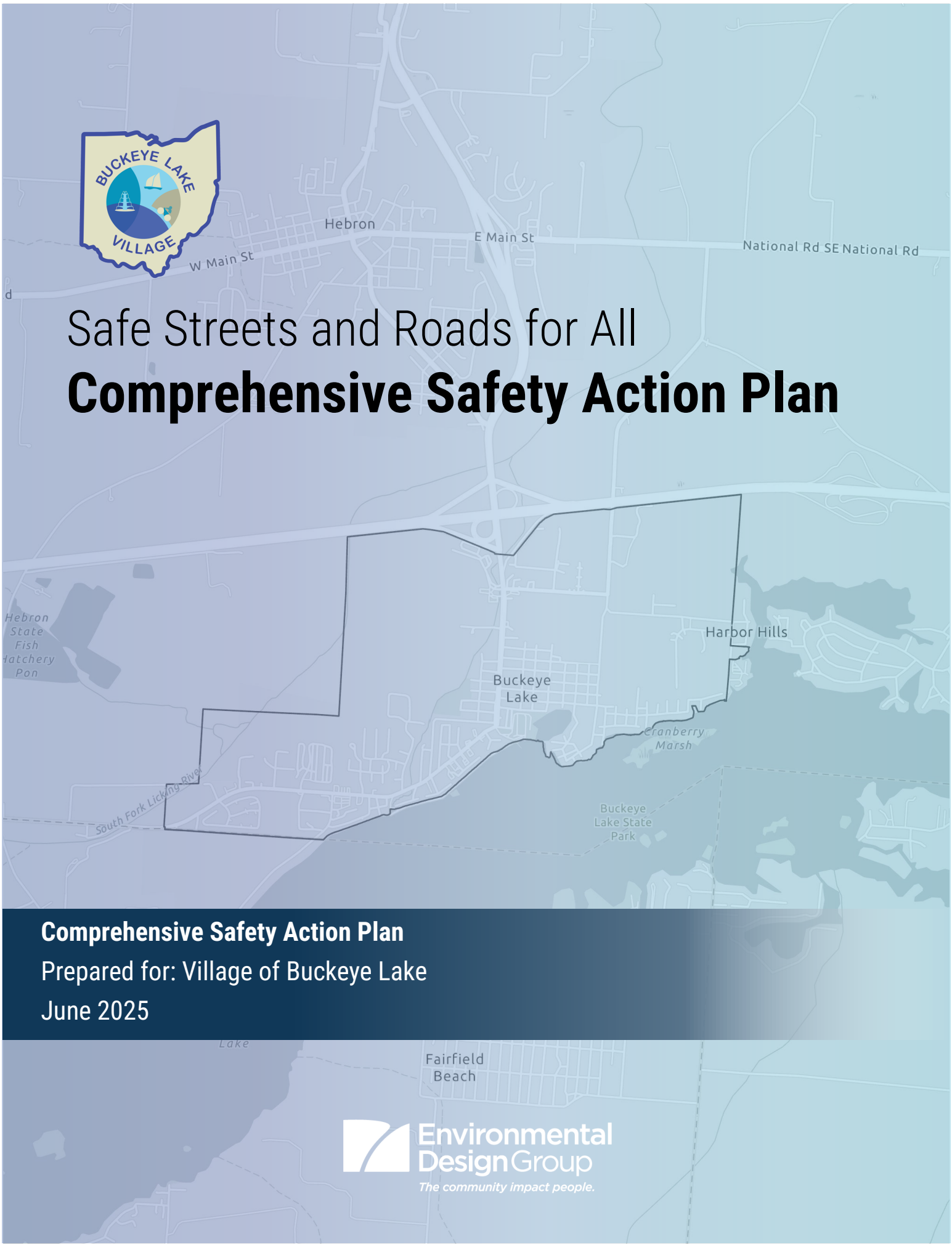
Safe Streets and Roads for All

Comprehensive Safety Action Plan



Comprehensive Safety Action Plan

Prepared for: Village of Buckeye Lake

June 2025

Environmental Design Group

The community impact people.

Table of Contents

List of Tables

List of Figures

Chapter 1

OVERVIEW

1. OVERVIEW

1.1 The Village of Buckeye Lake

Buckeye Lake is an Ohioan village in Licking and Fairfield counties. The nearly 2 square-mile village is home to approximately 2,520 residents, according to the 2020 US Census. The Village is adjacent to a 3,100-acre lake and State Park of the same name. The Village hosts a boat launch, parks, and the Buckeye Lake Dam – Walking & Biking Trail. These amenities, along with other local businesses and restaurants, attract visitors year-round, with an increase in tourism in the warmer months. The frequent presence of visitors can negatively affect the safety of a community's roadways, as an influx of unfamiliar drivers can lead to an increase in roadway crashes. Therefore, it is pertinent that the Village of Buckeye Lake can provide both residents and visitors with a safe roadway network for all modes of transportation.

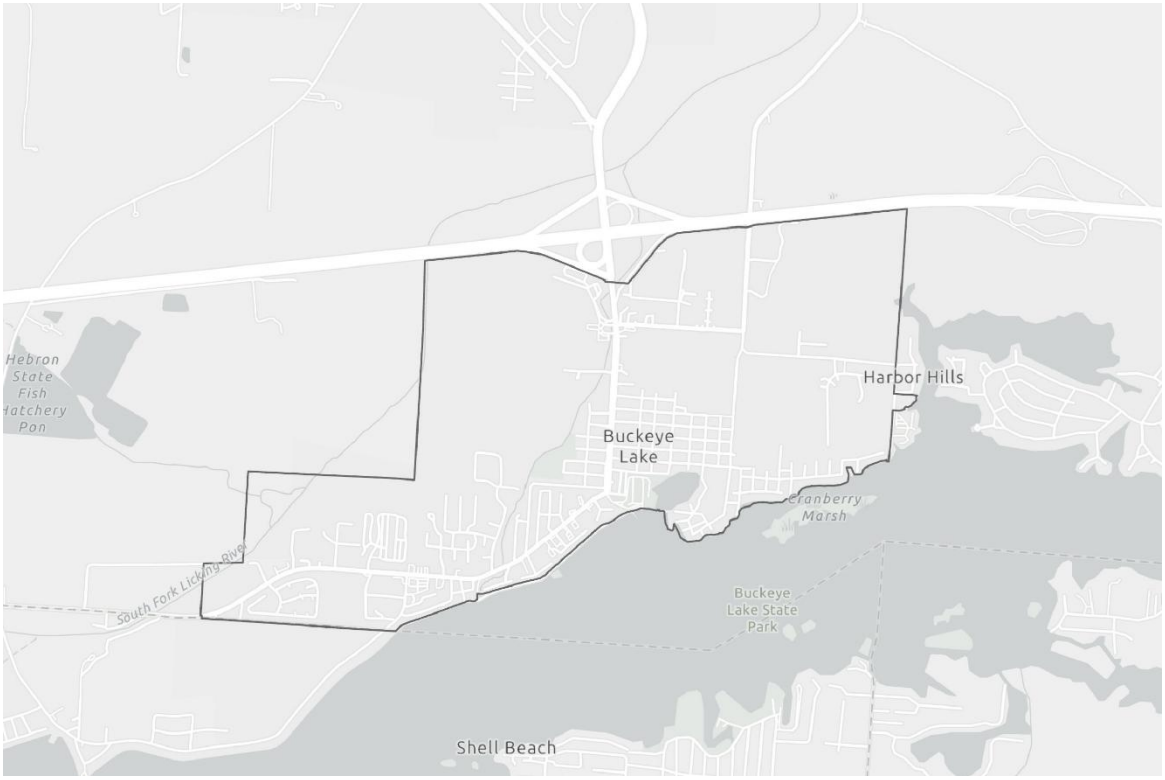


Figure 1. Map of the Village of Buckeye Lake

1.2 Commitment to Vision Zero

To improve traffic safety and public health, state, federal, regional, and local partners have begun working towards a common goal: achieving zero deaths on public roadways. The development of this Comprehensive Safety Action Plan incorporates **Vision Zero** and a **Safe System Approach** to address critical safety concerns and promote specific strategies towards zero deaths while prioritizing equity.

Vision Zero and the **Safe System Approach** are both strategies aimed at eliminating traffic fatalities and serious injuries, but they have different origins and focus areas. The relationships and key differences are as follows:

Vision Zero

- **Origin**: Vision Zero originated in Sweden in 1997. It is based on the philosophy that no loss of life is acceptable in the transportation system.
- **Goal**: The primary goal of Vision Zero is to eliminate all traffic-related fatalities and severe injuries. It emphasizes that traffic deaths are preventable and focuses on achieving zero fatalities.
- **Approach**: Vision Zero is a people-centered approach that focuses on designing streets and systems that account for human error and vulnerability. It prioritizes safety over speed and convenience.
- **Strategies**: Vision Zero encourages the redesign of roadways to reduce speeds, improve visibility, and create safer environments for pedestrians and cyclists. It emphasizes the importance of collaboration among various stakeholders, including city planners, policymakers, and the public.

Safe System Approach

- **Origin**: The Safe System Approach has its roots in the Netherlands and Australia and has been adopted internationally. It is a comprehensive framework used by the U.S. Department of Transportation and other agencies.
- **Goal**: Similar to Vision Zero, the Safe System Approach aims to reduce traffic fatalities and serious injuries. It focuses on building a transportation system that is forgiving of human mistakes and reduces the risk of severe outcomes.
- **Approach**: The Safe System Approach is broader and encompasses all aspects of the transportation system, including road design, vehicle safety, speeds, and road user behavior. It recognizes that human error is inevitable and designs systems to minimize the consequences of those errors.
- **Strategies**: This approach emphasizes five key elements: safe road users, safe vehicles, safe speeds, safe roads, and post-crash care. It integrates these elements to create a cohesive strategy for reducing traffic-related harm.

Relationships and Differences

- **Shared Goals**: Both Vision Zero and the Safe System Approach share the common goal of eliminating traffic fatalities and serious injuries. They both recognize the need for systemic changes to improve road safety.
- **Focus Areas**: Vision Zero is more focused on urban areas and often emphasizes the role of policy and urban design in improving safety. In contrast, the Safe System Approach takes a more holistic view, considering all aspects of the transportation ecosystem.
- **Implementation**: Vision Zero often involves setting specific targets and timelines for reducing fatalities, while the Safe System Approach provides a framework for continuous improvement in road safety across various domains.

In summary, while Vision Zero and the Safe System Approach share the goal of enhancing road safety, Vision Zero focuses on setting clear targets and policies for urban areas, whereas the Safe System Approach provides a comprehensive framework for building inherently safer transportation systems.

To reach Vision Zero, the United States Department of Transportation (USDOT) encourages communities to use a Safe System approach, which acknowledges that people make mistakes, and focuses on influencing system-wide practices, policies, and designs to lessen the severity of crashes.

This holistic approach combines safe road users, vehicles, speeds, and roads, with improved post-crash care to eliminate the unacceptable deaths and serious injuries currently populating our transportation systems. Through implementation of Proven Safety Countermeasures, transportation agencies can design safer roads that also induce slower driving speeds. Outside of road design, vehicles can also be designed to improve safety through technologically advanced safety features, such as automatic braking, blind-spot sensors, or lane-assist capabilities. By combining improved road design and safer vehicles with an informed public and improved post-crash care, human vulnerability is greatly reduced in anticipation of unpredictable and inevitable human error. As a result, a Safe System approach improves safety for all road users by incorporating change at every level of the transportation system.

Through the completion of this Action Plan, the roadways in Buckeye Lake will be analyzed alongside the previous crashes that have occurred there, revealing factors that make the roads unsafe and lead to frequent crashes. Once identified, the appropriate countermeasures can be utilized to address these factors. FHWA has identified 28 Proven Safety Countermeasures (PSCs) which are effective in reducing roadway fatalities and serious injuries throughout the Nation's roads. PSCs are solutions that are proven to offset present safety issues. These countermeasures will be discussed later in further detail. Implementing PSCs can address the Safe System Principles of Safe Roads and Safe Speeds, moving us one step closer to achieving Vision Zero. This Principles are shown below in Figure 2.

Figure 2. FHWA Safe Systems Approach Principles

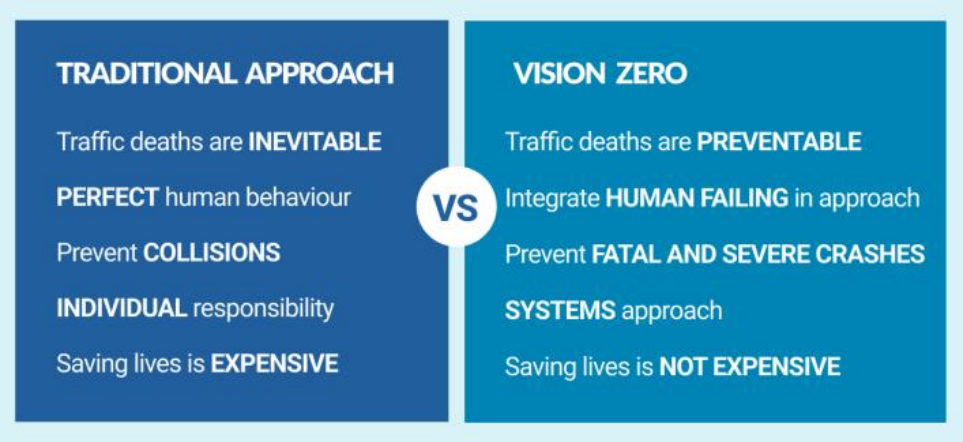


Figure 3. Traditional planning approach vs. Vision Zero

1.3 The Purpose of this Action Plan

The purpose of this Safe Streets and Roads for All Comprehensive Safety Action Plan (SS4A Action Plan) is to conduct a systemic safety analysis that includes documentation of the High Injury Network (HIN), set performance measures for improving all-modes safety throughout the region, and provide policy recommendations for next steps that the Village of Buckeye Lake can take in improving roadway safety. After this Action Plan is developed and approved, village leadership will then be eligible to apply for Implementation Grants to achieve the recommendations listed in this Action Plan.

1.4 The Need for Safety Improvements

According to crash data obtained from the Ohio Department of Transportation's (ODOT) Transportation Information Mapping System (TIMS), the Village of Buckeye Lake experienced 122 total crashes in the ten year study period of 2014-2023. Nine of these crashes resulted in a fatality or serious injury (FSI). On average, a fatal crash occurs in the Village every five years, and a serious injury crash occurs every other year. Crashes involving at least two vehicles ("vehicle-vehicle") account for 95% of all crashes, and 66.7% of all FSI crashes. Bicycle-vehicle and pedestrian-vehicle crashes are disproportionately represented in FSI crashes. Pedestrian-involved crashes compose 1.6% of all crashes, but 22% of all FSI crashes. Bicycle-involved crashes compose only 3.3% of all crashes, but 11% of all FSI crashes. This reflects the tendency for crashes involving a VRU to be much higher in severity than vehicle-vehicle crashes on average. Key findings within this crash data are later discussed in Chapter 3: *Existing Safety Analysis*.

Each fatal and serious injury (FSI) crash represents a preventable tragedy with lasting effects on individuals, families, and the community within Buckeye Lake. As state, federal, regional, and local partners strive to achieve zero deaths on public roadways, action must be taken to improve traffic safety on roadways.

1.5 Planning Structure

The consultant team was led by Environmental Design Group and supported by Burgess and Niple, Inc. and Toole Design Group, LLC. The leadership within the Village of Buckeye Lake will proceed with

implementation and monitoring the progress of the safety improvements recommended in this Action Plan, with continued assistance from the consultant team.

1.6 Prior Plans and Studies

Buckeye Lake has documented their plans to improve transportation accessibility and connectivity throughout the village in the *Buckeye Lake Comprehensive Plan* completed in 2023. This comprehensive plan outlines five plan elements, each with a measurable outcome, objectives, actions, and potential project(s). One of these five elements, Connectivity, aims to create a well-connected transportation network that reduces the distances traveled to reach destinations, increases the options for routes of travel, and facilitates walking and bicycling. The desired outcome for this element is to increase the Village's Walkscore from a somewhat walkable level of 51 to over 70 (very walkable) and Bikescore from minimal bike infrastructure of 35 to over 50 (bikeable). Within this plan element, the Village also states that they wish to increase accessible transportation and mobility options, create greater access to modes of active transportation, develop and adopt a Complete Streets Policy, and to adopt a bicycle and pedestrian plan that prioritizes future projects to improve safety and access to non-motorized transportation and connections. The safety and accessibility initiatives outlined in this document greatly reflect the priority placed on the safety of vulnerable road users within this Action Plan.

Buckeye Lake has also been involved in *LaunchLCA,* a 2050 Metropolitan Transportation Plan Update completed by Licking County Area Transportation Study (LCATS) in 2024. One of the goals outlined in this document is to increase safety for all travelers. LCATS is committed to creating a safe environment for all roadway users by adopting various performance measure targets. Some of these targets reflect ODOT's targets to achieve a 2% annual reduction in fatal and serious injury crashes, as well as a 2% annual reduction in the frequency of non-motorized fatalities and serious injuries. Another target goal of *LaunchLCA* is to develop regional Vision Zero and Complete Streets goals, as discussed previously in this Action Plan.

These commitments and dedications to safety by the Village of Buckeye Lake and its metropolitan planning organization LCATS display great cohesion with the research and development of this Action Plan, further increasing the likelihood of funding securement and project completion of plans that arise from this Action Plan.

Chapter 2

STAKEHOLDER AND PUBLIC ENGAGEMENT

2. STAKEHOLDER AND PUBLIC ENGAGEMENT

Any successful planning process relies on a meaningful level of engagement with other groups and individuals, particularly those who utilize the roads being studied. No one knows a community better than those living, working, or spending time there. Engaging with the public allows the project team to understand local safety concerns and opportunities that exist to correct them. Educational engagement events were held to enlighten community members of current safety issues while gathering their input as to how their roadways can be better designed with both their safety and interests in mind. This Action Plan involved multiple opportunities for concerned and interested locals to participate in accessible engagement events, ensuring as many voices could be heard as possible.

Engagement events were held separately for the public and for specified stakeholders. Two in-person public meetings were held, which were supplemented by attending two public events in the Village. Additionally, one virtual meeting was held with stakeholders to discuss public needs and wants and determine the Village's priority locations.

2.1 Stakeholder Engagement

A stakeholder meeting was held virtually on September 30, 2024. Table 1 lists the stakeholder attendees.

Table 1. Stakeholder Meeting Attendees (September 30, 2024)

ATTENDEE	ORGANIZATION
Toby Miller	Village of Buckeye Lake
Michael Fornataro	Buckeye Lake Regional Council
Mark Shonebarger	Bike Buckeye Lake
Matt Hill	LCATS
Wil Lloyd	LCATS
Alexander Griffith	LCATS
Kyle Lund	Licking Park District
Tami McAdams	Licking Park District
Mark Hoffhines	ODNR
Lisa Powell	Cranberry Point HOA

Attendees provided insight regarding areas of concern and future planning efforts. Stakeholders discussed trail connections and expansions to the Buckeye Scenic Trail, as well as unfamiliar drivers and high speeds in the summer. This information will be utilized to form comprehensive recommendations that account for existing infrastructure and community needs. Segments and intersections of stakeholder concern were recorded and are summarized below in Table 2. Note that this table contains two red X's, which signify additional input collected from public engagement.

Table 2. Stakeholder Input Findings (September 30, 2024)

	Focus Area	Motorists	Pedestrians	Cyclists	Golf Carts
Segments	Rt 79	X	X	X	X
	Mill Dam Rd	X	X	X	X
	Cranberry Ln	X	X	X	X
	Hunts Landing Rd	X			
	Neighborhood Streets			X	
Intersections	Rt 79 x Park Ave	X			
	East St x Hunts Landing Rd	X			
	Rt 79 x Cliff St	X			
	Rt 79 x Leroy St	X			
	Rt 79 x Rt 360		X		

Meeting attendees also participated in a survey to collect input on potential safety improvements. The results of these findings are listed in Table 3.

Table 3. Stakeholder Input on Safety Countermeasures (September 30, 2024)

Safety Countermeasure	Stakeholders in Favor
Separated Bike Lanes	9
Shared Sidepath	8
High-Visibility Crosswalks	7
Improved Lighting	6
Lane Reallocation (Road Diet)	6
Mini Roundabout	6
Curb Extensions (Bump Outs)	4
Speed Bumps & Tables	4

2.2 Public Engagement

Gathering public opinion was an integral part of this planning effort. Although crash data can provide decisionmakers with precise data about what has already happened, it does not convey potential issues, near-misses, and areas of concern. Further, it is not able to provide the necessary information about how and why people are making their transportation decisions. Public engagement, therefore, becomes an important and complementary part of the safety planning process.

An online survey went live on June 26, 2024, and was open for approximately six weeks. The survey was advertised by the Village through its social media channels. Survey results will be discussed in further detail later in the report.

Project team members visited the Village on July 5, 2024, to gather input and to advertise the survey and upcoming Town Hall meeting. At the visit, participants provided comments regarding roads and intersections that they perceived as unsafe, as well as what factors contribute to the danger. The most frequently mentioned roads were Walnut Road, Hebron Road, and Mill Dam Road. Participants also listed Cranberry Lane, Lakeview Avenue, and East Street. Frequently mentioned factors of concern included safety of vulnerable road users, speeding, and driver behavior. Participants were also concerned about cell phone distractions, a lack of pavement markings, and insufficient crosswalk signage.

Project team members visited the Village again on August 5, 2024, and on February 3, 2025, to present their findings at the monthly townhall meetings. Meeting attendees were presented with the most recently obtained data and possible countermeasures. Meeting attendees were encouraged to provide input, which was recorded for future use in forming recommendations, which are discussed later in the Action Plan.

2.3 Public Input Survey Results

The overall sentiment of the responses reflects a strong community concern about roadway safety across various transportation modes, including walking, biking, driving, and golf cart usage. Several themes come up repeatedly:

1. **Speed and Enforcement**: A consistent concern is the prevalence of speeding throughout the Village, particularly on major roads like Route 79. Respondents repeatedly call for lower speed limits and increased police presence, including specific mentions of ticketing for speeding, random sobriety checks, and enforcing traffic laws, especially on one-way streets and in high-traffic areas.
2. **Infrastructure and Visibility**: Many responses focus on inadequate infrastructure, such as a lack of sidewalks, bike lanes, and crosswalks. Poor visibility due to overgrown vegetation, obstructive decorations, and poorly marked signs was also a recurring theme, with suggestions for clearing these obstructions to improve sightlines. Enhanced lighting and clearer, more frequent signage are frequently recommended.
3. **Road Maintenance and Equity**: There's a shared concern about the condition of the roadways, with a sense that some areas—particularly those perceived as more affluent—receive more attention in terms of maintenance and infrastructure upgrades. Calls for regular maintenance, pothole repair, and a systematic plan for road improvements are prominent, with an emphasis on equal distribution of resources.
4. **Pedestrian and Cyclist Safety**: Residents express significant concerns for the safety of pedestrians and cyclists, advocating for dedicated lanes, better sidewalks, and clearer signage to protect these more vulnerable users. There's also a desire for increased awareness and driver responsibility, especially near crosswalks and in areas frequented by families.
5. **Golf Cart Usage**: Golf cart safety and access is another recurring topic. While some respondents feel safe using golf carts, others see them as a hazard on main roads due to the speed differential and

lack of designated lanes. Suggestions for a "golf cart town" designation or restricted access to major highways are common.

6. **Public Transportation**: While mixed, there is some interest in public transportation, contingent on factors such as route coverage, frequency, and affordability. Skepticism remains, however, about whether it would meet individual needs or align with residents' schedules.

Overall, the responses indicate a community committed to enhancing roadway safety through both infrastructural improvements and stricter enforcement. Respondents advocate for proactive planning and equitable resource allocation to address both current safety issues and future growth needs, with a strong desire for safe, accessible roadways for all users.

The survey questions and responses are shown below in Figure 4 through Figure 12. Some survey questions required an explanation or offered an "other" choice, also prompting respondents for a written explanation. Observed themes within these written responses are also provided below.

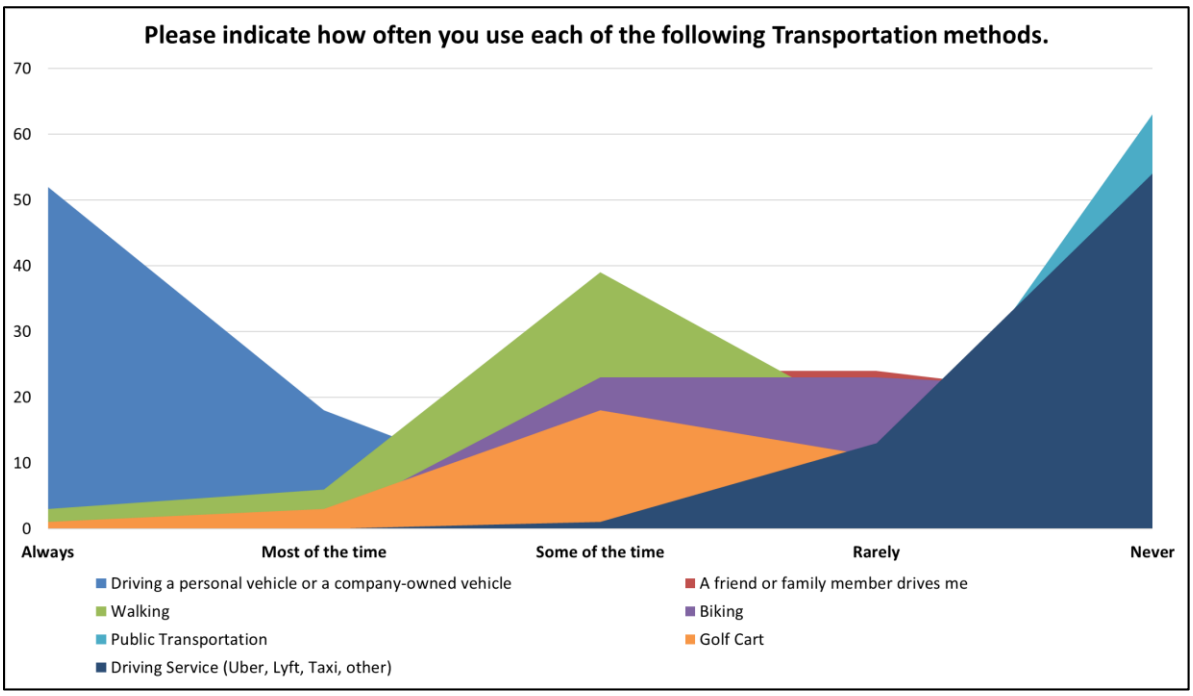


Figure 4. Survey responses to "Please indicate how often you use each of the following Transportation methods."

Do you feel the roadways in the Village are safe for all users? Please explain why or why not.

Residents expressed significant safety concerns about the roadways in the Village, particularly regarding high speeds, lack of clear crosswalks, inadequate sidewalks, and poor visibility due to overgrown vegetation and lack of signage. Many responses highlighted unsafe conditions for pedestrians, cyclists, and golf cart drivers, noting the need for bike lanes, sidewalks, and better enforcement of speed limits. Specific locations, such as Lakeview Drive, Route 79, and areas near the spillway, were frequently mentioned as problematic. There were also concerns about wrong-way drivers, especially on one-way streets, and the perceived lack of police enforcement for traffic violations. Some respondents suggested

additional safety measures, like speed bumps, designated lanes for golf carts, and improved signage for residential and high-traffic areas. The overall sentiment indicates a need for both infrastructural improvements and stricter traffic regulation to enhance roadway safety for all users.

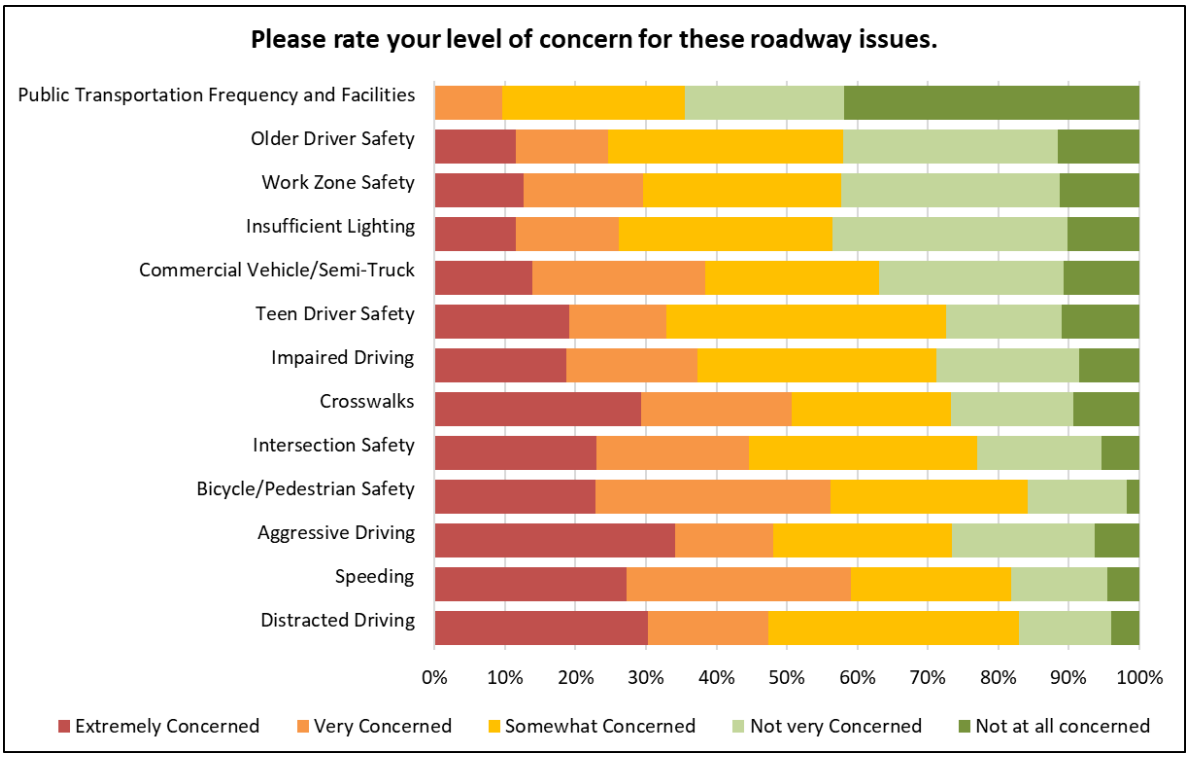


Figure 5. Survey responses to "Please rate your level of concern for these roadway issues."

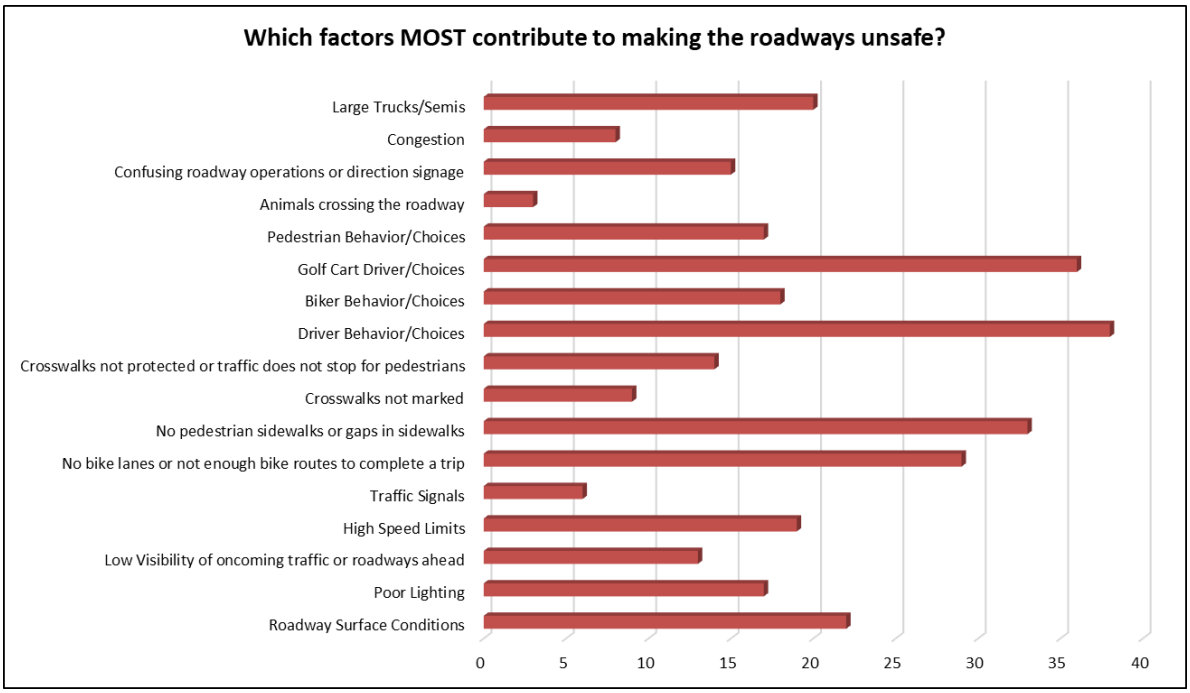


Figure 6. Survey responses to "Which factors MOST contribute to making the roadways unsafe?"

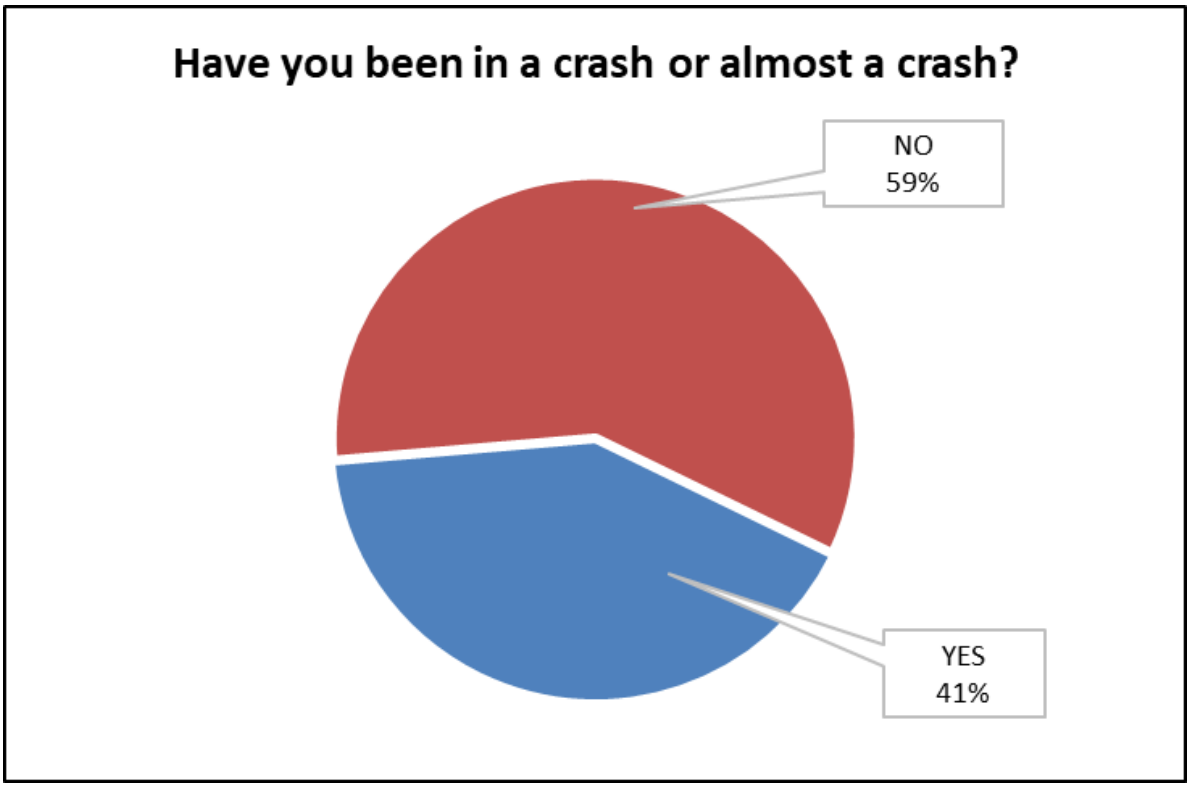


Figure 7. Survey responses to "Have you been in a crash or almost a crash?"

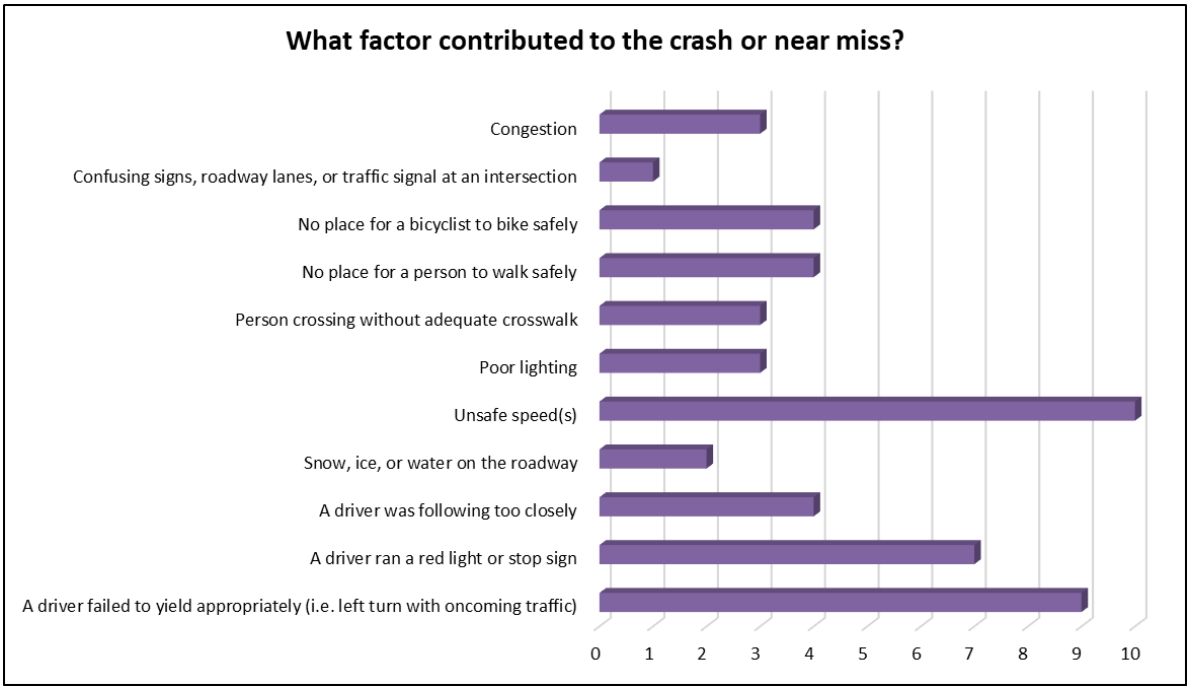


Figure 8. Survey responses to "What factor contributed to the crash or near miss?"

What factor contributed to the crash or near miss? (Other)

The responses describe several specific safety incidents and hazards related to driver behavior and visibility issues. Common themes include reckless or aggressive driving, such as drivers speeding after leaving bars, using their phones while driving, and failing to yield when reversing or making turns. Visibility is also a major concern, with bushes, trees, and decorations close to roadways frequently blocking drivers' views, making it difficult to see oncoming traffic. Additionally, the use of golf carts and their lack of clear signaling, along with drivers going the wrong way on one-way streets, were repeatedly mentioned as safety risks. Overall, these incidents suggest a need for improved visibility, better signage, and increased awareness and adherence to traffic rules to enhance safety in the area.

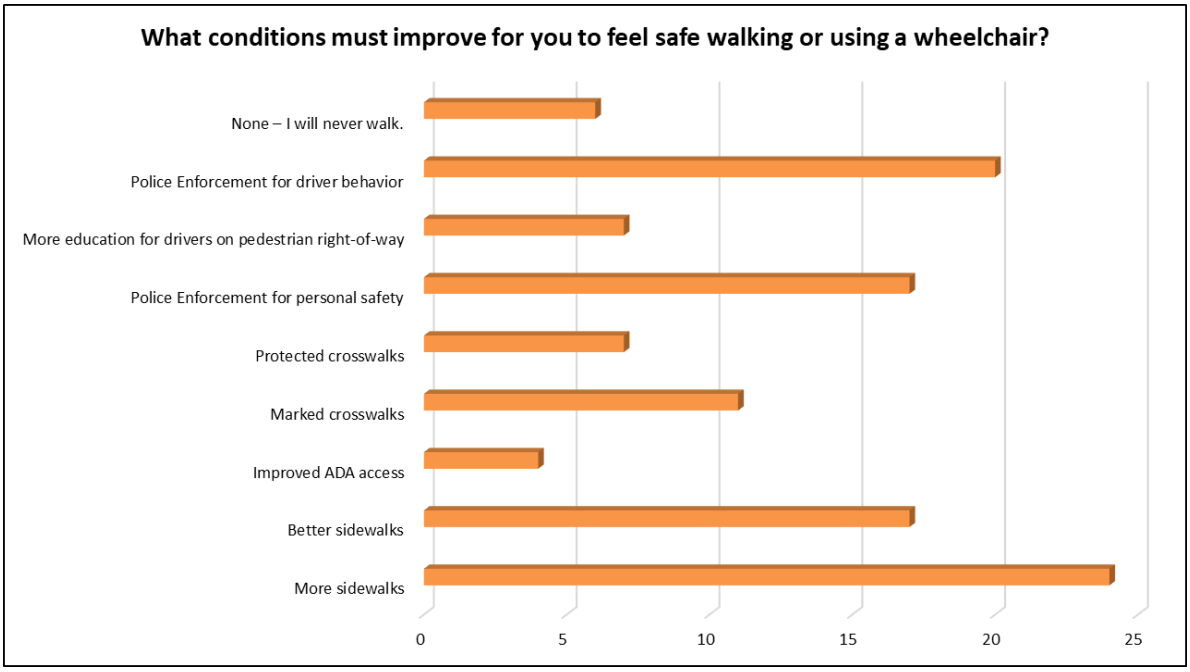


Figure 9. Survey responses to "What conditions must improve for you to feel safe walking or using a wheelchair?"

What conditions must improve for you to feel safe walking? (Other)

The responses highlight several suggestions to improve safety in the Village, focusing on speed management, increased police presence, and enhanced driver awareness. Many respondents advocate for lowering speed limits and introducing more visible signage, especially in areas where children play. There is a call for clearly designated bike lanes, along with driver education and consequences for endangering cyclists. Some residents feel that police should focus on active patrols rather than static speed tracking, with suggestions for random sobriety and safety checks. Other specific measures include ensuring cars stop at crosswalks when lights are flashing, and limiting or removing golf cart access to improve roadway safety. These comments suggest a desire for proactive safety initiatives and stricter enforcement of traffic regulations.

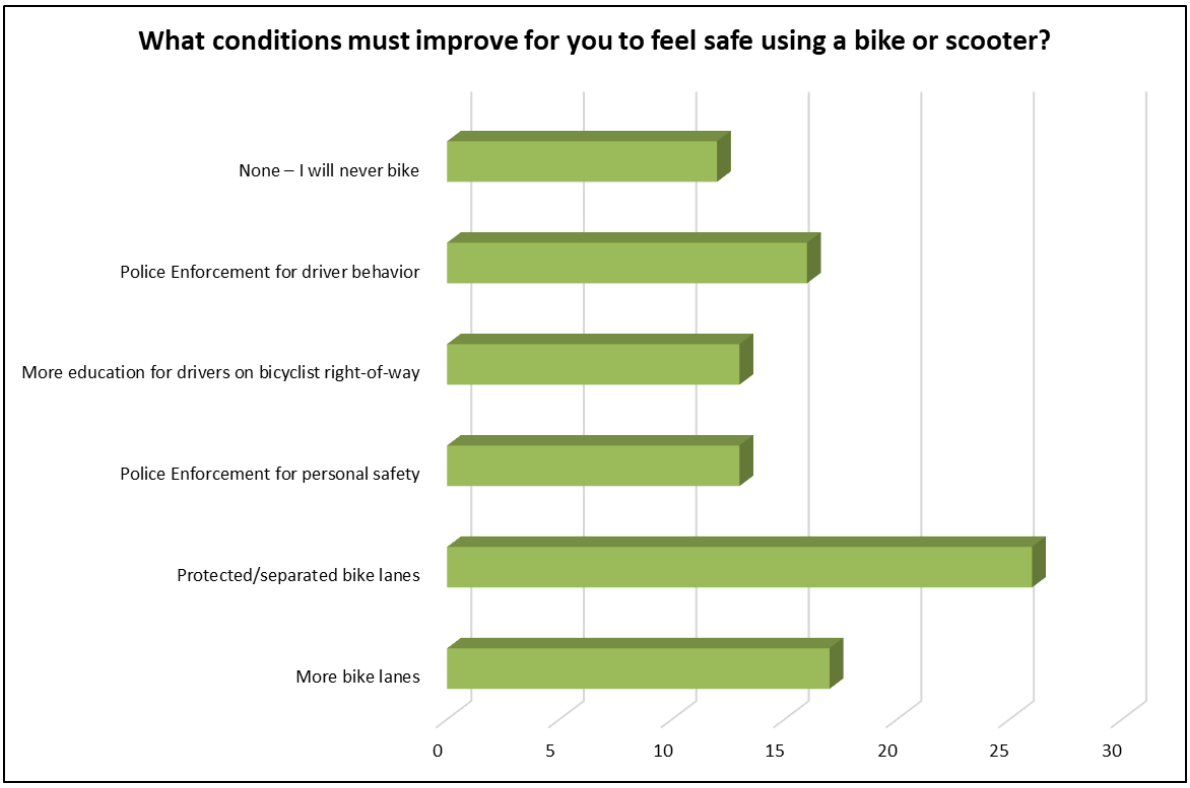


Figure 10. Survey responses to "What conditions must improve for you to feel safe using a bike or scooter?"

What conditions must improve for you to feel safe using a bike or scooter? (Other)

The primary focus of these responses is on the need for reduced speeds and increased police presence. There are repeated calls for slowing down traffic and for consistent, round-the-clock policing to address safety concerns. The mention of a “1 mill Levy” suggests that some residents are questioning whether increased funding could provide continuous law enforcement coverage. This emphasis on slowing traffic and enhanced law enforcement reflects a community concern over speeding and the desire for more active measures to ensure safety.

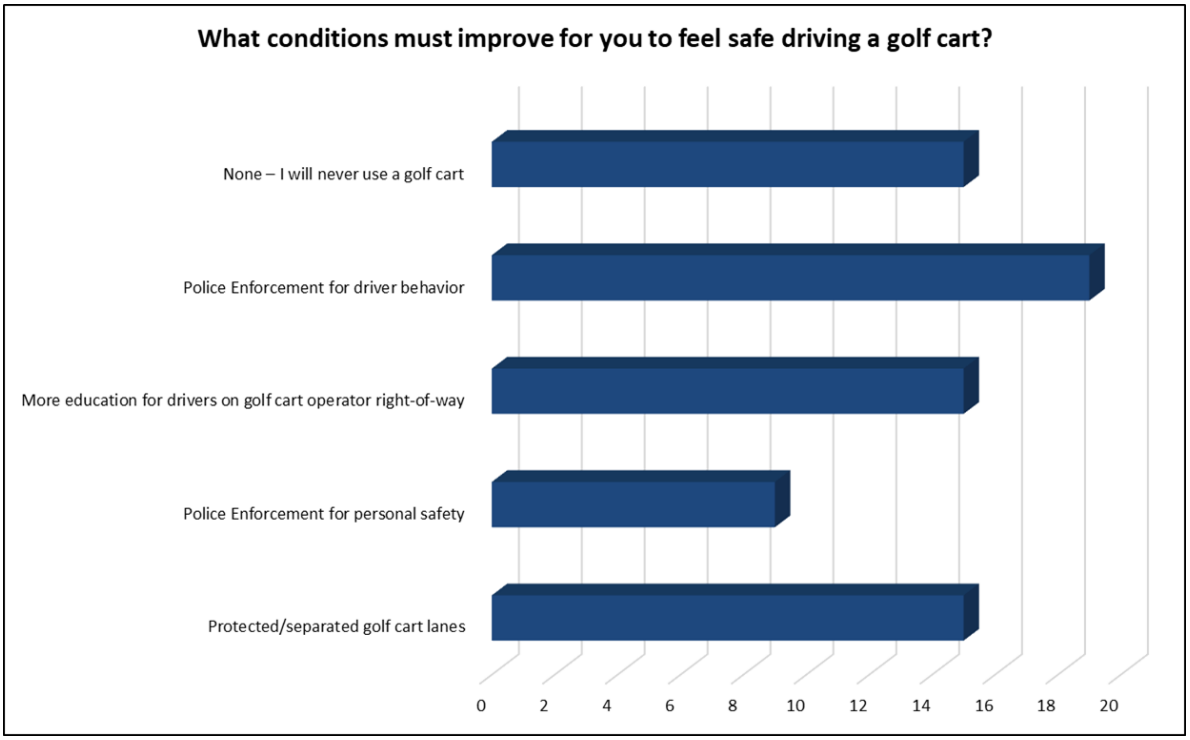


Figure 11. Survey responses to "What conditions must improve for you to feel safe using a golf cart?"

What conditions must improve for you to feel safe driving a golf cart? (Other)

Respondents share mixed feelings about the safety of driving golf carts on main roads, particularly on Route 79. Some view Route 79 as unsafe for golf carts, suggesting the need for a lower speed limit, signage indicating the area as a "golf cart town," and restricted access for golf carts on major highways. Others feel safe driving their golf carts, especially when they are cautious and in areas where other drivers are respectful. Concerns remain about interactions with other vehicles, particularly with cars pulling in and out of businesses, and some residents call for general road surface improvements to enhance safety.

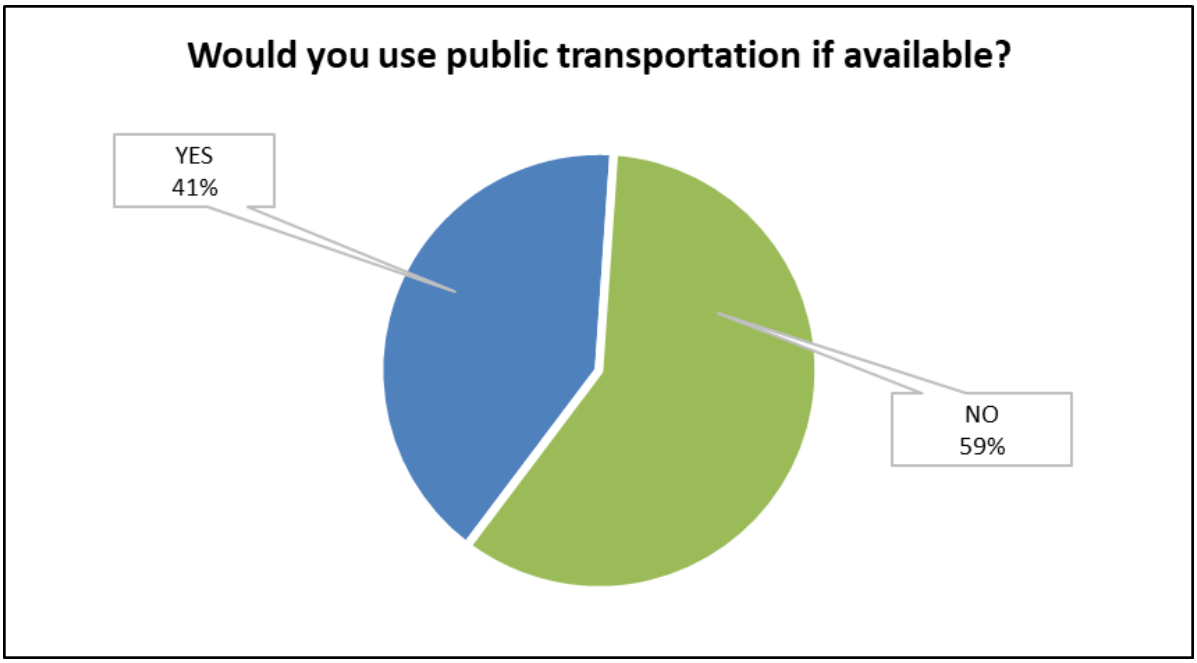


Figure 12. Survey responses to " Would you use public transportation if Licking County transit provided routes to/from Buckeye Lake?"

Would you use public transportation if Licking County transit provided routes to/from Buckeye Lake?

The responses indicate mixed interest in using public transportation if it were available in the village. Many respondents suggest that their willingness to use such a service would depend on factors like the routes, destinations, frequency, and affordability. Some believe it could be a valuable resource for the area, especially if it connected residents to popular local businesses and other necessary destinations. However, there is skepticism about whether the service would meet individual preferences in terms of timing and specific locations. Overall, while some express interest in the idea, others are unsure if it would align with their transportation needs.

Is there a specific location where safety must be improved? Please indicate the name of the road(s) and your concern:

Residents have identified multiple locations around the Village where safety improvements are needed, particularly regarding pedestrian, cyclist, and golf cart access. Route 79 is frequently mentioned as a high-priority area, with concerns about narrow lanes, high vehicle speeds, and a lack of safe crossings and sidewalks. Additional specific locations include Walnut Road, Seymour Avenue, Lakeview Drive, and various intersections (such as the corners of 7th and 6th Streets with Route 79) where limited visibility from overgrown vegetation and inadequate signage present risks. Respondents also call for dedicated lanes for golf carts and bikes, clearer speed limit signage, more crosswalks, and improved road surfaces. There is strong support for continuous sidewalks and better ingress/egress flow around busy business

areas, as well as enhanced law enforcement to address speeding and wrong-way driving on one-way streets.

Do you feel that roadways in less affluent areas are less safe than others? If yes, please tell us more about the causes and effects of disproportionate safety.

The responses indicate a mix of perspectives on whether less affluent areas have less safe roadways. Some residents feel that lower-income areas lack amenities like sidewalks, bike paths, and adequate lighting, which makes them less safe, especially for children. There is a concern that these areas see more frequent speeding and lack adequate law enforcement, contributing to an unsafe environment. However, some respondents believe that all areas of the Village face similar issues, with safety concerns focused more on high-traffic zones rather than on socioeconomic disparities. Others express that affluent areas can sometimes have entitled drivers who disregard traffic rules, making those areas feel less safe. Overall, the sentiment is divided, but many respondents agree that improvements in infrastructure and enforcement would benefit all areas equally, regardless of affluence.

If you feel roadways are more unsafe in some areas than others, how might those areas be improved?

Residents suggest a range of improvements to enhance safety in specific areas. Many emphasize the need for better sidewalks, enforcement of speed limits, and increased law enforcement presence, especially in areas with frequent speeding or reckless driving. Improved signage, particularly for speed and one-way streets, as well as flashing speed signs, are also recommended. Enhanced lighting and regular road maintenance, such as resurfacing and patching potholes, are seen as critical. Several respondents advocate for specific infrastructure improvements, like dedicated bike lanes, curbs for sidewalks, and view-blocking items (such as vegetation or decorations) to be cleared from near roadways.

Additionally, some suggest community-wide strategies, such as a five-year plan for road maintenance, accountability for developers, and street cameras. A few respondents also recommend enforcing property maintenance and addressing criminal behavior as part of the safety improvement strategy. The overall focus is on infrastructure enhancements, stricter law enforcement, and proactive planning to address current and future needs

Do you have any other comments about improving the safety of the roadways in the Village?

Respondents provided additional feedback on road safety and community needs, with a strong emphasis on road maintenance and enforcement. Common suggestions included repairing potholes effectively, increasing police presence, and enforcing speed limits, particularly in areas frequented by visitors. Some residents are concerned about unsafe conditions on specific roads, like Lakeview Drive, and advocate for reduced speed limits, updated signage, and traffic cameras. There's also a desire for more visible crosswalks and improved drainage to prevent standing water on certain roads.

Several comments reflect a sense of unequal attention to road repairs, with perceived priority given to affluent areas. Residents also expressed a need for better infrastructure to support pedestrians and cyclists, such as safer sidewalks and paths, especially along Route 79. Lastly, there were calls to balance community events with resident safety, suggesting modifications to large gatherings to reduce disruption. Overall, respondents support continuous improvement in infrastructure, road safety, and community planning.

Chapter 3

EXISTING SAFETY ANALYSIS

3. EXISTING SAFETY ANALYSIS

This chapter provides a data-driven basis for understanding the scope of fatal and serious injury (FSI) traffic crashes in the Village of Buckeye Lake, Ohio. This analysis articulates high-level crash trends by user and identifies areas of concern and opportunity to reduce FSI crashes through proven, innovative, and comprehensive strategies.

3.1 Summary of Key Findings

Years of Crash Data analyzed: 2014-2023

Total Crashes: 122

Total Fatal Crashes: 2

Total Serious Injury Crashes: 7

Total Fatal and Serious Injury (FSI) Crashes: 9

Total Property Damage Only Crashes: 83

Crashes by Year: In 2014, the Village of Buckeye Lake had the most FSI crashes (3) and the highest percentage of FSI crashes (37.5%) out of all years analyzed. FSI crash percentages have reduced with some years not reporting any. In addition, total crashes peaked in 2020 at 22.

Injury Severity: On average, a fatal crash occurs in the Village every five years, and a serious injury crash occurs every other year. The majority of crashes do not result in fatalities or severe injuries.

Crashes by Mode:

- **Pedestrians:** Pedestrian crashes compose 1.6% of all crashes, but 22% of all FSI crashes. There were 2 crashes involving a pedestrian in the years analyzed, both resulted in life altering injuries.
- **Bicycles:** Bicycle crashes compose 3.3% of all crashes, and 11.1% FSI crashes. There were 4 crashes involving a bicyclist in the years analyzed, and 1 resulted in serious injury.
- **Vehicles:** Vehicle crashes compose 95% of all crashes, and 66.7% of all FSI crashes. There were 116 crashes involving a vehicle in the years analyzed, 4 crashes caused serious injury and 2 were fatal.

Crashes by Vehicle Types: 22 (59%) out of 39 all injury crashes in the last ten years involved light trucks (minivans, SUVs, pick-up trucks.)

Leading Crash Type: Fixed object and Vulnerable Road User (VRU) crashes are the leading crash types that resulted in FSI crashes. Fixed object and rear end crashes are the leading crash types in all crashes. Angle crashes are the third leading crash type in all crashes.

Leading Crash Dynamics: Crash dynamics provide insight into the position and direction of vehicles, pedestrians, and bicyclists at the time of a crash. The most common crash dynamic in the Village of Buckeye Lake is fixed object crashes with a solo motorist going straight along a roadway. This accounts for 33% of all FSI crashes. Non-motorist crossing straight hit by motorist going straight is the second highest crash dynamic that resulted in FSI crashes.

Leading Contributing Factors: Contributing factors are variables that contribute to a crash. Tailgating, driving left of center, improper backing, speeding, swerving to avoid, load shifting, and improper starting from a parked vehicle each contributed to one of the FSI crashes. The other two FSI crashes had unknown or unidentified contributing factors.

Behaviors: Crash behaviors are attributes of drivers or actions of drivers that may have contributed to the crash. Road-departure, young drivers (under 25 years old), and alcohol impairment are the top behavioral factors associated with FSI crashes.

Roadway Characteristics: Eight out of nine FSI crashes and 93% of all crashes occurred at or near an intersection. The highest density of FSI crashes per mile occurred on major collectors and on state roads. 70% of crashes happened on roads with posted speed limits at 35 mph.

Environmental Characteristics:

- **Seasonal fluctuations:** On average, about 16 crashes occur per month during the summer (July and August), which is 72% higher than the crash frequencies in winter months (December through March.)
- **Weekly and daily fluctuations:** Three out of nine FSI crashes occurred at night between 9 PM and 12 AM. Saturday morning (9 AM-12 PM) and Sunday afternoon (12-6 PM) had the most crashes.
- **Lighting conditions:** Five out of nine FSI crashes occurred during dark conditions.
- **Pedestrian and bike infrastructure:** Pedestrian and bicyclist-involved crashes occurred at locations where additional and enhanced infrastructure could improve the multimodal safety conditions.

Demographics: Males between the ages of 45-54 were the leading population group that were at fault for all crashes. When comparing with the population distribution in Buckeye Lake, males aged between 15-64 and females aged between 15-24 are overrepresented in all crashes.

Equity: Most of the Village is considered as Disadvantaged tracts by USDOT Equitable Transportation Community (ETC) Explorer. When compared to the rest of the state, the roadway safety challenges in the Village are relatively high, contributing to transportation insecurity.

3.2 Descriptive Crash Analysis Methodology

The descriptive crash analysis methodology consisted of data collection, consolidation, processing, and contextualization based on available crash and roadway attribute data. A series of high-level descriptive summary tables and charts capture relationships between region-wide crash data, infrastructure data, and contextual variables. These statistics explore overall crash trends and patterns that can be used to guide the selection of variables warranting deeper analysis, new roadway behavior programs, policy changes, or the selection of safety countermeasures for project development. This report provides planners, engineers, and decision makers with more information to design roads and form infrastructure policies that respond to historical crashes and determine where there are similar crash conditions across the system. This memo also provides information on education, engagement, and enforcement initiatives that can improve safety outcomes for all road users.

Crash Data Overview

Police officers complete the Ohio OH-1 Crash Report Form when investigating a roadway crash.[1] The Report Form prompts responding officers to document information about the involved parties, location, crash factors, and vehicle types involved in the crash.

Crash data was obtained from the Ohio Department of Transportation's (ODOT) Transportation Information Mapping System (TIMS) for the most recent 10 years from 2014 through 2023 for the Village. This data was used for the descriptive analysis in this memo. The locations of the crashes were used as-is from the TIMS data download.

Data Sources

Table 4 lists the primary data sources used in the descriptive safety analysis. These data sets were used and interpreted as-is.

Table 4. Data Sources

DATASET	SOURCE	ATTRIBUTES
Crash Data	TIMS	Attributes consistent with information documented in Ohio OH-1 Crash Report. Crash data was already geocoded.
Road Inventory	TIMS and Open Street Map	TIMS included speed limit, functional class, and roadway jurisdiction attributes for non-residential roads. Geometries of residential streets were extracted from Open Street Map.
Sidewalk	Licking County	Presence and absence of sidewalks
Bike Trails	Bike Buckeye Lake[2]	Attributes were created using the information provided on the organization's website and mapping information provided for Tour De Buckeye Lake, created using RideGPS.

Study Limitations

Temporal Consistency Limitations

The consultant team studied crashes that occurred during a period of ten years, from 2014 through 2023. The compiled roadway data reflects current conditions according to the data made available at the time of this analysis. It can be assumed that some changes in roadway design and operations have occurred over the previous years that cannot be accounted for. For example, if a crash occurred in 2016 and the posted speed limit changed from 35 mph down to 30 mph in 2018, this analysis would link the 2016 crash with the present day 30 mph speed limit. As crash data is viewed at an aggregate level within this document, the impacts of these temporal inconsistencies are expected to be minor.

Exposure data

The analyses reported here do not adjust for exposure rates based on volumes by modes. Therefore, results show crash density but not frequency of crashes normalized by level of traffic or pedestrian and

[1] https://one.nhtsa.gov/nhtsa/stateCatalog/states/oh/ohio.html
[2] https://bikebuckeyelake.org/the-buckeye-lake-trail/

bicycle volumes, which is also called exposure. For example, in many communities, pedestrian crashes are more common during daylight conditions than dark conditions. This does not mean that daylight conditions are more dangerous than dark conditions. Rather, it reflects the fact that people are more likely to travel, and especially more likely to travel by walking, in light conditions than in dark conditions. Some proxies for exposure are noted in this analysis, such as land use, transit facilities, and functional classification.

Transportation Data for Future Study

As the Safe System Approach is used throughout the region, additional data can assist communities in understanding crash risk and take a more proactive approach to safety. Below are some recommendations for additional data components that may be valuable for future study.

- Regionwide bicycle and pedestrian volume data would allow for a measure of crash exposure for bicyclists and pedestrians.
- Several datasets listed below would help identify or refine risk factors. At this time, this data is either not available in a geospatial format, or were available, but with limited coverage:
    - Vehicle operating speeds
    - Crosswalk style
    - Location of fixed objects (raised medians, barriers, utility poles, etc.)
    - Marked crosswalks and crosswalks enhancements

3.3 Descriptive Crash Analysis Results

General Crash Trends

FSI Crashes Per Year

Figure 13 shows the number of total and FSI crashes by year's crashes. In 2014, the Village had the most FSI crashes (3) and the highest percentage of FSI crashes (33.3%) out of all years analyzed. The percentage of FSI crashes reduced over the years apart from a slight increase to 2 in 2017. Since 2021 there were no FSI crashes reported in the Village. The total number of crashes peaked in 2020 at 22.

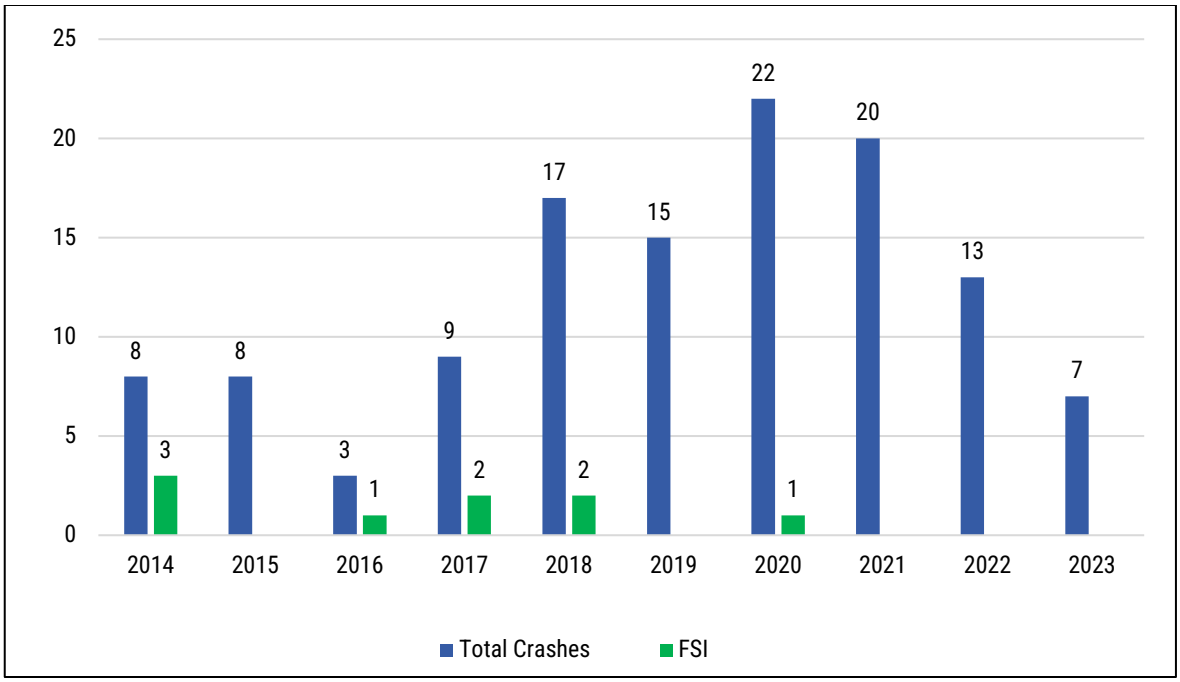


Figure 13. Crashes by Year, 2014-2023

Crashes by Mode

Table 5 indicates crash severity by the modes involved. Crashes involving at least two vehicles ("vehicle-vehicle") account for 95% (or 116 of 122) of all crashes, and 66.7% (or 6 of 9) of all FSI crashes. Bicycle-vehicle and pedestrian-vehicle crashes are disproportionately represented in FSI crashes. Pedestrian-involved crashes compose 1.6% of all crashes, but 22% of all FSI crashes. Bicycle-involved crashes compose only 3.3% of all crashes, but 11% of all FSI crashes. This reflects the tendency for crashes involving a VRU to be much higher in severity than vehicle-vehicle crashes on average.

Table 5. FSI Crashes by Mode, 2014-2023

MODE	Fatal	Suspected Serious Injury	Suspected Minor Injury	Possible Injury	No Apparent Injury	Total	% of Total Crashes
BICYCLE-VEHICLE	0	1	2	0	1	4	3.3%
PEDESTRIAN-VEHICLE	0	2	0	0	0	2	1.6%
VEHICLE-VEHICLE	2	4	13	15	82	116	95.1%
TOTAL	2	7	15	15	83	122	100%

Crashes by Vehicle Type

Figure 14 summarizes the types of vehicles involved in crashes. The data illustrates that a total of 120 crashes involved at least one passenger car, 38 of these crashes resulted in injuries. Light trucks, which include SUVs, minivans, and pick-up trucks, were involved in 22 injury crashes and 53 property damage only crashes. Four crashes involved motorcycles, three of which resulted in injuries.

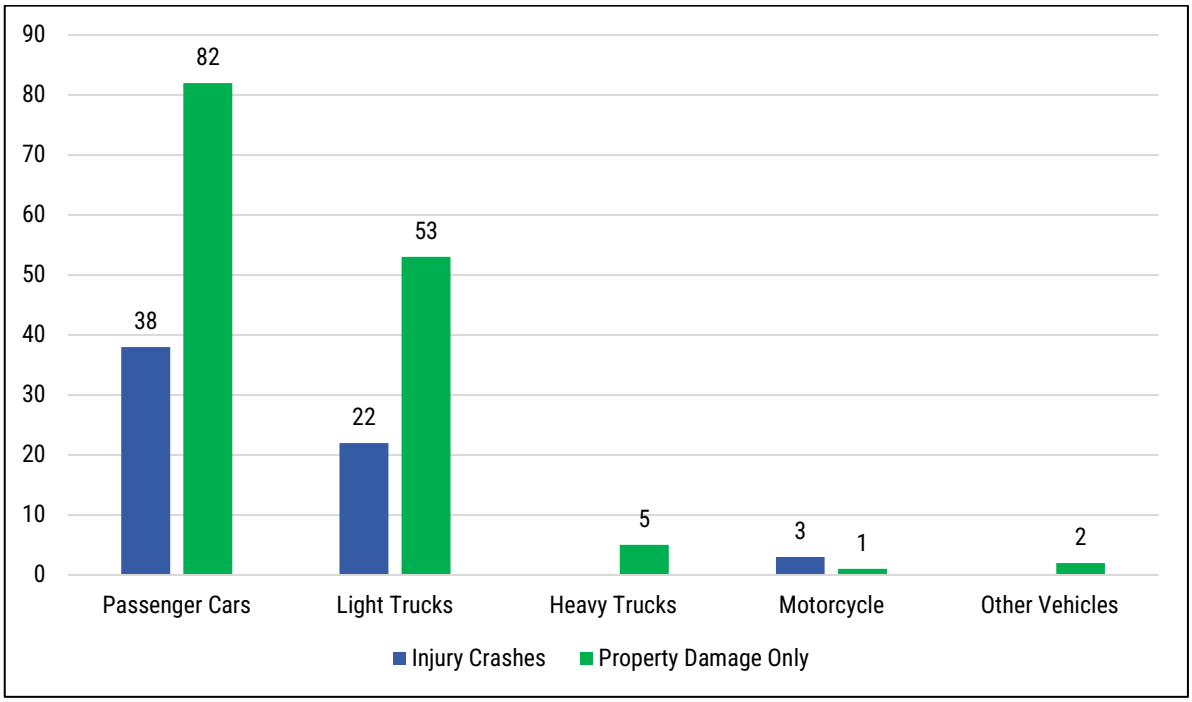


Figure 14. Total Crashes by Vehicle Type

The vehicle types for units involved in crashes were documented in the Ohio State Crash Report Form OH-1. The vehicle types from Form OH-1 were grouped based on National Highway Traffic Safety Administration classification, as summarized as below.[3]

Table 6. Crash Report Form According to Vehicle Type

VEHICLE TYPE	OHIO STATE CRASH REPORT FORM UNIT TYPE
PASSENGER CAR	Passenger Car
LIGHT TRUCKS	Passenger Van (Minivan), Sport Utility Vehicle, Pick Up, Cargo Van, Van (9-15 Seats)
HEAVY TRUCKS	Single Unit Truck, Semi-Tractor
MOTORCYCLE	Motorcycle 2-Wheeled, Motorcycle 3-Wheeled, Autocycle, Moped or Motorized Bicycle
OTHER VEHICLES	ALL Terrain Vehicle-- (ATV / UTV), Golf Cart, Snowmobile, Farm Equipment, Motorhome, Limo (Livery Vehicle), Other Vehicle

[3] https://www-fars.nhtsa.dot.gov/Vehicles/VehiclesAllVehicles.aspx

Crash Causation

Crash Types

Figure 15 summarizes total crashes by crash type. Fixed object and VRU crashes are the leading crash types that resulted in FSI crashes. Fixed object and rear end crashes are the leading crash types in all crashes. Angle crashes are the third leading crash types in all crashes, however no angle crashes resulted in FSI.

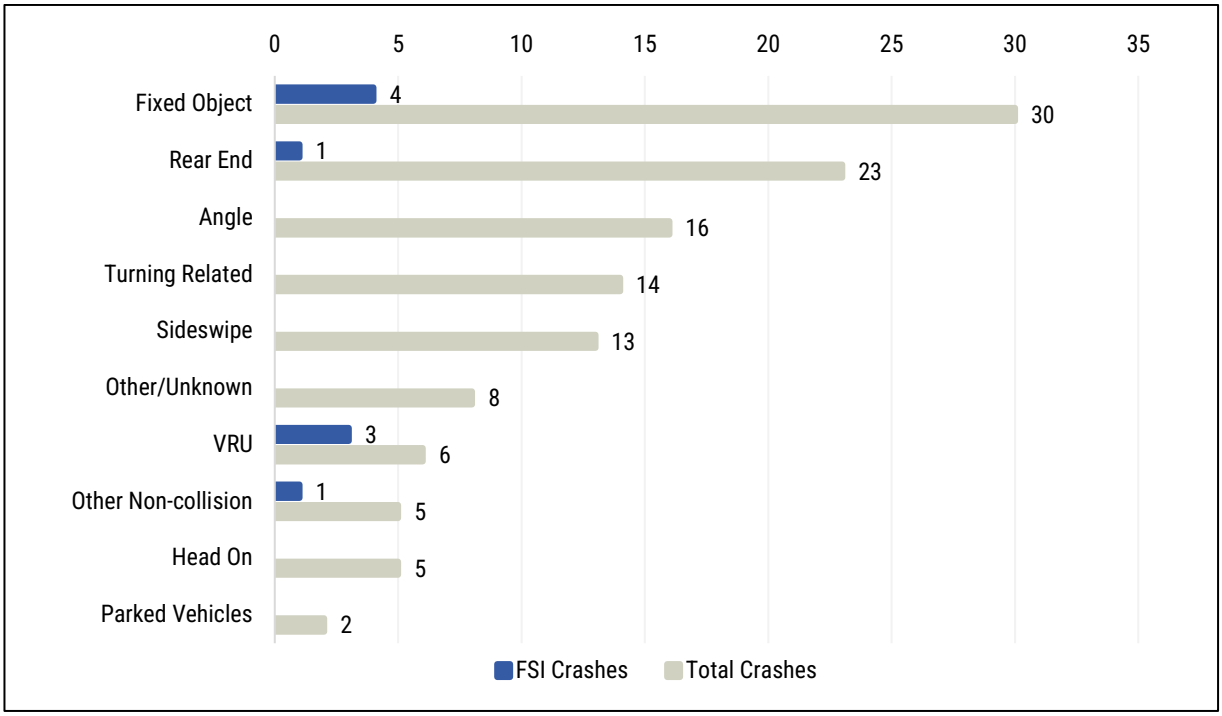


Figure 15. Total and FSI Crashes by Crash Type, 2014-2023

Leading Crash Dynamics

Table 7 lists the top 10 crash dynamics that impact Buckeye Lake. The most common crash dynamic in the Village is fixed object crashes with a solo motorist going straight along a roadway. This accounts for three (33%) of all FSI crashes. Non-motorist crossing straight when a motorist is going straight is the second most frequent crash dynamic in Buckeye Lake, resulting in two FSI crashes.

Table 7. Top 10 Crash Dynamics, 2014-2023

TOP 10 CRASH TYPES	ALL CRASHES	FSI CRASHES
FIXED OBJECT: SOLO STRAIGHT	20	3
VRU: NON-MOTORIST CROSSING - STRAIGHT	2	2
OTHER NON-COLLISION: SOLO STRAIGHT	4	1
REAR END: LEFT TURN - STRAIGHT	3	1
VRU: OTHER - OVERTAKING/PASSING	1	1
FIXED OBJECT: SOLO ENTERING TRAFFIC	1	1
REAR END: SLOWING/STOPPING - STRAIGHT	13	0
ANGLE: LEFT TURN - STRAIGHT	9	0
TURNING RELATED: LEFT TURN - STRAIGHT	6	0
ANGLE: STRAIGHT - STRAIGHT	5	0

Leading Contributing Factors

Figure 16 summarizes the leading contributing factors that led to crashes. Crashes with no known or identified contributing factors had the highest share of both FSI and total crashes. Other than these crashes the primary contributing factors to FSI crashes are tailgating, driving left of center, improper backing, speeding, swerving to avoid, load shifting, and improper starting from a parked vehicle. Failing to yield ranks as the second most common contributing factor across all crashes, followed by crossing into the left of the center lane as the third most prevalent factor.

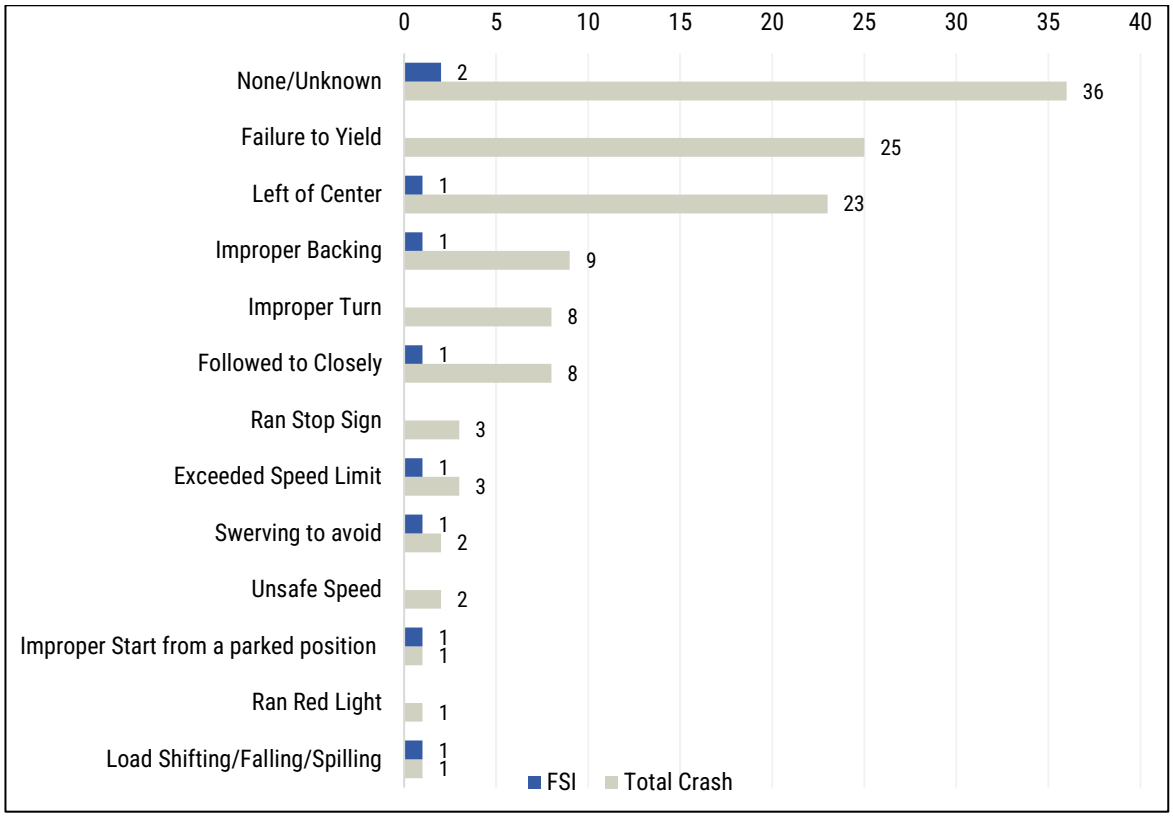


Figure 16. Top Contributing Factors to FSI and total crashes, 2014-2023

Crash Behaviors

There are six behaviors identified in the Report Form, including road-departure, youth (under 25 years old), speeding, senior (65 years old and older), impairment (drugs, medication, or alcohol), and distracted driving. Officers and first respondents who complete this form may choose any behavioral factors that apply to the crashes. Figure 5 shows that the most common crash behaviors in FSI crashes are road-departure, young drivers (under 25 years old), and alcohol impairment.

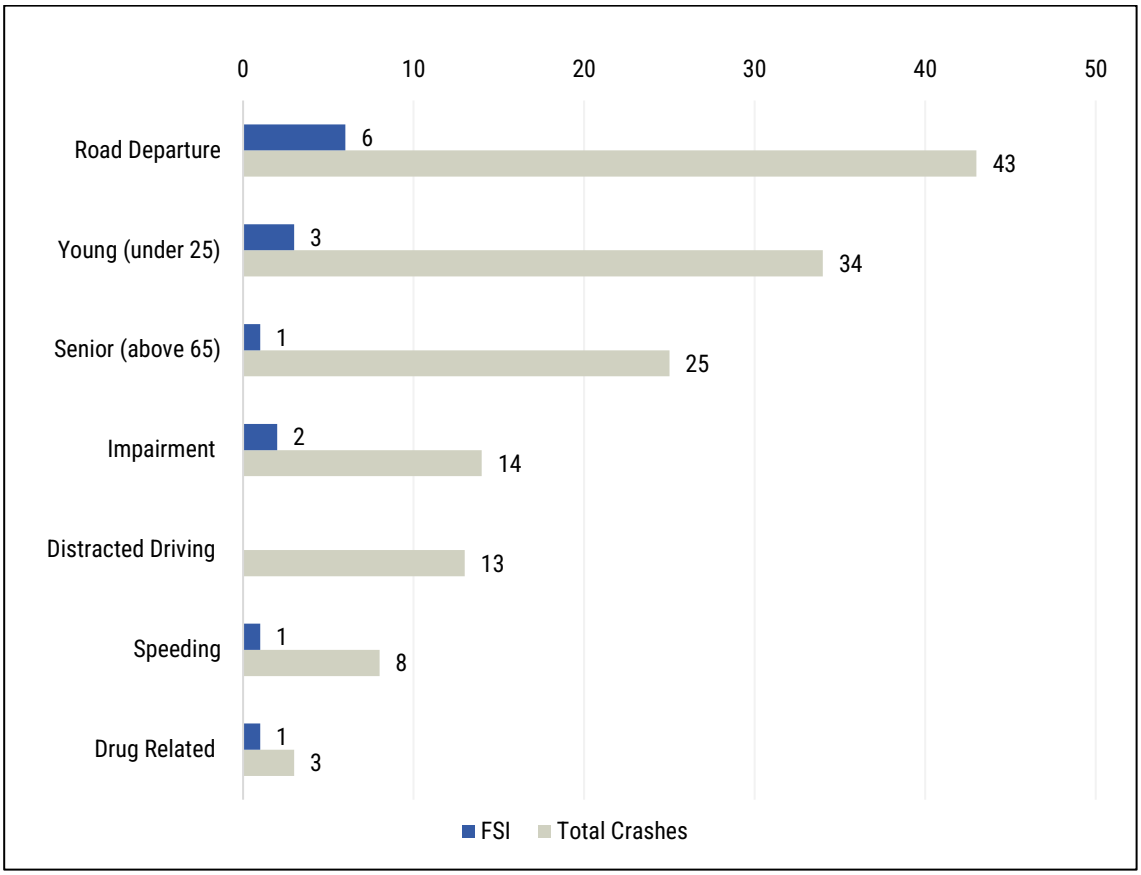


Figure 17. Behaviors Involved in All Crashes, 2014-2023

Roadway Characteristics

Crash Location

Figure 18 summarizes crashes by location types. Crashes within 150 feet of intersections are considered intersection crashes; crashes within 100 feet of the centerline network but not near intersections are considered mid-block crashes. The remaining crashes are considered off-network (like on private property or in parking lots), as their spatial locations are not near any intersections or roadways. From the figure below, intersections account for the majority of crashes, comprising 93% of total crashes (114 out of 122) and 89% of FSI crashes (8 out of 9). Mid-block areas represent a smaller portion, with 6% of total crashes (7 out of 122) and 11% of FSI crashes (1 out of 9).

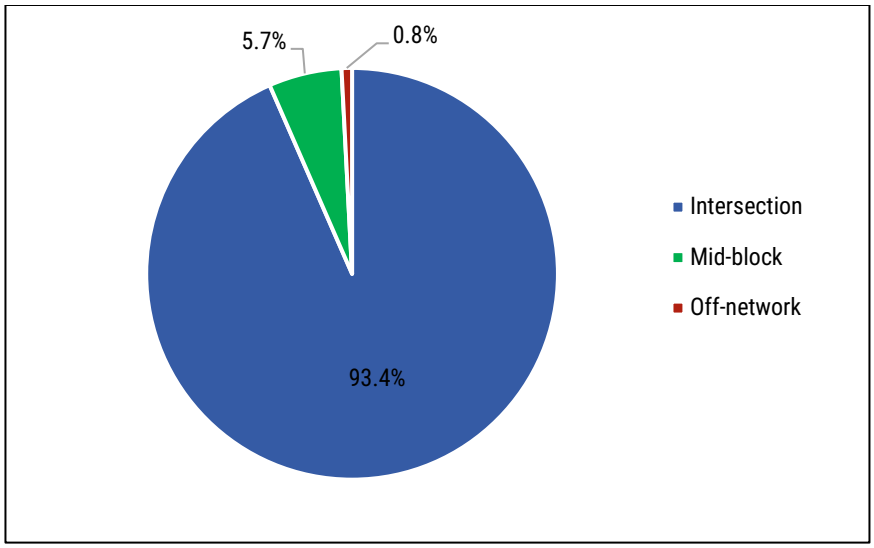


Figure 18. Crash locations, 2014-2023

Intersection Control Type

Figure 19 summarizes the intersection crashes by intersection control type. A majority of the intersection-related crashes occur at STOP-controlled intersections, accounting for 94% (106 out of 114 total intersection crashes). The only signalized intersection is Hebron Road & Mill Dam Road, where eight non-FSI crashes occurred in the last ten years.

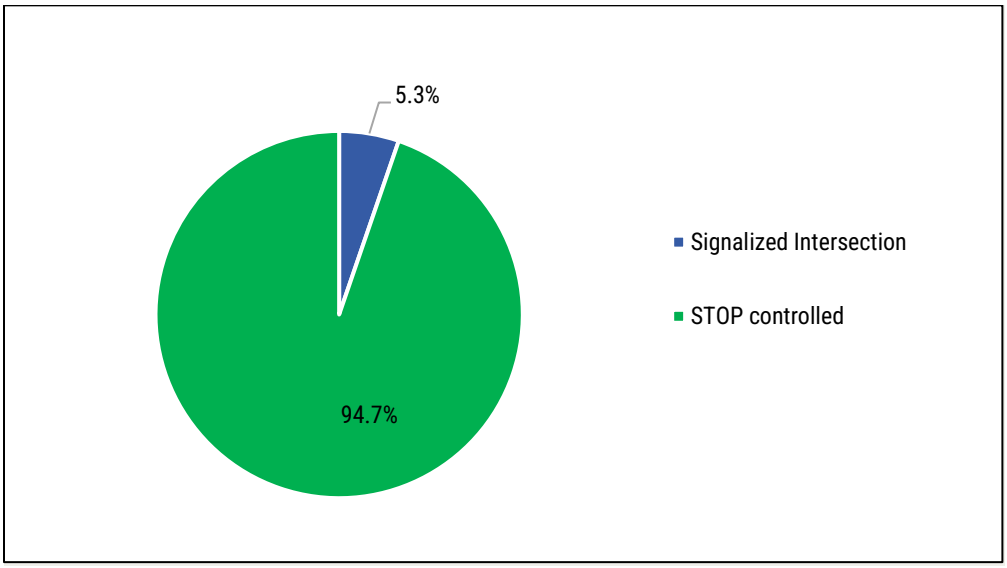


Figure 19. Intersection Crashes by Intersection Control Type, 2014-2023

Functional Classification

Table 8 summarizes crashes by roadway functional classification. When normalizing by roadway miles, about two FSI crashes occur on every mile of major collector streets. Major collector roadways account for 8 of the 9 FSI crashes and 90 of the 122 total crashes in the Village. Walnut Road, Hebron Road, and Northbank Road are the major collectors within the Village.

Table 8. FSI crashes by functional class, 2014-2023

Functional Class	FSI	Total Crashes	FSI / Miles	Total Miles
Local	1	28	0.07	15.26
Major Collector	8	90	2.27	3.53
Principal Arterial other	0	1	0	8.86
Unknown	0	3	N/A	N/A
Total	**9**	**122**	**0.33**	**27.65**

State Routes/Roadway Jurisdiction

Table 9 summarizes crashes by roadway jurisdiction types. Within the jurisdiction, eight out of nine FSI crashes occurred on state roads (Walnut Road, Hebron Road, and Northbank Road.) An additional FSI crash was found on municipal routes, accounting for one out of nine FSI crashes. The highest numbers of crashes are highlighted in red in Table 5 below.

Table 9. FSI Crashes by Roadway Jurisdiction, 2014-2023

Jurisdiction	FSI	Total Crashes	FSI/Miles	Total Miles
Municipal	1	30	0.07	14.25
County	0	5	0.00	0.9
State	8	84	1.92	3.64
Unknown	0	3	N/A	N/A
Total	**9**	**122**	**0.33**	**27.65**

Posted Speed Limit

Table 10 summarizes crashes by posted speed limit. Eight out of nine FSI crashes occurred on roadways with 30 or 35 mph posted speed limit (Walnut Road and Hebron Road).

Table 10. FSI crashes by posted speed limit, 2014-2023.

Speed Limit	FSI	Total Crashes	FSI/Miles	Total Miles
≤25	1	33	0.09	10.81
30-35	8	86	3.02	2.65
40-45	0	3	0.00	0.24
Total	**9**	**122**	**0.33**	**27.65**

Environmental Characteristics

FSI Crashes by Month of Year

Figure 20 summarizes the share of crashes by month. Most FSI crashes occurred in February, June, and July, each accounting for 2 FSI crashes. Summer months (July and August) experienced the most crashes, with a combined total of 33 crashes, while winter months (December through March) also had 33 crashes. Therefore, the crash frequency in summer months is the same as in winter months.

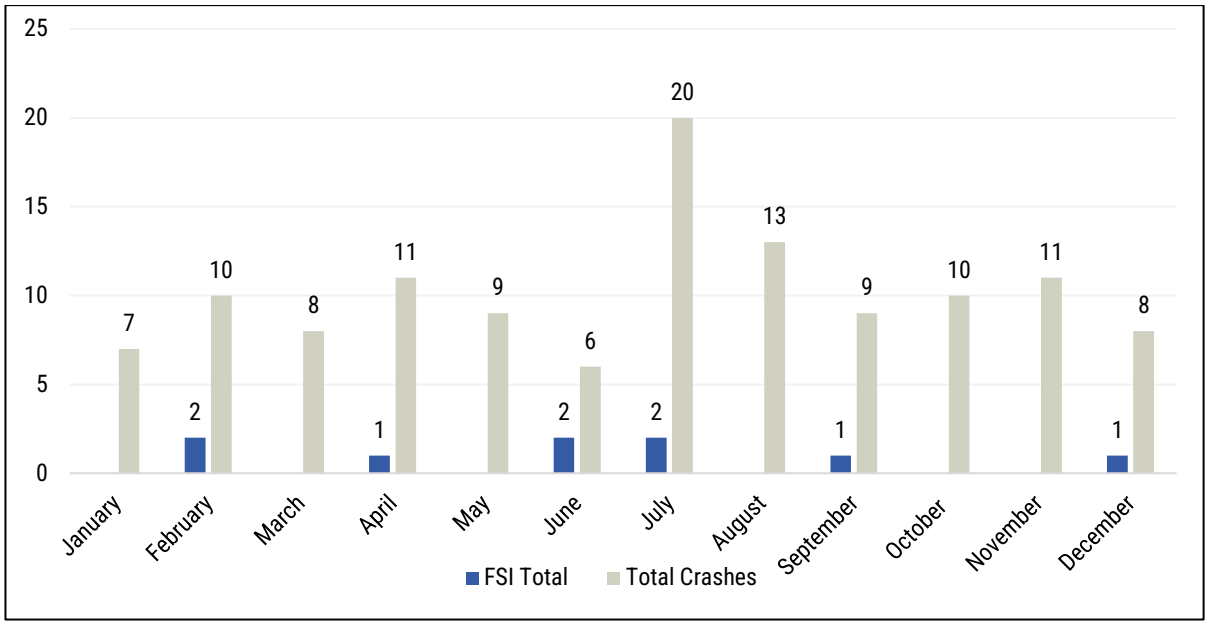


Figure 20. FSI and Total Crashes by Month, 2014-2023

Crashes by Day of Week and Time of Day

Table 11 summarizes total crashes by day of week and time of day. Total crashes peaked on weekends, with Saturday morning (9 AM-12 PM) and Sunday afternoon (12-6 PM) having the most crashes. On weekdays, more crashes occurred between 3-9 PM in the middle of the week (Tuesday through Thursday) than the beginning or end of the week. FSI crashes are most frequent on Monday and Wednesday, with each day accounting for 3 crashes. The time periods with the highest number of FSI crashes are 3-6 PM and 9 PM-12 AM, each with 3 crashes.

Table 11. Total Crashes by Day of Week and Time of Day, 2014-2023

Total Crashes	Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Total
12-3 AM	2	2	1	0	0	2	1	**8**
3-6 AM	0	0	2	0	0	0	0	**2**
6-9 AM	0	3	2	1	1	0	0	**7**
9 AM-12 PM	2	3	1	3	6	4	7	**26**
12-3 PM	8	4	2	2	2	5	3	**26**
3-6 PM	6	3	4	1	3	0	3	**20**
6-9 PM	2	1	3	5	3	3	0	**17**
9 PM-12 AM	1	3	2	1	2	3	4	**16**
Total	**21**	**19**	**17**	**13**	**17**	**17**	**18**	**122**

Table 12. FSI Crashes by Day of Week and Time of Day, 2014-2023

FSI Crashes	Sunday	Monday	Wednesday	Saturday	Total
12-3 AM	0	1	0	0	**1**
3-6 PM	1	1	0	1	**3**
6-9 PM	0	0	2	0	**2**
9 PM-12 AM	0	1	1	1	**3**
Total	**1**	**3**	**3**	**2**	**9**

FSI Crashes by Lighting Condition

Figure 21 summarizes FSI crashes by lighting conditions. Most crashes occurred during daytime, but five out of nine FSI crashes occurred during dark lighting conditions.

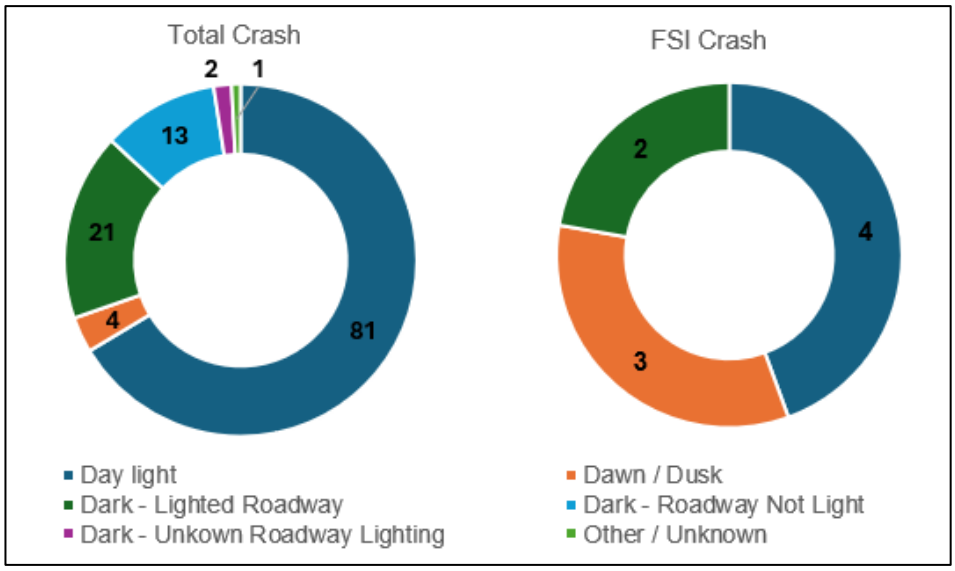


Figure 21. FSI Crashes by Lighting Condition

Crashes by Presence of Pedestrian and Bicycle Infrastructure

Figure 22 maps the locations of all four bicycle involved crashes in Buckeye Lake. None of the bicycle crashes occurred along existing bike facilities. One serious injury crash occurred on Walnut Road.

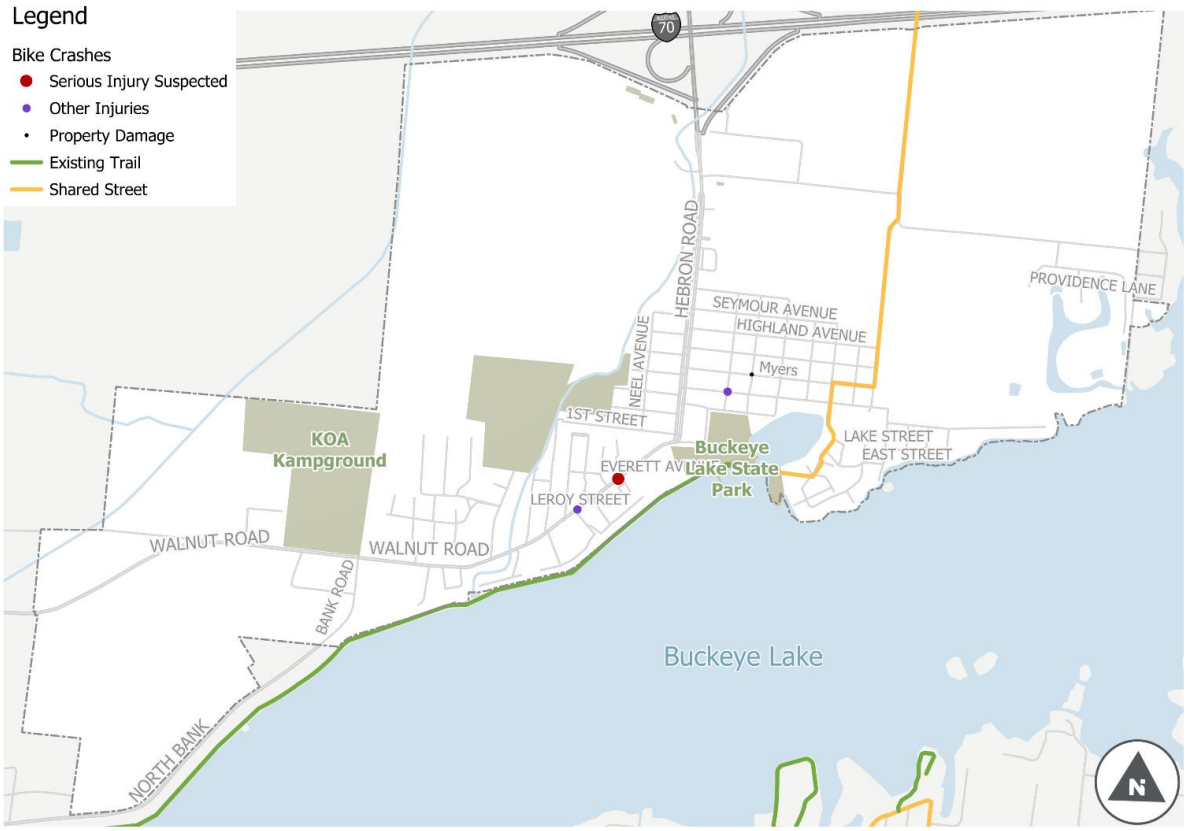


Figure 22. Bicycle Crashes, 2014-2023

Figure 23 maps the location of pedestrian crashes in reference to existing sidewalk. Two serious injury crashes both occurred along Walnut Road, where side paths existed on one side of the road. Additional information on the presence and type of pedestrian crossings near these crash locations could inform whether additional pedestrian crossings could improve pedestrian crossing safety along this corridor.

Figure 23. Pedestrian Crashes, 2014-2023

Demographic and Equity

Age and Gender

Figure 24 summarizes the gender breakdown of at-fault parties in total and FSI crashes. Not all crashes have an at-fault party: 117 out of all 122 crashes and eight out of all nine FSI crashes have at-fault parties. Males are the leading gender group that were at fault for FSI and total crashes.

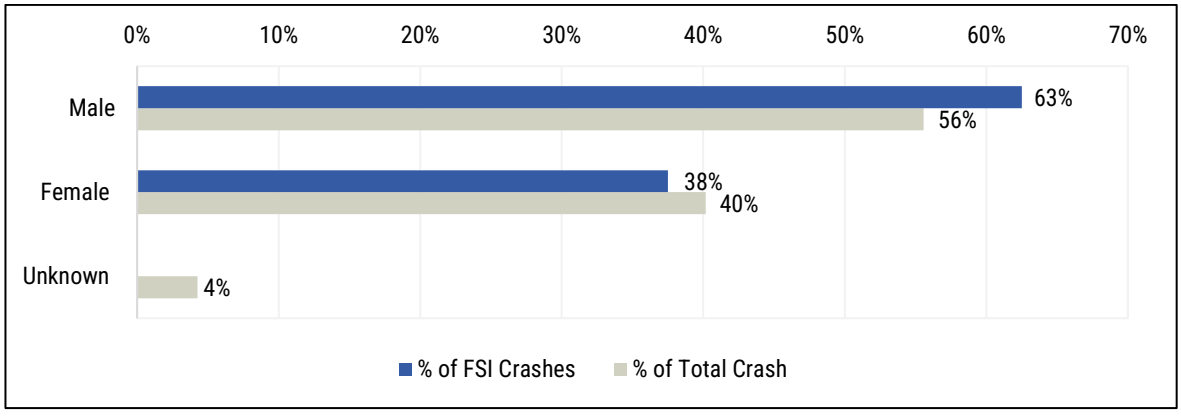


Figure 24. FSI and Total Crashes by At-Fault Gender

Table 13 summarizes the gender and age breakdown of at-fault parties in all crashes. Males between the ages of 45-54 were the leading population group that were at fault for all crashes. When comparing with the population distribution in Buckeye Lake, males aged between 15-64 and females aged between 15-24 are overrepresented in all crashes.

Table 13. Total Crashes by at-fault party age and gender, 2014-2023

AGE	FEMALE	MALE	UNKNOWN	TOTAL	FEMALE POPULATION %	MALE POPULATION%
<15	0%	1%	0%	1%	6%	3%
15-24	9%	9%	0%	19%	4%	4%
25-34	3%	10%	0%	14%	5%	6%
35-44	4%	9%	0%	13%	8%	5%
45-54	6%	11%	0%	17%	8%	10%
55-64	9%	9%	0%	19%	15%	5%
65-74	6%	3%	0%	9%	6%	5%
>=75	2%	2%	0%	3%	4%	7%
UNKNOWN	0%	1%	4%	5%	-	-
GRAND TOTAL	40%	56%	4%	100%	56%	44%

Roadway Safety in Disadvantaged Communities

Most of the Village of Buckeye Lake falls within the Disadvantaged census tracts. Specifically, the health vulnerability, social vulnerability, and transportation insecurity are ranked as relatively high when compared with the rest of the state. The transportation insecurity index is a composite score of traffic safety, transportation cost burden, and transportation access measures. The Village of Buckeye Lake scores relatively high in traffic safety at 73th percentile, indicating that roadway safety challenges contributed to transportation insecurity.

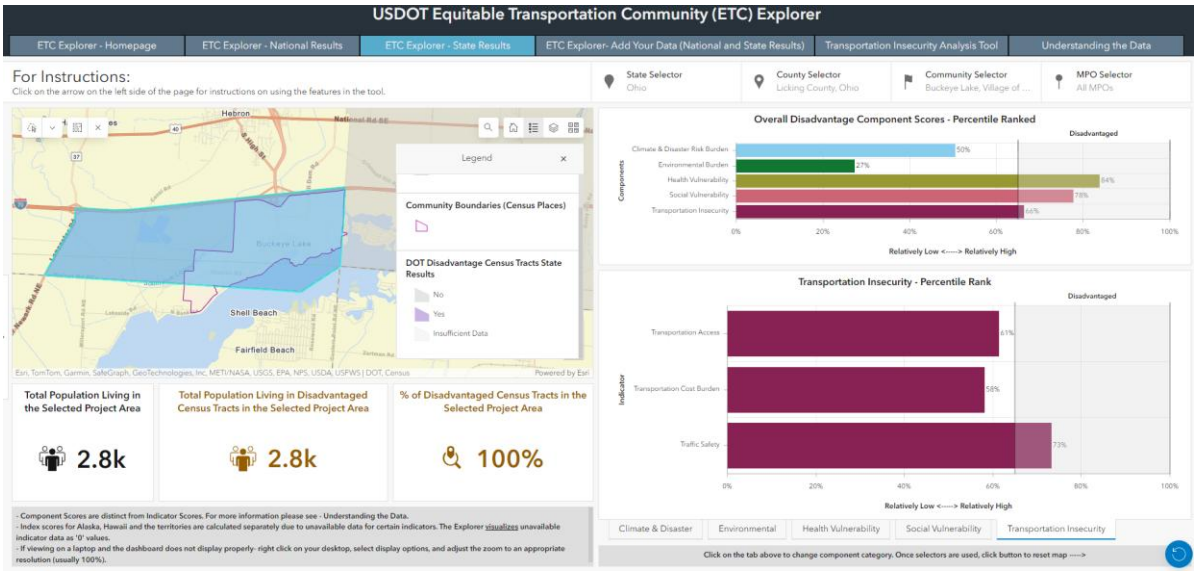


Figure 25. USDOT ETC Explorer Results for the Village

3.4 Conclusion

The descriptive analysis outlines the following crash types and locations that contributed to a large number of fatal and severe injury crashes in the past ten years:

- Fixed object crashes
- Rear-end crashes
- Road departure crashes
- Crashes involving pedestrians and cyclists
- Crashes on state roads
- Crashes in summer months (July and August)
- Crashes at stop-controlled intersections

Additional data collection efforts can deepen our understanding of the roadway context. Desktop review or field check of the following attributes can be valuable for risk-based analysis:

- Crosswalk style
- Location of fixed objects (raised medians, barriers, utility poles, etc.)
- Marked crosswalks and crosswalks enhancements
- Locations of alcohol-serving establishments

The review also surfaced some potential data quality issues with the TIMS crash data in the Village of Buckeye Lake. Specifically, the golf cart crashes lead the project team to question the accuracy and completeness of the crash reports. Village staff anecdotally shared that there were two crashes involving golf carts in recent years. However, the project team were not able to identify them based on the information in the crash reports.

Chapter 4

SYSTEMIC SAFETY ANALYSIS

4. SYSTEMIC SAFETY ANALYSIS

4.1 Systemic Screening Factors

One of the key outcomes of the systemic safety analysis is the identification of roadway, demographic, and land use characteristics that correlate with high crash frequency. These are also known as systemic screening factors or risk factors. Combinations of these factors identify roadway facility profiles that are associated with higher crash frequencies. However, it is important to note that this does not necessarily indicate a causal relationship, nor that these individual factors should necessarily be the target of treatments. For example, though the presence of nearby pedestrian generators may be found as a factor that correlates with elevated pedestrian crash frequencies, this does not mean that these generators should be removed, but instead that facilities near such generators may require additional safety investment.

Screening factors and roadway facility profiles should be studied from a practical and policy-driven perspective to determine what components may be reasonable targets of safety improvements and which should be viewed primarily as non-causal correlations.

Table 14 includes all roadway segment characteristics that were prepared and identified as candidate risk factors for consideration in the analysis. Factors considered in the analysis were limited by data quality and availability.

Table 14. Factors Screened for Systemic Analysis

SCREENING FACTOR	DESCRIPTION
TRAFFIC VOLUME	Average Annual Daily Traffic
POSTED SPEED LIMIT	Posted speed limits are grouped into 30 MPH or lower, 35-45 MPH, and 50 MPH or above.
INTERSECTION DENSITY	Number of intersection nodes within 250 feet of the segment.
FUNCTIONAL CLASS	The roadway functional class are grouped into high functional class, low functional class, and unknown.
NUMBER OF LANES	Number of lanes in all travel directions are grouped into two-lane roadways and multilane roadways.
RIGHT OF WAY WIDTH	Segments are grouped as “Narrow ROW” and “ROW width above 25 feet” based on measurement of satellite imagery.
SHOULDER PRESENCE	Whether paved shoulders are present on roadway based on reviews of Google Street View and satellite imagery

CROSSWALK PRESENCE	Number of crosswalks within 300 feet of the roadway segment, based on review of satellite imagery
LIQUOR STORE PRESENCE	Number of liquor stores within 500 feet of the roadway segment, based on review of Google Maps
DEMOGRAPHIC FACTORS	Demographic factors at the census tract level were collected from US Census and Ohio DOT, including percent of households with zero vehicles, percent of population in poverty, percent of youth and senior populations, and active transportation demand. Because Buckeye Lake Village only has few census tracts with very high uniformity within the jurisdiction, these demographic factors do not provide insightful linkage to crash risks.

4.2 Analysis Process

The systemic analysis focused on the study period of 2014 through 2023, measured by a crash score weighted by severity. All fatal and serious injury crashes are weighted three times of other less severe injury crashes, including suspected minor injury and possible injury. Roadway data was segmented at intersection points, retaining all relevant roadway cross-sectional and context attributes. Additional census and network data attributes were applied to the segmented data as needed to include the screening factors.

The screening process is based on a decision tree machine learning algorithm where each factor is screened individually to determine whether the factor distinguishes between locations with relatively high and low average weighted crash densities per mile. For categorical factors such as functional classification, the algorithm considers each unique classification individually. For numerical factors such as the poverty rate of the surrounding community, it considers all potential breakpoints by which the numerical values could be split. The algorithm screens all factors recursively to identify the most correlated factor and continues until a set of factors are identified as a facility profile. Figure 26 illustrates the decision tree algorithm where three correlated factors define a high-risk facility profile.

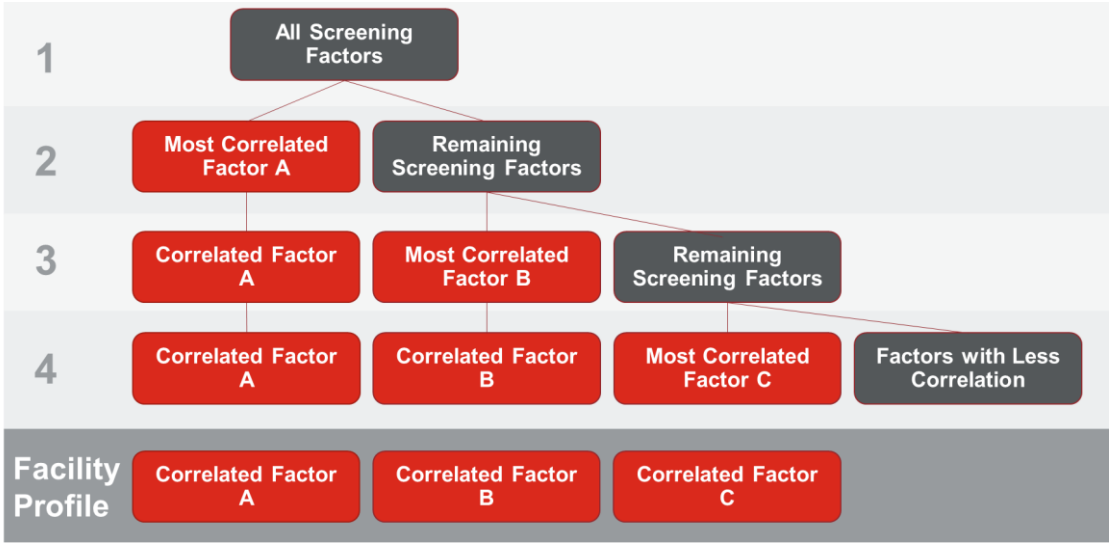


Figure 26. Illustration of Decision Tree Screening Process

Crash Data Limitations

Local law enforcement agencies submit the crash reports that provide the raw crash data. Although crash reports are currently the best way to obtain information about a large number of crashes, they have limitations. Crash severity may have limited accuracy because those completing reports typically don't have medical training, and victims of crashes may be unaware of internal injuries masked by adrenalin. The total number of crashes may be underreported due to fears, language barriers, financial concern, and more. Crash reports may not capture the effects of speed in crashes, as the first responders are typically on the scene after the crash has occurred and witnesses outside a crash are not typically interviewed about operator speed. Even when crash reports are perfect, they do not record near misses or the self-limiting behavior of travelers who don't feel safe in currently configured networks. It is useful to keep these limitations in mind when using crash data and to vet data with priority populations as part of the planning process.

4.3 Analysis Results – All Modes

All Modes Injury Crash Summary

Table 2 summarizes the risk factors based on their associated weighted crash score per mile during the study period. The screening factors identified to be most effective at indicating elevated crash frequency and severity are:

- Intersection Density
- Posted Speed

The screening factor identified to have the highest crash risk is roadways with high intersection density. These are roadway segments with more than 4 intersection nodes within 250 feet. 67 percent of crashes (weighted by severity) in the study area occur on roadways with high intersection density, even though these facilities represent only 40 percent of the total roadway miles in the study area. This is likely due to the existing configuration of streets in Buckeye Lake. The high intersection density is due to staggered

side streets intersecting Hebron Road. In the 0.3 mile stretch between 6th Avenue and West 1st Street, there are 14 three-legged intersections in close succession less than 150 feet from each other. This unique configuration in conjunction with the wide median and roadway results in more conflict points.

Table 15. All Modes: Risk Factor Summary

RISK FACTORS	FACILITY PROFILE METRICS			
	Total Miles in Study Area	*Weighted Crashes*	*% Miles in Study Area*	*% Weighted Crashes*
HIGH INTERSECTION DENSITY	7.5	35	40%	67%
SPEED (35-45 MPH)	2.9	39	15%	68%
HIGH TRAFFIC VOLUME	2.7	39	14%	68%

All Modes High-Risk Network Mapping

Figure 27 displays the High-Risk Network for all mode injury crashes. At least two of the three risk factors are present on the all mode high risk network.

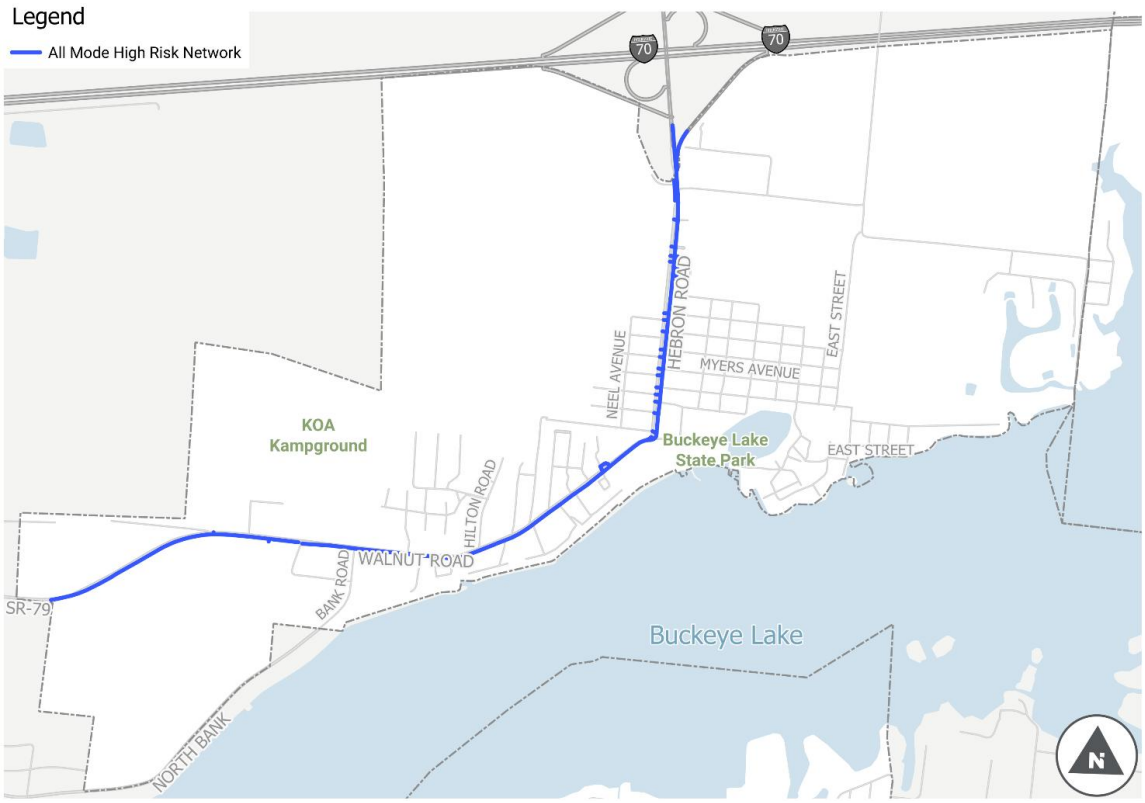


Figure 27. All Mode High Risk Network

4.4 Analysis Results – Vulnerable Road Users

VRU Analysis Summary

Vulnerable road user systemic analysis was performed for the study area to identify risk factors for crashes involving bicyclists or pedestrians.

Table 16 summarizes the factors based on their weighted crash score per mile during the study period. The screening factors identified to be most effective at indicating elevated VRU crash risks are:

- Intersection Density
- Traffic Volume
- Proximity to Liquor Stores
- Speed

The screening factors identified to have the highest VRU crash risk are locations with medium intersection density and roadways with AADT greater than or equal to 6,000 vehicles.

91 percent of the weighted VRU crashes in the study area occur at locations with medium intersection density, where 4 or 5 intersection nodes are within 250 feet of a segment, even though these facilities represent only 36 percent in the study area. Similarly, 29 percent of the total roadway miles in the study area have AADT equal to or greater than 6000, contributing to 91 percent of the weighted VRU crashes.

Existing conditions show a lack of crosswalks within the village, especially at areas with high traffic volume. There are only 2 mid-block crossings on Hebron Road and no crossings on Walnut Road. It is likely that many pedestrians cross unprotected to get to their destination, increasing the likelihood for collisions.

Table 16. VRU Crashes Risk Factor Summary

RISK FACTORS	**FACILITY PROFILE METRICS**			
	Total Miles in Study Area	*Weighted VRU Crashes*	*% Miles in Study Area*	*% Weighted VRU Crashes*
MEDIUM INTERSECTION DENSITY	6.9	10	36%	91%
AADT ≥ 6000	1.9	10	10%	91%
SPEED > 30 MPH & LIQUOR STORE NEARBY	2.8	7	15%	64%

VRU High-Risk Network Mapping

Figure 28 displays the High-Risk Network for Pedestrians and Bicyclists (VRU.) At least two of the three risk factors are present on the VRU high risk network.

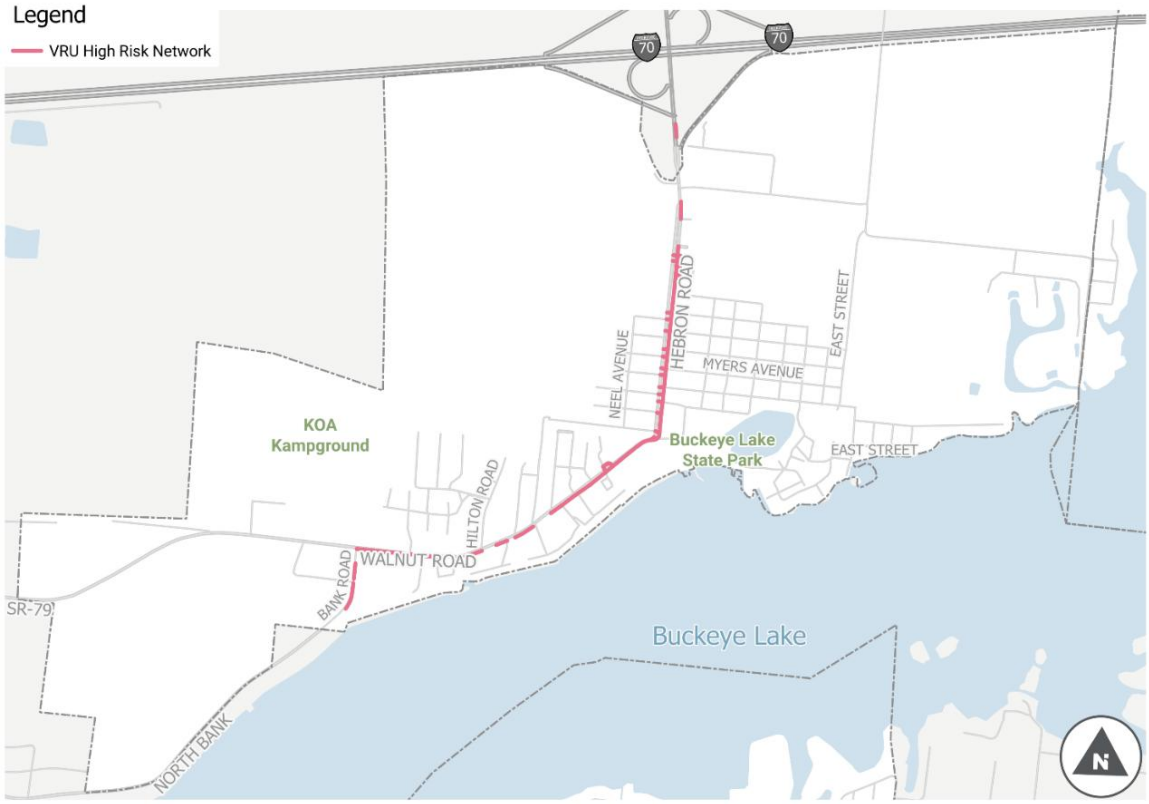


Figure 28. VRU High Risk Network

4.5 Analysis Results – Fixed Object

Fixed Object Analysis Summary

Fixed object systemic analysis was performed for the study area to identify risk factors for fixed object crashes.

Fixed object crashes were the leading crash type in Buckeye Lake during the study period, resulting in 30 crashes including 4 FSI crashes.

summarizes the risk factors that lead to high weighted crashes. The screening factors identified to be most effective at indicating elevated fixed object crash frequency and severity are:

- Volume (AADT)
- Posted Speed

The factor identified to have the highest fixed object crash risk are roadways with AADT greater than 500 vehicles. 70 percent of fixed object crashes (weighted by severity) in the study area occur on roadways with AADT greater than 500 vehicles, even though these facilities represent only 24 percent of the total roadway miles in the study area. This suggests that traffic calming, speed reduction, and better signage to mark the raised median as well as fixed objects on the side of the roadways can be effective at addressing fixed object risks.

Table 4. Fixed Object: High Risk Summary

RISK FACTORS	FACILITY PROFILE METRICS			
	Total Miles in Study Area	*Weighted Fixed Object Crashes*	*% Miles in Study Area*	*% Weighted Fixed Object Crashes*
AADT > 500	4.6	14	24%	70%
SPEED (35-45 MPH)	2.9	11	15%	55%

Fixed Object High-Risk Network Mapping

Figure 29 displays the High-Risk Network for fixed object crashes. Both risk factors are present on the fixed object high risk network.

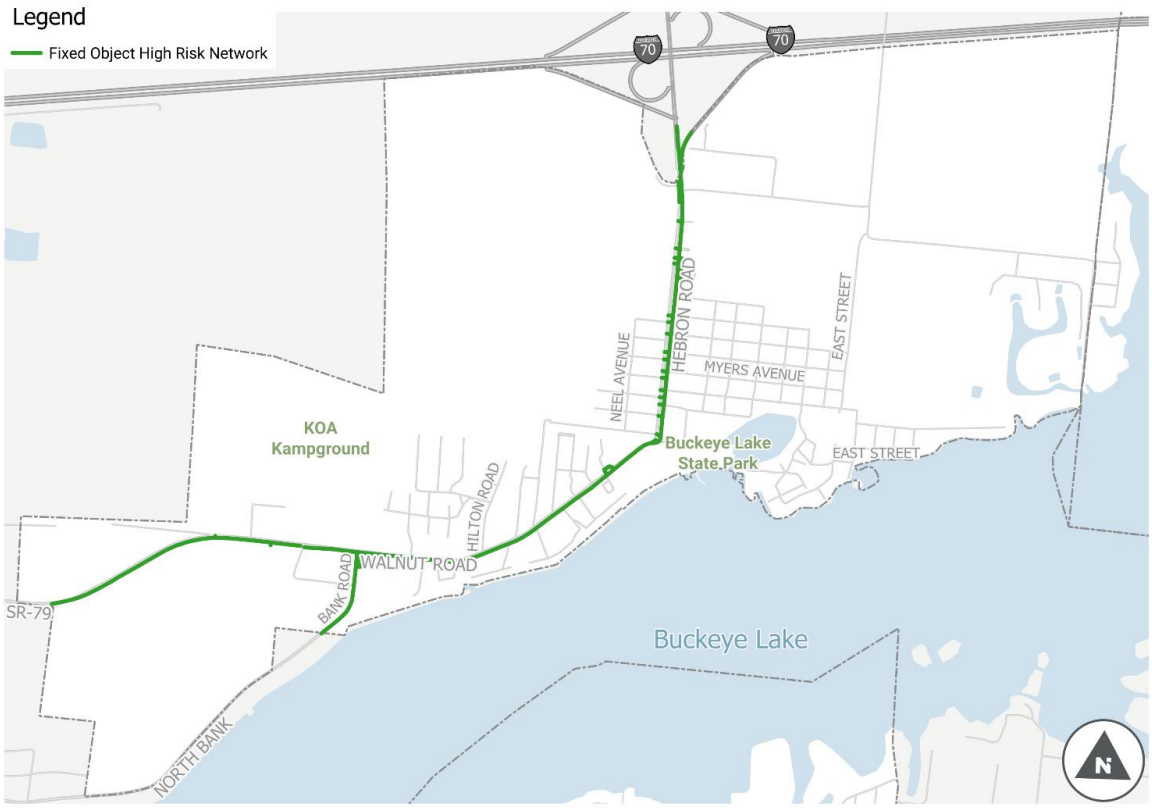


Figure 29. Fixed Object High Risk Network

Chapter 5

GOLF CART SAFETY

5. GOLF CART SAFETY

This analysis identifies risks factors for golf cart-involved crashes by reviewing existing research literature and crash history in the Village of Buckeye Lake. Using a systemic approach to safety, the risk factors are categorized into human behavior, vehicle design, roadway design, post-crash care, and speed.

Understanding the crash risk factors for golf cart crashes can proactively identify streets that may experience frequent and severe crashes, illustrates the shared responsibility to improve the safety conditions for golf cart traveling, and develop targeted safety improvements and recommendations.

5.1 Key Concepts in Safe System Approach

Kinetic Energy and Transportation Safety

Kinetic energy, the energy of a moving object, is determined by its mass and velocity. The transfer of high levels of kinetic energy causes severe injuries and fatalities in crashes. The human body cannot withstand the forces of high-speed collisions, and children and older adults are especially vulnerable. Reducing kinetic energy in the transportation system leads to safer conditions for everyone.

Reducing Speed and Vehicle Size

Lowering vehicle speeds significantly reduces the severity of crashes by limiting the kinetic energy transferred on impact. Similarly, smaller, lighter vehicles cause less harm. For example, a person hit by a heavy car with a high front end is far more likely to suffer serious injury than someone struck by a smaller, lighter golf cart at the same speed. Removing large vehicles from roadways where possible reduces crash severity.

Rethinking Transportation Design

For decades, roadways and speed limits have been designed to prioritize fast car travel, often disregarding other modes of transportation, land uses, and the human body's vulnerability to impact forces. This focus on speed has come at the expense of vibrant public spaces, equitable access, local economic development, and, most tragically, human lives.

5.2 Golf Cart Uses in the Nation

Golf cart use on streets has significantly increased recently, as their popularity grows among older adults for both course play and short-distance travel. Along with this rise in popularity, there has been a notable increase in safety concerns. Available data on golf cart crashes clearly highlights the extent of the issue. An analysis of golf cart-related injuries treated in U.S. emergency departments from 2007 through 2017 revealed that approximately 156,040 individuals received treatment for such injuries[4]. The study found that the average rate of traumatic brain injuries (TBI) among children was 1.6 per 100,000, which is significantly higher than the rates for adults (0.5 per 100,000) and older adults (1.1 per 100,000). Additionally, the overall injury rate for older adults increased by 67.6%, rising from about 4.8 per 100,000 in 2007 to nearly 8.1 per 100,000 in 2017.

[4] https://www.ncbi.nlm.nih.gov/pmc/articles/PMC10737216/

5.3 Key Reports and Research

Using golf carts as a transportation mode: Who does it?[5]

Anne E. Barrett, Hope Mimbs, Mohammadreza Koloushani, Eren Erman Ozguven, Brianna Soulie, Jessica Noblitt, Cherish Michael

Golf carts are increasingly popular among older adults, used not only on the golf course but also for short-distance travel. While much research has focused on the rise in golf cart-related injuries, less attention has been given to understanding who uses golf carts as a mode of transportation. Data from a survey of Floridians aged 50 and older, conducted between December 2020 and April 2021 (n = 4,199), was analyzed using OLS regression to explore factors influencing golf cart use. Key findings indicate that frequent golf cart use is associated with being younger, male, married or partnered, experiencing less loneliness, and having a more positive self-perception of aging. Users also tend to walk and bike more, interact more frequently with friends, and live in inland counties with lower golf cart injury rates. These results suggest that predictors of frequent golf cart use differ from those related to transitioning from driving, highlighting the role of golf carts in enhancing social interactions and well-being among middle-aged and older adults.

Analysis of Factors Affecting Injury Severity for Riders or Occupant of All- Terrain Vehicles and Golf Carts Involved in Police- Reported Crashes[6]

B. J. Russo and E. J. Smaglik

Russo and Smaglik analyzed Arizona crash data from 2010 to 2015 to understand factors affecting the injury severity of ATVs and golf carts. They found that 1,769 individuals were involved in 575 golf cart crashes, resulting in 21 fatalities, 67 incapacitating injuries, 157 non-incapacitating injuries, 74 possible injuries, and 252 cases with no injuries. Nearly 68% of those involved in the crashes were severely injured or killed. The study also revealed that 58% of crashes were single-vehicle incidents, and 80% occurred on straight roads. Additionally, 63% of crashes happened on roads with speed limits of 35 mph or lower. The analysis showed that 337 individuals were ejected from vehicles, and 630 vehicles rolled over. These findings provide valuable insights for developing effective safety measures.

Analysis of death and disability due to golf cart crashes in The Villages, Florida:2011-2019[7]

John Edward Castaldo, Brandon Raquet, Mitchel Roberts, and Carla VandeWeerd

This study examined golf cart crash data in The Villages over eight years (2011-2019) and found that 63% of the crashes occurred on public streets. The analysis highlighted that rollovers and ejections were the primary causes of these incidents. Specifically, 27% of crashes involved the ejection of at least one occupant, while rollovers were identified as the major cause in 10% of cases.

[5] https://www.sciencedirect.com/science/article/pii/S2590198223002506
[6] https://www.sciencedirect.com/science/article/abs/pii/S0022437520301237
[7] https://trafficsafetyteam.org/wp-content/uploads/2023/05/Golfcarts-at-Villages-Traffic-Injury-Prevention-Analysis.pdf

Fun ride or risky transport: Golf cart-related injuries treated in U.S. emergency departments from 2007 through 2017[8]

Kyle Z. Horvath, Rebecca J. McAdams, Kristin J. Roberts, Motao Zhu, Lara B. McKenzie

The researchers reviewed 2007-2017 data from the National Electronic Injury Surveillance System. Findings show that an estimated 156,040 people received emergency room treatment for golf cart-related injuries, and the annual total number and rate of such injuries remained relatively unchanged over the course of the study period.

The average rate of traumatic brain injuries among kids who sustained golf cart-related injuries was 1.6 per 100,000 – more than three times the rate incurred by adults (0.5 per 100,000) and around 46% greater than that of older adults (1.1 per 100,000). The overall injury rate among older adults climbed to nearly 8.1 per 100,000 in 2017 from approximately 4.8 per 100,000 in 2007 – a 67.6% increase.

Citing previous studies, the researchers note that golf cart-related injuries can range from lacerations and strains to fractures and traumatic brain injuries. Some injuries have even been fatal.

- A total of 47% of injuries were due to falling/jumping from the golf cart.
- The average injury rate among children (<17 years) was more than twice that of adults.
- Children were more likely to sustain a TBI than all other patients.
- The injury and fracture rates among seniors (≥65 years) increased significantly.

Summary of Codes Applicable to Golf Carts and Low-Speed Utility Vehicles[9]

Section 4511.214 | Ohio Revised Code

- **(A)(1)** No person shall operate a low-speed vehicle on any street or highway with a speed limit greater than 35 mph.
- **(A)(2)** No person shall operate an under-speed or utility vehicle on any street or highway except:
    - On streets or highways with a speed limit of 35 mph or less, with local authority permission (section 4511.215).
    - State park or political subdivision employees or volunteers operating within park boundaries for maintenance.
- **(B)(1)** Operators of low-speed vehicles, under-speed, or utility vehicles may cross intersections of streets or highways with speed limits greater than 35 mph.
- **(C)** Local authorities may adopt stricter regulations for low-speed vehicles or utility vehicles.
- **(D)** Violations of division (A) are minor misdemeanors, escalating to misdemeanors of the fourth or third degree with repeated offenses within one year.

[8] https://www.sciencedirect.com/science/article/abs/pii/S0022437520301237
[9] https://codes.ohio.gov/ohio-revised-code/chapter-4511

5.4 Systemic Risk Factors for Golf Cart Crashes

The table below summarizes the primary and secondary risk factors that can contribute to golf cart crashes. Primary risk factors are direct causes that increase the likelihood of a crash occurring; secondary risk factors influence the severity of crashes.

Table 17. Factors Screened for Systemic Analysis

Risk Factor Category	Primary Factors	Secondary Factors
Driver Behavior	• Exceeding the safe speed limit for golf carts, especially on slopes and curves. • Lack of familiarity with operating a golf cart, common among first-time users or children. • Use of mobile phones, eating, or other activities that divert attention from driving. • Driving under the influence of alcohol or drugs.	• Driver fatigue, especially after long hours of playing golf, can impair judgment and reaction times. • Pre-existing health conditions that may suddenly incapacitate the driver.
Passenger Behavior	• Carrying more passengers than the golf cart is designed for, leading to imbalance and tipping. • Passengers standing or sitting improperly, increasing the risk of ejection.	N\A
Environment and Infrastructure	• Uneven, hilly, or slippery surfaces can cause loss of control. • Wet or icy conditions can make surfaces slippery and reduce visibility. • Presence of obstacles such as trees, rocks, and other vehicles.	• Poorly designed paths that are too narrow, lack proper signage, or have abrupt curves. • Areas where golf carts share paths with pedestrians, cyclists, or other vehicles. • Driving at dusk or dawn without proper lighting can reduce visibility. • Dark-colored carts may be less visible to other drivers and pedestrians, especially in low-light conditions.

Golf Cart Design and Maintenance	• High center of gravity and narrow wheelbase can make carts prone to tipping over.	• Problems with brakes, steering, or tires due to poor maintenance. • Electric golf carts can suffer from battery malfunctions, leading to sudden stops or power loss. • Many golf carts do not have seat belts, mirrors, lights, or robust braking systems.
Regulations	N\A	• Inconsistent or lax regulations regarding the use of golf carts on public roads or private properties. • Poor enforcement of existing rules, leading to unsafe practices.

5.5 Golf Cart Crashes in Buckeye Lake Village

Golf Cart Crash History

Based on the crash reports provided by the Village, there were two serious injury crashes involving golf carts in Buckeye Lake Village during the study period. Both crashes occurred during daytime on Walnut Road (State Route 79.) One crash was a single-vehicle roll over crash, and the other involved a motorist that failed to yield to golf cart when entering traffic.

Recommendations

Communities across the United States, particularly in popular retirement destinations such as Florida and Arizona, are embracing the use of golf carts on their streets. These areas are facilitating the use of golf carts by providing dedicated lanes and parking spaces, recognizing their growing popularity as a mode of transportation. In Buckeye Lake Village, there is a significant population that uses golf carts. To further enhance safety and convenience, several recommendations can be made:

- **Improve Infrastructure:** Design and construct more dedicated lanes and parking areas for golf carts to ensure they can travel safely alongside other vehicles.
- **Enhanced Signage:** Install clear and visible signage to guide golf cart drivers and alert other road users to the presence of golf carts.
- **Intersection Design:** Improve cross sections to better accommodate golf carts.

Chapter 6

EQUITY CONSIDERATIONS

6. EQUITY CONSIDERATIONS

6.1 Equity in Transportation

Equity in transportation acknowledges that underserved communities often experience greater exposure and reduced resilience to traffic safety issues. An "underserved community" refers to a group of individuals or a geographic area that lacks access to essential services and opportunities, typically due to historical and systemic inequities. These communities often experience neglect or insufficient investment from government, private, or nonprofit sectors, resulting in inadequate infrastructure, education, healthcare, employment opportunities, and transportation options. These areas, typically lower-income, face disproportionately high rates of crashes, injuries, and fatalities. Residents in these communities are more reliant on walking, biking, or public transit, exposing them to significant risks due to extended periods spent near unsafe roadways. Additionally, if vehicles are owned, they are likely older and lack advanced safety features, making these communities less resilient to the impacts of traffic incidents, weather events, and inadequate infrastructure.

The equitable safety improvement strategy outlined prioritizes the needs of these communities. Extensive outreach ensures that those most affected by transportation inequalities are heard, and their feedback is integrated into planning efforts. Tools like the Justice40 data and USDOT's ETC Explorer help identify areas with high cumulative burdens due to underinvestment. This approach not only prioritizes investments in high-risk areas but also ensures that the benefits of transportation improvements are equitably distributed, enhancing accessibility and safety for all, particularly those in high-need areas.

Policy recommendations advocate for integrating transportation safety investments with housing and land use policies to mitigate displacement risks and enhance community stability. Proactive safety measures rather than reactive penalties are emphasized, with a focus on traffic calming to reduce speeds in high-risk areas. Additionally, recommendations include further studies and fund allocations specifically targeting underserved areas to support their unique needs.

This comprehensive, data-informed, and community-focused approach aims to break the cycle of poverty and vulnerability by creating a more just and equitable transportation system, ensuring that all community members, regardless of their economic status or geographical location, have access to safe, reliable, and affordable transportation options

6.2 Underserved Communities; Greater Exposure and Reduced Resiliency

Lower-income neighborhoods experience higher rates of crashes, injuries, and fatalities compared to other areas. Residents in low-income communities have greater exposure to traffic safety problems. They are less likely to own or have sufficient access to a family vehicle and therefore rely on less protected modes of transport such as walking, biking, or public transit. These methods often result in longer time periods spent on or adjacent to unsafe roadways with few options to avoid or reroute. If a car is owned and available, it is more likely to be an older model with less advanced safety features. Low-income households that do own a car often prioritize using the car for commuting to work, relying on active transportation or public transit for other types of trips. In addition to greater exposure to unsafe roadways, members of the underserved communities are at a reduced resiliency to unsafe roadways. Weather events, construction detours, occasional and consistent traffic congestion, and inadequate

facilities are more impactful to the commute of someone using active or public transportation. This could result in later arrivals, missed work, loss of wages, and loss of employment. Furthermore, members of underserved communities are less resilient in the case of a traffic incident. Older vehicles may be totaled more easily than newer cars, leaving residents without a vehicle and not enough cash to replace it with the same functionality. Loss of transportation could result in loss of employment. People in low-income communities may be less likely to afford medical treatment or to maintain their employment and pay, as lower wage work is often physical and intolerant to limited capabilities. Thus, higher exposure and reduced resiliency to unsafe roadways results in increased levels of poverty and the cycle continues.

The study *Neighborhood Social Inequalities in Road Traffic Injuries: The Influence of Traffic Volume and Road Design*[10] by Patrick Morency and colleagues investigates how differential traffic volumes and road geometries contribute to social inequalities in road traffic injuries among pedestrians, cyclists, and motor vehicle occupants in urban settings. The research indicates that much of the higher incidence of road traffic injuries in poorer neighborhoods can be explained by higher exposure to risk due to more intensive traffic flows and potentially more hazardous road geometries. Addressing these risk factors through urban planning and targeted road safety interventions could reduce socioeconomic disparities in road traffic injuries. This research is similar and echoed by many sources.

Key Findings:

- Higher Injury Rates in Poorer Areas: There were significantly more injuries among all road users (pedestrians, cyclists, motor vehicle occupants) at intersections in poorer areas compared to richer areas.
- Role of Traffic Volume and Road Design: Adjusting for traffic volume and intersection design (e.g., the number of intersection legs and the presence of major roads) substantially reduced the disparity in injury rates between poorer and richer areas. For example, the rate ratios for pedestrian injuries decreased by 70% when these factors were considered.
- Impact of Population Density and Transportation Modes: Higher population densities and different modes of transportation (e.g., increased walking and public transit usage in poorer areas) also correlated with higher injury rates. These factors indicate more exposure to potential accidents.

Mechanisms and Implications:

- Environmental and Exposure Risk Factors: The study underscores the significant impact of environmental characteristics such as traffic density and road design on injury risks. Poorer neighborhoods often have higher traffic volumes and road designs that increase the risk of accidents.
- Policy Implications: The findings suggest that interventions focusing on modifying road designs, improving traffic conditions, and possibly reducing vehicle speeds could mitigate the higher risk of road injuries observed in economically disadvantaged areas.

[10] https://ajph.aphapublications.org/doi/full/10.2105/AJPH.2011.300528

6.3 Equitable Safety Improvement Strategy

To develop a secure and equitable transportation system, a comprehensive plan must give precedence to safety and concentrate on communities that are typically underserved. This equitable strategy should allocate investments in a manner that prioritizes individuals with limited resources and those subject to exclusion and discrimination based on race, gender, age, disability, or economic status, thereby enhancing their health and living standards.

The historical lack of investment in these communities has led to unequal outcomes in terms of crash fatalities and severe injuries. Additional funding is now crucial to close these gaps and achieve the goal of no deaths or serious injuries. An equitable funding approach involves directing a larger portion of transportation funds to these underserved areas, providing them with comparable access to safe, multi-modal transport options similar to those in traditionally well-served areas, thereby facilitating safer access to jobs, healthcare, education, food, and leisure activities.

The Federal Highway Administration is adapting its procedures to embed safety for all users as a standard practice in all its federal funding schemes. Existing engineering approaches and safety measures, such as a systemic safety approach, the use of Proven Safety Countermeasures, Complete Streets initiatives, and Context-Sensitive Design, are instrumental in addressing the specific safety needs and priorities of underserved communities in all transport projects. This Action Plan adheres to that model in the following ways:

1. **Acknowledgement.** The Action Plan asserts that underserved communities are at a greater exposure and a reduced resiliency to traffic safety problems, resulting in a higher frequency of crashes, a higher proportion of pedestrian and cyclist involved crashes, and a greater degree of severity and/or more fatalities due to crashes.

2. **Outreach.** To ensure those in underserved communities were heard, staff hosted a variety of public outreach opportunities, as described in **Section 2.2 Public Engagement**. Staff also met regularly with Village administration to better understand the population needs, sentiment toward roadway safety, and exposure.

3. **Incorporation of Justice40 Data and ETC study. Per USDOT;** The Justice40 initiative, created by the Biden-Harris Administration through Executive Order 14008 Tackling the Climate Crises at Home and Abroad, is a key component in U.S. Department of Transportation (DOT) efforts to confront and address decades of underinvestment. When decision makers at all levels have the tools to understand how a community is experiencing disadvantage and can identify projects that create benefits that will reverse or mitigate those causes, the result is a higher quality of life and economic prosperity in communities across the country.

   The U.S. DOT Equitable Transportation Community (ETC) Explorer is an interactive web application that uses 2020 Census Tracts and data, to explore the cumulative burden communities experience as a result of underinvestment in transportation, in the following five components: Transportation Insecurity, Climate and Disaster Risk Burden, Environmental Burden, Health Vulnerability, and Social Vulnerability. It is designed to complement the White House Council on Environmental Quality (CEQ) Climate & Economic Justice Screening Tool

(CEJST) by providing users deeper insight into the Transportation disadvantage component of CEJST, and the ETC Explorer's Transportation Insecurity component, which will help ensure the benefits of DOT's investments are addressing the transportation related causes of disadvantage. USDOT's ETC Explorer is not a binary tool indicating whether a census tract is considered disadvantaged; it is a dynamic tool that allows every community in the country to understand how it is experiencing burden that transportation investments can mitigate or reverse.

The data extracted by this tool is derived from Census Tract 39089758300. This tract encompasses the entire Village limits, as well as additional land west of SR 37. As a result, this data produces the same findings for all roadways within the Village. To better visualize areas of need within the Village, StreetLight Insight was utilized. Streetlight Insight is a big data web platform that harnesses data from bluetooth devices, such as those in your car and cell phone, and converts it to vehicle, transit, bike, and foot traffic. StreetLight Insight can also provide anonymous attribute data of the analyzed travelers. Through an origin-destination analysis, annual income data was obtained according to the neighborhood traveled to. According to the US Department of Health and Human Services (HHS), the 2025 poverty guideline for the 48 contiguous states and the District of Columbia for a household of four is $32,150. Using StreetLight Insight, the neighborhoods identified in Figure 30 are displayed according to the percentage of households with an average annual income below $30,000.

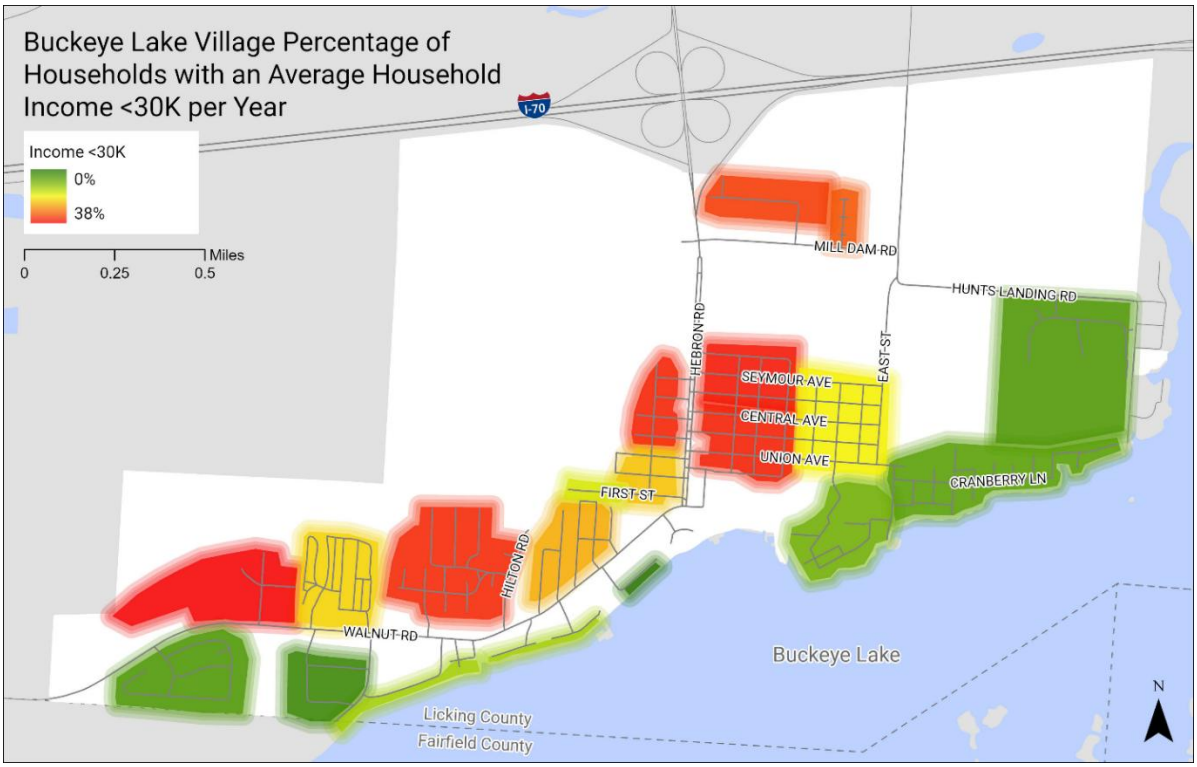


Figure 30. Buckeye Lake neighborhoods with an Average Annual Household Income below $30,000

Intersectionality involves the intersection of various inequities such as race, income, age, geography, disability, English proficiency, among other factors, which multiply to impact individuals' lives. The vulnerabilities faced by an individual are not isolated; for instance, those without a vehicle are at

greater risk in a car-centric transportation system that lacks comprehensive pedestrian and transit networks, a risk further increased for individuals with disabilities due to unsafe and inaccessible infrastructure. This concept of intersectionality should be incorporated into every phase of the transportation safety process by analyzing data should include examining multiple demographic factors, engaging with communities with individuals facing multiple vulnerabilities, rather than assuming a single community member represents the entire group's concerns, and implementing improvements addressing the needs of those facing compounded disadvantages. Using the equity-focused methodology described above accomplishes this.

4. **Prioritization.** In the Village of Buckeye Lake, many roadway segments and intersections serve both low- and high-income neighborhoods, making equity-based prioritization more difficult to accomplish. To face this challenge, the recommended infrastructure projects, discussed later in this Action Plan, are prioritized by their incorporation of active transportation facilities. These facilities, such as sidewalks, bike lanes, and sidepaths, equitably serve pedestrians and cyclists who need to reach their destination despite not owning a vehicle. The prioritization process of recommended infrastructure projects will be discussed in more detail later in the report.

5. **Recommendations.**
    a. **Infrastructure.** Improving roadway safety equitably depends on improving high crash areas, but also providing safer and better access to active transportation. In terms of pedestrian and bicycle facilities, transportation officials need not wait for a fatality in a certain location to apply safety improvement countermeasures. Locations of poor, inadequate, or missing infrastructure where there is a high need for active transportation should be included in top recommendations for improvement. See **Section 8.2 Project Identification and Recommended Countermeasures** on page 57 for information on how this was done. Furthermore, the types of countermeasures recommended for improvement favor proactive safety such as traffic calming to reduce speeds, rather than speed and ticketing cameras to penalize speeding.
    b. **Policy.** These recommendations promote integrating transportation safety investments with housing and land use policies to prevent negative outcomes like displacement of residents and businesses. The recommendations also include updating policies, procedures, guidelines, and plans based on equitable data analysis and public involvement.
    c. **Supplemental Study**. Funds for additional safety studies favor locations where the municipality is in an underserved area and less likely to have capital to fund their own studies.

Neglecting equity in decision-making processes can have several detrimental outcomes. It can increase the risk of fatal and severe injuries in crashes, particularly in communities that rely on multi-modal transportation systems. This oversight can also foster a growing distrust in government processes and reduce community involvement, potentially leading to the delay or complete halt of projects. Moreover, it often results in inefficient and ineffective use of funds meant to enhance safety performance objectives. Furthermore, delays in investments, often due to data inaccuracies and underreporting, can exacerbate these issues. Ultimately, this neglect perpetuates the vulnerability of those most susceptible to environmental burdens and disparities, leaving them at continued risk.

Chapter 7

POLICY RECOMMENDATIONS

7.1 Policy and Process Change Recommendations

7. POLICY RECOMMENDATIONS

An effective policy directs staff and decision makers to consistently plan, design, build, operate, and maintain the transportation system in a way that prioritizes safety and progress toward the goal of eliminating traffic-related deaths and serious injuries. Policies can take many forms; they can be brief or may contain extraordinary detail, but they should be more than just an expression of support. An effective policy outlines the path to turning a policy into practice and a realized goal.

Listed below are some of the safety improvements that should be considered with all new projects and systematically applied to Village roadways. This section outlines proposed policy and progress recommendations to be considered moving forward.

7.1 Policy and Process Change Recommendations

The Action Plan recommends the following new or revised policies, guidelines, and/or standards to contribute to the goal of zero deaths:

1. **Use High-Visibility Crossing treatments for all pedestrian crossings**. Crosswalks are traditionally marked with two parallel lines, referred to as the "standard" crosswalk style. However, utilizing high-visibility markings, such as the "continental" or "ladder" styles, are more likely to grab the attention of drivers, enhancing the safety of pedestrians crossing the street.

2. **Add 4'-0" minimum paved shoulders with all rural new or resurfacing projects**. Widened shoulders not only provide a recovery zone for vehicles that stray off the roadway but also provide a refuge for active transportation users.

3. **Construct parallel facilities for active transportation users on rural new or resurfacing projects**. Wherever practicable, parallel facilities like sidewalks, bicycle lanes, or shared use paths should be incorporated alongside rural roads to ensure that all road users can experience a safe, connected transportation network throughout the Village.

4. **Widen pavement edge lines and centerlines and install Raised Pavement Markings (RPMs) on rural new or resurfacing projects.** This can be especially useful on horizontal curves where vehicles are more likely to experience run-off-road crashes. Edge line rumble strips and chevron signage may also assist in lowering the likelihood of run-off-road crashes on rural roads.

5. **Consider constructing roundabouts where appropriate**. Roundabouts are a proven safety countermeasure that can reduce the frequency and severity of crashes at intersections. Roundabouts can reduce conflict points, reducing the likelihood of crashes. Due to the geometric configuration of roundabouts, the crashes that may occur at them are more likely to result in a lower severity than those at a traditional stop-controlled intersection.

6. **Consider a policy addressing sight distances at intersections**. Overgrown vegetation and private business signs placed in the clear zone can impede driver sight distance triangles, increasing the likelihood of crashes at intersections.

7. **Develop a 5-year plan with local transit authorities to develop new route(s) that serve the Village**. This Action Plan acknowledges that an inaccessible transportation system hinders opportunity and creates barriers between users and the resources they need to live a meaningful life. An effective transit network can help combat transportation inequities, providing more opportunities for those without access to a vehicle.

8. **Support or develop educational and advocacy programs to promote safe walking and riding.** Additional education and advocacy can lead to an increase in awareness, understanding, and acceptance of active transportation on local roadways.

These are some of the policy and procedure changes for consideration to support the Village's vision of zero deaths and serious injuries.

Chapter 8

STRATEGY AND PROJECT SELECTION

8. STRATEGY AND PROJECT SELECTION

8.1 FHWA Proven Safety Countermeasures

FHWA's Proven Safety Countermeasures (PSC) initiative is a collection of 28 countermeasures and strategies effective in reducing roadway fatalities and serious injuries on our Nation's highways. Transportation agencies are strongly encouraged to consider widespread implementation of PSCs to accelerate the achievement of local, State, and National safety goals. These strategies are designed for all road users and all kinds of roads—from rural to urban, from high-volume freeways to less traveled two-lane State and county roads, from signalized crossings to horizontal curves, and everything in between. Each countermeasure addresses at least one safety focus area – speed management, intersections, roadway departures, or pedestrians/bicyclists – while others are crosscutting strategies that address multiple safety focus areas. Each of the countermeasures and the safety focus group that it addresses is listed below. The last group of countermeasures, titled Crosscutting, addresses multiple safety focus areas.

Speed Management

Appropriate Speed Limits for All Road Users

Speed Safety Cameras

Variable Speed Limits

Roadway Departure

Enhanced Delineation for Horizontal Curves

Longitudinal Rumble Strips and Stripes on Two-Lane Roads

Median Barriers

Roadside Design Improvements at Curves

SafetyEdge℠

Wider Edge Lines

Pedestrian/Bicyclist


Bicycle Lanes


Crosswalk Visibility Enhancements


Leading Pedestrian Interval


Medians and Pedestrian Refuge Islands in Urban and Suburban Areas


Pedestrian Hybrid Beacons


Rectangular Rapid Flashing Beacons (RRFB)


Road Diets (Roadway Reconfiguration)


Walkways

Intersections


Backplates with Retroreflective Borders


Corridor Access Management


Dedicated Left- and Right-Turn Lanes at Intersections


Reduced Left-Turn Conflict Intersections


Roundabouts


Systemic Application of Multiple Low-Cost Countermeasures at Stop-Controlled Intersections


Yellow Change Intervals

Crosscutting


Lighting


Local Road Safety Plans


Pavement Friction Management


Road Safety Audit

8.2 Project Identification and Recommended Countermeasures

Herein is the identification of a comprehensive set of projects and strategies—shaped by data, the best available evidence and noteworthy practices, and stakeholder input and equity considerations—that will address the safety problems described in this Action Plan. These strategies and countermeasures focus on a Safe System Approach and effective interventions and consider multidisciplinary activities.

The methodology for determining and prioritizing safety improvement projects in the Village of Buckeye Lake considers the following items:

- Crash History (2014-2023)
- High Injury Network (HIN) and High Risk Network (HRN)
- Mode (All Modes, Motor Vehicle, VRU*)
- Justice40 Score and Low to Moderate Income Population
- Public Involvement and Stakeholder Input

*Recall that VRU refers to vulnerable road users such as pedestrians, bicyclists, and golf carts, as these road users have a greater exposure to, and lower resilience in, crashes. Note that the VRU crashes represent a small proportion of traffic volume as compared to motor vehicles, resulting in VRU network locations that are based on one or more crashes.

Considering the factors listed above, a Location Specific Priority List was formed. This Priority List ranks proposed projects as a function of percent injury, FSI crash history, equitable opportunities for active transportation facilities, and HIN scores. This Priority List can be found in **Appendix A** and contains the following projects:

#1 Walnut Road Reconfiguration (SLICSR00079C, 2.288-3.512)**

Existing Conditions: Two travel lanes with a posted speed of 35 mph

Crash History: Between 2014-2023, there were 42 total crashes, including six FSI crashes and 38.1% injury. Common crash types include Rear End (12), Fixed Object (9), and Angle (7).

HIN Score: Intersections along this segment have ranked on all three High Injury Networks, with scores as high as 3.0 on each of the three.

Public & Stakeholder Comments: Speeding is frequently observed along this road. There is poor visibility near Hilton Road and a need for pedestrian and bicycle facilities throughout.

Recommended Countermeasures: Consider conducting a speed study to determine if the posted speed can be reduced to 25 mph. Reductions in speed can lead to better control for drivers (likely leading to fewer run-off-road Fixed Object crashes), as well as a decrease in severity of future crashes. Widen Walnut Road to accommodate a center turn lane with the goal of reducing Angle and Rear End crashes. Construct new sidewalk (north side) and shared use path (south side). Install protected mid-block crossings with RRFBs. These improvements have been developed to address safety concerns for All Modes of traffic.

Figure 31. Google StreetView image of Walnut Road (facing east)

#2 Hebron Road Reconfiguration (SLICSR00079C, 3.512-4.082)**

Existing Conditions: Four travel lanes and a wide, grassy median (hosting trees and utilities) with a posted speed of 35 mph

Crash History: Between 2014-2023, there were 34 total crashes, including two FSI crashes and 29.4% injury. Common crash types include Rear End (7), Sideswipe-Passing (7), Fixed Object (7).

HIN Score: Intersections along this segment have ranked on the All Modes (3.0) and Motor Vehicle (4.0) High Injury Networks.

Public & Stakeholder Comments: This roadway was stated to be unsafe for pedestrians. There is limited visibility for drivers exiting narrow side streets. The median breaks do not provide enough space for two cars to turn left. There is a need for bicycle facilities.

Recommended Countermeasures: Consider conducting a speed study to determine if the posted speed can be reduced to 25 mph. Reductions in speed can lead to better control for drivers (likely leading to fewer run-off-road Fixed Object crashes), as well as a decrease in severity of future crashes. To reduce Sideswipe-Passing crashes and better serve the present volume of traffic, the four lanes should be reduced to two lanes, reallocating the extra lanes for vulnerable road users. To address safety concerns for All Modes of traffic, the following alternative configurations should be considered:

- Alternative 1
  - Reconfigure to accommodate two travel lanes, a center turn lane, and buffered golf cart lanes and bike lanes
  - Install protected mid-block crossings, utilizing RRFBs and pedestrian refuge islands
- Alternative 2
  - Reconfigure to accommodate two travel lanes, a center turn lane, and new tree lawns
  - Place lighting and utilities in new tree lawns
  - Widened and repair existing sidewalk on the east side
  - Replace the sidewalk on the west side with a new shared use path
  - Install protected mid-block crossings, utilizing RRFBs and pedestrian refuge islands
- Alternative 2.5
  - All recommendations in Alternative 2
  - Construct a one-way access road west of the shared use path to reduce conflict points
  - Construct a roundabout at the intersection of Walnut Road and Hebron Road to connect traffic from the access road
  - Construct another roundabout at north end of access road to connect access road traffic to Hebron Road
  - Install protected mid-block crossings, utilizing RRFBs and pedestrian refuge islands
- Alternative 3
  - Reconfigure to accommodate two travel lanes, a center turn lane, and new tree laws
  - Place lighting and utilities in new tree lawns
  - Widen and repair the existing sidewalk
  - Construct bike lanes adjacent to the existing sidewalk, utilizing the tree lawns as a buffer
  - Install protected mid-block crossings, utilizing RRFBs and pedestrian refuge islands

- Alternative 4
  - Reconfigure to accommodate two travel lanes and buffered bike lanes
  - Retain the existing lawn median. Fill existing gaps to remove conflict points. Construct up to 3 U-turn locations.
  - Construct a roundabout at the intersection of Walnut Road and Hebron Road to facilitate U-turns
  - Install protected mid-block crossings, utilizing RRFBs and pedestrian refuge islands

To better visualize these alternative designs, conceptual drawings are provided in **Appendix B**.

Figure 32. Google StreetView image of Hebron Road (facing north)

#3 Intersection of Walnut Road and Hebron Road Safety Improvements (SLICSR00079C, 3.512)**

Existing Conditions: There is one approach lane from Walnut Road with no traffic control, two approach lanes from Hebron Road (left lane has a stop sign, right lane continues onto Walnut Road), one approach lane from Park Avenue (stop controlled), and two approach lanes from the park entrance (stop controlled). One business parking lot can be accessed directly from the intersection.

Crash History: Between 2014-2023, there were six total crashes, with zero FSI crashes and 33.3% injury. Common crash types include Fixed Object (5), Backing (1). Note that two of the six crashes were originally recorded as Sideswipe-Passing. These vehicles both departed the roadway and sideswiped parked cars in an adjacent parking lot. This scenario may be better represented by a run-off-road Fixed Object crash, resulting in the consideration of five Fixed Object crashes at this intersection.

HIN Score: This intersection has a score of 2.0 on the Motor Vehicle High Injury Network.

Public & Stakeholder Comments: Cars are seen driving in the incorrect lanes.

Proposed Countermeasures: Redesign the State Park entrance, using the Park Avenue alignment to form a three-leg intersection. Then, convert the three-leg intersection into a three-leg roundabout. Utilizing a roundabout may lead to a decrease in run-off-road Fixed Object crashes as vehicles will no longer have the option of continuing straight through the intersection, possibly misinterpreting the change in alignment of the roads. This design may also reduce the risk of driver confusion of lane requirements and traffic controls, as the existing approaches each exhibit unique configurations.

Figure 33. Google StreetView image of the intersection of Hebron Road and Walnut Road (facing south)

#4 Walnut Road Horizontal Curve Safety Improvements (SLICSR00079C, 2.183-2.460)**

Existing Conditions: Two travel lanes with a posted speed of 35 mph exhibit a curve around Black Lane and Hart Drive.

Crash History: Between 2014-2013, there were six total crashes, including two FSI crashes and 66.7% injury. The most common crash type was run-off-road Fixed Object crashes (5), in addition to one Sideswipe-Passing crash. Three Fixed Object crashes occurred at or near the intersection of Walnut Road and Hart Drive. The remaining two Fixed Object crashes occurred near a driveway to the east of this intersection, one resulting in a fatality.

HIN Score: This segment contains an intersection (Hart Drive) with a score of 1.0 on the Motor Vehicle High Injury Network.

Public & Stakeholder Comments: No comments were recorded regarding this segment.

Proposed Countermeasures: Utilize edge line rumble strips, raised pavement markings, and chevron signage to assist drivers in safely maneuvering the curve.

Figure 34. Google StreetView image of a horizontal curve on Walnut Road (facing west)

#5 Intersection of East Street and Hunts Landing Road Safety Improvements (MLICMR00017C, 0.448)**

Existing Conditions: At this three-leg intersection, there is a curve in the alignment of East Street, likely limited sight distance and creating confusion for unfamiliar drivers.

Crash History: In the ten-year study period, there were five total crashes, including zero FSI crashes and 40% injury. The most common crash type was Fixed Object (4), in addition to one Sideswipe-Opposite crash. Three of the Fixed Object crashes occurred after a driver on East Street traveled straight through the intersection, failing to follow the curve in alignment.

HIN Score: This intersection has a score of 1.0 on the Motor Vehicle High Injury Network.

Public & Stakeholder Comments: Members of the public reported concerns about the safety of the intersection. Local stakeholders are concerned about the safety of the intersection following the future construction of housing developments east of this intersection, likely leading to an increase in motorized and nonmotorized traffic.

Proposed Countermeasures: Convert the existing three-leg intersection into a roundabout. This may lead to a decrease in run-off-road crashes that are likely influenced by the existing alignment. Improvements at the intersection should also consider vulnerable road users, utilizing sidewalk and high-visibility crosswalks for pedestrians.

Figure 35. Google Earth image of the intersection of East Street and Hunts Landing Road

#6 Intersection of Hebron Road and Mill Dam Road Safety Improvements (SLICSR00079C, 4.082)**

Existing Conditions: This four-leg intersection is located just south of I-70 and its entrance and exit ramps on Hebron Road. The north and south approaches on Hebron Road each have three approach lanes, including one left turn lane. The westbound Mill Dam Road approach hosts two lanes and the eastbound Gateway Crossing hosts two lanes. The Gateway Crossing leg serves a gas station, fast food restaurants, and a hotel.

Crash History: In the ten-year study period, there were 12 recorded crashes, with zero FSI crashes and 25.0% injury. The most common crash types were Angle (4), Rear End (3), and Angle-Left Turn (2).

HIN Score: This intersection has a score of 1.0 on the Motor Vehicle High Injury Network.

Public & Stakeholder Comments: This intersection was noted to be unsafe for pedestrians and cyclists, creating a barrier for vulnerable road users traveling from Mill Dam Road. Additionally, stakeholders are concerned about the safety of the intersection following the future construction of housing developments in the east side of the Village, as the volume of motorized and nonmotorized traffic is expected to increase.

Proposed Countermeasures: Pedestrian and cyclist infrastructure proposed on Hebron Road should continue north to the intersection at Mill Dam Road. Convert existing four-way signalized intersection into a roundabout, utilizing high-visibility crosswalks and RRFBs to enhance the safety of crossings. If a roundabout is not installed, pedestrian-focused improvements, such as high-visibility crosswalks, countdown signal heads, and push buttons, should be installed to enhance the safety of crossings.

Figure 36. Google StreetView image of the intersection of Hebron Road and Mill Dam Road (facing north)

The remaining recommendations in this Action Plan are not Location Specific but are instead Systemic Recommendations that can be implemented throughout Village neighborhoods to enhance safety for residents and visitors of Buckeye Lake. Unlike the Location Specific recommendations, the Systemic Recommendations place less emphasis on specific crash statistics and the High Injury Network. Crash statistics can provide great insight into unsafe roadway characteristics and crash trends, as they can depict areas that need effective change for the safety of future road users. However, crash statistics do not provide the insight of near-misses—locations where crashes commonly almost occur. Crash statistics are also affected by exposure, or the presence of roadway users. For example, a busy high-speed road may experience a lack of pedestrian or cyclist crashes, not because it is safe for these users, but because it is so unsafe that these users cannot travel here. The Systemic Recommendation List was created after collecting input from stakeholders and the public, such as a need for sidewalks or frequent observations of speeding. To address these safety concerns, the following Systemic Recommendations should be implemented:

Neighborhood Safety Improvements - East of Hebron Road

East of Hebron Road, there are both existing and future neighborhoods to consider. One neighborhood, confined by Hebron Road, East Street, 6th Avenue, and Grand Staff Avenue, acts as a gateway to the other existing and proposed neighborhoods further east. Many participating members of the public input process stated great concerns for speeding throughout this neighborhood, particularly along Union Avenue, Myers Avenue, and East Street. These individuals speculated that the speeding is due to an influx in unfamiliar visitors who are renting homes in the neighborhoods surrounding Cranberry Lane, Lake Street, and Lakeview Avenue. In addition to the existing neighborhoods, additional developments are expected to be constructed further east in the coming years, placing further emphasis on the need for safety-focused improvements on these streets, which will likely be serving additional users soon.

The streets in these neighborhoods are very narrow, often approximately 13-15 feet wide. Crash history shows Fixed Object (5), Backing (3), and Sideswipe (2) crashes, all likely influenced by the narrow roadway. In the “gateway” neighborhood, north/south streets are two-way and east/west streets are one-way. The one-way east/west streets often don’t have stop signs when intersecting the north/south roads. Four Angle crashes were recorded at these intersections, possibly due to the misinterpretation of traffic controls and limited sight distances. Public input also revealed that vehicles traveling through the “gateway” neighborhood to reach the other neighborhoods are observed to ignore the one-way statutes, possibly due to the unfamiliarity of visitors.

To address these concerns, the following systemic changes are proposed:

- Install speed cushions on roads frequently experiencing speeding.
- Improve sight distance at intersections through the removal of sight obstructions.
- Replace stop signs with yield signs at neighborhood intersections to raise awareness of approaching vehicles.
- Convert north/south two-way roads to one-way, installing “WRONG WAY” and other appropriate signage to enhance driver comprehension. Retain east/west one-way statutes.
- Paint yellow and white edge lines to define the roadway and emphasize direction of one-way roads.

Neighborhood Safety Improvements - West of Hebron Road

West of Hebron Road, there are two disconnected neighborhoods. One neighborhood, situated between Leroy Street and Everett Avenue, can be accessed from Walnut Road. The second neighborhood, situated between W 1st Street and 7th Street, provides access to Ryan Brayden Park and can be accessed from Hebron Road. These two-way streets are often less than 15 feet wide and cannot offer enough space for all road users, especially when children are playing or when vehicles are parked along the street. Additionally, members of the public have stated that there is poor sight distance when maneuvering these narrow streets, especially at the intersections of 6th Street with Hebron Road or Stewart Avenue and Hilton Road with Walnut Road. Each of these issues is exasperated when vehicles in these neighborhoods exhibit high speeds.

To address these concerns, the following systemic changes are proposed:

- Install speed cushions on roads experiencing speeding.
- Improve sight distance at intersections through the removal of sight obstructions.
- Install sidewalk on Hilton Road to connect Lakeside Manufactured Home Community to the proposed sidewalk on the north side of Walnut Road.
- Convert 3rd Street to one-way to create a one-way loop with 2nd Street and Essex Lane. Then, reduce the road width of 3rd Street to accommodate one-way traffic, reallocating space for new sidewalk to improve pedestrian access to Ryan Brayden Park.

Note that the equity analysis described above shows that these neighborhoods (east and west of Hebron Road) host higher proportions of households with an average annual income below $30,000. To provide equitable solutions for the residents of Buckeye Lake, these Neighborhood Safety Improvements should be prioritized in future implementation projects.

Public Transportation Services

Presently, there are no public transit services available in the Village. However, the 2020 US Census shows that the Low to Moderate Income (LMI) Population of the Village was 63.06%. Additionally, the 2020 Census revealed that 27.4% of occupied housing units in Tract 7583 (which primarily consists of the Village limits) have only one vehicle, and that 7.1% of occupied housing units did not have a vehicle. Furthermore, the Census states that the average commute for those in the tract was 23.1 minutes. Note that the City of Newark is approximately 20 minutes northeast of the Village, possibly providing a variety of jobs to Village residents.

To provide equitable transportation options for historically underserved communities, transit services through Licking County Transit (LCT) should incorporate new routing through the Village, including stops near known Lower or Middle Income communities, such as those identified previously in Figure 30. Like the aforementioned Neighborhood Safety Improvements, these services should also be prioritized in future implementation projects.

Future Development and Proactive Infrastructure

During the completion of this Action Plan, project team members are expecting the Village to undergo development in its neighborhoods east of Hebron Road, particularly near Mill Dam Road, Hunts Landing Road, and East Street. This includes residential developments as well as retail opportunities. As a result,

recommendations must be proactively implemented with the anticipation of an increase in motorized and nonmotorized traffic to and from these developments.

To better serve residents and visitors of Buckeye Lake, the following safety improvements should be implemented:

- Paint edge lines and install rumble strips to address run-off-road crashes.
- Paint center lines and install raised pavement markings (RPMs) to address sideswipe crashes.
- Construct parallel facilities along key routes (Mill Dam Road, Hunts Landing Road, and East Street) for nonmotorized users, such as sidewalk or shared use paths, to accommodate future development.

Improved Lighting for All Road Users

A major consequence of insufficient lighting is reduced visibility. Without proper lighting, drivers have a limited ability to see the road, obstacles, pedestrians, cyclists, and other vehicles clearly, increasing the likelihood of crashes in low-light conditions or at night. This reduced visibility leads to an increased risk for pedestrians and cyclists. Reduced visibility can make it harder for drivers to notice pedestrians and cyclists, especially at crosswalks or intersections, heightening the risk of accidents involving vulnerable road users.

Insufficient lighting also leads to slower reaction time for drivers. Without adequate lighting, it takes longer for drivers to detect and react to hazards, leading to higher chances of collisions. Similarly, insufficient lighting results in impaired depth perception. Poor lighting affects a driver's ability to perceive depth and speed accurately, which can result in misjudging distances and cause unsafe maneuvers.

Though there is lighting infrastructure present throughout the Village, it is pertinent that the functionality of these lights be supported through regular maintenance, such as the replacements of light bulbs. In addition to ensuring the functionality of existing infrastructure, installing new lighting along key corridors may be necessary to provide sufficient visibility for all road users. Lighting enhancements may also be beneficial in encouraging pedestrian and cyclist communities to travel in non-daylight hours.

Available Amenities for Cyclists

Encouraging residents and visitors of Buckeye Lake to cycle instead of driving can lead to a reduction in crash frequency while introducing healthy lifestyle habits. However, without the proper tools, this change is less likely to occur. Safe cyclist-focused infrastructure such as shared use paths and bike lanes have been discussed previously in this Action Plan, but these infrastructure projects may not be as effective if the community does not feel that they have sufficient access to cycling. To address these issues and foster a safe and healthy cyclist community in Buckeye Lake, amenities such as public bicycles, bicycle parking racks, and trailhead parking should be researched and considered for implementation in the Village.

Reduction of Alcohol-Impaired Driving

As a travel destination hosting a variety of restaurants and bars, the Village of Buckeye Lake commonly experiences alcohol-impaired drivers. The 2014-2023 crash data revealed that 13.3% of recorded

crashes were alcohol related. These 14 crashes resulted in all severity levels, including two FSI crashes. According to the National Highway Traffic Safety Administration (NHTSA), about 32% of all traffic crash fatalities in the United States involve drunk drivers. Drunk driving is characterized by driving with a blood alcohol content (BAC) of 0.08 g/dL or higher. Addressing alcohol-impaired driving along key corridors may result in the reduction of crashes throughout the Village.

To address alcohol-impaired driving, the leadership in the Village of Buckeye Lake and local police officers should utilize tools such as education, outreach, and publicized sobriety checkpoints on weekends and holidays.

Emergency Vehicle Warning Systems

As discussed in **Section 1.2 Commitment to Vision Zero**, this Action Plan is developed in adherence with the Safe System Principles of Safe Roads and Safe Speeds with the goal of achieving Vision Zero. One of these principles is Post-Crash Care, emphasizing the need for proper mobility of emergency vehicles.

One way to improve post-crash care is to install emergency vehicle warning systems in the Village. These warning systems can improve the awareness of other drivers who must prepare themselves to operate safely while an emergency vehicle is passing. Maintaining a safe roadway and improving the mobility of emergency vehicles can make a valuable difference in life of individual awaiting post-crash care.

8.3 Recommendation Timeframes

The identified projects and strategies are prioritized in a list that provides time ranges for when the strategies and countermeasures will be deployed (e.g., short-, mid-, and long-term timeframes).

Short Term Project Recommendations

Short-term projects are those of which have the potential to benefit all transportation modes and are more likely to obtain funding within the next five years (through FY 2030). These projects rank high on the Priority List.

Medium Term Project Recommendations

Mid-term project recommendations are projects that are not currently funded but will be considered in the mid-term future of FY 2030 through FY 2040. These projects are moderately ranked on the Priority List.

Long Term Project Recommendations

Projects considered as long-term are anticipated to require more time to obtain the necessary funding. These projects are to be completed between FY 2040 and FY 2050. Long-term projects are ranked lower on the Priority List.

Chapter 9

LEADERSHIP COMMITMENT, PROGRESS, AND TRANSPARENCY

9. LEADERSHIP COMMITMENT, PROGRESS, AND TRANSPARENCY

9.1 Leadership Commitment

The Village of Buckeye Lake has made an official commitment via Resolution No. 2025-11, passed on June 9, 2025, to a goal of zero roadway fatalities and serious injuries by 2040. The complete resolution can be found in **Appendix C** and is as follows:

> **NOW THEREFORE, BE IT RESOLVED BY A TWO-THIRDS (2/3) MAJORITY OF THE LEGISLATIVE AUTHORITY OF THE VILLAGE OF BUCKEYE LAKE THAT FOLLOWING AN AFFIRMATIVE VOTE OF AT LEAST TWO-THIRDS (2/3) OF THE COUNCIL TO DISPENSE WITH THE REQUIREMENT OF THE BUCKEYE LAKE VILLAGE CHARTER TO READ A RESOLUTION ON THREE SEPARATE DAYS,**
>
> **SECTION 1**: That the Village of Buckeye Lake adopts of a goal of zero traffic fatalities and serious injuries by 2040 and endorses development, implementation, and monitoring of Vision Zero as a comprehensive and holistic approach to achieving this goal.
>
> **SECTION 2**: That the Village of Buckeye Lake commit significant time and resources to achieving this goal.
>
> **SECTION 3**: That the Village of Buckeye Lake continue to implement and evaluate the Comprehensive Safety Action Plan and Vision Zero and build upon existing education, enforcement, engineering, and policy strategies to reach this goal.
>
> **SECTION 4**: That the Village of Buckeye Lake is dedicated to regularly reporting and assessing the progress, challenges, and successes of the Vision Zero commitment with current data and measurable metrics.
>
> **SECTION 5**: That the Village of Buckeye Lake strives to improve the health and well-being of all travelers on Village roads. The development of the Comprehensive Safety Action Plan and Vision Zero goal will address critical safety concerns and promote specific strategies towards zero deaths while prioritizing equity.

9.2 Progress and Transparency

This SS4A Comprehensive Safety Action Plan includes recommendations that should positively impact transportation for all users. As the Village begins to implement recommendations from the Action Plan, it is critical that progress is measured in a fully transparent way. The Village of Buckeye Lake will measure progress towards a Vision Zero goal and provide transparency to the public in the following ways:

1. Issue a Press Release upon completion of the Action Plan and maintain access to the document on the Village website.
2. Maintain updated priority lists, indicating project location, recommendation (study/demonstration/implementation), potential funding sources, predicted fiscal year of study/demonstration/implementation completion, and a measure of progress.
3. Measures of progress will be tracked, including funding secured, funding expended on study/demonstration/implementation, studies or projects performed, and items constructed or

improved (miles of sidewalk/bike, lanes/road diet, number of intersections, number of bus stops, etc.).

4. Crash statistics will be tracked in total for the region, by community, and by segment or intersection on the High Injury Network.
5. Measures of progress will be reported on the Village website annually.

CONCLUSION

CONCLUSION

This Comprehensive Safety Action Plan is pivotal for advancing the Vision Zero objective in the Village of Buckeye Lake. Through the countermeasures provided above, the Village is better equipped to accomplish their goal of eliminating traffic-related deaths and serious injuries. This Action Plan utilizes a comprehensive approach that incorporates infrastructural improvements with education, public engagement, and policy change to enhance the safety for all road users in the Village. The strategies and projects recommended in this Action Plan hold critical importance and the potential to prevent fatalities among drivers, passengers, cyclists, and pedestrians alike. These recommendations have been put forth with the intention of creating a safe transportation network for all who visit and reside in the Village of Buckeye Lake.

APPENDICES

Appendix A— Priority List
Appendix B— Hebron Road Conceptual Drawings
Appendix C— Village Resolution No. 2025-11

Appendix A

PRIORITY LIST

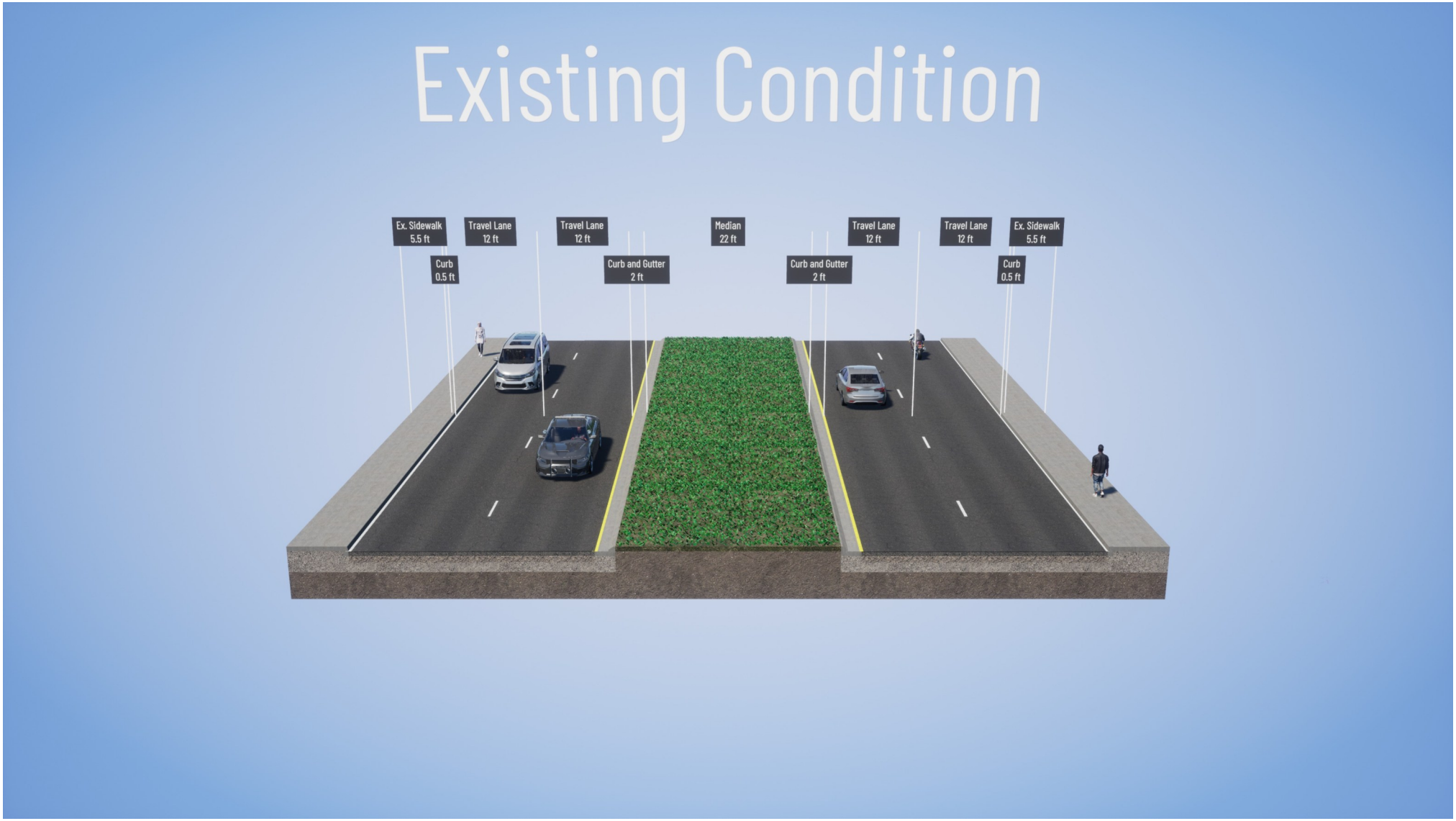
VILLAGE OF BUCKEYE LAKE - LOCATION SPECIFIC PROJECT RECOMMENDATIONS

Rank	Priority Location (NFLID)	SLM Location Limits	Recommended Project	Project Description	Project Timeline	Top Crash Types	# Total Crashes	# FSI Crashes	% Injury	Modes Served	Combined HIN Scores
1	Walnut Road (**SLICSR00079**C**)	**2.288 - 3.512** (Hart Drive to Hebron Road)	Walnut Road Reconfiguration	Widen Walnut Road to accommodate a center turn lane. Construct new sidewalk (north side) and shared use path (south side). Install protected mid-block crossings with RRFBs. Consider lowering the posted speed to 25 mph.	Short-term	Rear End (12), Fixed Object (9), Angle (7)	**42**	**6**	**38.1**	**3**	**9**
2	Hebron Road (**SLICSR00079**C**)	**3.512 - 4.082** (Walnut Road to Mill Dam Road)	Hebron Road Reconfiguration	Reconfigure Hebron Road to reduce travel lanes and turning movement conflict points, and to provide offset facilities for vulnerable road users. Consider lowering the posted speed to 25 mph.	Short-term	Rear End (7), Sideswipe-Passing (7), Fixed Object (7)	**34**	**2**	29.4	**3**	**7**
3	Walnut Road & Hebron Road (**SLICSR00079**C**)	**3.512** (Walnut Road & Hebron Road)	Intersection of Walnut Road and Hebron Road Safety Improvements	Convert existing four-way intersection into a three-way roundabout, realigning the park entrance with Park Avenue.	Medium-term	Fixed Object (5), Backing (1)	6	0	33.3	**2**	**2**
4	Walnut Road (**SLICSR00079**C**)	**2.183 - 2.460**	Walnut Road Horizontal Curve Safety Improvements	Utilize edgeline rumble strips, raised pavement markings, and chevron siagnage to assist drivers in safely manuevering the curve.	Medium-term	Fixed Object (5), Sideswipe-Passing (1)	6	**2**	**66.7**	1	1
5	East Street (**MLICMR00017**C**)	**0.448** (East Street & Hunts Landing Road)	Intersection of East Street and Hunts Landing Road Safety Improvements	Convert existing three-way stop-controlled intersection into a roundabout.	Long-term	Fixed Object (4), Sideswipe-Opposite (1)	5	0	**40**	1	1
6	Hebron Road (**SLICSR00079**C**)	**4.082** (Hebron Road & Mill Dam Road)	Intersection of Hebron Road and Mill Dam Road Safety Improvements	Convert existing four-way signalized intersection into a roundabout.	Long-term	Angle (4), Rear End (3), Angle-Left Turn (2)	**12**	0	25	1	1

Appendix B

HEBRON ROAD CONCEPTUAL DRAWINGS

CONTACT THE VILLAGE OF BUCKEYE LAKE TO VIEW ORIGINAL FULL-SIZED EXHIBIT



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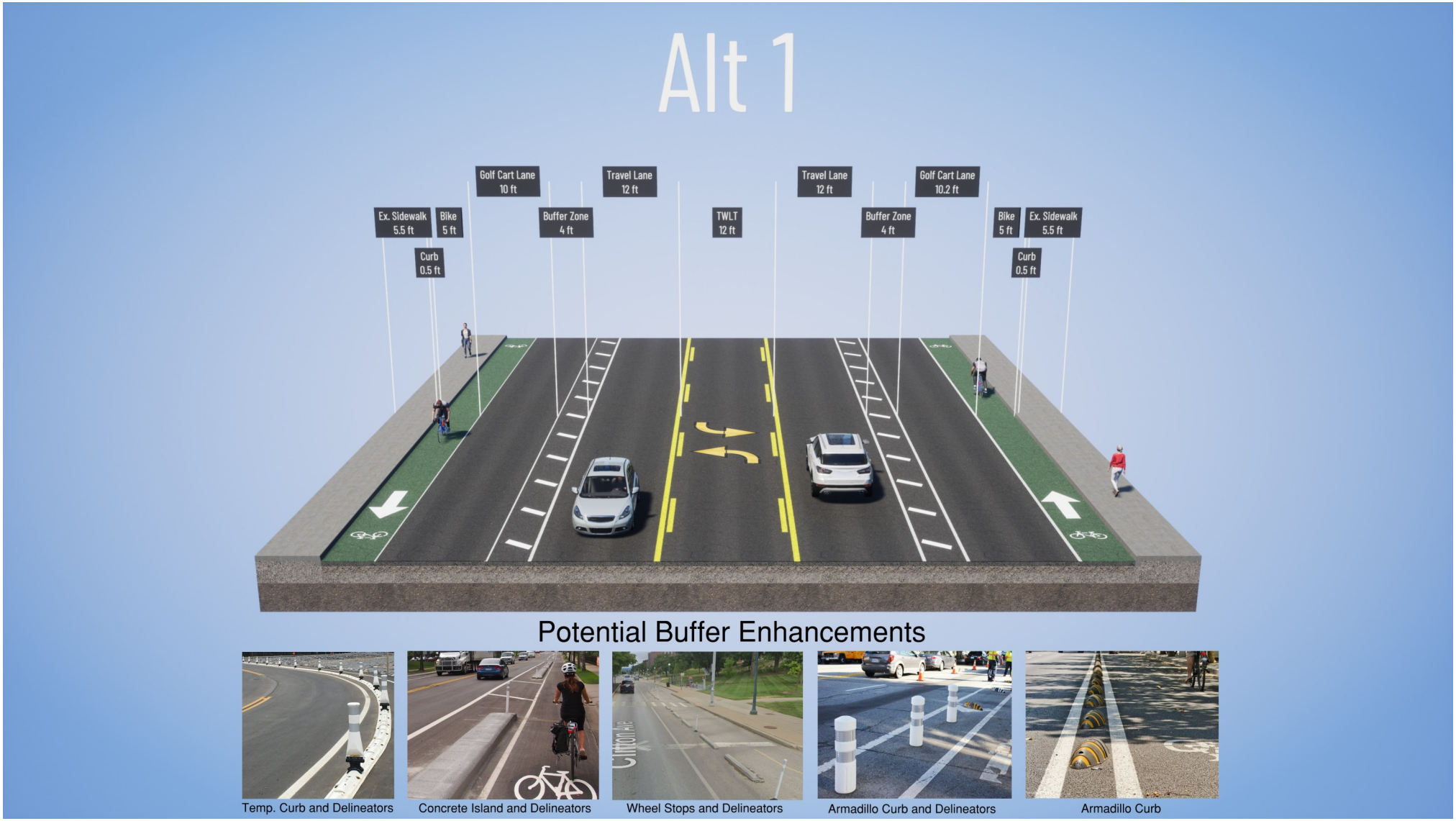

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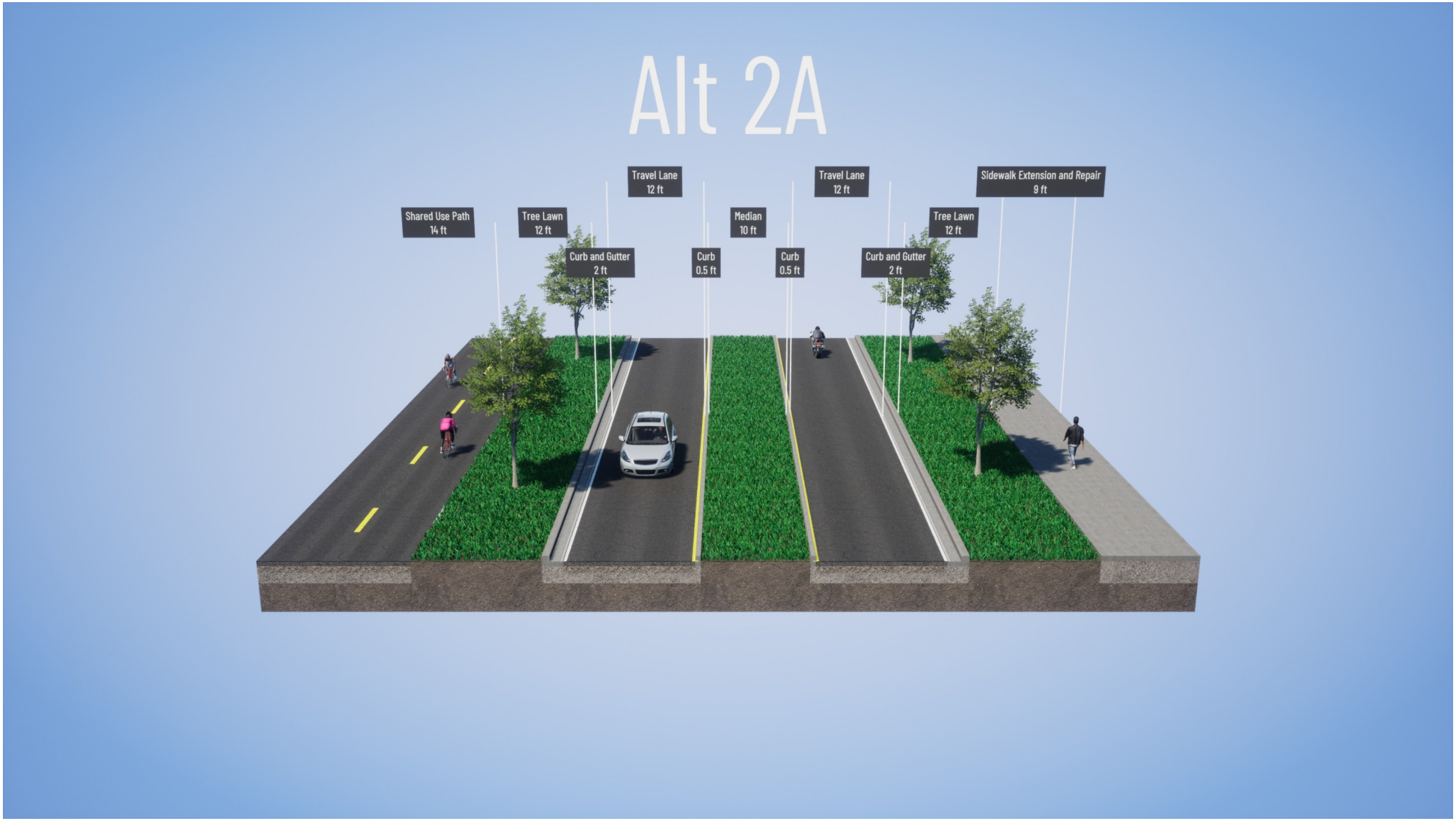

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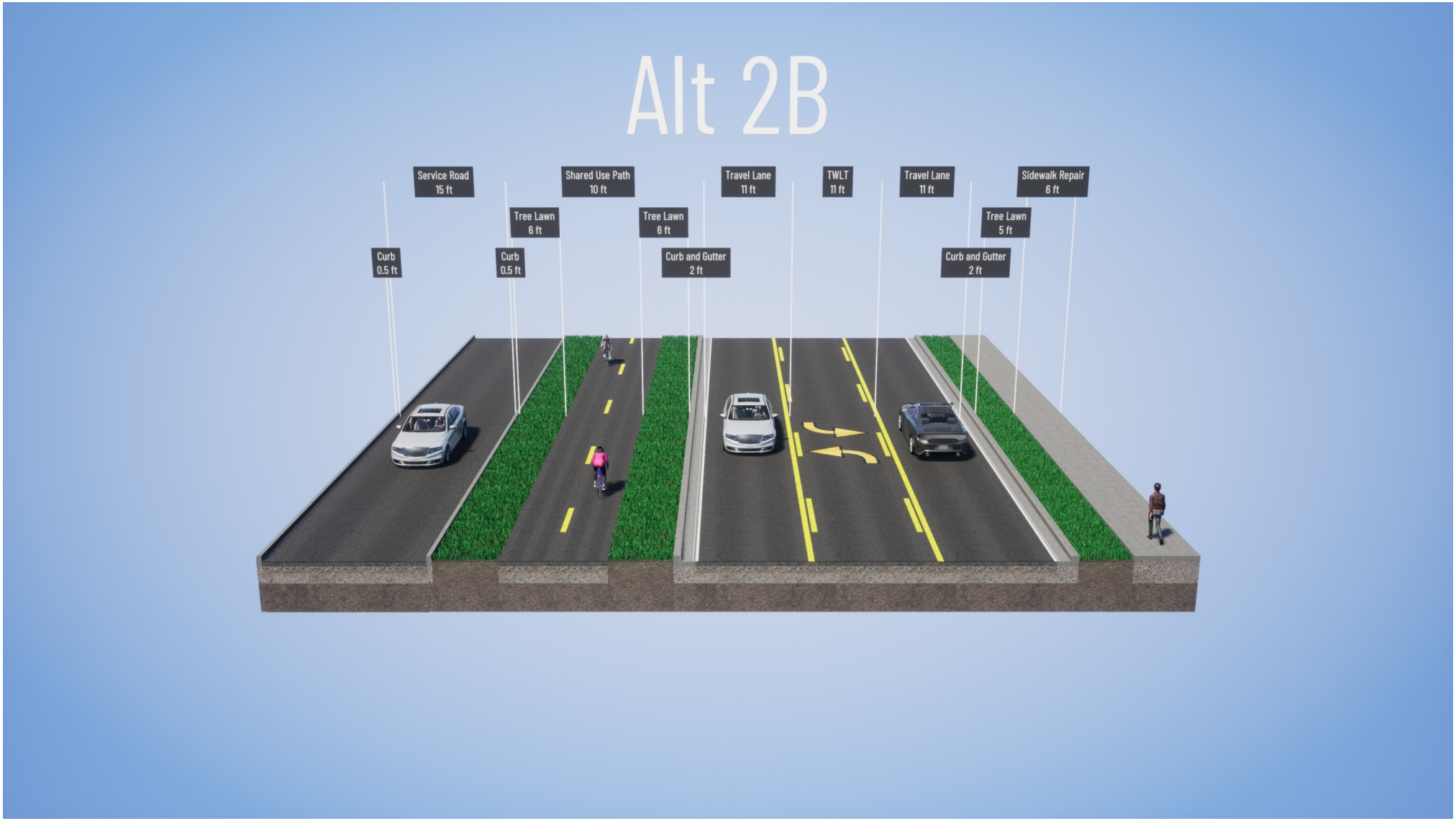

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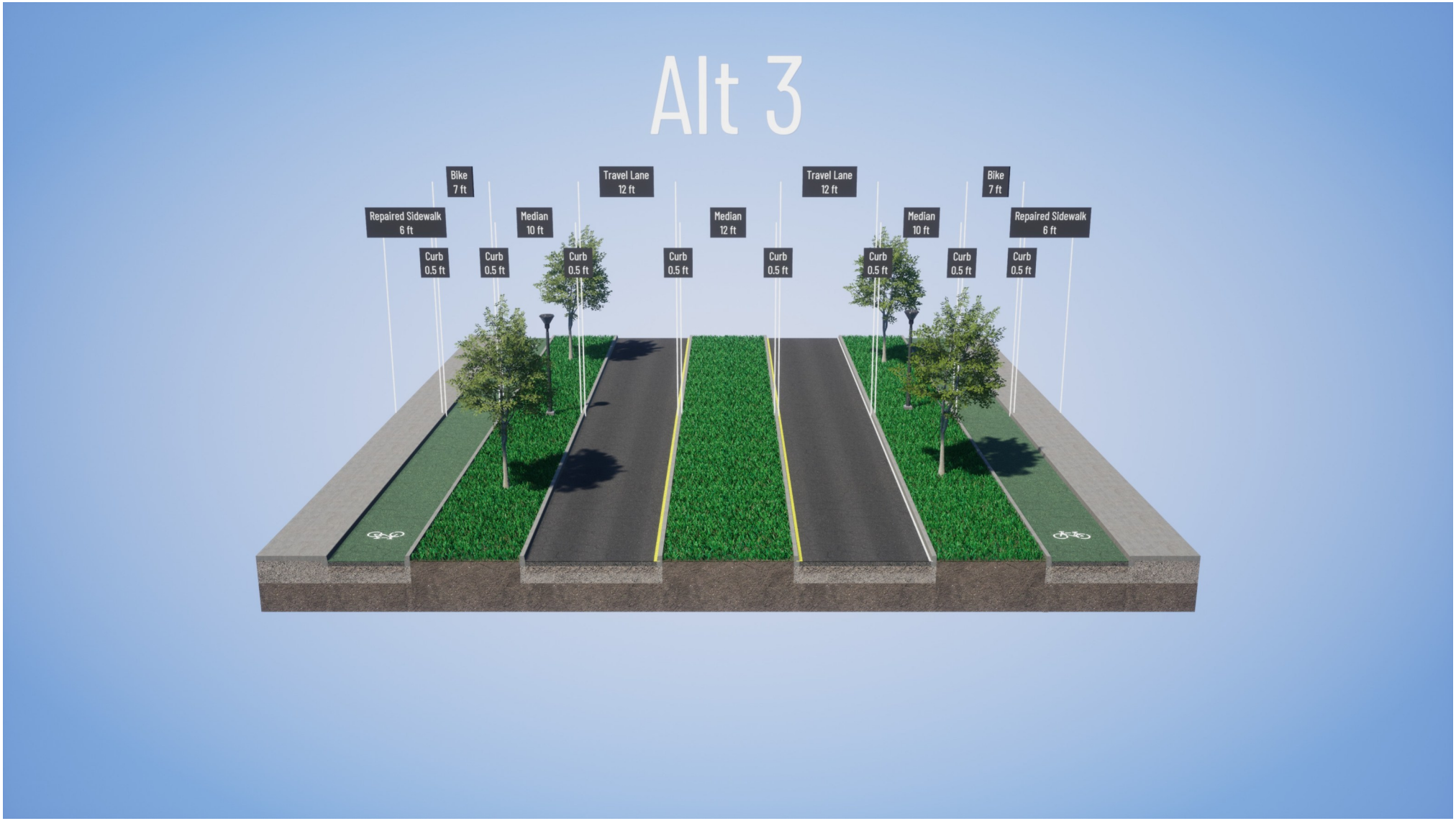

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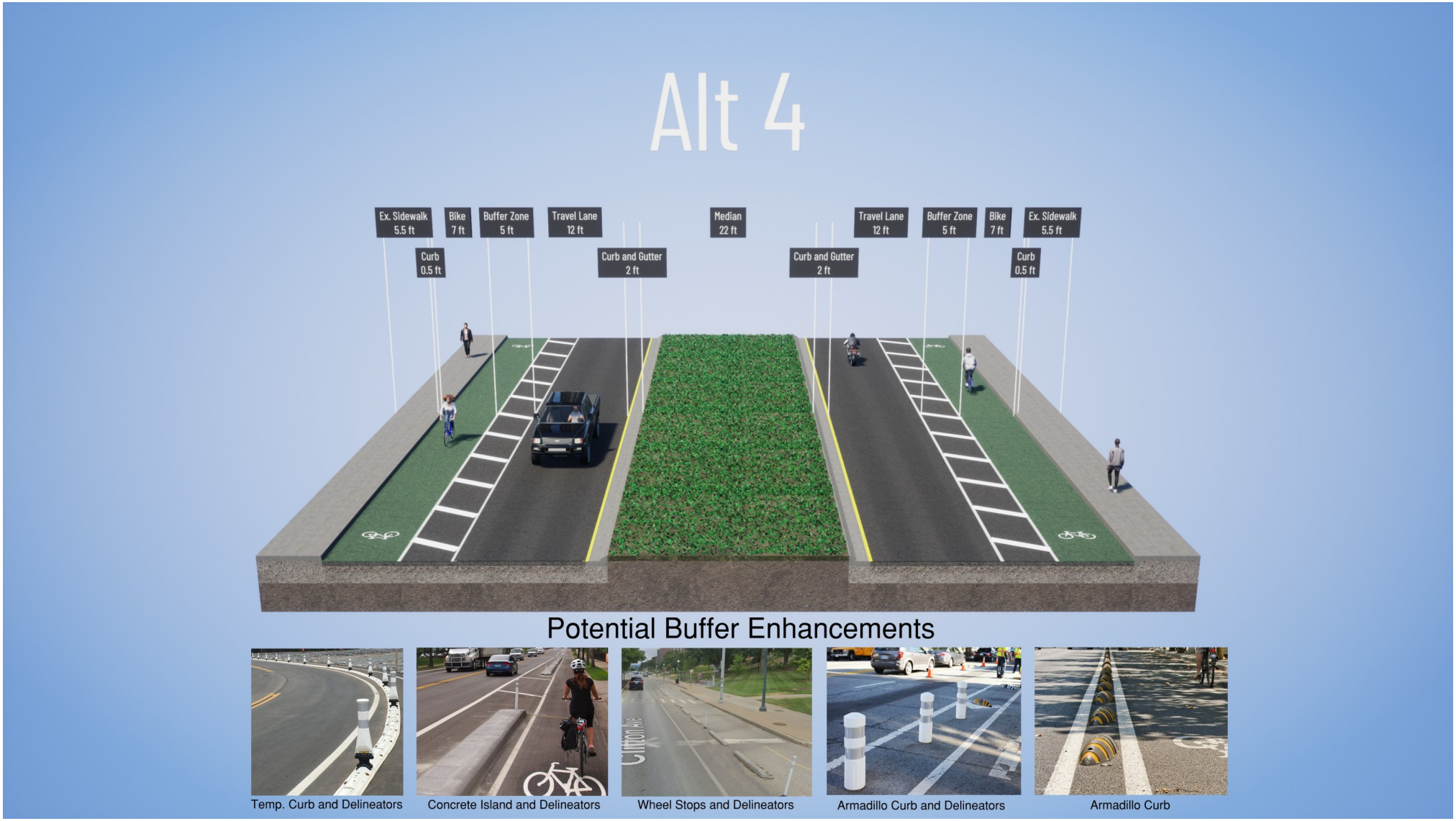

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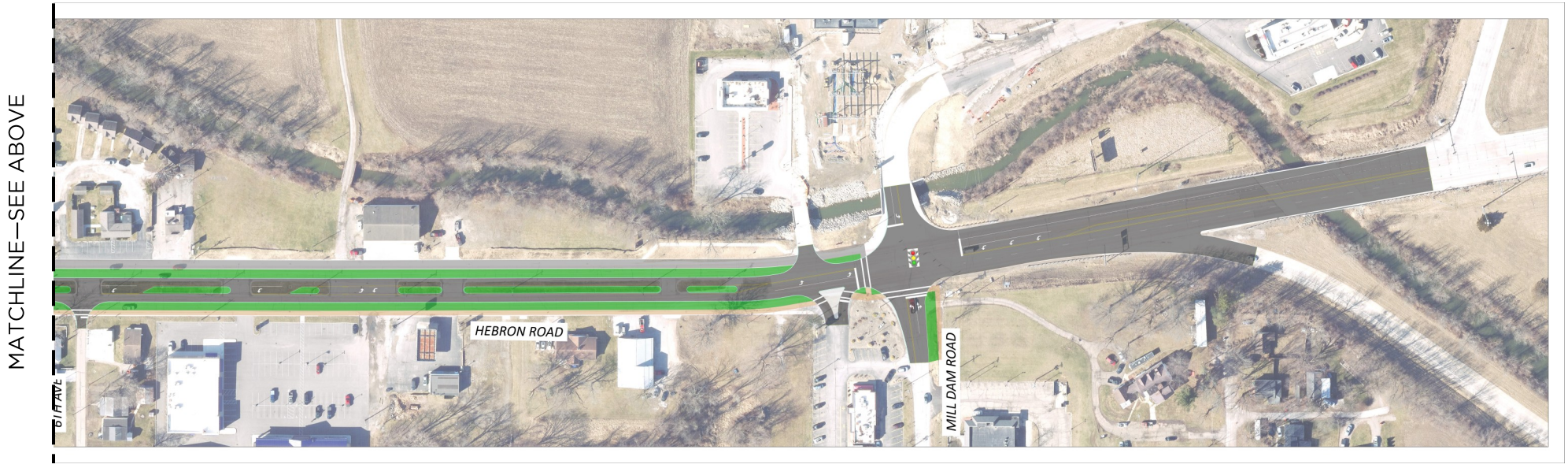

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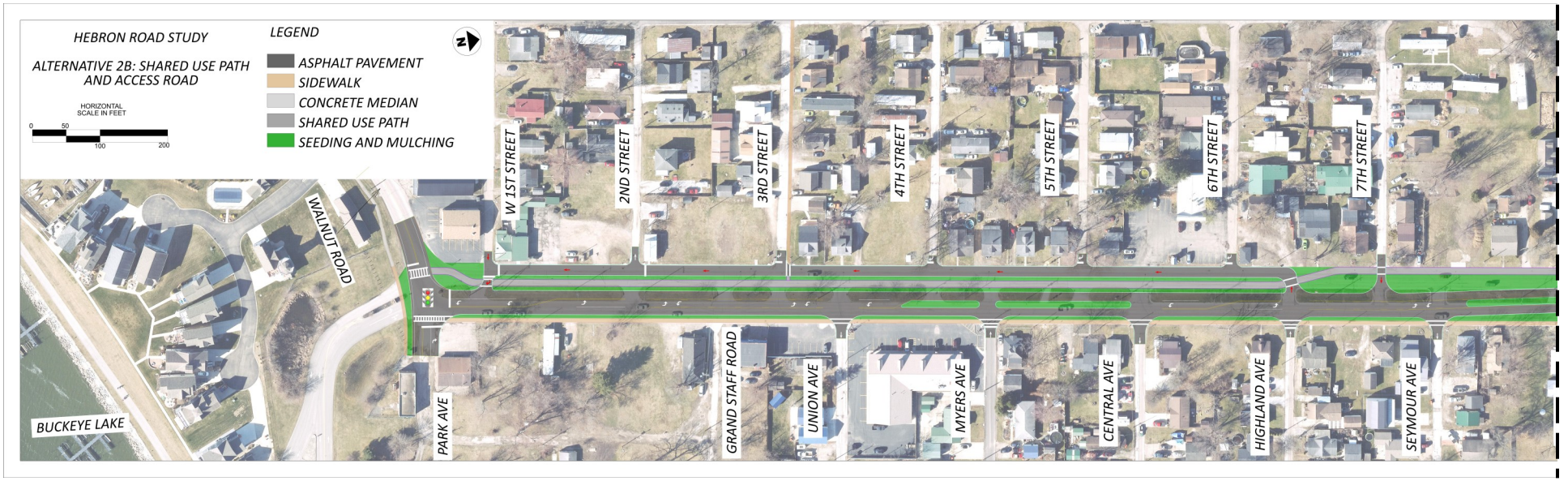

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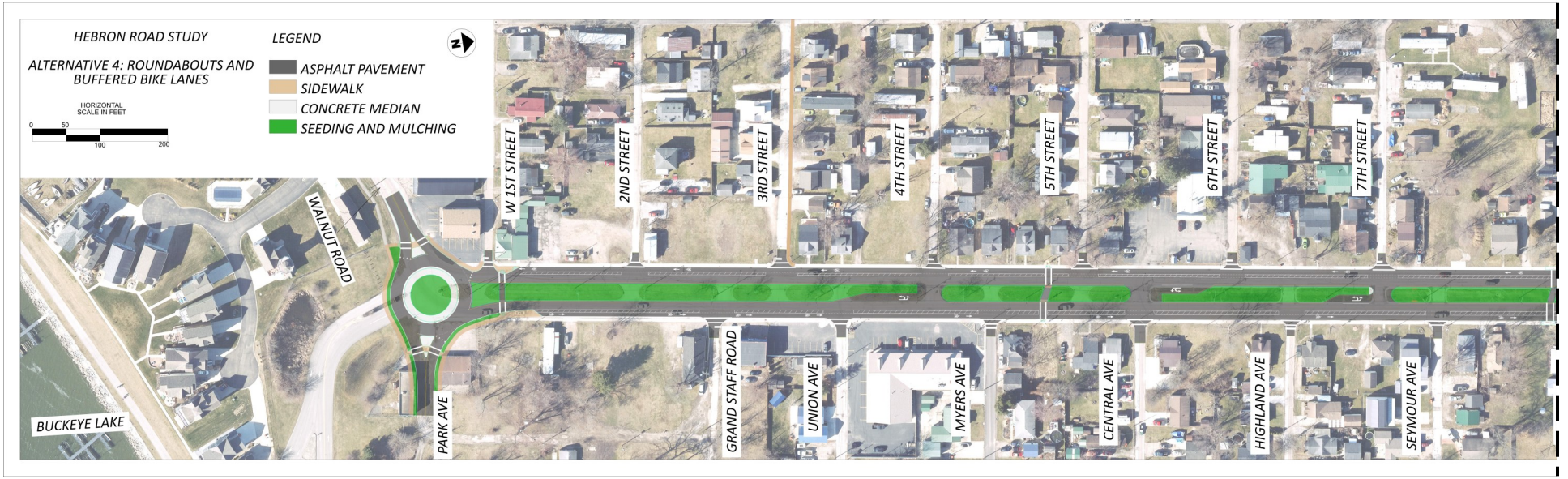

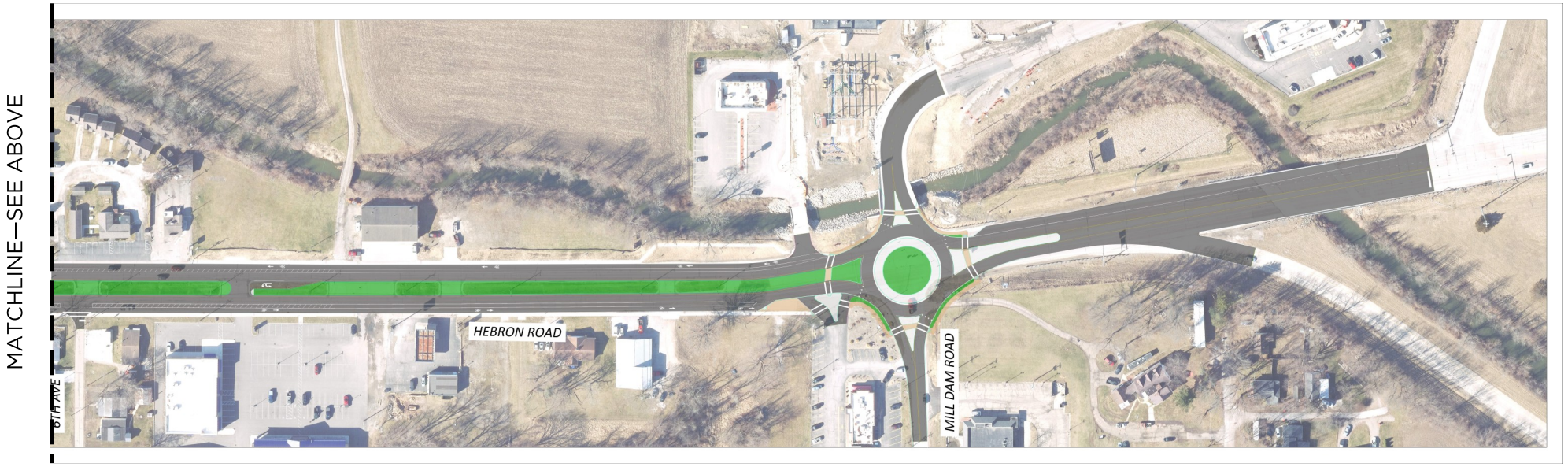

Hebron Road Study

Alternative 1
01/27/25

DESCRIPTION	TOTAL QUANTITY	UNIT	UNIT PRICE	TOTAL PRICE (2024 dollars)
ROADWAY				
Pavement Removed	13,015	SQ YD	$13.00	$169,201
Curb Removed	5,400	FT	$7.00	$37,800
Excavation	5,000	CU YD	$15.00	$75,000
Embankment	1,000	CU YD	$25.00	$25,000
Curb	1,150	FT	$30.00	$34,500
Curb Ramp	3,450	SQ FT	$20.00	$69,000
Concrete Walk	4,310	SQ FT	$9.00	$38,790
Seeding and Mulching	54	SQ YD	$4.00	$215
Utility Pole Relocated	21	EACH	$5,000.00	$105,000
			ROADWAY SUBTOTAL	**$554,600**
PAVEMENT				
Asphalt Resurfacing	20,974	SQ YD	$15.00	$314,613
Full Depth Asphalt Pavement	13,015	SQ YD	$90.00	$1,171,390
			PAVEMENT SUBTOTAL	**$1,486,100**
DRAINAGE				
Drainage	1	LUMP	$600,000.00	$600,000
			DRAINAGE SUBTOTAL	**$600,000**
TRAFFIC CONTROL				
Pavement Markings	1	LUMP	$60,000.00	$60,000
Signing	1	LUMP	$40,000.00	$40,000
			TRAFFIC CONTROL SUBTOTAL	**$100,000**
MAINTENTANCE OF TRAFFIC				
MOT	1	LUMP	$238,990.00	$238,990
			MAINTENANCE OF TRAFFIC SUBTOTAL	**$239,000**
SIGNALS				
Pedestrian Signal Upgrades	1	LUMP	$80,000.00	$80,000
			TRAFFIC SIGNALS SUBTOTAL	**$80,000**
INCIDENTALS				
Field Office, Type B	9	MONTH	$1,050.00	$9,450
Construction Layout Stakes	1	LUMP	$18,447.75	$18,448
Mobilization	1	LUMP	$100,000.00	$100,000
			INCIDENTALS SUBTOTAL	**$127,900**
			CONSTRUCTION TOTAL, 2024	**$2,588,000**
COST CONTINGENCY				
Cost Contingency - Preliminary Engineering	25.0%			$647,000
Construction Cost Inflation Rate (2024 to 2028)	16.0%			$414,080
TOTAL COST, 2028 DOLLARS				**$3,650,000**

Hebron Road Study

Alternative 2A
01/27/25

DESCRIPTION	TOTAL QUANTITY	UNIT	UNIT PRICE	TOTAL PRICE (2024 dollars)
ROADWAY				
Pavement Removed	20,892	SQ YD	$13.00	$271,596
Curb Removed	48,047	FT	$7.00	$336,329
Excavation	5,000	CU YD	$15.00	$75,000
Embankment	5,000	CU YD	$25.00	$125,000
Curb	3,000	FT	$30.00	$90,000
Curb & Gutter	7,000	FT	$35.00	$245,000
Curb Ramp	3,450	SQ FT	$20.00	$69,000
Concrete Walk	20,839	SQ FT	$9.00	$187,553
Seeding and Mulching	8,628	SQ YD	$4.00	$34,511
Utility Pole Relocated	6	EACH	$5,000.00	$30,000
			ROADWAY SUBTOTAL	**$1,464,000**
PAVEMENT				
Asphalt Resurfacing	7,825	SQ YD	$15.00	$117,373
Full Depth Asphalt Pavement	13,411	SQ YD	$90.00	$1,206,950
Asphalt Shared Use Path	4,251	SQ YD	$30.00	$127,531
			PAVEMENT SUBTOTAL	**$1,451,900**
DRAINAGE				
Drainage	1	LUMP	$900,000.00	$900,000
			DRAINAGE SUBTOTAL	**$900,000**
TRAFFIC CONTROL				
Pavement Markings	1	LUMP	$60,000.00	$60,000
Signing	1	LUMP	$40,000.00	$40,000
			TRAFFIC CONTROL SUBTOTAL	**$100,000**
MAINTENTANCE OF TRAFFIC				
MOT	1	LUMP	$330,190.00	$330,190
			MAINTENANCE OF TRAFFIC SUBTOTAL	**$330,200**
SIGNALS				
Pedestrian Signal Upgrades	1	LUMP	$80,000.00	$80,000
			TRAFFIC SIGNALS SUBTOTAL	**$80,000**
INCIDENTALS				
Field Office, Type B	9	MONTH	$1,050.00	$9,450
Construction Layout Stakes	1	LUMP	$25,695.75	$25,696
Mobilization	1	LUMP	$100,000.00	$100,000
			INCIDENTALS SUBTOTAL	**$135,200**
			CONSTRUCTION TOTAL, 2024	**$3,562,000**
COST CONTINGENCY				
Cost Contingency - Preliminary Engineering	25.0%			$890,500
Construction Cost Inflation Rate (2024 to 2028)	16.0%			$569,920
TOTAL COST, 2028 DOLLARS				**$5,023,000**

Hebron Road Study

Alternative 2B
01/27/25

DESCRIPTION	TOTAL QUANTITY	UNIT	UNIT PRICE	TOTAL PRICE (2024 dollars)
ROADWAY				
Pavement Removed	20,892	SQ YD	$13.00	$271,596
Curb Removed	48,047	FT	$7.00	$336,329
Excavation	5,000	CU YD	$15.00	$75,000
Embankment	5,000	CU YD	$25.00	$125,000
Curb	5,010	FT	$30.00	$150,300
Curb & Gutter	7,000	FT	$35.00	$245,000
Curb Ramp	3,450	SQ FT	$20.00	$69,000
Concrete Walk	20,839	SQ FT	$9.00	$187,553
Seeding and Mulching	9,523	SQ YD	$4.00	$38,091
Utility Pole Relocated	11	EACH	$5,000.00	$55,000
			ROADWAY SUBTOTAL	**$1,552,900**
PAVEMENT				
Asphalt Resurfacing	7,825	SQ YD	$15.00	$117,373
Full Depth Asphalt Pavement	14,716	SQ YD	$90.00	$1,324,440
Asphalt Shared Use Path	3,151	SQ YD	$30.00	$94,537
			PAVEMENT SUBTOTAL	**$1,536,400**
DRAINAGE				
Drainage	1	LUMP	$1,100,000.00	$1,100,000
			DRAINAGE SUBTOTAL	**$1,100,000**
TRAFFIC CONTROL				
Pavement Markings	1	LUMP	$60,000.00	$60,000
Signing	1	LUMP	$40,000.00	$40,000
			TRAFFIC CONTROL SUBTOTAL	**$100,000**
MAINTENTANCE OF TRAFFIC				
MOT	1	LUMP	$356,510.00	$356,510
			MAINTENANCE OF TRAFFIC SUBTOTAL	**$356,600**
SIGNALS				
Pedestrian Signal Upgrades	1	LUMP	$80,000.00	$80,000
			TRAFFIC SIGNALS SUBTOTAL	**$80,000**
INCIDENTALS				
Field Office, Type B	9	MONTH	$1,050.00	$9,450
Construction Layout Stakes	1	LUMP	$27,194.25	$27,194
Mobilization	1	LUMP	$100,000.00	$100,000
			INCIDENTALS SUBTOTAL	**$136,700**
			CONSTRUCTION TOTAL, 2024	**$3,763,000**
COST CONTINGENCY				
Cost Contingency - Preliminary Engineering	25.0%			$940,750
Construction Cost Inflation Rate (2024 to 2028)	16.0%			$602,080
TOTAL COST, 2028 DOLLARS				**$5,306,000**

Hebron Road Study

Alternative 3
01/27/25

DESCRIPTION	TOTAL QUANTITY	UNIT	UNIT PRICE	TOTAL PRICE (2024 dollars)
ROADWAY				
Pavement Removed	20,892	SQ YD	$13.00	$271,596
Curb Removed	48,047	FT	$7.00	$336,329
Excavation	5,000	CU YD	$15.00	$75,000
Embankment	5,000	CU YD	$25.00	$125,000
Curb	15,500	FT	$30.00	$465,000
Curb & Gutter	7,000	FT	$35.00	$245,000
Curb Ramp	3,450	SQ FT	$20.00	$69,000
Concrete Walk	31,897	SQ FT	$9.00	$287,071
Concrete Median		SQ FT	$10.00	$0
Seeding and Mulching	3,503	SQ YD	$4.00	$14,010
Utility Pole Relocated	16	EACH	$5,000.00	$80,000
			ROADWAY SUBTOTAL	**$1,968,100**
PAVEMENT				
Asphalt Resurfacing	7,825	SQ YD	$15.00	$117,373
Full Depth Asphalt Pavement	18,298	SQ YD	$90.00	$1,646,826
			PAVEMENT SUBTOTAL	**$1,764,200**
DRAINAGE				
Drainage	1	LUMP	$900,000.00	$900,000
			DRAINAGE SUBTOTAL	**$900,000**
TRAFFIC CONTROL				
Pavement Markings	1	LUMP	$60,000.00	$60,000
Signing	1	LUMP	$40,000.00	$40,000
			TRAFFIC CONTROL SUBTOTAL	**$100,000**
MAINTENTANCE OF TRAFFIC				
MOT	1	LUMP	$436,000.00	$436,000
			MAINTENANCE OF TRAFFIC SUBTOTAL	**$436,000**
SIGNALS				
Pedestrian Signal Upgrades	1	LUMP	$80,000.00	$80,000
			TRAFFIC SIGNALS SUBTOTAL	**$80,000**
INCIDENTALS				
Field Office, Type B	9	MONTH	$1,050.00	$9,450
Construction Layout Stakes	1	LUMP	$32,612.25	$32,612
Mobilization	1	LUMP	$100,000.00	$100,000
			INCIDENTALS SUBTOTAL	**$142,100**
			CONSTRUCTION TOTAL, 2024	**$4,491,000**
COST CONTINGENCY				
Cost Contingency - Preliminary Engineering	25.0%			$1,122,750
Construction Cost Inflation Rate (2024 to 2028)	16.0%			$718,560
TOTAL COST, 2028 DOLLARS				**$6,333,000**

Hebron Road Study

Alternative 4
01/27/25

DESCRIPTION	TOTAL QUANTITY	UNIT	UNIT PRICE	TOTAL PRICE (2024 dollars)
ROADWAY				
Pavement Removed	8,889	SQ YD	$13.00	$115,556
Curb Removed	10,000	FT	$7.00	$70,000
Excavation	5,000	CU YD	$15.00	$75,000
Embankment	5,000	CU YD	$25.00	$125,000
Curb	500	FT	$30.00	$15,000
Curb & Gutter	5,732	FT	$35.00	$200,620
Curb Ramp	3,450	SQ FT	$20.00	$69,000
Concrete Walk	8,177	SQ FT	$9.00	$73,592
Concrete Median	5,682	SQ FT	$10.00	$56,820
Seeding and Mulching	7,691	SQ YD	$4.00	$30,762
Utility Pole Relocated	2	EACH	$5,000.00	$10,000
			ROADWAY SUBTOTAL	**$841,400**
PAVEMENT				
Asphalt Resurfacing	18,482	SQ YD	$15.00	$277,228
Full Depth Asphalt Pavement	8,868	SQ YD	$90.00	$798,128
Truck Apron	618	SQ YD	$121.00	$74,812
			PAVEMENT SUBTOTAL	**$1,150,200**
DRAINAGE				
Drainage	1	LUMP	$600,000.00	$600,000
			DRAINAGE SUBTOTAL	**$600,000**
TRAFFIC CONTROL				
Pavement Markings	1	LUMP	$60,000.00	$60,000
Signing	1	LUMP	$40,000.00	$40,000
			TRAFFIC CONTROL SUBTOTAL	**$100,000**
MAINTENTANCE OF TRAFFIC				
MOT	1	LUMP	$224,510.00	$224,510
			MAINTENANCE OF TRAFFIC SUBTOTAL	**$224,600**
SIGNALS				
Pedestrian Signal Upgrades	1	LUMP	$40,000.00	$40,000
			TRAFFIC SIGNALS SUBTOTAL	**$40,000**
INCIDENTALS				
Field Office, Type B	9	MONTH	$1,050.00	$9,450
Construction Layout Stakes	1	LUMP	$17,671.50	$17,672
Mobilization	1	LUMP	$100,000.00	$100,000
			INCIDENTALS SUBTOTAL	**$127,200**
			CONSTRUCTION TOTAL, 2024	**$2,484,000**
COST CONTINGENCY				
Cost Contingency - Preliminary Engineering	25.0%			$621,000
Construction Cost Inflation Rate (2024 to 2028)	16.0%			$397,440
TOTAL COST, 2028 DOLLARS				**$3,503,000**

Appendix C

VILLAGE RESOLUTION NO. 2025-11

RESOLUTION NO. 2025-11
VILLAGE OF BUCKEYE LAKE, OHIO
FIRST READING

A RESOLUTION TO APPROVE THE ADOPTION OF A GOAL OF ZERO FATALITIES AND SERIOUS INJURIES IN THE VILLAGE OF BUCKEYE LAKE BY 2040.

WHEREAS, the Village of Buckeye Lake has endorsed the development, implementation, and monitoring of a Comprehensive Safety Action Plan and Vision Zero goal to eliminate traffic fatalities and severe injuries while increasing safe, healthy, and equitable mobility for all road users with an emphasis on protecting the most vulnerable users; and

WHEREAS, the lives and safety of persons residing and traveling in the Village of Buckeye Lake should be considered first, every time, and at every stage of a roadway project; and

WHEREAS, the Village of Buckeye Lake recognizes even one death on the transportation network is unacceptable. All road users should arrive safely at their destinations; and

WHEREAS, the Village of Buckeye Lake recognizes that humans make mistakes, but a safe driving environment is inseparable from a well-designed roadway network, therefore it is the responsibility of planners, engineers, and policymakers to implement strategies that prevent severe crashes; and

WHEREAS, the Village of Buckeye Lake Comprehensive Safety Action Plan promotes specific strategies and actions to address the most critical safety concerns in the Village—impaired drivers, intersections, and speed; and identifies the corridors, intersections, and road segments that could benefit from safety improvements; and

WHEREAS, between 2014 and 2023, there were 122 crashes in the Village of Buckeye Lake with nine crashes resulting in serious injury or fatality, two crashes involving pedestrians, and four crashes involving bicycle riders; and

WHEREAS, the number of deaths and injuries on Village Roads is a significant public health concern that requires immediate attention; and

WHEREAS, a commitment to Vision Zero is a commitment to all people, all modes of transportation and all locations, including people of all ages and abilities, pedestrians, bicyclists, public transit users, scooter riders, motorcyclists, drivers and passengers of motor vehicles, and urban and rural roads; and

WHEREAS, implementing a Vision Zero goal necessitates the ongoing partnership and support of local transportation and safety stakeholders, and residents, whether acting as an agency or as an individual; and

WHEREAS, the Village of Buckeye Lake will join other government entities around the nation in a commitment to eliminate traffic deaths and severe injuries by focusing funding, resources, and top-down support to implement safety policies, programs, and projects that will best achieve the identified safety goal and objectives;

NOW THEREFORE, BE IT RESOLVED BY A TWO-THIRDS (2/3) MAJORITY OF THE LEGISLATIVE AUTHORITY OF THE VILLAGE OF BUCKEYE LAKE THAT FOLLOWING AN AFFIRMATIVE VOTE OF AT LEAST TWO-THIRDS (2/3) OF THE COUNCIL TO DISPENSE WITH THE REQUIREMENT OF THE BUCKEYE LAKE VILLAGE CHARTER TO READ A RESOLUTION ON THREE SEPARATE DAYS,

SECTION 1: That the Village of Buckeye Lake adopts of a goal of zero traffic fatalities and serious injuries by 2040 and endorses development, implementation, and monitoring of Vision Zero as a comprehensive and holistic approach to achieving this goal.

SECTION 2: That the Village of Buckeye Lake commit significant time and resources to achieving this goal.

SECTION 3: That the Village of Buckeye Lake continue to implement and evaluate the Comprehensive Safety Action Plan and Vision Zero and build upon existing education, enforcement, engineering, and policy strategies to reach this goal.

SECTION 4: That the Village of Buckeye Lake is dedicated to regularly reporting and assessing the progress, challenges, and successes of the Vision Zero commitment with current data and measurable metrics.

SECTION 5: That the Village of Buckeye Lake strives to improve the health and well-being of all travelers on Village roads. The development of the Comprehensive Safety Action Plan and Vision Zero goal will address critical safety concerns and promote specific strategies towards zero deaths while prioritizing equity.

ADOPTED this 9th day of June, 2025

Attest: Samantha Torres
Council Clerk, Samantha Torres

Council President, John Lemmon

Date filed with Mayor: 6-11, 2025

Date approved By Mayor: 6-11, 2025

Linda Goodman
Mayor, Linda Goodman