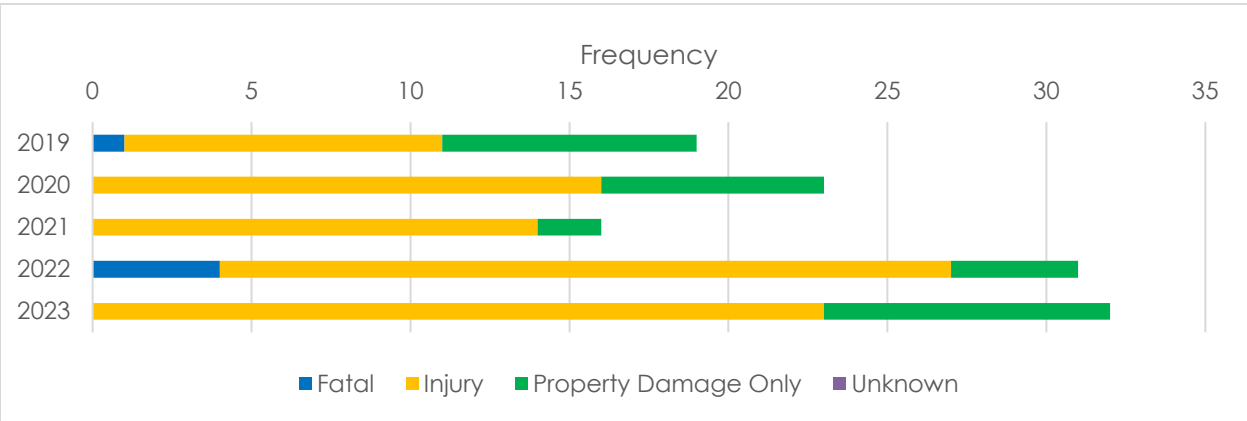


Figure 13 Bicyclist crashes per year

SAFETY COUNTERMEASURE TOOLKIT

The SAP toolkit contains infrastructure countermeasures that are applicable to crash types prevalent in Kent County. The purpose of this toolkit is to provide safety countermeasures to address severe crashes on Kent County's roadways. The toolkit includes a photo and description for each treatment, including the various contexts where the treatment applies. The toolkit also includes a general cost estimation. Agencies using the toolkit should refer to it as a guideline and reference when determining the appropriate safety countermeasures for a specific location.

Tools for the SAP are based on the Safe System Approach. These countermeasures, many of which are listed as Proven Safety Countermeasures by the Federal Highway Administration[3], have documented safety benefits. Note that although these countermeasures are listed in three categories (lane departure crashes, intersection crashes, and pedestrian and bicyclist crashes), they may have benefits across multiple crash types.

Lane Departure Countermeasures

- Increase pavement friction
- Install raised or recessed pavement markers
- Install or widen edge lines
- Install shoulder rumble strips
- Install centerline rumble strips
- Install chevron signs on horizontal curves
- Install new guardrail
- Install or widen paved shoulder
- Flatten rural side slopes
- Remove, relocate, protect, or increase distance to fixed objects adjacent to road
- Provide static combination horizontal alignment/advisory curve warning signs
- Install advance curve warning flashers
- Install dynamic speed feedback signs
- Implement median crossover turning restrictions or complete closures

Intersection Countermeasures

- Install "stop ahead" pavement markings
- Increase intersection warning with signing and striping
- Provide flashing beacons
- Increase triangle sight distance
- Convert to all-way stop control (from rural 2-way or yield control)
- Install transverse rumble strips on intersection approaches
- Reallocate roadway cross-section

[3] Federal High Administration. *Proven Safety Countermeasures.* 2025. https://highways.dot.gov/safety/proven-safety-countermeasures

- Convert signal or stop-controlled intersection to roundabout
- Provide positive offset for left-turn lanes
- Extend turn lanes
- Reconfigure as a reduced conflict intersection
- Reduce intersection skew angle
- Install signal backplates and fluorescent yellow borders
- Modify left-turn phasing
- Modify yellow change intervals
- Install raised median
- Install dynamic red signal ahead assemblies

Pedestrian and Bicyclist Countermeasures

- Implement traffic calming measures
- Reconfigure roadway cross section
- Restrict right turns on red
- Remove channelized right-turn lanes
- Install advance pedestrian or bicycle warning signs
- Install all types of roadway lighting at crosswalks and intersections
- Provide crossing enhancements at uncontrolled locations
- Implement leading pedestrian intervals
- Construct curb extensions
- Install hardened centerlines and slow turn corners
- Install pedestrian signal
- Implement exclusive pedestrian phases
- Install pedestrian refuge island
- Install rectangular rapid flashing beacon
- Install raised pedestrian crossings
- Install sidewalk
- Construct shared use paths
- Construct separated bike lanes
- Install bike lanes/buffered bike lanes
- Install two-stage left-turn boxes
- Place advanced stop bar on approach to intersection
- Construct protected intersection

LANE DEPARTURE COUNTERMEASURES

This section details treatments to reduce lane departure crashes. Implemented systemically, these countermeasures are intended to reduce lane departure crashes that could be reasonably prevented through specific roadway design treatments. Treatments included in this section were selected based on their applicability to Kent County's geography and existing crash patterns.

Increase pavement friction

High friction surface treatments apply aggregate to the pavement to increase or maintain the pavement friction at a site. Increasing or maintaining appropriate pavement friction through a curve can reduce the potential for motorists to lose control of their vehicle or skid when navigating a curve. Increased pavement friction has been shown to reduce crash frequency during wet conditions and in locations with high friction demand caused by vehicle speeds or roadway geometrics.

Intersection or segment	Segment
Applicable crash types	Wet roads
Potential crash reduction	20-68%
Planning-level cost	$35 per sq yd

Source: FHWA

Install raised or recessed pavement markers

Raised or recessed pavement markers are installed along the edge and centerline of the roadway to increase reflectivity and visibility during night-time conditions.

Intersection or segment	Segment
Applicable crash types	Nighttime
Potential crash reduction	15%
Planning-level cost	Raised: $5 per marker Recessed: $12 per marker

Source: FHWA

Install or widen edge lines

Restripe edge lines to increase their width to improve visibility for drivers. Wider edge lines more clearly define the edge of the roadway. This increased visibility of the edge of roadway can reduce the incidence of vehicles leaving the roadway.

Intersection or segment	Segment
Applicable crash types	Run off the road
Potential crash reduction	11-13%
Planning-level cost	$0.25 per ft (paint); $1.00 per ft (thermoplastic); $2.35 per ft (MMA)

Source: Texas A&M Transportation Institute

Install shoulder rumble strips

Shoulder rumble strips provide auditory and tactile feedback to motorists when they begin to exit the outside of the travel lane. Shoulder rumble strips can help reduce run-off-the-road crashes by alerting drivers that they are traveling beyond the designated lane. Gaps in the rumble strip can provide space for bicyclists to travel between the shoulder and the travel lane.

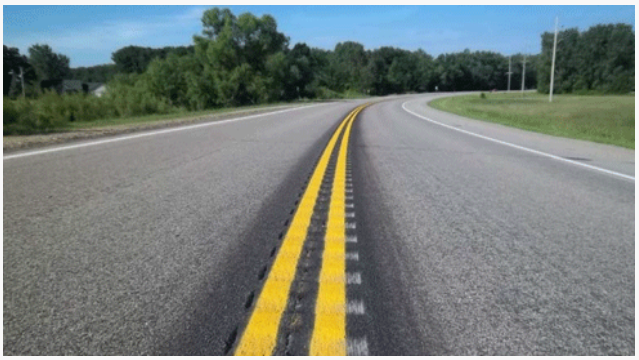
Intersection or segment	Segment
Applicable crash types	Run off the road
Potential crash reduction	16-42%
Planning-level cost	$1,000 per mile

Source: FHWA

Install centerline rumble strips

Centerline rumble strips provide auditory and tactile feedback to motorists when they have begun to cross over the centerline of the roadway. Centerline rumble strips can reduce head-on and other crossover crash types on horizontal curves of undivided roadway segments by alerting drivers they are crossing over the centerline into the opposing direction of traffic.

Intersection or segment	Segment
Applicable crash types	All injury
Potential crash reduction	9-45%
Planning-level cost	$3,500 per mile



Source: FHWA

Install chevron signs on horizontal curves

Chevron signs along horizontal curves provide a visual cue to alert and guide motorists through an approaching curve. Chevron signs alert drivers to reduce speeds and prepare to enter a curve. Chevron placement also helps guide drivers through the curve by providing a visual cue to the approaching curve's radius. Depending on engineering judgment of curves, chevron signs may be required or recommended.

Intersection or segment	Segment
Applicable crash types	Run off the road
Potential crash reduction	4-25%
Planning-level cost	$350 per new sign

Source: FHWA

Install new guardrail

Guardrails can prevent drivers from running off the road by stopping or slowing vehicles that have departed their lanes. This treatment is effective only in areas with non-recoverable sideslopes or obstructions that cannot be moved. High speeds and steep departure angles can limit guardrails' effectiveness in reducing roadway departure crashes, and guardrails should be consistently maintained and replaced or repaired, as needed.[4]

Intersection or segment	Segment
Applicable crash types	Run off the road
Potential crash reduction	44-47%
Planning-level cost	$120 per linear foot, $3,200 per end treatment

Source: Utah DOT

[4] Source: https://www.atssa.com/Portals/0/Blog%20News/SafetyBenefitsGuardrail_2017Book_Final.pdf?ver=2019-01-07-143743-100

Install or widen paved shoulder

Widen the paved shoulder adjacent to travel lanes. Paved shoulders may increase safety performance when navigating horizontal curves by providing a paved recovery area for motorists who have left the travel lane. The shoulder can help a driver maintain control and correct the vehicle path. Widening the outside shoulder of a curve provides the greatest benefit on roads where existing space is limited.

Intersection or segment	Segment
Applicable crash types	All crashes
Potential crash reduction	By 1 foot: 3-6% By 2 feet: 5-13% By 3 feet: 6-18%
Planning-level cost	Varies

Source: FHWA

Flatten rural side slopes

Flattening slopes alongside rural roads may help drivers who have left the travel lane regain control of their vehicles. The AASHTO Green Book's design guidelines suggests 10 feet of clearance alongside travel lanes, including flat or flattened side slopes.[5]

Intersection or segment	Segment
Applicable crash types	Run off the road
Potential crash reduction	3-15%
Planning-level cost	Varies

Source: FHWA

[5] Source: https://www.fhwa.dot.gov/programadmin/clearzone.cfm

Remove, relocate, protect, or increase distance to fixed objects adjacent to road

Remove or relocate fixed objects adjacent to the roadway to increase the clear zone. Clearing or moving fixed objects away from the roadway can reduce fixed-object crashes by providing a clear zone that gives drivers more space and time to correct their path should they leave the road. When able to be moved, increasing the distance to rural roadside obstacles to either 16 or 30 feet can also reduce fixed-object crashes by providing a clear zone alongside the travel lane.

Intersection or segment	Segment
Applicable crash types	All crashes
Potential crash reduction	38%
Planning-level cost	Varies

Source: Florida Vegetation Management Association

Provide static combination horizontal alignment/advisory curve warning signs

A static combination of alignment or advisory curve warning signs alert drivers to upcoming horizontal curves and their approximate steepness. Signs with suggested speeds can also be added to this treatment. Signs are reflective, which can reduce crashes at night or in weather circumstances with low light.[6]

Intersection or segment	Segment
Applicable crash types	All crashes
Potential crash reduction	13-29%
Planning-level cost	$700 per new sign

Source: FHWA

[6] Source: https://safety.fhwa.dot.gov/roadway_dept/horicurves/fhwasa15084/ch4.cfm

Install advance curve warning flashers

Circular yellow flashers caution drivers of upcoming curves and accompany horizontal alignment or advisory curve warning signs. This countermeasure can be a single beacon or multiple beacons, like if placed on both sides of a roadway.[7]

Intersection or segment	Segment
Applicable crash types	Curve
Potential crash reduction	5%
Planning-level cost	$6,000 per beacon

Source: FHWA

Install dynamic speed feedback signs

Dynamic speed feedback sign alert drivers when they are exceeding the posted speed limit, encouraging them to adjust their behavior.

Intersection or segment	Intersection
Applicable crash types	All crashes
Potential crash reduction	30%
Planning-level cost	$8,000 per sign

Source: FHWA

[7] Source: https://safety.fhwa.dot.gov/roadway_dept/countermeasures/horicurves/fhwasa15084/ch4.cfm

Work with DelDOT to implement automated speed enforcement

Based on 2023 enabling legislation, DelDOT established an Electronic Speed Safety Program (ESSP). According to DelDOT, "The ESSP provides automated speed enforcement in a DelDOT work zone, or in a residence district in either New Castle County or a municipality of the state. ESSP enforcement zones within residence districts will be enforced by the police agency with jurisdiction over the road." Municipalities in Kent County may apply to DelDOT for consideration of ESSP in a residential area.

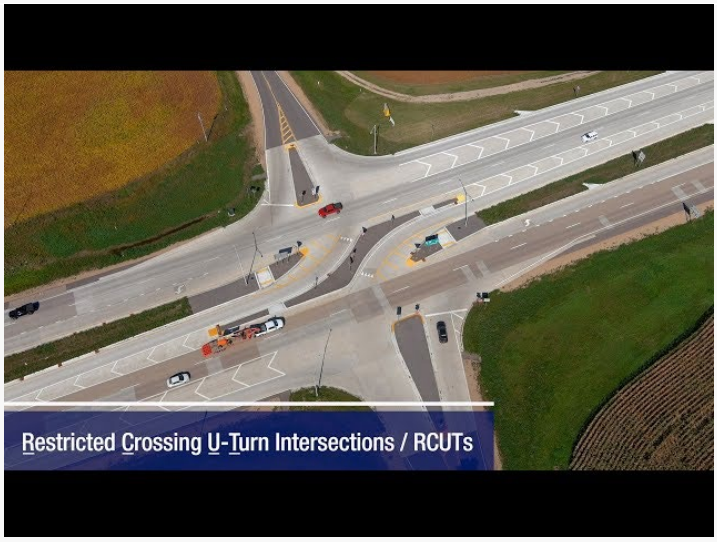
Intersection or segment	Segment
Applicable crash types	All crashes
Potential crash reduction	15%
Planning-level cost	Varies

Source: FHWA

Implement Median Crossover Turning Restrictions

Implementing median crossover turning restrictions or complete closures reduces the potential for lane departure crashes by limiting turning movement across the median.

Intersection or segment	Segment
Applicable crash types	All crashes
Potential crash reduction	20%
Planning-level cost	$2.75 Million per intersection



Source: FHWA

INTERSECTION COUNTERMEASURES

This section details treatments to improve conditions at both stop-controlled and signalized intersections. Implemented systemically, these countermeasures are intended to minimize the effect of intersection conditions on causing crashes. Treatments included in this section were selected based on their applicability to Kent County's geography and existing crash patterns.

Install "stop ahead" pavement markings

Stop ahead pavement markings are used to alert drivers of the presence of an intersection and that stopping is required. These markings provide a supplementary message and should be used in conjunction with additional regulatory warning and stops signs.

Intersection or segment	Intersection (Unsignalized)
Applicable crash types	All crashes
Potential crash reduction	31%
Planning-level cost	$1,200 per marking

Source: FHWA

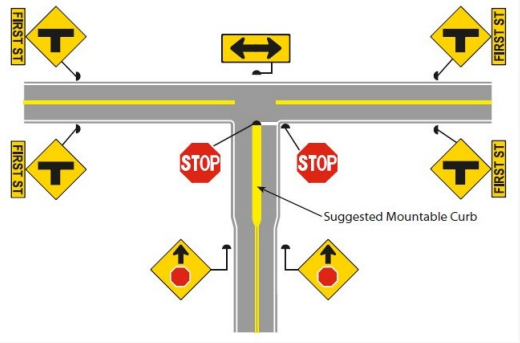
Increase intersection warning with signing and striping

Implementing a package of low-cost treatments can be used to increase intersection warning and improve safety performance at unsignalized intersections. The improvements may include:

1. doubled (left and right) oversize warning signs,
2. doubled STOP signs,
3. a raised splitter island on the stop approach (if feasible),
4. street name signs,
5. stop bars,
6. removing any limitations to sight distance, and
7. double warning arrow at the stem of T-Intersections.

This set of enhancements combines multiple treatments to make the approach of two-way stop-controlled intersections more visible to the driver and increase awareness and visibility of potential conflicts. These treatments can help slow approaching vehicles and increase stop compliance on the controlled approaches.

Intersection or segment	Intersection
Applicable crash types	All crashes
Potential crash reduction	11-55%
Planning-level cost	Varies: $600 per new sign; $800 per oversized sign; $1,200 per Stop Ahead legend



Source: FHWA

Provide flashing beacons

Flashing beacons can be placed above stop-signs, as well as above stop-ahead or signal-ahead warning signs, to raise intersection visibility and awareness. Flashing beacons may flash continuously or be actuated when a vehicle approaches the intersection. This treatment may help reduce angle crashes at intersections where driver awareness of the approaching intersection is a challenge.

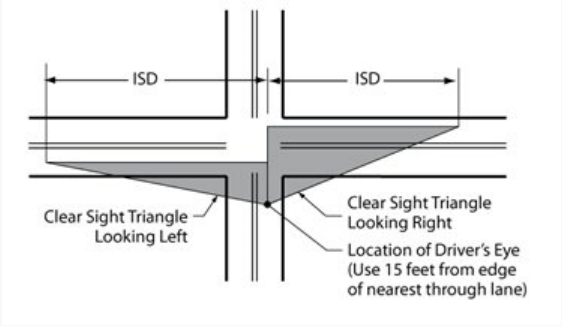
Intersection or segment	Intersection
Applicable crash types	Angle crashes
Potential crash reduction	5-58%
Planning-level cost	$6,000 per mount

Source: FHWA

Increase triangle sight distance

Increasing intersection sight distance may involve a variety of actions to increase the line of sight including clearing vegetation and embankments, relocating objects, and implementing parking restrictions. By increasing intersection sight distance, drivers are provided with a greater distance to see potential conflicts and complete maneuvers to avoid potential crashes.

Intersection or segment	Intersection
Applicable crash types	All crashes
Potential crash reduction	11-56%
Planning-level cost	Varies



Source: FHWA

Convert to all-way stop control (from rural 2-way or yield control)

Converting to an all-way stop control from a rural 2-way or yield control limits may reduce angle crashes, turning conflicts, and may reduce vehicle conflicts with pedestrians or bicyclists crossing the intersection.

Intersection or segment	Intersection (Unsignalized)
Applicable crash types	All crashes
Potential crash reduction	18-75%
Planning-level cost	$600 per new sign

Source: FHWA

Install transverse rumble strips on intersection approaches

Transverse rumble strips create an audible warning to attract the attention of a driver and alert them to a possible change of conditions, such as an upcoming stop control or curve. Transverse rumble strips should be used in conjunction with advance signing to warn of the intersection ahead. Care should be taken to avoid installing transverse rumble strips near residences and businesses due to the noise generated by the vehicles when driving over the strips. Only thermoplastic striping rumble strips and not milled rumble strips may be used.

Intersection or segment	Intersection (most commonly unsignalized)
Applicable crash types	All crashes
Potential crash reduction	-36-33%
Planning-level cost	$600 per rumble strip

Source: FHWA

Reallocate roadway cross-section

A roadway reconfiguration reduces the number of vehicle travel lanes and reallocates roadway space to help manage speeds and reduce crash risk for all users. The most common form, reconfiguring a four-lane undivided street to three lanes, provides bike lanes and offers greater separation between pedestrians and moving traffic. Roadway reconfigurations may be implemented as part of reconstruction or pavement rehabilitation projects. FHWA considers locations with less than 20,000 ADT or fewer than 750 vehicles in the peak hour as good candidates for 4-to-3-lane reconfigurations, or "road diets," though DelDOT has implemented them with higher volumes.

Intersection or segment	Intersection and segment
Applicable crash types	All crashes
Potential crash reduction	30%
Planning-level cost	Roughly $10-20 per linear foot for 4- to 3-lane road diets

Source: Delaware Department of Transportation

Convert signal or stop-controlled intersection to roundabout

Converting a signal or stop-controlled intersection to a roundabout reduces turning conflicts and limits speeds through the intersection, reducing both crash frequency and severity. They continue to serve mobility needs for motor vehicle drivers, pedestrians, and bicyclists.

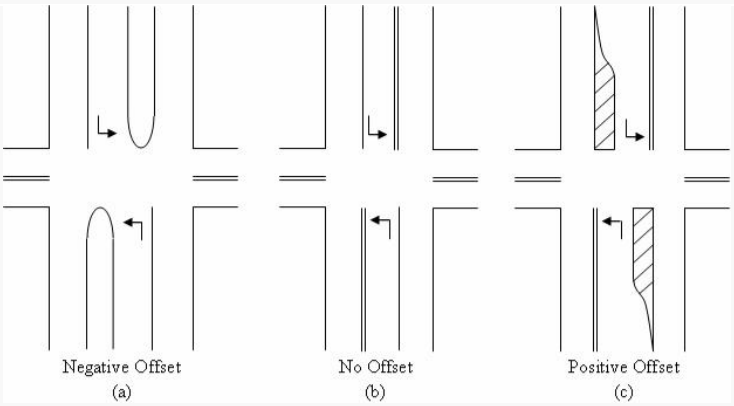
Intersection or segment	Intersection
Applicable crash types	All crashes
Potential crash reduction	50%, greater for more severe crashes
Planning-level cost	$1 million to $4 million per intersection

Source: Tahoe Regional Planning Agency

Provide positive offset for left-turn lanes

Where median width permits, moving left-turn lanes further to the left improves sight distance for left-turning vehicles. This treatment is applicable where permissive or protected-permissive left-turn phases are used.

Intersection or segment	Intersection
Applicable crash types	Angle crashes
Potential crash reduction	36% for fatal and injury crashes
Planning-level cost	Varies



Source: FHWA

Extend turn lanes

Where queues extend beyond existing left- or right-turn lanes, or are predicted to do so in the future, extending those turn lanes can reduce the risk of rear-end crashes.

Intersection or segment	Intersection
Applicable crash types	Rear-end crashes
Potential crash reduction	15% for fatal and injury crashes
Planning-level cost	Varies

Source: FHWA

Reconfigure as a reduced conflict intersection

On multilane divided arterials, intersections can be reconfigured as reduced conflict intersections (RCIs) by displacing left turning movements and/or cross-street through traffic. Examples of RCIs include restricted crossing U-turns (RCUTs), where minor street traffic makes a right turn followed by a U-turn, and median U-turns (MUTs), which displaces major street left turns to U-turns beyond the intersection.

Intersection or segment	Intersection
Applicable crash types	Angle crashes
Potential crash reduction	22-54% for fatal and injury crashes
Planning-level cost	Varies

Source: Google Maps

Reduce intersection skew angle

Acute angles between intersection legs can make it difficult for drivers to see oncoming traffic or judge its speed, creating safety concerns. Realigning the intersection to bring the skew angle closer to 90 degrees improves this condition.

Intersection or segment	Intersection, especially unsignalized
Applicable crash types	Angle crashes
Potential crash reduction	Varies depending on skew angle
Planning-level cost	Varies


Source: FHWA

Install signal backplates and fluorescent yellow borders.

Signal backplates provide greater contrast between the signal indication and the background. They are particularly effective in locations with visual clutter behind the signal, or where sun glare is a concern. Many backplates have retroreflective borders for even greater contrast, especially in low-light conditions.

Intersection or segment	Signalized intersection
Applicable crash types	All crashes
Potential crash reduction	15% for fatal and injury crashes
Planning-level cost	$40 per signal head for reflective tape $125 per signal head to install new backplates with integral retroreflective material

Source: FHWA

Modify left-turn phasing

Allowing for protected or protected permissible left-turn phasing decreases the potential for angle crashes happening during permissive left-turn movements. Modifying left-turn phasing can also lower the risk of severe injury during a crash.

Intersection or segment	Signalized intersection
Applicable crash types	Left-turn crashes
Potential crash reduction	15%
Planning-level cost	$5,500

Source: pedbikesafe.org

Modify yellow change intervals

Modifying yellow change intervals to appropriate durations can lower the risk of drivers running red lights. Drivers running red lights have a higher potential of causing severe injury crashes.

Intersection or segment	Signalized intersection
Applicable crash types	All crash types
Potential crash reduction	12%
Planning-level cost	$5,500


Source: FHWA

Install raised median

Raised medians clearly demarcate opposing directions of traffic and direct turning movements to appropriate locations. They channelize turn movements to specific locations where storage and adequate sight distance can be provided.

Intersection or segment	Segment
Applicable crash types	All crashes
Potential crash reduction	25%
Planning-level cost	$200 per linear foot

Source: Tahoe Regional Planning Agency

Install dynamic red signal ahead assemblies

Installing advance warning signs alert drivers to upcoming traffic lights and also indicate when traffic lights are about to turn red. The advanced warning helps drivers to prepare to slow down while approaching an intersection.

Intersection or segment	Intersection
Applicable crash types	Angle
Potential crash reduction	19%
Planning-level cost	$8,000 per sign

Source: Orangetraffic.com

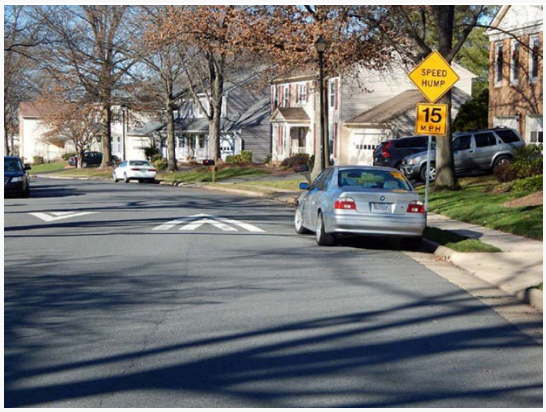
PEDESTRIAN & BICYCLIST COUNTERMEASURES

This section details treatments to improve for pedestrians and bicyclists along and across roadways. Implemented systemically, these countermeasures are intended to reduce crashes involving pedestrians and bicyclists through enhanced roadway design. Treatments included in this section were selected based on their applicability to Kent County's geography and existing crash patterns.

Implement traffic calming measures

Traffic calming measures are countermeasures designed to decrease vehicular speeds or volumes and increase the level of comfort and visibility of vulnerable road users along a single corridor or across a roadway network. Traffic calming measures consist of horizontal or vertical deflections that help to alter driver behavior. For example, a speed hump is a vertical deflection to reduce vehicle speeds. The 2025 DelDOT Traffic Calming Design Manual provides more information on specific traffic calming measures[8].

Intersection or segment	Segment
Applicable crash types	All crashes
Potential crash reduction	Varies
Planning-level cost	Varies



Source: FHWA

[8] Source: https://deldot.gov/Publications/manuals/traffic_calming/pdfs/Delaware_TrafficCalmingDesignManual.pdf

Reconfigure roadway cross section

A roadway reconfiguration is a process that reduces the number of travel lanes and repurposes that space to help manage speeds and reduce crash risk for all users.

Intersection or segment	Segment
Applicable crash types	All crashes
Potential crash reduction	30%
Planning-level cost	$15 per linear foot

Source: FHWA

Restrict right turns on red

Implementing a right turn on red restriction has the potential to reduce conflicts with pedestrians and drivers taking a right turn. Consider implementing a leading pedestrian interval in conjunction with a right turn on red restriction.

Intersection or segment	Intersection
Applicable crash types	Pedestrian and angle crashes
Potential crash reduction	Unknown
Planning-level cost	Sign: $300 Electronic Sign: $4,500

Source: pedbikesafe.org

Remove channelized right-turn lanes

Removing channelized right-turn lanes forces drivers to slow their speeds during right-turn movements at signalized and unsignalized intersections.

Intersection or segment	Intersection
Applicable crash types	Pedestrian, bicyclist, and angle crashes
Potential crash reduction	Varies
Planning-level cost	Varies

Source: MNDOT

Install advance pedestrian or bicycle warning signs

Advance pedestrian or bicycle warning signs can provide notice to drivers of unexpected crossings. These signs can be used when no other marked crosswalk countermeasures are included in order to avoid the overuse of warning signs.[9]

Intersection or segment	Segment or stop-controlled intersection
Applicable crash types	Pedestrian and bicyclist crashes
Potential crash reduction	5-15%
Planning-level cost	$500 per new sign

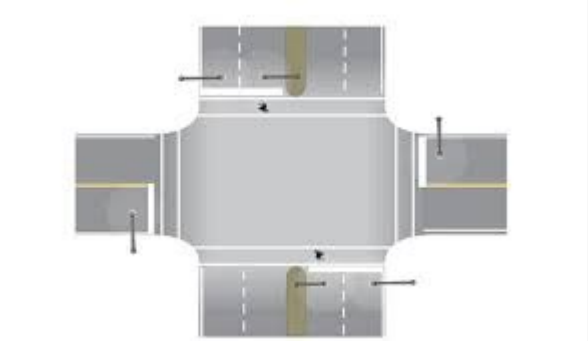
Source: FHWA

[9] Source: https://safety.fhwa.dot.gov/PED_BIKE/univcourse/pdf/swless14.pdf

Install all types of roadway lighting at crosswalks and intersections

Installing all types of roadway lighting, including pedestrian scale lighting, for crosswalks and at intersections improves visibility and sight distance, especially for vulnerable road users.

Intersection or segment	Intersection
Applicable crash types	All crashes
Potential crash reduction	40%
Planning-level cost	$7,500 per light



Source: FHWA

Provide crossing enhancements at uncontrolled locations

Crossing enhancements at uncontrolled intersections increase pedestrian visibility to drivers. Additionally, drivers are alerted to slow their speed and potentially yield to pedestrians as they approach the intersection.

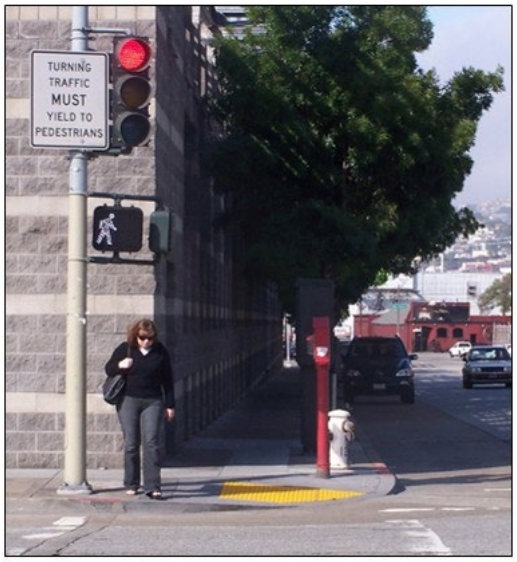
Intersection or segment	Intersection
Applicable crash types	Pedestrian crashes
Potential crash reduction	20%
Planning-level cost	$3,000 for new signs and markings

Source: FHWA

Implement leading pedestrian intervals

Leading pedestrian intervals (LPIs) allow pedestrians to start crossing in advance of turning motorists. The treatment makes pedestrians more visible to turning vehicles, making drivers more likely to yield to pedestrians crossing the street.

Intersection or segment	Intersection
Applicable crash types	Pedestrians and bicyclist crashes
Potential crash reduction	60%
Planning-level cost	$1,500 - $2,500



Source: FHWA

Construct curb extensions

Curb extensions increase visibility between pedestrians and drivers and shorten the crossing distance for pedestrians.

Intersection or segment	Intersections
Applicable crash types	Pedestrian and bicyclist crashes
Potential crash reduction	0 – 57%
Planning-level cost	$2,000 - $20,000 per corner depending on materials

Source: FHWA

Install pedestrian signal

Pedestrian signals are pedestrian crossing treatments for previously uncontrolled locations that have significant pedestrian volumes. Pedestrian signals provide an exclusive signal phase that stops conflicting vehicular movements. Pedestrian signals may be activated by a push-button or actuated through pedestrian detection.

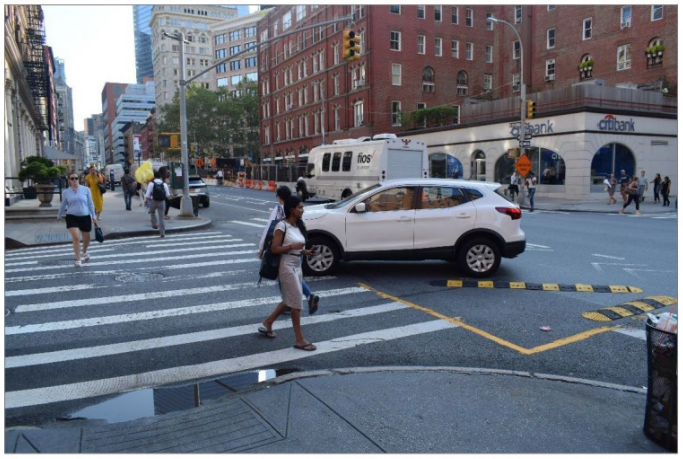
Intersection or segment	Segment
Applicable crash types	Pedestrian crashes
Potential crash reduction	15-69%
Planning-level cost	$250,000

Source: Kittelson

Install hardened centerlines and slow turn corners

Hardened centerlines and slow turn corners are designed to reduce the speed of drivers and increase pedestrian visibility. This countermeasure can help to slow turning vehicles without reducing traffic capacity.

Intersection or segment	Intersection
Applicable crash types	Pedestrian and bicyclist crashes
Potential crash reduction	46%
Planning-level cost	Varies depending on materials



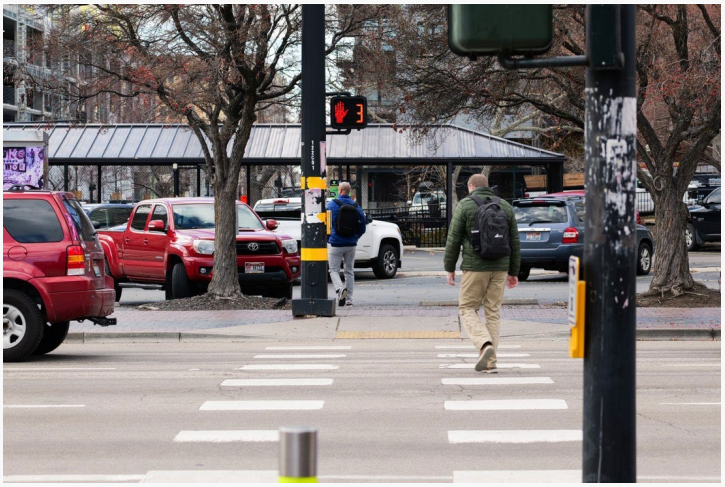
Turn wedges force slower turns to improve safety for crossing pedestrians. Photo from outside Arlington County.

Source: Arlington County

Implement exclusive pedestrian phases

Exclusive pedestrian phases stop all of the vehicular traffic at a signalized intersection and allow for pedestrians to cross in any direction.

Intersection or segment	Intersection
Applicable crash types	Pedestrian and bicyclist crashes
Potential crash reduction	25%
Planning-level cost	$15,000 per intersection

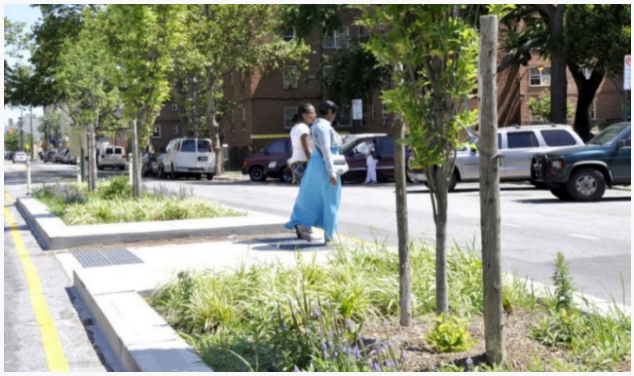


Source: Kittelson

Install pedestrian refuge island

Refuge islands are physical crossing enhancements that allow for two-stage crossings (where people only need to cross one direction of travel at a time). This effectively shortens the crossing distance and reduces exposure to vehicles. Median refuge islands are most suitable for locations where pedestrians must cross three or more vehicle travel lanes (but may also be considered in other locations, space permitting). Medians may also support speed management on high-speed roadways at uncontrolled or midblock crossing locations.

Intersection or segment	Intersection or Segment
Applicable crash types	All crashes
Potential crash reduction	26-31%
Planning-level cost	$30,000

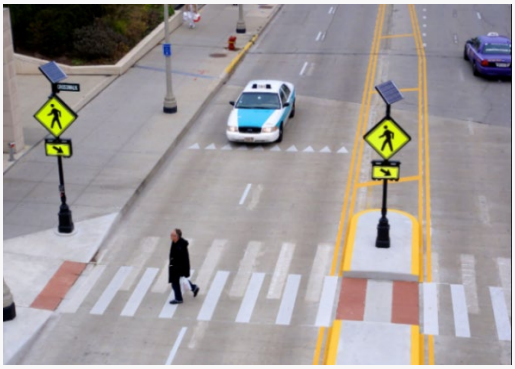


Source: New York City DOT

Install rectangular rapid flashing beacon

Rectangular rapid flashing beacons (RRFBs) are pedestrian-actuated warning signs supplemented with high-visibility LED lights. When activated, RRFBs flash a high-visibility strobe-like light warning drivers when pedestrians are crossing. RRFBs have been shown to reduce pedestrian crashes by up to 56 percent. RRFBs should be used in locations with high pedestrian safety issues as over-use may diminish their effectiveness. Installing median safety islands with RRFBs can further increase effectiveness.

Intersection or segment	Segment
Applicable crash types	Pedestrian crashes
Potential crash reduction	10-56%
Planning-level cost	$30,000



Source: FHWA

Install raised pedestrian crossings

Raising pedestrian crossings can increase pedestrian visibility and improve safety by slowing vehicle speeds.

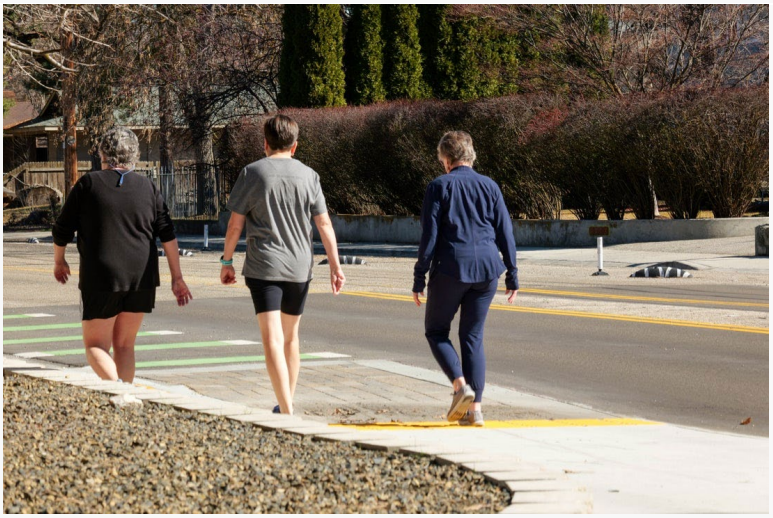
Intersection or segment	Uncontrolled Intersections
Applicable crash types	Pedestrian crashes
Potential crash reduction	30 – 45%
Planning-level cost	$8,000 – $35,000

Source: FHWA

Install sidewalk

Installing sidewalks provides space for pedestrians to walk which reduces potential conflicts with vehicular traffic.

Intersection or segment	Intersection and Segment
Applicable crash types	Crashes involving pedestrians walking along the roadway
Potential crash reduction	80%
Planning-level cost	$30 per linear foot

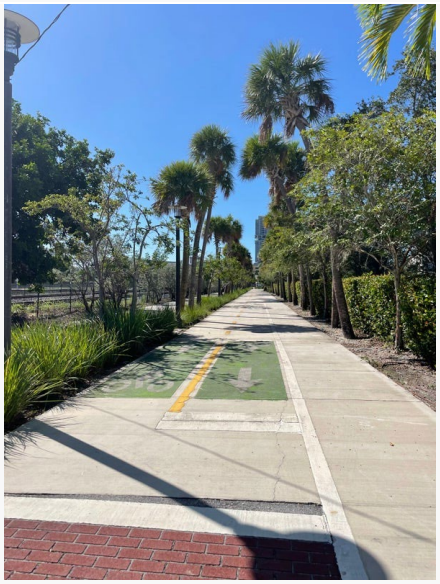


Source: Kittelson

Construct shared use paths

Expanding existing sidewalk infrastructure or installing new infrastructure to accommodate a shared-use path can provide dedicated space for pedestrians and bicyclists, separating them from motor vehicle traffic except at crossings.

Intersection or segment	Segment
Applicable crash types	Pedestrian and bicyclist crashes
Potential crash reduction	65 – 89%
Planning-level cost	Varies



Source: Kittelson

Construct separated bike lanes

Separating bicycle lanes from traffic can reduce the level of stress for bicyclists and reduce potential conflicts with vehicular traffic.

Intersection or segment	Segment
Applicable crash types	Bicyclist crashes
Potential crash reduction	30 – 53%
Planning-level cost	Varies depending on materials used for separation

Source: Kittelson

Install bike lanes / buffered bike lanes

Bike lanes are on-street facilities. This facility type includes bike lanes with a painted buffer (stripe) but no physical (horizontal and vertical) separation between vehicle travel lanes and bicycle travel lanes. Buffered bike lanes provide extra lateral separation visually but without vertical elements. In general, a buffer is preferred where possible.

Intersection or segment	Segment
Applicable crash types	Bicyclist crashes
Potential crash reduction	0-53%
Planning-level cost	$25,000-$35,000 per mile (striping only)

Source: Kittelson

Install two-stage left-turn boxes

A two-stage left-turn box provides bicyclists with a more comfortable process for making left turns than an advance stop bar by separating the turning movement into two phases.

Intersection or segment	Intersection
Applicable crash types	Bicyclist crashes
Potential crash reduction	15%
Planning-level cost	$1,500

Source: Kittelson

Place advanced stop bar on approach to intersections

Advanced stop bars on the approach to intersections, otherwise known as bike boxes, increase the separation between stopped vehicles and crosswalks. Implementing bike boxes creates visible and designated spaces for bicyclists to wait at a red light.

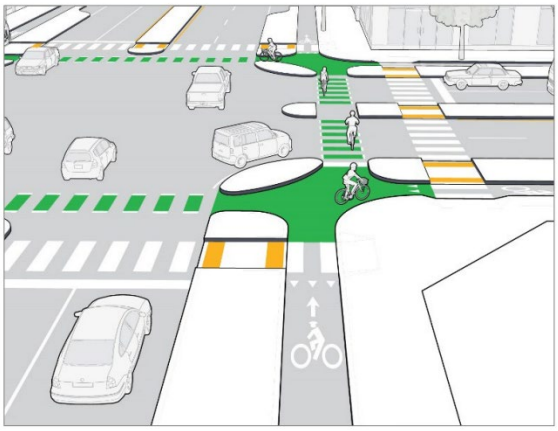
Intersection or segment	Intersection
Applicable crash types	Pedestrian and bicyclist crashes
Potential crash reduction	15%
Planning-level cost	$1,500 per approach

Source: Kittelson

Construct protected intersection

A protected intersection has a combination of concrete floating curb islands to create separation between bicyclists and motor vehicle traffic. These are best to use at intersections with existing bicycle infrastructure and also combined with high-visibility crosswalks and leading pedestrian intervals.

Intersection or segment	Intersection
Applicable crash types	Bicyclist crashes
Potential crash reduction	Varies
Planning-level cost	Varies



Typical elements of a protected intersection.

Source: Arlington County

HIGH-PRIORITY LOCATIONS

After identifying emphasis areas based on reported crashes in Kent County, a network screening approach was used to determine priority locations for safety recommendations. Network screening is a process used to evaluate a roadway network to identify and rank locations that may benefit from safety countermeasures. This process involved the Equivalent Property Damage Only, or EPDO, method to conduct the screening, as described below, to identify roadway segments and intersections with high crash frequency and severity.

HIGH INJURY NETWORK

The EPDO screening identified locations within the county that experience the highest frequency and severity of crashes by assigning a greater weight to more severe outcomes. Focusing on severe crashes in safety is especially important because these incidents have the most significant impact on the public and addressing them can lead to the greatest reduction in fatalities and serious injuries. As previously noted, the initial dataset used to summarize crash characteristics and contributing factors only contained the three severity levels (i.e., fatal, personal injury, PDO) readily available. However, for this EPDO network screening, a more detailed crash dataset was obtained that includes five levels of severity, offering greater insight into personal injury outcomes. It is important to note that this dataset includes only crash severity levels and does not have any additional crash-specific details. The five levels of crash severity in this dataset are:

- Fatal
- Injury A (incapacitating injury)
- Injury B (non-incapacitating injury)
- Injury C (possible injury – complaint of pain)
- Property damage only (no injury)

While it is possible to simply count the total number of crashes at an intersection or along a corridor segment, doing so treats all crashes equally and fails to account for differences in injury severity. For example, equating a fatal or incapacitating injury crash with a property damage only (PDO) crash overlooks the greater impact of more severe incidents. Because the focus of the SAP is on reducing fatal and serious injury crashes, it is important to prioritize those crashes in the analysis.

Applying different weights to crash severity levels allows more severe crashes to be given greater emphasis while still accounting for crashes of all types. This weighting process is part of the EPDO network screening, which normalizes the societal cost of crashes by converting injury crashes into their PDO equivalents. After crashes are weighted by severity, each location is assigned a total EPDO score, which is then used to rank locations within the county.

For the Kent County SAP intersection and segment screenings, EPDO weights were developed by comparing the societal crash costs used by the Pennsylvania and Virginia Departments of Transportation. The crash costs compared were simplified for this analysis to reflect a three-tier system that accounts for the societal costs of fatal and serious injury crashes versus non-severe injury crashes. The assigned weights are shown in **Table 2**.

Table 3 EPDO Weights

Collision Severity	Weighting
Fatal and Serious Injury	500x
Moderate and Minor Injury	15x
PDO	1x

Figure 14 shows a map of the High Injury Network in Kent County, which includes the High Priority Segments and Intersection discussed in the following sections.

High Priority Intersections

High priority intersections in Kent County were identified through a spatial analysis of crash data categorized by severity. Crashes occurring within 250 feet of an intersection were assigned to that intersection, with crashes near intersections less than 500 feet apart assigned to the nearest one. Crashes occurring more than 250 feet from an intersection were included in the corridor analysis.

Each intersection's EPDO score was then calculated by applying the severity-based weights to the number of crashes and summing the results. The total score was annualized based on five years of crash data (2019-2023), allowing intersections to be ranked and prioritized based on crash frequency and severity. Figure 15 maps the high priority intersection locations.

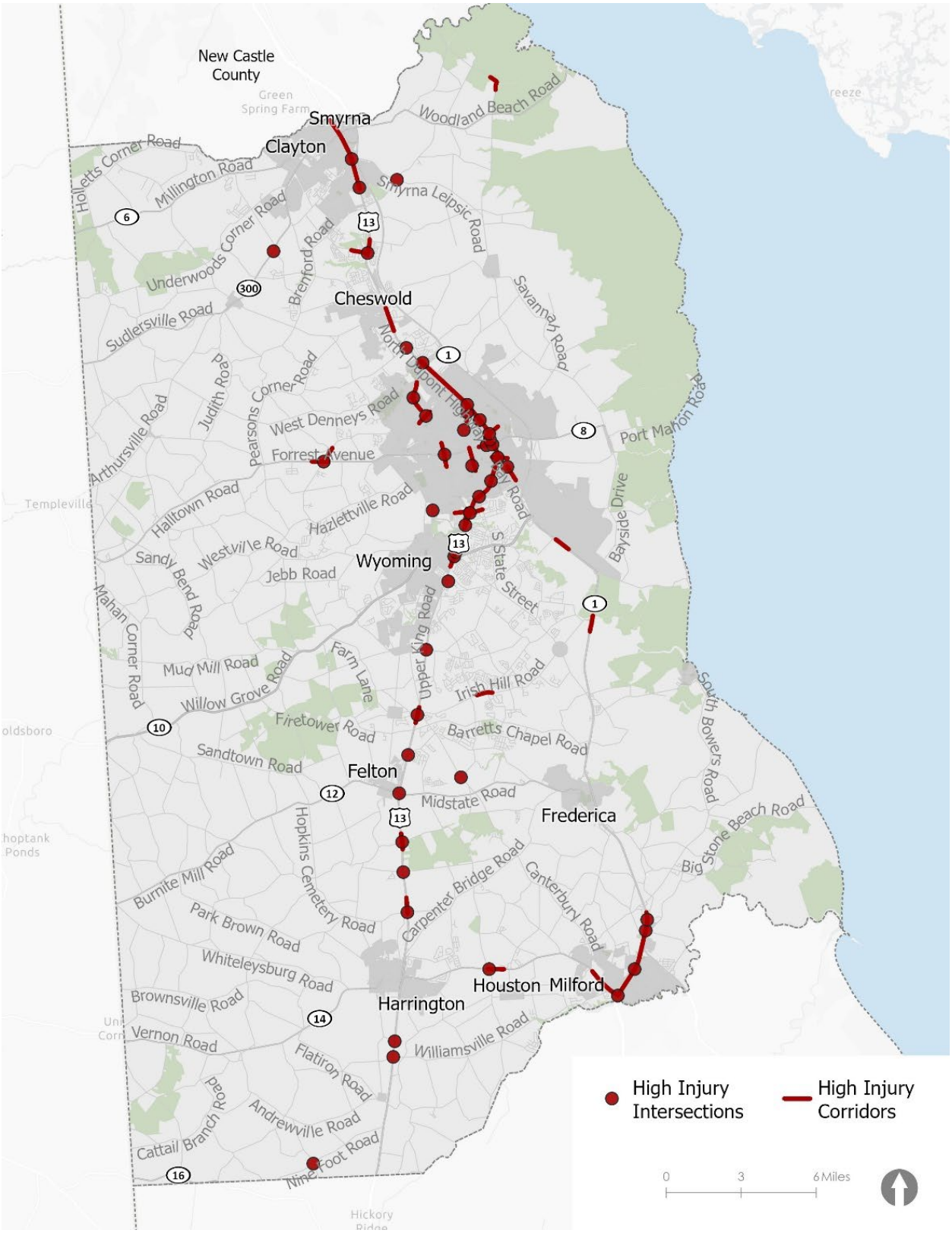


Figure 14 High Injury Network

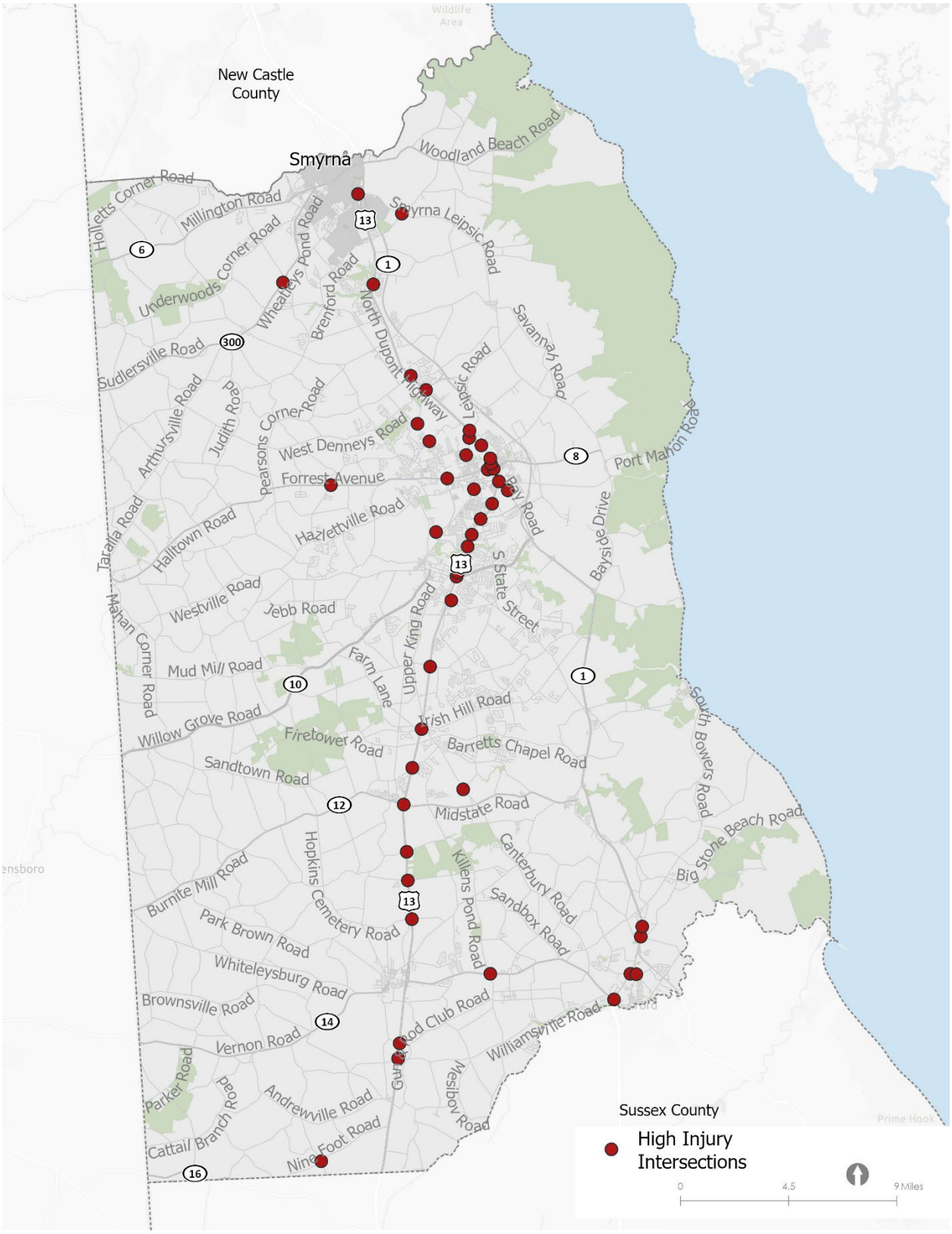


Figure 15 Intersections in Kent County with highest EPDO scores

High Priority Segments

Following the intersection analysis approach, crashes for the segment screening were first categorized by severity. Crashes occurring more than 250 feet from an intersection were classified as segment-related crashes and associated with the nearest roadway feature if they occurred within 100 feet of the roadway's centerline.

Segment crashes were screened using a sliding window analysis as defined in the Highway Safety Manual[10]. This analysis method screens a section of a roadway using a defined segment length (i.e. the window) and moves the limits of the analysis section along the corridor in defined increments. Consecutive windows are overlapped to avoid arbitrary segment start and end points and to identify for the individual segments along the roadway network. The sliding window used 1/2-mile segments with increments of 1/4 mile. As a result, segments do not have easily defined start and end points.

Like the intersection method, crashes for the segment screening are summarized by severity, and totals were multiplied by the EPDO weights for roadway segments. The weighted crashes were then summed and annualized by dividing the score by the five years of crash data, generating an annualized EPDO score. Figure 16 shows the location of segments in Kent County with the highest EPDO scores.

[10] American Association of State Highway and Transportation Officials (AASHTO). (2023). Highway Safety Manual, Second Edition. Washington, D.C.: AASHTO. See Volume 1, Chapter 4: Network Screening.

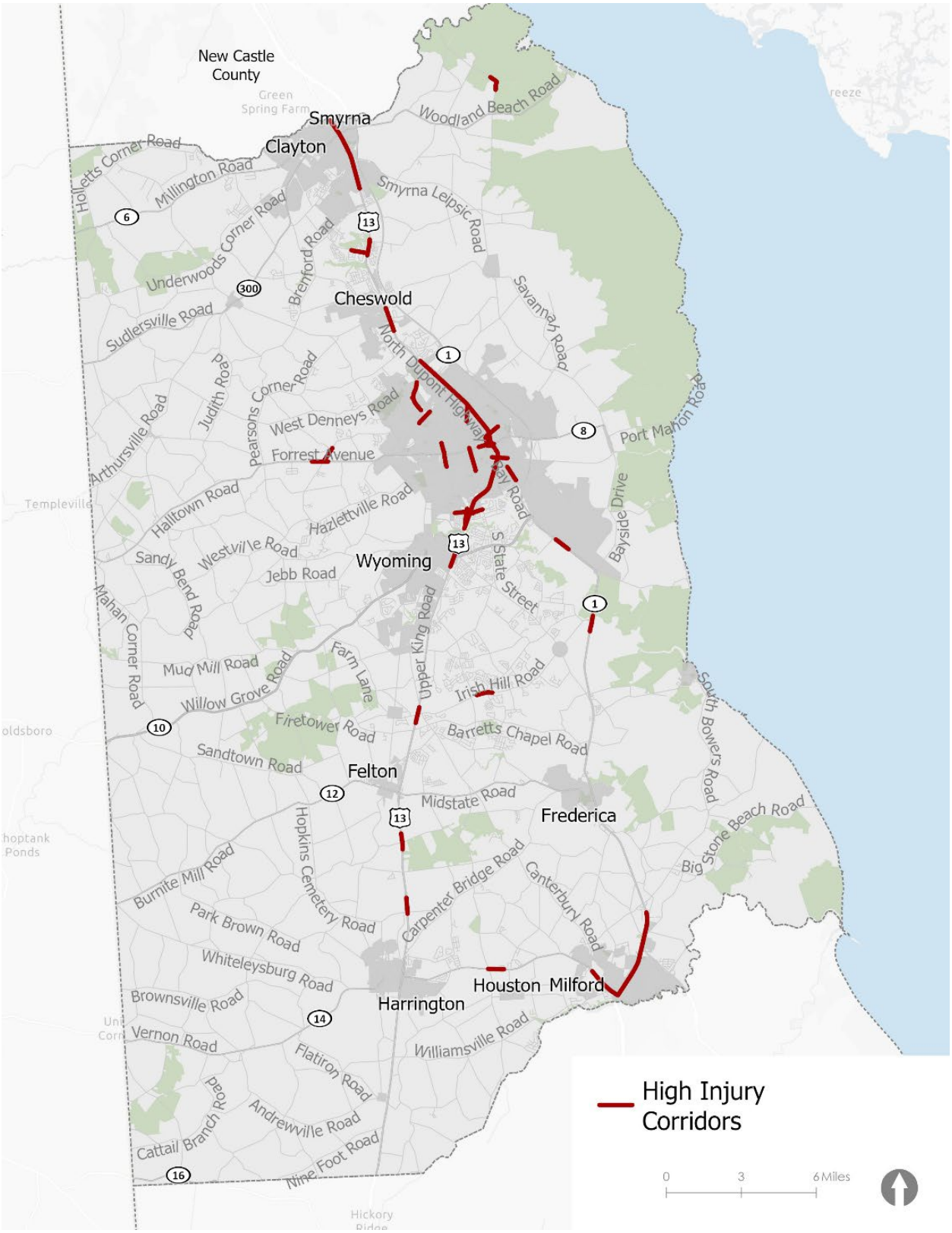


Figure 16 Map of segments with highest EPDO scores

PRIORITY CORRIDOR RECOMMENDATIONS

Intersections and segments with high EPDO scores were reviewed to identify locations with a history of fatal and serious injury crashes. In some cases, gaps between high-ranking intersections or segments were evaluated to determine if they shared similar roadway characteristics, such as roadway function, cross-section, or surrounding land use, and were in close proximity. Where appropriate, these gaps were closed, and the locations were combined to reflect a more comprehensive understanding of crash patterns. Additionally, multiple high-priority locations located near one another were grouped into clusters. This clustering approach supports the development of coordinated countermeasures that can complement one another and improve safety across a broader area.

It is important to note that the network screening analysis was specifically focused on identifying locations with a documented history of severe crashes, where targeted investments can have a substantial impact on safety outcomes. Based on this analysis, recommendations were developed for priority corridors to address key safety issues and highlight opportunities for improvement. The following pages present these recommendations, proposing potential treatments along specific segments of the High Injury Network. While these recommendations establish a foundation for action, further design and analysis will be required as projects move into implementation.

Recommendations

Kent County Safety Action Plan:
Making Kent County's Streets Safer for All

US 13 through Smyrna

KEY CORRIDOR CONSIDERATIONS

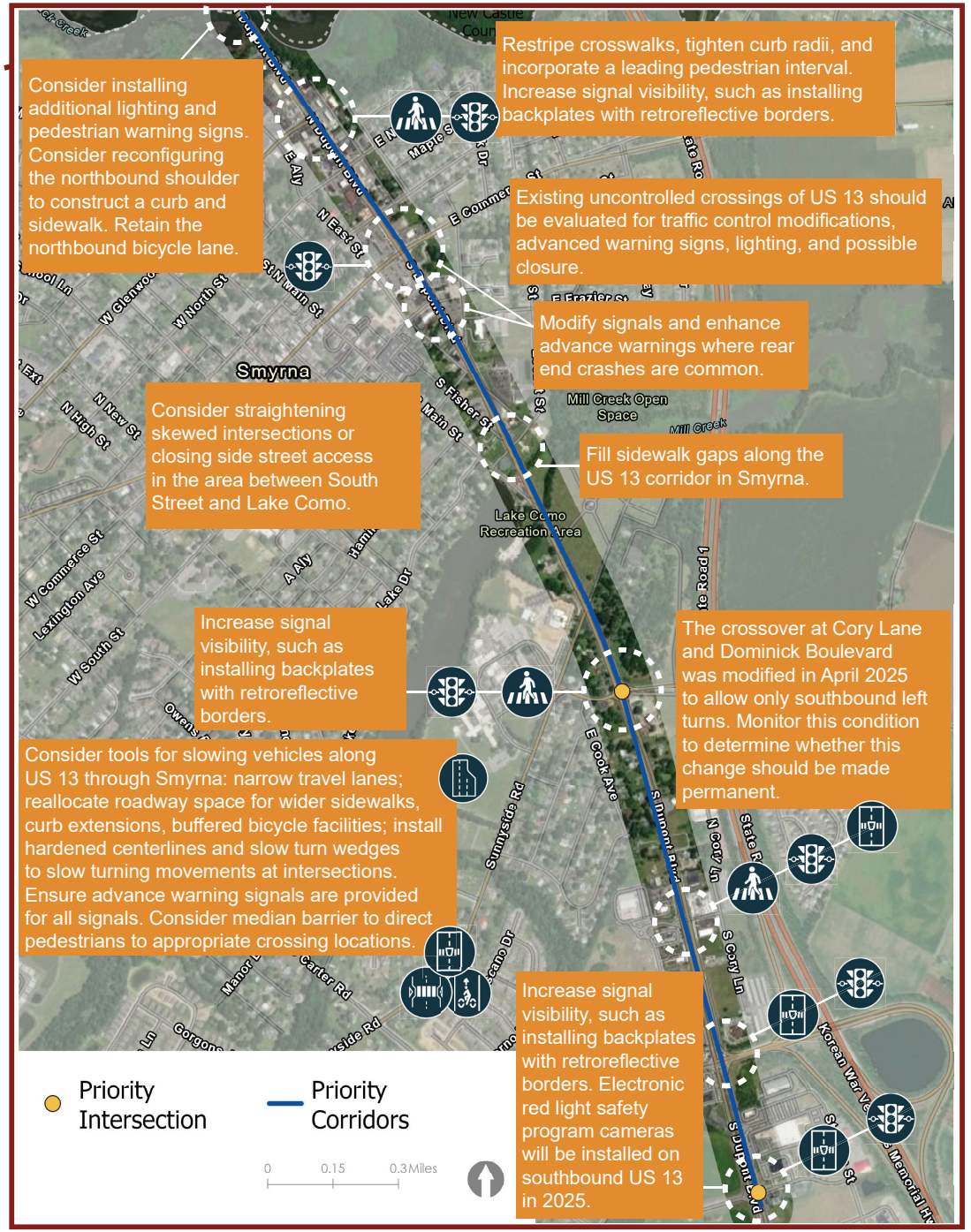
1. There are no marked pedestrian crossings of US 13 between E Commerce Street and Canwit Drive in Smyrna. Existing uncontrolled, marked crosswalks in the northern portion of the corridor lack best practices for the given speeds and volumes. Portions of the corridor lack accessible sidewalks and dedicated multimodal facilities.

2. This corridor is serving many needs. It is both a local commercial hub and a street for through traffic. Tools to keep prevailing speeds at 30 to 35 mph are likely to improve safety while maintaining traffic capacity.

3. Rear end crashes are common along this corridor. Signal modifications are suggested to address this pattern.

POTENTIAL COUNTERMEASURES

- High Visibility Crosswalk
- Curb Extension
- Intersection Daylighting
- Median/Pedestrian Island
- Speed Hump
- Raised Crosswalk/Intersection
- Flashing Beacon
- Signal Modification
- Bicycle Lane
- Roadway Reallocation



DOVER KENT MPO
METROPOLITAN PLANNING ORGANIZATION

KITTELSON & ASSOCIATES

Recommendations

Kent County Safety Action Plan:
Making Kent County's Streets Safer for All

US 13 / Hickory Ridge Road

KEY CORRIDOR CONSIDERATIONS

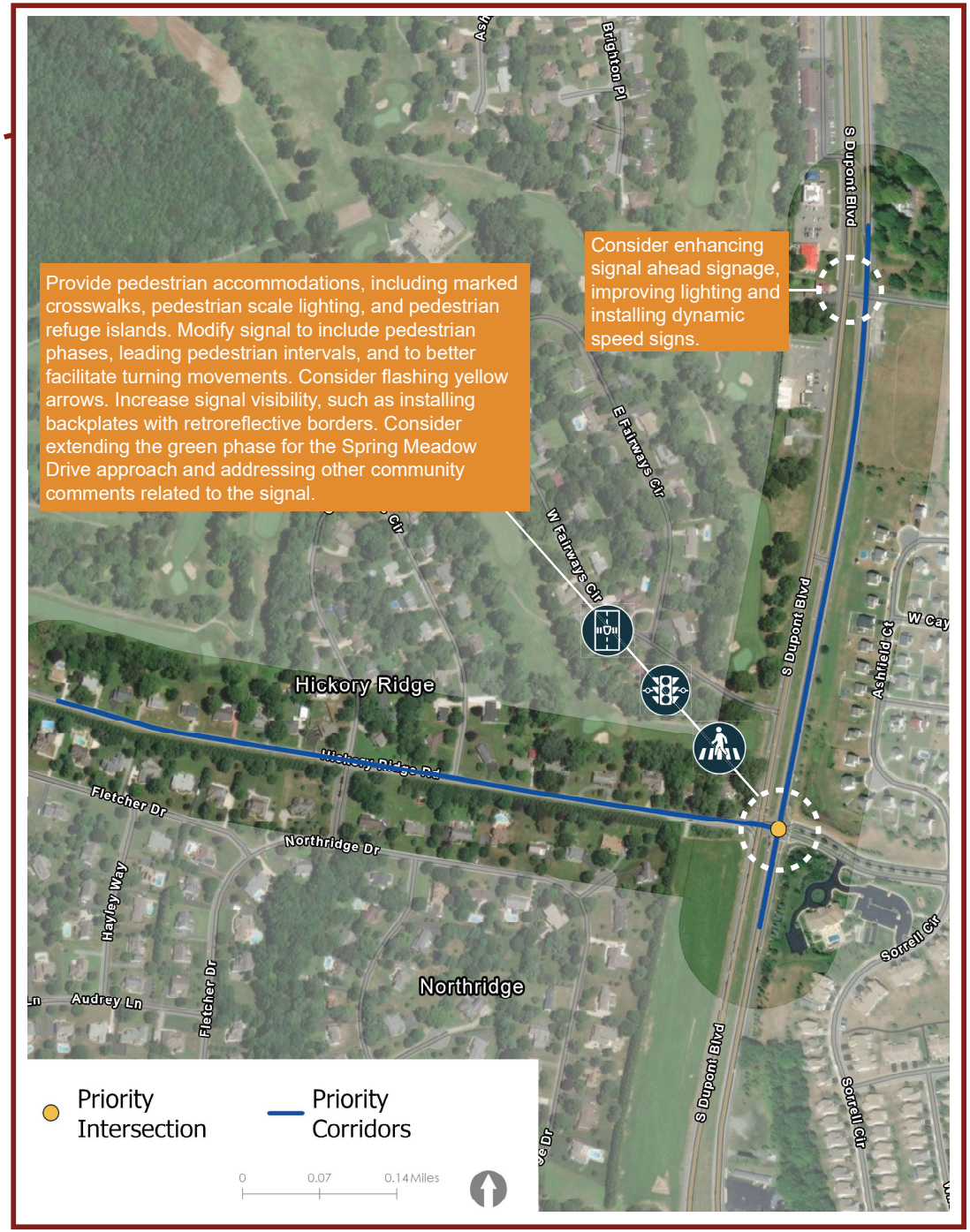
1. The intersection of US 13 and Hickory Ridge Road lacks pedestrian accommodations.

2. The community raised several concerns about the US 13 / Hickory Ridge intersection, indicating that speeding and red light running are key challenges. Residents suggest that there should be increased green time for the side streets.

3. Common crash types include angle, rear end, and sideswipe crashes.

POTENTIAL COUNTERMEASURES

- High Visibility Crosswalk
- Curb Extension
- Intersection Daylighting
- Median/Pedestrian Island
- Speed Hump
- Raised Crosswalk/Intersection
- Flashing Beacon
- Signal Modification
- Bicycle Lane
- Roadway Reallocation



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Recommendations

Kent County Safety Action Plan:
Making Kent County's Streets Safer for All

US 13 through Cheswold

KEY CORRIDOR CONSIDERATIONS

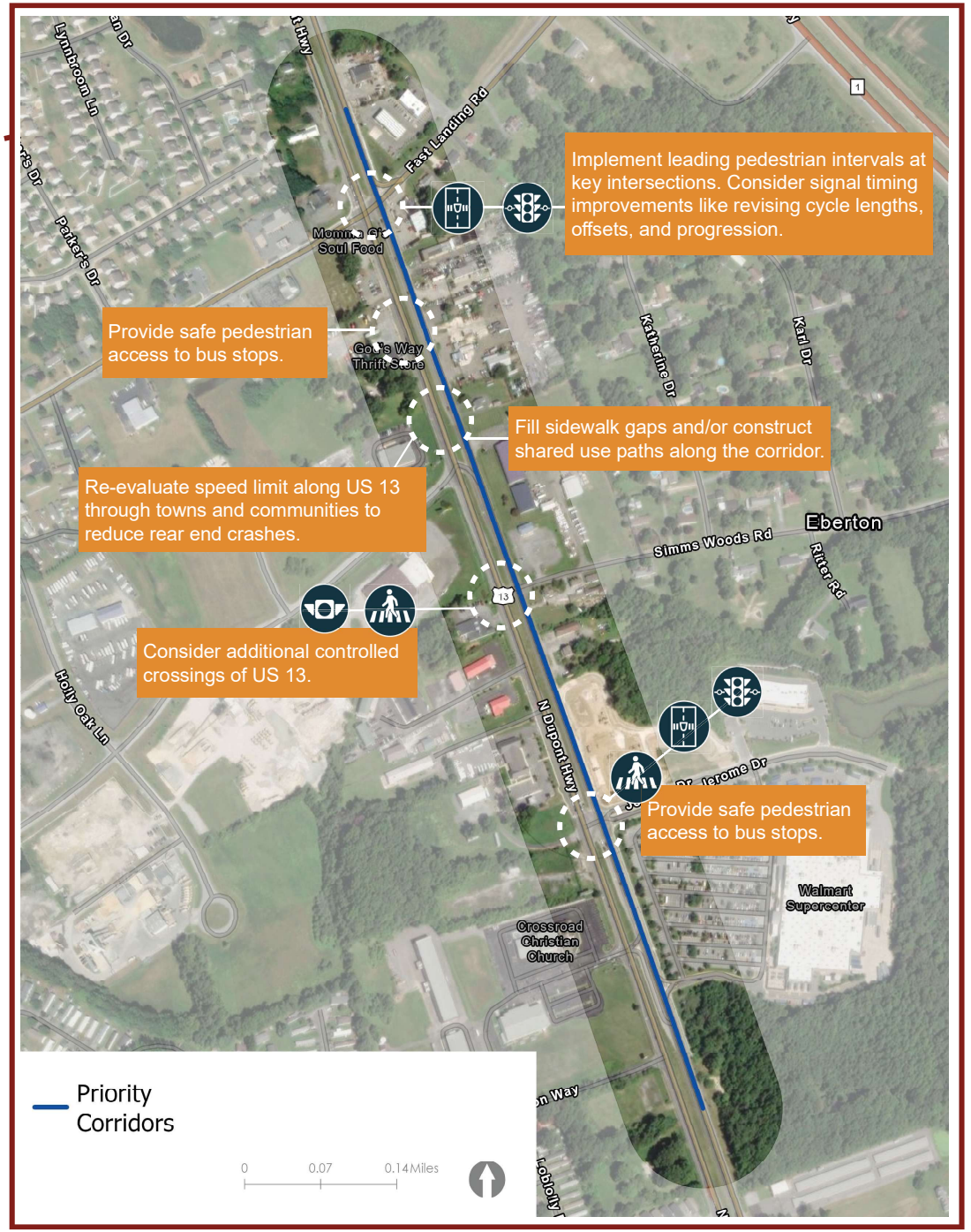
1. Pedestrian crossings of US 13 in Cheswold are long without refuge. Some bus stops lack safe pedestrian access, and there are gaps in the sidewalk network along the corridor.

2. The speed limit along US 13 is 55 mph through Cheswold. Tools may be needed to slow traffic through communities and speed limits should be re-evaluated.

3. Rear end crashes are common along US 13 through Cheswold.

POTENTIAL COUNTERMEASURES

- High Visibility Crosswalk
- Curb Extension
- Intersection Daylighting
- Median/Pedestrian Island
- Speed Hump
- Raised Crosswalk/Intersection
- Flashing Beacon
- Signal Modification
- Bicycle Lane
- Roadway Reallocation



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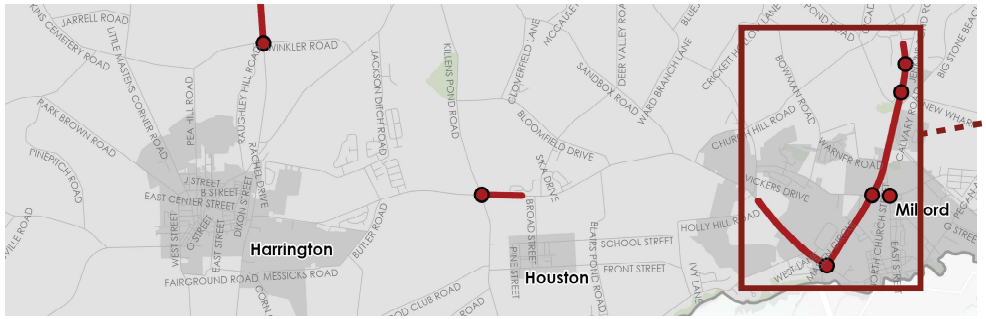
Recommendations

Kent County Safety Action Plan:
Making Kent County's Streets Safer for All

SR 1, US 113, & Milford Harrington Hwy in Milford



KEY CORRIDOR CONSIDERATIONS

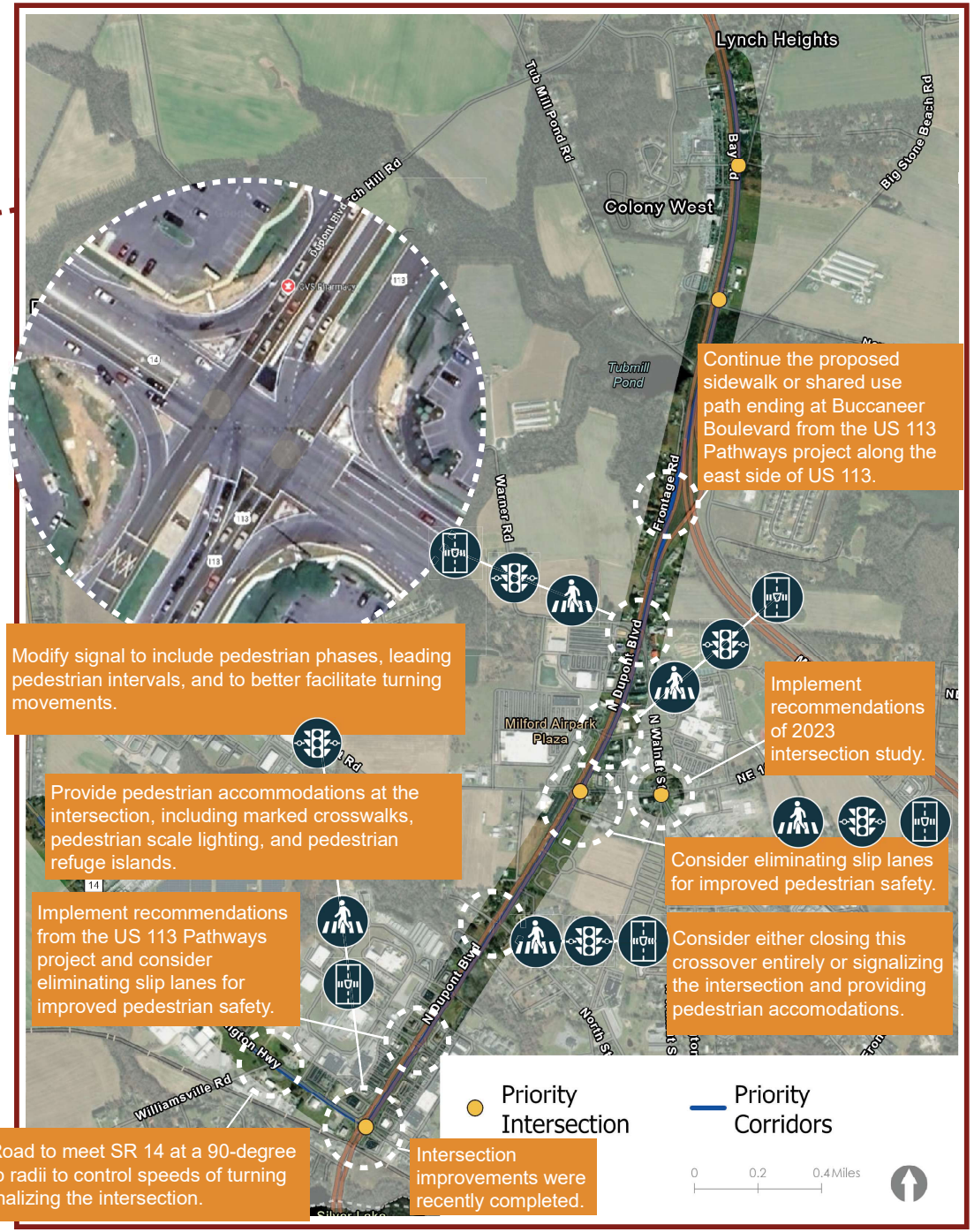
1. There are no existing pedestrian accommodations at the intersection of US 113 and Milford Harrington Highway.

2. There is a shared use path along a short portion of the US 113 corridor, but much of the corridor lacks dedicated pedestrian and bicycle facilities despite there being many destinations for these users. There are ongoing safety projects projects along the US 113 corridor in Milford, including a road safety audit, a lighting project, a shared use path, and signal improvements.

3. Several intersections along the US 113 corridor are wide with complicated turning movements. Multimodal intersection safety, access, and control are key.

POTENTIAL COUNTERMEASURES

- High Visibility Crosswalk
- Raised Crosswalk/Intersection
- Curb Extension
- Flashing Beacon
- Intersection Daylighting
- Signal Modification
- Median/Pedestrian Island
- Bicycle Lane
- Speed Hump
- Roadway Reallocation



Continue the proposed sidewalk or shared use path ending at Buccaneer Boulevard from the US 113 Pathways project along the east side of US 113.

Modify signal to include pedestrian phases, leading pedestrian intervals, and to better facilitate turning movements.

Implement recommendations of 2023 intersection study.

Provide pedestrian accommodations at the intersection, including marked crosswalks, pedestrian scale lighting, and pedestrian refuge islands.

Consider eliminating slip lanes for improved pedestrian safety.

Implement recommendations from the US 113 Pathways project and consider eliminating slip lanes for improved pedestrian safety.

Consider either closing this crossover entirely or signalizing the intersection and providing pedestrian accomodations.

Realign Williamsville Road to meet SR 14 at a 90-degree angle with smaller curb radii to control speeds of turning vehicles. Consider signalizing the intersection.

Intersection improvements were recently completed.

DOVER KENT MPO
METROPOLITAN PLANNING ORGANIZATION

KITTELSON & ASSOCIATES

Recommendations

Kent County Safety Action Plan:
Making Kent County's Streets Safer for All

Scarborough Road / McKee Road / College Road

KEY CORRIDOR CONSIDERATIONS

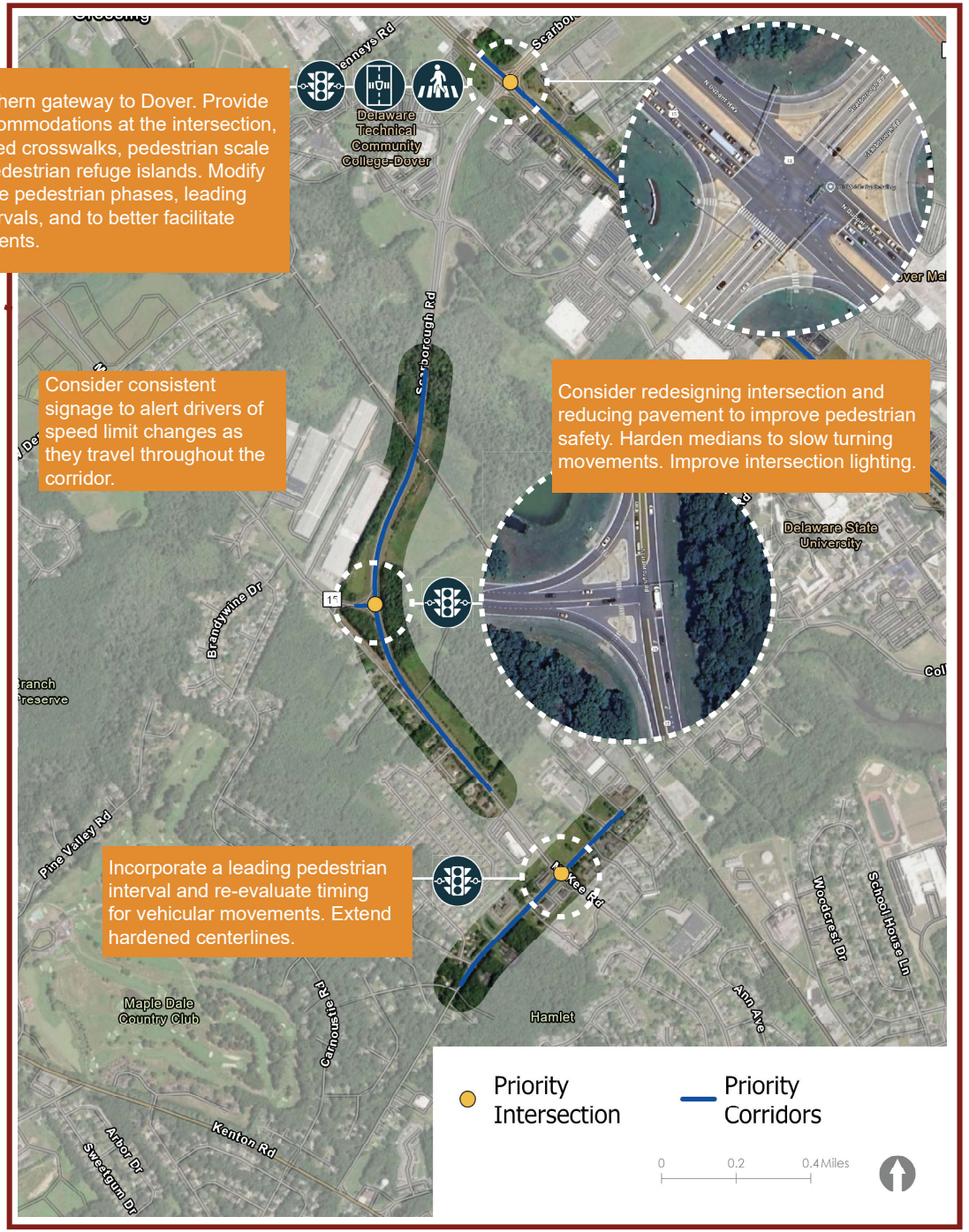
1. There is an existing shared use path along Scarborough Road and McKee Road, providing multimodal connectivity between nearby university campuses.

2. Intersections should be improved to better accommodate safe, multimodal access.

3. Rear end crashes are common at the Scarborough Road / McKee Road intersection.

POTENTIAL COUNTERMEASURES

- High Visibility Crosswalk
- Curb Extension
- Intersection Daylighting
- Median/Pedestrian Island
- Speed Hump
- Raised Crosswalk/Intersection
- Flashing Beacon
- Signal Modification
- Bicycle Lane
- Roadway Reallocation



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METROPOLITAN PLANNING ORGANIZATION

KITTELSON & ASSOCIATES

Recommendations

Kent County Safety Action Plan:
Making Kent County's Streets Safer for All

US 13 through Dover

KEY CORRIDOR CONSIDERATIONS

1. There are several corridors and intersections in Dover where more severe crashes are occurring.

2. The US 13 corridor through Dover is serving many needs. It is both a local commercial hub and a street for through traffic. Tools are needed to slow vehicles while still providing traffic capacity.

3. Improvements in Downtown Dover should build off the Downtown Dover Pathways Plan.

POTENTIAL COUNTERMEASURES

- High Visibility Crosswalk
- Curb Extension
- Intersection Daylighting
- Median/Pedestrian Island
- Speed Hump
- Raised Crosswalk/ Intersection
- Flashing Beacon
- Signal Modification
- Bicycle Lane
- Roadway Reallocation

APPLYING TOOLS

Implement recommendations of the US 13 Pedestrian Safety Study completed by DelDOT in 2020.

Provide wide sidewalks or shared use paths along US 13 through Dover, set back from the roadway.

Provide improved wayfinding, directional, and advance warning signage.

Improve vehicular and pedestrian scale lighting.

Re-evaluate speed limits on arterials through towns, cities, and communities.

Where possible, narrow travel lanes and reallocate space for medians, wider sidewalks, and separated multimodal facilities.

Relocate bicycle facilities behind curb where they are separated and protected from traffic.

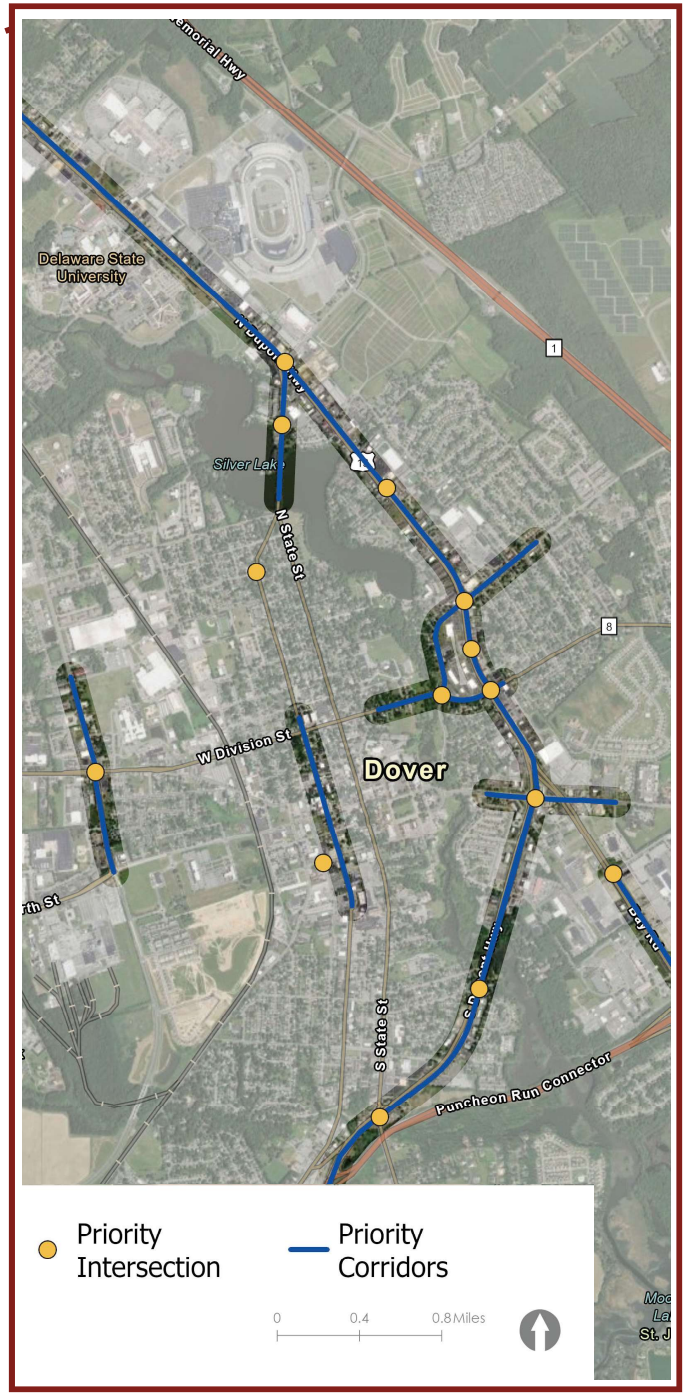
Enhance pedestrian accommodations at intersections, including providing or restriping marked crosswalks and installing pedestrian refuge islands.

Modify signals to include pedestrian phases, leading pedestrian intervals, and to better facilitate turning movements.

Where appropriate, provide hardened centerlines and slow turn wedges to slow turning movements.

In Downtown Dover, consider traffic calming treatments such as speed humps, curb extensions, and raised intersections.

Implement the recommendations of the 2024 Downtown Dover Pathways study and the recommendations of the MLK Boulevard and South Little Creek Road Connector project, funded by a 2024 RAISE grant.



DOVER KENT MPO
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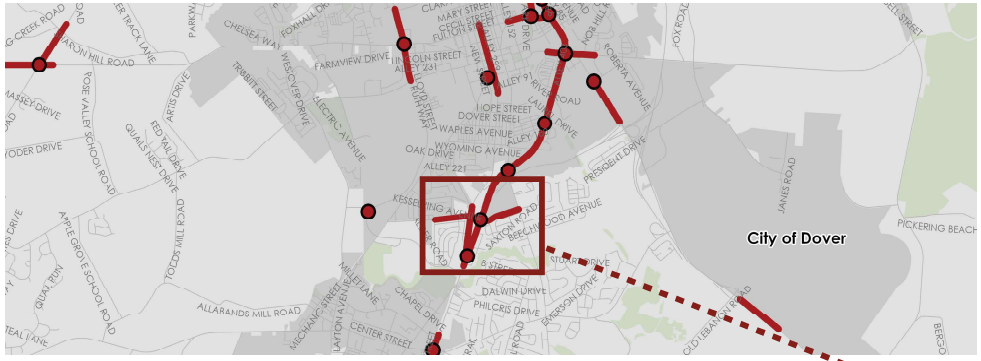
Recommendations

Kent County Safety Action Plan:
Making Kent County's Streets Safer for All

US 13 / Webbs Lane



KEY CORRIDOR CONSIDERATIONS

1. There have been severe pedestrian and bicyclist crashes at the intersection of US 13 and Webbs Lane.

2. Angle crashes are common at the intersection of US 13 and Governors Avenue.

POTENTIAL COUNTERMEASURES

- High Visibility Crosswalk
- Curb Extension
- Intersection Daylighting
- Median/Pedestrian Island
- Speed Hump
- Raised Crosswalk/Intersection
- Flashing Beacon
- Signal Modification
- Bicycle Lane
- Roadway Reallocation

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Other Corridor Recommendations

This section shows the locations of the High Injury Network that have a lower level of severity than the priority corridors depicted in the recommendation graphics in the previous section. Locations were grouped into clusters based on location. The tables below shows the location, the majority crash type, bicyclist or pedestrian crashes, and details the potential countermeasures to reduce crashes. The maps show the High Priority Intersections and Segments as well as the Equity Focus Areas throughout the county.

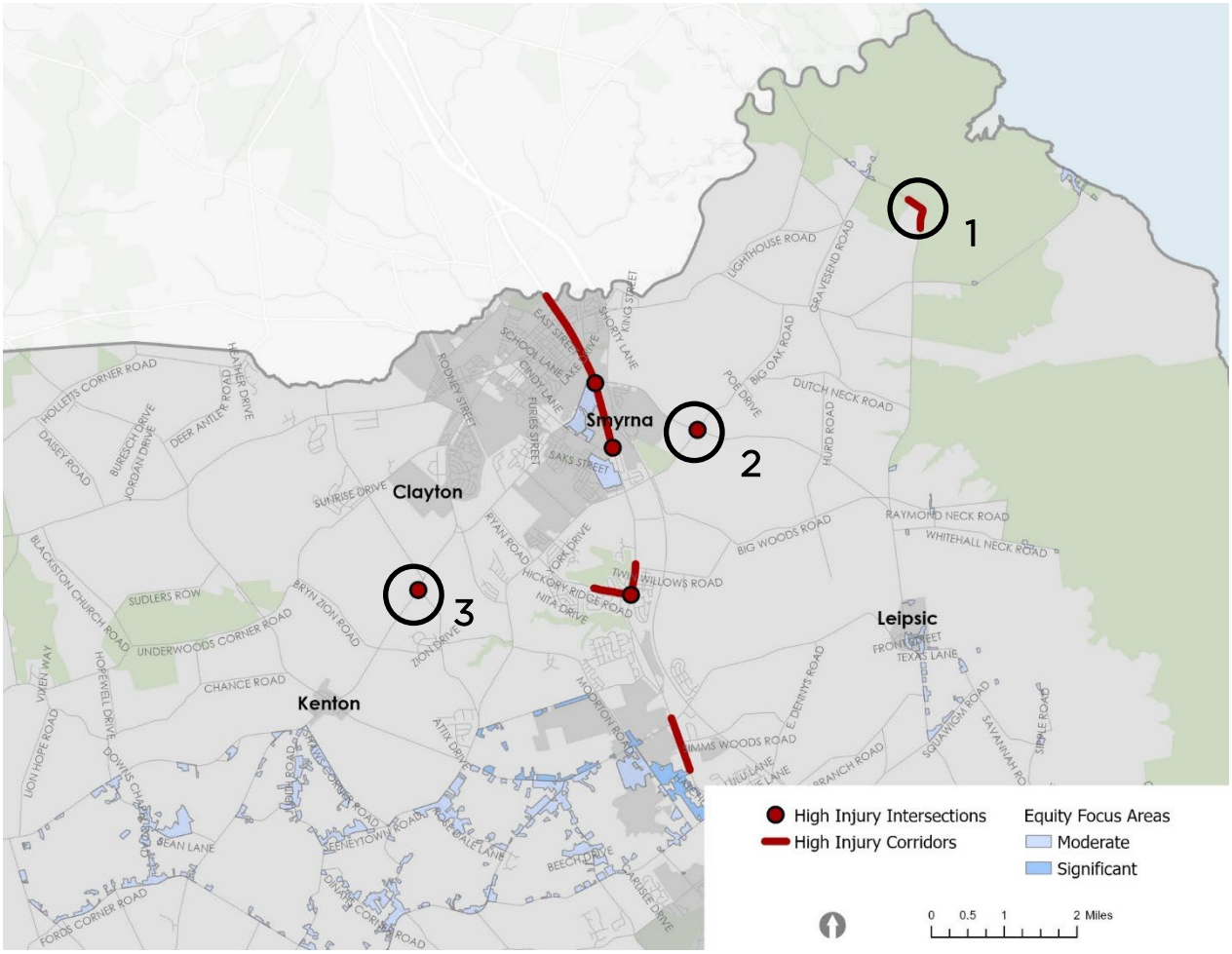
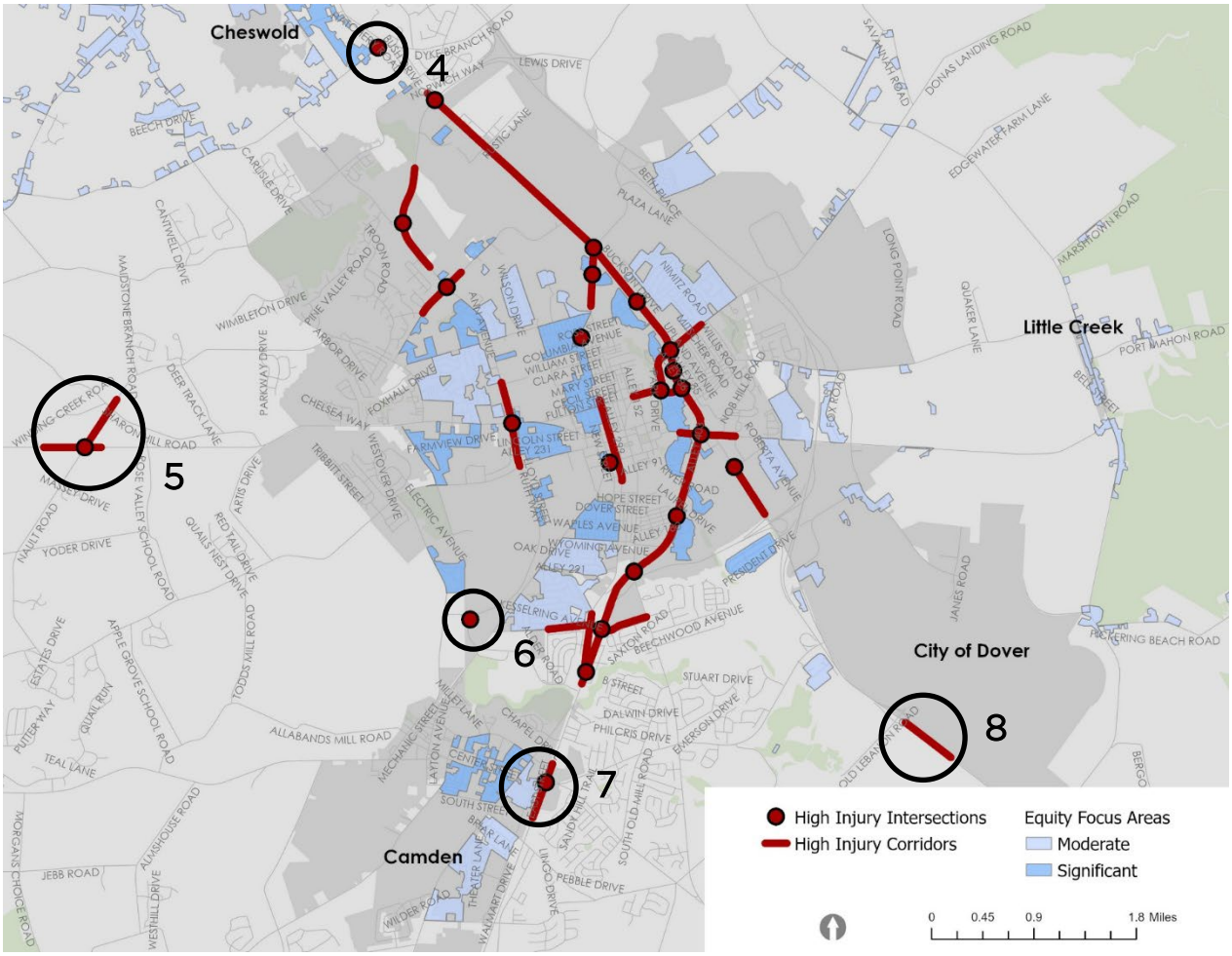
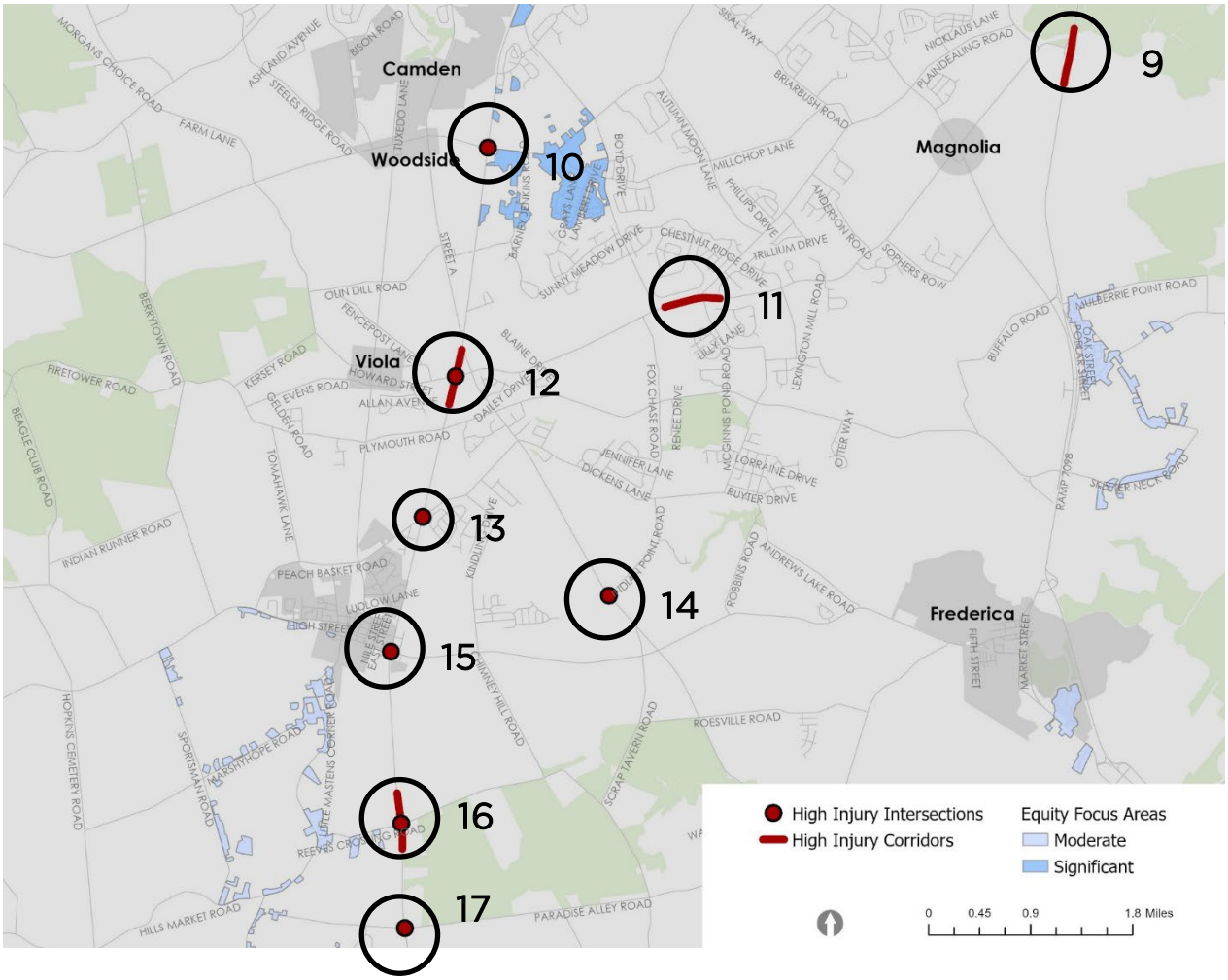


Table 4 Cluster Recommendation Table (2019 – 2023 Crash Data)

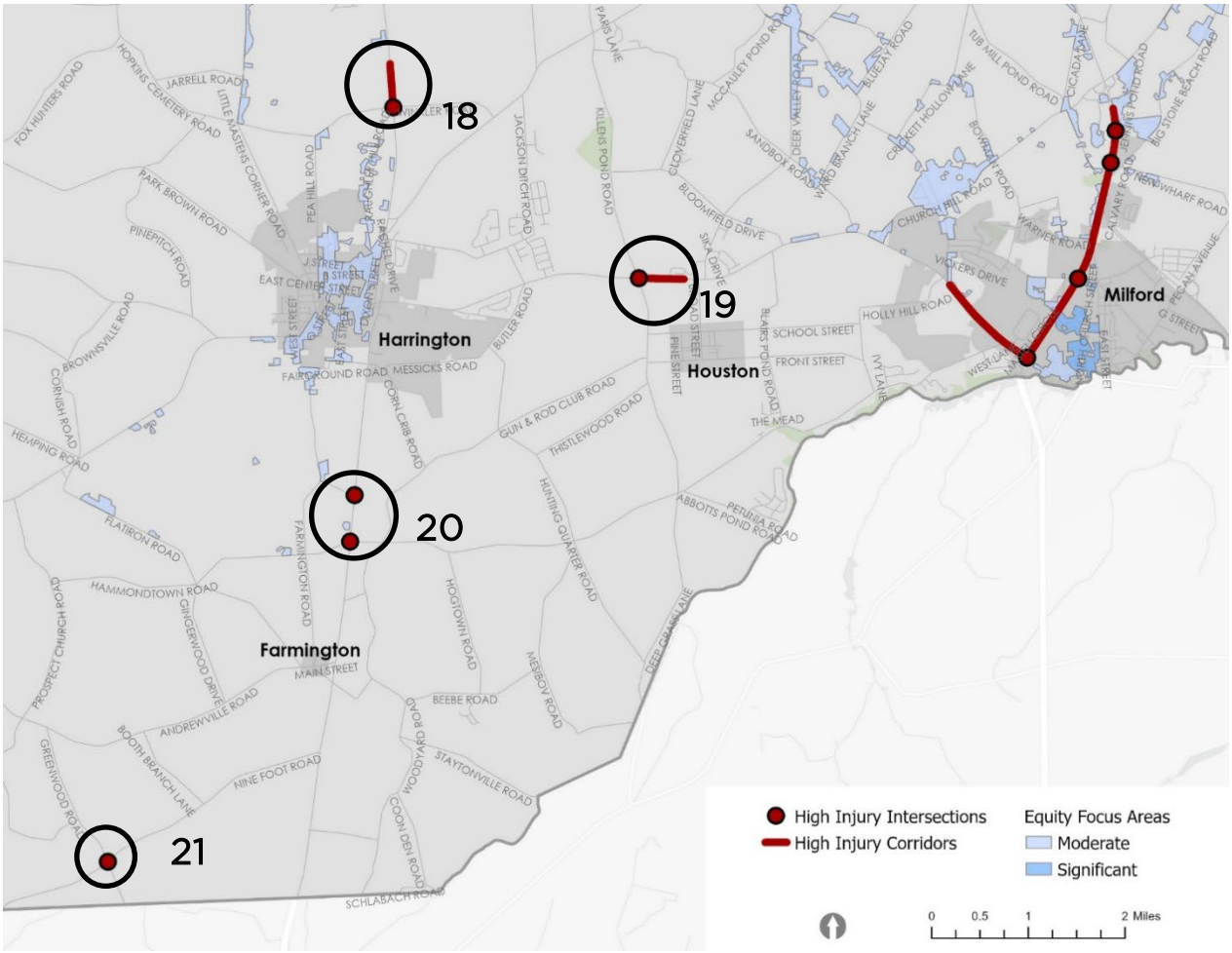
Location	Map ID	Top Crash Type	VRU Crashes	Key Takeaways	Potential Countermeasures
Hay Point Landing Road, Smyrna	1	SV (64%)	No bicyclist or pedestrian crashes	Many lane-departure crashes Sharp curve on road	Rumble Strips Chevrons Guiderails Improved lighting
Big Oak Road/Smyrna Leipsic Road	2	Angle (75%)	No bicyclist or pedestrian crashes	Considerable amount of dark hour crashes Young drivers are involved in majority of the crashes	Advance warning signs Roadway safety campaigns since 75% of crashes involved young or mature drivers Improved lighting
SR 15/Mount Friendship Road	3	SV (50%)	No bicyclist or pedestrian crashes	Fatalities from rear end crashes Many lane-departure crashes	Advance warning signs Rumble Strips Install or widen paved shoulder Widen edge lines


Cheswold
4
5
6
7
8
Little Creek
City of Dover
Camden
High Injury Intersections
High Injury Corridors
Equity Focus Areas
Moderate
Significant
0
0.45
0.9
1.8 Miles

Location	Map ID	Top Crash Type	VRU Crashes	Key Takeaways	Potential Countermeasures
US 13/Dyke Branch Road	4	Rear End (60%)	1 pedestrian SSI crash	Rear end crashes at intersection Pedestrian safety issues	Advance warning signs Install "No Ped Movement" sign as there are no pedestrian crossing
Chestnut Grove Road and Winding Creek Road	5	Angle (51%)	2 pedestrian SSI crashes	Angle crashes at intersection Pedestrian safety issue Young drivers and driver fatigue are big issues	Roadway safety campaigns Improve intersection sight distance Install "No Ped Crossing" sign Consider signal phasing changes for angle crashes
POW/MIA Parkway and Wyoming Mill Spur	6	Angle (44%)	No bicyclist or pedestrian crashes	Angle crashes at intersection Young drivers are a concerning issue	Roadway safety campaigns
US 13, Old North Road to US 13 at Positive Outcomes Charter School	7	Angle (100% of all FSSI) Rear End (67%)	No bicyclist or pedestrian crashes	Many FSSI crashes occurred in dark conditions with no light Young/ mature driver and fatigued drivers are major issues	Advance warning signs Improved lighting Roadway safety campaigns Improve intersection sight distance
SR 1 along Dover Airforce Base	8	SV (48%)	No bicyclist or pedestrian crashes	Many FSSI crashes occurred in dark conditions with no light Lane-departure crashes are a significant concern	Rumble strips Improved lighting


Camden
Woodside
Magnolia
Viola
Frederica
9
10
11
12
13
14
15
16
17
High Injury Intersections
High Injury Corridors
Equity Focus Areas
Moderate
Significant
0
0.45
0.9
1.8 Miles

Location	Map ID	Top Crash Type	VRU Crashes	Key Takeaways	Potential Countermeasures
SR 1 south of Barkers Landing Road	9	SV (57%)	No bicyclist or pedestrian crashes	Many lane-departure crashes	Rumble strips
US 13/SR 10	10	Rear End (61%)	No bicyclist or pedestrian crashes	Rear end crash at intersection	Advance warning signs
Irish Hill Road	11	SV (60% of all FSSI) Angle (40% of all FSSI)	No bicyclist or pedestrian crashes	Many lane-departure crashes FI crashes occurred in dark condition with no light	Rumble strips Improved lighting Improve intersection sight distance
US 13, Canterbury Road to Angie Drive	12	Angle (26%) Rear End (39%)	No bicyclist or pedestrian crashes	Angle and rear end crashes at intersection	Advance warning signs Consider signal phasing changes
US 13 Andrews Lake Road and Peach Basket Road	13	Angle (48%)	1 pedestrian fatality	Pedestrian safety issue Lighting is a major issue	Improved lighting Install "No Ped Crossing" sign
Canterbury Road / Indian Point Road	14	SV (50%)	No bicyclist or pedestrian crashes	Many lane-departure crashes Lighting is an issue	Rumble strips Improved lighting
US 13/ E Main Street	15	Rear End (62%)	No bicyclist or pedestrian crashes	Rear end crashes at intersection	Advance warning signs
US 13, Reeves Crossing Road to Starkey Lane	16	SV (34%) Rear End (33%)	No bicyclist or pedestrian crashes	Lane-departure crash on segments and rear end crashes at intersection Lighting is an issue	Advance warning signs Rumble strips Improved lighting
US 13/Paradise Alley Road	17	Angle (41%)	No bicyclist or pedestrian crashes	Angle crash at intersection	Improve intersection sight distance


18
19
20
21
Harrington
Houston
Milford
Farmington
High Injury Intersections
High Injury Corridors
Equity Focus Areas
Moderate
Significant
0
0.5
1
2 Miles

Location	Map ID	Top Crash Type	VRU Crashes	Key Takeaways	Potential Countermeasures
US 13, Winkler Road to 0.5 Miles North of Winkler Road	18	SV (42%) Angle (100% of all fatality)	No bicyclist or pedestrian crashes	Lane departure crashes	Rumble strips
SR 14, Deep Grass Lane to Cams Fortune Way	19	Angle (48%) SV (35%)	No bicyclist or pedestrian crashes	Lane departure crash on segment and angle crash at intersection Lighting is an issue	Rumble strips Improved lighting
US 13/ Powell School Road and US 13/ Williamsville Road	20	Angle (38%) SV (34%)	No bicyclist or pedestrian crashes	Angle and SV crash at TWSC intersection Lighting is an issue	Rumble strips Improved lighting
Greenwood Road / Nine Foot Road	21	Angle (80%)	No bicyclist or pedestrian crashes	Angle crash at TWSC intersection	Improve intersection sight distance

NON-INFRASTRUCTURE SAFETY SOLUTIONS

Non-infrastructure safety solutions include education, enforcement, maintenance, and operations in the form of programs, policies, and other initiatives. The Safe System Approach suggests that these types of strategies are important to implement in conjunction with engineered solutions to alter driver behaviors and transform the culture of driving and travelling in a community. These strategies are described below.

EDUCATION STRATEGIES

Education strategies focus on enhancing how people learn to travel more safely in Kent County. These strategies can be relatively low in cost, but transformative in culture.

Enhance Driver Education

Relevant partners, including DKMPO and the Office of Highway Safety, should complete a review of existing driver education programs and policies. It is especially important that drivers understand the costs of speeding and reckless driving. Roadway safety campaigns help increase drivers' awareness of the costs of risky driving behavior. To further reduce severe-crash factors, the curriculum should also emphasize to recognize and avoid fatigued driving and stress the legal and personal consequences of driving under the influence while promoting safe-ride and designated-driver options. Kent County has a diverse traveler population, including residents from the Plain Sect and Amish community. Therefore, it is important to have a variety of safety campaigns. Individual campaigns could target young drivers, horse-drawn buggies, and a specific campaign to encourage drivers to use their seat belts more often.

Education and Outreach with Families, Children and Teenagers

Transportation safety should begin being taught at a young age, including at all school levels, and should continue into adulthood. The education approach should consider how children and families are discussing transportation safety. Providing take-home materials prompts household conversations about seat-belt use, and the dangers of getting into a car with a fatigued or impaired driver. SafeAcross is a national pedestrian safety campaign with educational resources. Schools can pair this material with short classroom modules that illustrate how distraction—whether on foot or behind the wheel—raises crash risk. Communities can host bicycling events that teach children how to bike on city streets. A walking or biking school bus could gather students together to take active modes of transportation to school. High school level education campaigns about distracted and impaired driving are also important.

ENFORCEMENT STRATEGIES

Enforcement is another important tool in controlling roadway behaviors for safer outcomes. It is imperative that enforcement approaches be equitable and contribute to safer outcomes for all.

Enhanced Enforcement Operations

Through public engagement activities, members of the community have raised concerns about the lack of current enforcement of transportation safety. Police enforcement can increase driver awareness and consequently reduce crashes. Any directed enforcement strategies should be undertaken with great care to avoid inequitable enforcement activities.

The most effective enforcement strategies tend to be those that can be done transparently, consistently, and in coordination with education or outreach campaigns such as enforcement in school zones during school hours. The MPO should coordinate with the Delaware State Police, Office of Highway Safety, and possibly DelDOT to review enforcement operations to avoid enforcement that targets marginalized communities. Crash data can help officers undertake enforcement in appropriate locations, beginning with warnings and education, followed by ticketing and fees.

POLICY STRATEGIES

Policies are an important way to codify commitments to cultural change. Policies help direct funding and resources.

Complete Streets Policies for Municipalities

The MPO could assist municipalities in developing and adopting Complete Streets policies to encourage transportation safety best practices. According to Smart Growth America, a Complete Streets policy is a set of planning and engineering principles that provide safe access to all road users, not just drivers[11]. This policy sets a standard framework for prioritizing multimodal safety as part of private and public investment. Formalized guidelines for implementing active transportation policies and infrastructure help to create a uniform approach and avoid an inequitable distribution of resources. DelDOT's Draft Complete Streets Design Guide, published in 2024, is a great tool for agencies to plan their own program.[12]

[11] Smart Growth America. *What Are Complete Streets.* https://smartgrowthamerica.org/what-are-complete-streets/
[12] DelDOT. *DelDOT Complete Streets Design Guide. https://deldot.gov/Publications/pdfs/DelDOT-Complete-Streets-Design-Guide.pdf*

Safe Routes to School for Municipalities

The MPO could assist municipalities in developing and adopting Safe Routes to School policies to ensure students can travel safely to school by any means of travel. Any Safe Routes to School program should be guided by DelDOT and FHWA's existing program guidelines. Coordinating with local stakeholders to promote the program, ensure proper enforcement of traffic laws, and evaluation of progress are key steps to a successful program.

PROGRAMMATIC STRATEGIES

Programs are another tool in combination with engineering solutions to reduce speeding and improve driver behavior.

Implement Municipal Traffic Calming Programs

The MPO can coordinate with participating municipalities to implement programs focused on implementing traffic calming treatments, prioritizing residential streets where there are speed concerns. Treatments may include speed humps, mini traffic circles, hardened centerlines, and daylighting. Municipalities can use an objective, data-driven process and collect community feedback to identify streets for these types of targeted, quicker-implementation traffic calming improvements. In areas of Kent County not within municipal boundaries, DelDOT administers a traffic calming program.

Conduct Road Safety Audits

Conducting focused road safety audits at key crash locations can help communities identify specific approaches. This is especially pertinent at high priority intersections identified through crash analysis and systemic safety analysis. As relevant, doing audits in darker or especially busy conditions might reveal root crash causes. Road safety audits are a flexible program and can be conducted on a range of corridor widths and lengths. Potential recommendations from the road safety audits can be implemented incrementally as time and budget allows.

IMPLEMENTATION

Implementation planning for projects is informed by planning level cost opinions, potential funding sources, prioritization, and coordination with any necessary stakeholders. The priority level and scoring for each project was developed by a data-driven process and informed by public feedback during the engagement process.

An implementation matrix is attached at the end of this section of the SAP, outlining key implementation considerations.

PLANNING LEVEL COST OPINION

Planning level costs have been developed for the recommended projects. These estimates are intended to provide a general idea of how much a full project might cost. Projects can also be broken into smaller, less costly portions.

Infrastructure Project Cost Estimates

Typical costs were determined for crosswalks, daylighting, curb extensions, pedestrian refuge islands, medians, raised intersections, flashing beacons, signal modifications, road reallocations, and bicycle lanes. For each treatment, a general set of dimensions was assumed to represent a typical application. Additionally, the following key assumptions were made:

- Unit prices are based on DelDOT item price histories.
- Additional costs are applied to the material costs for treatments which modify existing drainage patterns, including drainage and stormwater management (30%), utility relocations (10%), and erosion and sediment control (8%), totaling 48%.
- An additional planning level contingency of 30% of the base cost estimate is also included.
- Engineering costs were applied to total project costs based on general best practices (e.g., 15% for <$1M, 12% for $1M to $5M, 10% for >$5M).
- Costs are in 2025 dollars, with no assumption for inflation.

For the high priority corridors, the approach involved developing a cost estimate for each safety countermeasure treatment and then multiplying by the number of times that the treatment is recommended along the corridor.

Non-Infrastructure Solutions Cost Estimates

Specific costs have not been identified for the non-infrastructure solutions. Instead, approximate costs are provided on a scale from low to medium to high. Generally, education campaigns are a relatively low-cost effort. Road safety audits are also typically low cost. Some of the non-infrastructure solutions outlined herein may require additional study or hiring of consultant services for planning and administrative tasks. Allocating more resources

to programs can be more costly, particularly for increasing enforcement resources and expanding maintenance operations.

Overall, planning level costs for non-infrastructure solutions are at the municipal level and are as follows:

- **Low –** less than $100,000 to implement
- **Medium –** between $100,000 and $500,000 to implement
- **High** – more than $500,000 to implement

POTENTIAL FUNDING SOURCES

Several agencies and organizations may be involved in implementing the corridor projects and spot specific improvements. All the projects must consider not only the capital cost of installing the countermeasures, but operational and maintenance budgets as well.

Local Funding Sources

Capital Funding

DelDOT's or a municipality's capital budget may fund various types of projects and programs. Improvements outlined herein could be eligible for future capital funding.

Maintenance and Resurfacing

Simple improvements like signs and pavement markings could be achieved through street resurfacing and maintenance activities. There may also be savings achieved by tacking simple transportation improvements onto other projects being carried out through state or municipal departments, such as utility, stormwater, and parks projects.

Local Development

Improvements to the transportation system can be realized through private investment and public-private partnerships. Depending on development scale and land use, private construction could build out curb extensions, improved crosswalks, bicycle facilities, and other multimodal accommodations.

State Funding Sources

DelDOT Transportation Infrastructure Investment Fund (TIIF)

DelDOT has a competitive grant program to help build infrastructure to support new or expanding businesses across the state.

Statewide Bicycle and Pedestrian Funding Program ("bike/ped pool")

DelDOT has a limited amount of funding available each year for high-priority bicycle and pedestrian projects. No local match is needed. Applications are submitted in conjunction with the MPO. Prioritization criteria for this program are described in DelDOT's *Blueprint for a Bicycle Friendly Delaware.*

DelDOT Community Transportation Fund (CTF)

DelDOT has funding available for municipalities to address small improvements in their roadway infrastructure. Eligible projects include: repaving, curb replacements, sidewalk installations and repairs, and other shovel-ready projects. Each of Delaware's legislators has an equal amount of annual funding for their constituents.

Federal Funding Sources

Safe Streets and Roads for All Funding (SS4A)

As part of the Bipartisan Infrastructure Law, this program funds projects that reduce serious crashes. There are Planning and Demonstration Grants offered as well as Implementation Grants. The MPO has received the funding for this countywide SAP under this program. Once the plan is underway, the MPO or local jurisdictions within the county are eligible to apply for Supplemental Planning and Demonstration Grants, which may be used to build low-cost safety improvements using shorter-term materials like paint and flexible delineators. When the plan is finished, those jurisdictions may apply for Implementation Grants to build permanent infrastructure to improve safety.

Transportation Alternatives Program (TAP)

DelDOT administers this Federal program, which is available for communities across the state to increase their development of transportation projects centered on multimodal modes of travel. Eligible projects can include pedestrian and bicycle infrastructure, ADA accessibility, implementing a safe routes to schools program, and more.

Active Transportation Infrastructure Investment Program (ATIIP) – This program is a competitive grant program to construct projects to provide safe and connected active transportation facilities in active transportation networks or active transportation spines. ATIIP will award two types of grants: Planning and Design Grants and Construction Grants.

Better Utilizing Investments to Leverage Development (BUILD) – This grant program, formerly known as RAISE or TIGER, helps communities carry out surface transportation infrastructure projects that have a significant local or regional impact. Funding is available for capital projects as well as for planning efforts. BUILD is typically applied to relatively large projects.

IMPLEMENTORS AND COLLABORATORS

Several agencies and organizations will be involved in implementing the corridor projects, systemic safety improvements, and non-infrastructure strategies proposed herein. These partners were involved in the development of the SAP as part of the Safety Working Group. The MPO should facilitate an ongoing task force comprised of these partners to implement the SAP.

Delaware Department of Transportation (DelDOT) – A majority of the priority corridors are owned, maintained, and operated by DelDOT. Improvements to these corridors will involve partnership and coordination with DelDOT.

Dover Kent MPO (DKMPO) – Regional agency coordination should continue, especially when dealing with roadway networks that are part of the regional transportation network.

Community and Business Organizations – Coordination with local community and business organizations as well as representatives from local businesses, schools, churches, and other resource centers should be continued through implementing the SAP. This may be especially important if there are impacts to driveways, on-street parking, and loading zones within municipalities.

Local Municipalities – Cities and towns throughout the county will be another key partner for implementing corridor projects. Projects along locally maintained streets will require additional planning and partnership with local departments such as Public Works, Planning and Inspections, and Parks and Recreation. Coordination with local emergency services is also key for implementing both infrastructure and non-infrastructure projects.

Delaware Transit Corporation (DART) – Recommendations focused on VRU safety should make sure to coordinate with DART to ensure that safe access to bus stops and amenities is considered in the process.

PRIORITY LEVEL AND PHASING TIMELINE

Infrastructure Projects

The phasing timeline for these corridor projects is based on:

- Short Term - anticipated for design and implementation in the next 0 to 5 years
- Medium Term - anticipated for design and implementation in the next 5 to 10 years
- Long Term - anticipated for design and implementation in the next 10+ years

Some projects may need to be done in phases to achieve the ultimate result. It is anticipated that upon project selection, the following activities will be carried out:

1. Environmental review
2. Preliminary design
3. Final design
4. Right-of-way acquisition
5. Construction
6. Maintenance

Non-Infrastructure Solutions

The priority level for non-infrastructure solutions considers the potential costs and benefits of implementation. The scale in the implementation matrix is as follows:

- **Higher Priority –** solutions with a higher benefit / cost ratio.
- **Medium Priority –** solutions with a moderate benefit / cost ratio.
- **Lower Priority –** solutions with a lower benefit / cost ratio.

The phasing timeline for these non-infrastructure solutions is based on:

- **Short Term –** anticipated for implementation in the next 0 to 3 years
- **Medium Term –** anticipated for implementation in the next 3 to 5 years
- **Long Term –** anticipated for implementation in the next 5+ years

Kent County Safety Action Plan

Kent County, Delaware

Implementation Plan

Kent County Safety Action Plan: Making Kent County's Streets Safer for All

Project Information		Project Implementation					
ID	Projects	Planning Level Cost Opinion	Potential Funding Sources	Implementors & Collaborators	Priority Level	Phasing Timeline	Notes
Infrastructure Recommendations							
1	US 13 through Smyrna	$7M	TAP, SS4A, ATIIP, BUILD, BPP, CTP, TIIF, Mun, M&R	MPO, DelDOT, DTC, Smyrna	Higher	Medium-Term	The Town of Smyrna would like to see additional pedestrian facilities, especially as new developments advance in the southern part of the Town.
2	US 13 and Hickory Ridge Road Intersection	$1M	SS4A, CTP, CTP	MPO, DelDOT, DTC	Lower	Short-Term	Many people in the community expressed concern about this intersection.
3	US 13 through Cheswold	$5.5M	TAP, SS4A, ATIIP, BPP, CTP, TIIF, CTF, Mun, M&R	MPO, DelDOT, DTC, Cheswold	Medium	Long-Term	
4	SR 1 / US 113 / Milford Harrington Highway	$5.5M	TAP, SS4A, ATIIP, BUILD, BPP, CTP, CTP, Mun	MPO, DelDOT, DTC, Milford	Higher	Short-Term	These improvements connect with a number of DelDOT and City projects along US 113.
5	Scarborough Road / McKee Road / College Road Intersection	$2M	SS4A, CTP, Mun	MPO, DelDOT, Dover	Lower	Medium-Term	
6	US 13 through Dover	TBD	TAP, SS4A, ATIIP, BUILD, BPP, CTP, TIIF, CTF, Mun, M&R, Dev	MPO, DelDOT, DTC, Dover	Higher	Short-Term (study) Long-Term (implementation)	An additional study, potentially funded through SS4A supplemental planning, is recommended to determine specific improvements. Some improvements could be implemented more quickly.
7	US 13 and Webbs Lane	$2.5M	TAP, SS4A, CTP, Mun	MPO, DelDOT, DTC, Dover	Medium	Medium-Term	

Legend

Potential funding sources include:

- Transportation Alternatives Program (TAP)
- Safe Streets and Roads for All Funding (SS4A)
- Active Transportation Investment (ATIIP)
- Better Utilizing Investments to Leverage Development Grant Program (BUILD)
- Bicycle / Pedestrian Pool (BPP)
- DelDOT Capital Transportation Program (CTP)
- DelDOT Transportation Infrastructure Investment Fund (TIIF)
- DelDOT Community Transportation Fund (CTF)
- Municipal Capital Funding (Mun)
- Maintenance and Resurfacing (M&R)
- Local Development (Dev)

Cost assumptions are provided separately.

Implementors and Collaborators include:

- Dover Kent Metropolitan Planning Organization (MPO)
- Delaware Department of Transportation (DelDOT)
- Delaware Transit Corporation (DTC)
- City of Dover (Dover)
- Town of Smyrna (Smyrna)
- Town of Milford (Milford)
- Town of Cheswold (Cheswold)

Priority Level is based on:

- Higher Priority - corridors with a higher concentration of FSSI crashes and community concerns.
- Medium Priority - corridors with a moderate concentration of FSSI crashes and community concerns.
- Lower Priority - corridors with a lower concentration of FSSI crashes and community concerns.

Phasing Timeline is based on:

- Short Term - anticipated for design and implementation in the next 0 to 5 years
- Medium Term - anticipated for design and implementation in the next 5 to 10 years
- Long Term - anticipated for design and implementation in the next 10+ years

Kent County Safety Action Plan

Kent County, Delaware

Implementation Plan

Kent County Safety Action Plan: Making Kent County's Streets Safer for All

Project Information		Project Implementation				
ID	Projects	Planning Level Cost Opinion	Potential Funding Sources	Implementors & Collaborators	Priority Level	Phasing Timeline
Non-Infrastructure Recommendations						
1	Enhance Driver Education	Low	NHTSA, SS4A, Mun	Municipalities, DelDOT, Schools	Higher	Medium Term
2	Conduct Education and Outreach with Children and Teenagers	Low	NHTSA, SS4A, Mun	Municipalities, Schools, Community Organizations	Higher	Medium Term
3	Enhance Enforcement Operations	Medium	NHTSA, SS4A, Mun	Municipalities, Kent County	Medium	Short Term
4	Complete Streets Policies for Municipalities	Low	Mun, SS4A, CTP	Municipalities	Higher	Short Term
5	Safe Routes to School for Municipalities	Medium	TASA, NHTSA, SS4A, Mun	Municipalities, Schools, Community Organizations	Higher	Short Term
6	Implement Neighborhood Traffic Calming Program	Medium	NHTSA, SS4A, Mun	Municipalities, DelDOT	Higher	Medium Term
7	Conduct Road Safety Audits	Low	NHTSA, SS4A, Mun	Municipalities, DelDOT	Higher	Medium Term

Legend

Potential funding sources include:

Municipal Capital Funding (Mun)
Safe Streets and Roads for All (SS4A)
National Highway Traffic Safety Administration (NHSTA)

Costs are based on:

Low - less than $100K to implement
Medium - between $100K and $500K to implement
High - more than $500K to implement

Implementors and Collaborators include:

Dover Kent Metropolitan Planning Organization (MPO)
Delaware Department of Transportation (DelDOT)
Kent County
Municipalities
Schools
Community Organizations

Priority Level is based on:

Higher Priority - solutions with a higher benefit / cost ratio.
Medium Priority - solutions with a moderate benefit / cost ratio.
Lower Priority - solutions with a lower benefit / cost ratio.

Phasing Timeline is based on:

Short Term - anticipated for implementation in the next 0 to 3 years
Medium Term - anticipated for implementation in the next 3 to 5 years
Long Term - anticipated for implementation in the next 5+ years

CONCLUSIONS AND NEXT STEPS

The SAP has been developed to make strategic transportation safety investments in Kent County to reduce fatal and serious injury crashes by 50% by 2040. There were 115 fatal crashes and 423 suspected serious injuries in Kent County from 2019 to 2023. The SAP is based on the Safe System Approach to address severe crashes, and it includes context specific countermeasures for priority corridors, systemic safety improvements, and non-infrastructure solutions to transform transportation safety culture in Kent County.

The SAP relies on crash data from January 2019 to December 2023. This crash data has been analyzed to identify trends related to crash types, locations, and conditions. The SAP has been developed in collaboration with the Safety Working Group, which met four times to discuss approaches, results, and recommendations. There were two phases of public outreach, including an online StoryMap, surveys, workshops, community meetings, and pop-up events.

Recommendations in the SAP are especially focused on the High Injury Network. This plan recommends making investments in safety countermeasures where key crash-related conditions and patterns exist.

Implementing the SAP will help Kent County progress toward its goal of reducing the most severe crashes by 50% by 2040 and eliminating them by 2050. As outlined in the implementation plan, both infrastructure and non-infrastructure solutions, such as enhancing education around transportation safety, will help Kent County reach its goal.

For next steps, partner agencies should:

- Continue consulting with the Safety Working Group through regular meetings and correspondence, adapting attendees, roles, and procedures as appropriate.
- Identify priority projects to begin seeking funding, including for spot specific projects, systemic improvements, and non-infrastructure projects, some of which can be carried out in parallel through different funding pathways.
- Assign project champions, define implementation and collaboration roles, and determine immediate action items.
- Continue to engage community leaders and residents in conversations about transportation safety.
- Continue to engage agency representatives and other key stakeholders at municipalities within the county for potential project impacts and opportunities.
- Solicit support (as needed) to perform additional studies, analyses, and design work.

DOVER KENT MPO

METROPOLITAN PLANNING ORGANIZATION

KITTELSON & ASSOCIATES