



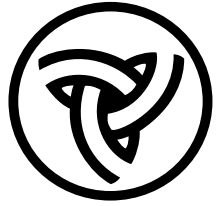
Illinois Department  
of Transportation

ILLINOIS

**VRU 20  
23**  
VULNERABLE ROAD USER  
SAFETY ASSESSMENT

NOVEMBER 2023





Illinois Department  
of Transportation

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ILLINOIS

**VRU 20**  
**VULNERABLE ROAD USER**  
**SAFETY ASSESSMENT** **23**

NOVEMBER 2023

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**Jacobs**

# Message from The Secretary

Illinois has a long tradition of providing efficient, effective and safe roads for all users. We have established the vision of zero fatalities and are making strides toward achieving this reality through the Safe System Approach. Our commitment is to improve the safety and reliability of Illinois roads for all, with a deliberate focus on vulnerable road users.

The Vulnerable Road User Safety Assessment builds on the mission presented in the Illinois Strategic Highway Safety Plan and represents a collaborative effort of federal, state, county, regional and municipal agencies, as well as stakeholders.

This assessment develops a data-driven process to identify strategies and programs that reduce traffic-related deaths and life-altering injuries of vulnerable road users on all public roads, with an intentional and proactive emphasis on addressing the safety of vulnerable road users in underserved communities.

Our vision of eliminating traffic fatalities can become a reality with continued collaboration and combined efforts as we unite to share knowledge and resources. We are committed to providing support for statewide implementation and coordination of projects that will benefit vulnerable road users. Through partnerships and targeted investment, Illinois will achieve zero fatalities for vulnerable users and all who share the road.

Sincerely,



Omer Osman  
Secretary of Transportation



# Executive Summary

*IT'S NOT A GAME, ILLINOIS!*





“ Through partnerships and targeted investment, Illinois will achieve zero fatalities for all transportation users. ”

# Executive Summary

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Per the Bipartisan Infrastructure Law, all states are required to develop a Vulnerable Road User (VRU) Safety Assessment as part of their Highway Safety Improvement Program. The VRU Safety Assessment is a process to identify safety trends, policies, rules, and procedures pertinent to safe travel by vulnerable road users and identify steps to improve them.

A VRU is a non-motorist who may include people walking, biking, or rolling as well as highway workers on foot in a work zone.

This document serves as a resource for safety stakeholders across Illinois and summarizes the results of the data analysis. Roadway owners and stakeholders can use the high-priority areas and characteristics to assist with project selection and programming improvements. Extensive Safe System Approach collaboration and stakeholder engagement informs the analytical process as well as countermeasures and strategies for implementation.

IDOT took an intentional and proactive approach to addressing equity throughout the process including targeted outreach and data analysis. With the equity considerations implemented as part of the data analysis, 52% of areas with a high potential for safety improvements are within historically underserved communities. This validates that these communities have been disproportionately affected by safety shortcomings and that increased investment is easy to justify and should be prioritized.

The VRU Safety Assessment provides a foundation for and underscores IDOT's commitment to improving safety for VRUs statewide.

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**52%** OF AREAS WITH A HIGH POTENTIAL FOR SAFETY IMPROVEMENTS ARE WITHIN AREAS IDENTIFIED AS HISTORICALLY DISADVANTAGE BY JUSTICE40.

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## Acronyms and Abbreviations

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<b>AADT</b>	annual average daily traffic
<b>ADA</b>	Americans with Disabilities Act
<b>ANSI</b>	American National Standards Institute
<b>ATP</b>	Active Transportation Plan
<b>CCRPC</b>	Champaign County Regional Planning Commission
<b>CDOT</b>	Chicago Department of Transportation
<b>CMAA</b>	Chicago Metropolitan Agency for Planning
<b>FHWA</b>	Federal Highway Administration
<b>HIN</b>	high-injury network
<b>HSIP</b>	Highway Safety Improvement Program
<b>IDOT</b>	Illinois Department of Transportation
<b>ITEP</b>	Illinois Transportation Enhancement Program
<b>MPH</b>	mile(s) per hour
<b>SHSP</b>	Strategic Highway Safety Plan
<b>SSA</b>	Safe System Approach
<b>SUV</b>	sports utility vehicle
<b>VRU</b>	vulnerable road user

# Overview of Vulnerable Road User Safety Performance

IT'S NOT A GAME, ILLINOIS!





SECTION 01

# Overview of Vulnerable Road User Safety Performance

## Introduction

All states are required to develop a Vulnerable Road User (VRU) Safety Assessment as part of their Highway Safety Improvement Program (HSIP). A VRU is a non-motorist who may include people walking, biking, or rolling as well as highway workers on foot in a work zone.

A VRU Safety Assessment is a process to identify safety trends, policies, rules, and procedures pertinent to safe travel by VRUs and identify steps to improve them. Under the Bipartisan Infrastructure Law, the VRU Safety Assessment must be included as an appendix to the Strategic Highway Safety Plan (SHSP). The Illinois SHSP (IL SHSP) "is a statewide data-driven plan developed

in partnership by the Illinois Department of Transportation (IDOT) and key safety stakeholders and includes comprehensive and coordinated safety strategies involving Engineering, Education, Enforcement, and Emergency Medical Services with the goal to eliminate all fatal and serious injury crashes on all Illinois roadways" (IDOT 2022). Pedestrians are identified as a priority focus area in the IL SHSP.

The Safe System Approach (SSA) (FHWA 2007) is the guiding philosophy used by the IL SHSP to address transportation safety and provides the foundation for the VRU Safety Assessment. The SSA recognizes death and serious injuries are unacceptable, humans make mistakes, humans are vulnerable, responsibility is shared, safety is proactive, and redundancy is crucial.

### WHAT IS A VRU?

A VRU is a non-motorist with a Fatality Analysis Reporting System person attribute code for pedestrian, bicyclist, other cyclist, and person on personal conveyance or an injured person that is, or is equivalent to, a pedestrian or pedalcyclist as defined in the American National Standards Institute (ANSI) Standard D16.1-2007 (also refer to U.S. Code Title 23, Section 148(a)(15) and Code of Federal Regulations Title 23, Section 490.205). A VRU does not include motorcyclists.



This VRU Safety Assessment proactively addresses the needs of VRUs while considering the SSA. Data-driven analysis is a crucial component of achieving the zero-fatality vision. IDOT compiled and analyzed safety data to understand system needs and align them to strategies and countermeasures that incorporate principles of the SSA. Educating stakeholders on the SSA and understanding where implementation assistance is needed were key elements of the stakeholder engagement process.

It has been widely studied that historically underserved communities have been disproportionately affected by the impacts to VRU safety. In order to address this, IDOT is taking an intentional approach to addressing equity through targeted outreach, identification of areas to account for and adjust data to better assist underserved communities and validate that proposed programs or projects align with allocation of investments that support leveling the playing field for historically underserved communities.

## Mission and Vision

### Our Mission

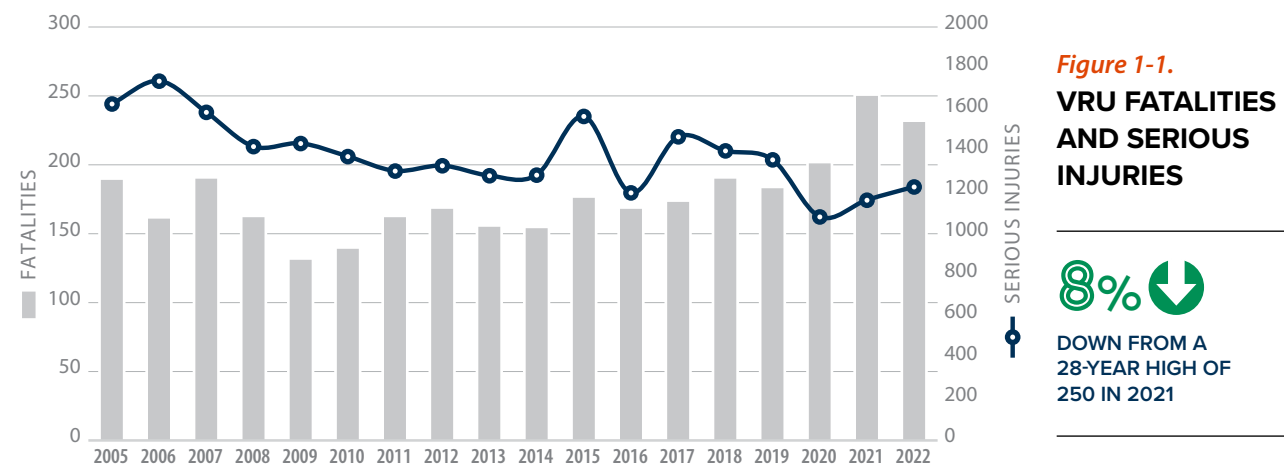
The Illinois Vulnerable Road User Safety Assessment's mission is to engage stakeholders and develop a data-driven process to identify strategies and programs, in line with the Safe System Approach, to reduce vulnerable user's traffic-related deaths and life-altering injuries on all public roads, with an intentional and proactive focus on underserved communities in Illinois.

### Our Vision

We envision a future where no one loses their life or is seriously injured while biking, walking, and rolling so that IDOT can achieve the goal of zero fatalities and serious injuries on public roadways in Illinois.

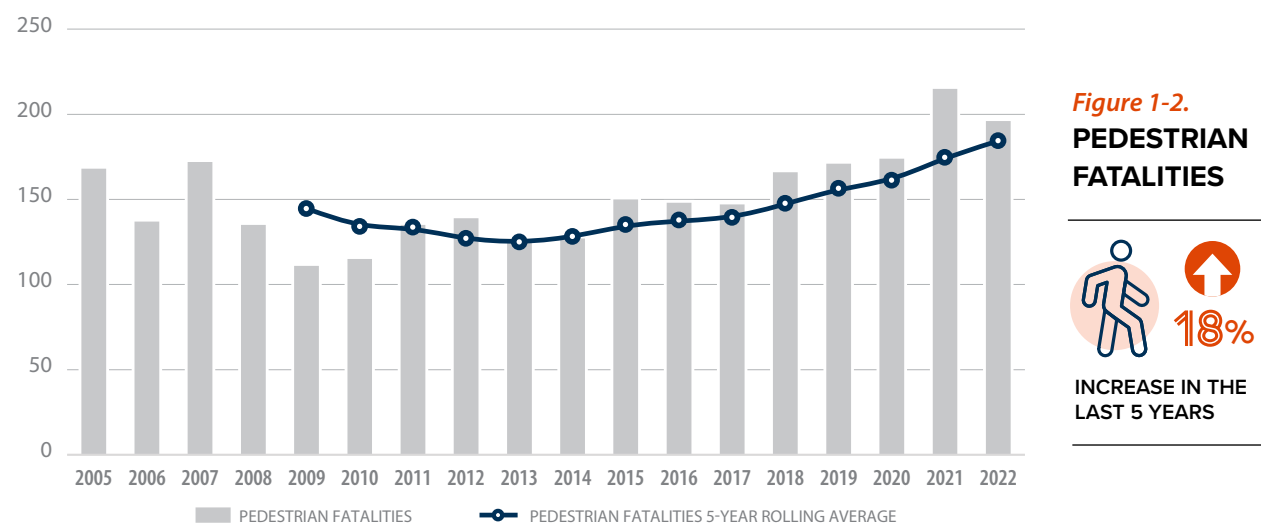
# Historical Trends

VRU fatalities in Illinois have been increasing while serious injuries have trended downward. In 2022, there were 231 VRU fatalities, down from a 28-year high of 250 in 2021 (Figure 1-1). Pedestrians account for the largest proportion of VRU fatalities and serious injuries followed by bicyclists. IDOT used historical trends to develop a high-injury network (HIN) and a systemic safety analysis (Section 2). Data on fatalities and serious injuries is from IDOT Crash Data for the years 2005-2022.

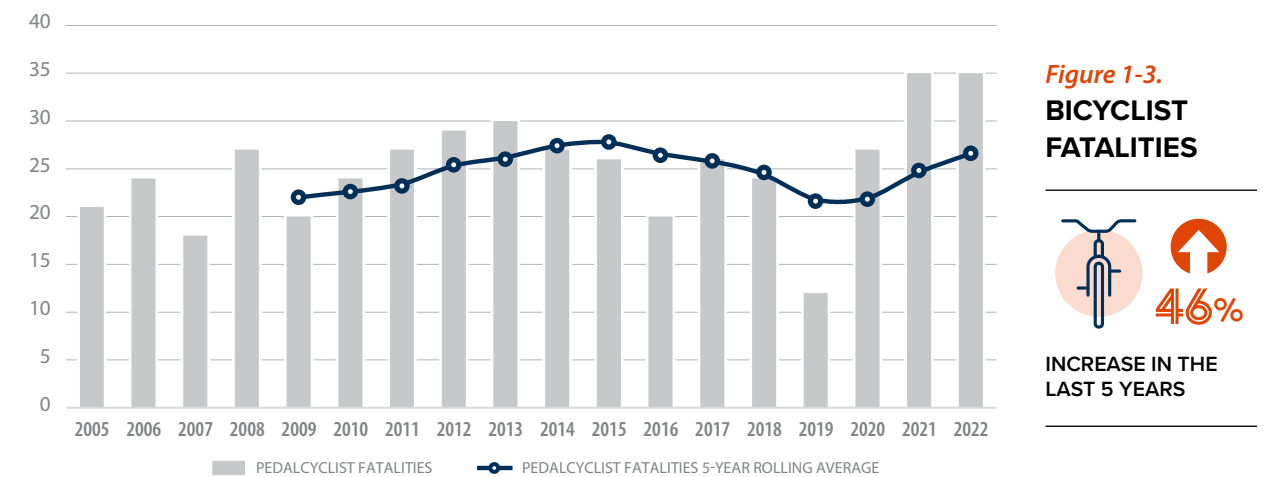


## Fatalities

Pedestrian fatalities have increased 18% in the last 5 years and peaked in 2021 at 215 (Figure 1-2).

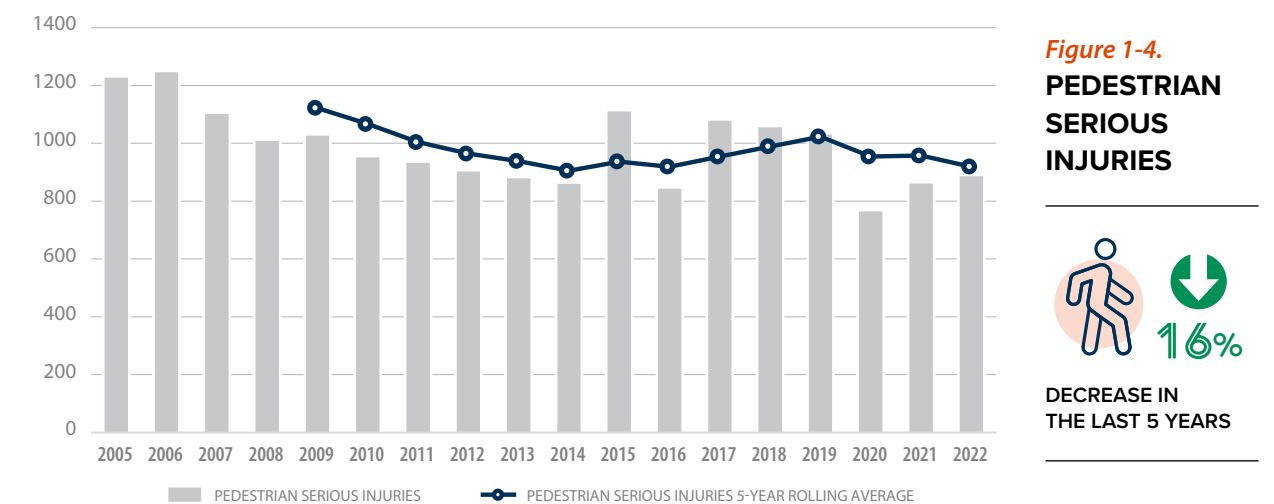


Although the trend for bicycle fatalities is not as clear as for pedestrian fatalities, bicycle fatalities have increased 46% in the last 5 years and reached an 18-year high of 35 in 2021 and 2022 (Figure 1-3). Since 2005, there have been no fatalities in the category other VRUs. Other VRUs include VRUs that are not pedestrians or bicyclists such as people in wheelchairs, on roller-blades, and equestrians.



## Serious Injuries

Serious injuries for VRUs have declined 12% in the last 5 years and 25% since 2005. In the last 5 years, serious injuries are down 16% for pedestrians (Figure 1-4) and have remained relatively flat for bicyclists (Figure 1-5). There have been three serious injuries in the category other VRUs: one in 2008 and two in 2017. Serious injuries are defined in the IL SHSP.





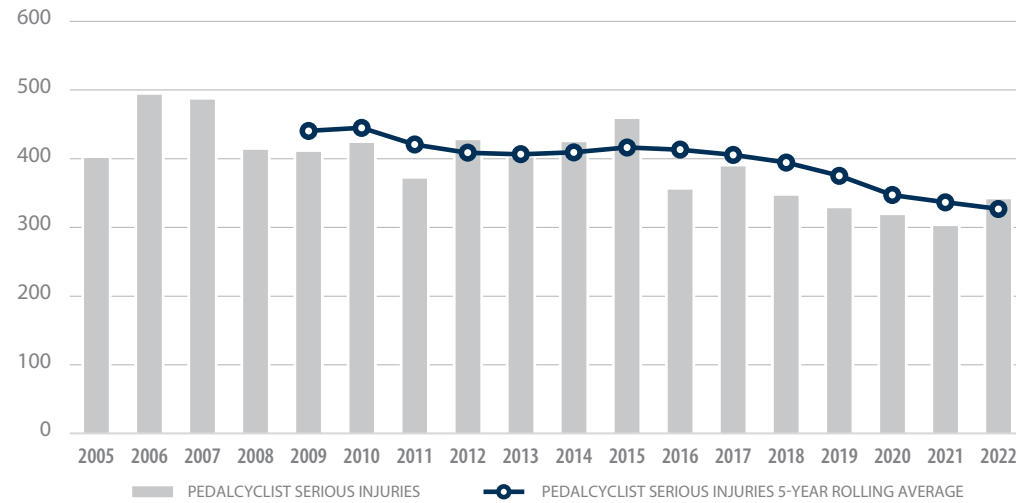


Figure 1-5. BICYCLIST SERIOUS INJURIES



SERIOUS INJURIES HAVE REMAINED RELATIVELY FLAT FOR BICYCLISTS OVER THE LAST 5 YEARS

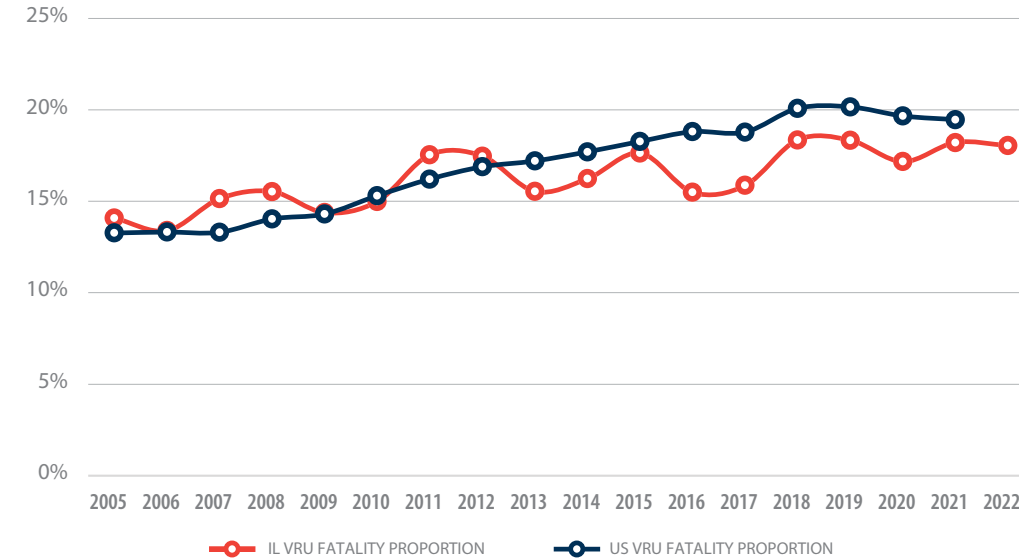


Figure 1-7. VRU FATALITIES AS A PERCENT OF TOTAL FATALITIES

18% TOTAL FATALITIES

THE PROPORTION OF VRU FATALITIES IN ILLINOIS IS LOWER THAN THE NATIONAL PROPORTION.

## Safety Performance

Fatalities in Illinois are increasing, and VRUs are following the overall trend (Figure 1-6). Since 2018, total fatalities are up 24% and VRU fatalities are up 22%.

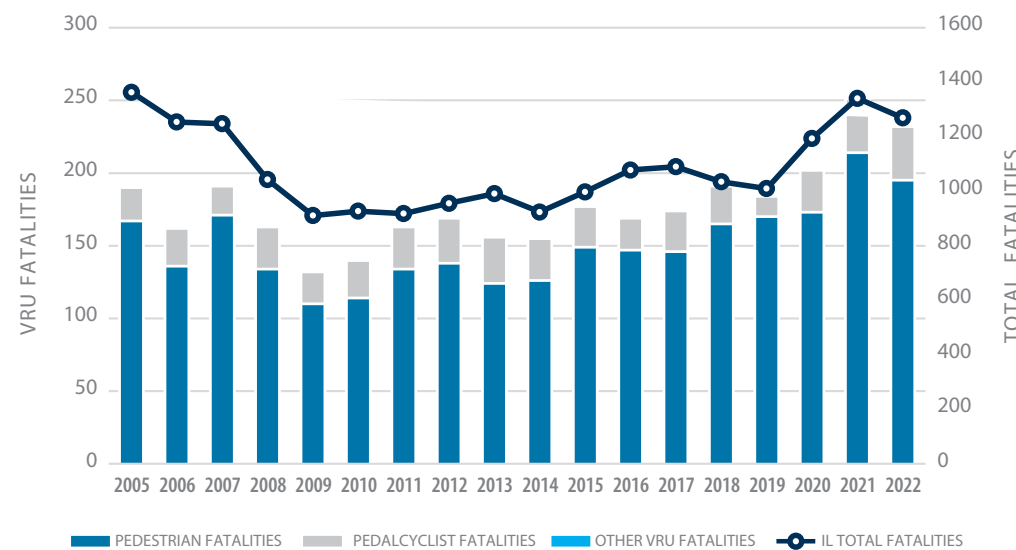


Figure 1-6. TOTAL FATALITIES AND VRU FATALITIES

TOTAL FATALITIES 24% ↑

VRU FATALITIES 22% ↑

In 2022, VRUs accounted for 18% of total fatalities in Illinois, 15.3% of which were pedestrian fatalities (Figure 1-7). Although this percentage has increased

since 2005, it has remained relatively flat over the last 5 years. The proportion of VRU fatalities in Illinois is lower than the national proportion.

## Progress

Pedestrian and bicycle safety are emphasis areas in the IL SHSP. Non-motorized fatalities and serious injuries is one of the performance measures in the IL HSIP. The target for non-motorized fatalities and serious injuries was set as a 2% annual reduction from a 5-year rolling average. Although the target was met during the most recent FFY23 performance review, Illinois' overall vision as outlined in the SHSP is zero fatalities.

Numerous plans and programs are already underway to address the safety needs of VRUs in Illinois. Using information gathered as part of the stakeholder engagement process, Section 3 highlights existing state, regional, county, and municipal safety programs and progress that has been made to date toward improving safety for VRUs. A menu of strategies and countermeasures that stakeholders can incorporate into their programs to improve the safety of VRUs is provided in Section 4.



# Summary of Quantitative Analysis

IT'S NOT A GAME, ILLINOIS!



SECTION 02

# Summary of Quantitative Analysis

Data-driven analysis is a crucial component of achieving the Safe System Approach’s vision of zero fatalities. As part of the VRU Safety Assessment, IDOT developed a high-injury network (HIN) and systemic safety analysis for use by statewide safety stakeholders. The HIN identifies areas of bicycle and pedestrian crash concentrations that may be potential locations for improvements. The systemic safety analysis, or contributing factors approach, identifies geometric, land use, and other characteristics that might be contributing to bicycle and pedestrian crashes. Recognizing the contributing factors or features allows roadway owners to identify locations with similar characteristics to implement proactive systemic treatments or improve policies and standards. A menu of safety strategies and countermeasures is provided in Section 4.

## Data-Driven Process

### Data Sources

IDOT and statewide agency partners provided data for use in the analysis including all crash data for the last 18 years (2005-2022), roadway inventory, land use, VRU facilities, and VRU generators. Stakeholders shared safety observations through the VRU Safety Webmap and engagement meetings discussed in Section 3. Equity was incorporated into the analysis by using the Illinois Active Transportation Plan (ATP) Composite Equity Score (IDOT 2023) and Justice40 data (Council on Environmental Quality

2022). Justice40 is a government wide initiative that allows USDOT to identify and prioritize projects that benefit communities facing barriers to affordable, equitable, reliable, and safe transportation. Demographic data was used as equity indicators in the development of the ATP Composite Equity Score. Data on underreporting of crashes came from *The incidence burden of unreported pedestrian crashes in Illinois* by Mickey Edwards and Manuel Gutierrez (2022).

## Analysis Components

The VRU Safety Assessment used a multipronged data analysis approach that accounts for overrepresentation of VRU crashes, stakeholder perception of VRU needs, equity metrics, and VRU generators such as land use and transit. VRU performance measures include two main components:

- 1 **Observed Safety:**  
Reported crashes
- 2 **Perceived Safety:**  
Locations where there is a demand for VRU activities but VRUs feel unsafe and therefore avoid









VRU Safety Webmap Interface







## AREA CLASSES

The results of the HIN and systemic safety analysis are presented by area class to show how VRU safety trends vary across the state. Descriptions of the area classes are shown in Table 2-1.







**Table 2-1.**  
**Area Class Characteristics**


Chicago		
 TOTAL POPULATION <b>2,757,845</b>	 MILES OF ROADWAY <b>4,267</b>	 SIGNALIZED INTERSECTION <b>2,980</b>
 POPULATION IN DISADVANTAGED AREAS <b>1,505,334</b>	 VRU CRASHES PER MILE OF ROADWAY <b>18.34</b>	 UNSIGNALIZED INTERSECTION <b>20,553</b>

Cook County <small>Excludes Chicago</small>		
 TOTAL POPULATION <b>2,517,696</b>	 MILES OF ROADWAY <b>8,799</b>	 SIGNALIZED INTERSECTION <b>2,312</b>
 POPULATION IN DISADVANTAGED AREAS <b>687,210</b>	 VRU CRASHES PER MILE OF ROADWAY <b>2.93</b>	 UNSIGNALIZED INTERSECTION <b>44,074</b>


Collar Counties <small>Excludes Chicago and Cook County</small>		
 TOTAL POPULATION <b>3,170,325</b>	 MILES OF ROADWAY <b>16,802</b>	 SIGNALIZED INTERSECTION <b>2,472</b>
 POPULATION IN DISADVANTAGED AREAS <b>402,881</b>	 VRU CRASHES PER MILE OF ROADWAY <b>1.01</b>	 UNSIGNALIZED INTERSECTION <b>68,252</b>

Urbanized Area <small>Population of 50,000 or more, excluding Chicago, Cook County, and collar counties</small>		
 TOTAL POPULATION <b>2,201,019</b>	 MILES OF ROADWAY <b>15,251</b>	 SIGNALIZED INTERSECTION <b>2,860</b>
 POPULATION IN DISADVANTAGED AREAS <b>551,708</b>	 VRU CRASHES PER MILE OF ROADWAY <b>1.03</b>	 UNSIGNALIZED INTERSECTION <b>64,350</b>

Urban Area		
 TOTAL POPULATION <b>846,058</b>	 MILES OF ROADWAY <b>7,431</b>	 SIGNALIZED INTERSECTION <b>780</b>
 POPULATION IN DISADVANTAGED AREAS <b>322,156</b>	 VRU CRASHES PER MILE OF ROADWAY <b>0.65</b>	 UNSIGNALIZED INTERSECTION <b>35,389</b>

Rural Area		
 TOTAL POPULATION <b>1,319,565</b>	 MILES OF ROADWAY <b>96,125</b>	 SIGNALIZED INTERSECTION <b>296</b>
 POPULATION IN DISADVANTAGED AREAS <b>217,221</b>	 VRU CRASHES PER MILE OF ROADWAY <b>0.05</b>	 UNSIGNALIZED INTERSECTION <b>119,225</b>



# High-injury Network

The HIN analysis was performed over all statewide public roads using safety performance measures that consider both observed and perceived safety for VRUs. The observed safety measure includes long-term, midterm, and short-term crash frequencies in addition to trends. It also includes multipliers for severity of crashes and underreported crashes. The perceived safety measure includes locations entered into the VRU Safety Webmap normalized by equity-adjusted population, vehicular exposure, and VRU exposure. VRU exposure is estimated by land use.

Additionally, a density-based clustering analysis was run using only the observed safety measure. This analysis is intended to supplement the HIN by expanding over larger areas based on proximity of crashes to provide a larger sample size for diagnostics and identifying appropriate treatments. Justice40 data were used to confirm that 40% of high-tier locations fall within disadvantaged communities.

Results of the HIN and clustering analysis are both categorized into high-medium-low tiers for each area class. The following graphic summarizes the results of the HIN:

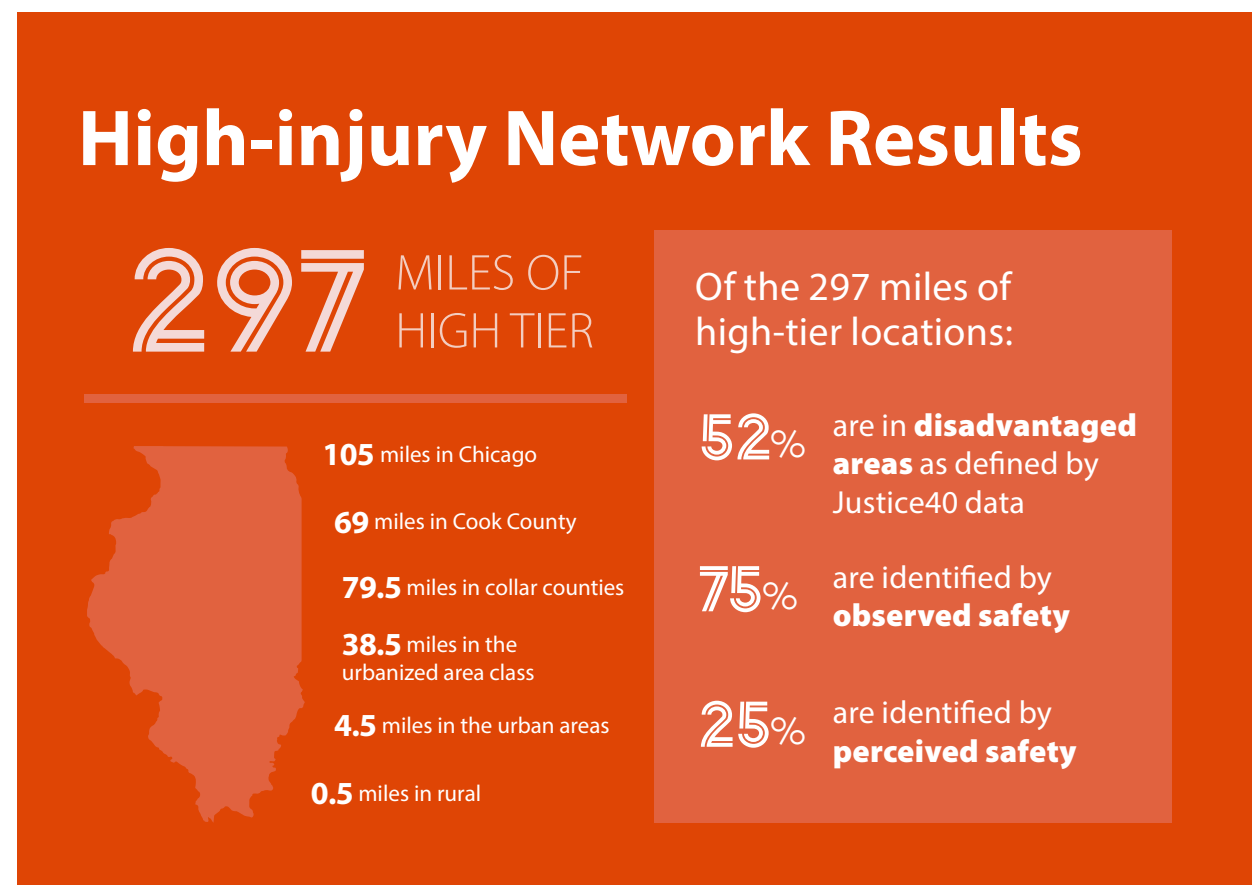
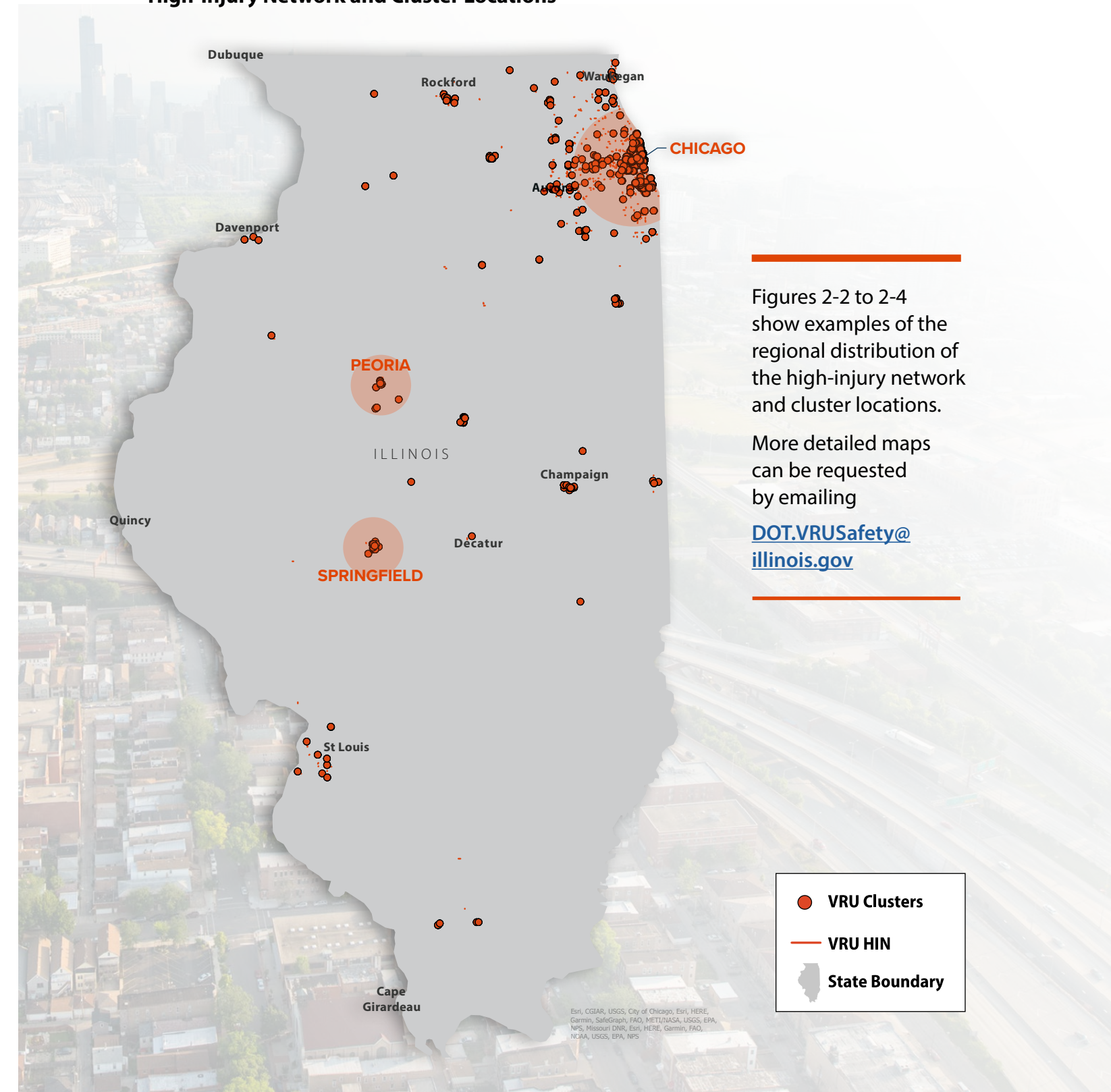


Figure 2-1  
High-Injury Network and Cluster Locations



Figures 2-2 to 2-4 show examples of the regional distribution of the high-injury network and cluster locations.

More detailed maps can be requested by emailing [DOT.VRUSafety@illinois.gov](mailto:DOT.VRUSafety@illinois.gov)



Figure 2-2  
Chicago Area HIN and Cluster Locations

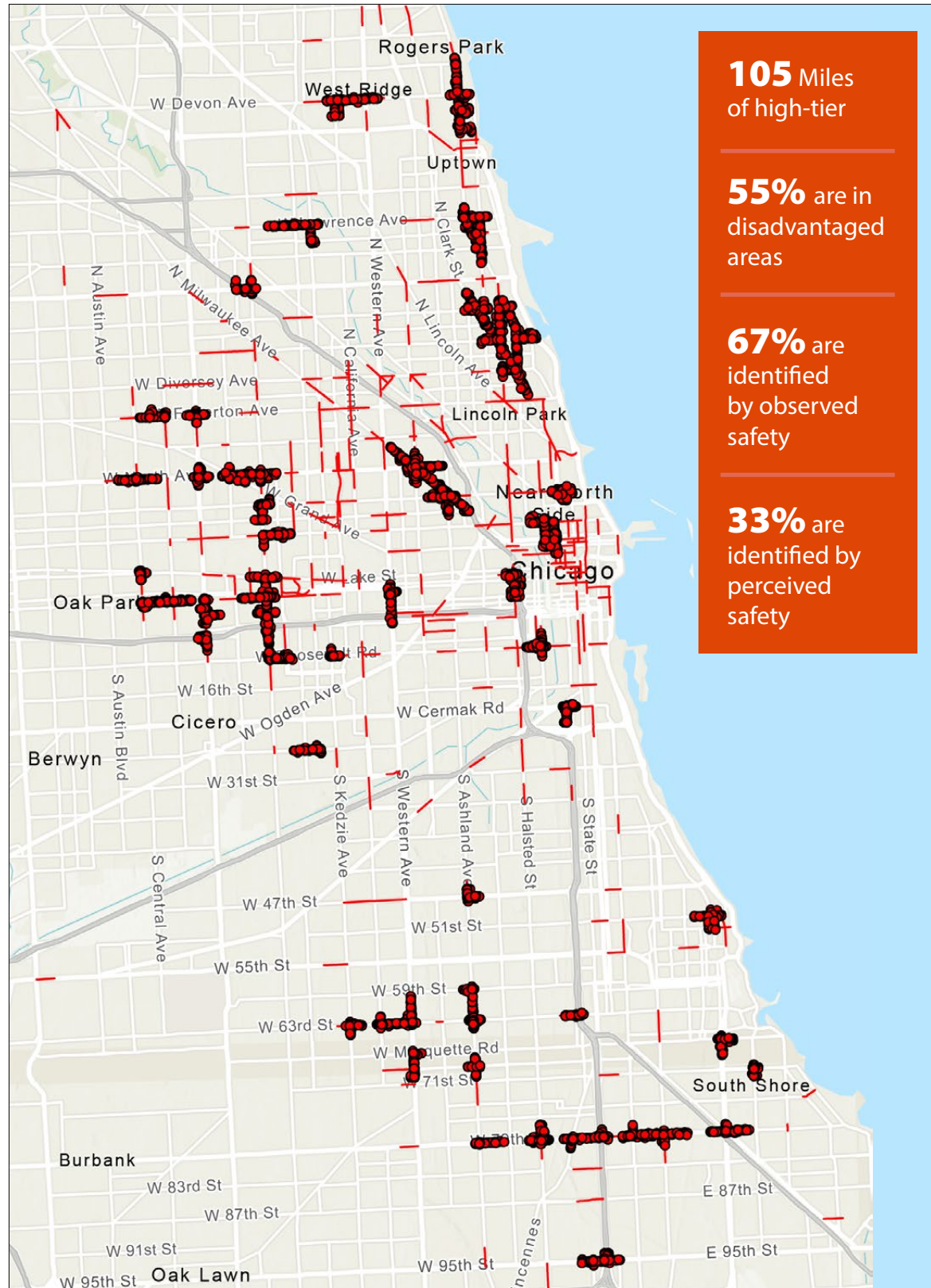


Figure 2-3  
Peoria Area HIN and Cluster Locations

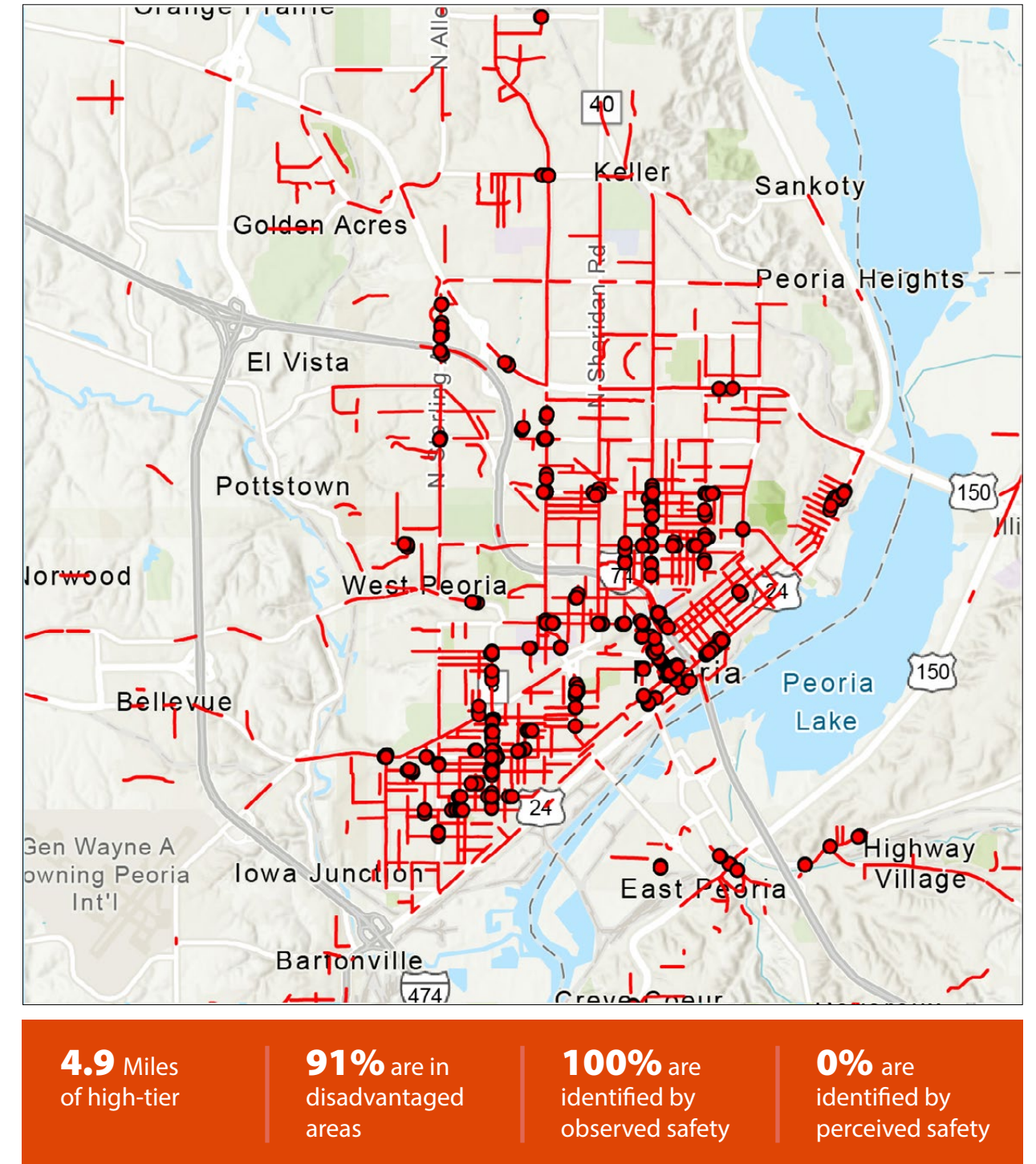
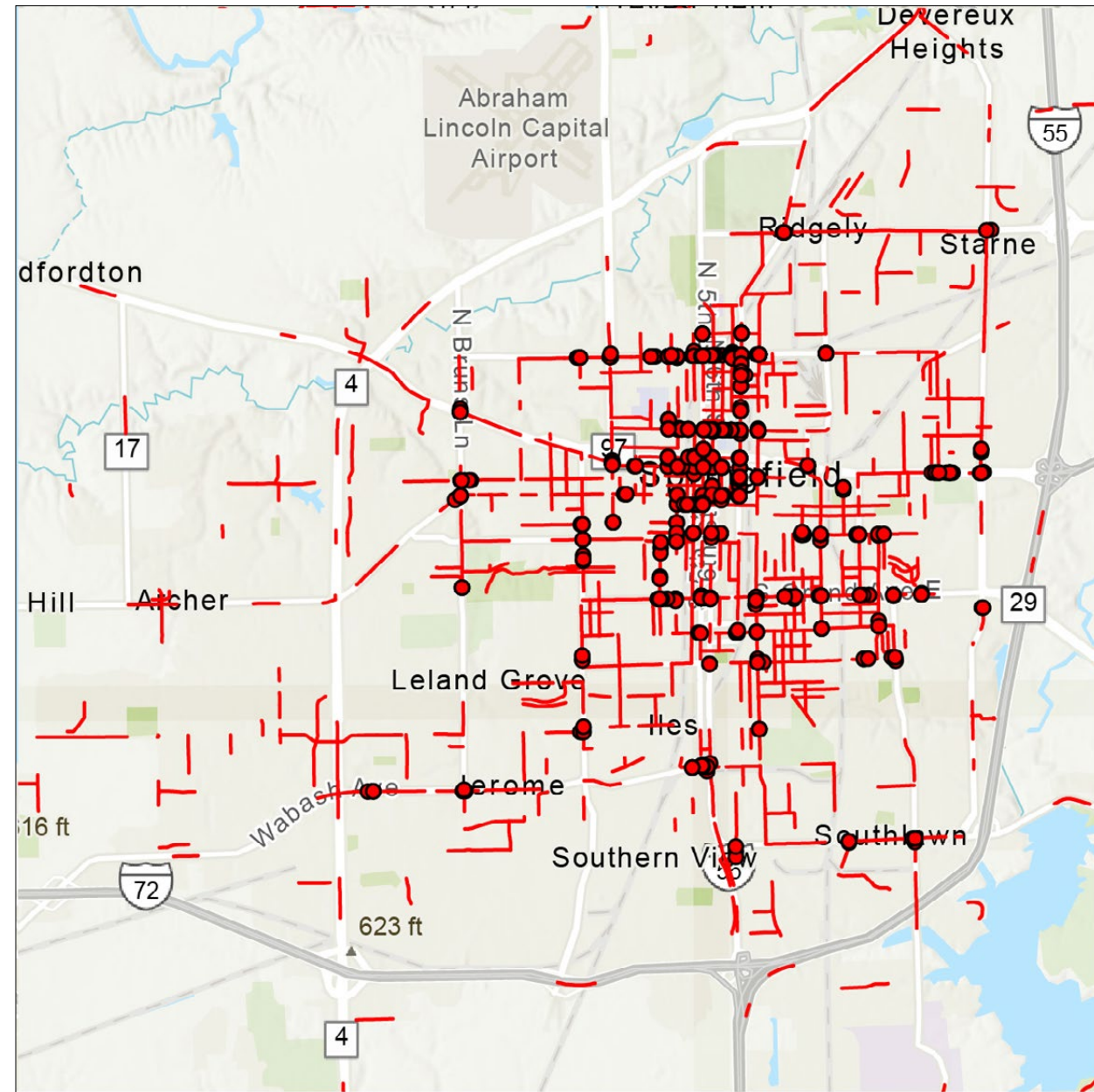




Figure 2-4  
Springfield Area HIN and Cluster Locations



<b>5.4</b> Miles of high-tier	<b>91%</b> are in disadvantaged areas	<b>79%</b> are identified by observed safety	<b>21%</b> are identified by perceived safety
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Table 2-2 provides the list of the top five locations for each area class based on the HIN results that are ranked as high tier. For rural areas, there are only two locations classified as high tier so the two locations are provided.

Table 2-2.  
Top 5 HIN Locations by Area Class

TOP 5 HIN LOCATIONS						
CHICAGO						
URBAN AREA	ROAD NAME	TOTAL CRASHES (YEARS 2005-2022)	OBSERVED SAFETY SCORE	PERCEIVED SAFETY SCORE	J40*	SEGMENT ID
Chicago	#1 Humboldt Boulevard	16	0.1	10.9	■	016 92833 000000_2.250_2.550
Chicago	#2 Pulaski Road	131	10.6	0	■	016 92812 000000_13.580_14.000
Chicago	#3 Lincoln Avenue	29	1.4	8.2		016 937298 000000_3.640_3.940
Chicago	#4 87 <sup>th</sup> Street	93	9.5	0	■	016 20395 000000_5.570_6.040
Chicago	#5 Milwaukee Avenue	101	4.6	4.5		016 93513 000000_10.250_10.550
COOK COUNTY						
URBAN AREA	ROAD NAME	TOTAL CRASHES (YEARS 2005-2022)	OBSERVED SAFETY SCORE	PERCEIVED SAFETY SCORE	J40*	SEGMENT ID
Chicago	#1 Cicero Avenue	47	6.9	0	■	016 20350 000000_16.400_16.760
Chicago	#2 Mannheim Road	36	6.2	0		016 20330 000000_17.040_17.340
Chicago	#3 Cermak Road	42	5.3	0	■	016 91453 000000_7.330_7.630
Chicago	#4 Cermak Road	29	4.8	0	■	016 91453 000000_8.570_8.670
Chicago	#5 Lake Street	10	4.8	0	■	016 20345 000000_4.170_4.470
COLLAR COUNTIES						
URBAN AREA	ROAD NAME	TOTAL CRASHES (YEARS 2005-2022)	OBSERVED SAFETY SCORE	PERCEIVED SAFETY SCORE	J40*	SEGMENT ID
Chicago	#1 County Farm Road	12	3.6	0.4		022 20362 000000_6.720_7.020
Chicago	#2 Cass Street	21	1.2	2.8	■	099 20607 000000_9.850_10.270
Chicago	#3 Illinois Route 59	16	2.1	1.8		022 20338 000000_11.370_11.670
Chicago	#4 Jefferson Street	27	3.5	0	■	099 20607 000000_6.920_7.410
Chicago	#5 Chicago Street	6	2.7	0	■	099 20846A 000000_1.540_1.800



**TOP 5 HIN LOCATIONS**

URBANIZED						
URBAN AREA	ROAD NAME	TOTAL CRASHES (YEARS 2005-2022)	OBSERVED SAFETY SCORE	PERCEIVED SAFETY SCORE	J40*	SEGMENT ID
De Kalb-Sycamore	#1 Lincoln Hwy	40	3.1	0		019 20567 000000_8.820_9.310
Danville	#2 Main (MLK Memorial Way)	13	2.9	0	■	092 20729 000000_4.970_5.360
Danville	#3 Main (MLK Memorial Way)	13	2.6	0	■	092 20729 000000_5.660_5.950
Springfield	#4 Carpenter Street	22	2.4	0	■	084 97975 000000_0.690_1.070
Carbondale	#5 E Grand Avenue	20	1.8	0.5		039 99711 000000_0.060_0.320

URBAN						
URBAN AREA	ROAD NAME	TOTAL CRASHES (YEARS 2005-2022)	OBSERVED SAFETY SCORE	PERCEIVED SAFETY SCORE	J40*	SEGMENT ID
Streator	#1 Bloomington Street	11	1.9	0		050 20068 000000_37.390_37.640
Ottawa	#2 LaSalle Street	21	1.8	0	■	050 20068 000000_22.720_23.070
Galesburg	#3 Henderson	15	1.3	0	■	048 96791 000000_2.000_2.500
Freeport	#4 Main Street	7	1.1	0	■	089 95236 000000_0.000_0.200
Morris	#5 Division Street	8	1.1	0		032 20326 000000_6.010_6.220

RURAL						
URBAN AREA	ROAD NAME	TOTAL CRASHES (YEARS 2005-2022)	OBSERVED SAFETY SCORE	PERCEIVED SAFETY SCORE	J40*	SEGMENT ID
	#1 Illinois Route 154	0	0	2.0		028 20841 000000_3.020_3.320
	#2 Illinois Route 154	0	0	1.6		028 20841 000000_3.520_3.740

Note: Segment ID refers to the [Illinois Roadway Inventory System \(IRIS\)](#) route, along with beginning and ending milepost.

\* J40 = Identified as a Disadvantage Community as defined by Justice40.

Table 2-3 provides the top three clusters by area class and mode.

Table 2-3.

**Top 3 Cluster Locations for Pedestrians and Bicyclist by Area Class**

TOP 3 – PEDESTRIANS				
CHICAGO				
LOCATIONS DESCRIPTION	TOTAL CRASHES REPORTED	ADJUSTED CRASHES PER YEAR*	J40**	CLUSTER ID
#1 Pulaski, Adams to Arthington	241	21.6	■	P_151
#2 Broadway, Farewell to Thorndale	278	19.1	■	P_100
#3 Illinois to Chicago, Wells to Orleans	292	16.6		P_298

COOK COUNTY				
LOCATIONS DESCRIPTION	TOTAL CRASHES REPORTED	ADJUSTED CRASHES PER YEAR*	J40**	CLUSTER ID
#1 Cicero, 19 <sup>th</sup> to 23 <sup>rd</sup>	91	14.2	■	P_451
#2 Mannheim and Armitage	11	5.7	■	P_1548
#3 147 <sup>th</sup> , Halsted to Jefferson	54	5.4	■	P_1498

COLLAR COUNTIES				
LOCATIONS DESCRIPTION	TOTAL CRASHES REPORTED	ADJUSTED CRASHES PER YEAR*	J40**	CLUSTER ID
#1 Chicago, State to Grove	39	3.9	■	P_892
#2 Sunset, Lewis to Elmwood	14	2.4	■	P_4507
#3 Chicago, Pheasant/Rachel to Bradford	7	2.3	■	P_224

URBANIZED				
LOCATIONS DESCRIPTION	TOTAL CRASHES REPORTED	ADJUSTED CRASHES PER YEAR*	J40**	CLUSTER ID
#1 Center to Main, Market to Mulberry	20	2.0	■	P_300
#1 Grand, 4 <sup>th</sup> to 7 <sup>th</sup>	14	2.0	■	P_1578
#1 Court, Schuyler to Indiana	15	1.9	■	P_1449

Note: Cluster ID is the reference number established through the analysis process and refers to the unique cluster.

\* Crashes are adjusted for under-reporting

\*\* J40 = Identified as a Disadvantage Community as defined by Justice40.

TOP 3 – PEDESTRIANS

URBAN				
LOCATIONS DESCRIPTION	TOTAL CRASHES REPORTED	ADJUSTED CRASHES PER YEAR*	J40**	CLUSTER ID
#1 La Salle, Main to Madison	9	1.1	■	P_1083
#2 High and Division	5	1.0		P_4479
#3 Broadway, Beaver to Blackhawk	5	0.9	■	P_4442

RURAL				
LOCATIONS DESCRIPTION	TOTAL CRASHES REPORTED	ADJUSTED CRASHES PER YEAR*	J40**	CLUSTER ID
#1 Main and Green	3	0.5		P_5558
#2 Main and Genesee	4	0.4	■	P_4272
#3 Washington and Randolph	3	0.3		P_4171

TOP 3 – BICYCLISTS

CHICAGO				
LOCATIONS DESCRIPTION	TOTAL CRASHES REPORTED	ADJUSTED CRASHES PER YEAR*	J40**	CLUSTER ID
#1 Milwaukee, Augusta to Oakley/Moffat	725	22.2		B_16
#2 Larrabee to Wells, Locust to Grand	204	10.2		B_145
#3 Wells, Lincoln to Division	219	9.2	■	B_53

COOK COUNTY				
LOCATIONS DESCRIPTION	TOTAL CRASHES REPORTED	ADJUSTED CRASHES PER YEAR*	J40**	CLUSTER ID
#1 Austin and Beckwith	19	1.8		B_2944
#2 Cicero, Cermak to 21 <sup>st</sup>	18	1.8	■	B_66
#3 22 <sup>nd</sup> , Wesley to East	21	1.6		B_831

Note: Cluster ID is the reference number established through the analysis process and refers to the unique cluster.

\* Crashes are adjusted for under-reporting

\*\* J40 = Identified as a Disadvantage Community as defined by Justice40.

TOP 3 – BICYCLISTS

COLLAR COUNTIES				
LOCATIONS DESCRIPTION	TOTAL CRASHES REPORTED	ADJUSTED CRASHES PER YEAR*	J40**	CLUSTER ID
#1 York, Vallette to Seminole	16	1.2		B_854
#2 Geneva and County Farm	13	1.0		B_2332
#3 Virginia and McHenry	17	0.8		B_187

URBANIZED				
LOCATIONS DESCRIPTION	TOTAL CRASHES REPORTED	ADJUSTED CRASHES PER YEAR*	J40**	CLUSTER ID
#1 Lincoln, Locust to Carroll	17	0.7		B_1780
#2 Grand and 5 <sup>th</sup>	14	0.7	■	B_934
#3 Grand, 5 <sup>th</sup> to 6 <sup>th</sup>	13	0.6	■	B_1298

URBAN				
LOCATIONS DESCRIPTION	TOTAL CRASHES REPORTED	ADJUSTED CRASHES PER YEAR*	J40**	CLUSTER ID
#1 1 <sup>st</sup> , Wallace to 2 <sup>nd</sup>	14	0.7	■	B_1110
#2 Henderson and Dayton	5	0.4		B_3636
#3 Main, La Salle to Columbus	10	0.4	■	B_1604

RURAL				
LOCATIONS DESCRIPTION	TOTAL CRASHES REPORTED	ADJUSTED CRASHES PER YEAR*	J40**	CLUSTER ID
#1 5 <sup>th</sup> and Main	3	0.2		B_3905

Note: Cluster ID is the reference number established through the analysis process and refers to the unique cluster.

\* Crashes are adjusted for under-reporting

\*\* J40 = Identified as a Disadvantage Community as defined by Justice40.



# Systemic Safety Analysis

Systemic safety analysis identifies common features and contributing factors to locations that have an overrepresentation of crashes. By recognizing the common features, agencies proactively identify criteria or warrants that can be applied system wide or may influence policy, guidance, and standards.

The effectiveness of the systemic safety analysis is based on the information that forms the foundation for determining common features. The VRU Safety Assessment considers land use, geometric characteristics of the roadway, public and stakeholder input, and equity.

## Systemic Safety Analysis Results

In Illinois, over 25% of VRU crashes occurred at signalized intersections in Chicago (Table 2-4). Outside of Chicago, both bicycle and pedestrian crashes happen most often at unsignalized intersections except for in rural areas, where the highest incidence of crashes is along the corridor. All crash types were included in the systemic safety analysis.

**Table 2-4. VRU Crashes by Mode, Location, and Area Class**

AREA CLASS	MODE						TOTAL
	BICYCLE			PEDESTRIAN			
	Along Corridor	Signalized Intersection	Unsignalized Intersection	Along Corridor	Signalized Intersection	Unsignalized Intersection	
<b>Chicago</b>	3.2% (4,667)	8.0% (11,683)	6.6% (9,587)	7.1% (10,401)	17.3% (25,287)	11.4% (16,649)	<b>53.6%</b> <b>(78,274)</b>
<b>Cook County</b>	1.2% (1,783)	2.7% (4,006)	3.7% (5,457)	2.3% (3,289)	3.6% (5,195)	4.1% (6,011)	<b>17.6%</b> <b>(25,741)</b>
<b>Collar Counties</b>	1.2% (1,738)	1.7% (2,499)	2.7% (3,981)	1.9% (2,768)	1.7% (2,416)	2.5% (3,604)	<b>11.7%</b> <b>(17,006)</b>
<b>Urbanized</b>	0.9% (1,256)	1.4% (2,009)	2.5% (3,646)	1.7% (2,502)	1.7% (2,417)	2.7% (3,929)	<b>10.8%</b> <b>(15,759)</b>
<b>Urban</b>	0.3% (406)	0.3% (474)	1.1% (1,542)	0.5% (653)	0.3% (424)	0.9% (1,361)	<b>3.3%</b> <b>(4,860)</b>
<b>Rural</b>	0.7% (1,064)	0.0% (10)	0.3% (503)	1.5% (2,246)	0.0% (31)	0.4% (551)	<b>3.0%</b> <b>(4,405)</b>
<b>TOTAL</b>	<b>7.5%</b> <b>(10,914)</b>	<b>14.2%</b> <b>(20,681)</b>	<b>16.9%</b> <b>(24,716)</b>	<b>15.0%</b> <b>(21,859)</b>	<b>24.5%</b> <b>(35,770)</b>	<b>22.0%</b> <b>(32,105)</b>	

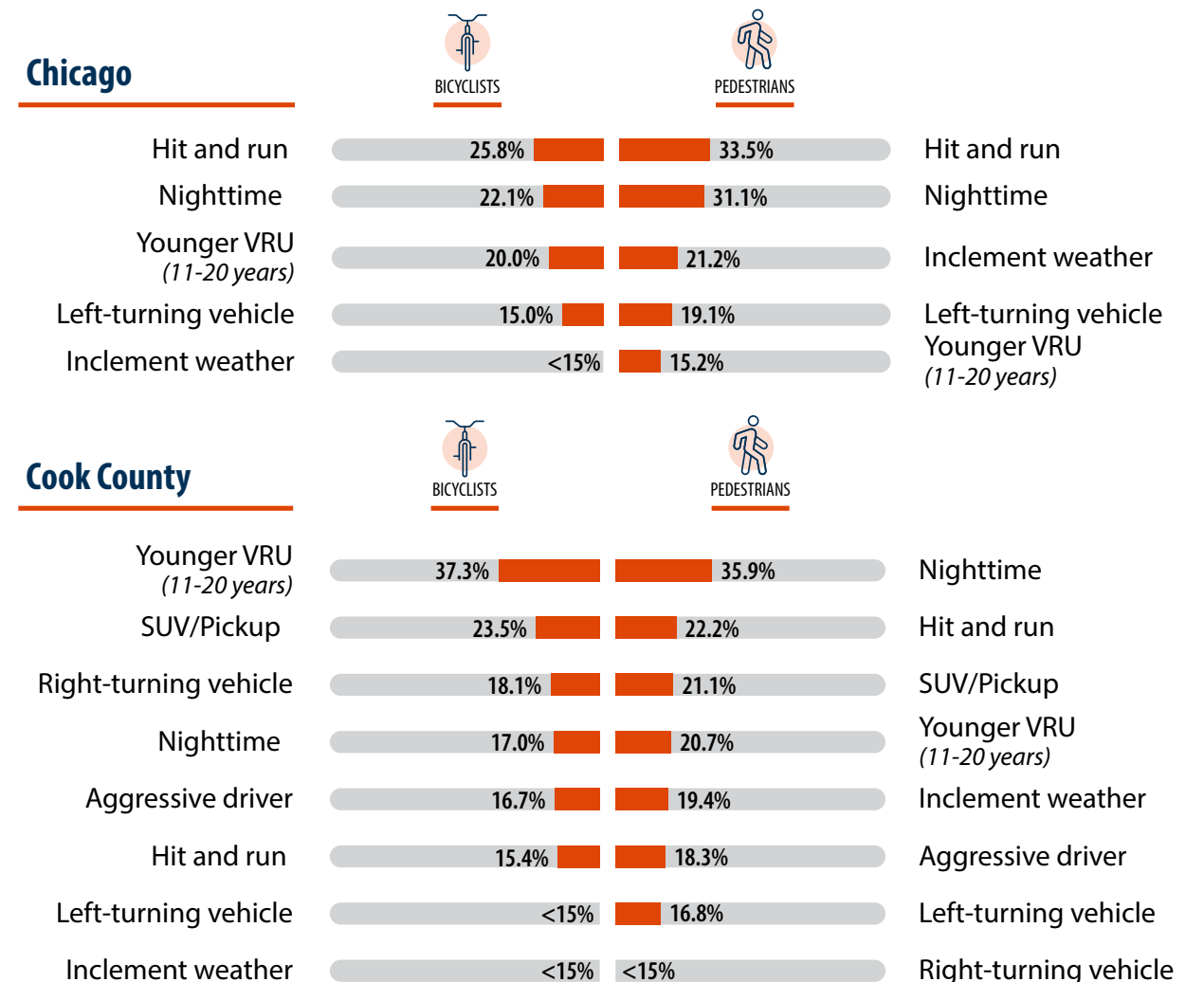
## CONTRIBUTING FACTORS

Darkness and a lack of visibility associated with nighttime conditions was the single highest contributing factor to VRU crashes in Illinois, with 28% of crashes occurring at night. Inclement weather was a factor in 16% of VRU crashes. A quarter of VRU crashes were hit and runs. A sports utility vehicle (SUV) or a pickup hit a VRU in 18% of crashes. Left-turning vehicles were involved in

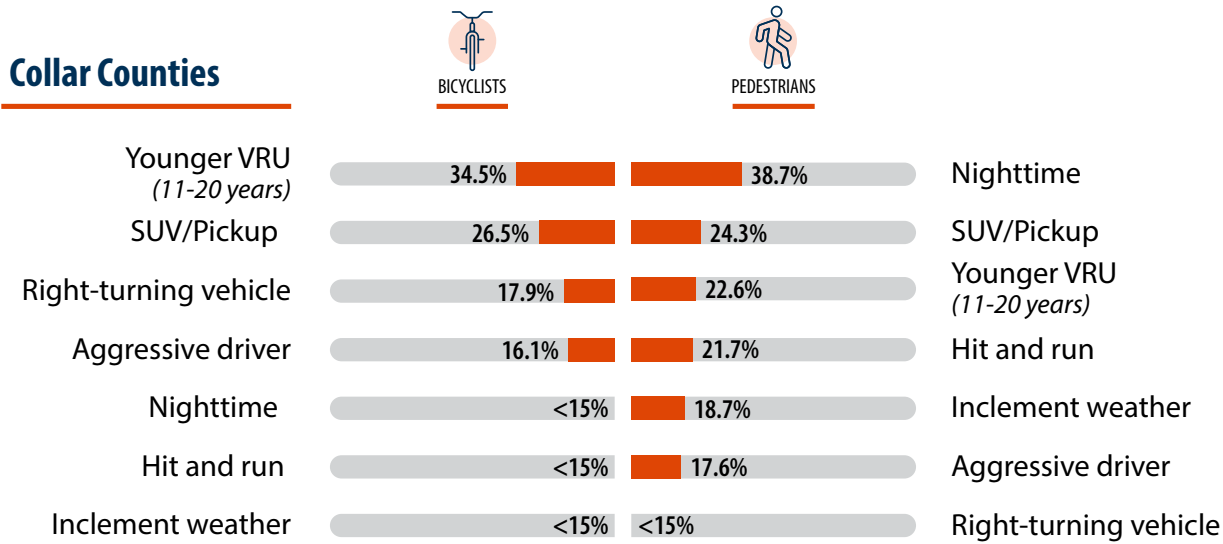
15% of VRU crashes, with the highest incidence rates in the City of Chicago.

Children, teens, and younger adults are overrepresented in VRU crashes. Although people under the age of 21 only account for 26% of the population in Illinois, almost 40% of bicycle crashes and 30% of pedestrian crashes involve a VRU under the age of 21. Figure 2-5 lists common factors in VRU crashes by mode and area class. Factors are included in the table if they occur in 15% or more of crashes for that mode and area.

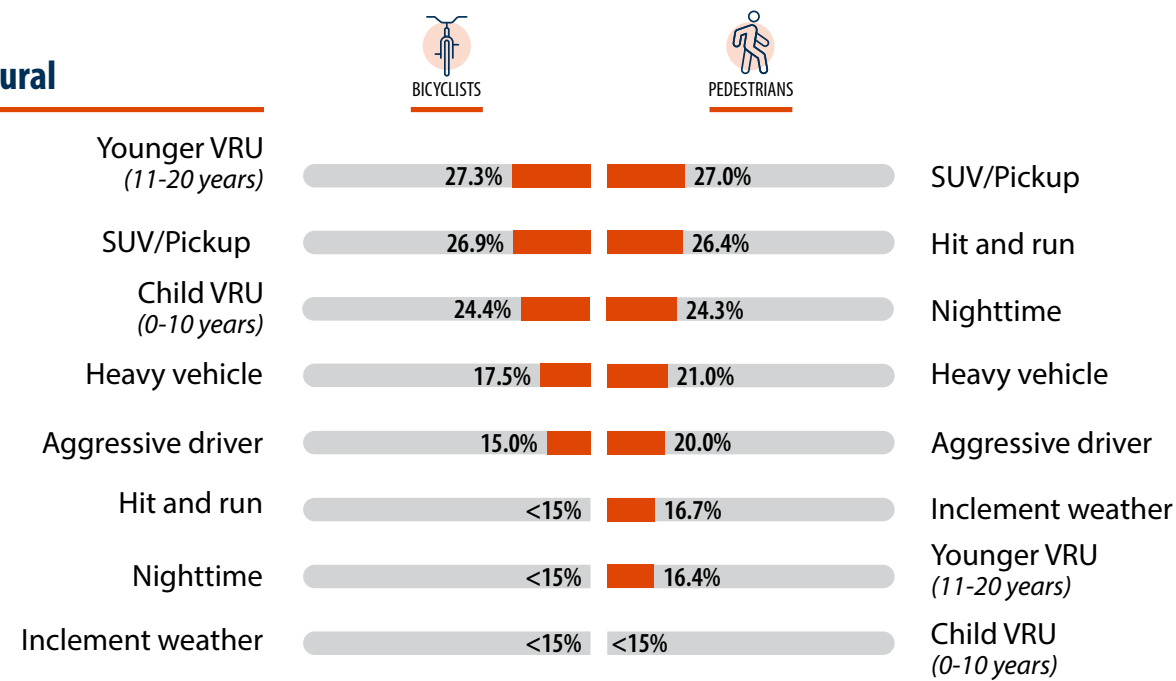
**Figure 2-5. Common Factors in VRU Crashes by Mode and Area Class**



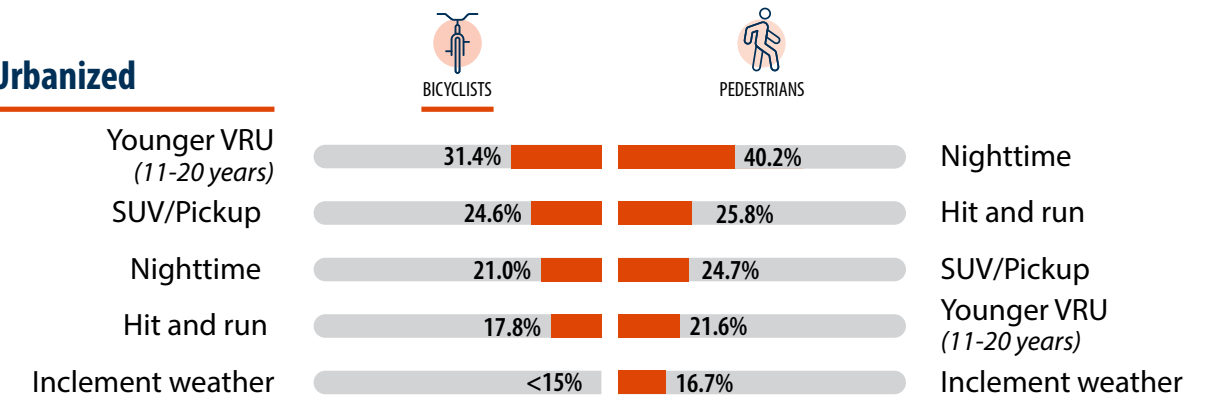
**Collar Counties**



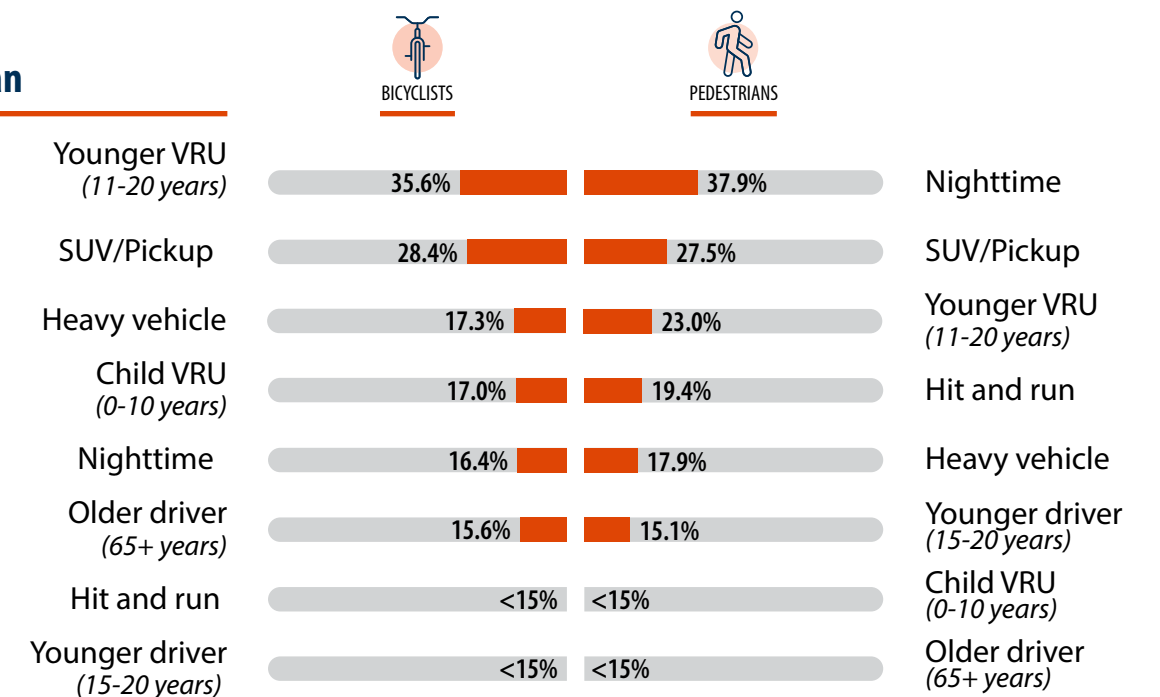
**Rural**



**Urbanized**



**Urban**





**Table 2-6.**  
**Land Use and Roadway Characteristics**  
**Associated with Common Factors**

Table 2-6 highlights land use and roadway characteristics most frequently associated with select common factors. While not necessarily the largest crash factor, the common factors listed in Table 2-6 do occur in 15% or more of crashes for that mode and area class.

AREA CLASS	MODE	COMMON FACTOR	ROADWAY AND LAND USE CHARACTERISTICS
<b>Chicago</b>	<i>Bicycle</i>	Left-turning vehicle	<ul style="list-style-type: none"> <li>Two-lane corridors</li> <li>Collector street</li> <li>10-15K AADT</li> <li>30-35 MPH speed limit</li> <li>Commercial land</li> </ul>
	<i>Pedestrian</i>	Left-turning vehicle	<ul style="list-style-type: none"> <li>Two-lane corridors</li> <li>Arterial street</li> <li>15-30K AADT</li> <li>30-35 MPH speed limit</li> <li>Commercial land</li> </ul>
<b>Cook County</b>	<i>Bicycle</i>	Right-turning vehicle	<ul style="list-style-type: none"> <li>Four-lane corridors</li> <li>Arterial street</li> <li>30-50K AADT</li> <li>30-35 MPH speed limit</li> <li>Commercial land</li> </ul>
	<i>Pedestrian</i>	Left-turning vehicle	<ul style="list-style-type: none"> <li>Four-lane corridors</li> <li>Arterial street</li> <li>30-50K AADT</li> <li>30-35 MPH speed limit</li> <li>Commercial land</li> </ul>
<b>Collar Counties</b>	<i>Bicycle</i>	Right-turning vehicle	<ul style="list-style-type: none"> <li>Four-lane corridors</li> <li>Arterial street</li> <li>15-30K AADT</li> <li>30-35 MPH speed limit</li> <li>Commercial land</li> </ul>
	<i>Pedestrian</i>	Nighttime	<ul style="list-style-type: none"> <li>Two-lane corridors</li> <li>Arterial street</li> <li>15-30K AADT</li> <li>30-35 MPH speed limit</li> <li>Commercial land</li> </ul>

AREA CLASS	MODE	COMMON FACTOR	ROADWAY AND LAND USE CHARACTERISTICS
<b>Urbanized</b>	<i>Bicycle</i>	Nighttime	<ul style="list-style-type: none"> <li>Two-lane corridors</li> <li>Arterial street</li> <li>10-15K AADT</li> <li>30-35 MPH speed limit</li> <li>Commercial land</li> </ul>
	<i>Pedestrian</i>	Nighttime	<ul style="list-style-type: none"> <li>Two-lane corridors</li> <li>Arterial street</li> <li>10-15K AADT</li> <li>40-45 MPH speed limit</li> <li>Commercial land</li> </ul>
<b>Urban</b>	<i>Bicycle</i>	Child VRU (0-10 years)	<ul style="list-style-type: none"> <li>Two-lane corridors</li> <li>Local street</li> <li>10-15K AADT</li> <li>30-35 MPH speed limit</li> <li>Commercial land</li> </ul>
	<i>Pedestrian</i>	Nighttime	<ul style="list-style-type: none"> <li>Two-lane corridors</li> <li>Arterial street</li> <li>10-15K AADT</li> <li>30-35 MPH speed limit</li> <li>Commercial land</li> </ul>
<b>Rural</b>	<i>Bicycle</i>	Child VRU (0-10 years)	<ul style="list-style-type: none"> <li>Two-lane corridors</li> <li>Local street</li> <li>5-10K AADT</li> <li>30-35 MPH speed limit</li> <li>Commercial land</li> </ul>
	<i>Pedestrian</i>	Hit and run	<ul style="list-style-type: none"> <li>Two-lane corridors</li> <li>Local street</li> <li>30-50K AADT</li> <li>40-45 MPH speed limit</li> <li>Commercial land</li> </ul>

**AADT** = annual average daily traffic  
**MPH** = mile(s) per hour

# Summary of Consultation

IT'S NOT A GAME, ILLINOIS!





SECTION 03

# Summary of Consultation

## Stakeholder Engagement

Stakeholder engagement was an essential part of the VRU Safety Assessment. Local and municipal agencies, IDOT, metropolitan planning organizations, advocacy groups, law enforcement, and other stakeholders shared local knowledge and perspectives on safety observations, potential strategies for improving the safety of VRUs, and challenges with implementing safety programs.

IDOT held a kickoff webinar on March 30, 2023, to provide a background on the VRU Safety Assessment process, including federal requirements and opportunities to support the initiative. There were 195 attendees from across the state.

The VRU Safety Webmap was demonstrated during the webinar and received positive feedback. The Webmap is an interactive online mapping application that provided an opportunity for the public to comment on safety observations and was open through June 2023. The Webmap was advertised through different media outlets and partnerships including newspaper articles, newsletters, email distribution, social media, and webinar outreach. Over 3,400 locations were entered into the Webmap (Figure 3-1). The observations collected from the Webmap were used in identification of the HIN.

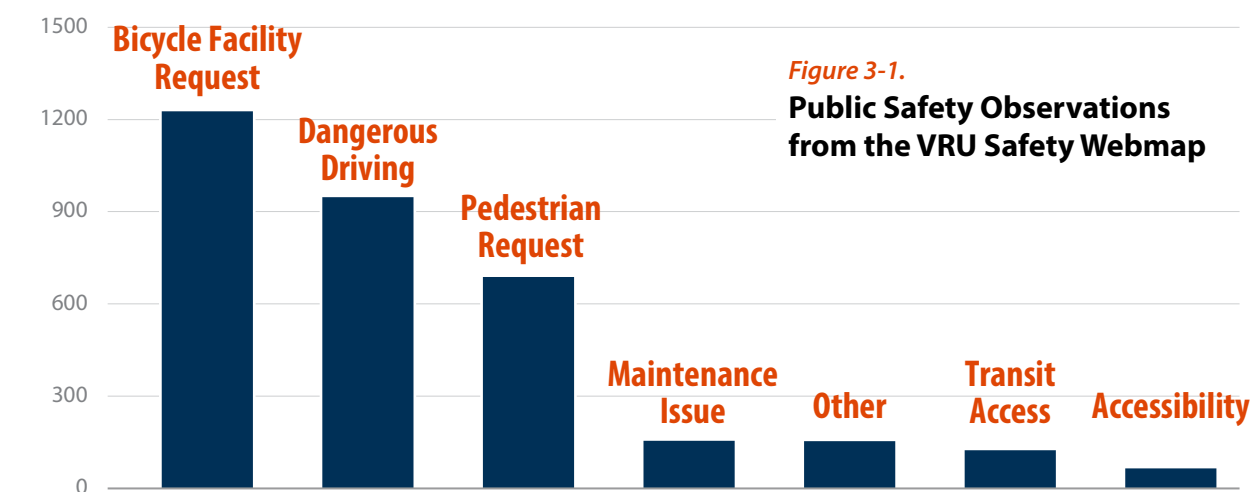
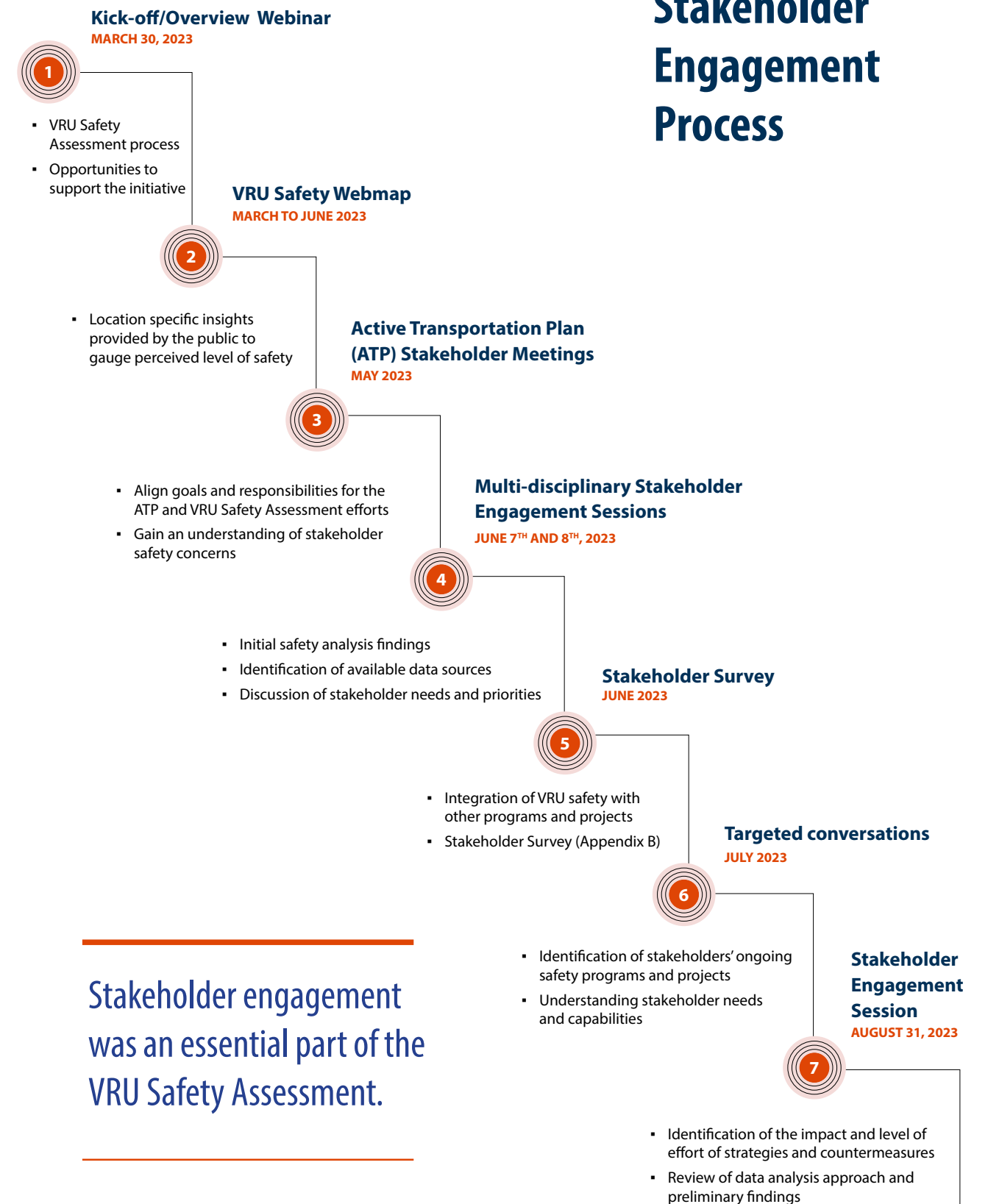


Figure 3-1. Public Safety Observations from the VRU Safety Webmap

## Stakeholder Engagement Process



Stakeholder engagement was an essential part of the VRU Safety Assessment.

A series of four stakeholder engagement sessions representing regions across the state (urbanized areas, non-urbanized areas, Cook County, Collars Counties) were held in June 2023. There were 255 attendees across the four sessions, with some participants joining multiple sessions. Attendees represented local and municipal agencies (36%), IDOT (29%), advocacy groups (10%), metropolitan planning organizations (9%), the private sector (6%), federal agencies (5%), law enforcement (1%), and other groups (3%). Stakeholders discussed the trends they are seeing in their communities and

the approaches they are planning, or have been implementing, to save lives and reduce injuries for bicyclists and pedestrians.

To obtain more information about ongoing safety programs and projects, IDOT shared a survey with stakeholders and held follow-up detailed conversations after the engagement sessions.

IDOT convened a meeting with the roadway owners and other technical advisers in August 2023 to review results and discuss proposed strategies and countermeasures.

### EQUITY CONSIDERATIONS

The Illinois Division of the Federal Highway Administration (FHWA) drafted a VRU Underserved Communities Report (2023) for Illinois that was used to guide stakeholder outreach. Underserved communities include the following:

- Black, Latino, and Indigenous and Native American persons; Asian Americans and Pacific Islanders; and other persons of color
- Members of religious minorities
- Lesbian, gay, bisexual, transgender, and queer (LGBTQ+) persons
- Persons with disabilities
- Persons who live in rural areas
- Persons otherwise adversely affected by persistent poverty or inequality

Justice40 was considered in the identification of underserved communities.

IDOT conducted additional outreach to the 138 communities identified in the report to invite them to participate in the stakeholder engagement sessions; 25% of communities attended at least one of the stakeholder meetings. The geographic breakout of the meetings—urbanized areas, non-urbanized areas, Cook County, Collars Counties—helped to ensure that smaller communities had a venue for direct engagement.

### SAFE SYSTEM APPROACH

Educating stakeholders on the SSA was an important part of the consultation process for the VRU Safety Assessment. During the first round of stakeholder engagement sessions, participants were asked about their familiarity with the SSA, and 60% of respondents said that they were very or extremely familiar, while 40% were not at all or not so familiar. IDOT presented the tenants of the SSA and stressed the need for collaboration and participation from all stakeholders in the identification and implementation of safety countermeasures.

As part of the survey about ongoing safety programs and projects, IDOT asked stakeholders if their agency plans on adopting a SSA and if they had started to implement a SSA. Although 67% of respondents said that they plan to implement an SSA, only 25% have started. The responses from stakeholders highlight the need for continuing education around the SSA and assistance with implementation.

### Summary of Outcomes

Stakeholders provided feedback on their safety concerns, projects, and programs that they have implemented or want to implement, barriers to improving transportation safety, and how the information from the VRU Safety Assessment will be used in their safety programs.

### SAFETY OBSERVATIONS

During the first round of engagement sessions, stakeholders shared their VRU safety observations. Infrastructure was the primary focus of traffic safety observations, followed by driver behavior, then pedestrian or bicyclist behavior. The top infrastructure observations were the fact that roadway design prioritizes vehicles and encourages high speed, followed by a lack of separation between vehicles and VRUs, and a lack of bicycle or pedestrian infrastructure along segments. With respect to driver behavior, speeding or aggressive driving and distracted driving were the main observations. Poor visibility and not using the bicycle or pedestrian accommodation were the top-ranked pedestrian or bicyclist behavior observations.

Based on the information provided, it became clear that VRUs continue to be a high-priority safety need in Illinois, and strategies that address both infrastructure and behavior should be considered in the VRU Safety Assessment.

THE SSA & OUR STAKEHOLDERS

60% OF PARTICIPANTS ARE FAMILIAR WITH THE SSA

40% OF PARTICIPANTS ARE NOT FAMILIAR WITH THE SSA

67% OF PARTICIPANTS PLAN TO IMPLEMENT THE SSA

25% OF PARTICIPANTS HAVE STARTED IMPLEMENTATION



### CHALLENGES AND BARRIERS TO OPPORTUNITY

Stakeholders identified funding followed closely by agency priority conflicts (such as a focus on maintenance, operations, other needs) as the biggest barriers to improving VRU safety. Maintenance agreements for non-roadway infrastructure are also a barrier for communities that lack the resources to maintain these facilities.

Roadway projects are frequently driven by pavement condition and maintaining a state of good repair, but agencies plan to incorporate safety more into project selection. Safety projects are often made possible by integrating them into other resurfacing or reconstruction projects, and the availability of local funds. Policy changes and design guidelines were identified as critical components to improving VRU safety. The administrative process (both federal and state) is a challenge for many communities.

Stakeholders anticipate the VRU Safety Assessment will help them implement safety improvements by providing a visual assessment of the results, including hotspot identification, countermeasure recommendations, and funding source recommendations. The VRU Safety Assessment should help position agencies across the state to implement proven safety countermeasures and policies.

**The VRU Safety Assessment should help position agencies across the state to implement proven safety countermeasures and policies.**



### Safety Programs and Progress

There are a number of existing state, regional, county, and municipal plans and programs already in place to address the safety needs of VRUs in Illinois. This section summarizes current progress toward meeting safety performance targets for VRUs using information gathered from stakeholders and planning documents.

#### SAFETY PLANS, PROGRAMS, AND PROJECTS

Tables 3-1 to 3-3 provide an overview of plans, ongoing programs, and projects that address the safety needs of VRUs. The tables are a sample of plans and programs but may not be comprehensive.

**Table 3-1. IDOT Bicycle and Pedestrian Safety Plans, Programs, and Projects**

IDOT SAFETY INITIATIVE	SAFE SYSTEM APPROACH	FUNDING	RELEVANCE
<b>SHSP</b>	<ul style="list-style-type: none"> <li>• Safer People</li> <li>• Safer Roads</li> <li>• Safer Speeds</li> <li>• Post-crash Care</li> </ul>	NA	Goal: 2% annual reduction in bicycle and pedestrian fatalities and serious injuries.
<b>Highway Safety Plan</b>	<ul style="list-style-type: none"> <li>• Safer People</li> <li>• Safer Speeds</li> </ul>	\$1.55M	\$1.55M in 2023 for nonmotorized safety program (communication campaign, bicycle/pedestrian safety outreach and education).
<b>Highway Safety Improvement Program</b>	<ul style="list-style-type: none"> <li>• Safer People</li> <li>• Safer Roads</li> <li>• Safer Speeds</li> </ul>	\$15.6M	Provides bicycle/pedestrian countermeasures with crash reduction factors. \$15.6M for VRU projects in 2023. At least 15% of HSIP funds must be spent on VRUs when VRUs are 15% or more of traffic fatalities per the HSIP VRU Special Rule.
<b>Active Transportation Plan (ATP)</b>	<ul style="list-style-type: none"> <li>• Safer People</li> <li>• Safer Roads</li> <li>• Safer Speeds</li> </ul>	NA	In development. The ATP will use data from the VRU to inform the safety analysis. Equity metrics from the ATP were incorporated into the VRU.
<b>Rebuild Illinois Capital Plan</b>	<ul style="list-style-type: none"> <li>• Safer Roads</li> </ul>	\$50M	2020-2025: \$50M committed for bicycle/pedestrian infrastructure projects.
<b>IL Transportation Enhancement Program (ITEP)</b>	<ul style="list-style-type: none"> <li>• Safer Roads</li> </ul>	\$122.9M	Competitive biannual program: 61 bicycle/pedestrian projects awarded in 2023 ranging from \$150K-\$3M and totaling \$122.9M.
<b>Safe Routes to Schools</b>	<ul style="list-style-type: none"> <li>• Safer People</li> <li>• Safer Roads</li> <li>• Safer Speeds</li> </ul>	\$12.4M	\$12.4M in 2022 for 57 projects.
<b>Emergency Traffic Patrol</b>	<ul style="list-style-type: none"> <li>• Post-crash Care</li> </ul>	NA	Responds to all disruptive incidents on the state's busiest urban expressway systems and take immediate corrective action to safely restore normal traffic flow.
<b>District 1 HIN</b>	<ul style="list-style-type: none"> <li>• Safer Roads</li> <li>• Safer Speeds</li> </ul>	NA	Develop an HIN to determine what corridors require the most attention.

**Table 3-2. REGIONAL Bicycle and Pedestrian Safety Plans, Programs, and Projects**

REGIONAL AGENCY	SAFETY INITIATIVE	SAFE SYSTEM APPROACH	FUNDING	RELEVANCE
<b>Chicago Metropolitan Agency for Planning (CMAP)</b>	Safe Travel for All Roadmap	<ul style="list-style-type: none"> <li>▪ Safer People</li> <li>▪ Safer Roads</li> <li>▪ Safer Speeds</li> </ul>	NA	\$5M Safe Streets and Roads for All grant to develop a framework for safety research and programs in northeastern Illinois.
<b>CMAP</b>	Complete Streets Toolkit	<ul style="list-style-type: none"> <li>▪ Safer People</li> <li>▪ Safer Roads</li> <li>▪ Safer Speeds</li> </ul>	NA	Toolkit that provides resources on Complete Streets policies emphasizing improvements in bicycling, walking, and public transport with the aim of developing safe, efficient transportation systems for all road users.
<b>Cook County</b>	Invest in Cook	<ul style="list-style-type: none"> <li>▪ Safer Roads</li> </ul>	\$5.3M	\$5.3M in 2022 for 28 bicycle/ pedestrian projects countywide.
<b>Champaign County Regional Planning Commission (CCRPC)</b>	Sustainable Neighborhoods Toolkit	<ul style="list-style-type: none"> <li>▪ Safer People</li> <li>▪ Safer Roads</li> <li>▪ Safer Speeds</li> </ul>	NA	Analyzes neighborhood-level mobility, accessibility, and health in Champaign County. Includes level of traffic stress scores for bicycles and pedestrians.
<b>Metro East Park and Recreation District</b>	Metro East Bicycle/ Pedestrian Plans	<ul style="list-style-type: none"> <li>▪ Safer Roads</li> </ul>	\$3M	\$3M committed to Park and Trail programs in Madison and St. Clair counties. Will fund up to 40% of costs for developing a bicycle/ pedestrian plan in communities.
<b>McLean County Regional Planning Commission</b>	Go:Safe Action Plan	<ul style="list-style-type: none"> <li>▪ Safer People</li> <li>▪ Safer Roads</li> <li>▪ Safer Speeds</li> </ul>	\$9.9M	Target of zero fatalities or life-changing injuries by 2030. \$9.9M Rebuild Illinois grant to make all bus stops ADA compliant.

**Table 3-3. LOCAL Bicycle and Pedestrian Safety Plans, Programs, and Projects**

LOCAL AGENCY	SAFETY INITIATIVE	SAFE SYSTEM APPROACH	FUNDING	RELEVANCE
<b>Ride Illinois</b>	Guide to Municipal Bicycle Planning	<ul style="list-style-type: none"> <li>▪ Safer People</li> <li>▪ Safer Roads</li> <li>▪ Safer Speeds</li> </ul>	NA	Goal: Assist towns with bicycle plan development.
<b>Chicago Department of Transportation (CDOT)</b>	2023 Chicago Cycling Strategy	<ul style="list-style-type: none"> <li>▪ Safer Roads</li> </ul>	\$17M	Goal: 70% of Chicagoans living within 0.5 mile of low-stress bicycle way; \$17M committed.
<b>CDOT</b>	Vision Zero Chicago	<ul style="list-style-type: none"> <li>▪ Safer Roads</li> </ul>	NA	Intersection safety improvements.
<b>CMAP</b>	Bartlett and Streamwood Bicycle and Pedestrian Plan	<ul style="list-style-type: none"> <li>▪ Safer Roads</li> </ul>	\$56.4M	Goal: 85%-97% residents within 0.25 mile of a bike network, address 47 miles of high- or medium-priority sidewalk gaps. \$56.4M estimated total cost.
<b>City of Carbondale</b>	Carbondale Bikeway Network	<ul style="list-style-type: none"> <li>▪ Safer Roads</li> </ul>	\$2M	Established a system of recommended bicycle routes. \$2M ITEP grant in 2021 to extend bicycle/pedestrian path.
<b>CCRPC</b>	Urbana Bicycle Master Plan	<ul style="list-style-type: none"> <li>▪ Safer People</li> <li>▪ Safer Roads</li> </ul>	NA	Provides infrastructure and non-infrastructure recommendations to improve public safety, create connected multi-modal infrastructure, and increase the number of bicyclists.



# » About Equity

## Equity Considerations in Ongoing Safety Projects and Programs

Safety programs in Illinois are working to address transportation disparities by using equity as a metric to prioritize projects, allocate funding, and target engagement and outreach. Equity is a foundational principal of the IL SHSP. Implementation of the IL SHSP will focus on understanding systemic disparities and inequities that exist within road safety and creating a safer, more equitable transportation system by investing where the needs are the greatest.

**CDOT's Neighborhood Bike Network** is an example of how equity and community engagement is being used to improve safety for VRUs. Neighborhood Bike Networks are a community-driven approach to expanding Chicago's bikeway network in areas that are not currently well served. By partnering with local communities, CDOT has been able to link biking and traffic safety to other community goals and build a connected network of bikeways where people have convenient access to the places that are important to them.



# Program of Projects or Strategies

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SECTION 04

# Program of Projects or Strategies

## Strategies and Countermeasures

A menu of strategies and countermeasures for improving VRU safety was compiled by IDOT from published sources including FHWA’s Proven Safety Countermeasures and Illinois-specific guidelines and policies, as well as stakeholder input through the VRU Safety Assessment development process. The comprehensive list incorporates principles of the SSA and provides a universe of choices that stakeholders can use to select countermeasures. Recommended strategies and countermeasures are shown in Tables 4-1 to 4-6. Pedestrian strategies also address people with disabilities and highway workers on foot. The impact and level of effort ratings were developed with input from stakeholders and may be based on context and differences statewide. These are not intended to encourage or dissuade use of any countermeasure.

### STRATEGIES & COUNTERMEASURES FOCUSED ON:

#### PEDESTRIAN SAFETY

-  Infrastructure Strategies for Intersections
-  Infrastructure Strategies for Segments
-  Safe System Approach Strategies
-  Common Factors for Pedestrians

#### BICYCLIST SAFETY

-  Bicycle Infrastructure Strategies for Intersections
-  Bicycle Infrastructure Strategies for Segments
-  Bicycle Safe System Approach Strategies
-  Common Factors for Bicyclists

## Pedestrian Safety

Table 4-1. Pedestrian Infrastructure Strategies for Intersections

STRATEGY	EXPECTED IMPACT AND LEVEL OF EFFORT (LOE)	EXAMPLE ELEMENTS
<b>Grade-separated crossings</b>	<b>Impact:</b> High; <b>LOE:</b> High	—
<b>Roundabouts</b>	<b>Impact:</b> High; <b>LOE:</b> Depends on location and existing right-of-way	<ul style="list-style-type: none"> <li>▪ Convert to roundabout</li> <li>▪ Neighborhood circles</li> </ul>
<b>Geometric and Traffic Control Improvements</b>	<b>Impact:</b> Moderate <b>LOE:</b> Varies	<ul style="list-style-type: none"> <li>▪ Modified T-intersection</li> <li>▪ Improve skew</li> <li>▪ Enhance turn lanes</li> <li>▪ Convert two-way to all-way stop</li> <li>▪ Raised intersection</li> </ul>
<b>Prohibit Turns</b>	<b>Impact:</b> High <b>LOE:</b> Lower	<ul style="list-style-type: none"> <li>▪ Prohibit right turn on red</li> <li>▪ Prohibit left</li> </ul>
<b>Parking</b>	<b>Impact:</b> Moderate <b>LOE:</b> Lower	<ul style="list-style-type: none"> <li>▪ Restrictions near intersections</li> <li>▪ Added parking for traffic calming</li> </ul>
<b>Signal Timing</b>	<b>Impact:</b> High <b>LOE:</b> Lower	<ul style="list-style-type: none"> <li>▪ Leading pedestrian interval</li> <li>▪ Barnes-dance/exclusive pedestrian phase</li> <li>▪ Increase pedestrian walking time</li> <li>▪ Permissive to protected left turn</li> <li>▪ Leading/lagging left turns</li> </ul>
<b>Signal Improvements</b>	<b>Impact:</b> Moderate <b>LOE:</b> Lower	<ul style="list-style-type: none"> <li>▪ Add pedestrian countdown timers</li> <li>▪ Replace walk/don't walk</li> <li>▪ Push buttons</li> <li>▪ Accessible pedestrian signal</li> </ul>
<b>Signing</b>	<b>Impact:</b> Moderate <b>LOE:</b> Lower	<ul style="list-style-type: none"> <li>▪ Speed feedback signs</li> <li>▪ Pedestrian crossing</li> </ul>
<b>Median/Refuge Island</b>	<b>Impact:</b> High; <b>LOE:</b> Moderate	—
<b>Crosswalk – Activated</b>	<b>Impact:</b> High <b>LOE:</b> Lower	<ul style="list-style-type: none"> <li>▪ Rectangular rapid flashing beacons</li> <li>▪ Pedestrian hybrid beacons</li> </ul>
<b>Crosswalk – Enhanced</b>	<b>Impact:</b> High <b>LOE:</b> Lower to moderate	<ul style="list-style-type: none"> <li>▪ Raised crosswalk</li> <li>▪ Pavement marking</li> <li>▪ High visibility crosswalk</li> <li>▪ Curb extension</li> <li>▪ Curbs ADA [Americans with Disabilities Act]</li> </ul>
<b>Crosswalk – Remove</b>	<b>Impact:</b> High; <b>LOE:</b> Moderate	<ul style="list-style-type: none"> <li>▪ Remove unprotected crosswalk</li> </ul>
<b>Speed Management</b>	<b>Impact:</b> High; <b>LOE:</b> Lower	<ul style="list-style-type: none"> <li>▪ Transverse rumble strips</li> </ul>
<b>Visibility</b>	<b>Impact:</b> High; <b>LOE:</b> Moderate	<ul style="list-style-type: none"> <li>▪ Lighting</li> </ul>
<b>Systemwide</b>	<b>Impact:</b> Moderate <b>LOE:</b> Lower	<ul style="list-style-type: none"> <li>▪ Transit stop location</li> <li>▪ Far side bus stops</li> <li>▪ Maintenance</li> </ul>

**Table 4-2.**  
**Pedestrian Infrastructure Strategies for Segments**

STRATEGY	EXAMPLE ELEMENTS	EXPECTED IMPACT AND LEVEL OF EFFORT
<b>Separation</b>	Multi-use path	High impact, high level of effort
<b>Sidewalks</b>		High impact, level of effort depends on right-of-way
<b>Connective and Complete Pedestrian Network</b>		High impact, high level of effort
<b>Delineator</b>	Bollards	Moderate impact, lower level of effort
	Pedestrian fencing	
<b>Geometric Improvements</b>	Choker/narrow street	High impact, moderate level of effort
	Paved shoulder	
<b>Lane Conversion</b>	Road diet	High impact, moderate level of effort
	Skinny streets	
<b>System Planning</b>	Improved public transit access	High impact, moderate level of effort
	Speed management	
	Work zone pedestrian detours	

**Table 4-3.**  
**Pedestrian Safe System Approach Strategies**

STRATEGY	EXAMPLE ELEMENTS	EXPECTED IMPACT AND LEVEL OF EFFORT
<b>Education</b>	Pedestrian safety programs	Lower short-term impact, lower level of effort
<b>Emergency Response</b>	Emergency Traffic Patrol	Moderate impact, lower level of effort
<b>Enforcement</b>	Speeding vehicles	Moderate impact, expansion may require a high level of effort due to limited resources
	Sweeper patrol of impaired pedestrians	
<b>Legislative</b>	Speed limits	High impact, high level of effort
<b>Policy</b>	Complete Streets	High impact, lower level of effort
	Safe Streets for All	
	Data collection on exposure	



**Table 4-4.**  
**Bicycle Infrastructure Strategies for Intersections**

STRATEGY	EXAMPLE ELEMENTS	EXPECTED IMPACT AND LEVEL OF EFFORT
<b>Roundabouts</b>		High impact, level of effort depends on location and existing right-of-way
<b>Intersection Pavement Marking</b>	Bike boxes	High impact, lower level of effort
	Yield bar	
	Advance stop	
<b>Intersection Signal</b>	Bike signal	High impact, moderate level of effort
	Signal timing and visibility	
<b>Parking</b>	Remove near intersections	Moderate impact, lower level of effort
	Traffic calming	
<b>Visibility</b>	Lighting	High impact, moderate level of effort
	Aesthetics/landscaping	

**Table 4-5.**  
**Bicycle Infrastructure Strategies for Segments**

STRATEGY	EXAMPLE ELEMENTS	EXPECTED IMPACT AND LEVEL OF EFFORT
<b>Separated Path</b>		High impact, moderate level of effort
<b>Bike Lane – Protected</b>		High impact, moderate level of effort
<b>Bike Lane – Delineated</b>		High impact, lower level of effort
<b>Bike Lane – Buffered/Traditional</b>		High impact, lower level of effort
<b>Connective and Complete Bicycle Network</b>		High impact, high level of effort
<b>Geometric Improvements</b>	Access management	High impact, moderate level of effort
	Increase lane width	
	Increase median width	
	Add median	
	Paved shoulder	
<b>System Planning</b>	Priority corridors	High impact, moderate level of effort
	Speed management	



## SECTION 04

**Table 4-6.**  
**Bicycle Safe System Approach Strategies**

STRATEGY	EXAMPLE ELEMENTS	EXPECTED IMPACT AND LEVEL OF EFFORT
<b>Education</b>	Cycle skills clinic	Lower short-term impact, lower level of effort
	Bike fair	
	Neighborhood task force	
	Share the Road	
<b>Legislation</b>	Bike helmet laws	High impact, higher level of effort to implement and enforce
<b>Enforcement</b>	Cars parked in bike lanes	Moderate impact, expansion may require a high level of effort due to limited resources
	Speeding vehicles	
	Red light running	
<b>Policy</b>	Road safety assessments	High impact, lower level of effort
	Complete streets	
	SSA	

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# Application

Through discussions with stakeholders, strategies and countermeasures were aligned with common features and contributing factors identified in the systemic safety analysis (Section 2). This allows stakeholders to consider their system needs, gain an understanding of potential treatments to address conditions, and develop and implement a robust transportation safety program that supports statewide and community priorities, and equitably addresses the needs of VRUs. While this is not a comprehensive list of countermeasures, Tables 4-7 and 4-8 provide examples of strategies that can be used to address common factors for pedestrians and bicycles.

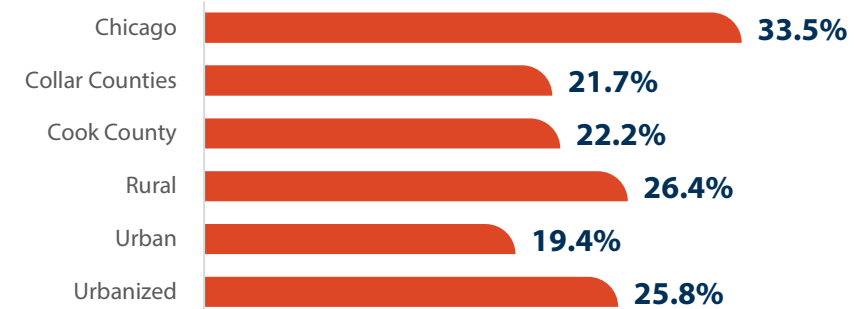
Prevalence in VRU crashes lists the percentage of crashes that involved a common factor by mode and area class.



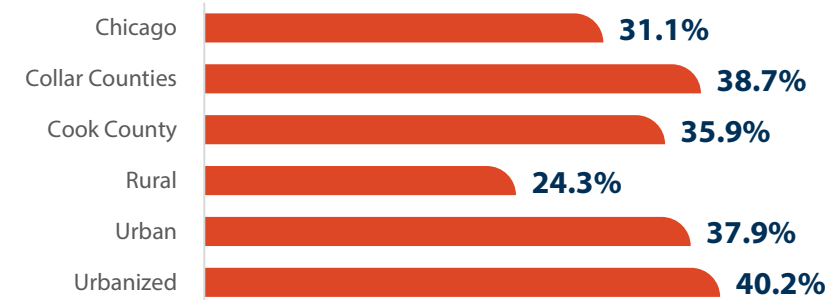
# Common Factors for Pedestrians



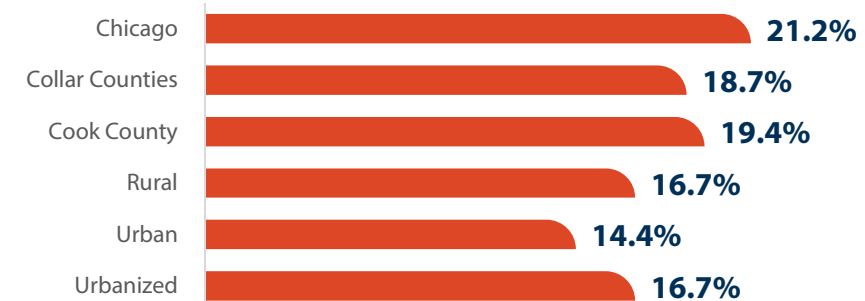
## Hit and run



## Nighttime



## Inclement weather



### Strategies

- Legislative
- Visibility
- Speed Management

### Strategies

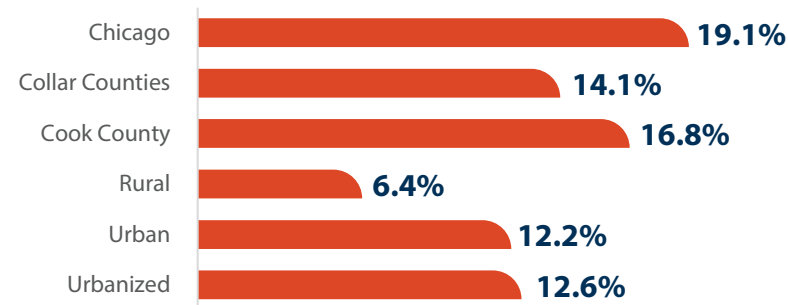
- Lighting
- Improve education for high visibility clothing
- High visibility crosswalks and signing

### Strategies

- High friction surface treatment
- Enhance visibility



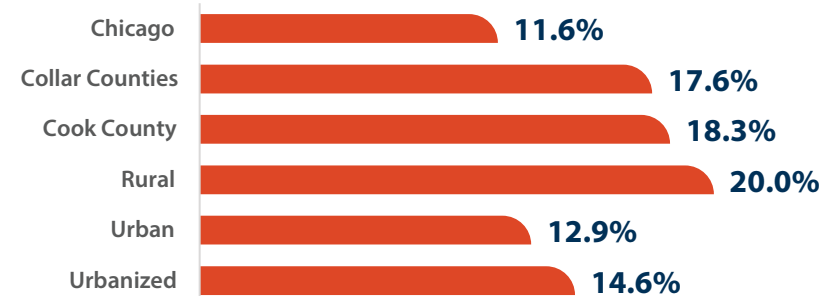
### Left-turning vehicle



#### Strategies

- Protected left turn phasing
- Alternative intersection design to minimize conflicts (R-Cuts, Continuous Green)
- Roundabouts
- Access management
- Signal improvements such as all red, leading pedestrian intervals

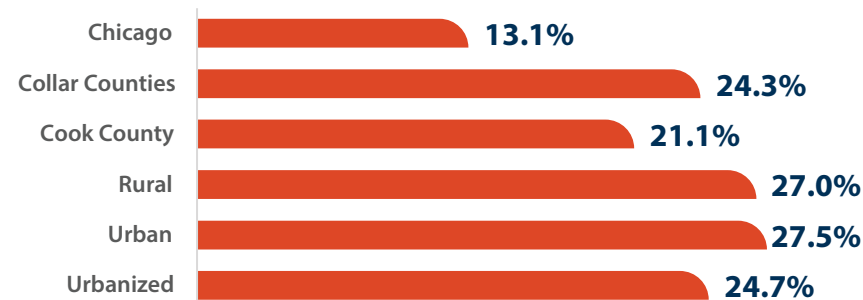
### Aggressive driver



#### Strategies

- Speed Management
- Traffic calming improvements
- Consider photo speed enforcement

### SUV/Pickup



#### Strategies

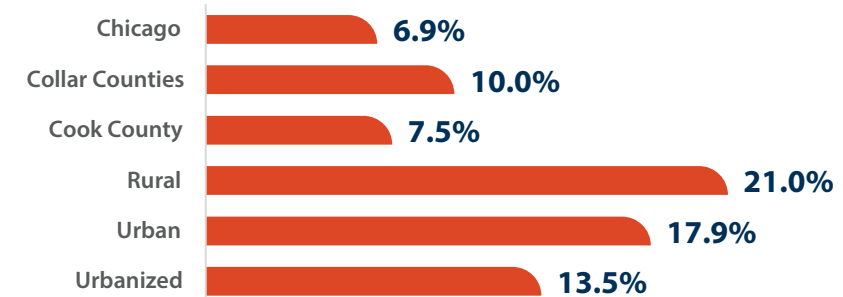
- Separation of vehicles and pedestrians through paths or sidewalks
- Increase education for SUV/Pickup drivers
- Decrease the turning radius at intersections to reduce truck speed
- Speed management



Table 4-7.

### Strategies to Address Common Factors for Pedestrians

#### Heavy vehicle



#### Strategies

- Separation of vehicles and pedestrians through paths, sidewalks, bump outs, medians and refuge islands
- Decrease the turning radius at intersections to reduce truck speed
- Increase education for heavy vehicle drivers and pedestrians crossing in areas with high truck volumes

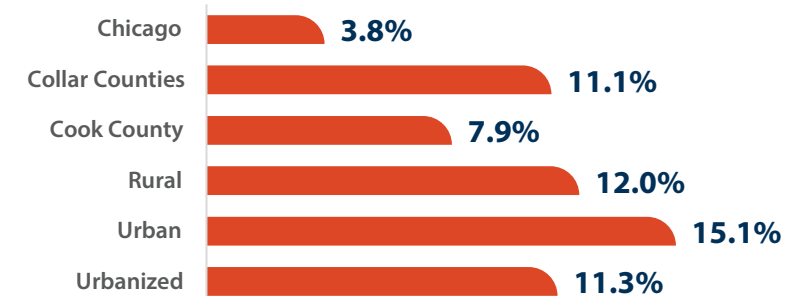
#### Younger VRU (11-20 years)



#### Strategies

- Sidewalks
- Crosswalk – Enhanced
- Median/Refuge Island
- Enhance education and awareness

#### Younger driver (15-20 years)



#### Strategies

- Speed Management
- Enhance education and awareness of laws and right of way in cross walks; rules of the road

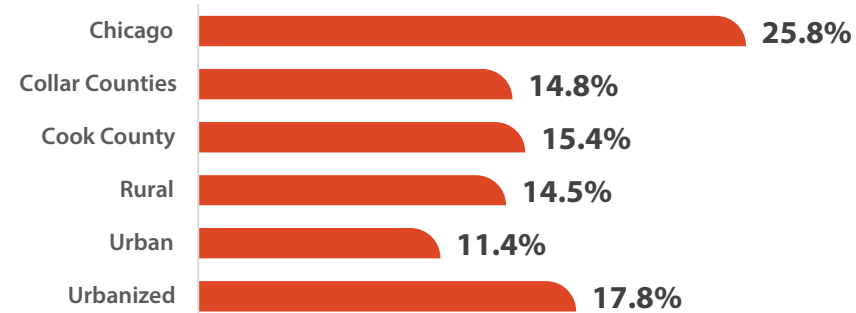


# Common Factors for Bicyclists

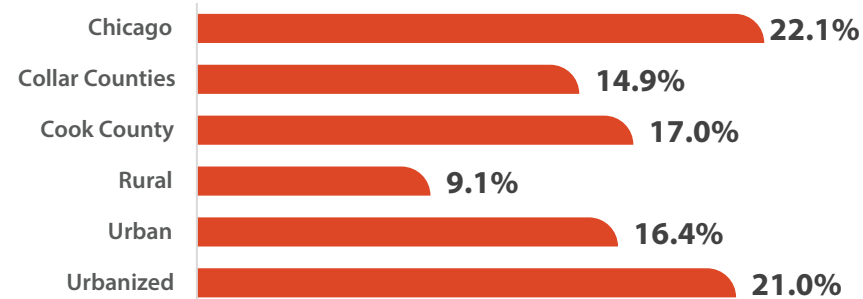
Table 4-8. Strategies to Address Common Factors for Bicyclists



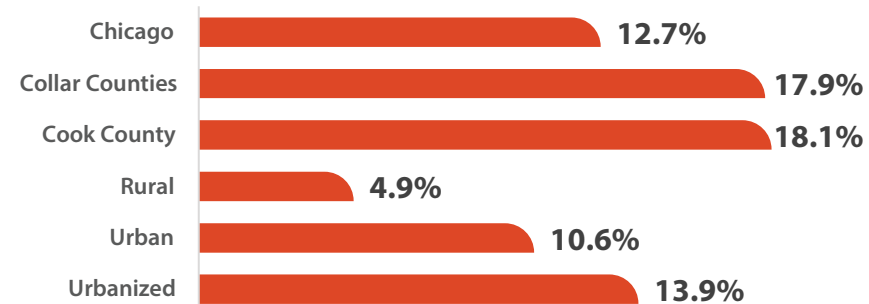
## Hit and run



## Nighttime



## Right-turning vehicle



### Strategies

- Legislative
- Visibility

### Strategies

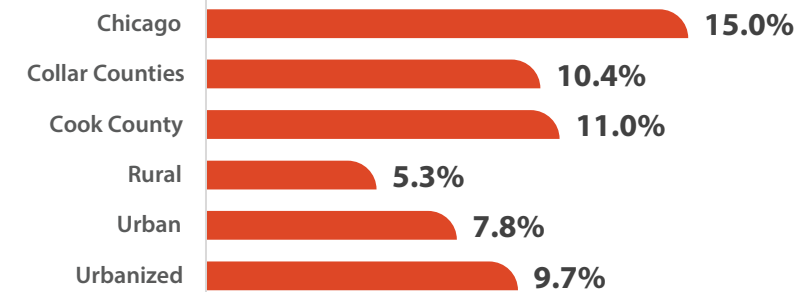
- Improve lighting
- Increase visibility of bicyclist
- Provide bike lights at community events

### Strategies

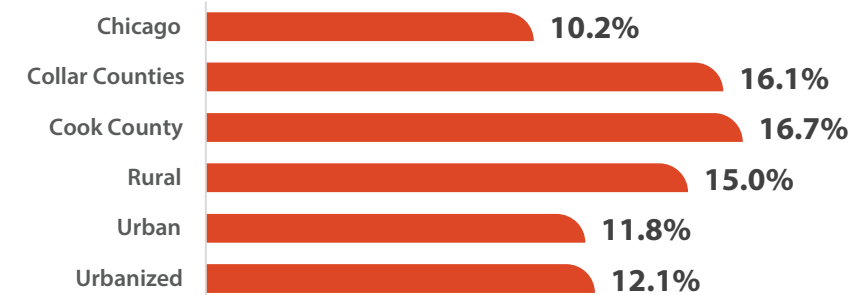
- Prohibit turns
- Roundabouts
- Add bike boxes



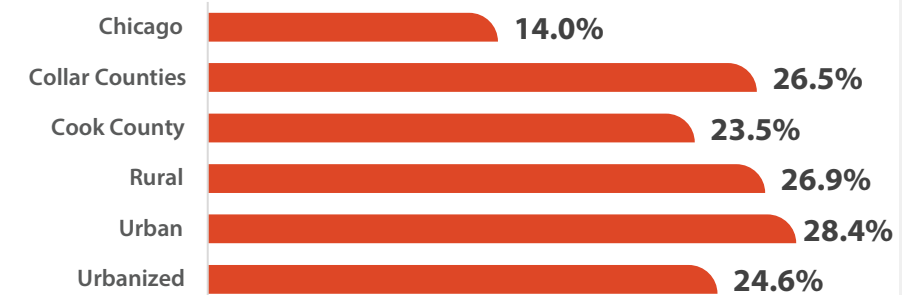
## Left-turning vehicle



## Aggressive driver



## SUV/Pickup



### Strategies

- Prohibit turns
- Roundabouts
- Protected left turns
- Add bike boxes

### Strategies

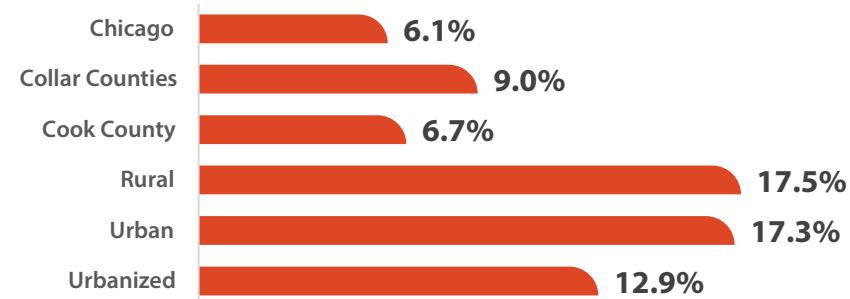
- Speed Management
- Traffic calming improvements
- Consider photo speed enforcement

### Strategies

- Bike Lane – Delineated
- Bike Lane – Buffered/Traditional



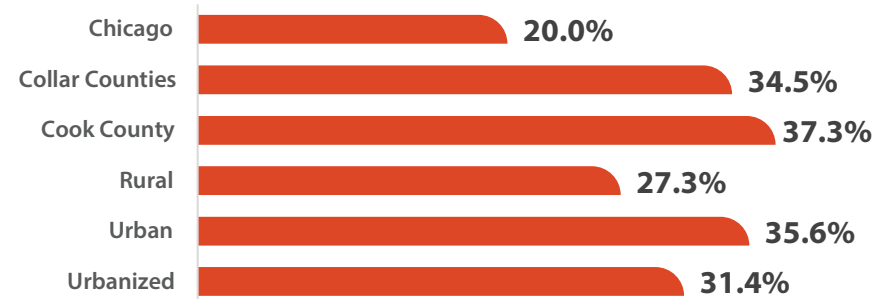
### Heavy vehicle



#### Strategies

- Separated Path

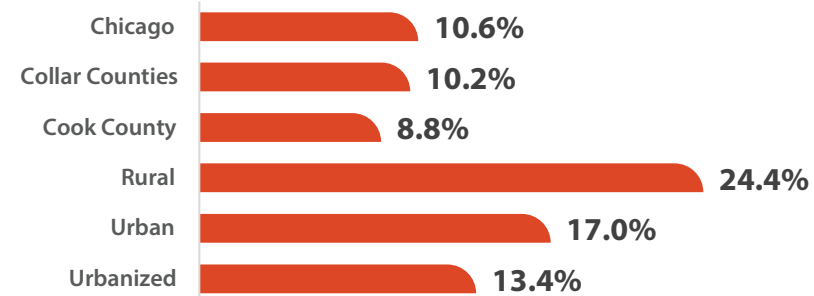
### Younger VRU (11-20 years)



#### Strategies

- Separated Path, sidewalks
- Improve education and enhance visibility

### Child VRU (0-10 years)

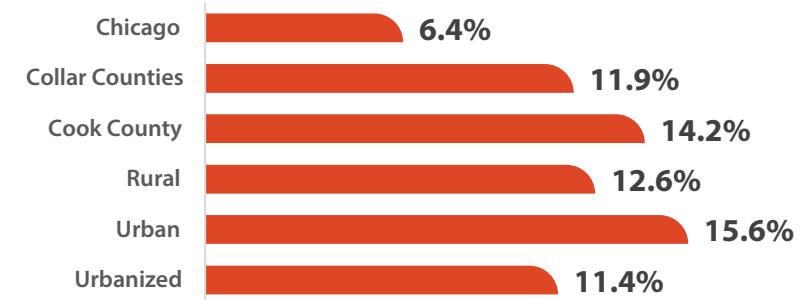


#### Strategies

- Separated Path, sidewalks
- Improve education and enhance visibility



### Older driver (65+ years)



#### Strategies

- Improve education of bicyclist accommodation features
- Separation of bicyclist and vehicle facilities
- More frequent driver assessments



# Program Implementation

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»» **IDOT is committed to providing support for statewide implementation and coordination of projects that will benefit VRUs.**

**SECTION 05**

# Program Implementation

The VRU Safety Assessment serves as a resource for safety stakeholders across Illinois. The analysis approach identifies both characteristics and high-priority areas for the potential implementation of strategies to address VRU needs across the state. Roadway owners and stakeholders can use the high-injury network and systemic safety analysis to assist with project selection and programming improvements. This document reflects expansive outreach and collaboration of safety leaders, roadway owners, and stakeholders to identify and share effective SSA countermeasures and strategies. It is a foundation for a program to improve VRU safety statewide.

With the equity considerations implemented as part of the data analysis, 52% of areas with a high potential for safety improvements are within areas identified as historically disadvantaged by Justice40. This validates that historically disadvantaged communities have

been disproportionately affected by safety shortcomings and that increased investment in these areas is easy to justify and should be prioritized.

To supplement this document, IDOT is establishing safety analysis tools for public agency use in assessing their roadway network for project and program identification. IDOT is committed to providing support for statewide implementation and coordination of projects that will benefit VRUs. Through partnerships and targeted investment, Illinois will achieve zero fatalities for all transportation users with an immediate focus on VRUs.

**52%** OF AREAS WITH A HIGH POTENTIAL FOR SAFETY IMPROVEMENTS ARE WITHIN AREAS IDENTIFIED AS HISTORICALLY DISADVANTAGED BY JUSTICE40.



# References

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# References

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# Appendix A

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# Disclaimer

## Protection of Data from Discovery Admission into Evidence

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### 23 U.S.C. 148(h)(4) states

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

### 23 U.S.C. 148(h)(4) states

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

identified or addressed in the reports, surveys, schedules, lists, or other data.”

### 23 U.S.C. 409 states

“Notwithstanding any other provision of law, reports, surveys, schedules, lists, or data compiled or collected for the purpose of identifying, evaluating, or planning the safety enhancement of potential crash sites, hazardous roadway conditions, or railway-highway crossings, pursuant to sections 130, 144, and 148 of this title or for the purpose of developing any highway safety construction improvement project which may be implemented utilizing Federal-aid highway funds shall not be subject to discovery or admitted into evidence in a Federal or State court proceeding or considered for other purposes in any action for damages arising from any occurrence at a location mentioned or addressed in such reports, surveys, schedules, lists, or data.”

#### Data Source:

Results of the analyses are based on data that was provided by the Illinois Department of Transportation Bureau of Data Collection. Crash data represents years 2005 to 2022 and was used “as is” for analysis purposes and should be interpreted accordingly.



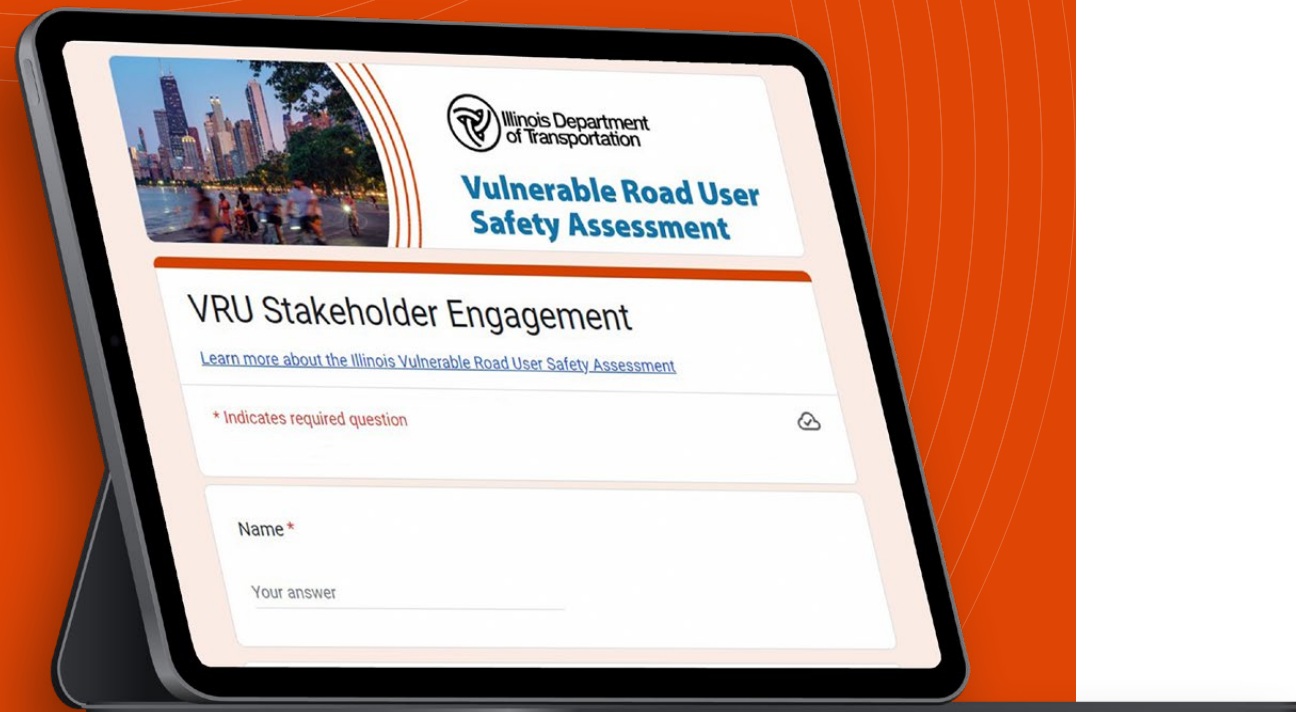
# Appendix B

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## APPENDIX B

# VRU Stakeholder Engagement Survey



After a series of four stakeholder engagement sessions representing regions across the state, IDOT convened a meeting with the roadway owners and other technical advisers to review results and discuss proposed strategies and countermeasures.

## Survey Questions

1. What geography(s) within Illinois does your organization represent?
2. What initiatives for improving safety for bicyclists are currently underway in your community? What strategies, countermeasures, programs, campaigns, or other efforts have you found to be most effective in reducing fatalities and serious injuries for bicyclists?
3. What initiatives for improving safety for pedestrians are currently underway in your community? What strategies, countermeasures, programs, campaigns, or other efforts have you found to be most effective in reducing fatalities and serious injuries for pedestrians?
4. What kinds of initiatives or strategies would you like to implement?
5. Does your agency have a plan or approach for addressing the needs of VRUs? What is the format of the plan and when was it completed? Please provide the URL if available.
6. Does your agency plan on adopting a Safe System Approach?
  - Yes
  - No
7. Have you started to implement a Safe System Approach?
  - Yes
  - No
8. Please provide a URL for your Safe Systems Approach if available.
9. Does your agency plan to implement Complete Streets?
  - Yes
  - No
10. Have you started to implement Complete Streets?
  - Yes
  - No
11. Please provide a URL for your Complete Streets program if available.
12. What are the roadblocks or barriers to improving safety for bicyclists and pedestrians?
13. How is equity being considered in your community? Is it being considered in safety planning?
14. Do you have recommendations or insights that you feel should be included in the IL VRU Safety Assessment?
15. Can we contact you with follow-up questions?
  - Yes
  - No



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of Transportation**

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