AMENDED AGENDA
CHANGES HIGHLIGHTED

COMMITTEE MEMBERS
Jon Nguyen
Michael Maestas
Martin Steinpress
Jency James
Carlos Montalvo

Civic Center
1950 Parkside Drive
Concord, CA 94519
www.cityofconcord.org

Special Meeting AGENDA Bicycle and Pedestrian Advisory Committee Meeting

Wednesday, May 06, 2026	6:00 p.m.	Permit Center Conference Room 1950 Parkside Drive

This meeting is being held in person only.

Under California law, public comments at special meetings are limited to subjects on the agenda only. Therefore, public comment will only be taken prior to the Committee's consideration of items specifically listed on the Agenda. There will be no General Public Comment Period.

AGENDIZED ITEMS – The public is entitled to address the Committee on items appearing on the agenda before or during the Committee's consideration of that item. Each speaker will be limited to approximately three minutes.

1. **ROLL CALL**

2. **APPROVAL OF March 11, 2026 MINUTES**

3. **REPORTS**

   a) **City of Concord Comprehensive Safety Action Plan (CSAP) developed under the Safe Streets and Roads for All (SS4A) Federal Grant Program**
   Presented by Deputy Director | Department of Public Works, Abhishek Parikh

   i Written Public Comment

4. **COMMITTEE ANNOUNCEMENTS/COMMENTS**

5. **ADJOURNMENT**
    a. **Next Regular Meeting: Wednesday, June 10, 2026**

ADA NOTICE AND HEARING-IMPAIRED PROVISIONS

In accordance with the Americans with Disabilities Act and California Law, it is the policy of the City of Concord to offer its public programs, services, and meetings in a manner that is readily accessible to everyone, including those with disabilities. If you are disabled and require a copy of a public hearing notice, or an agenda and/or agenda packet in an appropriate alternative format; or if you require other accommodation, please contact the ADA Coordinator Tianjun Cao at (925) 671-3243 or Tianjun.cao@cityofconcord.org, at least 24 hours in advance of the meeting. Advance notification within this guideline will enable the City to make reasonable arrangements to ensure accessibility.

Distribution: Mindy Gentry, Director of Community Development;
Abhishek Parikh, Deputy Director of Public Works – Transportation;
Carlton Thompson, PE, City Engineer

Benched Correspondence
Agenda Item No 3a
May 6, 2026

From: Aaron McHugh <ahmchugh@gmail.com>
Sent: Wednesday, May 6, 2026 10:38 AM
To: Moreira, Andrea <Andrea.Moreira@cityofconcord.org>; Parikh, Abhishek <Abhishek.Parikh@cityofconcord.org>
Cc: dani.lanis@bikeeastbay.org; robert@bikeeastbay.org
Subject: Comment for Benched Correspondence

Comment to be included in benched correspondence (Item 3a)

Regarding high priority safety needs for vulnerable street users (people on bicycles, walking, using mobility devices), all of the intersections between highway 242 and interstate 680 (Concord Avenue, Willow Pass Road, etc. are in dire need of robust, high-quality bicycle and pedestrian infrastructure. Additionally, Solano Way under highways 242 & 4 needs these protections too. Please coordinate with Caltrans to bring the applicable underpasses (and related intersections) up to modern safety and comfort standards. Some of these correlate with the high-injury network (HIN) but some are so hostile to non-motorized transport that they effectively cut off people from accessing their own neighborhoods, thus preventing an easy way to reduce vehicle miles traveled and increase convenience and connectivity.

Thank you,
Aaron McHugh
Concord resident

COMMITTEE MEMBERS
Michael Maestas - Chair
Martin Steinpress
Jon Nguyen
Jency James
Carlos Montalvo

Civic Center
1950 Parkside Drive
Concord, CA 94519
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Regular Meeting MINUTES Bicycle and Pedestrian Advisory Committee Meeting

Wednesday, March 11, 2026	6:00 p.m.	Permit Center Conference Room 1950 Parkside Drive

This meeting is being held in person only.

Information for the public on participation at Committee meetings can be found on the back of the Speaker Identification Card. Should you have any questions after consulting the Speaker Identification Card, please contact the staff prior to the committee meeting.

AGENDIZED ITEMS – The public is entitled to address the Committee on items appearing on the agenda before or during the Committee's consideration of that item. Each speaker will be limited to approximately three minutes.

1. **ROLL CALL**

Michael Maestas, Present
Jon Nyugen, Present
Carlos Montalvo, Present
Martin Steinpress, Present
Jency James, Absent

City Staff: Andrea Moreira, Carlton Thompson, Juliana Bruno, Justine Gee, Abhishek Parikh

2. **APPROVAL December 10, 2025, ANNOTATED MINUTES**
   a. Committee Member Nguyen makes the motion to approve the minutes, Vice Chair Steinpress seconds. All in favor. Minutes approved

3. PUBLIC COMMENT PERIOD

This is a 15-minute Public Comment Period for items within the Committee's subject matter jurisdiction that are not on this agenda. Each speaker will be limited to approximately three minutes. State law prohibits the Committee from taking action on any matter raised during the Public Comment Period at this meeting.

No Public Comment

4. REPORTS

a. Galindo Street Multimodal Corridor Project (PJ 2452)

Presented by Justine Gee, PE, Associate Civil Engineer

Gee introduced Dan Leary from Sanbell to present an update as the Consultant Designer and presenter for the Galindo Street Multimodal Corridor Project. Gee additionally mentions that this project was introduced to BPAC in September of 2024 with the Planning Division, Transportation, and Public Works, followed by a Community Meeting in November of 2024.

The purpose of this project is to install a new Class I path from the East Side of Galindo from Salvio Street to Clayton Road. This project includes new Signage and striping, upgrading non-compliant curb ramps to ADA standards, pavement rehabilitation, installing white and green high-visibility pedestrian and bike crosswalks, installing new decorative lighting, and installing new County Connection Transit stop signs going Southbound.

MTC Grant revised the scope to include only the East Side path due to the results of a traffic study, lane reconfigurations, and right-of-way constraints, while keeping the new pedestrian walkway for the West Side. The timeline provided for this project begins with the Public meeting in October of 2024, Caltrans Federal Funding Approval in Summer of 2026, Final design and advertised for Bidding Summer of 2026, and Construction from Winter 2026 to Fall of 2027.

Vice Chair Steinpress asks if the striping is for both directions of the Class I path. Sanbell confirmed. Maestas questioned whether this would be concrete. City staff responds that this will be regular concrete.

Vice Chair Steinpress requests a timeline, and City Staff notes that it is not clear at this time due to ongoing applications for additional funding and grant opportunities, as well as constraints posed by the current infrastructure. Parikh mentions the option to apply for the ADA Grant, but the process is lengthy.

Committee Member Nguyen questions whether bike racks will be available. Staff responds that space is the main concern for bike racks, but that it will also be part of other projects.

Public Comments

Bike East Bay offers suggestions for this project, including green Class I trail crossing markings, dashed yellow centerlines along crosswalk pathways, revised legends from 'bikes' to 'shared road' to make it clear it is shared with pedestrians, and signal lights with no button press required. Additionally, mentioning that although the City of Concord has the right to prohibit the use of electrical Bikes on this pathway, they should be encouraged to use this path.

Attachment A Map from the public is attached to page 6.

Another public comment emphasized that the City of Concord should prioritize the suggested signals and signage.

Vice Chair Steinpress questioned how comments will be considered. City Staff responds that all matters will be considered and possibly incorporated, although some may not be feasible; a response will be provided to the commentator.

Committee Member Nguyen followed up with the possibility of bike racks for consideration.

No additional comments

5. Collision Dashboard Database – Status Update BY THE TRANSPORTATION DIVISION, Deputy Director | Department of Public Works, Abhishek Parikh

Parikh presents the Collision Dashboard Database. The City of Concord has received SS4A Complete Compliance Safety Action Plan Funding to create the dashboard, while applying for additional funding to upgrade the platform.

The report was not created as all the data had not been compiled, but the platform was being presented. The database allows collision reports to be shown through 4 categories: fatal injury, severe injury, visible injury, and complaint of pain. This database shows the collision factors and how we can prevent future accidents. Data from 2014 to 2025 has been added to the platform at this time.

The map section shows variables that contribute to collisions, including red-light running, lack of sidewalks, infrastructure, and DUI. The map shows locations with

no sidewalks or bike lanes to prioritize funding and match grants to the issues we are experiencing.

Vice Chair, Steinpress, asks how City Staff is developing all insights and crunching data. City Staff responds that there is a formula that takes all the data and sorts it into these categories. Chair Maestas questions where all the data is being combined. City Staff reports all data is from the Transportation Injury Mapping System (TIMS) and police reports. Chair Maestas asks to explain TIMS. City Staff responds that it is a state-run program that collects data from all police departments and highway patrols. Committee Member Nguyen asks if this can be made available to the public. City Staff responds that it will be partially available to the public and will be published on a website. The City of Concord is in the process of creating a website, Concordsaferoads.org, which is almost live and shows some data and part of the safety action plan.

Chair Maestas asks whether the later stages should be brought in for public comment to address safety concerns. City Staff mentions that this data will be available for project consideration. Committee Member Nguyen asks if there is raw data. Parikh mentions that TIMS provides raw data. Committee Member Montalvo asks why the data is being provided and if it is being used during projects. City Staff responds that he plans to populate data from the complaints we receive and to develop education and safety plans. When looking at projects, we focus mostly on engineering issues, but this platform also encourages education on safe driving.

Public Comments

Bike East Bay mentions that he understands we cannot avoid all crashes and that there are not always engineering faults, but that there are things we can do, such as assigning and accepting projects.

Another Commentor mentions that, as a driver and cyclist, behavior differs when certain designs are in place, such as barriers, and that the dashboard only captures incidents, not near misses. A commentator suggests adding a safety camera that captures near misses. Committee Member Montalvo notes that the data shows improvements and promotional trends. City Staff mention that the safe city website is showing some data and posting links. Vice Chair Steinpress asks to see the update at the next meeting. City Staff mentions that we want to make sure the site is ready and that we will present.

6. COMMITTEE ANNOUNCEMENTS/COMMENTS

a. **No Announcements**

7. **ADJOURNMENT**
   a. **Next Regular Meeting: Wednesday, June 10, 2026**
   b. **Meeting Adjourned at 7:00 PM**

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Distribution: Mindy Gentry, Director of Community Development;
Abhishek Parikh, Deputy Director of Public Works – Transportation;
Carlton Thompson, PE, City Engineer

Attachment A

Throughout the project:

- Use green Class 1 trail crossing markings to better highlight these areas as bike/walk spaces for drivers - See the Ohlone Greenway crossings in Albany (like at Masonic/Solano) for examples

- Provide a dashed yellow center line along the Class 1 pathway & change the Detail B legends from "bikes yield to peds" to "share the path" (as on Emeryville's Doyle Street Greenway), to make it more clear that it is a mixed-use trail, encourage users to stay right and look for one another

- Ideally provide recall signal phases for all the Class 1 trail crossings with no button press required in order to get a walk light - If recall signal phases are not provided, then make sure the pedestrian signal buttons are provided toward the right side of all the trail crossings within easy reach of people bicycling

- The City of Concord is permitted to ban any type of e-bike from Class 1 multi-use trails - But since this facility is being provided instead of an on-street Class 4 protected bikeway, Concord should commit to not restrict access for any class of legal e-bike from using this facility

- Cities in CA have a liability exemption for injuries on Class 1 multi-use trails due to maintenance issues, since they are considered "recreational" trails that people use at their own risk. Since this facility is being provided instead of an on-street Class 4 protected bikeway, Concord should proactively assume liability for this trail, as for any other bikeway, in order to protect users and give the city an incentive to maintain the facility

Upgrade this crosswalk to also match the other Class 1 trail crossings. Bike riders will be using this crossing even though it only connects to the trail on one side, and it is a legal "bicycle trail crossing" per the CVC

Add "no right on red" prohibitions for drivers for every westbound approach to ALL the Galindo trail crossings, not only where there are 2-stage bike left turn boxes - Drivers looking left while making a right turn on red across bike/walk trail traffic is unsafe

Provide a signal phase for drivers turning right from Galindo onto Salvio, Willow Pass, or Clayton Rd, separate from the bike/walk crossing phase, in order to reduce conflicts

Add a "no right on red" prohibition for northbound Galindo drivers at Clayton Rd, so as to not create a conflict with bicyclists waiting in the 2-stage bike turn box

LEGEND

PROJECT NOTES (THIS SHEET ONLY):

DETAIL 'B'
"BIKES YIELD TO PEDS"
PRE-FORMED THERMOPLASTIC MARKING
NOT TO SCALE

GALINDO ST
SALVIO ST
WILLOW PASS RD
CONCORD BLVD
CLAYTON RD

Underground Service Alert
Call: TOLL FREE
811/800
227-2600

90% SUBMITTAL
NOVEMBER 2025

REVISIONS

RECORD DRAWING
(NO WARRANTY AS TO ACCURACY)
PROJECT ENGINEER:
DATE ACCEPTED:
REVISIONS BY:
DATE:

NOT FOR CONSTRUCTION

DATE: NOVEMBER 2025
SCALE: AS SHOWN
DESIGN BY: MH
DRAWN BY: KG/JH
CHECKED BY: MH

Fehr & Peers

City of Concord
COMMUNITY AND ECONOMIC DEVELOPMENT
1950 Parkside Drive MS/40
Concord, CA 94519
(925) 671-3361

GALINDO STREET [illegible] LITATION

SIGNING AND STRIPING PLAN

CONCORD CONTRA COSTA COUNTY CALIFORNIA

SHEET NUMBER SS2.1
38 OF 46
CITY PROJECT NO. 2452

Staff Report

Date: May 6, 2026

To: Bicycle Pedestrian Advisory Committee

From: Abhishek Parikh, Deputy Director PW - Transportation

Reviewed by: Carlton Thompson, PE, City Engineer

Prepared by: Abhishek Parikh, Deputy Director PW - Transportation
Abhishek.Parikh@cityofconcord.org
(925) 671-3139

Subject: **Adoption of the City of Concord Comprehensive Safety Action Plan (CSAP) developed under the Safe Streets and Roads for All (SS4A) Federal Grant Program**

Report in Brief

The Comprehensive Safety Action Plan (CSAP) is grounded in a five-year collision analysis (2021–2025) of 1,804 total injury collisions, of which 164 (9 percent) involved fatal or severe injuries (KSI), comprising 19 fatal collisions and 145 severe injury collisions. The Plan includes a High Injury Network (HIN) identifying corridors where severe collisions are most concentrated, an inventory of fourteen existing plans and policies aligned with the CSAP's goals, a Safe Streets Toolkit of evidence-based countermeasures drawn from Federal Highway Administration (FHWA) research, and a project prioritization framework for implementation. Adoption of the CSAP will enable the City to compete for SS4A implementation grants and other federal and state safety funding for which an adopted comprehensive safety action plan is a prerequisite.

Background

The City is committed to advancing its Vision Zero goals of eliminating traffic fatalities and severe injuries while promoting safe, healthy, and equitable mobility for all road users. In 2022, City Council adopted the Local Roadway Safety Plan (LRSP), a state-led initiative to reduce roadway fatalities and serious injuries through a data-driven approach. The Comprehensive Safety Action Plan builds upon the LRSP's foundation by completing a more comprehensive systemic safety analysis, engaging the community, and developing an implementation framework consistent with SS4A program requirements administered by the Federal Highway Administration (FHWA).

CSAP was developed using the Safe System Approach — a framework that acknowledges human error is inevitable and designs the road system to minimize the serious consequences of crashes.

The CSAP project objectives include:

1. **Data-Driven Analysis:** Conduct a comprehensive five-year assessment of traffic collision data to identify high-risk intersections and corridors, high-injury networks, and prevalent contributing factors across all modes.

2. **Community Engagement:** Engage diverse community stakeholders to gather insights, reflect the safety needs and priorities of all residents, and ensure the Plan's strategies are informed by those most affected by traffic safety challenges, including residents in historically underserved communities. The CSAP engagement program included a dedicated project website (concordsafestreets.org), a multi-agency Steering Committee convening representatives from three agencies (BART, County Connection and Mount Diablo School District) across three steering committee meetings, three public community outreach meetings, a citywide online safety survey generating 651 responses, a web-based map input platform collecting 77 location-specific comments, and a presentation to the Bicycle and Pedestrian Advisory Committee.

3. **Existing Plans Review:** Inventory and align the CSAP with fourteen existing City and regional plans, policies, and programs, ensuring the Plan builds upon and does not duplicate prior safety investments.

4. **Safe System Countermeasures:** Develop a Safe Streets Toolkit of evidence-based engineering, enforcement, and education countermeasures drawn from FHWA research and calibrated to Concord's specific collision patterns and High Injury Network findings.

5. **Implementation Framework:** Provide a clear roadmap for prioritizing and executing recommended safety measures, including project identification, equity considerations, performance metrics, and potential funding sources.

6. **Enhanced Collision Dashboard:** Upgrade Concord's existing Collision Dashboard to incorporate CSAP implementation tracking, map countermeasures to collisions, automate project identification for grant applications, provide enforcement analytics for red-light running, and develop a query interface to identify trends and correlations among collision factors.

Analysis
CSAP is organized into chapters 1 through 7, each addressing a core component of the City's comprehensive safety strategy:

Chapter 1 – Introduction establishes the CSAP's purpose, policy context, and organizing framework. It documents the City's formal commitment to Vision Zero, presents the Safe System Approach and its five pillars (Safe Road Users, Safe Vehicles, Safe Speeds, Safe Roads, and Post-Crash Care), and situates the Plan within its federal SS4A program context.

Chapter 2 – Existing Plans, Policies, and Programs inventories and synthesizes fourteen existing plans and programs relevant to transportation safety in Concord. These include the Concord 2030 General Plan Transportation Element (2015), the Bicycle, Pedestrian & Safe Routes to Transit Plan (2016), the Complete Streets Feasibility Study for Willow Pass Road, Galindo Street and Cowell Road (2020), the Local Roadway Safety Plan (2022), the Pine Hollow Road Complete Streets Feasibility Study (2023), the Contra Costa County Complete Streets Safety Assessment (2024), the Five-Year Capital Improvement Plan FY2025–2029 (2024), and the Safe Trips to BART: An Action Plan for Safer Roadways (2025), among others. Each document is assessed for how it informs the CSAP's goals, ensuring the Plan builds upon and aligns with prior safety investments without duplication. Appendix A provides a detailed matrix of goals, objectives, and policies; Appendix B lists road safety related projects.

Chapter 3 – Data-Driven Safety Analysis presents the technical foundation of the CSAP. Five years of collision records (2021–2025) drawn from the Transportation Injury Mapping System (TIMS), the Statewide Integrated Traffic Records System (SWITRS), and Concord Police Department reports were analyzed across multiple dimensions including severity, mode, time of day, day of week, location type, collision type, and contributing factors. Key findings include:

- 1,804 total collisions were reported over the five-year study period. Of these, 164 (9 percent) involved fatal or severe injuries (KSI), comprising 19 fatal collisions (20 fatalities) and 145 severe injury collisions. An additional 427 collisions resulted in visible injuries, while the remaining 1,213 were classified as complaint of pain.
- Vulnerable road users are significantly overrepresented in severe outcomes relative to their share of total collisions: pedestrian-involved collisions account for 28 percent of KSI while representing only 11 percent of all injury collisions; bicyclists account for 13 percent of KSI and 8 percent of injury collisions; motorcyclists account for 19 percent of KSI and 7 percent of injury collisions.

- Broadside collisions are the most prevalent collision type, accounting for 38 percent of all injury collisions and 29 percent of KSI collisions, consistent with the high concentration of collision activity at intersections and identifying

intersection safety as the central focus for safety investment. The analysis culminates in the identification of Concord's High Injury Network (HIN) — the corridors and intersections where fatal and serious injury collisions are most heavily concentrated — which provides the spatial framework for prioritizing safety investments. Collision profiles were also developed to characterize recurring crash patterns by severity, mode, and contributing factor, directly informing the countermeasure selection.

- For 2023, Concord ranked 4th out of 62 comparable cities by the California Office of Traffic Safety (OTS) for pedestrian collisions involving seniors (age 65+), 15th for speed-related collisions, and 16th for hit-and-run collisions.

Chapter 4 – Community Engagement and Outreach document a robust community engagement program conducted from February through May 2026 to support development of the CSAP. Recognizing that traffic safety is a shared responsibility, the process prioritized input from residents, partner agencies, and local stakeholders to identify concerns, validate technical analyses, and build support for recommended strategies. Engagement efforts included a dedicated project website (www.concordsafestreets.org), a multi-agency Steering Committee, three public outreach meetings, a citywide online safety survey, an interactive web-based map input tool, and a presentation to the Bicycle and Pedestrian Advisory Committee. The project website served as a central information hub, while the Steering Committee—comprising representatives from key local and regional agencies—provided technical oversight and policy guidance through a series of meetings. Three community outreach meetings, held between March and May 2026, created multiple opportunities for the public to review findings, provide feedback, and shape the Plan's recommendations.

Community input was extensive and directly informed the CSAP's priorities. The online survey generated 651 responses, revealing high levels of concern about traffic safety, with speeding and red-light running identified as top issues and strong support for enforcement and pedestrian-focused improvements. The interactive map tool produced 77 submissions highlighting 106 safety concerns, with the greatest concentration along major corridors such as Willow Pass Road, Concord Boulevard, Treat Boulevard, and Monument Boulevard—locations that align closely with the High Injury Network identified through collision data analysis. Additional input from the Bicycle and Pedestrian Advisory Committee reinforced the needs of vulnerable road users. Overall, the strong alignment between community-identified concerns and technical findings underscores the validity of the CSAP's recommendations and reflects a plan that is both data-driven and community-informed.

Chapter 5 – Safe Streets Toolkit presents a comprehensive suite of evidence-based countermeasures drawn from FHWA research, including the Crash Modification Factor (CMF) Clearinghouse, to guide implementation of the CSAP. Countermeasures are organized into four categories: Signalized Intersections, Unsignalized Intersections,

Roadway Segments, and Additional Countermeasures (education, enforcement, and programmatic initiatives). Each countermeasure is characterized by the collision types it addresses, its Crash Reduction Factor (CRF), expected service life, and systemic implementation potential. The Toolkit is designed as a flexible technical resource for City staff to select context-sensitive improvements based on site-specific conditions, collision history, and available resources — not a prescriptive list. Consistent with the Safe System Approach, the Toolkit integrates engineering, enforcement, and education strategies, recognizing that infrastructure improvements must be complemented by behavioral programs to address speeding, impaired driving, distracted driving, and failure to yield.

Chapter 6 - Proposed Safety Projects identifies 16 proposed projects across four categories, informed by 1,804 injury collisions recorded citywide from 2021–2025. All projects are subject to further engineering analysis and environmental review, and implementation is contingent upon the availability of funding for design and construction.

High Injury Network Corridor Improvements (Projects 1, 4, 5, 6, 7, 8, 9, and 10)
Project 1 would implement targeted multimodal safety improvements along five HIN-priority corridors — Clayton Road, Monument Boulevard, Willow Pass Road, Concord Avenue, and Galindo Street — collectively associated with 687 injury collisions, including 8 fatalities and 52 severe injuries. Improvements include speed feedback signs, enhanced lighting, LPI, high-visibility crosswalks, ADA curb ramps, HFST, C-V2X technology, EVP GPS, and access management medians. This project is also proposed under the SS4A Implementation Grant. **Project 4** would close bicycle facility gaps on Monument Boulevard, Cowell Road, Galindo Street, Diamond Boulevard, Market Street, and Clayton Road through shared-use path enhancements, protected bike lane intersection treatments, and crossing improvements, informed by 149 citywide bicycle collisions. **Project 5** would address Concord Boulevard (SR-242 to Kirker Pass Road) with sidewalk gap closures, HAWK/beacon crosswalk upgrades, and speed feedback signs near two schools. **Project 6** would implement median, signal, and pedestrian crossing improvements on Port Chicago Highway, including at Bonifacio Street and North 6th Street, where broadside and pedestrian collision patterns have been observed. **Project 7** would improve delineation, edge lines, rumble strips, and lighting on the northern segment of Willow Pass Road. **Project 8** would address Treat Boulevard (Winton Drive to Clayton Road) with signal upgrades, LPI, HAWK signals, HFST, and a feasibility study for a bicycle and pedestrian connection between San Miguel Road and Marietta Circle. **Project 9** would install a raised median, speed feedback signs, and crosswalk enhancements on Oak Grove Road, including at the Contra Costa Trail crossing. **Project 10** would address geometric, signing, striping, HFST, guardrail, and median improvements on Ygnacio Valley Road and Kirker Pass Road.

Complete Streets and Active Transportation (Projects 2 and 3)
Project 2 would seek grant funding to advance design and construction of complete street improvements on Monument Boulevard (Iron Horse Trail to Walters Way), Cowell Road, and Galindo Street, building on an existing feasibility study. **Project 3** would implement a Safe Routes to School program citywide, including curb reconfiguration, raised crosswalks, advanced stop bars, dynamic signage, and bike lanes near schools, informed by 131 pedestrian and bicycle collisions in school proximity areas, including 4 fatalities and 21 severe injuries.

Citywide Safety Programs (Projects 11 and 12)
Project 11 would fill sidewalk gaps citywide, prioritizing HIN corridors with pedestrian collision history — including Clayton Road, 6th Street, and Cowell Road — informed by 187 pedestrian-involved collisions, including 7 fatalities and 37 severe injuries. Project 12 would install LPI and right-turn-on-red restrictions at approximately 15 intersections with recorded pedestrian severe-injury collisions, informed by 159 pedestrian-involved intersection collisions, including 6 fatalities and 31 severe injuries.

Planning and Policy Initiatives (Projects 13, 14, 15, and 16)
Project 13 would fund complete street feasibility studies and preliminary design on seven HIN corridors — Clayton Road, Willow Pass Road, Treat Boulevard, Concord Avenue, Market Street, Detroit Avenue, and Diamond Boulevard (approximately 12+ miles combined) to establish the engineering foundation for future capital investment, informed by 667 combined corridor collisions. Project 14 would establish a corridor speed management program with data collection, hotspot identification, and speed feedback deployment, responding to unsafe speed as a contributing factor in 483 of 1,804 collisions. Project 15 would create a formal citywide traffic calming policy and program for residential neighborhoods, defining program criteria, eligible treatments, and a consistent prioritization process. Project 16 would deploy machine-learning traffic conflict sensors and smart infrastructure on key corridors and school zones to identify near-miss patterns and guide future investment, consistent with the City's Transportation Management Center vision and SMART grant eligibility.

Chapter 7 – **Implementation, Evaluation, and Funding Strategy** establishes the framework for implementing, monitoring, and evaluating the CSAP to ensure continued progress toward the City’s safety goals. Consistent with SS4A program requirements, the CSAP is intended to function as a living document, with periodic updates recommended every two to five years to incorporate new collision data, assess the performance of implemented projects, and reflect evolving best practices. Implementation of CSAP recommendations will be coordinated with the City’s Capital Improvement Program (CIP) and prioritized using a data-driven methodology that emphasizes collision frequency and severity, equity considerations, project readiness, and cost-effectiveness, with a focus on locations within the City’s High Injury Network. The chapter establishes a performance monitoring framework that includes tracking key measures such as reductions in fatal and serious injury collisions and implementation

progress for prioritized projects. Concords enhanced collision dashboard will support ongoing monitoring and public reporting. Adoption of this CSAP satisfies SS4A Action Plan requirements and positions the City to compete for SS4A Implementation Grant funding, with awards ranging from $2.5 million to $25 million on an 80/20 federal-to-local cost split, and a federal application deadline of May 26, 2026. In addition to SS4A, the Chapter identifies a diversified funding strategy spanning the Highway Safety Improvement Program (HSIP), Active Transportation Program (ATP), Office of Traffic Safety (OTS) grants, One Bay Area Grant (OBAG) program, CCTA Measure J and Measure X, and other federal and state sources aligned with CSAP project types.

Public Contact
The Bicycle and Pedestrian Advisory Committee Meeting Agenda was posted.

Attachment
Exhibit A - City of Concord Comprehensive Safety Action Plan (CSAP)
Exhibit B - Recommended Safety Projects

CITY OF CONCORD — Comprehensive Safety Action Plan

Proposed Safety Projects

#	Project Name	Category	Key Locations / Corridors	Key Improvements / Treatments	Collision Context
HIN CORRIDOR IMPROVEMENTS					
1	**High Injury Corridor Improvements**	*HIN Corridors – Project 1*	Clayton Rd (SR-242 to Washington Blvd) Monument Blvd (Cowell Rd to Mohr Ln) Willow Pass Rd (I-680 to Avila Rd) Concord Ave (John Glenn Dr to Salvio St) Galindo St (Salvio St to Cowell Rd)	Speed feedback signs · Enhanced street & intersection lighting · Pedestrian passive detection · Leading pedestrian intervals (LPI) · High-visibility crosswalks · ADA curb ramps · Curb Reconfiguration · Sidewalk gap closures · CV2X connected vehicle technology · Emergency vehicle preemption (EVP GPS) · Access management medians · High-friction surface treatment (HFST) · Intersection safety analytics · Protected intersection design	687 injury collisions across 5 corridors, incl. 8 fatalities & 52 severe injuries
4	**Bicycle Safety Improvements**	*Citywide + (Focus) HIN Corridors – Project 4*	Including Monument Blvd (Systron Dr to Mohr Ln) Concord Blvd (Grant St to Port Chicago Hwy) Cowell Rd · Galindo St Diamond Blvd · Market St · Clayton Rd	Class I shared-use paths · Protected bike lane intersections · Bike lane gap closures · Crossing improvements at major intersections	149 bicycle collisions citywide; multiple severe injuries at identified gap locations
5	**Concord Blvd Safety Improvements**	*HIN Corridors – Project 5*	Concord Blvd: SR-242 to Kirker Pass Rd	Sidewalk gap closures · Crosswalk enhancements (HAWK conversion / LED beacons) · Sight triangle clearance · Raised/separated path near schools · Speed feedback signs	35 unsafe speed collisions; 29 rear-end collisions; pedestrian activity near 2 schools
6	**Port Chicago Traffic Calming**	*HIN Corridors – Project 6*	Port Chicago Hwy: North of High School Ave to City Limits Bonifacio St · E. Olivera Rd · N. 6th St	Median expansion / curb extension · Speed feedback signs · Signal timing modifications (split phase) · Protected left turn phasing · Leading pedestrian intervals · High-visibility crosswalks · ADA curb ramps	13 broadside collisions; 4 broadside at 6th St; 1 pedestrian severe injury at Bonifacio
7	**Willow Pass Rd – Northern Improvements**	*HIN Corridors – Project 7*	Willow Pass Rd: North of Lynwood to City Limits	Median delineators (prevent passing) · Enhanced curve delineation · Widened edge lines · Object markers · Rumble strips · Streetlights	Curve-related collision pattern on northern segment
8	**Treat Blvd Safety Improvements**	*HIN Corridors – Project 8*	Treat Blvd: Winton Dr to Clayton Rd (3.1 miles)	Complete street feasibility study & preliminary design · Mast-arm signal head upgrades · Sidewalk improvements & gap closures · HAWK signal installation · LPI corridor-wide · Speed feedback signs · Curve safety treatments (HFST, warning beacons)· Evaluate Bike/Ped Connection between San Miguel Rd to Marietta Cir	76 total collisions; 5 pedestrian, 1 bus, 5 bicycle involved
9	**Oak Grove Rd Improvements**	*HIN Corridors – Project 9*	Oak Grove Rd: City Limits to Monument Blvd	Raised median · Speed feedback signs · Crosswalk enhancements at various locations including Contra Costa Trail crossing · Sight distance improvements	Elevated speed and sight distance concerns along corridor
10	**Kirker Pass / Ygnacio Valley Rd**	*HIN Corridors – Project 10*	Ygnacio Valley Rd: Alberta Way/Pine Hollow to Park Highlands Blvd Kirker Pass Rd: Concord Blvd to City Limits	Geometric revisions (curb radii & striping) · Sidewalk / shared path gap closures · Overhead signal warning beacons · High-friction surface treatment (HFST) · Raised median / barrier · Median street lighting · Full corridor restriping · Guardrail · Crash cushion	High-speed corridor with curve and sight distance concerns; downhill segments
COMPLETE STREETS & ACTIVE TRANSPORTATION					
2	**Complete Street Design & Construction**	*Complete Streets – Project 2*	Monument Blvd: Iron Horse Trail to Walters Way Cowell Rd: Monument Blvd to Ygnacio Valley Rd Galindo St: Concord Blvd to Cowell Rd	Design & construction of bicycle and pedestrian safety improvements · Transit connection & circulation improvements based on completed feasibility study	Feasibility study previously completed; priority near schools and parks

3	**Safe Routes to School Program**	*Complete Streets – Project 3*	School proximity areas citywide (from SS4A 2024 grant proposal)	Curb Reconfiguration · High-visibility crosswalks with advance stop bars · Raised crosswalks · Dynamic warning signage · Bike lanes · Enhanced school zone circulation	131 pedestrian & bicycle collisions near schools, incl. 4 fatalities & 21 severe injuries
CITYWIDE SAFETY PROGRAMS					
11	**Pedestrian Sidewalk Improvements**	*Citywide – Project 11*	Citywide (priority: Clayton Rd Fabian to Barbis · 6th St Willow Pass to Alameda · Cowell Rd Galindo to Treat)	Fill sidewalk gaps throughout the City, prioritizing HIN corridors with pedestrian collision history	187 citywide pedestrian involved collisions, incl. 7 fatalities & 37 severe injuries
12	**Pedestrian Signal Improvements**	*Citywide – Project 12*	~15 locations with pedestrian severe-injury collisions citywide	Leading pedestrian intervals (LPI) · Right-turn-on-red restrictions at high-risk pedestrian crossings	159 citywide pedestrian involved collisions at intersections, incl. 6 fatalities & 31 severe injuries
PLANNING & POLICY INITIATIVES					
13	**Complete Street Feasibility Study and Preliminary Design**	*Planning – Project 13*	Clayton Rd: SR-242 to Farm Bureau Rd (2.3 mi) Willow Pass Rd: West City Limits to Port Chicago Hwy (~3 mi) Treat Blvd: Winton Dr to Clayton Rd (3.1 mi) Concord Ave: Concord Blvd to Meadow Ln (1.0 mi) Market St: Concord Ave to Meadow Ln (0.9 mi) Detroit Ave: Monument Blvd to Whitman Rd (0.6 mi)	Preliminary design · Traffic analysis · ROW evaluations · Public outreach · Engineering basis for future capital investment	Combined 667 collisions on study corridors including 58 pedestrian and 40 bicycle collisions
14	**Corridor Speed Management and Safety Improvement Project**	*Planning – Project 14*	All HIN corridors with unsafe speed collision history	Speed data collection · Speeding hotspot identification · Speed feedback sign deployment	Unsafe speed factor in 483 of 1,804 collisions, incl. 1 fatality & 24 severe injuries
15	**Traffic Calming Policy Update + Implementation**	*Planning – Project 15*	Residential neighborhoods citywide	Establish formal citywide traffic calming policy · Define program criteria, process, and eligible treatments for neighborhood applications	Unsafe speed contributing factor in 483 of 1,804 total collisions
16	**Traffic Conflict Analysis & Advanced Traffic Management (Smart Infrastructure)**	*Planning – Project 16*	Key corridors & school zones citywide	Traffic conflict (near-miss) data collection · Machine-learning sensors for vulnerable road user detection · Street-light-mounted hardware · School zone monitoring	Supports Transportation Management Center vision; aligned with SMART grant eligibility

Source: City of Concord SWITRS/TIMS Collision Data 2021–2025 (1,804 injury collisions) | Concord Comprehensive Safety Action Plan, 2025



City of Concord

Comprehensive Safety Action Plan



2026

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City of Concord

Comprehensive Safety Action Plan



2026

Prepared by:

Nayan Amin, TE

TJKM

Professional Civil Engineer & Project Manager,
TJKM Transportation Planning Consultants

Signed for Approval:

LEADERSHIP COMMITMENT

CITY OF CONCORD

1950 Parkside Drive

Concord, CA 94519

_____, 2026

Dear Members of the Community,

I am writing to express my strong and enthusiastic support for the recent resolution adopted by the City of Concord City Council, formally affirming its commitment to a comprehensive transportation safety initiative aimed at reducing traffic collisions, serious injuries, and fatalities on our roadways. This action reflects the City Council's forward-thinking leadership and unwavering dedication to building a safer, healthier, and more livable community for all who live, work, and travel in Concord.

The adoption of this resolution marks a pivotal moment for our city. It sends a clear and powerful message that safety will remain a top priority in Concord's transportation planning, policy decisions, and infrastructure investments. The Safety Action Plan is far more than a policy directive, it represents a transformative framework grounded in the belief that traffic deaths and serious injuries are preventable and that no loss of life on our roadways is acceptable. Every resident, visitor, pedestrian, bicyclist, transit rider, and driver deserves to travel safely throughout our community.

As the City Manager of Concord, I am proud to affirm that our city staff is fully committed to advancing this vision. We recognize the responsibility entrusted to us to translate this commitment into meaningful action through thoughtful planning, community engagement, and data-driven strategies. Our departments will continue to work collaboratively to implement effective solutions that address safety challenges through engineering improvements, targeted enforcement, education initiatives, and partnerships with regional and state agencies.

Equally important, this initiative reflects our belief that transportation safety is not only a policy priority but also a moral imperative. Protecting the lives and well-being of our residents must remain at the heart of every decision we make regarding our transportation system. By prioritizing safer streets and proactive safety measures, we are investing in the long-term vitality and resilience of our community.

This commitment also aligns with federal safety objectives and the priorities of our state and regional partners, including the California Department of Transportation and other transportation agencies working to advance safe, equitable, and sustainable mobility. Through the Safety Action Plan, Concord is positioning itself as a proactive leader in advancing the vision of eliminating traffic fatalities and serious injuries.

I extend my sincere appreciation to the City Council for its leadership, vision, and dedication in adopting this resolution. Their commitment demonstrates a shared determination to protect our community and ensure that safety remains central to Concord's future. Through collaboration, innovation, and sustained effort, I am confident that we can achieve the goals outlined in the Comprehensive Safety Action Plan and create a lasting legacy of safer streets and stronger communities for generations to come.

Sincerely,

City Manager/City of Concord

CITY OF CONCORD

1950 Parkside Drive

Concord, CA 94519

_____, 2026

Dear Members of the Community,

On behalf of the Mayor, Vice-Mayor, and the members of the Concord City Council, we are proud to reaffirm our strong commitment to advancing transportation safety across the City of Concord. The recently adopted City Council resolution reflects our collective determination to take meaningful steps toward reducing traffic collisions, preventing serious injuries, and ultimately saving lives on our streets.

The safety of our residents, workers, students, and visitors remains one of our highest responsibilities as elected leaders. Every person traveling through Concord, whether walking, biking, driving, or using transit, deserves to feel safe and protected within our transportation system. The adoption of this resolution represents our clear intent to make roadway safety a central focus of the City's policies, programs, and infrastructure investments.

We recognize that traffic collisions are not random or unavoidable events. With thoughtful planning, responsible design, and coordinated community action, we can significantly reduce the risks that lead to crashes and injuries. The Comprehensive Safety Action Plan provides an important roadmap for achieving this goal by identifying priority safety improvements, supporting data-driven decision making, and promoting strategies that protect the most vulnerable roadway users.

As a City Council, we are fully committed to supporting the implementation of this effort. We will continue to work closely with City staff, regional agencies, and community stakeholders to ensure that safety improvements are prioritized and implemented effectively. Public engagement will remain an essential component of this process, as the voices and experiences of Concord residents help guide our understanding of where improvements are most needed.

Concord's leadership in advancing transportation safety aligns with broader state and national efforts to eliminate traffic fatalities and serious injuries. By taking proactive steps today, we are laying the groundwork for a safer and more resilient transportation network that will benefit our community for years to come.

We commend the dedication of City staff and community partners who will play a key role in moving this initiative forward. Together, through continued collaboration and commitment, we can make Concord's streets safer and ensure that our transportation system supports the well-being and quality of life of everyone in our city.

Sincerely,

Mayor

Vice-Mayor

City Council Members

City of Concord

POLICY RESOLUTION

CITY OF CONCORD

RESOLUTION NO. _____

A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF CONCORD ADOPTING THE COMPREHENSIVE SAFETY ACTION PLAN (CSAP) AND COMMITTING TO A VISION ZERO GOAL OF ELIMINATING ALL TRAFFIC FATALITIES AND SERIOUS INJURIES BY 2050

WHEREAS, the City of Concord is committed to the health, safety, and wellbeing of all people who live, work, and travel within the City, regardless of their mode of transportation; and

WHEREAS, traffic fatalities and serious injuries are preventable and represent a significant public safety and public health concern requiring a proactive and coordinated response; and

WHEREAS, the United States Department of Transportation established the Safe Streets and Roads for All (SS4A) program to support local agencies in developing and implementing Comprehensive Safety Action Plans to significantly reduce roadway fatalities and serious injuries; and

WHEREAS, crashes within the City of Concord necessitate a comprehensive and coordinated approach to street planning, design, policy, enforcement, legal processes, education, and public communication; and

WHEREAS, the City has developed a Comprehensive Safety Action Plan (CSAP) to analyze collision trends, identify high-injury locations, and establish data-driven strategies to improve roadway safety and reduce traffic-related harm for all users; and

WHEREAS, the City of Concord recognizes that pedestrians, bicyclists, motorcyclists, children, older adults, and people with disabilities are among the most vulnerable roadway users and deserve particular attention and protection in transportation planning and design; and

WHEREAS, a commitment to zero traffic deaths and serious injuries reflects the value of human life and the equitable opportunity for all Concord residents to travel safely; and

WHEREAS, the City recognizes that achieving safer streets requires a comprehensive approach that integrates engineering, education, enforcement, and emergency response strategies; and

WHEREAS, safety improvements must be pursued in a data-driven and equitable manner responsive to the needs of all communities within the City, including historically underserved and disadvantaged populations, to ensure that safety benefits are distributed fairly across all neighborhoods; and

WHEREAS, implementation of the CSAP requires ongoing collaboration among City departments, partner agencies, community members, residents, business owners, and other stakeholders; and

WHEREAS, the City recognizes the importance of coordination with regional partners, including the Contra Costa Transportation Authority, Metropolitan Transportation Commission, California Department of Transportation, law enforcement agencies, and community organizations, to improve the safety, comfort, and accessibility of streets throughout the City; and

WHEREAS, the CSAP establishes a long-term vision of eliminating traffic fatalities and serious injuries and provides a framework for prioritizing safety investments and pursuing future grant funding opportunities; and

WHEREAS, the City of Concord is committed to regular monitoring, reporting, and evaluation of safety outcomes to ensure accountability and measure progress toward achieving the goals of the CSAP.

NOW, THEREFORE, BE IT RESOLVED that the City Council of the City of Concord hereby:

1. Commits to a Vision Zero goal of reducing traffic related fatalities and severe injuries (also referred to as serious injuries under the SS4A program) on City streets by fifty (50) percent by the year 2040, with the eventual goal of eliminating all traffic related fatalities and severe injuries on City streets by the year 2050, through a holistic and proactive Safe System Approach;

2. Adopts the Comprehensive Safety Action Plan (CSAP) as the City's guiding policy framework for achieving this Vision Zero goal through a holistic and proactive Safe System Approach;

3. Directs City staff to implement the strategies, programs, and projects identified in the CSAP, prioritizing engineering solutions, education initiatives, equitable enforcement, and interagency coordination;

4. Acknowledges that achieving this goal requires significant and sustained effort, resources, and dedicated safety planning activities, and commits to allocating appropriate resources toward this end;

5. Ensures that multimodal safety investments are made in a fair and equitable manner, with special consideration given to vulnerable road users and underserved communities; and

6. Directs City staff to conduct annual monitoring, reporting, and evaluation of CSAP implementation progress, and to communicate findings clearly to the City Council, partner agencies, and the public.

PASSED, APPROVED, AND ADOPTED by the City Council of the City of Concord on the _____ day of _____, 2026.

Mayor of the City of Concord

ATTEST:

_____

City Clerk of the City of Concord

ACKNOWLEDGMENTS

This Comprehensive Safety Action Plan (CSAP) was developed by the City of Concord with funding provided through a Safe Streets and Roads for All (SS4A) grant awarded by the Federal Highway Administration (FHWA), which is a testament to the City's commitment to making its streets safer for every resident and visitor.

The CSAP builds on a strong foundation of prior planning work, including the Concord Bicycle, Pedestrian, and Safe Routes to Transit Plan (2016), the Complete Streets Feasibility Study for Willow Pass Road, Galindo Street, and Cowell Road (2020), and the Safe Trips to BART Action Plan (2025). It is further anchored in the principles of Vision Zero, the global movement committed to eliminating all traffic fatalities and severe injuries from our transportation network.

The City of Concord extends its sincere gratitude to the regional partner agencies and community organizations whose engagement and expertise were indispensable in shaping this plan. The perspectives of stakeholders and community members across Concord ensured that the CSAP reflects the real safety needs and priorities of all residents, whether they travel by foot, bicycle, transit, or car.

The City of Concord is fully committed to implementing the strategies set forth in this CSAP and to working in close partnership with its partner agencies to achieve the ultimate goal: zero traffic fatalities and serious injuries on Concord's streets.

CONCORD CSAP STEERING COMMITTEE

The City of Concord's CSAP was developed with the guidance and oversight of a multidisciplinary Steering Committee representing key municipal, regional, and institutional stakeholders. The committee provided strategic direction throughout the planning process, contributing expertise in public works, transportation, emergency services, transit operations, and school safety to ensure the CSAP reflects the diverse needs of the Concord community.

REPRESENTATIVE	AGENCY
Abhishek Parikh	City of Concord Public Works Department
Virendra Patel	City of Concord Public Works Department, Project Manager
Shawn Phalen	City of Concord Public Works Department
Jesse Crawford	City of Concord
Danielle Thomas	Contra Costa County Fire Protection Department
Pranjal Dixit	Contra Costa County Transportation Authority (CCCTA)
Kamla Parks	Bay Area Rapid Transit (BART)
Melanie Koslow	Mt. Diablo Unified School District

CITY OF CONCORD STAFF

- Abhishek Parikh, Deputy Director, Department of Public Works
- Virendra Patel, TE, Transportation Program Manager, Department of Public Works

CONSULTANT TEAM

- Nayan Amin, TE (Project Manager)
- Ruta Jariwala, PE, TE
- Andrew Dickinson

EXECUTIVE SUMMARY

The City of Concord has developed this Comprehensive Safety Action Plan (CSAP) in accordance with the requirements of the Safe Streets and Roads for All (SS4A) grant program administered by the U.S. Department of Transportation. The CSAP is guided by the Safe System Approach and the City's formal commitment to Vision Zero. Through a City Council Resolution adopted in May 2026, Concord has committed to reducing traffic-related fatalities and serious injuries by 50 percent by 2040, with the ultimate goal of eliminating all such outcomes on City streets by 2050.

The primary objectives of the CSAP are to:

- Conduct a comprehensive, data driven safety analysis of Concord's transportation network for the period January 2021 through December 2025.
- Identify the City's High Injury Network (HIN), comprising the corridors and intersections where fatal and serious injury (KSI) collisions are most heavily concentrated.
- Develop a Safe Streets Toolkit of evidence-based countermeasures organized under the Safe System Approach to address identified collision patterns and systemic risk factors.
- Identify and prioritize a portfolio of actionable safety projects and programs, including both systemic network-wide improvements and targeted interventions at high-injury corridors and intersections.
- Establish a framework for implementation, performance monitoring, and funding to ensure sustained, accountable progress toward the City's Vision Zero goals.

Between January 1, 2021 and December 31, 2025, a total of 1,804 traffic collisions were reported in Concord, of which 164 (approximately nine percent) resulted in KSI, including 19 fatalities and 145 severe injuries. The safety analysis culminates in the identification of the City's HIN, comprising 15 high-priority corridors and 12 high-priority intersections. Clayton Road rank as the highest-priority corridor, followed by Monument Boulevard, Willow Pass Road, Concord Boulevard, and Treat Boulevard. Together, these corridors and intersections account for a disproportionate share of KSI outcomes citywide and form the spatial foundation for the CSAP's safety investment strategy.

The CSAP was informed by an inclusive community engagement process encompassing an interactive map-based public survey, community workshops, and a multidisciplinary Steering Committee representing City departments, law enforcement, EMS, schools, regional transportation partners, and community advocacy organizations. Special efforts were made to reach historically underserved communities and to ensure that safety investments reflect both collision data and the lived experiences of all Concord residents. The resulting safety project portfolio spans systemic improvements that proactively address risk across the transportation network and targeted design projects at specific HIN locations, each documented with proposed countermeasures and planning-level cost estimates. Project prioritization weighs safety performance, benefit to vulnerable road users, and proximity to schools, disadvantaged population impacts, and ease of implementation.

The CSAP aligns with the Safe System Approach and the SS4A program requirements, and is intended to function as a living document updated every two to five years. Implementation will be coordinated with the City's Capital Improvement Program and supported by partnerships with Caltrans District 4, CCTA, MTC, the Concord Unified School District, and law enforcement. Annual performance monitoring will track reductions in KSI collisions and implementation progress, with findings reported publicly to ensure accountability. Through this commitment, the City of Concord aims to serve as a model for other Bay Area communities in achieving the goal of zero traffic fatalities and serious injuries.

SS4A ACTION PLAN COMPONENTS

ACTION PLAN COMPONENTS	SECTION
Leadership Commitment and Goal Setting	Chapter 1
Planning Structure	Chapter 1 and Chapter 8
Safety Analysis	Chapter 3
Engagement and Collaboration	Chapter 4
Policy and Process Changes	Chapter 7
Strategy and Project Selections	Chapter 5 and Chapter 6
Progress and Transparency	Chapter 8 and City of Concord Website
Action Plan Adoption Date	May 12, 2026

GLOSSARY

AADT Abbreviation for Average Annual Daily Traffic: A measure of the average volume of vehicle traffic on a roadway segment over a full year, expressed as a daily average.

ATP Abbreviation for Active Transportation Program: A California state grant program administered by Caltrans that funds projects encouraging increased use of active modes, including walking and bicycling.

BART Abbreviation for Bay Area Rapid Transit: The regional heavy-rail transit system serving the San Francisco Bay Area, including two stations within the City of Concord.

CCTA Abbreviation for Contra Costa Transportation Authority: The Congestion Management Agency (CMA) for Contra Costa County, responsible for countywide transportation planning and the administration of Measure J sales tax funds.

CMA Abbreviation for Congestion Management Agency.

Collision Severity The intensity of a traffic collision, typically classified as: fatal, severe injury (serious injury), minor injury, possible injury, or property damage only (PDO).

CRF Abbreviation for Crash Reduction Factor: The estimated percentage reduction in collision frequency expected from the application of a specific countermeasure or safety treatment.

CSAP Abbreviation for Comprehensive Safety Action Plan.

Disadvantaged Communities Census tracts identified as experiencing transportation disadvantage using screening tools such as CalEnviroScreen or MTC's Communities of Concern framework. These communities face cumulative burdens including low income, high pollution exposure, social vulnerability, and limited transportation access.

FHWA Abbreviation for Federal Highway Administration: The federal agency within the U.S. Department of Transportation responsible for managing the national highway system and administering federal-aid highway programs, including HSIP and SS4A.

HIN Abbreviation for High Injury Network: A subset of streets within a jurisdiction typically a small percentage of total lane miles that accounts for a disproportionately large share of KSI collisions. Prioritizing the HIN allows targeted safety investment for maximum impact.

HSIP Abbreviation for Highway Safety Improvement Program: A federal-aid funding program administered by Caltrans in California that provides funding for projects that demonstrably reduce traffic fatalities and serious injuries on public roads.

KSI Abbreviation for fatal and severe injury collisions (Killed and Severely Injured). KSI collisions are the primary focus of safety action planning as they represent the most critical outcomes of traffic violence.

LPI Abbreviation for Leading Pedestrian Interval: A signal timing strategy that gives pedestrians a head start before vehicles receive a green indication, increasing pedestrian visibility and reducing conflict with turning vehicles.

MOE Abbreviation for Measure of Effectiveness: A quantitative metric used to evaluate the performance of a transportation project or safety countermeasure relative to stated goals.

MTC Abbreviation for Metropolitan Transportation Commission: The transportation planning, financing, and coordinating agency for the nine-county San Francisco Bay Area.

PDO Abbreviation for Property Damage Only: A collision in which no persons were injured or killed, resulting only in damage to vehicles or property.

RAISE Grant Abbreviation for Rebuilding American Infrastructure with Sustainability and Equity grant program: A U.S. DOT discretionary grant program that funds state and local transportation projects of significant regional or national impact.

Safe System Approach (SSA) A transportation safety philosophy that acknowledges human error as inevitable and designs the transportation system (roads, speeds, vehicles, and road users) to absorb those errors without resulting in death or serious injury. Adopted by FHWA as the overarching framework for the National Roadway Safety Strategy.

SS4A Abbreviation for Safe Streets and Roads for All: A federal grant program providing $5 billion nationally over five years (2022–2026) to help metropolitan areas, localities, and tribes develop and implement comprehensive safety action plans to reduce roadway fatalities and serious injuries.

SWITRS Abbreviation for Statewide Integrated Traffic Records System: The California Highway Patrol's statewide database of traffic collision records, used as the primary crash data source for the Concord CSAP safety analysis.

TDM Abbreviation for Transportation Demand Management: Strategies and programs that reduce single-occupancy vehicle travel demand through incentives, information, and land use coordination.

Type of Collision A classification of how the vehicles or road users involved in a collision came into contact with each other or with other objects (e.g., broadside, rear-end, head-on, sideswipe, pedestrian).

Vision Zero A national and international transportation safety movement, originating in Sweden, with the goal of eliminating all traffic fatalities and serious injuries. Vision Zero holds that deaths and severe injuries in the transportation system are preventable and unacceptable, and that system design (rather than individual behavior alone) is the primary lever for change.

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CONCORD

Comprehensive Safety Action Plan



CHAPTER ONE

Introduction

The City of Concord is the largest City in Contra Costa County and a major regional hub within the San Francisco Bay Area. Incorporated in 1905 as an agricultural community, Concord experienced substantial residential and commercial growth following the launch of Bay Area Rapid Transit (BART) service in 1973. With a 2020 U.S. Census population of approximately 125,410 residents and a total area of approximately 30.5 square miles in central Contra Costa County, Concord has developed into a significant regional center for commerce, employment, and transit.

As a general law city under California state law, Concord's transportation responsibilities encompass planning and maintaining the local street network, delivering capital improvement projects, and ensuring compliance with federal and state requirements related to transportation planning and environmental justice. The City maintains close coordination with the Contra Costa Transportation Authority (CCTA) which is the county's Congestion Management Agency as well as with the Metropolitan Transportation Commission (MTC), Caltrans District 4, and BART on the full range of regional transportation priorities.

Concord's transportation network is shaped by its predominantly suburban land use pattern, where more than 70 percent of parcels are devoted to single-family residential uses and commercial activity is concentrated along principal arterials. The City's most travelled corridors, namely Monument Boulevard, Clayton Road, Willow Pass Road, Galindo Street, Salvio Street, and Concord Boulevard form the backbone of daily movement for tens of thousands of residents. Two BART stations anchor the multimodal network: the Concord Station adjacent to the historic downtown, and the North Concord/ Martinez Station along Port Chicago Highway, both of which serve as critical destinations and transfer points for commuters and residents alike.

IMPORTANCE OF TRANSPORTATION SAFETY

Traffic safety is not an abstract policy objective, but it is a direct expression of a community's values. Every fatality on a public road represents a preventable loss; every severe injury carries consequences that ripple through families and communities for years. Despite sustained investment at the federal, state, and local levels, traffic-related collisions continue to exact an enormous toll in human suffering, economic cost, and diminished quality of life across California and the nation.

The consequences of traffic-related incidents are not borne equally across the community. Pedestrians, cyclists, older adults, children, and individuals with disabilities face a disproportionate share of fatal and serious injuries, and these impacts are most concentrated in communities that have experienced historic underinvestment in transportation infrastructure. In Concord, as in many Bay Area cities, these disparities are most pronounced along high-volume arterial corridors and in lower-income neighborhoods where residents depend most heavily on walking, cycling, and transit for their daily travel needs.

Improving transportation safety is both a civic responsibility and a practical foundation for building livable, sustainable, and inclusive communities. The Safe System Approach provides a proven framework for achieving this goal by shifting primary responsibility from individual road users to the design of the transportation system itself, ensuring that the network is forgiving of human error and that mistakes do not routinely result in death or severe injury. By embracing this approach, the City of Concord can achieve meaningful, lasting reductions in traffic-related fatalities and serious injuries while creating an environment that supports walking, cycling, and transit as safe and viable modes of travel.

The City of Concord recognizes that safe streets are fundamental to the health and vitality of its community. Through this CSAP, the City commits to a proactive, data-driven strategy for eliminating traffic fatalities and serious injuries that is grounded in evidence, guided by community need, and built for lasting impact.

LEADERSHIP COMMITMENT AND GOAL SETTING

The City of Concord is committed to improving safety across its entire transportation network, in alignment with the statewide goals established under California's Strategic Highway Safety Plan and the principles of Vision Zero. With a clear recognition of the urgent need to reduce traffic fatalities and serious injuries, the City has set an ambitious but achievable goal: the reduction of traffic related fatalities and severe injuries on City streets by 50 percent by the year 2040, with the eventual goal of eliminating all traffic related fatalities and severe injuries on City streets by the year 2050.

The Concord City Council has formally adopted a Resolution committing to Vision Zero and endorsing this Comprehensive Safety Action Plan as the City's roadmap for achieving that goal. The full text of the Resolution, together with the City's Vision Zero policy commitment, is included in Appendix A. In adopting this resolution, the City affirms its resolve to serve as a regional leader in roadway safety, leveraging engineering solutions, sound policy, and sustained investment to fundamentally improve the safety of its streets.

This commitment reflects the City's core value of prioritizing the safety and wellbeing of all Concord residents, regardless of how they choose to travel. To achieve its Vision Zero goal, the City will pursue a comprehensive, data-driven approach that addresses the full range of factors contributing to traffic collisions from engineering improvements at high-risk locations to education initiatives that promote safe road-user behavior and enforcement efforts that uphold traffic safety laws.

City leadership is fully committed to this vision and has dedicated the resources and institutional will necessary to drive meaningful, measurable progress. Ongoing performance monitoring, rigorous data analysis, and sustained stakeholder engagement will ensure that Concord remains on track toward its safety targets. Through this commitment, the City aims to serve as a model for other communities across the Bay Area and California in achieving the goal of zero traffic fatalities and serious injuries.

ORGANIZATION OF CSAP

CHAPTER 1: INTRODUCTION

This chapter establishes the purpose, need, and scope of the Comprehensive Safety Action Plan (CSAP) in accordance with Safe Streets and Roads for All (SS4A) program requirements. It introduces the City of Concord's commitment to the Safe System Approach and Vision Zero, sets forth the City's safety goals and objectives, and describes the policy context in which the CSAP is situated, including alignment with federal, state, and regional safety priorities.

CHAPTER 2: EXISTING PLANS, POLICIES AND PROCESSES

Consistent with SS4A guidance, this chapter inventories the local and regional plans, policies, and processes that shape roadway safety in Concord. It assesses prior planning efforts, including the Local Roadway Safety Plan, General Plan Transportation Element, Multimodal Corridor Plans, Downtown Specific Plan, Complete Streets Feasibility Study, and Bicycle and Pedestrian Plan, alongside relevant regional initiatives. The review identifies gaps and opportunities, ensuring the CSAP reinforces and integrates with the City's established planning frameworks rather than duplicating them.

CHAPTER 3: SAFETY ANALYSIS AND HIGH-INJURY NETWORK IDENTIFICATION

This chapter presents a comprehensive, data-driven safety analysis of collision patterns across the City of Concord for the period January 2021 through December 2025. Collisions are examined by severity, roadway type, user category, temporal patterns, and primary contributing factors. Consistent with SS4A best practices, the analysis culminates in the identification of the City's High-Injury Network (HIN), comprising the corridors and intersections where fatal and serious injury collisions are disproportionately concentrated, providing the analytical foundation for targeted safety investment.

CHAPTER 4: ENGAGEMENT AND COLLABORATION

This chapter describes the community engagement process conducted to inform the CSAP, consistent with SS4A requirements. It details outreach methods, including an interactive map-based survey, community workshops, and a multidisciplinary Steering Committee, and highlights efforts to reach historically underserved communities alongside key institutional stakeholders such as public agencies, law enforcement, schools, and advocacy groups. The input gathered through this process directly informed the development of safety priorities and project recommendations.

CHAPTER 5: SELECTION OF SAFETY STRATEGIES (SAFE STREETS TOOLKIT)

This chapter presents a comprehensive suite of safety strategies organized under the Safe System Approach, spanning engineering, education, enforcement, and emerging technology. The Safe Streets Toolkit assembles evidence-based countermeasures drawn from Federal Highway Administration (FHWA) resources, national best practices, and California state guidance. Each strategy is tailored to the risk factors identified in the safety analysis and organized to guide implementation across varied roadway contexts and user groups.

CHAPTER 6: SAFETY PROJECTS

This chapter identifies and prioritizes a portfolio of actionable safety projects and programs consistent with SS4A Action Plan requirements. The project list spans systemic improvements, targeted corridor and intersection treatments, and dedicated enhancements for pedestrians and bicyclists. Each project is documented with a description, location, proposed countermeasures, and planning-level cost estimate. Prioritization reflects a multi-factor methodology that weighs safety performance data, disadvantaged and vulnerable road user considerations, risk exposure, project readiness, and community input.

CHAPTER 7: POLICY AND PLANNING CHANGES

This chapter presents recommended planning and policy initiatives that address identified gaps in Concord's current regulatory and operational framework. The initiatives span speed management, street design standards, active transportation planning, traffic impact analysis, and safety performance monitoring. Each initiative is grounded in existing municipal authority, advanced through mechanisms such as Council resolutions, Municipal Code amendments, and departmental policies, and is structured to strengthen the City's competitiveness for state and federal safety grant programs including SS4A, HSIP, and ATP. Together, these initiatives form the institutional foundation upon which the capital improvements and programs described throughout the CSAP can be delivered, sustained, and evaluated over time.

CHAPTER 8: IMPLEMENTATION, EVALUATION AND FUNDING STRATEGY

This chapter establishes the framework for implementing, monitoring, and evaluating the CSAP over time. It defines performance measures aligned with SS4A safety outcomes, including measurable reductions in fatalities and serious injuries, and sets out procedures for tracking progress, reporting results, and updating the plan as conditions evolve. The chapter also identifies a range of potential funding sources, including SS4A grants and complementary federal, state, regional, and local programs, to support project delivery. Throughout, the chapter reinforces the continuous improvement ethos at the core of the Safe System Approach.



CONCORD

Comprehensive Safety Action Plan



CHAPTER TWO

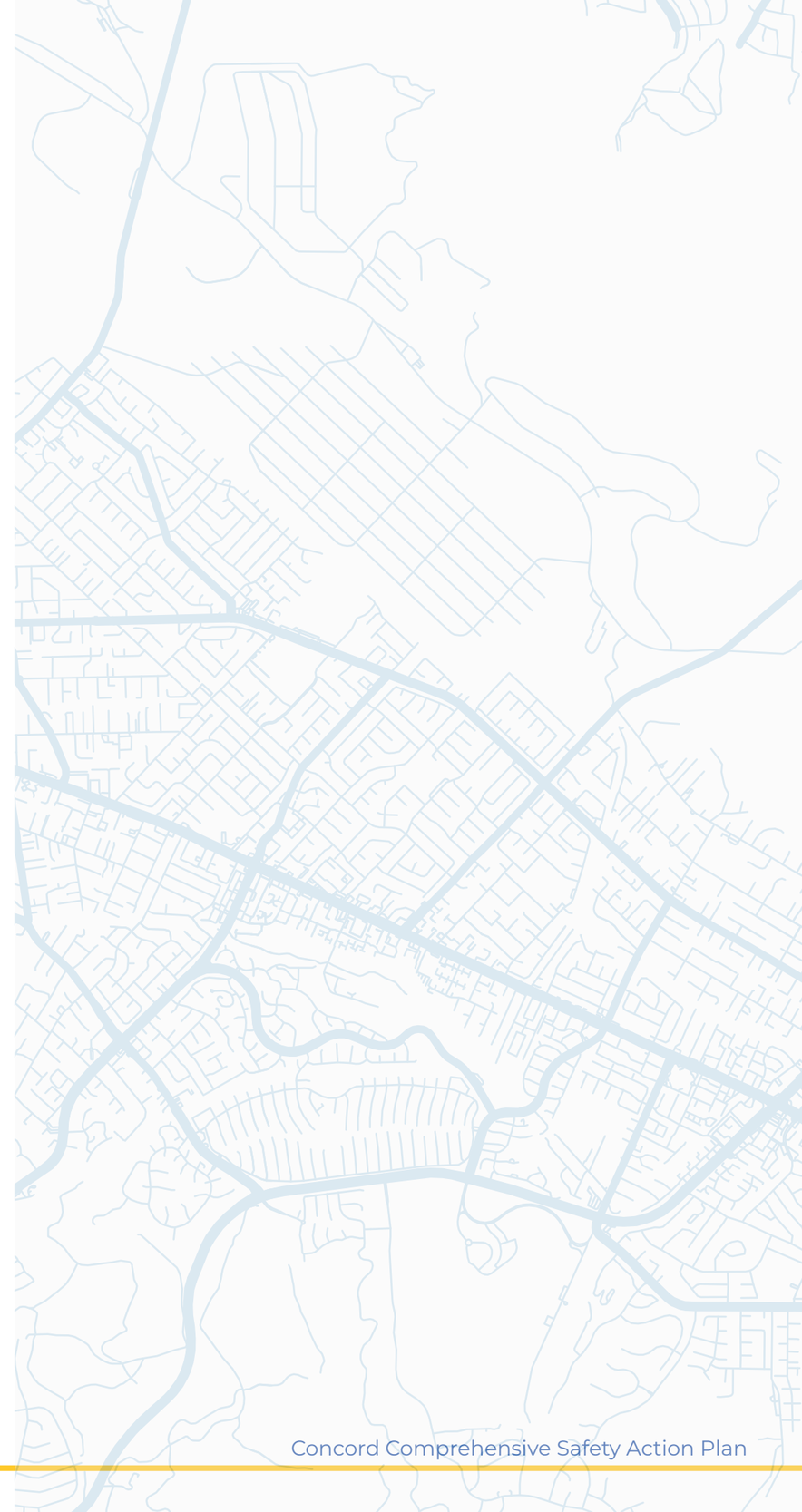
Existing Plans, Policies & Processes

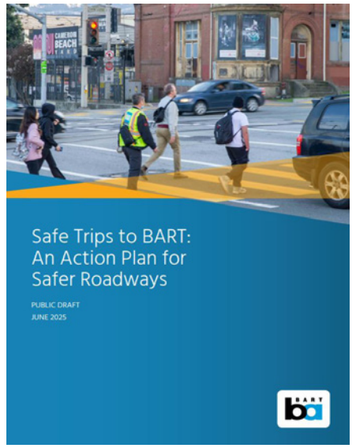
Existing Plans, Policies & Processes

This chapter inventories the existing plans, policies, projects, and programs reviewed in the development of the City of Concord Comprehensive Safety Action Plan (CSAP). The review ensures that the CSAP's vision, goals, and Safe System strategies are aligned with prior planning efforts, planned transportation projects, and established community safety programs. The documents reviewed are as follows:

1. Safe Trips to BART: An Action Plan for Safer Roadways (2025)
2. Five-Year Capital Improvement Plan FY2025-FY2029 (2024)
3. Contra Costa County Complete Streets Safety Assessment (2024)
4. Pine Hollow Road Complete Streets Feasibility Study (2023)
5. Concord Local Roadway Safety Plan (2022)
6. City of Concord Complete Streets Feasibility Study: Willow Pass Road, Galindo Street & Cowell Road (2020)
7. Monument Corridor Community-Based Transportation Plan (2019)
8. Bicycle, Pedestrian & Safe Routes to Transit Plan (2016)
9. Downtown Corridors Plan (2016)
10. Concord 2030 General Plan - Transportation Element (2015)
11. Concord Complete Streets Study (2014)
12. Downtown Specific Plan (2014)
13. Citywide Climate Action Plan (2013)
14. Concord Trails Master Plan (2002)

The following sections include brief descriptions of these documents and how they inform the development of the CSAP. A detailed list of goals, objectives and relevant policies from the reviewed information is listed in Appendix B, while a list of road safety related improvements and projects are listed in Appendix C.



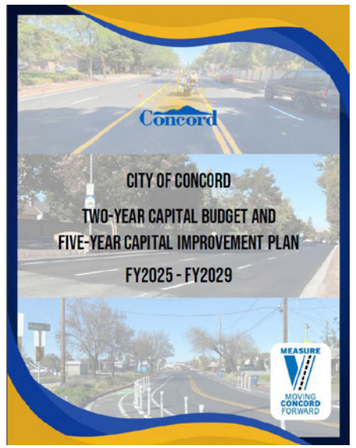


Safe Trips to Bart: An Action Plan for Safer Roadways (2025)

This regional roadway safety action plan was developed by the San Francisco Bay Area Rapid Transit District (BART). It is the first plan of its kind developed by a transit operator in the United States. Guided by the Safe System Approach, the plan analyzed five years of injury crash data (2019–2023) on public streets surrounding all 48 non-airport BART stations across five Bay Area counties to identify a system wide High Injury Network (HIN). The plan produced a four-tier Systemic Roadway Safety Measures Toolbox of more than 30 engineering countermeasures aligned with the FHWA Safe System Roadway Design Hierarchy, and developed Focus Station Area Action Plans (FSAAPs) for seven representative stations, including Concord.

CSAP Relevance

The Concord FSAAP directly supports the CSAP by identifying six priority locations on HIN corridors. For each location, the FSAAP provides site-specific countermeasure recommendations organized by Safe System tier with capital cost estimates, offering a ready implementation framework consistent with the CSAP's Safe System approach. The plan's system wide finding that arterials and higher-speed roads disproportionately concentrate KSI collisions aligns directly with the CSAP's goals of targeting investment on high-injury corridors. The plan also provides a documented regional evidence base the City can reference when pursuing federal and state safety grant funding to implement CSAP projects.

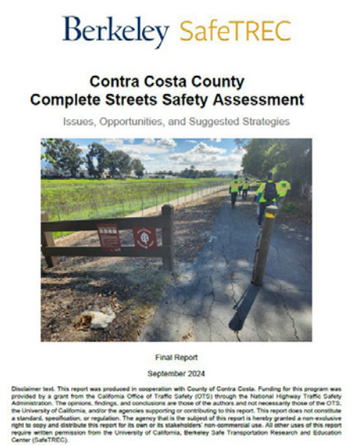


Five-Year Capital Improvement Plan FY2025-FY2029 (2024)

The Five-Year Capital Improvement Plan (CIP) FY2025–FY2029, adopted by City Council in June 2024, provides the financial and programmatic framework for implementing CSAP strategies through capital investments in transportation infrastructure. The CIP evaluation criteria explicitly prioritize projects that implement Complete Streets policy goals and Climate Action Plan strategies, ensuring the systematic integration of safety considerations into all capital planning decisions.

CSAP Relevance

The CIP includes dedicated programs that directly advance CSAP objectives, including the School Safety Assessment Program addressing infrastructure conditions at all 50 schools citywide, the street lighting and safety improvement project, and the traffic safety and traffic calming program providing systemic solutions for high-risk areas. These programmatic investments complement project-specific safety improvements across the bicycle and pedestrian network, creating a comprehensive capital framework that translates the CSAP's vision and goals into funded infrastructure improvements over the five-year planning horizon.



Contra Costa County Complete Streets Safety Assessment (2024)

The Contra Costa County Complete Streets Safety Assessment (CSSA), conducted by UC Berkeley SafeTREC, evaluates pedestrian and bicycle safety along Concord Avenue from Contra Costa Boulevard to downtown Concord. The assessment applies the Safe System Approach, integrating safe road users, safe vehicles, safe speeds, safe roads, and post-crash care. Through crash data analysis, policy benchmarking, and field audits of three focus areas, the CSSA identifies infrastructure countermeasures including Leading Pedestrian Intervals, protected left turns, roundabouts, medians, and enhanced crossings.

CSAP Relevance

This assessment directly advances CSAP strategies by addressing crossing barriers at I-680 and SR-242, implementing traffic calming through lane narrowing, providing separated bicycle facilities, and enhancing signalized intersection safety. The CSSA's alignment with the County Vision Zero Resolution adopted in December 2023 demonstrates the regional coordination essential to CSAP success.



Pine Hollow Road Complete Streets Feasibility Study (2023)

The Pine Hollow Road Complete Streets Feasibility Study addresses a critical 2.2-mile corridor segment from Clayton Valley Charter High School to Mount Diablo Elementary School. The study was identified in the City's Bicycle, Pedestrian and Safe Routes to Transit Plan (2016) as a priority corridor lacking continuous sidewalks or bike lanes and facing challenges from high traffic speeds, heavy truck traffic, and frequent collisions. The study conducted extensive stakeholder engagement, analyzed existing corridor conditions, and recommended innovative and context-sensitive multimodal improvements to enhance bicycle and pedestrian safety, improve auto circulation, enhance trail connectivity, and improve residential and school access.

CSAP Relevance

This feasibility study exemplifies the CSAP's comprehensive approach to corridor safety by addressing multiple modes of transportation, prioritizing vulnerable users near schools, and incorporating community input into design solutions. The study's focus on complete streets principles and accessibility improvements directly supports the CSAP's Safe System approach and demonstrates the City's commitment to the systematic evaluation and improvement of high-priority corridors identified through data analysis and community concern.

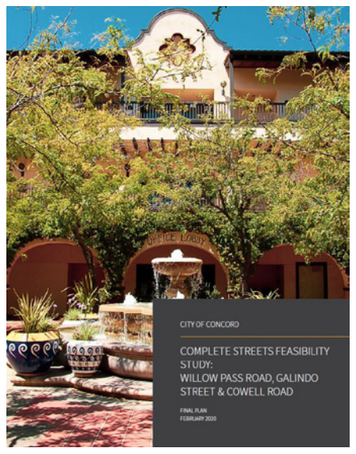


Concord Local Roadway Safety Plan (2022)

The Concord Local Roadway Safety Plan (LRSP) provides a systematic, data-driven approach to identifying roadway safety issues and developing targeted countermeasures to reduce fatal and serious injury (KSI) collisions. The LRSP analyzed collision data, identified high-risk locations, and developed emphasis areas focused on Safe System elements including safe road users, safe vehicles, safe speeds, safe roads, and post-crash care. The LRSP establishes a framework to systematically identify and analyze safety problems and recommend improvements following the Safe System approach, which acknowledges that human error is inevitable and designs the road system to minimize the serious consequences of collisions.

CSAP Relevance

The LRSP serves as a critical foundation document for the CSAP, providing detailed collision analysis, proven countermeasures, and implementation roadmaps that directly support the CSAP's goals. The CSAP builds upon the LRSP's data-driven approach while expanding its scope to include comprehensive community safetyw analysis, and broader stakeholder and public engagement consistent with SS4A program requirements. The LRSP's emphasis on Vision Zero principles and the Safe System approach provides the philosophical and technical foundation for the CSAP's comprehensive safety strategy.



City Of Concord Complete Streets Feasibility Study: Willow Pass Road, Galindo Street & Cowell Road (2020)

The Complete Streets Feasibility Study, completed in February 2020 with Caltrans funding, develops design concepts for 2.4 miles of Willow Pass Road, 1.2 miles of Galindo Street, and 2.1 miles of Cowell Road. The study provides engineering analysis and community-driven recommendations applying complete streets principles including travel lane narrowing to 10–11 feet, widened sidewalks, separated bicycle facilities, curb extensions, green infrastructure, street trees at 25–30 foot spacing, and improved signal timing.

CSAP Relevance

This study supports the CSAP through phased implementation leveraging existing CIP repaving projects, medium-term network connectivity improvements, and long-term road diets converting vehicle capacity to pedestrian and bicycle space. The community engagement process provides a model for incorporating resident priorities into CSAP implementation while addressing documented safety needs.



Monument Corridor Community-Based Transportation Plan (2019)

The Monument Corridor Community-Based Transportation Plan addresses mobility and accessibility challenges along a key corridor in the City of Concord. The plan identified several mobility goals, with community concerns focused specifically on bicycle and pedestrian safety. Users of active transportation are disproportionately affected by collisions in the study area. Drawing on extensive public feedback, the plan recommends comprehensive actions to improve transportation safety, including Safe Routes to School improvements, enhanced crossings, traffic signal coordination, sidewalk gap closure, commercial driveway consolidation, separated bikeways, wayfinding signage, and volunteer driver programs.

CSAP Relevance

This community-based plan demonstrates the CSAP's commitment to engaging directly with residents and addressing their specific safety concerns. The plan's emphasis on protecting vulnerable users, particularly pedestrians and cyclists, aligns with Safe System principles and provides a model for comprehensive corridor improvements that balance multiple transportation modes while prioritizing safety. The plan's recommendations for infrastructure improvements combined with educational and enforcement programs support the CSAP's multifaceted approach to transportation safety.



Bicycle, Pedestrian & Safe Routes to Transit Plan (2016)

The Bicycle, Pedestrian & Safe Routes to Transit Plan establishes a 20-year vision for improving the walking and bicycling environment throughout Concord. To achieve a safe and efficient multimodal transportation system, the City recognizes that new streets will need to be developed and existing streets selectively retrofitted through road diets, lane narrowing, traffic calming, and other safety improvements. The plan places safety as its highest priority, developing project recommendations that address known safety challenges based on available collision data. The plan prioritizes travel safety for all modes of transportation and designs active transportation projects that are accessible and comfortable for people of all ages and abilities.

CSAP Relevance

This comprehensive plan provides the strategic framework for the CSAP's active transportation safety goals. The plan's commitments to regularly reviewing collision data, prioritizing improvements at high-injury intersections and corridors, implementing enforcement and education campaigns, and applying designs that emphasize safety and comfort for vulnerable users directly support the CSAP's Safe System approach. The plan's emphasis on creating a complete and convenient active transportation network provides the infrastructure foundation necessary to achieve Vision Zero objectives while promoting sustainable transportation choices throughout the community.



Downtown Corridors Plan (2016)

The Downtown Corridors Plan focuses on revitalizing Concord's downtown area by enhancing three critical corridors: Oak Street, Grant Street from Oak Street to Salvio Street, and Salvio Street from Grant Street to Broadway. These corridors form the eastern half of the green frame conceptualized in the Downtown Specific Plan. The plan aims to improve key pedestrian and bicycle connections between Todos Santos Plaza, employment centers, residential neighborhoods, and regional transit. The design applies familiar materials while establishing more consistent standards, better legibility and accessibility, and improved safety for all users.

CSAP Relevance

This corridor-specific plan demonstrates how the CSAP's comprehensive safety approach can be applied to enhance the pedestrian environment in downtown areas. The plan's focus on improving connections to transit, employment, and community destinations while prioritizing safety and accessibility directly supports the CSAP's goals of creating a walkable, bikeable community. The conceptual streetscape plans provide a guide for implementing Safe System infrastructure that transforms the public right-of-way to support safe, sustainable transportation while fostering economic development and community vitality.

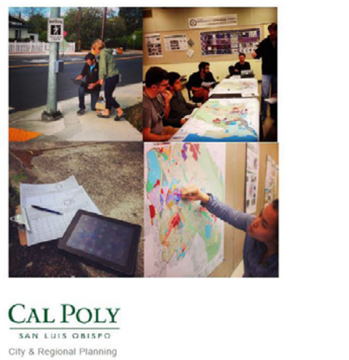


Concord 2030 General Plan - Transportation Element (Amended 2015)

The Transportation Element of the Concord 2030 General Plan, amended in 2015, provides comprehensive guidance to ensure that people and goods can safely and efficiently move within Concord and connect to the regional transportation system. The Element defines clear priorities within the transportation system, placing pedestrians and cyclists first and prioritizing pedestrian facilities above dedicated bicycle facilities, and both above street trees and parking. The Element incorporates complete streets policies as required by state law, recognizing that roads should be designed to meet the needs of multiple users including motorists, bicyclists, pedestrians, transit users, and persons of different physical capabilities.

CSAP Relevance

This foundational planning document establishes the policy framework that guides all transportation planning and implementation in Concord. The Element's clear prioritization of vulnerable users, commitment to complete streets principles, and emphasis on multimodal transportation provide the overarching policy foundation for the CSAP. The specific policies addressing pedestrian circulation, bicycle network development, traffic calming, and safe routes to schools create the regulatory and planning framework necessary to systematically implement the CSAP's comprehensive safety strategies while ensuring consistency with broader community planning goals.



Concord Complete Streets Study (2014)

The Concord Complete Streets Study provides comprehensive analysis and recommendations for implementing complete streets principles throughout the City. The study examined existing conditions, analyzed collision data from the Transportation Injury Mapping System (TIMS) for pedestrian and bicycle collisions, identified twelve target intersections for safety improvements, and developed specific design recommendations.

CSAP Relevance

This study provides detailed technical analysis and specific design solutions that support the CSAP's implementation strategy. The study's recommendations for establishing clear ADA accessibility plans, evaluating lower-volume streets as boulevards, implementing consistent bike lanes and sharrows, and creating programs to educate residents and foster a culture of active transportation directly inform the CSAP's comprehensive approach. The collision data analysis and identification of high-priority intersections provide a data-driven foundation for targeting safety improvements where they are needed most.

Concord Downtown Specific Plan (2014)



The Downtown Specific Plan, adopted in 2014 and amended in 2021, articulates a comprehensive vision to revitalize Downtown Concord and accommodate growth in future population and employment. As a designated Priority Development Area and BART Station Planning Area, Downtown Concord represents a critical opportunity for transit-oriented development. The plan contains specific circulation objectives including developing a green street framework, designing and constructing streets that integrate green streets principles supporting pedestrian, biking, transit, and green infrastructure, and improving access to and from the Downtown Concord BART Station.

CSAP Relevance

This specific plan provides the land use and development framework that supports the CSAP's comprehensive safety goals. By promoting higher-density, mixed-use development around transit stations and creating walkable, bikeable environments, the plan reduces vehicle miles traveled and creates opportunities for safe active transportation. The plan's complete streets approach and emphasis on multimodal connectivity directly support the CSAP's Vision Zero objectives while advancing broader community goals related to economic development, environmental sustainability, and quality of life.

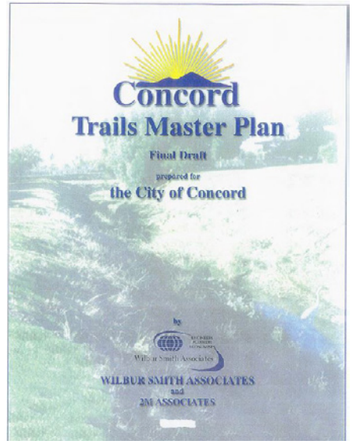


Citywide Climate Action Plan (2013)

The Citywide Climate Action Plan is a comprehensive community document that measures and monitors locally-generated greenhouse gas emissions trends. The plan includes Transportation Systems and Land Use strategies that make incremental, long-term improvements to expand viable transportation options within Concord and improve the energy efficiency of motor vehicle infrastructure. Key strategies include developing pedestrian and bicycle master plans consistent with Complete Streets standards, prioritizing traffic enforcement to protect cyclists and pedestrians, implementing traffic calming measures, creating comprehensive Safe Routes to Schools programs, and implementing complete streets projects that prioritize active transportation users.

CSAP Relevance

This climate action plan demonstrates how transportation safety improvements directly support broader environmental sustainability goals. The plan's emphasis on expanding active transportation options, implementing traffic calming, and creating complete streets directly aligns with the CSAP's Safe System approach while addressing climate change mitigation. By reducing vehicle miles traveled through safe, attractive alternatives for walking and cycling, these strategies advance both Vision Zero objectives and greenhouse gas reduction targets by demonstrating the compounded benefits of comprehensive transportation safety investment.

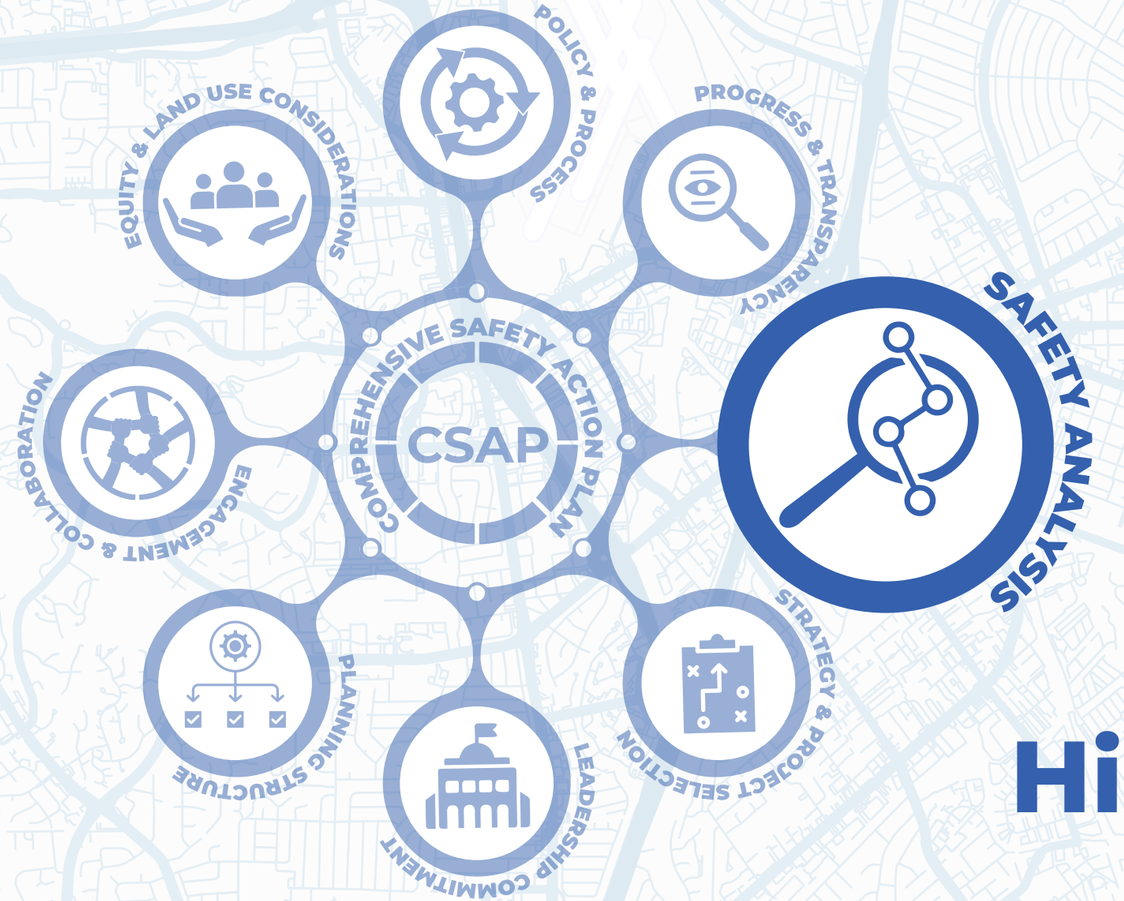


Concord Trails Master Plan (2002)

The Concord Trails Master Plan establishes a comprehensive network for recreation and alternative transportation modes including hiking, biking, and equestrian use. The plan identifies the need for providing access to BART stations, historic walking tours, new bridges, and filling roadway gaps. The trails are designed to serve multiple purposes including outdoor recreation, transportation for commuters, public health, education, social and economic well-being, and alternative emergency access.

CSAP Relevance

This trails master plan provides the foundation for developing a comprehensive off-street active transportation network that complements on-street bicycle and pedestrian facilities. The plan's emphasis on connecting trails to transit, schools, and community destinations while providing safe, grade-separated crossings of major barriers supports the CSAP's comprehensive approach to transportation safety. By creating attractive, safe alternatives to driving for both recreation and transportation, the trails network advances Vision Zero objectives while enhancing community health, quality of life, and environmental sustainability.



CONCORD

Comprehensive Safety Action Plan



CHAPTER THREE

Safety Analysis & High-Injury Network Identification

This chapter presents the results of the safety analysis conducted for the City of Concord as part of the Comprehensive Safety Action Plan (CSAP). Grounded in the Safe Streets and Roads for All (SS4A) program requirements and the Safe System Approach, the analysis provides the technical foundation for identifying high-risk locations, understanding systemic safety patterns, and guiding the selection and prioritization of countermeasures.

The analysis is structured around three primary components: (1) collision analysis, (2) High-Injury Network (HIN) identification, and (3) development of collision profiles.

Collision Analysis

The CSAP employs a systematic, data-driven methodology to evaluate roadway safety conditions across the City of Concord. Five years of collision records were analyzed to identify trends, recurring patterns, and contributing factors affecting all categories of road users. The findings directly inform the identification of priority safety concerns and the development of targeted, evidence-based countermeasures.

DATA SOURCES

Collision data were drawn from three primary sources: the Transportation Injury Mapping System (TIMS), the Statewide Integrated Traffic Records System (SWITRS), and records maintained by the Concord Police Department. Police reports were used to supplement and validate individual collision details. Together, these sources yield a five-year dataset spanning January 1, 2021, through December 31, 2025, a sufficiently robust timeframe to evaluate long-term safety trends, seasonal patterns, and location-specific risk concentrations.

METHODOLOGY

The analysis applied a range of complementary techniques to evaluate collision patterns and contributing factors across multiple dimensions. The key components include:

Severity Analysis: Classification of collisions by severity, including fatal, severe injury, visible injury, and complaint of pain.

Temporal Trends: Evaluation of collision patterns by year, month, day of week, and time of day.

Road User Analysis: Identification of vulnerable road users, including pedestrians, bicyclists, and motorcyclists.

Collision Characteristics Analysis: Examination of collision types, primary contributing factors, roadway characteristics, lighting conditions, and weather conditions.

Demographics Analysis: Assessment of trends related to age and gender of involved parties.

Spatial Distribution Analysis: Use of Geographic Information Systems (GIS) to map collision locations and identify spatial patterns and clusters.

HIGH-INJURY NETWORK IDENTIFICATION

Drawing on the results of the collision analysis, the City identified a High-Injury Network (HIN) is a defined set of roadway segments and intersections where fatal and severe injury collisions are disproportionately concentrated. The HIN serves as the primary tool for directing safety investments and prioritizing targeted interventions toward the locations where the potential to reduce serious harm is greatest.

COLLISION PROFILES

Collision profiles were developed to characterize recurring patterns in roadway incidents, capturing key dimensions including collision severity, mode involvement, and contributing factors. These profiles deepen the understanding of systemic safety challenges and directly inform the selection of countermeasures suited to specific collision types and roadway contexts.

OFFICE OF TRAFFIC SAFETY (OTS) RANKINGS

The California Office of Traffic Safety (OTS) publishes annual rankings that enable cities to benchmark their traffic safety performance against peers of comparable population. These rankings are produced using an Empirical Bayesian methodology that accounts for population size, vehicle miles traveled, and collision frequency, providing a statistically grounded basis for comparison.

For 2023, the most recent year for which OTS rankings are available, Concord's results identify several areas warranting focused attention:

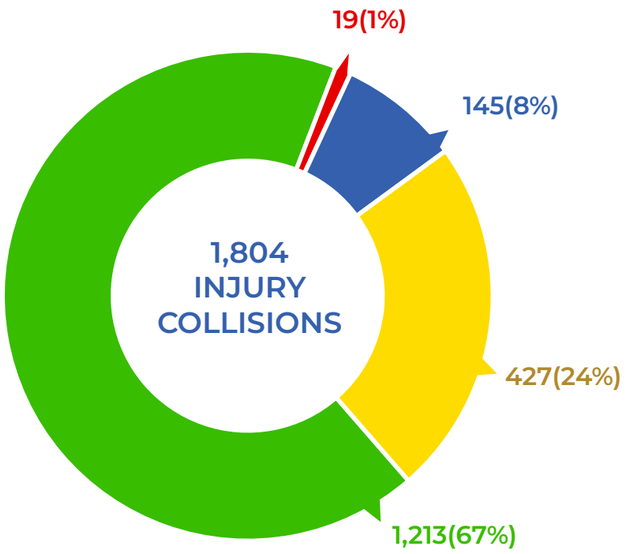
- Pedestrian collisions (age 65 and older): 4th out of 62 cities
- Speed-related collisions: 15th out of 62 cities
- Hit-and-run collisions: 16th out of 62 cities
- DUI collisions (drivers under age 21): 18th out of 62 cities

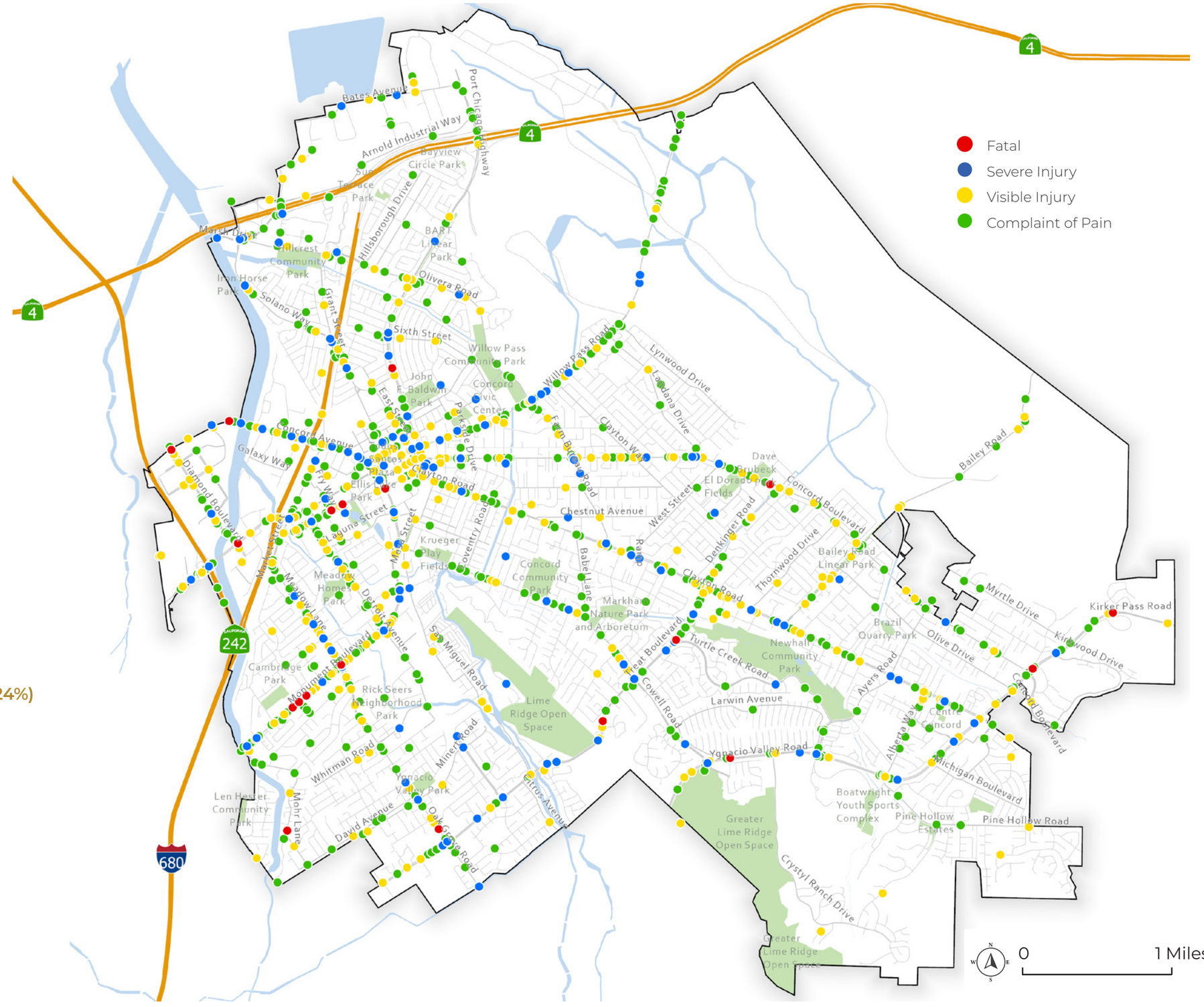
A full list of all categories is posted on California OTS's website. These rankings serve as high-level indicators of safety performance and are considered alongside the City's own local collision analysis to inform planning priorities and funding strategies.

COLLISIONS BY SEVERITY

Between January 1, 2021, and December 31, 2025, a total of 1,804 traffic collisions were reported within the City of Concord. Of these, 164 collisions (approximately 9 percent) involved fatal or severe injuries (KSI), including 19 fatal collisions and 145 severe injury collisions. An additional 427 collisions (24 percent) resulted in visible injuries, while the remaining 1,213 collisions (67 percent) were categorized as complaint of pain.

This distribution reinforces the importance of directing resources toward strategies that reduce both the frequency and severity of collisions, with particular emphasis on those resulting in fatal and serious injuries. Figure below illustrates injury collisions by severity.





KSI COLLISIONS

164 events · 2021–2025

41%

of all KSI on
5 corridors

Willow Pass (17), Clayton Rd (15),
Concord Ave, Monument & Treat (12 ea.)

87% at intersections

39%

of all KSI
in dark conditions

Late-night KSI rates reach 32–27% —
3–4× the 9.1% citywide average.

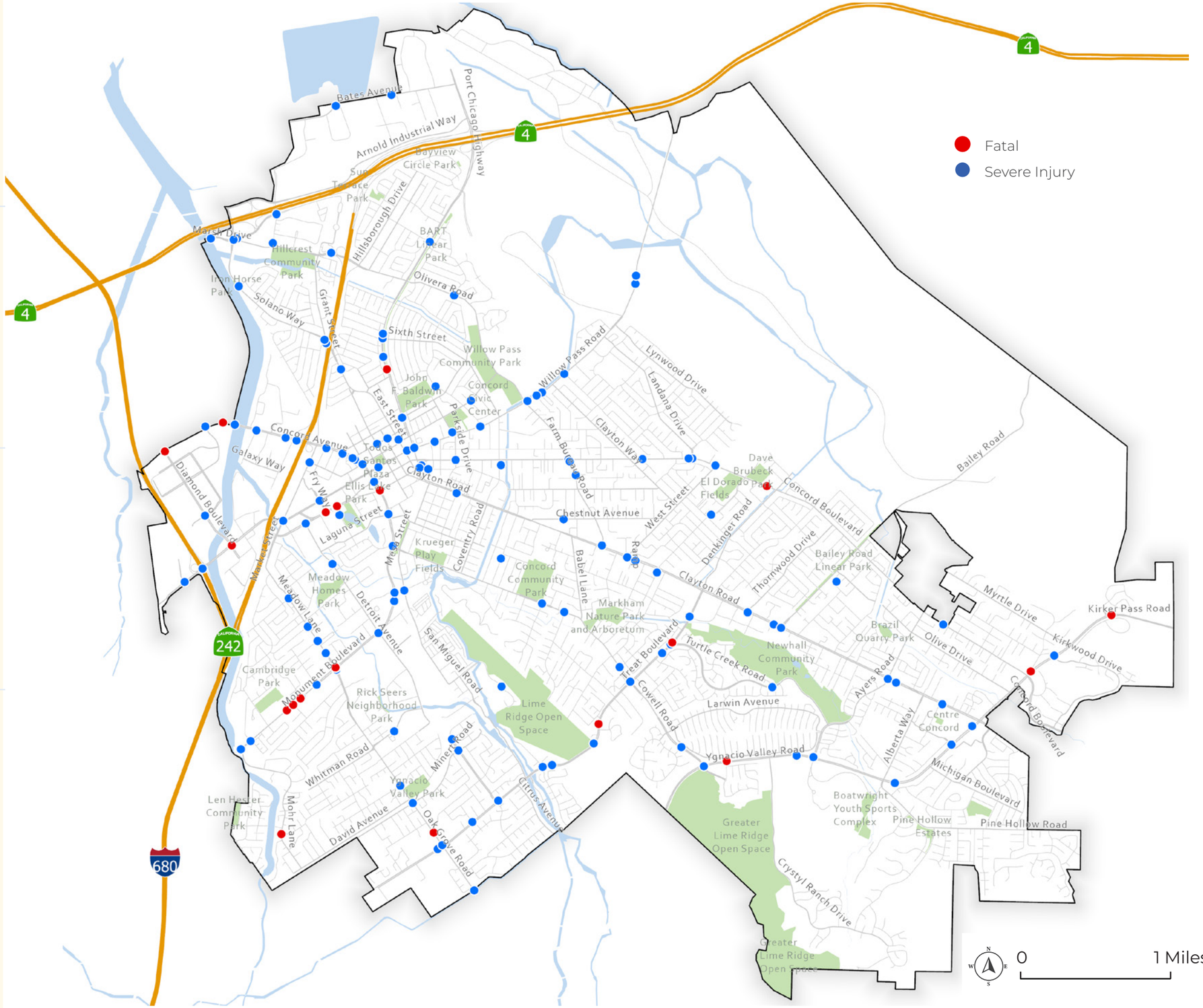
1 AM: 32% · 5 AM: 27%

85%

of KSI in clear weather —
not conditions, behavior

Speed, signals & turning each drive 23 KSI
(42% combined). DUI rate: 14.4%.

Behavior is the primary factor



PEDESTRIAN COLLISIONS

190 total · 46 KSI · 24.2% KSI rate

24.2%

KSI rate —
2.7× the citywide average

10.5% of crashes → 28% of KSI
→ 37% of all fatalities (7 of 19).

Veh/ped type: 24.3% KSI rate

42.3%

KSI rate — pedestrians
in dark conditions

Nearly 5× citywide avg. Monument Blvd,
Clayton Rd & Willow Pass Rd lead.

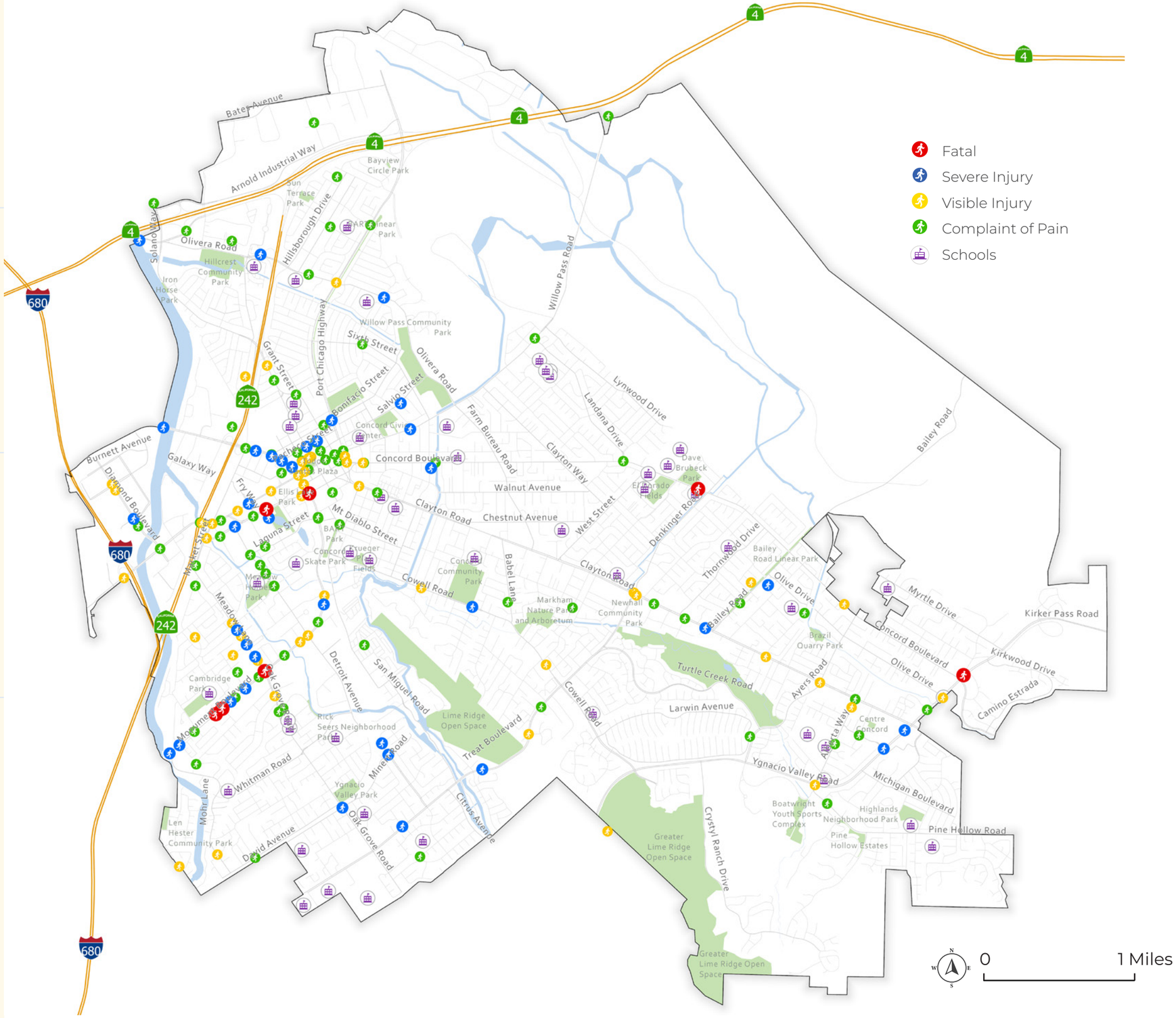
~27% of ped crashes in darkness

41.5%

KSI rate — highest
of any violation type

22 KSI from 53 crashes. Reflects
mid-block crossing gaps on arterials.

Exceeds DUI rate of 14.4%



BICYCLE COLLISIONS

149 total · 21 KSI · 14.1% KSI rate

14.1%

KSI rate —
55% above citywide avg

8.3% of collisions → 12.8% of KSI.
Volume up 75%: 20 (2021) → 35 (2025).

10.5% of all fatalities

20.8%

hit-and-run rate —
nearly 2× citywide

31 of 149 bicycle crashes involved
a hit-and-run departure.

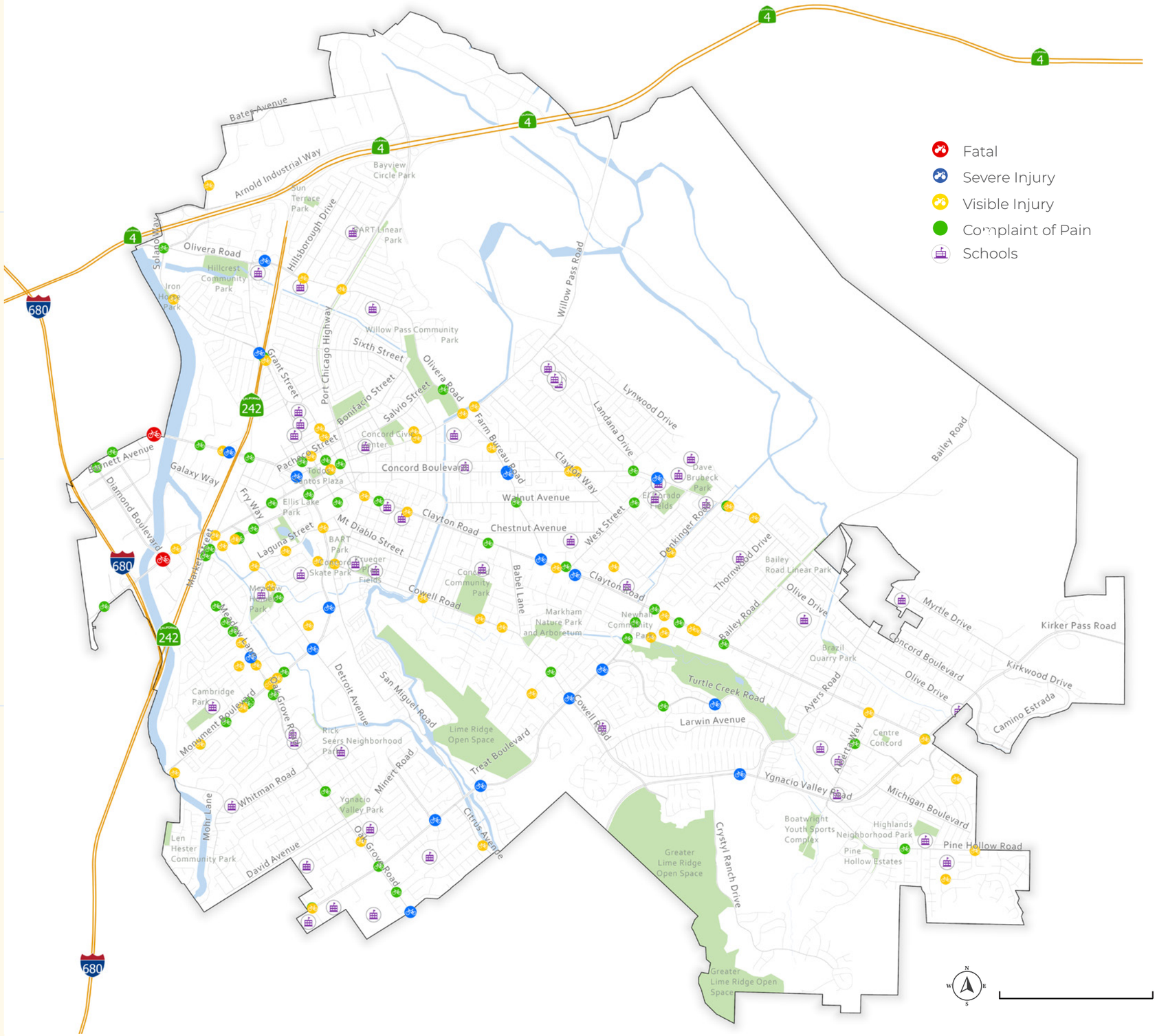
Highest mode-specific H&R rate

89%

of bicycle KSI
at intersections

Broadside dominant. Fatal sites:
Willow Pass/Diamond · Concord Ave/New Dr.

Annual KSI rate: 2.8%–27% across 5 yrs



COLLISIONS BY LOCATION

Collisions were categorized by location type to distinguish between intersection-related and mid-block incidents. Consistent with standard practice, any collision occurring within 250 feet of an intersection was classified as an intersection collision.

Of the 1,804 reported collisions, 1,518 (84 percent) occurred at or near intersections, with the remaining 286 (16 percent) occurring along mid-block segments. This pronounced concentration at intersections identifies them as the primary locus of collision risk in Concord and a central focus for safety investment. The table below summarizes injury collisions by severity and location type.

Collision Severity	Roadway Segment	Intersection	Total
Fatal	3	16	19
Severe Injury	19	126	145
Visible Injury	79	348	427
Complaint of Pain	185	1,028	1,213
Total	286	1,518	1,804

Yearly Trends

Fatal and serious injury (KSI) collisions peaked in 2022, with 39 incidents recorded, which is the highest annual total in the five-year study period. Both 2021 and 2025 followed with 34 KSI collisions each.

Total injury collisions rose from 315 in 2021 to a five-year peak of 383 in both 2022 and 2024, before declining to 341 in 2025. This year-to-year variability reflects the complexity of roadway safety and reinforces the case for sustained, data-informed interventions rather than single-point responses.

Daily Trends

KSI collisions are most frequent on Mondays and Sundays, with 28 incidents recorded on each day over the study period.

Total injury collisions follow a different distribution, peaking on weekdays, with Thursday recording the highest volume at 310 collisions, while weekend totals are lower, with 235 on Saturday and 206 on Sunday.

This divergence between weekday and weekend patterns reflects differences in travel volume and trip purpose. Weekday commuting drives higher overall collision counts, while severe collisions are distributed more evenly across all days of the week, indicating that high-speed or high-risk travel behaviors are not limited to peak commute periods.

Monthly Trends

KSI collisions are most frequent in June, with 19 incidents recorded over the five-year period, followed by August and December with 17 each.

Total injury collisions are broadly consistent across the calendar year, though a seasonal pattern is evident: collision frequency rises during the warmer months of May through October. Monthly totals range from a low of 126 in February to a peak of 165 in both September and October.

This seasonal pattern likely reflects the increase in travel activity, including recreational trips and pedestrian and bicycle use during warmer months. This pattern underscores the value of heightened safety outreach and targeted interventions timed to peak travel periods.

Hourly Trends

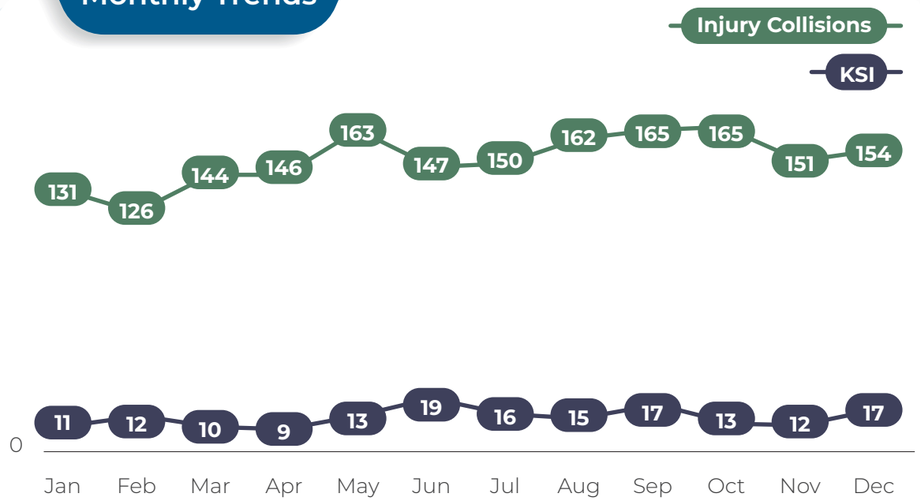
Both KSI and total injury collisions are most frequent during the afternoon and early evening hours. The period between 2:00 p.m. and 5:00 p.m. records the highest activity, with 36 KSI collisions and 420 injury collisions over the five-year study period.

This concentration aligns with the combined pressures of afternoon commuter traffic and school dismissal trips which is a period of elevated roadway demand that warrants focused safety measures and targeted enforcement during peak hours.

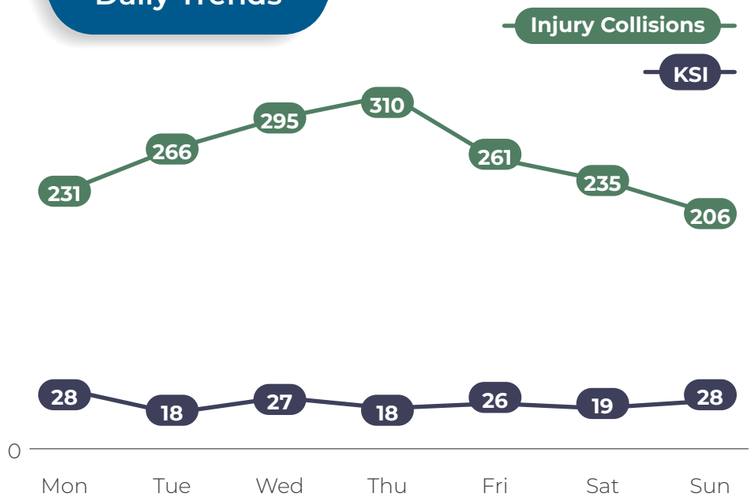
Yearly Trends



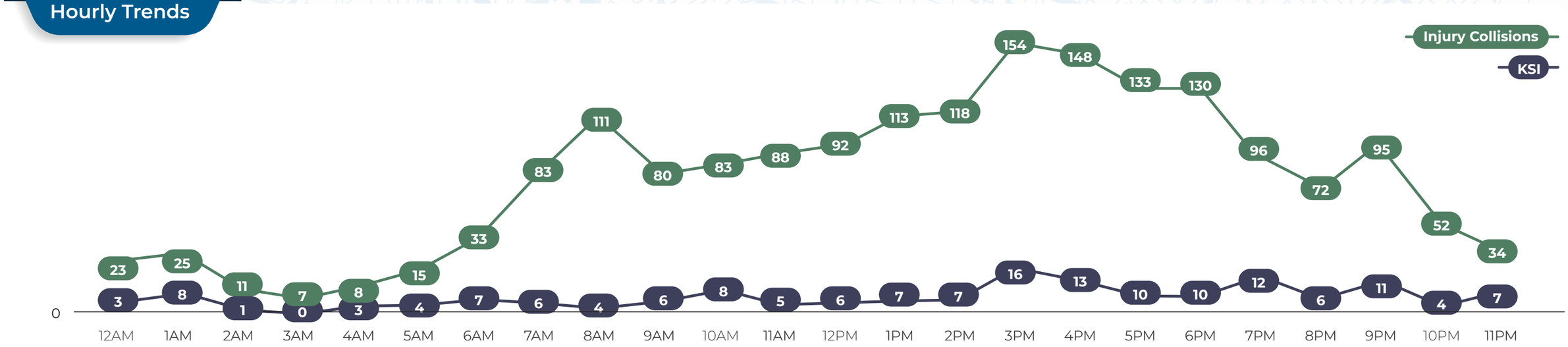
Monthly Trends



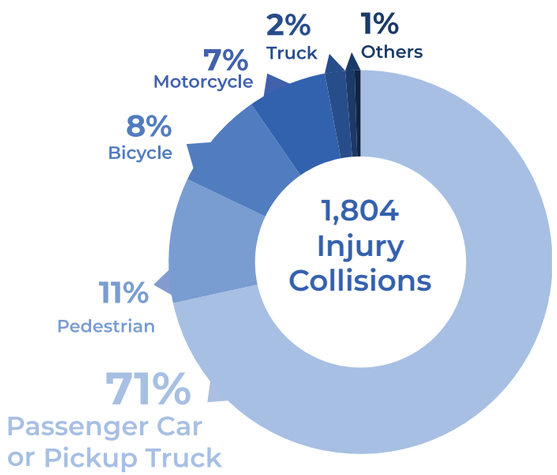
Daily Trends

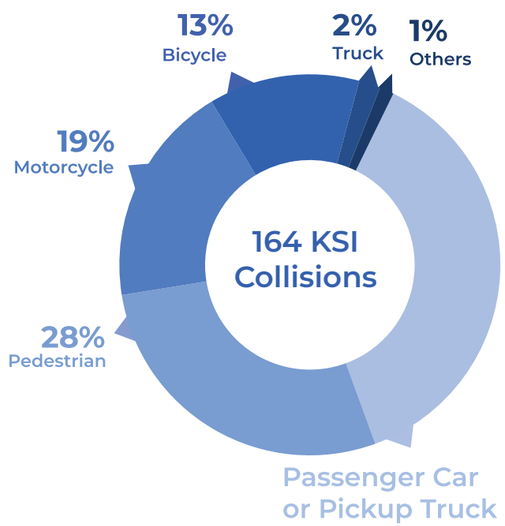


Hourly Trends

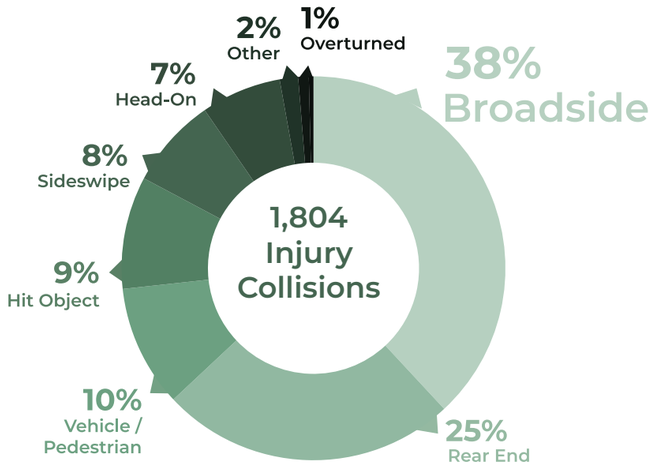


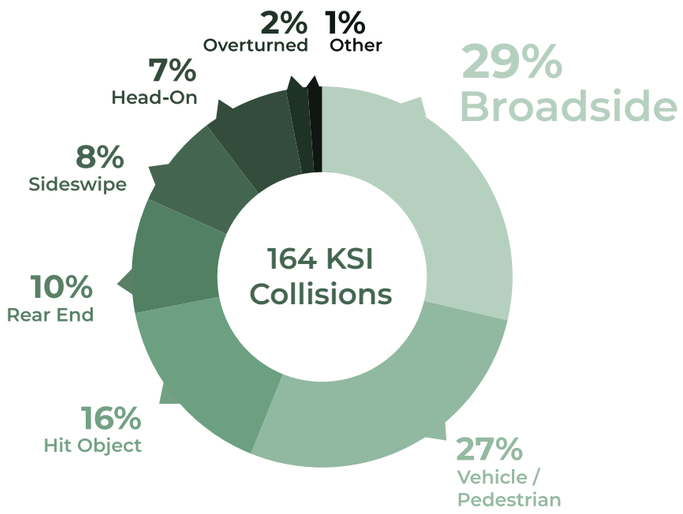
Mode





Collision Type





COLLISION BY MODE

Passenger vehicles are the most frequently involved mode, accounting for 37 percent of KSI collisions and 71 percent of total injury collisions.

Vulnerable road users are significantly overrepresented in severe outcomes relative to their share of total collisions. Pedestrian-involved collisions account for 28 percent of KSI collisions while representing only 11 percent of all injury collisions. Bicyclists account for 13 percent of KSI collisions and 8 percent of injury collisions, and motorcyclists account for 19 percent of KSI collisions and 7 percent of injury collisions. In each case, the gap between KSI share and overall collision share reflects the heightened physical vulnerability of these road users in the event of a collision.

These results affirm the need for safety strategies that specifically address pedestrian, bicycle, and motorcycle safety, consistent with the Safe System Approach's priority of protecting those most at risk of serious harm.

COLLISION BY COLLISION TYPE

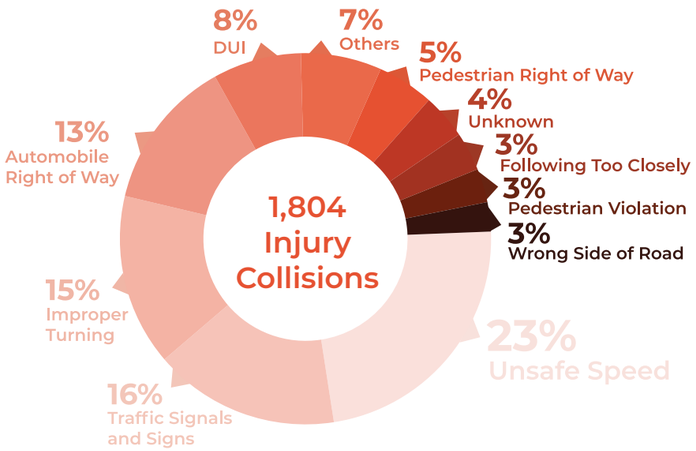
Broadside collisions are the most prevalent collision type, accounting for 29 percent of KSI collisions and 38 percent of all injury collisions, which shows a consistent pattern with Concord's high concentration of collision activity at intersections.

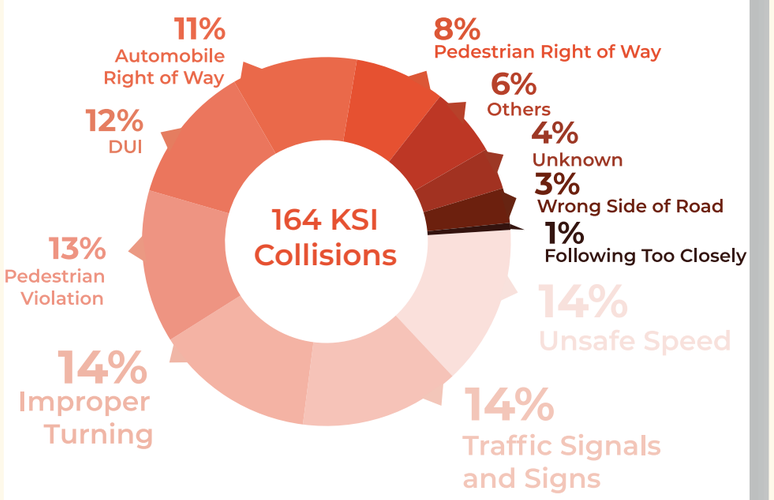
Vehicle-pedestrian collisions account for 27 percent of KSI collisions which reflects the physical vulnerability of pedestrians and the severity of outcomes when they are involved in collisions. Rear-end collisions represent 25 percent of total injury collisions but only 10 percent of KSI collisions, indicating that while they are common, they tend to produce less severe outcomes than intersection-related conflict types.

Collisions involving vehicles striking fixed objects contribute 16 percent of KSI collisions and 9 percent of total injury collisions, representing a meaningful share of severe outcomes that warrants attention in roadway design and speed management strategies.

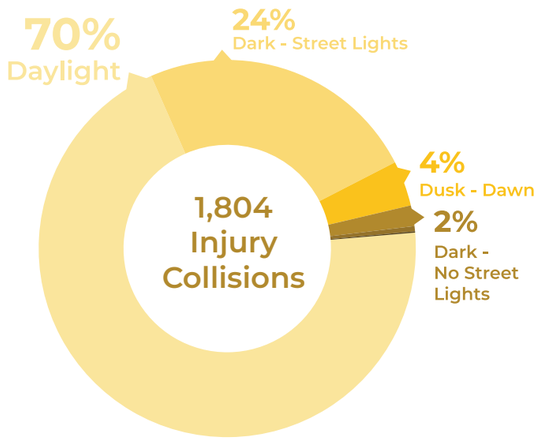
Taken together, these patterns point to the need for countermeasures that address intersection conflict, pedestrian exposure, and roadway departure risk, the three collision types responsible for the greatest share of fatal and severe injury outcomes in Concord.

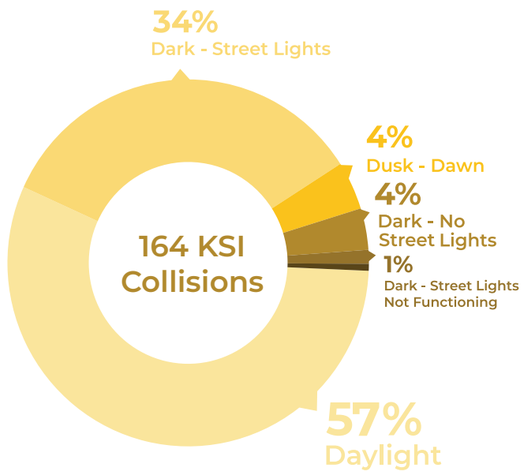
Violation





Lighting





COLLISION BY VIOLATION CATEGORY

Unsafe speed is the leading contributing factor in Concord collisions, associated with 14 percent of KSI collisions and 23 percent of all injury collisions. Traffic signal and sign violations are equally prevalent in severe collisions, contributing to 14 percent of KSI collisions and 16 percent of total injury collisions.

Improper turning movements account for 14 percent of KSI collisions and 15 percent of injury collisions, while automobile right-of-way violations contribute 11 percent of KSI and 13 percent of injury collisions. Driving under the influence (DUI) is implicated in 12 percent of KSI collisions and 8 percent of total injury collisions, which shows a disproportionate share given DUI's share of all trips, underscoring its outsized role in serious collision outcomes.

Pedestrian violations account for 13 percent of KSI collisions, a figure that reflects the complexity of pedestrian-vehicle interactions and the shared responsibility between road users and system design in preventing serious outcomes.

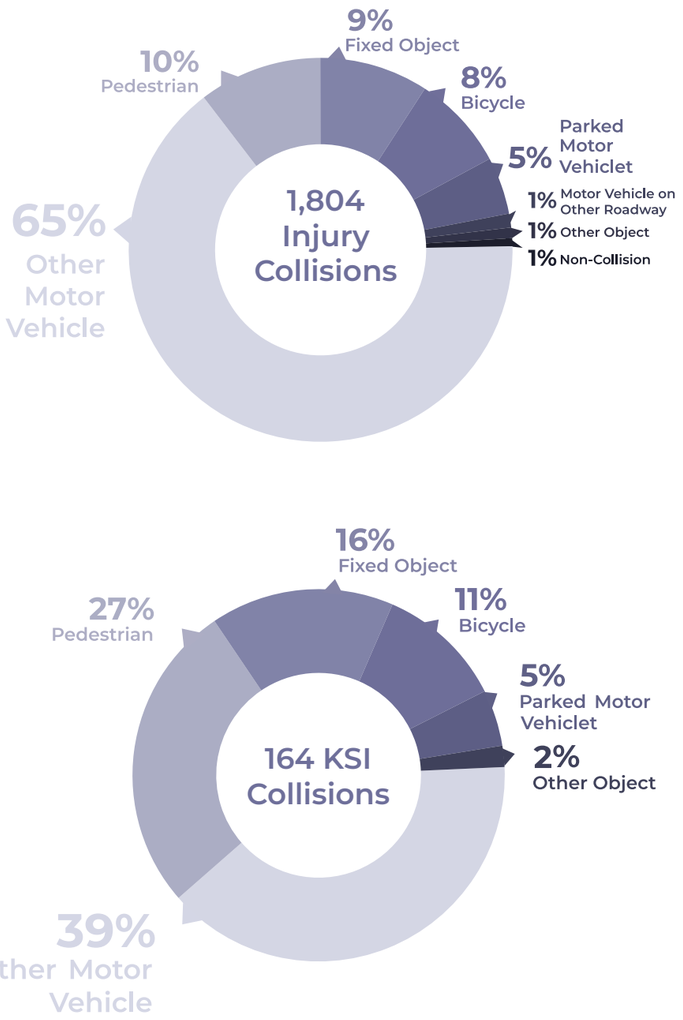
The breadth and variety of contributing factors confirm that no single intervention will resolve Concord's safety challenges. Effective improvement requires a coordinated combination of engineering measures, targeted enforcement, and public education, each addressing different behaviors and roadway conditions.

COLLISION BY LIGHTING CONDITIONS

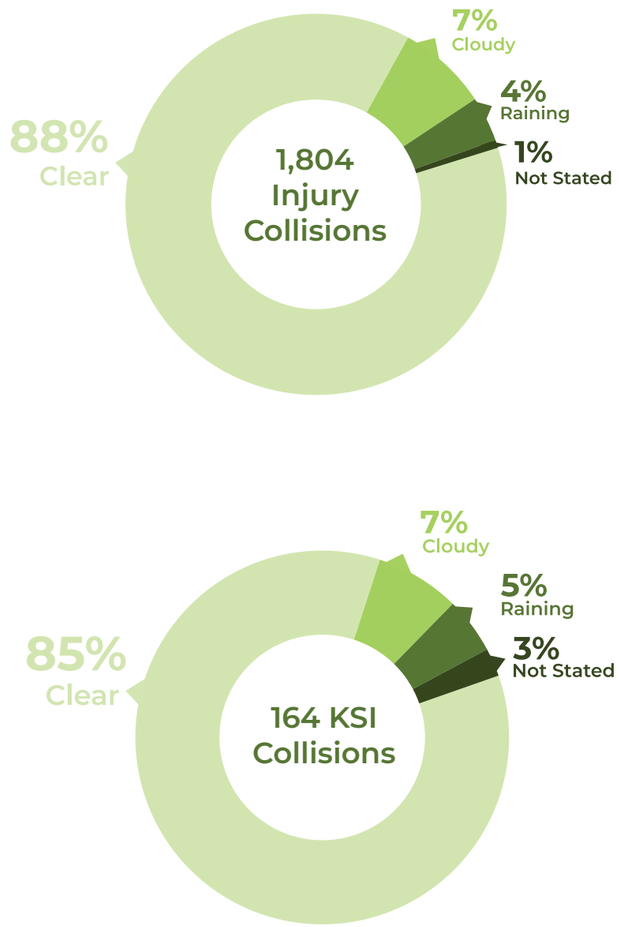
Most collisions occur during daylight hours, accounting for 56 percent of KSI collisions and 70 percent of total injury collisions, a reflection of the greater volume of travel that occurs in daylight rather than any protective quality of darkness.

Collisions under dark conditions with street lighting present a disproportionate risk: they account for 34 percent of KSI collisions while representing only 24 percent of injury collisions overall. This gap indicates that nighttime conditions meaningfully increase the severity risk of a collision even when street lighting is present, reinforcing the importance of roadway lighting quality, visibility enhancements, and treatments that reduce vehicle speeds during low-light hours.

Moto Vehicle



Weather



COLLISION BY MOTOR VEHICLE INVOLVED WITH

Motor vehicle-to-motor vehicle incidents account for the largest share of collisions, with 39 percent of KSI and 65 percent of total injury collisions, reflecting the dominant role of vehicle-to-vehicle conflict in Concord's collision landscape.

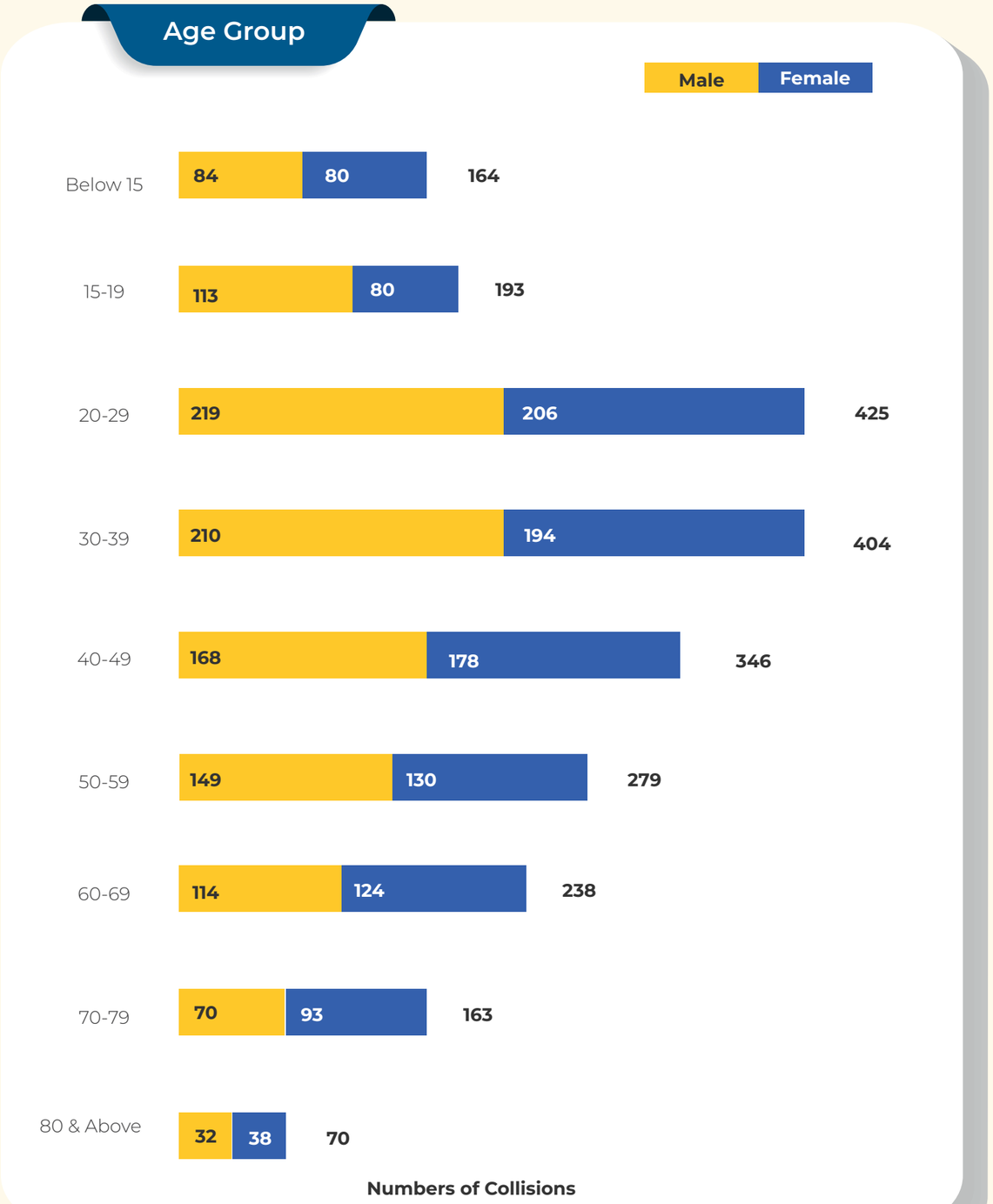
Pedestrian-involved collisions are strongly overrepresented in severe outcomes: they account for 27 percent of KSI collisions while comprising only 10 percent of total injury collisions. Collisions with fixed objects similarly punch above their weight, representing 16 percent of KSI collisions against 9 percent of total injury collisions.

Bicycle-involved collisions account for 11 percent of KSI and 8 percent of injury collisions. Across all vulnerable road user categories, the data consistently show a gap between collision frequency and collision severity, a pattern that directly informs the Safe System priority of designing the transportation network to protect those most at risk.

COLLISION BY WEATHER CONDITION

The overwhelming majority of collisions occurred under clear weather conditions, with 88 percent of KSI and 85 percent of all injury collisions.

Cloudy conditions account for 7 percent of both KSI and total injury collisions, while all other weather conditions contribute a minimal share. The data confirm that adverse weather is not a primary driver of collision risk in Concord. Rather, collisions are concentrated under the everyday travel conditions that most residents experience most of the time, which reinforces the importance of systemic infrastructure improvements that perform under normal operating conditions, not just edge-case scenarios.



INDIVIDUALS (VICTIMS) INVOLVED IN INJURY COLLISIONS

Over the five-year study period, a total of 2,385 individuals were involved in injury collisions within the City of Concord, resulting in 20 fatalities and 2,365 reported injuries. Of those injuries, 152 were classified as severe, 473 as visible, and 1,740 as complaints of pain.

Age and gender data were unavailable for 103 individuals. Among those with complete records, adults aged 20 to 29 account for the largest share of those involved, at 425 individuals (19 percent), followed by those aged 30 to 39 with 404 individuals (18 percent) and those aged 40 to 49 with 346 individuals (15 percent).

Gender distribution is broadly balanced, with males accounting for 51 percent and females for 49 percent of involved individuals.

The concentration of collision involvement among working-age adults aged 20 to 49 is consistent with their higher rates of driving and active transportation use. This age distribution should inform both outreach strategies and the design of safety improvements along corridors most heavily used by this population.

High Injury Network

The collision analysis culminates in the identification of Concord's High-Injury Network (HIN) corridors and intersections where fatal and serious injury collisions are most heavily concentrated. Consistent with SS4A guidance and Safe System principles, the HIN provides the spatial framework for prioritizing safety investments and directing resources to locations where the potential for impact is greatest.

Collision locations were mapped and spatially analyzed using ArcGIS to identify areas of elevated KSI and total injury concentration. Each location was evaluated on both collision frequency and severity to ensure that the resulting network reflects the full spectrum of safety risk rather than volume alone.

The output of this analysis is a prioritized list of high-injury corridors and intersections that forms the foundation for the safety project recommendations in Chapter 6 and guides the allocation of limited resources toward locations with the greatest demonstrated need.

METHODOLOGY

To identify and prioritize high-injury locations, the City applied a weighted ranking methodology consistent with Safe System principles and FHWA guidance. The approach is designed to reflect the dual priorities of reducing the most severe collisions and protecting vulnerable road users.

The scoring model draws on five collision indicators: KSI collisions, total injury collisions, intersection-related collisions, pedestrian-involved collisions, and bicycle-involved collisions. Each indicator carries a weight that reflects its relative importance to overall safety performance.

KSI collisions carry the highest weight of 30, reflecting the Safe System imperative to eliminate fatal and severe outcomes above all else. Pedestrian and bicycle collisions each receive a weight of 20, consistent with the elevated severity risk these users face. Total injury collisions are also weighted at 20 to capture overall safety performance, while intersection-related collisions receive a weight of 10.

To enable fair comparison across locations of different sizes and volumes, each indicator value is normalized proportionally: the count at each location is divided by the citywide total for that indicator, then multiplied by its assigned weight. The five weighted components are summed to produce a composite Safe System score for each corridor and intersection.

The Safe System score is calculated as follows:

$$\text{Safe System Score} = \left(\frac{\text{KSI}}{\text{Total KSI}} \times 30\right) + \left(\frac{\text{Injury}}{\text{Total Injury}} \times 20\right) + \left(\frac{\text{Intersection}}{\text{Total Intersection}} \times 10\right) + \left(\frac{\text{Pedestrian}}{\text{Total Pedestrian}} \times 20\right) + \left(\frac{\text{Bicycle}}{\text{Total Bicycle}} \times 20\right)$$

Locations are ranked by their composite score, with higher scores indicating a greater concentration of severe collisions and a correspondingly higher priority for safety investment.

This transparent, data-driven framework ensures that safety resources are directed to the locations where they can achieve the greatest reductions in fatalities and serious injuries, directly fulfilling SS4A program objectives and the core principles of the Safe System Approach.

EXAMPLE CALCULATION – Clayton Road (Rank A)

For Clayton Road, the observed collision data includes:

- Fatal and serious injury (KSI) collisions: 16
- Total injury collisions: 224
- Intersection-related collisions: 208
- Pedestrian-involved collisions: 18
- Bicycle-involved collisions: 20

These values were normalized using systemwide totals:

- Total KSI collisions: 164
- Total injury collisions: 1,804
- Total intersection collisions: 1,518
- Total pedestrian collisions: 190
- Total bicycle collisions: 149

Each component was weighted and calculated as follows:

- KSI contribution: (16 / 164) × 30 = 2.93
- Injury contribution: (224 / 1,804) × 20 = 2.48
- Intersection contribution: (208 / 1,518) × 10 = 1.37
- Pedestrian contribution: (18 / 190) × 20 = 1.89
- Bicycle contribution: (20 / 149) × 20 = 2.68

The resulting composite Safe System score for Clayton Road is 11.36.

With a composite score of 11.36, Clayton Road ranks as the highest-priority corridor in the network. This ranking reflects both its substantial share of fatal and serious injury collisions and its elevated involvement of pedestrians and bicyclists, precisely the combination of factors the Safe System scoring methodology is designed to surface.

The table below provides the list of top 15 high injury corridors within City of Concord, identified based on the collisions that occurred between January 1, 2021 and December 31, 2025.

RANK	CORRIDOR NAME	FATAL	SEVERE INJURY	OTHER VISIBLE INJURY	COMPLAINT OF PAIN	KSI COLLISIONS	INJURY COLLISIONS	COLLISIONS OCCURRED AT INTERSECTIONS	PEDESTRIAN COLLISIONS	BICYCLE COLLISIONS	SAFE SYSTEM SCORE
A	Clayton Road: SR-242 to Washington Boulevard	3	13	57	151	16	224	208	18	20	11.36
B	Monument Boulevard: Cowell Road to Mohr Lane	3	10	30	101	13	144	114	24	14	9.13
C	Willow Pass Road: I-680 to Avila Road	1	16	29	135	17	181	153	16	9	9.02
D	Concord Boulevard: Galindo Street to Yolanda Cir	1	9	45	104	10	159	150	9	10	6.87
E	Treat Boulevard: Argonne Drive to Clayton Road	2	11	14	51	13	78	71	10	4	5.30
F	Concord Avenue: John Glenn Drive to Salvio Street	1	11	17	49	12	78	67	5	7	4.97
G	Meadow Lane: Market Street to Monument Boulevard	1	5	14	31	6	51	43	9	8	3.97
H	Oak Grove Road: Monument Boulevard to Contra Costa Canal Trail	1	6	7	34	7	48	40	3	6	3.20
I	Port Chicago Highway: Clayton Road to Bates Ave	1	7	18	40	8	66	52	4	1	3.09
J	Cowell Road: Monument Boulevard to Ygnacio Valley Road	0	5	15	38	5	58	52	2	6	2.92
K	Ygnacio Valley Road: Clayton Road to Cowell Road	1	6	13	35	7	55	42	3	2	2.75
L	Galindo Street: Salvio Street to Cowell Road	0	2	12	46	2	60	60	5	3	2.36
M	Market Street: Concord Avenue to Meadow Lane	0	1	7	28	1	36	30	4	5	1.87
N	Detroit Avenue: Clayton Road to Whitman Road	0	1	8	31	1	40	27	6	2	1.70
O	Diamond Boulevard: Willow Pass Road to Concord Avenue	1	1	8	36	2	46	30	4	1	1.63

The map illustrates the high injury corridors in City of Concord.

A Clayton Road: SR-242 to Washington Boulevard

B Monument Boulevard: Cowell Road to Mohr Lane

C Willow Pass Road: I-680 to Avila Road

D Concord Boulevard: Galindo Street to Yolanda Cir

E Treat Boulevard: Argonne Drive to Clayton Road

F Concord Avenue: John Glenn Drive to Salvio Street

G Meadow Lane: Market Street to Monument Boulevard

H Oak Grove Road: Monument Boulevard to Contra Costa Canal Trail

I Port Chicago Highway: Clayton Road to Bates Ave

J Cowell Road: Monument Boulevard to Ygnacio Valley Road

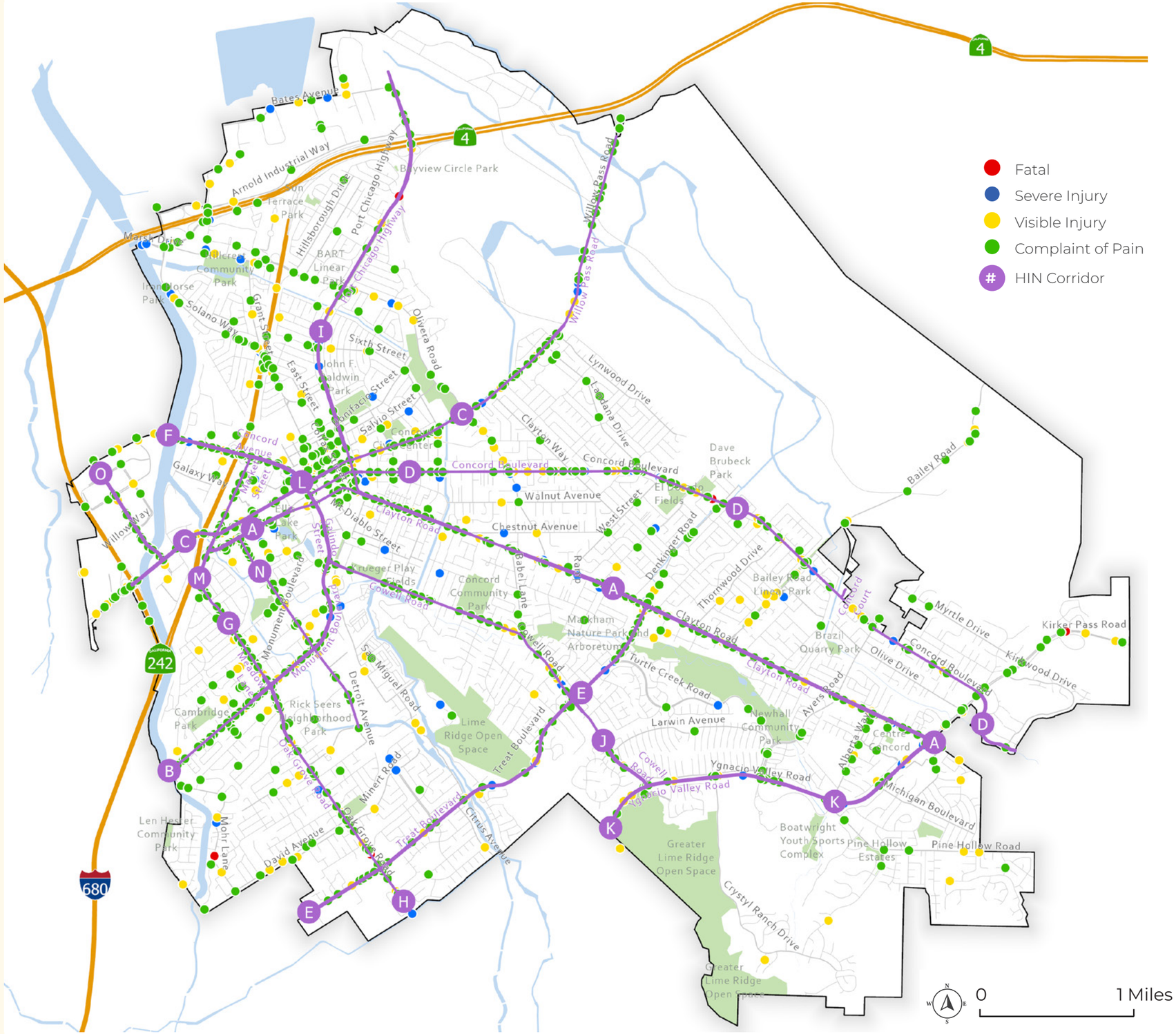
K Ygnacio Valley Road: Clayton Road to Cowell Road

L Galindo Street: Salvio Street to Cowell Road

M Market Street: Concord Avenue to Meadow Lane

N Detroit Avenue: Clayton Road to Whitman Road

O Diamond Boulevard: Willow Pass Road to Concord Avenue

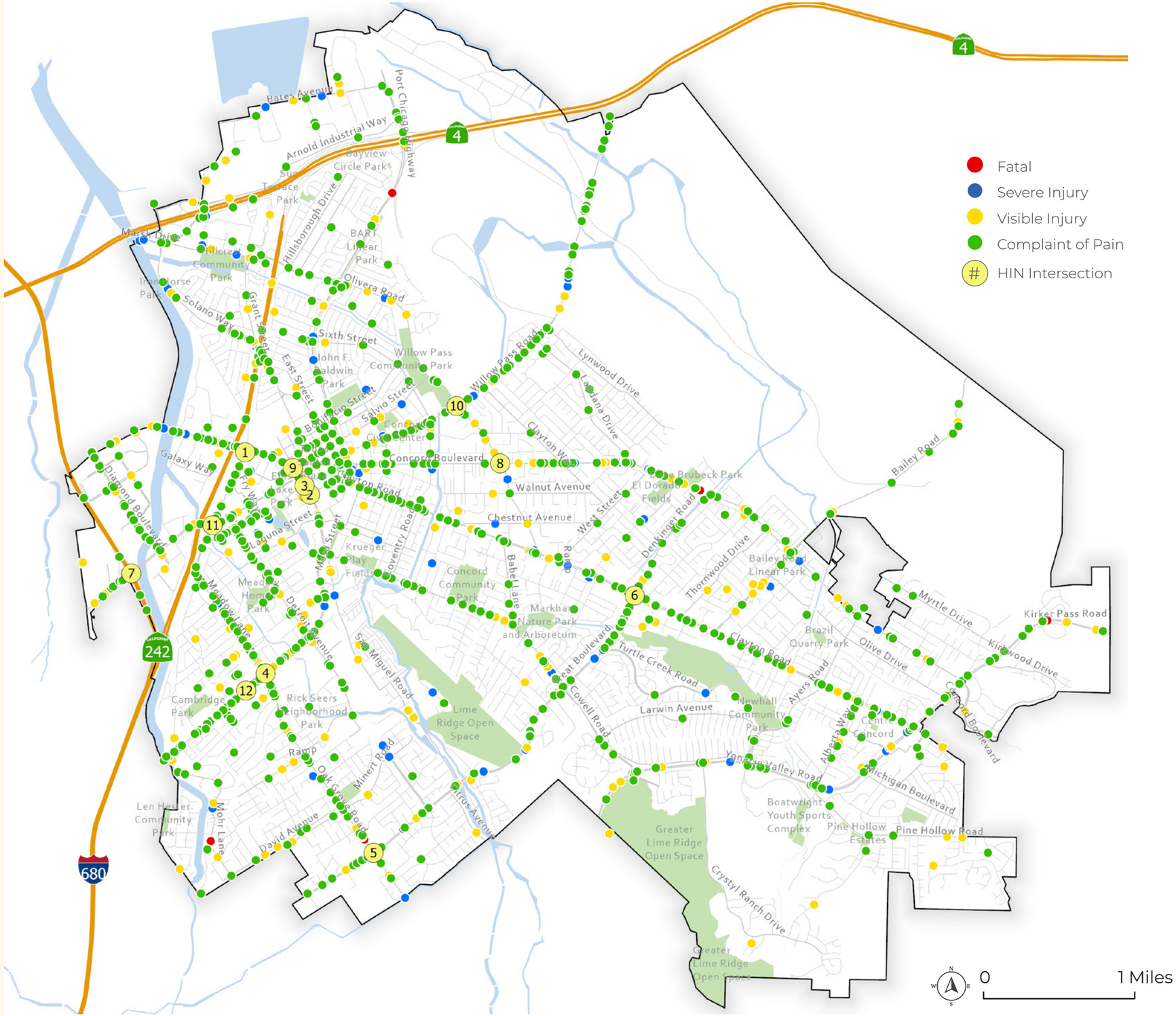


The table below provides the list of top 12 high injury intersections within City of Concord, identified based on the collisions that occurred between January 1, 2021 and December 31, 2025.

RANK	INTERSECTIONS NAME	FATAL	SEVERE INJURY	OTHER VISIBLE INJURY	COMPLAINT OF PAIN	KSI COLLISIONS	INJURY COLLISIONS	PEDESTRIAN COLLISIONS	BICYCLE COLLISIONS
1	Market Street & Concord Avenue	0	0	6	26	0	32	1	1
2	Galindo Street & Clayton Road	1	0	5	21	1	27	2	0
3	Galindo Street & Concord Boulevard	0	1	6	19	1	26	3	2
4	Monument Boulevard & Meadow Lane	1	3	6	13	4	23	4	4
5	Treat Boulevard & Oak Grove Road	0	2	2	17	2	21	0	1
6	Clayton Road & Treat Boulevard	0	0	8	12	0	20	2	0
7	Willow Pass Road & I-680	0	1	2	13	1	16	1	0
8	Concord Boulevard & Farm Bureau Road	0	2	6	7	2	15	0	3
9	Concord Avenue & Salvio Street	0	3	1	9	3	13	3	1
10	Willow Pass Road & Farm Bureau Road	0	1	5	7	1	13	0	2
11	Willow Pass Road & Market Street	0	1	4	8	1	13	1	1
12	Monument Boulevard & Virginia Lane	0	1	2	10	1	13	4	2

The map illustrates the high injury intersections in City of Concord.

1	Market Street & Concord Avenue
2	Galindo Street & Clayton Road
3	Galindo Street & Concord Boulevard
4	Monument Boulevard & Meadow Lane
5	Treat Boulevard & Oak Grove Road
6	Clayton Road & Treat Boulevard
7	Willow Pass Road & I-680
8	Concord Boulevard & Farm Bureau Road
9	Concord Avenue & Salvio Street
10	Willow Pass Road & Farm Bureau Road
11	Willow Pass Road & Market Street
12	Monument Boulevard & Virginia Lane



Collision Profiles

Collision profiles distill five years of collision data into a set of clearly defined, recurring safety patterns within the City of Concord. Each profile captures a distinct type of collision risk and serves as the analytical basis for selecting targeted countermeasures in the Comprehensive Safety Action Plan (CSAP).

Drawing on collision records from January 2021 through December 2025, the City identified consistent patterns in collision type, contributing factors, road user behavior, and roadway characteristics. These systemic patterns are the focus of the profiles, supporting countermeasure selection that addresses both collision frequency and severity across the network.

The profiles are designed to deepen understanding of the underlying causes of injury collisions and to anchor safety decision-making in evidence. By synthesizing trends across collision type, violation category, travel mode, location context, and lighting conditions, they surface the most effective and context-appropriate safety strategies for each identified risk area.

Rather than organizing safety issues by roadway classification, Concord's profiles are developed on a citywide basis. This approach captures the most prevalent and severe patterns across the entire transportation network and allows the City to address systemic challenges that cut across roadway types and geographic areas.

Each collision profile is structured around four elements:

- Total number of injury collisions, including those involving fatal and serious injury (KSI)
- Key collision trends, including collision types, violation factors, location characteristics, and lighting conditions
- Primary travel modes involved, such as motor vehicles, pedestrians, bicyclists, and motorcyclists
- A geographic representation illustrating the spatial distribution of collisions associated with the profile

Together, these elements provide a complete picture of each safety challenge and the evidence base needed to identify effective countermeasures.

The analysis identified ten priority collision profiles representing the most significant and persistent safety challenges on Concord's roadway network:

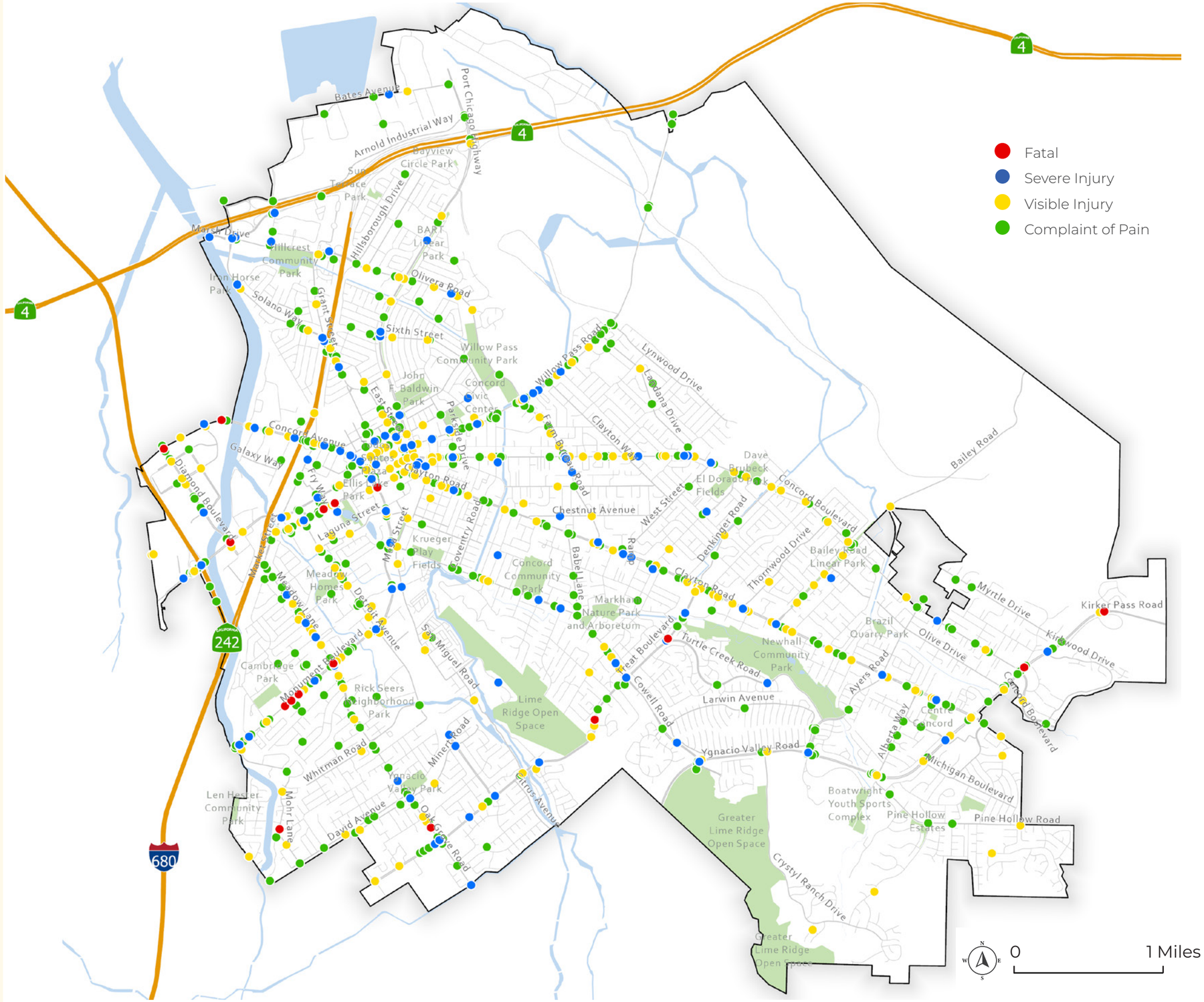
1. **Improve Safety at Intersections – 1,518 collisions**
2. **Reduce Broadside Collisions – 687 collisions**
3. **Address Collisions Near Schools (within 0.25 miles) – 667 collisions**
4. **Reduce Nighttime Collisions – 544 collisions**
5. **Reduce Rear-End Collisions – 450 collisions**
6. **Reduce Unsafe Speed-Related Collisions – 418 collisions**
7. **Address Traffic Signal and Sign Violations – 292 collisions**
8. **Improve Pedestrian Safety – 190 collisions**
9. **Improve Bicycle Safety – 149 collisions**
10. **Reduce DUI-Related Collisions – 139 collisions**

Collectively, these ten profiles define the safety priorities that shape every subsequent element of the CSAP, from infrastructure investments and project selection to education campaigns and enforcement strategies. By aligning resources with the conditions and behaviors most strongly associated with fatal and serious injury outcomes, the City can ensure that every safety dollar delivers the greatest possible reduction in harm.

1 IMPROVE SAFETY AT INTERSECTIONS

KSI Collisions	142
Injury Collisions	1,518
Collision Type	
Broadside Collisions	607
Rear End Collisions	374
Violation Category	
Unsafe Speed Collisions	340
Traffic Signs and Signals Violation Collisions	287
Lighting	
Nighttime Collisions	457
Mode	
Bicycle	133
Bus	9
Motorcycle	93
Others	6
Passenger Car or Pickup Truck	1,090
Pedestrian	163
Truck	24

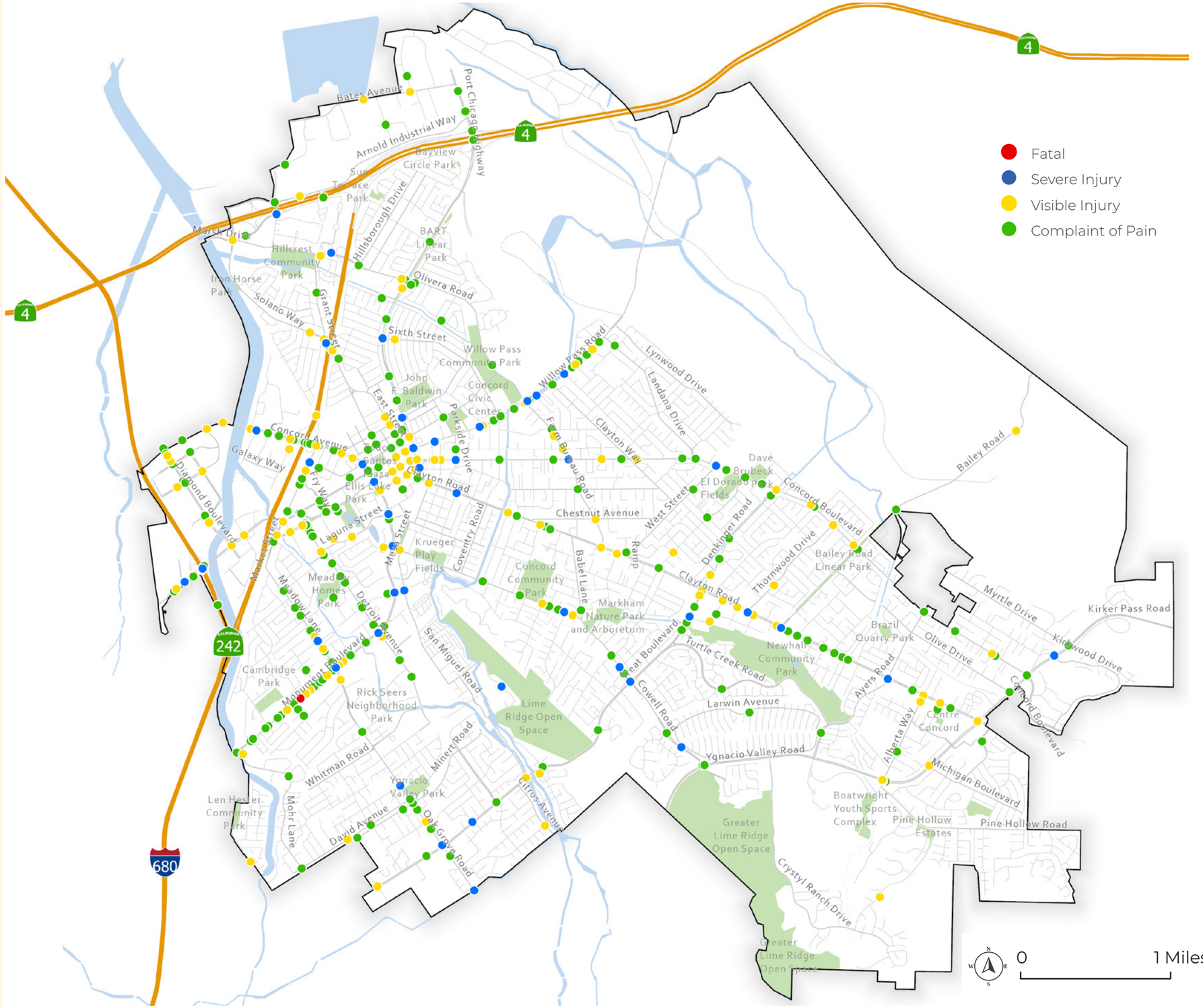
The map illustrates the collisions that occurred at intersections in the City of Concord between January 1, 2021 and December 31, 2025.



2 REDUCE BROADSIDE COLLISIONS

KSI Collisions	47
Injury Collisions	687
Violation Category	
Collisions at Intersections	607
Traffic Signs and Signals Collisions	253
Automobile Right-of-Way Collisions	190
Improper Turning Collisions	107
Lighting	
Nighttime Collisions	179
Mode	
Bicycle	89
Bus	6
Motorcycle	50
Others	3
Passenger Car or Pickup Truck	524
Pedestrian	3
Truck	12

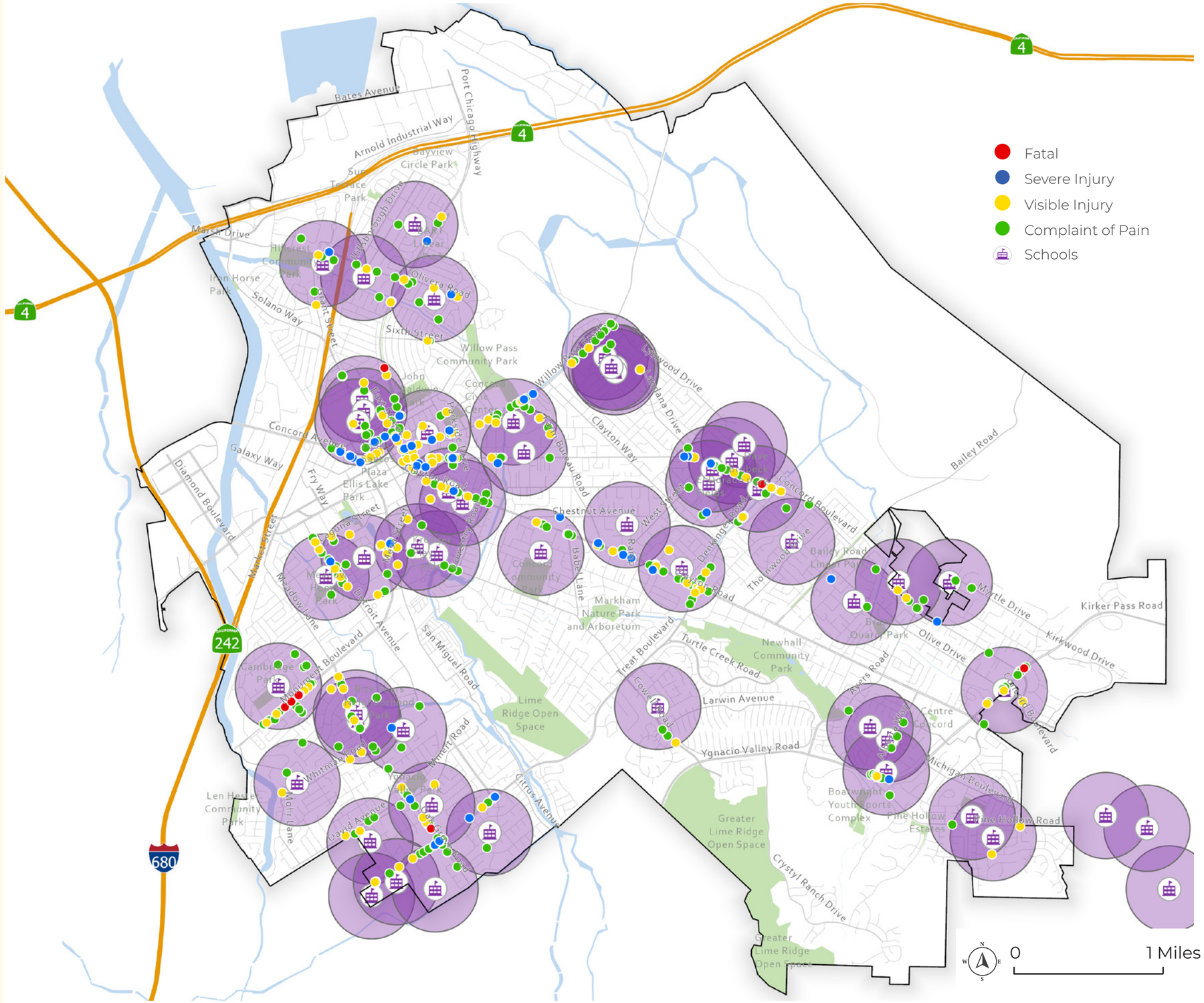
The map illustrates the broadside collisions in the City of Concord between January 1, 2021 and December 31, 2025.



3 ADDRESS COLLISIONS NEAR 0.25 MILE OF SCHOOLS

KSI Collisions	57
Injury Collisions	667
Location Type	
Collisions at Intersections	589
Collision Type	
Broadside Collisions	243
Rear End Collisions	166
Violation Category	
Unsafe Speed Collisions	155
Traffic Signs and Signals Violation Collisions	105
Lighting	
Nighttime Collisions	197
Mode	
Bicycle	52
Bus	3
Motorcycle	44
Others	4
Passenger Car or Pickup Truck	476
Pedestrian	70
Truck	18

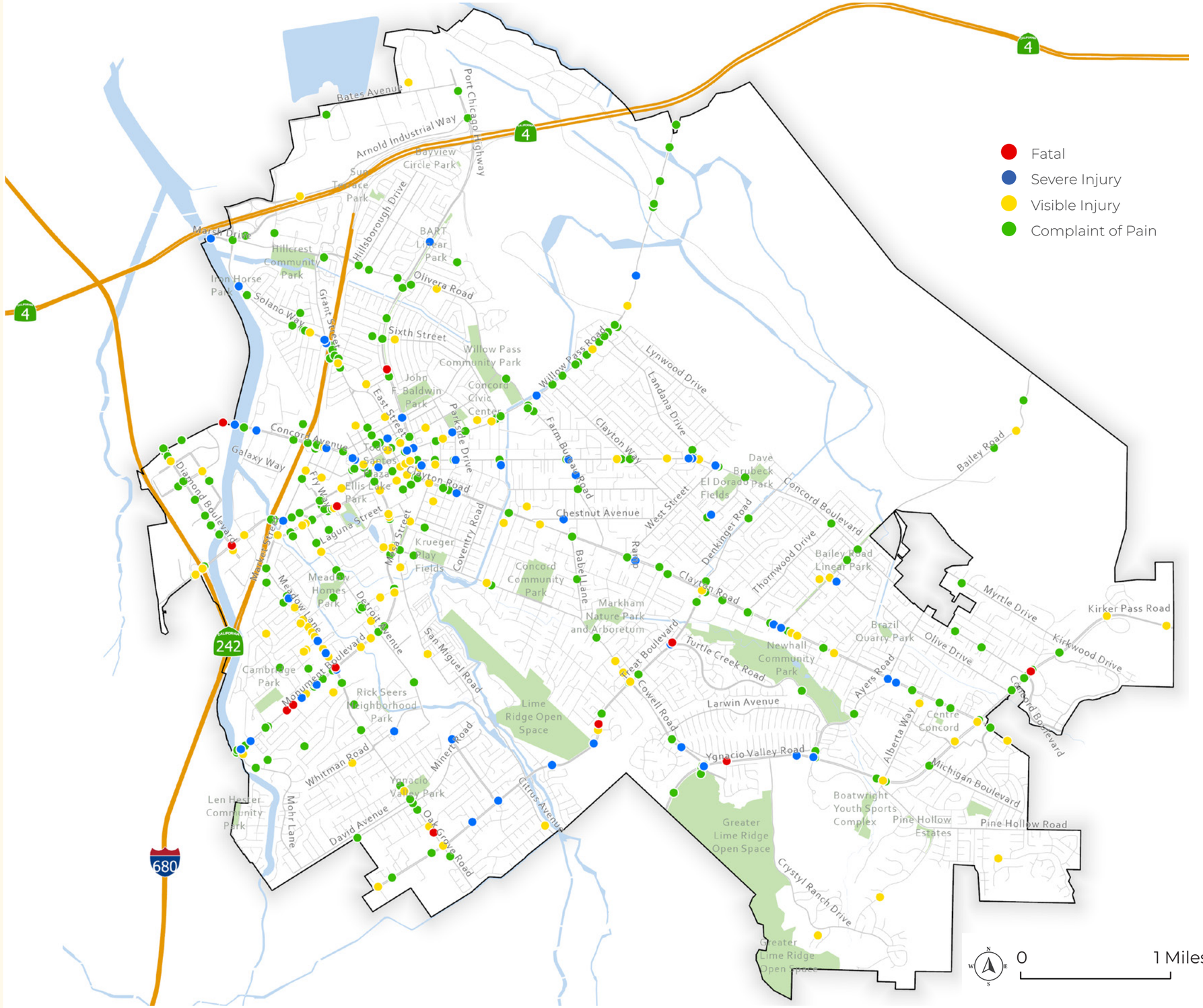
The map illustrates the collisions that occurred within 0.25 miles of schools in the City of Concord between January 1, 2021 and December 31, 2025.



4 REDUCE NIGHTTIME COLLISIONS

KSI Collisions	71
Injury Collisions	544
Location Type	
Collisions at Intersections	457
Collision Type	
Broadside Collisions	179
Rear End Collisions	136
Violation Category	
Unsafe Speed Collisions	122
DUI Collisions	107
Mode	
Bicycle	33
Bus	1
Motorcycle	39
Others	1
Passenger Car or Pickup Truck	400
Pedestrian	60
Truck	10

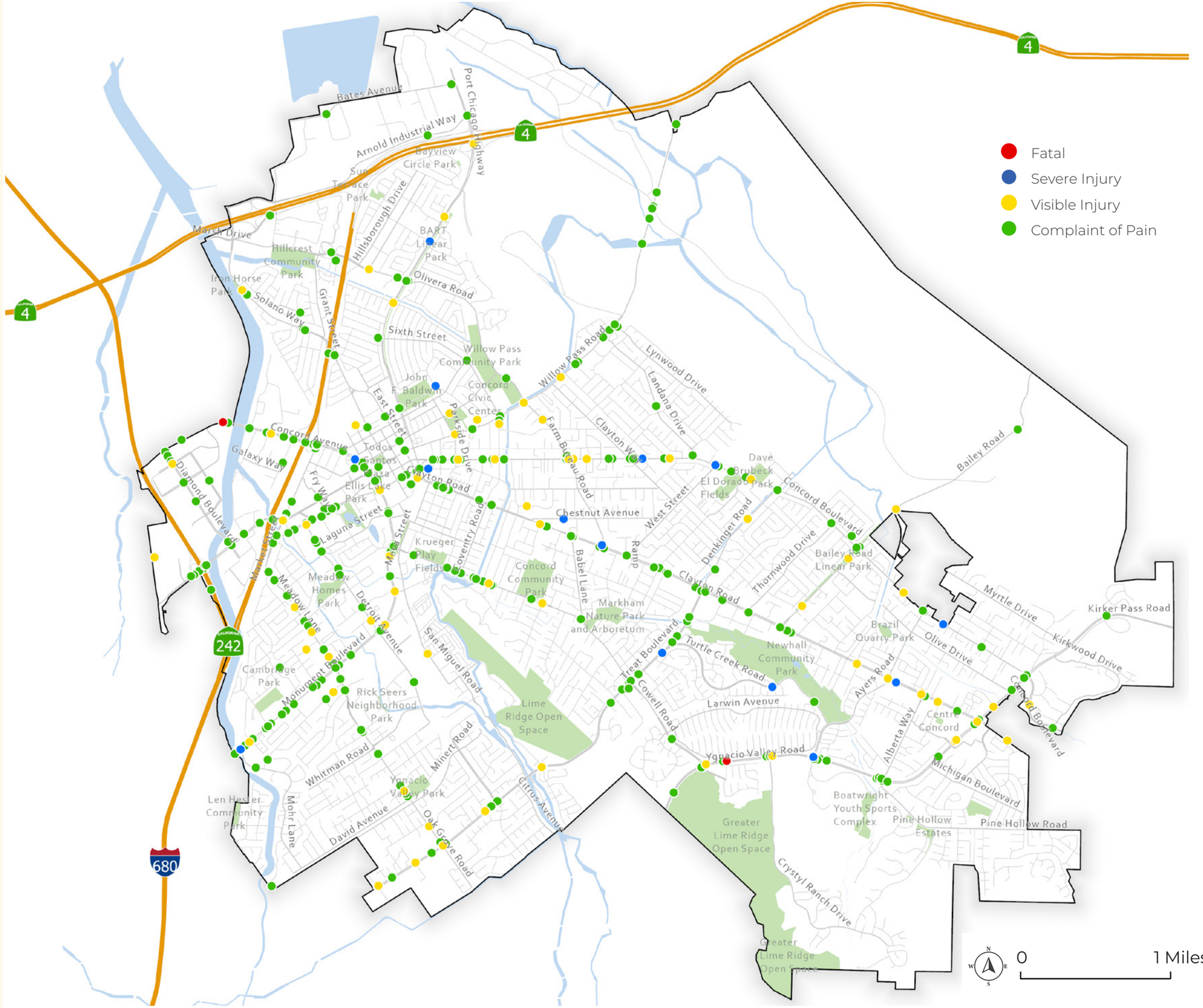
The map illustrates the nighttime collisions in the City of Concord between January 1, 2021 and December 31, 2025.



5 REDUCE REAR-END COLLISIONS

KSI Collisions	16
Injury Collisions	450
Location Type	
Collisions at Intersections	374
Violation Category	
Unsafe Speed Collisions	292
Following Too Closely Collisions	59
Lighting	
Nighttime Collisions	136
Mode	
Bicycle	10
Bus	4
Motorcycle	16
Others	2
Passenger Car or Pickup Truck	406
Pedestrian	1
Truck	11

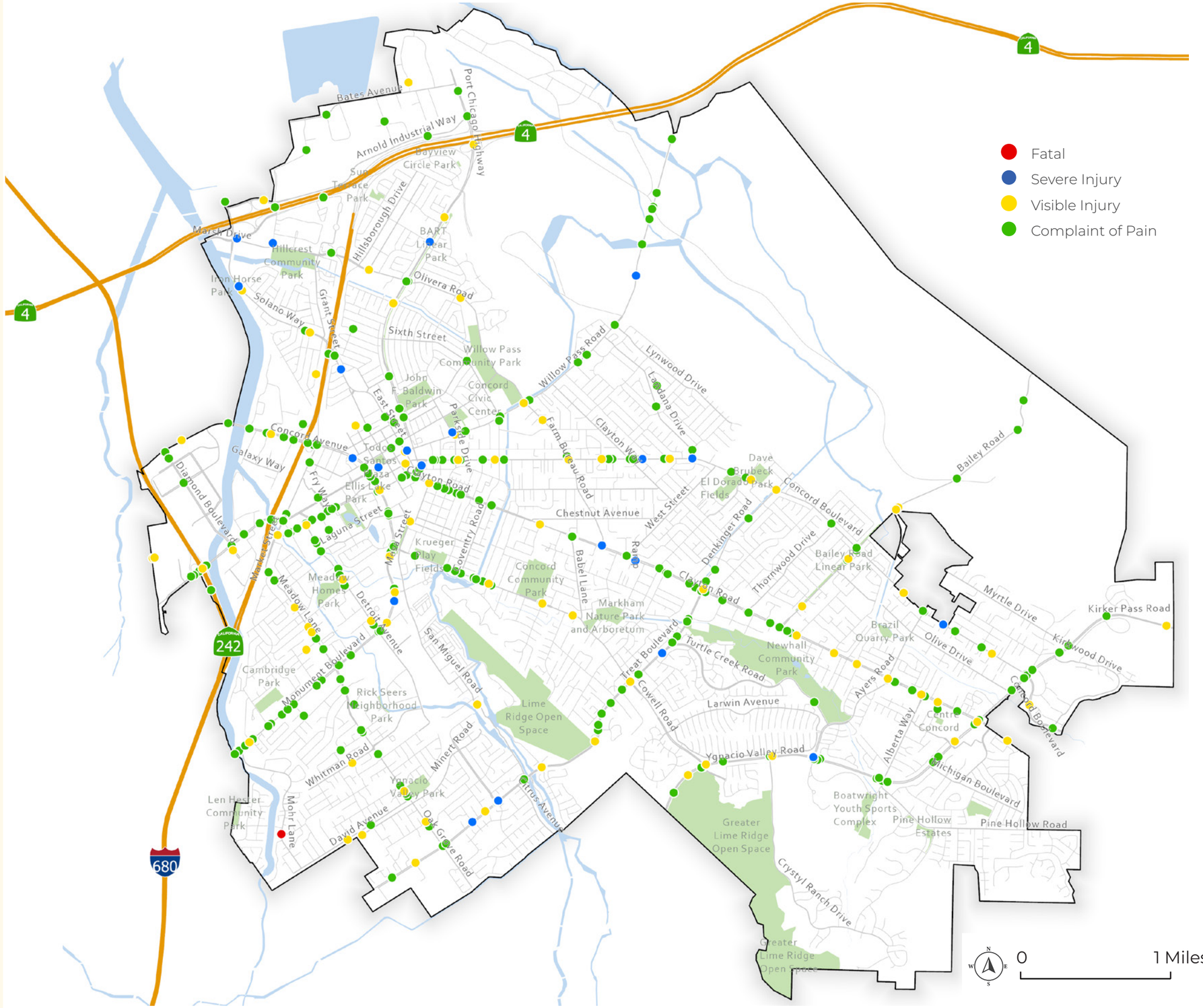
The map illustrates rear-end collisions in the City of Concord between January 1, 2021 and December 31, 2025.



6 REDUCE UNSAFE SPEED-RELATED COLLISIONS

KSI Collisions	23
Injury Collisions	418
Location Type	
Collisions at Intersections	340
Collision Type	
Rear End Collisions	292
Hit Object Collisions	48
Lighting	
Nighttime Collisions	122
Mode	
Bicycle	9
Bus	2
Motorcycle	24
Others	1
Passenger Car or Pickup Truck	355
Pedestrian	20
Truck	7

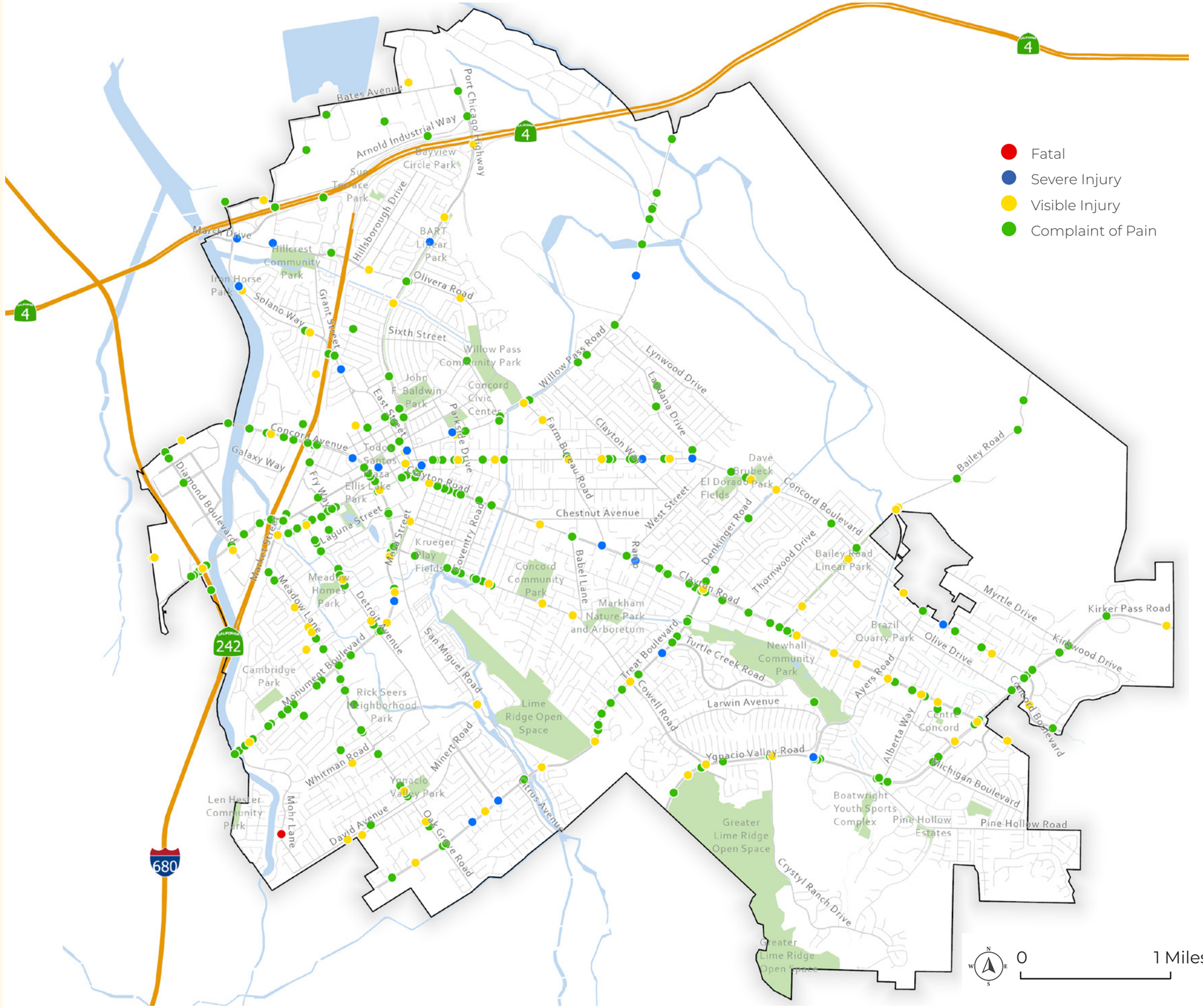
The map illustrates the unsafe speed collisions in the City of Concord between January 1, 2021 and December 31, 2025.



7 ADDRESS TRAFFIC SIGNS AND SIGNALS VIOLATIONS

KSI Collisions	23
Injury Collisions	292
Location Type	
Collisions at Intersections	287
Collision Type	
Broadside Collisions	253
Lighting	
Nighttime Collisions	69
Mode	
Bicycle	27
Bus	1
Motorcycle	15
Others	1
Passenger Car or Pickup Truck	235
Pedestrian	9
Truck	4

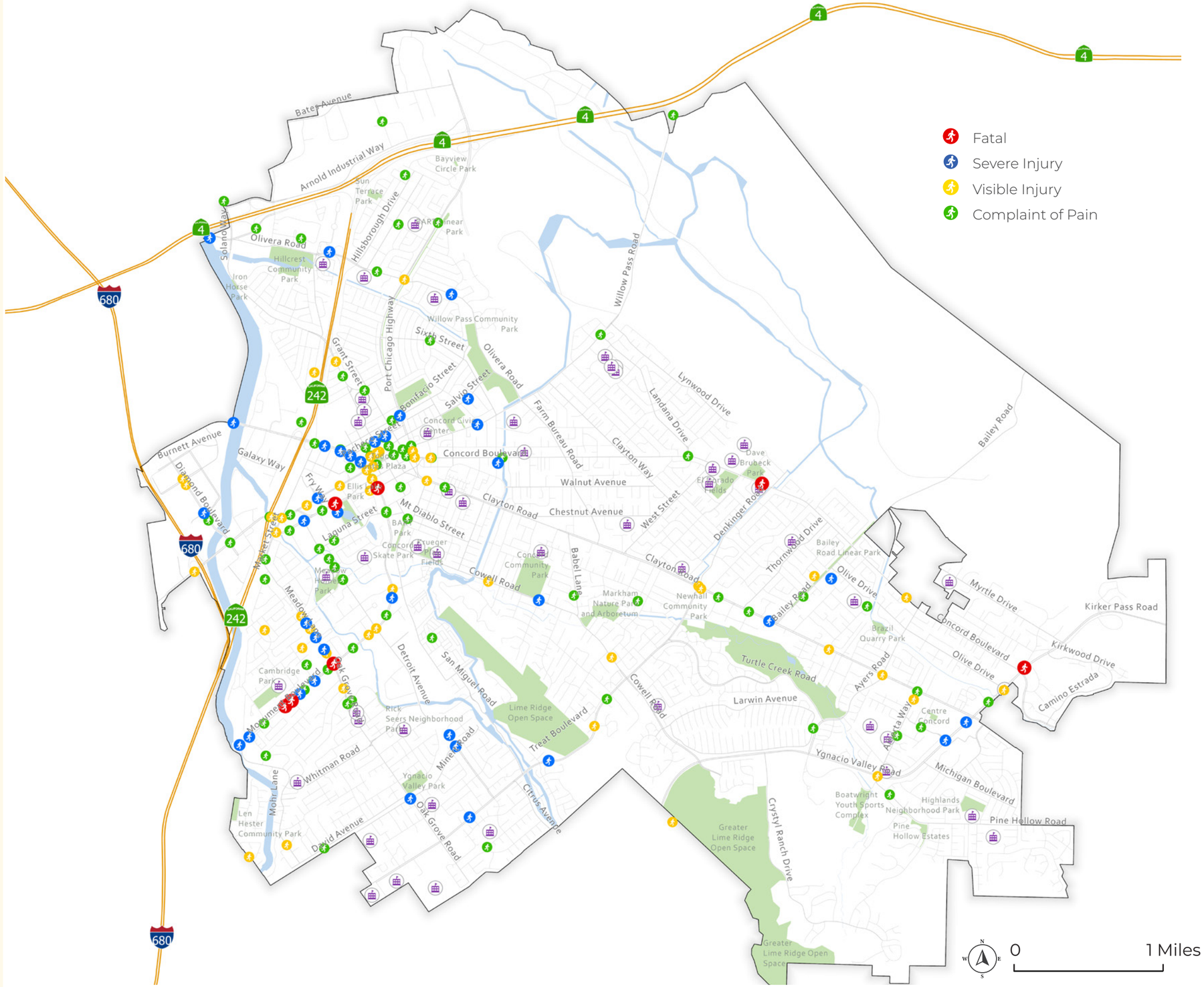
The map illustrates the collisions related to traffic signs and signals violations in the City of Concord between January 1, 2021 and December 31, 2025.



8 IMPROVE PEDESTRIAN SAFETY

KSI Collisions	46
Injury Collisions	190
Location Type	
Collisions at Intersections	163
Collision Type	
Vehicle/Pedestrian Collisions	181
Violation Category	
Pedestrian Right-of-Way Violations	75
Pedestrian Violations	48
Lighting	
Nighttime Collisions	60
Mode	
Pedestrian	190

The map illustrates the pedestrian-involved collisions in the City of Concord between January 1, 2021 and December 31, 2025.



9 IMPROVE BICYCLE SAFETY

KSI Collisions	21
Injury Collisions	149

Location Type

Collisions at Intersections	133

Collision Type

Broadside Collisions	89
Improper Turning Collisions	21

Violation Category

Traffic Signs and Signals Collisions	27
Wrong Side of Road Collisions	26
Automobile Right-of-Way Collisions	21

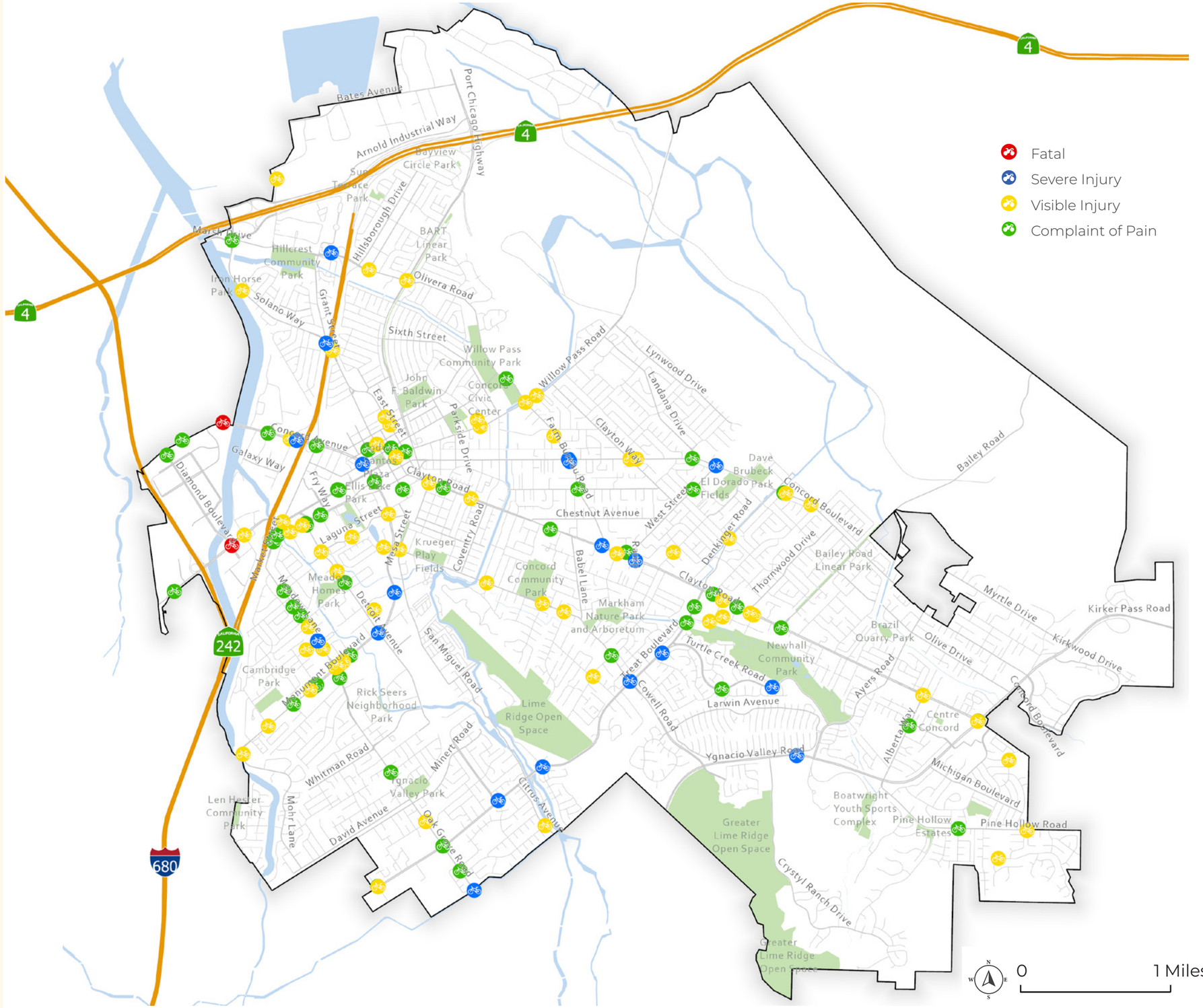
Lighting

Nighttime Collisions	33

Mode

Bicycle	149

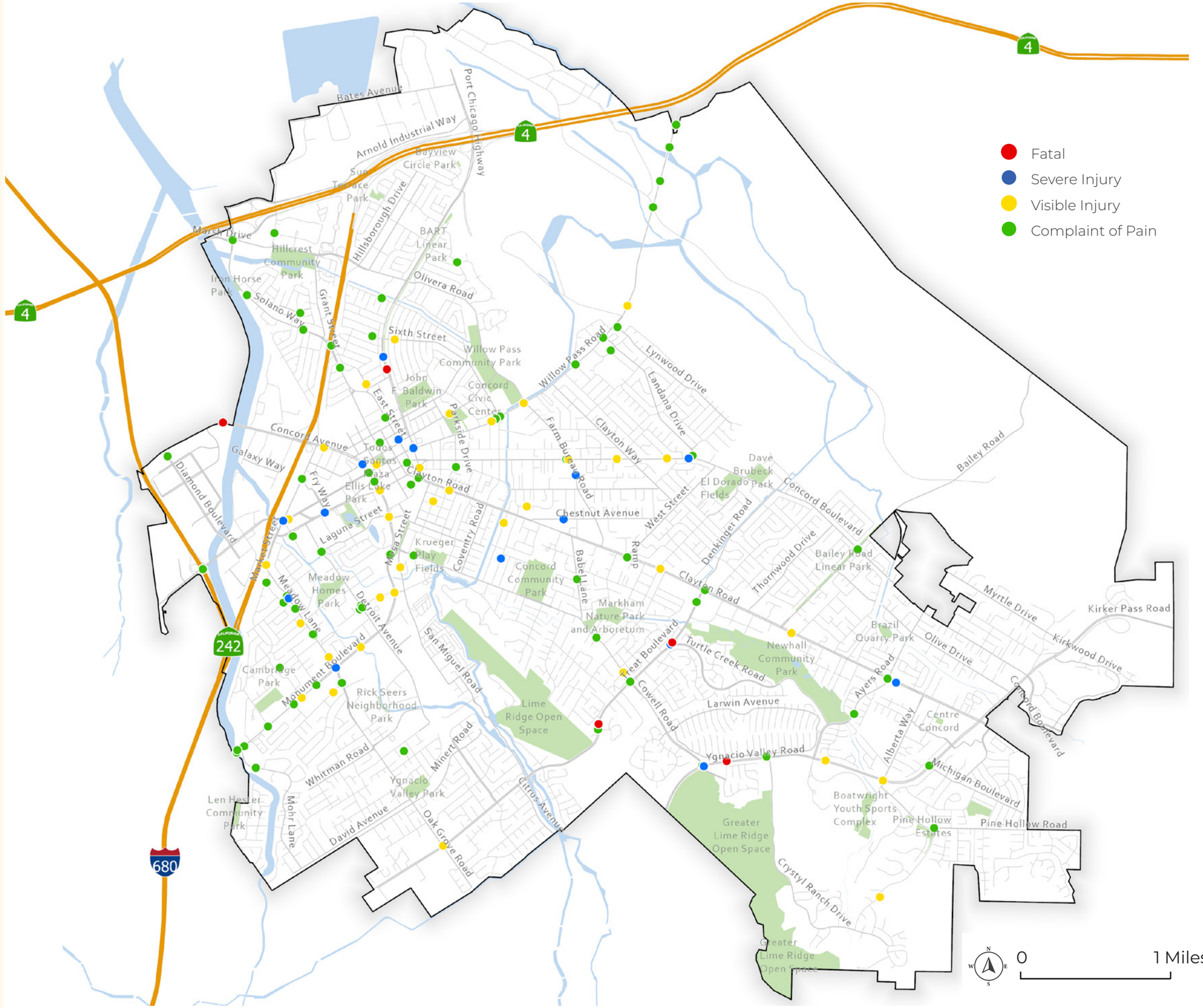
The map illustrates the bicycle-involved collisions in the City of Concord between January 1, 2021 and December 31, 2025.

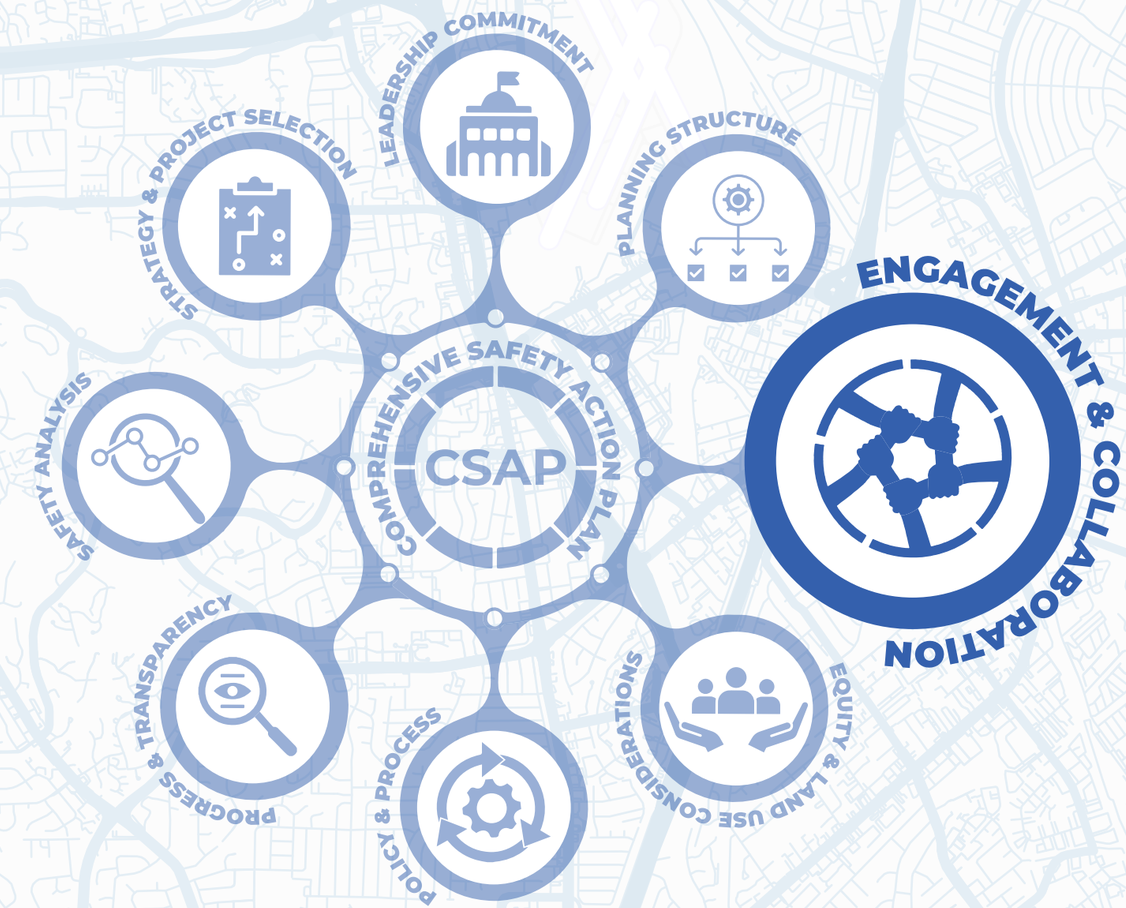


10 REDUCE DUI-RELATED COLLISIONS

KSI Collisions	20
Injury Collisions	139
Location Type	
Collisions at Intersections	113
Collision Type	
Rear End Collisions	41
Hit Object Collisions	40
Broadside Collisions	23
Head-On Collisions	21
Lighting	
Nighttime Collisions	107
Mode	
Bicycle	1
Motorcycle	4
Passenger Car or Pickup Truck	129
Pedestrian	2
Truck	3

The map illustrates the collisions related to DUI collisions in the City of Concord between January 1, 2021 and December 31, 2025.





CONCORD

Comprehensive Safety Action Plan



CHAPTER FOUR

Engagement & Collaboration

OVERVIEW

The development of the Concord Comprehensive Safety Action Plan (CSAP) involved extensive community engagement and close collaboration with stakeholders and residents. Recognizing that traffic safety is a shared responsibility, the process prioritized input from community members, partner agencies, and local stakeholders to identify key concerns, validate technical analyses, and build support for recommended strategies. Incorporating lived experiences from those who use Concord's streets daily is essential to both the safety analysis and the identification of priority projects.

The CSAP engagement program was designed to reach a broad cross-section of the community and included four primary components:

Steering Committee: Established to provide technical oversight and stakeholder guidance throughout the plan's development.

Community Outreach Meetings: Three meetings open to the public, offering opportunities for residents to learn about the project and share feedback.

Public Input Tools: A citywide online safety survey and an interactive web-based mapping platform that allowed residents to identify specific locations and corridors of concern.

Project Website: A dedicated website (concordsafestreets.org) that served as a central hub for project information, planning documents, and engagement opportunities throughout the process.

The following table summarizes all engagement activities.

SUMMARY OF ENGAGEMENT AND OUTREACH ACTIVITIES

Activity	Description	Date(s)
Project Website	A dedicated project website, concordsafestreets.org, was created to provide residents with ongoing access to CSAP information, planning documents, and survey and map input links throughout the planning process.	*Launched in February 2026*
Steering Committee Meeting #1	Virtual kickoff meeting with the CSAP Steering Committee to introduce project scope, review the Safe System Approach, and present preliminary collision data analysis findings.	*February 23, 2026*
Online Survey and Map Input Opens	Launch of the citywide online community safety survey and web-based public map input platform, allowing residents to submit safety concerns and identify specific locations of concern across the city.	*March 11, 2026*
Community Outreach Meeting #1 (In-person)	In-person public meeting open to all Concord residents. Collision data analysis and preliminary High Injury Network findings were presented, and the survey and map input platform were introduced.	*March 30, 2026*
Community Outreach Meeting #2 (Virtual)	In a virtual public meeting, survey and map input results were presented alongside draft project recommendations, and residents provided direct feedback on proposed safety improvements.	*April 13, 2026*
Steering Committee Meeting #2	Virtual Steering Committee meeting to review engagement outcomes, High Injury Network findings, and draft safety project recommendations. Guidance was provided on project prioritization and plan finalization.	*April 14, 2026*
Online Survey and Map Input Closes	Engagement period closes. A total of 651 survey responses and 77 map input comments were collected over the online survey period.	*April 20, 2026*
Steering Committee Meeting #3	Virtual Steering Committee meeting to present the Safety Project recommendations and solicit feedback from the Steering Committee.	*April 30, 2026*
Community Outreach Meeting #3	Third Community Outreach meeting to present the Safety Project recommendations and solicit feedback from the residents.	*May 4, 2026*
Bicycle & Pedestrian Advisory Committee Meeting (In-person)	Bicycle and Pedestrian Advisory Committee (BPAC) meeting presenting the CSAP recommendations.	*May 6, 2026*

COMMUNITY OUTREACH MEETING #1 PRESENTATION



STEERING COMMITTEE MEETING #1 PRESENTATION



Appendix D includes presentations of both community outreach meetings and steering committee meetings.

CSAP STEERING COMMITTEE

The Steering Committee was established as part of the Concord Comprehensive Safety Action Plan (CSAP) to provide technical oversight and stakeholder guidance throughout the plan's development. The committee brings together representatives from municipal departments, regional transportation agencies, emergency services, and local institutions to support a coordinated and collaborative approach to improving traffic safety in Concord.

The formation of the Steering Committee reflected the understanding that traffic safety is a shared responsibility that requires coordination across multiple agencies and disciplines. Representatives from the City of Concord Public Works Department, the Contra Costa Transportation Authority (CCTA), Bay Area Rapid Transit (BART), the Contra Costa County Fire Protection District, and the Mt. Diablo Unified School District were convened to contribute their expertise and perspectives. This structure allowed the City to draw on a broad range of institutional knowledge and resources to identify and advance strategies to reduce serious injuries and fatalities on Concord's roadways.

During the preparation of the CSAP, the Steering Committee played a central role in providing policy direction and technical input. Members contributed insights related to infrastructure, transit operations, emergency response, and school travel safety, helping to develop a comprehensive understanding of Concord's safety challenges. The committee's diverse representation ensured that the action plan reflected a wide range of considerations, including capital improvements, corridor redesigns, education, enforcement, and emergency response coordination.

The following table lists Steering Committee members and their affiliated agencies.

REPRESENTATIVE	AGENCY
Abhishek Parikh	City of Concord Public Works Department
Virendra Patel	City of Concord Public Works Department, Project Manager
Phalen Shwan	City of Concord
Jesse Crawford	City of Concord
Danielle Thomas	Contra Costa County Fire Protection Department
Pranjal Dixit	Contra Costa County Transportation Authority (CCCTA)
Kamla Parks	Bay Area Rapid Transit (BART)
Melanie Koslow	Mt. Diablo Unified School District

PROJECT WEBSITE

A dedicated project website (concordsafestreets.org) was developed to provide residents with ongoing access to CSAP information throughout the planning process. The website served as a central hub for project materials, including a project overview, a preliminary collision analysis summary with an interactive collision map, links to the community survey and map-based input tools, and updates on the project schedule.

The website was promoted through City communication channels and partner agency networks to reach a broad cross-section of Concord residents and encourage participation in the planning process. By providing accessible and up-to-date information, the website supported transparency and facilitated ongoing community engagement.

The following figure illustrates the project website homepage.

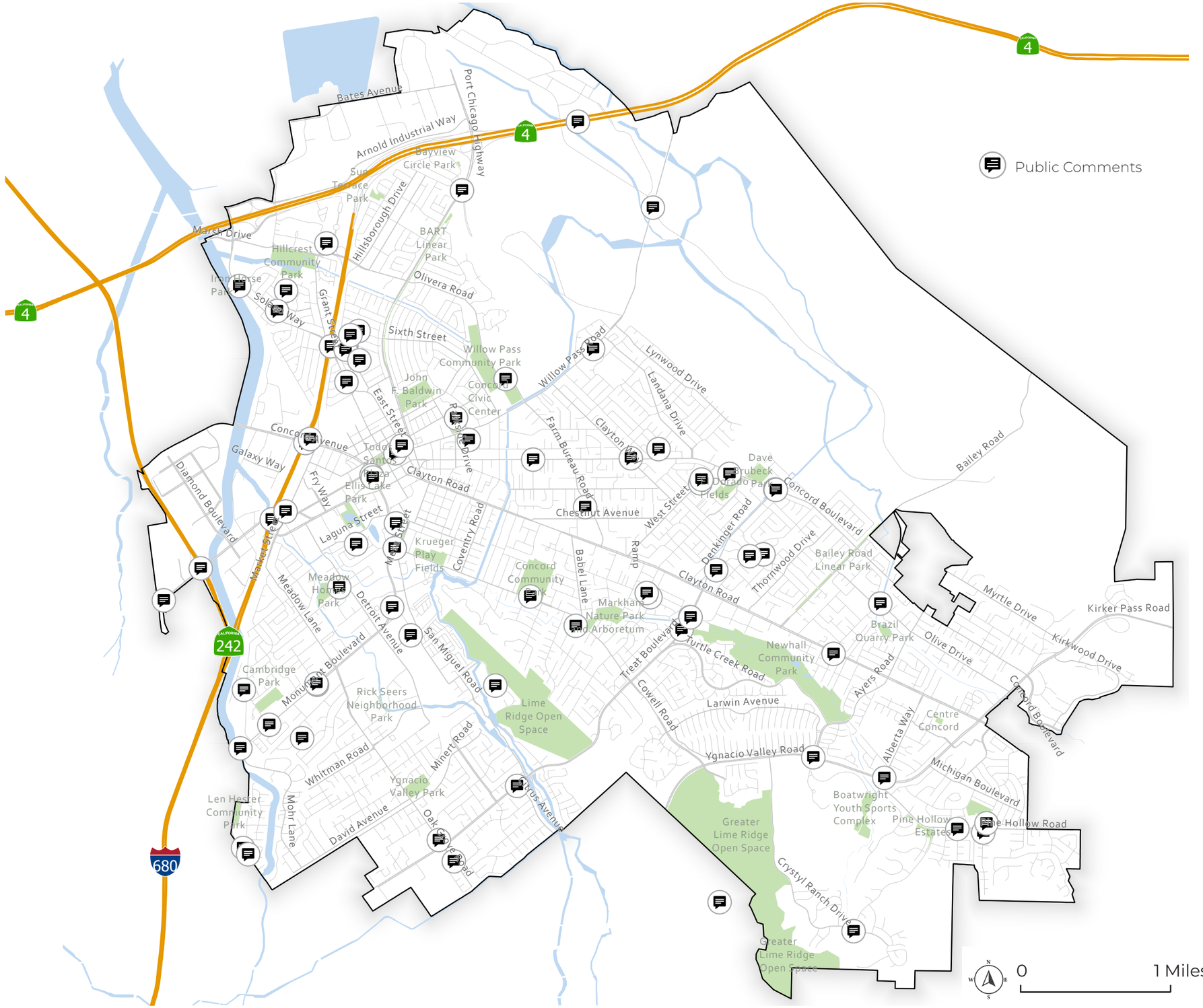


ONLINE MAP INPUT PLATFORM

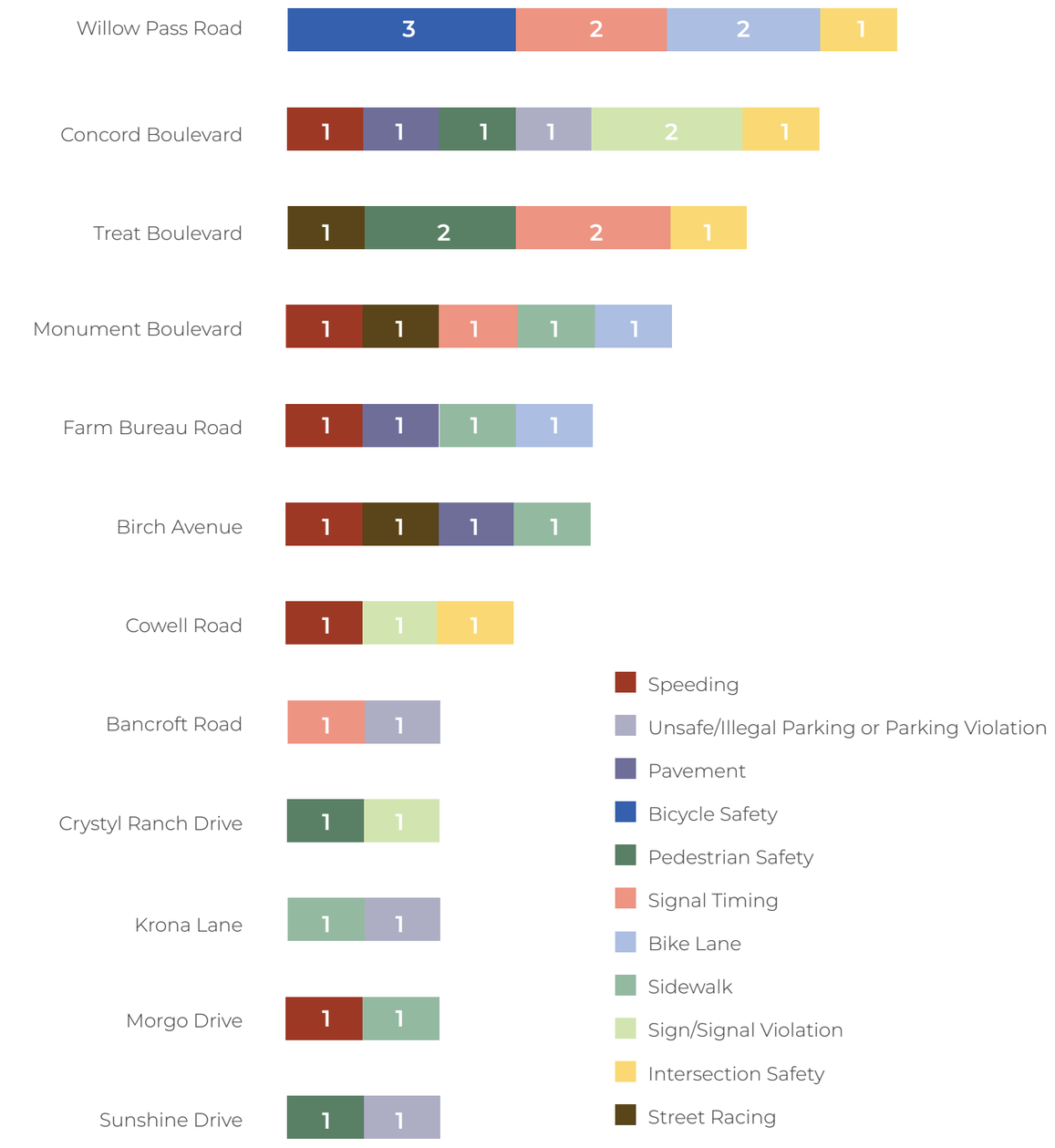
A web-based public map input platform was made available to allow residents to identify specific locations and corridors where they had observed or experienced traffic safety issues. The platform was open from March 11 to April 20, 2026.

A total of 77 map-based comments were received during this period. Analysis of these submissions resulted in 106 categorized safety concern responses, as individual comments often referenced multiple issue types. For example, a single comment at a given location might identify concerns related to speeding, school safety, and inadequate street lighting, with each concern categorized separately in the analysis. All subsequent analysis in this section is based on these 106 categorized responses.

The following map illustrates the locations of all community input comments across the city. Appendix E contains the complete log of map input comments and their associated safety concern categories.



The following figure provides a summary bar chart of the issue categories.



Note: This graph represents the top 12 corridors and top 11 issue categories from the map input survey responses.

The highest concentration of comments was received along Willow Pass Road, Concord Boulevard, Treat Boulevard, and Monument Boulevard. These corridors are consistent with the High Injury Network segments identified through the CSAP collision data analysis.

Speeding was the most frequently cited concern, followed by unsafe or illegal parking and poor pavement conditions.

The following tables summarize the corridors receiving the greatest number of comments and the distribution of categorized responses by issue type.

MAP INPUT: TOP CORRIDORS BY NUMBER OF COMMENTS

Corridor	Number of Comments
Willow Pass Road	10
Concord Boulevard	7
Treat Boulevard	7
Monument Boulevard	6
Farm Bureau Road	5
Birch Avenue	4
Cowell Road	4
Bancroft Road	3
Crystyl Ranch Drive	3
Krona Lane	3
Morgo Drive	3
Sunshine Drive	3

MAP INPUT: CATEGORIZED SAFETY CONCERN RESPONSES BY ISSUE TYPE

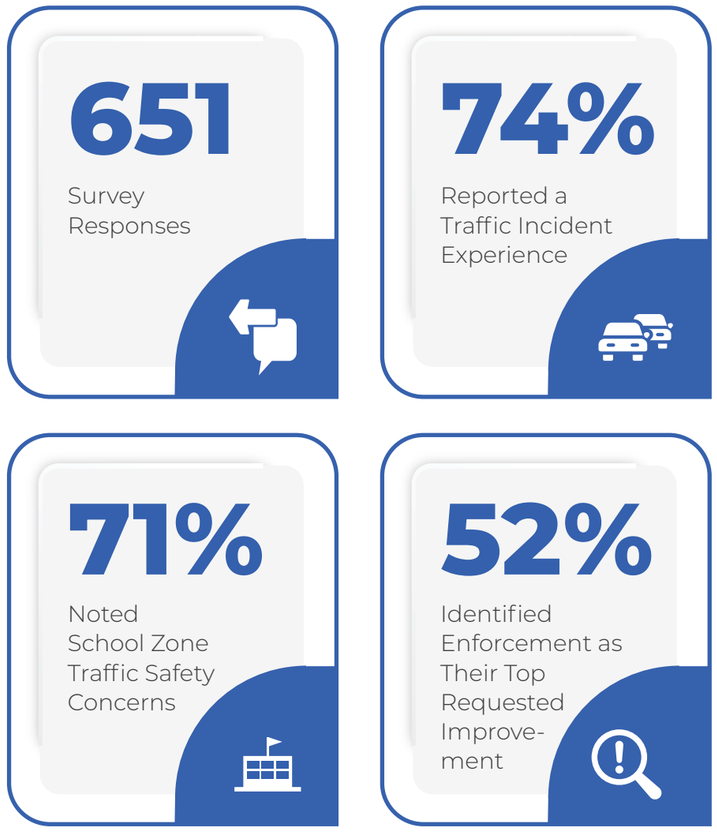
Issue Category	# Responses	% of Total Responses
Speeding	11	10.4%
Unsafe or Illegal Parking	10	9.4%
Pavement	9	8.5%
Bicycle Safety	8	7.5%
Pedestrian Safety	8	7.5%
Signal Timing	8	7.5%
Bike Lane (Request or Gap)	7	6.6%
Sidewalk (Gap or Request)	6	5.7%
Sign or Signal Violation	6	5.7%
Intersection Safety	4	3.8%
Street Racing	4	3.8%
Poor Visibility	3	2.8%

Note: 77 map input comments were received. Analysis yielded 106 categorized safety concern responses, as individual comments may address multiple distinct issue types. Percentages are calculated as a share of 106 total responses.

COMMUNITY SAFETY SURVEY HIGHLIGHTS

An online community safety survey was administered citywide from March 11 to April 20, 2026, generating a total of 651 responses. The survey collected information on travel behavior, safety concerns, personal experiences with traffic incidents, school zone conditions, geographic priorities, and preferred safety improvements.

Key findings from the survey are summarized below. A complete tabulation of results, including cross-tabulation analyses by age, trip purpose, and collision experience, is provided in Appendix F.



Note: Survey data collected via the City of Concord CSAP public engagement platform, March 11–April 20, 2026. Total valid responses: 651. Survey used multi-select, single-select, and open-text question formats. Percentages for multi-select questions exceed 100% as respondents could select multiple options. Open-text responses were reviewed thematically; locations cited fewer than three times were noted but not individually tabulated. Analysis and report prepared by the Transportation Division, Public Works Department, City of Concord.

COMMUNITY SAFETY SURVEY: HIGHLIGHTS BY TOPIC

Topic	Key Finding
Respondent Profile	651 responses collected March 11 to April 20, 2026. 51 percent of respondents were aged 55 or older. 94 percent traveled primarily by personal vehicle, consistent with Concord's auto-oriented street network.
Top Safety Concerns	Speeding (66 percent) and red-light running (60 percent) are the dominant concerns across all road user groups and represent the clearest, most consistent signal in the survey. Distracted driving (39 percent) and illegal or unsafe e-bike operations (24 percent) are the next most frequently cited concerns.
Pedestrian Safety	Failure to yield at crosswalks (37 percent) and turning vehicle conflicts (32 percent) are the leading pedestrian safety concerns. Missing sidewalks (19 percent) and missing crossings (13 percent) indicate unmet infrastructure needs.
Bicycle Safety	Cyclists not following traffic rules ranked first (26 percent), followed by absence of bike lanes (18 percent), poor road conditions (15 percent), and no safe routes (12 percent). Multiple open-ended responses noted e-bikes operating on sidewalks, particularly near schools, and called for consistent enforcement of e-bike regulations.
Personal Incident Experience	74 percent of respondents reported direct personal experience with a traffic incident on Concord streets. Near-misses (30 percent) and witnessed collisions (30 percent) were most commonly reported, followed by direct collision involvement (11 percent). Only 26 percent reported no personal incident experience.
Time-of-Day Risk	The afternoon period (3 PM to 6 PM) was the highest-risk window across all modes: 62 percent of drivers, 33 percent of pedestrians, and 26 percent of cyclists identified it as the most dangerous time. Morning commute hours (6 AM to 9 AM) and school hours were the next most-cited periods.
School Zone Safety	72 percent of respondents expressed concern about school-area safety. Speeding near schools (41 percent), traffic backup at drop-off/pick-up (36 percent), and double-parking blocking sight lines (29 percent) were the top driver issues. Drivers failing to yield to children (30 percent) and absence of a dedicated bike route to school (19 percent) were prominent pedestrian and bicycle concerns.
Priority Improvements	Crash-prone intersections (54 percent) and commercial corridors (36 percent) were the most frequently selected geographic focus areas. Increased police enforcement (52 percent), pedestrian signal improvements (38 percent), and high-visibility crosswalks (34 percent) are the most requested interventions.
Behavior Change	92 percent of respondents modified their travel behavior due to safety concerns. The most common adaptations were avoiding certain streets (32 percent), traveling more cautiously (30 percent), and avoiding certain times of day (30 percent). Corridors most frequently cited for avoidance included Ygnacio Valley Road, Clayton Road, and Treat Boulevard.

KEY TAKEAWAYS

1

Enforcement is the most requested improvement across all contexts.

It ranked as the top priority in every geographic category, including residential streets, intersections, school zones, and commercial corridors. Support for physical infrastructure improvements was also strong, with pedestrian signals and high-visibility crosswalks consistently ranking second and third.

2

Speeding and red-light running are the most prevalent safety concerns.

These issues were cited across all road user groups and geographic areas, indicating that any effective safety strategy should prioritize these behaviors through both enforcement and engineering countermeasures.

3

Traffic safety issues are widely experienced by residents.

Three out of four respondents reported having direct or indirect experience with a traffic incident on Concord streets, indicating that safety concerns are grounded in direct experience rather than perception alone.

4

The afternoon peak period presents the greatest safety risk.

Between 3:00 PM and 6:00 PM, the highest share of drivers, pedestrians, and cyclists reported elevated safety concerns. Targeting enforcement, signal operations, and school zone measures during peak periods would benefit the broadest range of users.

5

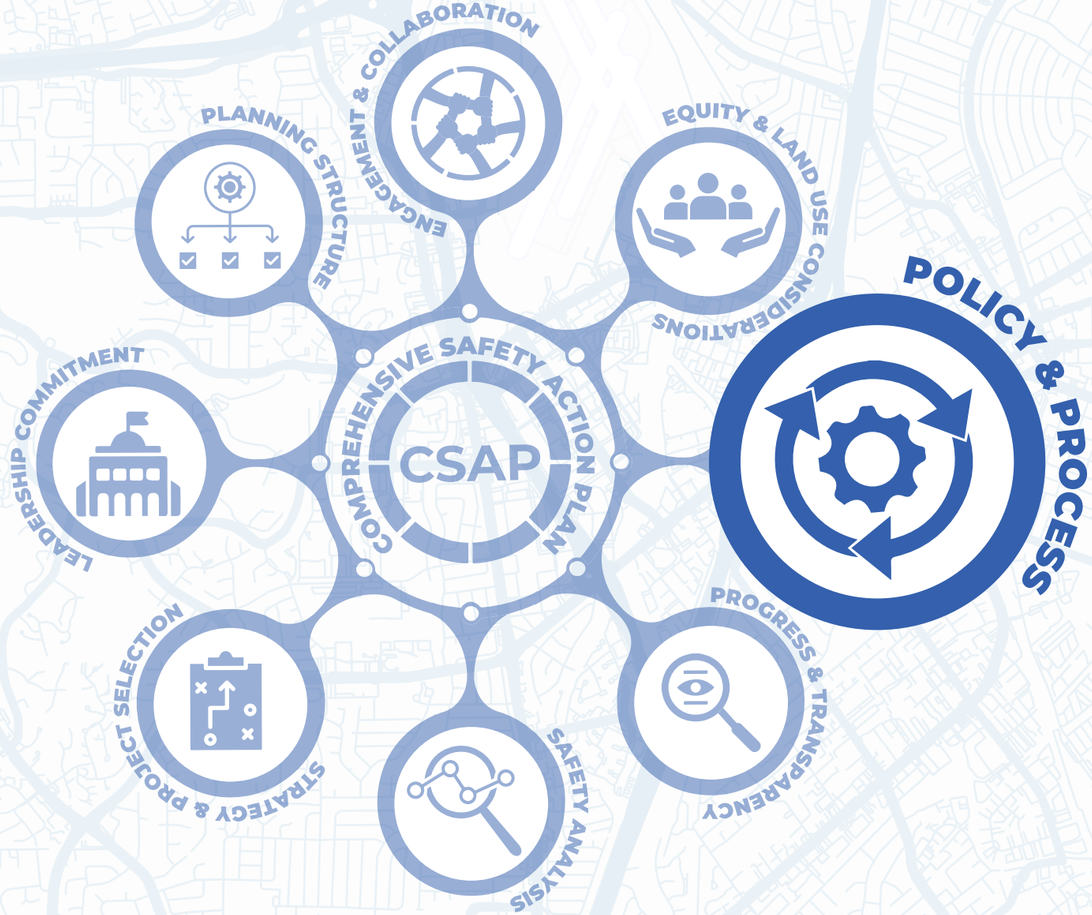
Residents are actively adapting their behavior in response to safety concerns.

The 92 percent rate of behavioral changes, such as avoiding certain routes or shifting travel times, highlights a substantial, often unmeasured burden that extends beyond reported collision data.

HOW ENGAGEMENT & OUTREACH INFORMED THE CSAP

Engagement findings were directly integrated into the CSAP's analytical and planning framework. Input from the community survey and map-based platform both corroborated and enriched the technical collision data analysis. Corridors most frequently identified by residents as areas of concern, including Willow Pass Road, Concord Boulevard, Treat Boulevard, and Monument Boulevard, align closely with the High Injury Network corridors identified through quantitative analysis. Consistent emphasis on issues such as speeding, intersection conflicts, crosswalk violations, and gaps in pedestrian and bicycle infrastructure across both engagement tools further reinforced these concerns as citywide priorities.

Steering Committee guidance helped ensure that engagement outcomes were interpreted within the context of existing plans, programs, and funding opportunities. This coordination supported the development of recommendations that were feasible within the City's capital improvement programming and grant funding framework. In addition, three community outreach meetings provided opportunities for the public to review and comment on draft findings and emerging project recommendations, allowing the planning team to refine priorities through direct dialogue with residents prior to finalizing the CSAP.



CONCORD

Comprehensive Safety Action Plan



CHAPTER FIVE

Safe Street Toolkit

The Safe Streets Toolkit presents a comprehensive suite of safety countermeasures to support implementation of the CSAP. The countermeasures are drawn from evidence-based strategies identified by the Federal Highway Administration (FHWA), including the Crash Modification Factor (CMF) Clearinghouse and FHWA guidance documents related to roadway departure, intersection safety, and roadway safety analysis. A complete listing of FHWA Proven Safety Countermeasures is provided in Appendix X.

The Toolkit serves as a technical resource to guide the selection and application of safety treatments that address identified collision patterns and systemic risk factors across the City's transportation network.

TOOLKIT PURPOSE & APPLICATION

The Safe Streets Toolkit is designed as a flexible reference document rather than a prescriptive list of improvements. All countermeasures are supported by research and have demonstrated safety benefits; however, their applicability varies depending on site-specific conditions, community context, and implementation feasibility.

In accordance with the Safe System Approach, the Toolkit enables City staff to select context-sensitive countermeasures based on factors such as roadway characteristics, user needs, collision history, and available resources. Inclusion of a countermeasure in the Toolkit does not constitute a formal recommendation for implementation; rather, it provides a range of viable options to be considered during project development and design.

COMPREHENSIVE SAFETY APPROACH

Consistent with SS4A guidance, the Toolkit supports a multidisciplinary approach to safety that integrates Engineering, Enforcement, and Education strategies. While engineering countermeasures form the core of the Toolkit, complementary measures including targeted enforcement and public education campaigns are essential for addressing behavioral risk factors such as speeding, impaired driving, distracted driving, and failure to yield.

Implementing these strategies will require coordination with law enforcement agencies, community organizations, and regional partners to ensure a comprehensive and effective response to identified safety challenges.

ORGANIZATION OF COUNTERMEASURES

For ease of application, countermeasures are organized into the following categories:

Signalized Intersections: Treatments applicable to intersections controlled by traffic signals, including signal timing modifications, enhanced signage and pavement markings, and geometric improvements.

Unsignalized Intersections: Countermeasures for stop-controlled or uncontrolled intersections, including signal installation, roundabouts, and improved signing and striping.

Roadway Segments: Treatments designed to improve safety along roadway corridors between intersections, such as rumble strips, roadway lighting, guardrails, and geometric realignments.

Additional Countermeasures: Non-infrastructure strategies, including education, enforcement, and programmatic initiatives.

COUNTERMEASURE EVALUATION CRITERIA

Each countermeasure included in the Toolkit is characterized using a standardized set of evaluation criteria to support informed decision-making:

Collision Types Addressed: Identifies the types of collisions the countermeasure is intended to mitigate, such as all collisions, pedestrian and bicycle collisions, or nighttime crashes.

Crash Reduction Factor (CRF): Provides the expected percentage reduction in collisions based on empirical research and national studies.

Expected Service Life: Indicates the anticipated functional lifespan of the countermeasure, typically ranging from 10 to 20 years, before major rehabilitation or replacement is required.

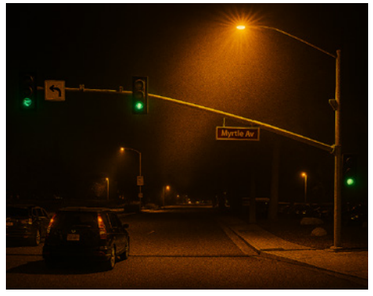
Systemic Implementation Potential: Assesses the suitability of applying the countermeasure using a systemic, risk-based approach across multiple locations, categorized as Very High, High, Medium, or Low.

APPLICATION IN CONCORD

The Toolkit supports both location-specific and systemic safety improvements within Concord. By leveraging data from the High Injury Network (HIN) and broader collision analysis, City staff can identify appropriate countermeasures to address priority safety concerns while also proactively deploying treatments across similar roadway contexts.

The following sections present detailed descriptions of individual countermeasures and provide guidance on their applicability within the City of Concord.

SIGNALIZED INTERSECTION COUNTERMEASURES



Add Intersection Lighting

Crash Type: Night

CRF 40%

EXPECTED LIFE (YEARS) 20

SYSTEMIC APPROACH OPPORTUNITY Medium

Includes the installation of new streetlights, upgraded lighting fixtures, or the enhancement of existing lighting to improve visibility for all road users at intersections. This may involve increasing the number of luminaires, improving lighting levels, or adjusting lighting patterns to enhance visibility and safety for all road users.



Improve Signal Hardware: Lenses, Back-Plates With Retroreflective Borders, Mounting, Size, And Number

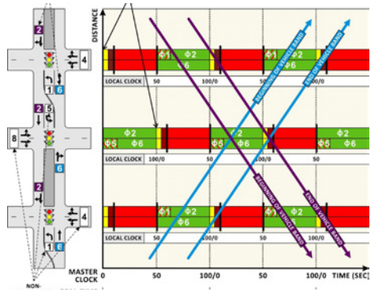
Crash Type: All

CRF 15%

EXPECTED LIFE (YEARS) 10

SYSTEMIC APPROACH OPPORTUNITY Very High

Includes New LED lighting, signal back plates, retro-reflective tape outlining the back plates, or visors to increase signal visibility, larger signal heads, relocation of the signal heads, or additional signal heads.



Improve Signal Timing (Coordination, Phases, Red, Yellow, Or Operation)

Crash Type: All

CRF 15%

EXPECTED LIFE (YEARS) 10

SYSTEMIC APPROACH OPPORTUNITY Very High

Includes adding phases, lengthening clearance intervals, eliminating or restricting higher-risk movements, and coordinating signals at multiple locations.



Install Emergency Vehicle Pre-Emption Systems

Crash Type: Emergency Vehicle

CRF 70%

EXPECTED LIFE (YEARS) 10

SYSTEMIC APPROACH OPPORTUNITY High

Corridors that have a history of collisions involving emergency response vehicles. The target of this strategy is signalized intersections where normal traffic operations impede emergency vehicles and where traffic conditions create a potential for conflicts between emergency and nonemergency vehicles. These conflicts could lead to almost any type of crash, due to the potential for erratic maneuvers of vehicles moving out of the paths of emergency vehicles.



Install Left-Turn Lane And/Or Add Turn Phase (Signal Has No Left-Turn Lane or Phase Before)

Crash Type: All

CRF 55%

EXPECTED LIFE (YEARS) 20

SYSTEMIC APPROACH OPPORTUNITY Low

Intersections that do not currently have a left turn lane or a related left-turn phase that are experiencing a large number of collisions. Many intersection safety problems can be traced to difficulties in accommodating left-turning vehicles, in particular where there is currently no accommodation for left turning traffic. A key strategy for minimizing collisions related to left-turning vehicles (angle, rear-end, sideswipe) is to provide exclusive left-turn lanes and the appropriate signal phasing, particularly on high-volume and high-speed major-road approaches.



Provide Protected Left Turn Phase (Left Turn Lane Already Exists)

Crash Type: All

CRF 30%

EXPECTED LIFE (YEARS) 20

SYSTEMIC APPROACH OPPORTUNITY High

Left turns are widely recognized as the highest-risk movements at signalized intersections. Providing Protected left-turn phases for signalized intersections with existing left turn pockets significantly improve the safety for left-turn maneuvers by removing the need for the drivers to navigate through gaps in oncoming/opposing through vehicles.



Convert Signal to Mast Arm (from Pedestal-Mounted)

Crash Type: All

CRF	30%
EXPECTED LIFE (YEARS)	20
SYSTEMIC APPROACH OPPORTUNITY	Medium

Converting a signal to a mast arm from a pedestal-mounted base provides better visibility of intersection signs and signals that aid the drivers' advance perception of the upcoming intersection. Visibility and clarity of the signal should be improved without creating additional confusion or distraction for drivers.



Install Pedestrian Median Fencing on Approaches

Crash Type: P & B

CRF	35%
EXPECTED LIFE (YEARS)	20
SYSTEMIC APPROACH OPPORTUNITY	Low

Signalized Intersections with high pedestrian-generators nearby (e.g. transit stops) may experience high volumes of pedestrians J-walking across the travel lanes at mid-block locations instead of walking to the intersection and waiting to cross during the walk-phase.

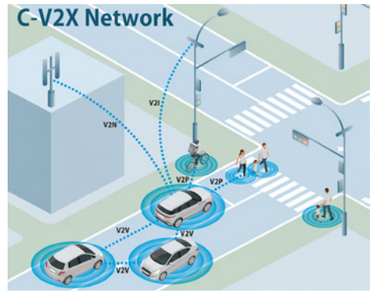


Install Flashing Beacons as Advance Warning

Crash Type: All

CRF	30%
EXPECTED LIFE (YEARS)	10
SYSTEMIC APPROACH OPPORTUNITY	Medium

Includes the installation of flashing beacons (e.g., yellow beacons, LED beacons) to alert drivers to an upcoming signalized intersection or stop sign. This provides drivers with increased visual cues, allowing for earlier identification of the upcoming intersection and improved reaction time.



Connected Vehicle Infrastructure (C-V2X Roadside Units)

Crash Type: All

CRF	N/A
EXPECTED LIFE (YEARS)	10
SYSTEMIC APPROACH OPPORTUNITY	Medium

Cellular Vehicle-to-Everything (C-V2X) Roadside Units (RSUs) enable real-time communication between infrastructure and connected vehicles to broadcast safety messages such as signal phase and timing (SPaT), intersection geometry (MAP), and hazard alerts. RSUs mounted at signalized intersections transmit standardized safety messages to equipped vehicles, enabling in-vehicle warnings for red-light violations, pedestrian presence, hard braking events, and collision hazards. This technology supports the USDOT's Safe System Approach by providing an additional layer of safety beyond physical infrastructure. C-V2X RSUs are most effective when deployed at high-risk intersections with a history of fatalities or severe injuries and are complementary to near-miss analytics platforms. RSUs require fiber backhaul connectivity and integration with the traffic signal controller.



Install raised median on approaches

Crash Type: All

CRF	25%
EXPECTED LIFE (YEARS)	20
SYSTEMIC APPROACH OPPORTUNITY	Medium

Raised medians next to left turn lanes at intersections offer a cost effective means for reducing collisions and improving operations at higher volume intersections.



High Visibility Crosswalk

Crash Type: All, P & B

CRF	40%
EXPECTED LIFE (YEARS)	3
SYSTEMIC APPROACH OPPORTUNITY	High

Ladder or zebra crosswalk markings are added to an intersection to make the crosswalk more visible and improve yielding to pedestrians.

Note: N/A refers to Not Applicable



Create Directional Median Openings to Allow (& Restrict) Left-Turns & U-Turns (S.i.)

Crash Type: All

CRF	50%
EXPECTED LIFE (YEARS)	20
SYSTEMIC APPROACH OPPORTUNITY	Medium

Collisions related to turning maneuvers include angle, rear-end, pedestrian, and sideswipe (involving opposing left turns) type collisions. If any of these crash types are an issue at an intersection, restriction or elimination of the turning maneuver may be the best way to improve the safety of the intersection.



Modify Signal Phasing to Implement a Leading Pedestrian Interval (LPI)

Crash Type: P & B

CRF	60%
EXPECTED LIFE (YEARS)	10
SYSTEMIC APPROACH OPPORTUNITY	Very High

The addition of LPI gives pedestrians the opportunity to enter an intersection 3-7 seconds before vehicles are given a green indication; only minor signal timing alteration is required.



Convert Intersection to Roundabout

Crash Type: All

CRF	Varies
EXPECTED LIFE (YEARS)	20
SYSTEMIC APPROACH OPPORTUNITY	Low

For signalized intersections that have a significant crash problem, one alternative to change the nature of the intersection itself is to convert the intersection into a roundabout. Roundabouts can also be very effective at intersections with complex geometry and intersections with frequent left-turn movements.



Install Pedestrian Countdown Signal Heads

Crash Type: All

CRF	25%
EXPECTED LIFE (YEARS)	20
SYSTEMIC APPROACH OPPORTUNITY	Very High

Installing pedestrian countdown signal heads at signalized pedestrian crossings with walk/don't walk indicators, particularly at locations with a history of pedestrian-vehicle collisions, provides pedestrians with a countdown of remaining crossing time, encouraging safer and more timely crossing decisions.



Accessible Pedestrian Signal (APS)

Crash Type: P & B

CRF	45%
EXPECTED LIFE (YEARS)	15
SYSTEMIC APPROACH OPPORTUNITY	Very High

Accessible pedestrian signals provide information in alternative formats such as verbal message, audible tones and vibrating surfaces to communicate information on the status of pedestrian crossing (Walk, Flashing Don't Walk, or Don't Walk) to people who are visually impaired. Speech messages and wayfinding tones aid in navigation to the pedestrian push button and to the far side of the street. Speech messages also aid sighted pedestrians by alerting them to the pedestrian signal indication changing from Don't Walk to Walk, reducing instances of late crossings. Messaging that includes street names aids in wayfinding and orientation.



Install Pedestrian Crossing

Crash Type: P & B

CRF	25%
EXPECTED LIFE (YEARS)	20
SYSTEMIC APPROACH OPPORTUNITY	High

Signalized Intersections with no marked crossing and pedestrian signal heads, where pedestrians are known to be crossing intersections that involve significant turning movements. They are especially important at intersections with (1) multiphase traffic signals, such as left-turn arrows and split phases, (2) school crossings, and (3) double-right or double-left turns. At signalized intersections, pedestrian crossings are often safer when the left turns have protected phases that do not overlap the pedestrian walk phase.



Pedestrian Scramble

Crash Type: P & B

CRF	40%
EXPECTED LIFE (YEARS)	20
SYSTEMIC APPROACH OPPORTUNITY	High

Pedestrian Scramble is a form of pedestrian “WALK” phase at a signalized intersection in which all vehicular traffic is required to stop, allowing pedestrians/bicyclists to safely cross through the intersection in any direction, including diagonally. Pedestrian Scramble may be considered at signalized intersections with very high pedestrian/bicycle volumes, e.g. in an urban business district.



Install Advance Stop Bar Before Crosswalk

Crash Type: P & B

CRF	15%
EXPECTED LIFE (YEARS)	10
SYSTEMIC APPROACH OPPORTUNITY	Very High

Installing an advance stop bar before the crosswalk at signalized intersections with marked crossings, particularly where significant bicycle and/or pedestrian volumes are known to occur, helps to improve driver compliance with the red light and enhance pedestrian safety.

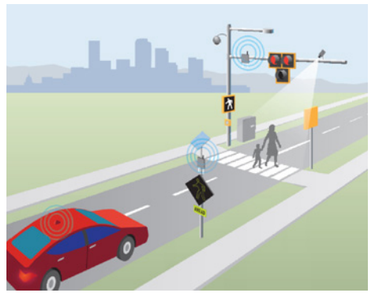


Bicycle Turn Box

Crash Type: P & B

CRF	15%
EXPECTED LIFE (YEARS)	10
SYSTEMIC APPROACH OPPORTUNITY	Very High

A designated, painted box at signalized intersections that offers bicyclists a multi-stage process to safely and more visibly make a left turn across an intersection from a bike lane.

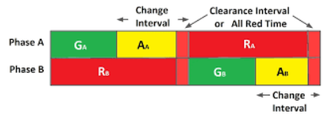


Pushbutton-Activated Pedestrian Lighting System (PPLS)

Crash Type: P & B / Nighttime

CRF	40%
EXPECTED LIFE (YEARS)	15
SYSTEMIC APPROACH OPPORTUNITY	High

Overhead-mounted LED luminaires that activate upon pedestrian pushbutton press, providing targeted crosswalk illumination during pedestrian crossing phases. Unlike static intersection lighting, PPLS concentrates high-intensity illumination directly on the crosswalk zone only when a pedestrian is present, providing a dynamic visual cue to drivers that a pedestrian is actively crossing. Particularly effective at intersections with high percentages of nighttime or dark-condition pedestrian collisions. PPLS is most effective when integrated with APS and LPI timing to provide a coordinated pedestrian safety package.

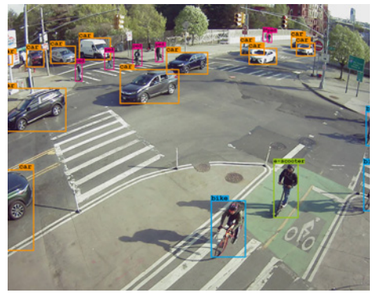


All-Red Clearance Interval Extension

Crash Type: All

CRF	15%
EXPECTED LIFE (YEARS)	10
SYSTEMIC APPROACH OPPORTUNITY	Very High

Extending the all-red clearance interval adds additional time after one phase ends and before the conflicting phase begins, allowing vehicles that entered the intersection during the yellow change interval to clear before cross-traffic receives a green indication. This low-cost signal timing adjustment is particularly effective at wide intersections and locations with a high proportion of angle and red-light-running collisions. It can be implemented with existing signal hardware through controller programming changes only.



Near-Miss Video Analytics Platform

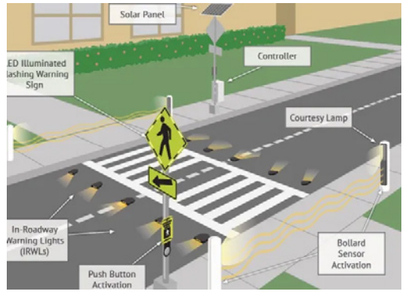
Crash Type: All

CRF	N/A
EXPECTED LIFE (YEARS)	10
SYSTEMIC APPROACH OPPORTUNITY	Very High

AI-powered video analytics platforms use computer vision and machine learning to continuously monitor intersection operations and detect near-miss events, traffic conflicts, and unsafe behaviors in real time. These systems analyze multimodal interactions between vehicles, pedestrians, and bicyclists to generate conflict heatmaps, identify root causes of recurring safety issues, and quantify risk before collisions occur. Near-miss analytics provide a proactive, data-driven foundation for selecting and prioritizing engineering countermeasures, validating the effectiveness of implemented safety treatments, and supporting grant applications with quantitative safety evidence. Systems can integrate with existing traffic cameras or deploy dedicated sensors, and typically include automated signal performance measures (ATSPM) and dashboard reporting capabilities.

Note: N/A refers to Not Applicable

NON-SIGNALIZED INTERSECTION COUNTERMEASURES



Advance Pedestrian Warning System (Activated)

Crash Type: P & B

CRF	40%
EXPECTED LIFE (YEARS)	20
SYSTEMIC APPROACH OPPORTUNITY	High

Advance pedestrian warning systems are activated signs installed upstream (typically 100–150 feet) of a marked crosswalk to alert approaching drivers that a pedestrian is actively in the crosswalk ahead. Activated by pushbutton, passive infrared detection, or radar-based pedestrian sensing, these systems display flashing W11-2 pedestrian warning signs with “AHEAD” or distance supplemental plaques and/or LED-enhanced border lighting. They are especially effective on multilane roads where a driver in a far travel lane may not see a pedestrian already crossing in front of a stopped vehicle in a near lane (the “multiple-threat” scenario). Per MUTCD guidance, advance RRFBs may also be installed upstream of the crosswalk to supplement the warning when sight distance is limited. These systems are applicable at both signalized and unsignalized crossings and are distinct from static pedestrian warning signs by providing a dynamic, real-time alert only when a pedestrian is present.



Convert to all-way STOP control (from 2-way or Yield control)

Crash Type: All

CRF	50%
EXPECTED LIFE (YEARS)	10
SYSTEMIC APPROACH OPPORTUNITY	High

Unsignalized intersection locations that have a crash history and have no controls on the major roadway approaches. However, all-way stop control is suitable only at intersections with moderate and relatively balanced volume levels on the intersection approaches. Under other conditions, the use of all-way stop control may create unnecessary delays and aggressive driver behavior.



Convert Intersection to Roundabout or Mini-Roundabout

Crash Type: All

CRF	Varies
EXPECTED LIFE (YEARS)	20
SYSTEMIC APPROACH OPPORTUNITY	Low

Intersections that have a high frequency of right-angle and left-turn type collisions. Whether such intersections have existing crash patterns or not, a roundabout provides an alternative to signalization. The primary target locations for roundabouts should be moderate-volume unsignalized intersections.



Install/Upgrade Larger or Additional Stop Signs or Other Intersection Warning/ Regulatory Signs

Crash Type: All

CRF	15%
EXPECTED LIFE (YEARS)	10
SYSTEMIC APPROACH OPPORTUNITY	Very High

Installing/upgrading larger or additional stop signs or other intersection warning/regulatory signs at or prior to intersections will enhance the ability of approaching drivers to perceive them, improving driver awareness and reducing the risk of collisions.



Upgrade Intersection Pavement Markings

Crash Type: All

CRF	25%
EXPECTED LIFE (YEARS)	10
SYSTEMIC APPROACH OPPORTUNITY	Very High

Upgrading intersection pavement markings, which typically includes the addition of “Stop Ahead” markings, centerlines, and stop bars, can improve driver guidance, reduce confusion, and enhance overall safety at the intersection.



Reduced Left-Turn Conflict Intersections

Crash Type: All

CRF	50%
EXPECTED LIFE (YEARS)	20
SYSTEMIC APPROACH OPPORTUNITY	Medium

Reduced left-turn conflict intersections are geometric designs that alter how left-turn movements occur in order to simplify decisions and minimize the potential for related collisions. Two highly effective designs that rely on U-turns to complete certain left-turn movements are known as the restricted crossing U-turn (RCUT) and the median U-turn (MUT).

Note: N/A refers to Not Applicable



Improve Sight Distance to Intersection (Clear Sight Triangles)

Crash Type: All

CRF	55%
EXPECTED LIFE (YEARS)	10
SYSTEMIC APPROACH OPPORTUNITY	Medium

Unsignalized intersections with restricted sight distance and patterns of collisions related to lack of sight distance where sight distance can be improved by clearing roadside obstructions without major reconstruction of the roadway.



Install Splitter-Islands on The Minor Road Approaches

Crash Type: All

CRF	40%
EXPECTED LIFE (YEARS)	20
SYSTEMIC APPROACH OPPORTUNITY	Medium

The installation of a splitter island allows for the addition of a stop sign in the median to make the intersection more conspicuous.



Install Right-Turn Lane

Crash Type: All

CRF	20%
EXPECTED LIFE (YEARS)	20
SYSTEMIC APPROACH OPPORTUNITY	Low

Many collisions at unsignalized intersections are related to right-turn maneuvers. A key strategy for minimizing such collisions is to provide exclusive right-turn lanes, particularly on high-volume and high-speed major-road approaches. When considering new right-turn lanes, potential impacts to non-motorized users should be considered and mitigated as appropriate.



Install Flashing Beacons at Stop-Controlled Intersections

Crash Type: All

CRF	15%
EXPECTED LIFE (YEARS)	10
SYSTEMIC APPROACH OPPORTUNITY	High

Flashing beacons can reinforce driver awareness of the Non-Signalized intersection control and can help mitigate patterns of right-angle collisions related to stop sign violations. Post-mounted advanced flashing beacons or overhead flashing beacons can be used at stop-controlled intersections to supplement and call driver attention to stop signs.



Install Flashing Beacons as Advance Warning

Crash Type: All

CRF	30%
EXPECTED LIFE (YEARS)	10
SYSTEMIC APPROACH OPPORTUNITY	High

Installing flashing beacons as advance warning, such as yellow beacons, to call drivers' attention to intersection control signs, provides increased visual cues and improves driver awareness of upcoming intersections.



Curb Extensions/Bulb-outs

Crash Type: Pedestrian

CRF	30%
EXPECTED LIFE (YEARS)	20
SYSTEMIC APPROACH OPPORTUNITY	Medium

Curb Extensions (also called Bulb-outs) extend the sidewalk into the parking lane at intersections, narrowing the effective street width and shortening pedestrian crossing distances. This countermeasure improves pedestrian visibility by positioning waiting pedestrians at the edge of the parking lane, slows turning vehicle speeds by reducing corner radii, and reduces pedestrian exposure time when crossing the roadway. Bulb-outs also provide additional space for accessible curb ramps and prevent parking encroachment on crosswalks.



Install/Upgrade Pedestrian Crossing at Uncontrolled Locations (with Enhanced Safety Features)

Crash Type: P & B

CRF	60%
EXPECTED LIFE (YEARS)	10
SYSTEMIC APPROACH OPPORTUNITY	Very High

Installing/upgrading pedestrian crossings at uncontrolled locations with enhanced safety features, such as flashing beacons, curb extensions, advanced “stop” or “yield” markings, and other safety features, at locations where pedestrians are known to cross intersections with significant vehicular traffic, particularly at school crossings and intersections with turn pockets, improves pedestrian safety by providing designated crossing areas and enhancing driver awareness.



Install Traffic Signals

Crash Type: All

CRF	30%
EXPECTED LIFE (YEARS)	20
SYSTEMIC APPROACH OPPORTUNITY	Low

Installing traffic signals at unsignalized intersections or locations with high traffic volumes and complex movements can improve traffic flow, reduce congestion, and enhance safety for all road users.



Install Traffic Circles

Crash Type: All

CRF	Varies
EXPECTED LIFE (YEARS)	20
SYSTEMIC APPROACH OPPORTUNITY	Very High

Install traffic circles at intersections to reduce vehicle speeds and conflict points. This treatment improves safety by lowering the likelihood and severity of angle and speed-related collisions while maintaining continuous traffic flow.



Install Left-Turn Lane (Where No Left-Turn Lane Exists)

Crash Type: All

CRF	35%
EXPECTED LIFE (YEARS)	20
SYSTEMIC APPROACH OPPORTUNITY	Low

Many collisions at unsignalized intersections are related to left-turn maneuvers. A key strategy for minimizing such collisions is to provide exclusive left-turn lanes, particularly on high-volume and high-speed major-road approaches. When considering new left-turn lanes, potential impacts to non-motorized users should be considered and mitigated as appropriate.



Install Raised Medians / Refuge Islands

Crash Type: P & B

CRF	45%
EXPECTED LIFE (YEARS)	20
SYSTEMIC APPROACH OPPORTUNITY	Medium

Intersections that have a long pedestrian crossing distance, a higher number of pedestrians, or a crash history may benefit from the installation of raised medians/ refuge islands. Raised medians/refuge islands decrease the level of exposure for pedestrians and allow pedestrians to concentrate on (or cross) only one direction of traffic at a time.



Install Pedestrian Crossing at Uncontrolled Locations

Crash Type: P & B

CRF	25%
EXPECTED LIFE (YEARS)	10
SYSTEMIC APPROACH OPPORTUNITY	High

Installing pedestrian crossings at uncontrolled locations where pedestrians are known to cross intersections involving significant vehicular traffic, particularly at school crossings and intersections with right and/or left-turn pockets, improves pedestrian safety by providing designated crossing areas and enhancing driver awareness.

ROADWAY SEGMENT COUNTERMEASURES



Add Segment Lighting

Crash Type: Night

CRF 35%

EXPECTED LIFE (YEARS) 20

SYSTEMIC APPROACH OPPORTUNITY Medium

Adding segment lighting along roadways improves visibility for all road users, especially during nighttime and low-visibility conditions, enhancing safety and reducing the risk of collisions.



Install Chicanes

Crash Type: All

CRF 35%

EXPECTED LIFE (YEARS) 10

SYSTEMIC APPROACH OPPORTUNITY High

Installing chicanes, which introduce alternating horizontal deflection in the roadway through curb extensions, islands, or other physical features, helps reduce vehicle speeds and improve driver attentiveness. This treatment is particularly effective on local and collector streets with speeding concerns or cut-through traffic. By requiring drivers to navigate a slight side-to-side alignment, chicanes discourage high-speed travel, enhance neighborhood livability, and reduce the likelihood and severity of speed-related collisions.



Diagonal Parking

Crash Type: All

CRF 60%

EXPECTED LIFE (YEARS) 15

SYSTEMIC APPROACH OPPORTUNITY Medium

On-street parking stalls are painted diagonally to the street roadway in order to reduce the width of the road.



Install Raised Median

Crash Type: All

CRF 25%

EXPECTED LIFE (YEARS) 20

SYSTEMIC APPROACH OPPORTUNITY Medium

Areas experiencing head-on collisions that may be affected by both the number of vehicles that cross the centerline and by the speed of oncoming vehicles. Installing a raised median is a more restrictive approach in that it represents a more rigid barrier between opposing traffic.



Install Median (Flush)

Crash Type: All

CRF 15%

EXPECTED LIFE (YEARS) 20

SYSTEMIC APPROACH OPPORTUNITY Medium

Areas experiencing head-on collisions that may be affected by both the number of vehicles that cross the centerline and by the speed of oncoming vehicles. Roadways with oversized lanes offer an opportunity to restripe the roadway to reduce the lanes to standard widths and use the extra width for the median.



Green Pavement for Bicycle Facilities

Crash Type: Bicycle

CRF 40%

EXPECTED LIFE (YEARS) 10

SYSTEMIC APPROACH OPPORTUNITY High

This is an easy to maintain, cost effective measure, created with paint, epoxy, thermoplastic, or colored asphalt used to designate bike lanes, bike boxes, bike conflict zones or intersection crossings.



Turn movement Restrictions

Crash Type: All

CRF	Varies
EXPECTED LIFE (YEARS)	10
SYSTEMIC APPROACH OPPORTUNITY	High

Traffic signs are installed to prevent undesired turning movements.



Refresh of Current Signage

Crash Type: All

CRF	Varies
EXPECTED LIFE (YEARS)	10
SYSTEMIC APPROACH OPPORTUNITY	High

Faded/old traffic signs are replaced.



Portable Speed Feedback Trailer

Crash Type: All

CRF	20%
EXPECTED LIFE (YEARS)	10
SYSTEMIC APPROACH OPPORTUNITY	High

A speed feedback trailer is temporarily placed along a street segment to remind drivers to watch their speed.



Install centerline rumble strips/stripes

Crash Type: All

CRF	20%
EXPECTED LIFE (YEARS)	10
SYSTEMIC APPROACH OPPORTUNITY	High

Center Line rumble strips/stripes can be used on virtually any roadway especially those with a history of head-on collisions.



Install Rectangular Rapid Flashing Beacon (RRFB)

Crash Type: P & B

CRF	35%
EXPECTED LIFE (YEARS)	20
SYSTEMIC APPROACH OPPORTUNITY	Medium

Rectangular Rapid Flashing Beacon (RRFB) includes pedestrian-activated flashing lights and additional signage that enhance the visibility of marked crosswalks and alert motorists to pedestrian crossings. RRFB uses an irregular flash pattern that is similar to emergency flashers on police vehicles. RRFBs can be installed at unsignalized intersections and mid-block pedestrian crossings.



Install Pedestrian Crossing at Uncontrolled Locations

Crash Type: P & B

CRF	25%
EXPECTED LIFE (YEARS)	10
SYSTEMIC APPROACH OPPORTUNITY	High

Installing pedestrian crossings at uncontrolled locations where pedestrians are known to cross intersections involving significant vehicular traffic, particularly at school crossings and intersections with right and/or left-turn pockets, improves pedestrian safety by providing designated crossing areas and enhancing driver awareness.



Install Acceleration/ Deceleration Lanes

Crash Type: All

CRF 25%

EXPECTED LIFE (YEARS) 20

SYSTEMIC APPROACH OPPORTUNITY Low

Areas proven to have collisions that are the result of drivers not being able to turn onto a high speed roadway to accelerate until the desired roadway speed is reached and areas that do not provide the opportunity to safety decelerate to negotiate a turning movement.



Improve Horizontal Alignment (Flatten Curves)

Crash Type: All

CRF 50%

EXPECTED LIFE (YEARS) 20

SYSTEMIC APPROACH OPPORTUNITY Low

Roadways with horizontal curves that have experienced lane departure collisions as a result of a roadway segment having compound curves or a severe radius. This strategy should generally be considered only when less expensive strategies involving clearing of specific sight obstructions or modifying traffic control devices have been tried and have failed to ameliorate the crash patterns.



Add Two-Way Left-Turn Lane

Crash Type: All

CRF 30%

EXPECTED LIFE (YEARS) 20

SYSTEMIC APPROACH OPPORTUNITY Medium

Roadways having a high frequency of drivers being rear-ended while attempting to make a left turn across oncoming traffic. Also can be effective for drivers crossing the centerline of an undivided multilane roadway inadvertently.



Install Pedestrian Signal (including Pedestrian Hybrid Beacon (HAWK))

Crash Type: P & B

CRF 55%

EXPECTED LIFE (YEARS) 20

SYSTEMIC APPROACH OPPORTUNITY Low

Intersections noted as having a history of pedestrian vs. vehicle collisions and in areas where the likelihood of the pedestrian presence is high. Corridors should also be assessed to determine if there are adequate safe opportunities for non-motorists to cross and if a pedestrian signal, or a Pedestrian Hybrid Beacon (PHB) (also called High-Intensity Activated crossWalK beacon (HAWK)) are needed to provide an active warning to motorists when a pedestrian is in the crosswalk.



Remove Or Relocate Fixed Objects Outside of Clear Recovery Zone

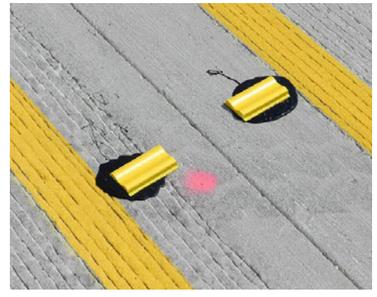
Crash Type: All

CRF 35%

EXPECTED LIFE (YEARS) 20

SYSTEMIC APPROACH OPPORTUNITY High

Removing or relocating fixed objects outside of the Clear Recovery Zone, such as utility poles, drainage structures, trees, and other fixed objects, from locations or roadway segments prone to collisions, including the outside of curves, end of lane drops, and within traffic islands, can significantly reduce the severity of run-off-road collisions. Where public right-of-way is limited, steps should be taken to request assistance from property owners, as appropriate.



Install Raised Pavement Markers & Striping

Crash Type: All

CRF 10%

EXPECTED LIFE (YEARS) 10

SYSTEMIC APPROACH OPPORTUNITY Very High

When drivers approach and traverse through complex intersections, drivers may be required to perform unusual or unexpected maneuvers, so adding raised pavement markings and striping can guide motorists through complex intersections safely.



Install Curve Advance Warning Signs

Crash Type: All

CRF 25%

EXPECTED LIFE (YEARS) 10

SYSTEMIC APPROACH OPPORTUNITY Very High

Installing curve advance warning signs, which may also include horizontal alignment and/or advisory speed warning signs, can improve driver awareness of upcoming curves and help prevent run-off-road collisions.



Install Curve Advance Warning Signs (Flashing Beacon)

Crash Type: All

CRF 30%

EXPECTED LIFE (YEARS) 10

SYSTEMIC APPROACH OPPORTUNITY High

Installing curve advance warning signs with flashing beacons on roadways with an unacceptable level of collisions on relatively sharp curves can improve driver awareness and reduce the risk of run-off-road collisions. However, the use of flashing beacons should be limited to curves with a severe crash history to maintain their effectiveness.



Improve Pavement Friction (High Friction Surface Treatments)

Crash Type: All

CRF 55%

EXPECTED LIFE (YEARS) 10

SYSTEMIC APPROACH OPPORTUNITY Medium

Improving pavement friction with High Friction Surface Treatments can enhance skid resistance at locations with high frequencies of wet road collisions, potentially addressing collisions caused by a failure to stop.



New/Enhanced Traffic Control Signage

Crash Type: All

CRF Varies

EXPECTED LIFE (YEARS) 10

SYSTEMIC APPROACH OPPORTUNITY High

Traffic control signage, such as truck restriction signs, is installed along a street segment.



Install/Upgrade Signs with New Fluorescent Sheeting (Regulatory or Warning)

Crash Type: All

CRF 15%

EXPECTED LIFE (YEARS) 10

SYSTEMIC APPROACH OPPORTUNITY Very High

Additional or new signage with fluorescent sheeting can address collisions caused by lack of driver awareness or compliance of roadway signing, especially at night.



Install Chevron Signs on Horizontal Curves

Crash Type: All

CRF 40%

EXPECTED LIFE (YEARS) 10

SYSTEMIC APPROACH OPPORTUNITY Very High

Installing chevron signs on roadways with an unacceptable level of collisions on relatively sharp curves during periods of light and darkness can improve driver awareness of upcoming curves and help prevent run-off-road collisions.



Reduced Speed School Zone

Crash Type: All

CRF	30%
EXPECTED LIFE (YEARS)	10
SYSTEMIC APPROACH OPPORTUNITY	Medium

Reduction in speed limits in school zones brings significant safety benefits by reducing vehicular speeds and fatal and injury collisions.



Speed Cushions, Speed Humps and Speed Tables

Crash Type: All

CRF	30%
EXPECTED LIFE (YEARS)	10
SYSTEMIC APPROACH OPPORTUNITY	High

Speed tables are extended and wide speed humps with a flat top that may include a pedestrian crossing. Speed cushions are traffic calming devices that reduce vehicle speeds, and can be speed humps or speed tables with wheel cutouts for large vehicles. They are often used on emergency response routes.



Install Edge Line Rumble Strips / Stripes

Crash Type: All

CRF	15%
EXPECTED LIFE (YEARS)	10
SYSTEMIC APPROACH OPPORTUNITY	High

Shoulder and edge line milled rumble strips/stripes should be used on roads with a history of roadway departure collisions.



Vehicle Speed Feedback Sign

Crash Type: All

CRF	30%
EXPECTED LIFE (YEARS)	10
SYSTEMIC APPROACH OPPORTUNITY	High

With the goal of improving drivers speed compliance while making streets safe, vehicle speed feedback signs use radar to ascertain the speed of the vehicle and provide information through LED signs.



Install Delineators, Reflectors & Object Markers

Crash Type: All

CRF	15%
EXPECTED LIFE (YEARS)	10
SYSTEMIC APPROACH OPPORTUNITY	Very High

Installation of delineators, reflectors and/or object markers are intended to warn drivers of an approaching curve or fixed object that cannot easily be removed.

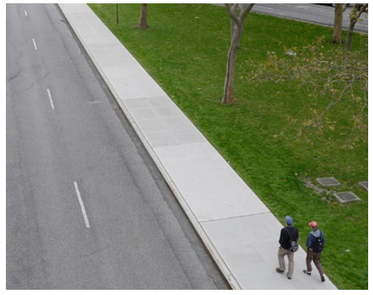


Install Edge Lines & Centerlines

Crash Type: All

CRF	25%
EXPECTED LIFE (YEARS)	10
SYSTEMIC APPROACH OPPORTUNITY	Very High

Any road with a history of run-off-road right, head-on, opposite-direction-sideswipe, or run-off-road-left collisions is a candidate for edge line or centerlines should be installed where the existing lane delineation is not sufficient to assist the motorist in understanding the existing limits of the roadway. Depending on the width of the roadway, various combinations of edge line and/or center line pavement markings may be the most appropriate.



Install Sidewalk / Pathway (to Avoid Walking along Roadway)

Crash Type: P & B

CRF	80%
EXPECTED LIFE (YEARS)	20
SYSTEMIC APPROACH OPPORTUNITY	Medium

Areas noted as not having adequate or no sidewalks and a history of walking along roadway pedestrian collisions. In rural areas asphalt curbs and/or separated walkways may be appropriate.



Mid-Block Crosswalks

Crash Type: P & B

CRF	25%
EXPECTED LIFE (YEARS)	10
SYSTEMIC APPROACH OPPORTUNITY	High

When incorporated with a pedestrian refuge island and appropriate signage and advance warning, mid-block crossings may increase safety by decreasing random and unexpected pedestrian crossings while allowing drivers to predict and expect pedestrian traffic.



Install Raised Pedestrian Crossing

Crash Type: P & B

CRF	35%
EXPECTED LIFE (YEARS)	20
SYSTEMIC APPROACH OPPORTUNITY	Medium

Installing raised pedestrian crossings on lower-speed roadways where pedestrians are known to be crossing roadways involving significant vehicular traffic can improve pedestrian visibility, slow traffic, and reduce the risk of pedestrian-vehicle collisions.



Install Bike Lanes

Crash Type: P & B

CRF	35%
EXPECTED LIFE (YEARS)	20
SYSTEMIC APPROACH OPPORTUNITY	High

Installing bike lanes on roadway segments noted as having collisions between bicycles and vehicles, or collisions that may be preventable with a buffer/shoulder, can significantly improve bicycle safety and reduce the risk of these types of collisions.



Install Separated Bike Lanes

Crash Type: P & B

CRF	45%
EXPECTED LIFE (YEARS)	20
SYSTEMIC APPROACH OPPORTUNITY	High

Separated bike lanes are most appropriate on streets with high volumes of bike traffic and/or high bike-vehicle collisions, typically in an urban or suburban area. Separation types range from simple, painted buffers and flexible delineators, to more substantial separation measures including raised curbs, grade separation, bollards, planters, and parking lanes.

ADDITIONAL COUNTERMEASURES



Safe Routes Programs

Crash Type: All

Implement additional Safe Routes educational programming to include Safe Routes to Parks, Safe Routes for Seniors and Safe Routes for People with Disabilities to prioritize vulnerable population.

COMMUNITY PARTNERSHIPS

Community Partnership

Crash Type: All

Partner with School District to distribute targeted Vision Zero messaging for students and employees.



Vision Zero Training Manual

Crash Type: All

Develop a Vision Zero Training Manual and integrate Vision Zero traffic safety awareness and education into training employees who drive City vehicles on a daily basis or drive while on City business.



Share the Road Awareness Program

Crash Type: All

Create a Share the Road Awareness Program for motorists, bicyclists and pedestrians that is easily accessible.



Alcohol Use Disorder (AUD) Assessment & Treatment Programs

Crash Type: All

Long-term, tailored, and specialized treatment programs can serve as an opportunity to assess drinking habits and refer them for brief interventions or specialized treatment.



Targeted Enforcement

Crash Type: All

Police traffic officer patrols a location to monitor for speeding/unsafe driving.



Corridor Access Management

Crash Type: All

Access management refers to the design, application, and control of entry and exit points along a roadway. This includes intersections with other roads and driveways that serve adjacent properties.



High Visibility Enforcement

Crash Type: All

Direct traffic enforcement efforts to prioritize the most critical high-injury corridors identified in the City's Vision Zero Action Plan. Concentrate enforcement activities in areas of City where engineering and educational initiatives have already been implemented.



Appropriate Speed Limits for All Road Users

Crash Type: All

There is broad consensus among global roadway safety experts that speed control is one of the most important methods for reducing fatalities and serious injuries. Speed is an especially important factor on non-limited access roadways where vehicles and vulnerable road users mix.



Traffic Safety Diversion Program

Crash Type: All

Design a traffic safety diversion program specifically for bicycle and pedestrian traffic violations, with the primary goal of facilitating access to safety courses and programs centered on biking and walking.



Educational Initiatives over Citations

Crash Type: All

Prioritize educational initiatives while issuing citations during traffic enforcement by actively seeking opportunities to provide educational resources. This counter measurement's expected lifespan is 20 years.



Educational Campaign

Crash Type: All

Create and actively implement a branding,promotional,andeducational campaign for Vision Zero to enhance knowledge and understanding of its principles. Work together with community organizations to distribute materials, spread messages, and organize public events that promote active transportation and transit as responsible choices.



Safe Routes to School Program

Crash Type: All

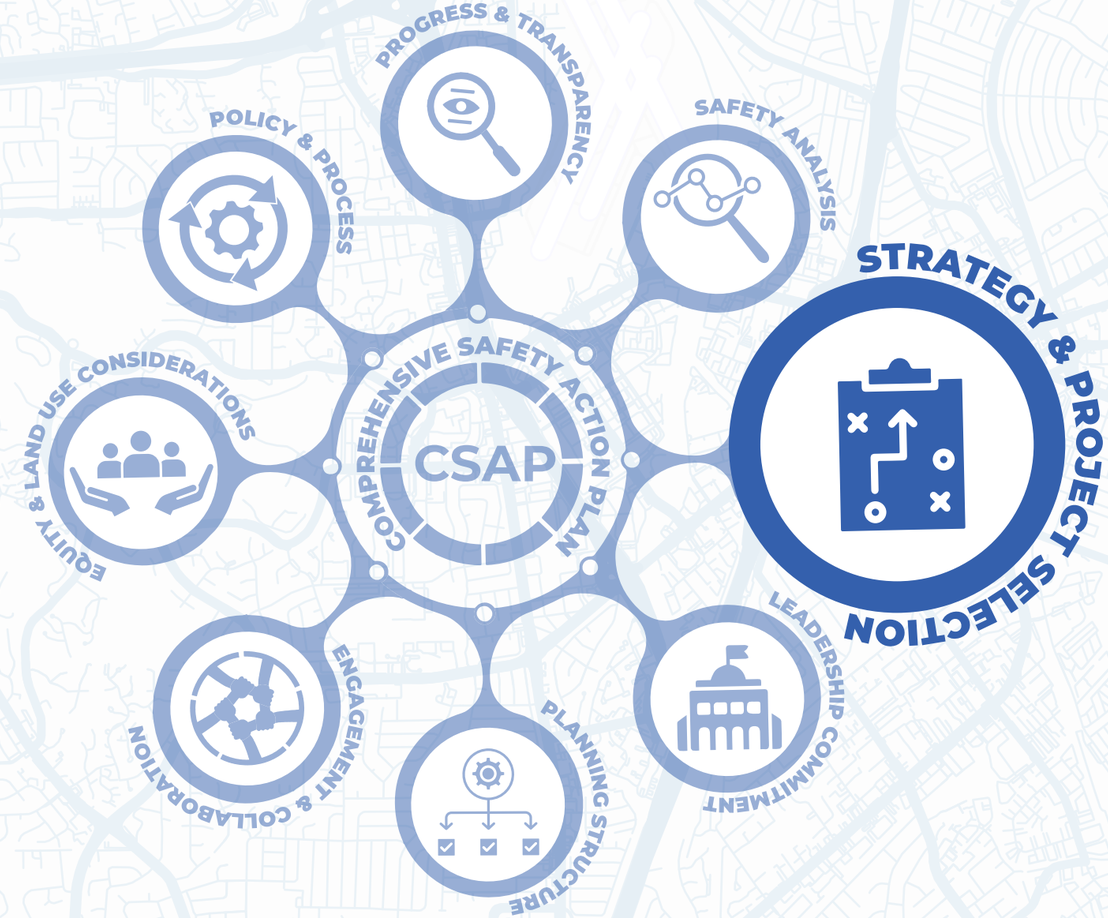
Expand the Safe Routes to School Program to include Vision Zero Training material for students, parents and teachers.



Rapid Response Safety Communication Protocol

Crash Type: All

Create a Rapid Response Safety Communication Protocol for Vision Zero. Implement a communication plan that addresses recent severe and fatal collisions, with a specific focus on promoting traffic safety and health-conscious behaviors to the community.



CONCORD

Comprehensive Safety Action Plan



CHAPTER SIX

Safety Projects

This chapter outlines a comprehensive, data-driven strategy to reduce traffic collisions, including fatalities and serious injuries within the City of Concord. Guided by the principles of the Safe System approach and informed by detailed collision analysis covering the period from January 2021 through December 2025, the recommended projects translate identified safety challenges into targeted, implementable improvements.

The proposed location-specific countermeasures respond directly to documented collision trends, including a high incidence of broadside and rear-end collisions, unsafe speed-related violations, vehicle–pedestrian conflicts, nighttime visibility concerns, and traffic signal and/or sign violations at both signalized and unsignalized intersections. These recommendations also reflect priorities identified through stakeholder engagement and community feedback.

To effectively address these safety challenges, the CSAP organizes recommended improvements into two categories:

Systemic Projects

Design Projects

Together, these approaches provide a balanced framework that addresses both widespread risk factors across the transportation network and location-specific collision patterns along high-injury corridors and intersections. This strategy enables the City to strengthen overall network safety while prioritizing investments in areas where they will have the greatest impact.

The Concord Comprehensive Safety Action Plan (CSAP) identifies 16 proposed projects organized into four categories: High Injury Network (HIN) Corridor Improvements, Complete Streets and Active Transportation, Citywide Safety Programs, and Planning and Policy Initiatives. These projects are designed to address collision patterns observed citywide during the study period, with a focus on corridors and locations where injury data indicates elevated risk for all roadway users.

All projects are conceptual and will require further feasibility analysis, preliminary engineering, and environmental review to define final scope, design, and cost. Implementation is contingent upon securing funding for both design and construction phases, and project prioritization may evolve based on additional technical analysis, community input, and emerging funding opportunities.

SYSTEMIC PROJECTS

Systemic projects consist of citywide initiatives designed to address recurring collision risk factors through consistent improvements across the transportation network. Rather than focusing on individual locations, these projects target common deficiencies that contribute to collisions throughout the city, such as pedestrian safety at signalized intersections and gaps in sidewalk infrastructure.

In Concord, systemic projects were identified based on recurring collision patterns observed in the five-year collision analysis. Community input reinforced these findings, with residents highlighting concerns related to pedestrian safety at signalized intersections and the need for improved and continuous sidewalks.

The systemic projects recommended in this CSAP include:

11 **Citywide Pedestrian Sidewalk Improvements**

12 **Citywide Pedestrian Signal Improvements**

DESIGN PROJECTS

While systemic projects address network-wide risks, design projects focus on specific corridors and intersections where collision concentrations and operational challenges are more pronounced. These targeted improvements respond to unique roadway conditions, traffic patterns, surrounding land uses, and multimodal travel demands.

Design projects were identified through a detailed evaluation of collision history, roadway characteristics, and community-identified safety concerns. High-injury corridors and areas near schools were prioritized due to their disproportionate share of severe collisions and their critical role within the City's transportation network.

The design projects recommended in this CSAP include:

1 **High Injury Corridor Improvements**
(Monument Boulevard, Concord Avenue, Galindo Street, Willow Pass Road, Clayton Road)

2 **Complete Streets Construction**
(Cowell Road and Galindo Street)

3. Safe Routes to School Improvements
4. Bicycle Safety Improvements at High Injury Network Corridors
5. Concord Boulevard Safety Improvements
6. Port Chicago Highway Safety Improvements
7. Willow Pass Road Northern Portion Improvements
8. Treat Boulevard Safety Improvements
9. Oak Grove Road Safety Improvements
10. Ygnacio Valley Road and Kirker Pass Road Safety Improvements

These corridors and locations account for a significant share of injury and KSI (Killed or Seriously Injured) collisions within the City. Corridors identified along the High Injury Network represent a disproportionate share of all KSI collisions citywide, underscoring the need for focused safety investments.

Unlike systemic projects, which address risks across the broader network, design projects deliver targeted solutions at locations where data indicates elevated safety risks. These interventions aim to reduce both the frequency and severity of collisions while improving accessibility, connectivity, and overall user comfort.



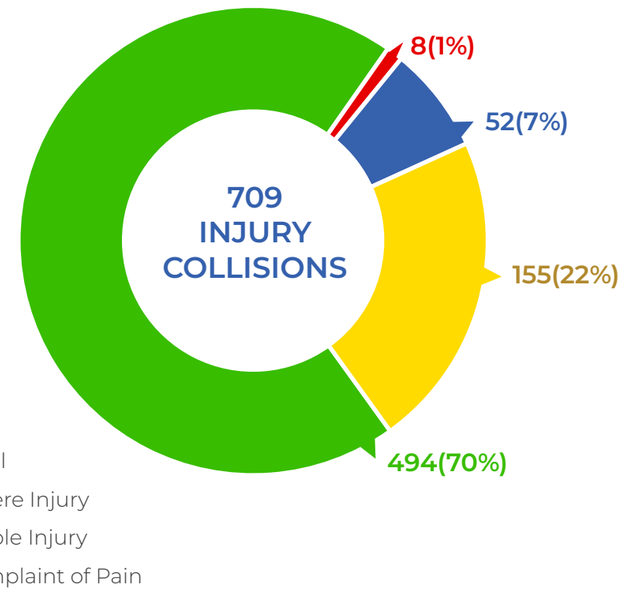
INTEGRATED SAFETY STRATEGY

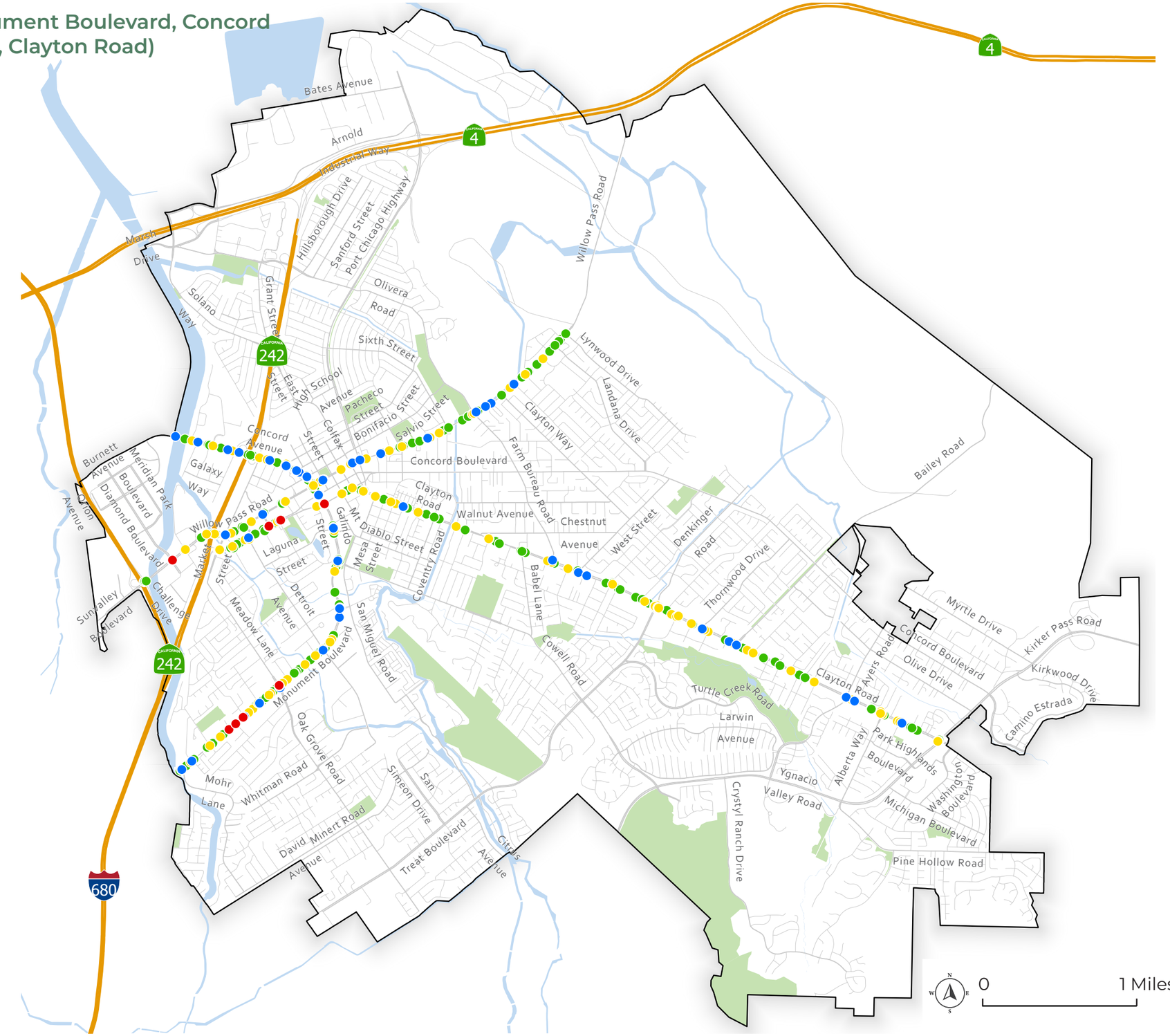
Together, systemic and design projects form a comprehensive safety framework for the City of Concord. Systemic projects address widespread collision risk factors across the transportation network, while design projects focus resources on high-injury corridors and intersections with documented safety concerns.

This integrated strategy ensures that safety investments are both proactive and responsive. Systemic improvements aim to prevent future collisions by addressing common roadway deficiencies, while design projects target locations with a demonstrated history of collisions. By combining detailed data analysis, engineering best practices, and community input, the City establishes a strategic roadmap for reducing fatalities and serious injuries across the transportation network.

1 High Injury Corridor Improvements (Monument Boulevard, Concord Avenue, Galindo Street, Willow Pass Road, Clayton Road)

Project 1 would deliver targeted safety improvements along five HIN-priority corridors: Clayton Road (SR-242 to Washington Boulevard), Monument Boulevard (Cowell Road to Mohr Lane), Willow Pass Road (I-680 to Avila Road), Concord Avenue (John Glenn Drive to Salvio Street), and Galindo Street (Salvio Street to Cowell Road). Potential improvements identified for further design evaluation include speed feedback signs, enhanced street and intersection lighting, pedestrian passive detection, leading pedestrian intervals (LPI), high-visibility crosswalks, ADA-compliant curb ramps, curb reconfiguration, sidewalk gap closures, access management medians, high-friction surface treatment (HFST), intersection safety analytics, protected intersection design, connected vehicle (C-V2X) technology, and emergency vehicle preemption (EVP GPS) at priority intersections. Collectively, these five corridors are associated with 687 injury collisions over the study period, including 8 fatalities and 52 severe injuries.





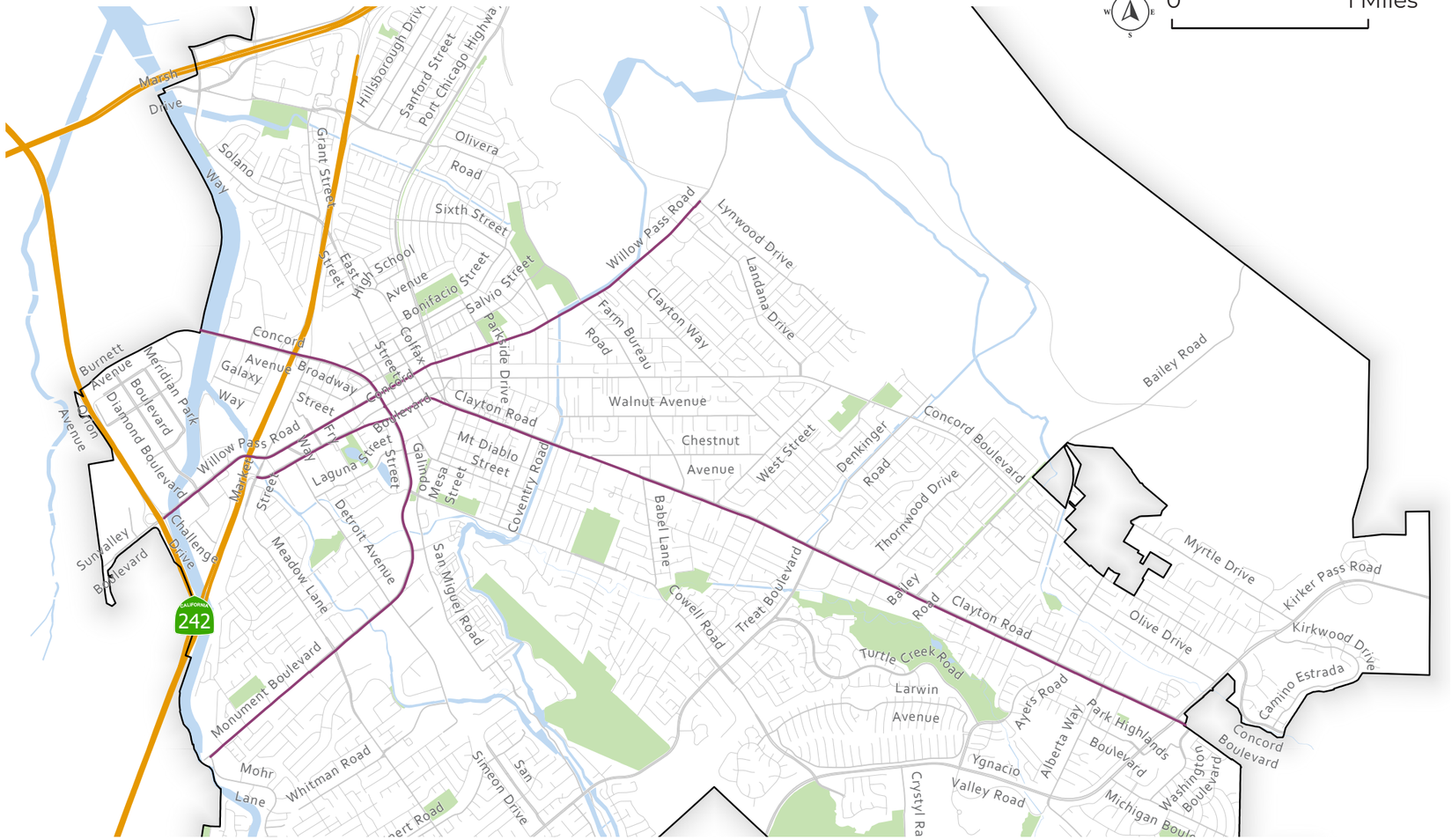
1 High Injury Corridor Improvements (Monument Boulevard, Concord Avenue, Galindo Street, Willow Pass Road, Clayton Road)

MODE

	62
	5
	46
	5
	500
	80
	11

COLLISION TRENDS

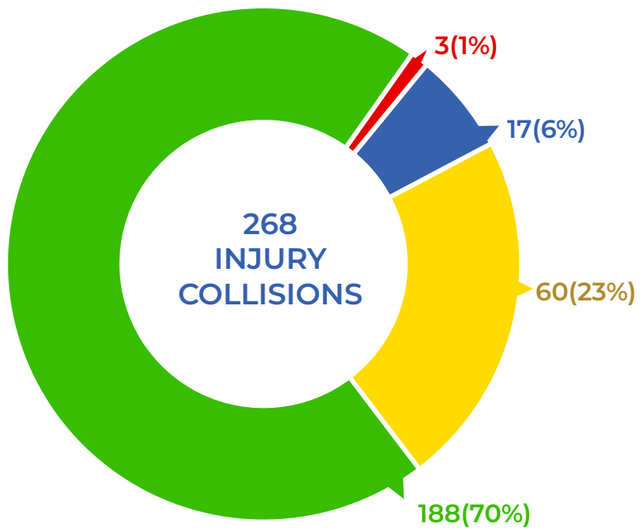
1	86%	Intersection 608 Collisions
2	45%	Broadside 317 Collisions
3	24%	Rear End 168 Collisions
4	30%	Nighttime 210 Collisions
5	22%	Traffic Signals & Signs 155 Collisions

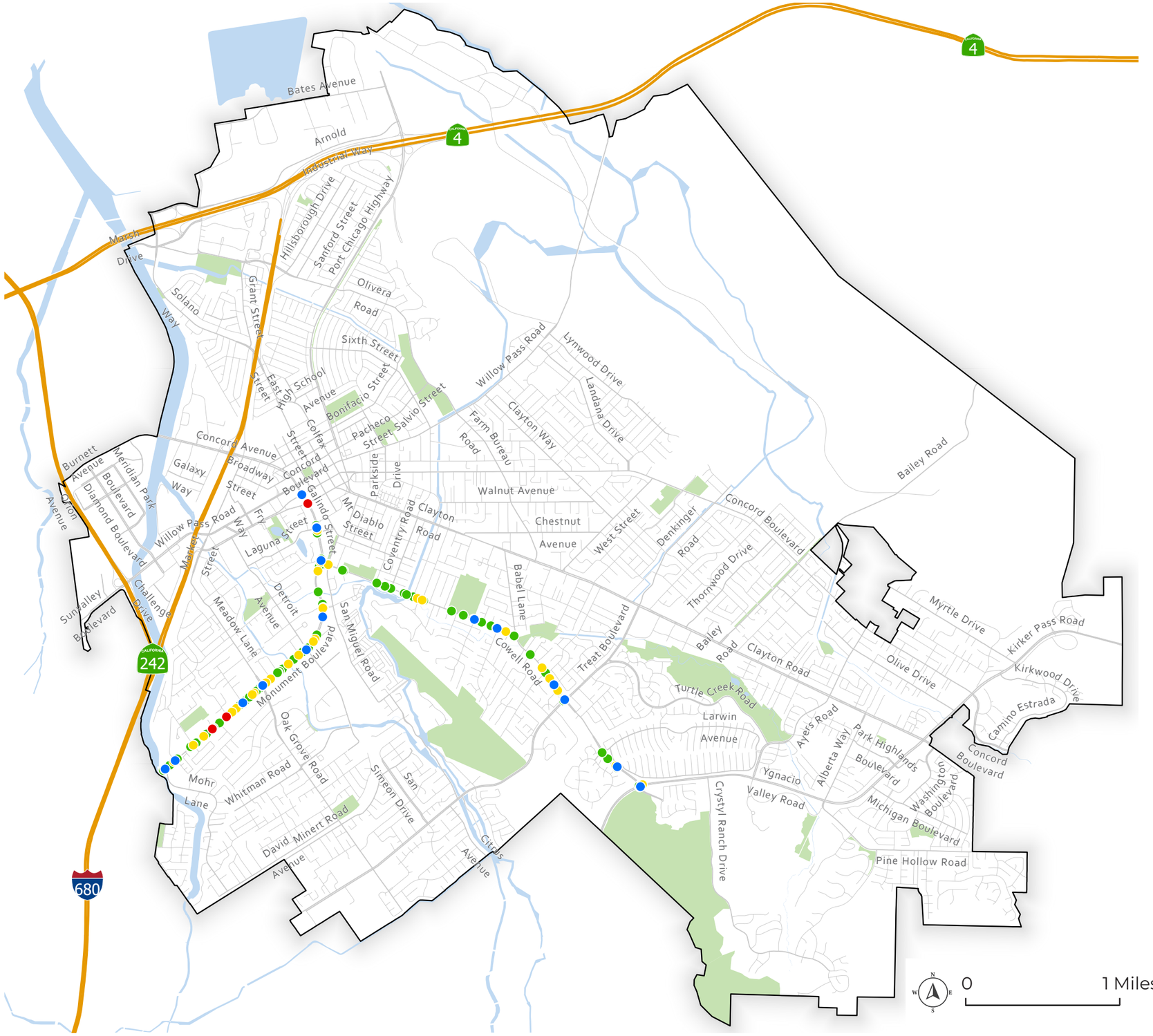


IMPROVEMENTS	LOCATIONS	ESTMATED COST
Clayton Rd Safety Improvements	Clayton Rd: SR-242 to Washington Boulevard	$5,497,100
Monument Blvd Safety Improvements	Monument Blvd: Cowell Road to Mohr Lane	$2,609,700
Willow Pass Rd Safety Improvements	Willow Pass Rd: I-680 to Avila Road	$2,003,000
Concord Ave Safety Improvements	Concord Ave: John Glenn Drive to Salvio Street	$1,146,400
Galindo St Safety Improvements	Galindo St: Salvio St to Cowell Rd	$3,234,500
	Contingency Cost	**$2,898,000**
	Engineering Cost	**$5,216,000**
	Total Cost	**$22,605,000**

2 Complete Streets Construction (Cowell Road and Galindo Street)

Project 2 would advance the design and potential construction of complete street improvements on three corridors: Monument Boulevard (Iron Horse Trail to Walters Way), Cowell Road (Monument Boulevard to Ygnacio Valley Road), and Galindo Street (Concord Boulevard to Cowell Road), building on an existing feasibility study. Potential improvements include bicycle and pedestrian safety enhancements and transit connection and circulation improvements, with prioritization informed by proximity to schools and parks.





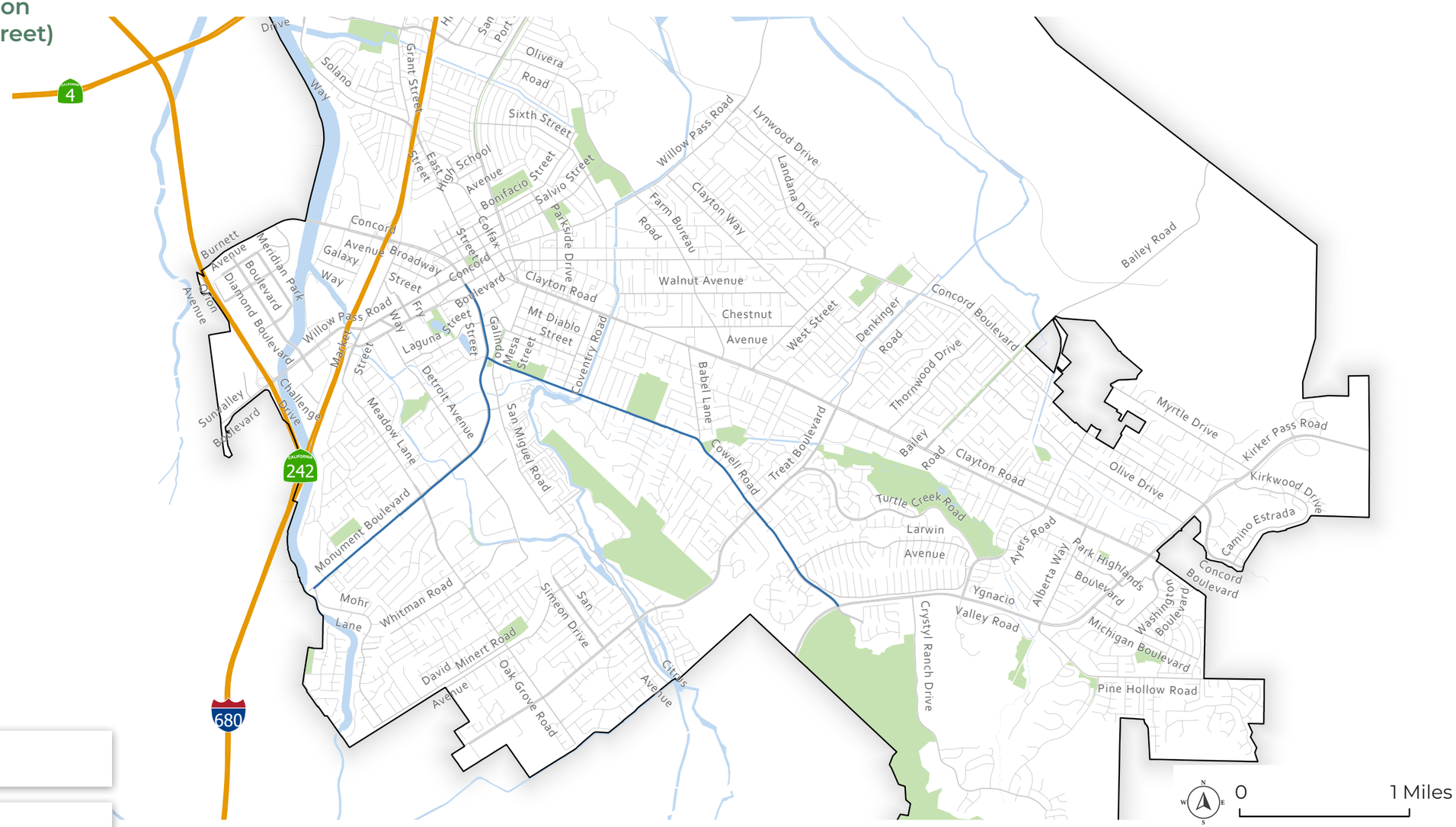
2 Complete Streets Construction (Cowell Road and Galindo Street)

MODE

	22
	2
	15
	4
	189
	31
	5

COLLISION TRENDS

1	87%	Intersection 234 Collisions
2	47%	Broadside 125 Collisions
3	31%	Rear End 82 Collisions
4	25%	Nighttime 68 Collisions
5	22%	Traffic Signals & Signs 59 Collisions

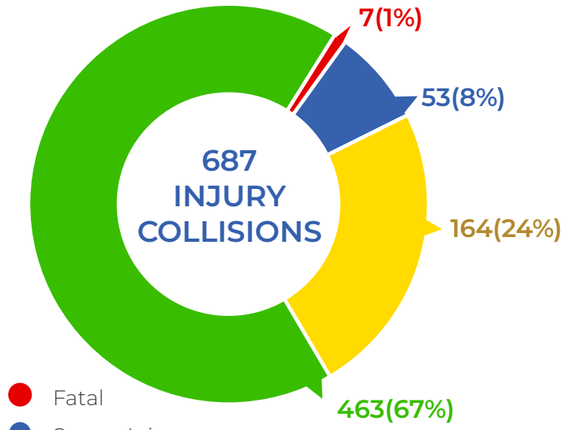


IMPROVEMENTS	LOCATIONS	ESTMATED COST
Cowell Rd Complete Streets Improvements	Cowell Rd: Monument Boulevard to Ygnacio Valley Road	$10,000,000
Monument Blvd Complete Streets Improvements	Monument Boulevard: Cowell Road to Mohr Lane	$30,000,000
Galindo St Complete Streets Improvements	Galindo Street: Concord Blvd to Cowell Road	$5,000,000

Contingency Cost	**$9,000,000**
Engineering Cost	**$18,900,000**
Total Cost	**$72,900,000**

3 Safe Routes to School Improvements

Project 3 would implement a Safe Routes to School program in school proximity areas citywide, informed by the City's 2024 SS4A grant proposal. Potential improvements identified for further evaluation include curb reconfiguration, high-visibility crosswalks with advance stop bars, raised crosswalks, dynamic warning signage, bike lanes, and enhanced school zone circulation improvements. Collision data indicates 131 pedestrian and bicycle collisions in school proximity areas over the study period, including 4 fatalities and 21 severe injuries.



COLLISION TRENDS

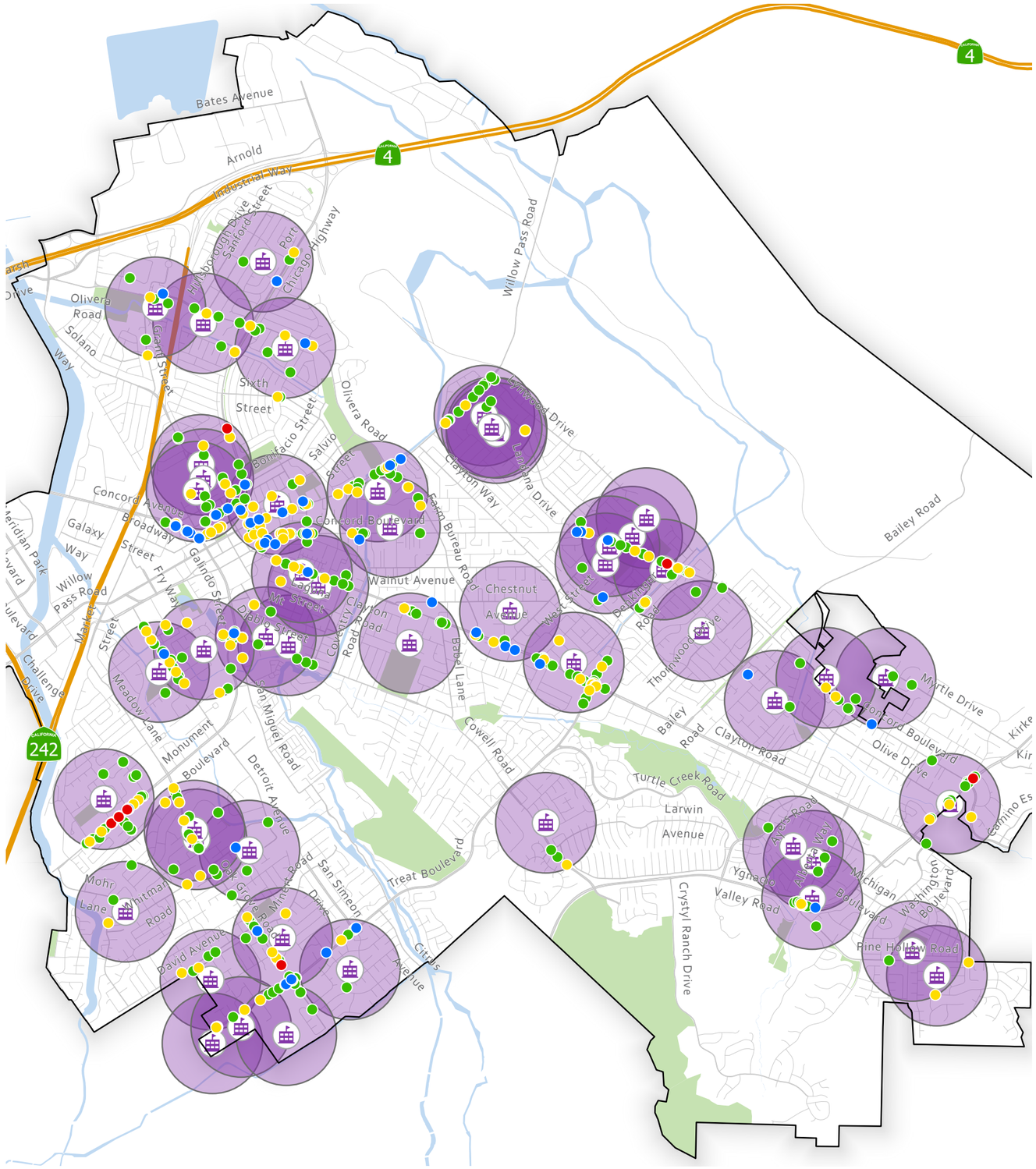
1	36%	Broadside 246 Collisions
2	30%	Nighttime 207 Collisions
3	25%	Rear End 169 Collisions
4	23%	Unsafe Speed Violations 155 Collisions
5	12%	Intersection 85 Collisions

IMPROVEMENTS

- High Visibility Crosswalks
- Advanced Stop Bars
- Raised Crosswalks
- Dynamic Warning Signs
- Bike Lanes
- Enhanced School Zone Circulation

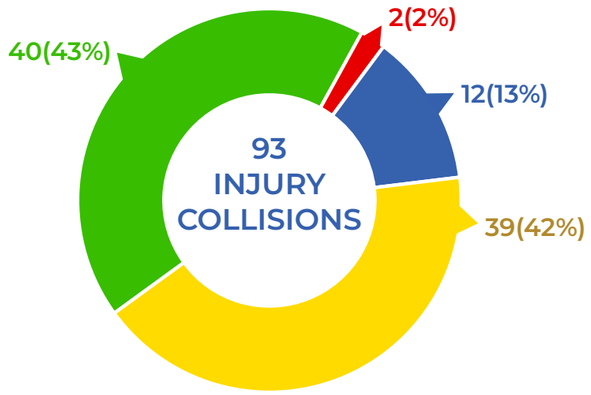
MODE

	53
	3
	44
	4
	488
	77
	18



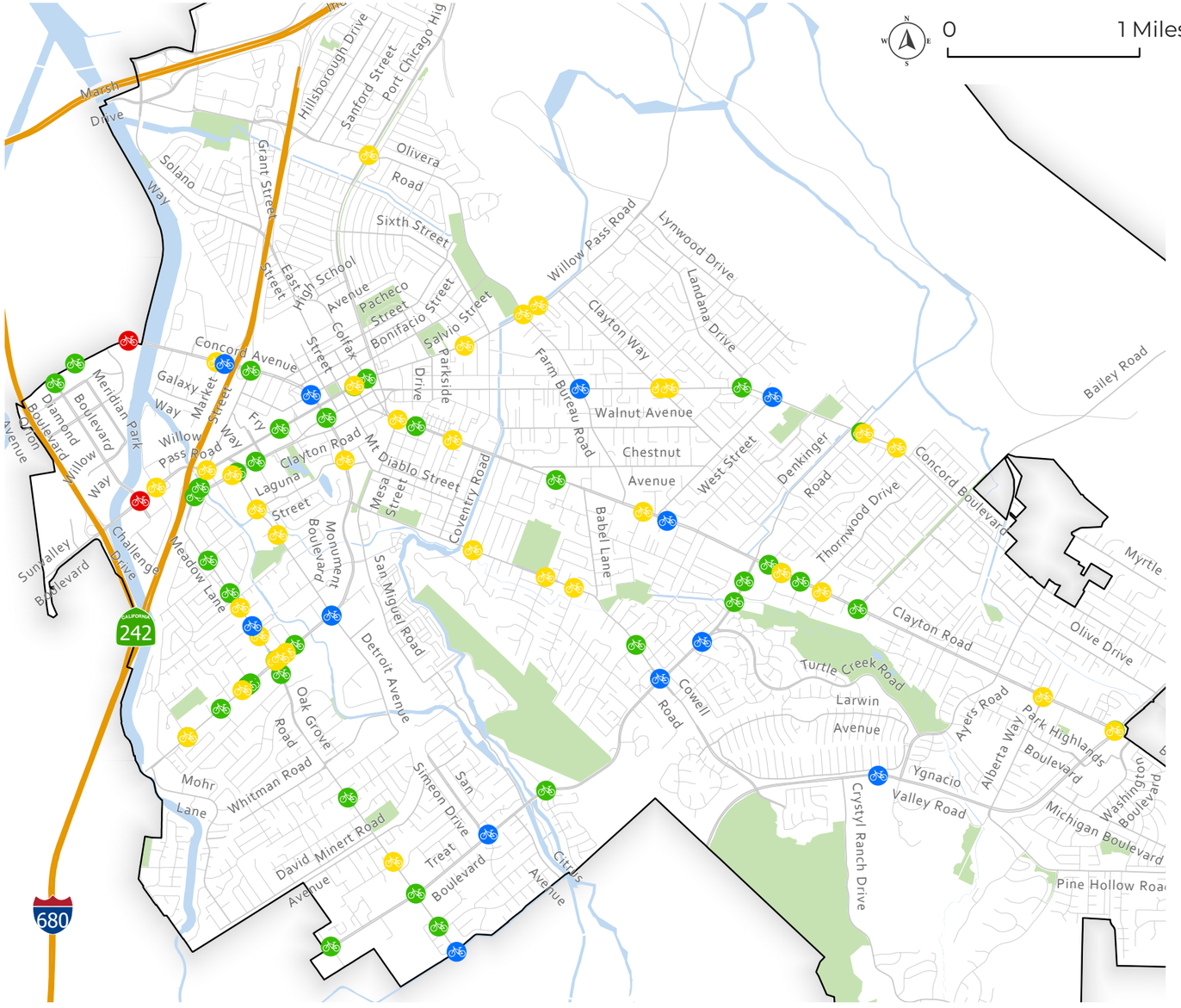
4 Bicycle Safety Improvements at High Injury Network Corridors

Project 4 would deliver bicycle safety improvements across multiple HIN corridors and citywide locations, potentially including Class I shared-use path enhancements, protected bike lane intersection treatments, bike lane gap closures, and crossing improvements at major intersections. Corridors and locations identified for further evaluation include Monument Boulevard (Systron Drive to Mohr Lane), Concord Boulevard (Grant Street to Port Chicago Highway), Cowell Road, Galindo Street, Diamond Boulevard, Market Street, and Clayton Road. Over the study period, 149 bicycle collisions were recorded citywide, with multiple severe injuries at locations identified as candidates for gap improvements.



COLLISION TRENDS

1	91%	Intersection 85 Collisions
2	65%	Broadside 60 Collisions
3	24%	Nighttime 22 Collisions
4	16%	Improper Turning 15 Collisions
5	14%	Automobile Right of Way 13 Collisions



IMPROVEMENTS	LOCATIONS	ESTMATED COST
Protected Bike Lane Intersections	Various Signalized Intersections along Concord Blvd	$1,660,000
Bike Lane Improvements	High Injury Network Corridors with Bicycle Collisions	$52,727,830

Contingency Cost	**$18,877,600**
Engineering Cost	**$22,842,900**
Total Cost	**$88,108,400**

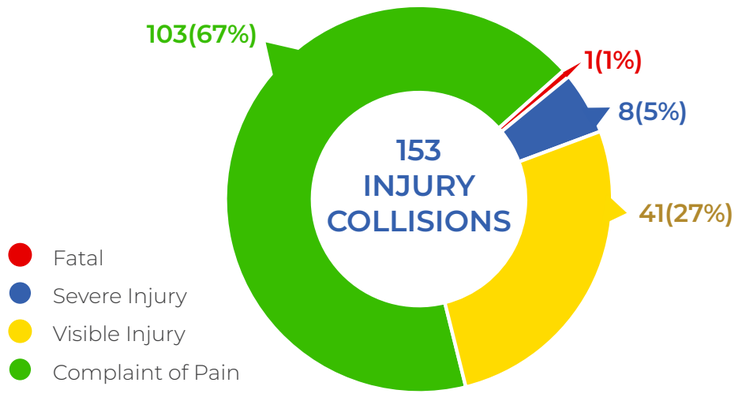
5 Concord Boulevard Safety Improvements

Project 5 would address safety and active transportation connectivity considerations along Concord Boulevard (SR-242 to Kirker Pass Road). Improvements identified for design consideration include sidewalk gap closures, crosswalk enhancements — including potential HAWK signal conversions and LED beacon installations — sight triangle clearance, raised or separated path improvements near schools, and speed feedback signs. This corridor is associated with 35 collisions where unsafe speed was identified as a contributing factor and 29 rear-end collisions, with noted pedestrian activity in proximity to two schools.

COLLISION TRENDS

1	95%	Intersection 146 Collisions
2	42%	Broadside 65 Collisions
3	25%	Unsafe Speed 39 Collisions
4	25%	Nighttime 38 Collisions
5	22%	Traffic Signals & Signs 34 Collisions

MODE	MODE
10	121
1	8
10	3



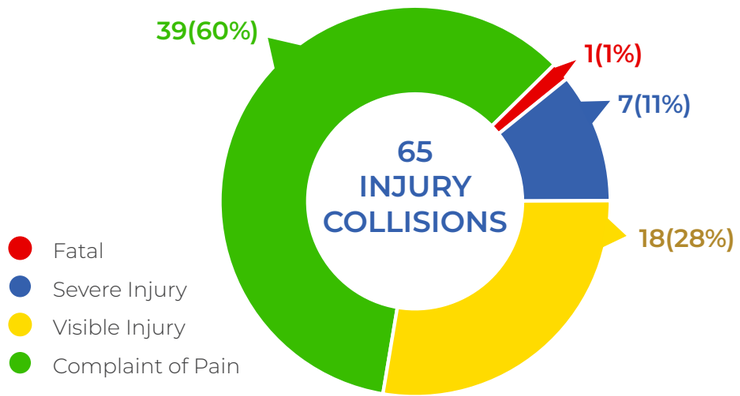
IMPROVEMENTS	LOCATIONS	ESTMATED COST
Fill Sidewalk Gaps	West of Alary Dr to Woodside Ct Sutter St to Galindo St	$442,700
Enhance Pedestrian Crossings	2nd St Contra costa Trail Crossing	$684,600
Sight Distance Improvements	Intersections along Corridor	$100,000
Speed Feedback Signs	Highway 242 to Kirker Pass Rd	$150,000

Contingency Cost	$9,000,000
Engineering Cost	$18,900,000
Total Cost	$72,900,000



6 Port Chicago Highway Safety Improvements

Project 6 would evaluate and implement safety improvements along Port Chicago Highway (north of High School Avenue to the City Limits), including at Bonifacio Street, East Olivera Road, and North 6th Street. Potential improvements identified for design consideration include median expansion and curb extensions, speed feedback signs, signal timing modifications, protected left-turn phasing, leading pedestrian intervals, high-visibility crosswalks, and ADA-compliant curb ramps. Collision data indicates a pattern of 13 broadside collisions on this segment, including 4 at the 6th Street intersection and 1 pedestrian severe injury at Bonifacio Street.



COLLISION TRENDS

1	78%	Intersection 51 Collisions
2	60%	Broadside 39 Collisions
3	34%	Traffic Signals & Signs 22 Collisions

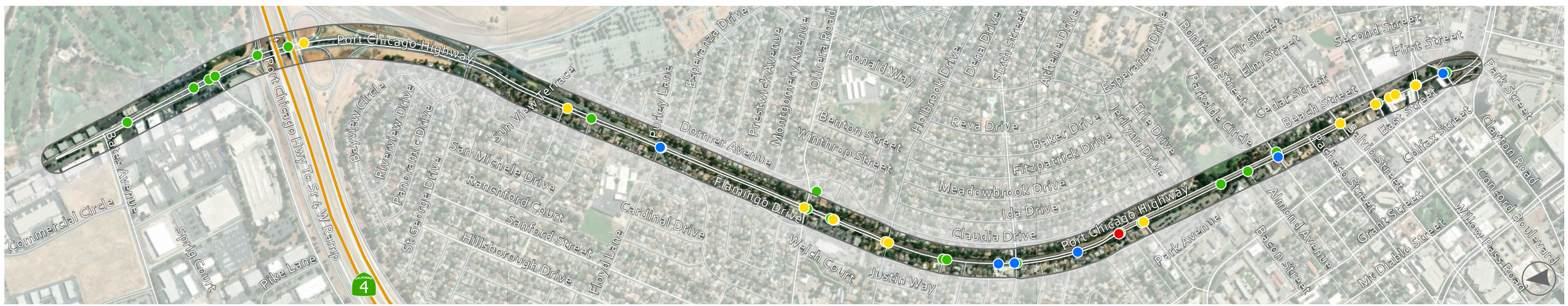
COLLISION TRENDS

4	32%	Nighttime 21 Collisions
5	18%	Unsafe Speed 12 Collisions
6	15%	Automobile ROW Violations 10 Collisions

MODE	MODE
1	53
1	4
3	3

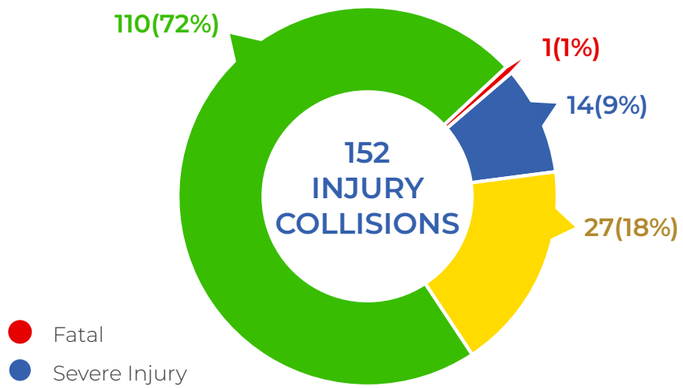
IMPROVEMENTS	LOCATIONS	ESTMATED COST
Speed Feedback Signs	North of High School Ave	$30,000
Sight Distance Improvements	North of High School Ave	$50,000
Median and Access Management	North of High School Ave	$200,830
Modify Signal Timing and Hardware	Traffic Signals	$121,000
Protected Left Turn	N 6th St	$20,000
Pedestrian Crossing Improvements	Bonifacio St E Olivera Rd	$48,440

Contingency Cost	**$94,000**
Engineering Cost	**$197,000**
Total Cost	**$761,000**



7 Willow Pass Road Northern Portion Improvements

Project 7 would address delineation and roadway edge treatment considerations along Willow Pass Road from north of Lynwood Drive to the City Limits. Potential improvements identified for further evaluation include median delineators to discourage unsafe passing, enhanced curve delineation, widened edge lines, object markers, rumble strips, and streetlight upgrades.



COLLISION TRENDS

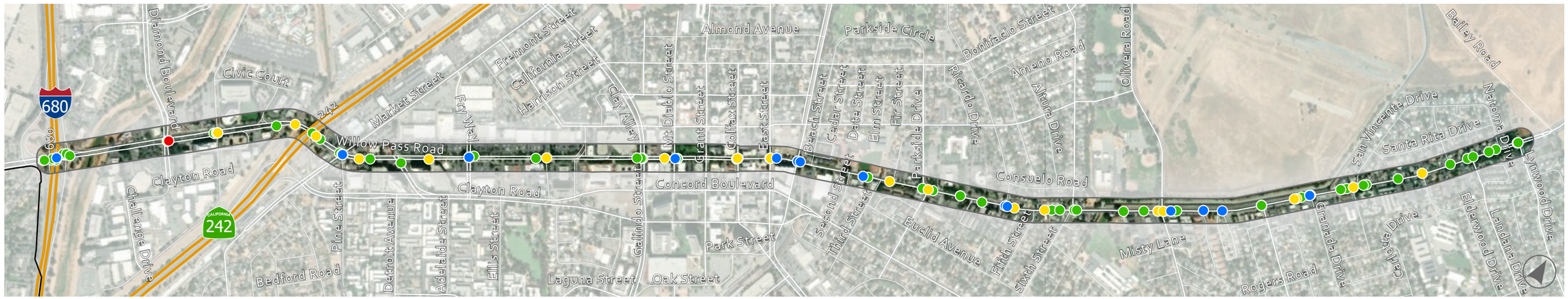
1	91%	Intersection 138 Collisions
2	49%	Broadside 75 Collisions
3	32%	Unsafe Speed 49 Collisions
4	22%	Nighttime 34 Collisions
5	20%	Traffic Signals & Signs 31 Collisions

MODE

Bicycle	9
Motorcycle	11
Vehicle	116
Pedestrian	16

IMPROVEMENTS	LOCATIONS	ESTMATED COST
Delineators, Wider Edgeline, and Rumble Strips	North of Lynwood to City Limits	$197,900
Street Lighting	North of Lynwood to City Limits	$178,500
Enhance Curve Delineation	North of Lynwood to City Limits	$34,350
Signs and Object Markers	North of Lynwood to City Limits	$7,500

Contingency Cost	**$83,000**
Engineering Cost	**$175,000**
Total Cost	**$677,000**



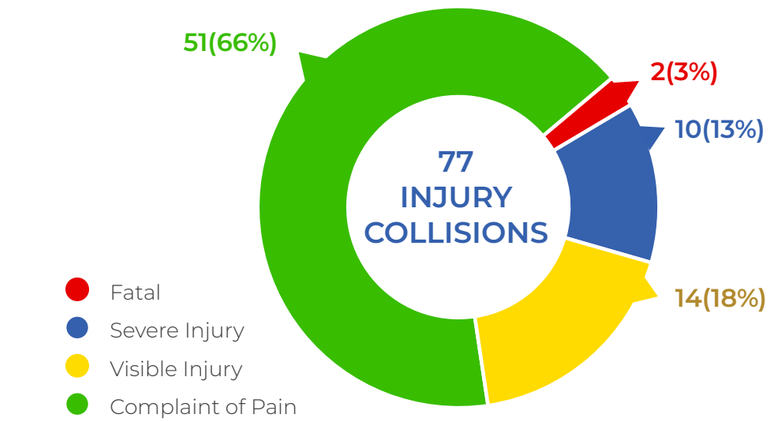
8 Treat Boulevard Safety Improvements

Project 8 would address the Treat Boulevard corridor (Winton Drive to Clayton Road, approximately 3.1 miles) through a combination of planning and physical improvements. Potential elements identified for design consideration include a complete street feasibility study and preliminary design, mast-arm signal head upgrades, sidewalk improvements and gap closures, HAWK signal installation, leading pedestrian intervals (LPI) corridor-wide, speed feedback signs, and curve safety treatments including high-friction surface treatment (HFST) and warning beacons. Evaluation of a bicycle and pedestrian connection between San Miguel Road and Marietta Circle is also identified for further study. This corridor is associated with 76 total injury collisions over the study period, including 5 pedestrian-involved, 5 bicycle-involved, and 1 bus-involved collision.

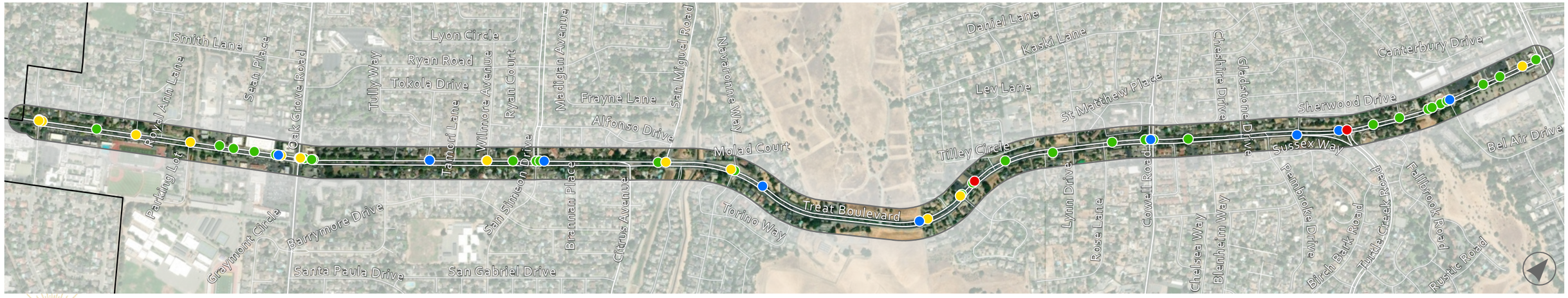
COLLISION TRENDS

1. **86%** — Intersection, 66 Collisions
2. **39%** — Broadside, 30 Collisions
3. **32%** — Unsafe Speed, 25 Collisions
4. **27%** — Nighttime, 21 Collisions
5. **18%** — Traffic Signals & Signs, 14 Collisions

MODE		MODE	
	6		59
	1		5
	3		3

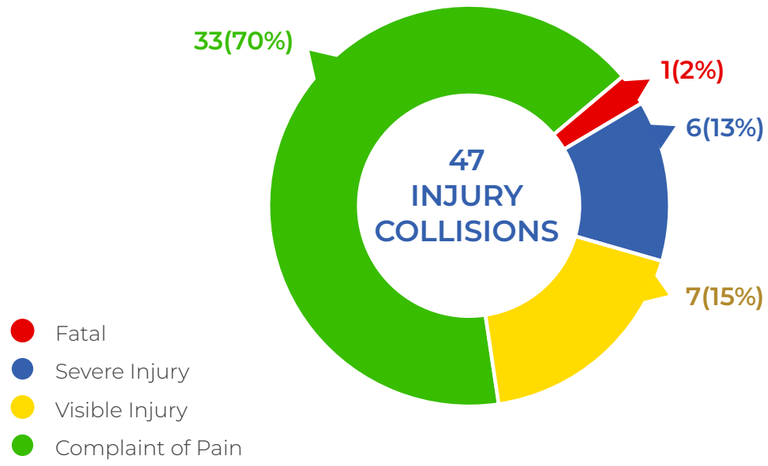


IMPROVEMENTS	LOCATIONS	ESTMATED COST
Upgrading pedestal mounted left turn heads to mast arm mounted	Various Signalized Intersections	$915,000
Fill Sidewalk Gaps	Lancelot Drive to Navaronne Way	$2,565,200
Advanced Traffic Signal Beacon	Treat Blvd and Navaronne Way	$130,000
Leading Pedestrian Interval	Various Signalized Intersections	$27,000
HAWK Signal	Treat Blvd and Blarney Ave	$650,000
Speed Feedback Signs	Argonne Dr to Clayton Rd	$90,000
Enhance Curve Delineation	Curve Locations	$62,000
	Contingency Cost	**$887,000**
	Engineering Cost	**$1,864,000**
	Total Cost	**$7,191,000**



9 Oak Grove Road Safety Improvements

Project 9 would evaluate safety improvements along Oak Grove Road (City Limits to Monument Boulevard), including raised median installation, speed feedback signs, crosswalk enhancements at various locations — including the Contra Costa Trail crossing — and sight distance improvements. Collision data indicates elevated speed and sight distance considerations along this corridor.



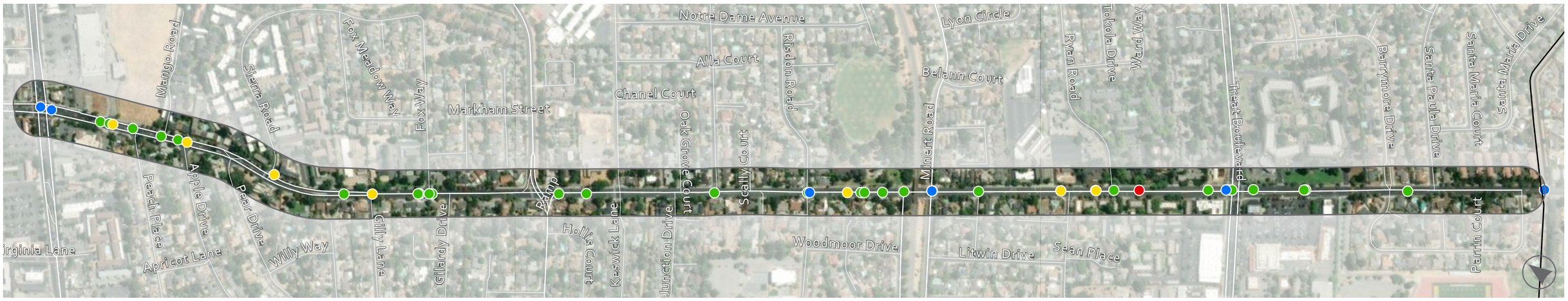
COLLISION TRENDS

1	83%	Intersection 39 Collisions
2	34%	Broadside 16 Collisions
3	32%	Unsafe Speed 15 Collisions
4	30%	Nighttime 14 Collisions
5	28%	Traffic Signals & Signs 13 Collisions

MODE	MODE
6	36
1	2
1	1

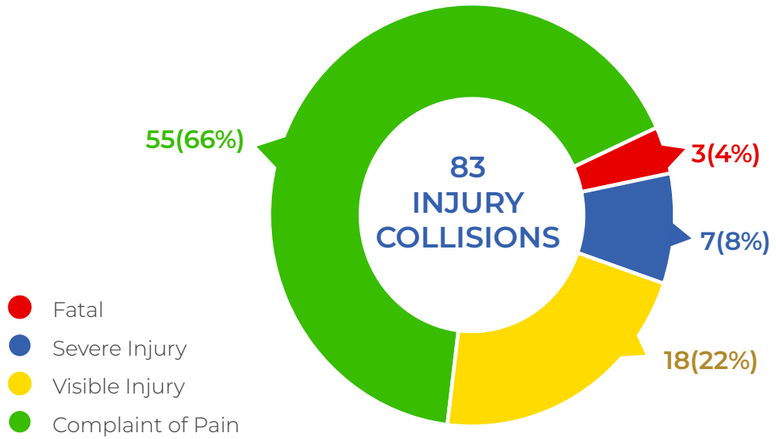
IMPROVEMENTS	LOCATIONS	ESTMATED COST
Median and Access Management	Gilly Ln to City Limits	$2,235,440
Speed Feedback Signs	City Limit to Monument Blvd	$90,000
Sight Distance Improvements	City Limit to Monument Blvd	$80,000
Pedestrian Crossing Enhancements	Various Locations including Contra Costa Trail Crossing	$41,000

Contingency Cost	**$489,000**
Engineering Cost	**$1,027,000**
Total Cost	**$3,963,000**



10 Ygnacio Valley Road and Kirker Pass Road Safety Improvements

Project 10 would identify and address geometric, striping, and roadway safety considerations along Ygnacio Valley Road (Alberta Way/Pine Hollow Road to Park Highlands Boulevard) and Kirker Pass Road (Concord Boulevard to the City Limits). Potential improvements identified for design consideration include geometric revisions to curb radii and striping, sidewalk and shared path gap closures, overhead signal warning beacons, high-friction surface treatment (HFST), raised median or barrier installation, median street lighting, full corridor restriping, guardrail, and crash cushions. Collision data indicates elevated speed and sight distance considerations on these high-speed segments, particularly on downhill curves..



COLLISION TRENDS

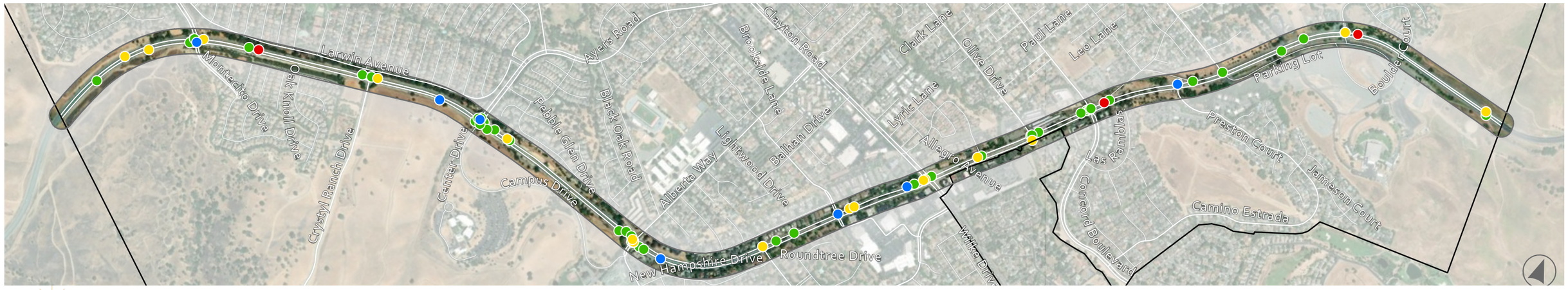
1	77%	Intersection 64 Collisions
2	48%	Broadside 40 Collisions
3	45%	Unsafe Speed 37 Collisions
4	35%	Nighttime 29 Collisions
5	19%	Traffic Signals & Signs 16 Collisions

MODE

Bicycle	2
Bus	1
Motorcycle	6
Car	68
Pedestrian	6

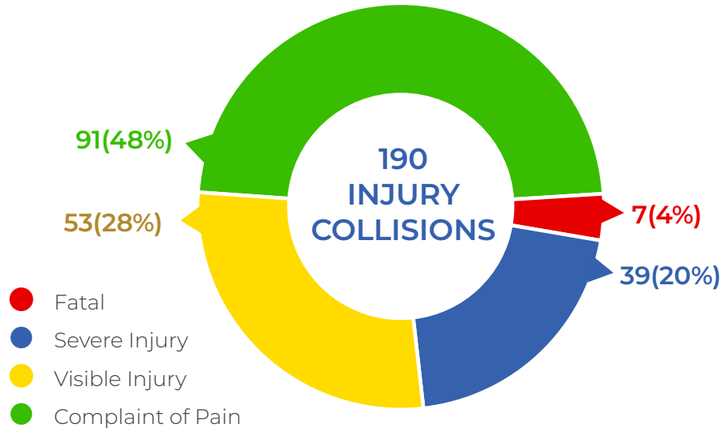
IMPROVEMENTS	LOCATIONS	ESTMATED COST
Fill Sidewalk Gaps	Sidewalk Gaps	$3,864,100
Traffic Signal Warning Beacons	Cowell Rd	$85,500
High Friction Surface Treatment	Cowell Rd \ Ayers/Alberta \ Myrtle to City Limits	$564,400
Raised Median or Barrier	City Limits to Michigan Blvd	$1,625,000
Street Lighting	City Limits to Michigan Blvd	$2,504,000
Upgrade Striping	Whole Corridor	$514,800
Install Guardrail	SB on Kirker Pass North of Clearbrook Dr	$31,000
Crash Cushion	Before median barrier on Kirker pass	$197,000

Contingency Cost	$1,877,000
Engineering Cost	$3,942,000
Total Cost	$15,205,000



11 Citywide Pedestrian Sidewalk Improvements

Project 11 would address sidewalk gaps citywide, with prioritization informed by HIN corridor collision data and pedestrian collision history. Priority segments identified for further evaluation include Clayton Road (Fabian Way to Barbis Way), 6th Street (Willow Pass Road to Alameda Avenue), and Cowell Road (Galindo Street to Treat Boulevard), among others. Citywide pedestrian-involved collision data reflects 187 collisions over the study period, including 7 fatalities and 37 severe injuries.



COLLISION TRENDS

1	95%	Vehicle / Pedestrian 181 Collisions
2	86%	Intersection 163 Collisions
3	39%	Pedestrian Right of Way 75 Collisions
4	32%	Nighttime 60 Collisions
5	25%	Pedestrian Violation 48 Collisions

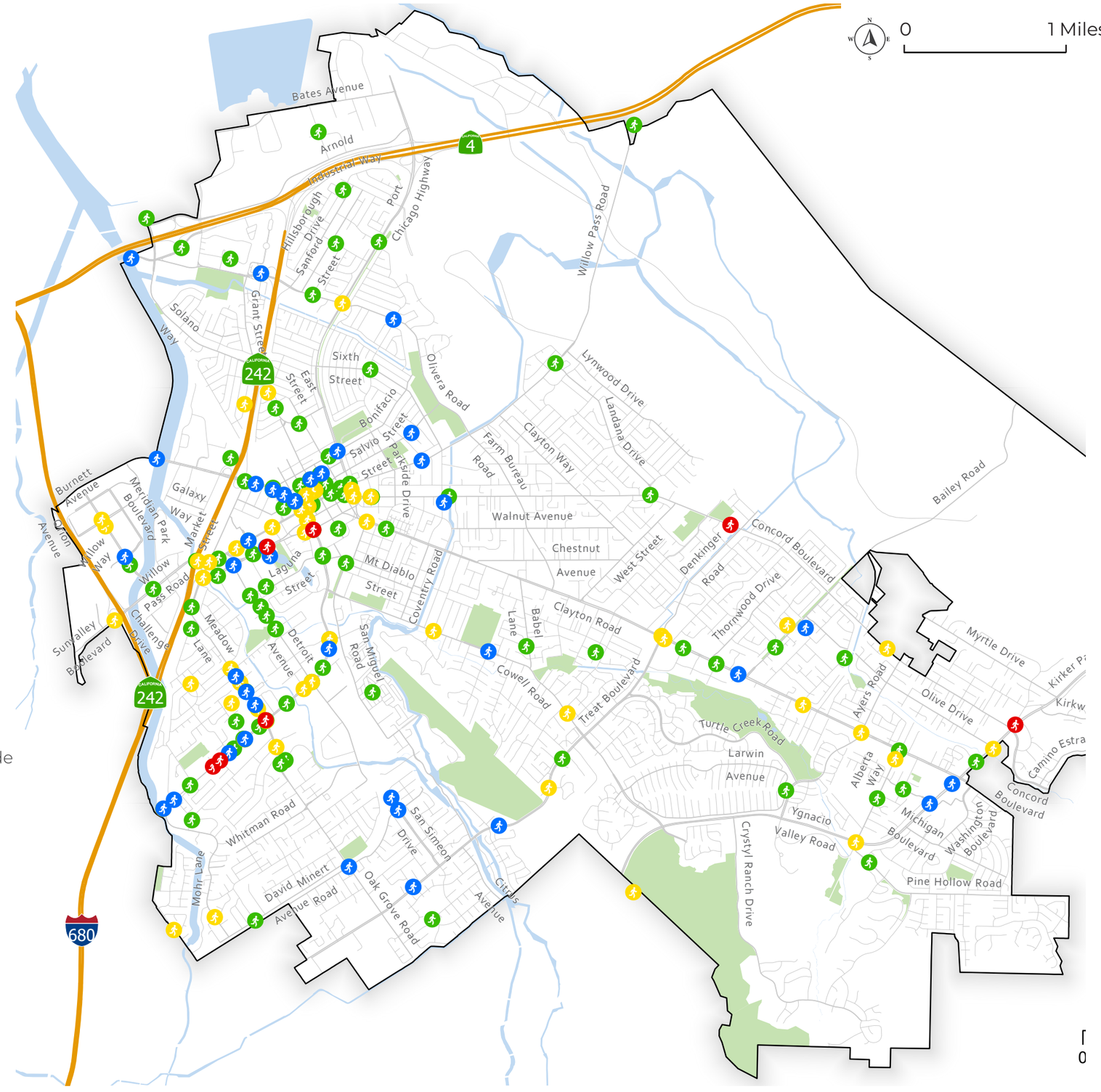
IMPROVEMENTS
Fill Sidewalk Gaps Citywide

ESTMATED COST
$156,119,000

Contingency Cost
$31,223,000

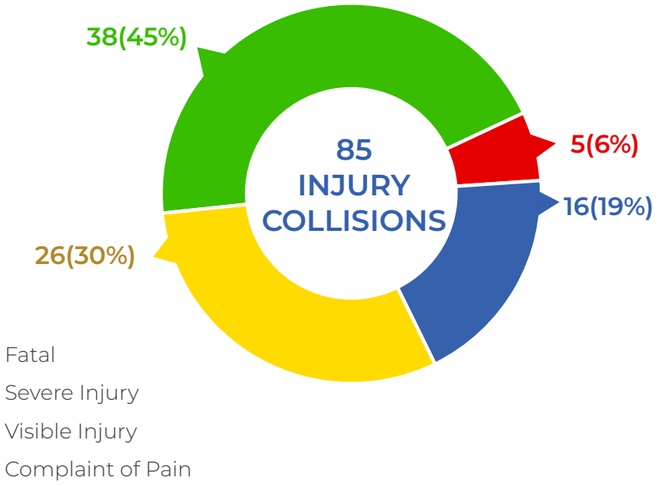
Engineering Cost
$65,570,000

Total Cost
$252,912,000



12 Citywide Pedestrian Signal Improvements

Project 12 would evaluate the installation of leading pedestrian intervals (LPI) and right-turn-on-red restrictions at approximately 15 locations where pedestrian severe-injury collisions have been recorded at intersections citywide. Pedestrian-involved intersection collision data indicates 159 collisions over the study period, including 6 fatalities and 31 severe injuries.



COLLISION TRENDS

1	100%	Intersection 85 Collisions
2	99%	Broadside 84 Collisions
3	51%	Unsafe Speed 43 Collisions
4	32%	Nighttime 27 Collisions
5	20%	Traffic Signals & Signs 17 Collisions

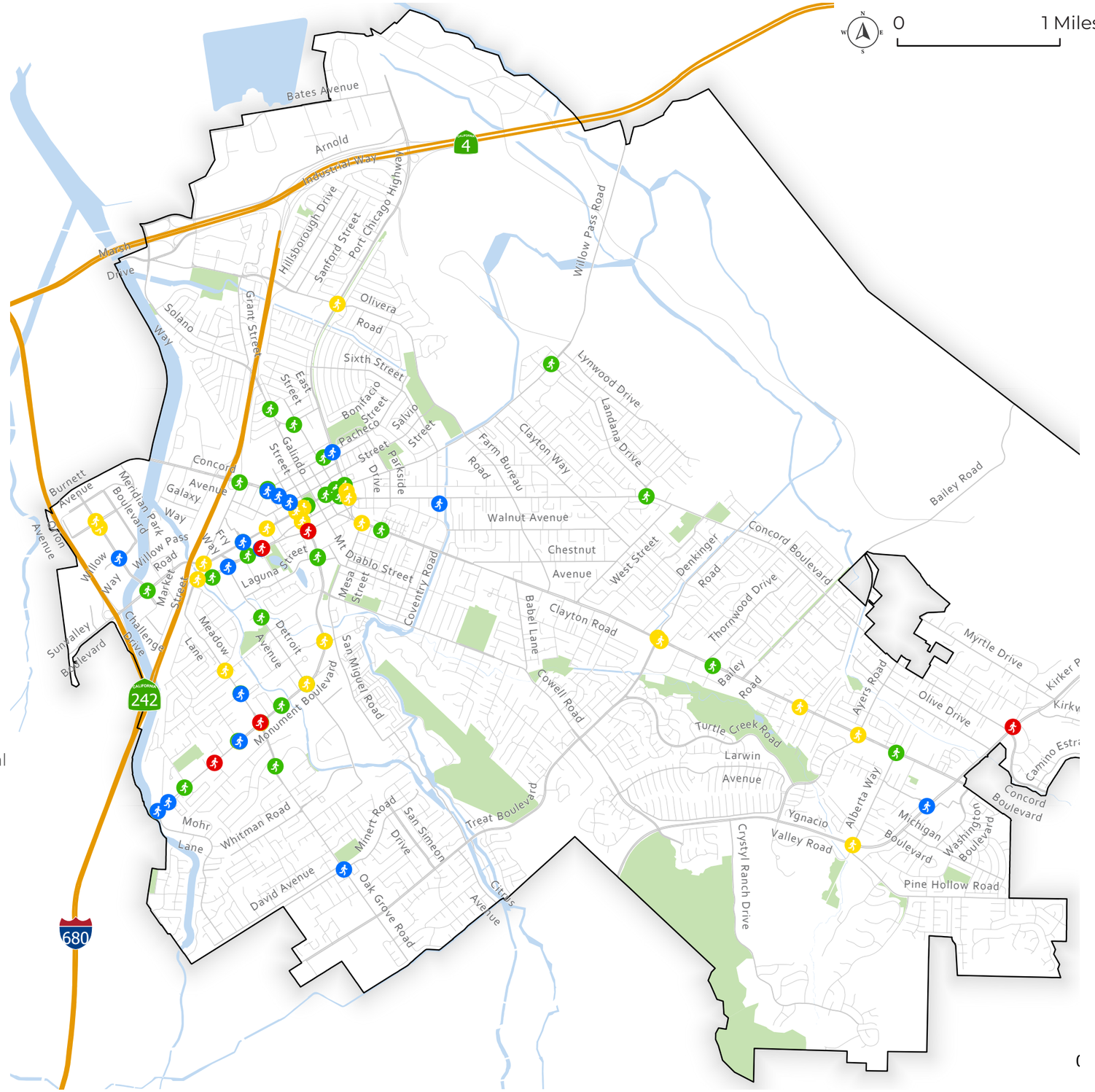
IMPROVEMENTS
Leading Pedestrian Interval

ESTMATED COST
$180,000

Contingency Cost
$36,000

Engineering Cost
$75,000

Total Cost
$291,000





CONCORD

Comprehensive Safety Action Plan



CHAPTER SEVEN

Policy & Process Changes

Transforming Concord's transportation system into one that is safe by design requires more than capital investment. It requires that the policies, standards, and procedures governing how the City plans, reviews, and delivers transportation projects be aligned with Safe System principles. This chapter presents recommended planning and policy initiatives that address identified gaps in Concord's current regulatory and operational framework, spanning speed management, street design standards, active transportation planning, traffic analysis, and performance monitoring. Each initiative is grounded in existing municipal authority and is structured to strengthen the City's competitiveness for state and federal safety grant programs. Together, these initiatives form the institutional foundation upon which the capital improvements and programs described throughout the CSAP can be delivered, sustained, and evaluated over time.

SUMMARY OF RECOMMENDED POLICY INITIATIVES

The following table summarizes the 19 recommended policy initiatives, identifying lead department, target adoption year, primary adoption vehicle (resolution, code amendment, or operational policy), and the federal or state grant programs each initiative most directly supports. Detailed narrative for each item follows.

#	Policy Initiative	Lead	Target	Adoption Vehicle	Primary Grant Alignment
1	Safe Routes to School Coordination	Public Works (PW) + MDUSD	2027	Inter-agency MOU + SRTS Master Plan	ATP, OTS
2	Corridor Speed Management Program	PW	2027	PW Policy + CIP integration	SS4A, HSIP
3	Transit-Oriented Development	Planning	2027	CDC 18.105 amendment + CRP Specific Plan	OBAG, AHSC
4	Access Management	PW + Planning	2028	New Corridor Access Management Policy	HSIP, SS4A
5	Complete Streets & Context-Sensitive Design	PW + Planning	2026	Council Resolution + design references	SS4A, ATP, OBAG
6	Transportation Demand Management	Planning	2028	CMC 19.35 update	TFCA, MTC
7	Multimodal Active Transportation Planning	PW + Planning	2028	New Active Transportation Plan	ATP, SS4A
8	Marked Crosswalk Installation Policy	PW	2026	PW Policy (per CMC 10.50.010)	HSIP, SS4A, OTS
9	Traffic Impact Analysis & VMT Modernization	PW + Planning	2027	P&P 144 update (per CMC 19.30)	SB 743 compliance
10	Engineering Design Standards Update	PW	2027+	CMC 12.05.010 + Standard Plans update	HSIP, SS4A
11	Proactive Safety Analysis & Smart Infrastructure	PW	2026+	Operational pilot → scale 2027–28	SS4A, HSIP
12	Traffic Calming Policy Update	PW	2027	PW Policy (existing-streets retrofit)	SS4A, ATP
13	Quick-Build & Demonstration Project Policy	PW	2026	PW Policy (per CMC 10.10.070)	SS4A, ATP, OTS
14	Street Lighting & Nighttime Visibility Policy	PW	2027	PW Policy + IES RP-8 reference	HSIP, SS4A
15	Post-Crash Response & Systemic Review Protocol	PW + PD	2026	Inter-departmental Protocol (per CMC 10.10)	SS4A foundational
16	Curb Management & Daylighting Policy	PW	2026	CMC 10.30 amendment	AB 413, SS4A
17	Performance Monitoring & Open Data Policy	PW + PD	2026	Council Resolution + dashboard maintenance	SS4A, FHWA SPM
18	Safety Investment Prioritization Methodology	PW	2026	Council Resolution	SS4A, ATP, HSIP

1 SAFE ROUTES TO SCHOOL COORDINATION & MASTER PLAN

Concord has established uniform 25 mph speed limits in school zones citywide through Council action, providing a consistent standard across all K–12 campuses and replacing the prior segment-by-segment approach. The 2025 citywide speed limit update applied AB 43 flexibilities to standardize school zone speeds and improve driver expectancy. Building on this foundation, the City should formalize a memorandum of understanding (MOU) with Mt. Diablo Unified School District (MDUSD) to coordinate Safe Routes to School (SRTS) programming, and pursue a citywide SRTS Master Plan that aligns engineering treatments, education, and encouragement activities across all campuses within Concord.

Implementation note: With uniform school zone speeds already in place, the remaining policy work is institutional (MOU) and programmatic (SRTS Master Plan), neither requires additional code changes, and both strengthen competitiveness for SRTS-eligible state and federal funding.

2 CORRIDOR SPEED MANAGEMENT PROGRAM

Through Council action, Concord recently completed a comprehensive citywide speed limit update grounded in updated Engineering and Traffic Survey data and AB 43 flexibilities, establishing current posted speed limits across all functional classifications. Posted speeds, however, are only one element of corridor-level speed management; sustained operating-speed reduction typically requires the integration of self-enforcing roadway design, traffic calming measures, and targeted enforcement. The City should develop a Corridor Speed Management Program that builds on the recent posted-speed update by adding a tiered countermeasure toolkit organized by functional classification and target speed, with priority given to corridors on the High Injury Network (HIN).

Implementation note: With posted speeds already updated through the recent citywide action, the corridor program focuses on physical and operational measures — not signage — and can be phased over multiple capital cycles.

3 TRANSIT-ORIENTED DEVELOPMENT

Transit-oriented development (TOD) in Concord is supported by a strong foundation, including the 2014 Downtown Specific Plan and the Transit Station Overlay District (TSOD) under CDC 18.105. However, CDC 18.105.020 expressly excludes the study district adjacent to the North Concord BART station from TSOD applicability, and the City has not completed a formal compliance submittal under the Metropolitan Transportation Commission's (MTC) Transit-Oriented Communities (TOC) Policy.

The City has taken a significant step toward achieving TOC compliance through the successful award of an MTC TOC Planning/Rezoning Technical Assistance grant. This grant will fund targeted amendments to the 2030 General Plan, Downtown Concord Specific Plan, and Development Code to increase minimum residential densities and commercial intensities within the Concord BART station area, conduct community engagement, and complete any necessary environmental review. The effort is specifically intended to bring the Concord TOC area into compliance with MTC's TOC Policy requirements, including minimum density and floor area ratio thresholds, while advancing implementation of the Downtown Specific Plan.

Building on this funded effort, the City should continue advancing full TOC Policy compliance for both BART station areas, extend TSOD or equivalent overlay zoning to North Concord through the forthcoming Community Reuse Project Specific Plan, and integrate active transportation safety and multimodal access standards into that plan.

Implementation note: The awarded MTC grant provides near-term capacity and funding to achieve TOC compliance for the Concord BART station area in the next 18 months, positioning the City more competitively for future MTC One Bay Area Grant (OBAG) and Affordable Housing and Sustainable Communities (AHSC), and other regional funding programs while ensuring that planned growth is anchored by safe, multimodal access.

4 ACCESS MANAGEMENT

Access management at the parcel level is well-established in Concord through CDC 18.160.110 (Driveways and Site Access), CDC 18.160.100 (Curb Cuts and Parking Lots), and CMC 12.25.010 (driveway widths and separation). Together these provisions limit driveway and curb-cut frequency by frontage, require a minimum 28-foot separation centerline to centerline between driveways and a minimum 60-foot setback from intersections, mandate median strips for parking entrances serving more than 25 vehicles, and differentiate driveway widths by speed limit on the abutting street. CMC 17.20.030(b)(12) further restricts direct residential access to community and regional streets in new subdivisions. What is not currently codified is a corridor-level access management framework, including arterial median typology, a redevelopment-triggered driveway consolidation program, and a High Injury Network (HIN) screening trigger that flags access decisions on the City's most collision-prone corridors. The City should adopt a corridor-level Access Management Policy that builds on these existing parcel-level provisions and addresses these three remaining elements.

Implementation note: Building on existing parcel-level provisions limits new policy work to corridor-scale analysis and coordination, avoiding duplication of code already in force.

5 COMPLETE STREETS & CONTEXT-SENSITIVE DESIGN

Concord has substantial Complete Streets foundations in place. CMC 17.20.030(b)(2) requires new subdivision streets to comply with the City's Complete Streets policies and to meet the needs of motorists, bicyclists, pedestrians, transit users, and persons of different physical capabilities. CMC 17.20.040 requires bicycle, pedestrian, and transit facilities for new subdivisions, including marked crosswalks, curb extensions, refuge islands, and lighting, per the 2016 Bicycle, Pedestrian and Safe Routes to Transit Plan. CDC 18.150.050 (Frontage Improvements) requires curbs, sidewalks, paving, lighting, and planting on all planning permits, and CDC 18.155.L applies pedestrian-friendly design (including curb bulbs, raised crosswalks, and roundabouts) to small lot subdivisions. What is missing is a standalone Complete Streets Resolution aligned with MTC Resolution 4493 (2022), formal adoption of the NACTO Urban Street Design Guide and FHWA Proven Safety Countermeasures as governing references for safety improvement projects, and consistent application to retrofit and Capital Improvement Program (CIP) projects on existing streets. The City should adopt this resolution and design-reference framework to extend the existing parcel-level requirements to the rest of the network.

Implementation note: Adopting design references by resolution and applying a project review checklist to CIP projects avoids duplicating the substantial Complete Streets requirements already in CMC 17.20.

6 TRANSPORTATION DEMAND MANAGEMENT

Transportation Demand Management (TDM) in Concord is governed by CMC Chapter 19.35, adopted in 1997 to align with state legislation eliminating mandatory employer-based trip reduction. The chapter establishes goals and objectives but does not impose project-level requirements or mode share targets. On the development-code side, CDC 18.160.050(H) provides up to a 25 percent parking reduction for projects that implement a TDM program, and CDC 18.160.060(B)(2)(d) allows downtown in-lieu parking fees to fund TDM efforts. The City currently relies primarily on countywide programs, including 511 Contra Costa and the Bay Area Commuter Benefits Program, to support TDM delivery. The City has taken a significant step toward modernizing its TDM framework through the successful award of an MTC TOC Parking Management Implementation grant. This grant will fund development of a comprehensive parking and transportation demand management (PTDM) policy applicable to both Concord and North Concord BART station areas, including updates to parking requirements, evaluation of parking supply and demand, establishment of parking maximums, and creation of a toolbox of TDM strategies with associated monitoring and performance metrics. The effort also includes community and stakeholder engagement and is intended to bring the City into compliance with the MTC TOC Policy's parking management and TDM requirements.

Building on this funded effort, the City should update CMC 19.35 to codify a project-level TDM Ordinance that includes mode share targets, monitoring requirements, and graduated trip reduction expectations for major developments, while aligning with the broader parking management framework being developed through the grant.

Implementation note: The awarded MTC parking management grant provides near-term funding and technical support to develop and implement a comprehensive TDM and parking policy framework within approximately 18 months, positioning the City to achieve full TOC Policy compliance while reducing vehicle miles traveled and supporting higher-density, transit-oriented growth.

7 MULTIMODAL ACTIVE TRANSPORTATION PLANNING

Multimodal active transportation in Concord is guided by the 2016 Bicycle, Pedestrian, and Safe Routes to Transit Plan, which remains the City's primary active transportation document nearly a decade after adoption with no update currently underway. In parallel, BART's Safe Streets and Roads for All (SS4A) planning effort "Safe Trips to BART" identifies Concord Station as a Focus Station Area and includes targeted countermeasure recommendations that have not yet been formally incorporated into City plans. The City should update its Active Transportation Plan, integrate BART's Safe Trips to BART recommendations, and establish a Vision Zero target as the overarching framework for all multimodal capital and planning investments.

Implementation note: The updated plan should be calibrated to current Caltrans Active Transportation Program (ATP) competitive scoring criteria so that subsequent project applications are pre-aligned with state funding priorities.

8 COMPLETE STREETS & CONTEXT-SENSITIVE DESIGN

Marked crosswalk installation in Concord is authorized under CMC 10.50.010, which empowers the Director of Public Works to establish, designate, and maintain crosswalks at intersections and other locations upon determination of need, with mid-block crosswalks limited to blocks of 400 feet or longer. There is, however, no formal citywide policy establishing engineering warrants, default treatment standards, or evaluation criteria for community requests; requests are received informally through the Concord Connect portal. The City should adopt a Marked Crosswalk Installation Policy based on FHWA STEP (Safe Transportation for Every Pedestrian) guidance and NCHRP Report 562, establish high-visibility continental markings as the default treatment, and integrate AB 413 daylighting requirements (no parking within 20 feet of a crosswalk approach).

Implementation note: Building on the existing CMC 10.50.010 authority allows immediate adoption through a Public Works policy without requiring code amendments; a published decision matrix tied to roadway speed, ADT, and number of lanes provides a consistent, defensible response framework.

9 TRANSPORTATION DEMAND MANAGEMENT

Traffic impact analysis in Concord is governed by CMC Chapter 19.30 (Land Development and Transportation Improvements), which is administered through Policy and Procedure No. 144 (CMC 19.30.020) and implemented through the City's Transportation Impact Analysis (TIA) Guidelines. While the framework continues to include a vehicle level-of-service (LOS) approach for local operational analysis, the City has already incorporated vehicle miles traveled (VMT) analysis for CEQA compliance consistent with SB 743 through its adopted TIA Guidelines. Specifically, discretionary projects are required to evaluate VMT impacts, apply screening criteria, and assess consistency with adopted thresholds aligned with state guidance.

In addition, the TIA Guidelines include multimodal analysis requirements, such as pedestrian, bicycle, and transit assessments, as well as safety-related components including collision analysis, site access review, and evaluation of potential hazards. However, these elements are not yet fully integrated into a unified Safe System–based screening framework or tied to a formal High-Injury Network (HIN) prioritization process.

Building on the City's existing VMT-compliant framework, the City should update P&P 144, and CMC 19.30 if needed, to formalize VMT as the primary CEQA metric in policy language, clarify the role of LOS as an operational (non-CEQA) tool, and integrate a Safe System–based safety screening step. This could include incorporating HIN-based screening criteria that trigger a focused safety assessment for projects within or adjacent to high-injury corridors, as well as strengthening multimodal level-of-service or person-throughput considerations in project review.

Implementation note: The City already has a strong foundation through its adopted TIA Guidelines, which require VMT analysis and multimodal review. Updating the referenced policy framework to explicitly reflect this practice, and to incorporate Safe System principles, can be accomplished through targeted revisions to P&P 144 without requiring a full ordinance update, aligning the City with state-mandated practices and evolving best practices in transportation safety and performance.

10 ENGINEERING DESIGN STANDARDS UPDATE

Engineering design standards in Concord are defined through the City of Concord Standard Specifications referenced in CMC 12.05.010 (dated January 1990) and the CA-series Standard Plans. Engineering design standards in Concord are defined through the City of Concord Standard Specifications, as referenced in Concord Municipal Code (CMC) Section 12.05.010 (dated January 1990), along with the CA-series Standard Plans. The City also maintains a publicly accessible library of Standard Plans and Specifications on its website, which includes commonly used details such as curb, gutter, and sidewalk improvements (e.g., Standard Plan S-3), driveway approaches (S-7), and traffic calming elements such as speed humps/ raised crosswalks (S-42). These documents provide a strong baseline for typical infrastructure improvements.

However, the current standards do not include standard details for several widely accepted and proven safety countermeasures. These include, but are not limited to, curb extensions (bulb-outs), hardened centerlines, protected intersection geometry, and vertical bikeway separation treatments.

In addition, the City has not formally adopted nationally recognized design guidance documents—such as the NACTO Urban Bikeway Design Guide or FHWA Proven Safety Countermeasures—as governing or reference standards. As a result, implementation of these treatments often requires project-specific engineering justification, which can add time and complexity to project delivery.

The City should update its Standard Specifications and expand its Standard Plans library, including those maintained on the City's website, to incorporate priority safety countermeasures, while also formally adopting applicable national design guidance by resolution. This approach would streamline project delivery, improve consistency across projects, and support the City's broader safety objectives.

Implementation note: The updated plan should be calibrated to current Caltrans Active Transportation Program (ATP) competitive scoring criteria so that subsequent project applications are pre-aligned with state funding priorities.

11 PROACTIVE SAFETY ANALYSIS & SMART INFRASTRUCTURE

Traffic safety analysis in Concord is anchored in CMC 10.10.060, which directs the Traffic Engineer to conduct engineering analyses of traffic accidents and devise remedial measures. This framework is currently reactive, drawing on reported collision data; proactive tools such as conflict analysis and AI-based near-miss video analytics are not part of standard practice. The City has also not widely deployed advanced traffic management technologies, such as adaptive signal control, real-time monitoring, or connected vehicle systems, to support data-driven safety interventions. The City should incorporate AI-based near-miss video analytics into its safety toolkit, beginning with a pilot at HIN intersections, and continue investment in advanced traffic management systems that enable real-time monitoring, proactive signal performance review, and improved multimodal safety outcomes.

Implementation note: A pilot-first approach builds on the Traffic Engineer's existing CMC 10.10.060 analytical authority; SS4A and HSIP funding can offset initial deployment costs.

12 TRAFFIC CALMING POLICY UPDATE

Traffic calming for new development is partially codified: CMC 17.20.030(b)(10) authorizes traffic management techniques such as traffic circles, narrow lanes, and bulb-outs in residential subdivisions, and CMC 17.20.030(b)(13) lists specific design features for speed control, including jogs, traffic circles, narrowed streets, neck-downs, and median islands. CDC 18.155.L further encourages curb bulbs, raised crosswalks, and roundabouts in small lot subdivisions. What is not currently in place is a comprehensive citywide policy applicable to existing streets and request-driven retrofit installations. The City should adopt a Traffic Calming Policy for existing streets that establishes clear eligibility criteria, a transparent prioritization process, and a toolkit of context-appropriate measures organized by street type. Implementation should prioritize locations on the HIN and in school zones.

Implementation note: A standalone existing-streets policy complements the in-place new-development requirements in CMC 17.20 and CDC 18.155, providing residents with a predictable, equitable pathway for retrofit consideration.

13 QUICK-BUILD & DEMONSTRATION PROJECT POLICY

CMC 10.10.070 already empowers the Director of Public Works to make temporary or experimental regulations and to test traffic control devices under actual conditions of traffic, providing the underlying authority for quick-build and demonstration projects. What the City lacks is a formal policy structure that defines project scope, materials, evaluation period, and pathway to permanent installation. Quick-build projects are increasingly favored by SS4A Implementation Grants, ATP, and OTS because they accelerate benefit delivery and provide field-tested designs prior to permanent construction. The City should adopt a Quick-Build and Demonstration Project Policy that builds on the existing CMC 10.10.070 authority, defines administrative review for time-limited demonstrations, allows the use of CA-MUTCD interim treatments, and requires pre/post evaluation.

Implementation note: Building on existing experimental authority allows administrative implementation without a code amendment; treating demonstrations as evaluation rather than capital construction limits City exposure.

14 STREET LIGHTING & NIGHTTIME VISIBILITY POLICY

Site and subdivision lighting in Concord is well-covered: CDC 18.150.110 establishes outdoor lighting standards (full cut-off luminaires, glare control), CDC 18.160.100(D) requires 0.5–3.0 foot-candle illuminance in parking lots serving 10 or more vehicles, and CMC 17.20.030(b)(15) and 17.20.040(g)(3) require subdivision street lighting per City standard plans, including lighting tied to pedestrian improvements. The City also maintains adopted street lighting design standards and details that establish illumination levels, pole spacing, and design criteria for roadway and pedestrian environments.

These existing standards provide a technical foundation for the design and installation of street lighting. However, they function primarily as design criteria and do not establish a citywide Street Lighting and Nighttime Visibility Policy that prioritizes lighting improvements based on safety outcomes. In particular, the City does not currently define targeted minimum illuminance and uniformity expectations for high-priority safety locations such as High Injury Network (HIN) corridors and intersections, marked crosswalks, transit stops, and school approaches.

The City should adopt a Street Lighting and Nighttime Visibility Policy that builds on its existing standards and establishes prioritized, safety-based lighting targets consistent with IES RP-8 guidance. The policy should also include a programmatic upgrade strategy tied to the HIN and incorporate lighting evaluation into project scoping for roadway and corridor improvements.

Implementation note: Building on the City's existing lighting standards allows the new policy to focus on prioritization and safety performance rather than baseline design requirements; lighting upgrades are eligible for HSIP, SS4A, and Caltrans Local Highway Safety Improvement funding.

15 POST-CRASH RESPONSE & SYSTEMIC REVIEW PROTOCOL

Concord has a long-standing post-crash framework in CMC Title 10 that pre-dates the modern Safe System Approach: CMC 10.10.020 directs the Police Department to cooperate with Public Works in conducting accident studies and determining remedial measures; CMC 10.10.030 establishes the accident-report filing system; and CMC 10.10.040 requires the Police Department to annually prepare a traffic safety report including fatalities, injuries, and recommendations for future safety activities. What this framework lacks is alignment with current Safe System practice: defined timelines for site review and interim countermeasure consideration following fatal and severe-injury collisions, multi-disciplinary review participation beyond Police and Public Works (e.g., emergency response, public health), and a public-facing summary product. The City should adopt a Post-Crash Response and Systemic Review Protocol that formalizes these elements within the existing CMC 10.10 authority structure.

Implementation note: The protocol formalizes existing CMC 10.10.020–040 authorities rather than creating new ones; existing collision data sources support implementation, and an annual public summary supports grant-application reporting.

16 CURB MANAGEMENT & DAYLIGHTING POLICY

Concord has a mature curb-management framework in CMC Title 10. CMC 10.30.250 establishes the curb color/marking hierarchy (red, yellow, white, green) governing parking, commercial loading, passenger loading, and time-limited parking; CMC 10.30.240 authorizes loading zones; CMC 10.30.300 authorizes bus zones; and CMC 10.30.305 authorizes valet loading zones. CMC 10.30.040(8) prohibits parking within 20 feet of a crosswalk or intersection where so marked, and CMC 10.30.340–360 authorize Vision Safety Parking Zones for visibility at intersections, driveways, and other areas requiring unobstructed visibility, providing the underlying daylighting authority. CDC 18.150.170 separately addresses sight-distance triangles on private property. What is not currently codified is recognition of AB 413's default 20-foot daylighting rule (effective January 1, 2025), an active marking program to physically establish daylighting at HIN locations, and a published curb-use prioritization hierarchy for resolving competing demands. The City should adopt a consolidated Curb Management and Daylighting Policy that updates CMC 10.30 to recognize AB 413, establishes a HIN-prioritized marking program, and publishes a curb-use prioritization hierarchy.

Implementation note: AB 413 codification can be implemented as a CMC 10.30 amendment; HIN-prioritized marking is operational rather than regulatory and can be phased through routine striping cycles.

17 PERFORMANCE MONITORING & OPEN DATA POLICY

CMC 10.10.040 already requires the Police Department to annually prepare a traffic safety report, filed with the City Manager, which includes fatalities, injuries, accident counts, safety activities, and plans/recommendations for future activities. This is the foundational element of the performance-monitoring commitment that federal and state grant programs increasingly expect. The current report is internal, not modally disaggregated, and not aligned with current Safe System metrics. Concord also publishes selected safety information through the CSAP and concordsafestreets.org, but no formal policy commits to sustained public reporting. The City should adopt a Performance Monitoring and Open Data Policy that updates the existing CMC 10.10.040 annual report to include KSI rates by mode, HIN coverage, and project delivery metrics, and that commits to a maintained public dashboard at concordsafestreets.org consistent with FHWA Safety Performance Management practice.

Implementation note: Building on the existing CMC 10.10.040 annual report and the concordsafestreets.org infrastructure keeps ongoing maintenance cost low while substantially strengthening grant-application reporting.

18 SAFETY INVESTMENT PRIORITIZATION METHODOLOGY

Federal and state safety grant programs increasingly expect a transparent, repeatable basis for project ranking. To support consistent decision-making across the City's safety project pipeline, capital programming, grant applications, and operational deployment, the City should adopt a published Safety Investment Prioritization Methodology. The methodology should anchor the High Injury Network (HIN) as the primary investment geography, weight collision frequency and severity using FHWA Safety Performance Management practice (with severe-injury and fatal outcomes weighted significantly higher than property-damage-only outcomes), incorporate exposure (vehicle volume, pedestrian volume, and mode share) as a normalizing factor, and integrate community-reported safety concerns from the CSAP survey as a separate, documented input. Once adopted, the methodology should be applied consistently across SS4A, ATP, HSIP, and OTS applications, providing reviewers a single, defensible basis for project ranking that does not require re-justification with each new application cycle.

Implementation note: The methodology should rely on existing collision and CSAP survey datasets to keep ongoing maintenance cost low, and should be adopted by Council resolution to provide multi-year grant-application durability across funding cycles.



CONCORD

Comprehensive Safety Action Plan



CHAPTER EIGHT

Implementation, Evaluation & Funding Strategy

This chapter establishes the framework for implementing, monitoring, and evaluating the Comprehensive Safety Action Plan (CSAP) to ensure continued progress toward the City of Concord's safety goals. Consistent with the Safe Streets and Roads for All (SS4A) program and the Safe System Approach, CSAP is intended to function as a living document. Regular evaluation and periodic updates, recommended every two to five years will be conducted to assess effectiveness, incorporate new data, and refine strategies in response to evolving community needs and emerging best practices.

IMPLEMENTATION FRAMEWORK

CSAP identifies a comprehensive set of countermeasures spanning engineering, education, enforcement, and emergency response to reduce fatal and serious injury collisions. These strategies are organized across five key areas: Safe Roads, Safe Road Users, Safe Speeds, Safe Vehicles and Emergency Response, and Program Initiatives and Evaluation.

Implementation of CSAP recommendations will be coordinated with the City's Capital Improvement Program (CIP) and other planned infrastructure investments to ensure efficient delivery and maximize cost-effectiveness. Project prioritization will be guided by a data-driven methodology that emphasizes collision frequency and severity, with a focus on locations identified within the City's High Injury Network (HIN).

In addition to safety performance data, prioritization will incorporate equity considerations, including the needs of disadvantaged communities and vulnerable road users. Other key factors include the cost-effectiveness of proposed countermeasures, project readiness, and consistency with community-identified priorities.

Effective implementation will require clearly defined roles and responsibilities across City departments, including Public Works and the City Manager's Office, as well as coordination with external partners such as Caltrans District 4, the Contra Costa Transportation Authority (CCTA), and the Metropolitan Transportation Commission (MTC). The City will also continue to engage community stakeholders, including the Concord Unified School District, to support coordinated and context-sensitive delivery of safety improvements.

MONITORING & EVALUATION

To ensure accountability and continuous improvement, the City will establish a performance monitoring framework aligned with SS4A objectives. This framework will include tracking key safety measures, such as reductions in fatal and serious injury collisions, as well as implementation progress for prioritized projects and programs.

Ongoing data collection and analysis will inform periodic evaluations of CSAP effectiveness. Findings will be used to adjust strategies, refine prioritization criteria, and identify additional safety needs. Regular reporting will support transparency and maintain alignment with federal and state safety performance expectations.

FUNDING STRATEGY

Securing sustainable funding is essential to the successful implementation of CSAP. The Safe Streets and Roads for All (SS4A) program, administered by the Federal Highway Administration (FHWA) and the U.S. Department of Transportation (USDOT), represents a primary funding opportunity for implementation activities. This CSAP satisfies SS4A Action Plan requirements and positions the City of Concord to compete for SS4A Implementation Grant funding.

In addition to SS4A, the City will pursue a diversified funding strategy that includes federal, state, regional, and local sources. Table in the next page identifies potential grant programs and funding opportunities that align with CSAP's safety objectives and project types, including infrastructure improvements, behavioral safety programs, and emergency response enhancements.

By leveraging multiple funding sources and aligning project delivery with available resources, the City will advance implementation of the CSAP in a strategic and fiscally responsible manner.

POTENTIAL FUNDING SOURCES

Funding Source	Funding Agency	Amount Available	Next Call for Projects*	Applicable E's	Notes
Safe Streets and Roads for All (SS4A)	USDOT	Up to $993.5M total (FY 2026)	May 26, 2026	Engineering, Education, Enforcement, Emergency Response	Primary funding vehicle for CSAP implementation. Implementation grants range $2.5M–$25M (80/20 Fed/local split). FY26 adds priority for Public Safety Infrastructure, directly supporting LA County Fire/EMS improvements. Planning grants may be used to update the CSAP.
Highway Safety Improvement Program (HSIP)	Caltrans	Varies; distributed through Caltrans cycle-based solicitations	TBD; most recent in 2024	Engineering, Education, Enforcement, Emergency Response	Data-driven program aligned with FHWA Proven Safety Countermeasures. Primary source for HIN engineering improvements.
Active Transportation Program (ATP)	Caltrans / California Transportation Commission (CTC)	~$540M statewide in Cycle 7 (2024); next cycle TBD	TBD; most recent in 2024	Engineering, Education	Funds bicycle and pedestrian infrastructure, Safe Routes to School programs, and safety education.
Office of Traffic Safety (OTS) Grants	California Office of Traffic Safety	Varies by grant type	Annual; applications close January 31	Education, Enforcement, Emergency Response	Eligible public agencies may apply annually. Supports DUI checkpoints, speed enforcement saturation patrols, pedestrian and bicycle safety campaigns, and EMS training. Applications must be supported by local collision data aligned with OTS priority program areas.
RAISE Grant	U.S. DOT	~$1.5B total	TBD	Engineering, Education	Discretionary federal grant for larger infrastructure investments. Supports projects that improve safety, sustainability, quality of life, and economic competitiveness. Best suited for corridor-scale capital improvements.
Local Streets and Roads Maintenance and Rehabilitation (SB 1 / RMRA)	CTC (distributed by formula to local agencies)	Varies; allocated by formula	Distributed annually; deadline May 1	Engineering	Formula-based funds for road maintenance and rehabilitation. CSAP countermeasures such as restriping, bulb-out construction, signal timing upgrades can be bundled into SB 1-funded resurfacing projects to minimize unit costs and accelerate delivery.
Contra Costa Transportation Authority (CCTA) Measure J / Measure X	CCTA	Formula-based	Ongoing (annual allocations)	Engineering	Local sales tax funding for transportation improvements in Concord
Surface Transportation Block Grant (STBG)	FHWA / MTC (ACTC suballocated)	Varies	Annual RTIP programming cycle	Engineering	Flexible federal funds for roadway safety capital improvements programmed through the Metropolitan Transportation Commission (MTC) and Alameda-Contra Costa Transit District (ACTC) Regional Transportation Improvement Program. Best suited for long-term safety capital projects.
Affordable Housing and Sustainable Communities Program (AHSC)	Strategic Growth Council and CA Department of Housing and Community Development	~$380M in Cycle 6 (FY 2024–25)	TBD; Cycle 6 most recent in 2024	Engineering, Education	Requires connection to affordable housing development. Applicable where safety projects are sited proximate to affordable housing areas in Concord. Eligible for active transportation and pedestrian safety infrastructure as co-benefits.
Sustainable Transportation Equity Project (STEP)	California Air Resources Board (CARB)	~$32.6M per program cycle	TBD; most recent cycle 2023	Engineering, Education	Targets transportation equity improvements in Disadvantaged Communities (DACs) and Severely Disadvantaged Communities (SDACs). Strong nexus with lower-income Census tracts within Concord. Supports active transportation safety infrastructure, pedestrian safety programs, and community engagement.
One Bay Area Grant (OBAG) Program	Metropolitan Transportation Commission (MTC)	$750M - $800M per Cycle	OBAG Cycle 4, April to October 2026	Engineering, Planning	Major regional funding source for local streets and active transportation
Carbon Reduction Program (CRP)	FHWA / MTC	Varies	Programmed through regional cycles	Engineering	Funds projects that reduce emissions, including active transportation improvements
Transportation Alternatives Program (TAP)	Caltrans / MTC	~$1.5B total for 2026	Cycle-based (last: 2023; next expected early 2026)	Engineering, Education	Supports active transportation and Complete Streets improvements

Next Call for Projects*: Most Recent Call

MONITORING, EVALUATION & PLAN UPDATES

Consistent with the Safe Streets and Roads for All (SS4A) program and the Safe System Approach, the City of Concord will implement a comprehensive monitoring and evaluation framework to ensure the effectiveness of the Comprehensive Safety Action Plan (CSAP) and support continuous improvement over time. This framework emphasizes data-driven decision-making, accountability, and transparency in advancing roadway safety outcomes.

ONGOING MONITORING & PERFORMANCE TRACKING

The City will establish quantifiable performance measures to track progress toward reducing fatal and serious injury (KSI) collisions. Key indicators will include, but are not limited to, total and KSI collisions, traffic citation data, observed operating speeds, and community feedback. A standardized data collection protocol will be implemented citywide to ensure consistency and reliability.

Data sources will include the Statewide Integrated Traffic Records System (TIMS/SWITRS), roadway condition assessments, 85th percentile (P85) speed studies, enforcement data from the Concord Police Department, and public input mechanisms. A designated lead entity, such as CSAP Task Force, will be responsible for coordinating data collection and reporting across departments, including Public Works, Engineering, Planning, Community Development, and the City Manager's Office, with support from external partners such as Caltrans District 4 and public safety agencies.

To support ongoing monitoring, the City will develop and maintain a GIS-based dashboard to track implementation progress and safety performance trends over time. Both output-based measures (e.g., number of countermeasures implemented) and outcome-based measures (e.g., reductions in KSI collisions, particularly along the High Injury Network [HIN]) will be evaluated.

PROJECT-LEVEL EVALUATION METHODOLOGY

For location-specific and higher-cost safety improvements, the City will conduct rigorous before-and-after evaluations to assess effectiveness. Prior to implementation, baseline data will be collected, including collision characteristics, traffic volumes, multimodal activity levels, operating speeds, and observed user behavior.

Post-implementation data will be collected after an appropriate observation period, typically one to three years, using consistent methodologies to ensure valid comparison. Where feasible, shorter or longer evaluation periods may be applied based on traffic volumes and statistical significance.

The City will apply established statistical techniques, including Empirical Bayes methods and regression analysis, consistent with the FHWA Highway Safety Manual (HSM), to account for regression-to-the-mean and other confounding factors. Performance will be evaluated by comparing predicted and observed outcomes, including changes in total collisions, KSI collisions, collision types, operating speeds, and multimodal conflicts. Observed results will be compared against established Crash Modification Factors (CMFs) and Crash Reduction Factors (CRFs) to assess effectiveness.

PERFORMANCE REPORTING & DOCUMENTATION

Each evaluated project will be documented in a formal Project Evaluation Report. These reports will include a description of the project scope and countermeasures, implementation costs and funding sources, data collection and analytical methodologies, and before-and-after performance outcomes. Reports will also identify lessons learned and provide recommendations to inform future project delivery, policy development, and design practices.

Findings will be made publicly available through the City's website and incorporated into annual CSAP progress reporting, supporting transparency and ongoing stakeholder engagement.

CONTINUOUS IMPROVEMENT & ADAPTIVE MANAGEMENT

The City will establish a recurring schedule for monitoring and reporting, including the preparation of an annual CSAP Progress Report. Findings from performance evaluations will be used to refine implementation strategies, adjust prioritization criteria, and reallocate resources toward the most effective safety interventions. This adaptive management approach ensures that CSAP remains responsive to changing conditions and maximizes safety benefits.

PLAN UPDATES

The CSAP will be updated on a regular cycle of approximately two to five years to maintain relevance and effectiveness. Updates will incorporate the latest collision data, reassess safety trends, evaluate the status and performance of implemented projects, and reflect evolving best practices and funding opportunities.

The update process will include stakeholders and community engagement to ensure that the plan continues to address the needs of all users, particularly disadvantaged communities and vulnerable road users. Maintaining an up-to-date CSAP will also support the City's continued eligibility for competitive funding programs, including SS4A Implementation Grants.

END OF DOCUMENT

CITY OF CONCORD
RESOLUTION NO. _____

A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF CONCORD ADOPTING THE COMPREHENSIVE SAFETY ACTION PLAN (CSAP) AND COMMITTING TO A VISION ZERO GOAL OF ELIMINATING ALL TRAFFIC FATALITIES AND SERIOUS INJURIES BY 2050

WHEREAS, the City of Concord is committed to the health, safety, and wellbeing of all people who live, work, and travel within the City, regardless of their mode of transportation; and

WHEREAS, traffic fatalities and serious injuries are preventable and represent a significant public safety and public health concern requiring a proactive and coordinated response; and

WHEREAS, the United States Department of Transportation established the Safe Streets and Roads for All (SS4A) program to support local agencies in developing and implementing Comprehensive Safety Action Plans to significantly reduce roadway fatalities and serious injuries; and

WHEREAS, crashes within the City of Concord necessitate a comprehensive and coordinated approach to street planning, design, policy, enforcement, legal processes, education, and public communication; and

WHEREAS, the City has developed a Comprehensive Safety Action Plan (CSAP) to analyze collision trends, identify high-injury locations, and establish data-driven strategies to improve roadway safety and reduce traffic-related harm for all users; and

WHEREAS, the City of Concord recognizes that pedestrians, bicyclists, motorcyclists, children, older adults, and people with disabilities are among the most vulnerable roadway users and deserve particular attention and protection in transportation planning and design; and

WHEREAS, a commitment to zero traffic deaths and serious injuries reflects the value of human life and the equitable opportunity for all Concord residents to travel safely; and

WHEREAS, the City recognizes that achieving safer streets requires a comprehensive approach that integrates engineering, education, enforcement, and emergency response strategies; and

WHEREAS, safety improvements must be pursued in a data-driven and equitable manner responsive to the needs of all communities within the City, including historically underserved and disadvantaged populations, to ensure that safety benefits are distributed fairly across all neighborhoods; and

WHEREAS, implementation of the CSAP requires ongoing collaboration among City departments, partner agencies, community members, residents, business owners, and other stakeholders; and

WHEREAS, the City recognizes the importance of coordination with regional partners, including the Contra Costa Transportation Authority, Metropolitan Transportation Commission, California Department of Transportation, law enforcement agencies, and community organizations, to improve the safety, comfort, and accessibility of streets throughout the City; and

WHEREAS, the CSAP establishes a long-term vision of eliminating traffic fatalities and serious injuries and provides a framework for prioritizing safety investments and pursuing future grant funding opportunities; and

WHEREAS, the City of Concord is committed to regular monitoring, reporting, and evaluation of safety outcomes to ensure accountability and measure progress toward achieving the goals of the CSAP.

NOW, THEREFORE, BE IT RESOLVED that the City Council of the City of Concord hereby:

1. Commits to a Vision Zero goal of reducing traffic related fatalities and severe injuries (also referred to as serious injuries under the SS4A program) on City streets by fifty (50) percent by the year 2040, with the eventual goal of eliminating all traffic related fatalities and severe injuries on City streets by the year 2050, through a holistic and proactive Safe System Approach;
2. Adopts the Comprehensive Safety Action Plan (CSAP) as the City's guiding policy framework for achieving this Vision Zero goal through a holistic and proactive Safe System Approach;
3. Directs City staff to implement the strategies, programs, and projects identified in the CSAP, prioritizing engineering solutions, education initiatives, equitable enforcement, and interagency coordination;
4. Acknowledges that achieving this goal requires significant and sustained effort, resources, and dedicated safety planning activities, and commits to allocating appropriate resources toward this end;
5. Ensures that multimodal safety investments are made in a fair and equitable manner, with special consideration given to vulnerable road users and underserved communities; and

6. Directs City staff to conduct annual monitoring, reporting, and evaluation of CSAP implementation progress, and to communicate findings clearly to the City Council, partner agencies, and the public.

PASSED, APPROVED, AND ADOPTED by the City Council of the City of Concord on the _____ day of _____, 2026.

Mayor of the City of Concord

ATTEST:

_____

City Clerk of the City of Concord

Appendix B: Matrix of Relevant Planning Goals, Objectives and Policies

Document	Highlights
Safe Trips to BART: An Action Plan for Safer Roadways (2025)	**Vision:** • Safe Trips to BART: An Action Plan for Safer Roadways establishes a vision in which riders can get to and from BART stations safely, comfortably, conveniently, and reliably, no matter how they travel. The goal of this Plan is to eliminate fatalities and severe injuries resulting from traffic crashes on public streets that provide access to BART stations. Designing roadways to prioritize the safety of vulnerable road users leads to better safety for everybody — transit users, drivers and their passengers, pedestrians, motorcyclists, wheelchair users, scooter riders and bicyclists alike. **Systemic Safety Strategies — Four-Tier Toolbox:** • Tier 1 — Remove Severe Conflicts: grade separation, protected intersections, road diets converting vehicle lanes to bicycle and pedestrian space, median barriers, and shared-use paths. • Tier 2 — Reduce Vehicle Speeds: lane narrowing, road diets, raised crosswalks, speed tables, curb extensions and bulb-outs, and signal retiming to encourage lower operating speeds. • Tier 3 — Manage Conflicts in Time: protected signal phasing, Leading Pedestrian Intervals (LPIs), and pedestrian hybrid beacons separating pedestrian and vehicle movements temporally. • Tier 4 — Increase Attentiveness and Awareness: high-visibility continental crosswalk markings, advance stop bars, Rectangular Rapid Flashing Beacons (RRFBs), pedestrian-scale lighting, and wayfinding signage.
Contra Costa County Complete Streets Safety Assessment (2024)	**Strategies:** • Prioritize safe target speeds and change road geometry to manipulate crash angles reducing fatal and severe injuries • Conduct off-cycle speed surveys after complete streets improvements to determine if speed limit reductions are needed • Consider 15 mph school zones where appropriate • Form Safe Routes to Schools steering committees with county staff, school district staff, and PTA leaders

Document	Highlights
	• Implement FHWA proven safety countermeasures including Leading Pedestrian Intervals, protected left turns, roundabouts, and medians • Use green pavement markings to highlight conflict zones at large intersections • Review design of slip/trap-right lanes and implement improvements • Identify and create inventory of pedestrian barriers with phased improvement recommendations • Conduct formal education campaigns targeting drivers, pedestrians, and bicyclists with focus on speed and safe driving • Implement sustained pedestrian safety enforcement involving media and distributing safety pamphlets • Include regular walking and bicycling audits in countywide safety programs
Pine Hollow Road Complete Streets Feasibility Study (2023)	**Goals and Strategies:** • Create a safe and complete pedestrian and bicycle network along the 2.2-mile corridor. • Reduce traffic speed and improve safety. • Enhance trail connectivity. • Address challenges associated with high traffic speeds, heavy truck traffic, and frequent collisions. • Provide continuous sidewalks and bike lanes where currently lacking.
Concord Local Roadway Safety Plan (2022)	**Vision Statement:** Roadway safety impacts the health and comfort of all those who live and travel in the City of Concord, and it is imperative to make the transportation system safer and more equitable for users of all transportation modes. The City of Concord is committed to eliminate traffic deaths and severe injuries by 2033. As part of this commitment, the City will prioritize safety when trade-off decisions are necessary between competing demands and visions for the roadway network. The City of Concord will form a standing Local Roadway Safety Working Group that will meet regularly to implement this Local Roadway Safety Plan, monitor progress towards the City's goal of eliminating traffic deaths and severe injuries, and communicate outcomes to the public regularly.

Document	Highlights
	Safety Goals: • Equity: Commit to equity in all aspects of Vision Zero, including data analysis that acknowledges and addresses reporting biases, project prioritization efforts that promote projects in historically under-invested communities rather than providing unequal opportunities to those with the historically "loudest" voices or most resources for civic participation, and enforcement strategies that follow data-driven approaches. • Eliminating Collisions: Eliminate fatal and serious injury collisions, particularly those involving people walking and biking. • Crossings: Enhance roadway crossings, especially near commercial areas, schools, and other high pedestrian activity areas, to promote and support safe travel for people walking and biking. • Nighttime Visibility: Improve the visibility of roadway users traveling at night, especially for people walking. • Safe Speeds and Safer Streets: Encourage safe driving practices (such as driving at lower speeds, obeying signal controls at intersections, and avoiding driving under the influence) through roadway design, outreach, and enhanced enforcement, including considerations of automated enforcement methods.
City of Concord Complete Streets Feasibility Study: Willow Pass Road, Galindo Street & Cowell Road (2020)	**Key Issues:** 1. Visual quality of corridors lacking safe and comfortable pedestrian environment 2. Auto-centric infrastructure with excessive lane widths and corner radii 3. Perceived safety concerns from high speeds and lack of buffering mechanisms 4. Lack of connectivity with excessive block sizes (1,000+ feet) limiting access 5. Lack of well-distributed open space network along corridors 6. Lack of place type and building type variety limiting community identity **Key Design Strategies:** 1. Establish distinct identity along each corridor and segments based on context

Document	Highlights
	2. Support walkability and bikeability prioritizing space-efficient transportation modes 3. Include frontages and gifts-to-the-street activating public realm and encouraging social interaction 4. Ensure 5-minute walk access to daily goods and services with 300-foot block faces 5. Provide smaller, high-quality, well-distributed public open spaces and trails 6. Define place types as destinations and building types as ingredients of place
Bicycle, Pedestrian & Safe Routes to Transit Plan (2016)	**Vision:** The City of Concord envisions an environment that supports walking, bicycling and active living, and enables people of all ages and abilities to comfortably access jobs, schools, recreation, shopping and transit by foot or on bicycle as a part of daily life. **Goals, Objectives and Policies:** ***GOAL 1: Safety*** **Prioritize travel safety for all modes of transportation.** **Objective 1.A:** Seek to eliminate all traffic fatalities and reduce the number of bicycle and pedestrian related injuries by 50 percent by 2020, consistent with the City's adopted Climate Action Plan. • **Policy 1.A.1:** Annually review most recent available crash data, including causes, to implement ongoing improvements throughout the transportation network. • **Policy 1.A.2:** Identify viable funding for an enforcement campaign targeting violations associated with severe and fatal injuries, high injury areas and corridors, schools and housing for seniors and people with disabilities. • **Policy 1.A.3:** Prioritize suggested roadway improvements at intersections and corridors with significant numbers of injuries and fatalities.

- **Policy 1.A.4:** Identify viable funding for an education campaign focusing on road safety for all users and the City's objective to reduce traffic fatalities.

GOAL 2: Design

Design active transportation projects that are accessible and comfortable for people of all ages and abilities.

Objective 2.A: Utilize designs that emphasize safety and comfort on all vulnerable road users.

- **Policy 2.A.1:** Apply state of the practice & emerging designs including Design Guidelines supplemented to this plan, the California Manual on Uniform Traffic Control Devices, and national manuals such as NACTO (National Association of City Transportation Officials) guides.
- **Policy 2.A.2:** Incorporate sustainable designs into transportation projects, recognizing limited maintenance resources.
- **Policy 2.A.3:** Prioritize pedestrian and bikeway designs to address the needs and safety for people of all ages and abilities, considering issues such as street design speed, hierarchy of streets, connectivity and level of stress experienced.
- **Policy 2.A.4:** Seek to provide enhanced walking and bicycling facilities that may require separation on higher volume and higher speed roads such as the City's Downtown, Community, Regional, and Service streets, and in school areas.

Objective 2.B: Preserve and enhance access to bicycle and pedestrian facilities for all new construction.

- **Policy 2.B.1:** Consider developing a policy to ensure new development plans do not block access to existing trails or active transportation facilities.

GOAL 3: Network

Identify and develop a complete and convenient active transportation network.

Document	Highlights
	Objective 3.A: Develop 5-year, 10 year, and 20 year strategies to realize this Plan's recommendations. **Objective 3.B:** Improve school and transit access. • **Policy 3.B.1:** Prioritize transportation projects that improve school and transit access. **Objective 3.C:** Seek to implement this Plan's recommended bikeways on Downtown, Neighborhood and Community streets by 2026. • **Policy 3.C.1:** Develop an implementation strategy for this Plan's recommended bikeway facilities on Downtown, Neighborhood, and Community streets by 2026. **Objective 3.D:** Strive to implement this Plan's priority sidewalk projects by 2026. • **Policy 3.D.1:** Develop an implementation strategy for this Plan's priority sidewalk projects by 2026. **Objective 3.E:** Aim to complete this Plan's recommended studies by 2026. • **Policy 3.E.1:** Develop an implementation strategy for this Plan's recommended studies on arterial and collector streets by 2026. **Objective 3.F:** Seek recommendations for pedestrians. • **Policy 3.F.1:** Seek to provide marked crossings at reasonable intervals in areas with existing or potential high pedestrian activity and establish vehicle speed and volume thresholds for appropriate treatments such as crossing control, curb extensions, and refuge islands. **Objective 3.G:** Provide plentiful, high quality support facilities that complement the travel network. • **Policy 3.G.1:** Identify viable funding to build support facilities such as bicycle parking and community/bikeway wayfinding.

Objective 3.H: Identify viable funding to realize this Plan's recommendations.

- **Policy 3.H.1:** Apply for available regional and state grants to implement this Plan's recommendations.
- **Policy 3.H.2:** Integrate bicycle and pedestrian facilities as part of new street design and resurfacing projects where feasible.

GOAL 4: Programs

Increase awareness and support of walking and bicycling through education, encouragement, and evaluation programs.

Objective 4.A: Support educational opportunities for those who drive, bicycle, and walk about their rights and responsibilities.

- **Policy 4.A.1:** Support Contra Costa Transportation Authority and the Mt. Diablo Unified School District to implement Safe Routes to School programs.
- **Policy 4.A.2:** Support the development of adult bicycling education programs.
- **Policy 4.A.3:** Support the development of a Safe Routes to Transit program that will facilitate walking and bicycling to transit.

Objective 4.B: Support encouragement opportunities that promote walking and bicycling as viable travel choices.

- **Policy 4.B.1:** Incorporate messaging in all City of Concord social media that promotes the benefits of active transportation and raises awareness of walking and bicycling opportunities.
- **Policy 4.B.2:** Support encouragement programs sponsored by regional agencies and local employers to encourage walking or bicycling.

Objective 4.C: Evaluate how well the City of Concord is progressing towards meet this Plan's goals.

Document	Highlights
	1. **Policy 4.C.1:** Review this Plan's recommendations annually with the Bicycle and Pedestrian Advisory Committee to evaluate progress and update priorities as necessary.
Concord 2030 General Plan - Transportation Element (2015)	• GOAL T-1: A Safe and Efficient Multi-Modal Transportation System • Principle T-1.1: Provide an Easily Accessible, Functional, and Attractive Circulation Network • Policy T-1.1.1: Maintain streets and pavement in optimal physical condition to provide safe and efficient travel. • Policy T-1.1.2: Continue to promote a wide variety of transportation alternatives and modes to serve all residents and businesses to enhance the quality of life. The City will strive to shift auto trips to walking, bicycling, and transit use, particularly in Downtown Concord and on the Concord Reuse Project site where other modes of travel are (or will be) available. • Policy T-1.1.3: Ensure that streets are designed to balance the needs of multiple travel modes, including vehicles, pedestrians, bicycles, and transit. This policy supports the concept of "complete streets," consistent with AB 1358. New streets should be designed to balance the needs of motorists with the needs of other travelers and should recognize the special needs of children, seniors, and persons with disabilities. • Policy T-1.1.4: Maintain and upgrade transportation systems to provide smooth flow of traffic, minimize vehicle emissions, and save energy. Transportation improvements should be consistent with statewide greenhouse gas reduction goals established by Assembly Bill 32. • Policy T-1.1.5: Maintain transportation levels of service benchmarks which consider not only vehicle speed and intersection delay, but also broader goals relating to environmental quality and community character. Lower levels of service may be acceptable in Downtown Concord, within one-half mile of the City's two BART stations, along designated transit routes, and in other locations as deemed appropriate by the City Council. • Policy T-1.1.8: Develop and operate a circulation system that directs the flow of vehicle traffic on residential streets to collector and arterial streets. • Policy T-1.1.9: Provide a high level of multimodal connectivity in the design of the citywide circulation system, particularly in the Concord Reuse Project area.

Document	Highlights
	• Policy T-1.1.14: Enhance the visual quality of public space through the design and landscaping of streets, and the control of visual and functional aspects of abutting improvements. The City desires to ensure that streets provide an aesthetic driving, walking, and bicycling experience. • Policy T-1.1.16: Prioritize funding of pedestrian and bicycle safety improvements for designated truck routes that are in close proximity to schools. • Principle T-1.5: Provide a Safe and Convenient Pedestrian Circulation System • Policy T-1.5.1: Prioritize pedestrian safety in the design of new streets and the retrofit of existing streets. • Policy T-1.5.2: Support programs and infrastructure improvements which create an attractive and safe pedestrian environment, particularly in Downtown and around BART stations. Examples include wide sidewalks, illuminated crosswalks, signalized crossings, bulb-outs, and street lighting. • Policy T-1.5.3: Facilitate pedestrian circulation near high activity centers. • Policy T-1.5.4: Encourage new development to provide pedestrian connections to adjacent open spaces and trails. • Policy T-1.5.5: Identify critical deficiencies in the City's pedestrian circulation system and implement strategies, actions, and funding programs to address them. This will be done in concert with the Safe Routes to Schools program, the Capital Improvement Program and the Transportation Improvement Program, with priority given to pedestrian circulation improvements that will enhance pedestrian safety and promote walkability. • Policy T-1.5.6: Incorporate urban design measures in commercial and mixed use districts which accommodate pedestrians and support walking. Examples include ample shade trees, buildings constructed to the front setback line, ground floor storefronts with window displays, frequent building entrances, benches and other street furniture, and parking lots located behind buildings. • Principle T-1.6: Provide a Safe and Comprehensive Bicycle Network • Policy T-1.6.1: Implement strategies and actions for enhanced bicycle circulation throughout the City. • Policy T-1.6.2: Require provision of bicycle facilities in new developments, where appropriate. Examples include weather

Document	Highlights
	protected bicycle parking and direct and safe access for pedestrians and bicyclists to adjacent routes. • Policy T-1.6.4: Encourage, and where appropriate require, new development to provide bicycle access to parks, schools, and transit stops in the design of new residential neighborhoods.
Downtown Specific Plan (2014)	**CIRCULATION** **Objectives:** • Develop a green street framework of pedestrian friendly streets to promote healthy, active lifestyles. • Design and Construct Streets that integrate walking, biking, transit and other green infrastructure. • Connect Downtown Concord to the rest of the region by improving access to and from BART. **Major Policies:** • Design and retrofit existing streets to adhere to Complete Streets and improve accessibility. • Incorporate bike lanes into major streets that connect through the Downtown, particularly along Grant Street. • Provide greater ease of use for transit users in the downtown. • Facilitate a 'Park One Time' Parking Strategy. • Provide a strong connection between major open spaces within the downtown/connections between BART, Todos Santos Plaza and Ellis Park. • Review traffic signal synchronization in the Downtown core. **Major Implementation Strategies:** • Focus on redeveloping Grant Street from BART to Todos Santos Plaza as a walkable and pedestrian friendly street. • Focus on redeveloping Salvio Street from Todos Santos Plaza across Galindo to the Park and Shop. • Develop a transit circulator shuttle around the downtown with shortened headways.

Document	Highlights
	• Provide more public parking near existing downtown uses- people like to once and walk to their other destinations.
Citywide Climate Action Plan (2013)	**Climate Action Strategies: Transportation Systems:** **Strategy TL1:** Develop a pedestrian master plan consistent with Citywide Complete Streets Standards to minimize barriers to pedestrian access and maximize pedestrian interconnectivity throughout the City. **Strategy TL2:** Implement programs and enforcement for safer active transportation with specific targets: 25% reduction in accidents involving pedestrians and bicyclists compared to baseline by 2017, 50% by 2020, 75% by 2035. **Strategy TL2:** Work with Police Department to prioritize traffic enforcement efforts in strategic locations to protect the safety and rights of cyclists and pedestrians. **Strategy TL2:** Develop and implement training programs to inform drivers of the need to respect cyclists and pedestrians. **Strategy TL3:** Implement pedestrian and bicycle-friendly traffic calming measures including curb bulb-outs, additional street trees, raised crosswalks, roundabouts, smaller corner radii, pavement treatments, and lane narrowing. **Strategy TL3:** Require traffic calming measures as a condition of development approvals where appropriate. **Strategy TL4:** Develop a bicycle master plan to make it more convenient and safe to ride bicycles throughout the City, identifying and addressing barriers and dangers, and maximizing connectivity to key destinations like transit stations, schools, medical services, and grocery stores. **Strategy TL4:** Leverage the off-road trails network and increase connections to the on-street network. A bicycle master plan could be developed as part of an update to the existing Concord Trails Master Plan.

Document	Highlights
	Strategy TL5: Require bike parking facilities for all multi-family projects and non-residential uses. Provide secure and convenient bicycle parking at City facilities. **Strategy TL6:** Create a comprehensive Safe Routes to Schools program using the "five E's" framework: engineering, enforcement, encouragement, education, and evaluation. **Strategy TL6:** Implement 5 projects per year beginning 2017 improving pedestrian and bicycle access to schools, with goal of 80% of children walking or bicycling to school by 2035. **Strategy TL8:** Develop multi-modal wayfinding system to facilitate use of bicycles and walking by making it easier to find best routes to key destinations such as transit stations, schools, medical services, and grocery stores. **Strategy TL9:** Develop a street tree master plan for Downtown Concord and key street corridors specifying shade trees to provide traffic calming effects, make walking and bicycling more pleasant, and reduce heat island effect. **Strategy TL10:** Prioritize active modes in engineering and design by reviewing street reconstruction, development projects, and utility projects to identify opportunities to implement complete streets principles. **Strategy TL10:** Develop and apply a streamlined complete streets checklist for review of proposed transportation improvement projects. **Strategy TL10:** Design and improve streets to facilitate safe crossings, including accessible curb ramps, crosswalks, refuge islands, and pedestrian signals designed to meet needs of people with different abilities and ages. **Strategy TL10:** Use innovative and effective walkway features including buffers between pedestrians and vehicle traffic, wide sidewalks, illuminated crosswalks, signalized crossings, bulb-outs, pedestrian-scale lighting, benches, and street furniture. **Strategy TL11:** Prioritize active transportation in 10-year Capital Improvement Program and project funding to ensure systematic investment in bicycle and pedestrian infrastructure.

Document	Highlights
	Policy: All Transportation Systems and Land Use strategies (TL1-TL26) are mandatory for the City, ensuring systematic integration of safety and climate goals into transportation planning and investment decisions.
Concord Trails Master Plan (2002)	**Goals:** • Create a comprehensive network for recreation and alternative transportation modes including hiking, biking, and equestrian use. • Provide access to BART stations through dedicated trail connections enabling safe multimodal travel. • Provide access to schools throughout the city via safe walking and biking routes. • Create historic walking tours encouraging pedestrian activity and community connection. **Purpose:** • Support outdoor recreation providing healthy activity options for residents. • Provide transportation for commuters to get to work and school as alternative to driving, reducing vehicle miles traveled. • Improve public health by encouraging active transportation and outdoor physical activity. • Support education through environmental and historical interpretive opportunities along trails. • Enhance social and economic well-being by increasing economic benefit and property values through quality trail amenities. • Provide alternative emergency access and egress routes enhancing community resilience. **Strategies:** • Identify need for new bridges and filling roadway gaps to provide continuous safe pedestrian and bicycle facilities. • Include plans for pedestrian underpass under Highway 242 to eliminate dangerous at-grade crossings. • Develop trails within Naval Weapons Station development to provide connectivity for future residents. • Present regional trail connectors to Walnut Creek, Pleasant Hill, Clayton, Martinez, and East Bay Regional Parks for seamless regional active transportation network.

Document	Highlights
	• Detail bike parking requirements at trail access points to encourage multimodal connectivity. • Ensure bus and BART bicycle access through coordinated planning of trail connections to transit facilities. • Develop promotional materials including bikeway mapping, wayfinding signage, and basic trail information to encourage use and ensure safety. • Provide school bicycle safety education through Police Department in-class presentations and school newspaper features reaching grades 1-3. • Implement bicycle rodeo program providing hands-on safety training for youth. • Develop school district programming integrating bicycle and pedestrian safety into curriculum. • Deploy police officers on bikes for community engagement and safety enforcement on trails. • Develop auto trip reduction programs encouraging shift from driving to active transportation. • Implement adult bicycle safety and education programs addressing identified gap in safety training.

Appendix C: Road Safety related Projects from Existing Planning

SAFE TRIPS TO BART: AN ACTION PLAN FOR SAFER ROADWAYS (2025)

1. Galindo Street Signal Timing Coordination, Shared-Use Path Planning, and Pedestrian Refuge

Location: Galindo Street from Salvio Street to Clayton Road/Willow Pass Road

FHWA Tier 1 Safety Countermeasure to Remove Severe Conflicts:
- A shared use path that is physically separated from vehicle traffic will provide safety and access benefits for people to bicycle to and from BART.
- Road diets reduce the number and width of vehicle lanes, which can help reduce vehicle speeds and allow for additional pedestrian and bicyclist safety treatments.

FHWA Tier 2 Safety Countermeasure to Reduce Vehicle Speeds:
- Coordinated signal timing can manage vehicle speeds, increasing pedestrian safety. It can also create a steady and predictable flow of traffic, minimizing abrupt stops and starts that can lead to rear-end collisions.

Estimated Cost: $40,000

2. Clayton Road Class IV Cycle Track, Bus Boarding Island, and Crossing Enhancements

Location: Clayton Road from Sutter Street to Grant Street

FHWA Tier 1 Safety Countermeasure to Remove Severe Conflicts:
- Physically separated bicycle lanes will provide more separation between bicyclist and vehicles to reduce chance for severe conflicts.

FHWA Tier 4 Safety Countermeasure to Increase Attentiveness and Awareness:
- High-visibility crosswalks and advance stop bars increase the visibility of pedestrians at marked crosswalks.
- Advance stop bars improve visibility of crossing pedestrians by increasing the distance between stopped motorists and crossing pedestrians.

Estimated Cost: $100,000

3. Clayton Road Pedestrian Safety and Complete Street Improvements

Location: Clayton Road from Park Street to the Alameda; Sunset Street and East Street

FHWA Tier 1 Safety Countermeasure to Remove Severe Conflicts:

- Bus bulbs reduce pedestrian crossing distance and minimize conflicts caused by buses pulling into and out of the travel lane.

FHWA Tier 2 Safety Countermeasure to Reduce Vehicle Speeds:
- Edge lines reduce the width of the travel lane, encouraging slower speeds.

FHWA Tier 3 Safety Countermeasure to Manage Conflicts in Time:
- Leading Pedestrian Intervals (LPIs) allow pedestrians to begin crossing before vehicles are given the green signal.

FHWA Tier 4 Safety Countermeasure to Increase Attentiveness and Awareness:
- High-visibility crosswalks increase the visibility of pedestrians at marked crosswalks.
- Advance stop bars improve visibility of crossing pedestrians by increasing the distance between stopped motorists and crossing pedestrians.

Estimated Cost: $100,000

4. Salvio Street Class IV Cycle Track, Bus Bulb, and Intersection Safety Improvements

Location: Salvio Street from East Street to Parkside Drive

FHWA Tier 1 Safety Countermeasure to Remove Severe Conflicts:
- Physically separated bicycle lanes will provide physical barrier between bicyclist and vehicles to reduce chance for severe conflicts.
- A pedestrian refuge reduces exposure and allows pedestrians to focus on crossing one direction of traffic at a time.
- Bulb-outs reduce the distance pedestrians need to cross, decreasing the time they are exposed to traffic.

FHWA Tier 4 Safety Countermeasure to Increase Attentiveness and Awareness:
- High-visibility crosswalks make crossing pedestrians more visible to drivers.
- Bulb-outs improve sight lines between pedestrians and drivers.

Estimated Cost: $200,000

5. Willow Pass Road and East Street Intersection Safety Improvements

Location: Willow Pass Road and East Street intersection

FHWA Tier 1 Safety Countermeasure to Remove Severe Conflicts:
- Bus bulbs reduce pedestrian crossing distance and exposure to conflicts with vehicles.

FHWA Tier 2 Safety Countermeasure to Reduce Vehicle Speeds:
- Bus bulbs reduce the width of the roadway and encourage drivers to reduce speed.

FHWA Tier 4 Safety Countermeasure to Increase Attentiveness and Awareness:

- High-visibility continental crosswalks make crossing pedestrians more visible to drivers.

Note: This intersection is adjacent to the Concord Village mixed-use development site (approximately 230 residential units), where increased pedestrian demand is anticipated upon project completion.

Estimated Cost: $100,000

6. Willow Pass Road and Parkside Drive Intersection Safety Improvements

Location: Willow Pass Road and Parkside Drive intersection, near the Concord Civic Center

FHWA Tier 2 Safety Countermeasure to Reduce Vehicle Speeds:
- Bulb-outs reduce the turn radii and vehicle turning speed by forcing vehicles to make sharper turns.

FHWA Tier 4 Safety Countermeasure to Increase Attentiveness and Awareness:
- High-visibility crosswalks make crossing pedestrians more visible to drivers.
- Advance stop bars improve visibility of crossing pedestians and increase distance between crossing pedestrians and stopped motorists.

Estimated Cost: $20,000 (Quick Build) – $200,000

CONTRA COSTA COUNTY COMPLETE STREETS SAFETY ASSESSMENT (2024)

Focus Area #1: Concord Avenue/Contra Costa Boulevard to Diamond Boulevard - Install continuous sidewalks minimum 6-foot width, ADA-compliant curb ramps, pedestrian-scale lighting at 30-foot spacing, street trees, protected bicycle facilities (Class II or IV), high-visibility crosswalks with refuge islands, curb extensions, countdown pedestrian timers, Leading Pedestrian Intervals, and narrowed travel lanes (10-11 feet).

Focus Area #2: Concord Avenue/John Glenn Drive to Via Mercados (Iron Horse Trail Access) - Enhance trail access with clear wayfinding signage, accessible pathways, bicycle parking, improved visibility at crossings with high-visibility markings and Rectangular Rapid Flashing Beacons, separated bicycle facilities connecting to trail network, pedestrian-scale lighting at access points, traffic calming with speed feedback signs, and consider grade-separated crossing at high-volume locations.

Focus Area #3: Concord Avenue at SR-242 Interchange - Redesign interchange ramps with tighter corner radii, install protected bicycle facilities with physical separation, provide high-quality lighting throughout undercrossing, implement pedestrian refuge islands, upgrade signal timing for adequate crossing time, add green conflict zone markings, coordinate with Caltrans, and consider long-term grade-separated crossing.

Countywide Safe Routes to School Program - Conduct walking/biking audits, prioritize infrastructure improvements including sidewalk extensions, crossing guards, enhanced crosswalks with beacons, traffic calming near schools, implement education programs, provide enforcement, encourage active transportation, and evaluate program effectiveness.

Systemic Signalized Intersection Enhancement Program - Implement Leading Pedestrian Intervals (3-7 seconds), protected left turn phasing, pedestrian countdown signals, accessible pedestrian signals, bicycle detection, signal timing optimization, high-visibility crosswalks, advance stop bars, green conflict zone markings, and Rectangular Rapid Flashing Beacons at uncontrolled crossings.

FY2025-FY2029 CAPITAL IMPROVEMENT PLAN (2024)

School Safety Assessment Program (Project 2539) - Location: Citywide. Ongoing proactive safety assessment for 50 schools focusing on pedestrian and bicycle infrastructure conditions near schools, providing recommendations for engineering solutions, education, and enforcement to address traffic calming for school-related transportation issues including drop-off/pick-up operations, traffic circulation, and parking in residential and commercial neighborhoods.

Streetlighting and Safety Improvement (Project 2695) - Location: Citywide with arterial lighting improvements on Port Chicago Highway, Clayton Road, Cowell Road, Monument Boulevard, Galindo Street, Kirker Pass Road, Treat Boulevard, Ygnacio Valley Road, and Concord Boulevard. Project updates streetlights to LED fixtures and adds streetlights where feasible to address the critical safety issue that 46 percent of pedestrian crashes and 66 percent of fatal and severe injury pedestrian collisions occur in dark conditions. Funded through HSIP Cycle 11 with total grant award of $7,409,470.

Traffic Safety and Traffic Calming Program (Project 2464) - Location: Citywide. Provides traffic calming for school-related transportation issues and neighborhood safety concerns, ensuring overall traffic safety through engineering interventions and systematic implementation of proven countermeasures.

Citywide Traffic Monitoring (Project 2537) - Location: Citywide. Collects average daily traffic data at all major streets every two years, updates citywide radar speed surveys for up to 30 segments annually, and deploys 35-40 devices to identify cut-through traffic using anonymous Bluetooth and Wi-Fi data to continuously monitor routes and implement mitigation measures.

West Concord Bikeways Phase 2 (Project 2524) - Location: West Concord area. Continues implementation of dedicated bicycle facilities to provide safe connectivity for cyclists in western portions of the city.

Sun Terrace Elementary School Crossing Enhancements (Project 2712) - Location: Sun Terrace Elementary School vicinity. Implements safety improvements at school crossings to protect students walking and biking to school.

Village Road/Cowell Road Crossing Improvements (Project 2717) - Location: Village Road and Cowell Road intersection. Enhances pedestrian and bicycle crossing safety at this key intersection through infrastructure improvements.

David Avenue Bicycle Improvements (Project 2605) - Location: David Avenue corridor. Provides dedicated bicycle facilities along this corridor to improve cyclist safety and connectivity.

Court Lane Bicycle Improvements (Project 2617) - Location: Court Lane corridor. Implements bicycle infrastructure improvements to create safer cycling conditions and fill network gaps.

Salvio Street Bikeway Improvements Phase 2 (Project 2619) - Location: Salvio Street corridor. Continues implementation of bicycle facilities on this important downtown connector street.

Pine Hollow Road Complete Street Project (Project TRA-30-003) - Location: Pine Hollow Road and Alberta Way, 2.2-mile segment from Clayton Valley Charter High School to Mount Diablo Elementary School. Constructs pedestrian and bicycle improvements including continuous sidewalks and bike lanes, implements multi-modal and operational strategies to improve safety, transit connections, and circulation. Based on 2022 feasibility study recommendations.

HSIP Cycle 11 RRFB Crossing Enhancements (Project 2696) - Location: Various high-priority crossing locations citywide. Implements Rectangular Rapid Flashing Beacon systems at pedestrian crossings to improve visibility and driver yielding behavior at uncontrolled crossings.

Citywide Bike Lane Enhancements (Project 2697) - Location: Citywide. Systematic improvements to existing bike lane network including upgraded striping, signage, and pavement markings to improve safety and comfort for cyclists.

Willow Pass Road Cycle Track (Project 2572) - Location: Willow Pass Road corridor. Provides protected cycle track facility on this major arterial to create safe separated space for cyclists.

East Downtown Concord PDA Access and Safe Routes to Transit Project (Project 2457) - Location: East Downtown Concord Priority Development Area. Improves pedestrian and bicycle access to transit facilities including BART station with focus on complete streets improvements and connectivity.

ADA Transition Plan Update (Project 2377) - Location: Citywide. Updates the citywide ADA transition plan to systematically identify and prioritize accessibility improvements throughout the pedestrian network.

Citywide Sidewalk Repair Program (Project 2666) - Location: Citywide. Ongoing program to repair damaged sidewalks and maintain pedestrian infrastructure in safe, accessible condition.

Citywide Sidewalk Replacement Program (Project 2341) - Location: Citywide. Systematic replacement of deteriorated sidewalk segments to maintain continuous, safe pedestrian facilities throughout the city.

PINE HOLLOW ROAD COMPLETE STREET FEASIBILITY STUDY (2023)

The Study identified a set of recommended improvements that would create a safe and connected transportation network for all users, prioritizing the needs of those most vulnerable and to encourage use of alternative modes. Improvements are proposed throughout the study area, in both the cities of Concord and Clayton:

- Sidewalk Improvements
- Protected Bike Lane
- Crosswalk Improvements
- Traffic Calming Features

Approach to developing potential Improvement Concepts: These inputs led to the development of the three, key improvement objectives:

- Reduce auto speeds and improve traffic safety
- Continuous, safer, and more comfortable pedestrian facilities
- Connected bicycle facilities throughout the corridor

Proposed Pedestrian Infrastructure Improvements:

- New sidewalks
- New crosswalks
- High-visibility crosswalk markings and advanced stop bars
- Raised crosswalks/raised intersections
- Rapid rectangular flashing beacons
- Median refuges
- Pedestrian lighting at crossings
- Upgrading curb ramps to current standards
- Tighten curb radii
- Landscape trimming and utility pole relocation to increase pedestrian visibility
- Adding leading pedestrian intervals to improve accessibility and safety

Bicycle Infrastructure Improvements:

A two-way cycle track on one side of the street, as proposed west of Indiana Drive, while the image on the bottom represents a one-way cycle track on both sides of the road, which is proposed east of Pennsylvania Boulevard. Note that these examples are representative of the basic concept only and differ in landscaping widths and roadway configuration from what is proposed for Pine Hollow Road.

Focused Intersections:

- Mitchell Canyon Road and Pine Hollow Rd
- Pine Hollow Road and Indiana Dr
- Pine Hollow Road and Pennsylvania Blvd
- Kaiser Quarry Road and Pine Hollow Road
- Rolling Woods Way and Pine Hollow Road
- Pine Hollow Road and Campus Dr
- Pine Hollow Road/ Albert Way and Ygnacio Valley Road
- Albert Way and Academy Road

CITY OF CONCORD LOCAL ROADWAY SAFETY PLAN (2022)

No Safety Projects Identified.

COMPLETE STREETS FEASIBILITY STUDY: WILLOW PASS ROAD, GALINDO STREET & COWELL ROAD (2020)

Willow Pass Road Enhanced Cycle Track (CIP #2449 Integration) - Location: Landana Drive to Parkside Drive, north side. Implement two-way protected cycle track with vertical delineators, special pavement markings, public realm improvements including street trees and lighting, and enhanced crossings with green conflict zone markings.

Willow Pass Road Long-Term Complete Streets Transformation - Location: Galindo Street to Market Street. Implement road diet removing one westbound lane, wider two-way cycle track on north side, move curb line toward center allowing sidewalk widening to 8-10 feet, street tree double rows at 25-30 foot spacing, green infrastructure bioswales, enhanced transit stops, traffic calming through lane width reduction, and enhanced crossings with curb extensions and refuge islands.

Willow Pass Road Bicycle Network Connectivity - Location: Parkside Drive to Salvio Street, Salvio Street to Grant Street and Galindo Street. Create continuous low-stress bicycle network connecting downtown corridors with dedicated facilities, wayfinding signage, bicycle parking at destinations, and coordination with downtown circulation plans.

Galindo Street Complete Street Redesign - Location: Willow Pass Road to Monument Boulevard/Cowell Road (1.2 miles). Maintain two through lanes each direction with varied turn lanes, implement varying shared spaces and pedestrian amenity zones (8-12 feet wide), install street trees at 30-foot spacing with double rows, integrate green infrastructure bioswales, implement bicycle facilities connecting to downtown, simplify intersection designs, enhance transit infrastructure, and evaluate transitioning Concord Boulevard and Clayton Road to two-way operation.

Cowell Road Complete Street Implementation - Location: Monument Boulevard to Ygnacio Valley Road (2.1 miles). Maintain existing lanes on most segments, implement road diet on Community Park area converting four lanes to two lanes with center turn lane, develop combination of shared-use paths and shared spaces between Mesa Street and Treat Boulevard, install enhanced bike lanes between Treat Boulevard and Ygnacio Valley Road, extend Community Park into roadway as shared space, upgrade Cowell Road/Treat Boulevard intersection, install street trees at 30-foot spacing, and enhance trail connections to East Bay Regional Parks.

Corridor-Wide Intersection Safety Improvements - Location: All intersections along three study corridors. Implement high-visibility crosswalk markings, curb extensions reducing crossing distances by 10-20 feet, ADA-compliant curb ramps, pedestrian countdown signals, advance stop bars setback 4-8 feet, green conflict zone markings, signal timing optimization with protected/permissive left turns, Leading Pedestrian Intervals, Rectangular Rapid Flashing Beacons at uncontrolled crossings, refuge islands, and tight corner radii (10-15 feet).

Wayfinding and Connectivity Enhancements - Location: All three corridors connecting downtown, BART, schools, parks, and regional trails. Implement directional signage for pedestrians and bicyclists, distance and time information to key destinations, bicycle route signage with pavement markings, interpretive signage at gateway features, maps at key decision points, integration with transit information, connectivity improvements filling gaps, and coordination with Downtown Specific Plan and Bicycle Pedestrian Plan.

Green Infrastructure and Streetscape Program - Location: All three corridors with focus at Community Park, downtown gateway, and neighborhood sections. Implement bioswales and rain gardens managing stormwater, permeable pavements, street trees at 25-30 foot spacing providing 50-60% canopy coverage, pedestrian-scale lighting at 30-40 foot spacing, street furniture including benches at 200-300 foot spacing, bicycle parking, wayfinding kiosks, public art and gateway features, and coordination with frontage improvements for outdoor dining and active uses.

MONUMENT CORRIDOR COMMUNITY-BASED TRANSPORTATION PLAN (2020)

The Metropolitan Transportation Commission (MTC) has allocated funds to develop Community- Based Transportation Plan (CBTP) updates for the Bay Area's Communities of Concern, including the Monument Corridor in the City of Concord.

Recommended Transportation Strategies (Tier I):

- **Safe Routed to School Improvements:**
  Concord has been actively supporting a local Safe Routes to School (SR2S) Program to make it easier, safer, and more enjoyable to walk or bike to school. The program consists of constructing bicycle and pedestrian infrastructure, in-classroom bicycle and pedestrian safety education, encouragement programs and contests to promote walking and biking. The City should continue its SR2S program, including applying for grant funding to construct further school-related infrastructure improvements.
    - **Walkway Improvements:** This strategy recommends reviewing existing bus stops that are in close proximity to schools, and the pedestrian infrastructure around the stops, including nearby crosswalks, sidewalks, curb ramps, traffic signals, etc., to catalog those which need improvement, and then making the changes necessary to make all stops in the areas around schools accessible.
    - **Walking School Bus/Bicycle Train:** Safety is one of the most common reasons parents who live within walking or bicycling distance to school are reluctant to allow their children to walk to school. Providing adult supervision may help reduce those worries for families. Two ways to help alleviate parents' concerns are to encourage parents to start a walking school bus or a bicycle train.
    - **Low- Stress Bikeways:** Adding and improving bike lanes will help guide bicyclists and alert cars to their presence. Bicycle network improvements should be targeted towards several different street segments with a goal of enhancing the City's network of bicycle facilities to provide continuous access to key destinations in and beyond the Monument Corridor.
    - **Transit youth Passes:** Outreach indicated community support for a discounted transit pass program for youth for CCCTA, BART, and other bus services. Such a program could help improve the mobility and transit use of youth who have difficulty affording transit fares. While this strategy should be sponsored and coordinated on a County-wide level, community groups, such as Monument Impact, youth groups, or local churches, could be responsible for disseminating passes from CCCTA, BART, or other transit agencies to eligible youth.
    - **Mobility Education:** This strategy recommends creating transportation information centers at schools, with up-to-date materials in English and Spanish including local and intercity transit information and maps, car sharing bulletin boards, school carpool matching services, walking or biking programs, and, potentially, internet access for adults.

- **Infrastructure Improvements:**
    - **Improve intersections, enhanced crossings at specific distances, and traffic signal coordination:** Intersections pose challenges to bicyclists/pedestrians, including long crossing distances, uncontrolled free right-turn movements. Bike lane treatments at intersections are inconsistent. The City should consider evaluating and improving selected

signalized intersections (for example, intersections with a history of bicycle-pedestrian-motor vehicle conflict, intersections located near schools, and intersections adjacent to major transit stops and centers). In particular, the City lanes, when necessary, so that they are located to the left of right turn lanes. Consider ways to eliminate conflicts between bicycle traffic and motor traffic (e.g. advanced or separate signal phases for bicycles).

- **Sidewalk gaps and consolidation of commercial driveways:** There was a strong interest in improved pedestrian facilities including safer roadway crossings and slower traffic speeds. Broken and misaligned sidewalks, and commercial driveways were also a significant concerns expressed.
- **Bus stop amenities:** Adding bus stop amenities is both relatively inexpensive and popular within the community as a very tangible improvement in the quality of the public transit experience. Although the solution does not necessarily improve origin-to-destination mobility in the community, it improves the experience of using transit service which can in turn encourage increased use of transit.

- **Bicycle Improvements:**
  - **Bike share:** The system is expected to expand to 7,000 bicycles around 540 stations in San Francisco, Oakland, Berkeley, Emeryville, and San Jose. Concord, on behalf of the Monument Corridor area, could reach out to Bay Wheels and private providers to gauge the feasibility of stationing docked or dockless bicycles in the Study Area.
  - **Separated Bikeways:** Community outreach indicated interest in improving bicycle safety and wayfinding through Monument Corridor streets by creating separated bikeways. Ideally, "separated" means protected by vertical separation elements, but it could also include paint-only facilities where motor traffic speeds and volumes are low enough.
  - **"Bike Kitchens":** Bike Kitchen teaches people of all ages and backgrounds how to repair bicycles. Bike Concord offers a community bicycle shop as well as a pop-up repair shop known as the "The Bike Tent".

CITY OF CONCORD BICYCLE, PEDESTRIAN & SAFE ROUTES TO TRANSIT PLAN (2016)

The City of Concord envisions an environment that supports walking, bicycling and active living, and enables people of all ages and abilities to safely and comfortably access jobs, schools, recreation, shopping and transit.

- **High Visibility Crosswalk Project:**
  - Babel Lane and Clayton Road
  - Bacon St and East Street
  - Bel Air Dr and Treat Blvd
  - Clayton Road and Kirker Pass Road
  - Clayton Road and Farm Bureau Road
  - Commerce Avenue Concord Avenue
  - Concord Blvd and Landana Drive
  - Cowell Rd and Monument Blvd
  - Clayton Rd and Denkinger Ct (Shared Use Path Study)
  - Detroit Avenue and Monument Blvd
  - East St and Willow Pass Rd
  - Fairfield Avenue and Grant St

- Franquette Avenue and Willow Pass Road
- Fry Way and Willow Pass Rd
- Grant St and Olivera Rd
- Harrison St and Concord Avenue
- Mesa St and Cowell Road
- Oak Grove Road and Treat Blvd
- Palm Lake E and Oak Grove Road
- Port Chicago Highway and Willow Pass Rd
- Sutter St and Willow Pass Road
- Clayton Road and Terry Lynn Lane
- Clayton Road and Thornwood Dr
- 6th St and Concord Blvd
- Almond Avenue and East St
- Ayers Rd and Concord Blvd
- Ayers Rd and Clayton Rd
- Bailey Rd and Clayton Rd
- Bailey Rd and Concord Blvd
- Bonifacio St and East St
- Cary Dr and Monument Blvd
- Chestnut Ave and Clayton Rd
- Clayton Avenue and Clayton Rd
- Clayton Rd and Oakland Avenue
- Clayton Rd and Treat Blvd
- Clayton Rd and Park St
- Clayton Rd and Concord Blvd
- Concord Ave and Market St
- Concord Blvd and Kirker Pass Road
- Concord Blvd and Farm Bureau Rd
- Concord Blvd and West St
- Concord Blvd and Mendocino Dr
- Coventry Rd and Clayton Rd
- Coventry Rd and Cowell Rd
- Treat Blvd and Cowell Rd
- Babel Lane and Cowell Rd
- Cowell Rd and Ygnacio Valley Rd
- David Ave and Oak Grove Rd
- Denkinger Rd and Concord Blvd
- Diamond Blvd and Willow Pass Rd
- East St and Salvio St
- Esperanza Rd and Monument Blvd
- Erickson Rd and Monument Blvd
- Fredrick St and Grant St
- High School Ave and Grant St
- Hillside Avenue and Solano Way
- Hookston Rd and Creek
- Huron Dr and Ronald Way

- Keswick Lane and Oak Grove Rd
- Market St and Willow Pass Rd
- Michigan Blvd and Ygnacio Valley Rd
- Minert Rd and Oak Grove Rd
- Mohr Lane and Monument Blvd
- Monument Blvd and Mohr Lane
- Monument Blvd and Detroit Ave
- Monument Blvd and Walters Way
- Monument Blvd and Systron Dr
- Monument Blvd and Erickson Rd
- Monument Blvd and Carey Dr
- Moretti Dr and Esperanza Dr
- 6th St and Willow Pass Rd
- N Larwin Ave and Cowell Rd
- Navaronne Way and Treat Blvd
- Oak Grove Road and Minert Rd
- Oak Grove Road and Whitman Rd
- Oak Grove Road and David Ave
- Olivera Rd and Hillsborough Dr
- Pacheco St and Concord Ave
- Pacheco St and East St
- Park Highlands Blvd and Ygnacio Valley Rd
- Parkside Dr and Concord Blvd
- Parkside Dr and Willow Pass Rd
- Salvio St and Treat Blvd
- San Simeon Dr and Treat Blvd
- Solano Way and Broadmoor Avenue
- Systron Dr and Monument Blvd
- Terry Lynn Lane and Clayton Rd
- The Alameda and Clayton Rd
- West St and Clayton Rd
- West St and Concord Blvd
- Whitman Rd and Oak Grove Rd
- Willow Pass Rd and Farm Bureau Rd
- Willow Pass Rd and Diamond Blvd
- Willow Pass Rd and Market St
- Willow Pass Rd and Parkside Dr
- Clayton Rd and Colfax St
- Clayton Rd and Sunset Avenue
- Greenbush D and Thornwood Dr
- Lacey Lane and S Side of Cambridge Elementary Driveway Loop
- Olivera Rd and Sanford St

- **Complete Street Study Project:**
- Babel Lane and Cowell Road

- Clayton Road and The Alameda
- Clayton Road and Market St
- Concord Ave and Contra Costa Blvd
- Concord Blvd and Grant St
- Diamond Blvd and Concord Avenue
- Galindo St and Concord Blvd
- Grant St and Fairfield Avenue
- Grant St and Willow Pass Road
- Oak St and Galindo St
- Solano Way and Hilltop Road
- Systron Dr and Trailside Cir
- Treat Blvd and Clayton Road
- Willow Pass Road and Market St
- Willow Pass Road and 6th St
- Detroit Avenue and Monument Blvd
- Franquette Ave/ Waterworld Pkwy and CA-242 Undercrossing
- Galaxy Way and Meridian Park Blvd
- Market St and Meadow Lane
- Meadow Lane and Leland Way
- Minert Rd and Bancroft Rd
- Oak Grove Road and Chalomar Rd

- **Class I Bike Boulevard Project:**
- Bailey Rd and 180ft SW of Laura Dr
- Concord Community Park
- Market St and Meadow Lane
- Rolling Woods Way and Vista Point Lane
- Franquette Ave and Franquette Ave

- **Class II Bike Boulevard Project:**
- Clayton Road and Ashbury Drive
- Concord Blvd and Sattler Drive
- Fairfield Avenue and Crystal Avenue
- Galaxy Way and Meridian Park Blvd
- Grant St and Willow Pass Road
- John Glenn Dr and Concord Avenue
- Meridian Park Blvd and Concord Blvd (Buffered)
- Port Chicago Hwy and Salvio St
- Willow Way and Meridian Park Blvd
- Burnett Avenue and Meridian Park Blvd
- Clayton Rd and Village Rd
- Farm Bureau Rd and Wren Avenue
- Meadow Lane and 500ft NW of Oak Grove Rd
- Oakland Ave and Clayton Rd

- **Class III Bike Boulevard Project:**
  - Bonifacio St and Port Chicago Highway
  - Bonifacio St and Concord Avenue (Shared Lane Marking)
  - Burnett Avenue and Diamond Blvd
  - Chestnut Avenue and Clayton Road
  - Commerce Avenue Concord Avenue
  - Fairfield Avenue and Crystal Avenue
  - Laguna St and Detroit Avenue
  - Concord Blvd and Landana Drive (Shared Lane Marking)
  - Parkside Dr and Bonifacio St
  - Salvio St and Broadway St (Shared Lane Marking)
  - Victory Lane and Linden Dr
  - 6th St and Willow Pass Rd
  - Argonne Dr and Biscay Way
  - Avon venue and Solano Way
  - Babel Lane and Merridan Dr
  - Bantley St and Bancroft Rd
  - Broadway St and Market St
  - Cape Cod Way and Cowell Rd
  - Clayton Rd and Diamond Blvd
  - Concord Blvd and Bailey Rd
  - Consuelo Rd and Esperanza Dr
  - Coventry Rd and Cowell Rd
  - Court Lane and S Terminus
  - Diamond Avenue and Burnett Avenue
  - Esperanza Dr and W Terminus
  - Grant St and Gill Dr
  - Grove Way and Orchard Avenue
  - Hickroy Dr and Birch Avenue
  - Hillsborough Dr and Olivera Rd
  - Kaski Lan and Hitchcock Rd
  - Landana Dr and Willow Pass Rd
  - Live oak Avenue and Clayton Way
  - Maria Avenue and Dover Way
  - Clayton Rd and Mendocino Dr
  - Merridan Dr and Lancashire Dr
  - Minert Rd and Oak Grove Rd
  - Mohr Lane and Monument Blvd
  - Mt Diablo St and Mesa St
  - Mt Diablo St and Oak St
  - Mt Diablo St and Coventry Rd
  - Mt Diablo St and Laguna St
  - 6th St and Port Chicago Hwy
  - Nuala St and Mohr Lane
  - Oasis Dr and Whitman Rd
  - Olivera Rd and Solano Way

- Olivera Rd and Esperanza Dr
- Orchard Ave and W Terminus
- Panoramic Dr and St George Dr
- Reed Way Grove Way
- Rosal Lane and Joan Avenue
- Salvio St and Esperanza Dr
- Silverwood Dr and Village Rd
- St Francis Dr and Liscome Way
- The Alameda and Clayton Rd
- The Alameda and Walnut Avenue
- Third St and Willow Pass Rd
- Via De Mercados and Concord Ave
- Clayton Way and Village Rd
- Weaver Lane and Minert Rd
- Whitman Rd and Oasis Dr
- Wren Ave and 6th St
- Birch Avenue and Fairfield Ave
- Biscay Way and Weaver Lane
- Cardinal Dr and Thunderbird Dr
- Euclid Ave and Third St
- Falcon Dr and Cardinal Dr
- Galaxy Way and Via De Mercados
- Gelbke Lane and Evergreen Dr
- Hitchcock Rd and Court Lane
- Joan Ave and Babel Lane
- Liscome Way and St Francis Dr
- Lyon Cir and Wilmore Ave
- Marice Ct and Hitchcock Rd
- Ryan Rd and Wilmore Avenue
- St George Dr and Hillsborough Dr
- Sutter St and Market St
- Wilmore Ave Lyon Cir

- **Sidewalk Improvement Project:**
- Concord Blvd and Galindo Street
- E Olivera Rd and Salvio St
- E Olivera Rd and Mars St
- Oak St and Laguna St
- Willow Pass Road and Granada Dr
- Willow Pass Road and 6th St
- Willow Pass Road and Olivera Rd
- 5th Street and S of Marvalle Lane
- 5th Avenue and Clayton Rd
- Amador Avenue and Clayton Rd
- Arnold Industrial Way and Industrial Way

- Arnold Industrial Way and Pike Lane
- Arnold Industrial Way and Port Chicago Hwy
- Ayers Rd and Kenmore Dr
- Bailey Rd and Hakimi Ct
- Barbis Way and Gerald Dr
- Barbis Way and Pancho Via St
- Beach St and Bonifacio St
- Belmont Rd and Waltham Rd
- Bonifacio St and Port Chicago Hwy
- Chalomar Rd and Oak Grove Rd
- Chestnut Avenue and W of McCarl Lane
- Chestnut Avenue and Calyton Rd
- Chestnut Avenue and W of Stillman Ct
- Clayton Rd and S Willow Pass Rd
- Concord Avenue and W of Commerce Ave
- Concord Blvd and Vincente Rd
- Concord Blvd and NW of Kirker Pass Rd
- Concord Blvd and Denkinger Rd
- Concord Blvd and Yvonne Dr
- Concord Blvd and Mahoo Lane
- Concord Blvd and Princeton Ct
- Concord Blvd and Bailey Rd
- Coventry Rd and Cowell Rd
- Cowell Rd and Hale Dr
- Cowell Rd and Almendra Ct
- Cowell Rd and Monument Blvd
- Cowell Rd and Babel Lane
- Cowell Rd and S of Plumleigh Lane
- Cowell Rd and S of Treat Blvd
- Cowell Rd and Kaski Lane
- Cowell Rd and Almar St
- Craig Dr and Cowell Rd
- Crystal Avenue and Fairfield Ave
- David Ave and Cowell Rd
- Detroit Avenue and Monument Blvd
- Detroit Avenue and Walters Way
- E Olivera Rd and S of Montgomery Avenue
- East St and Crescent Dr
- Fabian Way and Clayton Rd
- Granada Dr and Willow Pass Rd
- Gross Lane and Orchard Avenue
- Grove Way and Orchard Ave
- Grove Way and Cowell Rd
- Hampton Dr and Hookston Rd
- Hilltop Rd and Solano Way
- Keswick Lane and Honister Lane

- Laguna St and Galindo St
- Laura Alice Way and Arnold Industrial Way
- Lee Lane and David Avenue
- Leland Way and Backfield Dr
- Maria Avenue and Dover Way
- March Dr and Iron Horse Regional Trail
- Mohr Lane and N of Mohr Ct
- Mohr Lane and N of Bentley St
- Mohr Lane and N of DaviD Avenue
- Monument Blvd and Cowell Rd
- Navaronne Way and NW of Viola Pl
- Oak Grove Road and Whitman Rd
- Olivera Rd and Peralta Rd
- Parkside Dr and Concord Blvd
- Parkside Dr and Salvio St
- Parkside Dr and Bonifacio St
- Peach Pl and Oak Grove Rd
- Pear Dr and Oak Grove Rd
- Port Chicago Hwy and S of Bates Ave
- Port Chicago Hwy and S of S of Salvio St
- Port Chicago Hwy and S of S of Kinne Blvd
- Port Chicago Hwy and S of S of Concord Blvd
- Ridgewood Dr and Ridgewood Ct
- Ridgewood Dr and Cowell Rd
- Risdon Rd and Risdon Ct
- Rose Lane and Treat Blvd
- Salvio St and 160ft W of Grant St
- Salvio St and Beach St
- Salvio St and N 6th St
- San Carlos Ave and Laguna St
- San Miguel Rd and Systron Dr
- Solano Way and Hilltop Rd
- St Francis Dr and Cowell Rd
- The Alameda and Corvada Way
- Thompson Dr and N of Thompson Dr
- Thunderbird Dr and Olivera Rd
- Treat Blvd and N of Thompson Dr
- Treat Blvd and Navaronne Way
- Treat Blvd and Vista Kelly Oaks Ct
- Treat Blvd and S of Marietta Ct
- Treat Blvd and N of Kingswood Dr
- Treat Blvd and Lynn Dr
- Treat Blvd and Cobblestone Dr
- Treat Blvd and NE of Cowell Rd
- Treat Blvd and E of Navaronne Way
- Whitman Rd and Oak Grove Rd

- Willow Pass Rd and St Phillps Ct

- **Corridor Conceptual Plan Project:**
- Monument Blvd and Walnut Creek
- Clayton Rd and Farm Bureau Rd
- Willow Pass Rd and Lynwood Dr

- **Short Term Bike Parking Project:**
- Mt Diablo St and 130ft S of Salvio St
- Pacheco St and 18ft E of Mt Diablo St
- Willow Pass Road and Mt. Diablo St
- Willow Pass Road and 200ft E of Grant St
- Willow Pass Road and Grant St
- Concord Community Park
- Meadow Home Park
- Parkside Cir and Between Beach St/ Parkside Dr
- Parkside Cir and 600ft NE of Beach St
- Parkside Cir and 600ft NW of Parkside Dr
- Salvio St and 160ft W of Grant St
- Victory Lane and Rea Anne Rd
- Willow Pass Community Park and N of Salvio Dr
- Willow Pass Community Park and S of Salvio Dr

- **Rectangular Rapid Flashing Beacon Project:**
- Alberta Way and N of Valmer Dr
- Alberta Way and Academy Rd
- Cowell Rd and Quail Ct
- Olivera Rd and Sanford St
- West St and Forest view Ave
- Floyd Lane and Cardinal Dr
- Lacey Lane and S Side of Cambridge Elementary Driveway Loop

- **Wayfinding/Sign Improvement Project:**
- Bonifacio St and Port Chicago Hwy
- CA-242 N and Undercrossing
- Wren Ave and Contra Costa Canal Trail

- **Pedestrian Scaled Lighting Project:**
- Clayton Rd and Sunset Avenue
- Colfax St and Pacheco St
- Concord Blvd and Galindo St
- East St and Pacheco St
- Grant St and Oak St
- Mt Diablo St and Concord Blvd
- Oakland Ave and Clayton Rd

- Pacheco St and Concord Ave
- Park St and Grant St
- Salvio St and Concord Ave
- Sunset Ave and Galindo St
- Willow Pass Rd and Concord Ave

- **Bicycle Access Study Project:**
- Monument Blvd and Iron Horse Trial
- Olive Dr and Mt Diablo Creek
- Panoramic Dr and Port Chicago Hwy
- Meridian Park Blvd and Willow Way

CONCORD COMPLETE STREETS STUDY (2014)

The City of Concord, located in Contra Costa County, faces a number of challenges in providing safe and accessible biking and walking facilities. The purpose of this study is to provide preliminary support in starting the process of creating a safer, bike friendly, walkable and livable Concord.

Proposed Treatments:

- **Galindo Street and Salvio Street Intersection (Intersection Improvement):**
  - Intersections create the biggest risk factors for bicyclists.
  - At intersections, right turning vehicle soften cross the bicycle lane to turn creating a conflict zone with bicycles. The most successful solution to this problem is the protected intersection design with refuge islands, also called Dutch intersection design because it was first developed and tested in the Netherlands.
  - Protected intersections resolve conflicts between bicyclists, pedestrians and vehicles by improving visibility and minimizing vehicle-bicycle conflicts.
- **Babel Lane and Cowell Road (Intersection Improvement):**
  - Bicyclist and pedestrian volume for this particular intersection is very low. However, to plan for future growth and greater use of the facilities, there appears to be a need for specific treatments. An addition of grade-separated sidewalks through much of this intersection will allow for safe use for both pedestrians and bicyclists.
  - Grade separated sidewalks will encourage walking and greater use by the residents living in the neighborhood. Next, striped signalized crossings will reinforce yielding of vehicles turning during a green signal phase.
  - Striping the crosswalks as wide as or wider than the walkway it connects to will ensure that when people walk, they can comfortably pass.
  - The use of high-visibility, zebra crosswalk markings are more visible to approaching vehicles. In addition, the crossing distances should be as short as possible for pedestrians.
  - For bicyclists, a clearly demarcated Class II bicycle lane with green striping in the existing pathway would help to alleviate confusion for pedestrians, cyclists and drivers. The high volume traffic and speeds along Cowell pose a risk to the safety of cyclists.
  - A "trail of bread crumbs" will guide the bicyclist across the intersection, while alerting drivers to approaching cyclist crossing. In the future, when bike path circulation is further coordinated and connected, implementing a buffered bike path with flexible delineators would help to shield cyclists from high volume and high-speed traffic.

- A Class I facility would be appropriate for Babel as there were few bicyclists turning in from Babel onto Cowell. Most cyclists used Cowell.

- **Meadow Lane/Oak Grove Road Intersections and Monument Boulevard (Intersection Improvements):**
  - Add a protected/buffered Class II (Bike Lane) facility on Monument Blvd and improve the current.
  - Class II (Bike Route) on Oak Grove Rd/Meadow Lane to a protected/buffered Class II (Bike Lane). In order to achieve this, a road diet will need to be performed to allocate proper widths of the bike lanes and vehicular lanes. Add a Standard Crosswalk to complement the current textured crosswalk.
  - This will help to contrast the textured crosswalk, make pedestrians more visible, and cars will stop ahead of time. Since, cars were noticed to stop directly on the textured crosswalk adding a solid white border can help prevent cars from doing so. Add a bus shelter and bench on each bus stop to improve transit rider usage.
- **Clayton Road and The Alameda (Intersection Improvements):**
  - This is true for the existing advance stop lines at this intersection as well. It is also suggested that higher visibility pedestrian and cyclist warning signs and rectangular rapid flashing beacons to be installed to improve driver awareness of the trail crossing ahead.
  - Larger more visible signs, and the flashing beacons at the crosswalk can increase visibility for oncoming traffic when activated by pedestrians or cyclists.
- **Willow Pass Road and Diamond Boulevard (Intersection Improvements):**
  - This report strongly urges the city of Concord to reduce the overall width of automobile lanes, to under ten feet, and introduce highly visible Class II bicycle facilities throughout the corridor. As shown above, the Class II bicycle facilities will strategically utilize green paint throughout the intersection to increase bicycle visibility.
  - As the bicycle lanes approach the intersection, the design pattern shifts from a stripe pattern where the bicycle lane is marked with green paint every 10-15 feet, to a solid green line.
  - This is done to further increase bicyclist visibility near the intersection and to act as a traffic calming device. At turning lanes, where it is much more difficult to implement a bike-only lane, we introduce "sharrows"; large green arrows that let automobile drivers know that bicyclists are equally as able to utilize that lane to turn as they are.
- **Clayton Road and Fry Way (Intersection Improvements):**
  - A fully painted, dashed Class II bicycle lane is proposed, possible with textured pavement to visuals and physically inform drivers that they are crossing the bicycle lane. Due to the lower traffic volumes and a fewer number of lanes on Fry Way, sharrows are a more appropriate measure as there is not enough room for a full 5 foot Class II bicycle lane immediately off the intersection with the raised median further down the road.
  - Additional, and alterations at this intersection could include textured pavement along the crosswalk across Clayton Rd, the development of an elevated pedestrian bridge from the bus stop along eastbound Clayton Rd to the opposite side, and a Class II bicycle lane between the two turning lanes on southbound Fry Way.
  - These alternatives would be more costly than the initially proposed intersection alterations, but can have a greater effect on increasing pedestrian and bicycle comfort and safety.
- **Willow Pass Road and Galindo Street (Intersection Improvements):**

- Diagonal crossings stop all vehicular traffic at the intersection and safety allow pedestrians and cyclists alike to cross diagonally as they please.
- Furthermore, in order to accommodate bicyclists and pedestrian safety, this suggests highly visible Class II bicycle lanes along both Galindo Street and Willow Pass Road.

- **Galindo Street and Laguna Street (Intersection Improvements):**
  - A "zebra crossing" at this crosswalk in particular will help to increase the visibility of the intersection for pedestrians and drivers. Zebra crossings are recommended for all other crosswalks at this intersection.
  - The distance between these corners is approximately 101 feet in length. Because the average person walks at 3.4 feet per second, it would take approximately 30 seconds for the average person to cross the proposed diagonal crossing.
  - Bulb-outs are proposed on each corner of the intersection to reduce pedestrian crossing distance and the speed of turning vehicles. Improvements to signal timing would better accommodate pedestrian mobility at every crossing at this intersection, especially along the southern crosswalk on Galindo Street.
  - Class II bicycle lanes with green stripping for both Galindo and Laguna streets increase bicyclist safety and help to guide bicyclists through the intersection. Although class II bicycle lanes may currently conflict with existing automobile traffic volumes, they should be considered for future implementation as Concord's bicycle path circulation network is further developed.
- **Mt Diablo Street/Oakland Avenue and Mt Diablo Street/Mesa Street: (Intersection Improvements):**
  - To convert both intersections into roundabouts. This will improve traffic flow, and improve motorist satisfaction which will likely improve the chances of them yielding to pedestrians.
  - To further improve pedestrian safety at these two intersections the crosswalks should also include bulb outs and high visibility crosswalks.
- **Clayton Road and Grant Street: (Intersection Improvements):**
  - In order to embrace the TOD, higher visibility be given to crosswalks. Although there are different pavers to alert drivers of crossing an intersection, more visibility can be given in a zebra-like manner as shown in the image above. The design pattern would be striping every 16 inches to 2 feet along the crosswalk.
  - This allows for pedestrians to be clearly seen from further away, as well as accommodate for an increase in pedestrian usage. This in turn encourages more pedestrian-oriented development within the area and emphasizes on the TOD overlay of the site.
- **Panoramic Drive and Port Chicago Highway: (Intersection Improvements):**
  - Multiple interventions are suggested for the intersection at Port Chicago Highway and Panoramic Drive.
  - These suggested improvements are made based on observations and pedestrian and bicycle traffic counts made during AM and PM peak hours on May 7th and 8th. Measures are necessary to increase bicycle and pedestrian access, visibility, and safety. It is recommended that the sidewalk is continued on the east side of Port Chicago Highway north of Panoramic Drive.
  - This should continue to the north in order to connect with the existing sidewalk at the Hwy 4 North off ramp. In order to shorten crossing time and create a safer pedestrian crossing, improvements need to be made to the crosswalks.

- The crosswalks with the highest pedestrian volumes should have their medians extended into the crosswalks and pedestrian islands should be included.
- A crosswalk should also be added to the north side of the intersection. All crosswalks should have zebra stripping in order to increase visibility.
- This will improve access for pedestrians. In order to create a more comfortable transit riding experience, a shelter and bench should be added to the bus stop on southwest corner of the intersection. The class I bike path that travels along the BART line and Port Chicago Highway needs substantial improvement.
- This path is the key bicycle connection between the North Concord BART station and the surrounding neighborhoods with the rest of the city.
- It is underutilized and has the potential to increase bicycle usage throughout Concord. The path needs to be clearly marked with painted bicycle symbols and lanes. It must be connect to the rest of the path through proper street crossings and way-finding signage. Way-finding signage needs to be prominent at all cross streets and within the BART station to direct people to the class I path and the destinations found near the route.
- The path needs to be fully connected throughout the route. There should be no gaps in this path.
- This means that there needs to be a clear bicycle crossing within the BART station. Also the gap in the path to the north, between the intersection and the freeway entrance ramp, must be filled in. These improvements will become more necessary as the Naval Weapons Station Reuse Plan comes into effect. It is recommended that these improvements are made before development construction begins.

CONCORD DOWNTOWN SPECIFIC PLAN (2014, AMENDED 2021)

Central Concord Pedestrian Improvements and Streetscape Project - Location: Downtown area at 30 intersections. Rehabilitate crosswalks including pothole repair and re-staining of colored concrete crosswalks, improve curb ramps on Grant and Salvio Streets, install bicycle racks and lanes on Grant Street, add striping and sharrows on Salvio Street, update wayfinding at BART plaza, refurbish pedestrian light poles and tree lighting on Grant Street to improve pedestrian safety and visibility.

Concord BART Plaza Improvements - Location: Concord BART Station area, Grant Street, and Oak Street. Install bicycle lanes on Grant and Oak Streets, provide additional pedestrian lighting along Grant Street, create new pedestrian walkway from BART entrance to Grant Street, relocate taxi and Kiss 'N Ride parking for improved pedestrian flow, install new wayfinding signage to enhance pedestrian orientation and safety.

Downtown Concord Bicycle Lane Improvements - Location: Clayton Road, Concord Boulevard, Grant Street, Oakland Avenue, and Mt. Diablo Street. Implement bicycle routes and lanes throughout downtown corridor, construct and widen sidewalks on Clayton Road and Grant Street (east side between Concord Boulevard and Willow Pass Road) to provide dedicated safe space for cyclists and pedestrians.

Downtown Sewer and Streetscape Improvements - Location: Grant Street and surrounding downtown streets. Phased project combining sewer system replacement with street paving and striping, sidewalk

repair on portions of Grant Street, selected curb replacements to improve overall pedestrian and bicycle infrastructure quality during utility work.

Salvio Street Improvements at Mt. Diablo Street - Location: Salvio Street east of Mt. Diablo Street. Remove diagonal parking along north side of Salvio Street to improve sight lines and safety, enhance sidewalk conditions at intersection to create safer pedestrian environment.

Salvio Street Bicycle Lanes - Location: Salvio Street from Port Chicago Highway to Parkside Drive. Install bicycle sharrows to provide designated bicycle space and improve cyclist safety along this key downtown connector.

Willow Pass Road and Nearby Intersections Traffic Signal Upgrades - Location: Willow Pass Road and downtown intersections. Upgrade traffic signals and install new signals at multiple downtown intersections, add protected left turn phasing to reduce vehicle-pedestrian conflicts, implement ADA upgrades on Willow Pass Road including accessible curb ramps and crossing infrastructure.

Grant Street Two-Way Conversion - Location: Grant Street between BART Station and Todos Santos Plaza. Convert one-way street segments to two-way operation with consistent travel lanes, dedicated bike lanes, and wider sidewalks to reduce vehicle speeds and improve safety for all users.

BART Linear Park and Greenway - Location: Along BART tracks from North Concord BART station to Downtown Concord BART station. Develop open space and bicycle/pedestrian path beneath BART elevated tracks to create safe grade-separated active transportation connection providing direct access to BART station from surrounding neighborhoods.

Pedestrian Priority Zone Treatments - Location: Downtown core area within 10-minute walk of BART. Implement raised crosswalks, signal timing changes limiting traffic speeds, curb extensions, decorative pavement treatments, enhanced lighting, and other traffic calming measures to prioritize pedestrian safety in high-activity areas.

Clay Alley Pedestrian District - Location: Clay Alley and Salvio Street near Pacheco Adobe. Create pedestrian-oriented retail and dining environment with enhanced sidewalks, outdoor seating areas, pedestrian-scale lighting, and traffic calming measures centered around historic Pacheco Adobe.

CITYWIDE CLIMATE ACTION PLAN (2013)

The Climate Action Plan does not identify specific project locations but establishes mandatory programmatic safety strategies to be implemented citywide:

Pedestrian Master Plan Development - Location: Citywide. Develop comprehensive pedestrian master plan to strategize and prioritize efforts making walking easier, safer, and more comfortable, establishing bicycle and pedestrian mode share goals and monitoring provisions.

Safer Active Transportation Programs and Enforcement - Location: Citywide with focus on high-injury areas, schools, and senior housing. Implement enforcement campaigns targeting violations associated with

severe and fatal injuries in strategic locations, with annual collision data review and cause analysis to implement ongoing safety improvements.

Traffic Calming Implementation - Location: Citywide as conditions of development approval. Implement measures including curb bulb-outs, additional street trees, raised crosswalks, roundabouts, smaller corner radii, pavement treatments, and lane narrowing to slow traffic and encourage walking and bicycling.

Bicycle Master Plan Development and Implementation - Location: Citywide connecting transit stations, schools, medical services, grocery stores, and key destinations. Identify and address barriers and dangers to bicycling, maximize connectivity, increase local access to dedicated bicycle lanes and trails, coordinate infrastructure investments with pedestrian master plan.

Bike Parking Installations - Location: All new multi-family and non-residential development, City facilities citywide. Require and install secure, convenient bicycle parking within 30 feet of entrances, well-lit at night, to increase safety and visibility of bicycling as travel option.

Safe Routes to Schools Comprehensive Program - Location: All 50 schools citywide with priority for high-need areas. Implement engineering improvements including walkways, crossings, bike lanes, traffic calming; enforcement at schools; encouragement programs like walking school buses; education including bicycle safety training; evaluation through walk and bike audits identifying key safety improvements.

Multi-Modal Wayfinding System - Location: Citywide with emphasis on connections to transit stations, schools, medical services, grocery stores. Install directional signage helping pedestrians and cyclists find safest, most convenient routes across town and to key destinations.

City Forest Plan/Street Tree Implementation - Location: Downtown Concord and key street corridors citywide. Plant street trees strategically to provide traffic calming effects, shade sidewalks and bike lanes to make active travel more pleasant and safe, reduce heat island effect.

Complete Streets Checklist Application - Location: All street reconstruction, development projects, and utility projects citywide. Apply streamlined complete streets review ensuring safe crossings with accessible curb ramps, crosswalks, refuge islands, pedestrian signals, buffers between pedestrians and vehicles, wide sidewalks, illuminated crosswalks, bulb-outs, pedestrian-scale lighting.

Active Transportation CIP Priority Projects - Location: Citywide prioritized through 10-year Capital Improvement Program. Systematically fund bicycle and pedestrian infrastructure improvements identified through master plans, with coordination across all City infrastructure investments.

MAKING CONCORD STREETS SAFER

Comprehensive Safety Action Plan

Community Outreach Meeting

March 30, 2026 | City of Concord

City of Concord
Transportation Division

Federally Funded by
U.S. DOT SS4A Program

www.concordsafestreets.org

Agenda

Community Outreach Meeting | March 30, 2026

- Welcome & Introductions
- What is the CSAP & Why It Matters
- Our Vision: Zero Traffic Fatalities and Serious Injuries
- 5-Year Collision Snapshot (2021–2025)
- Community Engagement
- Your Voice Shapes This Plan
- How to Stay Involved

What is a Comprehensive Safety Action Plan?

What It Is

A data-driven roadmap that identifies high-risk locations and defines strategies to reduce fatal and serious injury crashes.

Safe System Approach
No one should die or be seriously injured on our roadways. Safety is a shared responsibility.

SS4A Federal Funding
Supported by the U.S. DOT Safe Streets and Roads for All program. Positions Concord for implementation grants.

1. Collision data analysis
2. High-risk location identification
3. Community & stakeholder engagement
4. Safety countermeasure development
5. Project prioritization & funding plan
6. Monitoring & evaluation framework

Our Commitment: Zero Traffic Fatalities and Serious Injuries

Vision Zero – No death on our roads is acceptable or inevitable

Data-Driven Priorities

Uses 5 years of crash data to identify exactly where and why crashes are happening

Focused on Saving Lives

Every strategy targets fatal and severe injury (KSI) crashes first

Community Input

Your lived experience tells us which streets feel unsafe and what improvements matter most

Systemic Approach

Addresses crash patterns across the entire city network, not just one intersection

Funding Readiness

Positions Concord for future SS4A implementation grants to deliver real capital improvements

Measurable Outcomes

Clear metrics track progress and demonstrate impact over time

CSAP Process

Where we are today — and where we're heading

WE'RE HERE



Stakeholder and Community Engagement

5-Year Collision Snapshot

2021 – 2025 | City of Concord

1,804	164	19	145
Total Collisions	KSI Collisions	Fatal Collisions	Severe Injuries

Key Highlights

Severity	Segment	Intersection	Total
Fatal	3	16	**19**
Severe Injury	19	126	**145**
Visible Injury	79	348	**427**
Complaint of Pain	185	1,028	**1,213**
Total	**286**	**1,518**	**1,804**

Key Highlights

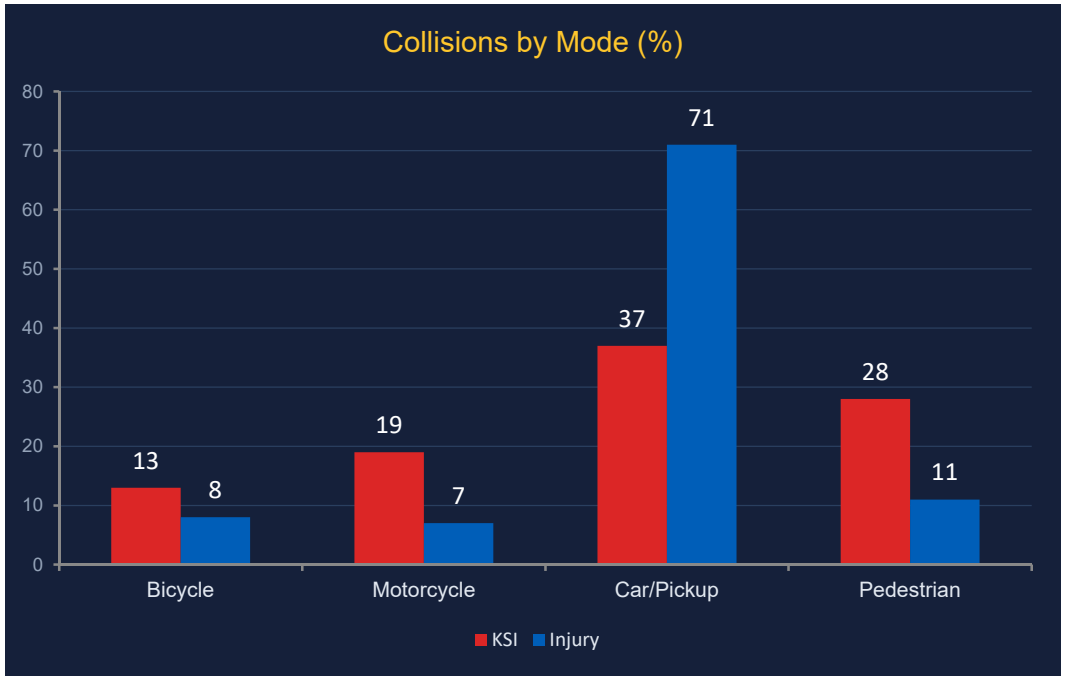
87% of KSI at intersections
142 of 164 KSI collisions occurred at intersection locations

60% of KSI: Peds, Bikes, Motos
Vulnerable road users far overrepresented in severe outcomes

12% of KSI involve alcohol
20 of 164 KSI collisions were alcohol-related

Collision Trends Over Time

2021 – 2025 | KSI and Total Collisions by Mode



Key Observations

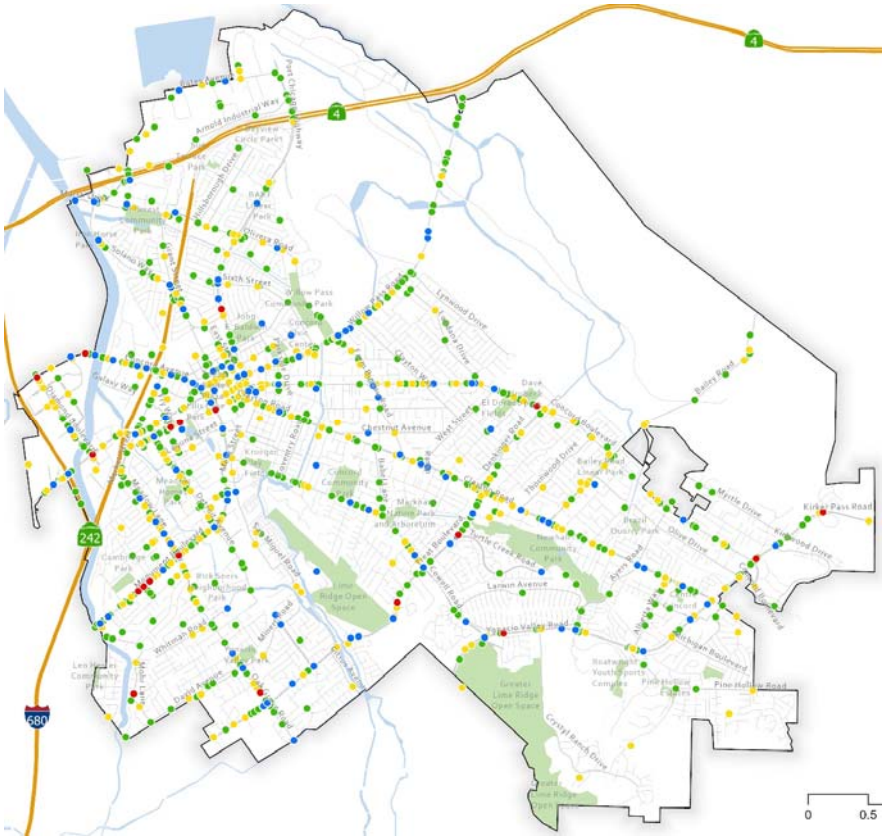
Peak year: 2022
383 total collisions and 39 KSI

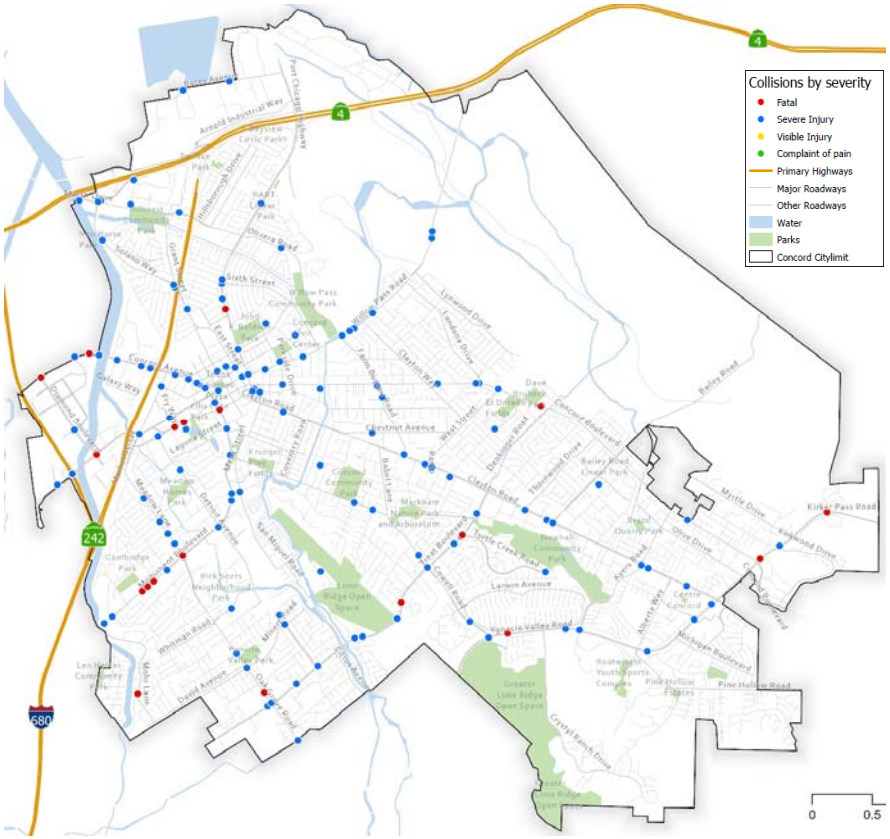
2025 shows decline
341 total collisions (∑11% from peak)

KSI remains elevated
34 KSI in 2025—same as 2021 despite overall decline

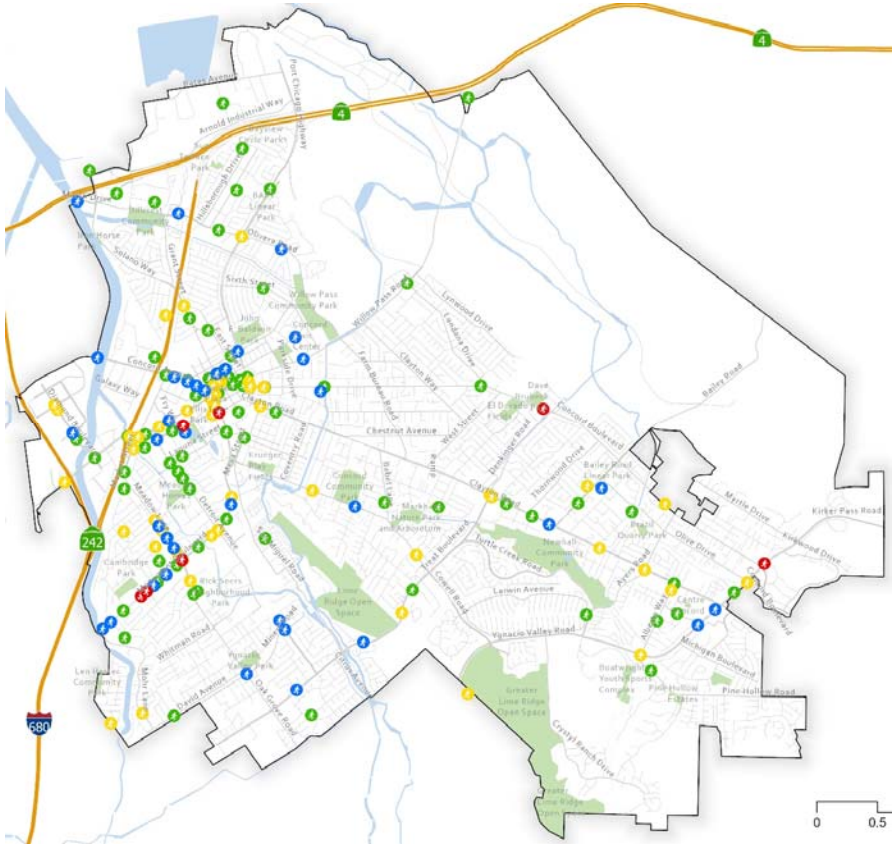
84% at intersections
1,518 of 1,804 collisions occurred at intersections

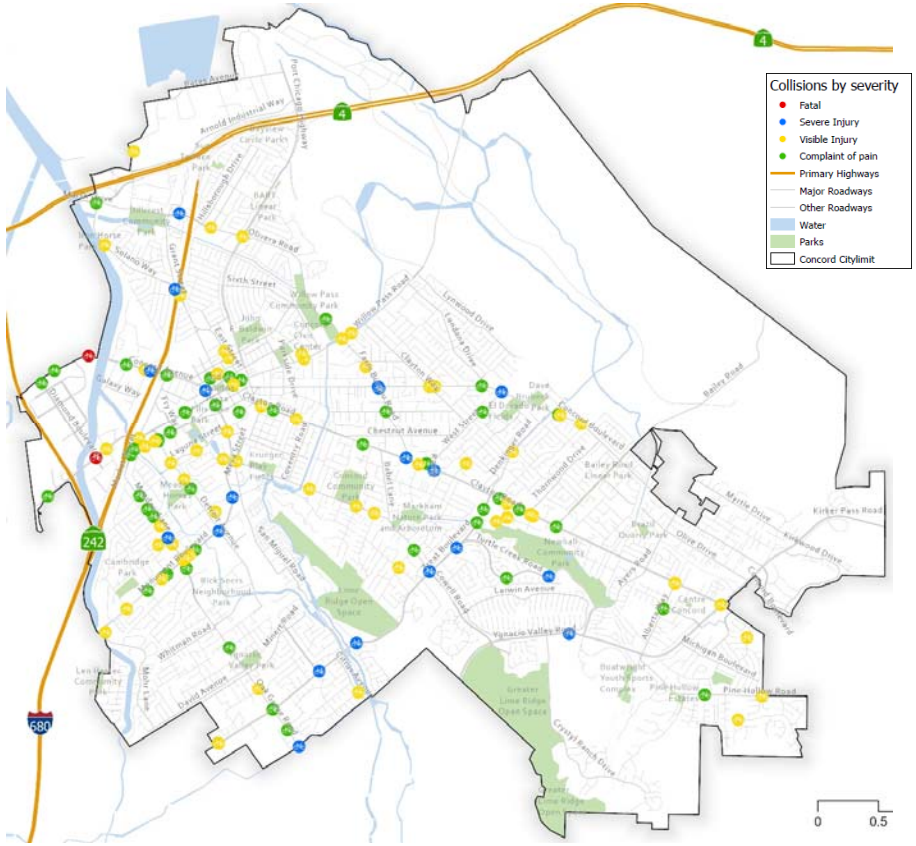
Where Crashes Are Happening





Pedestrian & Bicycle Crash Locations

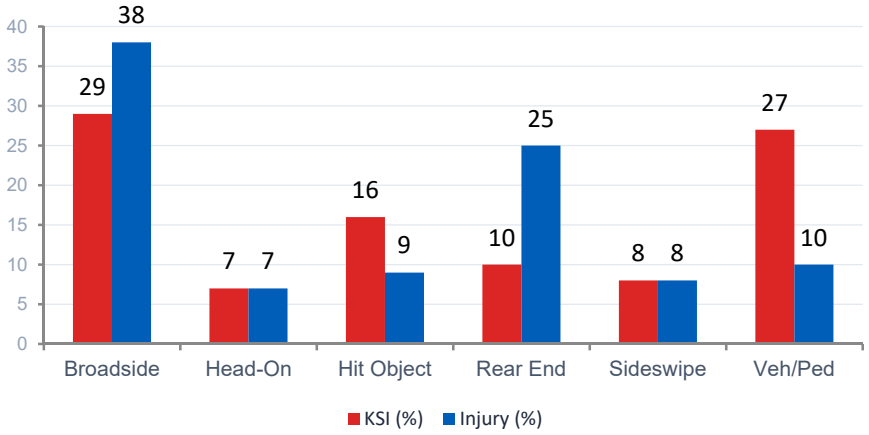




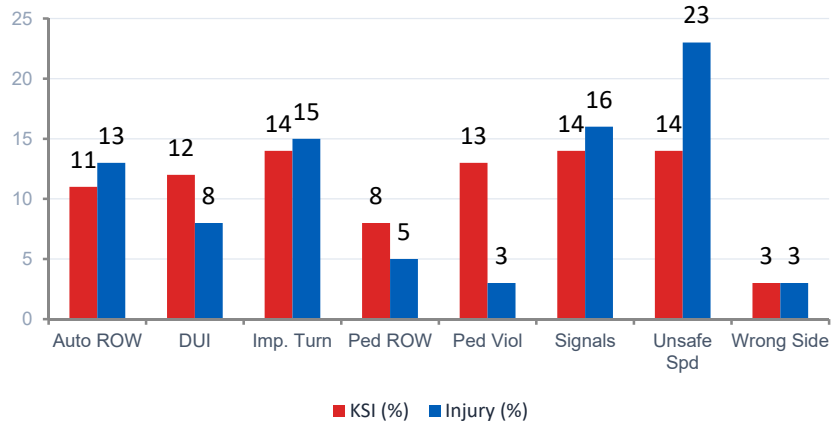
How & Why Crashes Are Happening

Understanding crash patterns helps target the right solutions

By Collision Type



By Violation Category



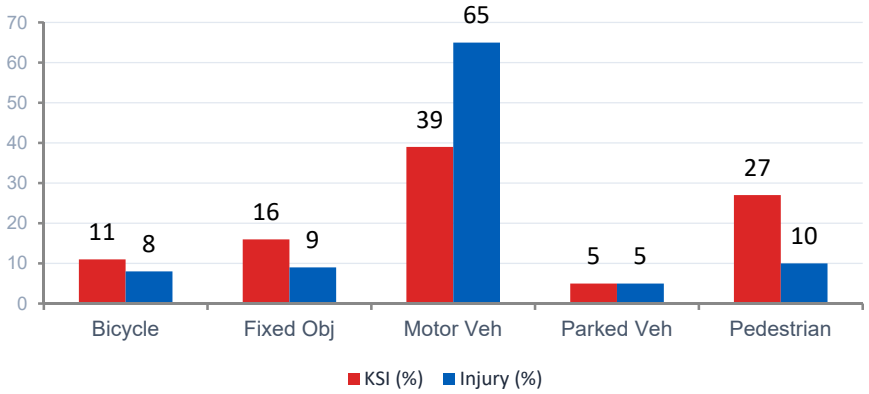
Key Finding:

Broadside and Vehicle/Pedestrian collisions accounted for 29% and 27% of KSI outcomes respectively, together responsible for over half of all deaths and severe injuries. Pedestrian/bicycle collisions are disproportionately severe relative to their overall share.

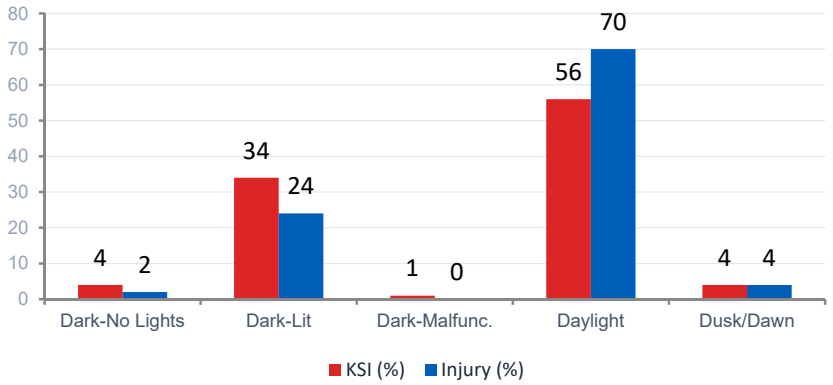
Vehicle Involvement & Lighting

What is involved and when are crashes most severe?

Motor Vehicle Involved With



Lighting Conditions



Top 5 KSI Corridors:
Willow Pass Rd (17 KSI), Clayton Rd (16), Monument Blvd (13), Treat Blvd (13), Concord Ave (10). Together: 69 of 164 citywide KSI = 42% of all severe crashes.

Lighting & Peak Hours:
38% of KSI occur in dark conditions. PM Peak (4–7 PM) is the single highest-risk period with 33 KSI, followed by evenings at 40 KSI.

Community Engagement

What are we doing?

- Webpage with Interactive Map to report your concern
- Web base survey
- Community Meetings

1. Meeting No. 1 – to receive feedback

2. Meeting with Bike Concord and Community Groups

3. Meeting No. 2 – Present the findings and recommendations

Community Survey: What We've Heard So Far

252 responses · March 11–27, 2026 | All Modes of Travel

252
Responses Received

79%
Had Personal Collision Experience

96%
Changed Travel Behavior Due to Safety

72%
Concerned About School Zone Safety

WHO RESPONDED



TOP GEOGRAPHIC FOCUS

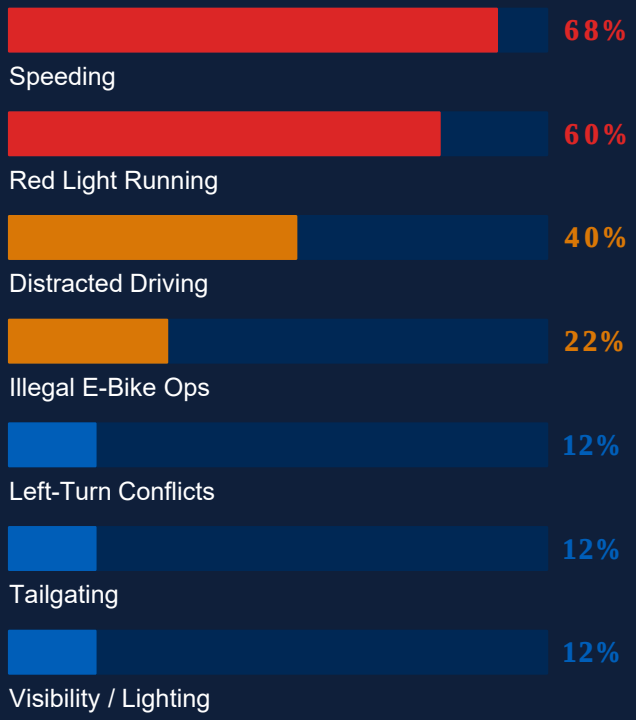


Top ZIP: 94521 (38%) | English: 90% | Disability: 11%

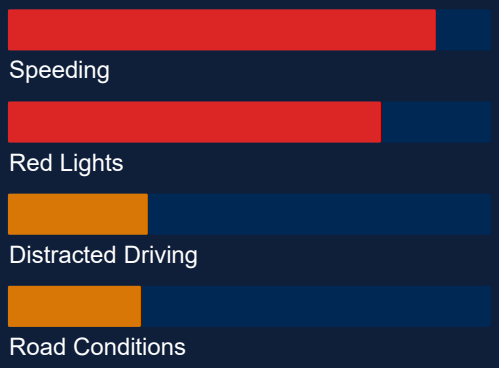
Top Safety Concerns — What Community is Telling Us

Multi-select responses · n=252

OVERALL SAFETY CONCERNS



DRIVERS



PEDESTRIANS



CYCLISTS

27% No Rules Followed

17% No Bike Lanes

School Zone Safety & Collision Experience

Two high-priority themes from community feedback

SCHOOL ZONE SAFETY

72% concerned about school-zone safety

Very Concerned	34%
Somewhat Concerned	38%
Not Concerned	13%

TOP SCHOOL ISSUES CITED

41%	Speeding near schools
38%	Pickup / dropoff backup
30%	Double-parking / sight lines
33%	Drivers failing to yield

PERSONAL COLLISION EXPERIENCE

79% have experienced a collision firsthand

32%	Near-miss personally
31%	Witnessed a collision
13%	Directly involved
21%	No experience

INSIGHT

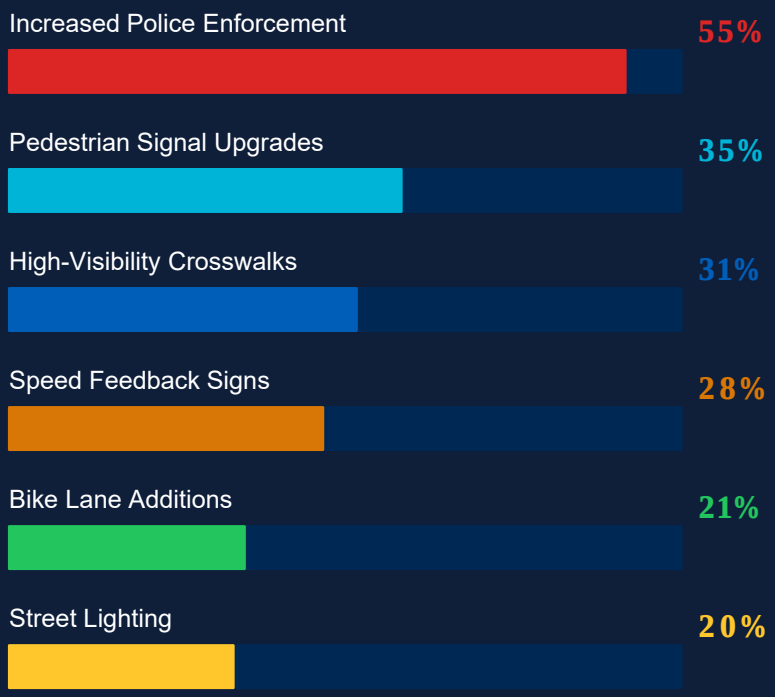
Residents directly involved in collisions cite distracted driving at 53% — 15 points higher than those with no experience (38%). Collision exposure sharpens concern for all violations.

What Community Wants — Priorities & Behavior Change

% of 252 respondents · March 11–27, 2026

REQUESTED IMPROVEMENTS

% of 252 respondents selecting each option



TRAVEL BEHAVIOR CHANGED BY SAFETY

96% of residents have modified their travel due to safety concerns

36%	Avoid certain streets
27%	Avoid certain times
26%	Drive / walk more cautiously
2%	Changed travel mode
4%	No change in behavior

Residents 65+ shift time (41% avoid times) · Working-age adults shift routes (47–52% avoid streets)

Key Takeaways: What the Survey Is Telling Us

Evidence-based priorities derived from 252 community survey responses · March 11–27, 2026

01 Enforcement Is the #1 Requested Fix

55% of residents named increased police enforcement as their top improvement — higher than any infrastructure measure. This holds across every geographic focus area.

02 Speeding + Red Lights Dominate Every Mode

68% cite speeding and 60% cite red light running. These dual violations top every subgroup: drivers, pedestrians, cyclists, and all age groups.

03 School Zone Safety Is a Shared Urgency

72% are concerned about school-zone safety. Very concerned residents identify speeding; somewhat concerned identify pickup congestion — requiring a two-stream response.

04 Pedestrian Signals Are the Top Infrastructure Ask

35% requested pedestrian signal upgrades, ranking 2nd overall. Residents with disabilities cited signals at 36% — key equity finding for crosswalk investment.

05 96% Changed How They Travel Due to Safety

Route avoidance (36%), time-shifting (27%), and cautious driving (26%) are widespread. Older adults shift when they travel; working-age adults shift where — both responses need parallel interventions.

06 Survey & Data Tell a Consistent Story

Community concerns align directly with collision data: high-injury corridors on Clayton Rd, Willow Pass, and Monument Blvd are the same streets residents call out most.

Your Voice Shapes This Plan

Crash data tells us WHERE. Your experience tells us WHY streets feel unsafe.

Take the Survey

5 minutes, anonymous. Share which streets feel unsafe and your top safety priorities.

concordsafestreets.org/survey

Contact the Team

Reach out directly to our project team with questions or detailed feedback.

abhishek.parikh@cityofconcord.org

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concordsafestreets.org

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www.concordsafestreets.org

Spread the Word

Share the project with neighbors, friends, and community groups. More voices = better plan.

Share with neighbors

Thank You — Your Input Matters

Together we are building safer streets for every person who walks, bikes, drives, and lives in Concord.

City of Concord — Transportation Division

Survey: concordsafestreets.org/survey | Concerns: concordsafestreets.org

Comprehensive Safety Action Plan | 2026

MAKING CONCORD STREETS SAFER

Comprehensive Safety Action Plan

Community Outreach Meeting No. 2

April 13th, 2026 | City of Concord

City of Concord
Transportation Division

Federally Funded by
U.S. DOT SS4A Program

www.concordsafestreets.org

Agenda

Community Outreach Meeting | April 13, 2026

- Welcome & Introductions
- What is CSAP ?
- Our Vision: Zero Traffic Fatalities and Serious Injuries
- 5-Year Collision Snapshot (2021–2025)
- Community Engagement
- Your Voice Shapes This Plan
- How to Stay Involved

What is a Comprehensive Safety Action Plan?

What It Is

A data-driven roadmap that identifies high-risk locations and defines strategies to reduce fatal and serious injury crashes.

Safe System Approach

No one should die or be seriously injured on our roadways. Safety is a shared responsibility.

SS4A Federal Funding

Supported by the U.S. DOT Safe Streets and Roads for All program. Positions Concord for implementation grants.

Our Commitment: Zero Traffic Fatalities and Serious Injuries

Vision Zero – No death on our roads is acceptable or inevitable

Data-Driven Priorities

Uses 5 years of crash data to identify exactly where and why crashes are happening

Focused on Saving Lives

Every strategy targets fatal and severe injury (KSI) crashes first

Community Input

Your lived experience tells us which streets feel unsafe and what improvements matter most

Systemic Approach

Addresses crash patterns across the entire city network, not just one intersection

Funding Readiness

Positions Concord for future SS4A implementation grants to deliver real capital improvements

Measurable Outcomes

Clear metrics track progress and demonstrate impact over time

CSAP Process

Where we are today — and where we're heading

WE'RE HERE



Stakeholder and Community Engagement

5-Year Collision Snapshot

2021 – 2025 | City of Concord

1,804
Total Collisions

164
KSI Collisions

19
Fatal Collisions

145
Severe Injuries

Key Highlights

Severity	Segment	Intersection	Total
Fatal	3	16	**19**
Severe Injury	19	126	**145**
Visible Injury	79	348	**427**
Complaint of Pain	185	1,028	**1,213**
Total	**286**	**1,518**	**1,804**

Key Highlights

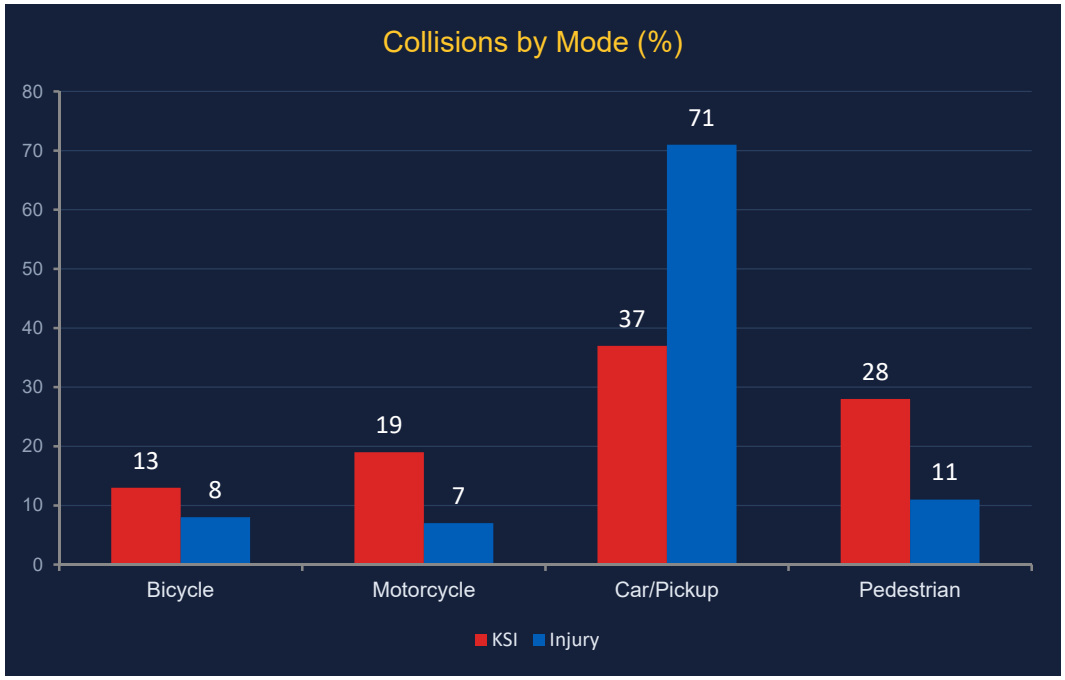
87% of KSI at intersections
142 of 164 KSI collisions occurred at intersection locations

60% of KSI: Peds, Bikes, Motos
Vulnerable road users far overrepresented in severe outcomes

12% of KSI involve alcohol
20 of 164 KSI collisions were alcohol-related

Collision Trends Over Time

2021 – 2025 | KSI and Total Collisions by Mode



Key Observations

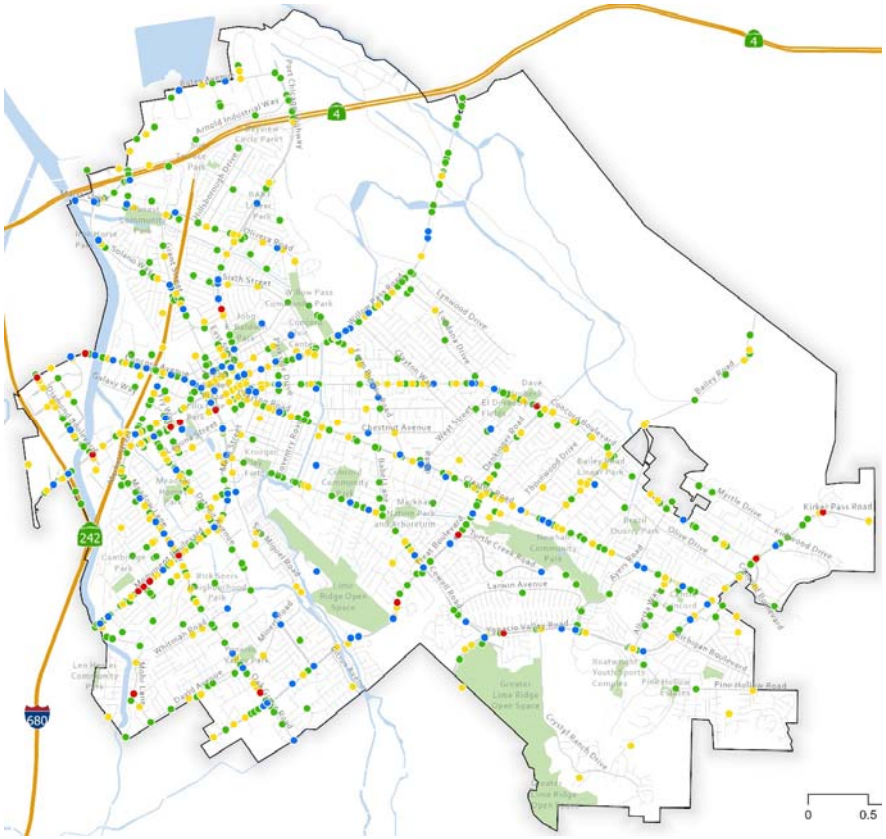
Peak year: 2022
383 total collisions and 39 KSI

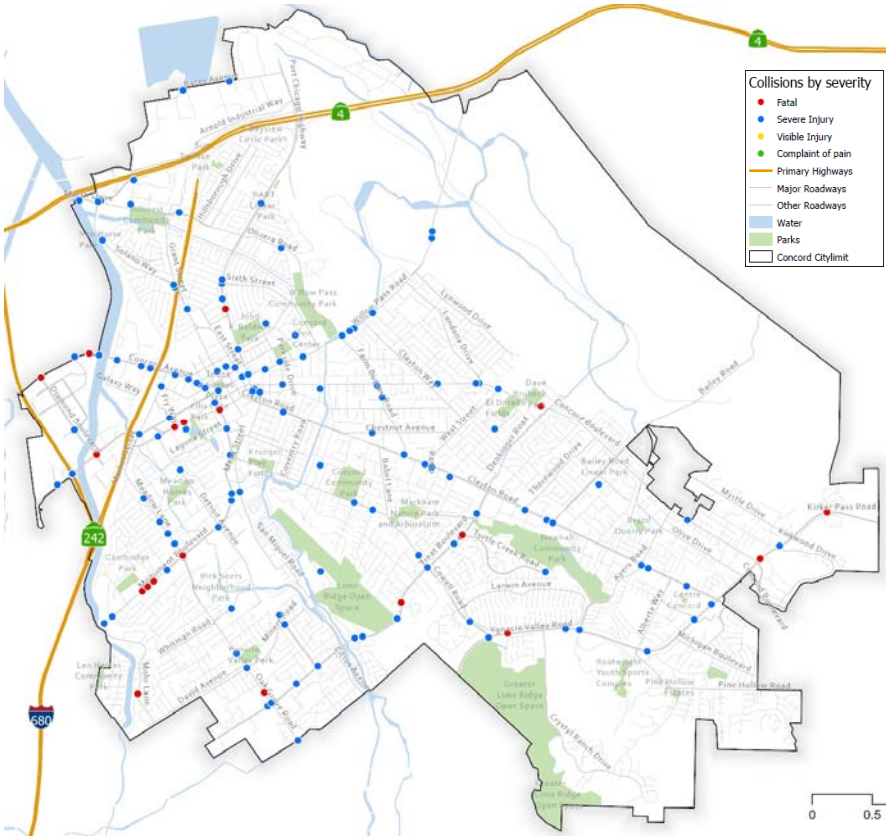
2025 shows decline
341 total collisions (∑11% from peak)

KSI remains elevated
34 KSI in 2025—same as 2021 despite overall decline

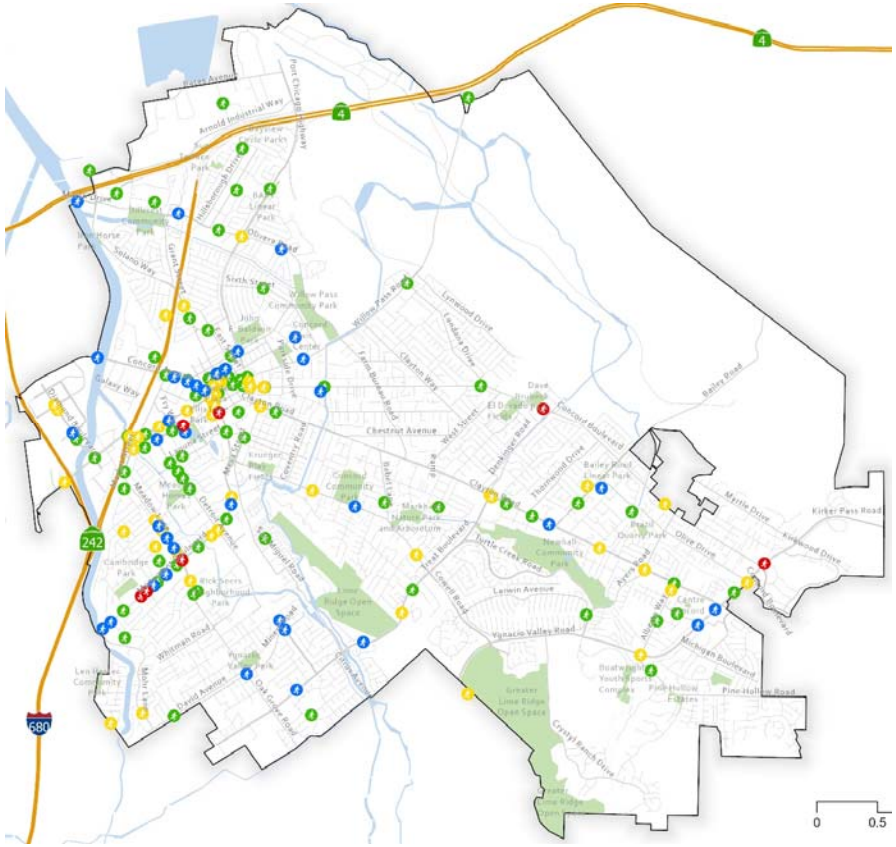
84% at intersections
1,518 of 1,804 collisions occurred at intersections

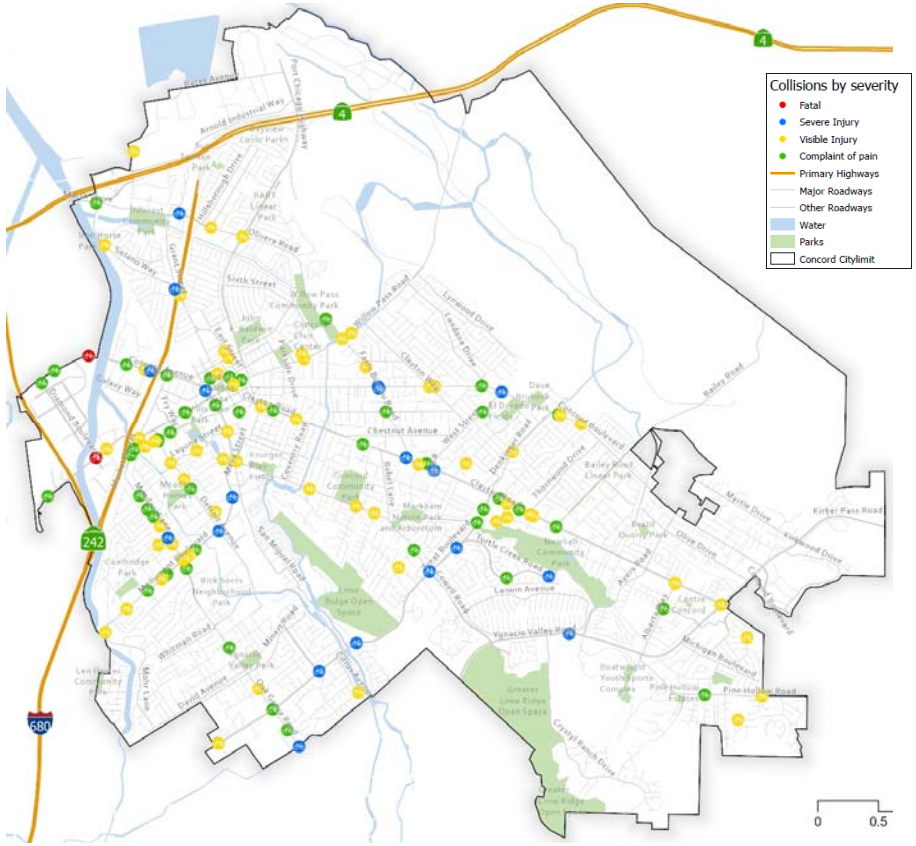
Where Crashes Are Happening





Pedestrian & Bicycle Crash Locations

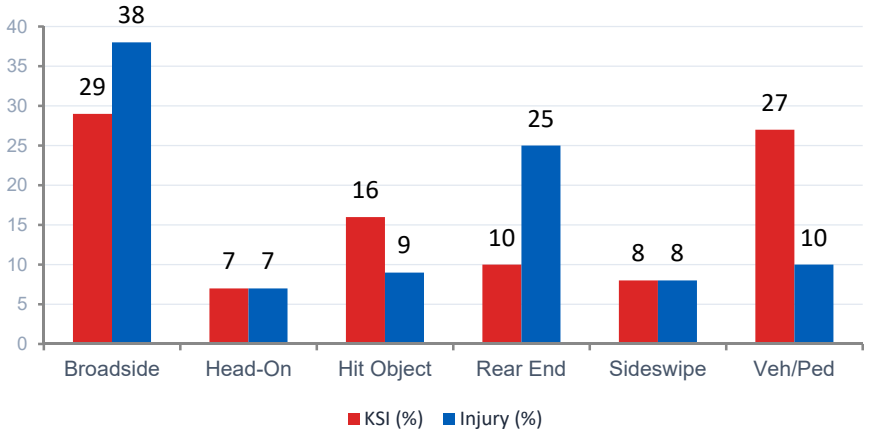




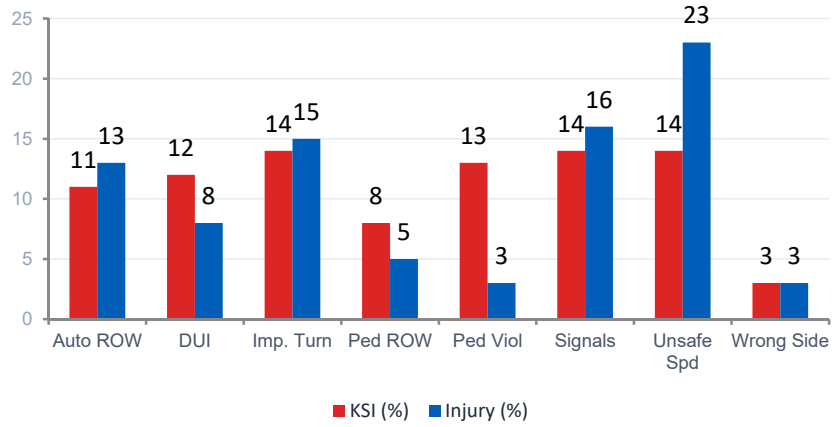
How & Why Crashes Are Happening

Understanding crash patterns helps target the right solutions

By Collision Type



By Violation Category



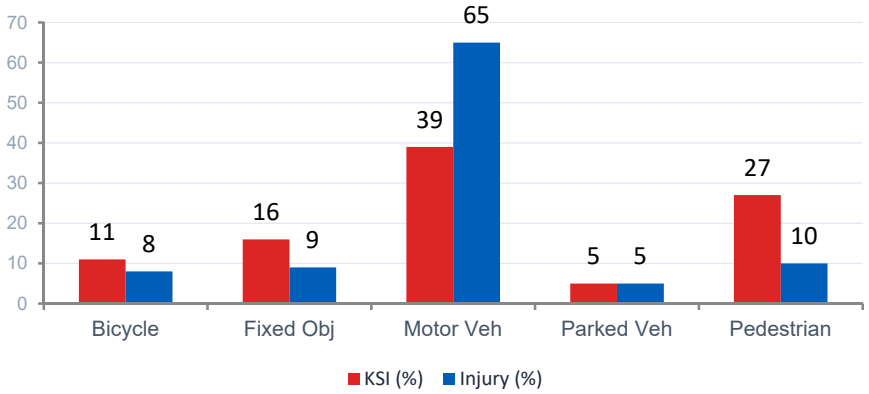
Key Finding:

Broadside and Vehicle/Pedestrian collisions accounted for 29% and 27% of KSI outcomes respectively, together responsible for over half of all deaths and severe injuries. Pedestrian/bicycle collisions are disproportionately severe relative to their overall share.

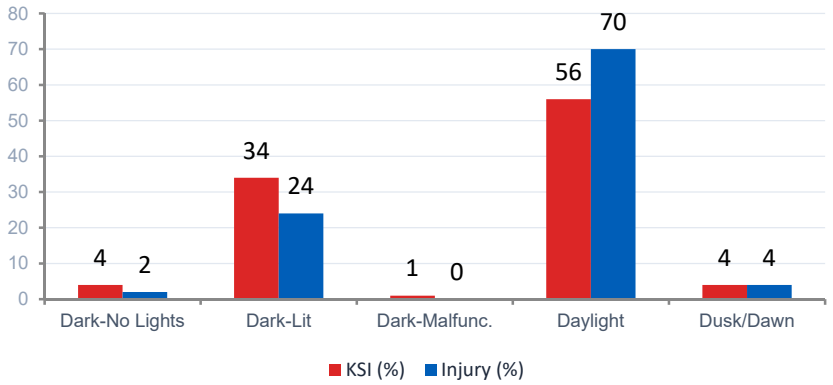
Vehicle Involvement & Lighting

What is involved and when are crashes most severe?

Motor Vehicle Involved With



Lighting Conditions



Top 5 KSI Corridors:
Willow Pass Rd (17 KSI), Clayton Rd (16), Monument Blvd (13), Treat Blvd (13), Concord Ave (10). Together: 69 of 164 citywide KSI = 42% of all severe crashes.

Lighting & Peak Hours:
38% of KSI occur in dark conditions. PM Peak (4–7 PM) is the single highest-risk period with 33 KSI, followed by evenings at 40 KSI.

Community Engagement

What are we doing?

- Webpage with Interactive Map to report your concern
- Web base survey
- Community Meetings

1. Meeting No. 1 – to receive feedback
2. Meeting No. 2 – to receive feedback
3. Meeting No. 3 – Present the findings and recommendations
4. Meeting with Bike Concord and Community Groups

Community Survey: What We've Heard So Far

523 responses · March 11–April 12, 2026 | All Modes of Travel

523
Responses Received

73%
Reported a Traffic Incident Experience

96%
Changed Travel Behavior Due to Safety

70%
Expressed Concern About School Zone Safety

WHO RESPONDED



TOP GEOGRAPHIC FOCUS

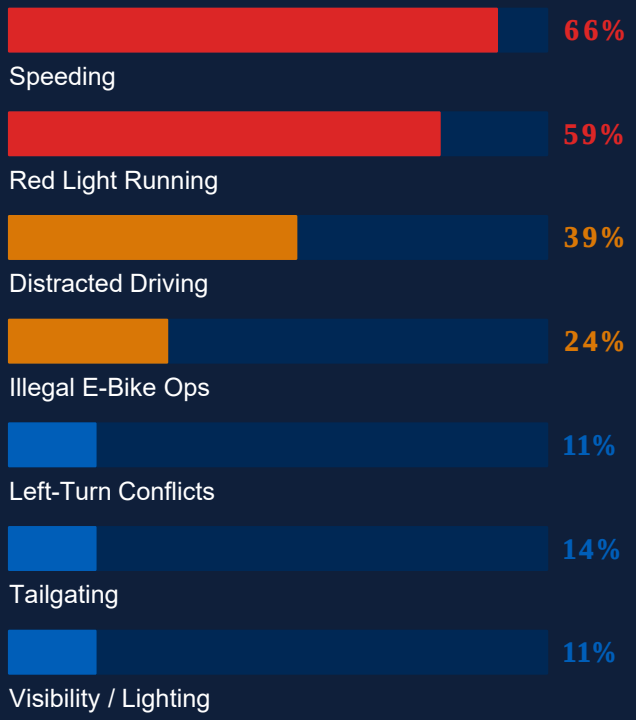


Top ZIP: 94521 (37%) | English: 91% | Disability: 11%

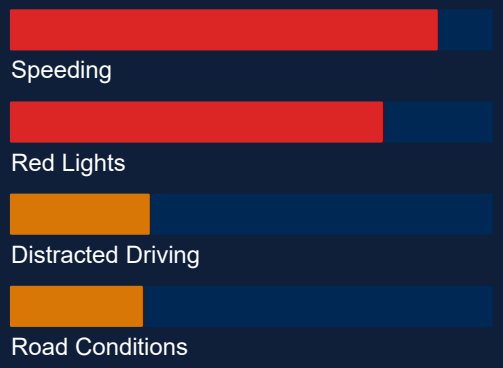
Top Safety Concerns — What Community is Telling Us

Multi-select responses · n=523

OVERALL SAFETY CONCERNS



DRIVERS



PEDESTRIANS



CYCLISTS

26% No Rules Followed

16% No Bike Lanes

School Zone Safety & Collision Experience

Two high-priority themes from community feedback

SCHOOL ZONE SAFETY

70% concerned about school-zone safety

Very Concerned	33%
Somewhat Concerned	37%
Not Concerned	16%

TOP SCHOOL ISSUES CITED

40%	Speeding near schools
40%	Pickup / dropoff backup
30%	Double-parking / sight lines
33%	Drivers failing to yield

PERSONAL COLLISION EXPERIENCE

73% have experienced a collision firsthand

31%	Near-miss personally
29%	Witnessed a collision
10%	Directly involved
27%	No experience

INSIGHT

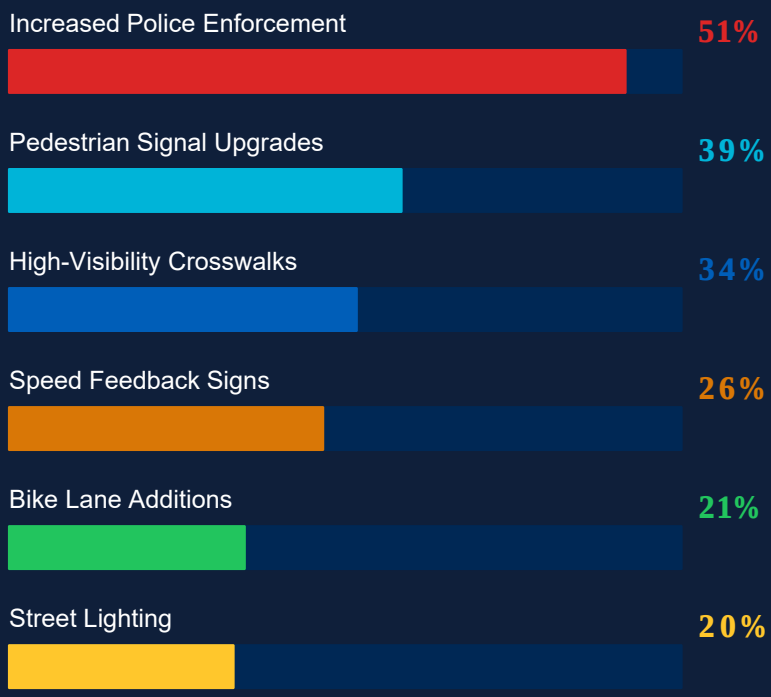
Afternoon (3–6 PM) and morning (6–9 AM) are the periods when the most respondents across all modes cited elevated concerns — 63% of drivers, 33% of pedestrians, and 26% of cyclists. These windows align with collision data peak hours.

What Community Wants — Priorities & Behavior Change

% of 523 respondents · March 11–April 12, 2026

REQUESTED IMPROVEMENTS

% of 523 respondents selecting each option



Enforcement ranks first in every geographic focus area. The one exception: residents

SCHOOL ZONE SAFETY CONCERNS

70% of respondents expressed concern about school-zone safety

40%	Speeding near schools
38%	Pickup/dropoff congestion
30%	Double-parking near schools
33%	Drivers failing to yield to children
19%	No dedicated bike route to school

E-bike concerns near schools were cited by 20% of respondents — the highest rate among any school-related bike issue. Physical separation of bike and pedestrian facilities near schools was a common open-text request.

Key Takeaways: What the Survey Is Telling Us

Key findings from 523 community survey responses · March 11–April 12, 2026

01 Enforcement Is the #1 Requested Fix

51% of respondents selected increased police enforcement as their top requested improvement — the highest of any option. This preference was consistent across all geographic focus areas, from crash intersections to school zones.

02 Speeding + Red Lights Dominate Every Mode

66% of respondents cited speeding and 60% cited red light running as top safety concerns. These two issues were cited consistently across all respondent groups — by drivers, pedestrians, cyclists, and every age group.

03 School Zone Safety Is a Shared Urgency

70% of respondents expressed concern about school-zone safety. Speeding near schools (40%), pickup/dropoff congestion (38%), and double-parking (30%) were the most frequently cited issues.

04 Sidewalks and Crosswalks Are Priority Infrastructure Gaps

18% of respondents cited missing sidewalks and 14% cited missing crossings. These gaps were noted across residential areas and near schools. Respondents with mobility limitations cited sidewalk gaps at a higher rate than those without.

05 Afternoon and Morning Are the Highest-Concern Time Windows

63% of respondents identified the afternoon (3–6 PM) as an elevated-concern period for drivers, and 58% identified the morning (6–9 AM). School hours were cited by 34%. These windows align with peak collision periods in the CSAP data.

06 Survey & Data Tell a Consistent Story

Community-cited locations align with collision data. The corridors most frequently mentioned in open-text responses — Clayton Road, Willow Pass Road, Treat Boulevard, and Ygnacio Valley Road — correspond directly with the corridors identified in the CSAP High Injury Network analysis.

Your Voice Shapes This Plan

Crash data tells us WHERE. Your experience tells us WHY streets feel unsafe.

Take the Survey

5 minutes, anonymous. Share which streets feel unsafe and your top safety priorities.

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Thank You — Your Input Matters

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City of Concord — Transportation Division

Survey: concordsafestreets.org/survey | Concerns: concordsafestreets.org

Comprehensive Safety Action Plan | 2026

COMPREHENSIVE SAFETY ACTION PLAN

Steering Committee Meeting #1

February 23, 2026 | 2:00 PM

City of Concord

Transportation Division

Prepared by TJKM

Agenda

Steering Committee Meeting #1

- Introduction
- Your Role as a Safety Champion
- What is a Comprehensive Safety Action Plan?
- Benefits of CSAP
- CSAP Process Overview
- Preliminary Collision Analysis Findings
- Next Steps
- Discussion & Questions

Steering Committee

Abhishek Parikh – City of Concord Public Works Department
Virendra Patel – City of Concord Public Works Department, Project Manager
Phalen Shwan – City of Concord
Jesse Crawford – City of Concord
Danielle Thomas – Contra Costa County Fire Protection Department
Pranjal Dixit – CCCTA
Kamla Parks – BART
Melanie Koslow – Mt. Diablo Unified School District

Your Role as a Safety Champion



Set Goals

Help set the goals and objectives of the CSAP



Share Issues

Tell us about traffic-safety-related issues you see



Community Voice

Tell us what you've heard from community members



Report Concerns

Use the survey and interactive map on the project webpage



Share Experience

Share your experience with recently implemented countermeasures



Spread the Word

Share project details and help increase community awareness



Monitor Progress

Help monitor the program and evaluate implemented strategies



Stay Informed

Stay up to date on the project and its milestones

What is a Comprehensive Safety Action Plan?

CSAP Definition

A data-driven roadmap that identifies high-risk locations and defines strategies to reduce fatal and serious injury crashes. It uses the Safe System approach to prioritize and implement effective roadway safety improvements.

Key Elements

1. Collision data analysis
2. High-risk location identification
3. Stakeholder engagement
4. Safety countermeasure development
5. Project prioritization
6. Implementation & funding plan
7. Monitoring & evaluation



Safe System Approach

No one should die or be seriously injured on our roadways. Safety is a shared responsibility across road design, vehicle safety, speeds, and user behavior.

Benefits of the CSAP

Data-Driven Priorities

Uses data to identify high-risk locations and prioritize improvements

Focused on Saving Lives

Reduces fatal and serious injury (KSI) crashes

Community Input

Incorporates community and stakeholder feedback

Systemic Approach

Addresses crash patterns across the entire network

Funding Readiness

Positions the City for state and federal safety grants

Measurable Outcomes

Establishes clear metrics for monitoring and evaluation

CSAP Process

Our structured approach to safety improvement

WE'RE HERE

1 — Data Collection

Compile 6 years of collision data (Jan 2020–Dec 2025)

2 — Collision Trend Analysis

Examine patterns, time periods, and contributing factors

3 — Identify High-Risk Network

Pinpoint corridors, intersections, and zones with highest risk

4 — Develop Safety Countermeasures

Propose engineering, enforcement, and education measures

5 — Integrate Inputs & Prioritize

Incorporate stakeholder feedback and prioritize projects

6 — Action Plan & Report

Document findings, strategies, and recommendations

Collision Analysis Findings

2020 – 2025 | Six-Year Analysis Period

2,108
Total Injury Collisions

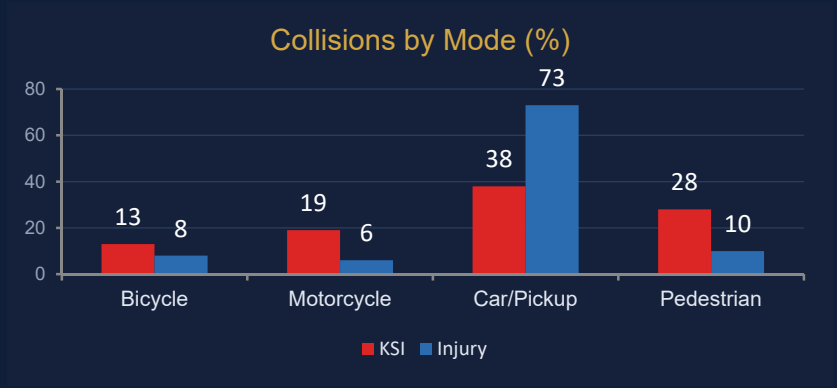
191
KSI Collisions

23
Fatal Collisions

168
Severe Injury Collisions

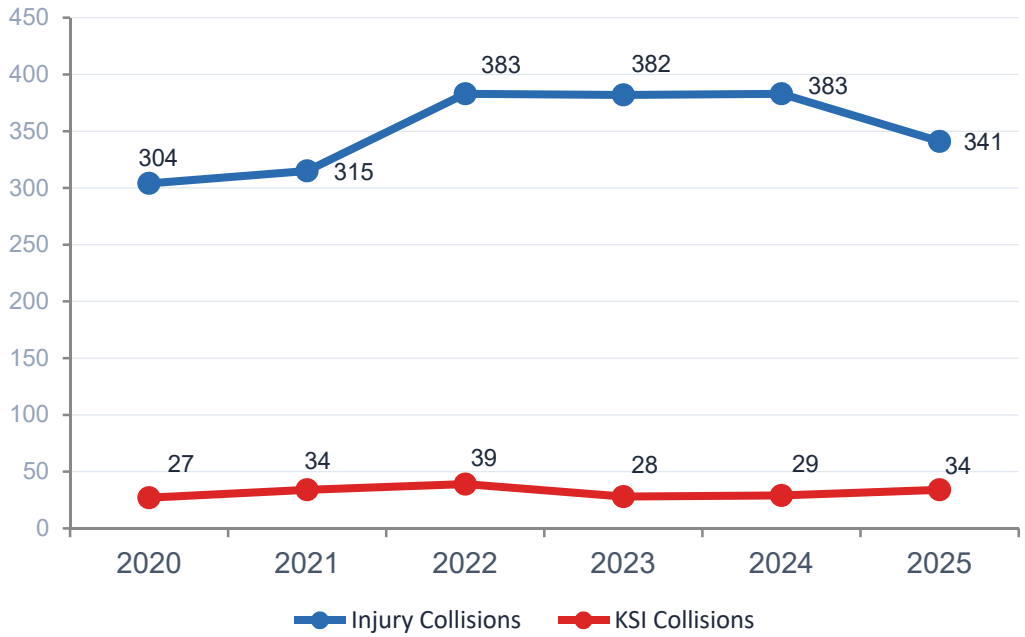
Collisions by Severity and Location

Severity	Segment	Intersection	Total
Fatal	4	19	**23**
Severe Injury	23	145	**168**
Visible Injury	93	416	**509**
Complaint of Pain	214	1,194	**1,408**



Yearly Collision Trends

2020 – 2025 | KSI and Total Injury Collisions



Key Observations

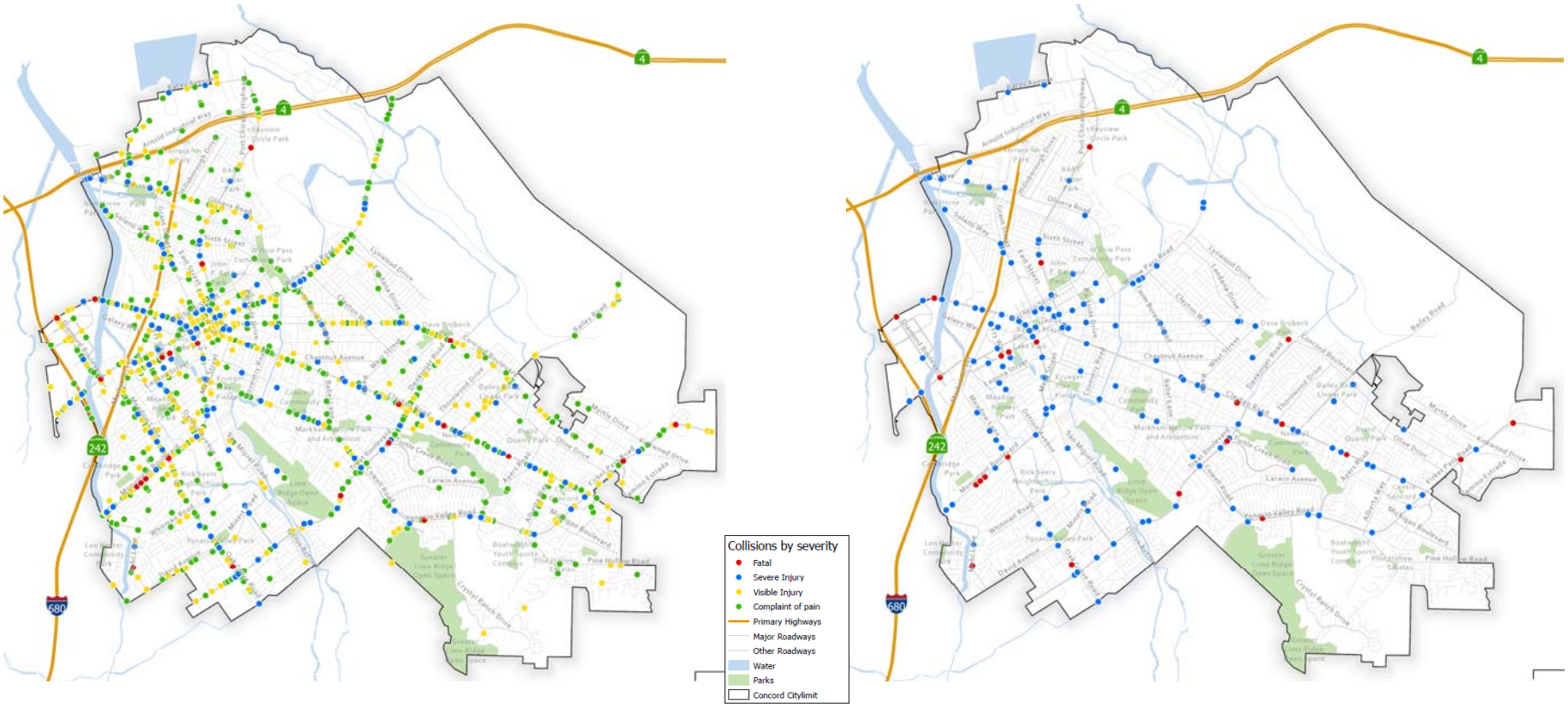
Peak year: 2022
383 total collisions and 39 KSI

2025 shows decline
341 total collisions (∑11% from peak)

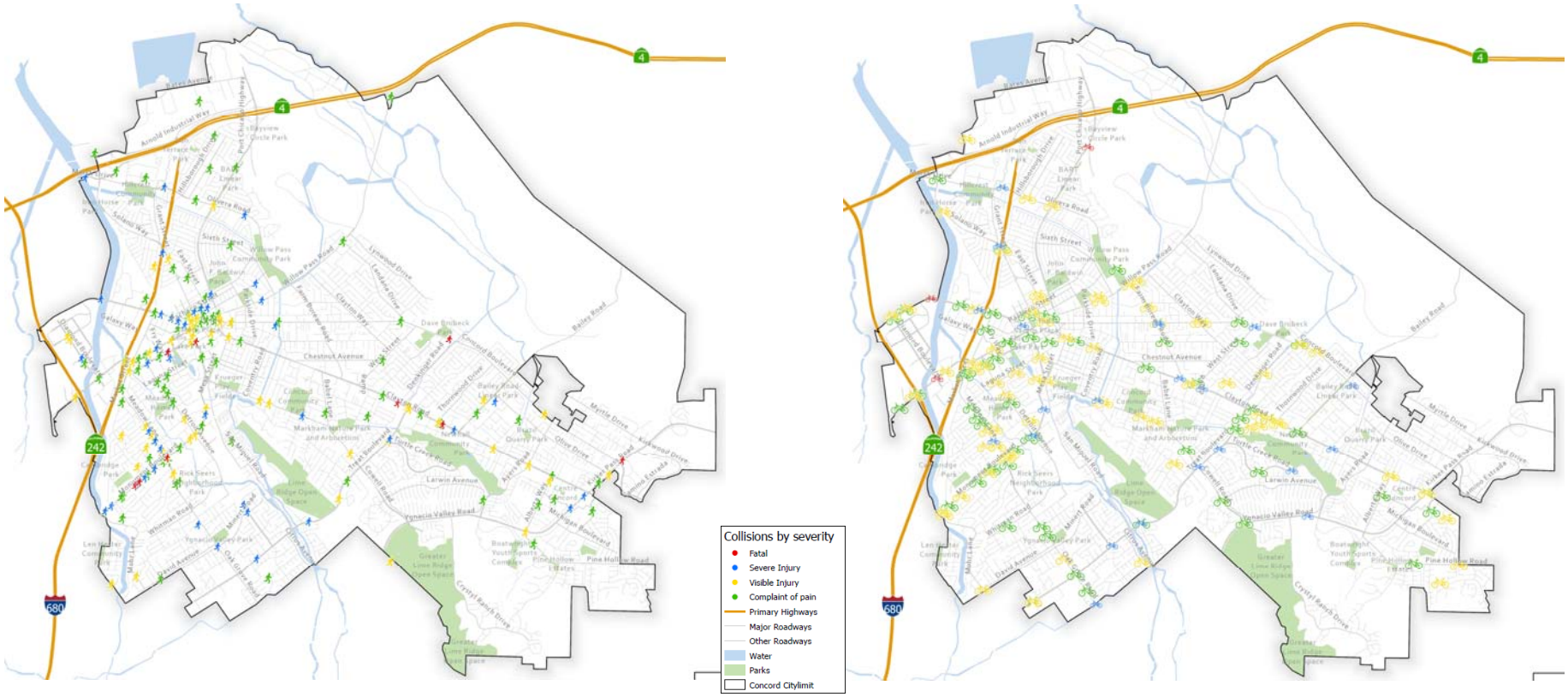
KSI remains elevated
34 KSI in 2025—same as 2021 despite overall decline

84% at intersections
1,774 of 2,108 collisions occurred at intersections

Injury and Collision Map



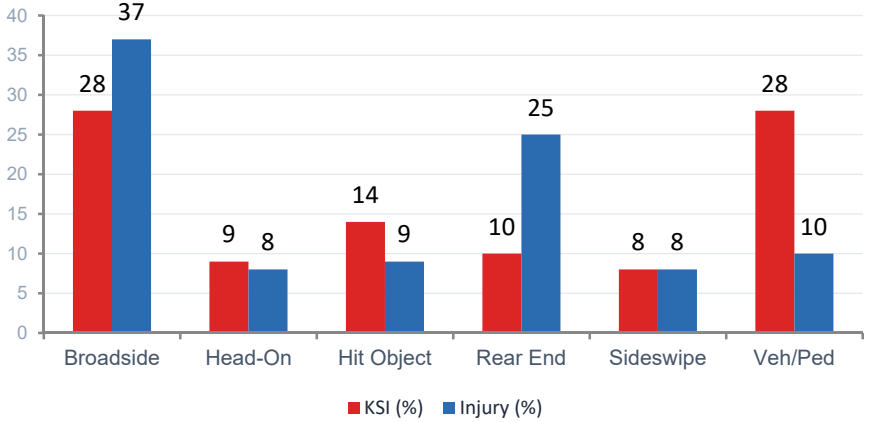
Pedestrian and Bicycle Collision Map



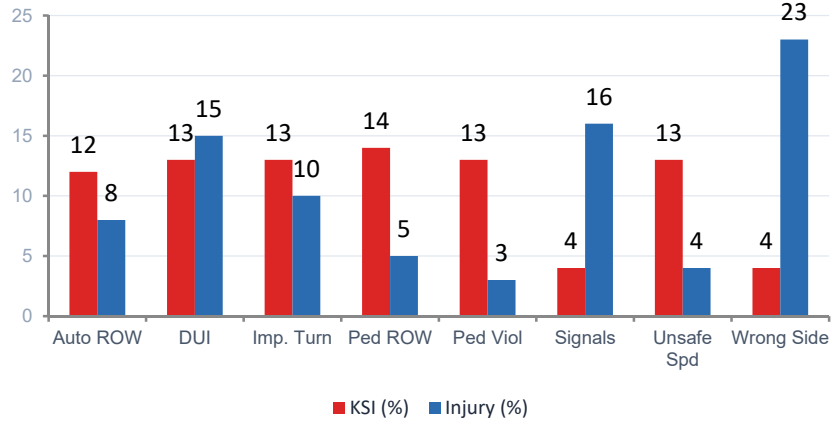
Collisions by Type & Violation

What types of crashes are occurring and why?

By Collision Type



By Violation Category



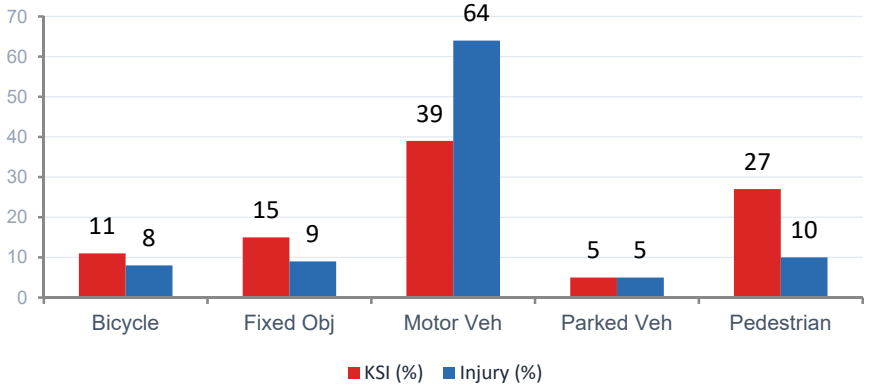
Key Finding:

Broadside and Vehicle/Pedestrian collisions each account for 28% of KSI outcomes together responsible for over half of all deaths and severe injuries. Pedestrian/bicycle collisions are disproportionately severe relative to their overall share.

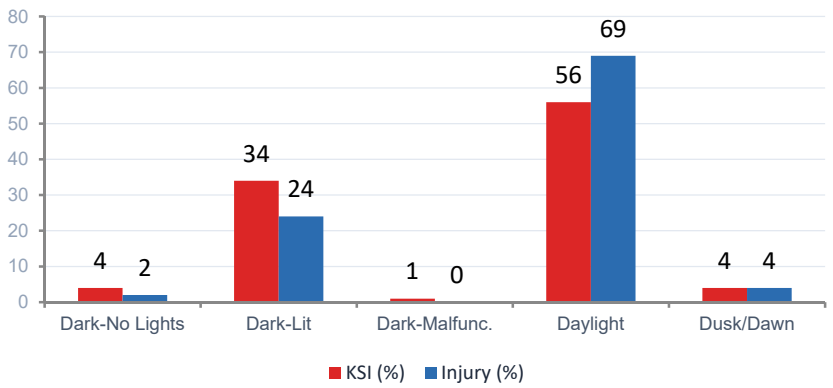
Vehicle Involvement & Lighting

What's involved and when are crashes most severe?

Motor Vehicle Involved With



Lighting Conditions



VRU Disproportionality:
Pedestrians and bicycles account for 38% of KSI but only 18% of all injury collisions, a 2.1x disproportionality ratio.

Darkness Severity Spike:
Dark conditions account for 39% of KSI but only 26% of injury collisions. KSI rate is significantly elevated after dark, especially for pedestrians.

Next Steps

1

High-Risk Location Identification

Pinpoint specific corridors, intersections, and zones with the highest collision risk for targeted analysis.

2

Safety Countermeasures & Strategies

Develop engineering, enforcement, and education measures tailored to the identified collision patterns.

3

Project Prioritization

Rank safety improvements by impact, feasibility, and cost-effectiveness to maximize safety investment returns.

4

Safety Action Plan

Compile findings into a comprehensive, adopted plan with timelines, responsibilities, and funding strategies.

Discussion & Questions

Thank you for your partnership in making Concord's streets safer.

City of Concord — Transportation Division
Virendra Patel

Prepared by TJKM Transportation Consultants

Comprehensive Safety Action Plan | 2026

COMPREHENSIVE SAFETY ACTION PLAN

Steering Committee Meeting #2

April 14, 2026 | 2:00 PM

City of Concord

Transportation Division

Prepared by TJKM

Agenda

Steering Committee Meeting #2

- Introduction
- Your Role as a Safety Champion
- CSAP Process Overview
- Collision Analysis Findings
- Community Survey Findings
- Next Steps & Discussion

Steering Committee

Abhishek Parikh – City of Concord Public Works Department
Virendra Patel – City of Concord Public Works Department, Project Manager
Phalen Shwan – City of Concord
Jesse Crawford – City of Concord
Danielle Thomas – Contra Costa County Fire Protection Department
Pranjal Dixit – CCCTA
Kamla Parks – BART
Melanie Koslow – Mt. Diablo Unified School District
Cristian Lepe – Mt. Diablo Unified School District

Your Role as a Safety Champion

Set Goals

Help set the goals and objectives of the CSAP

Share Issues

Tell us about traffic-safety-related issues you see

Community Voice

Tell us what you've heard from community members

Report Concerns

Use the survey and interactive map on the project webpage

Share Experience

Share your experience with recently implemented countermeasures

Spread the Word

Share project details and help increase community awareness

Monitor Progress

Help monitor the program and evaluate implemented strategies

Stay Informed

Stay up to date on the project and its milestones

CSAP Process

Our structured approach to safety improvement

WE'RE HERE

1

Data Collection

Compile 5 years of collision data (Jan 2021 –Dec 2025)

2

Collision Trend Analysis

Examine patterns, time periods, and contributing factors

3

Identify High-Risk Network

Pinpoint corridors, intersections, and zones with highest risk

4

Develop Safety Countermeasures

Propose engineering, enforcement, and education measures

5

Integrate Inputs & Prioritize

Incorporate stakeholder feedback and prioritize projects

6

Action Plan & Report

Document findings, strategies, and recommendations

5-Year Collision Snapshot

2021 – 2025 | City of Concord

1,804	164	19	145
Total Collisions	KSI Collisions	Fatal Collisions	Severe Injuries

Key Highlights

Severity	Segment	Intersection	Total
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Complaint of Pain	185	1,028	**1,213**
Total	**286**	**1,518**	**1,804**

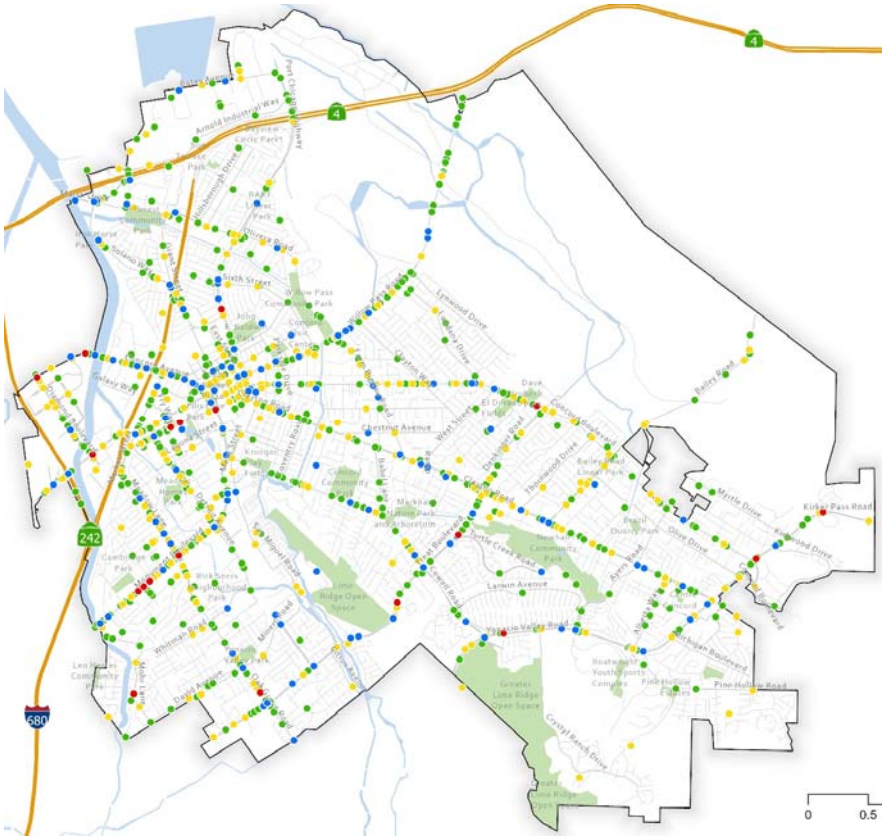
Key Highlights

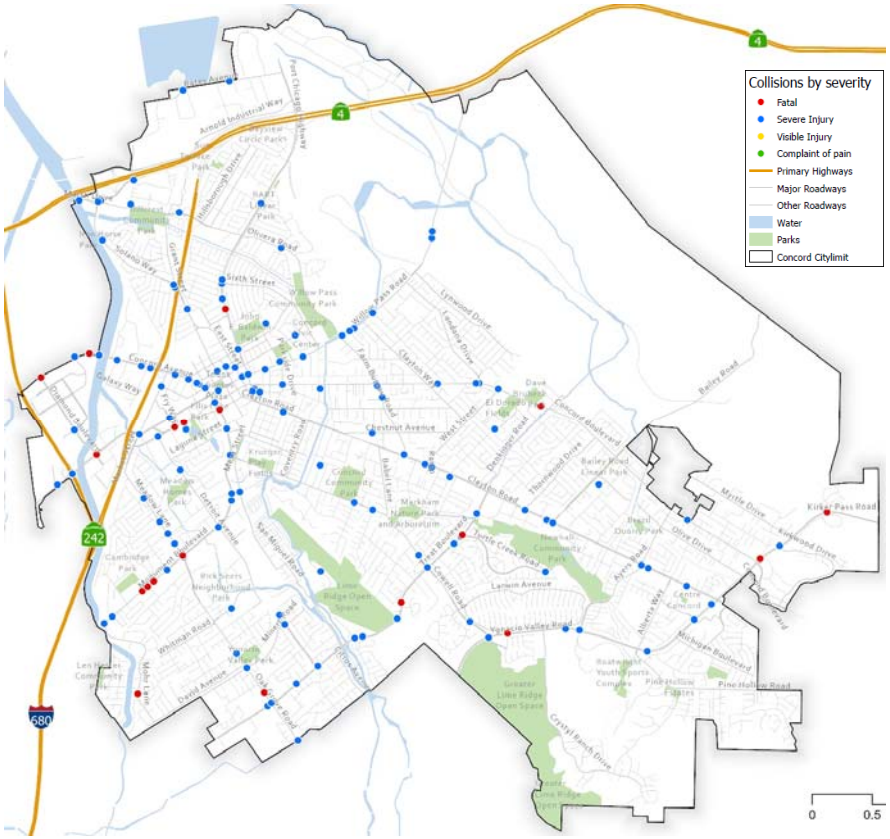
87% of KSI at intersections
142 of 164 KSI collisions occurred at intersection locations

60% of KSI: Peds, Bikes, Motos
Vulnerable road users far overrepresented in severe outcomes

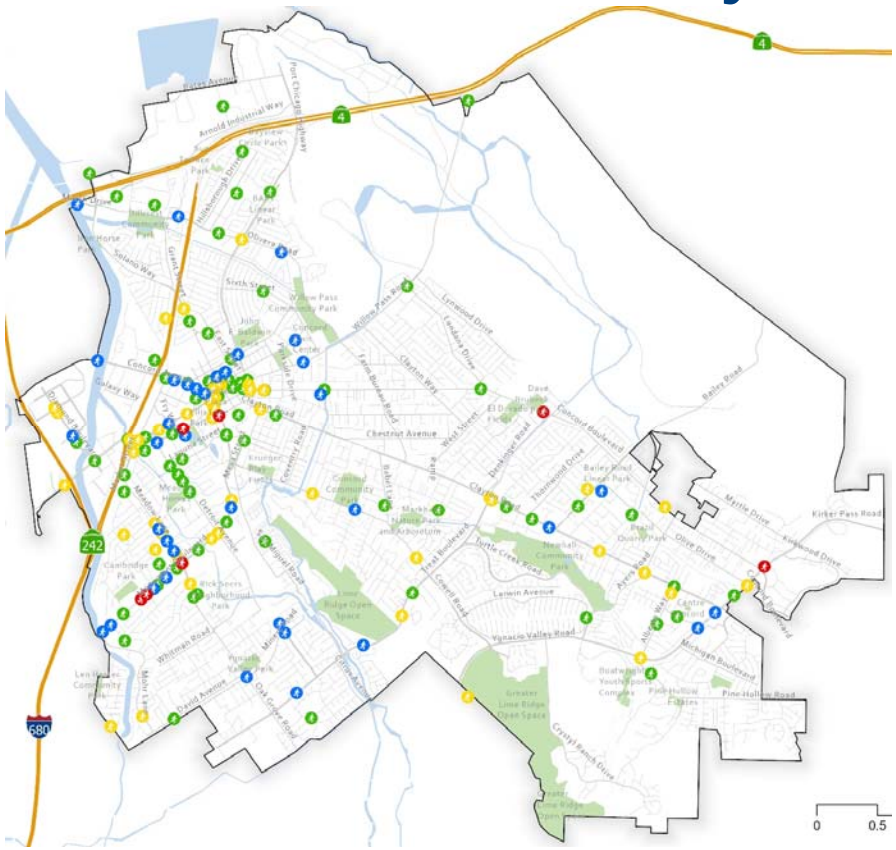
12% of KSI involve alcohol
20 of 164 KSI collisions were alcohol-related

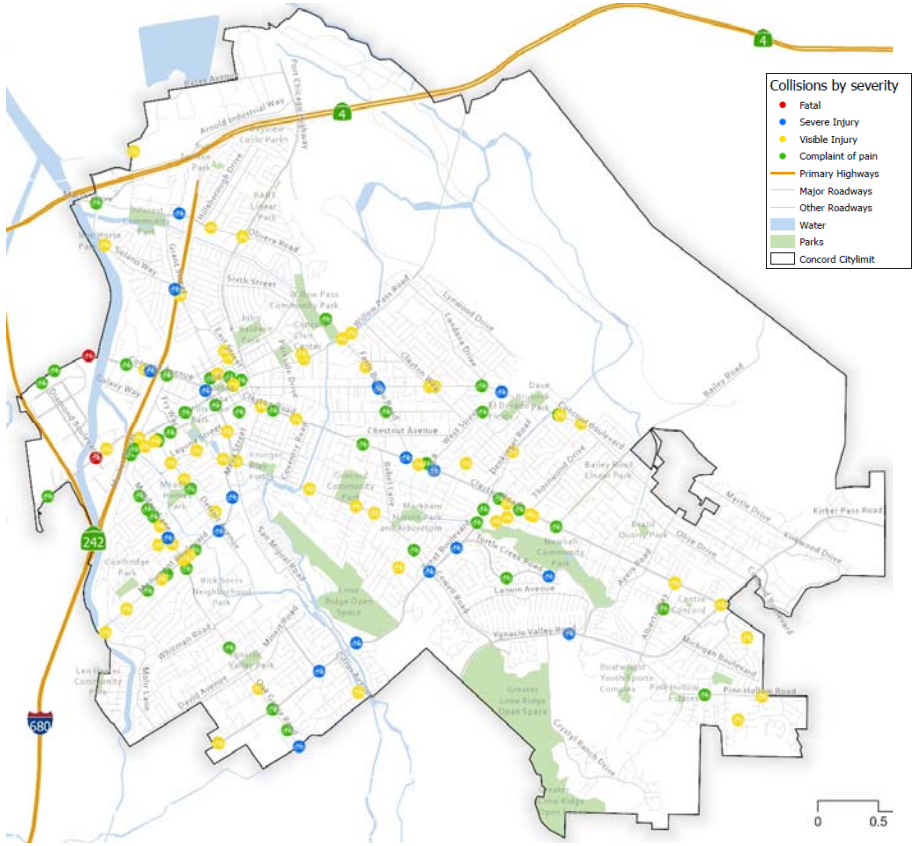
Where Crashes Are Happening





Pedestrian & Bicycle Crash Locations

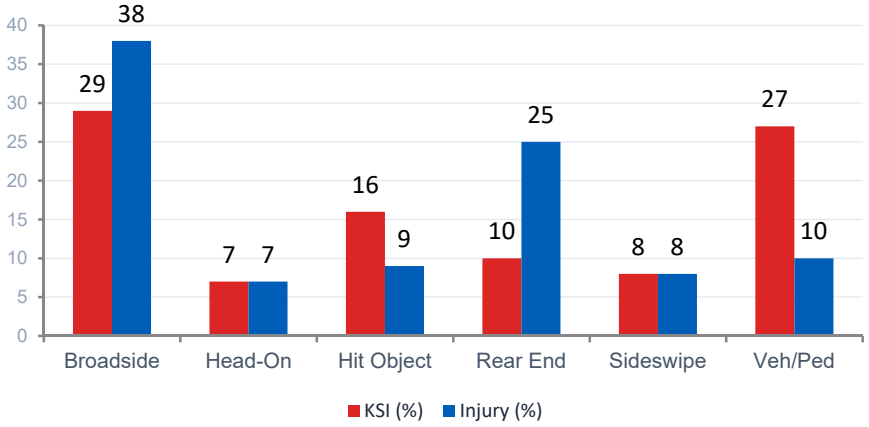




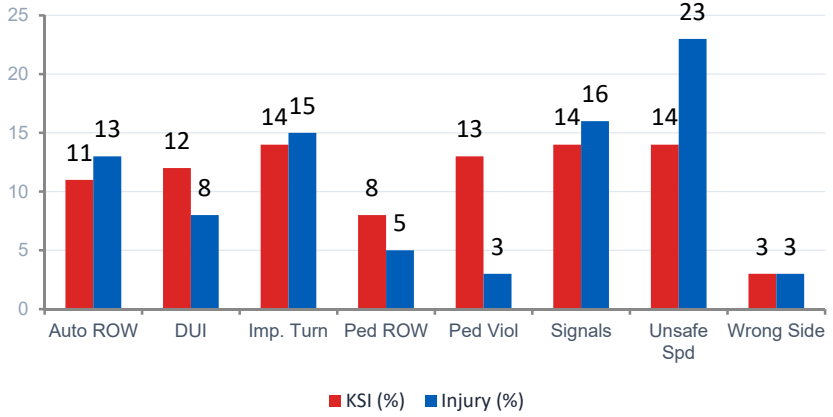
How & Why Crashes Are Happening

Understanding crash patterns helps target the right solutions

By Collision Type



By Violation Category



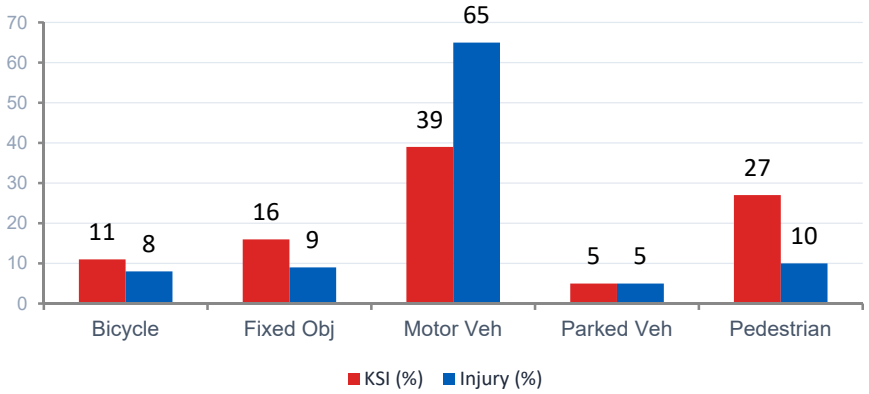
Key Finding:

Broadside and Vehicle/Pedestrian collisions accounted for 29% and 27% of KSI outcomes respectively, together responsible for over half of all deaths and severe injuries. Pedestrian/bicycle collisions are disproportionately severe relative to their overall share.

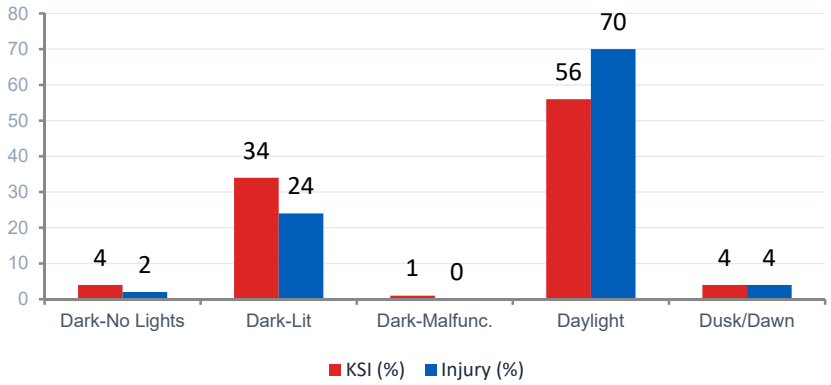
Vehicle Involvement & Lighting

What is involved and when are crashes most severe?

Motor Vehicle Involved With



Lighting Conditions



Top 5 KSI Corridors:
Willow Pass Rd (17 KSI), Clayton Rd (16), Monument Blvd (13), Treat Blvd (13), Concord Ave (12). Together: 71 of 164 citywide KSI = 43% of all severe crashes.

Lighting & Peak Hours:
39% of KSI occur in dark conditions (all categories). PM Peak (2–5 PM) is the single highest-risk window with 36 KSI, followed by the evening hours (6–11 PM) with 40 KSI.

What Concord Residents Are Telling Us

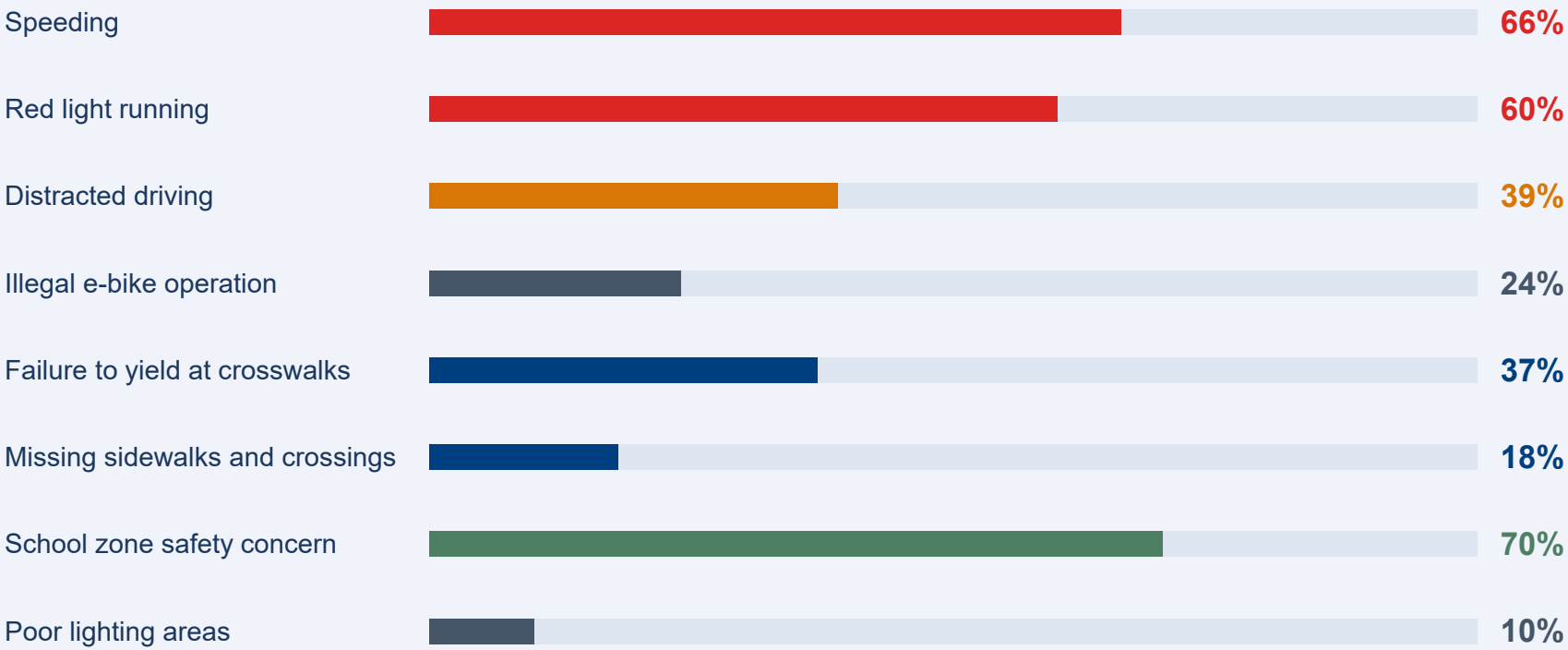
523 residents shared their safety concerns, priorities, and experiences across all travel modes

523	73%	70%	51%
Responses	Reported an Incident	School Zone Concern	Enforcement Requested

City of Concord CSAP Community Safety Survey | March 11 - April 12, 2026 | n = 523

Top Safety Concerns Reported by Community Residents

Multi-select question — 523 respondents — March 11 - April 12, 2026



Focus areas: crash-prone intersections (54%) · commercial corridors (36%) · residential streets (34%) · schools and parks (31%)

Survey vs. Collision Data: Where They Agree

Three community concerns directly confirmed by 5 years of collision records (2021-2025)

MATCH

Speeding and signal violations lead both survey and crash data

66% of respondents cite speeding; 60% cite red light running — the two top concerns across all age groups and modes.

These exactly match the top 2 Primary Collision Factors in KSI records: Unsafe Speed and Signals/Signs violations.

Together they account for 28% of all KSI events over 5 years and appear consistently on every top HIN corridor.

MATCH

Community-cited corridors match the High Injury Network exactly

Clayton Rd, Willow Pass Rd, Treat Blvd, Monument Blvd, and Ygnacio Valley Rd cited most in open-text responses.

Each is a top-5 KSI corridor in the CSAP HIN analysis — Clayton Rd (#1 with 16 KSI, Willow Pass #3 with 17 KSI.

Community-perceived risk is geographically aligned with measured crash concentration — a strong validation of this CSAP.

MATCH

PM peak is the highest-concern and highest-KSI time window

63% of respondents identified the afternoon (3-6 PM) as the period of greatest concern for drivers across all modes.

Collision data confirms: PM peak (4-7 PM) accounts for 36 KSI events — the single highest window in the 5-year record.

School hours (34%) and morning commute (58%) are also cited — aligning with Profile 3 school-zone collision patterns.

Survey vs. Collision Data: What Is New

Three community signals not visible in historical crash records — emerging priorities for the CSAP

NEW

E-bike safety: an emerging concern not yet in crash data

24% of all respondents cited illegal or unsafe e-bike operation — the 4th highest concern overall.

Historical SWITRS data does not disaggregate e-bikes as a distinct collision category, so this risk is invisible in the record.

Open-text responses specifically cite sidewalk riding near schools and park trails — a forward-looking planning signal.

DIVERGE

Late-night danger is severely underrepresented in survey perceptions

Only 14% of driver respondents flagged late night (10 PM+) as a concern — the lowest of any time window surveyed.

63% of all FATAL collisions occur in dark conditions; nighttime KSI rate = 13% vs. citywide 9.1% average.

Gap likely explained by fewer residents traveling at night — the community underestimates one of the highest-risk scenarios.

NEW

School zone operational issues absent from collision records

70% expressed school-zone concern; pickup congestion (38%) and double-parking (30%) were cited as distinct problems.

These are operational issues — blocking sightlines, impeding pedestrian flow — not captured in SWITRS crash data at all.

The survey is the only data source revealing these conditions, identifying the cause of risk before crashes occur.

School Zone Safety and Time-of-Day: Operational Priorities

Community-identified patterns that inform engineering, enforcement, and operational planning

SCHOOL ZONE SAFETY

70% of residents expressed concern

33% Very Concerned	37% Somewhat	16% Not

DRIVER ISSUES

40% Speeding near schools

38% Pickup / drop-off congestion

30% Double-parking / sight lines blocked

PEDESTRIAN + BIKE

33% Drivers failing to yield near crossings

21% Child pedestrian habits near schools

19% No dedicated bike route to school

TIME-OF-DAY CONCERNS

All modes of travel | n = 523 respondents

Time Period	Drivers	Peds	Cyclists
Afternoon (3-6 PM)	63%	33%	26%
Morning (6-9 AM)	58%	29%	19%
School hours	34%	27%	17%
Midday (10AM-2PM)	27%	19%	13%
Evening (6-10 PM)	24%	21%	13%
Weekends	23%	15%	13%
Late night (10PM+)	14%	9%	7%

KEY INSIGHT: Afternoon and morning are the only windows where all three modes simultaneously report elevated concern — directly aligning with PM peak KSI concentration in collision data.

High Injury Network — Methodology & Scoring

What is the High Injury Network?

The HIN identifies streets and intersections where fatal and severe injury (KSI) crashes are most concentrated.

FHWA Safe System Weighted Scoring

1 **KSI Collisions** Weight: 30
2 **Pedestrian Collisions** Weight: 20
3 **Bicycle Collisions** Weight: 20
4 **Injury Collisions** Weight: 20
5 **Intersection Collisions** Weight: 10

Score = (KSI/Total KSI ×30) + (Injury/Total Injury ×20) + (Intersection/Total Intersection ×10) + (Ped/Total Ped ×20) + (Bicycle/Total Bicycle ×20)

Corridor Prioritization

- Corridors are ranked by their final Safe System Score.
- Higher scores indicate a greater concentration of severe crashes and vulnerable road user collisions.

High-Injury Intersection Ranking

- Intersections are ranked by total **injury collisions** and **KSI collisions** recorded at each location.

Top Priority Corridor

Clayton Road

SR-242 to Washington Boulevard

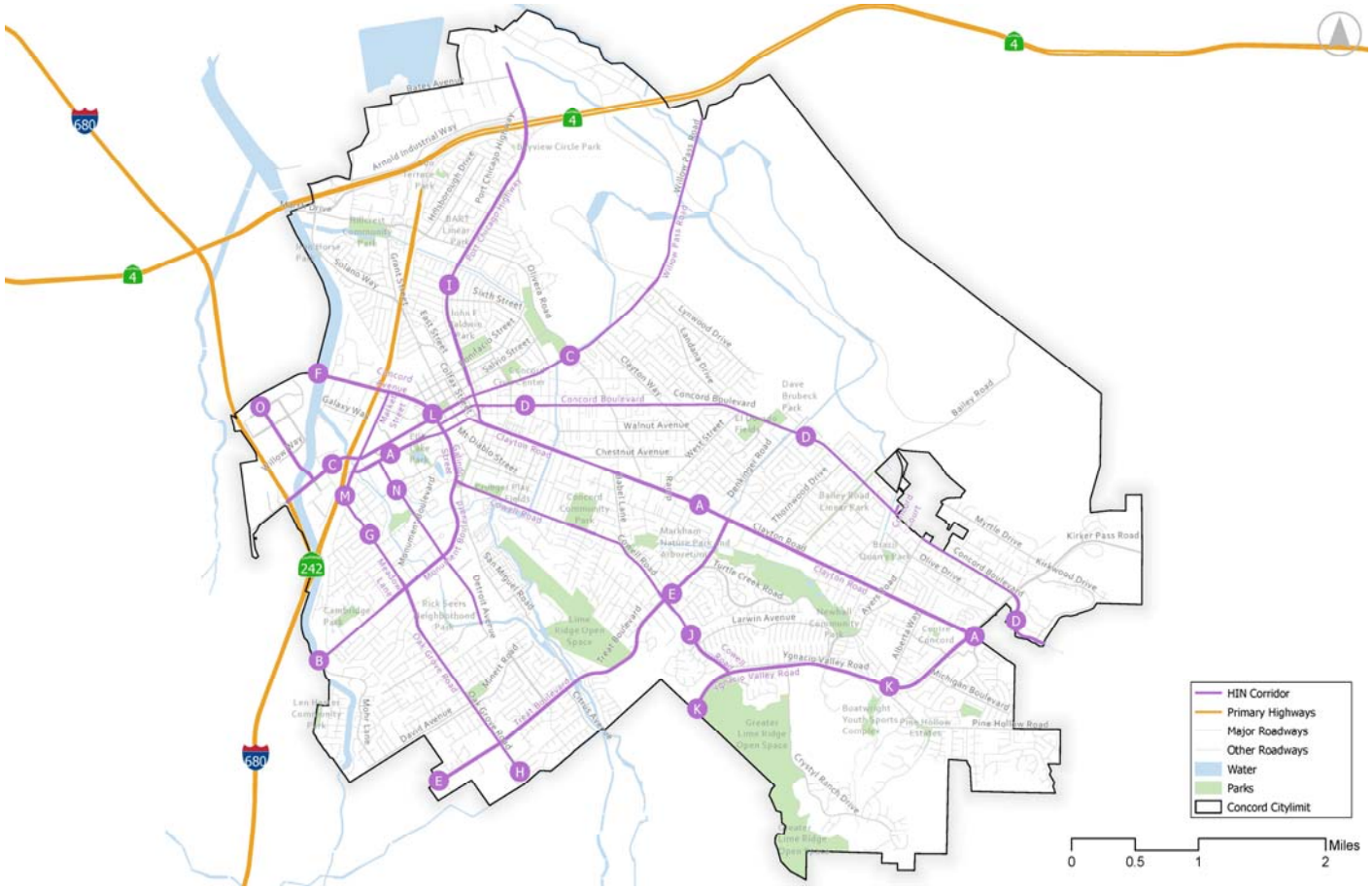
11.36 Safe System Score

16 KSI • 224 Injury Collisions
18 Pedestrian • 20 Bicycle Collisions

High Injury Network - Corridors

Rank	Corridor	KSI	Injury	Collisions occurred at Intersections	Pedestrian Collisions	Bicycle Collisions	Safe System Score
A	Clayton Rd: SR-242 to Washington Blvd	16	224	208	18	20	**11.36**
B	Monument Blvd: Cowell Rd to Mohr Ln	13	144	114	24	14	**9.13**
C	Willow Pass Rd: I-680 to Avila Rd	17	181	153	16	9	**9.02**
D	Concord Blvd: Galindo St to Yolanda Cir	10	159	150	9	10	**6.87**
E	Treat Blvd: Argonne Dr to Clayton Rd	13	78	71	10	4	**5.30**
F	Concord Ave: John Glenn Dr to Salvio St	12	78	67	5	7	**4.97**
G	Meadow Ln: Market St to Monument Blvd	6	51	43	9	8	**3.97**
H	Oak Grove Rd: Monument Blvd to Canal Trail	7	48	40	3	6	**3.20**
I	Port Chicago Hwy: Clayton Rd to Bates Ave	8	66	52	4	1	**3.09**
J	Cowell Rd: Monument Blvd to Ygnacio Valley Rd	5	58	52	2	6	**2.92**
K	Ygnacio Valley Rd: Clayton Rd to Cowell Rd	7	55	42	3	2	**2.75**
L	Galindo St: Salvio St to Cowell Rd	2	60	60	5	3	**2.36**
M	Market St: Concord Ave to Meadow Ln	1	36	30	4	5	**1.87**
N	Detroit Ave: Clayton Rd to Whitman Rd	1	40	27	6	2	**1.70**
O	Diamond Blvd: Willow Pass Rd to Concord Ave	2	46	30	4	1	**1.63**

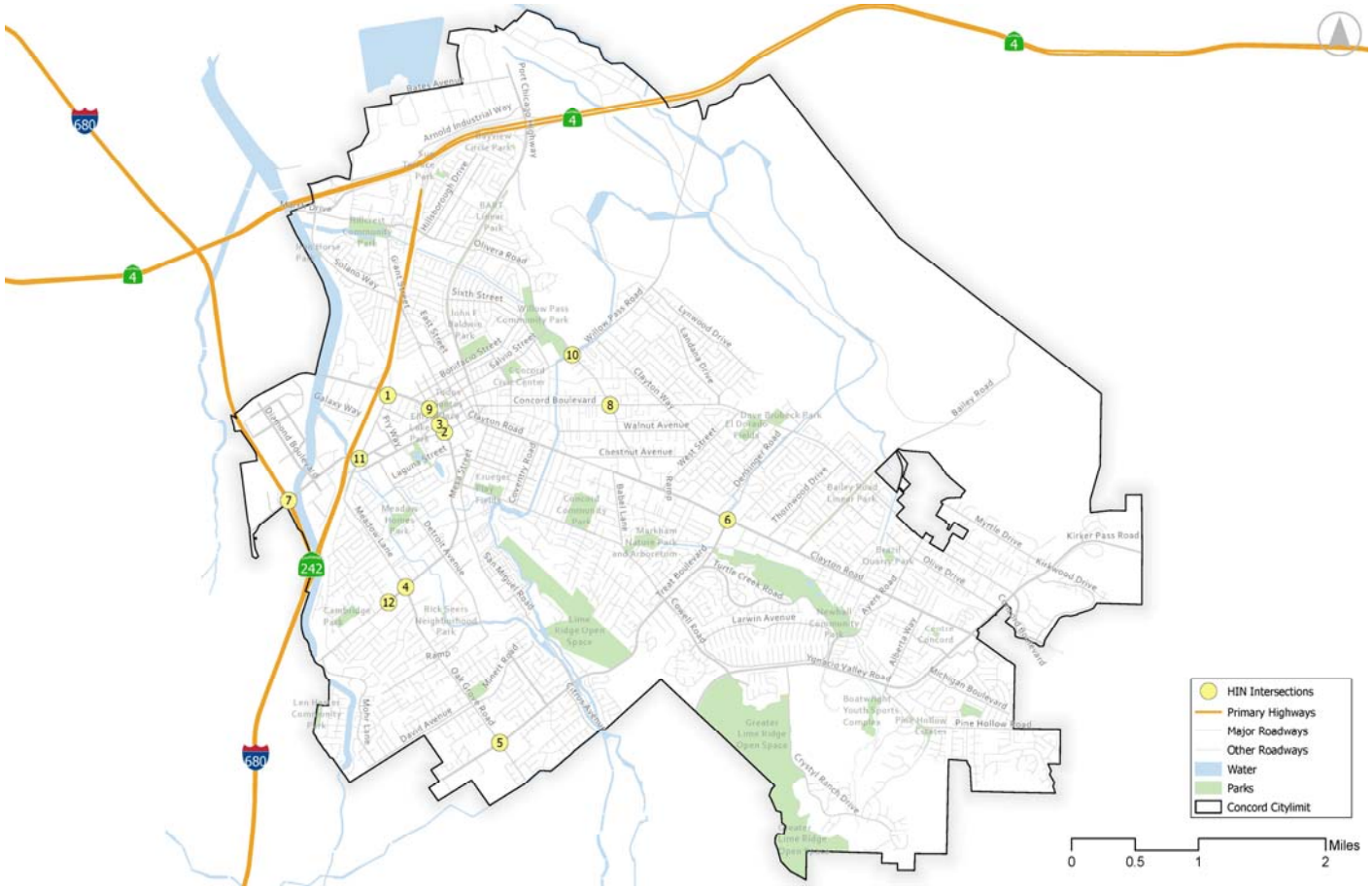
High Injury Network – Corridors



High Injury Network - Intersections

Rank	Intersection	KSI	Injury	Pedestrian Collisions	Bicycle Collisions
1	Market Street & Concord Avenue	0	32	1	1
2	Galindo Street & Clayton Road	1	27	2	0
3	Galindo Street & Concord Boulevard	1	26	3	2
4	Monument Boulevard & Meadow Lane	4	23	4	4
5	Treat Boulevard & Oak Grove Road	2	21	0	1
6	Clayton Road & Treat Boulevard	0	20	2	0
7	Willow Pass Road & I-680	1	16	1	0
8	Concord Boulevard & Farm Bureau Road	2	15	0	3
9	Concord Avenue & Salvio Street	3	13	3	1
10	Willow Pass Road & Farm Bureau Road	1	13	0	2
11	Willow Pass Road & Market Street	1	13	1	1
12	Monument Boulevard & Virginia Lane	1	13	4	2

High Injury Network - Intersections



Collision Profiles Summary | 10 profiles | 2021–2025 | City Roads Only

#	Profile Name	Injuries	KSI	KSI Rate
1	Improve Safety at Intersections	1,518	142	9%
2	Reduce Broadside Collisions	687	47	7%
3	Address Collisions near Schools	667	57	9%
4	Reduce Nighttime Collisions	544	71	13%
5	Reduce Rear-End Collisions	450	16	4%
6	Reduce Unsafe Speed Collisions	418	23	6%
7	Address Traffic Signs & Signal Violations	292	23	8%
8	Improve Pedestrian Safety	190	46	24%
9	Improve Bicycle Safety	149	21	14%
10	Reduce DUI-Related Collisions	139	20	14%

Profile 8 — Improve Pedestrian Safety | 190 Injury Collisions | 46 KSI | KSI Rate: 24%

190
Injury Collisions

46
KSI Collisions

24%
KSI Severity Rate

KEY INSIGHTS

1. 46 KSI collisions — 24% severity rate, nearly 3× the citywide 9% average
2. 181 of 190 collisions (95%) involve a vehicle striking a pedestrian
3. 86% at intersections — pedestrian crossing design is the primary intervention target

86% at intersections

32% at night

TOP COLLISION TYPES

Vehicle/Pedestrian — **181** (95%)

TOP VIOLATION CATEGORIES

Ped Right-of-Way Violation — **75** (39%)

Pedestrian Violations — **48** (25%)

Profile 9 — Improve Bicycle Safety | 149 Injury Collisions | 21 KSI | KSI Rate: 14%

149
Injury Collisions

21
KSI Collisions

14%
KSI Severity Rate

KEY INSIGHTS

1. 21 KSI collisions — 14% severity rate, above the citywide 9% average
2. 133 of 149 collisions (89%) at intersections — bicycle infrastructure at crossings is key
3. 33 collisions (22%) occurred at night — lighting and visibility are critical factors

89% at intersections

22% at night

TOP COLLISION TYPES

Broadside — **89** (60%)

Sideswipe — **22** (15%)

TOP VIOLATION CATEGORIES

Wrong Side of Road — **52** (35%)

Signal Violations — **30** (20%)

Profile 10 — Reduce DUI-Related Collisions | 139 Injury Collisions | 20 KSI | KSI Rate: 14%

139	20	14%
Injury Collisions	KSI Collisions	KSI Severity Rate

KEY INSIGHTS

1. 20 KSI collisions — 14% severity rate, above the citywide 9% average
2. 107 of 139 collisions (77%) at night — highest nighttime share of all profiles
3. 81% at intersections — DUI enforcement and intersection lighting are primary countermeasures

77% at intersections **81%** at night

TOP COLLISION TYPES

Hit Object — **48** (35%)

Rear-End — **35** (25%)

TOP VIOLATION CATEGORIES

DUI — **139** (100%)

Unsafe Speed — **42** (30%)

Next Steps

1

Safety Countermeasures & Strategies

Develop engineering, enforcement, and education measures tailored to the identified collision patterns.

2

Project Prioritization

Rank safety improvements by impact, feasibility, and cost-effectiveness — incorporating community-identified priorities from 523 survey responses.

3

Safety Action Plan

Compile collision data findings and community survey input into a comprehensive, adopted plan with timelines, responsibilities, and funding strategies.

APPENDIX

Safe Street Toolkit

Countermeasures Aligned to Concord Collision Profiles

Profile 4 — Reduce Nighttime Collisions | 544 Injury Collisions | 71 KSI | KSI Rate: 13%

RECOMMENDED COUNTERMEASURES

Add / Upgrade Intersection Lighting

Crash Type: Nighttime CRF: 40% **Cost: $$···**

13% KSI severity rate — 44% above citywide average. 84% at intersections. New LED poles + foundations at top dark-condition KSI locations: $60K-$120K per intersection.

Pushbutton-Activated Pedestrian Lighting (PPLS)

Crash Type: Pedestrian / Nighttime CRF: 40% **Cost: $$$··**

Dynamic overhead LED floods that activate on pedestrian pushbutton press. Concentrates illumination on crosswalk zone only when pedestrians are present. Most effective at nighttime ped collision locations.

C-V2X Roadside Units (RSUs)

Crash Type: All CRF: N/A **Cost: $$$··**

Broadcast SPaT, MAP, and hazard data to connected vehicles at fatality locations. Concord's AXIS fiber backbone supports deployment. $30K-$50K per RSU. Leverages existing SS4A project infrastructure.

DUI Saturation / High Visibility Enforcement

Crash Type: All (DUI) CRF: N/A **Cost: $$···**

20% of nighttime collisions involve DUI — 107 of 544 events. Targeted HVE deployments during high-risk hours (10 PM-3 AM). Coordinate with Concord PD at top nighttime corridors.

Upgrade Signs with Fluorescent Sheeting

Crash Type: All CRF: 15% **Cost: $····**

High-intensity retroreflective sheeting on regulatory and warning signs dramatically improves nighttime conspicuity. Very High systemic opportunity. $500-$1,250 per sign installed systemically.

Discussion & Questions

Thank you for your partnership in making Concord's streets safer.

City of Concord — Transportation Division
Abhishek Parikh, T.E.

Prepared by TJKM Transportation Consultants

Comprehensive Safety Action Plan | 2026

Profile 1 — Improve Safety at Intersections | 1,518 Injury Collisions | 142 KSI | KSI Rate: 9%

1,518
Injury Collisions

142
KSI Collisions

9%
KSI Severity Rate

KEY INSIGHTS

1. 142 KSI collisions — severity rate consistent with the citywide 9% average
2. Broadside collisions dominate — 607 events (40%), primarily at signalized intersections
3. 457 collisions (30%) occurred at night — nighttime intersection safety is a priority

40% broadside collisions **30%** at night

TOP COLLISION TYPES

Broadside — **607** (40%)

Rear-End — **374** (25%)

TOP VIOLATION CATEGORIES

Unsafe Speed — **340** (22%)

Signal Violations — **287** (19%)

Profile 2 — Reduce Broadside Collisions | 687 Injury Collisions | 47 KSI | KSI Rate: 7%

687
Injury Collisions

47
KSI Collisions

7%
KSI Severity Rate

KEY INSIGHTS

1. 47 KSI collisions — 6.8% severity rate, below the citywide 9% average
2. 607 of 687 collisions (88%) at intersections — signal and right-of-way violations are primary factors
3. Bicycle involvement is significant — 89 bicycle collisions within this profile

88% at intersections

26% at night

TOP COLLISION TYPES

Broadside — **607** (88% at intersections)

TOP VIOLATION CATEGORIES

Signal Violations — **253** (37%)

Auto Right of Way — **190** (28%)

Profile 3 — Address Collisions near Schools | 667 Injury Collisions | 57 KSI | KSI Rate: 9%

667
Injury Collisions

57
KSI Collisions

9%
KSI Severity Rate

KEY INSIGHTS

1. 57 KSI collisions — 8.5% severity rate, near the citywide 9% average
2. 589 of 667 collisions (88%) at intersections — consistent with the citywide pattern
3. 70 pedestrian and 52 bicycle collisions — elevated VRU exposure near school zones

88% at intersections

30% at night

TOP COLLISION TYPES

Broadside — **243** (36%)

Rear-End — **166** (25%)

TOP VIOLATION CATEGORIES

Unsafe Speed — **155** (23%)

Signal Violations — **105** (16%)

Profile 4 — Reduce Nighttime Collisions | 544 Injury Collisions | 71 KSI | KSI Rate: 13%

544
Injury Collisions

71
KSI Collisions

13%
KSI Severity Rate

KEY INSIGHTS

1. 71 KSI collisions — 13% severity rate, significantly above the citywide 9% average
2. DUI is a major contributing factor — 107 of 544 collisions (20%) are DUI-related
3. Pedestrians are disproportionately impacted — 60 pedestrian collisions recorded

84% at intersections

20% DUI-related

TOP COLLISION TYPES

Broadside — **179** (33%)

Rear-End — **136** (25%)

TOP VIOLATION CATEGORIES

Unsafe Speed — **122** (22%)

DUI — **107** (20%)

Profile 5 — Reduce Rear-End Collisions | 450 Injury Collisions | 16 KSI | KSI Rate: 4%

450
Injury Collisions

16
KSI Collisions

4%
KSI Severity Rate

KEY INSIGHTS

1. 16 KSI collisions — 4% severity rate, among the lowest of all profiles
2. 373 of 450 collisions (83%) at intersections — signal timing and following distance are key
3. 135 collisions (30%) occurred at night — nighttime rear-end risk is elevated

83% at intersections

30% at night

TOP COLLISION TYPES

Broadside — **354** (79%)

Rear-End — **60** (13%)

TOP VIOLATION CATEGORIES

Unsafe Speed — **152** (34%)

Following Too Closely — **98** (22%)

Profile 6 — Reduce Unsafe Speed Collisions | 418 Injury Collisions | 23 KSI | KSI Rate: 6%

418
Injury Collisions

23
KSI Collisions

6%
KSI Severity Rate

KEY INSIGHTS

1. 23 KSI collisions — 6% severity rate, below the citywide 9% average
2. 338 of 418 collisions (81%) at intersections — speed management at signals is critical
3. 121 collisions (29%) at night — lighting and speed enforcement both apply

81% at intersections **29%** at night

TOP COLLISION TYPES

Hit Object — **148** (35%)

Rear-End — **89** (21%)

TOP VIOLATION CATEGORIES

Unsafe Speed — **418** (100%)

Unsafe Lane Change — **42** (10%)

Profile 7 — Address Traffic Signs & Signal Violations | 292 Injury Collisions | 23 KSI | KSI Rate: 8%

292	23	8%
Injury Collisions	KSI Collisions	KSI Severity Rate

KEY INSIGHTS

1. 23 KSI collisions — 8% severity rate, near the citywide 9% average
2. 286 of 292 collisions (98%) at intersections — highest concentration of all profiles
3. 70 collisions (24%) at night — signal compliance is critical across all hours

98% at intersections

24% at night

TOP COLLISION TYPES

Broadside — **204** (70%)

Rear-End — **44** (15%)

TOP VIOLATION CATEGORIES

Auto Right of Way — **292** (100%)

Signal Violations — **58** (20%)

Profile 1 — Improve Safety at Intersections | 1,518 Injury Collisions | 142 KSI | KSI Rate: 9%

RECOMMENDED COUNTERMEASURES

Provide Protected Left-Turn Phase

Crash Type: All (Angle, Broadside) CRF: 30% **Cost: $$$··**

Add protected left-turn phasing where left pockets exist. Removes driver judgment gaps vs. oncoming traffic. High priority at Concord's 87%-intersection KSI cluster.

Leading Pedestrian Interval (LPI)

Crash Type: Pedestrian & Bicycle CRF: 60% **Cost: $····**

Give pedestrians a 3-7 second head start before vehicles receive green. Low-cost timing change with highest CRF of any ped countermeasure. Deployable citywide via software.

Improve Signal Timing & Coordination

Crash Type: All CRF: 15% **Cost: $$···**

Re-time signals, extend clearance intervals, add all-red extensions. Addresses signal violations (14% of KSI) and reduces angle conflicts at approach speeds.

High Friction Surface Treatment (HFST)

Crash Type: All (Wet-Road, Failure to Stop) CRF: 55% **Cost: $$···**

Apply HFST epoxy or polyurethane on stop bars and approach lanes. Reduces skid-related broadside and rear-end events. Strong CRF, 10-year life, federally eligible.

Near-Miss Video Analytics (AI Platform)

Crash Type: All (Diagnostic Tool) CRF: N/A **Cost: $$$··**

Deploy AI-based conflict detection at priority intersections using Concord's existing AXIS cameras. Identifies near-miss hotspots pre-crash, supports grant applications with quantitative data.

Profile 2 — Reduce Broadside Collisions | 687 Injury Collisions | 47 KSI | KSI Rate: 7%

RECOMMENDED COUNTERMEASURES

Protected Left-Turn Phase (Existing Pocket)

Crash Type: All (Broadside, Angle) CRF: 30% **Cost: $$$··**

88% of this profile occurs at intersections. Signal violations and auto ROW are the top violations. Protected phasing directly eliminates the gap-acceptance conflict driving broadside events.

Install Left-Turn Lane + Protected Phase

Crash Type: All CRF: 55% **Cost: $$$$·**

Where no left-turn pocket exists, add channelization plus signal phase. Costs vary $100K-$250K+ with mast arm. Highest CRF of geometric countermeasures for left-turn conflicts.

Improve Signal Hardware (Backplates, LEDs)

Crash Type: All CRF: 15% **Cost: $····**

Retroreflective backplates and upgraded LED heads improve signal conspicuity. Very High systemic opportunity. Low cost relative to impact — $800-$2,700 per head for backplate + LED retrofit.

All-Red Clearance Interval Extension

Crash Type: All (Angle, Red-Light Running) CRF: 15% **Cost: $····**

Extend all-red phase via controller reprogramming only — no hardware needed. Especially effective at wide intersections. Controller programming only: $2,000-$5,000 per intersection.

High Visibility Enforcement (HVE)

Crash Type: All CRF: N/A **Cost: $$···**

Deploy targeted enforcement at top broadside intersections. Signal violations = 14% of KSI in this profile. Engineering + enforcement pairing maximizes impact at priority locations.

Profile 3 — Address Collisions Near Schools | 667 Injury Collisions | 57 KSI | KSI Rate: 9%

RECOMMENDED COUNTERMEASURES

Rectangular Rapid Flashing Beacon (RRFB)

Crash Type: Pedestrian & Bicycle CRF: 35% **Cost: $$···**

Pedestrian-activated irregular flash pattern at unsignalized crossings near schools. 70 ped + 52 bike collisions in this profile. Solar-powered pairs: $25K-$40K. Proven VRU safety impact.

Enhanced School Zone Package

Crash Type: All CRF: 30% **Cost: $$$··**

Reduced speed zone + flashing beacons + speed feedback signs + high-visibility markings. Full package $120K-$300K per school. 88% of this profile at intersections near school zones.

Accessible Pedestrian Signal (APS)

Crash Type: Pedestrian & Bicycle CRF: 45% **Cost: $····**

Audible/vibrotactile signals at school crossings improve compliance for all users, not just visually impaired. Retrofit $4,500-$8,500 per location. Very High systemic opportunity.

Leading Pedestrian Interval (LPI)

Crash Type: Pedestrian & Bicycle CRF: 60% **Cost: $····**

Head-start walk phase is the single highest-CRF pedestrian countermeasure available. Timing-only implementation near school zones: $4K-$18K. Concord has existing hardware to support.

Safe Routes to School (SRTS) Program

Crash Type: All CRF: N/A **Cost: $$···**

Expand curriculum, walking audits, and Vision Zero training for students, parents, and staff. Addresses unsafe speed (23%) and pedestrian violations near schools. $50K-$120K per school.

Profile 8 — Improve Pedestrian Safety | 190 Injury Collisions | 46 KSI | KSI Rate: 24%

RECOMMENDED COUNTERMEASURES

Pedestrian Hybrid Beacon (HAWK Signal)

Crash Type: Pedestrian & Bicycle CRF: 55% **Cost: $$$$·**

24% KSI rate — nearly 3x citywide. 95% are vehicle/pedestrian events. HAWK provides active stop compliance for mid-block and uncontrolled crossings. $300K-$500K per location.

High-Visibility Ladder Crosswalk Markings

Crash Type: Pedestrian & Bicycle CRF: 25% **Cost: $····**

Continental/ladder striping dramatically increases driver recognition distance at crossings. 86% at intersections. $2,500-$6,000 per crossing. SS4A project standard at all 23 priority locations.

Leading Pedestrian Interval (LPI)

Crash Type: Pedestrian & Bicycle CRF: 60% **Cost: $····**

Highest-CRF ped countermeasure. Ped ROW violations = 39% of Profile 8 violations. LPI directly addresses driver yielding failure by giving pedestrians a visible head start before vehicle green.

Bulb-Outs / Curb Extensions

Crash Type: Pedestrian & Bicycle CRF: 20% **Cost: $$···**

Narrow crossing distance, slow turning vehicles, improve ped-driver sightlines. Concord project cost estimate: $8K-$10K per location (per recent project data). Very High systemic opportunity.

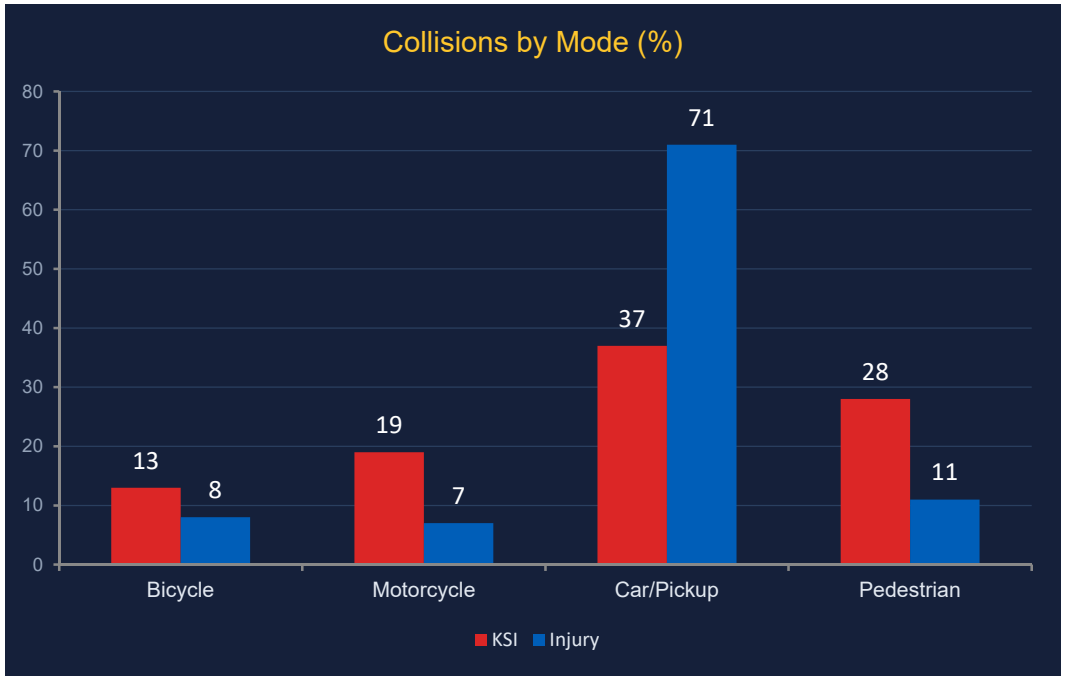
Advance Pedestrian Warning System (Activated)

Crash Type: Pedestrian & Bicycle CRF: 30% **Cost: $$···**

Radar/IR-activated W11-2 warning signs alert far-lane drivers that a pedestrian is actively crossing. Addresses multiple-threat scenarios at multilane crossings. $12K-$55K per approach.

Collision Trends Over Time

2021 – 2025 | KSI and Total Collisions by Mode



Key Observations

Peak year: 2022
383 total collisions and 39 KSI

2025 shows decline
341 total collisions (∑11% from peak)

KSI remains elevated
34 KSI in 2025—same as 2021 despite overall decline

84% at intersections
1,518 of 1,804 collisions occurred at intersections

S.No.	ID	Complaint	Latitude	Longitude	Mode	Major Street	Minor Street	Location Type	Issue Category
1	77	There are bike lanes on Farm Bureau Road and sharrows and a 25 mph speed limit on the northern portion of E. Olivera Road, but there is no bike provision, and little pedestrian provision, on this busy and fast section of E. Olivera Road.	37.98563573067052	-122.0180648	Bicycle	Olivera Rd	-	Roadway Segment	Bike Lane
1	77	There are bike lanes on Farm Bureau Road and sharrows and a 25 mph speed limit on the northern portion of E. Olivera Road, but there is no bike provision, and little pedestrian provision, on this busy and fast section of E. Olivera Road.	37.98563573067052	-122.0180648	Pedestrian	Olivera Rd	-	Roadway Segment	Sidewalk
2	76	The two sections of Olive Drive are meant to be connected over the stream for cyclists and pedestrians, but this involves scrambling up and down the stream banks.	37.96368728510119	-121.9701009		Olive Drive	-	Roadway Segment	Bicycle Safety
3	75	Not safe to cycle on this stretch of the freeway.	38.01158516589001	-122.009426	Bicycle	California Delta Hwy	-	Roadway Segment	Bicycle Safety
4	74	Not safe to cycle over this bridge	38.00307693751492	-121.9997398	Bicycle	Willow Pass Rd	-	Roadway Segment	Bicycle Safety
5	73	Not safe to cycle along Willow Pass Road beneath freeway.	37.966125944317724	-122.0563323	Bicycle	Willow Pass Rd	-	Roadway Segment	Bicycle Safety
6	72	Not safe to cycle along Willow Pass Road beneath freeway	37.97115987	-122.0474274	Bicycle	Willow Pass Rd	-	Roadway Segment	Bicycle Safety
7	71	Not safe to cycle along Clayton Road beneath freeway.	37.978876071055566	-122.0433163	Bicycle	Clayton Rd	-	Roadway Segment	Bicycle Safety
8	70	Not safe to cycle along Grant Street beneath the freeway.	37.988632977568656	-122.0402823	Bicycle	Grant Street	-	Roadway Segment	Bicycle Safety
9	69	Lots of cars coming off the freeway and speeding down this road, but there are no sidewalks.	37.98871416056805	-122.0383328	Vehicle	Birch Ave	-	Roadway Segment	Speeding
9	69	Lots of cars coming off the freeway and speeding down this road, but there are no sidewalks.	37.98871416056805	-122.0383328	Pedestrian	Birch Ave	-	Roadway Segment	Sidewalk
10	68	North bound bike lane just dies on the wrong side of the road, leading cyclists to ride into oncoming traffic. The plans for this intersection were better, but the city did not build what was on the plans.	37.98506744	-122.0382417	Grant St	Frederick St	-	Intersection	Bicycle Safety
11	67	Concord will not fix broken street lights unless they are provided with grant money specifically for this purpose. Currently they may not replace broken streetlights until next year. This has been city policy since before last year.	37.98162376710759	-122.0242699	All	Grant Street	Frederick St	Roadway Segment	Broken Streetlights
12	65	Speeding cars past Concord High school.	37.97646994558026	-121.9894923	All	Concord Blvd	-	Roadway Segment	Speeding
13	64	Treat boulevard from San Miguel to the Walnut Creek boundary is terrible for pedestrians and bicycles. It could be reduced to 2 lanes of traffic to provide more space for sidewalks and bike lanes, just like the stretch from San Miguel east to Clayton road.	37.944802493085376	-122.0157812	Pedestrian	Treat Blvd	San Miguel to the Walnut Creek boundary	Roadway Segment	Sidewalk
13	64	Treat boulevard from San Miguel to the Walnut Creek boundary is terrible for pedestrians and bicycles. It could be reduced to 2 lanes of traffic to provide more space for sidewalks and bike lanes, just like the stretch from San Miguel east to Clayton road.	37.944802493085376	-122.0157812	Bicycle	Treat Blvd	San Miguel to the Walnut Creek boundary	Roadway Segment	Bike lane
13	64	Treat boulevard from San Miguel to the Walnut Creek boundary is terrible for pedestrians and bicycles. It could be reduced to 2 lanes of traffic to provide more space for sidewalks and bike lanes, just like the stretch from San Miguel east to Clayton road.	37.944802493085376	-122.0157812	All	Treat Blvd	San Miguel to the Walnut Creek boundary	Roadway Segment	Road Diet

COMMUNITY SURVEY REPORT

Comprehensive Safety Action Plan — Public Safety Survey Results

March 2026 | 651 Respondents | City Streets | All Modes of Travel

Summary Finding: 74% of survey respondents reported personal experience with a traffic incident on Concord streets — including near-misses, witnessed events, or direct collision involvement. Speeding and red light running were the most frequently cited concerns across all respondent groups. 92% of respondents reported modifying their travel behavior in response to their perceptions of street conditions.

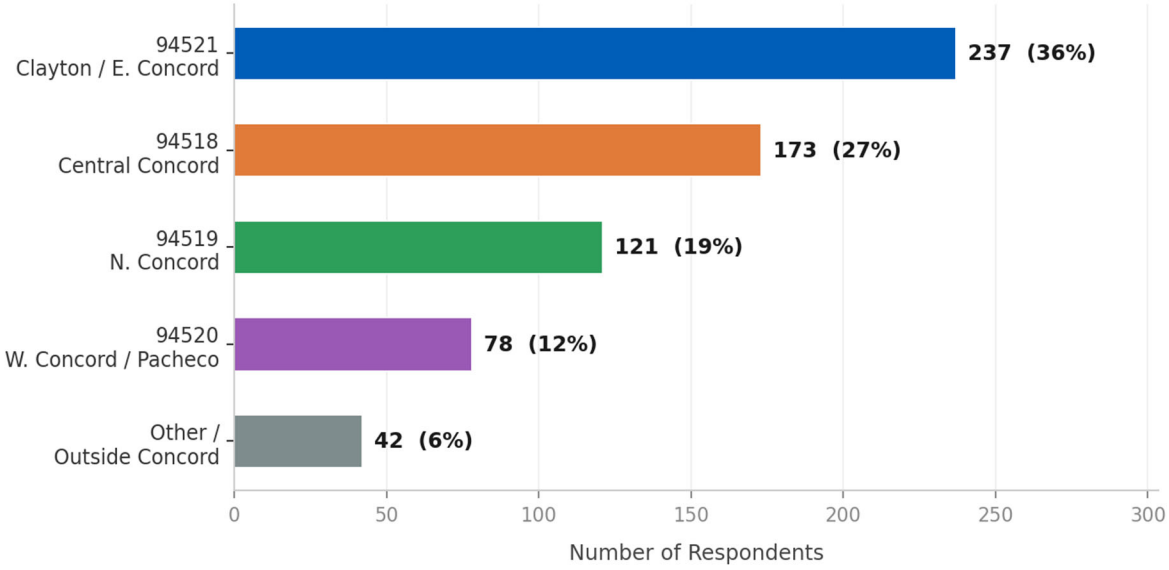
1. Survey Overview

This report summarizes 651 responses to the City of Concord's Comprehensive Safety Action Plan (CSAP) community safety survey, collected between March 11 and April 20, 2026. The survey asked residents about their travel habits, safety concerns, collision experiences, school-zone issues, and priority improvements. Responses span all major Concord zip codes and all primary modes of travel.

Table 1.1 — Survey snapshot

Responses	Collection Period	Top ZIP Code	Primary Language
651	Mar 11–Apr 20, 2026	94521 (37%)	English (91%)

Figure 1.2 — Survey Respondents by ZIP Code (n = 651)



Respondent Demographics

The survey skewed toward older residents, with 51% of respondents aged 55 or older. Residents aged 35–54 comprised 36%, and 8% were under 35. This age distribution reflects typical civic engagement patterns and should be noted when interpreting results. Nearly all respondents (94%) travel primarily by personal vehicle, with walking (3%), bicycle (3%), and transit (1%) as secondary modes — consistent with Concord's auto-dependent street network. Respondents reported using their vehicles for local trips (56%), a mix of local and through travel (36%), and through-traffic or commuting (5%).

Table 1.2 — Age distribution of respondents

Response	Count	%	Distribution (n=651)
65 and older	**161**	31%	30%
55–64	**106**	20%	26%
45–54	**94**	18%	26%
35–44	**93**	18%	16%
25–34	**42**	8%	8%
18–24	**2**	0%	0%

2. Safety Concerns

Respondents were asked to identify their primary safety concerns across all modes. Speeding and red light running dominate every concern category — for drivers, for pedestrians, and for cyclists. These two behaviors appear consistently across the survey and represent the clearest consensus among respondents.

Table 2.1 — Overall safety concerns (multi-select, n=523)

Response	Count	%	Distribution (n=651)
Speeding	**346**	66%	68%
Red light running	**316**	60%	59%
Distracted driving	**204**	39%	32%
Illegal e-bike operation	**123**	24%	23%
Left turn conflicts	**60**	11%	11%
Tailgating	**72**	14%	14%
Visibility/lighting	**59**	11%	11%

Driver Concerns

Among driver-specific concerns, speeding (59%) and red light running (52%) were most frequently cited, followed by distracted driving (23%) and road condition concerns (20%). Respondents consistently cited arterial streets as the most challenging environments. Unprotected left turns on Concord Boulevard, Treat Boulevard, Clayton Road, and Ygnacio Valley Road were mentioned repeatedly in open-ended responses, with many calling for protected left-turn phases at major intersections.

Table 2.2 — Driver-specific concerns

Response	Count	%	Distribution (n=651)
Speeding	**371**	60%	59%
Red light running	**324**	53%	53%
Distracted driving	**144**	23%	23%
Road condition	**115**	19%	18%
Visibility	**48**	8%	8%
Unprotected left turns	**30**	5%	5%

Pedestrian Concerns

Among pedestrian concerns, failure to yield at crosswalks (37%) and turning vehicle conflicts (32%) rank highest. Missing sidewalks (19%) and missing crossings (13%) indicate clear infrastructure gaps. Respondents with disabilities more frequently cited missing sidewalks and inadequate crossings, reflecting a higher rate of sidewalk gap citations among this group. Poor lighting was noted by 10% of all respondents, particularly on Monument Boulevard and Meadow Lane.

Table 2.3 — Pedestrian concerns

Response	Count	%	Distribution (n=651)
Failure to yield at crosswalk	**230**	37%	37%
Turning vehicle conflicts	**201**	32%	35%
Missing sidewalks	**112**	18%	18%
Missing crossings	**80**	13%	13%
Poor lighting	**62**	10%	10%
Faded crosswalk markings	**42**	7%	11%

Bicycle Concerns

Bicycle concerns center on behavior and infrastructure in roughly equal measure. Cyclists not following traffic rules ranked first (26%), followed by no bike lanes (18%), poor road conditions (15%), and no safe routes (12%). A notable theme in open-ended responses was the prevalence of **e-bikes operated at high speed on sidewalks** — particularly near schools — with many respondents noting the need for consistent enforcement of electric bike regulations. Several respondents also noted that existing bike lanes abruptly end without connecting to destinations, reducing their functional utility.

Table 2.4 — Bicycle concerns

Response	Count	%	Distribution (n=651)
Cyclists not following rules	**161**	26%	26%
No bike lanes	**105**	15%	18%
Poor road conditions	**93**	18%	19%
No safe routes	**72**	12%	12%
Riding too close to traffic	**61**	10%	10%
Right-of-way conflicts	**59**	10%	10%

3. Personal Collision Experience

74% of respondents reported personal experience with a traffic incident on Concord streets, including near-misses, witnessed events, or direct collision involvement.

Table 3.1 — Collision experience (single-select, n=523)

Response	Count	%	Distribution (n=651)
Near-miss personally experienced	**187**	30%	30%
Witnessed a collision	**184**	30%	30%
Directly involved in a collision	**68**	11%	11%
No collision experience	**160**	26%	26%

The combined 74% who reported any traffic incident experience represents the majority of survey respondents. Near-misses were the most commonly reported experience (30%), cited by 193 respondents. Direct collision involvement was reported by 11% of respondents (72 respondents). Witnessed collisions were reported by 30% (196 respondents).

4. Locations Identified by Residents

Open-ended responses identified specific locations cited with elevated frequency across all mode categories. The following corridors and intersections were most often mentioned. These align with High Injury Network corridors identified in the CSAP collision data analysis.

Table 4.1 — Most frequently cited locations (open-text responses)

Location	Mentions	Primary Concern Cited
Clayton Road (all segments)	**20+**	Speeding, red light running, school zones
Treat Blvd / Oak Grove intersection	**12+**	Speeding, signal timing, cut-through traffic
Willow Pass Road (full length)	**10+**	Speeding, lane confusion, pedestrian crossings
Ygnacio Valley Road	**10+**	Speeding, red light running, cut-through traffic
Concord Boulevard	**9+**	Lane design, unprotected left turns, bike lanes
Monument Boulevard	**6+**	Speeding, pedestrian safety, sight lines
Cowell Road / Treat intersection	**5+**	Unprotected left turns, red light running
Clayton Rd & Treat Blvd intersection	**5+**	Starbucks traffic backup, lane weaving
Galindo St & Clayton Road	**4+**	Speeding, visibility, pedestrian conflicts
Port Chicago Hwy / Willow Pass	**3+**	Speed, signal sequencing, freight traffic

5. Time-of-Day Safety Patterns

Respondents most frequently identified the afternoon (63%) and morning (58%) as elevated-concern periods for drivers — consistent with the AM and PM commute peaks identified in the CSAP collision data. School hours were identified as an elevated-concern period by 34% of respondents, consistent with the school-zone findings in Section 6. Evening hours were cited by 21% of pedestrian respondents.

Table 5.1 — Worst time of day by mode (multi-select)

Time Period	Drivers	Pedestrians	Cyclists
Morning (6–9 AM)	378 (58%)	191 (29%)	129 (20%)
Afternoon (3–6 PM)	405 (62%)	218 (33%)	169 (26%)
School hours	226 (35%)	182 (28%)	109 (17%)
Midday (10 AM–2 PM)	152 (23%)	133 (20%)	87 (13%)
Evening (6–10 PM)	176 (27%)	119 (18%)	89 (14%)

Weekends	141 (22%)	101 (16%)	86 (13%)
Late Night (10 PM+)	93 (14%)	59 (9%)	46 (7%)

6. School Zone Safety

School-zone safety was one of the most frequently cited themes in the survey. 71% of respondents expressed some level of concern, with 35% describing themselves as very concerned. Traffic backup (38%), speeding near schools (40%), and double-parking (30%) were the most frequently cited driver-related issues. Among pedestrian concerns, drivers failing to yield (33% of respondents) and child pedestrian habits (21%) were most commonly cited. No dedicated bike route to school was noted by 19% of respondents.

Table 6.1 — School safety concern level (n=179 respondents with school-age context)

Level	Count	%	Distribution
Very concerned	212	35%	35%
Somewhat concerned	227	37%	37%
Not concerned	91	16%	19%

Table 6.2 — School zone issues by mode (multi-select)

Issue	Count	% of Respondents
DRIVER ISSUES		
Traffic backup at drop-off/pick-up	237	36%
Speeding near schools	254	41%
Double-parking blocking sight lines	185	29%
Poor sight lines	72	12%
PEDESTRIAN ISSUES		
Drivers failing to yield to children	200	30%
Unsafe child pedestrian habits	117	26%
Missing or inadequate sidewalks	190	12%
BICYCLE ISSUES		
Speeding near school bike routes	131	18%
No bike route to school	112	19%

Conflict between bikes and cars	94	15%

7. Priority Focus Areas and Requested Improvements

Respondents were asked to identify geographic focus areas and specific improvement types. Crash-prone intersections (54%) and commercial corridors (36%) were the most frequently selected geographic focus areas. Residential streets (34%) and schools/parks (31%) followed closely. Police enforcement, pedestrian signals, and high-visibility crosswalks were the most commonly requested improvement types.

Table 7.1 — Geographic focus areas (multi-select, n=523)

Response	Count	%	Distribution (n=651)
Crash-prone intersections	**334**	54%	54%
Commercial corridors	**221**	36%	30%
Residential streets	**209**	32%	39%
Schools and parks	**195**	34%	30%
Poor lighting areas	**58**	9%	9%
Transit corridors	**29**	5%	5%

Table 7.2 — Improvements requested (multi-select, n=523)

Response	Count	%	Distribution (n=651)
Increased police enforcement	**323**	52%	52%
Pedestrian signal improvements	**236**	38%	32%
High-visibility crosswalks	**210**	34%	35%
Speed feedback signs	**162**	26%	26%
Bike lane additions	**132**	22%	26%
Street lighting improvements	**127**	21%	26%

8. Travel Behavior Changes Due to Safety Concerns

92% of respondents reported modifying their travel behavior due to traffic safety concerns. Reported changes include avoiding certain streets (32%), increasing personal caution while traveling (30%), or avoiding certain travel times (26%).

Table 8.1 — Travel behavior changes due to safety (multi-select, n=523)

Response	Count	%	Distribution (n=651)
Avoid certain streets	195	32%	30%
Avoid certain times	162	30%	30%
Drive/walk more cautiously	185	30%	30%
No change in behavior	24	4%	4%
Changed travel mode	27	4%	4%

Open-text explanations provided context for the structured responses; however, travel behavior change is a self-reported measure and should be interpreted with appropriate caution. **Frequently cited streets include Ygnacio Valley Road, Clayton Road, and Treat Boulevard.**

9. Key Takeaways and Recommended Actions

Summary of findings from 523 community survey responses

01

Enforcement Is the Top Requested Intervention

Increased police enforcement was the most frequently requested improvement type, cited by 52% of respondents — the highest of any single improvement option. Community responses indicate support for increased enforcement activity on frequently cited corridors, including Clayton Road, Treat Boulevard, and Ygnacio Valley Road.

02

Speeding and Red Light Running Require a Dual-Track Response

Speeding (68%) and red light running (59%) were the two most frequently cited safety concerns across all respondent groups, appearing consistently across mode categories and open-text responses. Signal coordination along Ygnacio Valley Road and Clayton Road was referenced in multiple open-text responses.

03

School Zone Safety Requires Targeted Infrastructure Investment

71% of respondents expressed some level of concern about school-zone safety. Traffic backup, double-parking, and absence of designated bike routes near schools were the most frequently identified issues. Schools named most frequently in open responses include Ayers Elementary (Ygnacio Valley / Clayton corridor), Monte Gardens, Glenbrook, and CVCHS. Drop-off zone redesigns, parking enforcement during school hours, and protected pedestrian crossings at school approaches are near-term investments supported by the data.

04

Infrastructure Gaps Disproportionately Affect Vulnerable Residents

Missing sidewalks (19% of respondents) and missing crossings (13%) were cited across residential areas and locations near schools. Respondents who identified a disability or mobility limitation cited missing sidewalks at a higher rate than those who did not. Survey data reflects support for completing sidewalk and crosswalk connections on residential streets, including corridors such as Monument Boulevard, Meadow Lane, and Sunshine Drive.

05

E-Bike Concerns Identified by Respondents

23% of respondents cited illegal or unsafe e-bike operation as a safety concern. Open-text responses referenced e-bikes operating on sidewalks, near schools, and on park trails. Respondents noted the need for enforcement of e-bike regulations and physical separation of bicycle and pedestrian facilities.

06

Route Avoidance and Time-Shifting Reported by Respondents

92% of respondents reported modifying their travel behavior due to traffic safety concerns. 32% reported avoiding specific streets, 30% reported traveling more cautiously, and 26% reported avoiding certain travel times.

Data Sources & Methodology

Survey data collected via the City of Concord CSAP public engagement platform, March 11–April 20, 2026. Total valid responses: 651. Survey used multi-select, single-select, and open-text question formats. Percentages for multi-select questions exceed 100% as respondents could select multiple options. Open-text responses were reviewed thematically; locations cited fewer than three times were noted but not individually tabulated. Analysis and report prepared by the Transportation Division, Public Works Department, City of Concord.

SECTION 2

Cross-Question Analysis & Deep Survey Insights

Question-by-Question Cross-References | Response Patterns | Actionable Findings

The following analysis cross-references responses across survey questions to identify patterns that individual question results alone cannot reveal. Each finding connects two or more questions — for example, who reports the most danger, what they want done about it, and how they have already changed their behavior. These cross-references help distinguish perceptions from lived experience and surface the strongest signals for investment prioritization.

XR-1 Collision Experience (Q7) × Safety Concerns (Q6)

Q7 asked whether respondents had been directly involved in a collision, witnessed one, experienced a near-miss, or had no experience. Q6 asked about their top safety concerns. Comparing these reveals whether lived experience intensifies specific concern types.

Table XR-1.1 — Top safety concerns by collision experience level

Collision Experience (Q7)	n	#1 Concern	#2 Concern	#3 Concern	% Citing Speeding
Directly involved	68	Speeding (68%)	Red lights (59%)	Distracted (54%)	69%
Near-miss (personal)	187	Speeding (68%)	Red lights (73%)	Distracted (42%)	68%
Witnessed collision	184	Speeding (67%)	Red lights (72%)	Distracted (34%)	71%
No experience	160	Speeding (62%)	Red lights (47%)	Distracted (39%)	62%

Survey Insight: Collision exposure amplifies distracted driving concern most sharply.

Respondents directly involved in a collision cited distracted driving at 54% vs 39% among those with no experience — a 15-point gap. Speeding and red light running are universally high across all groups, suggesting these are not just concerns among those harmed — they are objective, observable conditions. The elevated distracted driving citation among those involved in actual collisions is a strong signal that phone enforcement should be a component of any enforcement strategy.

XR-2 Trip Purpose (Q5) × Safety Concerns (Q6) & School Issues (Q12)

Q5 asked how respondents describe most of their Concord trips: local, through, mixed, commute, school, or leisure. Comparing trip purpose against safety concerns and school-zone issues shows whether different traveler types identify different problems.

Table XR-2.1 — Safety concerns by primary trip purpose

Trip Purpose (Q5)	n	Top Concern	2nd Concern	Notable Difference
Local trips	292	Speeding (68%)	Red lights (62%)	Distracted driving 38% — highest rate among local-trip respondents
Mixed trips	189	Speeding (65%)	Red lights (58%)	E-bike illegal operation cited by 25% among mixed-trip respondents
Through traffic	21	Red lights (62%)	Speeding (73%)	Equal top concerns — consistent with arterial use
School trips	4	Red lights (86%)	E-bike illegal (43%)	No speeding in top 3 — unique school-zone profile

Survey Insight: School-trip respondents flag e-bikes and signal violations — not speed — as their primary concern.

The four respondents making primarily school-related trips cited red lights at 100% and illegal e-bike operation at 75%. This diverges sharply from all other trip-purpose groups where speeding dominates. The finding suggests that the experience of navigating school zones on foot or by bike reorients concern away from vehicle speed (which is lower in school zones) toward signal compliance and e-bike conflicts at crossing points. School-zone signal engineering and e-bike enforcement should be treated as distinct from general speed management.

XR-3 Age Group (Q17) × Safety Concerns (Q6) & Travel Changes (Q15)

Q17 captured respondent age. Cross-referencing with Q6 (safety concerns) and Q15 (travel behavior changes) reveals whether different generations experience or respond to Concord's safety conditions differently.

Table XR-3.1 — Safety concerns and behavior change by age group

Age Group (Q17)	n	Top Concern (Q6)	2nd Concern	Primary Behavior Change (Q15)	Avoids Streets	Avoids Times
25–34	50	Speeding (62%)	Red lights (50%)	Avoid streets (29%) or times (24%)	32%	19%
35–44	110	Red lights (58%)	Speeding (63%)	Avoid streets (38%)	32%	18%
45–54	113	Speeding (67%)	Red lights (66%)	Avoid streets (46%)	46%	19%
55–64	129	Speeding (68%)	Red lights (63%)	Avoid streets (29%) or times (30%)	30%	30%

65+	184	Speeding (72%)	Red lights (62%)	Avoid times (37%)	23%	37%

Survey Insight: Older adults adapt by changing when they travel; working-age adults adapt by changing where.

Respondents aged 65+ showed the highest rate of avoiding travel at certain times (37%), while those aged 35–54 showed the highest rate of avoiding specific streets (38–46%). This split reflects different trip flexibility: working-age residents with fixed school and work schedules cannot easily avoid peak hours, so they reroute. Older residents with more schedule flexibility avoid peak times instead. Both represent significant quality-of-life costs. Interventions addressing arterial safety conditions during peak hours are consistent with the travel patterns of both groups.

XR-4 Safety Concerns (Q6) → Requested Improvements (Q13): Do They Align?

Q6 asked what safety concerns residents hold. Q13 asked which improvements they believe would help most. Cross-referencing tests whether the improvements respondents select are logically matched to the concerns they identified — or whether there are disconnects that warrant attention.

Table XR-4.1 — Improvement preferences among respondents citing each concern

Safety Concern (Q6)	n	Top Improvement Chosen	2nd Improvement	Alignment Assessment
Speeding	346	Enforcement (60%)	Ped signals (40%)	Strong alignment — enforcement cited first, physical measures second
Red lights	316	Enforcement (62%)	Ped signals (43%)	Strong alignment — enforcement prioritized
Distracted driving	204	Enforcement (54%)	Ped signals (41%)	Aligned — no engineering fix for phones, enforcement primary
Illegal e-bikes	123	Enforcement (53%)	Ped signals (45%)	Partial — bike lanes may not deter illegal e-bike use
Left turns	60	Enforcement (45%)	Ped signals (42%)	Strong — protected signal phases directly address left turns
Visibility	59	Ped signals (44%)	Enforcement (44%)	Strong — physical visibility improvements chosen

Survey Insight: Enforcement dominates improvement requests across all concern types — but engineering solutions rank second everywhere.

Respondents who flag speeding cite enforcement first (60%) and pedestrian signals second (40%), indicating they understand that engineering and enforcement work together. The notable exception is the left-turn concern group, which chose enforcement first (45%) and pedestrian signals second (42%) — correctly identifying protected-phase signals as the primary countermeasure. The e-bike concern group's second choice (pedestrian signals, 45%) may reflect a desire for physical separation from e-bike traffic rather than a belief that lanes alone reduce illegal riding. Survey responses consistently indicate support for both enforcement and infrastructure improvements together.

XR-5 School Concern Level (Q11) × School Issues (Q12) × Travel Change (Q15)

Q11 asked how concerned respondents are about school-area safety. Q12 asked what specific school-zone issues they observe. Q15 asked if concerns have changed their travel behavior. This three-way cross-reference identifies the most activated respondents — those who are very concerned, identify specific issues, and have already changed their behavior.

Table XR-5.1 — School concern level vs. top driver and pedestrian issues cited

School Concern (Q11)	n	Top Driver Issue (Q12)	Top Ped Issue (Q12)	% Who Avoid Streets (Q15)	% Avoid Times (Q15)
Very concerned	553	Speeding (66%)	Yield failure (53%)	43%	23%
Somewhat concerned	227	Traffic backup (52%)	Yield failure (33%)	29%	41%
Not concerned	91	—	—	23%	20%

Survey Insight: Very concerned school-zone respondents identify speeding as the primary driver issue — somewhat concerned respondents name traffic backup.

This is a meaningful split. "Very concerned" respondents focus on speeding (68%) as the core school-zone driver problem, while "somewhat concerned" respondents focus on traffic backup (53%). These reflect two different experience profiles: families who identify vehicle speed as the primary concern, and families who experience school-zone congestion as the primary problem. The former calls for speed calming; the latter calls for drop-off zone redesign. Both are valid, and both patterns are reflected in the data. Survey findings suggest that school-zone interventions addressing both speed and traffic management may serve the range of concerns identified.

XR-6 Disability Status (Q4) × Pedestrian Concerns (Q9) & Improvements (Q13)

Q4 asked whether respondents have a disability or mobility limitation affecting travel. Q9 asked about pedestrian safety concerns. Q13 asked about improvements. This cross-reference identifies whether residents with disabilities identify distinct needs that general infrastructure planning may not address.

Table XR-6.1 — Pedestrian concerns and improvement requests by disability status

Disability Status (Q4)	n	Top Ped Concern (Q9)	2nd Ped Concern	Top Improvement (Q13)	2nd Improvement
Has disability/mobility limitation	64	Yield failure (27%)	Turning conflicts (27%)	Enforcement (53%)	Hi-vis crosswalks (40%)
No disability	524	Yield failure (38%)	Turning conflicts (34%)	Enforcement (52%)	Ped signals (40%)

Survey Insight: Respondents with disabilities prioritize pedestrian signal upgrades at nearly 1.5× the rate of those without.

Among respondents with disabilities, 40% cited high-visibility crosswalks as a top improvement request vs 40% among those without. Enforcement was cited by 53% of disability respondents vs 52% of non-disability respondents. Missing sidewalks ranked as the 2nd concern (19%) for disability respondents — significantly higher proportionally than for the general population. Accessible pedestrian signals (APS), curb ramp upgrades, and sidewalk gap closures in high-demand areas directly serve this group and are also consistent with ADA compliance requirements. These investments address both ADA compliance requirements and the specific needs identified by this respondent group.

XR-7 Time-of-Day Alignment Across Modes (Q10)

Q10 asked respondents to identify the worst time of day for traffic safety issues separately for drivers, pedestrians, and cyclists. Comparing the three modes reveals when all three user groups perceive danger simultaneously — these are the highest-priority intervention windows.

Table XR-7.1 — Worst time of day by mode: aligned danger windows

Time Period	Driver Citations	Ped Citations	Cyclist Citations	All-Mode Alignment
Afternoon (3–6 PM)	63%	35%	30%	HIGHEST — all three modes peak simultaneously
Morning (6–9 AM)	58%	26%	19%	HIGH — drivers and peds aligned; cyclists moderate
School hours	37%	23%	19%	MODERATE — driver/ped concern, cyclist lower
Evening (7–10 PM)	23%	26%	12%	MODERATE — ped concern elevated relative to cyclists

Weekends	26%	11%	18%	LOW — consistent across modes; not a peak window
Late night (10 PM+)	14%	9%	8%	LOW — lower volume but high KSI rate in data

Survey Insight: Afternoon and morning commute windows are the periods when all three mode groups simultaneously report elevated safety concerns.

The afternoon window (3–6 PM) is the period when the highest proportion of respondents across all three modes cited elevated safety concerns: 63% of drivers, 33% of pedestrians, and 26% of cyclists. This is consistent with the CSAP collision data, which identifies the PM peak as the period with the highest recorded KSI count. Enforcement, signal optimization, and school-zone management concentrated in the 7–9 AM and 3–6 PM windows address the concerns of the maximum number of users simultaneously. Late-night hours received lower citation rates in this survey; the CSAP collision data show a higher proportional KSI rate during these hours.

XR-8 Travel Behavior Change (Q15) × Focus Area (Q14) × Safety Concerns (Q6)

Q15 asked whether safety concerns changed how or when respondents travel. Q14 asked where the City should focus improvements. Q6 captured top safety concerns. This three-way cross-reference reveals what specific concerns are driving behavior change, and whether respondents who have changed behavior select different geographic priorities than those who have not.

Table XR-8.1 — Focus area priorities by travel behavior change type

Behavior Change (Q15)	n	#1 Focus Area (Q14)	#2 Focus Area	Top Safety Concern (Q6)
Avoid specific streets	166	Crash intersections (54%)	Commercial corridors (43%)	Speeding (72%)
Avoid certain times	139	Crash intersections (48%)	Residential (39%)	Speeding (67%)
More cautious / alert	157	Crash intersections (58%)	Commercial corridors (49%)	Speeding (69%)
Changed travel mode	17	Schools/parks (47%)	Commercial (47%)	Speeding (59%)
No impact on travel	22	Commercial (67%)	Crash intersections (50%)	Speeding cited by 50% even among those without behavior change

Survey Insight: Respondents who avoid specific streets most frequently selected crash intersections as the priority focus area and cited speeding as their top concern (72%).

"Avoid streets" respondents cite speeding at 73% — 10 points higher than the overall average of 67%. Their focus on crash intersections (54%) suggests they are routing around specific known locations, not avoiding entire corridors. This precision matters for intervention targeting: these respondents are telling the City exactly where the problems are. Their top focus-area choice (crash intersections) combined with their top improvement request (enforcement) reflects a consistent pattern across this respondent group.

XR-9 Focus Area Priority (Q14) → Improvement Requests (Q13): Geographic Specificity

Q14 asked where the City should focus safety investment geographically. Q13 asked which improvement types would help most. This cross-reference tests whether different geographic priorities produce different improvement requests — or whether the same improvements are wanted everywhere.

Table XR-9.1 — Top improvement requests by geographic focus area preference

Priority Focus Area (Q14)	n	Top Improvement (Q13)	2nd Improvement	3rd Improvement	Unique Finding
Crash intersections	280	Enforcement (57%)	Ped signals (46%)	Hi-vis cross (33%)	—
Commercial corridors	190	Enforcement (62%)	Hi-vis cross (40%)	Ped signals (43%)	—
Residential streets	179	Enforcement (54%)	Hi-vis cross (41%)	Speed signs (37%)	★
Schools & parks	164	Enforcement (54%)	Ped signals (42%)	Hi-vis cross (41%)	—
Poor lighting areas	52	Lighting (73%)	Enforcement (53%)	Hi-vis cross (46%)	★★

★ **Residential:** "Other" improvements at 36% reflect unique residential issues — speed humps, cut-through traffic barriers, and stop sign enforcement — not captured in the standard options.

★★ **Poor lighting:** This is the only geographic category where a non-enforcement improvement (lighting, 74%) outranks enforcement as the primary request. Lighting improvements in this group are not just a preference — they are the primary safety need.

Survey Insight: Enforcement is the #1 request in every geographic focus area except poor lighting zones — where it ranks second to lighting.

This consistency strengthens the enforcement signal across the survey: regardless of where residents want the City to focus, they want enforcement first. The single exception — poor lighting areas — is also the most actionable geographic signal in the entire survey. The 74% who identified poor lighting as a concern and lighting improvements as their top request represent a self-selected, geographically specific group. Street lighting upgrades in the identified corridors (Monument Blvd, Meadow Lane, Oak Grove Road, Sunshine Drive) directly address both the safety concern and the improvement preference of this cohort.

XR-10 Synthesis: The Highest-Signal Cross-Reference Findings

The following table distills the nine cross-reference analyses into a prioritized action matrix. Each row links a cross-reference finding to its survey evidence base, recommended action type, and relative priority.

Table XR-10.1 — Cross-reference synthesis and priority action matrix

#	Finding	Evidence (Cross-ref)	Recommended Action	Mode Impact	Priority
1	Distracted driving concern spikes among those directly involved in collisions (+15 pts vs no-experience group)	XR-1: Q7 × Q6	Phone enforcement + automated detection at high-crash intersections	All modes	High
2	School-trip respondents cite e-bikes + signal violations, not speed — unique school-zone profile	XR-2: Q5 × Q6/Q12	Dedicated e-bike enforcement at school approaches; protected pedestrian phases at school crossings	Ped/Bike	High
3	Older adults time-shift travel; working-age adults route-shift — both are safety-driven adaptations	XR-3: Q17 × Q15	Peak-hour enforcement + arterial safety improvements benefit both groups simultaneously	All modes	High
4	Enforcement leads improvement requests for ALL concern types — but physical measures rank 2nd everywhere	XR-4: Q6 × Q13	Dual-track: enforcement at violation hot spots + engineering countermeasures at crash intersections	All modes	High
5	Very concerned school-zone respondents flag speeding; somewhat concerned flag traffic backup — different problems	XR-5: Q11 × Q12	Two-stream school response: speed calming for high-concern corridors + drop-off redesign for congestion	Driver/Ped	High
6	Disability respondents request pedestrian signals at 1.5× the rate of non-disability respondents	XR-6: Q4 × Q9/Q13	APS signals + sidewalk gap closures on primary pedestrian routes = high equity + safety return	Pedestrian	High
7	Afternoon window is the only time all three mode groups simultaneously identify elevated danger	XR-7: Q10 cross-mode	Concentrate enforcement + signal optimization in 7–9 AM and 3–6 PM windows	All modes	High
8	Route-avoiders cite speeding at 73% and target crash intersections — most precise geographic signal in survey	XR-8: Q15 × Q14 × Q6	Deploy enforcement at specific intersections identified in Q8 open text + address by residents	All modes	Medium

9	Lighting areas: only category where lighting (74%) outranks enforcement as top improvement request	XR-9: Q14 × Q13	Prioritize LED street lighting upgrades on Monument Blvd, Meadow Lane, Oak Grove, Sunshine Drive	Ped/Bike	**Medium**

Cross-Reference Analysis Notes

All cross-reference analyses use the 651 survey responses collected March 11–April 20, 2026. Sub-group sample sizes are noted for each table. Percentage calculations in cross-reference tables use the sub-group n as denominator (e.g., "67% of speeding-concerned respondents chose enforcement" means 67% of the 142 respondents who cited speeding). Multi-select questions allow percentages to sum beyond 100%. Cross-references with sub-groups smaller than n=10 are noted but treated as directional only. Analysis performed by the Transportation Division, Public Works Department, City of Concord.



MAKING OUR ROADS SAFER

One Countermeasure at a Time

28 Proven Safety Countermeasures that offer significant and measurable impacts to improving safety

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15. SUPPLEMENTARY NOTES

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16. ABSTRACT

The Proven Safety Countermeasure Initiative (PSCi) is a collection of 28 countermeasures and strategieseffective in reducing roadway fatalities and serious injuries on our Nation's highways. Transportationagencies are strongly encouraged to consider widespread implementation of PSCs to accelerate theachievement of local, State, and National safety goals. This booklet provides 1-page handouts for all 28PSCs, broken into the focus areas of speed management, roadway departure, intersections,pedestrians/bicyclists, and crosscutting for countermeasures that apply across categories.

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OFFICE OF SAFETY

Proven Safety Countermeasures

SPEED MANAGEMENT



Speed Safety Cameras



Variable Speed Limits



Appropriate Speed Limits for All Road Users

ROADWAY DEPARTURE



Wider Edge Lines



Enhanced Delineation for Horizontal Curves



Longitudinal Rumble Strips and Stripes on Two-Lane Roads



SafetyEdge℠



Roadside Design Improvements at Curves



Median Barriers

INTERSECTIONS



Backplates with Retroreflective Borders



Corridor Access Management



Dedicated Left- and Right-Turn Lanes at Intersections



Reduced Left-Turn Conflict Intersections



Roundabouts



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



Yellow Change Intervals

PEDESTRIANS/BICYCLES



Crosswalk Visibility Enhancements



Bicycle Lanes



Rectangular Rapid Flashing Beacons (RRFB)



Leading Pedestrian Interval



Medians and Pedestrian Refuge Islands in Urban and Suburban Areas



Pedestrian Hybrid Beacons



Road Diets (Roadway Reconfiguration)



Walkways

Crosscutting



Pavement Friction Management



Lighting



Local Road Safety Plans



Road Safety Audit

Introduction

Widespread use of the 28 Proven Safety Countermeasures (PSCs) identified in this booklet can offer significant, measurable impacts as part of any agency's approach to improving safety. These strategies are designed for all road users and all kinds of roads—from rural to urban, from high-volume freeways to less traveled two-lane State and county roads, from signalized crossings to horizontal curves, and everything in between. Each countermeasure addresses at least one safety focus area – speed management, intersections, roadway departures, or pedestrians/bicyclists – while others are crosscutting strategies that address multiple safety focus areas.

Between 2016 and 2019, 85 percent[1] of all public highway fatalities occurred on Federal-aid highways, which represent 25 percent[2] of the entire public highway network. FHWA's partner agencies have invested in highway safety through the Highway Safety Improvement Program (HSIP), which provides targeted safety funding that is eligible for use on all public roads. However, this dedicated funding source represents only about 6 percent of the total Federal-aid program.[3] Every transportation project, whether or not the specific project purpose is safety related, is a new opportunity to save lives on our roadways. The FHWA's Proven Safety Countermeasures are eligible under most Federal-aid highway funding programs, and can support state, local, and tribal agency efforts to effectively accomplish goals to reduce fatalities and serious injuries. These countermeasures should serve as the basis for what agencies consider and implement when designing any highway project to improve safety.

To assist practitioners with determining the most appropriate PSC for their location of interest, the PSC webpage includes a filter tool that allows users to obtain a tailored listing of potential PSCs. Users answer questions regarding area types, functional classification, traffic volumes, issue identified, targeted crash types, and other information to receive a list of PSCs meeting thecriteria. This search function is intended to better serve practitioners, including those with limited safety background, when identifying and considering treatments and strategies that can improve safety as part of their program or project.

Transportation agencies are strongly encouraged to consider widespread implementation of PSCs to accelerate the achievement of local, State, and National safety goals. Reaching our goal of zero deaths and serious injuries requires all of us to take ownership in safety. Together, we can consider the safety needs at every stage of the project development process, the safety impact of every investment decision, and the appropriate safety countermeasures for every Federal-aid project.

1 NHTSA Fatality Analysis Reporting System (FARS) 2016-2018 Final and 2019 Annual Report File (ARF)
2 FHWA Highway Statistics 2019 (https://www.fhwa.dot.gov/policyinformation/statistics/2019/hm16.cfm)
3 Federal-aid apportioned programs under the Fixing America's Surface Transportation (FAST) Act (https://www.fhwa.dot.gov/fastact/funding.cfm)

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Speed Safety Cameras

Safe Speeds is a core principle of the Safe System Approach since humans are less likely to survive high-speed crashes. Enforcing safe speeds has been challenging; however, with more information and tools communities can make progress in reducing speeds. Agencies can use speed safety cameras (SSCs) as an effective and reliable technology to supplement more traditional methods of enforcement, engineering measures, and education to alter the social norms of speeding. SSCs use speed measurement devices to detect speeding and capture photographic or video evidence of vehicles that are violating a set speed threshold.



Safety Benefits:

Fixed units can reduce crashes on urban principal arterials up to:

54% for all crashes.[4]

48% for injury crashes.[4]

P2P units can reduce crashes on urban expressways, freeways, and principal arterials up to:

37% for fatal and injury crashes.[2]

Mobile units can reduce crashes on urban principal arterials up to:

20% for fatal and injury crashes.[5]

In New York City, fixed units reduced speeding in school zones up to 63% during school hours.[6]

For more information on this and other FHWA Proven Safety Countermeasures, please reference the: Speed Safety Camera Program Planning and Operations Guide.

The contents of this Fact Sheet do not have the force and effect of law and are not meant to bind the public in any way. This Fact Sheet is intended only to provide clarity regarding existing requirements under the law or agency policies.

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Applications

Agencies should conduct a network analysis of speeding-related crashes to identify locations to implement SSCs. The analysis can include scope (e.g., widespread, localized), location types (e.g., urban/suburban/rural, work zones, residential, school zones), roadway types (e.g., expressways, arterials, local streets), times of day, and road users most affected by speed-related crashes (e.g., pedestrians, bicyclists).

SSCs can be deployed as:

- **Fixed units**—a single, stationary camera targeting one location.
- **Point-to-Point (P2P) units**—multiple cameras to capture average speed over a certain distance.
- **Mobile units**—a portable camera, generally in a vehicle or trailer.

The table below describes suitable circumstances for SSC deployment.[1]

Considerations

- SSCs can produce a crash reduction upstream and downstream, thus generating a spillover effect.[2]
- Public trust is essential for any type of enforcement. With proper controls in place, SSCs can offer fair and equitable enforcement of speeding, regardless of driver age, race, gender, or socio-economic status. SSCs should be planned with community input and equity impacts in mind.
- Using both overt (i.e., highly visible) and covert (i.e., hidden) enforcement may encourage drivers to comply with limits everywhere, not only at sites they are aware are enforced.
- Agencies should conduct evaluations regularly to determine if SSCs are accomplishing safety goals and whether changes in strategy, scheduling, communications, or public engagement are necessary.
- Agencies should conduct a legal and policy review to determine if SSCs are authorized within a jurisdiction and how the authorization and other traffic laws will affect a SSC program.
- Agencies should develop an SSC program plan with consideration of the USDOT SSC guidelines for planning, public involvement, stakeholder coordination, implementation, maintenance, evaluation, etc.[3]

Considerations for Selection	Fixed	P2P	Mobile
Problems are long-term and site-specific.	X	X	—
Problems are network-wide, and shift based on enforcement efforts.	—	—	X
Speeds at enforcement site vary largely from downstream sites.	—	X	X
Overt enforcement is legally required.	X	X	X
Sight distance for the enforcement unit is limited.	X	X	—
Enforcement sites are multilane facilities.	X	X	—

1 Speed Safety Camera Program Planning and Operations Guide. FHWA, (2023).
2 (CMF ID: 7718) Montella et al. "Effects on speed and safety of point-to-point speed enforcement systems". Accident Analysis and Prevention, Vol. 75, (2015). Note that this is an international study.
3 Speed Enforcement Camera Systems Operational Guidelines. NHTSA, (2008).
4 (CMF ID: 2915,2921) Shin et al. "Evaluation of the Scottsdale Loop 101 automated speed enforcement demonstration program." Accident Analysis and Prevention, Vol. 41, (2009).
5 (CMF ID: 7582) Li et al. "A Before-and-After Empirical Bayes Evaluation of Automated Mobile Speed Enforcement on Urban Arterial Roads." Presented at the 94th Annual Meeting of the Transportation Research Board, Paper No. 15-1563, Washington, D.C., (2015). Note that this is an international study.
6 Automated Speed Enforcement Program Report 2014-2017. New York City DOT, (2018).

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Variable Speed Limits

Selecting appropriate speed limits on roadways is important in maintaining a safe and efficient transportation network. Speed limits are established with an engineering study based on inputs like traffic volumes, operating speeds, roadway characteristics, and crash history. However, conditions on the roadway are susceptible to change in a short amount of time (e.g., congestion, crashes, weather). Drivers typically determine their operating speeds under normal weather conditions on a straight roadway section with good pavement quality and adequate sight distances. If ideal conditions do not exist and the roadway does not meet the driver's expectations, there is a greater chance that a driver error could result in a crash. Providing variable speeds limits (VSLs) capable of adapting to changing circumstances could reduce crash frequency and severity.

Speed management strategies, including VSLs, are integral to the Safe Speeds element of the Safe System Approach. Because humans are unlikely to survive high-speed crashes, VSLs reduce speeds so that human injury tolerances are accommodated in three ways: improving visibility, providing additional time for drivers to stop, and reducing impact forces.

Safety Benefits:

VSLs can reduce crashes on freeways up to:

34%
for total crashes.[1]

65%
for rear-end crashes.[1]

51%
for fatal and injury crashes.[1]

Benefit/Cost Ratios range between[1]

9:1 - 40:1

Applications

VSLs use prevailing information on the roadway, like traffic speed, volumes, weather, and road surface conditions, to determine appropriate speeds and display them to drivers. This strategy improves safety performance and traffic flow by reducing speed variance (i.e., improving speed harmonization). VSLs may also improve driver expectation by providing information in advance of slowdowns and potential lane closures, which could reduce the probability for secondary crashes. VSLs can mitigate adverse weather conditions or to slow faster-moving traffic as it approaches a queue or bottleneck.

Agencies can implement VSLs for the following applications:


CONGESTION


INCIDENTS


WORK ZONES


INCLEMENT WEATHER

Considerations

- Particularly effective on urban and rural freeways and high-speed arterials with posted speed limits greater than 40 mph.
- Often implemented as part of Active Traffic Management (ATM) plans or incorporated into existing Road Weather Information Systems.
- When used with ATM, VSLs can mitigate rear-end, sideswipe, and other crashes on high-speed roadways.
- May be implemented as a regulatory and/or an advisory system.
- Can be applied to an entire roadway segment or individual lanes.



Source: WSDOT

For more information on this and other FHWA Proven Safety Countermeasures, please visit https://highways.dot.gov/safety/proven-safety-countermeasures and https://highways.dot.gov/safety/speed-management/reference-materials.

1 (CMF ID: 11002,11005,11003) Avelar et al. Developing Crash Modification Factors for Variable Speed Limit. FHWA, (2020).

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Appropriate Speed Limits for All Road Users

There is broad consensus among global roadway safety experts that speed control is one of the most important methods for reducing fatalities and serious injuries. Speed is an especially important factor on non-limited access roadways where vehicles and vulnerable road users mix.

A driver may not see or be aware of the conditions within a corridor, and may drive at a speed that feels reasonable for themselves but may not be for all users of the system, especially vulnerable road users, including children and seniors. A driver traveling at 30 miles per hour who hits a pedestrian has a 45 percent chance of killing or seriously injuring them.[1] At 20 miles per hour, that percentage drops to 5 percent.[1] A number of cities across the United States, including New York, Washington, Seattle and Minneapolis, have reduced their local speed limits in recent years in an effort to reduce fatalities and serious injuries, with most having to secure State legislative authorization to do so.

States and local jurisdictions should set appropriate speed limits to reduce the significant risks drivers impose on others—especially vulnerable road users—and on themselves. Addressing speed is fundamental to the Safe System Approach to making streets safer, and a growing body of research shows that speed limit changes alone can lead to measurable declines in speeds and crashes.[2]

Safety Benefits:

Traffic fatalities in the City of Seattle decreased 26 percent after the city implemented comprehensive, city-wide speed management strategies and countermeasures inspired by Vision Zero. This included setting speed limits on all non-arterial streets at 20 mph and 200 miles of arterial streets at 25 mph.[5]

One study found that on rural roads, when considering other relevant factors in the engineering study along with the speed distribution, setting a speed limit no more than 5 mph below the 85th-percentile speed may result in fewer total and fatal plus injury crashes, and lead to drivers complying closely with the posted speed limit.[6]

For more information on this and other FHWA Proven Safety Countermeasures, please visit https://highways.dot.gov/safety/proven-safety-countermeasures and https://highways.dot.gov/safety/speed-management/reference-materials.

Applications

Posted speed limits are often the same as the legislative statutory speed limit. Agencies with designated authorities to set speed limits, which include States, and sometimes local jurisdictions, can establish non-statutory speed limits or designate reduced speed zones, and a growing number are doing so. While non-statutory speed limits must be based on an engineering study, conducted in accordance with the *Manual on Uniform Traffic Control Devices* (MUTCD) involving multiple factors and engineering judgment, FHWA is also encouraging agencies to use the following:[3]

- Expert Systems tools.
  - USLIMITS2.
  - NCHRP 966: Posted Speed Limit Setting Procedure and Tool.
- Safe System approach.

Based on international experience and implementation in the United States, the use of 20 mph speed zones or speed limits in urban core areas where vulnerable users share the road environment with motorists may result in further safety benefits.[4]

Considerations

When setting a speed limit, agencies should consider a range of factors such as pedestrian and bicyclist activity, crash history, land use context, intersection spacing, driveway density, roadway geometry, roadside conditions, roadway functional classification, traffic volume, and observed speeds.

To achieve desired speeds, agencies often implement other speed management strategies concurrently with setting speed limits, such as self-enforcing roadways, traffic calming, and speed safety cameras. Additional information is in the following FHWA resources:

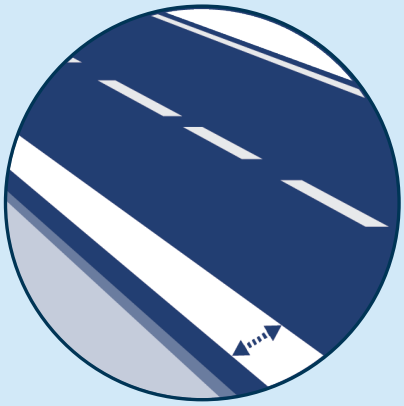
- FHWA Speed Management website.
- Self-Enforcing Roadways: A Guidance Report.
- Noteworthy Speed Management Practices.
- Jurisdiction Speed Management Action Plan Development Package.
- Traffic Calming ePrimer.

1 Reducing the speed limit to 20 mph in urban areas: Child deaths and injuries would be decreased.
2 Lowering the speed limit from 30 to 25 mph in Boston: effects on vehicle speeds.
3 FHWA's Methods and Practices for Setting Speed Limits: An Informational Report, (2012).
4 Recommendations of the Academic Expert Group for the 3rd Global Ministerial Conference on Road Safety.
5 https://safety.fhwa.dot.gov/speedmgt/ref_mats/fhwasa20047/sec8.cfm#foot813
6 Safety and Operational Impacts of Setting Speed Limits below Engineering Recommendations.

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Wider Edge Lines

Roadway departures account for over half of all traffic fatalities in the United States. If drivers cannot clearly identify the edge of the travel lanes and see the road alignment ahead, the risk of roadway departure may be greater. Wider edge lines enhance the visibility of travel lane boundaries compared to traditional edge lines. Edge lines are considered "wider" when the marking width is increased from the minimum normal line width of 4 inches to the maximum normal line width of 6 inches.[1]

Safety Benefits:

Wider edge lines can reduce crashes up to:

37%
for non-intersection, fatal and injury crashes on rural, two-lane roads.[2]

22%
for fatal and injury crashes on rural freeways.[3]

Benefit Cost Ratio
25:1
for fatal and serious injury crashes on two-lane rural roads.[4]

Applications

Wider edge lines increase drivers' perception of the edge of the travel lane and can provide a safety benefit to all facility types (e.g., freeways, multilane divided and undivided highways, two-lane highways) in both urban and rural areas.[2] Wider edge lines are most effective in reducing crashes on rural two-lane highways, especially for single-vehicle crashes.[3] Agencies should also consider implementing a systemic approach to wider edge line installation based roadway departure crash risk factors. Potential risk factors for two-lane rural roads include:

- Pavement and shoulder widths.
- Presence of curves.
- Traffic volumes.
- History of nighttime crashes.

Considerations

- Wider edge lines are relatively low cost.
- Wider edge lines can be implemented using existing equipment during maintenance procedures like re-striping and resurfacing, with the only cost increase being the additional material.
- Paint may have a lower initial cost, but more durable materials (e.g., thermoplastic) may result in a lower life cycle cost based on their longer service life.
- As the number of automated vehicles increases on roadways, wider edge lines may provide better guidance for these vehicles' sensors.



Source: Texas Transportation Institute

For more information on this and other FHWA Proven Safety Countermeasures, please visit https://highways.dot.gov/safety/proven-safety-countermeasures and https://highways.dot.gov/safety/other/visibility/pavement-markings.

1 Manual on Uniform Traffic Control Devices, Section 3A.06. FHWA, (2009).
2 (CMF ID: 4737) Park et al. "Safety effects of wider edge lines on rural, two-lane highways." Accident Analysis and Prevention Vol. 48, pp.317-325, (2012).
3 Potts et al. Benefit/Cost Evaluation of MoDOT's Total Striping and Delineation Program: Phase II. Missouri Department of Transportation, (2011).
4 Abdel-Rahim et al. Safety Impacts of Using Wider Pavement Markings on Two-Lane Rural Highways in Idaho. Idaho Transportation Department, (2018).

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Safety Benefits:

Chevron Signs

25% reduction in nighttime crashes.[1]

16% reduction in non-intersection fatal and injury crashes.[2]

Oversized Chevron Signs

15% reduction in fatal and injury crashes.[3]

Sequential Dynamic Chevrons

60% reduction in fatal and injury crashes.[4]

In-Lane Curve Warning Pavement Markings

35 - 38% reduction in all crashes.[5]

New Fluorescent Curve Signs or Upgrade Existing Curve Signs to Fluorescent Sheeting

18% reduction in non-intersection, head-on, run-off-road, and sideswipe in rural areas.[1]

For more information on this and other FHWA Proven Safety Countermeasures, please visit https://highways.dot.gov/safety/proven-safety-countermeasures and https://highways.dot.gov/safety/rwd/keep-vehicles-road/horizontal-curve-safety.

FHWA-SA-21-035

Enhanced Delineation for Horizontal Curves

Enhanced delineation at horizontal curves includes a variety of potential strategies that can be implemented in advance of or within curves, in combination, or individually.

Potential Strategies	In Advance of Curve	Within Curve
Pavement markings (standard width or wider)	✓	✓
In-lane curve warning pavement markings	✓	
Retroreflective strips on sign posts	✓	✓
Delineators		✓
Chevron signs		✓
Enhanced Conspicuity (larger, fluorescent, and/or retroreflective signs)	✓	✓
Dynamic curve warning signs (including speed radar feedback signs)	✓	
Sequential dynamic chevrons		✓

Enhanced delineation treatments can alert drivers to upcoming curves, the direction and sharpness of the curve, and appropriate operating speed.

Agencies can take the following steps to implement enhanced delineation strategies:

1. Review signing practices and policies to ensure they comply with the Manual on Uniform Traffic Control Devices (MUTCD) principles of traffic control devices. Consistent practice for similar curves sets the appropriate driver expectancy.
2. Use the systemic approach to identify and treat problem curves. For example, Minnesota uses risk factors that include curve radii between 500 and 1,200 ft, traffic volumes between 500 and 1,000 vehicles per day, intersection in the curve, and presence of a visual trap.[1]
3. Match the appropriate strategy to the identified problem(s), considering the full range of enhanced delineation treatments. Once the MUTCD requirements and recommendations have been met, an incremental approach is often beneficial to avoid excessive cost.



Chevron signs with retroreflective strips on sign posts installed along a curve. Source: FHWA

1 (CMF ID: 2439,2431,2432) Albin et al. Low-Cost Treatments for Horizontal Curve Safety 2016. FHWA-SA-15-084, (2016).
2 (CMF ID: 2438) Srinivasan et al. Safety Evaluation of Improved Curve Delineation. FHWA-HRT-09-045, (2009).
3 (CMF ID: 8978) Lyon et al. Safety Evaluation of Two Curve Warning Treatments: In-Lane Curve Warning Pavement Markings and Oversized Chevron Signs. Presented at the 96th TRB Annual Meeting, Paper No. 17-00432, (2017).
4 (CMF ID: 10362) Hallmark, S. Evaluation of Sequential Dynamic Chevrons on Rural Two-lane Highways. FHWA, (2017).
5 (CMF ID: 10312,9167) Donnell et al. Reducing Roadway Departure Crashes at Horizontal Curve Sections on Two-lane Rural Highways. FHWA-SA-19-005, (2019).

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Longitudinal Rumble Strips and Stripes

Longitudinal rumble strips are milled or raised elements on the pavement intended to alert drivers through vibration and sound that their vehicle has left the travel lane. They can be installed on the shoulder, edge line, or at or near the center line of an undivided roadway.

Rumble stripes are edge line or center line rumble strips where the pavement marking is placed over the rumble strip. This can increase the visibility and durability of the pavement marking during wet, nighttime conditions, and can improve the durability of the marking on roads with snowplowing operations.

Safety Benefits:

Center Line Rumble Strips

44-64%

reduction in head-on fatal and injury crashes on two-lane rural roads.[4]

Shoulder Rumble Strips

13-51%

reduction in single vehicle, run-off-road fatal and injury crashes on two-lane rural roads.[4]

With roadway departure crashes accounting for more than half of the fatal roadway crashes annually in the United States, rumble strips and stripes are designed to address these crashes by alerting distracted, drowsy, or otherwise inattentive drivers who drift from their lane. They are most effective when deployed systemically.

Transportation agencies should consider milled center line rumble strips (including in passing zone areas) and milled edge line or shoulder rumble strips with bicycle gaps for systemic safety projects, location-specific corridor safety improvements, as well as reconstruction or resurfacing projects.

Considerations

- Rumble strips are relatively low-cost, and economic analyses have indicated benefit/cost ratios that exceed 100.[1]
- Where rumble strips cannot be placed due to noise concerns, agencies may consider a design using an oscillating sine wave pattern (also known as "mumble strips") that reduces noise outside of the vehicle. However, the safety benefits of this design need more study.[2]
- Maintenance concerns:
  - Where rumble strips are placed along a pavement joint, there are typically no issues with joint stability if the pavement structure and joint was already in good condition.
  - Studies have shown no evidence of issues related to snow, ice, or rain build-up in the rumble strip.[3]



Shoulder rumble strips and center line rumble stripes are installed on this roadway. Source: FHWA



Example of an edge line rumble stripe. Source: Missouri DOT

For more information on this and other FHWA Proven Safety Countermeasures, please visit https://highways.dot.gov/safety/proven-safety-countermeasures and https://highways.dot.gov/safety/rwd/keep-vehicles-road/rumble-strips.

FHWA-SA-21-036

1 Himes, S., and McGee, H. Decision Support Guide for the Installation of Shoulder and Center Line Rumble Strips on Non-Freeways. Federal Highway Administration Report No. FHWA-SA-16-115. (August 2016).
2 Bedsole et al. *Did You Hear That?* Public Roads Magazine, Volume 80, No. 4. FHWA Publication No. FHWA-HRT-17-002, (2017).
3 NCHRP Synthesis 339: Centerline Rumble Strips – A Synthesis of Highway Practices, (2005
4 (CMF ID: 3358, 3356, 3425, 3648) NCHRP Report 641: Guidance for the Design and Application of Shoulder and Centerline Rumble Strips, (2009).

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SafetyEdge℠

The SafetyEdge℠ technology shapes the edge of the pavement at approximately 30 degrees from the pavement cross slope during the paving process. This safety practice eliminates the potential for vertical drop-off at the pavement edge, has minimal effect on project cost, and can improve pavement durability by reducing edge raveling of asphalt.

Safety Benefits:

11%
reduction in fatal and injury crashes.[2]

21%
reduction in run-off-road crashes.[2]

19%
reduction in head-on crashes.[2]

Benefit-Cost Ratio Range[3]

700:1 to 1,500:1

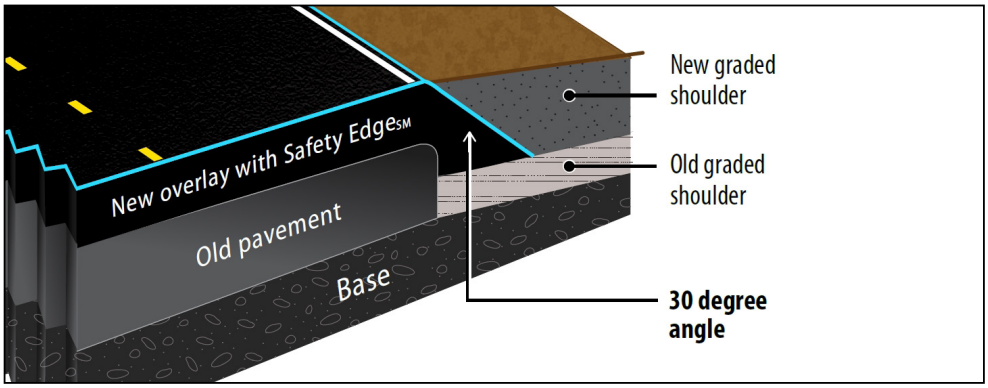
Rural road crashes involving edge drop-offs are 2-4 times more likely to include a fatality than other crashes on similar roads.[1] Vehicles may leave the roadway for various reasons ranging from distracted driver errors to low visibility, or to the presence of an animal on the road. Exposed vertical pavement edges can cause vehicles to become unstable and prevent their safe return to the roadway. The SafetyEdge℠ gives drivers the opportunity to return to their travel lane while maintaining control of their vehicle.

The SafetyEdge℠ technology only requires adding one of several commercially available devices to the screed or endgate when placing hot-mix asphalt. Forms for shaping the edge of concrete pavement are simpler and can be made on site by the contractor. Some agencies allow the SafetyEdge℠ to remain exposed while a segment is under construction, unlike conventional pavement edges. However, before construction ends, agencies should bring the adjacent roadside flush with the top of the pavement for both the SafetyEdge℠ and traditional pavement edge. Over time, regardless of the edge type, the edge may become exposed due to settling, erosion, and tire wear. When this occurs, the gentle slope provided by the SafetyEdge℠ is preferred versus the traditional vertical pavement edge.

Transportation agencies should develop standards for implementing the SafetyEdge℠ systemwide on all new asphalt paving and resurfacing projects where curbs and/or guardrail are not present, while also encouraging standard application for concrete pavements.



Example of the SafetyEdge℠ after backfill material settles or erodes. Source: FHWA



Cross-section view of an overlay with the SafetyEdge℠. Source: FHWA-SA-17-044

For more information on this and other FHWA Proven Safety Countermeasures, please visit https://highways.dot.gov/safety/proven-safety-countermeasures and https://highways.dot.gov/safety/rwd/provide-safe-recovery/safetyedge.

FHWA-SA-21-038

1 Hallmark et al. Safety Impacts of Pavement Edge Drop-offs, (Washington, DC: AAA Foundation for Traffic Safety: 2006), p 93.
2 (CMF ID: 9205, 9211, 9217) Donnell et al. Development of Crash Modification Factors for the Application of the SafetyEdge℠ on Two-Lane Rural Roads. FHWA-HRT-17-081, (2017).
3 Safety Effects of the SafetyEdge℠, FHWA-SA-17-044, (2017).

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Safety Benefits:

Flatten sideslope from 1V:3H to 1V:4H:

8%

reduction for single-vehicle crashes.[2]

Flatten sideslope from 1V:4H to 1V:6H:

12%

reduction for single-vehicle crashes.[2]

Increase the distance to roadside features from 3.3 ft to 16.7 ft:

22%

reduction for all crashes.[3]

Increase the distance to roadside features from 16.7 ft to 30 ft:

44%

reduction for all crashes.[3]

For more information on this and other FHWA Proven Safety Countermeasures, please visit https://highways.dot.gov/safety/proven-safety-countermeasures and https://highways.dot.gov/safety/rwd/provide-safe-recovery/clear-zones/clear-zones.

FHWA-SA-21-029

Roadside Design Improvements at Curves

Horizontal curves account for 27 percent of all fatal crashes and 80 percent of all fatal crashes at curves are roadway departure crashes.[1] Roadside design improvements at curves is a strategy encompassing several treatments that target the high-risk roadside environment along the outside of horizontal curves. These treatments can reduce roadway departure fatalities and serious injuries by giving vehicles the opportunity to recover safely and by reducing crash severity.

Roadside design improvements can be implemented alone or in combination, and are particularly recommended at horizontal curves—where data indicates a higher risk for roadway departure fatalities and serious injuries.

Roadside Design Improvements to Provide for a Safe Recovery

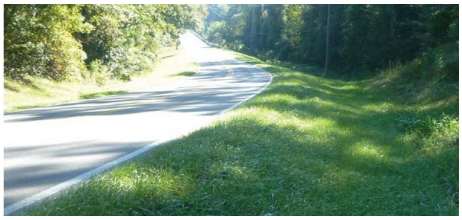
In cases where a vehicle leaves the roadway, having strategic roadside design elements, including an added or widened shoulder, flattened sideslopes, or a widened clear zone can provide drivers with an opportunity to regain control and re-enter the roadway in their lane or come to a safe stop before rolling over or encountering a fixed object.

- A **clear zone** is an unobstructed, traversable roadside area that allows a driver to stop safely or regain control of a vehicle that has left the roadway. Agencies should avoid adding new fixed objects such as trees and utility cabinets or poles in the clear zone. AASHTO's *Roadside Design Guide* details the clear zone width adjustment factors to be applied at horizontal curves.
- **Slope flattening** reduces the steepness of the sideslope to increase drivers' ability to keep the vehicle stable, regain control of the vehicle, and avoid obstacles. Slopes of 1V:4H or flatter are considered recoverable (i.e., drivers can retain control of a vehicle by slowing or stopping). Slopes between 1V:3H and 1V:4H are generally considered traversable, but non-recoverable (i.e., errant vehicle will continue to the bottom of the slope).
- **Adding or widening shoulders** gives drivers more recovery area to regain control in the event of a roadway departure.

Roadside Design Improvements to Reduce Crash Severity

Since not all roadside hazards can be removed, relocated, or redesigned at curves, installing roadside barriers to shield unmovable objects or steep embankments may be an appropriate treatment. Three common types of roadside barriers are:

- **Cable barrier** is a flexible barrier made from steel cables mounted on weak steel posts. Flexible barriers are more forgiving and have the most deflection.
- **Metal-beam guardrail** is a semi-rigid barrier where a W-beam or box-beam is mounted on steel or timber posts. These deflect less than cable barriers, so they can be located closer to objects where space is limited.
- **Concrete barrier** is a rigid barrier that has little to no deflection.



Clear zone provided on the outside of the curve. Source: FHWA.

1 Fatality Analysis Reporting System.
2 (CMF ID: 4627,4632) NCHRP Report 617: Accident Modification Factors for Traffic Engineering and ITS Improvements, (2008).
3 (CMF ID: 35,36) Elvik, R., and Vaa, T. Handbook of Road Safety Measures, (2004).

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8%

of all fatalities on divided highways are due to head-on crashes.[1]

Safety Benefits:

Median Barriers Installed on Rural Four-Lane Freeways

97%

reduction in cross-median crashes.[2]

For more information on this and other FHWA Proven Safety Countermeasures, please visit https://highways.dot.gov/safety/proven-safety-countermeasures and https://highways.dot.gov/safety/rwd/reduce-crash-severity.

FHWA-SA-21-037

Median Barriers

Median barriers are longitudinal barriers that separate opposing traffic on a divided highway and are designed to redirect vehicles striking either side of the barrier. Median barriers significantly reduce the number of cross-median crashes, which are attributed to the relatively high speeds that are typical on divided highways. AASHTO's ***Roadside Design Guide*** (RDG) recommends guidelines for the use of median barriers on high-speed, fully controlled-access roadways for locations where the median is 30 ft in width or less and the average daily traffic (ADT) is greater than 20,000 vehicles per day (vpd). For locations with median widths greater than 50 ft and where the ADT is less than 20,000 vpd, a median barrier is optional. For locations where the median is between 30 and 50 feet, the RDG suggests an analysis to determine the cost effectiveness of median barrier installation. Median barriers can be cable, metal-beam, or concrete.

- **Cable barriers** are flexible barriers, made from steel cables mounted on weak steel posts, resulting in less occupant impact force as it absorbs energy from the crash, capturing or redirecting the vehicle. Due to larger deflection, median width is an important consideration. These barriers are more adaptable to slopes typically found in medians. Cable barriers tend to require more frequent maintenance and repair than other barrier types.
- **Metal-beam guardrails** are considered semi-rigid barriers, where the W-beam or box-beam is mounted to steel or timber posts. When impacted, they are designed to deform and deflect, absorbing some of the crash energy and redirecting the vehicle. Metal-beam guardrails often do not require maintenance after minor impacts. They deflect less than cable barriers, so they can be located closer to objects where space is limited.
- **Concrete barriers** are usually rigid and result in little to no deflection. They redirect rather than absorb energy from the impact. Rigid concrete barriers seldom require repair or maintenance. Some agencies have used portable concrete barriers as median barriers. These barriers require repositioning after an impact but are typically less maintenance than a post mounted barrier.

To reduce cross-median crashes, transportation agencies should review their head-on crash history on divided highways to identify hot spots. Agencies should also consider implementing a systemic approach to median barrier placement based on cross-median crash risk factors. Potential risk factors include:

- Traffic volumes.
- Vehicle classifications.
- Median crossover history.
- Crash incidents.
- Vertical and horizontal alignment.
- Median terrain configurations.



Median cable barrier prevents a potential head-on crash.
Source: Washington State DOT

1 Fatality Analysis Reporting System.
2 (CMF ID: 7040) NCHRP Report 794: Median Cross-Section Design for Rural Divided Highways, (2011).

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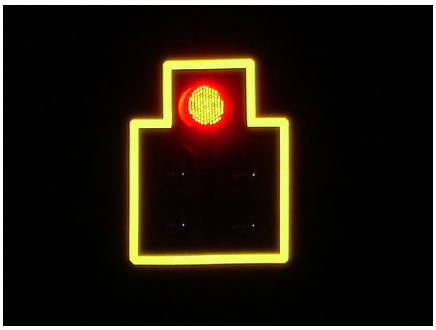
Backplates with Retroreflective Borders

Backplates added to a traffic signal head improve the visibility of the illuminated face of the signal by introducing a controlled-contrast background. The improved visibility of a signal head with a backplate is made even more conspicuous by framing it with a 1- to 3-inch yellow retroreflective border. Signal heads that have backplates equipped with retroreflective borders are more visible and conspicuous in both daytime and nighttime conditions.

Safety Benefits:

15%
reduction in total crashes.[1]

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



Retroreflective borders are highly visible during the night. Source: South Carolina DOT

Considerations

Transportation agencies should consider backplates with retroreflective borders as part of their efforts to systematically improve safety performance at signalized intersections. Adding a retroreflective border to an existing signal backplate is a very low-cost safety treatment. This can be done by either adding retroreflective tape to an existing backplate or purchasing a new backplate with a retroreflective border already incorporated. The most efficient means of implementing this proven safety countermeasure is to adopt it as a standard treatment for signalized intersections across a jurisdiction or State.

Implementation challenges include minimizing installation time, accessing existing signal heads, and structural limitations due to added wind load in instances where an entire backplate is added. Agencies should consider the design of the existing signal support structure to determine if the design is sufficient to support the added wind load.



Signal backplate framed with a retroreflective border. Source: FHWA

For more information on this and other FHWA Proven Safety Countermeasures, please visit https://highways.dot.gov/safety/proven-safety-countermeasures and https://rosap.ntl.bts.gov/view/dot/42807.

1 (CMF ID: 1410) Sayed, T., Leur, P., and Pump, J., "Safety Impact of Increased Traffic Signal Backboards Conspicuity." 2005 TRB 84th Annual Meeting: Compendium of Papers CD-ROM, Vol. TRB#05-16, Washington, D.C., (2005).

FHWA-SA-21-039

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Safety Benefits:

Reducing driveway density

5-23%
reduction in total crashes along 2-lane rural roads.[3]

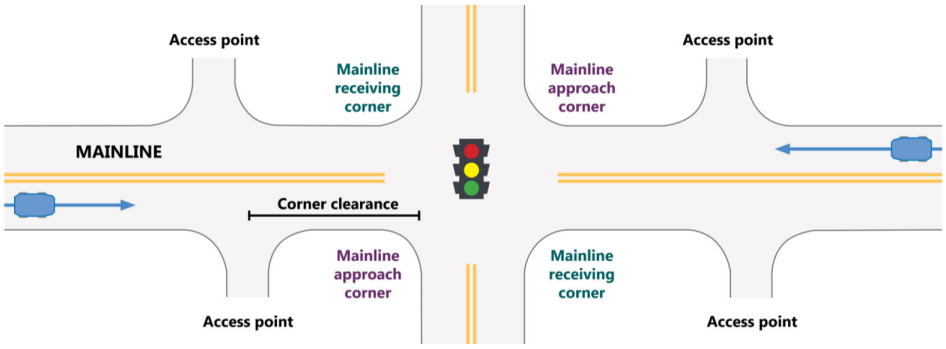
25-31%
reduction in fatal and injury crashes along urban/ suburban arterials.[4]

For more information on this and other FHWA Proven Safety Countermeasures, please visit https://highways.dot.gov/safety/proven-safety-countermeasures and https://highways.dot.gov/safety/intersection-safety/cam.

FHWA-SA-21-040

Corridor Access Management

Access management refers to the design, application, and control of entry and exit points along a roadway. This includes intersections with other roads and driveways that serve adjacent properties. Thoughtful access management along a corridor can simultaneously enhance safety for all modes, facilitate walking and biking, and reduce trip delay and congestion.



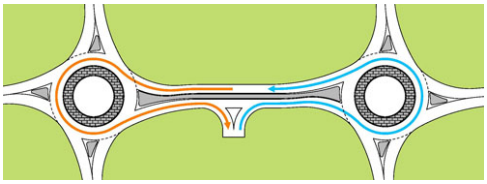
Schematic of an intersection and adjacent access points. Source: FHWA

Every intersection, from a signalized intersection to an unpaved driveway, has the potential for conflicts between vehicles, pedestrians, and bicyclists. The number and types of conflict points—locations where the travel paths of two users intersect—influence the safety performance of the intersection or driveway. FHWA developed corridor-level crash prediction models to estimate and analyze the safety effects of selected access management techniques for different area types, land uses, roadway variables, and traffic volumes.[1]

The following access management strategies can be used individually or in combination with one another:

- Reduce density through driveway closure, consolidation, or relocation.
- Manage spacing of intersection and access points.
- Limit allowable movements at driveways (such as right-in/ right-out only).
- Place driveways on an intersection approach corner rather than a receiving corner, which is expected to have fewer total crashes.[2]
- Implement raised medians that preclude across-roadway movements.
- Utilize designs such as roundabouts or reduced left-turn conflicts (such as restricted crossing U-turn, median U-turns, etc.).
- Provide turn lanes (i.e., left-only, right-only, or interior two-way left).
- Use lower speed one-way or two-way off-arterial circulation roads.

Successful corridor access management involves balancing overall safety and mobility for all users along with the needs of adjacent land uses.



Tandem roundabouts with a continuous raised median eliminates left-turn and across-roadway conflicts. Source: FHWA

1 Gross et al. Safety Evaluation of Access Management Policies and Techniques. FHWA-HRT-14-057, (2018).
2 Le et al. Safety Evaluation of Corner Clearance at Signalized Intersections. FHWA-HRT-17-084, (2018).
3 Harwood et al. Prediction of the Expected Safety Performance of Rural Two-Lane Highways. FHWA-RD-99-207, (2000).
4 (CMF ID: 179,178) Elvik, R. and Vaa, T., Handbook of Road Safety Measures. Oxford, United Kingdom, Elsevier, (2004).

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Dedicated Left- and Right-Turn Lanes at Intersections

Auxiliary turn lanes—either for left turns or right turns—provide physical separation between turning traffic that is slowing or stopped and adjacent through traffic at approaches to intersections. Turn lanes can be designed to provide for deceleration prior to a turn, as well as for storage of vehicles that are stopped and waiting for the opportunity to complete a turn.

Safety Benefits:

Left-Turn Lanes

28-48%

reduction in total crashes.[1]

Positive Offset Left-Turn Lanes

36%

reduction in fatal and injury crashes.[2]

Right-Turn Lanes

14-26%

reduction in total crashes.[1]



Left- and right-turn lanes at a two-way stop-controlled intersection. Source: City of Greeley, CO

For more information on this and other FHWA Proven Safety Countermeasures, please visit https://highways.dot.gov/safety/proven-safety-countermeasures and https://www.fhwa.dot.gov/publications/research/safety/02103/02103techbrief.pdf.

FHWA-SA-21-041

While turn lanes provide measurable safety and operational benefits at many types of intersections, they are particularly helpful at two-way stop-controlled intersections. Crashes occurring at these intersections are often related to turning maneuvers. Since the major route traffic is free flowing and typically travels at higher speeds, crashes that do occur are often severe. The main crash types include collisions of vehicles turning left across opposing through traffic and rear-end collisions of vehicles turning left or right with other vehicles following closely behind. Turn lanes reduce the potential for these types of crashes.

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

Offset Turn Lanes

Providing offset of left- and right-turn lanes to increase visibility can provide added safety benefits, and is preferable in many situations, particularly at locations with higher speeds, or where free-flow or permissive movements are possible.

At turn lanes with zero or negative offset, turning vehicles can block sightlines. For left-turn lanes, this usually involves opposing left-turning vehicles occupying the turn lanes at the same time. For right-turn lanes, this typically involves right-turning vehicles from the major road and vehicles entering the intersection from the minor road. In both scenarios, adding positive offset to turn lanes enhances the sight distance to approaching vehicles that conflict with the turning movement. Offset turn lanes should be considered when there is a high frequency of these types of conflicts in order to reduce the likelihood of a severe crash.

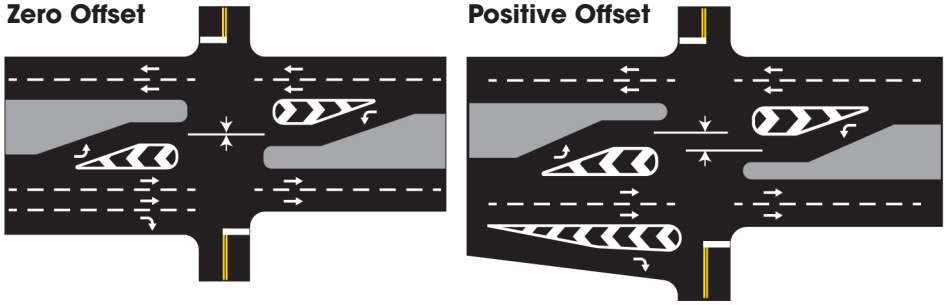


Illustration comparing zero offset to positive offset of left- and right-turn lanes. Source: FHWA

1 (CMF ID: 260, 268, 285, 289) Harwood et al. Safety Effectiveness of Intersection Left- and Right-Turn Lanes. FHWA-HRD-02-089, (2002).
2 (CMF ID: 6096) Persaud et al. Safety Evaluation of Offset Improvements for Left-Turn Lanes. FHWA-HRT-09-035, (2009).

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Safety Benefits:

RCUT

Two-Way Stop-Controlled to RCUT:

54%

reduction in fatal and injury crashes.[2]

Signalized Intersection to Signalized RCUT:

22%

reduction in fatal and injury crashes.[3]

Unsignalized Intersection to Unsignalized RCUT:

63%

reduction in fatal and injury crashes. [4]

MUT

30%

reduction in intersection-related injury crash rate.[5]

For more information on this and other FHWA Proven Safety Countermeasures, please visit https://highways.dot.gov/safety/proven-safety-countermeasures and https://highways.dot.gov/safety/intersection-safety/intersection-types/reduced-left-turn-conflict-intersections.

FHWA-SA-21-030

Reduced Left-Turn Conflict Intersections

Reduced left-turn conflict intersections are geometric designs that alter how left-turn movements occur. These intersections simplify decision-making for drivers and minimize the potential for higher severity crash types, such as head-on and angle. Two highly effective designs that rely on U-turns to complete certain left-turn movements are known as the Restricted Crossing U-turn (RCUT) and the Median U-turn (MUT).

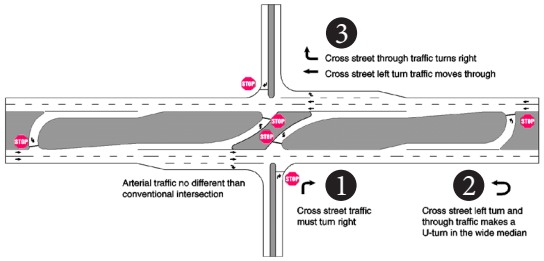
Restricted Crossing U-turn

The RCUT intersection, also known as a J-Turn, Superstreet, or Reduced Conflict Intersection, modifies the direct left-turn and through movements from cross-street approaches. Minor road traffic makes a right turn followed by a U-turn at a designated location—either signalized or unsignalized—to continue in the desired direction. The RCUT is suitable for and adaptable to a wide variety of circumstances, ranging from isolated rural, high-speed locations to urban and suburban high-volume, multimodal corridors. It is a competitive and less costly alternative to constructing an interchange. RCUTs work well when consistently used along a corridor, but also can be used effectively at individual intersections. Studies have shown that installing an RCUT can result in a 30-percent increase in throughput and a 40-percent reduction in network intersection travel time.[1]

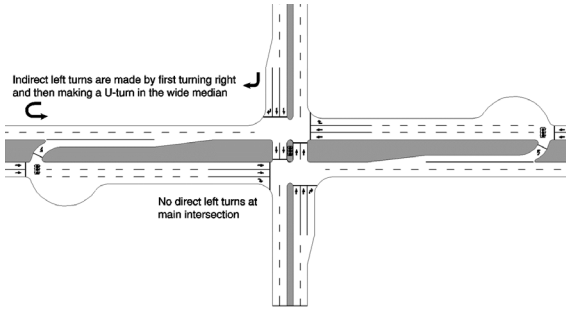
Median U-turn

The MUT intersection modifies direct left turns from the major approaches. Vehicles proceed through the main intersection, make a U-turn a short distance downstream, followed by a right turn at the main intersection. The U-turns can also be used for modifying the cross-street left turns, similar to the RCUT.

The MUT is an excellent choice for intersections with heavy through traffic and moderate left-turn volumes. Studies have shown a 20- to 50-percent improvement in intersection throughput for various lane configurations as a result of implementing the MUT design. When implemented at multiple intersections along a corridor, the efficient two-phase signal operation of the MUT can reduce delay, improve travel times, and create more crossing opportunities for pedestrians and bicyclists.



Example of a unsignalized RCUT intersection. Source: FHWA



Example of a MUT intersection. Source: FHWA

1 Hugher and Jagannathan. Restricted Crossing U-Turn Intersection. FHWA-HRT-09-059, (2009).
2 (CMF ID: 5556) Edara et al. Evaluation of J-turn Intersection Design Performance in Missouri. MoDOT, (2013).
3 (CMF ID: 9985) Hummer and Rao. Safety Evaluation of a Signalized Restricted Crossing U-Turn. FHWA-HRT-17-082, (2017).
4 (CMF ID: 4884) Hummer et al. Superstreet Benefits and Capacities. FHWA/NC/2009-06, NC State University, (2010).
5 (CMF ID: 10867) Synthesis of the Median U-Turn Treatment, Safety, and Operational Benefits, FHWA-HRT-07-033, (2007).

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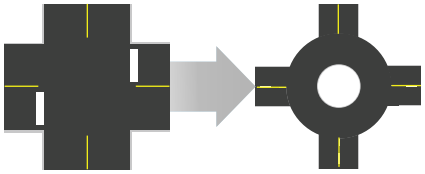
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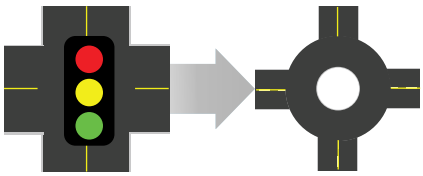
Safety Benefits:

Two-Way Stop-Controlled Intersection to a Roundabout



82%
reduction in fatal and injury crashes.[1]

Signalized Intersection to a Roundabout



78%
reduction in fatal and injury crashes.[1]

For more information on this and other FHWA Proven Safety Countermeasures, please visit https://highways.dot.gov/safety/proven-safety-countermeasures and https://highways.dot.gov/safety/intersection-safety/intersection-types/roundabouts.

FHWA-SA-21-042

Roundabouts

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

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

Roundabouts can be implemented in both urban and rural areas under a wide range of traffic conditions. They can replace signals, two-way stop controls, and all-way stop controls. Roundabouts are an effective option for managing speed and transitioning traffic from high-speed to low-speed environments, such as freeway interchange ramp terminals, and rural intersections along high-speed roads.



Illustration of a multilane roundabout. Source: FHWA



Example of a single-lane roundabout. Source: FHWA

1 (CMF ID: 211,226) AASHTO. The Highway Safety Manual, American Association of State Highway Transportation Professionals, Washington, D.C., (2010).

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

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

Safety Benefits:

10%
reduction of fatal and injury crashes at all locations/types/areas.

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

27%
reduction of fatal and injury crashes at rural intersections.

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

Average Benefit-Cost Ratio

12:1

For more information on this and other FHWA Proven Safety Countermeasures, please visit https://highways.dot.gov/safety/proven-safety-countermeasures and https://highways.dot.gov/sites/fhwa.dot.gov/files/2022-06/fhwasa18047.pdf.

FHWA-SA-21-031

There are several benefits to systemically applying multiple low-cost countermeasures at stop-controlled intersections, including,

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



Example of countermeasures on the through approach.
Source: South Carolina DOT



Example of countermeasures on the stop approach.
Source: South Carolina DOT

The low-cost countermeasures for stop-controlled intersections generally consist of the following treatments:

On the Through Approach

- Doubled-up (left and right), oversized advance intersection warning signs, with supplemental street name plaques (can also include flashing beacon).
- Retroreflective sheeting on sign posts.
- Enhanced pavement markings that delineate through lane edge lines.

On the Stop Approach

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

Source: (CMF ID: 8867, 8870, 8874, 8893) T. Le et al. "Safety Effects of Low-Cost Systemic Safety Improvements at Signalized and Stop-Controlled Intersections," 96th Annual Meeting of the Transportation Research Board, Paper Number 17-05379, January 2017.

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Safety Benefits:

36-50%
reduction in red light running.[2]

8-14%
reduction in total crashes.[2]

12%
reduction in injury crashes.[2]

Yellow Change Intervals

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

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

Transportation agencies can improve signalized intersection safety and reduce red-light running by reviewing and updating their traffic signal timing policies and procedures concerning the yellow change interval. Agencies should institute regular evaluation and adjustment protocols for existing traffic signal timing. Refer to the *Manual on Uniform Traffic Control Devices* for basic requirements and further recommendations about yellow change interval timing. As part of strategic signal system modernization and updates, incorporating automated traffic signal performance measures (ATSPMs) is a proven approach to improve on traditional retiming processes. ATSPMs provide continuous performance monitoring capability and the ability to modify timing based on actual performance, without requiring expensive modeling or data collection.[1]



Appropriately timed yellow change intervals can reduce red-light running and improve overall intersection safety. Source: FHWA

For more information on this and other FHWA Proven Safety Countermeasures, please visit https://highways.dot.gov/safety/proven-safety-countermeasures and https://highways.dot.gov/sites/fhwa.dot.gov/files/2022-06/fhwasa13027.pdf.

FHWA-SA-21-043

1 Federal Highway Administration. "Automated Traffic Signal Performance," (2020).
2 (CMF ID: 380,384) NCHRP Report 731: Guidelines for Timing Yellow and All-Red Intervals at Signalized Intersections, (2011).

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Crosswalk Visibility Enhancements

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

Three main crosswalk visibility enhancements help make crosswalks and the pedestrians, bicyclists, wheelchair and other mobility device users, and transit users using them more visible to drivers. These include high-visibility crosswalks, lighting, and signing and pavement markings. These enhancements can also assist users in deciding where to cross. Agencies can implement these features as standalone or combination enhancements to indicate the preferred location for users to cross.

Safety Benefits:

High-visibility crosswalks can reduce pedestrian injury crashes up to:

40% [1]

Intersection lighting can reduce pedestrian crashes up to:

42% [2]

Advance yield or stop markings and signs can reduce pedestrian crashes up to:

25% [3]

High-visibility crosswalks

High-visibility crosswalks use patterns (i.e., bar pairs, continental, ladder) that are visible to both the driver and pedestrian from farther away compared to traditional transverse line crosswalks. They should be considered at all midblock pedestrian crossings and uncontrolled intersections. Agencies should use materials such as inlay or thermoplastic tape, instead of paint or brick, for highly reflective crosswalk markings.

Improved Lighting

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

Enhanced Signing and Pavement Markings

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

In-street signing, such as "STOP Here for Pedestrians" or "YIELD Here to Pedestrians" may be appropriate on roads with two- or three-lane roads where speed limits are 30 miles per hour or less.



Source: FHWA

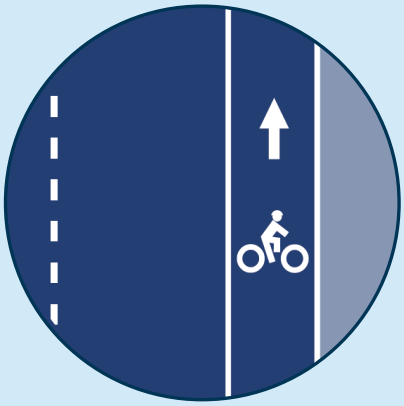
For more information on this and other FHWA Proven Safety Countermeasures, please visit https://highways.dot.gov/safety/proven-safety-countermeasures and https://highways.dot.gov/sites/fhwa.dot.gov/files/2022-06/techSheetVizEnhancemt2018.pdf.

FHWA-SA-21-049

1 (CMF ID: 4123) Chen, L., C. Chen, and R. Ewing. The Relative Effectiveness of Pedestrian Safety Countermeasures at Urban Intersections - Lessons from a New York City Experience. (2012).
2 (CMF ID: 436) Elvik, R. and Vaa, T. Handbook of Road Safety Measures. Oxford, United Kingdom, Elsevier, (2004).
3 (CMF ID: 9017) Zeeger et al. Development of Crash Modification Factors for Uncontrolled Pedestrian Crossing Treatments, FHWA, (2017).

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Bicycle Lanes

Most fatal and serious injury bicyclist crashes occur at non-intersection locations. Nearly one-third of these crashes occur when motorists are overtaking bicyclists[1] because the speed and size differential between vehicles and bicycles can lead to severe injury. Many people are not comfortable riding a bicycle because of their fear that this type of crash may occur. To make bicycling safer and more comfortable for most types of bicyclists, State and local agencies should consider installing bicycle lanes. Providing bicycle facilities can mitigate or prevent interactions, conflicts, and crashes between bicyclists and motor vehicles, and create a network of safer roadways for bicycling. Bicycle Lanes align with the Safe System Approach principle of recognizing human vulnerability—where separating users in space can enhance safety for all road users.

Safety Benefits:

Converting traditional or flush buffered bicycle lanes to a separated bicycle lane with flexible delineator posts can reduce crashes up to:

53%

for bicycle/vehicle crashes.[3]

Bicycle Lane Additions can reduce crashes up to:

49%

for total crashes on urban 4-lane undivided collectors and local roads.[7]

30%

for total crashes on urban 2-lane undivided collectors and local roads.[7]



Bicycle lane in Washington, DC. Source: Alex Baca, Washington Area Bicyclist Association.

For more information on this and other FHWA Proven Safety Countermeasures, please visit https://highways.dot.gov/safety/proven-safety-countermeasures and https://highways.dot.gov/sites/fhwa.dot.gov/files/2022-07/fhwasa18077.pdf.

Applications

The FHWA's *Bikeway Selection Guide* and *Incorporating On-Road Bicycle Networks into Resurfacing Projects* assist agencies in determining which facilities provide the most benefit in various contexts. Bicycle lanes can be included on new roadways or created on existing roads by reallocating space in the right-of-way through *Road Diets*. Separated bicycle lanes, which use vertical elements—such as flexible delineator posts, curbs, or vegetation—between the bicycle lane and motorized traffic lanes provide additional safety benefits.[2,3] For a marked bike lane without vertical elements, a lateral offset with marked buffer can help to further separate bicyclists from vehicle traffic.

Considerations

- In order to maximize a roadway's suitability for riders of all ages and abilities, bicycle lane design should vary according to roadway characteristics (number of lanes, motor vehicle and truck volumes, speed, presence of transit), user needs (current and forecasted ridership, types of bicycles and micromobility devices in use within the community, role within the bicycling network), and land-use context (adjacent land uses, types and intensity of conflicting uses, demands from other users for curbside access). Separated bicycle lanes are recommended on roadways with higher vehicle volumes and speeds, such as arterials.
- City and State policies may require minimum bicycle lane widths, although desirable bicycle lane widths can differ by agency and functional classification of the road, current and forecasted bicycle volumes, and contextual attributes such as topography.
- Studies have found that roadways did not experience an increase in crashes or congestion when travel lane widths were decreased to add a bicycle lane.[4]
- Studies and experience in U.S. cities show that bicycle lanes increase ridership and may help jurisdictions better manage roadway capacity.
- In rural areas, rumble strips can negatively impact bicyclists' ability to ride if not properly installed. Agencies should consider the dimensions, placement, and offset of rumble strips when adding a bicycle lane.[5]
- Bicycle lanes should be considered on roadways where adjacent land use suggests that trips could be served by varied modes, particularly to meet the safety and travel needs of low-income populations likely to use bicycles to reach essential destinations.[6]

1 Thomas et al. *Bicyclist Crash Types on National, State, and Local Levels: A New Look*. Transportation Research Record 673(6), 664-676, (2019).
2 Separated Bike Lane Planning and Design Guide. FHWA-HEP-15-025, (2015).
3 (CMF ID: 11296) Developing CMFs for Separated Bicycle Lanes. FHWA-HRT-23-025, (2023).
4 Park and Abdel-Aty. *Evaluation of safety effectiveness of multiple cross sectional features on urban arterials*. Accident Analysis and Prevention, Vol. 92, pp. 245-255, (2016).
5 FHWA Tech Advisory Shoulder and Edge Line Rumble Strips, (2011).
6 Sandt et al. Pursuing Equity in Pedestrian and Bicycle Planning. FHWA, (2016).
7 (CMF ID: 10738, 10742) Development of Crash Modification Factors for Bicycle Lane Additions While Reducing Lane and Shoulder Widths. FHWA-HRT-21-012, (2021).

FHWA-SA-21-051

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Rectangular Rapid Flashing Beacons (RRFB)

A marked crosswalk or pedestrian warning sign can improve safety for pedestrians crossing the road, but at times may not be sufficient for drivers to visibly locate crossing locations and yield to pedestrians. To enhance pedestrian conspicuity and increase driver awareness at uncontrolled, marked crosswalks, transportation agencies can install a pedestrian actuated Rectangular Rapid Flashing Beacon (RRFB) to accompany a pedestrian warning sign. RRFBs consist of two, rectangular- shaped yellow indications, each with a light-emitting diode (LED)-array-based light source.[1] RRFBs flash with an alternating high frequency when activated to enhance conspicuity of pedestrians at the crossing to drivers.

For more information on using RRFBs, see the Interim Approval in the *Manual on Uniform Traffic Control Devices (MUTCD)*.[1]

Safety Benefits:

RRFBs can reduce crashes up to:

47%

for pedestrian crashes.[4]

RRFBs can increase motorist yielding rates up to:

98%

(varies by speed limit, number of lanes, crossing distance, and time of day).[3]



RRFBs used at a trail crossing.
Source: LJB

Applications

The RRFB is applicable to many types of pedestrian crossings but is particularly effective at multilane crossings with speed limits less than 40 miles per hour.[2] Research suggests RRFBs can result in motorist yielding rates as high at 98 percent at marked crosswalks, but varies depending on the location, posted speed limit, pedestrian crossing distance, one- versus two-way road, and the number of travel lanes.[3] RRFBs can also accompany school or trail crossing warning signs.

RRFBs are placed on both sides of a crosswalk below the pedestrian crossing sign and above the diagonal downward arrow plaque pointing at the crossing.[1] The flashing pattern can be activated with pushbuttons or passive (e.g., video or infrared) pedestrian detection, and should be unlit when not activated.

Considerations

Agencies should:[2]

- Install RRFBs in the median rather than the far-side of the roadway if there is a pedestrian refuge or other type of median.
- Use solar-power panels to eliminate the need for a power source.
- Reserve the use of RRFBs for locations with significant pedestrian safety issues, as over-use of RRFB treatments may diminish their effectiveness.

Agencies shall not:[2]

- Use RRFBs without the presence of a pedestrian, school or trail crossing warning sign.
- Use RRFBs for crosswalks across approaches controlled by YIELD signs, STOP signs, traffic control signals, or pedestrian hybrid beacons, except for the approach or egress from a roundabout.

For more information on this and other FHWA Proven Safety Countermeasures, please visit https://highways.dot.gov/safety/proven-safety-countermeasures and https://highways.dot.gov/sites/fhwa.dot.gov/files/2022-06/techSheet_RRFB_2018.pdf.

FHWA-SA-21-053

1 *MUTCD* Interim Approval 21 - RRFBs at Crosswalks.
2 "Rectangular Rapid Flash Beacon" in PEDSAFE: Pedestrian Safety Guide and Countermeasure Selection System. FHWA, (2013).
3 Fitzpatrick et al. "Will You Stop for Me? Roadway Design and Traffic Control Device Influences on Drivers Yielding to Pedestrians in a Crosswalk with a Rectangular Rapid-Flashing Beacon." Report No. TTI-CTS-0010. Texas A&M Transportation Institute, (2016).
4 (CMF ID: 9024) NCHRP Research Report 841 Development of Crash Modification Factors for Uncontrolled Pedestrian Crossing Treatments, (2017).

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Safety Benefits:

13%

reduction in pedestrian-vehicle crashes at intersections.[1]

Leading Pedestrian Interval

A leading pedestrian interval (LPI) gives pedestrians the opportunity to enter the crosswalk at an intersection 3-7 seconds before vehicles are given a green indication. Pedestrians can better establish their presence in the crosswalk before vehicles have priority to turn right or left.

LPIs provide the following benefits:

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

FHWA's Handbook for ***Designing Roadways for the Aging Population*** recommends the use of the LPI at intersections with high turning vehicle volumes. Transportation agencies should refer to the ***Manual on Uniform Traffic Control Devices*** for guidance on LPI timing and ensure that pedestrian signals are accessible for all users. Costs for implementing LPIs are very low when only signal timing alteration is required.



An LPI allows a pedestrian to establish a presence in the crosswalk before vehicles are given a green indication. Source: FHWA



LPIs reduce potential conflicts between pedestrians and turning vehicles. Source: FHWA

For more information on this and other FHWA Proven Safety Countermeasures, please visit https://highways.dot.gov/safety/proven-safety-countermeasures and https://highways.dot.gov/sites/fhwa.dot.gov/files/2022-06/fhwasa19040.pdf.

1 (CMF ID: 9918) Goughnour, E., D. Carter, C. Lyon, B. Persaud, B. Lan, P. Chun, I. Hamilton, and K. Signor. "Safety Evaluation of Protected Left-Turn Phasing and Leading Pedestrian Intervals on Pedestrian Safety." Report No. FHWA-HRT-18-044. Federal Highway Administration. (October 2018)

FHWA-SA-21-032

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Safety Benefits:

Median with Marked Crosswalk

46%

reduction in pedestrian crashes.[2]

Pedestrian Refuge Island

56%

reduction in pedestrian crashes.[2]

Medians and Pedestrian Refuge Islands in Urban and Suburban Areas

A **median** is the area between opposing lanes of traffic, excluding turn lanes. Medians in urban and suburban areas can be defined by pavement markings, raised medians, or islands to separate motorized and non-motorized road users.

A **pedestrian refuge island** (or crossing area) is a median with a refuge area that is intended to help protect pedestrians who are crossing a road.

Pedestrian crashes account for approximately 17 percent of all traffic fatalities annually, and 74 percent of these occur at non-intersection locations.[1] For pedestrians to safely cross a roadway, they must estimate vehicle speeds, determine acceptable gaps in traffic based on their walking speed, and predict vehicle paths. Installing a median or pedestrian refuge island can help improve safety by allowing pedestrians to cross one direction of traffic at a time.

Transportation agencies should consider medians or pedestrian refuge islands in curbed sections of urban and suburban multilane roadways, particularly in areas with a significant mix of pedestrian and vehicle traffic, traffic volumes over 9,000 vehicles per day, and travel speeds 35 mph or greater. Medians/refuge islands should be at least 4-ft wide, but preferably 8 ft for pedestrian comfort. Some example locations that may benefit from medians or pedestrian refuge islands include:

- Mid-block crossings.
- Approaches to multilane intersections.
- Areas near transit stops or other pedestrian-focused sites.



Example of a road with a median and pedestrian refuge islands. Source: City of Charlotte, NC



Median and pedestrian refuge island near a roundabout. Source: www.pedbikeimages.org / Dan Burden

For more information on this and other FHWA Proven Safety Countermeasures, please visit https://highways.dot.gov/safety/proven-safety-countermeasures and https://highways.dot.gov/sites/fhwa.dot.gov/files/2022-08/techSheet_PedRefugeIsland2018.pdf.

1 National Center for Statistics and Analysis. (2020, March). Pedestrians: 2018 data (Traffic Safety Facts. Report No. DOT HS 812 850). National Highway Traffic Safety Administration

2 (CMF ID: 175) Desktop Reference for Crash Reduction Factors, FHWA-SA-08-011, September 2008, Table 11.

FHWA-SA-21-044

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Safety Benefits:

55%
reduction in pedestrian crashes.[2]

29%
reduction in total crashes.[3]

15%
reduction in fatal and serious injury crashes.[3]



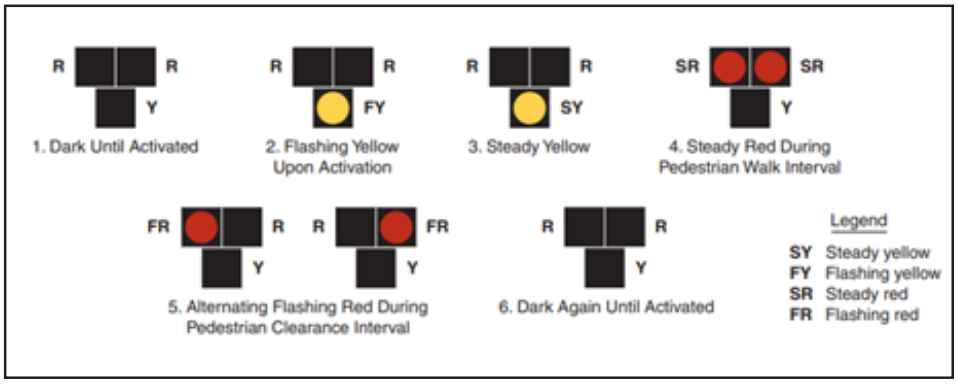
Example of PHBs mounted on a mast arm. Source: FHWA

For more information on this and other FHWA Proven Safety Countermeasures, please visit https://highways.dot.gov/safety/proven-safety-countermeasures and https://highways.dot.gov/sites/fhwa.dot.gov/files/2022-06/fhwasa18064.pdf.

FHWA-SA-21-045

Pedestrian Hybrid Beacons

The pedestrian hybrid beacon (PHB) is a traffic control device designed to help pedestrians safely cross higher-speed roadways at midblock crossings and uncontrolled intersections. The beacon head consists of two red lenses above a single yellow lens. The lenses remain "dark" until a pedestrian desiring to cross the street pushes the call button to activate the beacon, which then initiates a yellow to red lighting sequence consisting of flashing and steady lights that directs motorists to slow and come to a stop, and provides the right-of-way to the pedestrian to safely cross the roadway before going dark again.



Sequence for a PHB. Source: MUTCD 2009 Edition, p. 511, FHWA

Nearly 74 percent of pedestrian fatalities occur at non-intersection locations, and vehicle speeds are often a major contributing factor.[1] As a safety strategy to address this pedestrian crash risk, the PHB is an intermediate option between a flashing beacon and a full pedestrian signal because it assigns right of way and provides positive stop control. It also allows motorists to proceed once the pedestrian has cleared their side of the travel lane(s), reducing vehicle delay.

Transportation agencies should refer to the *Manual on Uniform Traffic Control Devices* (MUTCD) for information on the application of PHBs. Transportation agencies should locate pedestrian signals to be accessible for all users.

In general, PHBs are used where it is difficult for pedestrians to cross a roadway, such as when gaps in traffic are not sufficient or speed limits exceed 35 miles per hour. They are very effective at locations where three or more lanes will be crossed or traffic volumes are above 9,000 annual average daily traffic. Installation of a PHB must also include a marked crosswalk and pedestrian countdown signal. If PHBs are not already familiar to a community, agencies should conduct appropriate education and outreach as part of implementation.

1 National Center for Statistics and Analysis. (2020, March). Pedestrians: 2018 data (Traffic Safety Facts. Report No. DOT HS 812 850). National Highway Traffic Safety Administration
2 (CMF ID: 9020) Zegeer et al. NCHRP Report 841: Development of Crash Modification Factors for Uncontrolled Pedestrian Crossing Treatments. TRB, (2017).
3 (CMF ID: 2911,2917) Fitzpatrick, K. and Park, E.S. Safety Effectiveness of the HAWK Pedestrian Crossing Treatment, FHWA-HRT-10-042, (2010).

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Safety Benefits:

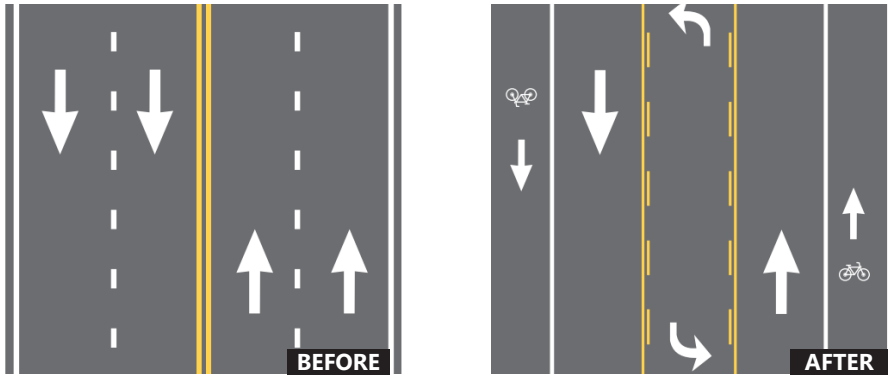
4-Lane to 3-Lane Road Diet Conversions

19-47%

reduction in total crashes.[1]

Road Diets (Roadway Reconfiguration)

A Road Diet, or roadway reconfiguration, can improve safety, calm traffic, provide better mobility and access for all road users, and enhance overall quality of life. A Road Diet typically involves converting an existing four-lane undivided roadway to a three-lane roadway consisting of two through lanes and a center two-way left-turn lane (TWLTL).



Before and after example of a Road Diet. Source: FHWA

Benefits of Road Diet installations may include:

- Reduction of rear-end and left-turn crashes due to the dedicated left-turn lane.
- Reduced right-angle crashes as side street motorists cross three versus four travel lanes.
- Fewer lanes for pedestrians to cross.
- Opportunity to install pedestrian refuge islands, bicycle lanes, on-street parking, or transit stops.
- Traffic calming and more consistent speeds.
- A more community-focused, Complete Streets environment that better accommodates the needs of all road users.

A Road Diet can be a low-cost safety solution when planned in conjunction with a simple pavement overlay, and the reconfiguration can be accomplished at no additional cost. Typically, a Road Diet is implemented on a roadway with a current and future average daily traffic of 25,000 or less.



Road Diet project in Honolulu, Hawaii. Source: Leidos

For more information on this and other FHWA Proven Safety Countermeasures, please visit https://highways.dot.gov/safety/proven-safety-countermeasures and https://highways.dot.gov/safety/other/road-diets.

1 (CMF ID: 5554,2841) *Evaluation of Lane Reduction "Road Diet" Measures on Crashes*, FHWA-HRT-10-053, (2010).

FHWA-SA-21-046

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Safety Benefits:

Sidewalks

65-89%

reduction in crashes involving pedestrians walking along roadways.[3]

Paved Shoulders

71%

reduction in crashes involving pedestrians walking along roadways.[3]

Walkways

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

With more than 6,200 pedestrian fatalities and 75,000 pedestrian injuries occurring in roadway crashes annually,[1] it is important for transportation agencies to improve conditions and safety for pedestrians and to integrate walkways more fully into the transportation system. Research shows people living in low-income communities are less likely to encounter walkways and other pedestrian-friendly features.[2]

Well-designed pedestrian walkways, shared use paths, and sidewalks improve the safety and mobility of pedestrians. Pedestrians should have direct and connected network of walking routes to desired destinations without gaps or abrupt changes. In some rural or suburban areas, where these types of walkways are not feasible, roadway shoulders provide an area for pedestrians to walk next to the roadway, although these are not preferable.

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



Example of a sidewalk in a residential area. Source: pedbikeimages.org / Burden



Paved shoulder used as a walkway. Source: pedbikeimages.org / Burden

For more information on this and other FHWA Proven Safety Countermeasures, please visit https://highways.dot.gov/safety/proven-safety-countermeasures and http://www.pedbikesafe.org/PEDSAFE/countermeasures_detail.cfm?CM_NUM=1.

FHWA-SA-21-047

1 National Center for Statistics and Analysis. (2020, March). Pedestrians: 2018 data (Traffic Safety Facts. Report No. DOT HS 812 850). National Highway Traffic Safety Administration.
2 Gibbs, et all. Income Disparities in Street Features that Encourage Walking. Bridging the Gap, (2012, March).
3 Gan et al. Update of Florida Crash Reduction Factors and Countermeasures to Improve the Development of District Safety Improvement Projects. Florida DOT, (2005).

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Safety Benefits:

HFST can reduce crashes up to:

63%
for injury crashes at ramps.[2]

48%
for injury crashes at horizontal curves.[2]

20%
for total crashes at intersections.[3]



Automated application of HFST.
Source: FHWA

For more information on this and other FHWA Proven Safety Countermeasures, please visit https://highways.dot.gov/safety/proven-safety-countermeasures and https://highways.dot.gov/safety/rwd/keep-vehicles-road/pavement-friction/hfst.

FHWA-SA-21-052

Pavement Friction Management

Friction is a critical characteristic of a pavement that affects how vehicles interact with the roadway, including the frequency of crashes. Measuring, monitoring, and maintaining pavement friction—especially at locations where vehicles are frequently turning, slowing, and stopping—can prevent many roadway departure, intersection, and pedestrian-related crashes.

Pavement friction treatments, such as High Friction Surface Treatment (HFST), can be better targeted and result in more efficient and effective installations when using continuous pavement friction data along with crash and roadway data.

Continuous Pavement Friction Measurement

Friction data for safety performance is best measured with Continuous Pavement Friction Measurement (CPFM) equipment. Spot friction measurement devices, like locked-wheel skid trailers, cannot safely and accurately collect friction data in curves or intersections, where the pavement polishes more quickly and adequate friction is so much more critical. Without CPFM equipment, agencies will assume the same friction over a mile or more.

CPFM technology measures friction continuously at highway speeds and provides both network and segment level data. Practitioners can analyze the friction, crash, and roadway data to better understand and predict where friction-related crashes will occur to better target locations and more effectively install treatments.[1]

High Friction Surface Treatment

HFST consists of a layer of durable, anti-abrasion, and polish-resistant aggregate over a thermosetting polymer resin binder that locks the aggregate in place to restore or enhance friction and skid resistance. Calcined bauxite is the aggregate shown to yield the best results and should be used with HFST applications.

Applications

HFST should be applied in locations with increased friction demand, including:

- Horizontal curves.
- Interchange ramps.
- Intersection approaches.
  - Higher-speed signalized and stop-controlled intersections.
  - Steep downward grades.
- Locations with a history of rear-end, failure to yield, wet-weather, or red-light-running crashes.
- Crosswalk approaches.

Considerations

- HFST is applied on existing pavement, so no new pavement is added.
- If the underlying pavement structure is unstable, then the HFST life cycle may be shortened, resulting in pre-mature failure.
- The automated installation method is preferred as it minimizes issues often associated with manual installation: human error due to fatigue, inadequate binder mixing, improper and uneven binder thickness, delayed aggregate placement, and inadequate aggregate coverage.
- The cost can be reduced when bundling installations at multiple locations.

1 Izeppi et al. Continuous Friction Measurement Equipment as a Tool for Improving Crash Rate Prediction: A Pilot Study. Virginia Department of Transportation, (2016).
2 (CMF ID: 10342, 10333) Merritt et al. Development of Crash Modification Factors for High Friction Surface Treatments. FHWA, (2020).
3 (CMF ID: 2259) NCHRP Report 617: Accident Modification Factors for Traffic Engineering and ITS Improvements, (2008).

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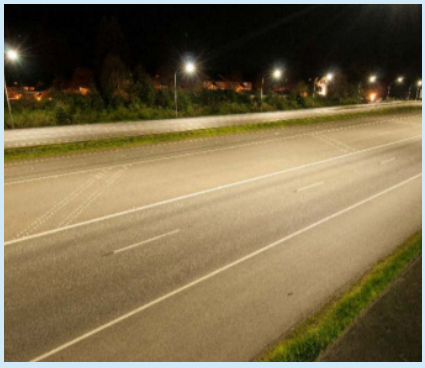
Safety Benefits:

Lighting can reduce crashes up to:

42%
for nighttime injury pedestrian crashes at intersections.[1]

33-38%
for nighttime crashes at rural and urban intersections.[2,1]

28%
for nighttime injury crashes on rural and urban highways.[1]



Source: WSDOT

For more information on this and other FHWA Proven Safety Countermeasures, please visit https://highways.dot.gov/safety/proven-safety-countermeasures and https://highways.dot.gov/safety/other/visibility/roadway-lighting-resources.

FHWA-SA-21-050

Lighting

The number of fatal crashes occurring in daylight is about the same as those that occur in darkness. However, the nighttime fatality rate is three times the daytime rate because only 25 percent of vehicle miles traveled (VMT) occur at night. At nighttime, vehicles traveling at higher speeds may not have the ability to stop once a hazard or change in the road ahead becomes visible by the headlights. Therefore, lighting can be applied continuously along segments and at spot locations such as intersections and pedestrian crossings in order to reduce the chances of a crash.

Adequate lighting (i.e., at or above minimum acceptable standards) is based on research recommending horizontal and vertical illuminance levels to provide safety benefits to all users of the roadway environment. Adequate lighting can also provide benefits in terms of personal security for pedestrians, wheelchair and other mobility device users, bicyclists, and transit users as they travel along and across roadways.

Applications

Roadway Segments

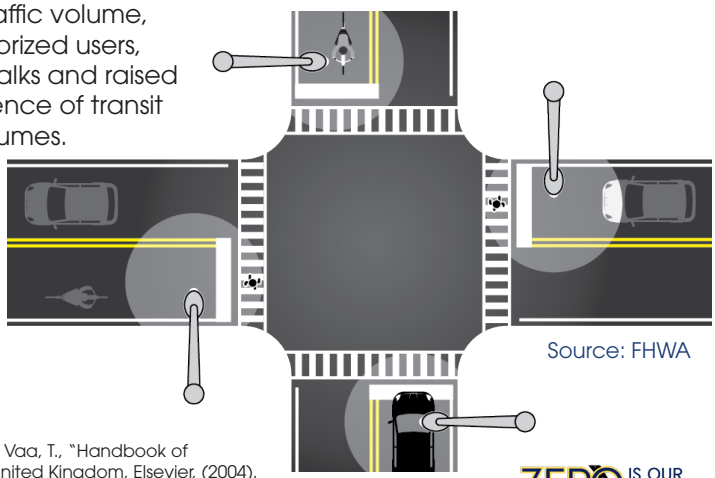
Research indicates that continuous lighting on both rural and urban highways (including freeways) has an established safety benefit for motorized vehicles.[1] Agencies can provide adequate visibility of the roadway and its users through the uniform application of lighting that provides full coverage along the roadway and the strategic placement of lighting where it is needed the most.

Intersections and Pedestrian Crossings

Increased visibility at intersections at nighttime is important since various modes of travel cross paths at these locations. Agencies should consider providing lighting to intersections based on factors such as a history of crashes at nighttime, traffic volume, the volume of non-motorized users, the presence of crosswalks and raised medians, and the presence of transit stops and boarding volumes.

Considerations

Most new lighting installations are made with breakaway features, shielded, or placed far enough from the roadway to reduce the probability and/or severity of fixed-object crashes. Modern lighting technology gives precise control with minimal excessive light affecting the nighttime sky or spilling over to adjacent properties. Agencies can equitably engage with underserved communities to determine where and how new and improved lighting can most benefit the community by considering their priorities, including eliminating crash disparities, connecting to essential neighborhood services, improving active transportation routes, and promoting personal safety.



Source: FHWA

1 (CMF ID: 436,433,192) Elvik, R. and Vaa, T., "Handbook of Road Safety Measures." Oxford, United Kingdom, Elsevier, (2004).
2 (CMF ID: 2376) Ye et al. A Simultaneous Equations Model of Crash Frequency By Collision Type for Rural Intersections, 87th Annual Meeting of the Transportation Research Board, (2008).

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Safety Benefits:

Agencies have experienced the following benefits after LRSP implementation:

25%
reduction in county road fatalities in Minnesota.

17%
reduction in fatal and serious injury crashes on county-owned roads in Washington State.

35%
reduction in severe curve crashes in Thurston County, WA.

For more information on this and other FHWA Proven Safety Countermeasures, please visit https://highways.dot.gov/safety/proven-safety-countermeasures and https://highways.dot.gov/safety/local-rural/local-road-safety-plans.

FHWA-SA-21-033

Local Road Safety Plans

A local road safety plan (LRSP) provides a framework for identifying, analyzing, and prioritizing roadway safety improvements on local roads. The LRSP development process and content are tailored to local issues and needs. The process results in a prioritized list of issues, risks, actions, and improvements that can be used to reduce fatalities and serious injuries on local roads. FHWA has developed several resources including an LRSP Do-It-Yourself website which further explains the process and includes resources local agencies and their partners need to create and implement an LRSP.[1]

Approximately 75 percent of rural roads are owned by local agencies.[2] While local roads are less traveled than State highways, they have a much higher rate of fatal and serious injury crashes.[2] Developing an LRSP is an effective strategy to improve local road safety for all road users and support the goals of a State's overall Strategic Highway Safety Plan (SHSP).

Although the development process and resulting plan can vary depending on the local agency's needs, available resources, and targeted crash types, aspects common to LRSPs include:

- Stakeholder engagement representing the 4E's: engineering, enforcement, education, and emergency medical services.
- Collaboration among municipal, county, Tribal, State, and/or Federal entities to leverage expertise and resources.
- Identification of target crash types and crash risk with corresponding recommended proven safety countermeasures.
- Timeline and goals for implementation and evaluation.

Local road agencies should consider developing an LRSP to be used as a tool for reducing roadway fatalities, injuries, and crashes.[3] LRSPs can help agencies create a prioritized list of improvements. LRSPs are also a proactive risk management technique to demonstrate an agency's responsiveness. The plan should be viewed as a living document that can be updated to reflect changing local needs and priorities.



Infographic showing the LRSP process. Source: FHWA

1 https://highways.dot.gov/safety/local-rural/local-road-safety-plans
2 Anderson et al. Noteworthy Practices: Addressing Safety on Locally-Owned and Maintained Roads A Domestic Scan, FHWA-SA-09-019, (2010).
3 Developing Safety Plans: A Manual for Local Rural Road Owners, FHWA-SA-12-017, provides guidance on developing an LRSP.

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Proven Safety Countermeasures



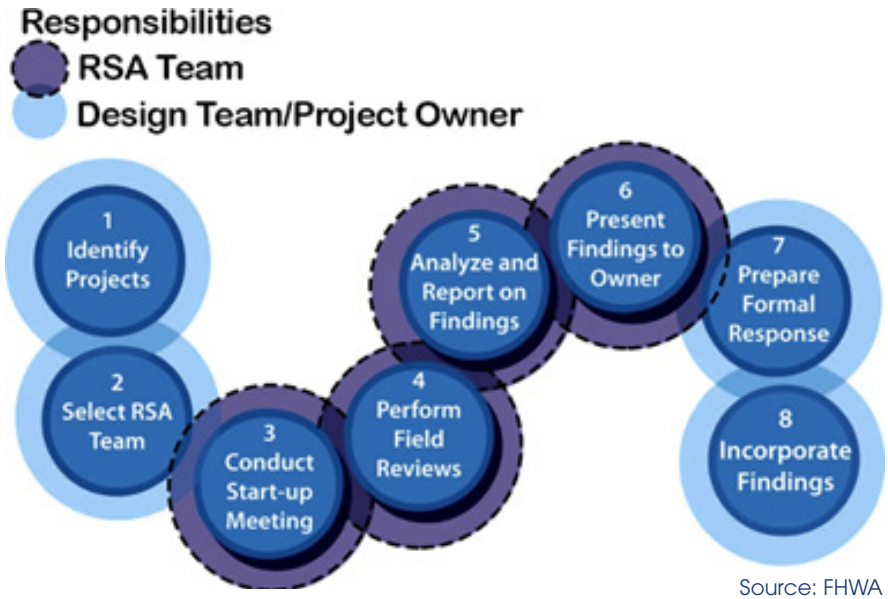
Safety Benefits:

10-60%

reduction in total crashes.[1]

Road Safety Audit

While most transportation agencies have established traditional safety review procedures, a road safety audit (RSA) or assessment is unique. RSAs are performed by a multidisciplinary team independent of the project. RSAs consider all road users, account for human factors and road user capabilities, are documented in a formal report, and require a formal response from the road owner. (See the eight steps for conducting an RSA below.)



Source: FHWA

RSAs provide the following benefits:

- Reduced number and severity of crashes due to safer designs.
- Reduced costs resulting from early identification and mitigation of safety issues before projects are built.
- Increased opportunities to integrate multimodal safety strategies and proven safety countermeasures.
- Expanded ability to consider human factors in all facets of design.
- Increased communication and collaboration among safety stakeholders.
- Objective review by independent multidisciplinary team.

RSAs can be performed in any phase of project development, from planning through construction. Agencies may focus RSAs specifically on motorized vehicles, pedestrians, bicyclists, motorcyclists, or a combination of these roadway users. Agencies are encouraged to conduct an RSA at the earliest stage possible, as all roadway design options and alternatives are being explored.



Multidisciplinary team performs field review during an RSA. Source: FHWA

For more information on this and other FHWA Proven Safety Countermeasures, please visit https://highways.dot.gov/safety/proven-safety-countermeasures and https://highways.dot.gov/safety/data-analysis-tools/systemic/road-safety-audits-rsa.

1 Road Safety Audits: An Evaluation of RSA Programs and Projects, FHWA-SA-12-037; and FHWA Road Safety Audit Guidelines, FHWA-SA-06-06.

FHWA-SA-21-048

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https://safety.fhwa.dot.gov/provencountermeasures/

FHWA-SA-21-071

CITY OF CONCORD

Safety Action Plan - Cost Estimate

Project 1: High Injury Network Corridor Improvements

Project 1: High Injury Network Corridor Improvements

No.	Improvement	Locations	Description	Unit	Unit Cost	Quantity	Subtotal	Total
1	Clayton Rd Safety Improvements	Clayton Rd: SR-242 to Washington Blvd	Various Improvements along Corridor. See Breakdown.	LS	$ 5,497,030.00	1	$ 5,497,030.00	
2	Monument Blvd Safety Improvements	Monument Blvd: Cowell Rd to Mohr Ln	Various Improvements along Corridor. See Breakdown.	LS	$ 2,609,620.00	1	$ 2,609,620.00	
3	Willow Pass Rd Safety Improvements	Willow Pass Rd: I-680 to Avila Rd	Various Improvements along Corridor. See Breakdown.	LS	$ 2,002,960.00	1	$ 2,002,960.00	$ 14,490,420.00
4	Concord Ave Safety Improvements	Concord Ave: John Glenn Dr to Salvio St	Various Improvements along Corridor. See Breakdown.	LS	$ 1,146,310.00	1	$ 1,146,310.00	
5	Galindo St Safety Improvements	Galindo St: Salvio St to Cowell Rd	Various Improvements along Corridor. See Breakdown.	LS	$ 3,234,500.00	1	$ 3,234,500.00	

Project Cost Total	**$ 14,490,420.00**
Contingency Cost(20%)	**$ 2,898,084.00**
Subtotal	**$ 17,388,600.00**
Environmental (5%)	**$ 869,430.00**
PS&E (15%)	**$ 2,608,290.00**
Construction Engineering (10%)	**$ 1,738,860.00**
Total	**$ 22,605,180.00**

CITY OF CONCORD
Safety Action Plan - Cost Estimate
Project 1: High Injury Network Corridor Improvements

1.1-Clayton Rd: SR-242 to Washington Boulevard

No.	Improvement	Locations	Description	Unit	Unit Cost	Quantity	Subtotal	Total
1	Speed Feedback Sign	Clayton Rd: SR-242 to Washington Boulevard	Install Dynamic/Variable Speed Warning Sign (Solar-Powered)	EA	$ 15,000.00	8	$ 120,000.00	$ 120,000.00
2	Safety Lighting Upgrades	Clayton Rd & Detroit Ave Clayton Rd & Ellis St Clayton Rd & Galindo St Clayton Rd & Grant St Clayton Rd & Colfax St Clayton Rd & Oakland Ave Clayton Rd & Treat Blvd Clayton Rd & Bailey Rd Clayton Rd & Ayers Rd	Replace Existing Luminaire Fixture	EA	$ 750.00	48	$ 36,000.00	$ 36,000.00
3	Street Lighting Improvements	Clayton Rd and San Carlos Ave	Install Street Light Pole, Foundation and Luminaire Fixture	EA	$ 20,000.00	1	$ 20,000.00	$ 121,000.00
			Install Street Light Pull Box	EA	$ 1,500.00	1	$ 1,500.00	
			Install Conduit and Cabling	LF	$ 110.00	75	$ 8,250.00	
		Clayton Rd and Roslyn Dr	Upgrade Existing Fixtures	EA	$ 500.00	4	$ 2,000.00	
		Between Bailey Rd and Matheson Rd	Install Street Light Pole, Foundation and Luminaire Fixture	EA	$ 20,000.00	3	$ 60,000.00	
			Install Street Light Pull Box	EA	$ 1,500.00	3	$ 4,500.00	
			Install Conduit and Cabling	LF	$ 110.00	225	$ 24,750.00	
4	Intersection Safety Analytics	Clayton Rd & Galindo St Clayton Rd & Treat Blvd Clayton Rd and Thornwood Dr Clayton Rd and Fry Way Clayton Rd and Ayers Rd Clayton Rd and Ellis St	Intersection Safety Analystics Camera and System	LS	$ 40,000.00	6	$ 240,000.00	$ 240,000.00
5	CV2X Improvements	Clayton Rd & Galindo St Clayton Rd & Treat Blvd Clayton Rd & Fry Way Clayton Rd & Ellis St	CV2X Roadside Unit System	EA	$ 35,000.00	4	$ 140,000.00	$ 140,000.00
6	EVP GPS	Clayton Rd: SR-242 to Washington Boulevard	Install GPS-Based EVP system	EA	$ 20,000.00	28	$ 560,000.00	$ 560,000.00
7	High Friction Surface Treatment	Clayton and Farm Bureau Rd	Install High Friction Surface Treatment	SF	$ 6.00	30000	$ 180,000.00	$ 187,300.00
			Install striping	LF	$ 4.00	1200	$ 4,800.00	
			Install Pavement Marking	EA	$ 500.00	5	$ 2,500.00	
8	PPLS	Clayton Rd & Detroit Ave Clayton Rd & Ellis St Clayton Rd & Galindo St Clayton Rd & Oakland Ave Clayton Rd & Treat Blvd Clayton Rd & Bailey Rd Clayton Rd & Claycord Ave Clayton Rd & Ayers Rd	Install Pedestrian Light Pole, Foundation and Luminaire Fixture	EA	$ 15,000.00	27	$ 405,000.00	$ 573,250.00
			Install Pull Box	EA	$ 2,000.00	27	$ 54,000.00	
			Install Conduit and Cabling	LF	$ 110.00	675	$ 74,250.00	
			Install PPLS System	EA	$ 5,000.00	8	$ 40,000.00	

9	ADA Compliant Curb Ramps	Clayton Rd and Washington Blvd (NE & NW)	Install Curb Ramp	EA	$ 10,000.00	2	$ 20,000.00	$ 20,000.00
10	High Visibility Crosswalks and Advance Stop Bar	Clayton Rd and Galindo St	Install High Visibility Crosswalk	EA	$ 1,000.00	4	$ 4,000.00	$ 9,040.00
		Clayton Rd and Oakland Ave	Install High Visibility Crosswalk	EA	$ 1,000.00	4	$ 4,000.00	
			Install Stop Bar	LF	$ 8.00	130	$ 1,040.00	
11	Pedestrian Passive Detection and LPI	Clayton Rd & Detroit Ave Clayton Rd & Ellis St Clayton Rd and Galindo St Clayton Rd and Oakland Ave Clayton Rd and Treat Blvd Clayton Rd & Bailey Rd Clayton Rd & Claycord Ave Clayton Rd & Ayers Rd	Modify Signal Phasing to Implement a Lead Pedestrian Interval	LS	$ 3,000.00	8	$ 24,000.00	$ 386,500.00
			Install Pedestrian Passive Detection	LS	$ 20,000.00	8	$ 160,000.00	
			Install Blankout Sign	EA	$ 7,500.00	27	$ 202,500.00	
12	Curb Line Reconfiguration	Clayton Rd and Thornwood Dr	Curb line Reconfiguration	EA	$ 25,000.00	2	$ 50,000.00	$ 150,000.00
		Clayton Rd and Galindo St, NE & NW	Curb line Reconfiguration	EA	$ 25,000.00	2	$ 50,000.00	
		Clayton Rd & Bailey Rd	Curb line Reconfiguration	EA	$ 25,000.00	2	$ 50,000.00	
13	Fill Sidewalk Gaps	Fabian Way to Julia Ln	Site Preparation and Removal	SF	$ 20.00	3925	$ 78,500.00	$ 384,000.00
			Install Sidewalk	SF	$ 40.00	3925	$ 157,000.00	
			Install Curb and Gutter	LF	$ 80.00	785	$ 62,800.00	
			Install Curb Ramp	EA	$ 10,000.00	7	$ 70,000.00	
			Striping Reconfiguration	LS	$ 4.00	3925	$ 15,700.00	
14	Crosswalk Enhancements	Clayton and Mt Diablo Mid Block Crossing	Curb line Reconfiguration	EA	$ 25,000.00	2	$ 50,000.00	$ 97,000.00
			Install Pull Box	EA	$ 2,000.00	2	$ 4,000.00	
			Install Conduit and Cabling	LF	$ 110.00	100	$ 11,000.00	
			Install Pole and Foundation	EA	$ 13,000.00	2	$ 26,000.00	
			Install New 3- Section Signal Head	EA	$ 3,000.00	2	$ 6,000.00	

15	Install Shared Use Path	Ellis St to Grant St	Site Preparation and Removal	SF	$ 8.00	24000	$ 192,000.00	$ 1,860,200.00
			Install Sign and Post	EA	$ 750.00	20	$ 15,000.00	
			Remove Striping	LF	$ 2.50	16800	$ 42,000.00	
			Install Striping	LF	$ 4.00	16800	$ 67,200.00	
			Remove Curb and Gutter	LF	$ 30.00	2400	$ 72,000.00	
			Install Curb and Gutter	LF	$ 80.00	2400	$ 192,000.00	
			Install Curb Ramp	EA	$ 10,000.00	20	$ 200,000.00	
			Install PCC Shared Use Path	SF	$ 45.00	24000	$ 1,080,000.00	
16	Remove Slip Lane	Clayton Rd and Farm Bureau Rd	Site Preparation and Removal	SF	$ 8.00	780	$ 6,240.00	$ 112,740.00
			Install Curb and Gutter	LF	$ 80.00	130	$ 10,400.00	
			Install Sidewalk	SF	$ 40.00	480	$ 19,200.00	
			Install Stamped Concrete	SF	$ 30.00	480	$ 14,400.00	
			Install Curb Ramp	EA	$ 10,000.00	1	$ 10,000.00	
			Remove Existing Mast Arm Pole and Equipment	EA	$ 7,500.00	1	$ 7,500.00	
			Install New Mast arm pole and Equipment	EA	$ 45,000.00	1	$ 45,000.00	
17	Protected Bike Intersection	Clayton and Galindo Clayton and Grant	Install Bike Protected Intersection	EA	$ 250,000.00	2	$ 500,000.00	$ 500,000.00
							Project Cost Total	**$ 5,497,030.00**
							Contingency Cost(20%)	**$ 1,099,406.00**
							Subtotal	**$ 6,596,500.00**
							Environmental (5%)	**$ 329,830.00**
							PS&E (15%)	**$ 989,470.00**
							Construction Engineering (10%)	**$ 659,650.00**
							Total	**$ 8,575,450.00**

CITY OF CONCORD
Safety Action Plan - Cost Estimate
Project 1: High Injury Network Corridor Improvements

1.2-Monument Blvd: Cowell Road to Mohr Lane

No.	Improvement	Locations	Description	Unit	Unit Cost	Quantity	Subtotal	Total
1	Speed Feedback Sign	Cowell Road to Mohr Lane	Install Dynamic/Variable Speed Warning Sign (Solar-Powered)	EA	$ 15,000.00	4	$ 60,000.00	$ 60,000.00
2	Safety Lighting Upgrades	Mohr Ln Carey Dr Reganti Dr Virginia Ln Oak Grove Rd Systron Dr Cowell Rd	Replace Existing Luminaire Fixture	EA	$ 750.00	29	$ 21,750.00	$ 21,750.00
3	Street Lighting Improvements	Mohr to Detroit	Install Street Light Pole, Foundation and Luminaire Fixture	EA	$ 20,000.00	3	$ 60,000.00	$ 114,000.00
			Install Street Light Pull Box	EA	$ 1,500.00	3	$ 4,500.00	
			Install Conduit and Cabling	LF	$ 110.00	450	$ 49,500.00	
4	Intersection Safety Analysis	Monument Boulevard & Oak Grove/Meadow Lane Monument Boulevard & Virginia Lane Cowell Rd and Cowell Rd Monument Blvd & Mohr Ln Monument Blvd & Systron Dr	Intersection Safety Analystics Camera and System	LS	$ 40,000.00	6	$ 240,000.00	$ 240,000.00
5	CV2X	Monument Boulevard & Meadow Lane Monument Boulevard & Virginia Lane	CV2X Roadside Unit System	EA	$ 35,000.00	2	$ 70,000.00	$ 70,000.00
6	EVP GPS	Corridor Wide	Install GPS-Based EVP system	EA	$ 20,000.00	10	$ 200,000.00	$ 200,000.00
7	Access Management (Median)	Mohr Ln to Virginia Ln	Site Preparation and Removal	SF	$ 8.00	35090	$ 280,720.00	$ 991,520.00
			Landscaping	SF	$ 10.00	31900	$ 319,000.00	
			Install Median Curb	LF	$ 60.00	6380	$ 382,800.00	
			Install Sign and Post	EA	$ 750.00	12	$ 9,000.00	
8	PPLS	Monument Blvd & Mohr Ln Monument Blvd & Carey Dr Monument Blvd & Reganti Dr Monument Blvd & Virginia Ln Monument Blvd & Systron Dr	Install Pedestrian Light Pole, Foundation and Luminaire Fixture	EA	$ 15,000.00	19	$ 285,000.00	$ 400,250.00
			Install Pull Box	EA	$ 2,000.00	19	$ 38,000.00	
			Install Conduit and Cabling	LF	$ 110.00	475	$ 52,250.00	
			Install PPLS System	EA	$ 5,000.00	5	$ 25,000.00	
9	Curb Ramps	Monument Blvd & Mohr Ln Monument Blvd & Carey Dr	Install Curb Ramp	EA	$ 10,000.00	5	$ 50,000.00	$ 50,000.00
10	Pedestrian Passive Detection & Leading Pedestrian Interval	Monument Blvd & Mohr Ln Monument Blvd & Carey Dr Monument Blvd & Reganti Dr Monument Blvd & Virginia Ln Monument Blvd & Systron Dr	Modify Signal Phasing to Implement a Lead Pedestrian Interval	LS	$ 3,000.00	5	$ 15,000.00	$ 257,500.00
			Install Pedestrian Passive Detection	LS	$ 20,000.00	5	$ 100,000.00	
			Install Blankout Sign	EA	$ 7,500.00	19	$ 142,500.00	
11	Curb line Reconfiguration	Monument Blvd and Lacey Ln	Curb line Reconfiguration	EA	$ 25,000.00	2	$ 50,000.00	$ 50,000.00
12	Bus Stop Improvements	Cowell Road to Mohr Lane	Install Bus Shelter, Trash Can and Bench	LS	$ 15,000.00	10	$ 150,000.00	$ 150,000.00
13	Crosswalk Enhancements	Monument Blvd and Mohr Lane	Install High Visibility Crosswalk	EA	$ 1,000.00	4	$ 4,000.00	$ 4,600.00
			Install Stop Bar	LF	$ 8.00	75	$ 600.00	
							Project Cost Total	**$ 2,609,620.00**
							Contingency Cost(20%)	**$ 521,924.00**
							Subtotal	**$ 3,131,600.00**
							Environmental (5%)	**$ 156,580.00**
							PS&E (15%)	**$ 469,740.00**
							Construction Engineering (10%)	**$ 313,160.00**
							Total	**$ 4,071,080.00**

CITY OF CONCORD
Safety Action Plan - Cost Estimate
Project 1: High Injury Network Corridor Improvements

1.3-Willow Pass Rd: I-680 to Avila Road

No.	Improvement	Locations	Description	Unit	Unit Cost	Quantity	Subtotal	Total
1	Speed Feedback Sign	I-680 to Avila Road	Install Dynamic/Variable Speed Warning Sign (Solar-Powered)	EA	$ 15,000.00	4	$ 60,000.00	$ 60,000.00
2	Safety Lighting Upgrades	Diamond Blvd Franquette Ave Market St Mt Diablo East St Port Chicago Hwy	Replace Existing Luminaire Fixture	EA	$ 750.00	22	$ 16,500.00	$ 16,500.00
3	Street Lighting Improvements	Saint Philips Ct Between 5th and 6th St 3rd St North of Lynwood	Install Street Light Pole, Foundation and Luminaire Fixture	EA	$ 20,000.00	6	$ 120,000.00	$ 195,000.00
			Install Street Light Pull Box	EA	$ 1,500.00	6	$ 9,000.00	
			Install Conduit and Cabling	LF	$ 110.00	600	$ 66,000.00	
4	Intersection Safety Analysis	Willow Pass Rd & Fry Way Willow Pass Road & I-680 Willow Pass Road & Farm Bureau Road Willow Pass Road & Market Street	Intersection Safety Analystics Camera and System	LS	$ 40,000.00	4	$ 160,000.00	$ 160,000.00
5	CV2X	Willow Pass Rd & Fry Way Willow Pass Road & I-680 Willow Pass Road & Farm Bureau Road Willow Pass Road & Market Street	CV2X Roadside Unit System	EA	$ 20,000.00	4	$ 80,000.00	$ 80,000.00
6	EVP GPS	Corridor Wide	Install GPS-Based EVP system	EA	$ 20,000.00	18	$ 360,000.00	$ 360,000.00
7	Access Management (Median)	Parkside - Farm Bureau	Site Preparation and Removal	SF	$ 8.00	30070	$ 240,560.00	$ 837,460.00
			Landscaping	SF	$ 10.00	27320	$ 273,200.00	
			Install Median Curb	LF	$ 60.00	5320	$ 319,200.00	
			Install Sign and Post	EA	$ 750.00	6	$ 4,500.00	
8	PPLS	Willow Pass Rd & Diamond Blvd Willow Pass Rd & Fry Way	Install Pedestrian Light Pole, Foundation and Luminaire Fixture	EA	$ 15,000.00	8	$ 120,000.00	$ 168,000.00
			Install Pull Box	EA	$ 2,000.00	8	$ 16,000.00	
			Install Conduit and Cabling	LF	$ 110.00	200	$ 22,000.00	
			Install PPLS System	EA	$ 5,000.00	2	$ 10,000.00	
9	Curb Ramps	Willow Pass Rd & Diamond Blvd	Install Curb Ramp	EA	$ 10,000.00	2	$ 20,000.00	$ 20,000.00
10	Pedestrian Passive Detection & Leading Pedestrian Interval	Willow Pass Rd & Diamond Blvd Willow Pass Rd & Fry Way	Modify Signal Phasing to Implement a Lead Pedestrian Interval	LS	$ 3,000.00	2	$ 6,000.00	$ 106,000.00
			Install Pedestrian Passive Detection	LS	$ 20,000.00	2	$ 40,000.00	
			Install Blankout Sign	EA	$ 7,500.00	8	$ 60,000.00	
							Project Cost Total	**$ 2,002,960.00**
							Contingency Cost(20%)	**$ 400,592.00**
							Subtotal	**$ 2,403,600.00**
							Environmental (5%)	**$ 120,180.00**
							PS&E (15%)	**$ 360,540.00**
							Construction Engineering (10%)	**$ 240,360.00**
							Total	**$ 3,124,680.00**

CITY OF CONCORD
Safety Action Plan - Cost Estimate
Project 1: High Injury Network Corridor Improvements

1.4 - Concord Ave: John Glenn Drive to Salvio Street

No.	Improvement	Locations	Description	Unit	Unit Cost	Quantity	Subtotal	Total
1	Speed Feedback Sign	Concord Ave: John Glenn Drive to Salvio Street	Install Dynamic/Variable Speed Warning Sign (Solar-Powered)	EA	$ 15,000.00	2	$ 30,000.00	$ 30,000.00
2	Safety Lighting Upgrades	Pacheco St Via De Mercados New Dr	Replace Existing Luminaire Fixture	EA	$ 750.00	8	$ 6,000.00	$ 6,000.00
3	Street Lighting Improvements	Fremont St Between Pacheco and Salvio Between Stanwell and Sams Club Signal	Install Street Light Pole, Foundation and Luminaire Fixture	EA	$ 20,000.00	3	$ 60,000.00	$ 147,000.00
			Install Street Light Pull Box	EA	$ 1,500.00	3	$ 4,500.00	
			Install Conduit and Cabling	LF	$ 110.00	750	$ 82,500.00	
4	Intersection Safety Analysis	Concord Ave & Market St Concord Avenue & Salvio Street	Intersection Safety Analystics Camera and System	LS	$ 40,000.00	2	$ 80,000.00	$ 80,000.00
5	CV2X	Concord Ave & Market St Concord Avenue & Salvio Street	CV2X Roadside Unit System	EA	$ 20,000.00	2	$ 40,000.00	$ 40,000.00
6	EVP GPS	Corridor Wide	Install GPS-Based EVP system	EA	$ 20,000.00	8	$ 160,000.00	$ 160,000.00
7	PPLS	Concord Ave and New Dr Concord Ave and Commerce Ave Concord Ave and Harrison St Concord Ave and Pacheco St Concord Ave and Salvio St	Install Pedestrian Light Pole, Foundation and Luminaire Fixture	EA	$ 15,000.00	19	$ 285,000.00	$ 400,250.00
			Install Pull Box	EA	$ 2,000.00	19	$ 38,000.00	
			Install Conduit and Cabling	LF	$ 110.00	475	$ 52,250.00	
			Install PPLS System	EA	$ 5,000.00	5	$ 25,000.00	
8	Curb Ramps	Concord Ave and Fremont St	Install Curb Ramp	EA	$ 10,000.00	2	$ 20,000.00	$ 20,000.00
9	High Visibility Crosswalks & Advance Stop Bar	Concord Ave and New Dr	Install High Visibility Crosswalk	EA	$ 1,000.00	4	$ 4,000.00	$ 5,560.00
			Install Stop Bar	LF	$ 8.00	195	$ 1,560.00	
10	Pedestrian Passive Detection & Leading Pedestrian Interval	Concord Ave and New Dr Concord Ave and Commerce Ave Concord Ave and Harrison St Concord Ave and Pacheco St Concord Ave and Salvio St	Modify Signal Phasing to Implement a Lead Pedestrian Interval	LS	$ 3,000.00	5	$ 15,000.00	$ 257,500.00
			Install Pedestrian Passive Detection	LS	$ 20,000.00	5	$ 100,000.00	
			Install Blankout Sign	EA	$ 7,500.00	19	$ 142,500.00	

Project Cost Total	**$ 1,146,310.00**
Contingency Cost(20%)	**$ 229,262.00**
Subtotal	**$ 1,375,600.00**
Environmental (5%)	**$ 68,780.00**
PS&E (15%)	**$ 206,340.00**
Construction Engineering (10%)	**$ 137,560.00**
Total	**$ 1,788,280.00**

CITY OF CONCORD
Safety Action Plan - Cost Estimate
Project 1: High Injury Network Corridor Improvements

1.5 - Galindo St: Salvio St to Cowell Rd

No.	Improvement	Locations	Description	Unit	Unit Cost	Quantity	Subtotal	Total
1	Speed Feedback Sign	Salvio St to Cowell Rd	Install Dynamic/Variable Speed Warning Sign (Solar-Powered)	EA	$ 15,000.00	2	$ 30,000.00	$ 30,000.00
2	Safety Lighting Upgrades	Salvio St Clayton Rd Laguna St	Replace Existing Luminaire Fixture	EA	$ 750.00	10	$ 7,500.00	$ 7,500.00
3	Intersection Safety Analysis	Galindo St & Clayton Rd Galindo St & Concord Blvd	Intersection Safety Analystics Camera and System	LS	$ 40,000.00	2	$ 80,000.00	$ 80,000.00
4	CV2X	Galindo St & Clayton Rd Galindo St & Concord Blvd	CV2X Roadside Unit System	EA	$ 20,000.00	2	$ 40,000.00	$ 40,000.00
5	EVP GPS	Corridor Wide	Install GPS-Based EVP system	EA	$ 20,000.00	6	$ 120,000.00	$ 120,000.00
6	Optimize change and Clearance Interval	Galindo St & Clayton Rd Galindo St & Concord Blvd	Modify Signal Timing	LS	$ 5,000.00	2	$ 10,000.00	$ 10,000.00
7	PPLS	Galindo St & Clayton Rd Galindo St & Concord Blvd	Install Pedestrian Light Pole, Foundation and Luminaire Fixture	EA	$ 15,000.00	8	$ 120,000.00	$ 168,000.00
			Install Pull Box	EA	$ 2,000.00	8	$ 16,000.00	
			Install Conduit and Cabling	LF	$ 110.00	200	$ 22,000.00	
			Install PPLS System	EA	$ 5,000.00	2	$ 10,000.00	
8	Class-I Shared Use Path	Galindo Street: Salvio Street to Cowell Road	Site Preparation and Removal	SF	$ 25.00	38400	$ 960,000.00	$ 2,688,000.00
			Install PCC Shared Use Path	SF	$ 45.00	38400	$ 1,728,000.00	
9	Pedestrian Passive Detection & Leading Pedestrian Interval	Galindo St & Clayton Rd Galindo St & Concord Blvd	Modify Signal Phasing to Implement a Lead Pedestrian Interval	LS	$ 3,000.00	2	$ 6,000.00	$ 91,000.00
			Install Pedestrian Passive Detection	LS	$ 20,000.00	2	$ 40,000.00	
			Install Blankout Sign	EA	$ 7,500.00	6	$ 45,000.00	
							Project Cost Total	**$ 3,234,500.00**
							Contingency Cost(20%)	**$ 646,900.00**
							Subtotal	**$ 3,881,400.00**
							Environmental (5%)	**$ 194,070.00**
							PS&E (15%)	**$ 582,210.00**
							Construction Engineering (10%)	**$ 388,140.00**
							Total	**$ 5,045,820.00**

CITY OF CONCORD

Safety Action Plan - Cost Estimate

Project 2: Complete Streets Design and Construction

2-Complete Streets Design and Construction

No.	Improvement	Locations	Description	Unit	Unit Cost	Quantity	Subtotal	Total
1	Cowell Rd Complete Streets Improvements	Cowell Rd: Monument Boulevard to Ygnacio Valley Road	Complete Streets Design and Construction	LS	$10,000,000.00	1	$ 10,000,000.00	
2	Monument Blvd Complete Streets Improvements	Monument Boulevard: Cowell Road to Mohr Lane	Complete Streets Design and Construction	LS	$20,000,000.00	1	$ 30,000,000.00	$ 45,000,000.00
3	Galindo St Complete Streets Improvements	Galindo Street: Concord Blvd to Cowell Road	Complete Streets Design and Construction	LS	$5,000,000.00	1	$ 5,000,000.00	
							Project Cost Total	**$ 45,000,000.00**
							Contingency Cost(20%)	**$ 9,000,000.00**
							Subtotal	**$ 54,000,000.00**
							Environmental (5%)	**$ 2,700,000.00**
							PS&E (20%)	**$ 10,800,000.00**
							Construction Engineering (10%)	**$ 5,400,000.00**
							Total	**$ 72,900,000.00**

CITY OF CONCORD

Safety Action Plan - Cost Estimate

Project 5: Concord Blvd Safety Improvements

5 - Concord Boulevard: Galindo Street to Yolanda Cir

No.	Improvement	Locations	Description	Unit	Unit Cost	Quantity	Subtotal	Total
1	Fill Sidewalk Gaps	240' West of Alary Dr to Woodside Ct	Site Preparation and Removal	SF	$ 8.00	5500	$ 44,000.00	$ 442,700.00
			Install Curb and Gutter	LF	$ 80.00	550	$ 44,000.00	
			Landscaping	SF	$ 10.00	2750	$ 27,500.00	
			Install ADA Compliant Curb Ramp	EA	$ 10,000.00	3	$ 30,000.00	
			Install Sidewalk	SF	$ 40.00	2750	$ 110,000.00	
		Sutter St to Galindo St (North Side of Island)	Site Preparation and Removal	SF	$ 8.00	3900	$ 31,200.00	
			Install Sidewalk	SF	$ 40.00	3900	$ 156,000.00	
2	Enhance Pedestrian Crossings	**At 2nd St** Convert Existing RRFB controlled Crosswalk to HAWK with Advance LED Flashing Warning Sign	Install HAWK Signal	LS	$ 650,000.00	1	$ 650,000.00	$ 684,600.00
			Remove Sign and Post	EA	$ 400.00	2	$ 800.00	
			Install Advance LED Flashing Pedestrian Crossing Warning Sign	EA	$ 7,500.00	2	$ 15,000.00	
			Remove and Salvage Existing RRFB System	LS	$ 3,000.00	1	$ 3,000.00	
		Contra Costa Trail Crossing Install Advance LED Flashing Warning Sign for Ex PED Crossing	Remove Sign and Post	EA	$ 400.00	2	$ 800.00	
			Install Advance LED Flashing Pedestrian Crossing Warning Sign	EA	$ 7,500.00	2	$ 15,000.00	
3	Sight Distance Improvements	Minor Approaches with broadside collisions having sight distance issues due to trees, poles and objects	Relocate Obstruction	EA	$ 10,000.00	10	$ 100,000.00	$ 100,000.00
4	Speed Feedback Signs	Concord Blvd: Highway 242 to Kirker Pass Rd	Install Dynamic/Variable Speed Warning Sign (Solar-Powered)	EA	$ 15,000.00	10	$ 150,000.00	$ 150,000.00

Project Cost Total	**$ 1,377,300.00**
Contingency Cost(20%)	**$ 275,460.00**
Subtotal	**$ 1,652,800.00**
Environmental (5%)	**$ 82,640.00**
PS&E (20%)	**$ 330,560.00**
Construction Engineering (10%)	**$ 165,280.00**
Total	**$ 2,231,280.00**

CITY OF CONCORD

Safety Action Plan - Cost Estimate

Project 6: Port Chicago Hwy Safety Improvements

6 - Port Chicago Hwy Safety Improvements

No.	Improvement	Locations	Description	Unit	Unit Cost	Quantity	Subtotal	Total
1	Speed Feedback Signs	North of High School Ave	Install Dynamic/Variable Speed Warning Sign (Solar-	EA	$ 15,000.00	2	$ 30,000.00	$ 30,000.00
2	Sight Distance Improvements	Minor Approaches with broadside collisions having sight distance issues due to trees, poles and objects	Relocate Obstruction	EA	$ 10,000.00	5	$ 50,000.00	$ 50,000.00
3	Median and Access Management	6th St to Gehringer	Site Preparation and Removal	SF	$ 8.00	6760	$ 54,080.00	$ 200,830.00
			Landscaping	SF	$ 10.00	5000	$ 50,000.00	
			Install Median Curb	LF	$ 60.00	1130	$ 67,800.00	
			Install Median Concrete	SF	$ 40.00	630	$ 25,200.00	
			Install Sign and Post	EA	$ 750.00	5	$ 3,750.00	
4	Modify Signal Timing and Hardware	Bonifacio St	Remove Existing Signal Head	EA	$ 500.00	2	$ 1,000.00	$ 121,000.00
			Remove Existing Pole and Equipment	EA	$ 2,500.00	2	$ 5,000.00	
			Install New Mast arm pole and Equipment	EA	$ 45,000.00	2	$ 90,000.00	
			Modify Signal Timing	LS	$ 5,000.00	1	$ 5,000.00	
			Install New 4- Section Signal Head	EA	$ 3,000.00	2	$ 6,000.00	
			Install New 3-Section Signal Head	EA	$ 3,500.00	4	$ 14,000.00	
5	Protected Left Turn	N 6th St	Remove Existing Signal Head	EA	$ 500.00	2	$ 1,000.00	$ 20,000.00
			Modify Signal Timing	LS	$ 5,000.00	1	$ 5,000.00	
			Install New 3-Section Signal Head	EA	$ 3,500.00	4	$ 14,000.00	
6	Pedestrian Crossing Improvements	Bonifacio St E Olivera Rd	Install ADA Compliant Curb Ramp	EA	$ 10,000.00	4	$ 40,000.00	$ 48,440.00
			Install Stop Bar	LF	$ 8.00	180	$ 1,440.00	
			Install High Visibility Crosswalk	EA	$ 1,000.00	7	$ 7,000.00	
							Project Cost Total	**$ 470,270.00**
							Contingency Cost(20%)	**$ 94,054.00**
							Subtotal	**$ 564,400.00**
							Environmental (5%)	**$ 28,220.00**
							PS&E (20%)	**$ 112,880.00**
							Construction Engineering (10%)	**$ 56,440.00**
							Total	**$ 761,940.00**

CITY OF CONCORD

Safety Action Plan - Cost Estimate

Project 7: Willow Pass Rd Northern Improvements

7 - Willow Pass Rd Northern Improvements

No.	Improvement	Locations	Description	Unit	Unit Cost	Quantity	Subtotal	Total
1	Delineators, Wider Edgeline, and Rumble Strips	North of Lynwood to City Limits	Install Edgeline Rumble Strips	EA	$ 5.00	11420	$ 57,100.00	$ 197,900.00
			Remove Striping	LF	$ 2.50	12800	$ 32,000.00	
			Install Wider Edge Lines	LF	$ 8.00	12800	$ 102,400.00	
			Install Delineators	EA	$ 75.00	85	$ 6,400.00	
2	Street Lighting	North of Lynwood to City Limits	Install Street Light Pole, Foundation and Luminaire Fixture	EA	$ 20,000.00	3	$ 60,000.00	$ 178,500.00
			Install Street Light Pull Box	EA	$ 1,500.00	3	$ 4,500.00	
			Install Conduit and Cabling	LF	$ 110.00	900	$ 99,000.00	
			Install Service Point	EA	$ 15,000.00	1	$ 15,000.00	
3	Enhance Curve Delineation	North of Lynwood to City Limits	Remove Sign and Post	EA	$ 400.00	2	$ 800.00	$ 34,350.00
			Install Flashing Beacon System (per pole) with curve warning Signs	EA	$ 15,000.00	2	$ 30,000.00	
			Install Sign on Existing Post	EA	$ 300.00	6	$ 1,800.00	
			Install Delineators	EA	$ 75.00	24	$ 1,750.00	
4	Signs and Object Markers	North of Lynwood to City Limits	Install Object Markers	EA	$ 250.00	20	$ 5,000.00	$ 7,500.00
			Instll Reflectors on Existing Guardrail	EA	$ 50.00	50	$ 2,500.00	
							Project Cost Total	**$ 418,250.00**
							Contingency Cost(20%)	**$ 83,650.00**
							Subtotal	**$ 501,900.00**
							Environmental (5%)	**$ 25,100.00**
							PS&E (20%)	**$ 100,380.00**
							Construction Engineering (10%)	**$ 50,190.00**
							Total	**$ 677,570.00**

CITY OF CONCORD

Safety Action Plan - Cost Estimate

Project 8: Treat Blvd Safety Improvements

8 - Treat Blvd Safety Improvements

No.	Improvement	Locations	Description	Unit	Unit Cost	Quantity	Subtotal	Total
1	Upgrading pedestal mounted left turn heads to mast arm mounted	Winton Dr, San Simeon Dr, San Miguel Rd, Navaronne Way, Turtle Creek, Bel Air Dr	Remove Existing Pole and Equipment	EA	$ 2,500.00	12	$ 30,000.00	$ 915,000.00
			Modify Signal Timing	LS	$ 5,000.00	6	$ 30,000.00	
			Install New Mast arm pole and Equipment	EA	$ 75,000.00	10	$ 750,000.00	
			Install 1-A Pole and Equipment	EA	$ 15,000.00	7	$ 105,000.00	
2	Fill Sidewalk Gaps	Lancelot Dr to San Miguel Rd	Site Preparation and Removal	SF	$ 8.00	45150	$ 361,200.00	$ 2,565,200.00
			Install Sidewalk	SF	$ 40.00	45150	$ 1,806,000.00	
			Install Curb and Gutter	LF	$ 80.00	1600	$ 128,000.00	
			Install Curb Ramp	EA	$ 10,000.00	27	$ 270,000.00	
3	Advanced Traffic Signal beacon	Navaronne Way WB	Install Mast Arm Pole and Warning Beacons	EA	$ 75,000.00	1	$ 75,000.00	$ 130,000.00
			Install Conduit and Cabling	LF	$ 110.00	500	$ 55,000.00	
4	Leading Pedestrian Interval	Corridor Wide Traffic Signals with Crossings	Modify Signal Phasing to Implement a Lead Pedestrian Interval	LS	$ 3,000.00	9	$ 27,000.00	$ 27,000.00
5	HAWK Signal	Blarney Ave	Install HAWK Signal	LS	$ 650,000.00	1	$ 650,000.00	$ 650,000.00
6	Speed Feedback Signs	Corridor Wide	Install Dynamic/Variable Speed Warning Sign (Solar-	EA	$ 15,000.00	6	$ 90,000.00	$ 90,000.00
7	Enhanced Curve Delineation	Between Navaronne Way and Cowell Rd	Install LED Signs or Beacons	EA	$ 13,000.00	4	$ 52,000.00	$ 62,000.00
			Install Sign and Post	EA	$ 500.00	20	$ 10,000.00	
							Project Cost Total	**$ 4,439,200.00**
							Contingency Cost(20%)	**$ 887,840.00**
							Subtotal	**$ 5,327,100.00**
							Environmental (5%)	**$ 266,360.00**
							PS&E (20%)	**$ 1,065,420.00**
							Construction Engineering (10%)	**$ 532,710.00**
							Total	**$ 7,191,590.00**

CITY OF CONCORD

Safety Action Plan - Cost Estimate

Project 9: Oak Grove Rd Safety Improvements

9 - Oak Grove Road Safety Improvements

No.	Improvement	Locations	Description	Unit	Unit Cost	Quantity	Subtotal	Total
1	Median and Access Management	Gilly Ln to City Limits	Site Preparation and Removal	SF	$ 8.00	32580	$ 260,640.00	$ 2,235,440.00
			Landscaping	SF	$ 50.00	32580	$ 1,629,000.00	
			Install Median Curb	LF	$ 60.00	5430	$ 325,800.00	
			Install Sign and Post	EA	$ 500.00	40	$ 20,000.00	
2	Speed Feedback Signs	Various Locations Throughout Corridor	Install Dynamic/Variable Speed Warning Sign (Solar-Powered)	EA	$ 15,000.00	6	$ 90,000.00	$ 90,000.00
3	Sight Distance Improvements	Unsignalized Intersections	Remove Obstruction	EA	$ 10,000.00	8	$ 80,000.00	$ 80,000.00
4	Pedestrian Crossing Enhancements	Contra Costa Trail	Install Curb Ramp	EA	$ 10,000.00	2	$ 20,000.00	$ 41,000.00
			Install Median Refuge	EA	$ 10,000.00	2	$ 20,000.00	
			Install High Visibility Crosswalk	EA	$ 1,000.00	1	$ 1,000.00	
							Project Cost Total	**$ 2,446,440.00**
							Contingency Cost(20%)	**$ 489,288.00**
							Subtotal	**$ 2,935,800.00**
							Environmental (5%)	**$ 146,790.00**
							PS&E (20%)	**$ 587,160.00**
							Construction Engineering (10%)	**$ 293,580.00**
							Total	**$ 3,963,330.00**

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Safety Action Plan - Cost Estimate

Project 10: Ygnacio Valley Rd/Kirker Pass Rd Safety Improvements

10 - Ygnacio Valley Rd/Kirker Pass Rd Safety Improvements

No.	Improvement	Locations	Description	Unit	Unit Cost	Quantity	Subtotal	Total
1	Fill Sidewalk Gaps	Ygnacio Valley Rd Crystl Ranch to Pine Hollow	Site Preparation and Removal	SF	$ 8.00	45000	$ 360,000.00	$ 3,864,100.00
			Install Sidewalk	SF	$ 40.00	45000	$ 1,800,000.00	
			Install Curb and Gutter	LF	$ 80.00	4500	$ 360,000.00	
			Install Curb Ramp	EA	$ 10,000.00	5	$ 50,000.00	
			Remove Median	SF	$ 15.00	3000	$ 45,000.00	
			Install Median Curb	LF	$ 60.00	500	$ 30,000.00	
		Ygnacio Valley Rd Michigan to Park Highlands	Site Preparation and Removal	SF	$ 8.00	6300	$ 50,400.00	
			Install Sidewalk	SF	$ 40.00	6300	$ 252,000.00	
			Install Curb Ramp	EA	$ 10,000.00	2	$ 20,000.00	
			Remove Curb	LF	$ 30.00	1050	$ 31,500.00	
			Install Curb and Gutter	LF	$ 80.00	1050	$ 84,000.00	
		Kirker Pass Rd Concord to Myrtle	Site Preparation and Removal	SF	$ 8.00	14400	$ 115,200.00	
			Install Sidewalk	SF	$ 40.00	14400	$ 576,000.00	
			Install Curb Ramp	EA	$ 10,000.00	9	$ 90,000.00	
2	Traffic Signal Warning Beacons	Ygnacio and Cowell EB	Install Mast Arm Pole and Warning Beacons Equipment	EA	$ 75,000.00	1	$ 75,000.00	$ 85,500.00
			Remove Existing Pole and Equipment	EA	$ 2,500.00	2	$ 5,000.00	
			Install Conduit and Cabling	LF	$ 110.00	50	$ 5,500.00	
3	High Friction Surface Treatment	Ayers/Alberta	Install High Friction Surface Treatment	SF	$ 6.00	20000	$ 120,000.00	$ 564,400.00
			Install Striping	LF	$ 4.00	1500	$ 6,000.00	
			Install Pavement Marking	EA	$ 500.00	8	$ 4,000.00	
		Myrtle to 1,000 feet past ClearBrook	Install High Friction Surface Treatment	SF	$ 6.00	70000	$ 420,000.00	
			Install Striping	LF	$ 4.00	3600	$ 14,400.00	
			Install Pavement Marking	EA	$ 500.00	5	$ 2,500.00	
4	Raised Median or Barrier	City Limits to Michigan	Site Preparation and Removal	SF	$ 8.00	2500	$ 20,000.00	$ 1,625,000.00
			Install Median Concrete	SF	$ 40.00	18750	$ 750,000.00	
			Install Median Curb	LF	$ 60.00	2500	$ 150,000.00	
			Install Sign and Post	EA	$ 500.00	10	$ 5,000.00	
			Install Median Barrier	LF	$ 100.00	7000	$ 700,000.00	
5	Street Lighting	City Limits to Michigan	Install Street Light Pole, Foundation and Luminaire	EA	$ 20,000.00	28	$ 560,000.00	$ 2,504,000.00
			Install Street Light Pull Box	EA	$ 1,500.00	32	$ 48,000.00	
			Install Conduit and Cabling	LF	$ 110.00	16800	$ 1,848,000.00	
			Service Location	EA	$ 12,000.00	4	$ 48,000.00	
6	Upgrade Striping	Corridor Limits	Remove Striping	LF	$ 2.50	79200	$ 198,000.00	$ 514,800.00
			Install Striping	LF	$ 4.00	79200	$ 316,800.00	
7	Install Guardrail and Impact Attentuator	City East Limit Mast Arm Pole	Install Guardrail	LF	$ 250.00	100	$ 25,000.00	$ 31,000.00
		East of Pavilion at Start of Median barrier	Install Impact Attentuator	EA	$ 6,000.00	1	$ 6,000.00	
8	Curb Line Reconfiguration	Alberta Way/ Pine Hollow Road	Install Curb Extension	EA	$ 25,000.00	3	$ 75,000.00	$ 197,000.00
		Alberta Way/ Pine Hollow Road	Install Curb Ramp	EA	$ 10,000.00	6	$ 60,000.00	
		Alberta Way/ Pine Hollow Road	Striping Improvements	LS	$ 5,000.00	1	$ 5,000.00	
		Park Highlands Blvd	Install Curb Extension	EA	$ 25,000.00	1	$ 25,000.00	
		Park Highlands Blvd	Install Curb Ramp	EA	$ 10,000.00	3	$ 30,000.00	
		Park Highlands Blvd	Striping Improvements	LS	$ 2,000.00	1	$ 2,000.00	
							Project Cost Total	**$ 9,385,800.00**
							Contingency Cost(20%)	**$ 1,877,160.00**
							Subtotal	**$ 11,263,000.00**
							Environmental (5%)	**$ 563,150.00**
							PS&E (20%)	**$ 2,252,600.00**
							Construction Engineering (10%)	**$ 1,126,300.00**
							Total	**$ 15,205,050.00**

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Safety Action Plan - Cost Estimate

Project 11: Citywide Pedestrian Sidewalk Improvements

11 - Citywide Pedestrian Sidewalk Improvements

No.	Improvement	Locations	Description	Unit	Unit Cost	Quantity	Subtotal	Total
1	Fill Sidewalk Gaps	Citywide	Site Preparation and Removal	SF	$ 8.00	3041280	$ 24,330,240.00	$ 156,119,040.00
			Install Sidewalk	SF	$ 40.00	3041280	$ 121,651,200.00	
			Install Curb and Gutter	LF	$ 80.00	126720	$ 10,137,600.00	
							Project Cost Total	**$ 156,119,040.00**
							Contingency Cost(20%)	**$ 31,223,808.00**
							Subtotal	**$ 187,342,900.00**
							Environmental (5%)	**$ 9,367,150.00**
							PS&E (20%)	**$ 37,468,580.00**
							Construction Engineering (10%)	**$ 18,734,290.00**
							Total	**$ 252,912,920.00**

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Safety Action Plan - Cost Estimate

Project 12: Citywide Pedestrian Signal Improvements

1.3-Willow Pass Rd: I-680 to Avila Road

No.	Improvement	Locations	Description	Unit	Unit Cost	Quantity	Subtotal	Total
1	Leading Pedestrian Interval	Citywide (~15 Locations)	Modify Signal Phasing to Implement a Lead Pedestrian Interval	LS	$ 12,000.00	15	$ 180,000.00	$ 180,000.00

Project Cost Total	**$ 180,000.00**
Contingency Cost(20%)	**$ 36,000.00**
Subtotal	**$ 216,000.00**
Environmental (5%)	**$ 10,800.00**
PS&E (20%)	**$ 43,200.00**
Construction Engineering (10%)	**$ 21,600.00**
Total	**$ 291,600.00**

14	63	Speeding vehicles, poor visibility for pedestrians, blind curve in crosswalk and for cars turning left onto Solano Way from Hilltop Rd. In 2025 the STOP sign on Hillcrest at this corner of concern was actually run down by speeding vehicle. Location needs Stop light or STOP signs / Speedbumps for BOTH directions. Drivers are just heading into and out of town in this area making this strip of Solano Way a very dangerous raceway for drivers and pedestrians. I have personally witnessed many near misses of pedestrians in the crosswalk in the past 5 years in particular. I have also been the victim of a head on collision in this very same area in 2020. The perpetrator was speeding into the area, lost control and crossed the center divide and collided with our vehicle just past the same Hilltop Rd/Solano Way location. Our car was totaled. I was 17 days post a major abdominal cancer surgery. My hospital bill was $58,000. The guilty driver had minimum insurance coverage. My husband and I have lived on Hilltop Rd for 40 years and we have witnessed many many dangerous incidents at this location. Though there is now a “Slow Down” sign past the crosswalk, it is only on one side of the rode. This is sorely inadequate and needs to be updated to a fulll STOP sign or traffic light AND/ or speed bumps on BOTH directions of Crosswalk. Your attention and funding of this project is badly needed BEFORE someone is killed, not afterward.	37.99453032605385	-122.0520473	Pedestrian	Solano Way	Hilltop Rd	Intersection	Pedestrian Safety
14	63	Speeding vehicles, poor visibility for pedestrians, blind curve in crosswalk and for cars turning left onto Solano Way from Hilltop Rd. In 2025 the STOP sign on Hillcrest at this corner of concern was actually run down by speeding vehicle. Location needs Stop light or STOP signs / Speedbumps for BOTH directions. Drivers are just heading into and out of town in this area making this strip of Solano Way a very dangerous raceway for drivers and pedestrians. I have personally witnessed many near misses of pedestrians in the crosswalk in the past 5 years in particular. I have also been the victim of a head on collision in this very same area in 2020. The perpetrator was speeding into the area, lost control and crossed the center divide and collided with our vehicle just past the same Hilltop Rd/Solano Way location. Our car was totaled. I was 17 days post a major abdominal cancer surgery. My hospital bill was $58,000. The guilty driver had minimum insurance coverage. My husband and I have lived on Hilltop Rd for 40 years and we have witnessed many many dangerous incidents at this location. Though there is now a “Slow Down” sign past the crosswalk, it is only on one side of the rode. This is sorely inadequate and needs to be updated to a fulll STOP sign or traffic light AND/ or speed bumps on BOTH directions of Crosswalk. Your attention and funding of this project is badly needed BEFORE someone is killed, not afterward.	37.99453032605385	-122.0520473	Vehicle	Solano Way	Hilltop Rd	Intersection	Speeding

15	62	My wife and I have lived on Navaronne Way in Concord for over 40 years. During this time, we have routinely hiked the paths/walkways from Concord to Walnut Creek. During the Pandemic, the paths/walkways were overtaken by Mountain Bikers flying down the hills. Now, young kids have taken over the paths/walkways on Electronic Bikes, flying down the paths/walkways at high rates of speed, with the only indication they are coming from behind you is from the loud sound of the knobby tires against the payment. Numerous times they have flown by us walking on the trails, barely dodging/missing us. Furthermore, over time it appears as if the paths/walkways have become a throughway for kids commuting back and forth to school and/or friends' houses, as we see the same kids in the same areas constantly. Adults, 16 years of age and older, are required to have an operator's license to operate a motorized vehicle(car/motorcycle) on the streets, be it an internal combustion gas vehicle or an Electronic Vehicle. However, on the paths/walkways, kids with no instruction/operators' licenses, are flying at high rates of speed on Electronic Bikes, as if it were an open roadway for vehicles. On numerous occasions I have seen people and/or their pets nearly struck by kids on Electronic Bikes and/or kids on the side of the pathways injured from wrecks. In conclusion, it is my belief that the pathways/trails in the Open Spaces are intended for people to walk and/or people to ride conventional bicycles and not have the pathways/trails overrun, by unlicensed kids on motorized vehicles.	37.93345200584385	-121.9898741	Pedestrian	Buckeye Trl	-	Roadway Segment	Pedestrian Safety

15	62	My wife and I have lived on Navaronne Way in Concord for over 40 years. During this time, we have routinely hiked the paths/walkways from Concord to Walnut Creek. During the Pandemic, the paths/walkways were overtaken by Mountain Bikers flying down the hills. Now, young kids have taken over the paths/walkways on Electronic Bikes, flying down the paths/walkways at high rates of speed, with the only indication they are coming from behind you is from the loud sound of the knobby tires against the payment. Numerous times they have flown by us walking on the trails, barely dodging/missing us. Furthermore, over time it appears as if the paths/walkways have become a throughway for kids commuting back and forth to school and/or friends' houses, as we see the same kids in the same areas constantly. Adults, 16 years of age and older, are required to have an operator's license to operate a motorized vehicle(car/motorcycle) on the streets, be it an internal combustion gas vehicle or an Electronic Vehicle. However, on the paths/walkways, kids with no instruction/operators' licenses, are flying at high rates of speed on Electronic Bikes, as if it were an open roadway for vehicles. On numerous occasions I have seen people and/or their pets nearly struck by kids on Electronic Bikes and/or kids on the side of the pathways injured from wrecks. In conclusion, it is my belief that the pathways/trails in the Open Spaces are intended for people to walk and/or people to ride conventional bicycles and not have the pathways/trails overrun, by unlicensed kids on motorized vehicles.	37.93345200584385	-121.9898741	Pedestrian	Buckeye Trl	-	Roadway Segment	E-Bike Enforcement
16	61	A woman on a bicycle was just killed here recently. Please extend the PH bike lane that ends at CCC all the way along Willow Pass. This area near the mall and 680 is deadly for anyone who's not in a car (and dangerous for car drivers as well). i see people riding bicycles on the sidewalk here everyday. They should have their own safe lane to travel in the roadway.	37.96284927457624	-122.0609375	Bicycle	Sunvalley Blvd	B/w Contra Costa Blvd & Willow Pass Rd	Roadway Segment	Bike lane
17	60	Constant street racing at night during the week and weekends. Numerous homes being hit by out of control cars.	37.96203683568193	-121.994176	Vehicle	Treat Blvd	Bel Air Dr	Roadway Segment	Street Racing
18	59	This area is very dangerous for people on bicycles. Please consider finding a route either here or along Willow Pass that would accommodate non car travellers.	37.97928630113958	-122.0427459	Bicycle	Willow Pass Rd	-	Roadway Segment	Bike lane
19	58	This intersection is very dangerous for all road users. I drive it to go to my job in Concord from my home in Pleasant Hill and it's scary as a driver. I see crashes there a lot. I'm sure you have data on this. I would actually prefer to ride my bicycle to my job on this route but I'm petrified of being on a bike at this intersection and along Willow Pass. Can you build out a protected bike lane along this route?	37.97197089607671	-122.0456894	All	Willow Pass Rd	Market St	Intersection	Intersection Safety

19	58	This intersection is very dangerous for all road users. I drive it to go to my job in Concord from my home in Pleasant Hill and it's scary as a driver. I see crashes there a lot. I'm sure you have data on this. I would actually prefer to ride my bicycle to my job on this route but I'm petrified of being on a bike at this intersection and along Willow Pass. Can you build out a protected bike lane along this route?	37.97197089607671	-122.0456894	All	Willow Pass Rd	Market St	Roadway Segment	Bike Lane
20	57	poor road conditions	37.99021238385524	-122.0368131	Vehicle	Hickory Dr	-	Roadway Segment	Pavement
21	56	poor road conditions & end of street barrier needs repair	37.98832299920383	-122.0384214	Vehicle	Mountain View Dr	-	Roadway Segment	Pavement
22	55	Poor visibility, no sidewalks so when parents park on both sides, no safe route for residents to drive out of neighborhood. Unsafe for pedestrians. Should be no parking zone up one block	37.940865738463344	-121.9565989	All	Krona Ln	-	Roadway Segment	Poor Visibility
22	55	Poor visibility, no sidewalks so when parents park on both sides, no safe route for residents to drive out of neighborhood. Unsafe for pedestrians. Should be no parking zone up one block	37.940865738463344	-121.9565989	Pedestrian	Krona Ln	-	Roadway Segment	Sidewalk
22	55	Poor visibility, no sidewalks so when parents park on both sides, no safe route for residents to drive out of neighborhood. Unsafe for pedestrians. Should be no parking zone up one block	37.940865738463344	-121.9565989	Vehicle	Krona Ln	-	Roadway Segment	Unsafe/ Illegal Parking or Parking Violation
23	54	The L turn into the high school is still timed even on a weekend. We had to wait, with zero cars traveling, to have a green L turn into the high school for a track meet.	37.93712599024833	-122.0236389	Vehicle	Oak Grove Rd	Ygnacio Valley High School Driveway	Intersection	Signal Timing
24	53	The median cones on Oak Grove Rd, west of Treat, block cars from entering the left turn lanes to eastbound Treat Blvd. When the southbound OGR light is red. This results in many cars that want to turn left having to wait through an additional cycle.	37.939240365335735	-122.025581	Vehicle	Oak Grove Rd	Treat Blvd	Roadway Segment	Lane Configuration
25	52	The intersection at concord blvd and denkinger is a hot spot for car accidents and a disaster waiting to happen. My family lives in the neighbor hood on the north side of this intersection (on denkinger where it dead ends). Whenever we leave our neighborhood (heading south on denkinger) we almost get a hit by oncoming traffic heading north on denkinger and turning west on concord blvd. Straight has the right of way yet people constantly turn in front of us and my family personally has come very close to be in an accident. There are signs saying left turn needs to yield yet people never do!! This light should be changed to flashing yellow left turn signal from denkinger (heading north) to concord blvd (heading west). This needs to be addressed before something serious happens. I have witnessed accidents myself and like I said have nearly been in accidents with my whole family in the car. My wife has reported the same thing to me while she's driving our kids! It's a simple fix that the city should implement to protect people obeying the law. This needs to be addressed if concord is serious about drivers safety! I have even seen a concord police officer not yielding to oncoming traffic at this intersection! Please do something to fix this hot spot	37.97498365848239	-121.9836582	Vehicle	Concord Blvd	Denkinger Rd	Intersection	Sign/Signal Violation

26	51	The traffic near Willow Pass and Galindo is nasty much of the time and especially betwen 4 and 6 p.m. with cars blocking traffic because of the timing of the traffic lights. The City of Concord has gone overboard with traffic lights of obnoxiously long cycles so that we often wait for a green light even when there are no other cars. Other cities uses 4-way stop signs . Whenever the lights temporarily stop functioning, drivers take turns and get through intersections safely and faster. I walk and also ride my bicycle and find the cycles to be crummy for them, too. I am sorry we can't do better. I'd love to get a response about this. cocoswendy@gmail.com	37.97575551556835	-122.0348713	Vehicle	Willow Pass Rd	Galindo St	Intersection	Signal Timing
27	50	People from both the Virginia side and Trees side often do not check for pedestrians when left turning into Mounment.	37.95052877233675	-122.0473087	Pedestrian	Monument Blvd	Victory Ln/Trees Dr	Intersection	Pedestrian Safety
28	49	People from Virginia left turning into Monument often do not check for pedestrians and I've seen them almost get hit more than once.	37.954628011198366	-122.0413378	Pedestrian	Monument Blvd	Virginia Ln	Intersection	Pedestrian Safety
29	48	When turning left from Victory Lane onto Brookview Circle (coming from Monument Boulevard), it is difficult to see oncoming traffic from the opposite direction of Victory Lane. The problem is worsened by cars often parked on the right side of that curve, which block the view for drivers attempting the left turn. It would be safer to install a mirror on the Brookview corner to improve visibility or to prohibit parking on the right side of Victory Lane at the curve.	37.95399228451298	-122.0505959		Victory Lane	Brookview Circle	Intersection	Sight Distance
29	48	When turning left from Victory Lane onto Brookview Circle (coming from Monument Boulevard), it is difficult to see oncoming traffic from the opposite direction of Victory Lane. The problem is worsened by cars often parked on the right side of that curve, which block the view for drivers attempting the left turn. It would be safer to install a mirror on the Brookview corner to improve visibility or to prohibit parking on the right side of Victory Lane at the curve.	37.95399228451298	-122.0505959		Victory Lane	Brookview Circle	Intersection	Unsafe/ Illegal Parking or Parking Violation
30	47	Speeding vehicles in a residential street. Possibly add a Stop Sign or speed bump. A lot of kids walk around the neighborhood. Vehicles (small, med & large trucks) are speeding at a consistent rate.	37.98726268855468	-122.0366506	Vehicle	Fairfield Ave	-	Roadway Segment	Speeding
31	46	The traffic light usually takes a long time for the light to turn green which causes traffic and annoying waiting.	37.95473560479566	-122.0414218	Vehicle	Monument Blvd	Virginia Ln	Intersection	Signal Timing
32	45	Pedestrian almost got hit, drivers going to right lane to Clayton Way to turn right, zooming even it is red light and pedestrian crossing.	37.977879360731734	-122.002031	Pedestrian	Concord Blvd	Clayton Way	Intersection	Pedestrian Safety
33	44	Cars running the stop signs and speeding resulting in parked cars being hit	37.96880399593722	-122.0366768	Vehicle	Ellis St	Toyon Dr	Intersection	Speeding
33	44	Cars running the stop signs and speeding resulting in parked cars being hit	37.96880399593722	-122.0366768	Vehicle	Ellis St	Toyon Dr	Intersection	Sign/Signal Violation
34	43	Speeding vehicles all hours of the day. Difficult to walk because there are no sidewalks and it’s a through street. Seen a lot of people texting while driving. Many students walk home on Margo Drive and it’s unsafe for them.	37.97884157434895	-121.998531	Vehicle	Morgo Dr	-	Roadway Segment	Speeding

34	43	Speeding vehicles all hours of the day. Difficult to walk because there are no sidewalks and it’s a through street. Seen a lot of people texting while driving. Many students walk home on Margo Drive and it’s unsafe for them.	37.97884157434895	-121.998531	Pedestrian	Morgo Dr	-	Roadway Segment	Sidewalk
34	43	Speeding vehicles all hours of the day. Difficult to walk because there are no sidewalks and it’s a through street. Seen a lot of people texting while driving. Many students walk home on Margo Drive and it’s unsafe for them.	37.97884157434895	-121.998531	All	Morgo Dr	-	Roadway Segment	Distracted Driving
35	42	This pole was involved in a traffic incident months ago, affecting the timer for the light.	37.94815300357165	-121.9782917	Vehicle	Ygnacio Valley Rd	Ayers Rd	Intersection	Signal Timing
36	41	I make a right turn from pine holloe on to comino solano. First you force all traffic into the left lane and then there is a right turning lane. People stay in the right lane and run right into the right turning lane. Those trying to follow the rules are in danger of being hit. It would be safer to just turn the right lane into a right turn only lane and not force us left and then right to make the turn.	37.94118117007163	-121.9598939	Vehicle	Pine Hollow Rd	Cam Solano	Roadway Segment	Lane Configuration
37	40	Now that the speed bumps have been installed on Glazier Dr the amount of excessive speed has increased on Baywood Dr between Glazier Dr and Wilson Ln. It's only a matter of time before a pedestrian, child or pet gets hit.	37.96844729042685	-121.9850144	Vehicle	Baywood Dr	-	Roadway Segment	Speeding
38	39	Throughout the stretch of Wilson Ln between Denkinger and Thornwood the amount of 4 way "Stop" runners is out of control. The 25 mph speed limit is rarely adhered to. I rarely see any police enforcement in this area.	37.96823786008903	-121.9867759	Vehicle	Wilson Ln	Denkinger Rd to Thornwood Dr	Roadway Segment	Speeding
38	39	Throughout the stretch of Wilson Ln between Denkinger and Thornwood the amount of 4 way "Stop" runners is out of control. The 25 mph speed limit is rarely adhered to. I rarely see any police enforcement in this area.	37.96823786008903	-121.9867759	Vehicle	Wilson Ln	Denkinger Rd to Thornwood Dr	Roadway Segment	Sign/Signal Violation
39	38	Cars are driving too fast between David and Hookston on the Bancroft Road. It is difficult for residents along the road to make a left turn to get on the Bancroft Road. Adding few speed bumps along the road will definitely help. Thanks!	37.93812005346648	-122.0503751	Vehicle	Bancroft Rd	David Ave to Hookston Rd	Roadway Segment	Sign/Signal Violation
40	37	The parking signs on corner are of colfex st and concord blvd. are allowed to park 2 hrs but people are parking for whole day and not getting any citations. the businesses around that area are loosing customers because of these careless service. I am one of the business owner asking the city to change these signs to loading unloading signs so our customers can use that space. city is not loosing any money by doing that. our customers can park and shop at our business and go. I will appreciate you help and we can grow our business and bring some funds to city. Please we need your help.	37.977999214310785	-122.0318856	Vehicle	Concord Blvd	Colfax St	Roadway Segment	Unsafe/ Illegal Parking or Parking Violation
41	36	Once again, there is a giant access door open that drops a couple feet down into the sidewalk. Extremely dangerous for children and literally anybody walking. Should be addressed right away.	37.99895210454321	-122.0410777	Pedestrian	Northwood Dr	-	Roadway Segment	Pedestrian Safety

42	35	On Bancroft Rd, between David St and Hookston St in Concord. Literally our properties are being depreciated due to the cars pass by so fast, I think over 55 mph. Please help. too many accidents in the intersection on Bancroft Rd and Mayhew Rd.	37.937493818097636	-122.049712	Vehicle	Bancroft Rd	David Ave to Hookston Rd	Roadway Segment	Speeding
42	35	On Bancroft Rd, between David St and Hookston St in Concord. Literally our properties are being depreciated due to the cars pass by so fast, I think over 55 mph. Please help. too many accidents in the intersection on Bancroft Rd and Mayhew Rd.	37.937493818097636	-122.049712	Vehicle	Bancroft Rd	Mayhew Way	Intersection	Intersection Safety
43	34	When is the traffic engineer going to drive round 3:00 pm to see how the 8 tier, traffic light system just backs up traffic, Maybe trying the 5 tier system to see if it work any better	37.97945853371064	-122.0226075	Vehicle	Willow Pass Rd	Parkside Dr	Intersection	Signal Timing
44	33	What is the timeline for putting street lines back in. It's a multi lane road, with a center lane and it's all unmarked currently	37.966784032701966	-121.9909758	Vehicle	Denkinger Rd	-	Roadway Segment	Lane Striping
45	32	6 vehicles parked on our narrow street with expired tags on their plates. Who is responsible to ticked these vehicles. I will gladly get the address & license plate of the vehicles & pass it on to the authorities. John	37.954840383037435	-122.018739	Vehicle	Via Montanas y	-	Roadway Segment	Unsafe/ Illegal Parking or Parking Violation
46	31	Why is this series of lights no longer synced together. Salvio -> willow pass -> concord blvd -> Clayton. One will be red and the others green and you catch every single red.	37.97552815992313	-122.034706	Vehicle	Galindo St	Salvio St to Concord Blvd	Intersection	Signal Cordination
47	30	The two lights at this intersection are not properly timed. Mesa street will be green but monument will be red, creating a huge backlog into the intersection and down cowell.	37.96845572768308	-122.0317716	Vehicle	Cowell Rd	Galindo St/ Monument Blvd to Mesa St	Intersection	Signal Cordination
48	29	This intersection lacks vehicle sensored lights, cycling through entire sequence even when there are no other vehicles	37.9461954	-121.969255	Vehicle	Ygnacio Valley Rd	Alberta Way	Intersection	Vehicle Detection
49	28	M-F 7:30 AM to 9:00 AM there is a lot of cut through traffic using Crystal Ranch Dr to avoid Ygnacio Valley Rd. Large percentage of vehicles coming off Rolling Wood on E/B Crystal Ranch Dr fail to stop at the stop sign controlled intersection endangering pedestrians and also not yielding to pedestrians in the crosswalk just east of the intersection.	37.93075289284954	-121.9728421	Vehicle	Crystyl Ranch Dr	Rolling Woods Way	Intersection	Sign/Signal Violation
49	28	M-F 7:30 AM to 9:00 AM there is a lot of cut through traffic using Crystal Ranch Dr to avoid Ygnacio Valley Rd. Large percentage of vehicles coming off Rolling Wood on E/B Crystal Ranch Dr fail to stop at the stop sign controlled intersection endangering pedestrians and also not yielding to pedestrians in the crosswalk just east of the intersection.	37.93075289284954	-121.9728421	Pedestrian	Crystyl Ranch Dr	Rolling Woods Way	Intersection	Pedestrian Safety
49	28	M-F 7:30 AM to 9:00 AM there is a lot of cut through traffic using Crystal Ranch Dr to avoid Ygnacio Valley Rd. Large percentage of vehicles coming off Rolling Wood on E/B Crystal Ranch Dr fail to stop at the stop sign controlled intersection endangering pedestrians and also not yielding to pedestrians in the crosswalk just east of the intersection.	37.93075289284954	-121.9728421	Pedestrian	Crystyl Ranch Dr	-	Roadway Segment	Cut Through Traffic
50	27	My kids walk to school here and it's very dangerous. There are 3 schools in this vicinity and kids walking around all over the place every weekday morning. There needs to be a crossing guard. Please assign a crossing guard. Kids have been hit in this area.	37.97547356564334	-121.9931746	Pedestrian	West St	Roland Dr	Intersection	School Safety

51	26	West Street, between Concord BLVD and Wilson Lane. We continue to have safety issues for students preschool thru High School crossing the street and walking cross neighboring streets. There is an elementary school, preschool, middle school and high school here. Just a few weeks ago a middle school student was hit by a car when crossing the crosswalk to El Dorado MS. There is lots of car traffic in the morning and afternoon during pick up and drop off. Many parents have complained and witness several close calls with students crossing and cars going too fast. We have 2 crosswalks but neither have cross walk guards. The lights on the ground are tempermental and don't go off when someone is crossing and also have gone off in the evening when no one is crossing. Concord HS has 1200 students, El Dorado has 900 students and Westwood has -300 students and 50 Preschool students.	37.97585444108583	-121.9930224	Pedestrian	West St	Concord Blvd to Wilson Lane	Roadway Segment	School Safety
52	25	Asphalt has deteriorated at the corner of Elm Rd and Concord Blvd. Once it fills with water it is an extremely hazardous spot for bicycles and motorcycles turning from Elm to Concord Blvd.	37.97758461144906	-122.0144107	All	Concord Blvd	Elm Rd	Intersection	Pavement
53	24	The street is terrible. The middle of the street sinking in. Also Reganti is bad, Apple drive too.	37.94924200237823	-122.0431153	Vehicle	Ernst Way	-	Roadway Segment	Pavement
53	24	The street is terrible. The middle of the street sinking in. Also Reganti is bad, Apple drive too.	37.94924200237823	-122.0431153	Vehicle	Apple Dr	-	Roadway Segment	Pavement
53	24	The street is terrible. The middle of the street sinking in. Also Reganti is bad, Apple drive too.	37.94924200237823	-122.0431153	Vehicle	Reganti Dr	-	Roadway Segment	Pavement
54	23	Poor visibility intersection between commute hours. I've almost been into car accidents getting out of Ashdale Drive on to Willow pass road. You can't see the on coming traffic on willow pass road. This intersection is also near Monte garden school, it needs to be safer. Their needs to be stops in both directions of willow pass road, instead of the keep clear no one stops there. Please fix this issue!	37.98878553028071	-122.0070341	Vehicle	Willow Pass Rd	Ashdale Dr	Intersection	Poor Visibility
54	23	Poor visibility intersection between commute hours. I've almost been into car accidents getting out of Ashdale Drive on to Willow pass road. You can't see the on coming traffic on willow pass road. This intersection is also near Monte garden school, it needs to be safer. Their needs to be stops in both directions of willow pass road, instead of the keep clear no one stops there. Please fix this issue!	37.98878553028071	-122.0070341	Vehicle	Willow Pass Rd	Ashdale Dr	Intersection	Four Way Stop Sign
55	22	Poor visibility on Cobblestone turning right onto Treat.This is especially because drivers on Treat are always speeding! So the poor visibility + speeding has caused countless near misses not to mention a 3-car accident tonight.	37.96076323218438	-121.995251	Vehicle	Treat Blvd	Cobblestone Dr	Intersection	Poor Visibility
55	22	Poor visibility on Cobblestone turning right onto Treat.This is especially because drivers on Treat are always speeding! So the poor visibility + speeding has caused countless near misses not to mention a 3-car accident tonight.	37.96076323218438	-121.995251	Vehicle	Treat Blvd	Cobblestone Dr	Intersection	Speeding

56	21	Cars regularly park on Pennsylvania directly next to the crosswalk (although now against state law). This makes it really difficult to see if kids are waiting to cross to get to highlands elementary. This could be fixed by painting the curb on either side of the crosswalk red.	37.94179561	-121.9562104	Vehicle	Pennsylvania Blvd	Alabama Dr	Intersection	Unsafe/ Illegal Parking or Parking Violation
57	20	this is one of many, many areas where reckless drivers with illegal exhaust mods. terrorize the community, specifically between 4 and 6 p.m.	37.97876795697724	-122.0311095	Vehicle	East St	-	Roadway Segment	Reckless Driving
58	19	I've lived in this area of Concord for the last 6 years and there has been concerning elements that have progressively continued or gotten even worse. First, the 4 way intersection at the corner of Sunshine Dr. and Detroit Ave in front of the "Meadow Homes Park" sign needs to be turned into a traffic light. This area is so heavily populated with children and pedestrians and I've witnessed countless people and children walking across the street to and from the park or school who have almost gotten hit by drivers running the stop signs all around, or not noticing people walking across the street. This area needs to have walking signals for pedestrians and a light that forces cars to stop or go that is metered. I've also personally experienced almost getting hit a few times walking a stroller with my child in it or walking my dog and it's starting to get out of hand. The park itself is wonderful, but also problematic for children and families most of the time. There are so many people sleeping in their cars around the park, doing drugs, drinking excessively and publicly during school hours while children at Meadow Homes School are present or playing outside. Additionally, people illegally park all up and down the streets surrounding the park, most notably on Sunshine Dr, Detroit Ave, and in all the cul de sacs surrounding Meadow Homes park. They illegally park inside cul de sacs during the week, (Charles Court, Haven Court, etc.) every weekend and most days during the week. We've had issues of people parking illegally inside the cul de sac during medical emergencies where abulances or firetrucks can't get through. Hit and runs of parked cars along Sunshine Drive happens constantly, during the day and during the night time. There aren't enough streetlights, or brighter streetlights on Sunshine Dr, so when people are driving drunk it's dark and they end up smashing into cars that are parked along the sides of homes. This area is also always scattered with broken and smashed alcohol bottles. Overall, this area has such high traffic of families, children, and pedestrians and it's just not safe and progressively gets worse. I	37.964446690700115	-122.0387294	Vehicle	Sunshine Dr	Detroit Ave	Intersection	Traffic Light

58	19	I've lived in this area of Concord for the last 6 years and there has been concerning elements that have progressively continued or gotten even worse. First, the 4 way intersection at the corner of Sunshine Dr. and Detroit Ave in front of the "Meadow Homes Park" sign needs to be turned into a traffic light. This area is so heavily populated with children and pedestrians and I've witnessed countless people and children walking across the street to and from the park or school who have almost gotten hit by drivers running the stop signs all around, or not noticing people walking across the street. This area needs to have walking signals for pedestrians and a light that forces cars to stop or go that is metered. I've also personally experienced almost getting hit a few times walking a stroller with my child in it or walking my dog and it's starting to get out of hand. The park itself is wonderful, but also problematic for children and families most of the time. There are so many people sleeping in their cars around the park, doing drugs, drinking excessively and publicly during school hours while children at Meadow Homes School are present or playing outside. Additionally, people illegally park all up and down the streets surrounding the park, most notably on Sunshine Dr, Detroit Ave, and in all the cul de sacs surrounding Meadow Homes park. They illegally park inside cul de sacs during the week, (Charles Court, Haven Court, etc.) every weekend and most days during the week. We've had issues of people parking illegally inside the cul de sac during medical emergencies where abulances or firetrucks can't get through. Hit and runs of parked cars along Sunshine Drive happens constantly, during the day and during the night time. There aren't enough streetlights, or brighter streetlights on Sunshine Dr, so when people are driving drunk it's dark and they end up smashing into cars that are parked along the sides of homes. This area is also always scattered with broken and smashed alcohol bottles. Overall, this area has such high traffic of families, children, and pedestrians and it's just not safe and progressively gets worse. I	37.964446690700115	-122.0387294	Vehicle	Sunshine Dr	Detroit Ave	Intersection	Pedestrian Safety

58	19	I've lived in this area of Concord for the last 6 years and there has been concerning elements that have progressively continued or gotten even worse. First, the 4 way intersection at the corner of Sunshine Dr. and Detroit Ave in front of the "Meadow Homes Park" sign needs to be turned into a traffic light. This area is so heavily populated with children and pedestrians and I've witnessed countless people and children walking across the street to and from the park or school who have almost gotten hit by drivers running the stop signs all around, or not noticing people walking across the street. This area needs to have walking signals for pedestrians and a light that forces cars to stop or go that is metered. I've also personally experienced almost getting hit a few times walking a stroller with my child in it or walking my dog and it's starting to get out of hand. The park itself is wonderful, but also problematic for children and families most of the time. There are so many people sleeping in their cars around the park, doing drugs, drinking excessively and publicly during school hours while children at Meadow Homes School are present or playing outside. Additionally, people illegally park all up and down the streets surrounding the park, most notably on Sunshine Dr, Detroit Ave, and in all the cul de sacs surrounding Meadow Homes park. They illegally park inside cul de sacs during the week, (Charles Court, Haven Court, etc.) every weekend and most days during the week. We've had issues of people parking illegally inside the cul de sac during medical emergencies where abulances or firetrucks can't get through. Hit and runs of parked cars along Sunshine Drive happens constantly, during the day and during the night time. There aren't enough streetlights, or brighter streetlights on Sunshine Dr, so when people are driving drunk it's dark and they end up smashing into cars that are parked along the sides of homes. This area is also always scattered with broken and smashed alcohol bottles. Overall, this area has such high traffic of families, children, and pedestrians and it's just not safe and progressively gets worse. I	37.964446690700115	-122.0387294	Vehicle	Sunshine Dr	Detroit Ave	Intersection	Unsafe/ Illegal Parking or Parking Violation
59	18	This intersection has been a problem since we have moved in 6 years ago. I have seen many accidents and have almost been apart of them multiple times. For some reason people coming from Deckenger and turning left towards concord HS forget that they need to give on coming traffic (from the neighborhood ex Yeoman/ Deckenger drive) the right away. I have almost been hit several times leaving our neighborhood but now always have to proceed with caution. I have seen pedestrians also almost hit by turning cars. There are several signs posted but that has done nothing. I think something as simple as a flashing yellow left hand signal would change this problem. Also, there are lots of cars driving on Concord BLVD that run yellow and red lights at this intersection. Is there something that can be done to lengthen the time a light turns red to green to prevent accidents? Thank you!	37.97493282307548	-121.9835809	Vehicle	Concord Blvd	Denkinger Rd	Intersection	Intersection Safety

59	18	This intersection has been a problem since we have moved in 6 years ago. I have seen many accidents and have almost been apart of them multiple times. For some reason people coming from Deckenger and turning left towards concord HS forget that they need to give on coming traffic (from the neighborhood ex Yeoman/ Deckenger drive) the right away. I have almost been hit several times leaving our neighborhood but now always have to proceed with caution. I have seen pedestrians also almost hit by turning cars. There are several signs posted but that has done nothing. I think something as simple as a flashing yellow left hand signal would change this problem. Also, there are lots of cars driving on Concord BLVD that run yellow and red lights at this intersection. Is there something that can be done to lengthen the time a light turns red to green to prevent accidents? Thank you!	37.97493282307548	-121.9835809	Vehicle	Concord Blvd	-	Roadway Segment	Sign/Signal Violation
60	17	Vehicles entering Estates Drive do not know that the street is technically a dead end after crossing the Highland Drive intersection. It would help if the city install a “not a through street” sign before the intersection so people are aware of this.	37.994139264514374	-122.0460906	Vehicle	Estates Dr	-	Roadway Segment	Signage
61	16	I find the intersection of Estates Drive and Overhill road to be dangerous. Cars turning from estates cannot see incoming traffic. I was hoping that the city can install mirrors to help gauge overhill before committing to the turn.	37.99208709271994	-122.0471969	Vehicle	Estates Dr	Overhill Rd	Intersection	Sight Distance
62	15	The traffic light changes on Monument Blvd. have made for an absolutely ridiculous time to get from the freeway to Reganti Dr. Today it was 35 min at 3pm! Now people seem to love to gas it after they have passed Victory Ln. due to frustration. Removing the no turn on red at Reganti Dr recently has also made many pedestrians almost get hit. It will be happening soon enough. Reganti Dr itself is in terrible condition. I would say it needs to be resurfaced with a higher weight limit or something since all the big rigs, fire trucks and large work vehicles go to El Molino and destroy the road with their weight. There is always a yellow box truck on the corner of Reganti Dr. and Peach Pl. that covers the stop sign, especially on the weekends. I have seen many people not stop since they don’t see it as well as almost hit pedestrians since it makes it a blind corner.	37.948118508625925	-122.0509262	Vehicle	Monument Blvd	Reganti Dr to I680	Intersection	Signal Timing

62	15	The traffic light changes on Monument Blvd. have made for an absolutely ridiculous time to get from the freeway to Reganti Dr. Today it was 35 min at 3pm! Now people seem to love to gas it after they have passed Victory Ln. due to frustration. Removing the no turn on red at Reganti Dr recently has also made many pedestrians almost get hit. It will be happening soon enough. Reganti Dr itself is in terrible condition. I would say it needs to be resurfaced with a higher weight limit or something since all the big rigs, fire trucks and large work vehicles go to El Molino and destroy the road with their weight. There is always a yellow box truck on the corner of Reganti Dr. and Peach Pl. that covers the stop sign, especially on the weekends. I have seen many people not stop since they don’t see it as well as almost hit pedestrians since it makes it a blind corner.	37.948118508625925	-122.0509262	Vehicle	Monument Blvd	Reganti Dr	Intersection	Intersection Safety
62	15	The traffic light changes on Monument Blvd. have made for an absolutely ridiculous time to get from the freeway to Reganti Dr. Today it was 35 min at 3pm! Now people seem to love to gas it after they have passed Victory Ln. due to frustration. Removing the no turn on red at Reganti Dr recently has also made many pedestrians almost get hit. It will be happening soon enough. Reganti Dr itself is in terrible condition. I would say it needs to be resurfaced with a higher weight limit or something since all the big rigs, fire trucks and large work vehicles go to El Molino and destroy the road with their weight. There is always a yellow box truck on the corner of Reganti Dr. and Peach Pl. that covers the stop sign, especially on the weekends. I have seen many people not stop since they don’t see it as well as almost hit pedestrians since it makes it a blind corner.	37.948118508625925	-122.0509262	Vehicle	Reganti Dr	-	Roadway Segment	Pavement
63	14	Every single day hundreds if not thousands of drivers illegally make a U-Turn here at this light at panoramic drive during commute hours. If they don't do the U-Turn at the light they will turn on Panoramic and make an illegal turn at the first left which clearly states no u-turns. Super annoying and unsafe as a person who crosses this street every day!	38.00449592865223	-122.0239909	Vehicle	Port Chicago Hwy	Panoramic Dr	Intersection	Illegal U-Turn
64	13	A favorite dead end for racers to do donuts. Look no further than the street to see rubber evidence of unlimited donuts. Multiple vehicles all times of the day. Mostly a black Nissan 350Z and an older silver Mustang with a black stripe on the hood. More patrols in this area and enforcement of parking laws would help. Many vehicles double parked, on the sidewalk, on private property, leaking fluids into the gutter from the nearby auto body shop. Racing up and down Cloverdale Ave., and extension of the street racing on Monument Blvd.	37.95974440798747	-122.0295745	Vehicle	Cloverdale Ave	-	Roadway Segment	Street Racing

64	13	A favorite dead end for racers to do donuts. Look no further than the street to see rubber evidence of unlimited donuts. Multiple vehicles all times of the day. Mostly a black Nissan 350Z and an older silver Mustang with a black stripe on the hood. More patrols in this area and enforcement of parking laws would help. Many vehicles double parked, on the sidewalk, on private property, leaking fluids into the gutter from the nearby auto body shop. Racing up and down Cloverdale Ave., and extension of the street racing on Monument Blvd.	37.95974440798747	-122.0295745	Vehicle	Cloverdale Ave	-	Roadway Segment	Unsafe/ Illegal Parking or Parking Violation
65	12	Constant street racers between Detroit and Cowell on Monument. Cars, motorcycles, especially evenings and weekends. I don't understand how they can race so close to the PD and not get noticed, pulled over and cited or towed. I've seen them race past a marked police unit and nothing was done. There's already been a couple of bad accidents and a rollover at the curve near the cemetery, and trees never grow up very large between Systron and Cowell in the median because they're constantly being wiped out. Large trees in this median would protect opposing traffic from a head-on, but the trees never last that long. It's a matter of time before pedestrians are hit and killed in this vicinity or a gruesome head-on takes place.	37.96252793529845	-122.0319689	Vehicle	Monument Blvd	Cowell Rd to Detroit Ave	Roadway Segment	Street Racing
66	11	We have noticed lately that there has been quite a few accidents on Birch Ave. between Hickory and Fairfield. There is a dip on Birch Ave and Upland Dr and the cars don’t slow down and they speed up trying to avoid it. On the same spot there have been some cars doing donuts. As a matter of fact there was a big accident on the streets mentioned above on 3/14/26. We have seen an increase of traffic in a couple of years because people are trying to make a short cut because the heavy traffic on the freeway. On these streets there are a lot of potholes, these streets have not been paved in a long, long time. On the corner of 2297 Upland Dr and Birch Ave when it rains it collects a big puddle of water and the drainage is on the other side of the street and this is because the street hasn’t been paved for a long time. I got some pictures in case are needed. Thanking you in advance	37.989778345163174	-122.037835	Vehicle	Birch Ave	Hickory Dr to Fairfield Ave	Roadway Segment	Pavement
66	11	We have noticed lately that there has been quite a few accidents on Birch Ave. between Hickory and Fairfield. There is a dip on Birch Ave and Upland Dr and the cars don’t slow down and they speed up trying to avoid it. On the same spot there have been some cars doing donuts. As a matter of fact there was a big accident on the streets mentioned above on 3/14/26. We have seen an increase of traffic in a couple of years because people are trying to make a short cut because the heavy traffic on the freeway. On these streets there are a lot of potholes, these streets have not been paved in a long, long time. On the corner of 2297 Upland Dr and Birch Ave when it rains it collects a big puddle of water and the drainage is on the other side of the street and this is because the street hasn’t been paved for a long time. I got some pictures in case are needed. Thanking you in advance	37.989778345163174	-122.037835	Vehicle	Birch Ave	Hickory Dr to Fairfield Ave	Roadway Segment	Street Racing

67	10	Black truck with flat tire and no plates parked on street; large ford transit bus parked on street with extension cord often plugged into it.	37.963962029239696	-121.9992637	Vehicle	Joan Ave	Cape Cod Way	Roadway Segment	Unsafe/ Illegal Parking or Parking Violation
68	9	Poor visibility and traffic concern due to blue pickup truck with large trailer parked alongside tree line	37.96437653690113	-121.9997403	Vehicle	Rosal Ln	Joan Ave	Roadway Segment	Unsafe/ Illegal Parking or Parking Violation
69	8	Frequently, cars are going the wrong way down 1 way street. Dogs are off leash at the park and in the Eichler neighborhood. Swim meet parking on Cowell are not ticketed even though they are over the 4hr parking limit.	37.96383699984628	-122.014494	Vehicle	Cowell Rd	-	Roadway Segment	Wrong Side of Rd
69	8	Frequently, cars are going the wrong way down 1 way street. Dogs are off leash at the park and in the Eichler neighborhood. Swim meet parking on Cowell are not ticketed even though they are over the 4hr parking limit.	37.96383699984628	-122.014494	Vehicle	Cowell Rd	-	Roadway Segment	Unsafe/ Illegal Parking or Parking Violation
70	7	Traffic light needs to be adjusted at Cowell and Babel. Frequently there is a long line of traffic on Cowell, but light is red d/t sensing of car turning left from Babel to Cowell. Onse the traffic on Cowell gets the green light, it once again turns red as soon as the Babel light senses another car needing to turn left onto Cowell. Sometimes, only 3 cars get to progress down Cowell after the green light only for the light to turn red once again. This leads to a long line at this intersection on Cowell street.	37.96096599779929	-122.0086676	Vehicle	Cowell Rd	Babel Ln	Intersection	Signal Timing
71	6	need a bike lane here to complete the throughway for bikes from Concord to Clayton. Car speeds are very scary	37.95856492407073	-121.9759312	Bicycle	Clayton Rd	-	Roadway Segment	Bike lane
72	5	Farm bureau Rd, from concord Blvd to Clayton Rd. 1. Unsafe auto speeds - speed limit is 30 mpg, yet cars and trucks repeatedly speed on this section, blowing past stop signs. 2. Large trucks using this short cut even though limit is 5 tons 3. No real sidewalks, what little asphalt paving serving as walkway is ALWAYS blocked by cars and trucks. This poses dangerous situation for pedestrians who have to walk close to , or in the street to get by. 4. Surface road is in desperatthis short cute need of new paving. Potholes, cracked asphalt. With so many cars/trucks using this shortcut, (especially during morning and evening rush hour, it is troubling that upgrades and safety is not a higher priority. 5. Non existing bike lanes - Hard to commute thru here with so many cars and such a narrow road. we've bee harassed numerous times, forcing us to alter our commutes and enjoyment of riding in our community	37.97290296354238	-122.0077198	Vehicle	Farm Bureau Rd	-	Roadway Segment	Speeding

72	5	Farm bureau Rd, from concord Blvd to Clayton Rd. 1. Unsafe auto speeds - speed limit is 30 mpg, yet cars and trucks repeatedly speed on this section, blowing past stop signs. 2. Large trucks using this short cut even though limit is 5 tons 3. No real sidewalks, what little asphalt paving serving as walkway is ALWAYS blocked by cars and trucks. This poses dangerous situation for pedestrians who have to walk close to , or in the street to get by. 4. Surface road is in desperatthis short cute need of new paving. Potholes, cracked asphalt. With so many cars/trucks using this shortcut, (especially during morning and evening rush hour, it is troubling that upgrades and safety is not a higher priority. 5. Non existing bike lanes - Hard to commute thru here with so many cars and such a narrow road. we've bee harassed numerous times, forcing us to alter our commutes and enjoyment of riding in our community	37.97290296354238	-122.0077198	Vehicle	Farm Bureau Rd	-	Roadway Segment	Cut Through Traffic
72	5	Farm bureau Rd, from concord Blvd to Clayton Rd. 1. Unsafe auto speeds - speed limit is 30 mpg, yet cars and trucks repeatedly speed on this section, blowing past stop signs. 2. Large trucks using this short cut even though limit is 5 tons 3. No real sidewalks, what little asphalt paving serving as walkway is ALWAYS blocked by cars and trucks. This poses dangerous situation for pedestrians who have to walk close to , or in the street to get by. 4. Surface road is in desperatthis short cute need of new paving. Potholes, cracked asphalt. With so many cars/trucks using this shortcut, (especially during morning and evening rush hour, it is troubling that upgrades and safety is not a higher priority. 5. Non existing bike lanes - Hard to commute thru here with so many cars and such a narrow road. we've bee harassed numerous times, forcing us to alter our commutes and enjoyment of riding in our community	37.97290296354238	-122.0077198	Pedestrian	Farm Bureau Rd	-	Roadway Segment	Sidewalk
72	5	Farm bureau Rd, from concord Blvd to Clayton Rd. 1. Unsafe auto speeds - speed limit is 30 mpg, yet cars and trucks repeatedly speed on this section, blowing past stop signs. 2. Large trucks using this short cut even though limit is 5 tons 3. No real sidewalks, what little asphalt paving serving as walkway is ALWAYS blocked by cars and trucks. This poses dangerous situation for pedestrians who have to walk close to , or in the street to get by. 4. Surface road is in desperatthis short cute need of new paving. Potholes, cracked asphalt. With so many cars/trucks using this shortcut, (especially during morning and evening rush hour, it is troubling that upgrades and safety is not a higher priority. 5. Non existing bike lanes - Hard to commute thru here with so many cars and such a narrow road. we've bee harassed numerous times, forcing us to alter our commutes and enjoyment of riding in our community	37.97290296354238	-122.0077198	Vehicle	Farm Bureau Rd	-	Roadway Segment	Pavement

72	5	Farm bureau Rd, from concord Blvd to Clayton Rd. 1. Unsafe auto speeds - speed limit is 30 mpg, yet cars and trucks repeatedly speed on this section, blowing past stop signs. 2. Large trucks using this short cut even though limit is 5 tons 3. No real sidewalks, what little asphalt paving serving as walkway is ALWAYS blocked by cars and trucks. This poses dangerous situation for pedestrians who have to walk close to , or in the street to get by. 4. Surface road is in desperatthis short cute need of new paving. Potholes, cracked asphalt. With so many cars/trucks using this shortcut, (especially during morning and evening rush hour, it is troubling that upgrades and safety is not a higher priority. 5. Non existing bike lanes - Hard to commute thru here with so many cars and such a narrow road. we've bee harassed numerous times, forcing us to alter our commutes and enjoyment of riding in our community	37.97290296354238	-122.0077198	Bicycle	Farm Bureau Rd	-	Roadway Segment	Bike lane
73	4	I am an owner of a residence on Bel Air Drive. I find it very challenging to turn onto Bel Air from Treat Blvd or onto Treat Blvd from Bel Air Drive due to the timing of the street light. I understand that traffic on Bel Air is discouraged, however, why should I, a resident of that street be penalized.	37.962009739654235	-121.994132	Vehicle	Treat Blvd	Bel Air Dr	Intersection	Signal Timing