City of Noblesville Safety Action Plan



April 2024

RESOLUTION RC-5-24

A RESOLUTION OF THE COMMON COUNCIL OF THE CITY OF NOBLESVILLE CONCERNING THE NOBLESVILLE TOWARDS ZERO RESOLUTION

WITNESS THAT:

WHEREAS, the City of Noblesville (the "City") is home to residential neighborhoods of various sizes and characters, as well as a thriving historic downtown including local restaurants, shopping, and art galleries; and

WHEREAS, to ensure that Noblesville remains a great place to live, work, and play every person must be safe as they travel in the City; and

WHEREAS, the City has undertaken the implementation of a Safety Action Plan ("SAP") to assist in implementing the City Capital Improvement Plan; and

WHEREAS, the City has identified as part of the SAP a High Injury Network of roadways, including but not limited to: State Road 37, Greenfield Avenue, Boden Road, Olio Road, 8th Street, 10th Street, and Logan Street; and

WHEREAS, the City recognizes that traffic deaths and serious injuries are not inevitable and is committed to take steps to attempt to eliminate traffic deaths and serious injuries by 2050.

IT IS THEREBY RESOLVED by the Common Council of the City of Noblesville as follows:

- 1. The Common Council of the City of Noblesville hereby resolves that to make City streets safer for all, no matter age, ability, or community, Noblesville is dedicated to collaborating with all partners including residents, community stakeholders, local and regional governments, and state agencies. Moving towards zero by 2050 is an ambitious goal, but together we can take actions to help save lives and make Noblesville's streets safer for all.
- 2. That the Noblesville Towards Zero Resolution is hereby approved.

City of Noblesville, Indiana:



Presented by me to the Mayor of the City of Noblesville, Indiana, this 14th day of

February, 2024 at 8:14 A.M.

Chris Jensen, Mayor

Approved on this <u>13th</u> day of <u>February</u>, 2024 by the Common Council of the

NAY	ABSTAIN		

Evelyn L. Lees City Clerk

MAYOR'S APPROVAL

<u>2-14-2024</u> Date

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Safety Action Plan

The Noblesville Safety Action Plan is a comprehensive safety plan aimed at eliminating fatal and serious injury crashes. The Plan combines an analysis of crash patterns with actionable strategies to make Noblesville streets safer, not just for motorists, but for all users including those who bike, walk, roll, or use public transportation. The Noblesville Safety Action Plan meets all the requirements of the Safe Streets and Roads for All (SS4A) program and will allow the City to apply for SS4A implementation grant funding for safety improvements.

Purpose & Commitment

The purpose of this plan is to identify the extent of the roadway safety problem in Noblesville, engage the community in an equitable and inclusive way, and to propose strategies to reduce and eliminate fatal and serious injury crashes. The Noblesville Safety Action Plan is comprehensive and promotes equitable transportation investments to improve roadway safety for all modes and all communities.

This plan established a steering committee that was tasked with the development of the plan, implementation of recommendations and strategies, and monitoring of performance. Recommendations follow the guidance of a Safe System Approach and include safety countermeasure along critical corridors and key intersections as well as policy and programmatic strategies to improve educational awareness, formalize safety design standards, and establish a roadway safety performance monitoring program to increase transparency and accountability.



The plan is organized in six plan elements that, together, offer a map to reduce and eliminate fatal and serious injury crashes.



Noblesville believes that traffic deaths are preventable and unacceptable and is committed to eliminating traffic deaths and serious injuries by 2050. To make City regional governments, and state agencies. Zero is an ambitious goal, but together we





Introduction

Traffic crashes are a leading cause of preventable death in the United States. According to the National Highway Traffic Safety Administration (NHTSA), 2021 saw nearly 43,000 traffic deaths across the nation, a 16-year high. Almost 43,000 people were again killed in traffic crashes in 2022. Since 2020, notable increases include:

- > Fatalities on urban roads up 16%
- > Pedestrian fatalities up 13%
- > Bicycle fatalities up 5%
- > Speeding related fatalities up 5%

Throughout the Indianapolis Metropolitan Area, around 170 people are killed each year in traffic crashes, and another 4,500 are seriously injured. The Noblesville Safety Action Plan is a strategic step toward engaging and coordinating with the public, planners, engineers, law enforcement, and first responders to improve traffic safety for all users. It will take a concerted and organized effort from various stakeholders and agencies to ensure this plan is implemented and zero traffic deaths and serious injuries becomes a reality.

This safety action plan combines a thorough analysis of crash patterns with actionable strategies to make Noblesville streets safer, not just for motorists, but for all users including those who bike, walk, roll, or use public transportation.

Safe Streets & Roads for All (SS4A) SS4A Eligibility Safety action plan eliby the SS4A Self-Cerr

In response to the alarming rise in traffic deaths, the U.S. Department of Transportation (USDOT) announced the comprehensive National Roadway Safety Strategy (NRSS) which provides a roadmap to addressing the national crisis of roadway fatalities and serious injuries. The NRSS established a federal vision of zero traffic deaths and adopted a Safe System Approach as the guiding paradigm to address roadway safety.

In support of the NRSS, the Bipartisan Infrastructure Law (BIL) established the Safe Streets and Roads for All (SS4A) discretionary grant program. The SS4A program has \$5 billion in appropriated funds over 5 years, from 2022 through 2026. While coordination with state departments of transportation (DOTs) is encouraged, state DOTs are not eligible applicants, providing local and regional agencies with more direct funding and control.

The SS4A program provides funding for two types of grants: planning and demonstration grants and implementation grants. Planning and demonstration grants provide funds to develop or supplement a safety action plan. Safety action plans are the foundation of the SS4A program. Implementation grants provide funds to implement projects and/or strategies identified in a safety action plan. A completed, eligible safety action plan is required to apply for an implementation grant.



Safety action plan eligibility is determined by the SS4A Self-Certification Eligibility Worksheet. For 2023, safety action plan eligibility is based on the requirements listed below. Under each requirement is the page number of this plan document on which the information satisfying that requirement may be found.

□ Are both of the following true?

- > Did a high-ranking official and/or governing body in the jurisdiction publicly commit to an eventual goal of zero roadway fatalities and serious injuries?
- > Did the commitment include either setting a target date to reach zero, OR setting one or more targets to achieve significant declines in roadway fatalities and serious injuries by a specific date?



To develop the Action Plan, was a committee, task force, implementation group, or similar body established and charged with the plan's development, implementation, and monitoring?





- Does the Action Plan include all of the following?
 - > Analysis of existing conditions and historical trends to baseline the level of crashes involving fatalities and serious injuries across a jurisdiction, locality, Tribe, or region;
 - Analysis of the location where there are crashes, the severity, as well as contributing factors and crash types;
 - > Analysis of systemic and specific safety needs is also performed, as needed (e.g., high risk road features, specific safety needs of relevant road users; and,
 - A geospatial identification (geographic or locational data using maps) of higher risk locations.



- Did the Action Plan development include all of the following activities?
 - Engagement with the public and relevant stakeholders, including the private sector and community groups;
 - Incorporation of information received from the engagement and collaboration into the plan; and
 - Coordination that included interand intra-governmental cooperation and collaboration, as appropriate.



Did the Action Plan development include all of the following?

- Considerations of equity using inclusive and representative processes;
- > The identification of underserved communities through data; and
- Equity analysis, in collaboration with appropriate partners, focused on initial equity impact assessments of the proposed projects and strategies, and population characteristics.



□ Are both of the following true?

- > The plan development included an assessment of current policies, plans, guidelines, and/or standards to identify opportunities to improve how processes prioritize safety; and
- > The plan discusses implementation through the adoption of revised or new policies, guidelines, and/or standards.



 Does the plan identify a comprehensive set of projects and strategies to address the safety problems in the Action Plan, time ranges when projects and strategies will be deployed, and explain project prioritization criteria?



- Does the plan include all of the following?
 - A description of how progress will be measured over time that includes, at a minimum, outcome data.
 - > The plan is posted publicly online.



The Plan

Process

In February 2023, the City of Noblesville was awarded an SS4A grant to develop a comprehensive safety action plan. The Noblesville Safety Action Plan project was initiated in October 2023. The process was led by the Noblesville Engineering Department and the Noblesville Safety Action Plan steering committee. In February 2023, the City of Noblesville A Safe System Approach is a holistic and human-centered approach to roadway safety. The principles of a Safe System Approach are: **Death and serious injuries are unacceptable.** The Safe System

With assistance from the City of Noblesville and the Indianapolis Metropolitan Planning Organization (IMPO), crash records were collected and cleaned for accuracy. A robust safety analysis was conducted to identify prevailing crash types, factors influencing crash severity, the High Injury Network (HIN), and Equity Target Areas (ETAs).

Public input was sought from the beginning stages of the planning process. An online survey and mapping tools, community open houses, small group interviews, and consistent messaging via social media provided numerous opportunities for residents, community groups, and other stakeholders to participate in the planning process.



Safe System Approach

A Safe System Approach was adopted as the guiding paradigm to address roadway by the USDOT and the NRSS. 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 System Approach, which focuses on both human mistakes and human vulnerability and recommends a transportation system with redundancies built in to protect all users.

- Death and serious injuries are unacceptable. The Safe System 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.

The Noblesville Safety Action Plan was developed and will be implemented following the principles of a Safe System Approach.



Review of Related Plans Noblesville Downtown Streetscape Master Plan

The Noblesville Downtown Streetscape Master Plan recommended conceptual design solutions and standards to preserve Downtown Noblesville's historic character and strengthen its sense of place. Multiple downtown corridors were identified in the plan as potential reconstruction projects, including 9th Street, Logan Street, 8th Street, and Maple Avenue. Other recommendations include new and improved bicycle and pedestrian facilities and connections.

Noblesville Thoroughfare Plan

As part of the 2020 Noblesville Comprehensive Plan, the Thoroughfare Plan classifies proposed and existing roadways based on future land use planning and mobility and access needs. Key transportation improvements found in the thoroughfare plan include proposed roundabouts, improved bicycle and pedestrian connectivity, traffic calming, and corridor access management.

Noblesville ADA Transition Plan

The Noblesville Americans with Disabilities Act (ADA) Transition Plan was updated in 2023 and meets all federal requirements. The ADA Transition Plan identifies physical barriers including non-compliant sidewalks and curb ramps within public right-of-way.

IMPO Safe Streets and Roads for
All Safety Action PlanIndiana Strategic Highway Safety
Plan 2022-2026

The IMPO Safety Action Plan was formally adopted in 2022 and updated in 2023. The plan adopts a Vision Zero statement and a goal of reducing fatal and serious injury crashes by 35% by 2040. This plan identified a regional high injury network, roadway risk factors, and project scoring criteria.



IMPO 2050 Metropolitan Transportation Plan

The IMPO 2050 Metropolitan Transportation Plan (MTP) was adopted in 2021 and most recently revised in 2023. The MTP guides regional transportation investments over a 20-year period. 2050 MTP recommendations include expanding transportation options for all users and improving safety throughout the transportation system.

MTP Project Viewer





The Indiana Strategic Highway Safety Plan (SHSP), developed in 2022, is a federally required statewide safety plan. The SHSP establishes goals, objectives, and strategies to save lives and advance the vision of zero fatalities and serious injuries.
The SHSP identifies strategic action steps and safety countermeasures to accomplish statewide crash reduction targets.

Noblesville Alternative Transportation (NAT) Plan

The NAT Plan is a comprehensive assessment of bicycle and pedestrian facilities throughout the City. The NAT Plan update was in development during the same time period of the Noblesville Safety Action Plan, and so information was shared between both planning teams to ensure strategies for both plans met the needs of improving bicycle and pedestrian mobility and safety.



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Emphasis Areas

Consistent with planning goals established in other plans, as well as the public engagement process, key emphasis areas were identified. Emphasis areas are overarching topics identified as key predictors of this plan's success. Safety improvements and strategic recommendations are aimed at improving safety for all throughout Noblesville but with special consideration given for areas of emphasis. Emphasis areas include:

- Pedestrian safety in downtown > Noblesville
- > Multimodal access to downtown Noblesville
- > Bicycle and pedestrian safety at roundabouts
- > Pedestrian crossings along high traffic and/or multi-lane corridors



Key Concepts Vision Zero

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

Toward Zero Deaths

Toward Zero Deaths is another traffic safety program focused on reducing traffic fatalities to zero. Toward Zero Deaths and Vision Zero are complimentary efforts that support the same goals and the use of a Safe System Approach. Toward Zero Deaths emphasizes the development of a traffic safety culture focusing on educational programing and safe driving behaviors.

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





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

Transportation Equity

Transportation equity is fairness with The specific language used to describe respect to the distribution of access, events can significantly alter the meaning. mobility, connectivity, opportunity, benefits, Fatal and serious injuries have a real and impacts of circumstances affecting the impact on crash victims and families who provision of a safe, reliable, and affordable must face the realities of an unforgiving transportation system and services.² transportation system. The term 'accident' Transportation equity can be classified into implies there is little that can be done three types: to prevent an event where no fault is evident. However, crashes are preventable, > **Procedural equity** is focused on the and changing semantics can profoundly degree of involvement of diverse alter people's perception of the problem public stakeholders in the processes and empower communities to end traffic violence and make safer streets.

- 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.

Disadvantaged Communities

Disadvantaged communities are communities that experience disproportionately high and adverse health. environmental. climate related, economic, and other cumulative impacts.³

Underserved Communities

Underserved communities are populations sharing a particular characteristic, as well as geographic communities, that have been systematically denied a full opportunity to participate is aspects of economic, social, and civic life.4

2 https://www.vtpi.org/equity.pdf 3,4 https://www.transportation.gov/sites/dot.gov/files/2022-04/ Equity_Action_Plan.pdf

Crashes, Not Accidents

Injury Status Classifications

Crash data analyzed for this project includes all crashes in Noblesville from 2018 - 2022. Each record in the crash data represents one crash and includes an injury status for each crash:

- > Fatal Injury: Any injury that results in death within a 30 day period after the crash occurred.
- > Incapacitating Injury: A non-fatal injury that prevents the injured person from walking, driving, or normally continuing the activities the person was capable of performing before the injury occurred.
- Incapacitating injuries are also referred to as serious injuries and together with fatal injuries are the target of this safety action plan.
 - > Non-incapacitating Injury: An injury, other than a fatal or incapacitating injury, which is evident to the officer at the scene of the crash and may require medical treatment.
 - > Possible Injury: Any injury reported or claimed which is not visible.
 - > Property Damage Only (PDO): No apparent injuries









Engagement Overview

Public and stakeholder engagement is a critical component of any successful planning process and aims to increase transparency, build trust and credibility, and promote collaboration between members of the community, experts in the field, and agency decision makers. Public input was gathered continuously throughout the project and incorporated into the final plan and recommendations. For more detail about engagement throughout the planning process, see Appendix B and Appendix C.

Steering Committee

The Noblesville Safety Action Plan Steering Committee was established to provide the City and project team with expert knowledge and connections to various groups and industries. The Steering Committee was tasked with assisting in the development, implementation, and monitoring of the plan in compliance with requirement number two in the 2023 SS4A Self-Certification Eligibility Worksheet.

The Steering Committee is composed of various City departments including engineering, planning, police, fire, and the Mayor's office. Steering Committee members committed to membership responsibilities including:

- Sharing knowledge and ideas with the project team,
- > Encouraging others to get involved,
- Assuming leadership roles to ensure the plan is implemented, and
- Developing a program to monitor the plan's success.

TABLE 1: STEERING COMMITTEE MEM	BER
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NAME	TITLE	DEPARTMENT
Denise Aschleman	Principal Planner	Planning Department
Eric Cunningham	Deputy Chief	Police Department
Uriah Eddingfield	Assistant Chief	Fire Department
Jeff Hendricks	Public Safety Technology Specialist	Public Safety
Robert Herrington	Press Secretary	Mayor's Office
Patty Johnson	Commissioner	Street Department
Sacha Lingerfeldt	Administrative Manager	Engineering Department
James Macky	Division Chief	Fire Department
Marley Pagel	Sergeant/Community Outreach	Police Department
Andrew Rodewald	Project Manager	Engineering Department

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.



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Stakeholder Outreach

With assistance from the Steering Committee, key transportation safety stakeholders were identified. Stakeholders then participated in small group interviews to assess how different groups view issues of roadway safety and potential strategies to improve safety. The small group interviews provided a means of gathering detailed and valuable information, perspectives, and opinions. Stakeholders represented various local and regional agencies and organizations including:

- > Noblesville Police
- > Noblesville Fire/Emergency Management
- > Hamilton County Health Department
- Hamilton County Highway
 Department
- > Noblesville Mayor's Office
- > Riverview Health
- > Shepard's Center of Hamilton County
- > Janus Developmental Services
- > Noblesville School District
- Hamilton Southeastern School District

The small group settings allowed key stakeholders to describe in detail the issues impacting those they serve. The interviews also gave the project team the opportunity to have thorough, candid conversations to build a depth of understanding about issues impacting the community. Each small group was given the chance to discuss items most relevant to them and their service and provide input on potential strategies that could improve roadway safety for all users.

Public Outreach

Public outreach efforts consisted of inperson events, engagement on social media, regular email updates, and online activities. Public outreach began early in the planning process, with a specific focus to reach underserved or

disadvantaged groups and vulnerable road users. The goal of public outreach was to hear from residents about safety concerns, incorporate public input into the plan recommendations, and educate the public about the Safe System Approach and effective safety improvement strategies.

Public Input Survey

The public input survey was available to the public for approximately six weeks. The purpose of the survey was to gather public preference for topics to address in the plan, assess general attitudes and behaviors that impact roadway safety, and identify safety improvements that generate broad public support.

The public input received from the survey was incorporated into the overall strategy of the plan as well as specific safety improvements.

FIGURE 1: HOW SAFE PEOPLE FEEL TRAVELING IN NOBLESVILLE







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FIGURE 4: SUPPORT FOR IMPROVEMENTS TARGETING DRIVERS



FIGURE 5: SUPPORT FOR IMPROVEMENTS TARGETING BICYCLISTS



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More street lighting, specifically in the non-downtown area. It can be hard to see the lanes and where you are turning at night."

Painted, high-visibility, or raised crosswalks

all of Noblesville

more walkable. Also,

there needs to be a

way for pedestrians

that live east of

(SR)37 to cross the

nighway to have the

option to walk or bike into downtown

Noblesville."



FIGURE 6: SUPPORT FOR IMPROVEMENTS TARGETING PEDESTRIANS

FIGURE 7: SUPPORT FOR IMPROVEMENTS TARGETING DOWNTOWN



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Public Input Mapping Tool

The Noblesville Safety Action Plan Public Input Mapping Tool is an online crowdsourcing map that was available in combination with the online pubic survey. The mapping tool allowed the public to anonymously submit new safety problems or opportunities to the map, view other submitted items, and vote for items they liked or agreed with.

Input from the mapping tool was incorporated to inform the high injury network as well as potential safety improvements.

"While crossing in many roundabouts, motorist do NOT give the right of way to pedestrians."



WWW.SURVEYMONKEY.COM/R/YCSX67R

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"(Opportunity to add) sidewalks along













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Open House Events

As part of the public engagement process, multiple informal open house events were held to solicit public input and share findings and progress throughout the plan development process. A combination of email and social media was used to publicize each event and encourage the public to attend.

The first open house event was held on November 9, 2023, in conjunction with the community open house for the Noblesville Alternative Transportation (NAT) Plan. By aligning early efforts with those of the NAT plan, the public was engaged early in the process and efforts were built on previous work instead of duplicated. The first open house introduced the concept of the safety action plan to the public and initiated the online survey and mapping tool.

The second open house was held on January 18, 2024, at Noblesville City Hall. This event served two main purposes: (1) to provide the public with a progress

update including results of the online survey and mapping tool, and (2) to seek input on priority improvements, programs, and policies.

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Join us for a #Noblexville Safety Action Plan Open House on January 1 from 5-7:30 p.m. at City Hall in Room A213/214. We need your input to improve roadway safety in our community!







National Trends

Traffic crashes are a leading cause of preventable death in the United States. According to the National Highway Traffic Safety Administration (NHTSA), 2021 saw nearly 43,000 traffic deaths across the nation, a 16-year high. Almost 43,000 people were again killed in traffic crashes in 2022. Since 2020, notable increases include:

- > Fatalities on urban roads up 16%
- Pedestrian fatalities up 13% >
- > Bicycle fatalities up 5%
- Speeding related fatalities up 5%

FIGURE 10: CRASH FATALITIES BY YEAR (NATIONAL)



Local Trends

Local trends within the City of Noblesville relied on multiple sources of crash data for five years from 2018-2022. Fatal and serious injury crashes were obtained from the IMPO, which cleaned and spatially located crash records from Indiana ARIES (Automated Reporting Information Exchange System). Crash records reported by the Noblesville Police Department were cleaned and verified by city staff. Finally, all other crashes not reported by Noblesville Police but by other police agencies, were obtained from ARIES.

From 2018-2022, there were approximately Just as the type of crash has a significant 1,300 crashes each year in Noblesville. impact on the likelihood of a fatal or After a dramatic decline in crashes in 2020 incapacitating injury, so too does the type of due most likely to the Covid-19 pandemic user involved in the crash. Every single one and reduced vehicle trips and vehicle miles of the 52 pedestrian- and bicyclist-involved traveled, total crashes per year increased crashes led to fatal or incapacitating in both 2021 and 2022. Following a similar injuries. Figure 12 and Figure 13 illustrate trend, fatal and incapacitating crashes the dramatic difference in crash severity dropped significantly in 2020 and increased between vehicle-only crashes and crashes in both 2021 and 2022. On average, there involving pedestrians or bicyclists. As are three fatalities and over 300 injuries vulnerable road users, pedestrians and each year on the roadways. Crashes per bicyclists are ten times more likely to be year are shown in Figure 11. killed or seriously injured in a collision with vehicle than a person in a vehicle-only At nearly 40% of all crashes, rear end crash.

crashes are the most prevalent crash type in Noblesville followed by right angle All fatal and incapacitating crashes are (19%), sideswipe (13%), and ran off the road shown on the maps in Figure 14. Figure 15 (10%). Approximately 10% of all crashes shows fatal and incapacitating crashes in and around downtown Noblesville. result in a fatal or incapacitating injury; however, certain crash types are more likely to result in fatal or incapacitating injuries. Twenty-six percent of head on crashes. 16% of ran off the road crashes. and 15% of right angle crashes result in a fatal or incapacitating injury. Crash types are shown in Table 2.

FIGURE 11: NOBLESVILLE CRASHES PER YEAR



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TABLE 2: CRASHES BY TYPE & SEVERITY

MANNER OF COLLISION	TOTAL CRASHES	PERCENT OF TOTAL	FATAL & INCAPACITATING	PERCENT FATAL & INCAPACITATING
Rear End	2,446	39%	141	6%
Right Angle	1,175	19%	171	15%
Same Direction Sideswipe	810	13%	15	2%
Ran Off Road	629	10%	100	16%
Left Turn	375	6%	44	12%
Other	286	5%	48	17%
Opposite Direction Sideswipe	159	3%	11	7%
Collision With Animal	148	2%	3	2%
Head On Between Two Vehicles	116	2%	30	26%
Right Turn	109	2%	8	7%
Bicycle or Pedestrian	52	1%	52	100%
TOTAL	6,305	100%	623	10%

FIGURE 12: VEHICLE CRASH SEVERITY

FIGURE 13: BICYCLE/PEDESTRIAN CRASH SEVERITY







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High Injury Network

The High Injury Network (HIN) represents the small number of roadways (33 miles) that experience the majority of fatal and serious-injury crashes. The HIN helps decision makers prioritize safety improvements so that improvements have the greatest potential reduction of fatal and serious injury crashes.

The Noblesville High Injury Network identifies the majority of all serious injuries and a third of all fatal injuries on just 5% of the total street network.

Approximately 50% of the HIN is owned and maintained by the City, with the other half owned and maintained by Westfield (along the perimeter of Noblesville city limits), Hamilton County, or INDOT (Table 3). The HIN ownership is shown on the maps in Figure 16 and Figure 17. Table 4 summarizes the HIN by functional

classification. Principal and minor arterials make up over 70% of the HIN.

> Notable streets on the HIN include:

- > SR37
- > SR32
- > SR38
- > 10th Street
- > Pleasant Street
- > Cumberland
- > Boden Roa
- > Olio Road

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Methodology

To develop the HIN, a safety index score was created for each roadway segment and intersection. The safety index score represents a data-driven metric for overall roadway safety whereby higher scores mean greater observed history of fatal and incapacitating injury crashes. For more detail on the development of the HIN, see Appendix E.

High Injury Network Statistics



65% of all crashes 64% of all injuries **57%** of serious injury crashes **32%** of fatal injury crashes

TABLE 3: HIN OWNERSHIP SUMMARY

OWNER	MILES	PERCENT OF HIN	AVERAGE SAFETY INDEX SCORE
City of Noblesville	17.5	52.3%	10.1
City of Westfield	0.6	1.9%	6.6
Hamilton County	1.8	5.5%	10.8
INDOT	13.5	40.3%	14.9
TOTAL	32.2	100%	

TABLE 4: HIN FUNCTIONAL CLASS SUMMARY

FUNCTIONAL CLASS	MILES	PERCENT OF HIN	AVERAGE SAFETY INDEX SCORE
Principal Arterial	18.5	55.4%	10.4
Minor Arterial	4.8	14.4%	15.9
Major Collector	6.3	18.7%	12.6
Minor Collector	0.9	2.7%	7.3
Local	3.0	8.8%	13.3
TOTAL	33.4	100%	







Equity Analysis

A safe and equitable transportation system expands access to opportunities for all Noblesville residents and helps to reduce the disparate economic, environmental, and health burdens experienced by disadvantaged and under-served communities. Noblesville is committed to an equitable distribution of safety improvements so that all residents of all abilities can feel safe when traveling.

To confront and address decades of underinvestment, the Justice40 Initiative, established by the Biden-Harris Administration, made it a goal that 40% of benefits of certain Federal investments flow to disadvantaged communities. The USDOT's SS4A program is covered by the Justice40 Initiative, and eligible safety action plans are required to consider the equity of projects and strategies. The Climate and Economic Justice Screening Tool (CEJST) is an interactive mapping tool that is used to identify disadvantaged communities. Disadvantaged communities are those that meet or exceed the threshold for one or more environmental. climate. or other burdens. The CEJST identifies one Census tract in Noblesville that is considered disadvantaged.

In addition to the CEJST disadvantaged community, a local equity index was created to further identify local areas of concern related to equity. The local equity index relies on demographic indicators at the Census block group level as shown in Table 5.

CEJST Noblesville, IN

Tract information Number: 18057110700 County: Hamilton County State: Indiana Population: 2,883

Tract demographics

Race / Ethnicity (Hide ~)	
White	85%
Black or African American	346
American Indian and Alaska Native	0%
Asian	0%
Native Hawaiian or Pacific Islander	0%
Other	396
Two or more races	3%
Hispanic or Latino	5%
Age (Hide >)	
Children under 10	99a
Ages 10 - 64	79%
Elderly over 65	11%

Identified as disadvantaged? YES

This tract is considered disadvantaged because it meets more than I burden threshold AND the associated socioeconomic threshold.

TABLE 5: EQUITY 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.

The local equity index is a composite of the The ETAs are primarily located around demographic indicators where higher index downtown and in the southern portions of values indicate higher concentrations of the City. Despite making up 21% of the total key equity demographics. Figure 18 shows population and 23% of households, ETAs the CEJST disadvantaged communities and are home to 35% of the total non-white the results of the equity index analysis. population, 60% of total households in poverty, and 60% of total households with limited English proficiency.

Since higher equity index scores mean higher percentages of targeted equity demographics, census block groups with local equity index scores in the 80th percentile and above were combined with the CEJST disadvantaged communities to establish equity target areas (ETAs). ETAs are identified communities to target and prioritize safety improvements to improve equitable outcomes throughout the City.





Figure 19 shows ETAs overlaid with the HIN to illustrate the relationship between equity and fatal and incapacitating crashes. Approximately 38% of all fatal and incapacitating crashes occur within ETAs demonstrating a disproportionate impact within these key communities. Furthermore, 60% of the HIN is located within ETAs showing the need for targeted safety improvements. The results of this equity analysis are used to target appropriate policies and programs and prioritize locations for safety countermeasures.

For more information about the equity analysis, see Appendix D.

TABLE 6: EQUITY TARGET AREAS SUMMARY

EQUITY TARGET AREA	POPULATION	HOUSEHOLDS	FATAL & INCAPACITATING CRASHES	HIGH INJURY NETWORK
Yes	21%	23%	38%	60%
No	79%	77%	62%	40%









Proven Safety Countermeasures

This plan and recommendations rely on a comprehensive understanding of crashes observed throughout the City as well as national best practices to inform effective strategies to improve safety. The safety toolkit is a reference of context-sensitive proven safety countermeasures that address predominant crash characteristics, roadway or intersection configurations, and other relevant trends observed throughout the planning process. The safety toolkit provides key information for each proven safety countermeasure including expected safety benefits, applicable locations, and important design considerations.

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

The safety toolkit includes safety countermeasures referenced in the HIN location recommendations along with others based on national best practices and the City's desire to improve the pedestrian experience and protect vulnerable road users. The complete safety toolkit is found in Appendix A.

TABLE 7	list	OE	Ροτεντιλι	SAFETY	COUNTERM
IADLE /.	LISI	Ur	FUIENIIAL	JAFEIT	COUNTERMI

COUNTERMEASURE	SAFET
Bicycle lanes	30%-4
Leading Pedestrian Intervals	13% r
Rectangular Rapid Flashing Beacons (RRFB)	47% r
Medians	46%-5
Pedestrian Refuge Island	56% r
Crosswalk Visibility Enhancements	25%-4
Walkways	65%-8
Reverse Angle Parking	Impro vehicl
Reduced Left-Turn Conflict Intersections	22%-6
Dedicated Left- and Right-Turn Lanes at Intersections	28%-4 14%-2
Signage	Effect reduc
Backplates with Retro-reflective Borders	15% r
Yellow Change Intervals	12% r
Dynamic Speed Monitoring Display	Effect aware
Dynamic Speed Monitoring Display Roundabouts	Effect aware 78%-8
Dynamic Speed Monitoring Display Roundabouts Pedestrian Hybrid Beacon (PHB or HAWK)	Effect aware 78%-8 29% r 55% r
Dynamic Speed Monitoring Display Roundabouts Pedestrian Hybrid Beacon (PHB or HAWK) Systemic Application of Multiple Low-Cost Countermeasures at Stop-Controlled Intersections	Effecti aware 78%-8 29% r 55% r 10% r
Dynamic Speed Monitoring Display Roundabouts Pedestrian Hybrid Beacon (PHB or HAWK) Systemic Application of Multiple Low-Cost Countermeasures at Stop-Controlled Intersections Road Diet	Effecti aware 78%-8 29% r 55% r 10% r 10% r
Dynamic Speed Monitoring Display Roundabouts Pedestrian Hybrid Beacon (PHB or HAWK) Systemic Application of Multiple Low-Cost Countermeasures at Stop-Controlled Intersections Road Diet Corridor Access Management	Effecti aware 78%-8 29% r 55% r 10% r 10% r 19%-4 25%-3 urban
Dynamic Speed Monitoring Display Roundabouts Pedestrian Hybrid Beacon (PHB or HAWK) Systemic Application of Multiple Low-Cost Countermeasures at Stop-Controlled Intersections Road Diet Corridor Access Management Curb Extensions	Effecti aware 78%-8 29% r 55% r 10% r 10% r 19%-4 25%-3 urban Increa crossi



EASURES

Y BENEFITS

9% reduction in total crashes

eduction in pedestrian crashes

eduction in pedestrian crashes

56% reduction in pedestrian crashes

eduction in pedestrian crashes

2% reduction in pedestrian crashes

39% reduction in pedestrian crashes

oved sight lines for bicyclists and motorists; .e passengers channeled to curb

3% reduction in fatal and injury crashes

8% reduction in total crashes (left turn lanes) 8% reduction in total crashes (right turn lanes)

ive at alerting drivers to oncoming hazards and ing crashes.

eduction in total crashes

eduction in injury crashes

ive at reducing vehicle speeds, improving driver eness, and promoting safer driving behaviors.

82% reduction in fatal and injury crashes

eduction in total crashes

eduction in pedestrian crashes

eduction in fatal and injury crashes

7% reduction in total crashes

81% reduction in fatal and injury crashes along /suburban arterials

ase pedestrian visibility; reduce pedestrian ing distance

54% reduction in total and fatal and injury es





HIN Strategies

In order to reach this plan's goal, and the City's Toward Zero resolution, additional funding should be directed to locations where safety improvements will have the largest impact. The high injury network is the basis of the safety focused location evaluation and prioritization. However, to provide context sensitive solutions, the HIN was broken down into location groups of similar corridors and/or intersections.

HIN location groups experience similar crash types, have similar roadway characteristics, have similar nearby land uses, or are otherwise grouped together to allow for an improvement project of appropriate scope and scale. For each HIN location, a detailed evaluation of crashes is provided along with prioritization criteria and potential strategies. The HIN locations grouped for further evaluation and strategies are detailed on the following pages.

For each location group, key information is presented including extents, existing conditions, and observed crash history. Notes about some locations are also included to provide additional context when and where necessary.



Strategies

Strategies for each location consider existing roadway design, geometry, and adjacent land uses and attempt to provide options ranging from simple and low-cost solutions to complex, higher-cost, and long-term solutions. Any known recently completed or funded projects were also considered and noted. Note: Pleasant Street was not evaluated due to an existing project included in the IMPO Metropolitan Transportation Plan (MTP) (Project ID 2508); as of April 2024, the Pleasant Street project is under construction from 19th Street to SR 38/Hague Road.

Strategies are categorized as either shortterm/low-cost improvements or long-term capital projects. Short-term/low-cost improvements are those that require less design, coordination, and funding and can be implemented quickly within 1-2 years. Long-term capital projects are those that will require more planning, design, coordination, and funding and will most like take 3 or more years for implementation.

Costs provided are planning level general cost estimates for each strategy. General cost estimates may not consider all contextual circumstances at each location. Generally, cost estimates provided follow the ranges as shown below:

\$ = \$0 - \$100k **\$\$** = \$100k - \$500k **\$\$\$** = \$500k - \$1M **\$\$\$\$** = \$1M+

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Prioritization

For each location group, prioritization criteria are listed and include:

- > Number of fatal and incapacitating (F & I) crashes
- > Safety index (for segments (S) and intersections (I))
- > Whether the location is within an equity target area (ETA or CEJST)
- Base on the prioritization criteria, priority tiers indicate level of priority for each
- location. Priority tier 1 indicates locations with highest priority. Prioritization is summarized in Table 8.







TABLE 8: HIN LOCATIONS PRIORITIZATION

PRIORITY TIER	LOCATION	F & I CRASHES	SAFETY INDEX	ETA	CEJST		
	Downtown Noblesville	56	S: 19.2 I: 7.6	Yes	Yes		
	Olio Road I-69 to SR 38	16	S: 3.3 I: 19.1	No	No		
	Greenfield Road Howe Road to 10th Street	22	S: 8.1 I: 33.9	Yes	Yes		
1	10th Street Pleasant St to Carbon St	25	S: 5.1 I: 27.4	Yes	Yes		
•	146th Street Allisonville Rd to Cumberland Rd	52	S: 19.1 I: 21.3	Yes	No		
	Suburban Intersections	125	S: n/a l: 3.4-28.9	Yes	No		
	SR 37 Allisonville Rd to 141st St	82	S: 2.1 I: 51.7	Yes	Yes		
	SR 32/Conner Street Presley Dr to Hague Rd	66	S: 64.1 I: 45.5	Yes	Yes		
	Harrell Parkway/Tegler Drive Brooks School Rd to Olio Rd	5	S: 22.7 I: 16.6	No	No		
	Boden Road Campus Pkwy to SR 38	29	S: 10.8 I: 18.7	Yes	No		
	186th Street 10th St to SR 37	4	S: 4.2 I: 25.9	No	No		
	Cherry Street 12th St to SR 37	14	S: 2.2 I: 3.6	Yes	Yes		
2	Campus Parkway Boden Rd to I-69 Interchange	36	S: 9.9 I: 18.7	No	No		
	206th Street Hague Rd to SR 37	14	S: 0.4 I: 8.5	No	No		
	SR 32 & SR 38 Junction	14	S: 3.4 I: 17.8	No	No		
	SR 32/Westfield Road Hague Rd to Gray Rd	26	S: 13.3 I: 23.0	No	No		
	SR38/Sheridan Road Moontown Rd to SR 32	25	S: 18.9 I: 24.0	No	No		
F & I Crashes = Fatal and Incapacitating Crashes							

Safety Index: S = Segment; I = Intersection ETA = 80th+ percentile equity index CEJST = Climate & Economic Justice Screening Tool Disadvantaged Community





Downtown Noblesville

Existing Conditions

The study limits defined as downtown Noblesville are bounded by the White River, Wayne Street, 12th Street, and Division Street.

FIGURE 20: DOWNTOWN NOBLESVILLE, CRASH PER



Crash History

Total Crashes (2018-2022): 309 Fatal & Incapacitating Crashes: 56 Pedestrian or Bicyclist Crashes: 7

Prioritization

Segment Safety Index: 19.2 Intersection Safety Index: 7.6 Equity Target Area: Yes

Strategies

The downtown area has a high concentration of pedestrian and bicyclist activity. Recommendations include strategies to improve safety for bicyclists and pedestrians. While many strategies can be implemented systemically, others such as raised intersections, should be part of larger transformation projects.

TABLE 9: DOWNTOWN NOBLESVILLE, STRATEGIES

STRATEGY	PURPOSE	BENEFIT/IMPACT	COST
	Short-Term/Low-Cost Impro	vements	
Leading pedestrian intervals	Improve visibility of pedestrians	13% reduction in pedestrian crashes	\$
Crosswalk visibility enhancements	Improve crossing safety and comfort for pedestrians	25%-42% reduction in pedestrian crashes	\$
Backplates with retro- reflective borders	Reduce red light running and right angle crashes	15% reduction in total crashes	\$
Yellow change intervals	Reduce red light running	12% reduction in injury crashes	\$
Tactical urbanism	Temporary pedestrian improvements to test success	n/a	\$
	Long-Term Capital Proje	ects	
Curb extensions Increase pedestrian visibility; reduce pedestrian crossing distance		\$\$	
Reverse angle parking	Improved sight lines for bicyclists and motorists; vehicle passengers channeled to curb		\$
Pedestrian refuge island and PHB or RRFB at mid-block crossings	Improve crossing safety, visibility, and comfort for pedestrians	47%-56% reduction in pedestrian crashes	\$\$
Raised intersections	Reduce vehicle speeds and improve pedestrian comfort	46% reduction in pedestrian crashes	\$\$\$\$









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Olio Road I-69 to SR 38/Pendleton Avenue

Existing Conditions

Olio Road is major collector that runs north-south. It is currently a 4-lane section from Campus Parkway to 146th Street/Greenfield Avenue and transitions to a 2-lane section north of 146th Street.

Notes

A roundabout was constructed at Olio Road and 146th Street in 2021, which may have temporarily led a temporary increase in crashes, but it is anticipated that this intersection improvement will reduce crashes moving forward, particularly rightangle crashes, which have the potential to result in severe injuries.

FIGURE 23: OLIO ROAD, CRASHES PER YEAR



Crash History

Total Crashes (2018-2022): 112 Fatal & Incapacitating Crashes: 16 Pedestrian or Bicyclist Crashes: 0

Prioritization

Segment Safety Index: 3.3 Intersection Safety Index: 19.1 Equity Target Area: No

Strategies

The MTP includes two Olio Road projects. There is a committed project to widen Olio Road from Tegler Road/146th Street to 146th Street to a 4-lane section (Project ID 2507). There is an illustrative project to widen from 146th Street to SR 32/SR 38 to a 4-lane road (Project ID 2106).

Intersection improvements along Olio Road are recommended through a systemic approach and may include improved signage and enhanced pavement markings. A roundabout at Olio Road and 166th is also recommended as a long-term improvement to reduce right angle crashes at this intersection.

TABLE 10: OLIO ROAD, STRATEGIES

STRATEGY	PURPOSE	BENEFIT/IMPACT	COST	
	Short-Term/Low-Cost Impro	vements		
Systemic Application of Multiple Low-Cost Countermeasures at stop controlled intersections	Reduce crashes at unsignalized intersections	10% reduction in fatal and injury crashes	\$	
	Long-Term Capital Projects			
Roundabout at Olio Road and 166th Street	Reduce right angle crashes and eliminate crossing conflict points	78%-82% reduction in fatal and injury crashes	\$\$\$\$	

FIGURE 24: OLIO ROAD, CRASH TYPES & SEVERITY









Greenfield Road

Howe Road to 10th Street

Existing Conditions Greenfield Avenue is a 2-lane principal arterial from Howe Road to Cumberland Road and transitions to a 4-lane roadway from Cumberland Road to SR 37 and then transitions back to a 2-lane roadway from SR 37 to 10th Street. There is a sidewalk/multi-use path along Greenfield Avenue from Stony Creek Elementary School to 10th St.

Notes

A roundabout was constructed at Greenfield Road and Howe Road in 2019.

FIGURE 26: GREENFIELD ROAD, CRASHES PER YEAR



Crash History

Total Crashes (2018-2022): 198 Fatal & Incapacitating Crashes: 22 Pedestrian or Bicyclist Crashes: 1

Prioritization

Segment Safety Index Score: 8.1 Intersection Safety Index Score: 33.9 Equity Target Area: Yes

Strategies

The MTP includes widening Greenfield Road from a 2-lane road to a 4-lane road in the future, but at the time this safety action plan was written no funding source has been identified.

Road Safety Audits (RSAs) are recommended at Cumberland Road and 10th Street. These intersections experience unexpected crash types and severities and will benefit from more detailed study.

TABLE 11: BODEN ROAD, STRATEGIES

STRATEGY	PURPOSE	BENEFIT/IMPACT	COST
	Short-Term/Low-Cost Improv	vements	
Backplates with retro- reflective borders	Reduce red light running and right angle crashes	15% reduction in total crashes	\$
	Long-Term Capital Proje	ects	
Left turn lanes	Reduce turning conflicts and improve visibility to reduce turning crashes	28%-48% reduction in total crashes	\$\$\$
Roundabout at 16th Street	Reduce right angle crashes and eliminate crossing conflict points	78%-82% reduction in fatal and injury crashes	\$\$\$\$
Shared use path	Improve pedestrian mobility and safety	65%-89% reduction in pedestrian crashes	\$-\$\$\$
Corridor access management from 10th Street to Holland Street	Reduce conflict points	25%-31% reduction in fatal and injury crashes	\$\$-\$\$\$\$









10th Street

Pleasant Street to Carbon Street

Existing Conditions

10th Street is a local 2-lane road that runs northsouth. This section of 10th Street is south of downtown Noblesville, between Pleasant Street and Carbon Street. Sidewalks are present along 10th Street north of South Street.

FIGURE 29: 10th Street, CRASHES PER YEAR



Crash History

Total Crashes (2018-2022): 147 Fatal & Incapacitating Crashes: 25 Pedestrian or Bicyclist Crashes: 1

Prioritization

Segment Safety Index: 5.1 Intersection Safety Index: 27.4 Equity Target Area: Yes

Strategies

The MTP includes a programmed project to widen 10th Street/Allisonville Road from 2-lanes to 4-lanes from Greenfield Avenue to 146th Street. As of April 2024, construction is underway on a roundabout at 10th Street and Pleasant Street.

A Road Safety Audit (RSA) is also recommended at for the intersection of 10th Street and Greenfield Road.

TABLE 12: 10th Street, Strategies

STRATEGY	PURPOSE	BENEFIT/IMPACT	COST
	Short-Term/Low-Cost Improv	vements	
Crosswalk visibility enhancements	Improve crossing safety and comfort for pedestrians	25%-42% reduction in pedestrian crashes	\$
Long-Term Capital Projects			
Bicycle lanes or walkways	Improve pedestrian mobility and safety	65%-89% reduction in pedestrian crashes	\$-\$\$\$
PHB or RRFB at mid- block locations	Improve crossing safety, visibility, and comfort for pedestrians	47%-56% reduction in pedestrian crashes	\$\$

- SAME DIRECTION SIDESWIPE
- - NON-COLLISION
 - LEFT/RIGHT TURN
- - COLLISION WITH ANIMAL

Incapaciting





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146th Street

Allisonville Road to Cumberland Road

Existing Conditions

146th Street from Allisonville Road to Cumberland Road is a 4-lane principal arterial with turn lanes at major intersections. This section of 146th Street includes an interchange with SR 37 providing regional connections, 3 signalized intersections, and a trail crossing at the Nickel Plate Trail.

There is a crossing with the new Nickle Plate Trail. A multi-use path is present on the south side of 146th Street from Allisonville Road to Herriman Road and from Tom Wood Way to Cumberland Road. East of North Point Boulevard, there is also a multiuse path on the north side of the street.



FIGURE 32: 146TH STREET, CRASHES PER YEAR

Crash History

Total Crashes (2018-2022): 372 Fatal & Incapacitating Crashes: 52 Pedestrian or Bicyclist Crashes: 1

Prioritization

Segment Safety Index: 19.1 Intersection Safety Index: 21.3 Equity Target Area: Yes

Strategies

There is a cluster of crashes at unsignalized intersections and driveways along 146st Street near the commercial district adjacent to the intersection with SR 37. Access management is recommended, including but not limited to improved turn lane delineation, raised medians, and driveway consolidation.

Improvements are recommended at the Nickel Plate Trail crossing. A grade separated crossing is currently in design and would offer maximum benefits to trail users. Other improvement concepts are included here if the grade separated crossing is not ultimately constructed.

The corridor is under Hamilton County jurisdiction so improvements will require interagency cooperation.

TABLE 13: 146TH STREET, STRATEGIES

STRATEGY	PURPOSE	BENEFIT/IMPACT	COST	
	Short-Term/Low-Cost Impro	vements		
Crosswalk visibility enhancements at Nickel Plate Trail	Improve crossing safety and comfort for trail user	25%-42% reduction in pedestrian crashes	\$	
	Long-Term Capital Projects			
Corridor access management	Reduce conflict points	25%-31% reduction in fatal and injury crashes	\$\$-\$\$\$\$	
Pedestrian refuge island and PHB or RRFB at Nickel Plate Trail	Improve crossing safety, visibility, and comfort for trail users	47%-56% reduction in pedestrian crashes	\$\$	









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Suburban Intersections

Existing Conditions

This location includes 16 intersections in suburban settings including four existing roundabouts and eight existing signalized intersections.

FIGURE 35: SUBURBAN INTERSECTIONS, CRASHES



Crash History

Total Crashes (2018-2022): 587 Fatal & Incapacitating Crashes: 125 Pedestrian or Bicyclist Crashes: 2

Prioritization

Intersection Safety Index: 3.4 - 28.9

Strategies

Improvements may be approached systematically for all intersections or a group of intersections.

Priority intersections include:

- > 146th Street & Gray Road
- > River Road & 146th Street
- > Hazell Dell Drive & 146th Street

TABLE 14: SUBURBAN INTERSECTIONS, STRATEGIES

STRATEGY	PURPOSE	BENEFIT/IMPACT	COST
	Short-Term/Low-Cost Impro	vements	
Backplates with retro- reflective borders	Reduce red light running and right angle crashes	15% reduction in total crashes	\$
Systemic Application of Multiple Low-Cost Countermeasures at stop controlled intersections	Reduce crashes at unsignalized intersections	10% reduction in fatal and injury crashes	\$
Wider edge lines	Reduce roadway departures (ran off road crashes)	37% reduction in fatal and injury crashes	\$
	Long-Term Capital Proje	ects	
Turn lanes	Reduce turning conflicts and improve visibility to reduce turning crashes	28%-48% reduction in total crashes	\$\$\$
Roundabouts	Reduce right angle crashes and eliminate crossing conflict points	78%-82% reduction in fatal and injury crashes	\$\$\$\$
Corridor access management	Reduce conflict points	25%-31% reduction in fatal and injury crashes	\$\$-\$\$\$\$





FIGURE 37: SUBURBAN INTERSECTIONS, MAP







SR 37 Allisonville Road to 141st Street

Existing Conditions

SR 37 is a 4-lane principal arterial with a divided median. The study limits begin at Allisonville Road and end at 141st Street.



FIGURE 38: SR 37, CRASHES PER YEAR

Crash History

Total Crashes (2018-2022): 1,047 Fatal & Incapacitating Crashes: 82 Pedestrian or Bicyclist Crashes: 5

Prioritization

Segment Safety Index: 2.1 Intersection Safety Index: 51.7 Equity Target Area: Yes

Strategies

As part of the "37 Thrives" project, the SR 37 and 146th Street intersection was recently reconstructed as a single-point urban interchange with free flow traffic on SR 37, and the SR 37 and 141st Street intersection was restricted to right-in right-out access on 141st Street.

INDOT and the City of Noblesville are pursuing a project on SR 37 from Greenfield Avenue to SR 32/SR 38. At the time this safety action plan was completed, there was an active RFP for project development services, including environmental, design, and right-of-way services.

Potential improvements along SR 37 will promote safety for all road users along SR 37 and adjacent streets. The Project envisions transforming SR 37 from a divided highway with four traditional signalized intersections to a context-sensitive design of a grade-separated expressway with three continuous flow roundabout interchanges and access management for remaining at-grade intersections with right-in-right-out. Seven additional intersections on arterials adjacent to SR 37 will also be reconstructed as roundabouts.

FIGURE 39: SR 37, CRASH TYPES & SEVERITY



Fatal and Incapacitating Non-Incapacitating









SR 32 / Conner Street

Presley Drive to Hague Road

Existing Conditions

SR 32/Conner Street is 2-lane Principal Arterial that runs east-west through Downtown Noblesville. This roadway runs through the downtown central business district and therefore overlaps with the Downtown Noblesville project.

Notes

Roundabouts were recently constructed at SR 32/Conner Street and River Road and at SR 38/ Sheridan Road junction at Riverview Health campus.

The corridor is under INDOT jurisdiction so improvements will require interagency cooperation.

FIGURE 41: SR 32 / CONNER STREET, CRASHES PER YEAR





Crash History

Total Crashes (2018-2022): 834 Fatal & Incapacitating Crashes: 66 Pedestrian or Bicyclist Crashes: 7

Prioritization

Segment Safety Index: 64.1 Intersection Safety Index: 45.5 Equity Target Area: Yes

Strategies

Separated pedestrian and bicyclist facilities (shared use path) are recommended due to the exposure to high-speed vehicles on SR 32/Conner Street, and multi-lane roundabouts present on the corridor.

Corridor access management is recommended from 16th Street to Cumberland Road and may include the following:

- > Add a median and convert the intersection with 19th Street to a Right-In Right-Out, Left-In (RIRO-LI) or a roundabout.
- Evaluate of traffic control (including signal warrants and alternative intersection types) for the intersection of SR 32/Conner Street and 17th Street.
- Detailed traffic analysis will need to be > performed to determine the best solution for access management.

TABLE 15: SR 32 / CONNER STREET, STRATEGIES

STRATEGY	PURPOSE	BENEFIT/IMPACT	COST	
	Short-Term/Low-Cost Impro	vements		
Backplates with retro- reflective borders	Reduce red light running and right angle crashes	15% reduction in total crashes	\$	
	Long-Term Capital Projects			
Walkways and/or bicycle lanes	Improve safety of bicyclists and pedestrians by separating modes	65%-89% reduction in pedestrian crashes	\$-\$\$\$	
Corridor access management	Reduce conflict points	25%-31% reduction in fatal and injury crashes	\$\$-\$\$\$\$	





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Harrell Parkway/Tegler Drive

Brooks School Road to Olio Road

Existing Conditions

CRASHES PER YEAR

2019

2018

Harrell Parkway and Tegler Drive are minor collectors that provide access to the Hamilton Town Center and the Saxony Campus. Land use in this area is primarily commercial.

FIGURE 44: HARRELL PARKWAY / TEGLER DRIVE,

Total Crashes (2018-2022): 72

Fatal & Incapacitating Crashes: 5 Pedestrian or Bicyclist Crashes: 0

Segment Safety Index: 22.7 Intersection Safety Index: 16.6 Equity Target Area: No

Strategies

Intersection improvements along the Harrell rear end, right angle, and left turn crashes. Access management along Tegler Drive is recommended including improved turn lane delineation, raised medians, and driveway consolidation.

TABLE 16: HARRELL PARKWAY/TEGLER DRIVE, STRATEGIES

2020

■ Incapaciting ■ Non-Incapacitating ■ PDO

2021

2022

STRATEGY	PURPOSE	BENEFIT/IMPACT	COST
	Short-Term/Low-Cost Impro	vements	
Backplates with retro- reflective borders	Reduce red light running and right angle crashes	15% reduction in total crashes	\$
Long-Term Capital Projects			
Left turn lanes	Reduce turning conflicts and improve visibility to reduce turning crashes	28%-48% reduction in total crashes	\$\$\$
Roundabout at Tegler Dr. and Bergen Blvd.	Reduce rear end and right angle crashes	78%-82% reduction in fatal and injury crashes	\$\$\$\$
Corridor access management	Reduce rear end and turning crashes	25%-31% reduction in fatal and injury crashes	\$\$-\$\$\$\$



Prioritization

Parkway and Tegler Drive are recommended. Strategies at this location are aimed at reducing

FIGURE 45: HARRELL PARKWAY / TEGLER DRIVE, CRASH TYPES & SEVERITY









Boden Road

Campus Parkway to SR 38/Pendleton Avenue

Existing Conditions

Boden Road is a 4-lane divided principal arterial from Campus Parkway to 146th Street/Greenfield Avenue and transitions to a 2-lane local road north of 146th Street. There is a sidewalk/multi-use path present along Boden Road from Campus Parkway to Mojo UP Sports Complex (south of 166th Street).

Notes

A roundabout was constructed at Boden Road and 156th Street in 2022.





Crash History

Total Crashes (2018-2022): 178 Fatal & Incapacitating Crashes: 29 Pedestrian or Bicyclist Crashes: 0

Prioritization

Segment Safety Index Score: 10.8 Intersection Safety Index Score: 18.7 Equity Target Area: Yes

Strategies

The MTP includes widening Boden Road from a 2-lane road to a 4-lane road in the future, but at the time this safety action plan was written no funding source has been identified. The project extents include Boden Road from 146th Street to SR 38.

A Road Safety Audit (RSA) is also recommended at the SR 38/Pendleton Avenue and Boden Road intersection and the 146th Street and Boden Road intersection. Improvements may be programmed with the upcoming roadway widening project.

TABLE 17: BODEN ROAD, STRATEGIES

STRATEGY	PURPOSE	BENEFIT/IMPACT	COST
	Short-Term/Low-Cost Impro	vements	
Systemic Application of Multiple Low-Cost Countermeasures at stop controlled intersections	Reduce crashes at unsignalized intersections	10% reduction in fatal and injury crashes	\$
Backplates with retro- reflective borders	Reduce red light running and right angle crashes	15% reduction in total crashes	\$
	Long-Term Capital Proje	ects	
Left turn lanes	Reduce turning conflicts and improve visibility to reduce turning crashes	28%-48% reduction in total crashes	\$\$\$
Roundabout at Boden Road and 166th Street	Reduce right angle crashes and eliminate crossing conflict points	78%-82% reduction in fatal and injury crashes	\$\$\$\$









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186th Street

10th Street/Allisonville Road to SR 37

Existing Conditions 186th Street is a 2-lane major collector with turn

lanes at major intersections. This corridor consists of 186th Street from 10th Street / Allisonville Road to SR 37.

The land use adjacent to the corridor is single family residential and educational, including Noblesville High School and Middle School.

A sidewalk is present along the south side of this section of 186th Street that intersects with the Cumberland Road Trail and the Allisonville / White River Trail at 10th Street.

FIGURE 50: 186TH STREET, CRASHES PER YEAR



Crash History Total Crashes (2018-2022): 32

Fatal & Incapacitating Crashes: 4 Pedestrian or Bicyclist Crashes: 1

Prioritization

Segment Safety Index: 4.2 Intersection Safety Index: 25.9 Equity Target Area: No

Strategies

The high school and middle school are pedestrian and bicyclist generators; therefore the following countermeasures should be considered:

- Crosswalk visibility enhancements >
- RRFB or PHB at mid-block crossings >
- > Shared use path or sidewalk along north side of roadway

Access management is recommended, including but not limited to improved turn lane delineation, raised medians, and driveway consolidation. Raised medians may double as pedestrian refuge areas at mid-block crossings.

TABLE 18: 186TH STREET, STRATEGIES

STRATEGY	PURPOSE	BENEFIT/IMPACT	COST
	Short-Term/Low-Cost Impro	vements	
Crosswalk visibility enhancements	Improve crossing safety and comfort for trail users	25%-42% reduction in pedestrian crashes	\$
	Long-Term Capital Proje	ects	
Corridor access management	Reduce conflict points	25%-31% reduction in fatal and injury crashes	\$\$-\$\$\$\$
Shared use path and PHB or RRFB at mid- block crossings	Improve bicycle and pedestrian safety near the high school and middle school	47%-56% reduction in pedestrian crashes	\$\$\$

FIGURE 51: 186TH STREET, CRASH TYPES & SEVERITY





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Cherry Street

12th Street to SR 37

Existing Conditions

Cherry Street is a local 2-lane road that runs eastwest. This section of Cherry Street is east of the downtown Noblesville, between 12th Street and SR 37. Sidewalks are present along Cherry Street from 12th Street to 19th Street. Sidewalks are not continuous between 19th Street and Cumberland Road.

The land use along Cherry Street is primarily single family residential. There is a commercial district between 19th Street and SR 37.





Crash History

Total Crashes (2018-2022): 74 Fatal & Incapacitating Crashes: 14 Pedestrian or Bicyclist Crashes: 1

Prioritization

Segment Safety Index: 2.2 Intersection Safety Index: 3.6 Equity Target Area: Yes

Strategies

Systemic countermeasures at stop controlled intersections may include improved signage, advanced warnings, and/or enhanced pavement markings.







TABLE 19: CHERRY STREET, STRATEGIES

STRATEGY	PURPOSE	BENEFIT/IMPACT	COST
	Short-Term/Low-Cost Impro	vements	
Systemic Application of Multiple Low-Cost Countermeasures at stop controlled intersections	Reduce crashes at unsignalized intersections	10% reduction in fatal and injury crashes	\$
Crosswalk visibility enhancements	Improve crossing safety and comfort for bicyclists and pedestrians	25%-42% reduction in pedestrian crashes	\$
Long-Term Capital Projects			
Corridor access management	Reduce conflict points	25%-31% reduction in fatal and injury crashes	\$\$-\$\$\$\$





Campus Parkway

Boden Road to I-69 Interchange

Existing Conditions

Campus Parkway (146th Street) from Boden Road to I-69 is a 4-lane principal arterial with multi-use paths on both sides of the road.

Land use in this area is primarily commercial, including the Hamilton Town Center, Ruoff Music Center, and medical facilities (IU Health and Ascension St. Vincent).

Campus Parkway provides regional mobility and has an interchange with I-69, that was reconstructed as a diverging diamond around the year 2017.

FIGURE 56: CAMPUS PARKWAY, CRASHES PER YEAR



Crash History

Total Crashes (2018-2022): 295 Fatal & Incapacitating Crashes: 36 Pedestrian or Bicyclist Crashes: 0

Prioritization

Segment Safety Index Score: 9.9 Intersection Safety Index Score: 18.7 Equity Target Area: No

Strategies

Intersection improvements along the Campus Parkway corridor are recommended. Strategies at this location are aimed primarily at reducing rear end and right angle crashes.

The corridor is under Hamilton County jurisdiction so improvements will require interagency cooperation.







TABLE 20: CAMPUS PARKWAY, STRATEGIES

STRATEGY	PURPOSE	BENEFIT/IMPACT	COST
	Short-Term/Low-Cost Impro	vements	
Backplates with retro- reflective borders	Reduce red light running and right angle crashes	15% reduction in total crashes	\$
Yellow change intervals	Reduce rear end crashes	12% reduction in injury crashes	\$
	Long-Term Capital Proje	ects	
Reduced conflict intersections	Reduce turning conflicts and improve visibility to reduce turning crashes	22%-63% reduction in fatal and injury crashes	\$\$\$\$
Left turn lanes	Reduce turning conflicts and improve visibility to reduce turning crashes	28%-48% reduction in total crashes	\$\$\$



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206th Street

Hague Road to SR 37

Existing Conditions

There are four intersections along 206th Street with Hague Road, SR 19 / Cicero Road, Cumberland Road, and SR 37.



Crash History

Total Crashes (2018-2022): 78 Fatal & Incapacitating Crashes: 14 Pedestrian or Bicyclist Crashes: 0

Prioritization

Segment Safety Index: 0.4 Intersection Safety Index: 8.5 Equity Target Area: No

Strategies

The MTP includes widening 206th Street from a 2-lane road to a 4-lane road in the future, but at the time this safety action plan was written no funding source has been identified. The scope includes potential realignment to terminate at the existing intersection at Hague Road and Carrigan Road.

The corridor is under Hamilton County jurisdiction so improvements will require interagency cooperation.

TABLE 21: 206th Street, Strategies

STRATEGY	PURPOSE	BENEFIT/IMPACT	COST
Short-Term/Low-Cost Improvements			
Backplates with retro- reflective borders	Reduce red light running and right angle crashes	15% reduction in total crashes	\$
Systemic Application of Multiple Low-Cost Countermeasures at stop controlled intersections	Reduce crashes at unsignalized intersections	10% reduction in fatal and injury crashes	\$
Wider edge lines	Reduce roadway departures (ran off road crashes)	37% reduction in fatal and injury crashes	\$
Long-Term Capital Projects			
Roundabouts at Cicero Road, Cumberland Road, and/or Hague Road	Reduce right angle crashes and eliminate crossing conflict points	78%-82% reduction in fatal and injury crashes	\$\$\$\$



East 196th Street

0.25 0.5 0.75

hulling

1 Miles

FIGURE 61: 206TH STREET, MAP

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SR 32 / SR 38 Junction

Existing Conditions

The SR 32/SR 38 Junction is on the east side of the City. SR 32/SR 38/Conner Street west of the junction is a 2-lane Minor Arterial. SR 32 east of the junction is a 2-lane Minor Arterial. SR 38 east of the junction is a 2-lane Major Collector.

Land use in this area includes residential (multifamily housing and single units), industrial, commercial, and agricultural. There is the potential for further development.

Notes

The roundabouts were constructed in the 2010-2012 timeframe. They are multi-lane roundabouts though the roadways approaching the roundabout have one lane in each direction.

A majority of the incapacitating injury crashes occurred at the SR 32/SR 38/Conner Street and Union Chapel Road intersection. 46% of the crashes were same direction sideswipe crashes, which are common a multi-lane roundabouts. 24% of the crashes were rear end crashes, which are unexpected at roundabouts with yield entry.

FIGURE 62: SR 32 / SR 38 JUNCTION, CRASHES



Crash History

Total Crashes (2018-2022): 125 Fatal & Incapacitating Crashes: 14 Pedestrian or Bicyclist Crashes: 0

Prioritization

Segment Safety Index: 3.4 Intersection Safety Index: 17.8 Equity Target Area: No

Strategies

The MTP includes a programmed project to widen SR 32 from 2-lanes to 4-lanes from Cicero Creek to the SR 38 junction.

A review existing roundabouts is recommended for best practices on geometry, signage for motorists navigating the roundabout, and safe pedestrian crossings.

A Roadway Safety Audit (RSA) is also recommended at this location.





FIGURE 64: SR 32 / SR 38 JUNCTION, MAP





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SR 32 / Westfield Road

Hague Road to Gray Road

Existing Conditions

SR 32 is a 2-lane Principal Arterial west of Noblesville. Land use along the corridor includes suburban housing developments, commercial, industrial, and agricultural

FIGURE 65: SR 32 / WESTFIELD ROAD, CRASHES PER YEAR



TABLE 22: SR 32 / WESTFIELD ROAD, STRATEGIES

STRATEGY	PURPOSE	BENEFIT/IMPACT	COST			
Short-Term/Low-Cost Improvements						
Systemic Application of Multiple Low-Cost Countermeasures at stop controlled intersections	Reduce crashes at unsignalized 10% reduction in fatal and injury crashes		\$			
	Long-Term Capital Proje	ects				
Walkways and/or bicycle lanes	Improve safety of bicyclists and pedestrians by separating modes	65%-89% reduction in pedestrian crashes	\$-\$\$\$			
Turn lanes	Reduce turning conflicts and improve visibility to reduce turning crashes	28%-48% reduction in total crashes	\$\$\$			
Corridor access management	Reduce conflict points	25%-31% reduction in fatal and injury crashes	\$\$-\$\$\$\$			
Roundabouts	Reduce right angle crashes and eliminate crossing conflict points	78%-82% reduction in fatal and injury crashes	\$\$\$\$			

Crash History

Total Crashes (2018-2022): 241 Fatal & Incapacitating Crashes: 26 Pedestrian or Bicyclist Crashes: 0

Prioritization

Segment Safety Index: 13.3 Intersection Safety Index: 23.0 Equity Target Area: No

Strategies

Separated pedestrian and bicyclist facilities (shared use path) are recommended due to the exposure to high-speed vehicles on SR 32/Westfield Road.

The corridor is under INDOT jurisdiction so improvements will require interagency cooperation. INDOT is currently studying the corridor for potential safety improvements.











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SR 38 / Sheridan Road

Moontown Road to SR 32

Existing Conditions

SR 38/Sheridan Road is a 2-lane Principal Arterial from Hague Road to Little Chicago Road and a 2-lane minor arterial west of Little Chicago Road. Land use along the corridor is primarily residential.

Notes

A roundabout was recently constructed at SR 38/ Sheridan Road and SR 32/Westfield Road junction at Riverview Health campus. A roundabout at SR 38 and Oakmont Drive is under construction and a roundabout at SR 38 and Logan Street is in design.

FIGURE 68: SR 38 / SHERIDAN ROAD, CRASHES PER YEAR



Crash History

Total Crashes (2018-2022): 227 Fatal & Incapacitating Crashes: 25 Pedestrian or Bicyclist Crashes: 1

Prioritization

Segment Safety Index: 18.9 Intersection Safety Index: 24.0 Equity Target Area: No

Strategies

Separated pedestrian and bicyclist facilities (shared use path) are recommended due to the exposure to high-speed vehicles on SR 38/Sheridan Road.

Evaluate traffic control due to high instances of right-angle crashes and add a left turn lane on SR 38 at the intersection with Oakmont Drive. Add a left turn lane (if compatible with traffic control) due to rear end and same direction sideswipe crashes.

The corridor is under INDOT jurisdiction so improvements will require interagency cooperation.

TABLE 23: SR 38 / SHERIDAN ROAD, STRATEGIES

STRATEGY	PURPOSE	BENEFIT/IMPACT	COST
	Short-Term/Low-Cost Impro	vements	
Systemic Application of Multiple Low-Cost Countermeasures at stop controlled intersections	Reduce crashes at unsignalized intersections	10% reduction in fatal and injury crashes	\$
	Long-Term Capital Proje	ects	
Walkways and/or bicycle lanes Improve safety of bicyclists and pedestrians by separatin modes		65%-89% reduction in pedestrian crashes	\$-\$\$\$



Figure 70: SR 38 / Sheridan Road, Map







Policy & Program Strategies

To comprehensively address roadway safety, physical safety improvements alone are not sufficient. Policy changes and programs are important strategies to improve behaviors, education, and enforcement outcomes.

To develop a list of policy and program recommendations, an assessment of current policies and programs was performed. The assessment was led by the project team in consultation with the steering committee. Policy assessment included design guidelines, speed management, and performance management.

A set of high level action items will serve as the road map for implementation. The strategies are the policy and program recommendations that, together with the HIN location recommendations, serve as the comprehensive set of strategies to address roadway safety in Noblesville and reach the goal of zero roadway fatalities and serious injuries.

These strategies respond to specific conditions in Noblesville and consider national best practices. Each strategy listed should be considered a starting point from which the City can begin working, along with their partners, to adjust and implement as necessary.

TABLE 24: POLICY AND PROGRAM STRATEGIES

STRATEGY	DESCRIPTION	TIMEFRAME
Complete Streets Policy	Develop and implement a Complete Streets policy.	0-3 years
Level of Service Alternatives	Evaluate alternatives to level of service (LOS) to evaluate transportation projects in Downtown Noblesville.	4-5 years
Pedestrian Crossing Standards	Develop and implement design standard for pedestrian crossing at roundabouts.	0-3 years
Corridor Access Management	Develop and implement corridor access management policies and design guidelines to minimize roadway conflict points.	5+ years
Traffic Calming Program	Create and establish a traffic calming program by which residents can formally request traffic calming treatments at specific locations.	0-3 years
Safe Routes to School Program	Establish a Safe Routes to School program.	4-5 years
Road Safety Campaign	Create targeted safety awareness educational campaigns.	0-3 years
Performance Management	Create roadway safety performance program to collect data, monitor progress, review fatal crashes, and publish annual report card.	0-3 years

Complete Streets Policy What:

Complete Streets is an approach to planning, designing, building, operating, and maintaining streets that enables safe access for all people who need to use them, including pedestrians, bicyclists, motorists and transit riders of all ages and abilities. A Complete Streets policy codifies a community's commitment to this approach and includes guidance for agency staff at every stage of project development and ongoing maintenance and operations. According to best practices promoted by the National Complete Streets Coalition, there are ten key elements to a strong and successful Complete Streets policy. These include establishing a vision and commitment, addressing all projects and phases, allowing only for clear exceptions, adopting excellent design guidance, and creating a plan for implementation.

Why:

For the City of Noblesville, a Complete Streets policy strengthens the city's commitment to creating safer streets for all Alternatives to LOS include: by providing a framework through which to plan, program, design, and maintain city streets. Noblesville's policy can be crafted to take into account the findings of this study to ensure that the HIN and recommended safety improvements are addressed in future projects.

Resources:

National Complete Streets Coalition Federal Highway Administration (FHWA) Indiana DOT



Level of Service Alternatives What:

Level of service (LOS) is a qualitative measure of performance that considers vehicle travel time, speed, and delay. Corridors and intersections are assigned letter grades A through F with A being free flowing traffic and F being congested, stop-and-go traffic. Because LOS only assess vehicle movements, evaluating transportation projects using LOS will inevitable prioritize those movements over the safety of all users including pedestrians and bicyclists.

Why:

While not explicitly required by the USDOT, most agencies rely on LOS to evaluate potential transportation improvement

- projects. In dense, urban environments LOS can be particularly harmful when attempting to design transportation systems that minimize vehicle throughput and maximize multimodal safety and access.
- - > Multimodal LOS
 - > Vehicle Miles Traveled
 - > Person throughput
 - > Multimodal access
 - > Allowing LOS F within dense, urban environments or commercial centers

Resources: USDOT Transportation for America



Pedestrian Crossing Standards What:

Pedestrian crossings vary considerably throughout the City in terms of quality and design. A consistent pedestrian crossing standard would ensure that pedestrians have safe crossing options throughout the City in urban, rural, suburban, and roundabout settings. Common throughout Noblesville and nearby communities, roundabouts are circular intersections safety and efficiently move traffic. Lower travel speeds and reduced conflict points make roundabouts an FHWA proven safety countermeasure for their ability to significantly reduce fatal and serious injury crashes.

Despite the benefits of roundabouts, pedestrians are often confused, unsure, and/or uncomfortable when trying to cross streets at a roundabout. There is not always a clear, marked, and signed method for pedestrian crossings. Crossing at roundabouts was an issue brought up by many in the public and in stakeholder interviews.

Why:

A standard design for pedestrian crossings would ensure the pedestrian experience is safe and uniform in all contexts, particularly at roundabouts. A standard design would also allow better use of signage and educational materials.

Resources:

Federal Highway Administration (FHWA) Minnesota DOT National Association of Transportation Officials (NACTO)

Corridor Access Management What:

Corridor access management refers to the land development regulations, roadway design standards, and control of entry and exit points along a roadway. This includes intersections with other roadways and driveways that serve as access points to adjacent properties. Access management treatments may include:

- > Reduce density through driveway closure, consolidation, or relocation.
- > Manage spacing of intersection and access points.
- > Implement raised medians that preclude across-roadway movements.
- > Utilize designs such as roundabouts or reduced left-turn conflicts (such as restricted crossing U-turn, median U-turns, etc.).
- > Use lower speed one-way or twoway off-arterial circulation roads.

Why:

Corridor access management is an FHWA proven safety countermeasure and can be expected to reduce fatal and serious injury crashes.

Resources:

Federal Highway Administration (FHWA) National Cooperative Highway Research Program (NCHRP)

Traffic Calming Program

What:

Traffic calming refers to treatments that reduce vehicle speeds and encourage slower, and more responsible driving behavior.

Currently, Noblesville residents who are concerned with speeding vehicles may provide general feedback to the Noblesville Police Department or to the Traffic Committee and all speeding complaints are reviewed by the Traffic Committee. However, not all residents are aware of the process for request traffic calming treatments.

Why:

A formalized traffic calming program would allow residents to more easily request treatments to reduce vehicle speeds and improve safety on neighborhood streets. A formalized program would also streamline the evaluation of locations, provide a archive of requested locations, particular treatments.

A SRTS program would align well with and help establish standards for the use of the Emphasis Areas and Key Concepts described earlier in the plan, including eliminating traffic-related fatalities and serious injuries, improving bicycle and **Resources:** Federal Highway Administration (FHWA) pedestrian safety and connectivity, and USDOT advancing equitable transportation investments that support disadvantaged National Association of Transportation Officials (NACTO) communities and vulnerable road users.



Safe Routes to School Program What:

Safe Routes to School (SRTS) is a holistic. multifaceted approach to increasing walking and bicycling to school. SRTS programs often include safety education, targeted traffic enforcement, and encouragement activities like Walk to School Day or daily Walking School Buses.

Some SRTS programs also focus on infrastructure improvements to slow motor vehicle traffic and create safe, contiguous connections for students to walk and bike to school. The scope and scale of a SRTS program can vary widely and is often dependent on leading agency (often a school district or municipality), local partners, staff and volunteer capacity, and resources. A successful SRTS program can improve traffic safety, increase physical activity, and reduce vehicle trips to and from school.

Why:

Resources:

USDOT National Center for Safe Routes to School Safe Routes Partnership Indiana Safe Routes to School Guidebook



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Road Safety Campaign

What:

Road safety campaigns are flexible safety tools used by national, state, local, and non-profit agencies around the world. Road safety campaigns vary considerably and can be tailored to address a range of topics, target general or specific audiences, adapted to different media and communication channels, and implemented for various lengths of time. While the ultimate goal of these campaigns are to reduce the frequency and severity of crashes, they can do so with different strategies, like improving knowledge and/ or awareness of risks and preventative behaviors, changing underlying factors known to influence behaviors, modifying problem behaviors, and maintaining or encouraging safety-conscious behaviors.

Why:

Not all road safety issues can be solved through design interventions. A road safety campaign can raise awareness of the human impacts of fatal and severe crashes in the community, bring light to the city's efforts to improve road safety for all users, and encourage safe and responsible travel behaviors among people who live, work, and play in Noblesville.

Resources:

National Highway Transportation Safety Administration (NHTSA) World Health Organization (WHO) Traffic Injury Research Foundation (TIRF)

Performance Management

What:

Safety Performance Management is the process by which data is used to review performance of the transportation system. The City of Noblesville is committed to developing a robust safety performance management program. Safety performance measures to collect, monitor, and publish include:

- > Number of fatalities
- > Rate of fatalities
- > Number of serious injuries
- > Rate of serious injuries
- Number of non-motorized fatalities and serious injuries

Why:

As required by the SS4A program, to monitor progress of this plan, crash data will be used to evaluate the effectiveness of the comprehensive set of strategies to improve safety. Each year, data will be collected, analyzed, and performance measures published in a annual report card to increase transparency and accountability. In addition to the performance measures, the Traffic Committee will review the circumstances for every fatal crash and take appropriate steps to address unsafe conditions.

Resources:

Federal Highway Administration (FHWA) Indianapolis Metropolitan Planning Organization (IMPO)





APPENDIX A Safety Toolkit

APPENDIX B

Engagement

APPENDIX C

Steering Committee

APPENDIX D

Equity

APPENDIX E

High Injury Network

APPENDIX F

Maps

City of Noblesville Safety Action Plan Appendix

Finalized April 2024

APPENDIX A Safety Toolkit



Countermeasures



Images: Wikipedia, Texas A&M Transportation Institute, LH6, City of Kirkwood, Nevada DOT, NACTO, Unsplash, Florin Roebig Trial Attorneys, WGI, Inclusivity City Maker, Street Light Data, Sagacom, ABC27, CDN, Wikimedia, CMT, Wired, Regina, NYC Street Design, PGA Design, Journal & Courier, Boston Globe



A2 | Noblesville Safety Action Plan

Ways to reduce crashes and keep our communities safe



Bicycle Lanes

Purpose

Aligns with the Safe Systems Approach principle of recognizing human vulnerability and separates users in space.

Description

Bicycle facilities can mitigate or prevent interactions, conflicts, and crashes between bicyclists and motor vehicles, and create a network of safer roadways for bicycling.

Applicable Locations

New roads/existing roads through modifications. Bicycle facilities can be appropriate within various roadway contexts however, roadway context determines the appropriate facility type and design.

Safety Benefits

Converting traditional or flush buffered bicycle lanes to a separated bicycle lane with flexible delineator posts can reduce crashes up to 53% for bicycle/vehicle crashes

Bicycle lane additions can reduce crashes up to 49% for total crashes on urban 4-lane undivided collectors and local roads

30% reduction for total crashes on urban 2-lane undivided collectors and local roads

More information





Design Guidance Considerations

In order to maximize a roadway's suitabi for riders of all ages and abilities, bicycl lane design should vary according to roadway characteristics (number of lane motor vehicle and truck volumes, speed presence of transit), user needs (curren and forecasted ridership, types of bicycle and micromobility devices in use within the community, role within the bicycling network), and land-use context (adjacen land uses, types and intensity of conflict uses, demands from other users for curbside access). Separated bicycle lane are recommended on roadways with high vehicle volumes and speeds, such as arterials.

City and State policies may require minimum bicycle lane widths, although desirable bicycle lane widths can differ by agency and functional classification o the road, current and forecasted bicycle volumes, and contextual attributes such as topography. Studies have found that

ility e s,	roadways did not experience an increase in crashes or congestion when travel lane widths were decreased to add a bicycle lane.
25 	Studies and experience in U.S. cities show that bicycle lanes increase ridership and may help jurisdictions better manage roadway capacity.
ng es her	In rural areas, rumble strips can negatively impact bicyclists' ability to ride if not properly installed. Agencies should consider the dimensions, placement, and offset of rumble strips when adding a bicycle lane.
f	Bicycle lanes should be considered on roadways where adjacent land use suggests that trips could be served by varied modes, particularly to meet the safety and travel needs of low-income populations likely to use bicycles to reach essential destinations.

Leading Pedestrian Intervals

Purpose

Leading pedestrian intervals allow pedestrians to better establish their presence in the crosswalk before vehicles have priority to turn right or left.

Description

A leading pedestrian interval gives pedestrians the opportunity to enter the crosswalk at an intersection 3-7 seconds before vehicles are given a green indication.

For more information: https://highways. dot.gov/sites/fhwa.dot.gov/files/2022-06/ fhwasa19040.pdf

Applicable Locations

Several cities across the U.S. have decided to install LPIs across systems of signalized intersections to improve pedestrian safety.

Agencies prioritize the intersections in places where there are lots of crashes, high pedestrian crossing volumes, and vulnerable populations.

They may be especially useful at one-way streets or at T-intersections.

Safety Benefits

- LPIs provide the following benefits:
- Increased visibility of crossing pedestrians.
- Reduced conflicts between pedestrians and vehicles.
- Increased likelihood of motorists yielding to pedestrians.
- Enhanced safety for pedestrians who may be slower to start into the intersection

Leading pedestrian intervals can create a 13% reduction in pedestrian-vehicle crashes at intersections

More information



Rectangular Rapid Flashing Beacons

Purpose

A marked crosswalk or pedestrian warning sign can improve safety for pedestrians crossing the road, but at times may not be sufficient for drivers to visibly locate crossing locations and yield to pedestrians. To enhance pedestrian conspicuity and increase driver awareness at uncontrolled, marked crosswalks, transportation agencies can install a pedestrian actuated Rectangular Rapid Flashing Beacon (RRFB) to accompany a pedestrian warning sign.

Description

RRFBs consist of two, rectangular- shaped yellow indications, each with a light-**Safety Benefits** emitting diode (LED)-array-based light source. RRFBs flash with an alternating high frequency when activated to enhance RRFBs can reduce crashes up to 47% for pedestrian crashes. RRFBs can increase conspicuity of pedestrians at the crossing motorist yielding rates up to 98%. to drivers.



Applicable Locations

- The RRFB is applicable to many types of pedestrian crossings but is particularly effective at multi-lane crossings with speed limits less than 40 miles per hour. Research suggests RRFBs can result
- in motorist yielding rates as high at 98 percent at marked crosswalks, but varies
- depending on the location, posted speed limit, pedestrian crossing distance, one-
- versus two-way road, and the number of travel lanes. RRFBs can also accompany school or trail crossing warning signs. Agencies should consult the Manual on Uniform Traffic Control Devices (MUTCD) for more information.

More information

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Medians

Purpose

Provides separation between opposing vehicle travel lanes, supports improved safety and traffic flow, and creates space for landscaping or visual enhancements.

Description

Area between opposing lanes of traffic, excluding turn lanes. Can be defined by pavement markings, raised medians, or islands.

Applicable Locations

Mid-block crossings, multilane intersections, and areas near transit stops or other pedestrian-focused sites

Safety Benefits

46% reduction in pedestrian crashes (median with marked crosswalk)

More information





Pedestrian Refuge Island

Purpose

Provides a protected area for pedestrians crossing a road.

Description

A raised median island with a refuge area intended for pedestrians.

Applicable Locations

Mid-block crossings, multilane intersections, and areas near transit stops or other pedestrian-focused sites

Safety Benefits

56% reduction in pedestrian crashes (Median with Marked Crosswalk)

More information



Crosswalk Visibility Enhancements

Description

A10 Noblesville Safety Action Plan

Poor lighting conditions, obstructions such as parked cars, and horizontal or vertical roadway curvature can reduce visibility at crosswalks, contributing to safety issues. For multilane roadway crossings where vehicle volumes are in excess of 10,000 Average Annual Daily Traffic (AADT), a marked crosswalk alone is typically not sufficient. Under such conditions, more substantial crossing improvements could prevent an increase in pedestrian crash potential.

Applicable Locations

Mid-block crossings and intersections.

Design Considerations

High-visibility crosswalks use patterns (i.e., bar pairs, continental, ladder) that ar visible to both the driver and pedestrian from farther away compared to traditional transverse line crosswalks. Agencies should use materials such as inlay or thermoplastic tape, instead of paint or brick, for high reflectivity and durability. High visibility crosswalks should be In-street signing, such as "STOP Here for Pedestrians" or "YIELD Here to considered at all midblock pedestrian Pedestrians" may be appropriate on roads crossings and uncontrolled intersections. These improvements can reduce pedestrian with two- or three-lane roads where speed injury crashes up to 40%. limits are 30 miles per hour or less.

Improved Lighting

The goal of crosswalk lighting should be illuminate with positive contrast to make easier for a driver to visually identify th pedestrian. This involves carefully plac the luminaires in forward locations to a a silhouette effect of the pedestrian.

76% of pedestrians were killed in collis that occurred when it was dark, with another 4% occurring during dusk or da (Schneider, 2020). Retting (2021) notes during the years 2010-2019 - a time wh pedestrian fatalities have been increasi the number of pedestrian fatalities that occurred in the dark increased by 58%, while daylight fatalities increased by 16%.



	On multilane roadways, agencies can use "YIELD Here to Pedestrians" or "STOP
	Here for Pedestrians" signs 20 to 50 feet in advance of a marked crosswalk to indicate
9	where a driver should stop or yield to pedestrians, depending on State law. To supplement the signing, agencies can also install a STOP or YIELD bar (commonly referred to as "shark's teeth") pavement markings.

More information

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Walkways

Purpose

Defined space for pedestrians.

Description

A walkway is any type of defined space or pathway for use by a person traveling by foot or using a wheelchair. These may be pedestrian walkways, shared use paths, sidewalks, or roadway shoulders.

Applicable Locations

Well-designed pedestrian walkways, shared use paths, and sidewalks improve the safety and mobility of pedestrians. Pedestrians should have direct and connected network of walking routes to desired destinations without gaps or abrupt changes.

Transportation agencies should work towards incorporating pedestrian facilities into all roadway projects unless exceptional circumstances exist. It is important to provide and maintain accessible walkways along both sides of the road in urban areas, particularly near school zones and transit locations, and where there is a large amount of pedestrian activity. Walkable shoulders should also be considered along both sides of rural highways when routinely used by pedestrians.





Safety Benefits

With more than 6,200 pedestrian fatalities Well-designed pedestrian walkways, and 75,000 pedestrian injuries occurring in shared use paths, and sidewalks improve roadway crashes annually, it is important the safety and mobility of pedestrians. for transportation agencies to improve Pedestrians should have direct and conditions and safety for pedestrians and connected network of walking routes to to integrate walkways more fully into the desired destinations without gaps or abrupt transportation system. Research shows changes. people living in low-income communities are less likely to encounter walkways and Transportation agencies should work

other pedestrian-friendly features. towards incorporating pedestrian facilities into all roadway projects unless exceptional Sidewalks can lead to a 65-89% reduction circumstances exist. It is important to in crashes involving pedestrians walking provide and maintain accessible walkways along roadways. Paved shoulders can lead along both sides of the road in urban to a 71% reduction in crashes involving areas, particularly near school zones and pedestrians walking along roadways. transit locations, and where there is a large amount of pedestrian activity. Walkable shoulders should also be considered along both sides of rural highways when routinely used by pedestrians.

Design Guidance

More information

Ile Safety Action

Reverse Angle Parking

Purpose

Reverse angle parking could be safer than • traditional angle parking because drivers • have an easier time seeing various vehicles • and pedestrians as they leave.

Description

While parking, drivers back into a parking space. This is easier that parallel parking. Most importantly, when drivers leave these parking spots, they drive forward into active traffic lanes, rather than blindly backing into them as they do in standard diagonal parking.

Applicable Locations

Reverse angle parking is particularly important on busy roadways, and roadways with many pedestrians.

Safety Benefits

- Improved sight distance
- Bicyclists dooring risk eliminated
- Bicyclists and motorists have clear sight lines to each other
- Easier loading and unloading of vehicles
- Rear loading occurs at curb instead of in-street
- Wider loading zones are possible
- Passengers are channeled toward the curb
- Easy to incorporate accessible parking spaces and access aisles

Design Considerations

- On the downhill side of a steep street, there is the possibility of improperly secured vehicles rolling into the street
- A conflict is possible when a driver is reversing into the parking space
- A reverse angle-in parked motor vehicle might overhang more into the sidewalk

More information



Reduced Left-Turn Conflict Intersections

Purpose

These intersections simplify decisionmaking for drivers and minimize the potential for higher severity crash types, such as head-on and angle.

Description

Reduced left-turn conflict intersections are geometric designs that alter how left-turn movements occur.

The RCUT intersection, also known as a J-Turn, Superstreet, or Reduced Conflict Intersection, modifies the direct left-turn and through movements from cross-street approaches. Minor road traffic makes a right turn followed by a U-turn at a designated location—either signalized or unsignalized—to continue in the desired direction.

The MUT intersection modifies direct left turns from the major approaches. Vehicles proceed through the main intersection, make a U-turn a short distance downstream, followed by a right turn at the main intersection.

Applicable Locations

The RCUT is suitable for and adaptable to a wide variety of circumstances, ranging from isolated rural, high-speed locations to urban and suburban high-volume, multimodal corridors. It is a competitive and less costly alternative to constructing an interchange. RCUTs work well when consistently used along a corridor, but also can be used effectively at individual intersections.

The MUT is an excellent choice for intersections with heavy through traffic and moderate left-turn volumes.

Safety Benefits

Studies have shown that installing an RCUT can result in a 30% increase in throughput and a 40% reduction in network intersection travel time.

More information

Dedicated Left- and Right-Turn Lanes at Intersections

Purpose

Turn lanes can be designed to provide for deceleration prior to a turn, as well as for storage of vehicles that are stopped and waiting for the opportunity to complete a turn.

Description

Auxiliary turn lanes—either for left turns or right turns—provide physical separation between turning traffic that is slowing or stopped and adjacent through traffic at approaches to intersections.

Applicable Locations

While turn lanes provide measurable safety and operational benefits at many types of intersections, they are particularly helpful at two-way stop-controlled intersections. Crashes occurring at these intersections are often related to turning maneuvers.

Installing left-turn lanes and/or right-turn lanes should be considered for the major road approaches for improving safety at both three- and four-leg intersections with stop control on the minor road, where significant turning volumes exist, or where there is a history of turn-related crashes. Pedestrian and bicyclist safety and convenience should also be considered when adding turn lanes at an intersection. Specifically, offset left- and right-turn lanes will lengthen crossing distances for pedestrians.

Safety Benefits

- ty Left-Turn Lanes: 28-48% reduction in total crashes
 - Positive Offset Left-Turn Lanes reduction in fatal and injury crashes
 - Right-Turn Lanes: 14-26% reduction in total crashes.

More information

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Signage

LIMIT

Purpose

Signs serve a crucial purpose in ensuring the safe and efficient movement of people and vehicles. They provide vital information regarding directions, speed limits, hazards, and regulations, aiding navigation and decision-making for drivers, pedestrians, and cyclists alike. By communicating standardized symbols and messages, signs help to establish order and predictability on roads, highways, railways, and waterways, reducing the risk of accidents and promoting smoother traffic flow. Whether indicating a sharp curve ahead or directing travelers to the nearest exit, the purpose of signs in transportation is ultimately to foster a safer, more organized, and userfriendly environment.

Description

There are many types of signs. For instance:

Regulatory signs include those used to communicate required or prohibited movements.

Flashing beacons can be used to enhance overhead and other regulatory signage, indicating to drivers and other users when the transit lane is in force.

Overhead signs above transit lanes and transitways alert drivers and other street users by placing critical information about lane use in a prominent location. Dynamic signs can be used to alert other street users of approaching transit vehicles, and to regulate turns and other movements that are prohibited when transit vehicles are approaching.

Applicable Locations

de

Signage finds application in various settings including highways, roads, and streets. They are often particularly important near intersections and busy areas.

Safety Benefits

A number of types of signs have been shown to provide safety benefits. For instance, advance yield signs have been shown to be effective in decreasing rear end and sideswipe crashes. Fluorescent curve signs have been shown to reduce crashes during nighttime and at nonintersections.

More information



Backplates with Retroreflective Borders

Purpose

Backplates with retroreflective borders improve the visibility of the illuminated face of the signal. Signal heads that have backplates equipped with retroreflective borders are more visible and conspicuous in both daytime and nighttime conditions.

This treatment is recognized as a human factors enhancement of traffic signal visibility, conspicuity, and orientation for both older and color vision deficient drivers. This countermeasure is also advantageous during periods of power outages when the signals would otherwise be dark, providing a visible cue for motorists to stop at the intersection ahead.



Description

Backplates added to a traffic signal head introduce a controlled-contrast background. The improved visibility of a signal head with a backplate is made even more conspicuous by framing it with a 1- to 3-inch yellow retroreflective border.

Applicable Locations

The most efficient means of implementing this proven safety countermeasure is to adopt it as a standard treatment for signalized intersections across a jurisdiction or State.

Safety Benefits

15% reduction in total crashes

More information

Yellow Change Intervals

Purpose

Since red-light running is a leading cause of severe crashes at signalized intersections, it is imperative that the yellow change interval be appropriately timed. Too brief an interval may result in drivers being unable to stop safely and cause unintentional red-light running. Too long of an interval may result in drivers treating the yellow as an extension of the green phase and invite intentional redlight running. Factors such as the speed of approaching and turning vehicles, driver perception-reaction time, vehicle deceleration, and intersection geometry should all be considered in the timing calculation.



Description

At a signalized intersection, the yellow change interval is the length of time that the yellow signal indication is displayed following a green signal indication. The yellow signal confirms to motorists that the green has ended and that a red will soon follow.

Applicable Locations

Signalized intersections

Safety Benefits

36-50% reduction in red light running 8-14% reduction in total crashes 12% reduction in injury crashes

More information

Dynamic Speed Monitoring Display

Purpose

Dynamic Speed Monitoring Display (DSMD) signs actively manage vehicle speeds through real-time feedback to drivers. By measuring the speed of approaching vehicles and displaying this information on dynamic message displays, DSMD signs encourage drivers to adjust their speed to comply with posted speed limits, ultimately reducing the risk of accidents and improving overall traffic safety.

Description

DSMD signs are advanced traffic control devices that utilize Intelligent Transportation System (ITS) technology. These signs incorporate radar sensors to measure the speed of oncoming vehicles and then relay this information to drivers via dynamic message displays. Positioned alongside standard static regulatory speed limit signs, DSMD signs provide drivers with real-time feedback about their current speed compared to the posted speed limit. This interactive approach aims to encourage drivers to adhere to speed limits and promote safer driving behavior, particularly in areas where speed limits change, such as speed reduction transition zones. Dynamic signs can be used to alert other street users of approaching transit vehicles, and to regulate turns and other movements that are prohibited when transit vehicles are approaching.

Applicable Locations

DSMD signs are applicable in various locations where managing vehicle speeds is crucial for road safety. These signs are particularly effective in speed reduction transition zones, where speed limits change from higher to lower speeds, such as rural highways entering urbanized areas. Additionally, DSMD signs can be beneficial in residential neighborhoods, school zones, work zones, and areas with high pedestrian activity. They are also useful on roads with frequent speed limit changes, curves, or hazardous conditions, where maintaining appropriate speeds is essential for preventing accidents.

Safety Benefits

By providing real-time feedback to drivers about their vehicle's speed compared to the posted speed limit, DSMD signs encourage drivers to adjust their speed accordingly, promoting compliance with speed limits and reducing the risk of crashes. These signs are particularly effective in speed transition zones and areas with changing road conditions, where maintaining appropriate speeds is critical for road safety. Additionally, DSMD signs enhance driver awareness and promote safer driving behaviors, contributing to overall improvements in traffic safety on both rural and urban roads.

More information



Roundabouts

Purpose

Roundabouts feature channelized, curved approaches that reduce vehicle speed, entry yield control that gives right-of-way to circulating traffic, and counterclockwise flow around a central island that minimizes conflict points. The net result of lower speeds and reduced conflicts at roundabouts is an environment where crashes that cause injury or fatality are substantially reduced.

Description

The modern roundabout is an intersection with a circular configuration that safely and efficiently moves traffic.

Applicable Locations

Roundabouts can be implemented in both urban and rural areas under a wide range of traffic conditions. They can replace

signals, two-way stop controls, and allway stop controls. Roundabouts are an effective option for managing speed and transitioning traffic from high-speed to low-speed environments, such as freeway interchange ramp terminals, and rural intersections along high-speed roads.

Safety Benefits

Roundabouts are not only a safer type of intersection; they are also efficient at keeping people moving. Even while calming traffic, they can reduce delay and queuing when compared to other intersection alternatives. Furthermore, the lower vehicular speeds and reduced conflict environment can create a more suitable environment for walking and bicycling.

More information



Pedestrian Hybrid Beacon

Purpose

The pedestrian hybrid beacon (PHB) is a traffic control device designed to help pedestrians safely cross higher-speed roadways at midblock crossings and uncontrolled intersections.

Description

The beacon head consists of two red lenses above a single yellow lens. The lenses remain "dark" until a pedestrian desiring to cross the street pushes the call button to activate the beacon, which then initiates a yellow to red lighting sequence consisting of flashing and steady lights that directs motorists to slow and come to a stop, and provides the right-of-way to the pedestrian to safely cross the roadway before going dark again.

Applicable Locations

New Roads/Existing roads through modifications



Safety Benefits

Nearly 74% of pedestrian fatalities occur at non-intersection locations, and vehicle speeds are often a major contributing factor. Pedestrian hybrid beacons also allow motorists to proceed once the pedestrian has cleared their side of the travel lane(s), reducing vehicle delay. 55% reduction in pedestrian crashes, 29% reduction in total crashes, and 15% reduction in serious injury and fatal crashes.

Design Guidance Considerations

In general, PHBs are used where it is difficult for pedestrians to cross a roadway, such as when gaps in traffic are not sufficient or speed limits exceed 35 miles per hour. They are very effective at locations where three or more lanes will be crossed or traffic volumes are above 9.000 annual average daily traffic. Installation of a PHB must also include a marked crosswalk and pedestrian countdown signal. If PHBs are not already familiar to a community, agencies should conduct appropriate education and outreach as part of implementation. If PHBs are not already familiar to a community, agencies should conduct appropriate education and outreach as part of implementation.

More information



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

Purpose

This systemic approach to intersection safety involves deploying a package of multiple low-cost countermeasures, including enhanced signing and pavement markings, at a large number of stop-controlled intersections within a jurisdiction. These countermeasures increase driver awareness and recognition of the intersections and potential conflicts. There are several benefits to systemically applying multiple low-cost countermeasures at stop-controlled intersections, including:

- Resources are maximized because the treatments are low cost.
- A high number of intersections can receive treatment.
- Improvements are highly cost-effective, with an average benefit-cost ratio of 12:1, even assuming a conservative 3-year service life.





Description

On the Through Approach:

- Doubled-up (left and right), oversized advance intersection warning signs, with supplemental street name plaques (can also include flashing beacon).
- Retroreflective sheeting on sign posts.
 Enhanced pavement markings that
 10% reduction of fatal and injury crashes at all locations/types/areas.
- Enhanced pavement markings that delineate through lane edge lines.

On the Stop Approach:

- Doubled-up (left and right), oversized advance "Stop Ahead" intersection warning signs (can also include flashing beacon).
 27% reduction of fatal and injury crashes at rural intersections.
- Doubled-up (left and right), oversized Stop signs.
- Retroreflective sheeting on sign posts.
- Properly placed stop bar.
- Removal of vegetation, parking, or obstructions that limit sight distance.
- Double arrow warning sign at stem of T-intersections.

Applicable Locations

Stop-controlled intersections.

es Safety Benefits

15% reduction of nighttime crashes at all locations/types/areas.

19% reduction of fatal and injury crashes at 2-lane by 2-lane intersections.

More information

E

Road Diet

Purpose

A Road Diet, or roadway reconfiguration, can improve safety, calm traffic, provide better mobility and access for all road users, and enhance overall quality of life. They may be a low-cost way to reduce an overbuilt street that suggests high speeds to drivers and provide more space for walking, bicycling, and for drivers who need to park their vehicles.

Description

A Road Diet typically involves decreasing the number of lanes in a roadway. This can be achieved by adding sidewalks, cycle lanes, center turn lanes, or otherwise decreasing the number of car lanes.

Applicable Locations

A Road Diet can be a low-cost safety solution when planned in conjunction with a simple pavement overlay, and the reconfiguration can be accomplished at no additional cost. Typically, a Road Diet is

implemented on a roadway with a current and future average daily traffic of 25,000 or less.

Safety Benefits

4-lane to 3-lane road diet conversions can have a 19-47% reduction in total crashes. Benefits of Road Diet installations may include:

- Reduction of rear-end and left-turn crashes due to the dedicated left-turn lane.
- Reduced right-angle crashes as side street motorists cross three versus four travel lanes.
- Fewer lanes for pedestrians to cross.
- Opportunity to install pedestrian refuge islands, bicycle lanes, on-street parking, or transit stops.
- Traffic calming and more consistent speeds.

More information



Corridor Access Management

Purpose

Thoughtful access management along a corridor can simultaneously enhance safety for all modes, facilitate walking and biking, and reduce trip delay and congestion.

Description

Access management refers to the design, application, and control of entry and exit points along a roadway. This includes intersections with other roads and driveways that serve adjacent properties. The following access management strategies can be used individually or in combination with one another:

- Reduce density through driveway • closure, consolidation, or relocation.
- Manage spacing of intersection and access points.
- Limit allowable movements at driveways (such as right-in/right-out only).
- Place driveways on an intersection approach corner rather than a receiving corner, which is expected to have fewer total crashes.
- Implement raised medians that preclude across-roadway movements.

- Utilize designs such as roundabouts or reduced left-turn conflicts (such
- as restricted crossing U-turn, median U-turns. etc.).
- Provide turn lanes (i.e., left-only, rightonly, or interior two-way left).
- Use lower speed one-way or two-way off-arterial circulation roads.

Applicable Locations

Every intersection, from a signalized intersection to an unpaved driveway, has the potential for conflicts between vehicles, pedestrians, and bicyclists. The number and types of conflict points—locations where the travel paths of two users intersect—influence the safety performance of the intersection or driveway.

Safety Benefits

Reducing driveway density 5-23% reduction in total crashes along 2-lane rural roads

25-31% reduction in fatal and injury crashes along urban/suburban arterials.

More information

Curb Extensions

Purpose

Curb extensions visually and physically narrow the roadway, creating safer and shorter crossings for pedestrians while increasing the available space for street furniture, benches, plantings, and street trees

Description

Curb extensions involves extending the curb into the street, decreasing roadway space and increasing pedestrian space.

Applicable Locations

Curb extensions may be implemented on downtown, neighborhood, and residential streets, large and small.

Mid-block curb extensions, known as pinchpoints or chokers, which may include cut-throughs for bicyclists.

Curb extensions used as gateways to minor streets known as neckdowns.

Offset curb extensions that force vehicles to move laterally, known as chicanes.

Curb extensions at bus (or transit) stops, also known as bus bulbs.

Safety Benefits

Curb extensions decrease the overall width of the roadway and can serve as a visual cue to drivers that they are entering a neighborhood street or area.

Curb extensions increase the overall visibility of pedestrians by aligning them with the parking lane and reducing the crossing distance for pedestrians, creating more time for preferential treatments such as leading pedestrian interval and transit signal priority.

Used as a bus bulb, curb extensions may improve bus travel times by reducing the amount of time a bus takes to merge with traffic after boarding. Bus bulbs also help to prevent motorists from double parking in the bus stop.

Curb extensions tighten intersection curb radii and encourage slower turning speeds.

Where application of a curb extension adversely impacts drainage, curb extensions may be designed as edge or a trench drain.

Installation of curb extensions may additional expense or be reoriented to avoid conflict with the hydrant.

Generally, curb extensions should be provided by the adjacent parking lane.



Automated Enforcement

Purpose

Agencies can use speed safety cameras (SSCs) as an effective and reliable technology to supplement more traditional methods of enforcement, engineering measures, and education to alter the social norms of speeding.

Description

SSCs use speed measurement devices to detect speeding and capture photographic or video evidence of vehicles that are violating a set speed threshold.

Applicable Locations

Indiana law does not currently permit the use of automated speed enforcement, but this strategy could be used in the future. In that event, agencies should conduct a network analysis of speeding-related crashes to identify locations to implement SSCs. The analysis can include scope (e.g., widespread, localized), location types (e.g., urban/suburban/rural, work zones, residential, school zones), roadway types (e.g., expressways, arterials, local streets), times of day, and road users most affected by speed-related crashes (e.g., pedestrians, bicyclists).

Safety Benefits

Fixed units can reduce crashes on urban Public trust is essential for any type of enforcement. With proper controls in principal arterials up to 54% for all crashes and 47% for injury crashes. place, SSCs can offer fair and equitable enforcement of speeding, regardless of P2P units can reduce crashes on urban driver age, race, gender, or socio-economic status. SSCs should be planned with community input and equity impacts in mind.

expressways, freeways, and principal arterials up to 37% for fatal and injury crashes.

Mobile units can reduce crashes on urban principal arterials up to 20% for fatal and injury crashes.

In New York City, fixed units reduced speeding in school zones up to 63% during school hours.

SSCs can produce a crash reduction upstream and downstream, thus generating a spillover effect.

Design Considerations

Using both overt (i.e., highly visible) and covert (i.e., hidden) enforcement may encourage drivers to comply with limits everywhere, not only at sites they are aware are enforced.

More information

sville Safety Action Plan | A33

APPENDIX B Engagement



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Q1 What topics would you like to see addressed in the Noblesville Safety Action Plan?



Online Survey Results

NSWER CHOICES	
Roadway design	
ntersection design	
edestrian network	
icycling network	
owntown Noblesville	
Roadway safety education campaigns	
changes to policy and project prioritization process	
)ther (please specify)	
otal Respondents: 132	



Answered: 132 Skipped: 5

RESPONSES	
40.15%	53
53.79%	71
53.03%	70
32.58%	43
48.48%	64
15.15%	20
11.36%	15
9.85%	13

Q2 Rank the following safety issues in order of what's most important to

Q3 Which modes of transportation do you use on a weekly basis?



	1	2	3	4	5	TOTAL	SCORE
Speeding	25.00% 34	13.97% 19	19.12% 26	17.65% 24	24.26% 33	136	2.98
Intersection safety	41.18%	21.32%	19.12%	15.44%	2.94%		
	56	29	26	21	4	136	3.82
Pedestrian safety	21.32%	27.21%	29.41%	19.85%	2.21%		
	29	37	40	27	3	136	3.46
Bicyclist safety	4.41%	16.18%	13.97%	24.26%	41.18%		
	6	22	19	33	56	136	2.18
Downtown Noblesville	8.09%	21.32%	18.38%	22.79%	29.41%		
	11	29	25	31	40	136	2.56



ANSWER CHOICES	RESPONSES
Personal vehicle	100.00% 135
Walking	60.74% 82
Biking	21.48% 29
Rideshare service	0.74% 1
Public transportation	0.74% 1
Other (please specify)	3.70% 5
Total Respondents: 135	

Answered: 135 Skipped: 2

B6 | Noblesville Safety Action Plan

Q4 How safe do you feel traveling on or along the roadways in Noblesville?



ANSWER CHOICES	RESPONSES	
Very safe	12.50%	17
Safe	68.38%	93
Unsafe	18.38%	25
Very unsafe	0.74%	1
TOTAL	:	136

Safe Inattentive Distracted Hurried Frustrated Intoxicated Angry No different than anywher... Other (please specify)

0%

10%

20%

30%

ANSWER CHOICES	RESPONSES	
Safe	12.98%	17
Inattentive	45.80%	60
Distracted	58.78%	77
Hurried	51.91%	68
Frustrated	21.37%	28
Intoxicated	0.76%	1
Angry	15.27%	20
No different than anywhere else	29.01%	38
Other (please specify)	4.58%	6
Total Respondents: 131		

Q5 What words best describe the behavior of drivers on streets in Noblesville?

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Answered: 131 Skipped: 6







	SOMETIMES	OFTEN	TOTAL
2.31%	36.15%	61.54%	130
3	47	80	
0.77%	43.08%	56.15%	130
1	56	73	
13.08%	50.77%	36.15%	130
17	66	47	
20.77%	53.85%	25.38%	130
27	70	33	
3.08%	51.54%	45.38%	130
4	67	59	
15.38%	65.38%	19.23%	130
20	85	25	
30.77%	48.46%	20.77%	130
40	63	27	
35.38%	46.15%	18.46%	130
46	60	24	

Q7 What is the current attitude of your community towards roadway safety?



ANSWER CHOICES	RESPON	SES
We care about the safety of all road users and are willing to take steps to improve roadway safety.	43.75%	56
We care about the safety of drivers, but vulnerable road users are left out (pedestrians/walkers/joggers, bicyclists, elderly, disabled).	39.06%	50
We don't show a lot of care about road safety, and it would be difficult to get the public support needed to implement safety improvements.	17.19%	22
TOTAL		128

Q8 Which of the following safety improvements targeting drivers would you support in your community?



Answered: 124 Skipped: 13



Noblesville Safety Action Plan



ANSWER CHOICES	RESPONSES	
Install roundabouts	58.06%	72
Provide roadway lighting	54.03%	67
Separate right turns from through lanes	50.00%	62
Add left turn lane or two-way left turn lanes where none exist	47.58%	59
Raised intersections, raised crosswalks	42.74%	53
Realign skewed intersections	38.71%	48
Widen shoulders	33.87%	42
Add high-friction surface treatments and centerline or edgeline rumble strips	27.42%	34
Convert two-way stop to all-way stop	26.61%	33
Add splitter islands to separate two directions of traffic	24.19%	30
Convert left turn signals to Flashing Yellow Arrow indicators rather than green arrows	23.39%	29
Install speed humps or tables	17.74%	22
Install Intersection Conflict Warning Systems or Advanced Signal Warning Systems	17.74%	22
Reduce channelized right turn angle for better visibility of oncoming traffic	16.94%	21
Other (please specify)	16.13%	20
Install dynamic speed feedback signs	12.90%	16
Install median barriers	12.90%	16
Install guardrails or flatten slopes adjacent the road	12.90%	16
Improve roadway curvature	8.87%	11
Install more signal heads at traffic signals	8.06%	10
Close driveways to reduce number of conflicts	7.26%	9
Remove roadside fixed objects	7.26%	9
Add signal head backplates	6.45%	8
Add advanced stop bars	4.03%	5
Total Respondents: 124		

Total Respondents: 124

Q9 Which of the following safety improvements would you support for walking in your community?



ANSWER CHOICES	RESPONS	ES
More or better lighting	68.29%	
Painted, high-visibility, or raised crosswalks	48.78%	
Pedestrian signals	44.72%	
Flashing beacons to alert cars to your presence at mid-block locations	43.09%	
Allow people walking to start crossing street before cars get a green indication	38.21%	
Construct sidewalks	38.21%	
Wider sidewalks	30.08%	
Separated sidewalks from bicycle paths	26.02%	
Raised medians so you cross one direction of traffic at a time	24.39%	
"No Right Turn on Red" for cars at traffic signals	22.76%	
Install pedestrian scramble (all pedestrian movements go at once, including diagonally)	21.95%	
Add curb extensions / bump-outs to shorten crossing distance	12.20%	
Remove permissive left turns by cars in heavily trafficked areas	10.57%	
Other (please specify)	8.13%	
Reduce number of driveways crossing a pedestrian path	6.50%	
Total Respondents: 123		

Q10 Which of the following safety improvements would you support for bicycling in your community?



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ANSWER CHOICES

Install bicycle lanes physically separated from cars

Widen trails or shared use paths that do not meet industry-prefer

Install bicycle lanes separated from cars with a white stripe or tw

Install bicycle signals in urban, heavily ridden areas

Update the statewide drivers manual with the meanings behind the

Install more wayfinding signage so cyclists worry about traffic are

Install sharrows to alert drivers that the road is also a marked bio

Install signage telling motorists to stay 3 feet away from bicyclist

Offer learn-to-ride program opportunities for children and adults

Other (please specify)

Reduce the speed limit on roads, particularly rural roads Total Respondents: 112

	RESPONSES	5
	63.39%	71
red width of 12'	45.54%	51
/0	28.57%	32
	27.68%	31
he various bike markings on the road	24.11%	27
ound them rather than their route	23.21%	26
cycle route	19.64%	22
ts when passing	18.75%	21
	15.18%	17
	13.39%	15
	11.61%	13

Q12 How safe do you feel traveling in Downtown Noblesville?





ANSWER CHOICES	RESPONSES	
Every day	60.48%	75
Once a week	30.65%	38
Once every few weeks	7.26%	9
Once a month	1.61%	2
Less than once a month	1.61%	2
Total Respondents: 124		

ANSWER CHOICES	RESPONSES
Very safe	17.74% 22
Safe	69.35% 86
Unsafe	12.10% 15
Very unsafe	0.81% 1
TOTAL	124

Q11 How often do you travel in Downtown Noblesville?

Answered: 124 Skipped: 13

Q13 Which of the following safety improvements would you support for Downtown Noblesville?





ANSWER CHOICES	RESPONSES	
Wider sidewalks	39.29%	44
Shorter crosswalks	15.18%	17
High quality pavement striping	46.43%	52
Better signage/wayfinding	48.21%	54
Other (please specify)	19.64%	22
Total Respondents: 112		

ANSWER CHOICES	RESPONSES
19 or younger	0.00% 0
20 to 34	13.33% 16
35 to 49	44.17% 53
50 to 64	30.00% 36
65 or older	12.50% 15
TOTAL	120

Q14 How old are you?

Answered: 120 Skipped: 17

Q16 What is the primary language spoken in your home?





English100.00%120Spanish0.00%0Other (please specify)0.00%0TOTAL120	ANSWER CHOICES	RESPONSES
Spanish0.00%0Other (please specify)0.00%0TOTAL120	English	100.00% 120
Other (please specify) 0.00% 0	Spanish	0.00% 0
120	Other (please specify)	0.00% 0
10/12/	TOTAL	120

ANSWER CHOICES	RESPONSES	
White	85.71%	102
Black or African American	0.00%	0
Hispanic or Latino	0.84%	1
Asian or Asian American	0.00%	0
Native American or Alaska Native	0.00%	0
Native Hawaiian or other Pacific Islander	0.00%	0
Two or more races or ethnicities	1.68%	2
Prefer not to answer	9.24%	11
Other (please specify)	2.52%	3
TOTAL		119

Answered: 120 Skipped: 17

%	50%	60%	70%	80%	90%	100%

Q18 What is the last grade or level of education that you completed?





ANSWER CHOICES	RESPONSES	
Male	48.33%	58
Female	45.83%	55
Non-Binary	0.00%	0
Other	0.00%	0
Prefer not to answer	5.83%	7
TOTAL		120

ANSWER CHOICES	RESPONSES	
Some high school	0.00%	0
High school diploma or GED	10.00%	12
Associate degree or training certificate	15.00%	18
Bachelor's degree	47.50%	57
Master's degree	20.83%	25
Doctorate	5.00%	6
Prefer not to answer	1.67%	2
TOTAL		120

Answered: 120 Skipped: 17

Answered: 120 Skipped: 17
Q19 What is your average annual household income (including all income

earners in your household)?

Q20 How many people age 16 or older live in your household?



RESPONSES	
2.50%	3
25.83% 32	1
38.33% 40	6
17.50% 22	1
15.83% 19	Э
120	С
	RESPONSES 2.50% 25.83% 38.33% 40 17.50% 15.83% 12 12

	Q21 Who is filling out
	Answered:
ANSWER CHOICES	
Name	
Company/Agency (if appli	cable)

Resident of Noblesville (yes or no)

Noblesville Safety Action Plan

Q22 Please provide your email address if you'd like to receive updates on plan progress and future events.

Answered: 33 Skipped: 104

Answered: 114 Skipped: 23

Noblesville Safety Action Plan

this survey? (Optional)

60 Skipped: 77

RESPONSES	
66.67%	40
3.33%	2
100.00%	60

Answered: 33 Skipped: 104

Noblesville Safety Action Plan

Q23 Please use the space below to provide any additional comments to the project team.





Noblesville Safety Action Plan January 2024 Stakeholder Interview Summary

Compass Outreach Solutions and Lochmueller Group and hosted four stakeholder interviews to collect public input for the Noblesville Safety Action Plan (SAP). The short Microsoft Teams virtual meetings were scheduled Jan. 10-12, 2024, and used to help promote the public Open House the following week.

The participants listed below included members of and recommendations from the City of Noblesville Traffic Committee, which were selected to ensure that a wide range of roadway and transportation users were represented. A standard set of seven questions, shown in bold below, were used as discussion prompts to identify safety problems and explore potential improvements. A summary of responses is provided in bullet points below each question.

Participants

- Eric Cunningham, Deputy Chief of the Patrol Division with the Noblesville Police Department •
- Lauren Guynn, Executive Director with the Shepherd's Center of Hamilton County •
- Robert Herrington, Press Secretary for the Noblesville Mayor's Office
- Yolanda Kincaid, President/CEO of Janus Developmental Services
- Jason LeMaster, Hamilton County Health Department Administrator ٠
- James Macky, Division Chief of Emergency Medical Services with the Noblesville Fire Department
- James Neal, Hamilton County Highway Engineer •
- Sargeant Marley Pagel, Community Outreach with the Noblesville Police Department

How safe are the roadways in Noblesville for your agency/service/customers?

- Many interview participants separately said they felt roadways in Noblesville were generally safe. The Health Department and representatives of the city's mobility challenged users (Janus and Shepherd's Center) gave lower ratings for safety.
- Both police and fire departments were concerned with higher speed roads, such as State Road 37, • 146th Street and more rural, open roads.
- when pedestrians are crossing.

How do your users feel about transportation safety?

- With a growing community, emergency responders and the Hamilton County Highway Engineer felt there are increasing congestion-related traffic problems.
- The Hamilton County Highway Engineer and the Shepherd's Center President/CEO said that downtown Noblesville is walkable, but there are less connected sidewalks and trails out of the central core.
- wanting to use trails for motorized bikes and carts.

3502 Woodview Trace, Suite 150 Indianapolis, Indiana 46268 PHONE: 317.222.3880 • TOLL FREE: 888.830.6977

Small Group Stakeholder Interviews Summary



Denise Aschleman, Principal Planner with the Noblesville Planning and Development Department

• The city planner and representatives of mobility challenged users noted pedestrian concerns crossing roundabouts. There was discussion of education and engineering solutions, including flashing lights

The Mayor's Press Secretary noted a safety conflict with non-motorized trail users and people



January 29, 2024

Page 2

How do underserved communities/disabled groups/senior groups feel about transportation safety?

- The Hamilton County Highway Engineer observed mobility challenges for these groups outside of downtown Noblesville.
- Emergency responders agreed on the need to balance road improvements for vehicles with the • needs of pedestrians.
- Both emergency responders and the city's planner suggested mid-block crossings as a way to address • challenges in crossing roundabouts.
- The city planner said the grant funding did improve the narrow sidewalks for lower income and disabled residents of Noble Manor Apartments, north of SR 32/38 on Cumberland Road, but that drivers are parking on the new sidewalks.
- The Janus President/CEO supports clearing trees and bushes for sidewalk clearance, particularly low branches that would not be detected by blind users, and addressing uneven sidewalks for users who shuffle their feet. Signal timings should also be longer for pedestrians who move slower or have assistive devices.
- She also said there's a need to educate others about the space needed for accessible vans with lifts and to provide high-contrast signs, including replacement of sun-damaged signs.
- The Shepherd's Center Executive Director supports more consistency of roundabout design and signage, such as the advanced signage at the Southeastern Pkwy./136th Street/Olio Rd. signage showing elderly driver where each roundabout leg goes.

Is speeding a safety issue for your service (customers or employees)?

- Many interview participants separately agreed that redesigning the road with narrower lanes, etc. is effective in controlling speed although it is not low-cost.
- The public may submit speeding complaints through the police public input form or directly to the city's Traffic Committee, on which emergency response leaders serve. Complaints are reviewed and additional data collected as needed.
- Members of the Committee said that many speeding complaints are perception and not supported • by speed data or observation.
- The Hamilton County Highway Engineer is concerned about artificially low speed limits, which he said breed a disrespect for all speed limits and create potential hazards with vehicles moving at different speeds.
- The Shepherd's Center Executive Director said that traffic enforcement is more visible and that speed limits seem more consistent across the line in Carmel. The Janus President/CEO agreed and advocated for more consistent speed limits in Noblesville.
- The Deputy Police Chief and Mayor's Press Secretary said that road projects increase safety on main • roads when completed, but the construction creates ripple effects with complaints increase about drivers speeding through residential neighborhoods as an alternate route.

Page 3

How do safety concerns limit the way you use transportation?

- interchange at I-69.
- avoids turning from Maple Avenue onto 10th Street at certain times of day.
- runs.
- roads to assist with traffic flow.
- routes, using the Keystone Ave. ramp to 146th Street as an example.

What safety improvements would you support?

- walking Cumberland Road to jobs near Lowe's.
- and night.
- pedestrians to cross SR 37.
- waiting for a gap on two-lane roads.
- systems are not fully reliable.
- Outreach Sargeant suggested education of vehicle and school bus drivers.
- signs.

Are there specific intersections or roadway segments that need safety improvements?

- would address the top safety concerns.
- exiting recent roundabouts along 8th Street forget the stop sign at 9th Street.
- Pleasant Street development will help.

 Three participants said they avoid Campus Parkway near Hamilton Town Center. The Hamilton County Highway Department representative said it was due to out-of-town drivers and sudden lane changes. The Mayor's Press Secretary and city planner avoid the double-crossover diamond

 The Deputy Police Chief has witnessed crashes and uses extra caution when clearing South 10th Street intersections at Maple Avenue, Cherry Street and Hannibal Street. The city planner said she

• The fire department is concerned about sideswiping cars on older, narrow streets during emergency

 Emergency responders and the city planner said they avoid certain routes due to traffic flow more so than safety. The Mayor's Press Secretary said that Noblesville has enough alternate routes and back

• The Hamilton County Highway Engineer observed that it's hard to get drivers to change familiar

 The Hamilton County Highway Department Engineer supports pedestrian improvements, including connecting lower-income housing to jobs, and observes Cumberland Pointe Apartment residents

• He and the Janus President/CEO identified a problem with pedestrians wearing dark clothing at dusk

• The city planner supported closing gaps in the sidewalk and trail network and creating ways for

The Janus President/CEO supports the addition of passing "blisters" where left-turning traffic is

• The EMS Division Chief is in favor of traffic signal preemption for emergency runs but says the

Two interview participants noted an increase in school bus stop arm violations. The Community

The Shepherd's Center Executive Director supports increased enforcement of speed limits and stop

Government employees were aware of future improvements projects planned and felt that they

• The EMS Division Chief expressed visibility concerns at 8th Street and Maple Avenue and crash concerns with SR 37 at 186th Street outside the city limits. He also said that Pleasant Street drivers

• The Hamilton County Highway Engineer said that developing areas require ongoing monitoring. This includes areas near Promise Road north of SR 32, 166th Street and Boden Road, and 161st Street west of the White River. He said that routes for commercial vehicles is important, and is optimistic that



January 29, 2024

Page 4

- The Shepherd's Center Executive Director supported interchanges with pedestrian crossings like those in Fishers, saying that low-income residents will run across SR 37 near the businesses.
- The Health Department Administrator said traffic moves fast on the access road that has no sidewalk behind Lowe's and Best Buy, and the sidewalks for the new subdivision stop as their property line.
- The city planner supported improvements more for traffic than safety at SR 32 and Cumberland • Road.
- Janus Developmental Services operates public transit service for the area and offered to have their • professional drivers help flag safety concerns if authorities are interested following up on the reports.



Noblesville was awarded a U.S. Department of Transportation Safe Streets and Roads For All (SS4A) grant in early 2023 to develop a Safety Action Plan.



This data-driven and community-involved plan will suggest projects and strategies to improve safety for all users of the City's transportation network. The Safety Action Plan will allow the City to apply for grants to help fund safety improvement projects.







WWW.SURVEYMONKEY.COM/R/YCSX67R



SAFETY ACTION PLAN **PUBLIC INPUT SURVEY AND ONLINE MAPPING TOOL**

The City of Noblesville is committed to reducing and eliminating traffic deaths and serious injuries.

Your valuable input will be heard by local leaders and used to develop the right strategies to improve roadway safety in Noblesville.

SHARE YOUR THOUGHTS BY TAKING OUR SURVEY AND CONTRIBUTING TO THE PUBLIC INPUT ONLINE MAPPING TOOL





SHARE YOUR THOUGHTS





Open House Poster Boards



B34 | Noblesville Safety Action Plan

Project Overview The Safety Action Plan will be a comprehensive, data-informed, and community involved plan that will outline projects and strategies to improve safety within the City's multimodal transportation network. Noblesville is committed to reducing and eliminating traffic deaths and serious injuries and this plan will provide a framework for achieving this ambitious goal and allow the City to qualify for potential SS4A implementation grants to complete safety improvement projects.

What do we need to know?

Grab a sticky note and add your concerns you have or opportunities you see for roadway safety in Noblesville

Please share your thoughts by taking our survey and contributing to the public input online mapping tool.



The Project Team: The City of Noblesville selected a multidisciplinary consulting team led by Lochmueller Group to develop the Safety Action Plan.









WELCOME!

About The Project

The Noblesville Safety Action Plan is a comprehensive safety plan aimed at eliminating fatal and serious injury crashes. The Plan will combine an analysis of crash patterns with actionable strategies to make Noblesville streets safer, not just for motorists, but for all users including those who bike, walk, roll, or use public transportation. The Noblesville Safety Action Plan will meet all the requirements of the Safe Streets and Roads for All (SS4A) program and allow the City of apply for SS4A implementation grant funding for safety improvements.



Open House

Nov

Equity Analysis

Survey/Mapping Too

Dec

Safety Analysis, High Injury Network, Project List

Engagement

Oct

Development

Plan

Open House

Mar

Draft Plan Final Plan

Apr

Steering Committee

Feb

Open House

Interviews

Jan

Policy Review

Safety Toolkit

The Vision:

The City of Noblesville is home to residential neighborhoods of various sizes and characters as well as a thriving historic downtown including local restaurants,

Noblesville believes that traffic deaths are preventable and unacceptable and is tted to eliminating traffic deaths and serious injuries by 2050. To make City treets safer for all, no matter age, ability, or community, Noblesville is dedicated to egional governments, and state agencies. Zero is an ambitious goal, but together w can save lives and make Noblesville's streets safer for all.



NOBLESVILLE SAFETY ACTION PLAN

SAFE STREETS & ROADS FOR ALL (SS4A)

Road Safety Trends

Safe System Approach In support of the U.S. Department of Traffic crashes are a leading cause of preventable death in the United States. According to the National Highway Traffic Strategy and the national goal of zero Safety Administration (NHTSA), 2021 saw nearly 43,000 traffic deaths across has been adopted as the new guiding the nation, a 16-year high. Almost 43,000 paradigm to address roadway safety. A people were again killed in traffic crashes Safe System Approach focuses on both in 2022. Since 2020, notable increases include:

- > Fatalities on urban roads up 16%
- > Pedestrian fatalities up 13%
- > Bicycle fatalities up 5% > Speeding related fatalities up 5%

In response to the alarming rise in traffic deaths, the Safe Streets and Roads for All (SS4A) grant program was established. The SS4A program has \$5 billion in appropriated funds over 5 years, 2022-2026, to fund initiatives to prevent roadway deaths and serious injuries.

safety.

Crash Fatalities by Year and Type





- <u>Σŷ</u>ζ **NOBLESVILLE SAFETY ACTION PLAN** NOBLESVILLE



Transportation National Roadway Safety roadway deaths, a Safe System Approach

human mistakes and human vulnerability and recommends a transportation system with redundancies built in to protect all users. A Safe System Approach is a holistic and human centered approach to roadway



Plan Requirements

Commitment

Public commitment to a goal of zero roadway fatalities and serious injuries

Implementation

 Committee established to develop, implement, and monitor plan

Analysis

Existing and historic crash trends

- Crash locations
- Systemic and specific safety needs

Geospatial identification of higher risk locations

Engagement

Public and relevant stakeholders

Incorporation of information received

Inter- and intra-governmental cooperation and collaboration

Equity

Considerations of equity

 Identification of underserved communities through data

 Equity analysis of proposed projects and strategies

Policv

- Assessment of current policies and plans
- Implementation through adoption of revised
- or new policies, guidelines, and/or standards

Comprehensive

 Comprehensive set of projects and strategies to address safety problems

Accountability

- Measure progress over time
- Plan posted publicly online



ENGAGING THE COMMUNITY

Public Outreach

The goal of public outreach was to hear from residents about safety concerns, incorporate public input into the plan recommendations, and educate the public about effective safety improvement strategies. Public outreach efforts include open house events, a survey, and a public input mapping tool.

Survey Results

What topics would you like to see addressed in the Noblesville Safety Action Plan?

Which of the following safety improvements targeting drivers would you support in your community





Rank the following safety issues in order of what's

most important to you.

Steering Committee

with assisting in the development, implementation, and monitoring of the plan in compliance with the SS4A Safety Action Plan requirements.

How safe do you feel traveling on or along the roadwavs in Noblesville?



Which of the following safety improvements would you support for Downtown Noblesville?





NOBLESVILLE SAFETY ACTION PLAN

ENGAGING THE COMMUNITY

Public Input Mapping Tool

We asked for the public to provide locations on a map where they see any safety related problems or where they feel like there are opportunities to improve safety. Opportunities may include sidewalks, bike lanes, or roundabouts. Problems may include speeding, difficulty crossing the street, or uncomfortable conditions for pedestrians or bicyclists.

What do you think? Tell us if you have anything to add.

Public Input Map - Opportunities







Public Input Map - Problems





HIGH INJURY NETWORK

A High Injury Network (HIN) represents the small number of roadways that experience the majority of fatal and serious injury crashes. The HIN will help decision makers prioritize safety improvements so that improvements can have the largest potential reduction of fatal and serious injury crashes.

The Noblesville High Injury Network identifies the majority of all serious injuries and a third of all fatal injuries on just 5% of the total street network.

Notable streets on the HIN include SR37. SR32, SR38, 146th Street, 10th Street, Pleasant Street, Cumberland Road, Boden Road, and Olio Road.

5% of streets

65% of all crashes **64%** of all injuries **57%** of serious injury crashes **32%** of fatal injury crashes



SHARE YOUR THOUGHTS

How Would You Spend Your Money

Just like parks, streets, and other public facilities, safety improvements and programs must compete for limited resources. Communities must choose how to best use limited funding and staff resources to support the safety of all road users.

In this exercise, please vote for up to three (3) improvements or programs you'd like to see Noblesville pursue through this plan and subsequent implementation efforts. You can vote for a single improvement or program more than once.

Note, some improvements are very expensive while others are more affordable. Please consider this as you make your selections.







Place stickers here

Place stickers here



NOBLESVILLE SAFETY ACTION PLAN







High Visibility Crosswalks



Place stickers here



Place stickers here

Educational Campaigns Place stickers here



Place stickers here













B42 | Noblesville Safety Action Plan

APPENDIX C Steering Committee



The Team



Cheryl Sharp, PE, PTOE, AICP



Peter Williams, AICP, GISP



Erin Pipkin, APR

Agenda

- Introductions
- Safety Action Plan Background
- Steering Committee Roles & Responsibilities

Noblesville Safety Action Plan

Steering Committee Meeting #1 December 8, 2023

- Plan Scope of Work
- Public engagement
- Recommendations



LOCHMUELLER

Safety Oversight Committee (SOC)

- What does safety mean to you?
- What is a safe street?
- What modes of transportation do you use regularly? How safe do you feel?
 Walking/running
 - Walking/rurBicycle
 - Scooter





Organization Representative	Name
Engineering Department	Andrew Rodewald
Street Department	Patty Johnson
Police Department	Eric Cunningham
Police Department	Marley Pagel
Fire/EMS Department	James Macky
Fire/EMS Department	Uriah Eddingfield
IT; Public Safety	Jeff Hendricks
Mayor's Office	Robert Herrington
Planning Department	Denise Aschleman
Engineering Department	Sacha Lingerfeldt





AND SERIOUS INJURIES ARE UNA E 0 SAFE SYSTEM APPROACH * Post-Crash Care RESPONSIBILITY IS SHARED

Safety Action Plan

LOCHMUELLER GROUP

Comprehensive Safety Action



Why Are We Here?

Safe Streets and Roads for All (SS4A)

- Established in The Bipartisan Infrastructure Law (BIL)
- \$5 billion in appropriated funds over 5 years, 2022-2026
- Funds regional, local, and Tribal initiatives through grants to prevent roadway deaths and serious injuries

Planning & Implementation

• Funds creation of safety action plans, or projects identified in qualifying safety action plans for implementation.

- Promote Safety • Low-cost, high-impact strategies over wide geographic area
- Equitable investment, both urban and rural
- Evidence-based
- Demonstration public/private engagement
- Align with USDOT Strategic Goals (e.g. climate change, equity/Justice40)

LOCHMUELLER GROUP

SOC Member Roles & Responsibilities





- O Did the Action Plan development include all of the following activities? Engagement with the public and relevant stakeholders, including the private sector and community groups;
- Incorporation of information received from the engagement and collaboration into the plan; and
- Coordination that included inter- and intra-governmental cooperation and collaboration, as appropriate.
- Did the Action Plan development include all of the following? Und the Action Prain development include all of the Following? Considerations of equity using inclusive and representative processes; The identification of underserved communities through data, and Equity analysis, in collaboration with appropriate partners, focused on initial equity impact assessments of the proposed projects and strategils and population characteristics.

- The plan development included an assessment of current policies, plans guidelines, and/or standards to identify opportunities to improve how processes prioritize safety; and
- Does the plan identify a comprehensive set of projects and strate address the safety problems in the Action Plan, time ranges when projects and strategies will be deployed, and explain project prioritization criterio?
- Does the plan include all of the following?
 A description of how progress will be measu a minimum, outcome data, red over time that includes, a
- The plan is posted publicly online Was the plan finalized and/or last updated between 2018 and June 20222



- Guidance
- Share knowledge
- Bring ideas
- Encourage others to get involved

- Leadership
- Action

- Accountability
- Credibility
- Track progress and celebrate success







Scope of Work

Technical Work



Vision Statement

The City of Noblesville is home to a thriving historic downtown including local restaurants, shopping, and art galleries, as well as charming residential neighborhoods.

To ensure that Noblesville remains a great place to live, work, and play, every person must be safe as they travel in the City.

Noblesville believes that traffic deaths are preventable and unacceptable and is committed to eliminating traffic deaths and serious injuries by 2040.

To make City streets safer for all, no matter age, ability, or community, Noblesville is dedicated to collaborating with all partners including residents, community stakeholders, local and regional governments, and state agencies. Zero is an ambitious goal, but together we can save lives and make Noblesville's streets safer for all.



LOCHMUELLER

GROUP

Public Engagement

ublic Survey

• Assess current attitudes & opinions related to roadway safety for all users • Review list of draft questions

• Locations for safety problems and opportunities • Help inform project list and potential safety countermeasure

• Emergency responders • School transportation Street department Health department Mayor's office Bicycle/Pedestrian advocates Neighborhood groups • Disables and elderly



itize locations for future safety improvements to achieve the largest impact and redu

Develop locally focused Equitable Target Areas (ETAs) and utilize USDOT's Equitable Transporta Community (ETC) Explorer Tool to explore insights of individual indicators of transportation





- •#1 in November (complete)
- Plan Information
- Input on key issues
- •#2 in January • Crash analysis & high injury
- network •Input on policy/programmatic
- recommendations
- •#3 in February
- Findings and recommendations





Schedule

Project Progress





Fatal Crashes

Project Progress



Noblesville Crash Heatmaps

GROUP

GROUP

Project Progress



KSI Crashes





2018-2022 • 15 people killed





2017-2022

- 15 people killed
- 647 KSI (killed or seriously injured) crashes





Project Progress



Plan Recommendations

Project Progress

Equitable Target Areas

- Income
- Race
- Limited English Proficiency



KSI Crashes & Equity



GROUP

Plan Recommendations









Comprehensive Project List

- Prioritized
- Proven safety countermeasures

- Complete Streets
- Fatal Crash Review
- Project selection

- Safety education/awareness
- Key marketing strategies
- Safety for all road users





Next Steps

- Steering Committee Meetings

 - January

 Next meeting (#2)

 February/March

 Meeting #3
- Open House #2 • January
 - Engagement resultsHIN
- Open House #3
 - February
 - Project listPolicies & programs
- Draft Plan
 - March



GROUP

Noblesville Safety Action Plan

Steering Committee Meeting #2 January 11, 2023

Agenda

- Vision Statement
- Public Engagement Results
- High Injury Network
- Open House
- Next Steps

Thank You

Feel free to reach out with any questions.











SOC Member Roles & Responsibilities





Vision Statement

The City of Noblesville is home to residential neighborhoods of various sizes and characters as well as a thriving historic downtown including local restaurants, shopping, and art galleries.

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Schedule

1 1 1 1 1 1		2023			20)24	
PRIMARY TASKS	OCT	NOV	DEC	JAN	FEB	MAR	APR
Notice -to-Proceed	*						
Project Management	\checkmark			\checkmark			
Investigate	•	-					
Engage	•	•			•	-	
Propose		•					
Prioritize					•		
Document			1	•		, ,	٢

★ Early October ★ Draft ★ Final





C14 | Noblesville Safety Action Plan

Public Engagement

- Small group stakeholder interviews ongoing
- 136 survey responses
- 29 map entries
- Open house #2
 - January 18, 2024







Survey Results



Survey Results

How safe do you feel traveling in Downtown Noblesville?

Survey Results



Survey Results

What words best describe the behavior of drivers on streets in Noblesville?



C16 | Noblesville Safety Action Plan







Survey Results

How often do you observe the following?

Survey Results

Which of the following safety improvements would you support for **walking** in your community?

Survey Results

Which of the following safety improvements targeting **drivers** would you support in your community?



20% 40% 60% 80% 100%

LOCHMUELLER

LOCHMUELLER

GROUP

Never Sometimes Often



Which of the following safety improvements would you support for **bicycling** in your community?



C18 | Noblesville Safety Action Plan











Survey Results



		_		(10	снм	UELI GRO	.ER UP
		0%	20%	40%	60%	80%	100%
	Other (please specify	-					
	Better signage/wayfinding						
	High quality pavement striping						
ntown	Shorter crosswalk	5					
owing safety ould you	Wider sidewalk	5					

Public Input Mapping Tool Results



Public Input Mapping Tool Results



High Injury Network

- 32 miles of roadway (5% of total roadway mileage)
- 97 intersections (3.5% of all intersections)
 - 65% of all crashes
 - 57% of incapacitating injury crashes
 64% of all people injured
 - 32% of fatal crashes











Crash Analysis



Crash Analysis



High Injury Network

Groupings

Crash Analysis



LOCHMUELLER



C22 | Noblesville Safety Action Plan

of Collis	ion; Severit	у				
					_	
eft Turn	Other	Opposite Direction Sideswipe	Collision With Animal	Head On Between Two Vehicles	Right Turn	
Non-Incap	pacitating Pos	sible PDO				
				LOCHM	JELLER	





High Injury Network Groupings



Next Steps

- Steering Committee Meetings
 - February/March
 Meeting #3
- Open House #3
 - February 28 or 29
 - Project list
 - Policies & programs
- Draft Plan
 - March

Open House #2

When?

- January 18, 2024
- 5pm 7:30pm

Where?

- Noblesville City Hall
- A213-214

- Materials
 - SS4A background
 - Project information
 - Survey & Input Mapping Tool results
 - High Injury Network
 - Seeking input:
 - Types of safety improvements

Thank You

Feel free to reach out with any questions.

GROUP











APPENDIX D Equity





MEMO

Equity Analysis

A safe and equitable transportation system expands access to opportunities for all Noblesville residents and helps to reduce the disparate economic, environmental, and health burdens experienced by disadvantaged and under-served communities. Historically disadvantaged populations such as people of color, people living in poverty, and people with limited English proficiency not only rely on alternative modes of transportation such as walking, biking, and transit, but may live in areas with limited or poor transportation infrastructure that contributes to unsafe travel conditions. Noblesville is committed to an equitable distribution of safety improvements so that all residents of all abilities can feel safe when traveling.

The local equity index is a composite index of demographic indicators where higher index values indicate higher concentrations of key equity demographics.

Demographic Indicators

Three demographic indicators were used to identify disadvantaged populations and develop the equity index (shown in Table 1). For each demographic indicator, block group level data was used from the U.S. Census Bureau 2017-2021 American Community Survey (ACS) 5-year estimates.

TABLE 1: DEMOGRAPHIC INDICATORS

Demographic Indicator	Description	ACS Table ID
People of Color	Percent of total population reported as non-white.	ACSDT5Y2021.B0200
Poverty	Percent of households with income in the past 12 months below poverty level.	ACSDT5Y2021.B1701
Limited English Proficiency	Percent of households reported as limited English speaking.	ACSDT5Y2021.C16002

Equity Index

The equity index is comprised of all three demographic indicators with equal weighting. The equity index is the sum of the three demographic indicators within each block group. 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.

Climate and Economic Justice Screening Tool

To confront and address decades of underinvestment, the Justice40 Initiative, established by the Biden-Harris Administration, made it a goal that 40% of benefits of certain Federal investments flow to disadvantaged communities. The USDOT's SS4A program is covered by the Justice40 Initiative, and eligible safety action plans are required to consider the equity of projects and strategies. The Climate and Economic Justice Screening Tool (CEJST) is an interactive mapping tool that is used to identify disadvantaged communities. Disadvantaged communities are those that meet or exceed the threshold for one or more environmental, climate, or other burdens. The CEJST identifies one Census tract in Noblesville that is considered disadvantaged (18057110700).

Equity Target Areas

To determine the equity target areas (ETAs) based on the equity index score, the equity index score was reclassified by quantile class. This method classified the equity index score by 20th percentile bins. The 80th percentile bin, top 20% of equity index scores, were combined with the CEJST disadvantaged communities to establish ETAs. ETAs are identified communities to target and prioritize safety improvements to improve equitable outcomes throughout the City.





Source: U.S. Cens	ource: U.S. Census Bureau, 2017-2021 American Community Survey 5-Year Estimates								
[ACSD15Y2021.B	(05D1012021.002001, A05D1012021.01/01/, A05D1012021.010002]								
Block Group ID	HH total	HH noverty	*Percent HH	Pon total	Pon nonwhite	*Percent Pop	I FP total	*Percent HH	Equity
Block Gloup ID	IIII_totat	III_poverty	Poverty	Γυρ_ισιαι	Pop_nonwinte	Nonwhite		LEP	Index
180571107003	214	10	4.67%	444	17	3.83%	0	0.00%	8.50%
180571107002	488	49	10.04%	1333	106	7.95%	0	0.00%	17.99%
180571105092	571	43	7.53%	1323	65	4.91%	0	0.00%	12.44%
180571105111	807	54	6.69%	2512	159	6.33%	0	0.00%	13.02%
180571105091	574	0	0.00%	1561	182	11.66%	0	0.00%	11.66%
180571106002	523	120	22.94%	1184	98	8.28%	8	1.53%	32.75%
180571107001	474	54	11.39%	1144	200	17.48%	0	0.00%	28.87%
180571105112	574	8	1.39%	1632	23	1.41%	0	0.00%	2.80%
180571108183	717	0	0.00%	2114	305	14.43%	0	0.00%	14.43%
180571108143	1027	13	1.27%	2255	333	14.77%	0	0.00%	16.03%
180571105181	586	0	0.00%	1735	85	4.90%	0	0.00%	4.90%
180571105172	826	50	6.05%	2430	521	21.44%	0	0.00%	27.49%
180571105141	948	0	0.00%	2800	322	11.50%	0	0.00%	11.50%
180571105122	1141	59	5.17%	2567	41	1.60%	0	0.00%	6.77%
180571105093	403	31	7.69%	1183	112	9.47%	0	0.00%	17.16%
180571105113	497	0	0.00%	1373	0	0.00%	0	0.00%	0.00%
180571105142	604	0	0.00%	1502	96	6.39%	32	5.30%	11.69%
180571105054	1228	38	3.09%	3770	54	1.43%	0	0.00%	4.53%
180571105052	288	0	0.00%	1017	129	12.68%	0	0.00%	12.68%
180571105053	632	9	1.42%	2165	95	4.39%	2	0.32%	6.13%
180571105182	1088	28	2.57%	3076	461	14.99%	0	0.00%	17.56%
180571105162	996	85	8.53%	2618	150	5.73%	0	0.00%	14.26%
180571105133	1723	57	3.31%	4681	1238	26.45%	0	0.00%	29.76%
180571101013	890	0	0.00%	2664	182	6.83%	26	2.92%	9.75%
180571105173	916	0	0.00%	3071	209	6.81%	0	0.00%	6.81%
180571105161	1037	0	0.00%	2939	103	3.50%	39	3.76%	7.27%
180571101011	689	175	25.40%	1816	482	26.54%	0	0.00%	51.94%
180571101012	1404	147	10.47%	4161	931	22.37%	0	0.00%	32.84%
180571105151	682	98	14.37%	1618	501	30.96%	0	0.00%	45.33%
180571108171	599	0	0.00%	2084	672	32.25%	0	0.00%	32.25%
180571105094	452	8	1.77%	1169	0	0.00%	0	0.00%	1.77%
180571105171	649	156	24.04%	1841	89	4.83%	47	7.24%	36.11%
180571108202	712	13	1.83%	1395	596	42.72%	108	15.17%	59.72%
180571105131	1219	0	0.00%	3504	560	15.98%	158	12.96%	28.94%
180571105132	947	30	3.17%	2058	606	29.45%	213	22.49%	55.11%
180571106001	681	23	3.38%	1748	103	5.89%	0	0.00%	9.27%
180571106003	515	24	4.66%	1503	165	10.98%	2	0.39%	16.03%
180571105121	808	56	6.93%	2125	147	6.92%	0	0.00%	13.85%

APPENDIX E High Injury Network





MEMO

High Injury Network

The identification of the high injury network (HIN) is a critical step in a successful safety action plan. The HIN represents those elements of the network (streets/roads and intersections), that are observed to have relatively high crash frequencies and/or higher rates of fatal and serious injury crashes. The HIN is used to identify and prioritize locations for safety improvements. This technical memorandum details the process by which the HIN was developed.

Data

Crash Records

Crashes from 2018 – 2022 were used in the analysis. Crash data was obtained from multiple sources:

- IMPO
- City of Noblesville
- ARIES

IMPO data included all fatal and incapacitating crashes and all bicycle and pedestrian crashes. IMPO staff cleaned and spatially located these crash records. City of Noblesville data included all crash reports taken by Noblesville Police Department. Noblesville staff cleaned and spatially located these crash records. For all remaining crash records, ARIES was used. ARIES data included crash reports taken by enforcement agencies other than Noblesville PD (i.e. Indiana State Police or Hamilton County Sheriff) with injury classifications other than fatal and incapacitating. Spatial and non-spatial methods were used to identify and remove duplicate crash records.

Roadway Network

Roadway network data was sourced from INDOT. Roadway network layers for functional classification and lanes were dynamically segmented. The result of the dynamic segmentation was a roadway network layer segmented with a change in functional classification, number of lanes, lane width, or divided lanes.

Intersections

Intersection data was sourced from Open Street Maps (OSM). The OSM intersections were filtered to remove segment endpoints. Noblesville intersection data was used to assign intersection type to all intersections (roundabout, signalized, unsignalized). Roundabout intersections were manually adjusted to the center of the roundabout.

Safety Index

To develop the HIN, Lochmueller Group created a safety index score for each roadway segment and intersection. The safety index score evaluated each segment and intersection by the observed crash history. The safety index score represents a data-driven metric for overall roadway safety.

The safety index score relies on two input statistics:

- segment or at an intersection.
- weighted according to their cost.

The input statistics captured both the number of crashes and the relative severity of crashes occurring at locations. Both input statistics were calculated by aggregating crashes along segments (within 100 feet) and at intersections (within 100 feet). Input statistics for intersections did not include length.

The formula for Crash Frequency is shown below:

To calculate EPDO Weighted Frequency, severity weight factors are required. Weight factors are based on the crash cost for each level of severity. The crash cost weights for the EPDO weighted frequency statistic were gathered from the FHWA Safety Program "Crash Costs for Highway Safety Analysis". The monetary crash costs and the severity weight factors are shown in Table 1.

TABLE 1: INDIANA CRASH COSTS AND SEVERITY WEIGHT FACTORS

Crash Severity	Cost	Severity Weight Factor
(K) Fatal Injury	\$373,000	59.21
(A) Incapacitating Injury	\$373,000	59.21
(B) Non-incapacitating Injury	\$35,200	5.59
(C) Possible Injury	\$35,200	5.59
(O) No Injury/Property Damage Only	\$6,300	1.00

Using the severity weight factors, the formula for EPDO Weighted Frequency is shown below:

EPDO Weighted Frequency	
$(K \ crashes \times K_s) + (A \ crashes$	$\times A_s$
	5(v

Where:

s = severity weight factor

Statistics for both segments and intersections were calculated by the same formula but with length being removed from the intersection calculations. Once both input statistics were generated, they were standardized. Standardization accomplished two main goals: it allows the data to be aggregated on a common scale and it mitigates the influence of outliers. For this analysis, the robust standardization



1. Crash Frequency: the number of crashes per year (and per mile for segments) that occur along a

2. Equivalent Property Damage Only (EPDO) Weighted Frequency: number of crashes per year (and per mile for segments) that occur along a segment or at an intersection where crashes are

 $Crash Frequency = \frac{Total Number of Crashes}{5 (years) \times Length of Segment}$

 $(B \text{ crashes } \times B_s) + (C \text{ crashes } \times C_s) + (0 \text{ crashes } \times O_s)$ 5 (years) \times Length of Segment



method was applied because of its effectiveness at mitigating the influence of outliers. After both input statistics were standardized, they were aggregated to create the safety index score. The safety index score should be used in comparison to other scores in the network where higher safety index scores mean more crashes, but it should not be interpreted on its own as a standalone value.

The formula for the safety index is shown below:

Safety Index = $X_f + X_w$

Where:

X = the standardized value

f = Crash Frequency

w = EPDO Weighted Frequency

To determine the HIN based on the safety index score, the safety index score was reclassified by quantile class. This method classified the safety index score by 20th percentile bins. The 80th percentile bin, top 20% of safety index scores, was identified as the HIN. The final HIN was cleaned to remove any remaining outliers or gaps.

ΣŴΖ

APPENDIX F Maps







RESOLUTION RC-18-24

A RESOLUTION OF THE COMMON COUNCIL OF THE CITY OF NOBLESVILLE CONCERNING THE NOBLESVILLE SAFETY ACTION PLAN

WITNESS THAT:

WHEREAS, the City of Noblesville, Indiana ("City") has undertaken the implementation of a Safety Action Plan ("SAP") to assist in implementing the City Capital Improvement Plan; and

WHEREAS, the City has gathered public, private, and agency input regarding the safety needs for users of the transportation network in the city; and

WHEREAS, the City has taken the gathered information and made recommendations from that in the form of an SAP, a copy of which is attached hereto as <u>Exhibit A</u>.

WHEREAS, the City recognizes that traffic deaths and serious injuries are not inevitable and is committed to take steps to attempt to eliminate traffic deaths and serious injuries.

IT IS THEREBY RESOLVED by the Common Council of the City of Noblesville as follows:

- 1. The Common Council of the City of Noblesville hereby resolves that to make City streets safer for all, no matter age, ability, or community, Noblesville is dedicated to collaborating with all partners including residents, community stakeholders, local and regional governments, and state agencies.
- That the Noblesville Safety Action Plan, a copy of which is attached hereto as <u>Exhibit</u> <u>A</u>, is hereby approved.

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Approved on this 23rd day of April , 2024 by the Common Council of the

City of Noblesville, Indiana: AYE NAY ABSTAIN Mark Boice

	TH K	Michael J. Davis	
	E-AAA	Evan Elliott	
	AAA	David M. Johnson	
2	R	Darren Peterson	
	All	Pete Schwartz	
-	find	Aaron Smith	
-		Todd Thurston	
	far ave	Megan G. Wiles	
	1. 0 1		

AMEST: <u>Les</u> Evelyn L. Lees, City Clerk

Presented by me to the Mayor of the City of Noblesville, Indiana, this 23 day of

lepil , 2024 at <u>8:10</u> P.M.

Evelyn L. Lees, City Clerk

MAYOR'S APPROVAL

Chris Jensen, Mayor

<u>4-23-24</u> Date

MAYOR'S VETO

Chris Jensen, Mayor Date CITY Ü ATTEST: al 1 Evelyn L. Lees, City Clerk MA