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Lynn Safety Action Plan

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Lynn Safety Action Plan Summary

Vision Zero and the Safe System Approach

Vision Zero is a strategy to eliminate deaths and serious injuries from traffic crashes. First implemented in Sweden, cities and towns across Massachusetts and the United States are putting Vision Zero into practice to save lives. The Safety System Approach is the framework for achieving Vision Zero. As opposed to traditional road safety practices that attempt to modify human behavior and prevent crashes, the Safe System Approach focuses on modifying transportation systems to anticipate human errors, lessen impact forces from crashes, and reduce crash severity to save lives. Reducing speeds systemwide is a key aspect of the Safe System Approach, as even a small difference in driver speed can affect the outcome of a crash (Figure 1).

Source: Tefft, B. C. Impact speed and a pedestrian's risk of severe injury or death. Accident Analysis & Prevention. 50. 2013.

Figure 1 Graphic demonstrating the connection between driver speed and crash fatality risk

Between 2018 and 2022, 14 people lost their lives in traffic crashes in Lynn and over 220 were seriously injured—averaging over 3 deaths and 40 life-altering injuries per year. The Lynn City Council adopted a Vision Zero commitment on March 26, 2024 (see Appendix A), establishing a goal of eliminating serious injuries and fatalities on City streets by 2040. More information about the state of transportation safety in Lynn can be found in the Why Lynn Needs the Safe System Approach and Safety Analysis sections.

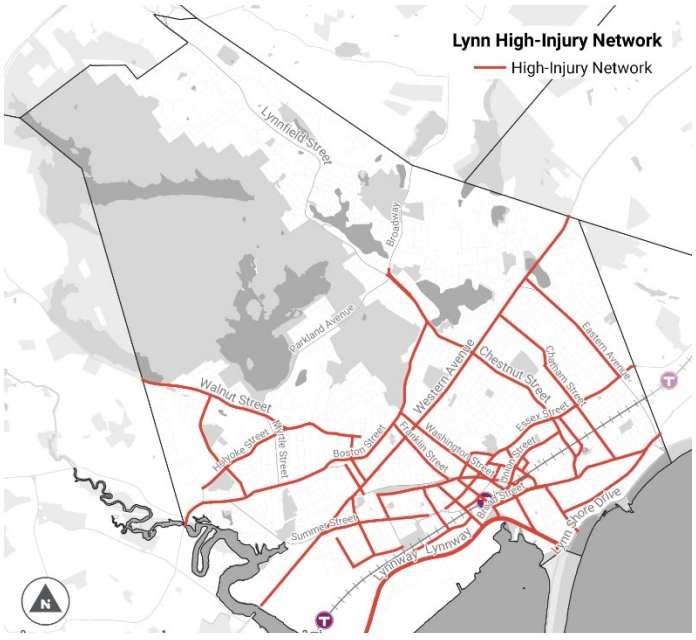


Figure 2 Small image of the High-Injury Network; full-sized maps can be found in Priority Locations for Action

Lynn's High-Injury Network

The High-Injury Network is a subset of Lynn's street network where targeted safety projects and strategies have the greatest potential to reduce serious injuries and fatalities. Though the High-Injury Network only includes 17% of the city's streets, crashes that occurred on these streets from 2018 to 2022 accounted for about:

- 86% of fatal crashes,
- 67% of serious injury crashes,
- and 72% of vulnerable road user crashes.

The High-Injury Network will be used to target safety interventions and strategies at streets and intersections where they will have the highest impact. The Priority Locations for Action section explores the High-Injury Network and High-Crash Intersections in greater detail.

Summary of Strategies for Action

The Strategies for Action are Lynn's plan for eliminating fatal and serious injury crashes on the city's streets. The strategies were developed in collaboration with the Lynn Traffic Safety Task Force, a group made up of representatives from a range of city departments with a role in Safety Action Plan implementation. Implementation goes beyond one single program and will require a coordinated whole-city approach to solving traffic safety problems. The strategies, which are explored in further detail in the Strategies for Action section, are organized into five themes:

1. Systemic Safety Implementation
2. Safe Street Design
3. Policy and Enforcement
4. Data Collection and Monitoring
5. Safety Culture

Figure 3 Frederick Douglass Park in Lynn

In alignment with the Safe System Approach, the Strategies for Action focus on realizing street design changes that are proven to reduce speeds, eliminate conflicts, and ensure that when crashes do inevitably occur that they do not cause serious injuries or fatalities. Achieving Lynn's Vision Zero goal will require sustained action to transform the design of the street network. The Systemic Safety Treatments section in the Safety Action Plan is intended to guide this transformation. These treatments will be integrated into scoping and concept development for corridor and intersection projects in discrete locations and be implemented systemically throughout the High-Injury Network where they have the potential to address safety issues.

Introduction

A New Approach to Traffic Safety

Vision Zero is a strategy to eliminate deaths and serious injuries from traffic crashes. First implemented in Sweden, cities and towns across Massachusetts and the United States are putting Vision Zero into practice to save lives. A strong Vision Zero approach includes:

- **Data-driven decision making:** Severe crashes can be prevented by proactively identifying risks and proposing data-driven solutions. Data transparency is necessary to understand problems and measure progress towards fixing them.
- **Safety Culture:** Communities must embrace the principle that all traffic deaths and serious injuries are unacceptable and preventable.
- **Designing for vulnerable road users:** Streets need to be designed for people of all ages and abilities, using all modes of transportation. This means prioritizing the needs of children, older adults, people with disabilities, pedestrians, cyclists, transit users, motorcycle/moped riders in street design.
- **Equity:** Putting equity into practice includes paying attention to the most vulnerable roadway users, rather than just drivers. It also takes into consideration how marginalized and underserved communities are disproportionately affected by serious crashes.
- **Broad community engagement:** Public and stakeholder participation cultivates shared investment in traffic safety goals and is an opportunity to learn from diverse perspectives.
- **Accountability:** Clear, measurable short-term and mid-term goals, combined with timelines and ownership from responsible government agencies, create a framework that is easy to evaluate and fund and builds buy-in.

Figure 4 Summary of the Safe System Approach; the core focus areas are within the circle, and the guiding principles are around the edges

Vision Zero implements the **Safe System Approach** (Figure 4), which differs from traditional traffic safety strategies. As opposed to traditional road safety practices that attempt to modify human behavior and prevent crashes, the Safe System Approach focuses on modifying transportation systems to anticipate human errors, lessen impact forces from crashes, and reduce crash severity to save lives. The Safe System Approach incorporates multiple layers of protection to prevent crashes from happening and minimize the harm when they do occur. This requires a focus on all the different pieces that affect crash potential including policy, street design, road user behavior, and vehicle design, among others. The United States Department of Transportation (USDOT) adopted the Safe System Approach as its core strategy in January 2022 as part of its National Roadway Safety Strategy.

Why Lynn Needs the Safe System Approach

Between 2018 and 2022, 14 people lost their lives in traffic crashes in Lynn and over 220 were seriously injured—averaging over 3 deaths and 40 life-altering injuries per year. While the city saw a decline in the serious and fatal (FSI) crash frequencies in 2020 during the COVID-19 pandemic, it has since rebounded to the pre-pandemic baseline (Figure 5). Serious and fatal crashes involving Vulnerable Road Users (VRUs) – pedestrians, cyclists, and motorcycle/moped riders – did not decline at all during the pandemic, and even increased slightly. Four vulnerable road users were killed in crashes in 2020 alone, and 2021 saw the highest number of serious and fatal crashes involving VRUs since 2018.

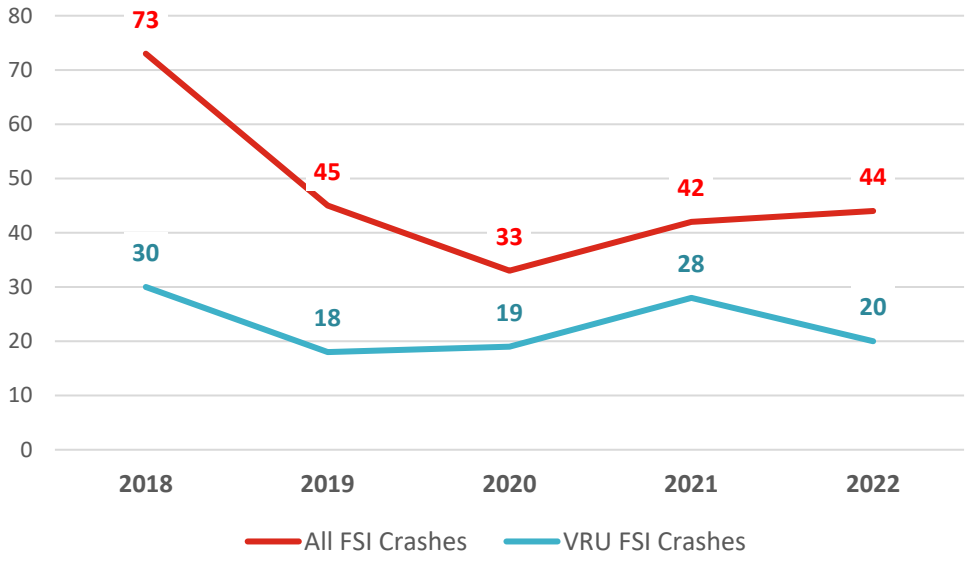


Figure 5 Annual FSI Crashes and VRU FSI Crashes 2018 - 2022

Lynn's traffic safety challenges are among the most serious in Massachusetts. The city's street network includes a number of statewide Top Crash Locations as defined by MassDOT, including:

- 7 Lynn intersections in the Top 200 Crash Clusters (2018 – 2020)
- 47 Lynn intersections in the Top 5% of Intersection Crash Clusters (2018 – 2020)
- 13 of the top 5% state-wide Pedestrian Crash Clusters (2011 – 2020)
- 3 of the top 5% state-wide Bicycle Crash Clusters (2011 – 2020)

The City has already begun the work of transforming the transportation network to put safety first and protect vulnerable road users (see Table 1). Improvements to many of the locations with the most serious historic traffic safety issues are already in design or programmed for funding in the near future (Figure 23, Figure 25). That said, Lynn is ready for a more proactive, rather than reactive, approach to reducing serious injuries and fatalities in alignment with the Safe System Approach.

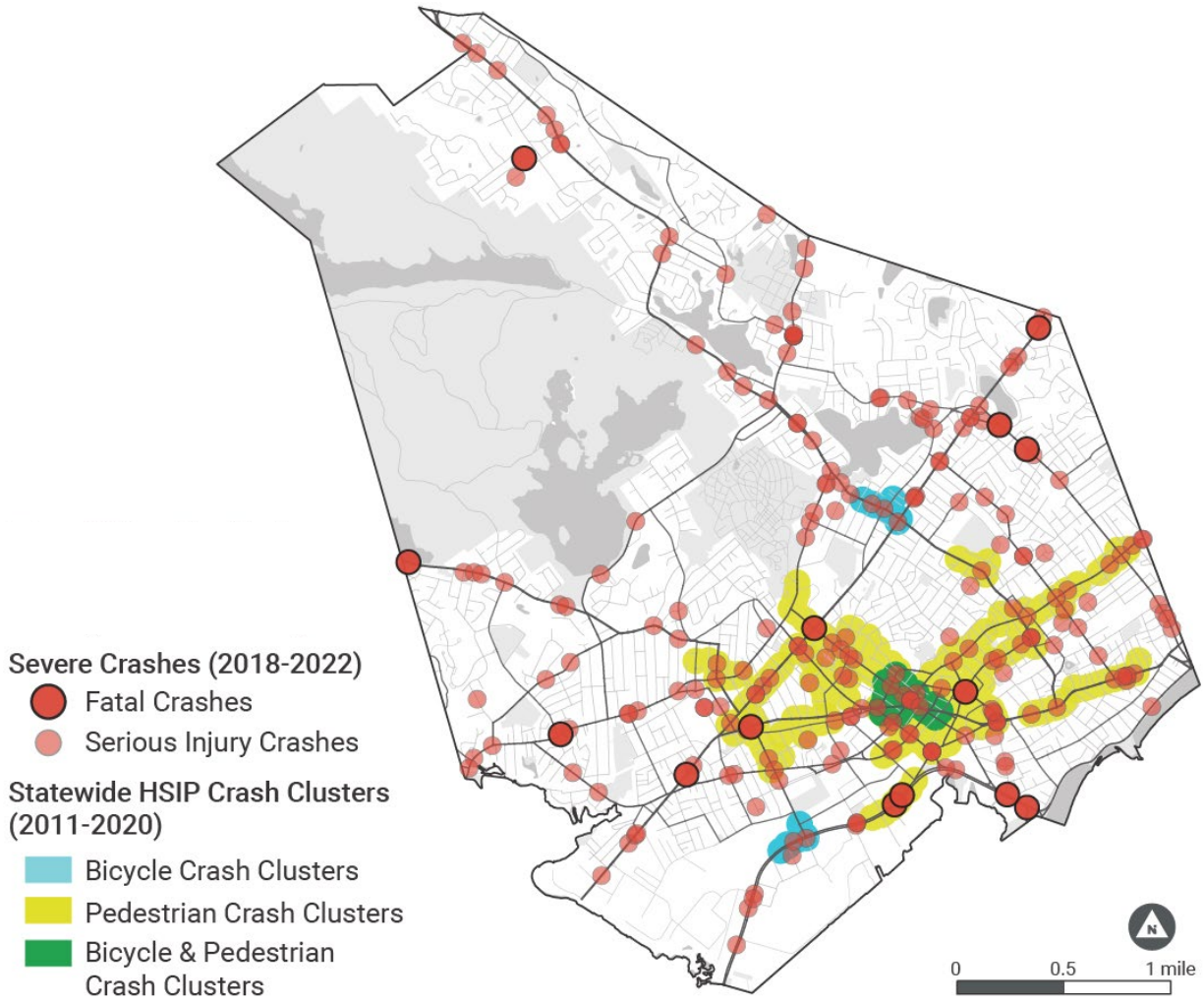


Figure 6 Map showing the locations of serious and fatal crashes and statewide Pedestrian and Bicycle Crash Clusters

Lynn's Safety Goals

In light of Lynn's traffic safety problems, MassDOT initiated a partnership with the City in 2021, first for the Lynn Safe Streets for People Playbook (see Table 1) and now to create the Lynn Safety Action Plan. This plan is a roadmap to achieving the city's Vision Zero goal, which was adopted by the Lynn City Council on March 26, 2024 (see Appendix A). The City's Vision Zero Resolution establishes a goal of eliminating serious injuries and fatalities on City streets by 2040.

The City and MassDOT also sought to realize as many planning process benefits as possible such that at the conclusion of the planning phase the City would be prepared to move forward on implementation. These include:

- Fostering internal collaboration on traffic safety through the Lynn Traffic Safety Task Force
- Identifying opportunities for high-impact safety investments through the High-Injury Network
- Moving forward the civic conversation about traffic safety to support systemic safety implementation and foster a safety culture
- Connecting Lynn with funding for plan implementation through the USDOT Safe Streets and Roads for All program (SS4A)

Related Transportation Initiatives

This plan connects with and incorporates aspects of several statewide and local transportation initiatives. These initiatives and their relationship to the Lynn Safety Action Plan are described below.

Table 1 Summary of related transportation initiatives in Lynn

Initiative	Summary	Connection to Lynn Safety Action Plan
Massachusetts Strategic Highway Safety Plan (2023)	The Strategic Highway Safety Plan (SHSP) provides a comprehensive structure for reducing roadway deaths and serious injuries on public roadways. It is grounded in the Safe System Approach and organized around six initiatives: 1. Implement Speed Management to Realize Safer Speeds 2. Address Top-Risk Locations and Populations 3. Take an Active Role to Affect Change in Vehicle Design, Features, and Use 4. Accelerate Research and Adoption of Technology 5. Double Down on What Works 6. Implement New Approaches to Public Education and Awareness The detailed action plan for achieving the six initiatives in the 2023 update to the SHSP is still in process.	MassDOT's Safety Action Plan partnership with Lynn represents action on the following SHSP initiatives: ▪ 2.1: Identify, initiate, and prioritize systemic projects involving top-risk locations ▪ 2.2: Identify, initiate, and prioritize systemic projects involving top-risk populations ▪ 5.1: Address top crash locations ▪ 5.5: Expand resources to municipalities
Massachusetts Vulnerable Road User Safety Assessment (2023)	The VRU Safety Assessment analyzes state safety performance with respect to vulnerable road users, with an emphasis on fatal and serious injuries, and outlines the state's plan to improve safety outcomes. It is guided by the six initiatives established in the SHSP.	The VRU Safety Assessment identified Lynn as a Top 5% VRU Risk Town. As a result, MassDOT is supporting the City in implementing low-cost systemic projects. These have focused on signalized intersections, VRU-specific markings, and bus stops. Data analysis conducted for the Safety Action Plan has been used to guide location prioritization.
Vision Lynn Comprehensive Plan (2023)	Vision Lynn is the city's first comprehensive plan. It captures a twenty-year vision for Lynn, including shared values and goals informed by	Vision Lynn frames traffic safety as a core part of holistic public safety in Lynn. The Safety Action Plan moves

Initiative	Summary	Connection to Lynn Safety Action Plan
	community collaboration, and will guide future development and infrastructure investments. It was adopted by the city council in June 2023.	forward the following strategies for change: ▪ Changes to our roads and improvements to our transit system will make our streets safer, more accessible, and more pleasant for pedestrians, bikers, and drivers ▪ Implementing the Safe Streets for People Playbook, which offers design solutions to make our streets safer for pedestrians, bikers, and drivers, will reduce crashes on our streets
Lynn Safe Streets for People Playbook (2022)	The Playbook was a safety planning partnership between the city and MassDOT focused on vulnerable road users. The approach to developing the Playbook centered on multimodal network connectivity, safety, and rapid implementation street design changes. The main outcome of the Playbook was a network of "Priority Corridors" for multimodal safety investments. The process included extensive targeted outreach during the summer of 2021.	The Playbook laid the groundwork for the Safety Action Plan by sparking initial internal conversations about traffic safety. The Safety Action Plan builds upon the Playbook with a comprehensive, systemic approach to safety and a greater focus on serious and fatal crashes for all modes. The Safety Action Plan is also guided by the engagement conducted during the Playbook process, which is summarized in the Public Engagement section.
Lynn Priority Corridors Implementation (ongoing)	MassDOT is supporting the implementation of multimodal safety enhancements to the eight Priority Corridors that emerged from the Playbook process. These projects have been scoped to support rapid implementation of design changes, using temporary materials and working within existing curb lines. They are currently in preliminary design.	The eight Priority Corridors are all on Lynn's High Injury Network. The Safety Action Plan has a greater focus on the parts of the High Injury Network that are not yet connected with pathways to implementation for street design changes.
Lynn Transit Action Plan (2020)	The Lynn Transit Action Plan identified strategies for providing faster, more reliable transit service in Lynn to make it easier for Lynn residents to travel by public transit and to better connect Lynn with the regional economy.	Under recommendations to improve access to transit and enhance the customer experience, the Transit Action Plan recommended investing in safer infrastructure for walking and biking to

Initiative	Summary	Connection to Lynn Safety Action Plan
		facilitate shifting short trips from driving to active modes.
Lynn Complete Streets Policy (2015) and Complete Streets Prioritization Plan (2016)	The City of Lynn passed Complete Streets Policy in 2015 as part of their participation in the MassDOT Complete Streets Funding Program. The Complete Streets Policy mandates that all public streets be designed to safety accommodate all roadway users, including people who drive, walk, bike, or take transit, and including people with disabilities. The Complete Streets Prioritization plan created a queue of Complete Streets projects for implementation. Lynn has received construction funding from the program in 3 grant rounds since 2016, most recently in Fall 2023.	The Complete Streets Policy provides policy backing for street design changes that improve safety. Additionally, Lynn's participation in the Complete Streets Funding Program provides a funding avenue for the implementation of safety treatments on the High-Injury Network. The City's most recently funded project will implement safety and multimodal design changes to a small segment of the High-Injury Network adjacent to the commuter rail station. The City aggressively seeks state and federal funding opportunities to implement roadway safety improvements consistent with the Safe Streets for People Playbook and Complete Street Policy. The City has successfully sought funding through the Boston MPO's Community Connections program and MassDOT's Shared Streets program to implement traffic calming and signal improvements to improve safety for all users.
Bike to the Sea Walk Audits (ongoing)	Bike to the Sea is a nonprofit organization that advocates for connecting North Shore communities with shared-use trails and promotes safe and happy trail use for people of all ages and abilities. In 2023, Bike the Sea received a grant from the AARP to support three walk audits in Lynn to assess challenges for older adults in accessing the Northern Strand Trail.	The first two walk audits took place in the fall of 2023 and coincided with the kick-off of the Safety Action Plan process. Several Traffic Safety Task Force members participated in the walk audits, as well as members of the project team. The walk audits received media coverage from local outlet ItemLive and raised awareness of pedestrian safety and accessibility challenges in Lynn. The third walk audit is planned for spring 2024. All walk audit routes overlap significantly with the High-Injury Network.

Transportation Equity in Lynn

Equity is a key lens for understanding traffic safety in Lynn. Access to safe and affordable ways of getting around is closely tied to economic opportunity, social resilience, and quality of life, but a large share of Lynn residents are at disproportionate risk of being involved in serious and fatal crashes. Most U.S. Census Block Groups in Lynn are classified as Massachusetts Environmental Justice (EJ) Communities, a designation given to block groups that meet at least one of the following criteria (Figure 7):

- **Income:** The annual median household income is 65% or less of the statewide annual median household income.

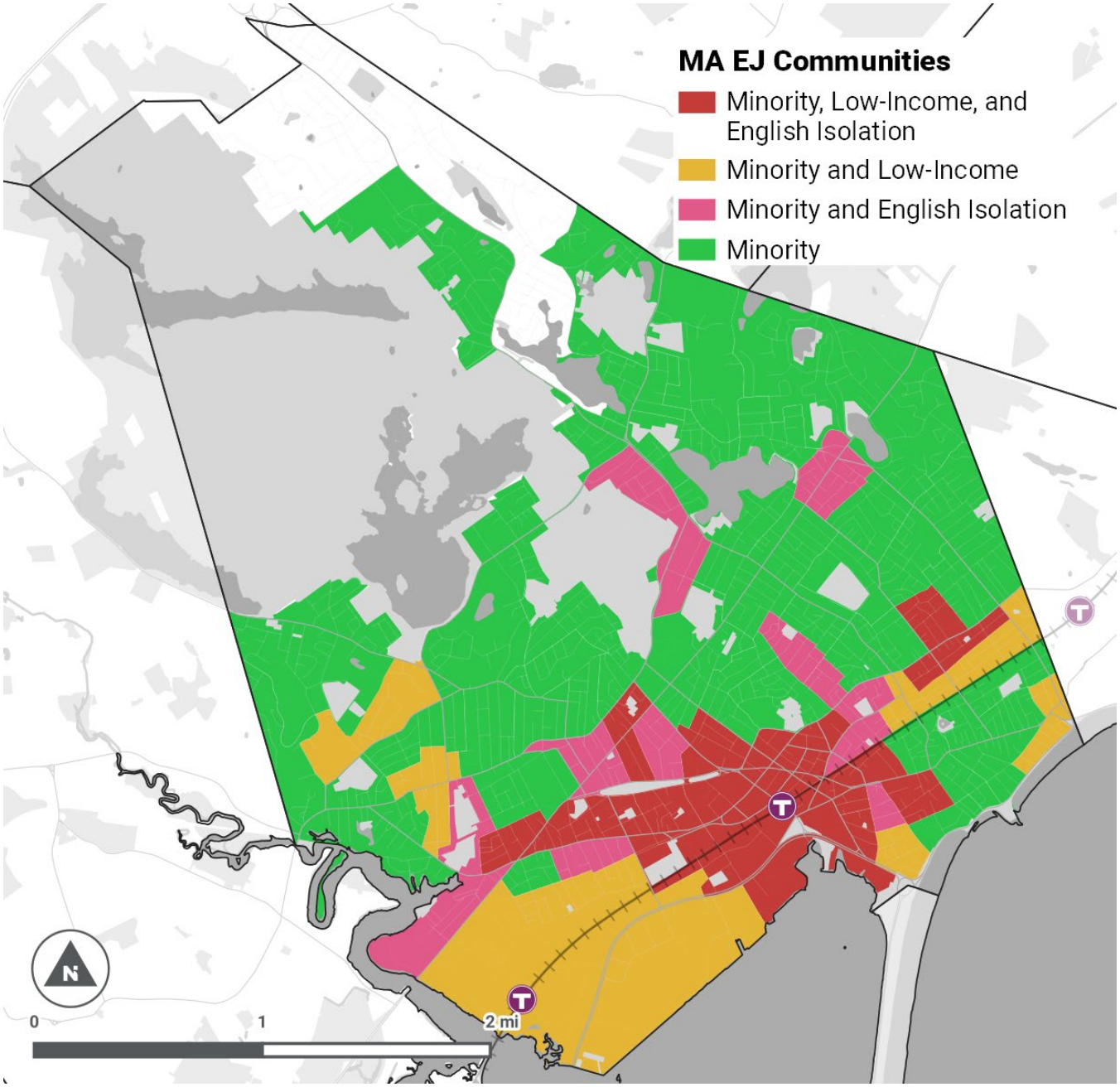


Figure 7 Massachusetts Environmental Justice Communities in Lynn by EJ indicator type

- **Race and Ethnicity:** Racial and ethnic minorities make up 40% or more of the population, or make up 25% or more of the population and the annual median household income of the municipality does not exceed 150% of the statewide annual median household income.
- **Limited English-speaking Proficiency:** 25% or more of households identify as speaking English less than "very well."

Over two-fifths of the city's population lives in a Block Group that meets two or more of these criteria, and 96% of the population in a Block Group that meets one. By USDOT's Disadvantaged Communities Indicator, 79% of Lynn residents live in Census Tracts that face cumulative burdens from underinvestment in transportation. Because of historic and ongoing discrimination and disinvestment, higher rates of transit and active transportation dependence, and other compounding vulnerabilities, people who live in communities with these demographic characteristics are at greater risk of serious and fatal vulnerable road user crashes. Between 2016 and 2020, Black (non-Hispanic) people in Massachusetts experienced non-fatal pedestrian injuries at nearly three times the rate of white (non-Hispanic) people, and Hispanic people experienced these injuries at nearly two times the rate[1]. Additionally, an analysis of statewide pedestrian and bicycle crash clusters showed that 82% of pedestrian clusters and 64% of bicycle clusters were located within block groups that rank in the top percentile regionally for the EJ Community criteria[2].

Consistent with these patterns, one in five households in Lynn does not have access to a vehicle and relies on walking, biking, and transit to get around[3]. Additionally, between 2018 and 2022, 6 of the 14 traffic fatalities recorded in Lynn were pedestrians.

Equity is a cornerstone of safety action planning. Equity means distributing resources to people in a just and impartial way that addresses the disproportionate harm that vulnerable populations and people of color often suffer on Massachusetts roadways. This Safety Action Plan aims to affect change in transportation equity by following these principles:

- **Invest equitably.** Focus on the safety needs of marginalized communities disproportionately affected by serious and fatal crashes, including by integrating equity indicators into crash risk.
- **Expand alternatives to driving and vehicle ownership.** Increase the availability and safety of walking, biking, and transit for daily trips. This empowers people to choose less expensive transportation options which are also healthier and more sustainable than driving.
- **Implement self-enforcing street design.** Design streets and roadway networks to encourage and reinforce desirable roadway user behavior, thereby reducing reliance on traffic enforcement.
- **Engage people and communities representative of Lynn's diversity.** Execute an inclusive and representative process to guide plan development, such that decision-making is informed by the unique perspectives of people marginalized by past and ongoing transportation decisions. Initial progress toward following this principle is described in the Public Engagement section and starting points for future engagement in Strategies for Safety Culture.

[1] Massachusetts Strategic Highway Safety Plan (2023) p. 11
[2] Massachusetts VRU Safety Assessment (2023) p. 15
[3] Vision Lynn Comprehensive Plan p. 118

Engagement and Collaboration

Lynn Traffic Safety Task Force

The city convened an internal Traffic Safety Task Force in the fall of 2023 to guide the creation of the Safety Action Plan and oversee its implementation. The departments involved and the individuals who represented them during the planning process are listed in the Acknowledgements. The participation of these staff in the Task Force was critical for generating awareness of the Safe System Approach and preparing the City to implement this plan collaboratively across departments. The Task Force has committed to meeting biannually to carry this coordination forward (see Strategies for Action).

The Task Force met four times throughout the planning process about the following topics:

- October 18, 2023: Introduction to the Safe System Approach, summary of traffic safety issues in Lynn, review of Vision Zero/SSA case study communities, draft High Injury Network discussion
- January 12, 2024: Final High Injury Network discussion, review and discussion of proposed safety countermeasures, initial Safety Action Plan strategy brainstorm
- March 5, 2024: Review and discussion of draft Safety Action Plan strategies
- April 10, 2024: Additional discussion of Safety Action Plan strategies and review of plans for early-action safety countermeasure implementation and SS4A Implementation Grant application

Existing Roles, Processes, and Practices

Task Force meetings were an important source of insight into the roles of different City departments and decision-making bodies with regard to traffic safety, as well as their existing and past processes and practices. Table 2 summarizes the understanding of the relevant roles, processes, and practices that guided Action Plan development. This understanding formed the basis for the Strategies for Action.

Table 2 Summary of internal traffic safety roles, processes, and practices

Department/Body	Roles, Processes, and Practices Related to Traffic Safety
Mayor's Office	▪ Communicates with the community about citywide priorities and objectives » The Mayor's Office publishes an annual Year In Review which highlights progress on infrastructure and traffic safety initiatives » The Mayor hosts the annual Lynnside Out event, an outdoor festival centered on community engagement with City departments ▪ Coordinates action across departments to implement citywide policy objectives » The Mayor's Office participates in the Traffic Safety Task Force and suggests opportunities for collaboration and connections to other ongoing initiatives
City Council	▪ The City's legislative body, which creates new legislation and votes it into adoption » The City Council has adopted legislation guiding the City's transportation priorities in the past, most notably the Complete Streets Policy in 2016 (see Table 1) and the Vision Zero Resolution in 2024 (see Appendix A) ▪ Individual councilors represent local voters in City government, including ward councilors who each represent one of Lynn's seven wards » Councilors field transportation and safety-related input, concerns, and requests from the residents they represent

Department/Body	Roles, Processes, and Practices Related to Traffic Safety
	» Councilors often advocate for or spearhead small safety projects, for example crossing enhancements or crosswalk installations, in response to requests
Traffic Commission	▪ Meets monthly to hear and approve or deny individual changes to signage and regulations citywide, including parking/curbside regulations, turn restrictions, one-way restrictions, etc.
Planning Department	▪ Coordinates progress across disciplines toward long-term strategic objectives established in the Vision Lynn comprehensive plan (see Table 1) ▪ Manages the design of transportation improvement projects ▪ Coordinates with external agencies like MassDOT, DCR, and MBTA on transportation projects/initiatives ▪ Communicates with the public about the planning, design, and engineering of ongoing transportation projects/initiatives » The Planning Department manages an online community engagement platform and sends a monthly newsletter to subscribers » Planning works with transportation design-engineering consulting firms in developing and implementing public engagement strategies in connection with transportation improvement projects ▪ Pursues grant funding to support transportation projects and initiatives ▪ Performs land use and transportation studies consistent with the City's economic development and housing objectives
Department of Public Works (DPW)	▪ Performs and/or oversees construction on streets, intersections, and sidewalks » DPW sometimes installs new crosswalks or crossing enhancements in response to requests from city councilors ▪ Manages the design and construction of street projects ▪ Maintains the city's street infrastructure, including seasonal street snow clearing and de-icing, street paving, and sidewalk repair ▪ Coordinates with external agencies like MassDOT, DCR, and MBTA on transportation projects/initiatives
Inspectional Services Department (ISD)	▪ Oversees traffic signals on city-managed streets » ISD worked with a consultant to complete a signal inventory in 2020, the maintenance and upgrade recommendations from which are integrated into other projects as opportunities arise » ISD is working with MassDOT to select high-crash intersections for VRUs for MassDOT-funded upgrades (see Table 1) ▪ Maintains street lights and school zone lights
Police Department (PD)	▪ Educates the public about traffic laws ▪ Enforces compliance with traffic laws through traffic stops » Capacity for traffic enforcement and monitoring is limited, and sometimes grants are used to support targeted traffic enforcement in problem locations ▪ Monitors speeding and driver behavior in targeted locations

Department/Body	Roles, Processes, and Practices Related to Traffic Safety
	» The Lynn PD Traffic Department monitors speeding in specific locations in response to complaints and requests » The PD has 4 pole-mounted signs and 4 radar trailers (also known as combo boards) for collecting data on driver speeds ▪ Supports school pick-up and drop-off safety
Fire Department	▪ Approves street design changes to the extent they may affect emergency response times
Department of Community Development	▪ Manages the design and construction of street projects ▪ Administers Community Development Block Grant (CDBG) funding program which may be used to fund public realm improvements including roadway and streetscape enhancements » Streetscape enhancements include improved lighting and pedestrian-scale lighting ▪ Pursues grants that support economic development including grants that seek to make public realm and infrastructure improvements
Schools Department	▪ Coordinates involvement among schools in the Safe Routes to School (SRTS) program

Public Engagement

The Lynn Safety Action Plan was informed by engagement with the community during the Lynn Safe Streets for People Playbook initiative (see Table 1), which was focused on safety for vulnerable road users. This section summarizes the key takeaways that shaped the Safety Action Plan and describes the engagement process.

Engagement Process

Phase 0: Pre-Engagement Educational Signage (Spring 2021)

When the Playbook initiative was beginning in late 2020, Lynn had recently implemented a series of multimodal street design changes in downtown Lynn with support from the MassDOT Shared Streets and Spaces grant program. This grant program was created to assist local governments with reallocating street space during the COVID-19 pandemic to address public health, mobility, and economic needs, with an emphasis on supporting the

Figure 8 Bus/bike lane on North Common Street installed as part of the Shared Streets and Spaces grant program

communities most vulnerable to the wide-ranging impacts of the pandemic. The changes in downtown Lynn included the first bus lanes and among the first bike lanes in the city.

To explain the purpose of these new designs, as well as capture the momentum from the Shared Streets and Spaces projects and connect them to a continued initiative, the Playbook project team posted educational signage along each of these streets. The signage explained each of the street design elements present and shared safety tips for all road users.

Figure 9 Signage installed along a new bike lane asking road users to "keep the bike lane clear" in English, Spanish, and Khmer

Phase 1: Community-Based Organization Partnership and Survey (Summer 2021)

Recognizing that sustained in-person engagement would be essential to an inclusive planning process in Lynn, MassDOT and the City partnered with a local community organization to lead on-the-ground engagement. LEO, Inc., a local community organization and service provider with a long history in Lynn, had not been involved in transportation planning work before but understood promoting safe mobility as part of their larger mission to help Lynn communities thrive. The people that LEO serves are also largely members of marginalized groups that face disproportionate traffic safety risks (see Transportation Equity in Lynn).

Throughout the summer of 2021, LEO integrated engagement for the citywide safety initiative into their existing programming and outreach, including at outdoor festivals and planned COVID-19 and food assistance outreach events. LEO staff collected multilingual surveys and shared incentives such as raffle entries for bikes and gift cards, small giveaways, and free bike tune-ups. The LEO team also produced and circulated a 2-minute video in English and Spanish highlighting traffic safety issues in Lynn and introducing possible street design solutions to common safety problems.

Figure 10 Woman filling out survey at LEO pop-up

LEO's staff spoke with hundreds of Lynn residents in the course of their summer programming and collected over 200 paper surveys, about one-third of which were filled out in Spanish. The survey was used to understand community traffic safety priorities and informed the selection of Priority Corridors for safety investments.

Phase 2: Priority Corridors Pop-Ups (Fall 2021)

The second phase of engagement was focused on confirming the final Priority Corridors for early implementation of safety projects (see Table 1). The project team hosted pop-ups in several locations with busy pedestrian activity and invited participants to indicate, from a selection of candidates, the corridors where they would most like to see safety improvements. The final corridors were selected in consideration of this feedback.

Key Engagement Takeaways

Community Safety Priorities

The survey distributed in the summer of 2021 primarily asked people about their experiences traveling around Lynn as vulnerable road users. This feedback was carried forward into the Safety Action Plan process and shaped the focus of this plan. Over one-third of the survey respondents reported walking or biking for transportation "every day," and another third "occasionally" (Figure 11).

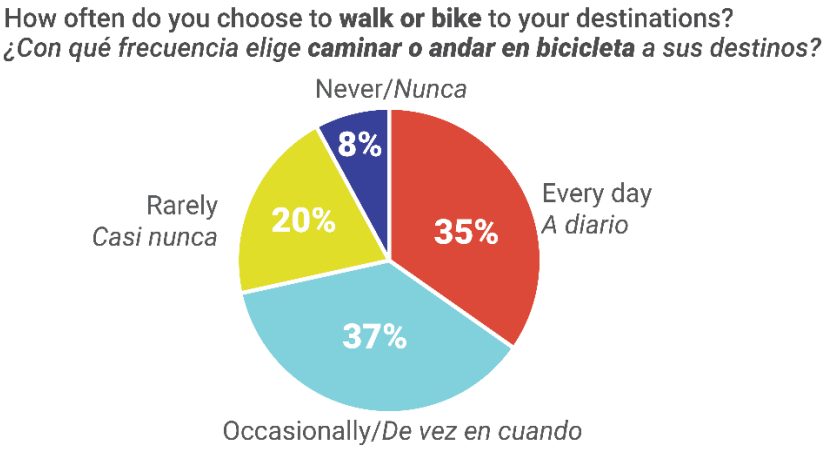


Figure 11 Summary of responses to question about transportation mode choice (n=241)

The primary safety-related feedback about walking in Lynn concerned the need for safer crossings, with over half of respondents indicating that this type of investment would improve their experience or lead them to walk more (Figure 13). For biking, over a quarter of respondents indicated that a network of connected bike lanes would improve their experience (Figure 14), feedback that was echoed by answers to free response questions. The following themes emerged in free response feedback:

- The City needs more and higher quality bike lanes and trails
- Aggressive behavior by drivers and speeding are widespread concerns
- General personal safety was a concern traveling around Lynn on foot, by bike, and by transit
- Sidewalk quality and accessibility could be improved
- Traffic signals are inconsistent and unreliable and need to be upgraded

Figure 12 Table at pop-up event with LEO materials, survey, and giveaways

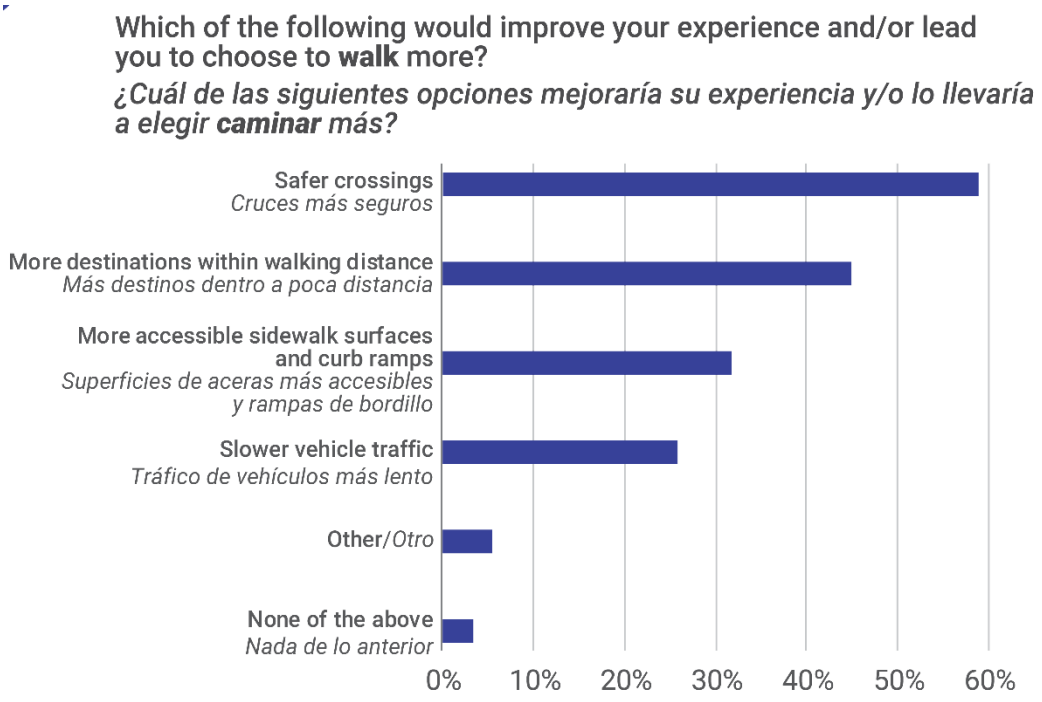


Figure 13 Summary of responses to question about walking (n=238)

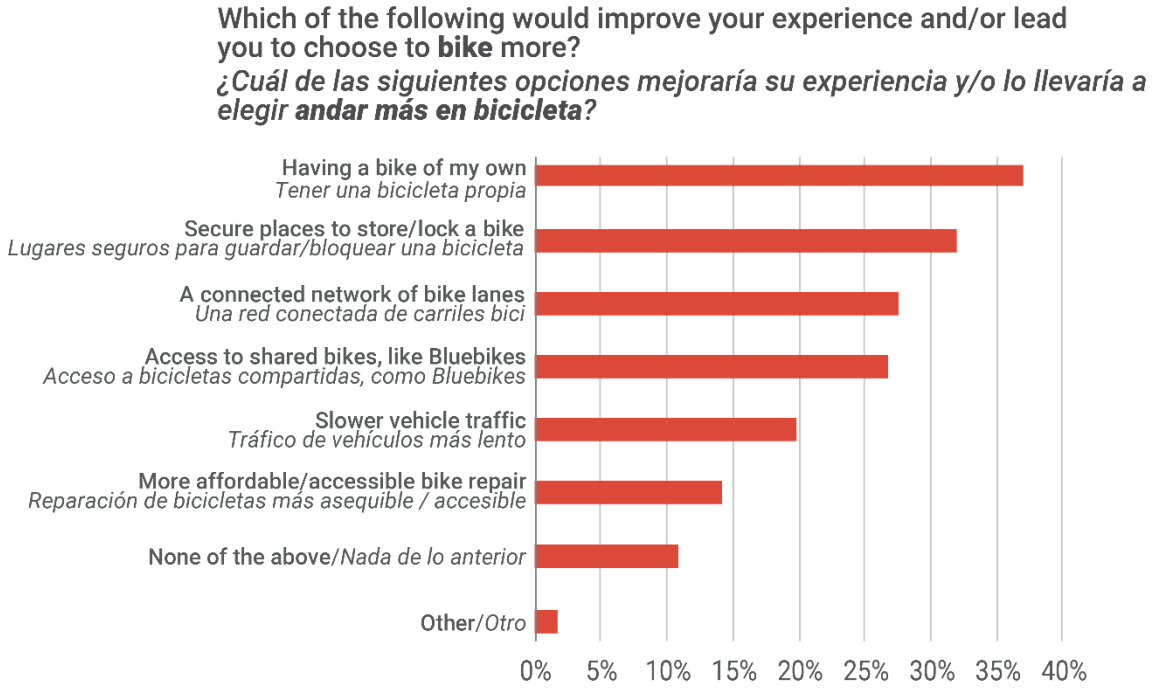


Figure 14 Summary of responses to question about biking (n=234)

Engagement Methods

The Playbook engagement process was an important opportunity to test out methods for inclusive engagement in Lynn. Lessons learned from this process can be incorporated into future outreach around Safety Action Plan implementation (see Strategies for Safety Culture). Important takeaways from this engagement process included:

- **Partnerships and Diversity:** A partnership with a community-based organization was an effective way to engage with harder-to-reach populations. Incorporating traffic safety outreach into their existing outreach around COVID-19, utility bill assistance, and other services, LEO talked with and collected surveys from many lower-income, Spanish-speaking Hispanic/Latine people. However, reaching an audience that is more representative of the language, racial/ethnic, and age diversity of Lynn may require partnering with multiple organizations with connections to different communities.
- **Incentives:** Giveaways and raffles were effective in drawing attention to the Playbook materials and encouraged many people to fill out surveys.
- **Free Bike Repair:** Free bike repair services appear to be in-demand in Lynn and could be a successful engagement tool in the future. The free bike tune-up event hosted at the Diversity Matters Festival, despite very minimal promotion, was busy for the duration of the festival. About 20 people had bikes tuned up, some of whom rode their bikes there and others who went home to retrieve them to be tuned up.
- **In-Person vs. Virtual Engagement:** Compared to in-person engagement at public events, virtual engagement did not reach many people. Only 23 responses were submitted to the only version of the survey, which was circulated primarily on social media and hosted on the project webpage.

Figure 15 Lynn community members having their bikes tuned up by volunteer bike mechanics at the 2021 Diversity Matters Festival

Safety Analysis

This section describes citywide crash characteristics between the years 2018 and 2022, with the objectives of:

- Establishing a baseline for transportation safety in Lynn against which future progress can be measured
- Highlighting patterns in crash characteristics that are associated with fatal and serious injury crashes
- Identifying strategies and street design treatments with the potential to be effective in reducing severe crashes in Lynn

The focus of this analysis is on crashes that caused fatalities and serious injuries (FSI crashes). Other crash severities are included as well in some figures to provide context and highlight the crash characteristics that are most correlated with higher severities.

Regardless of the outcome of any one crash, all pedestrian, bicyclist, and motorcycle crashes have the potential to be serious. For this reason, pedestrian, bicyclist, and motorcycle crashes of all severities were considered in this analysis and are referred to throughout as Vulnerable Road User (VRU) crashes.

The data used in this study was obtained through the MassDOT IMPACT Portal. More information about crash data sources and limitations can be found in Appendix B.

Summary of Key Findings

Injury Severity: While most crashes did not result in serious injuries or fatalities (97%), this outcome was more likely when VRUs were involved. FSI crashes comprised 16% of pedestrian-involved crashes, 8% of bicyclist-involved crashes, and 17% of motorcycle crashes, compared to 1% of motor vehicle-only crashes.

- Total Crashes: 9,327
- Total Fatal Crashes: 14
- Total Serious Injury Crashes: 223
- Total Fatal and Serious Injury (FSI) Crashes: 237

FSI Crashes by Mode:

- **Motor Vehicles**: Motor vehicle crashes accounted for 92% of all crashes and 51% of FSI crashes. There were 8,534 motor vehicle crashes during the study period, including 122 FSI crashes, 6 of which resulted in fatal injuries.
- **Motorcycles**: Motorcycle crashes comprised 2% of all crashes, but 14% of FSI crashes. There were 196 motorcycle crashes during the study period, and 33 of these resulted in a fatality or serious injury, including 2 fatal crashes.
- **Pedestrians**: Pedestrian-involved crashes only accounted for 5% of all crashes, but 30% of all FSI crashes. There were 464 pedestrian-involved crashes in the years analyzed, and 72 of these resulted in a fatality or serious injury, including 6 fatal crashes.
- **Bicyclists**: Bicyclist-involved crashes accounted for 1% of all crashes and 4% of all FSI crashes. There were no bicyclist fatalities in the years analyzed, but of the 133 crashes, 10 resulted in serious injuries.

Leading FSI Crash Types by Mode:

- **Motor Vehicles and Motorcycles:** Angle crashes, including those sometimes referred to as “T-bone crashes”, are the crash type that produced the highest number of motor vehicle and motorcycle FSI crashes during the study period (57), consisting of 37% of injury crashes for these modes.
- **Pedestrians:** Motor vehicles were reported to be traveling straight in most pedestrian-involved FSI crashes (46), accounting for 64% of these crashes. Crashes with left turning vehicles (11) made up another 15%.

- **Bicyclists:** Like with pedestrian injury crashes, motor vehicles were reported to be traveling straight in 7 of the 10 bicyclist-involved FSI crashes. For the remaining 3 FSI crashes motor vehicles were reported to be turning left.

Time of Day: Trends in the times of day when FSI and VRU crashes occur can point to systemic risk factors for these types of crashes that can be addressed through strategic action. VRU crashes were overrepresented compared to all crashes during the 3pm to 6pm evening peak (26% compared to 20%) and the 6pm to 9pm period (21% compared to 16%). FSI crashes were overrepresented compared to all crashes from 6pm to 9pm (22% compared to 16%) and 9pm to 12am (19% compared to 12%). The peak periods for FSI and VRU crashes may indicate a connection between these types of crashes and dark lighting conditions. Additionally, VRU crashes may be connected to school pick-up and/or rush hour commuting patterns.

Crash Trends and Patterns

Crash Severity and Mode

MassDOT classifies crashes by severity based on the most severe outcome associated with the crash. Minor crashes in which no injuries occurred are recorded as “Property Damage Only.” From January 2018 to December 2022, 14 fatal crashes and 223 serious injury crashes occurred in Lynn (Table 3).

Table 3 Reported crashes in Lynn by severity (2018 - 2022)

Maximum Severity	Count	% of Total
Fatal Injury (K)	**14**	**0.2%**
Suspected Serious Injury (A)	**223**	**2%**
Suspected Minor Injury (B) or Possible Injury (C)	2422	26%
Property Damage Only (O) or Unknown (U)	6668	72%
Total	**9327**	**100.0%**

The overwhelming majority of reported crashes during the study period only involved motor vehicles (Table 4). Vulnerable road users were involved in about 1 out of every 12 reported crashes (8.5%).

Table 4 Reported crashes in Lynn by mode (2018 - 2022)

Mode	Count	% of Total
Motor Vehicle	8534	92%
Motorcycle	196	2%
Pedestrian	464	5%
Bicycle	133	1%
Total	**9327**	**100.0%**

However, vulnerable road users were involved in 57% of fatal crashes and 48% of serious injury crashes, while only being involved in 2% of Property Damage Only/Unknown crashes (Figure 16). Of the 14 fatal crashes that occurred during the study period, 6 involved pedestrians and 2 involved motorcyclists.

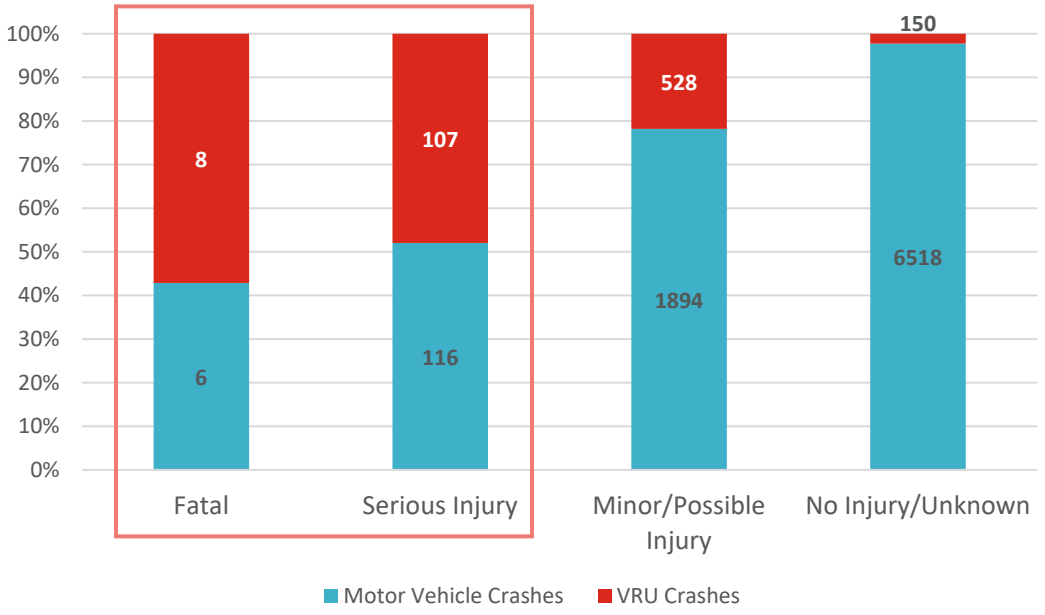


Figure 16 Crash severity for motor vehicle crashes compared to vulnerable road user crashes

Manner of Collision

Manner of collision summarizes road user actions leading up to a crash. Because of how these road user actions are recorded in crash data, manner of collision data is only reported consistently for motor vehicle and motorcycle crashes. Bicyclist and pedestrian crashes were excluded.

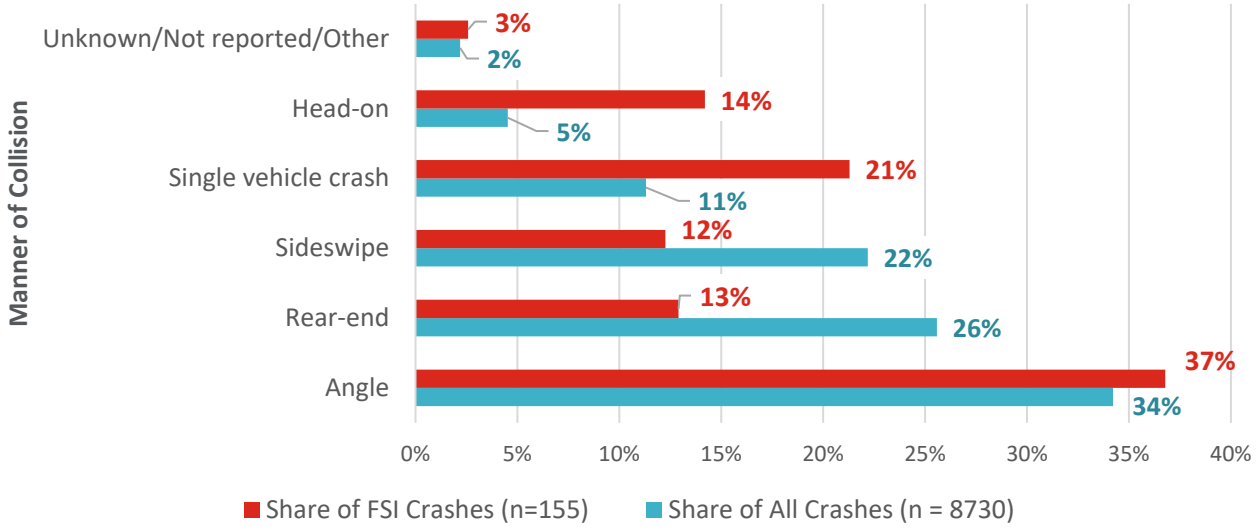


Figure 17 Manner of collision for motor vehicle and motorcycle crashes by crash severity

The most common manners of collision for all motor vehicle and motorcycle crashes were “angle” (34%), followed by “rear-end” (26%) and “sideswipe” (22%). The most common manners of collision for FSI motor vehicle and motorcycle crashes were “angle” (37%), “single vehicle” (21%), and “head-on” (14%).

“Angle” crashes accounted for approximately the same share of FSI crashes as for all crashes, while “rear-end” (13% of FSI) and “sideswipe” (12% of FSI) crashes were about half as likely to cause serious injuries or fatalities. By contrast, “head-on” (5% of all crashes) and “single Vehicle” (11% of all crashes) collisions made up a small share of overall crashes but were disproportionately represented among FSI crashes.

Vehicle Action in Pedestrian and Bicyclist Crashes

Summary-level manner of collision data is not provided as part of MassDOT IMPACT portal crash data for pedestrian and bicyclist crashes, but sufficient information is reported about vehicle actions leading up to a crash analyze limited trends.

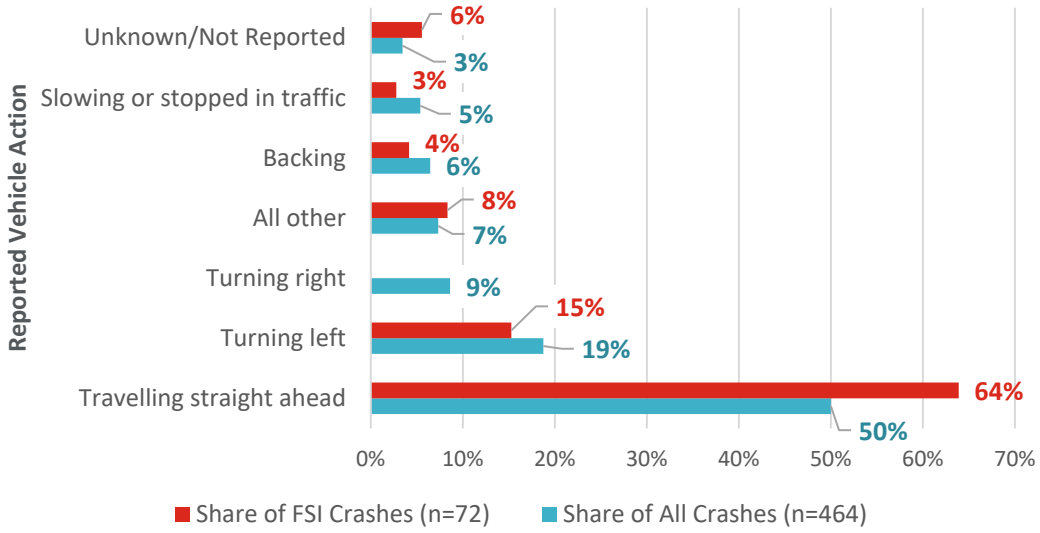


Figure 18 Vehicle Action reported in pedestrian crashes by crash severity

The most common vehicle actions reported for pedestrian crashes were “traveling straight ahead” (50%), “turning left” (19%), and” turning right” (9%). The majority of pedestrian FSI crashes involved a vehicle “traveling straight ahead” (64%) or “turning left” (15%).

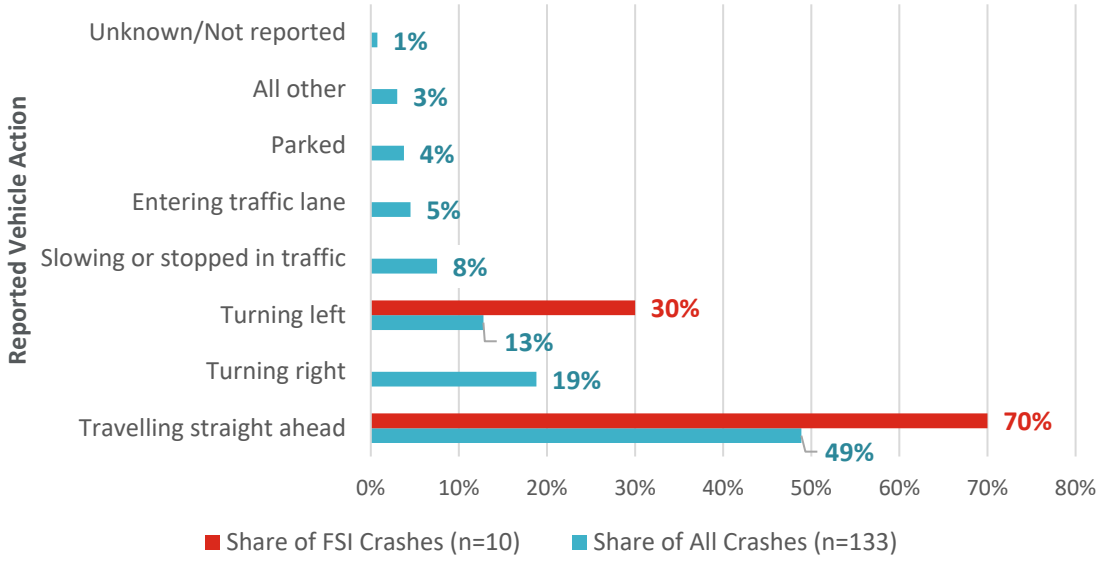


Figure 19 Vehicle Action reported in bicyclist crashes by crash severity

The most common vehicle actions reported for bicyclist crashes were “traveling straight ahead” (49%), “turning right” (19%), and “turning left” (13%). Only 10 bicyclist FSI crashes occurred during the study period, 7 of which involved a vehicle travelling straight ahead and 3 of which involved a vehicle turning left.

Contributing Factors

Contributing factors are behavioral or circumstantial factors that are reported to have contributed to a crash. They are reported at the driver-level, and multiple contributing factors can be reported for each crash. However, it is typically assumed that contributing factors are under-reported. Their accuracy relies to some extent on the accounts of road users involved in a crash, they are often subject to policies about what can be cited as a contributing factor without strong evidence, and policies and standards change over time so accuracy can change year to year. At least one contributing factor was reported for 2,101 crashes from 2018 to 2022, comprising 23% of all crashes reported, 30% of FSI crashes, and 13% of VRU crashes.

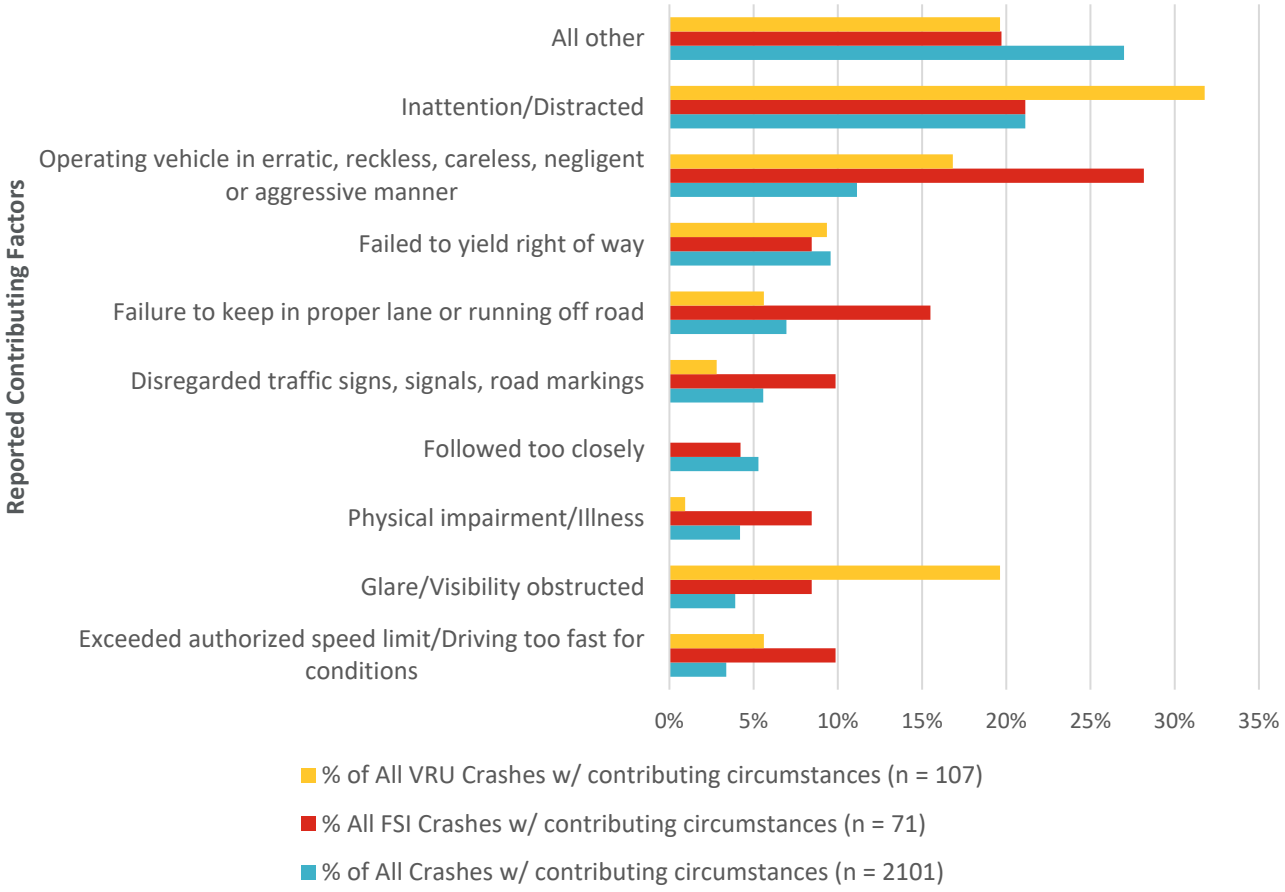


Figure 20 Reported contributing factors by crash mode and severity

Contributing factor data demonstrates a connection between reckless driving and FSI crashes. Inattention caused the most crashes of all, especially crashes involving VRUs, but appeared as a contributing factor in an equivalent share of FSI crashes relative to all crashes.

Time of Day

Crashes during the study period occurred more frequently as the day went on, with 13% of crashes occurring during the morning commute time from 6am to 9am, and a peak of 20% of crashes occurring during the afternoon commute time between 3pm and 6pm (Figure 21). Relative to all crashes, FSI crashes occurred more frequently in the hours that are dark for most or all of the year, with a peak of 22% of FSI crashes occurring from 6pm to 9pm and 19% of FSI crashes occurring from 9pm to 12am. The peak for all crashes was more pronounced for VRU crashes; 26% of VRU crashes occurred from 3pm to 6pm. And the crash rate fell from the afternoon peak more slowly for VRU crashes, with 21% of VRU crashes occurring between 6pm and 9pm.

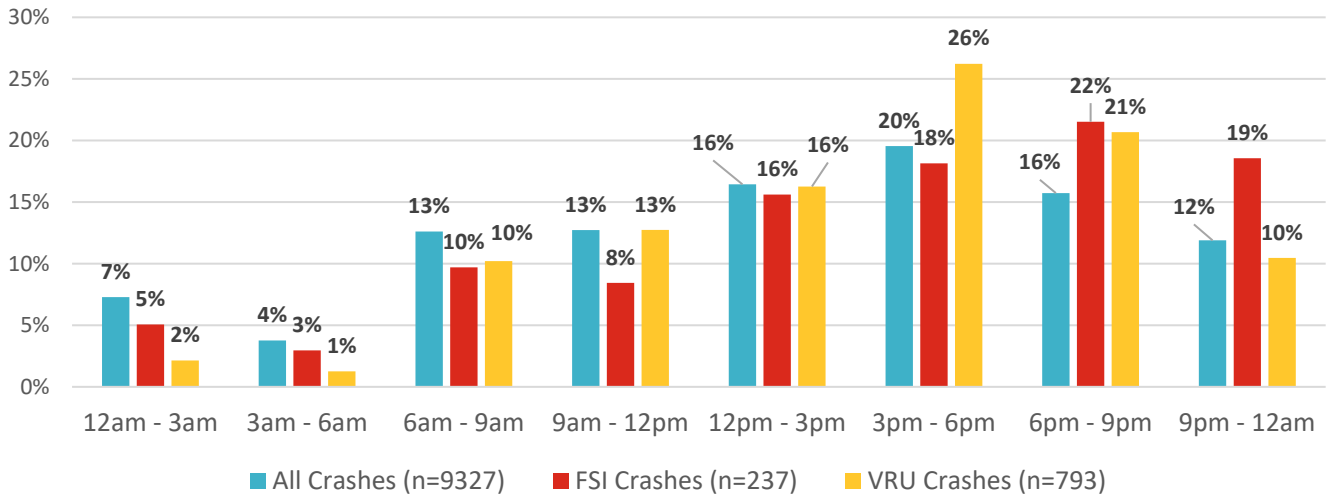


Figure 21 Crash time of day by severity and mode

Action Plan

Priority Locations for Action

High-Injury Network

The High-Injury Network is a subset of Lynn's street network where targeted safety projects and strategies have the greatest potential to reduce serious injuries and fatalities. It was created based on crash- and risk-based

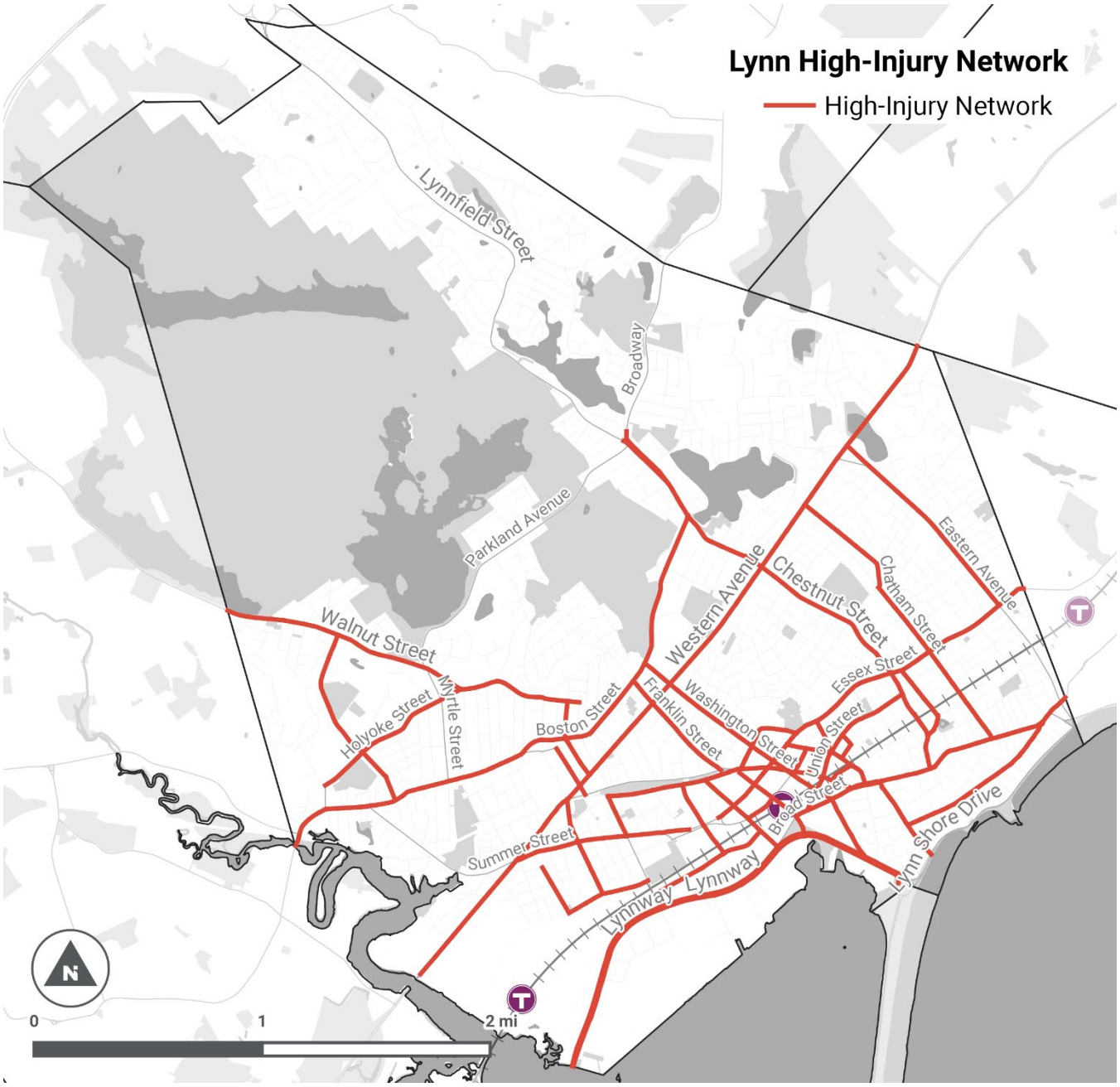


Figure 22 High-Injury Network

datasets produced by MassDOT and hosted on the MassDOT IMPACT Portal (see Appendix B). Crash- and risk-based data are both important components of safety analysis:

- **Crash-based analysis** is a reactive approach which looks at historic crash data to highlight roadways which have had relatively higher frequencies and severities of crashes in the past.
- **Risk-based analysis** is a proactive approach that identifies roadway and contextual attributes which are correlated with elevated frequency and severity of crashes. This process produces a set of risk factors associated with different types of crashes, and highlights roadways where these risk factors are present.

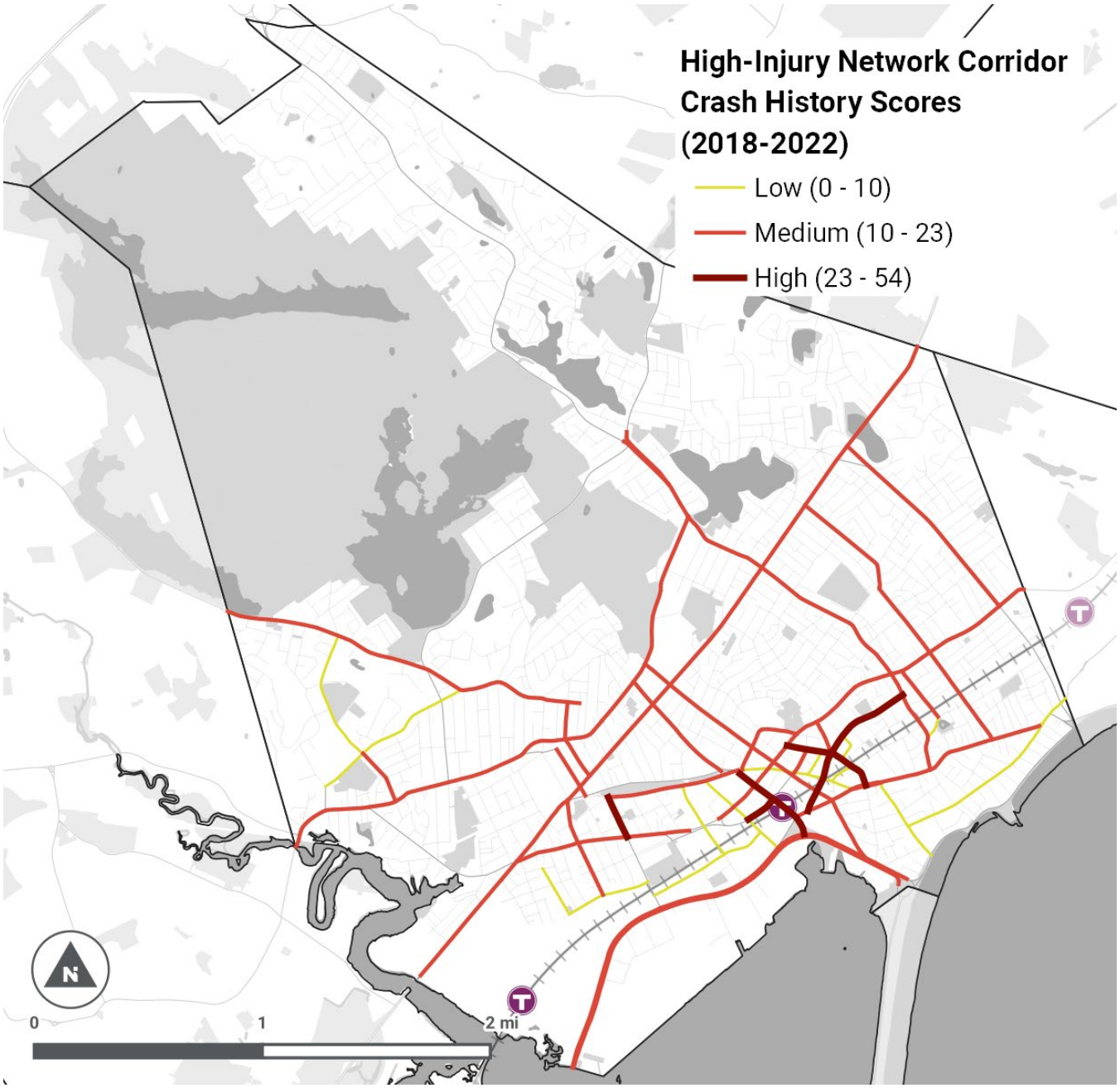


Figure 23 High-Injury Network Corridors by crash history score

Together, crash- and risk-based analysis can be used to both target locations where severe crashes have happened in the past for action, and to guide proactive action to prevent severe crashes from occurring in high-risk locations. The High-Injury Network was created primarily using risk-based datasets (see Appendix B).

Though the High-Injury Network only includes 17% of the city's streets, crashes that occurred on these streets from 2018 to 2022 accounted for about:

- 86% of fatal crashes,
- 67% of serious injury crashes,
- and 72% of VRU crashes.

Figure 23 shows High-Injury Network corridors scored by the frequency and severity of crashes that occurred along them from 2018 to 2022 (see Appendix B). While all of the streets on the High-Injury Network are high-risk for severe crashes, the City will focus action first in places where severe crashes have occurred in the past. A full list of High-Injury Network corridors is available in Appendix C.

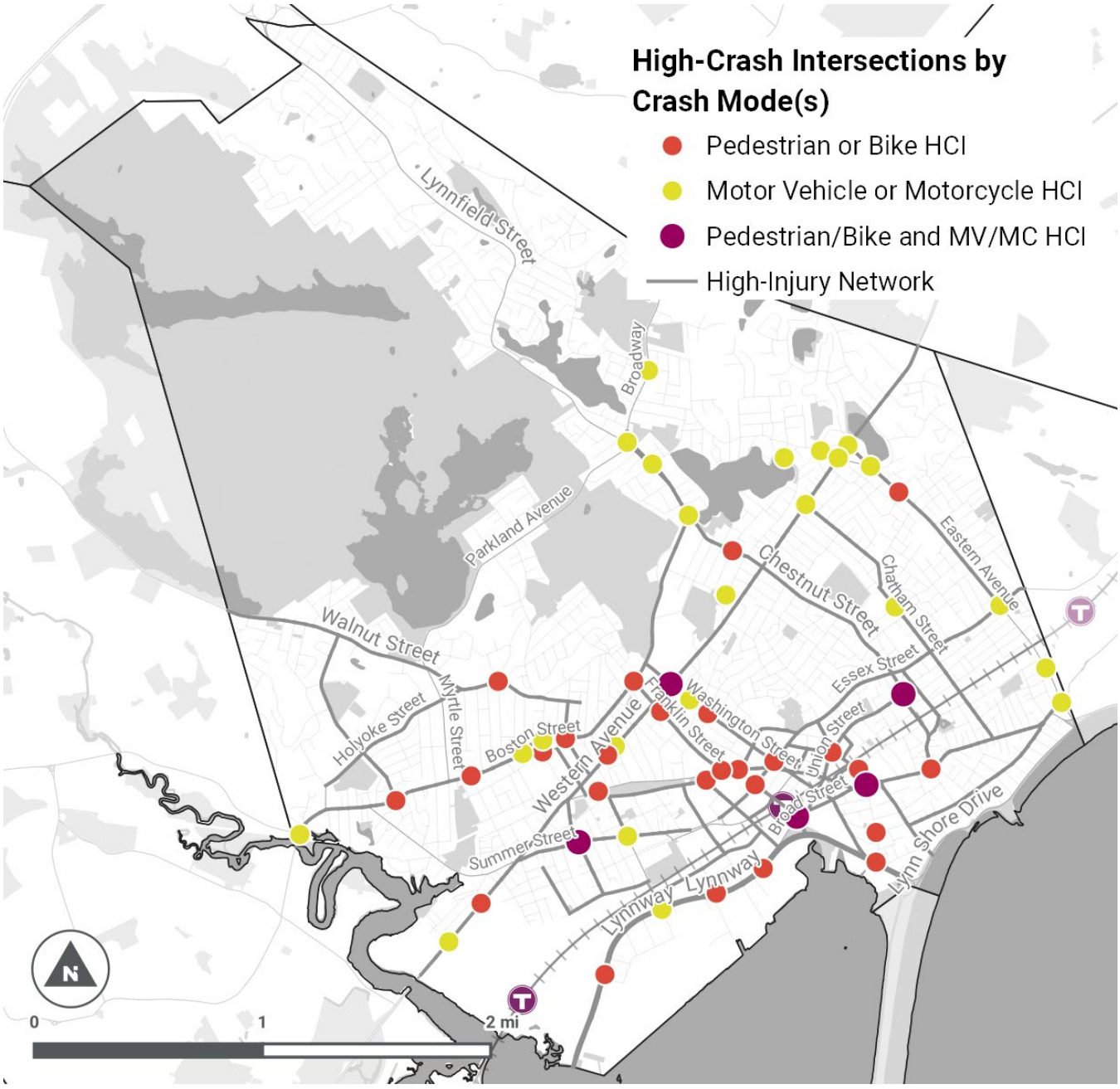


Figure 24 High-Crash Intersections by high-crash mode(s)

High-Crash Intersections

This plan also highlights High-Crash Intersections separately to capture crash hotspots outside of the High-Injury Network and single out intersections with high rates of severe crashes for more specific attention. A full list of High-Crash Intersections is available in Appendix D.

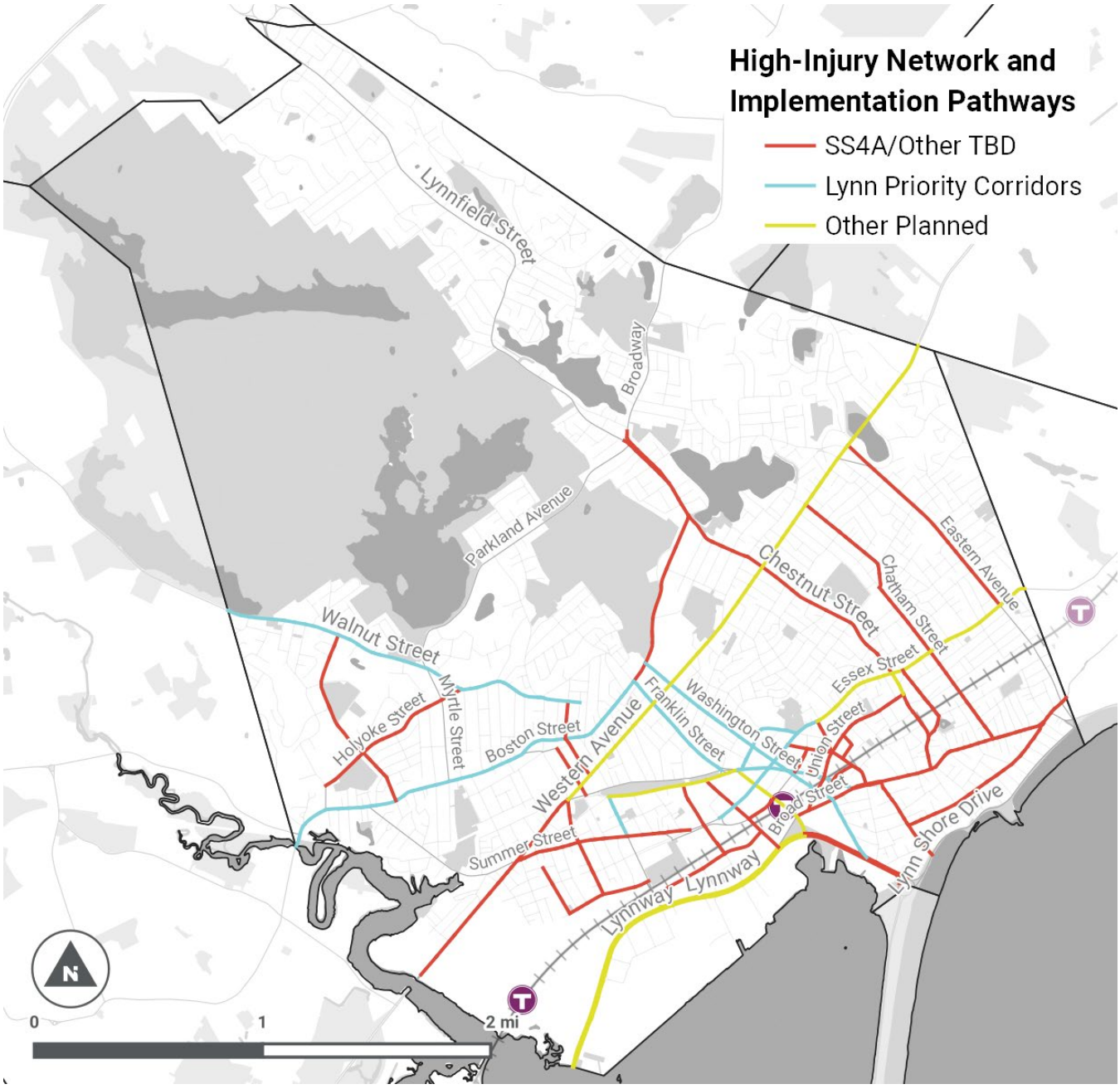


Figure 25 Implementation pathways for High-Injury Network corridors

Implementation Pathways

A number of High-Injury Network streets and High-Crash Intersections are already connected with funding for design and implementation through other projects and initiatives (Figure 25, Figure 26)[4]. In addition to the Lynn Priority Corridors initiative (see Table 1), these streets and intersections are included in the following projects:

- Essex Street Reconstruction Project: The Essex Street project will bring safety, accessibility, and operations enhancements for all road users. It is programmed for construction funding through the STIP in 2025.
- Western Avenue Complete Street Improvement Project: Western Avenue, a key commercial and residential corridor and regional connector that is managed by MassDOT, will see traffic safety improvements and

enhanced pedestrian, bike, and transit accommodations through this project. The project is programmed for construction funding through the State Transportation Improvement Program (STIP) in 2027.

- Northern Strand Extension Project: This project will extend the Northern Strand Trail, a 12-mile off-street shared-use path stretching from the inner-Boston community of Everett to Lynn, an additional 2 miles on-

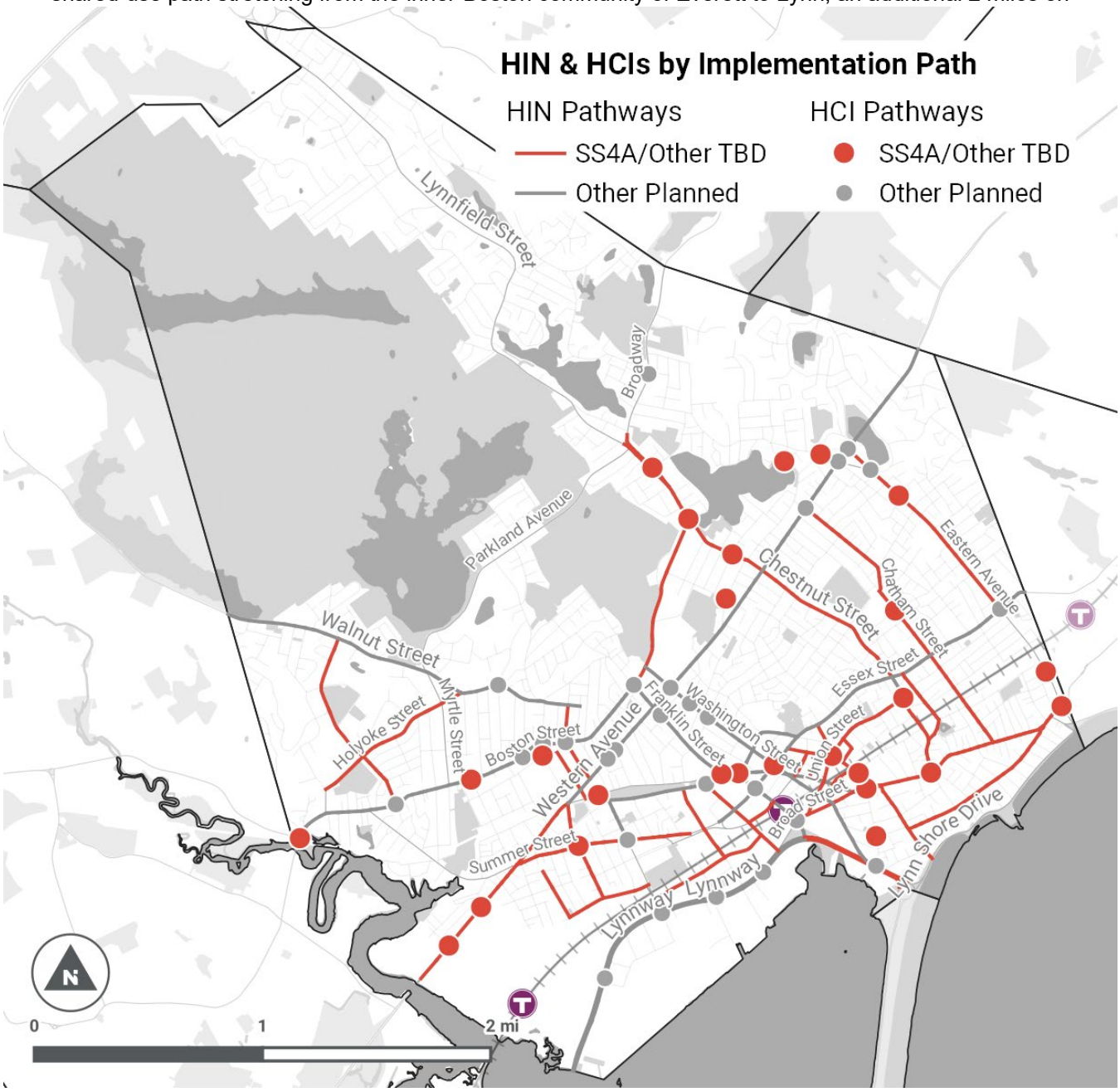


Figure 26 Implementation pathways for High-Crash Intersections

[4] Most of the High-Crash Intersections on the High-Injury Network will be addressed through the same project or initiative, except in cases where intersection upgrades are needed that go beyond the scope of a particular project.

street to Nahant Beach and the waterfront. Construction on the extension project is scheduled to begin in 2024.

- Lynnway Multimodal Corridor Project: MassDOT received $20M of funding in 2022 through the USDOT Rebuilding American Infrastructure with Sustainability and Equity (RAISE) grant program to redesign and reconstruct a segment of the Lynnway as a multimodal transit priority corridor.

Priority Locations and Equity

As discussed in the introduction, members of equity-seeking groups experience compounding vulnerabilities that put them at a higher risk of being involved in a severe crash. The High-Injury Network reflects this disproportionate risk through the risk-based safety analysis datasets that it is based upon (described in greater

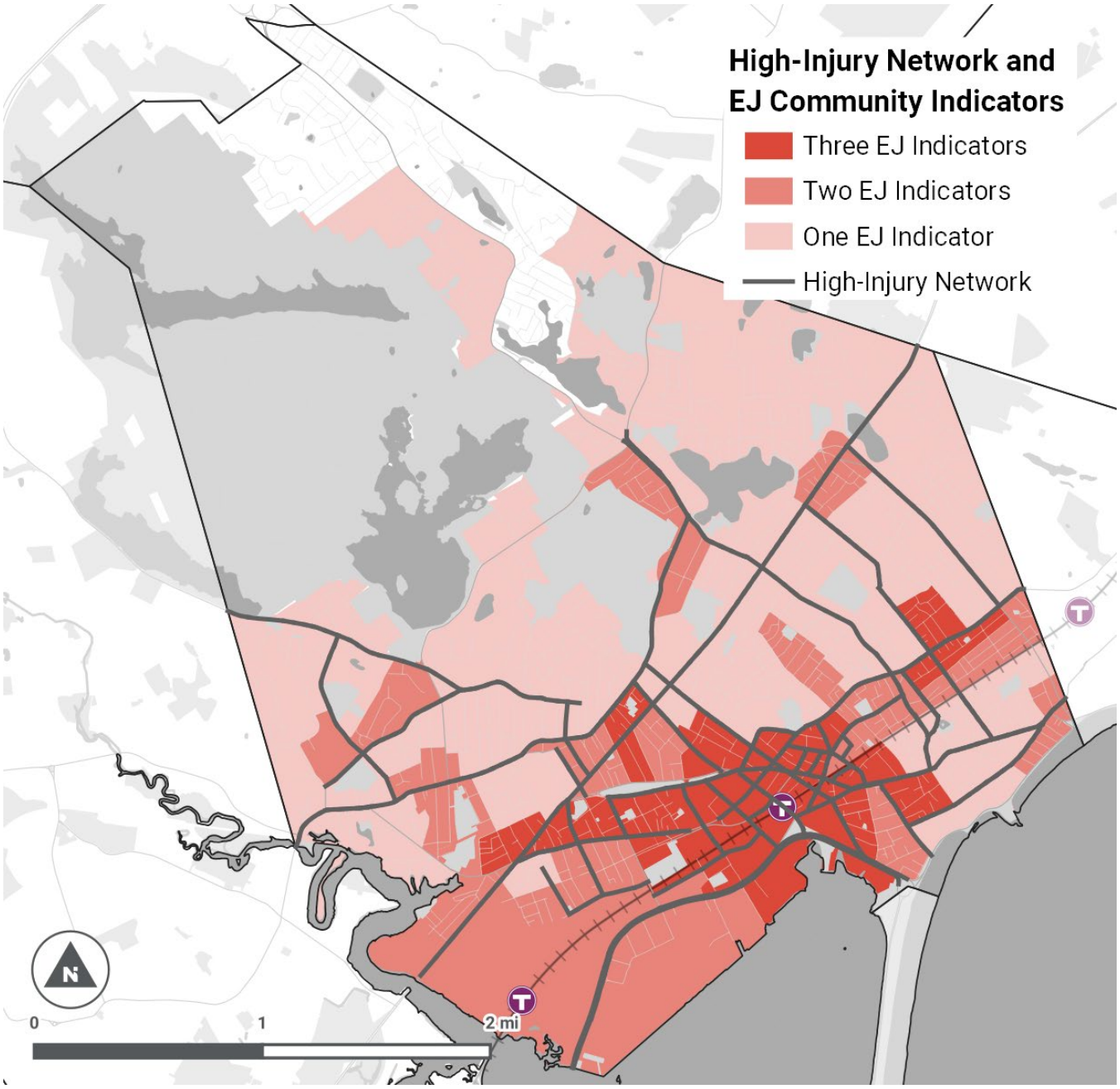


Figure 27 High-Injury Network displayed over MA Environmental Justice Community Indicators in Lynn

detail in Appendix B). The Bicycle Crash Risk and Pedestrian Crash Risk datasets incorporate demographic equity indicators that are correlated with these types of crashes, including low vehicle access, presence of two or more MA EJ Community indicators, and high share of residents working in the service industry. As such, the High-Injury Network overlaps strongly with MA EJ Community census block groups.

Systemic Safety Treatments

Achieving Lynn's Vision Zero goal will require sustained action to transform the design of the street network (see 1- Systemic Safety Implementation). The safety treatments in this section are included in the Safety Action Plan to guide this transformation. These treatments will be integrated into scoping and concept development for corridor and intersection projects in discrete locations and be implemented systemically throughout the High-Injury Network where they have the potential to address safety issues.

Implementing street design changes over a large area can contribute to culture shift by changing driver behavior and expectations throughout the network. Low-cost treatments with basic design needs and few implementation constraints or trade-offs are especially suitable for network-wide systemic intervention. Table 5 describes the systemic potential of each type of treatment, summarizing these considerations into a basic high /low evaluation. Treatments are also categorized by their approximate cost:

- Low cost: less than $50,000 per treatment per location
- Medium cost: $50,000 to $200,000 per treatment per location
- High cost: over $200,000 per treatment per location

Treatments were selected in collaboration with the Task Force based primarily on their potential to effectively reduce fatal and serious injury crashes in Lynn and their suitability to Lynn's street and land use contexts. Discussions about design treatments also considered maintenance and operations considerations and implementation methods and mechanisms.

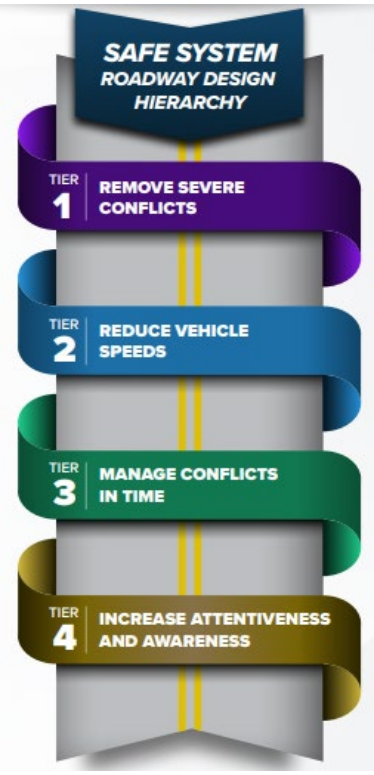


Figure 28 Summary of the Safe System Roadway Design Hierarchy

To communicate the roles and relative potential of different design treatments to reduce fatal and serious injuries crashes, each design treatment is connected with its place(s) in the Safe System Roadway Design Hierarchy. This is a framework developed by the Federal Highway Administration (FHWA) for prioritizing design treatments and strategies in transportation projects based on their alignment with the Safe System Approach. It includes four tiers that are arranged from most to least aligned with Safe System principles, recognizing physical changes to the street environment as more effective than changes that rely on individual road users to make safe decisions (Figure 28).

The treatments selected are applicable to a wide range of street contexts, summarized in Table 5 as follows:

- Local: Street within a residential neighborhood that primarily carries local traffic
- Collector: Street that connects between neighborhoods and between arterials
- Arterial: Street that connects with the wider regional transportation network and carries significant vehicle traffic

All of these treatments have demonstrated effectiveness in addressing the risk factors for serious and fatal crashes in other communities. Design treatments implemented in Lynn will be evaluated for their effectiveness (see 4 – Data Collection and Monitoring), such that over time the City can hone in and focus efforts on the highest-impact street design changes.

Table 5 Summary table of safety treatments

Treatment	Type	Contexts	Roadway Hierarchy Tier(s)	Approx. Cost	Systemic Potential
Speed Humps	Corridor	Local streets, some collector streets	Tier 2 Reduce Vehicle Speeds	Low	High
Chicanes	Corridor	Local and collector streets, some arterials	Tier 2 Reduce Vehicle Speeds	Low to medium	Low
Speed Feedback Signs	Corridor	Any; usually collector streets and arterials	Tier 4 Increase Attentiveness and Awareness	Low	High
Separated Bike Lanes	Corridor	Collector streets and arterials	Tier 1 Remove Severe Conflicts, Tier 2 Reduce Vehicle Speeds	Varies by imp. Method	Low
Mid-block crossings	Corridor	Any; best focused around commercial areas and transit stops	Tier 1 Remove Severe Conflicts, Tier 4 Increase Attentiveness and Awareness	Low to medium	High
Raised Crosswalks	Unsignalized intersection	Across local and collector streets, or across side streets along arterials	Tier 2 Reduce Vehicle Speeds, Tier 4 Increase Attentiveness and Awareness	Medium	High
Mini Roundabouts	Unsignalized intersection	Local and collector streets	Tier 2 Reduce Vehicle Speeds	Low to medium	Low
Curb Extensions	Unsignalized intersection, signalized intersection	Any; typically on streets with parking	Tier 2 Reduce Vehicle Speeds, Tier 4 Increase Attentiveness and Awareness	Low to medium	High
Left Turn Hardening	Unsignalized intersection, signalized intersection	Collector streets and arterials	Tier 2 Reduce Vehicle Speeds, Tier 4 Increase Attentiveness and Awareness	Low	High
Protected Turns	Signalized intersection	Collector streets and arterials	Tier 1 Remove Severe Conflicts	Low	High

Treatment	Type	Contexts	Roadway Hierarchy Tier(s)	Approx. Cost	Systemic Potential
Leading Pedestrian Intervals (LPIs)	Signalized intersection	Any	Tier 3 Manage Conflicts in Time	Low	High
Right on Red Restrictions	Signalized intersection	Any	Tier 1 Remove Severe Conflicts	Low	High
Convert Signal to All-way Stop	Signalized intersection	Local and collector streets; best in locations with low volumes and high frequencies	Tier 2 Reduce Vehicle Speeds	Medium	Low

Corridor Treatments

Corridor treatments are most often installed linearly along a street.

Table 6 Corridor treatment descriptions and resources

Treatment	Description and Resources	Example
Speed Humps	Encourage drivers to travel at slower speed with vertical humps (known as vertical deflection) in the street. Can reduce vehicle speeds by 20-25% when installed at 200 – 500' intervals along a corridor. Resources ▪ MassDOT Safe Speeds ▪ FHWA Traffic Calming ePrimer ▪ ITE Traffic Calming Fact Sheets	

Treatment	Description and Resources	Example
Chicanes	Encourage drivers to travel at slower speeds with curves in the path of travel (known as horizontal deflection). Can reduce speeds by 10-29%. Resources ▪ MassDOT Safe Speeds ▪ FHWA Traffic Calming ePrimer ▪ ITE Traffic Calming Fact Sheets ▪ NACTO Urban Street Design Guide: Chicanes	
Speed Feedback Signs	Relay information about current speed to drivers, increasing their awareness of speed. Can reduce speeds 2-17% on average and have demonstrated effectiveness in decreasing high-end speeding. Resources ▪ NHTSA Countermeasures That Work	
Separated Bike Lanes	Separate road users traveling at different speeds from one another, increasing safety and comfort for both bicyclists and drivers. Also narrow vehicle lanes and provide edge friction to encourage slower speeds. Can reduce bicyclist crashes by as much as 52% (figure based on conversion of existing bike lane to separated). Resources ▪ MassDOT Separated Bike Lane Planning & Design Guide ▪ NACTO Urban Bikeway Design Guide	

Treatment	Description and Resources	Example
Mid-block Crossings	Provide more opportunities to cross the street along pedestrian desire lanes, improving crossing predictability in places with high pedestrian activity. Also can increase driver awareness, lowering overall driving speeds. Resources ▪ FHWA STEP Guide to Pedestrian Safety at Uncontrolled Crossings ▪ NACTO Urban Street Design Guide: Midblock Crosswalks	

Unsignalized Intersection Treatments

Unsignalized intersection treatments are appropriate for intersections and crossings where a traffic signal is not present. Some of these treatments may also be implemented as corridor treatments, at every suitable intersection along a given street.

Table 7 Unsignalized intersection treatment descriptions and resources

Treatment	Description and Resources	Example
Raised Crosswalks	Force drivers to ramp up to the sidewalk level to traverse crosswalks, encouraging slower speeds and increased yielding to pedestrians. Also can improve pedestrian accessibility, and be implemented systemically along a corridor. Resources ▪ MassDOT Safe Speeds ▪ FHWA Traffic Calming ePrimer ▪ ITE Traffic Calming Fact Sheets ▪ FHWA STEP Guide to Pedestrian Safety at Uncontrolled Crossings	

Treatment	Description and Resources	Example
Mini Roundabouts	Slow drivers at intersections that might otherwise be all-way stop intersections, and reduce the number of potential collision points for vehicles. Resources ▪ MassDOT Safe Speeds ▪ FHWA Traffic Calming ePrimer ▪ ITE Traffic Calming Fact Sheets	
Curb Extensions	Extend the sidewalk into the street at intersections and crossings, usually for the length of one parking space from the crossing. Increase pedestrian visibility, shorten crossing distance, and tighten curb radii to encourage slower driver turning speeds. Most of these benefits can also be achieved by clearing the area one car length from the crossing (known as daylighting). Can be implemented at signalized intersections and systemically along a corridor as well. Resources ▪ MassDOT Safe Speeds ▪ FHWA Traffic Calming ePrimer ▪ ITE Traffic Calming Fact Sheets ▪ NACTO Urban Street Design Guide: Curb Extensions	
Left Turn Hardening	Force drivers to make slower, tighter left turns, increasing yielding to pedestrians. Can also be installed at signalized intersections, and targeted in locations where lane departure to make left turns is a common behavior contributing to crashes. Resources ▪ NYCDOT Turn Calming Program ▪ Arlington, VA Multimodal Safety Engineering Toolbox: Hardened Centerlines and Turn Wedges	

Treatment	Description and Resources	Example
	▪ Orlando, FL Quick Build Project Guide: Left-Turn Hardening and Slow Wedges	

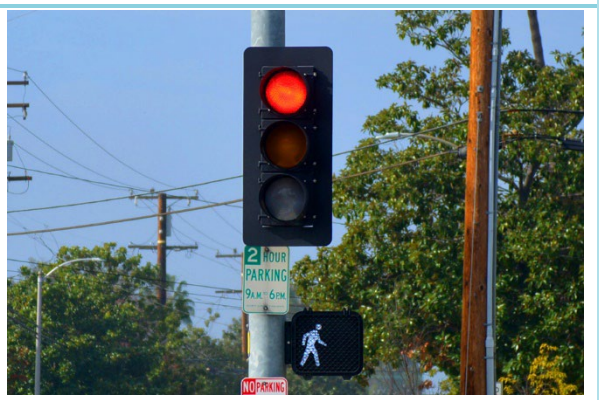
Signalized Intersection Treatments

Signalized intersection treatments are specific to intersections with traffic signals. These treatments will be installed alongside general upgrades to road markings, signage, and signal equipment, which are also important for ensuring consistency and predictability at signalized intersections. The City completed a Traffic Signal Inventory in 2020 to guide general signalized intersection upgrades.

Under the Strategies for Action, the City has committed to creating a signal policy to guide traffic signal operations citywide in a manner that facilitates safe mobility for all road users (see strategy 2.3). These treatments have the potential to be included in the signal policy, and applied network-wide where appropriate as part of its implementation.

Table 8 Signalized intersection treatment descriptions and resources

Treatment	Description and Resources	Example
Protected Turns	Give turning drivers (most commonly left-turning drivers) a dedicated signal phase to complete their turn, removing conflicts between turning drivers and pedestrians, bicyclists, and drivers traveling straight ahead. Can reduce angle crashes and rear ends, make traffic move more predictably, and reduce driver turning speeds. Resources ▪ FHWA Proven Safety Countermeasures	

Treatment	Description and Resources	Example
Leading Pedestrian Intervals (LPIs)	Give pedestrians a head start (typically of 3-7 seconds) before the light turns green for drivers, allowing them to enter the crosswalk before turning drivers and improving yielding. Resources ▪ FHWA Proven Safety Countermeasures	
Right on Red Restrictions	Reduce conflicts for pedestrians, bicyclists, and drivers, particularly at intersections where sight distance is poor or there are high volumes of pedestrian crossings. Resources ▪ FHWA PedSafe	
Convert Signal to All-way Stop	Reduces speed of drivers as they slow to a stop, looking to negotiate the intersection with other road users. Also reduces pedestrian delay at intersections. Resources ▪ FHWA Crash Modification Factor Clearinghouse	

Strategies for Action

The Strategies for Action are Lynn's plan for eliminating fatal and serious injury crashes on the city's streets. The strategies were developed in collaboration with the Task Force and cut across departments and disciplines. Implementation goes beyond one single program and will require a coordinated whole-city approach to solving traffic safety problems.

The strategies were developed to respond to opportunities and gaps identified in existing city processes, risk factors highlighted by safety analysis, and best practices for implementing the Safe System Approach tested in other communities. The strategies are organized into five themes:

1. Systemic Safety Implementation
2. Safe Street Design
3. Policy and Enforcement
4. Data Collection and Monitoring
5. Safety Culture

Timelines for each strategy are based on their potential to reduce fatal and serious injury crashes, City capacity for implementation, and funding considerations. A number of strategies do not tackle severe crashes directly but have the potential to grow capacity to sustain ongoing action towards Vision Zero. Each strategy is connected with one of the following timelines:

- Immediate: Starting implementation in 0-1 years
- Short-term: Starting implementation in 1-3 years
- Medium-term: Starting implementation in 3-5 years
- Long-term: Starting implementation in 5+ years

1 - Systemic Safety Implementation

Eliminating fatal and serious injury crashes in Lynn by 2040 begins with systemic changes to street design. Physical changes to city streets are necessary to control vehicle speeds and protect vulnerable road users. Lowering driver speeds throughout the transportation network will mean that, when crashes do inevitably occur, they are less likely to cause harm beyond property damage to the people involved. And, because vulnerable road user crashes are more likely to cause severe outcomes, prioritizing the safe mobility of VRUs is essential for achieving Vision Zero.

Figure 29 In-process curb extensions on Central Avenue in Lynn

Currently, efforts to affect change through street design changes are focused on discrete high-crash streets and intersections (see Table 1 and Implementation Pathways). This ongoing work promises to address safety issues in some of the locations in Lynn's transportation network where interventions are most urgently needed. In addition to guiding corridor and intersection projects moving forward, the strategies listed here look beyond specific locations to opportunities for network-wide transformation (see Systemic Safety Treatments). They will be targeted at and around the High-Injury Network first since these streets and intersections represent the greatest opportunity to reduce fatal and serious injury crashes.

Table 9 Strategies for Systemic Safety Implementation

#	Strategy	Type	Responsible Parties	Timeline
1.1	**Implement the safety countermeasures identified in this Action Plan systemwide throughout the High Injury Network on City-controlled streets.** In addition to any implementation projects that come from SS4A Implementation or Planning & Demonstration Grants, integrate safety countermeasures into maintenance projects, capital planning, TIP	Implementation	Lead: DPW Support: Planning, Inspectional Services, Mayor's Office, Community Development	Immediate

#	Strategy	Type	Responsible Parties	Timeline
	projects, developer mitigation, and other project delivery pathways.			
1.2	**Install more consistent street lighting throughout the High-Injury Network**, including pedestrian-scale lighting in areas with high pedestrian activity.	Implementation	Lead: Inspectional Services Support: DPW, Planning, Community Development	Immediate
1.3	**Install flashing school zone lights throughout school zones** in the city to raise awareness of the presence of children and increase compliance with reduced school zone speed limits during effective hours.	Implementation	Lead: DPW Support: Police, Schools Department	Immediate
1.4	**Create clear zones (or "daylighting") for all crosswalks citywide**, restricting parking for the 20' approaching the crosswalk to improve visibility. Start with crosswalks in downtown, around schools and important destinations for older adults, and in commercial districts. Consider using flexposts, bike parking corrals, planters, or other materials to prevent parking and stopping in the restricted spaces.	Implementation	Lead: DPW Support: Planning, Community Development	Immediate

2 - Safe Street Design

Much of the long-term evolution of streets and sidewalks is controlled by passive processes and practices. Safe Street Design strategies focus on leveraging these processes and practices to contribute to the transformation of Lynn's transportation network over time.

Figure 30 Bike lane and curb extensions on Wheeler Street

Table 10 Strategies for Safe Street Design

#	Strategy	Type	Responsible Parties	Timeline
2.1	**Coordinate with external agencies (i.e., MassDOT, DCR, MBTA) to incorporate safety treatments into projects on the High Injury Network (HIN) that are managed by those agencies.**	Implementation	Lead: Planning Support: DPW, Mayor's Office Partners: MassDOT, DCR, MBTA	Short-term
2.2	**Establish a traffic calming program to create a consistent process for traffic calming implementation throughout the city.** This would supplement action on the High-Injury Network with safety countermeasures on local roads and centralize requests from elected officials and residents. The traffic calming program might include a method for evaluating and prioritizing requests for traffic calming, a toolkit of approved traffic calming treatments, and a yearly funding allocation for implementation.	Program	Lead: DPW Support: Planning, Police, Mayor's Office	Medium-term
2.3	**Establish a signal policy to create greater consistency in signalization throughout the city and codify signal practices that promote safety for all modes.** This might include guidance on Leading Pedestrian	Policy	Lead: Inspectional Services Support: Planning, DPW	Short-term

#	Strategy	Type	Responsible Parties	Timeline
	Intervals (LPIs), the use of concurrent vs. exclusive pedestrian signal phasing, the use of automatic recall vs. push button activated pedestrian signals, and protected left turns.			

3 - Policy and Enforcement

Police enforcement has traditionally been one of the only avenues for action to manage the behavior of roadway users. In alignment with the Safe System Approach, this plan puts strategies to change behavior at the system level ahead of strategies to change behavior at the individual level. The first and best intervention that local governments can make to improve traffic safety is to build infrastructure that is designed and engineered to encourage or force safe driving behaviors and reduce the likelihood of speeding and severe crashes. Even as systemic changes to street design encourage better road user behavior and reduce the need for enforcement, however, the Lynn Police have an important role to play in responding to community concerns about traffic safety and reinforcing infrastructure change with education and enforcement when appropriate. Strategies within this theme identify opportunities for police and other forms of enforcement activities to advance traffic safety goals.

Table 11 Strategies for Policy and Enforcement

#	Strategy	Type	Responsible Parties	Timeline
3.1	**Conduct traffic enforcement around new safety and multimodal infrastructure, coordinated with a public awareness campaign, as the public adjusts to the changes.** Educate the public by conducting traffic stops and issuing verbal and written warnings and when appropriate, citations for non-compliant behavior.	Program	Lead: Police Support: Mayor's Office	Medium-term
3.2	**Enhance the Police Department's "speed feedback" program** with additional radar trailer(s) to deploy in locations with elevated perceived or recorded speeding to encourage safer speeds.	Program	Lead: Police Support: Planning, DPW	Immediate
3.3	**Better automate parking enforcement processes** (e.g., digital license plate readers) and techniques to increase enforcement of parking violations that impact safety and accessibility (e.g., parking on sidewalks, bus stops, crosswalks) outside of the core downtown area. Coordinate action on parking	Program	Lead: Parking Department Support: Planning, Police, Mayor's Office	Long-term

#	Strategy	Type	Responsible Parties	Timeline
	enforcement with the outcomes of the ongoing Downtown Lynn Parking Plan.			

4 - Data Collection and Monitoring

This Safety Action Plan represents a snapshot in time of Lynn's approach to achieving its Vision Zero goals. For the City to be successful, the City and Task Force will need to track progress towards plan implementation, monitor and respond to emerging traffic safety trends, and evaluate the effectiveness of strategies and design treatments as they are implemented. This is especially important because most of the strategies in this plan have never been tested in Lynn before. Over time, strong data collection and monitoring practices can help the City double down on the strategies and design treatments that are most effective in Lynn. Transparency with the public about progress is also important, as it creates accountability for and investment in plan implementation. Strategies within this theme establish practices that will set the City up to make better decisions about transportation investments and work towards Vision Zero in a responsive, evidence-based way.

Figure 31 Pop-up event at the Central Square Farmers Market

Table 12 Strategies for Data Collection and Monitoring

#	Strategy	Type	Responsible Parties	Timeline
4.1	**Publish an annual update on Safety Action Plan implementation and progress toward Vision Zero** following the Evaluation chapter of this plan.	Internal process	Lead: Planning Support: All Task Force offices and departments	Short-term
4.2	**Maintain a Safety Action Plan project page on the LynnInCommon engagement portal** to keep a record of the Safety Action Plan Process, centralize resources from public engagement campaigns, and host progress updates.	Internal process	Lead: Planning	Immediate
4.3	**Develop and implement a "before/after" study program.** Gather before/after data for all safety projects to evaluate the effectiveness of specific design treatments and implementation methods in Lynn. This should include speed	Policy	Lead: Planning Support: DPW	Medium-term

#	Strategy	Type	Responsible Parties	Timeline
	data, volume data, and qualitative observations about how people traveling by all modes use the street.			
4.4	**Create and maintain a spatial GIS dataset of safety countermeasure locations** to support annual reporting on plan implementation and a citywide evaluation of countermeasure effectiveness.	Internal process	Lead: Planning Support: Inspectional Services, DPW	Short-term
4.5	**Compile and digitize existing paper records and conduct an asset inventory to develop a spatial database** of sidewalks, crossings, street lighting, and other infrastructure in the public right-of-way.	Internal process	Lead: Inspectional Services Support: DPW, Planning, Community Development	Medium-term
4.6	**Hold quarterly meetings of the Lynn Traffic Safety Task Force**, established in 2023, to coordinate among departments for Safety Action Plan implementation and monitor ongoing and emergent traffic safety issues.	Internal process	Lead: Planning Support: All Task Force offices and departments	Immediate

5 - Safety Culture

Vision Zero and the Safe System Approach are grounded in the belief that even one fatal or serious injury crash is too many. Shifting to this framework, and away from the conventional understanding of severe crashes as inevitable, will be essential for generating sufficient public buy-in to carry forward the Safety Action Plan. A strong safety culture in Lynn should also encourage all road users to fulfill their responsibility to behave safely.

Figure 32 Young person riding a bike on the Lynn Community Path

Table 13 Strategies for Safety Culture

#	Strategy	Type	Responsible Parties	Timeline
5.1	**Conduct a public awareness campaign or campaigns about traffic safety, especially around Safety Action Plan implementation projects on the High-Injury Network.** This might include creating partnerships with community-based organizations for multilingual and culturally resonant outreach, distributing Vision Zero-branded giveaways, and pop-ups at existing events like LynnSide Out.	Program	Lead: Planning Support: Mayor's Office Partners: Community-based organizations	Short-term
5.2	**Enhance Transportation Demand Management programs in Lynn** through coordination with developers and the North Shore TMA.	Program	Lead: Planning Support: Community Development Partners: North Shore TMA	Long-term
5.3	**Establish a formal Safe Routes to School program and foster greater involvement in MassDOT SRTS programs among Lynn schools**, with a particular focus on pick-up and drop-off planning and youth traffic safety education.	Program	Lead: School Department Support: Planning, Police, Mayor's Office Partner: MassDOT	Medium-term
5.4	**Assemble a Vision Zero training module based on readily available resources** for relevant staff in the Planning, Public Works, Police, and Inspectional Services department to spread awareness internally of Vision Zero principles and traffic safety approaches.	Internal process	Lead: Planning	Medium-term

Reporting and Evaluation

A number of Strategies for Action revolve around data collection and evaluation, progress tracking, and public transparency. In particular, the City has committed to publishing an annual update on Safety Action Plan implementation and progress toward Vision Zero goals (see strategy 4.1). The City will collect and aggregate data and updates on metrics related to annual crash trends and the implementation of Safety Action Plan strategies as outlined in Table 14. Though the development of the report will be led by the Planning Department, data will be collected and organized in collaboration with other departments represented on the Task Force.

Table 14 Metrics for annual reporting

Category	Metric(s)	Responsible Parties	Notes
Yearly crash trends	Annual FSI crashes Annual VRU crashes	Planning Department	▪ Data is available on the MassDOT IMPACT Portal dashboards ▪ Consider including a map of annual FSI and VRU crashes ▪ Consider including most recent 5 years of data for comparison
Implementation of Strategies for Action	Share of strategies implemented or started by theme	All Task Force departments	▪ Consider also qualitatively describing progress toward implementing each strategy
Systemic safety treatment implementation	Number of systemic treatments implemented by type Number of roadway projects completed that include systemic treatments	Department of Public Works / Planning Department	▪ Geospatial data record of systemic treatments to be created as part of strategy 4.4 ▪ Consider including a map of systemic treatments and the High-Injury Network
Transportation equity	Share of systemic treatments implemented in U.S. Census Block Groups with 2 or more MA EJ Community flags Share of FSI crashes that involved VRUs	Planning Department	▪ Geospatial data record of systemic treatments to be created as part of strategy 4.4 ▪ MA EJ community data can be viewed or downloaded online
Mode shift	Change in walking, biking, or transit mode following systemic treatment or corridor project implementation	Planning Department	▪ Mode data can be difficult to obtain; annual updates may not be feasible ▪ Can collect, compile, and evaluate this data as part of before/after studies ▪ Could also pursue mode shift as a citywide metric if additional data sources become available (road user count programs, big data, etc.)
Public engagement reach	Number of people engaged in transportation safety campaigns, initiatives, and projects Number of community-based organizations involved in engagement	Planning Department, Community-based organization partners	

Appendices

- Appendix A: Lynn Vision Zero Resolution
- Appendix B: Safety Analysis Data Sources and Methodologies
- Appendix C: High-Injury Network Corridors
- Appendix D: High-Crash Intersections

APPENDIX A: LYNN VISION ZERO RESOLUTION

CITY OF LYNN

In City Council MARCH 26, 2024

A RESOLUTION THAT THE CITY OF LYNN SHALL WORK IN PARTNERSHIP WITH MASSDOT TO COMPLETE A ROADWAY SAFETY ACTION PLAN THAT INCLUDES VISION ZERO GOAL WITHIN THE CITY OF LYNN

BE IT RESOLVED: The City Council of the City of Lynn finds that:

WHEREAS The City of Lynn adopted a Complete Streets policy on December 15, 2015, which mandated that all public streets be designed to safely accommodate all roadway users, including people who drive, walk, bike, or use public transportation and including users of ranging in ability;

WHEREAS The City has allocated funding, and sought additional funding sources, to implement roadway improvements that meet the Complete Street standard and made significant strides in making our roadway system safe for all users;

WHEREAS The City has conducted several planning efforts in coordination with Massachusetts Department of Transportation (MassDOT) to improve transportation access and safety for all modes including the Lynn Transit Action Plan (LTAP – 2021), and The Safe Streets for People Playbook (Safe Streets – 2022);

WHEREAS These planning efforts have established that there remains a large number of high crash locations, pedestrian crash clusters, and bicycle crash clusters as defined by the Highway Safety Improvement Program (HSIP) program, and has prioritized a number of corridors for roadway safety improvements;

WHEREAS Seventeen (17) accidents have occurred in Lynn where people have lost their life and nearly 200 accidents have occurred including serious injury over a five-year period (2019-2023);

WHEREAS The City of Lynn is working in partnership with MassDOT to complete a roadway Safety Action Plan that includes Vision Zero Goal;

WHEREAS Vision Zero is a comprehensive approach and commitment to designing City Streets with a goal to eliminate transportation related fatalities and severe injuries; and

WHEREAS Development of the Safety Action Plan is a collaborative effort across several departments including Planning, Community Development, Public Works, Inspectional Services, Police, Fire, and in partnership with the Mayor's office and Lynn City Council; and

NOW, THEREFORE, BE IT HEREBY RESOLVED

1. That the City of Lynn commits to a goal of zero deaths and serious injuries that are a result of crashes on City streets by 2040.

2. That the City will complete the Lynn Safety Action Plan, and commit to regular reporting and evaluation of progress on meeting the Vision Zero goal at least every two years upon completion.

3. That the City will regularly update the Safety Action Plan based on bi-annual assessment and adapt to underlying conditions and evolving needs of the City to ensure the Vision Zero goal is achieved.

VISION ZERO GOAL
(Roadway Safety Action Plan)
RESOLUTION

Offered by Councilor **FIELD**

In City Council

Date: MARCH 26, 2024

Date Adopted:

Councilor	YES	NO
Alinsug	X	
Chakoutis	X	
Field	X	
Hogan	X	
LaPierre	X	
Matul	X	
McClain	X	
Meaney	X	
Megie-Maddrey	X	
Walsh	X	
TOTAL	11	

Janet L. Rowe

Janet L. Rowe, City Clerk

Date Approved: 3/28/24

Jared C. Nicholson, Mayor

In City Council

Immediate Reconsideration

Notice of Reconsideration

Councilor	YES	NO
Alinsug	☐	☐
Chakoutis	☐	☐
Field	☐	☐
Hogan	☐	☐
LaPierre	☐	☐
Matul	☐	☐
McClain	☐	☐
Meaney	☐	☐
Megie-Maddrey	☐	☐
Net	☐	☐
Walsh	☐	☐

Referred to All Departments

MARCH 27, 2024

A TRUE COPY ATTEST:
Janet L. Rowe
CITY CLERK

APPENDIX B: SAFETY ANALYSIS DATA SOURCES AND METHODOLOGIES

TOOLE DESIGN

2 OLIVER STREET
SUITE 305
BOSTON, MA 02109

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TOOLEDESIGN.COM

MEMORANDUM

Re: Lynn Safety Action Plan – Safety Analysis Data Sources and Methodologies

Crash Data Background and Limitations

Data Source

In Massachusetts, law enforcement officers investigating a roadway crash on a public way that either involves an injury or more than $1,000 in damage fill out a crash report. The report form prompts responding police officers to document information about the persons involved, location, crash factors, and many other crash attributes. These attributes are collected and reported through the MassDOT IMPACT Portal. This study covers all crash data from 2018 to 2022 within the limits of Lynn, MA. The data was downloaded from the IMPACT portal in August 2023.

Limitations

Exposure Data. The analyses reported in this memo do not adjust for motor vehicle, pedestrian, or bicyclist exposure rates based on volumes for these modes. Therefore, results show crash events but not frequency of crashes normalized by level of traffic or pedestrian and bicyclist volumes, which is also referred to as exposure.

As an example, bicyclist crashes often occur more often in daylight than in dark conditions. This does not mean that daylight conditions are inherently more dangerous than dark conditions. Rather, it indicates that people are more likely to choose to ride a bike in light conditions than in dark conditions.

Crash Data Reporting. These analyses rely on whether and how crashes were reported to MassDOT. It is impossible to know how many crashes go unreported and whether some types of crashes are reported more than others. For example, since repairing a damaged bicycle are more likely to be less expensive than damage to a motor vehicle, a higher share of bicyclist crashes may not meet the $1,000 threshold of required reporting. The risk-based analysis used to create the High-Injury Network was intended to compensate for the assumed underreporting by looking beyond the history of reported crashes to highlight places where land use, demographic, and street design characteristics are correlated with serious crashes.

Attributes in the crash data are also dependent on how crash reports were filled out by the investigating police officer. These fields may be filled out differently across different responding police departments, or even between different individual officers. Some fields may be less likely to be filled out correctly, or filled out at all, compared to other fields.

In the downloaded dataset, 106 crashes (1.1%) were not geocoded. For consistency with the spatial data used in other analyses, these crashes were not included in the historic crash data study.

High-Injury Network Methodology

The High-Injury Network was based on the crash- and risk- based network tools developed by MassDOT and hosted on the MassDOT IMPACT Portal. The datasets used in the High-Injury Network analysis and their respective weights are summarized in Table 1. These datasets were chosen to expand upon patterns in historic fatal and serious injury crashes with risk-based analysis.

Table 1 Datasets included in High-Injury Network analysis

Dataset	Type	Base Study Period[1]	Weight
Pedestrian Crash Risk Segments	Risk-based	2017 – 2021	2 points per "secondary risk segment" and 4 points per "primary risk segment"
Bicycle Crash Risk Segments	Risk-based	2017 – 2021	2 points per "secondary risk segment" and 4 points per "primary risk segment"
Speeding Crash Risk Segments	Risk-based	2013 – 2017	2 points per "secondary risk segment" and 4 points per "primary risk segment"
Excess Expected Crashes (Fatal and Injury)	Crash-based	2017 – 2021	4 points per "Top 5" segment and 2 points per "Next 10" segment

This analysis resulted in the corridor scores shown in Figure 1. The cutoff score for inclusion in the High-Injury Network was 4. Additional segments were added to the network to fill gaps, and Holyoke Street and O'Callaghan Way were added to the High-Injury Network in response to feedback from the Task Force. These streets are both transit corridor and important routes to a number of parks, athletic facilities, and schools, including for residents of adjacent public housing developments. They were added to the High-Injury Network in recognition of the importance of these destinations, anecdotal accounts of unsafe conditions, and several pedestrian crashes that occurred here outside the study period in 2023, including at least one involving a child.

[1] As of April 2024, the crash- and risk- based datasets available on the MassDOT IMPACT Portal are based on excess crash analysis and risk factors derived from the years 2013 to 2017. For the purposes of this study, the City of Lynn acquired datasets based on 2017 – 2021 crash data that was not yet available to the public. The exception was the Speeding Crash Risk Segments dataset, which was based on 2013 – 2017 crash data. While it is possible that the risk factors correlated with speeding-related crashes evolved in the intervening years, the risk factors themselves are primarily demographic and roadway characteristics that change slowly over time.

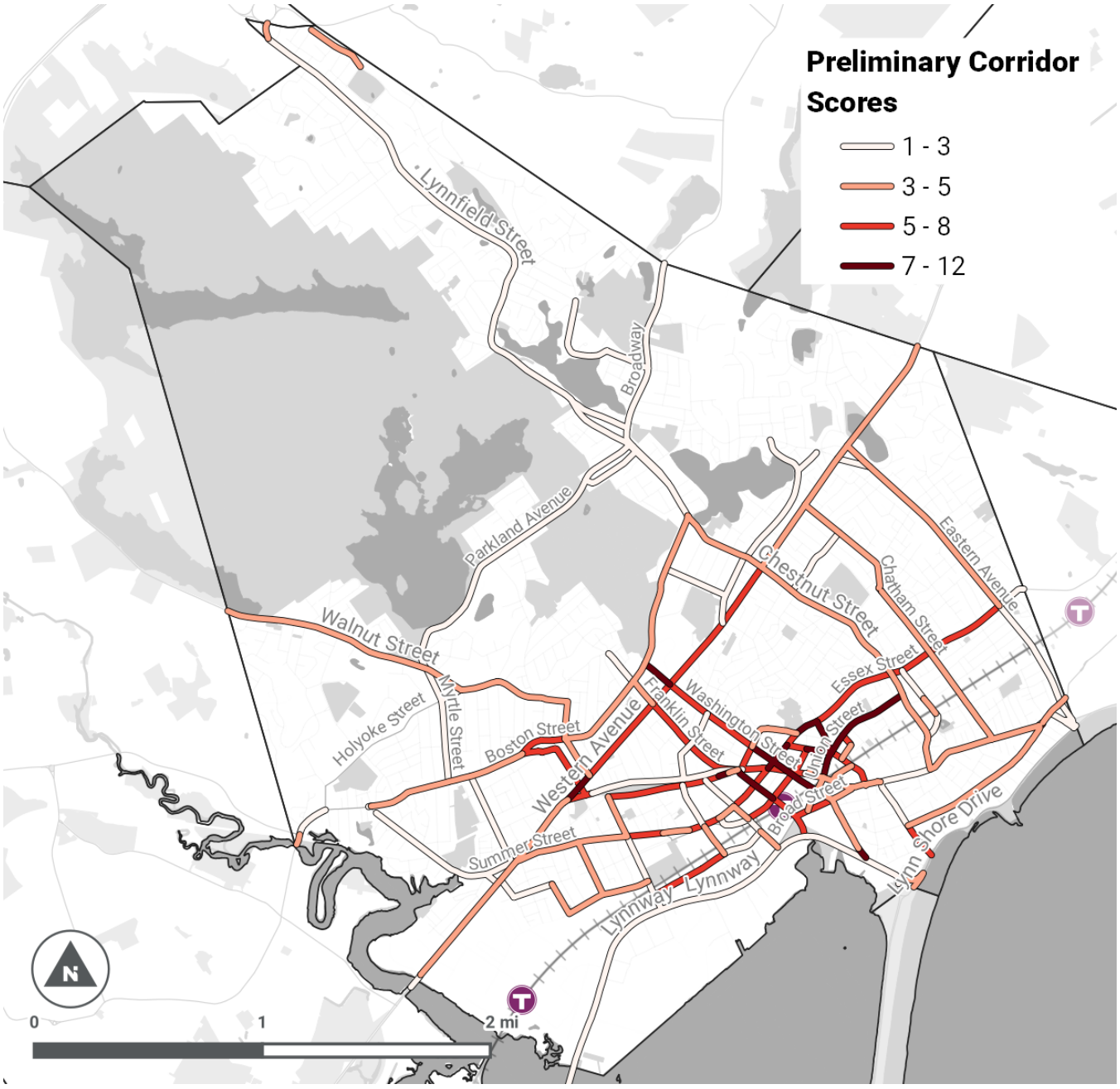


Figure 1 Corridor scores based on datasets and weights described in Table 1

Because High-Injury Network development relied primarily on risk-based datasets, the corridors were also given a crash history score based on crash data from the 2018 – 2022 study period. This was to support prioritization and target short-term action in locations where injury- and fatality-crashes have occurred already, before expanding focus to high-risk locations with less serious crash history. Corridors were scored using the crash types and weights described in Table 2 and normalized by length.

Table 2 Crash severities and weights for High-Injury Network crash history score

Crash Code	Crash Severity	Weight
K	Crashes involving a fatality	10 points
A	Crashes involving a serious injury	5 points
B	Crashes involving a non-capacitating injury	1 point

High-Crash Intersection Methodology

High-Crash Intersections were identified using crash data from 2018 – 2022. All intersections in Lynn were scored based on crashes weighted by severity (Table 3). Differences between the weighting schemes for the High-Injury Network and the High-Crash Intersections reflect the smaller crash dataset of only intersection crashes used in the latter analysis.

Table 3 Crash severities and weights for intersection scores

Crash Code	Crash Severity	Weight
K	Crashes involving a fatality	3 points
A	Crashes involving a serious injury	3 points
B	Crashes involving a non-capacitating injury	1 point

Cutoff scores were selected by mode, such that the threshold could be lower for intersections where serious crashes have occurred involving vulnerable users. High-Crash Intersections for motor vehicle crashes had a cutoff score of 9, for motorcycle crashes a cutoff score of 4, and for pedestrian and bicyclist crashes a cutoff score of 3.

To ensure that all MassDOT Top Crash Locations (Top 200 Crash Clusters 2018 – 2020 and Top 5% Intersection Crash Clusters) would be addressed within the Safety Action Plan, any Top Crash Locations that did not qualify by the criteria above and were not on High-Injury Network corridors were added to the High-Crash Intersections list. The following intersections were added to the High-Crash Intersections list in response to feedback from the Task Force:

- Boston Street at Hamilton Street: This location fell just short of the threshold for High-Crash Intersections for motor vehicle crashes and was added due to anecdotal safety issues and complaints from the public. Additionally, this intersection is directly adjacent to an access point to the Northern Strand Trail.
- Eastern Avenue at New Ocean Street: This location also fell just short of the threshold for High-Crash Intersections for motor vehicle crashes. It was added due to comments from Task Force members about frequent vehicle collisions with signal equipment and the potential risk to pedestrians on the sidewalk waiting to cross.

APPENDIX C: HIGH-INJURY NETWORK CORRIDORS

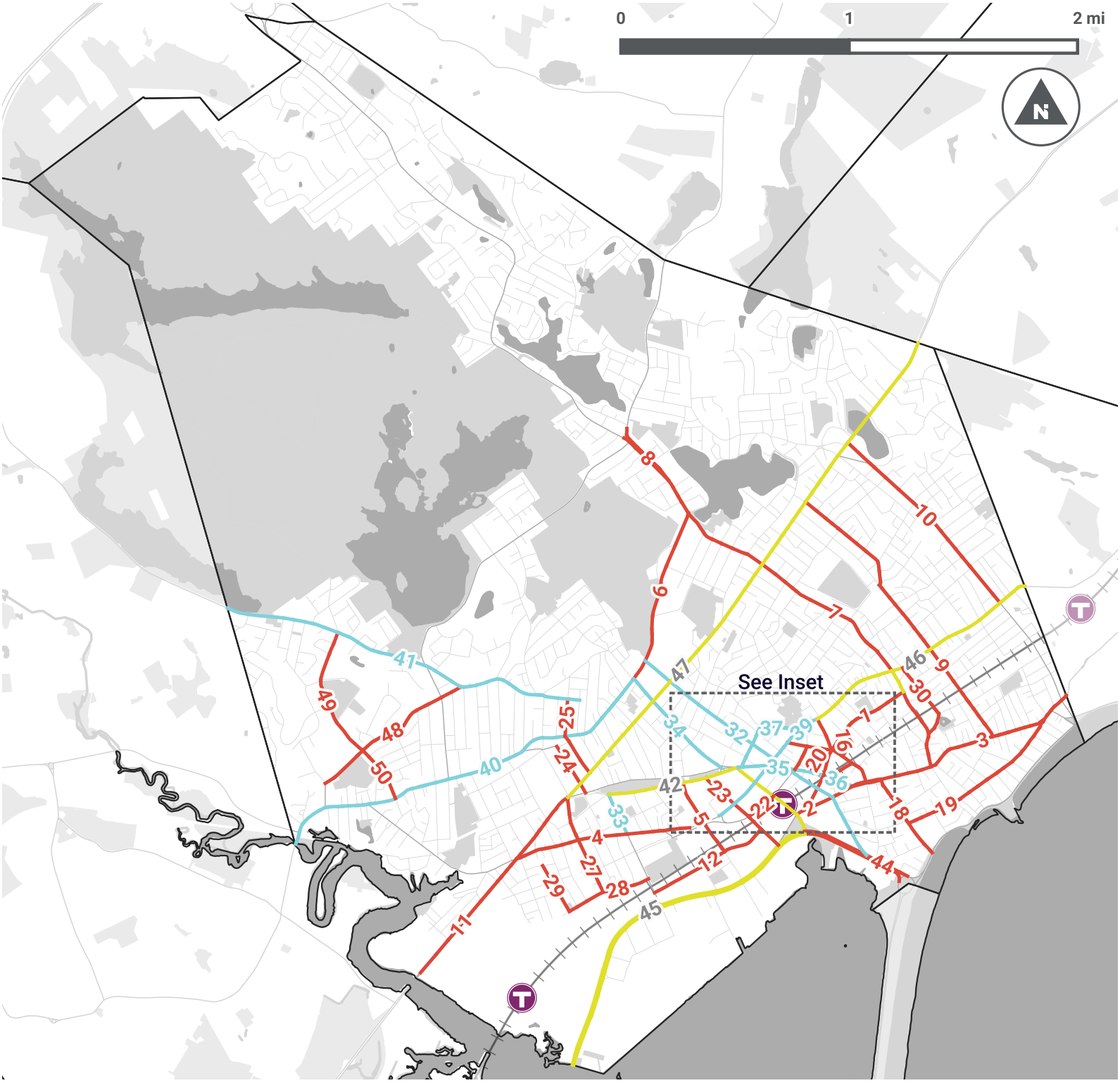
High-Injury Network Corridors

Crash Score Tiers

Tier	Range
Low	0 - 10
Medium	10 - 23
High	23 - 54

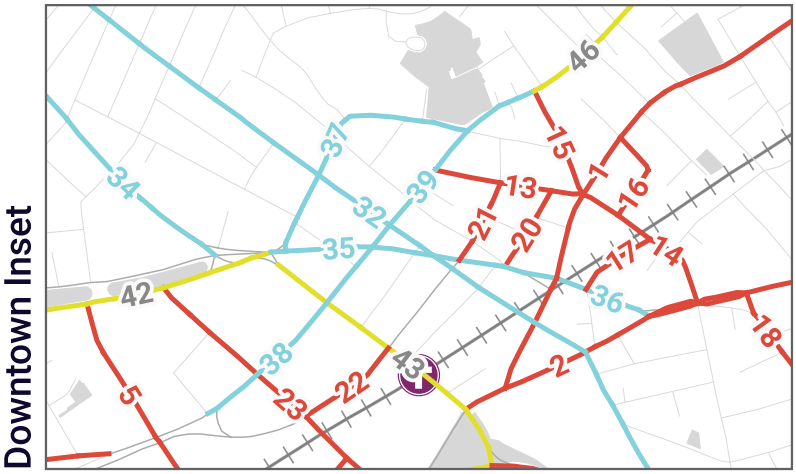
Map ID	Street Name	Limits	Implementation Pathway	Jurisdiction	FSI Crashes 2018-2022	Crash Score	Crash Score Tier
1	Union Street	Broad Street to Chestnut Street	SS4A	Local	8	27	High
2	Broad Street	Market Street to Chestnut Street	SS4A	Local	10	23	Medium
3	Lewis Street	Chestnut Street to Ocean Street	SS4A	Local	6	19	Medium
4	Summer Street	Western Avenue to Neptune Boulevard	SS4A	Local	4	18	Medium
5	Blossom Street	South Common Street to Alley Street	SS4A	Local	1	9	Low
6	Boston Street (east)	Franklin Street to Broadway	SS4A	Local	6	19	Medium
7	Chestnut Street	Broad Street to Boston Street	SS4A	Local	11	16	Medium
8	Broadway	Boston Street to Parkland Avenue	SS4A	Local	4	19	Medium
9	Chatham Street	Lewis Street to Western Avenue	SS4A	Local	9	15	Medium
10	Eastern Avenue	Essex Street to Western Avenue	SS4A	Local	7	18	Medium
11	Western Avenue (south)	Market Square to Saugus TL	SS4A	MassDOT	6	17	Medium
12	Alley Street	Commercial Street to Pleasant Street	SS4A	Local	0	3	Low
13	Buffum Street	Liberty Street to Union Street	SS4A	Local	3	26	High
14	Silsbee Street	Union Street to Broad Street	SS4A	Local	8	54	High
15	Baldwin Street	Essex Street to Union Street	SS4A	Local	2	23	Medium
16	School Street/Ellis Street	Union Street to Silsbee Street	SS4A	Local	0	6	Low
17	Mt. Vernon Street	Exchange Street to Silsbee Street	SS4A	Local	0	5	Low
18	Nahant Street	Broad Street to Lynn Shore Drive	SS4A	Local	0	2	Low
19	Ocean Street	Nahant Street to Swampscott TL	SS4A	Local	0	3	Low
20	Blake Street	Central Avenue to Buffum Street	SS4A	Local	0	2	Low
21	Oxford Street	Buffum Street to Market Street	SS4A	Local	1	15	Medium
22	State Street	Pleasant Street to Market Street	SS4A	Local	3	33	High
23	Pleasant Street	South Common Street to Lynnway	SS4A	Local	0	4	Low
24	Centre Street	Marion Street to Market Square	SS4A	Local	2	14	Medium
25	Moulton Street	Walnut Street to Boston Street	SS4A	Local	2	16	Medium
26	Brookvale Street	Boston Street to Western Avenue	SS4A	Local	1	13	Medium
27	South Street	Bennett Street to Market Square	SS4A	Local	1	14	Medium
28	Bennett Street	Commercial Street to Elmwood Avenue	SS4A	Local	0	4	Low
29	Elmwood Avenue	Bennett Street to Houghton Street	SS4A	Local	0	0	Low
30	Fayette Street	Essex Street to Bloomfield Street	SS4A	Local	1	13	Medium

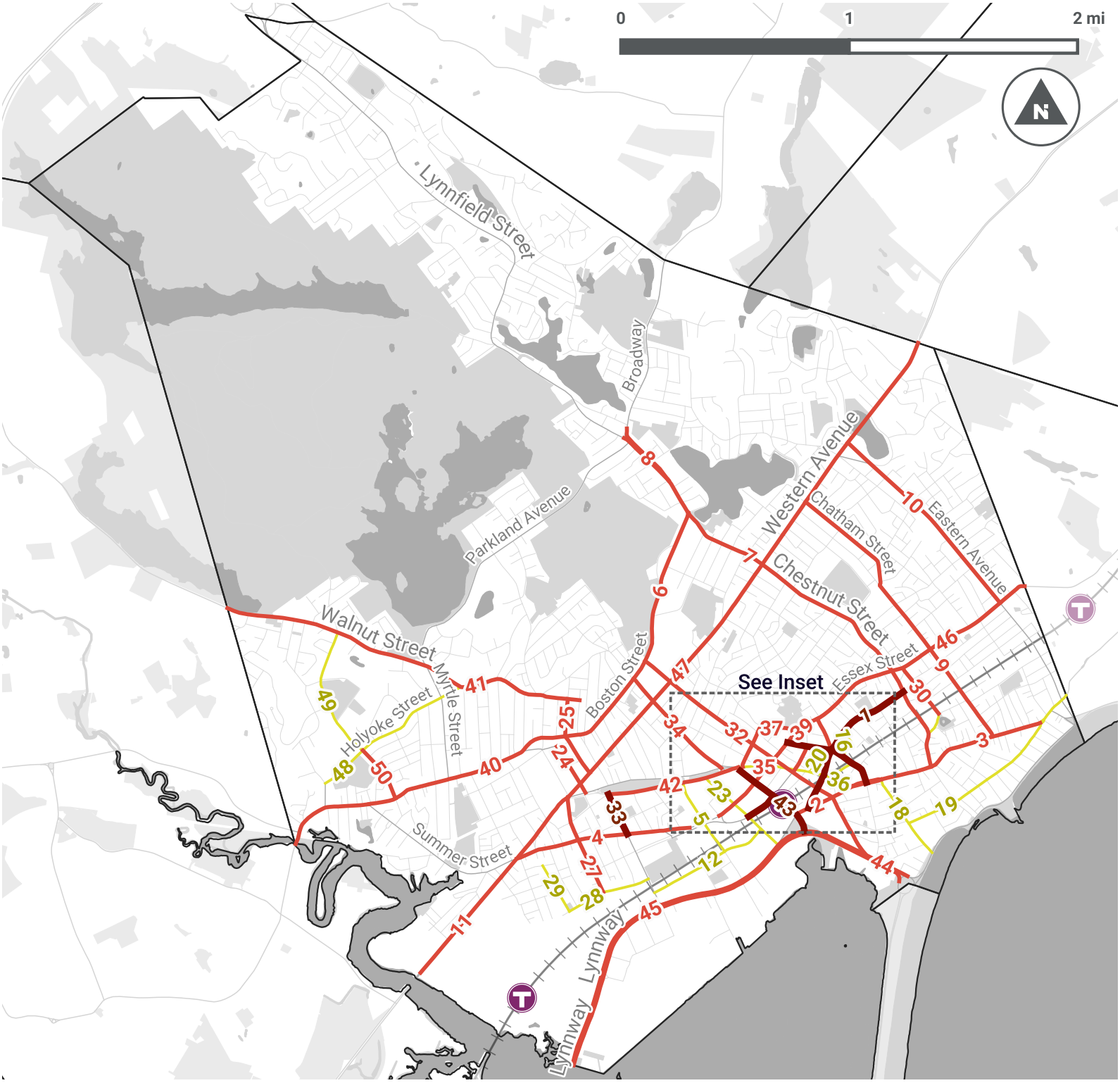
Map ID	Street Name	Limits	Implementation Pathway	Jurisdiction	FSI Crashes 2018-2022	Crash Score	Crash Score Tier
31	Lafayette Park	Chestnut Street to Bloomfield Street	SS4A	Local	0	4	Low
32	Washington Street	Boston Street to Lynnway	Lynn Priority Corridors	Local	12	21	Medium
33	Commercial Street	South Common Street to Summer Street	Lynn Priority Corridors	Local	2	34	High
34	Franklin Street	Boston Street to City Hall Square	Lynn Priority Corridors	Local	4	18	Medium
35	Central Avenue	City Hall Square to Union Street	Lynn Priority Corridors	Local	1	10	Low
36	Exchange Street	Union Street to Broad Street	Lynn Priority Corridors	Local	0	7	Low
37	Essex Street	Central Avenue to Liberty Street	Lynn Priority Corridors	Local	2	12	Medium
38	Tremont Street	Wheeler Street to Market Street	Lynn Priority Corridors	Local	2	14	Medium
39	Liberty Street	Market Street to Baldwin Street	Lynn Priority Corridors	Local	5	21	Medium
40	Boston Street (west)	Franklin Street to Saugus TL	Lynn Priority Corridors	Local	12	18	Medium
41	Walnut Street	Cedar Street to Saugus TL	Lynn Priority Corridors	Local	8	11	Medium
42	South Common Street	Market Square to City Hall Square	Northern Strand Extension	Local	4	13	Medium
43	Market Street	City Hall Square to Lynnway	Northern Strand Extension	Local	7	29	High
44	Lynnway (east)	Market Street to Nahant Circle	SS4A	DCR	4	8	Low
45	Lynnway (west)	Market Street to Saugus TL	RAISE Grant	DCR	11	7	Low
46	Essex Street	Baldwin Street to Swampscott TL	TIP Project	Local	10	21	Medium
47	Western Avenue (north)	Market Square to Salem TL	TIP Project	MassDOT	23	22	Medium
48	Holyoke Street	Winnepurkit Avenue to Walnut Street	SS4A	Local	2	6	Low
49	O'Callaghan Way	Walnut Street to Boston Street	SS4A	Local	1	4	Low
50	Keslar Avenue	Holyoke Street to Boston Street	SS4A	Local	1	12	Medium



Lynn High-Injury Network Implementation Pathways

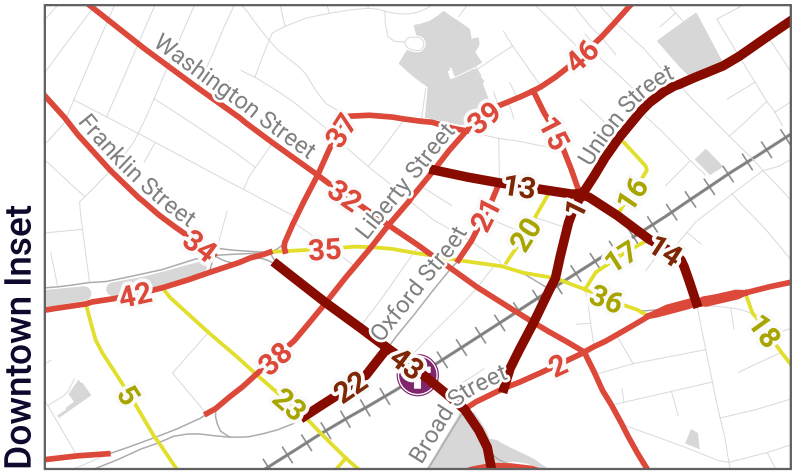
- SS4A/Other TBD
- Lynn Priority Corridors
- Other Planned





High-Injury Network Corridor Crash History Scores (2018-2022)

- Low (0 - 10)
- Medium (10 - 23)
- High (23 - 54)

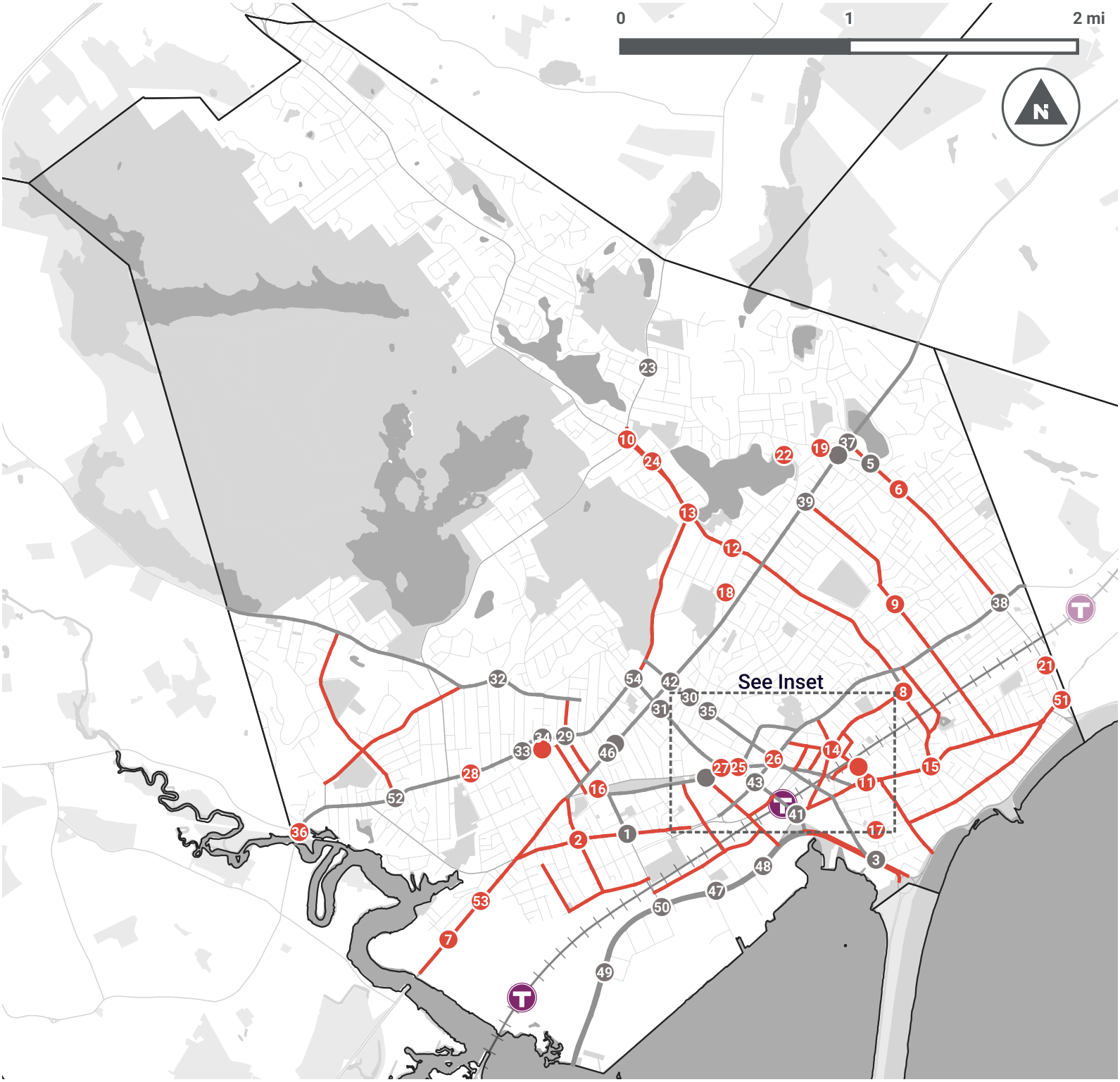


APPENDIX D: HIGH-CRASH INTERSECTION METHODOLOGIES

High-Crash Intersections

Map ID	Name	Traffic Control	High Crash Mode(s)	Implementation Pathway
1	Commercial Street/Summer Street	Signal	Motor Vehicle	Priority Corridors
2	South Street/Summer Street	Signal	Motor Vehicle, Pedestrian	SS4A/Other TBD
3	Lynnway/Newhall Street	Signal	Pedestrian	Other Planned
4	Friend Street/Silsbee Street	None	Pedestrian	SS4A/Other TBD
5	Eastern Avenue/Victory Road/Waitt Avenue	Minor-road stop	Motorcycle	Other Planned
6	Eastern Avenue/Elvir Street	None	Pedestrian	SS4A/Other TBD
7	Cooper Street/Western Avenue	Signal	Motor Vehicle	SS4A/Other TBD
8	Chestnut Street/Union Street	Minor-road stop	Motor Vehicle, Pedestrian	SS4A/Other TBD
9	Chatham Street/Marianna Street	Minor-road stop	Motor Vehicle	SS4A/Other TBD
11	Broad Street/Newhall Street/Silsbee Street/Washington Square	Signal	Motor Vehicle, Pedestrian, Bike	SS4A/Other TBD
12	Bowler Street/Chestnut Street	Minor-road stop	Pedestrian	SS4A/Other TBD
13	Boston Street/Broadway/Carter Road/Chestnut Street	Signal	Motor Vehicle	SS4A/Other TBD
14	Baldwin Street/Buffum Street/Silsbee Street/Union Street	All-way stop	Pedestrian	SS4A/Other TBD
15	Atlantic Street/Broad Street/Chestnut Street/Lewis Street	Signal	Pedestrian	SS4A/Other TBD
16	North Common Street/Market Square	None	Pedestrian	SS4A/Other TBD
17	Newhall Street/Sagamore Street	Minor-road stop	Pedestrian	SS4A/Other TBD
18	Ford Street/Maple Street	Minor-road stop	Motor Vehicle	SS4A/Other TBD
19	Fernwood Avenue/Maple Street/Stanwood Street	Roundabout	Motor Vehicle	SS4A/Other TBD
20	Federal Street/Marion Street/Waterhill Street	Roundabout	Pedestrian	SS4A/Other TBD
21	Eastern Avenue/Huron Street	Minor-road stop	Motor Vehicle	SS4A/Other TBD
22	Chase Road/Euclid Avenue	None	Motorcycle	SS4A/Other TBD
23	Broadway/Warwick Street	None	Motor Vehicle	Other Planned
24	Broadway/Magnolia Avenue/Springvale Avenue	Signal	Motor Vehicle	SS4A/Other TBD
25	City Hall Square/Essex Street/Market Street (City Hall Square East)	Signal	Pedestrian, Motor Vehicle	SS4A/Other TBD
26	Liberty Street/Washington Street	Signal	Pedestrian	SS4A/Other TBD
27	Franklin Street/North Common Street (City Hall Square West)	Signal	Pedestrian	SS4A/Other TBD
28	Boston Street/Cottage Street	Signal	Pedestrian	SS4A/Other TBD
29	Boston Street/Brookvale Street/Moulton Street	Minor-road stop	Pedestrian	Priority Corridors
30	Laighton Street/Washington Street	Minor-road stop	Motor Vehicle	Priority Corridors
31	Endicott Street/Franklin Street	None	Pedestrian	Priority Corridors
32	Childs Street/Cliff Street/Walnut Street	Minor-road stop	Pedestrian	Priority Corridors
33	Boston Street/Marion Street	Minor-road stop	Motor Vehicle	Priority Corridors
34	Boston Street/Federal Street/North Federal Street	Minor-road stop	Motor Vehicle	Priority Corridors
35	Beacon Hill Avenue/Hanover Street/Washington Street	Minor-road stop	Pedestrian	Priority Corridors

Map ID	Name	Traffic Control	High Crash Mode(s)	Implementation Pathway
36	Boston Street/Hamilton Street	Minor-road stop	Motor Vehicle	SS4A/Other TBD
37	Eastern Avenue/Western Avenue	Minor-road stop	Motor Vehicle	Other Planned
38	Eastern Avenue/Essex Street	Signal	Motor Vehicle	Other Planned
39	Chatham Street/Western Avenue	Signal	Motor Vehicle	Other Planned
40	Pleasant Street/South Common Street	Minor-road stop	Pedestrian	Other Planned
41	Broad Street/Market Street	Signal	Pedestrian, Motorcycle	Other Planned
42	Washington Street/Western Avenue	Signal	Motorcycle, Pedestrian	Other Planned
43	Liberty Street/Market Street/Tremont Street	Signal	Pedestrian	Other Planned
44	Park Street/Western Avenue	Minor-road stop	Motor Vehicle	Other Planned
45	Maple Street/President Street/Waitt Avenue/Western Avenue	Signal	Motor Vehicle	Other Planned
46	Barrett Street/Western Avenue	None	Pedestrian	Other Planned
47	Lynnway/Shepard Street	Signal	Pedestrian	Other Planned
48	Lynnway/Kingman Street	Signal	Pedestrian	Other Planned
49	Harding Street/Lynnway	Signal	Pedestrian	Other Planned
50	Commercial Street/Lynnway	Signal	Motor Vehicle	Other Planned
51	Eastern Avenue/New Ocean Street	Signal	Motor Vehicle	SS4A/Other TBD
52	Boston Street/Keslar Avenue	Minor-road stop	Bike	Priority Corridors
53	Western Avenue/Ida Street	Minor-road stop	Pedestrian	SS4A/Other TBD
54	Boston Street/Franklin Street	Signal	Pedestrian	Priority Corridors



High-Injury Network & High-Crash Intersections by Implementation Path

High-Injury Network Pathways

- SS4A/Other TBD
- Other Planned

High-Crash Intersection Pathways

- SS4A/Other TBD
- Other Planned