

VERMILION COUNTY SAFETY ACTION PLAN

DANVILLE AREA TRANSPORTATION STUDY

June 13, 2023
Final



Danville Area
Transportation Study
Metropolitan Planning Organization



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Introduction

Purpose and Commitment

The purpose of the Vermilion County Safety Action Plan (VCSAP) is to identify roadway safety concerns and prioritize actions and safety investments through a combined approach of data-driven analysis and community engagement. This project was initiated by the Danville Area Transportation Study (DATS), the federally designated Metropolitan Planning Organization (MPO) for the Danville, Illinois urbanized area. DATS and its member agencies, including City of Danville, Vermilion County, Danville Mass Transit, and CRIS Rural Mass Transit District, lend support and are committed to the successful implementation of this plan. The plan aims at an ambitious, but necessary, goal to eliminate traffic deaths and serious injuries by 2050.

This is no ordinary goal; it has the opportunity to be transformative. Every year, 60 people are killed or seriously injured in roadway crashes throughout Vermilion County. The impact of these injuries are felt by many including parents, children, siblings, co-workers, witnesses, first responders, and medical staff. On average, roadway crashes cost society approximately \$100 million each year.

Reducing and eliminating traffic deaths and serious injuries is a bold goal and one that reflects the values of the communities of Vermilion County. Traffic deaths are preventable and local leaders understand the commitment required to save lives.



-Kickapoo Rail Trail



-Kickapoo State Recreation Area



**Larry Baughn, Chairman
County Board
Vermilion County, Illinois**

Joseph G. Cannon Building
201 N. Vermilion Danville, IL 61832
Phone: (217) 554-6000 Fax: (217) 554-6010 e-mail: lbaughn@vercounty.org

Friday, May 12, 2023

Sam Cole, DATS Director
Danville Area Transportation Study
111155 East Voorhees Street, Suite A
Danville, Illinois 61832

Dear Director Cole:

I am writing to support the Vermilion County Safety Action Plan because your Vision Zero plan establishes a framework that focuses on improving traffic safety throughout the County.

As a member agency of the Danville Area Transportation Study (DATS), we support the four implementation sub-groups identified to improve safety:

- Intersections
- Arterial Routes
- Rural Highways
- Pedestrian and bicycle facilities

The development of the action plan will prove to be a key factor in Vermilion County, the City of Danville and other partners improving safety, and eliminating fatal and serious injury accidents. We support the goal of reaching zero fatalities on our roadways by 2050, and we look forward to the implementation of the Vermilion County Safety Action Plan and Vision Zero!

Sincerely,

Larry Baughn Jr,
Vermilion County Board Chairman



Rickey Williams, Jr., Mayor

June 9, 2023

Sam Cole, DATS Director
Danville Area Transportation Study
1155 East Voorhees Street, Suite A
Danville, IL 61832

Dear Director Cole,

I am writing in support of the Vermilion County Safety Action Plan because this Vision Zero plan establishes a framework that focuses on improving traffic safety throughout Vermilion County. As Mayor of Danville, I support the four implementation sub-groups identified to improve safety:

- Intersections
- Arterial Routes
- Rural Highways
- Pedestrian and bicycle facilities

I believe that having a safe and equitable transportation that serves all individuals regardless of the location or mode of transportation is key to restoring the health and vitality of our neighborhoods and ensuring that all individuals have the opportunity to live out their purpose. The development of the action plan will prove to be a key factor for Vermilion County, the City of Danville and other partners by providing a guide to improving safety and eliminating fatal and serious injury accidents. I support the goal of reaching zero fatalities on our roadways by 2050 and look forward to the implementation of the Vermilion County Safety Action Plan and Vision Zero!

Sincerely,

A handwritten signature in blue ink that reads "Rickey Williams, Jr." with a stylized flourish at the end.

Mayor, City of Danville

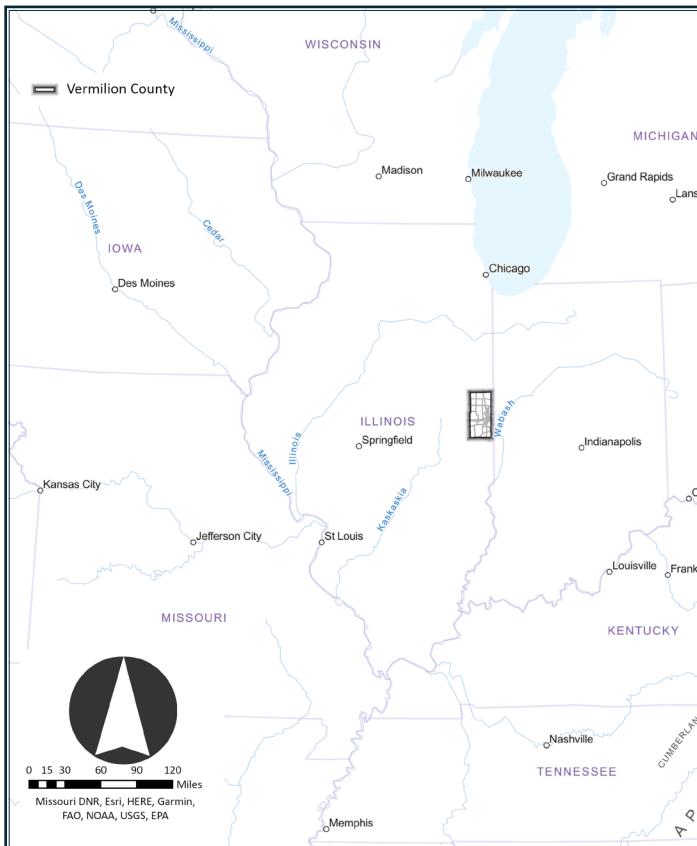
Context

The Plan

This plan combines a thorough analysis of crash patterns with actionable strategies to make our streets safer, not just for motorists but for all people who bike, walk, or take transit. Presented in this chapter is important background information including related planning efforts, a descriptor of the Safe Systems Approach, an outline of the focus areas, or implementation sub-groups, seen throughout the plan, and a discussion of important terms and concepts to help understand the broader context in which this safety action plan lives. Other chapters in the plan include an overview of the community engagement process, the results of the data-driven analysis including the high injury network and equitable target areas, an illustration of context sensitive proven safety countermeasures, and the presentation of actionable strategies to assist local leaders in achieving zero traffic deaths or serious injuries.

For more detailed information, please see the technical memorandums in the appendix.

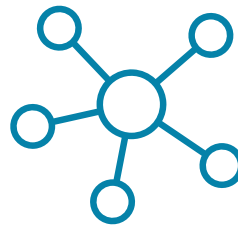
FIGURE 1. VERMILION COUNTY STUDY AREA



The **Context** chapter provides relevant background information including the Safe Systems Approach and other important concepts.



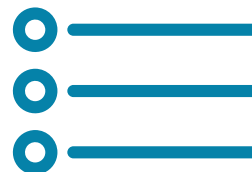
The **Engagement** chapter provides an overview of community engagement efforts including the public survey, key stakeholder interviews, and the public open house.



The **Analysis** chapter provides an assessment of observed crash trends as well as the identification of the high injury network and equitable target areas.



The **Countermeasures** chapter provides descriptions and illustrations of proven safety countermeasures.



The **Actions** chapter provides the strategic next steps that local leaders can utilize to realize the goal of this plan.

Relevant Plans

There has been a substantial amount of work done to identify projects and strategies to improve roadway safety at both the local and state level. Table 1 shows relevant and related plans that attempt to address safety. This plan, and its goal of improving safety, is consistent with recent statewide safety planning goals and efforts and will require agency coordination across all levels of government.

TABLE 1. RELEVANT AND RELATED PLANS

PLAN DOCUMENT	DESCRIPTION	KEY FINDINGS/ RECOMMENDATIONS
2023 Illinois Highway Safety Plan	A statewide effort to reduce crash fatalities through identifying problem locations and developing safety strategies and programs to address the causes.	Establishes 15 safety performance measure targets. Places importance on safety campaigns such as "Click it or Ticket" and "Drive Sober or get Pulled Over".
Illinois Strategic Highway Safety Plan 2022-2026	Emphasizes the Safe Systems Approach "SSA" to reach zero crash related fatalities.	Fatalities in IL have increased 30% between 2014 and 2020. In IL, the year 2021 saw a 12% increase in fatalities compared to 2020 and a 32% increase compared to 2019.
DATS Long Range Transportation Plan 2045	Aims to address the current and future transportation needs of the region by identifying strategies and opportunities.	Recommends a multimodal transfer zone in Danville. Recommends access management techniques throughout the metropolitan planning area (MPA)
DATS 2015 Regional Bike Plan	Aims to promote bicycle use as a mode of transportation throughout the County through safety programs, infrastructure improvements and maintenance.	Recommends a high level of bicycle connectivity throughout Vermilion County. Survey responses found that 27% of respondents traveled between 5-10 miles a week on bicycles and 73% of respondents would increase their route length if provided off-street bicycle facilities.

Safe Systems Approach

A commitment to zero traffic deaths and serious injuries requires a shift in philosophy to address roadway safety. This shift is demonstrated by a Safe Systems Approach which focuses on both human mistakes and human vulnerability and recommends a transportation system with redundancies built in to protect all users. A Safe Systems Approach has been adopted by the U.S. Department of Transportation with the stated and explicit goal of eliminating fatal and serious injury crashes for all road users.

A Safe Systems Approach is a holistic and human centered approach to roadway safety. The principles of the safe systems approach are:

- **Death and serious injuries are unacceptable.** The safe systems approach is an ethical principle that no one should suffer death or serious injury while using the transportation system.
- **Humans make mistakes.** People will inevitably make mistakes but the transportation system can be designed to mitigate human mistakes to avoid death and serious injury.
- **Humans are vulnerable.** Human bodies have physical limits for tolerating trauma, therefore, it is critical to design a transportation systems that accommodates physical human vulnerabilities.
- **Responsibility is shared.** All stakeholders—including government at all levels, industry, non-profit/advocacy, researchers, and the general public—are vital to preventing fatalities and serious injuries on our roadways.
- **Safety is proactive.** Proactive tools should be used to identify and address safety issues in the transportation system, rather than waiting for crashes to occur and reacting afterwards.
- **Redundancy is crucial.** Reducing risks requires that all parts of the transportation system be strengthened, so that if one part fails, the other parts still protect people.



Focus Areas

The focus areas, or implementation sub-groups, are those areas that are observed to have higher rates of fatal or serious injury crashes but have distinct characteristics that require unique potential solutions. Focus areas are referenced throughout the plan and can be helpful to prioritize improvements or strategies where prevailing crash trends are subject to particular conditions. The four focus areas are:

- Intersections
- Arterials
- Rural Highways
- Pedestrian and Bicycle Facilities

Intersections

Intersections are conflict points with high exposure to vehicles, pedestrians, and bicyclists. Intersections often see high rates of angle and turning crashes and can be problematic in both urban and rural areas.

Arterials

Arterials are typically high speed roadways that carry high amounts of traffic through and between regional destinations. As is often seen in many communities, the main arterials in Vermilion County also provide access to local commercial land uses. High levels of access along arterials creates a dual-purpose circumstance that contributes to fatal and serious injury crashes.

Rural Highways

Rural highways are characterized by high vehicle speeds, sharp curves, limited visibility and signage, and limited or lack of shoulders. These characteristics create circumstances for high rates of roadway departure crashes, which often lead to fatal or serious injuries.

Pedestrian & Bicycle Facilities

Pedestrian and bicyclist involved crashes are five times more likely to result in a fatal or serious injury compared to vehicle only crashes. To ensure the safety of all road users, accommodations for bicyclists and pedestrians are necessary and can often be included during regular corridor or intersection projects.

UNREPORTED PEDESTRIAN CRASHES

Pedestrian and bicycle crashes often go unreported to the police despite the prevalence of injury. The prevalence of unreported struck pedestrians is due to complex social circumstances and difficult economic decisions. In fact, unreported struck pedestrians are more likely to be a person of color, live in poverty, and live in a household without access to a vehicle. In Illinois, outside of Cook County, as many as 60% of struck pedestrian hospital records are not linked to reported crash records¹. This means that as observed crashes are analyzed for patterns and hot spots, up to 60% of pedestrian involved crashes may be missing from official crash records. While this plan does not offer guidance for unreported struck pedestrians, it is acknowledged that a potentially significant portion of pedestrian involved crashes are not present in the data-driven elements of the plan.

¹ Mickey Edwards & Manuel Gutierrez (2023) The incidence burden of unreported pedestrian crashes in Illinois, *Traffic Injury Prevention*, 24:1, 82-88, DOI:10.1080/15389588.2022.2143236

Key Concepts

Recently, there has been a lot of energy surrounding safety planning and equity. Much of this comes from the progress and success of safety and equity advocates, but also from key transportation related federal initiatives and legislation such as the Justice40 Initiative and the Infrastructure Investment and Jobs Act (IIJA), also known as the Bipartisan Infrastructure Law, as well as related policy and guidance that prioritizes safety, equity, and sustainability. This plan does not live in a vacuum, but rather within a complex environment of interrelated concepts, programs, and terminology. The following descriptions are intended to clarify some common concepts that relate to safety and safety action plans in general.

Safe Streets for All

The Safe Streets and Roads for All (SS4A) Grant Program is a discretionary program established by the IIJA and includes \$5 billion in funding. The funding is available to local, regional, and/or tribal entities. State departments of transportation are not eligible for funding through this program. SS4A for fiscal year 2022 and 2023 outlined criteria for Safety Action Plans, a requirement to be eligible for implementation funding. This plan is intended to satisfy SS4A safety action plan eligibility requirements and allow local agencies of Vermilion County, and Vermilion County itself, to apply for implementation funding.

Vision Zero

Vision Zero is the global movement to end traffic-related fatalities and serious injuries by incorporating a safe systems approach to roadway safety. Though sometimes used interchangeably, Vision Zero is the goal and a safe systems approach is the way to achieve that goal.

Vulnerable Road Users

Vulnerable Road User is a term meant to describe those who are most at risk in the event of a crash. The term is often applied to pedestrians and bicyclists but sometimes broadened to include motorcyclists or specified to the elderly or the disabled. The concept of a vulnerable road user is important because they account for a growing share of roadway fatalities in the U.S.¹



Photo by Noun Project from Noun Project

1 https://highways.dot.gov/sites/fhwa.dot.gov/files/2022-10/VRU%20Safety%20Assessment%20Guidance%20FINAL_508.pdf

Crashes, Not Accidents

The specific language used to describe events can significantly alter the meaning. Fatal and serious injuries have a real impact on families who must face the realities of an unforgiving transportation system. The term 'accident' implies there is little that can be done to prevent an event where no fault is evident. However, crashes are preventable and changing semantics can profoundly alter people's perception of the problem and empower communities to end traffic violence and make safer streets.

Disadvantaged Communities

Disadvantaged communities are communities that experience disproportionately high and adverse health, environmental, climate related, economic, and other cumulative impacts.¹

Transportation Equity

Transportation equity is fairness with respect to the distribution of access, mobility, connectivity, opportunity, benefits, and impacts of circumstances affecting the provision of a safe, reliable, and affordable transportation system and services.² Transportation equity can be classified into three types:

- **Procedural equity** is focused on the degree of involvement of diverse public stakeholders in the processes by which transportation decisions are made.
- **Geographic equity** focuses on the distribution of impacts across geography and space.
- **Social equity** is focused on the distribution across population groups that can be equal or differ by income, social class, and mobility ability.

Crash Severity Classifications

Crash data analyzed for this project include crashes from 2017 to 2021 in Vermilion County. Crash data was sourced from the Illinois Department of Transportation (IDOT). Each record in the crash data represents one crash incident and includes the following injury classifications (each crash is classified by the most severe injury of the crash):

- **K - Fatal Injury.** Any injury that results in death.
- **A - Suspected Serious Injury.** Any injury other than fatal that results in severe lacerations, broken bones, crush injuries, significant burns, unconsciousness, paralysis, or suspected skull, chest, or abdominal injury.
- **B - Suspected Minor Injury.** Any injury that is evident at the scene of the crash other than fatal or serious injuries.
- **C - Possible Injury.** Any injury reported or claimed which is not a fatal, suspected serious, or suspected minor injury. Possible injuries are those that are reported by the person or are indicated by his/her behavior, but no wounds or injuries are readily evident
- **O - No Apparent Injury.** Any situation where there is no reason to believe that the person received any bodily harm from the crash.

To better summarize crash trends and patterns, injury classifications are grouped into the following categories:

- Killed or Seriously Injured (KSI) - K and A crashes
- Minor Injury - B and C crashes
- Property Damage Only (PDO) - O crashes

¹ https://www.transportation.gov/sites/dot.gov/files/2022-04/Equity_Action_Plan.pdf

² <https://www.vtpi.org/equity.pdf>

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Engagement

Community Engagement

Community engagement is a critical component to a successful planning process and aims to increase transparency, build trust, and promote collaboration between the community and decision-makers. The result of a robust community engagement process is a well informed and representative plan that meets the needs of all stakeholders in the County.

The community engagement process had three primary purposes:

- **establish a steering committee of local leaders to guide and oversee the development of the plan**
- **hear from local residents about safety concerns and potential opportunities**
- **educate and inform the public about potential safety projects and strategies**



-N Vermilion St, Danville, IL

Steering Committee

The purpose of the steering committee is to guide decision making during the project and oversee the development of the plan. The steering committee's role was to provide critical input and ensure that the plan was developed using a data-driven approach, to prioritize the list of projects for implementation with the goal of eliminating serious injury and fatal crashes, and to serve as a conduit between the project team and the community, sharing information and building support among various constituent groups within the County. The steering committee consisted of local county/city staff, and state and federal representation.

The project team met regularly with the steering committee to provide project updates, receive critical feedback and guidance, and to ensure community input was received, understood, and incorporated. Moving forward, the steering committee will serve as the county-wide partnership tasked with implementing and monitoring the success of this plan. Members of the steering committee are shown in Table 2.

TABLE 2. STEERING COMMITTEE MEMBERS

NAME	AGENCY
Sam Cole	City of Danville
Adrian Greenwell	Vermilion County
Janet Payonk	Vermilion County
Lisa Beith	Danville Mass Transit
Nicole Dowling	CRIS Rural Mass Transit
Avoree Gore	IDOT
Thomas Caldwell	IDOT
Mark Moreschi	IDOT
Brian Trygg	IDOT
Scott Neihart	IDOT
Betsy Tracy	FHWA

Key Stakeholders

Key stakeholders were identified and interviewed individually to assess how different, interested groups view issues of roadway safety and potential strategies. Stakeholder interviews provided a means of gathering valuable information, opinions, and perspectives that are relevant to the project. Stakeholder interviews provided the project team and steering committee with a deeper understanding of the issues and concerns of different groups, and how these can be addressed in the planning and decision-making process. Key stakeholders interviewed include the following:

- Law Enforcement
- Fire Protection
- Farm Bureau
- Emergency Medical Service



-Carle at the Riverfront, Danville, IL

Online Survey

The purpose of the online survey was to gather information to identify behaviors and attitudes that impact roadway safety, identify barriers to traveling throughout the community, and develop community supported improvements to increase roadway safety for all users. The online survey was distributed with assistance from the steering committee via local social media channels, newsletters, key stakeholder interviews, and in-person canvassing.

Community Open House

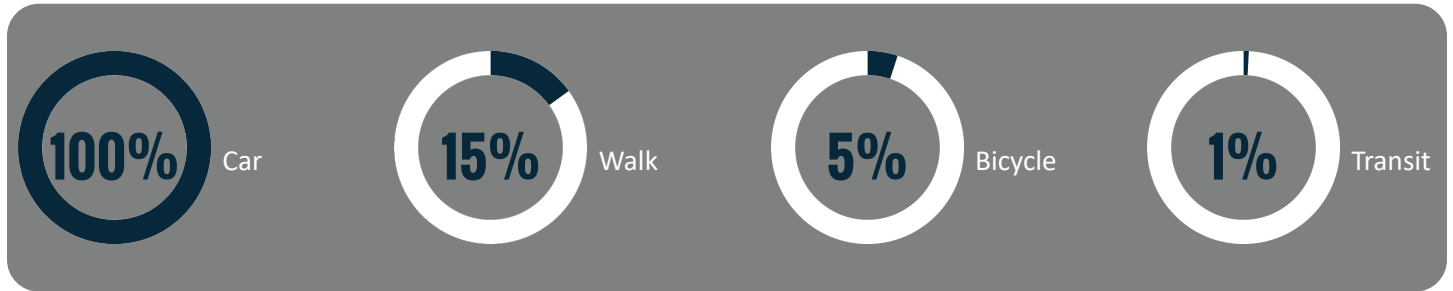
A community open house was held near the end of the planning process. The open house showcased how public input was incorporated into the plan, demonstrated the region's commitment to roadway safety, and illustrated the findings and recommendations of the plan. Members of the public were invited to the new Carle at the Riverfront Medical Facility to meet the project team and review the project. Attendees were asked their preferences and priorities for countermeasures and action strategies.



-Community Open House, May 18, 2023

How do people move around in the community?

We asked, "What travel modes do you use regularly? (at least once per week)"

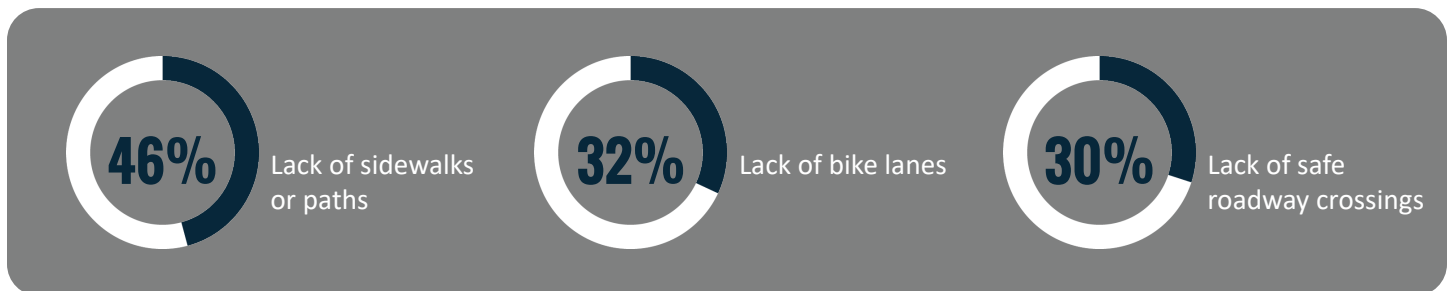


Vermilion County is an auto-dependent community and all survey respondents indicated they drive or ride in a car at least once a week. The relatively low rates of folks who use other modes regularly is notable, indicating a potential opportunity to increase walking and biking in particular.



What are barriers to more active transportation?

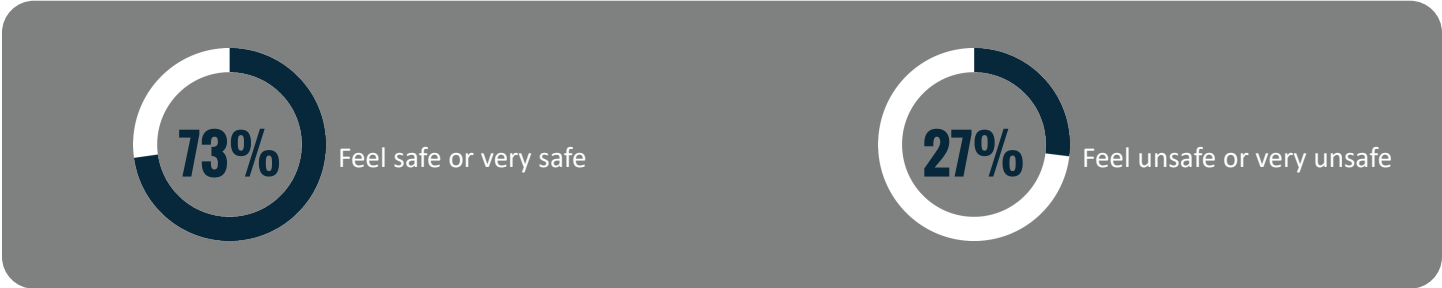
We asked, "What barriers keep you from walking or biking more, or at all?"



Most respondents (84%) indicated they would walk or bike more under the right circumstances. The barriers to walking and biking, for able bodied persons, indicate a lack of safe facilities.

What are the general feelings about roadway safety?

We asked, "How safe do you feel traveling on or along the roadways in your community?"



Most people who responded to the survey generally feel safe when traveling on the roadways in Vermilion County. Interestingly, half of those who said they feel very unsafe indicated they walk or bike regularly. Overall, there was a clear distinction between real or perceived feelings of safety for drivers versus vulnerable road users. While most people who drive regularly feel safe, there is recognition that it can be unsafe for vulnerable road users.

Vulnerable Road Users

When asked how safe it is traveling on the roadways within your community for different people,

77% say it is *unsafe for bicyclists* to travel

69% say it is *unsafe for walkers* to travel

67% say it is *unsafe for seniors* to travel

Current Attitudes

When asked to describe current attitudes of most people in the community,

41% said we care about the safety of drivers, but vulnerable road users are left out.

30% said we care about the safety of all road users and are willing to take steps to improve roadway safety.

29% said we do not show a lot of care about roadway safety and it will be difficult to get public support needed to implement safety improvements.

What are the top roadway safety concerns in the County?

When asked if speeding is a safety issue in your community,

66% said yes.

Safety and speed are competing priorities and many in the community look to law enforcement to control speeding.

Other top safety concerns include:

- roadway surface condition (potholes, cracking, etc.)
- lack of sidewalks and safe crossings
- poor lighting
- lack of signage on rural roads
- lack of bicycle facilities
- distracted driving (e.g. using cell phones)

Support for roadway safety improvements

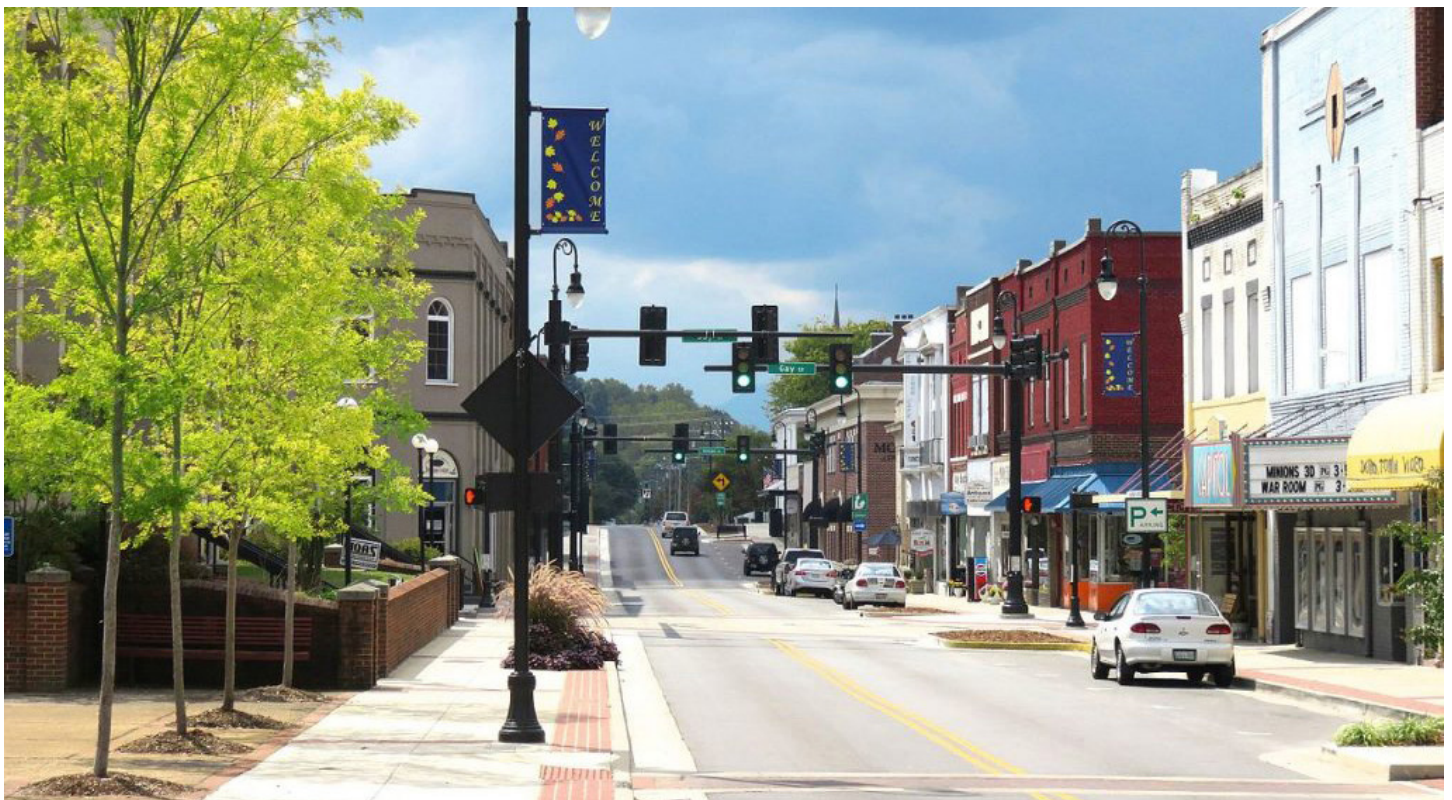
When asked what type of safety improvements would you support,

58% support lighting/signage

55% support accessibility improvements

52% support bicycle and pedestrian separation

52% support complete streets



-Example of a complete street (Erwin, TN)

Analysis

Crash Trends

Exploring crash trends is useful for identifying prevailing crash patterns across time, crash type, crash severity, and geography. The National Highway Traffic Safety Administration (NHTSA) reported nearly 43,000 traffic deaths across the country in 2021, a 16-year high. Additionally, the following increases were reported:

- Fatalities on urban roads up 16%
- Pedestrian fatalities up 13%
- Bicycle fatalities up 5%
- Fatalities in speeding-related crashes up 5%

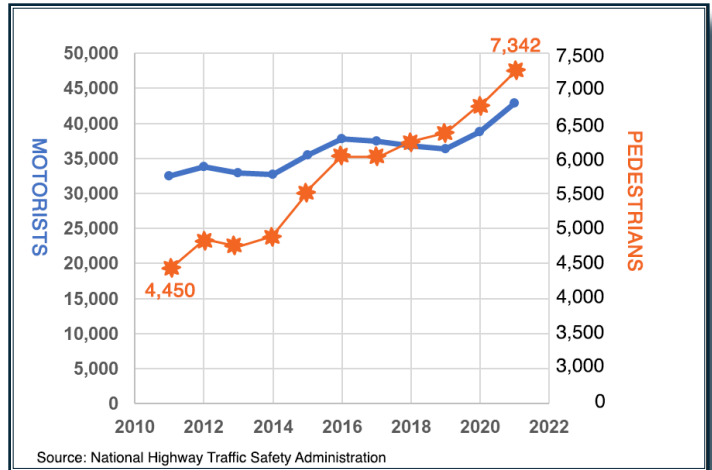
National trends for motorist and pedestrian fatalities are shown in Figure 2. The impact of crashes is real and significant and felt by many people including:

- Parents
- Children
- Siblings
- Witnesses
- First responders
- Co-workers

The crash analysis for Vermilion County was performed using 5-year crash data from 2017 to 2021 obtained from the IDOT*.

In the 5-year period from 2017 to 2021, there were nearly 4,400 crashes in Vermilion County, an average of almost 900 crashes per year.

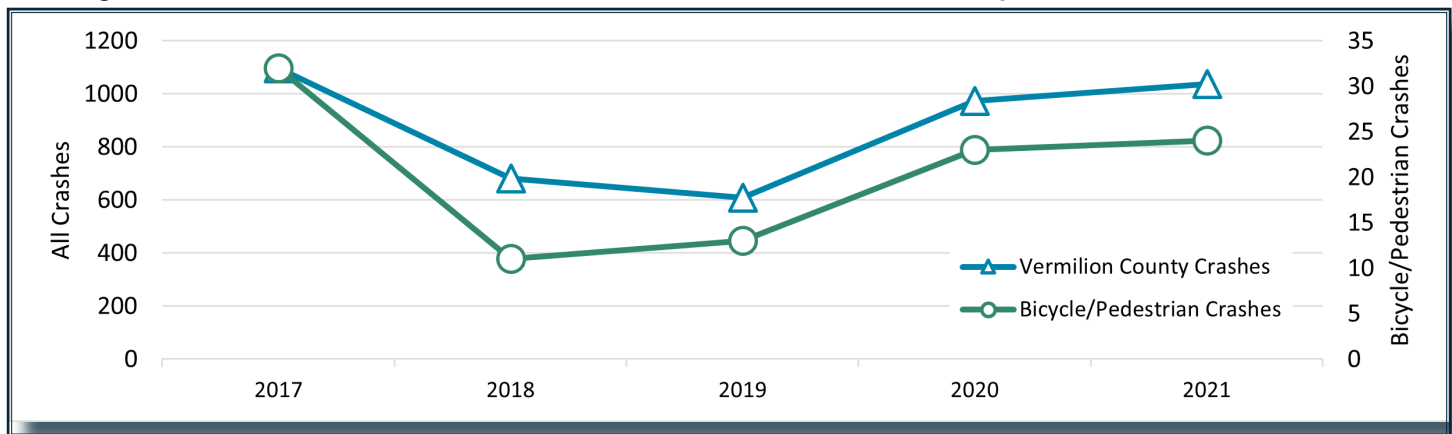
FIGURE 2. MOTORISTS AND PEDESTRIAN CRASHES PER YEAR



Crashes in Vermilion County appear to follow national trends with both motorist and bicycle/pedestrian crashes increasing each year since 2019. Crashes per year in Vermilion County are shown in Figure 3.

THE NUMBER OF CRASHES PER YEAR HAS INCREASED EACH YEAR SINCE 2019.

FIGURE 3. MOTORISTS AND PEDESTRIAN CRASHES PER YEAR, VERMILION COUNTY 2017-2021

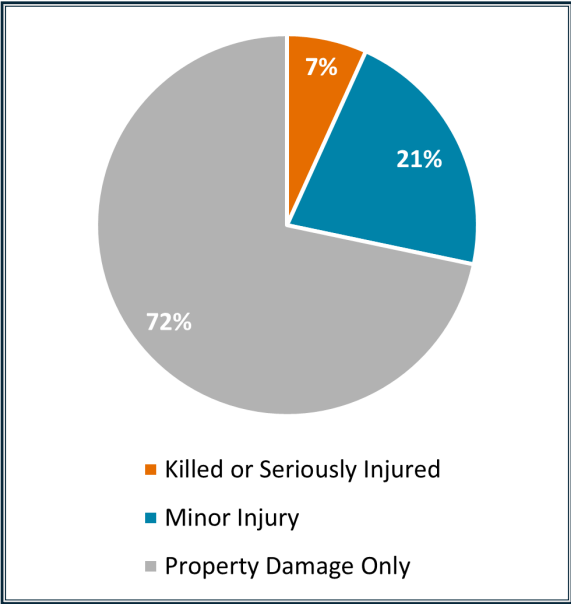


*Crashes along Interstate 74 and crashes involving animals were excluded from the analysis. More information can be found in the appendix.

Crash Severity Analysis

From 2017 to 2021 there were 298 crashes where someone was either killed or seriously injured (KSI crashes), an average of almost 60 per year. KSI crashes make up approximately 7% of total crashes, with minor injury crashes around 21% and property damage only crashes (PDO) the remaining 72% (shown in Figure 4).

FIGURE 4. CRASH SEVERITY BREAKDOWN 2017-2021



Understanding prevailing crash types can offer key insights into potential safety issues impacting the transportation system. The most common crash type is fixed object crashes (23%), followed by rear end crashes (19%), and turning crashes (18%). Crash types are shown in Table 3.

The high prevalence of fixed object crashes indicates a significant number of crashes occur because drivers are departing the driving lanes and exiting the roadway, leading to a collision with an object off the roadway. This crash type can not only lead to more serious injuries but can be attributed to dangerous curves, lack of signage or lighting, distracted driving, or otherwise unsafe speeds.

TABLE 3. CRASH TYPES 2017-2021

CRASH TYPE	COUNT	PERCENT
Fixed Object	1004	22.8%
Front to Rear	851	19.4%
Turning	805	18.3%
Angle	614	14.0%
Parked Motor Vehicle	427	9.7%
Sideswipe Same Direction	206	4.7%
Overtaken	105	2.4%
Pedestrian or Bicyclist	103	2.3%
Sideswipe Opposite Direction	80	1.8%
Front to Front	56	1.3%
Backing	53	1.2%
Other Non-Collision	50	1.1%
Other Object	36	0.8%
Train	6	0.1%

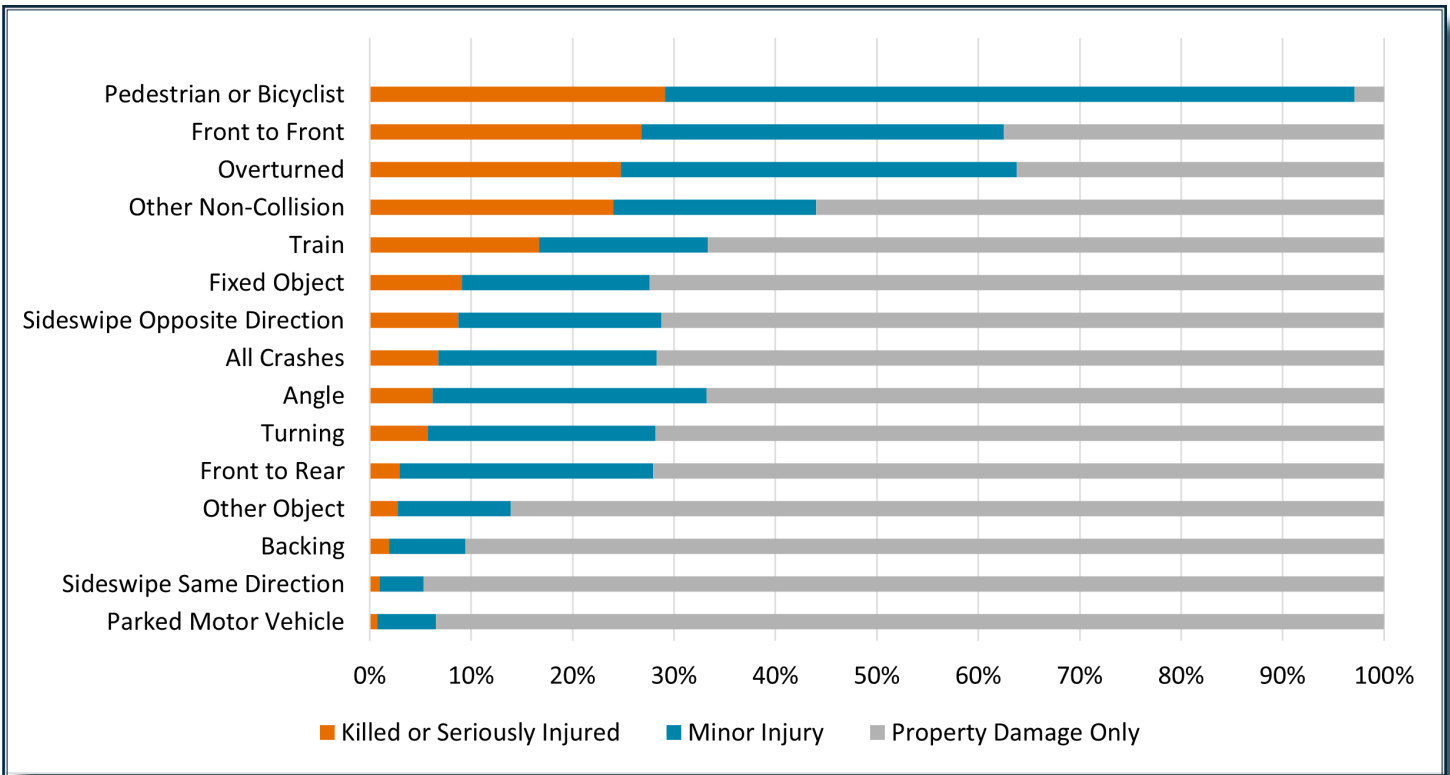
A FIXED OBJECT CRASH INVOLVES A PRIOR RAN-OFF-THE-ROADWAY EVENT WHICH IN TURN LEADS TO A COLLISION THAT OCCURS OFF THE ROADWAY.

Crash types also influence the level of severity.

KSI crashes represent 7% of all crashes but 29% of pedestrian/bicyclists crashes, 27% of front to front crashes (head on), and 25% of overturned crashes.

Conversely, parked vehicle, sideswipe same direction, and backing crashes have much lower percentages of KSI and are more likely to be property damage only. Figure 5 shows the relationship between the type of crash and the seriousness of the injury.

FIGURE 5. CRASH TYPES BY LEVEL OF SEVERITY



Urban/Rural Dynamics

The Danville Urbanized Area is the only urban area in Vermilion County and comprises an area that is different from City of Danville limits (shown in Figure 6). The urban area comprises 62% of the total population in the County.

For the analysis, crashes that occur within the Danville, IL Urban Area are considered urban crashes, while all others are considered rural crashes. In the 5-year period, 2017 to 2021, rural crashes make up about 30% of all crashes which is slightly less per capita than for the urban area. Urban and rural characteristic are shown in Table 4.

The urban area experiences a majority of all crashes (70%), but rural crashes are much more likely to be serious or fatal. 11% of rural crashes are KSI crashes compared to 5% of urban crashes (shown in Figure 7).

A rural crash is nearly 3 times as likely to result in a fatal or serious injury compared to an urban crash.

FIGURE 6. DANVILLE URBANIZED AREA

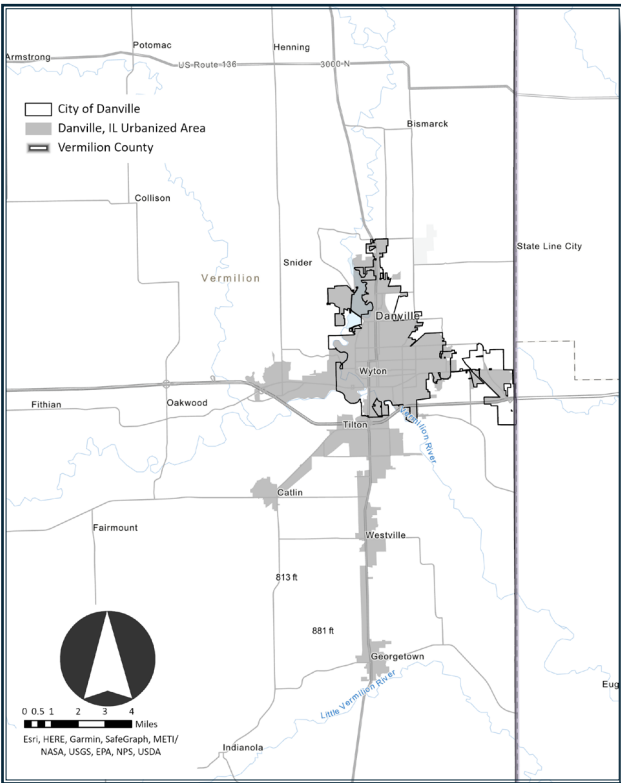
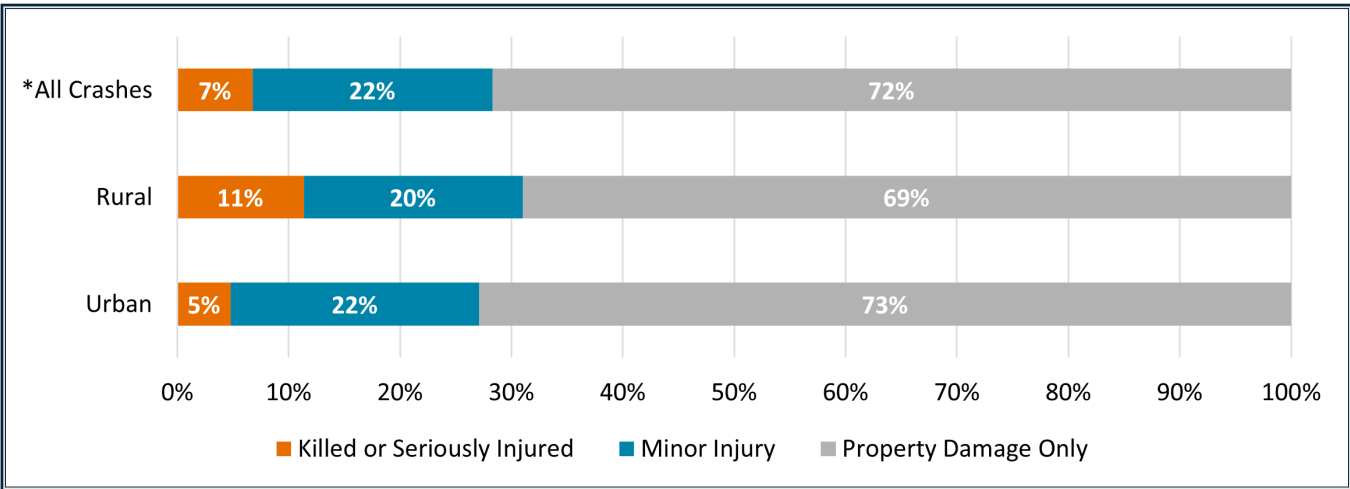


TABLE 4. URBAN/RURAL CHARACTERISTICS

AREA TYPE	POPULATION (2021)	POPULATION PERCENT	CENTERLINE MILEAGE	CENTERLINE MILEAGE PERCENT	TOTAL CRASHES	TOTAL CRASHES PERCENT
Urban	46,354	62%	387	19%	3,067	70%
Rural	28,599	38%	1,661	81%	1,329	30%
Total	74,953	100%	2,049	100%	4,396	100%

FIGURE 7. URBAN/RURAL CRASHES BY LEVEL OF SEVERITY



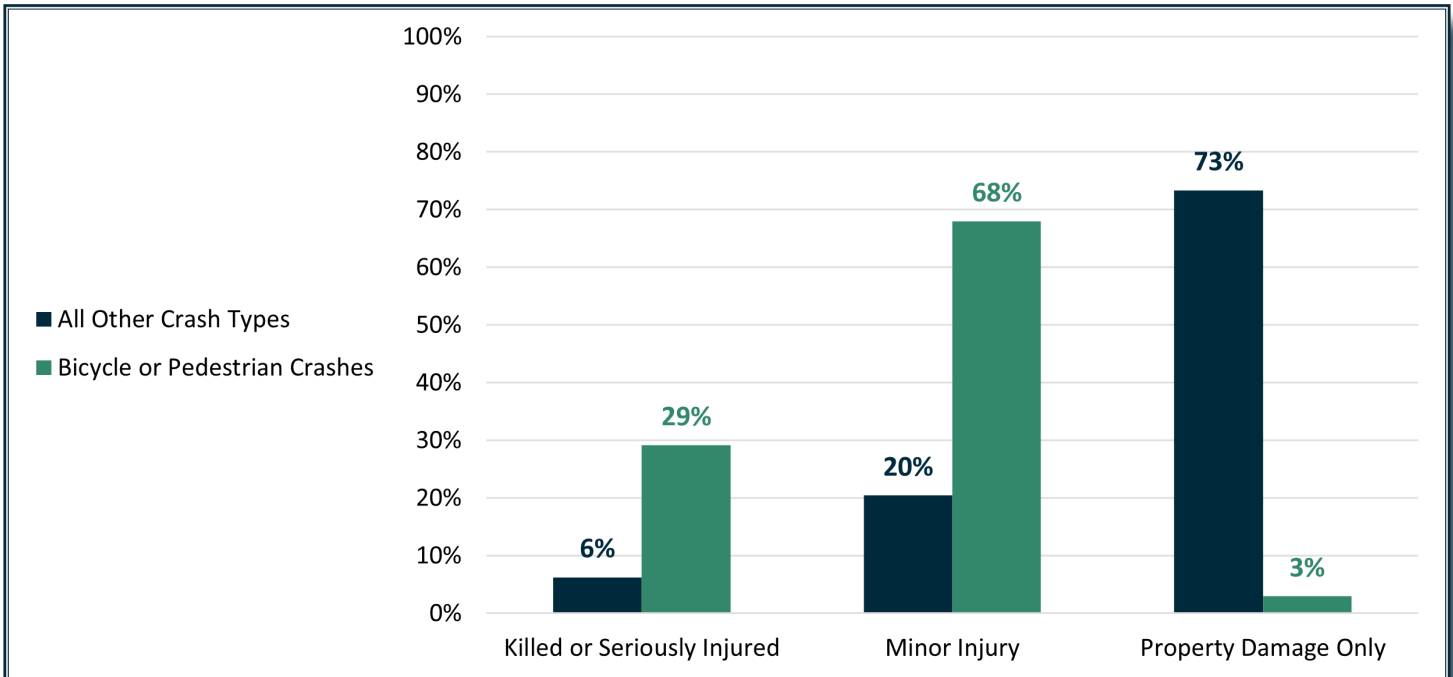
Bicycle and Pedestrian Dynamics

Bicyclists and pedestrians are significantly more likely to suffer a fatal or serious injury as a result of a crash with a vehicle. Bicyclists and pedestrians are vulnerable and exposed, with little or no protection from vehicles. Despite making up only 2% of crash types, bicycle and pedestrian crashes represent 10% of KSI crashes. Figure 8 shows the relative rates of severity between bicycle and pedestrian crashes and all other crash types.

A bicyclist or pedestrian involved in a crash is almost 5 times more likely to be killed or seriously injured than a person in a vehicle.



FIGURE 8. BICYCLE AND PEDESTRIAN CRASHES BY LEVEL OF SEVERITY



Excessive Speed

Vehicle speed is one of the most important factors that determines the level of severity of a particular crash. The higher the vehicle speed, the more likely the crash will result in a fatal or serious injury. As shown in Figure 9, pedestrian fatality rates when involved in a crash with a motor vehicle increase exponentially with the speed of the vehicle. There is a 95% likelihood that a pedestrian struck by a vehicle traveling at 20 miles per hour will survive the collision. That likelihood of survival decreases to 55% when vehicle speed increases to 30 miles per hour and decreases again to 15% when vehicle speed increases to 40 miles per hour.

In Vermilion County, 40% of crashes where excessive speed was noted in the police report resulted in a fatal or serious injury, almost 6 times higher than when speed was not noted as excessive (shown in Figure 10).

FIGURE 9. PEDESTRIAN SURVIVAL RATES BY VEHICLE SPEED

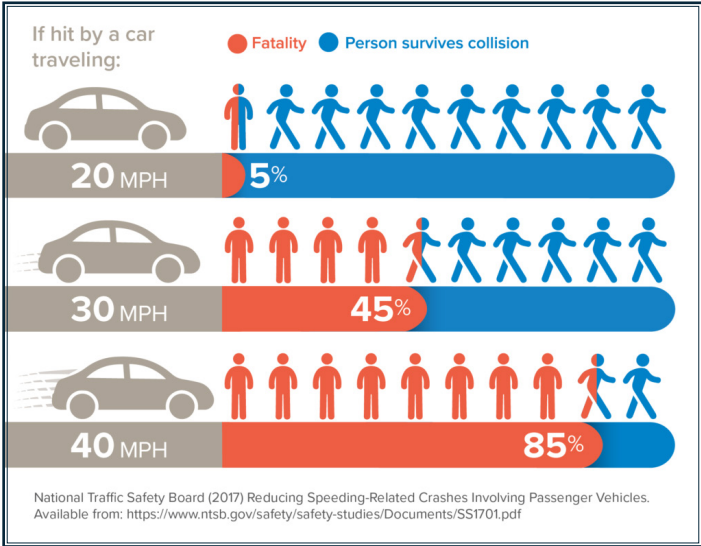
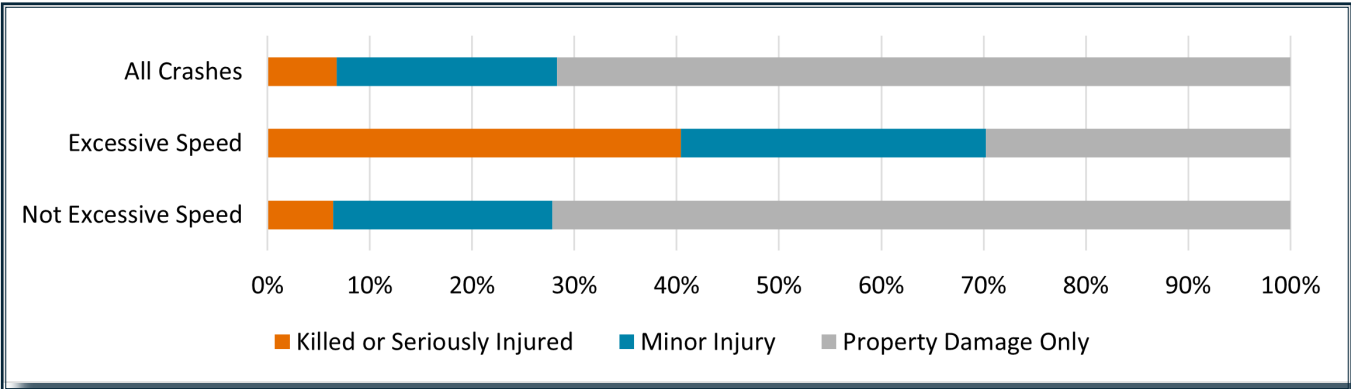


FIGURE 10. EXCESSIVE SPEED CRASHES BY LEVEL OF SEVERITY



High Injury Network

The High Injury Network (HIN) is the streets/roads and intersections of the transportation network that are observed to have relatively high crash frequencies and/or higher rates of fatal and serious injury crashes. The HIN represents the relatively small portion of the network that experiences the majority of fatal and serious injury crashes. The HIN is used to develop and prioritize locations for consideration of safety improvements or countermeasures.

To develop the HIN, a safety index was created by analyzing the crash frequency and the severity weighted crash frequency for each part of the network. The safety index score represents a data-driven metric for overall roadway safety where higher scores mean a greater safety risk and lower scores mean a lower safety risk. The highest 20% of safety index scores is the HIN.

The HIN is approximately 120 miles (6% of the total centerline mileage in the County), but accounts for:

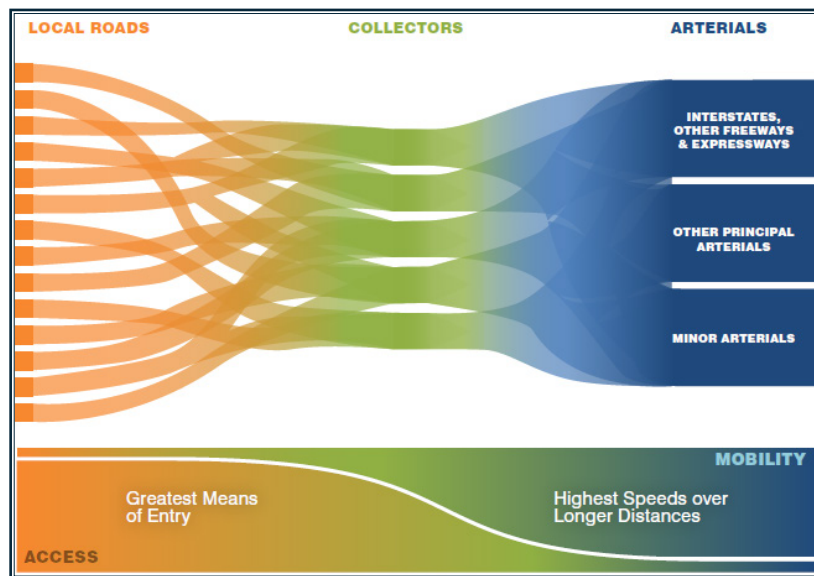
- 62% of all crashes
- 98% of fatal crashes
- 69% of KSI crashes
- 79% of bicycle and pedestrian crashes
- 90% of bicycle and pedestrian KSI crashes

The HIN is comprised of various roadway types including arterials, collectors, and local roads as shown in Table 5. Different roadway types are illustrated in Figure 11. Arterial roads make up 45% of the HIN while collectors make up 32% and local roads make up 23%. Not only do arterials make up the largest category of functional class within the HIN, but HIN arterials also have the highest average safety index score. Figure 12 shows the Vermilion County High Injury Network.

TABLE 5. HIN BY ROADWAY TYPE

ROADWAY TYPE	MILES	PERCENT OF HIN	AVERAGE SAFETY INDEX
Local Road or Street	27.4	23%	10.0
Minor Collector	7.1	6%	7.9
Major Collector	31.0	26%	12.7
Minor Arterial	30.5	25%	15.0
Principal Arterial	24.0	20%	16.9
Total	119.9	100%	12.4

FIGURE 11. FHWA FUNCTIONAL CLASSIFICATIONS



Equitable Target Areas

A safe transportation system creates more opportunities for all Vermilion County residents and helps to reduce the disparate economic, environmental, and health burdens experienced by disadvantaged and under-served communities.

Vermilion County is committed to an equitable distribution of safety improvements so that all residents of all abilities can feel safe when traveling.

This equity analysis identifies locations with higher concentrations of disadvantaged populations in order to more equitably prioritize safety improvements. The locations identified are termed Equitable Target Areas (ETA) and will serve the steering committee, Vermilion County, and other local agencies as a valuable resource to improve equity throughout the community.

Six demographic indicators were used to identify disadvantaged populations and develop the ETAs (shown in Table 6). For each demographic indicator, block group level data was used from the U.S. Census Bureau 2017-2021 American Community Survey (ACS) estimates.

An equity index was created by combining all six demographic indicators. While the demographic indicators capture the geographic distribution and concentration of individual groups, the equity index represents the general extent to which an area is comprised of disadvantaged groups of people. The block groups with the highest 20% of equity index scores are the ETAs. The ETAs represent a population of around 15,000.

Figure 13 shows the Vermilion County Equitable Target Areas and the overlay with the HIN. Approximately 31 miles of the HIN (26%) is within the ETAs. Notable portions of the HIN within the ETAs include:

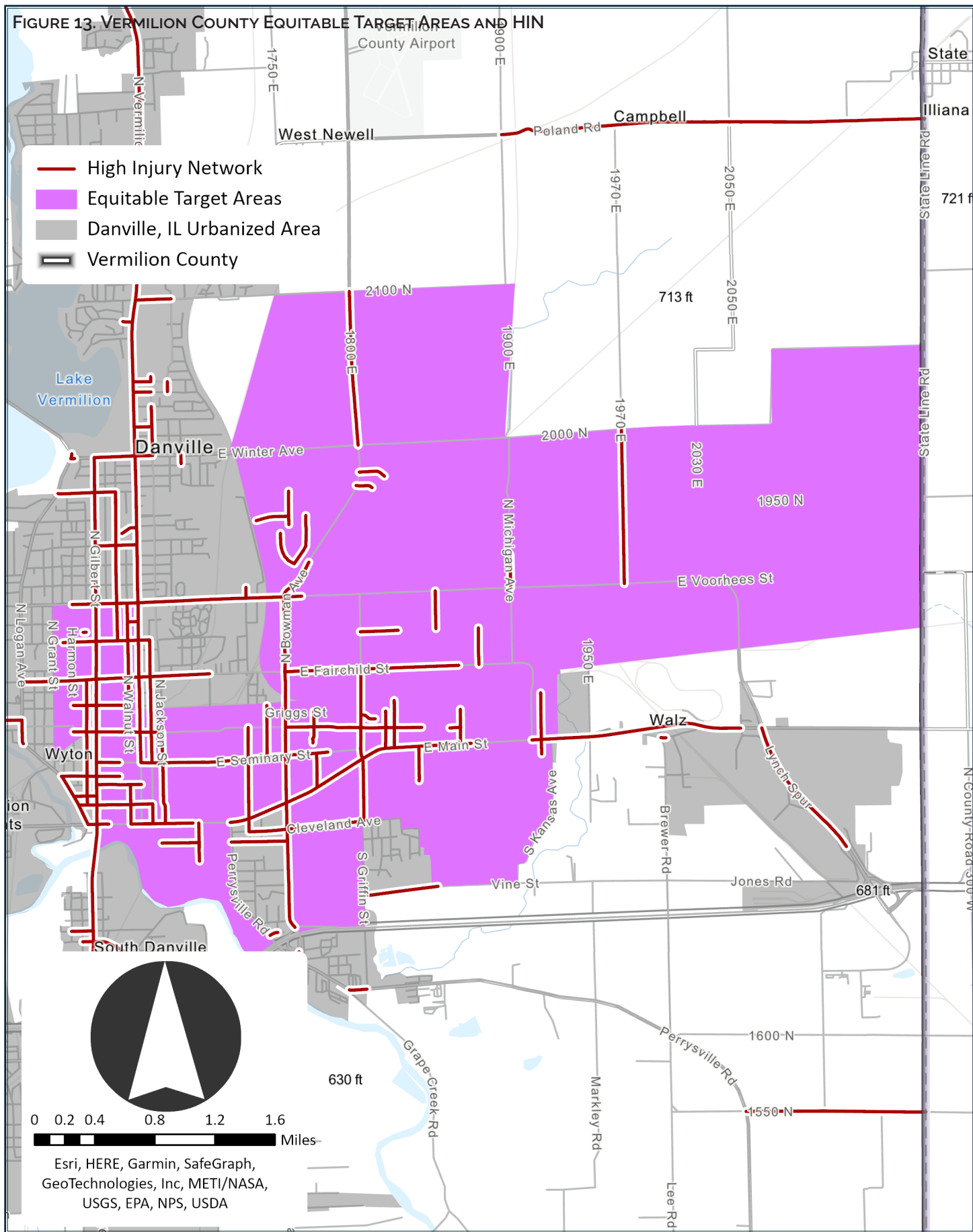
- North Bowman Avenue
- Williams Street
- East Fairchild Street
- Seminary Street
- South/North Griffin Street

These streets, among others within the ETAs, should be prioritized for future safety improvements.

TABLE 6. DEMOGRAPHIC INDICATORS

DEMOGRAPHIC INDICATOR	DESCRIPTION
People of Color	Percent of total population reported as non-white.
Poverty	Percent of households with income in the past 12 months below poverty level.
Limited English Proficiency	Percent of households reported as limited English speaking.
Senior Citizens	Percent of total population age 65 and over.
Individuals with a Disability	Percent of population with a disability.
No Access to a Vehicle	Percent of households with no vehicles available.

FIGURE 13. VERMILION COUNTY EQUITABLE TARGET AREAS AND HIN



Comprehensive Project Location List

Currently identified priority safety projects are those that have been identified by local agency staff and were found to have immediate safety benefits. Priority safety projects are shown in Table 7. The comprehensive project location list represents potential projects identified through community engagement, the HIN analysis, or identified by local agency staff. The comprehensive project location list is shown in Table 8 and includes project locations where significant safety benefits could be achieved. Moving forward, projects from the comprehensive list will be prioritized based on:

- Safety index score
- Equity index score
- Public input
- Feasibility
- Funding availability

TABLE 7. PRIORITY SAFETY PROJECTS

PROJECT NAME/LOCATION	HIN	ETA	URBAN/RURAL
Bowman Avenue Road Diet	Yes	Yes	Urban
Seminary St. (Carver Park to Bowman Ave)	Yes	Yes	Urban
Seminary St (Vermilion St to Carver Park)	Yes	Yes	Urban
Logan Ave (Madison St to Williams St)	No	No	Urban
Logan Ave Partial Reconstruction	No	No	Urban
Logan Ave Sidewalk	No	No	Urban
Logan Ave Reconstruction	No	No	Urban
Winter Ave/Jackson St Reconstruction	No	No	Urban
Voorhees St & Bowman Ave Ped Improvements	Yes	Yes	Urban
1900 E	Yes	No	Rural
750 E; 770E	No	No	Rural
900 N	No	No	Rural
Denmark Rd; West Newell Rd	No	No	Rural
1950 N	No	No	Rural
1350 N	No	No	Rural
Perrysville Rd	No	No	Rural
1200 N; 1800 E; 1100 N; 1850 E; 900N	No	No	Rural

TABLE 8. COMPREHENSIVE PROJECT LOCATION LIST

MAP ID*	ROAD NAME	SAFETY INDEX SCORE	HIN	ETA	URBAN/RURAL
204	Bowman Ave	152.7	Yes	Yes	Urban
173	North St	129.1	Yes	No	Urban
234	Georgetown Rd	74.2	Yes	No	Urban
139	Spelter Ave	63.2	Yes	No	Urban
24	Fairweight Ave	58.6	Yes	Yes	Urban
226	Gilbert St	55.9	Yes	Yes	Urban
81	Greenwood (Hegeler)	54.8	Yes	No	Urban
167	Winter Ave	54.3	Yes	No	Urban
168	Oakwood St	52.9	Yes	No	Rural
2	Lete (Hegeler)	46.9	Yes	No	Urban
229	Vermilion St	44.2	Yes	No	Urban
141	Williams St	37.8	Yes	Yes	Urban
108	Winter Ave	35.7	Yes	No	Urban
49	Main St	35.0	Yes	No	Urban
42	California Ave	33.8	Yes	Yes	Urban
101	Main St	32.7	Yes	No	Urban
232	Gilbert St	31.7	Yes	No	Urban
144	Fairchild St	30.0	Yes	Yes	Urban
136	4Th St	29.1	Yes	No	Urban
29	Vine St	28.9	Yes	Yes	Urban
71	English St	28.0	Yes	Yes	Urban
218	Fairchild St	27.7	Yes	Yes	Urban
115	English St	27.6	Yes	Yes	Urban
162	Voorhees St	26.5	Yes	Yes	Urban
171	Fairchild St	25.8	Yes	Yes	Urban
180	Griffin St	25.7	Yes	Yes	Urban
223	Vermilion St	24.9	Yes	Yes	Urban
112	Gilbert St	24.9	Yes	No	Urban
203	Bowman Ave	24.6	Yes	Yes	Urban
27	Illini Dr	24.0	Yes	No	Urban
60	Lake Shore Dr	23.5	Yes	No	Urban
110	Logan Ave	23.3	Yes	No	Rural
50	Avenue "G"	23.0	Yes	No	Urban
219	Georgetown Rd	22.6	Yes	No	Urban
233	Vermilion St	22.3	Yes	No	Urban
11	Crestwood St; Adams St	20.7	Yes	No	Urban
189	Main (MLK Memor Way)	19.8	Yes	Yes	Urban
205	Vermilion St	19.5	Yes	Yes	Urban
209	Main (MLK Memor Way)	18.6	Yes	Yes	Urban
194	Bowman Ave	18.5	Yes	Yes	Urban
207	US-150; Main St	18.0	Yes	No	Urban

Comprehensive Project Location List Continued

MAP ID*	ROAD NAME	SAFETY INDEX SCORE	HIN	ETA	URBAN/RURAL
31	3450 N	17.9	Yes	No	Rural
220	Gilbert St	16.6	Yes	Yes	Urban
188	Liberty Lane	16.5	Yes	No	Urban
200	Bowman Ave	16.3	Yes	Yes	Rural
158	Newell Rd	15.1	Yes	No	Rural
146	Seminary St	15.0	Yes	Yes	Urban
4	Arlington Dr	14.5	Yes	No	Urban
221	Vermilion St	14.3	Yes	Yes	Urban
206	Winter Ave	14.1	Yes	No	Urban
179	Lynch Rd	14.1	Yes	No	Urban
134	Main St	14.0	Yes	No	Urban
137	Bowman Ave	13.9	Yes	No	Rural
119	1970 E	13.7	Yes	Yes	Rural
216	Main (Mlk Memor Way)	13.5	Yes	No	Urban
182	Voorhees St	13.0	Yes	No	Urban
228	Vermilion St	13.0	Yes	No	Urban
196	Korean Memorial Hwy	12.8	Yes	No	Urban
224	Gilbert St	12.7	Yes	Yes	Urban
187	Gilbert St	12.5	Yes	Yes	Urban
191	Fairchild St	12.2	Yes	Yes	Urban
55	North Dr	11.7	Yes	Yes	Urban
210	Main (Mlk Memor Way)	11.6	Yes	Yes	Urban
149	Perrysville Rd	11.5	Yes	No	Urban
74	Marble Rd	11.2	Yes	No	Rural
22	Center St	11.1	Yes	Yes	Urban
107	16Th St	10.8	Yes	No	Urban
222	Vermilion St	10.7	Yes	No	Urban
193	Main St	10.6	Yes	No	Urban
174	Griffin St	10.4	Yes	Yes	Urban
190	Vermilion St	10.4	Yes	Yes	Urban
96	Hungry Hollow Rd	10.4	Yes	No	Rural
230	Vermilion St	9.9	Yes	No	Urban
63	Jackson St	9.9	Yes	Yes	Urban
135	Us-150	9.6	Yes	No	Rural
143	Main St	9.5	Yes	No	Rural
225	Georgetown Rd	9.5	Yes	No	Urban
6	1St St	9.3	Yes	No	Urban
95	English St	9.2	Yes	Yes	Urban
165	Williams St	9.1	Yes	Yes	Urban
114	North Dr	9.0	Yes	Yes	Urban
215	State St	8.8	Yes	No	Urban

Comprehensive Project Location List Continued

MAP ID*	ROAD NAME	SAFETY INDEX SCORE	HIN	ETA	URBAN/RURAL
212	State St	8.4	Yes	No	Urban
44	Honeywell Ave	8.4	Yes	No	Rural
7	Shady Lane Rd	8.2	Yes	No	Urban
128	Cleveland St	8.2	Yes	Yes	Urban
113	Jackson St	8.1	Yes	No	Urban
231	Gilbert St	7.9	Yes	No	Urban
145	Hazel St	7.9	Yes	Yes	Urban
35	Ridgeview St	7.8	Yes	No	Urban
58	Madison St	7.7	Yes	Yes	Urban
25	Moore St	7.7	Yes	Yes	Urban
199	Georgetown Rd	7.7	Yes	No	Urban
150	Williams St	7.6	Yes	Yes	Urban
1	Ingle St	7.6	Yes	No	Urban
133	Il-9	7.6	Yes	No	Rural
122	Market St	7.6	Yes	No	Rural
140	Hazel St	7.6	Yes	Yes	Urban
66	Cleveland St	7.5	Yes	Yes	Urban
131	W Newell Rd	7.5	Yes	No	Rural
213	Main (Mlk Memor Way)	7.4	Yes	Yes	Urban
105	"B" Ave	7.3	Yes	No	Urban
17	Smith Ave	7.0	Yes	No	Urban
19	Georgian Dr	7.0	Yes	Yes	Urban
227	Georgetown Rd	6.9	Yes	No	Urban
214	Main (Mlk Memor Way)	6.8	Yes	Yes	Urban
106	North Dr	6.8	Yes	No	Urban
169	Gilbert St	6.8	Yes	No	Urban
147	Williams St	6.8	Yes	No	Urban
195	Bowman Ave	6.6	Yes	Yes	Urban
153	Paris St	6.6	Yes	No	Urban
21	Monroe St	6.5	Yes	No	Urban
102	Range Line Rd	6.5	Yes	No	Rural
5	250 E	6.5	Yes	No	Rural
80	Hastings/Palermo Rd	6.5	Yes	No	Rural
155	Bowman Ave	6.4	Yes	No	Urban
166	Korean Memorial Hwy	6.4	Yes	No	Rural
157	Voorhees St	6.1	Yes	Yes	Urban
177	Gilbert St	6.0	Yes	Yes	Urban
41	Railroad Ave	6.0	Yes	No	Rural
10	680 E	6.0	Yes	No	Rural
78	2Nd St	6.0	Yes	No	Urban
51	Harrison St	6.0	Yes	Yes	Urban

Comprehensive Project Location List Continued

MAP ID*	ROAD NAME	SAFETY INDEX SCORE	HIN	ETA	URBAN/RURAL
116	Williams St	5.9	Yes	Yes	Urban
178	Fairchild St	5.9	Yes	Yes	Urban
20	Holland Ave	5.8	Yes	Yes	Urban
23	Ambassador Dr	5.8	Yes	No	Urban
151	4Th St	5.8	Yes	No	Urban
48	Lake Bluff Dr	5.8	Yes	No	Rural
126	Mill Rd; 785 N	5.7	Yes	No	Rural
62	Jackson St	5.6	Yes	Yes	Urban
130	Seminary St	5.6	Yes	Yes	Urban
89	Allen St	5.6	Yes	No	Rural
121	Market St	5.6	Yes	No	Rural
32	Downing Dr	5.6	Yes	No	Rural
70	Harrison St	5.5	Yes	Yes	Urban
118	English St	5.5	Yes	Yes	Urban
175	Newell Rd	5.5	Yes	No	Urban
65	Collett St	5.4	Yes	Yes	Urban
161	Fairchild St	5.4	Yes	Yes	Urban
64	Collett St	5.4	Yes	Yes	Urban
16	Collett St	5.3	Yes	No	Urban
79	Chicago Ave	5.3	Yes	No	Rural
15	Park St	5.3	Yes	Yes	Urban
159	Us-150; 1650 N	5.1	Yes	No	Rural
100	Il-49	5.0	Yes	No	Rural
104	Robinson St	5.0	Yes	Yes	Urban
3	Elsworth St	5.0	Yes	No	Urban
12	Franklin St	4.9	Yes	No	Urban
163	Vermilion St	4.9	Yes	No	Urban
53	Robinson St	4.9	Yes	No	Urban
34	3Rd St	4.9	Yes	No	Urban
93	Walnut St	4.9	Yes	Yes	Urban
72	Townway St	4.8	Yes	No	Urban
82	4200N	4.8	Yes	No	Rural
91	Park St	4.8	Yes	Yes	Urban
152	Voorhees St	4.8	Yes	Yes	Urban
28	Garden Dr	4.8	Yes	Yes	Urban
94	Il-9	4.8	Yes	No	Rural
97	Griffin St	4.7	Yes	Yes	Urban
109	Gilbert St	4.7	Yes	No	Urban
87	Newell Ave	4.7	Yes	No	Urban
123	Main St	4.7	Yes	No	Rural
46	Hegeler Ln	4.6	Yes	No	Urban

Comprehensive Project Location List Continued

MAP ID*	ROAD NAME	SAFETY INDEX SCORE	HIN	ETA	URBAN/RURAL
184	Voorhees St	4.6	Yes	Yes	Urban
75	State St	4.6	Yes	Yes	Urban
84	Poland Rd	4.6	Yes	No	Rural
211	Bowman Ave	4.5	Yes	Yes	Urban
197	Main St	4.5	Yes	No	Urban
76	Williams St	4.5	Yes	Yes	Urban
172	Orange St	4.4	Yes	No	Rural
33	Swisher Ave	4.4	Yes	No	Urban
111	Logan Ave	4.4	Yes	No	Urban
120	Fairchild St	4.3	Yes	Yes	Urban
183	Gilbert St	4.3	Yes	Yes	Urban
69	Harrison St	4.3	Yes	Yes	Urban
181	Voorhees St	4.2	Yes	No	Urban
176	Logan Ave	4.1	Yes	No	Urban
92	Kelly Ave	4.1	Yes	No	Urban
68	Holiday Dr	4.1	Yes	Yes	Urban
14	Lafayette St	4.0	Yes	No	Urban
26	Cronkrite Ave	4.0	Yes	Yes	Urban
40	Crestview Ave	4.0	Yes	Yes	Urban
164	Williams St	4.0	Yes	Yes	Urban
198	Bowman Ave	4.0	Yes	Yes	Urban
127	Hazel St	3.9	Yes	No	Urban
73	Fowler St	3.9	Yes	Yes	Urban
13	Clay St	3.9	Yes	Yes	Urban
36	Pixley St	3.8	Yes	Yes	Urban
56	"G" St	3.8	Yes	No	Urban
61	English St	3.8	Yes	Yes	Urban
30	Knox Dr	3.8	Yes	Yes	Urban
88	300 N	3.7	Yes	No	Rural
170	Logan Ave	3.7	Yes	No	Urban
77	Penn St	3.7	Yes	No	Rural
85	Attica Rd	3.7	Yes	No	Rural
217	Vermilion St	3.6	Yes	No	Urban
8	Leseure St	3.6	Yes	Yes	Urban
45	Seminary Ave	3.5	Yes	No	Rural
132	Hungry Hollow Rd	3.5	Yes	No	Urban
124	Avenue "B"	3.5	Yes	No	Urban
52	Jones Ln	3.4	Yes	No	Urban
57	Madison St	3.4	Yes	No	Urban
90	Vermilion St	3.4	Yes	No	Rural
37	Eastview Ave; Valleyview Dr	3.3	Yes	Yes	Urban

Comprehensive Project Location List Continued

MAP ID*	ROAD NAME	SAFETY INDEX SCORE	HIN	ETA	URBAN/RURAL
43	Illinois St	3.3	Yes	Yes	Urban
47	Williams St	3.3	Yes	No	Urban
99	Jackson St	3.3	Yes	Yes	Urban
138	Market St	3.3	Yes	No	Rural
186	Oakwood St	3.2	Yes	No	Rural
67	South St	3.2	Yes	Yes	Urban
38	Jewell St	3.2	Yes	Yes	Urban
142	Hazel St	3.2	Yes	Yes	Urban
103	Il-49; 270 E	3.2	Yes	No	Rural
18	Alexander St	3.1	Yes	Yes	Urban
125	Walnut St	3.1	Yes	Yes	Urban
9	Delaware St	3.0	Yes	No	Urban
117	Michigan Ave	3.0	Yes	Yes	Urban
39	Collett St; Cleveland St	3.0	Yes	Yes	Urban
98	South St	3.0	Yes	Yes	Urban
185	Main (Mlk Memor Way)	3.0	Yes	Yes	Urban
129	Penn St	2.9	Yes	No	Rural
54	Franklin St	2.9	Yes	Yes	Urban
148	Williams St	2.9	Yes	Yes	Urban
208	Main (Mlk Memor Way)	2.9	Yes	Yes	Urban
86	Lucas Ln	2.9	Yes	No	Rural
59	Roselawn Ave	2.9	Yes	No	Urban
154	Williams St	2.9	Yes	Yes	Urban

*Map ID can be used to locate projects on the online web map. <https://arcgis.lochgroup.com/portal/home/webmap/viewer.html?webmap=293cc1763e294573b308dc46c8d7a346>

Countermeasures

Proven Safety Countermeasures

This plan relies on a comprehensive understanding of crashes observed throughout the County as well as national best practices to inform effective strategies to improve safety. The Countermeasure Matrix lists context sensitive countermeasures that address predominant crash characteristics, roadway or intersection configurations, and other relevant trends observed in the County. It provides information for each countermeasure, including a cost/complexity rating, the crash modification factor (CMF) value, applicable crash types, and CMF Clearinghouse* rating.

Crash conditions and contextual circumstances drive the suitability of each countermeasure for a specific situation. The Countermeasure Matrix offers decision-makers the ability to select from multiple appropriate countermeasures and identify those that most align with available resources and public preferences in order to address a problem.

Based on the County's identified crash trends, four implementation sub-groups were developed to help identify which safety improvement(s) may be the most appropriate:

- **Intersections**
- **Arterials**
- **Rural Highways**
- **Pedestrian/Bicycle Facilities**

Countermeasure Matrix Contents

- **Cost/complexity rating** - Countermeasure cost/complexity rating is based on typical application. Ratings are low, low-medium, medium, and medium-high.
- **CMF value** - The CMF value is a multiplicative factor representing the proportion of crashes expected after implementing a countermeasure. CMFs with a value less than 1.0 indicate an expected decrease in crashes. Some CMFs are equation based. Due to the complexity of the equations, they were not included in the Countermeasure Matrix.
- **Applicable crash severity** - The KABCO scale corresponds to the severity of the injuries obtained from the crash: K (fatal injury), A (suspected serious injury), B (suspected minor injury), C (possible injury), and O (no apparent injury).
- **Applicable crash types** - Many of the countermeasures apply to all crash types, but some only apply to angle crashes.
- **CMF Clearinghouse rating** - The CMFs not included in the Highway Safety Manual (HSM) are rated in quality. Ratings are based on the study sample size, study design and statistical methodology, etc. The highest rank is 5 stars. CMFs in the Countermeasure Matrix are rated 3 out of 5 stars or better.

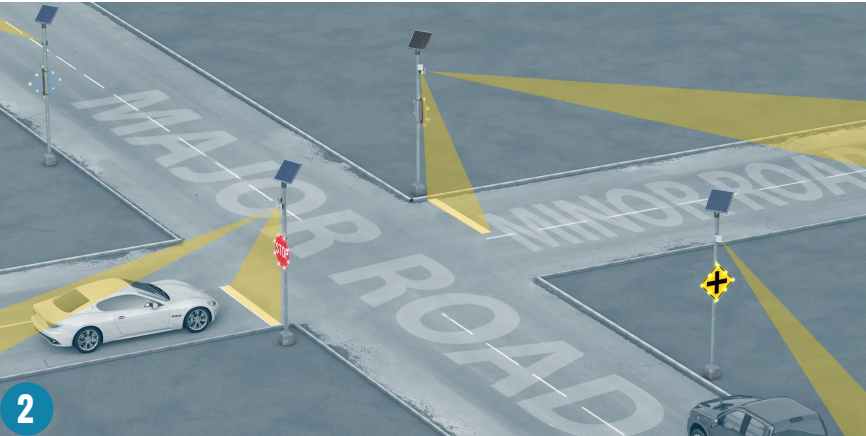
*The CMF Clearinghouse is a web-based database of CMFs with supporting documentation and quality ratings.

Intersections

Crashes occur at intersections due to the high exposure of vehicles, pedestrians, and bicyclists at conflict points. Though urban areas in Vermilion County experienced higher proportions of angle crashes and turning crashes than in the rural areas, these types of crashes also occur in suburban and rural settings. Accordingly, intersections were chosen as an implementation sub-group in the Countermeasure Matrix. The countermeasures in this section can apply to urban or rural roadways, but many are more fitting for an urban setting. For projects in this sub-group the exact safety countermeasure(s) would be selected in response to the crash history experienced at the specific intersection and be implemented as intersection improvement projects.



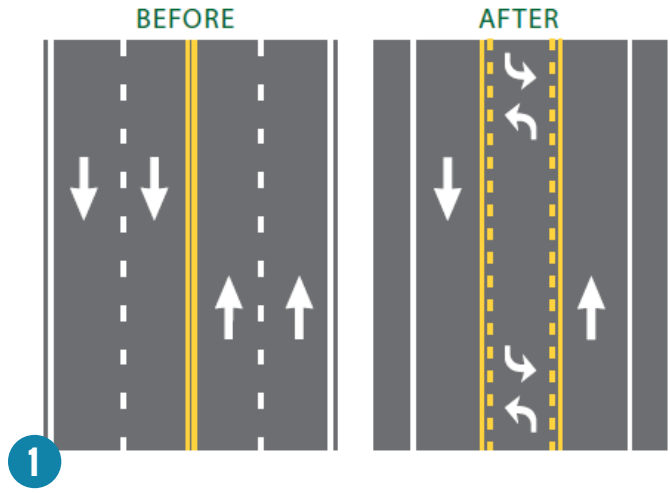
- 1** Stop ahead pavement markings alert drivers to an approaching unsignalized intersection.
- 2** Intersection conflict warning systems use technology to alert drivers to conditions approaching an intersection.
- 3** Roundabout intersection designs improve safety by reducing vehicle speeds and minimizing conflict points.



Arterials

Vermilion County’s main arterials are Illinois Route 1 and US 150. These facilities and other arterials carry traffic through and between Danville and neighboring communities. As a result, arterials were chosen as an implementation sub-group in the Countermeasure Matrix. Roadways categorized as arterials are facilities of regional significance and carry “through” traffic between major destinations. These facilities are dual purpose and often accommodate both local trips and regional traffic. Access management is an important tool in maintaining safe and efficient traffic operations on such facilities. Access management strategies include:

- Appropriate distance/spacing between traffic signals and driveways
- Dedicated turning lanes
- Two-way left turn lanes and raised medians
- Policies and/or land development regulations



1 A two-way left turn lane (TWLTL), often installed as part of a road diet project, reduces conflict points, vehicle speeds, and travel lanes for pedestrians to cross.

2 Medians allow pedestrians to more safely cross multi-lane roadways and are an effective access management strategy.

3 Lighting, or better lighting, improves safety by increasing visibility of potential hazards at night.



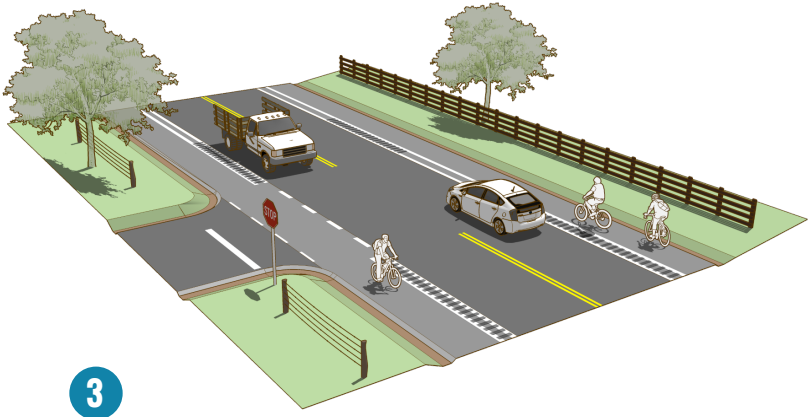
Rural Highways

There are numerous rural highways in Vermilion County under jurisdiction of either the State or the County, and rural highways are good candidates for systemic safety improvements. A systemic approach acknowledges that crash experience alone may not be sufficient to determine implementation priorities across a network. This is particularly true for many rural roadways with low volumes where crash frequencies tend to be low with few high crash locations.

The identified rural highway safety improvements focus on crashes where vehicles depart from the travel lane, including run-off-the-road crashes and head-on crashes caused by a vehicle crossing the centerline. These identified countermeasures provide auditory and/or tactile feedback to the driver should they stray from the travel lane, delineate curves, and provide recovery area by widening the roadway. While the focus of this implementation sub-group is rural highways, the countermeasures can be applied to lower functional class facilities in a rural setting.



- 1** Rumble strips, along the edge or center of the roadway, alert drivers who drift out of the driving lane via tactile vibrations and rumbling.
- 2** Dynamic speed feedback signs display a message to alert drivers who are exceeding a predetermined speed threshold.
- 3** Paved, or widened, shoulders provide space for pedestrians and bicyclists separate from vehicle travel lanes.



Pedestrian/Bicycle Facilities

A bicyclist or pedestrian involved in a crash is almost 5 times more likely to be killed or seriously injured than a person in a vehicle. Because of this vulnerability, pedestrian and bicyclist accommodations can be key elements in corridor or intersection safety projects.



- 1** Separated bike lanes are bicycle only facilities, next to the roadway but physically separated by a vertical element such as barriers, curbs, or landscaped medians.
- 2** Rectangular rapid flashing beacons (RRFB) are crosswalk enhancements to alert drivers to the presence of pedestrians.
- 3** Similar to a traffic signal, a pedestrian hybrid beacon (PHB) is a more robust pedestrian crossing enhancement compared to the RRFB.



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Countermeasure Matrix

COUNTERMEASURE	INTERSECTIONS				COST/ COMPLEXITY	CMF	AREA TYPE	RATING
	ARTERIALS	RURAL HIGHWAYS	PEDESTRIAN/ BICYCLE					
Retro-reflective Signal Head Backplates	X				LOW	0.76	Rural	3
Add 3-Inch Yellow Retro-reflective Sheeting to Signal Backplates	X				LOW	0.85	Urban	4
Modify Signal Phasing (Implement a Leading Phase Interval)	X		X		LOW	0.9	Urban, Rural	5
Prohibit Right Turn on Red	X		X		LOW	Equation	Urban, Rural	HSM
Install Intersection Conflict Warning Systems (ICWS) for Four-Lane at Four-Lane Intersections	X				LOW	0.83	Rural	5
Install Intersection Conflict Warning Systems (ICWS) for Two-Lane at Two-Lane Intersections	X				LOW	0.73	Rural	5
Provide "Stop Ahead" Pavement Markings	X				LOW	0.69	Rural	4
Convert Two-Way (With Flashing Beacons) to All-Way Stop Control (With Flashing Beacons)	X				LOW	0.198	Urban, Rural	3
Convert Two-Way (Without Flashing Beacons) to All-Way Stop Control (With Flashing Beacons)	X				LOW	0.183	Urban, Rural	3
Convert Two-Way (Without Flashing Beacons) To All-Way Stop Control (Without Flashing Beacons)	X				LOW	0.393	Urban, Rural	3
Replace Standard Stop Sign with Flashing LED Stop Sign (Angle Crashes)	X				LOW	0.585	Urban, Rural	4
Install Advanced Yield or Stop Markings And Signs	X				LOW	0.886	Urban, Rural	3
Install Dynamic Signal Warning Flashers	X				LOW	0.814	Urban, Rural	4
Install a Traffic Signal (Rural)	X				LOW-MED	0.56	Rural	5
Install a Traffic Signal (Urban/Suburban)	X				MED-HIGH	0.84	Urban, Suburban	4
Dilemma Zone Protection System	X	X			LOW-MED	0.564	Urban, Rural	3
Convert Intersection to Median U-Turn (MUT) Intersection	X				MED	0.633	Urban	5
Improve Angle of Channelized Right Turn Lane	X				MED	0.558	Urban, Rural	4
Install Pedestrian Signals	X		X		MED	Equation	Urban, Rural	4
Install Left Turn Flashing Yellow Arrow Signals and Supplemental Traffic Signs	X	X			MED	0.857	Urban	3
Convert From Permissive to Protected	X	X			MED	0.94	Urban, Rural	HSM
Convert Intersection With Minor-Road Stop Control to Modern Roundabout	X				MED-HIGH	0.56	Urban, Rural	3
Convert Signalized Intersection to Modern Roundabout	X				MED-HIGH	0.52	Urban, Rural	3
Change Intersection Skew Angle	X				MED-HIGH	Equation	Rural	HSM
Install a Traffic Signal (Urban)	X				MED-HIGH	0.77	Urban	4

COUNTERMEASURE	INTERSECTIONS				COST/ COMPLEXITY	CMF	AREA TYPE	RATING
	ARTERIALS	RURAL HIGHWAYS	PEDESTRIAN/ BICYCLE					
Install TWLTL (Two-Way Left Turn Lane) On Two Lane Road	X				LOW-MED	0.775	Urban, Rural	4
Install TWLTL (Two-Way Left Turn Lane) On Four Lane Road	X				LOW-MED	0.701	Urban	4
Install Any Type Of Median Barrier	X				LOW-MED	0.7	Rural	3
Install Any Type Of Median Barrier	X				LOW-MED	0.57	Rural	3
Modify Access Point Density	X				MED	Equation	Rural	HSM
Provide Highway Lighting	X				MED	0.8	Urban, Rural	HSM
Install Sidewalk	X		X		MED	0.598	Urban, Rural	4
Install Bicycle Lanes	X		X		MED	Varies	Urban	4
Install a Pedestrian Hybrid Beacon (PHB or HAWK)	X		X		LOW-MED	0.883	Urban	5
Install Rectangular Rapid Flashing Beacon (RRFB)	X		X		MED	0.31	Urban, Rural	4
Install Wider Edgelines (4 in To 5 in)		X			LOW	0.699	Rural	3
Install Wider Edgelines (4 in To 6 in)		X			LOW	0.825	Rural	4
Install Dynamic Speed Feedback System		X			LOW	0.95	Rural	4
Install In-Lane Curve Warning Pavement Markings		X			LOW	0.652	Rural	5
Roadway Lighting		X			LOW-MED	0.75	Rural	3
Provide Intersection Illumination		X			MED	0.67	Rural	4
Change Shoulder Width From X To Y (Meters)		X			MED	Equation	Rural	3
Flatten Side Slopes (2-Lane Median)		X			MED	0.861	Rural	4
Flatten Side Slopes (4-Lane Median)		X			MED	0.976	Rural	4
Install New Fluorescent Curve Signs or Upgrade Existing Curve Signs to Fluorescent Sheeting		X			LOW	0.82	Rural	5
Implement Systemic Signing And Visibility Improvements At Signalized Intersections		X			LOW	0.955	Urban, Rural	4
Edgeline Rumble Stripes		X			LOW	0.901	Urban	5
Install Centerline Rumble Strips		X			LOW	0.86	Rural	4
Install Centerline Rumble Strips		X			MED	0.89	Rural	4
Install Edgeline or Shoulder Rumble Strips		X			MED	0.839	Rural	4
Install High-Friction Surface Treatment (HFST) (Curves)		X			MED	0.529	Urban, Rural	5

-For the complete contents of the Countermeasure Matrix including applicable crash severities and crash types, please see the appendix.

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Actions

Action Items




The Vermilion County Safety Action Plan was developed through an extensive analysis of crash trends including the identification of the High Injury Network, a demographic analysis resulting in equitable target areas, and the creation of a toolbox of proven safety countermeasures. The plan also involved learning about public attitudes and concerns about roadway safety and incorporated expert local knowledge and guidance of the steering committee.

A set of high level action strategies will serve as the road map for the steering committee and other local leaders. The action strategies are actionable items that Vermilion County, City of Danville, and other local agencies and community groups can implement to achieve the goal of reducing and eliminating roadway deaths and serious injuries. These action items respond to specific conditions in Vermilion County as well as represent national best practices. Action strategies are grouped in three categories: engineering, policy, and programs.

Engineering action strategies are those related to the design, construction, and/or maintenance of proven safety countermeasures. Policy action strategies are those that require a new or modified approach to roadway safety by local governmental agencies and includes the project selection approach, project management, standards, and funding. Programmatic action strategies consist of repeatable, scheduled activities that require government or community support and can include educational and awareness campaigns or training programs. Each action strategy includes an estimated timeframe for completion/implementation. Short-term is within 3 years, mid-term is 3 to 5 years, and long-term is 5 years or more.



-Mural in Danville, IL

-ACTION STRATEGIES-		TIMEFRAME
	ENGINEERING	
	Implement proven safety countermeasures along the High Injury Network	Short-term
	Implement systemic safety improvements using the proven safety countermeasures matrix	Short-term
	Implement safety upgrades during routine maintenance	Short-term
	POLICY	
	Establish a county-wide roadway safety partnership and safety coordinator to ensure implementation of this plan	Mid-term
	Develop policies that ensure streets are designed to be safe for all users	Mid-term
	Ensure safety investments are made equitably	Short-term
	Foster collaboration between the County, IDOT, and local municipalities on roadway safety projects	Short-term
	Set aside for investments targeted at bicycle and/or pedestrian mobility, access, and safety	Long-term
	Develop and implement access management strategies	Long-term
	Update and review crash data against the HIN at least once every 3 years	Short-term
	Regularly update crash map and utilize as a public information tool	Short-term
	Track safety projects and provide timely public updates and information	Short-term
	Stay up to date on emerging practices	Short-term
	PROGRAMS	
	Establish repeatable process for collection and analysis of roadway safety data and complete annual reports to track progress	Mid-term
	Establish and support Safe Routes to School programs	Mid-term
	Promote and conduct training for local agencies on innovative strategies and techniques to improve safety for vulnerable road users	Mid-term
	Create targeted safety awareness campaigns for motorized and non-motorized users	Short-term
	Partner with law enforcement agencies to develop and enhance enforcement strategies	Mid-term

Engineering

Implement proven safety countermeasures along the High Injury Network

Implementing proven safety countermeasures at locations that experience the most fatal and serious injuries will be the most effective way to reduce and eliminate traffic deaths and serious injuries through direct interventions.

Implement systemic safety improvements using the proven safety countermeasures matrix

A systemic approach acknowledges that crash experience alone may not be sufficient to determine implementation priorities across a network. This is particularly true for many rural roadways with low volumes where crash frequencies tend to be low with few high crash locations.

Implement safety upgrades during routine maintenance

Not all proven safety countermeasures require significant investments of time and resources. Many can and should be accomplished during routine maintenance such as re-paving or re-striping projects.

Policy

Establish a county-wide roadway safety partnership and safety coordinator to ensure implementation and monitoring of this plan

Partnerships and coordination are essential for long-term success and will require leadership from a dedicated safety coordinator. This partnership could be a continuation of the steering committee tasked with implementing and monitoring the success of this plan.

Develop policies that ensure streets are designed to be safe for all users

Local policies that require or encourage a safe transportation network designed for all users is an integral component of change.

Ensure safety investments are made equitably

Disadvantaged communities are disproportionately burdened by the impacts of the existing transportation system. This plan demonstrates Vermilion County's commitment to transportation equity.

Foster collaboration between the County, IDOT, and local municipalities on roadway safety projects

Funding for transportation projects exists within a complicated framework across multiple levels of government. Collaboration between these agencies is essential to maximize investments.

Set aside for investments targeted at bicycle and/or pedestrian mobility, access, and safety

Similar to a roadway maintenance budget, money should be set aside for targeted bicycle and pedestrian investments to ensure vulnerable road users are not left out.

Develop and implement access management strategies

Successful access management strategies can often be accomplished by working directly with land owners to modify and/or consolidate access points. These strategies can be accomplished separate from improvement projects or during site reviews for new developments.

Update and review crash data against HIN at least once every 3 years

As improvements are made and traffic patterns change over time, it will be important to always have a clear and up-to-date HIN.

Regularly update crash map and utilize as a public information tool

To maintain trust and credibility, updated crash information should be shared with the public whenever possible and appropriate.

Track safety projects and provide timely public updates and information

Tracking safety projects not only provides a record of safety improvements but will also provide the necessary project information for tracking progress as traffic deaths and serious injuries are reduced and eliminated.

Stay up to date on emerging practices

As new research and technology emerge, best practices will change and it is important that local agencies have clear understanding of emerging practices.

Programs

Establish repeatable process for collection and analysis of roadway safety data and complete annual reports to track progress

Tracking progress will be essential to ensure the goal of this plan is achieved and that successes are celebrated.

Establish and support Safe Routes to School programs

Safe Routes to Schools programs promote walking and biking to school with many of the same strategies that will improve safety for everyone. A Safe Routes to Schools coordinator will be required at each school.

Promote and conduct training for local agencies on innovative strategies and techniques to improve safety for vulnerable road users

Training is a valuable resource for agency staff to ensure vulnerable road users are accounted for during early stages of roadway projects.

Create targeted safety awareness campaigns for motorized and non-motorized users

Public awareness campaigns can change driver behavior to reduce dangerous behaviors such as speeding and texting.

Partner with law enforcement agencies to develop and enhance enforcement strategies

The public looks to law enforcement to help mitigate dangerous driving behaviors. Working with law enforcement agencies will ensure enforcement strategies are targeted and an efficient use of law enforcement resources.

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