

Complete Streets Commission



REGULAR MEETING AGENDA

Date: 8/14/2024
Time: 6:30 p.m.
Location: [Zoom.us/join](https://zoom.us/join) – ID# 845 2506 8381 and
City Council Chambers
751 Laurel St., Menlo Park, CA 94025

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How to participate in the meeting

- Access the meeting, in-person, at City Council Chambers
- Access the meeting real-time online at:
[Zoom.us/join](https://zoom.us/join) – Meeting ID 845 2506 8381
- Access the meeting real-time via telephone at:
(669) 900-6833
Meeting ID 845 2506 8381
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Regular Session

A. Call To Order

B. Roll Call

C. Reports and Announcements

Under “Reports and Announcements,” staff and Commissioners may communicate general information of interest regarding matters within the jurisdiction of the Commission. No Commission discussion or action can occur on any of the presented items.

D. Public Comment

Under “Public Comment,” the public may address the Commission on any subject not listed on the agenda. Each speaker may address the Commission once under public comment for a limit of three minutes. You are not required to provide your name or City of residence, but it is helpful. The Commission cannot act on items not listed on the agenda and, therefore, the Commission cannot respond to non-agenda issues brought up under public comment other than to provide general information.

E. Regular Business

- E1. Accept the Complete Streets Commission minutes for July 10, 2024 ([Attachment](#))
- E2. Receive an update on Town of Atherton's El Camion Real Complete Streets Study ([Presentation](#))
- E3. Review the University of California, Berkeley's Safe Transportation Research and Education Center safety assessments on Santa Cruz Avenue and Sand Hill Road ([Staff Report #24-008-CSC](#))
- E4. Evaluate Commission subcommittees to support City Council and Commission priorities

F. Informational Items

- F1. Update on major project status
- F2. Tentative Complete Streets Commission agenda ([Attachment](#))

G. Committee/Subcommittee Reports

H. Adjournment

At every Regular Meeting of the Commission, in addition to the Public Comment period where the public shall have the right to address the Commission on any matters of public interest not listed on the agenda, members of the public have the right to directly address the Commission on any item listed on the agenda at a time designated by the Chair, either before or during the Commission's consideration of the item.

At every Special Meeting of the Commission, members of the public have the right to directly address the Commission on any item listed on the agenda at a time designated by the Chair, either before or during consideration of the item. For appeal hearings, appellant and applicant shall each have 10 minutes for presentations.

If you challenge any of the items listed on this agenda in court, you may be limited to raising only those issues you or someone else raised at the public hearing described in this notice, or in written correspondence delivered to the City of Menlo Park at, or prior to, the public hearing.

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REGULAR MEETING MINUTES – DRAFT



Date: 7/10/2024
Time: 6:30 p.m.
Location: Teleconference and
City Council Chambers
751 Laurel St., Menlo Park, CA 94025

Regular Session

A. Call To Order

Chair Cole called the meeting to order at 6:32 p.m.

B. Roll Call

Present: Altman, Bailey, Cole, Ierokomos, Rascoff
Absent: Cebrian, King
Staff: Assistant Engineer Matthew Hui, Senior Transportation Engineer Kevin Chen

C. Reports and Announcements

The Commission received reports on City Council actions since the June 12, 2024, Complete Streets Commission meeting.

D. Public Comment

- Aileen Lattmann spoke on the new red curbs in the Bohannon Business Park and on concerns related to RV (recreational vehicle) parking.

E. Regular Business

E1. Accept the Complete Streets Commission minutes for June 12, 2024 (Attachment)

ACTION: Motion and second (Rascoff/ Bailey), to accept the Complete Streets Commission minutes for June 12, 2024, passed 5-0-2 (Cebrian and King absent).

E2. Adopt resolutions to install no parking zones at 120, 140, and 160 Scott Drive (Staff Report #24-006-CSC)

Staff Chen made the presentation (Attachment).

The Commission discussed intersection daylighting implementation, nearby on-street parking capacity, project impact to pedestrians and bicyclists, alternative no parking signs, vehicle size relative to sight visibility, City approach to future requests and public outreach process.

- Randy Avalos spoke on concerns related to displacement of RV dwellers.
- Aileen Lattmann spoke in support of the project.

ACTION: Motion and second (Cole/ Rascoff), to adopt resolutions to install no parking zones at 120, 140, and 160 Scott Drive, passed 5-0-2 (Cebrian and King absent).

E3. Recommend to City Council to approve the Complete Streets Commission 2024-25 work plan (Staff Report #24-007-CSC)

Staff Chen introduced the item (Attachment).

The Commission discussed the order of goals.

ACTION: Motion and second (Cole/ Rascoff), to recommend to City Council to approve the revised Complete Streets Commission 2024-25 work plan, passed 5-0 (Cebrian and King absent).

E4. Evaluate Commission subcommittees to support City Council and Commission priorities

Staff Chen introduced the item (Attachment).

The Commission discussed the 2024-25 work plan and subcommittee goals and purposes.

ACTION: Motion and second (Cole/ Bailey), to dissolve the Transportation Corridor Subcommittee and Neighborhood Traffic Management Program Subcommittee and form the following subcommittees:

- Middlefield Road Safe Streets Subcommittee (Cole, Ierokomos)
- Safe Routes to School Subcommittee (Bailey, Cebrian, Rascoff)
- Vision Zero Subcommittee (Altman, Rascoff)
- Bike Rack Subcommittee (Bailey, Ierokomo), passed 5-0-2 (Cebrian and King absent).

F. Informational Items

F1. Update on major project status

The Commission received updates on the Belle Haven Traffic Calming Plan construction.

F2. Tentative Complete Streets Commission agenda

The Commission discussed future coordination with the police department.

G. Committee/Subcommittee Reports

None.

H. Adjournment

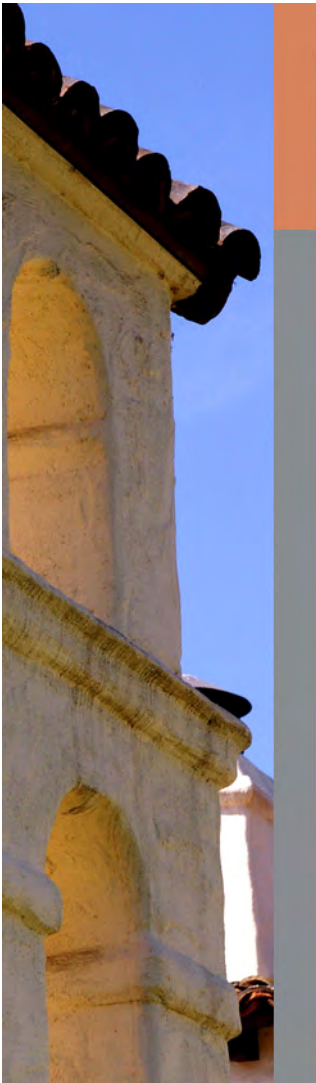
Chair Cole adjourned the meeting at 8:21 p.m.

Kevin Chen, Senior Transportation Engineer



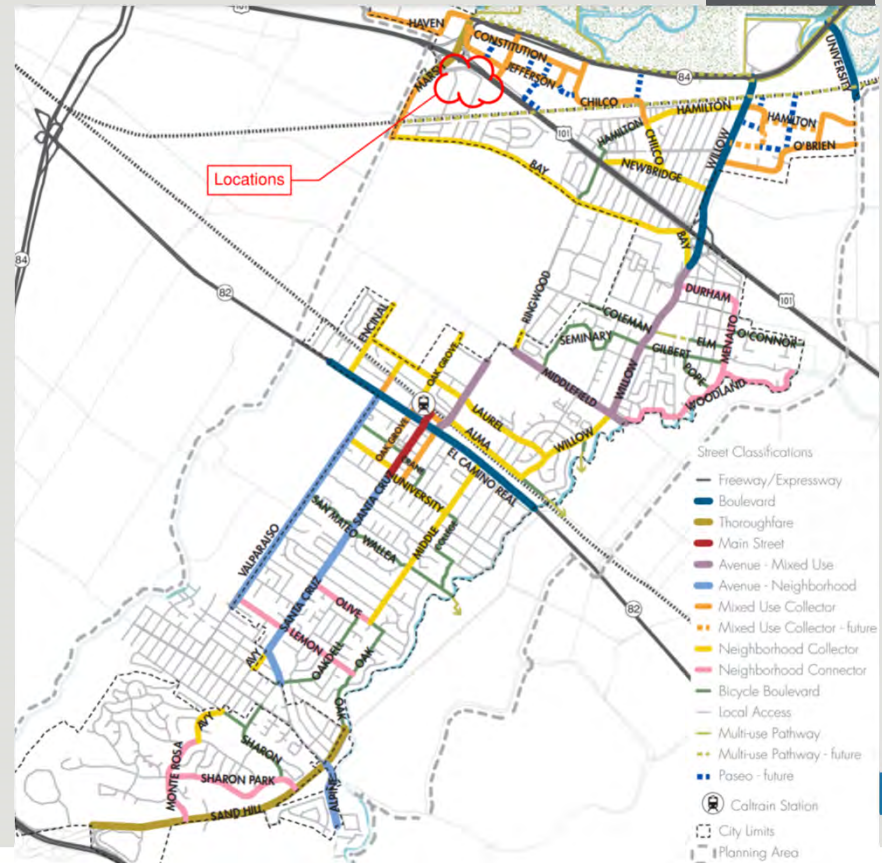
**ADOPT RESOLUTIONS TO INSTALL NO PARKING ZONES
AT 120, 140, 160 SCOTT DRIVE**

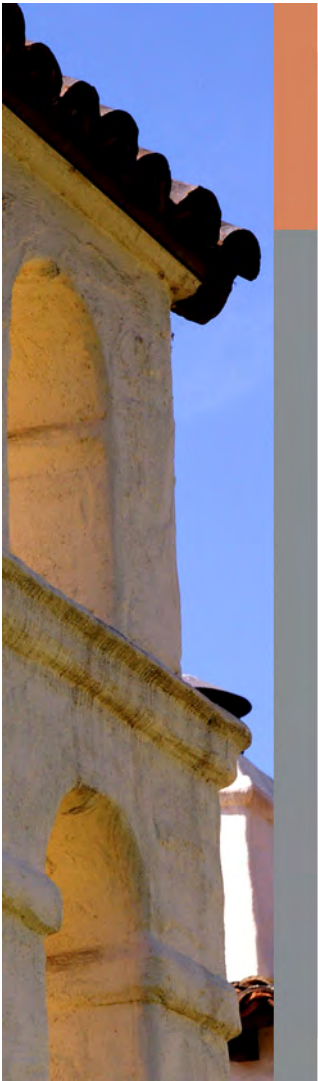
Complete Streets Commission Meeting: July 10, 2024



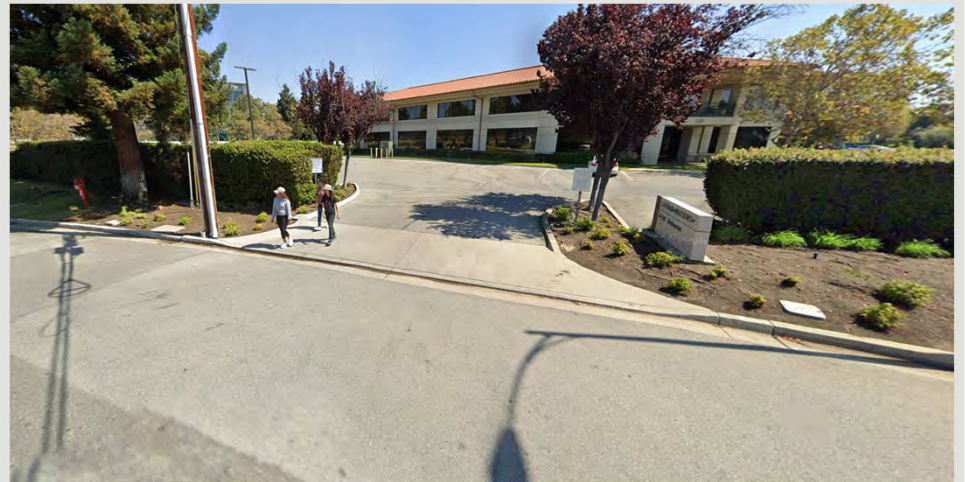
AGENDA

- Background
- Evaluation
- Recommendations

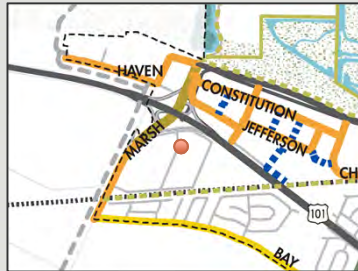


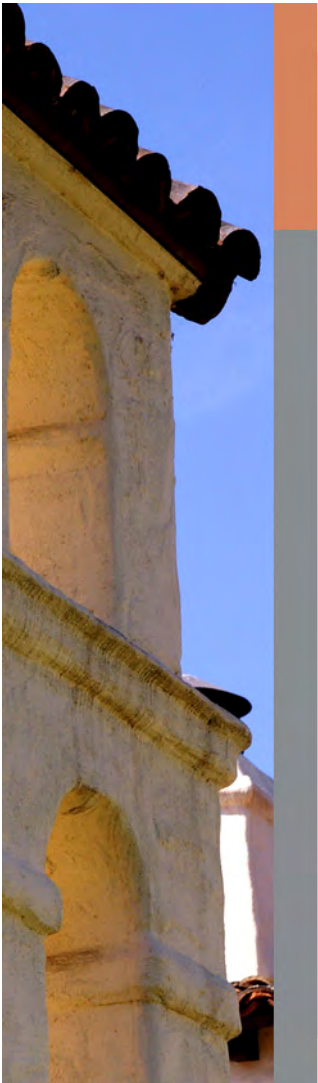


BACKGROUND (120 SCOTT DR.)



View from across the street

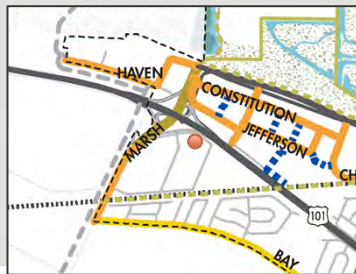


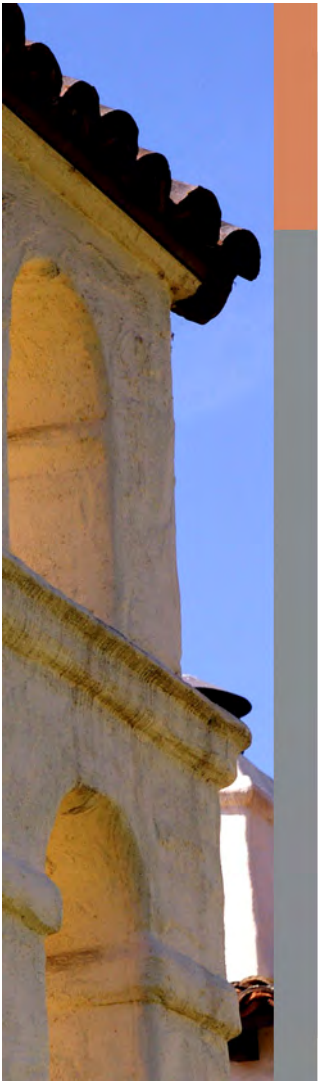


BACKGROUND (140 SCOTT DR.)



View from across the street

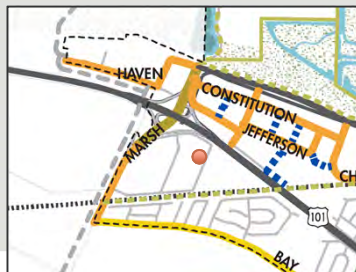




BACKGROUND (160 SCOTT DR.)



View from across the street

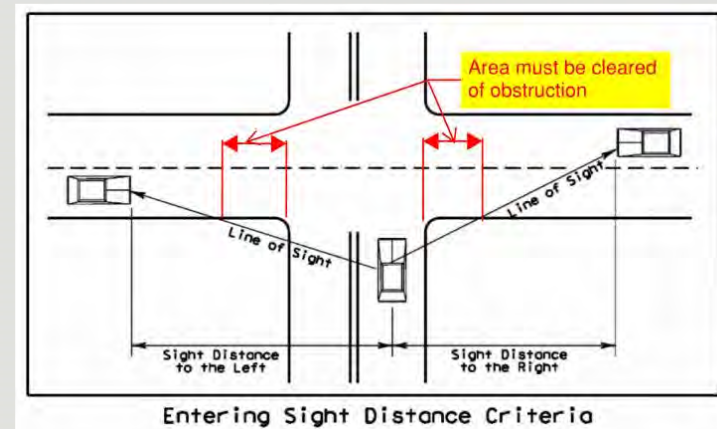




BACKGROUND

- Minimum stopping sight distance for 25 mph: 155 feet

US Customary				
Design speed (mph)	Brake reaction distance (ft)	Braking distance on level (ft)	Stopping sight distance	
			Calculated (ft)	Design (ft)
15	55.1	21.6	76.7	80
20	73.5	38.4	111.9	115
25	91.9	60.0	151.9	155
30	110.3	86.4	196.7	200
35	128.6	117.6	246.2	250
40	147.0	153.6	300.6	305
45	165.4	194.4	359.8	360
50	183.8	240.0	423.8	425
55	202.1	290.3	492.4	495
60	220.5	345.5	566.0	570
65	238.9	405.5	644.4	645
70	257.3	470.3	727.6	730
75	275.6	539.9	815.5	820
80	294.0	614.3	908.3	910



EVALUATION (120 SCOTT DR.)

- Existing line of sight



Left of driveway



Right of driveway

EVALUATION (140 SCOTT DR.)

- Existing line of sight



Left of driveway



Right of driveway
(~ 60' of existing red curb)

EVALUATION (160 SCOTT DR.)

- Existing line of sight



Left of driveway

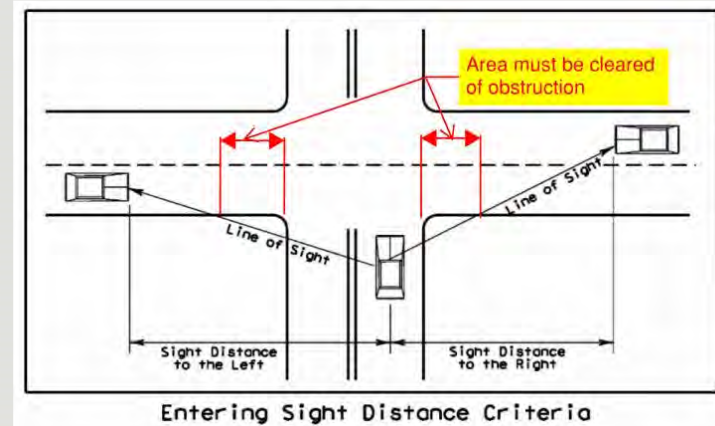


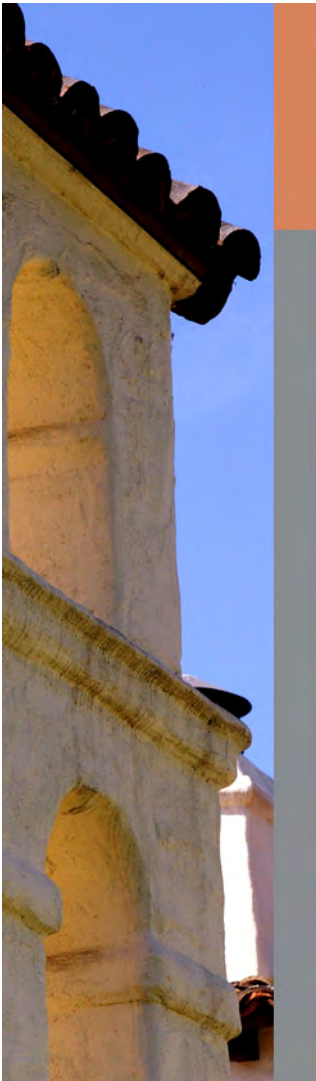
Right of driveway
(~ 50' of existing red curb)

EVALUATION

- Current speed: 25 mph
- 155 feet of stopping sight distance needed

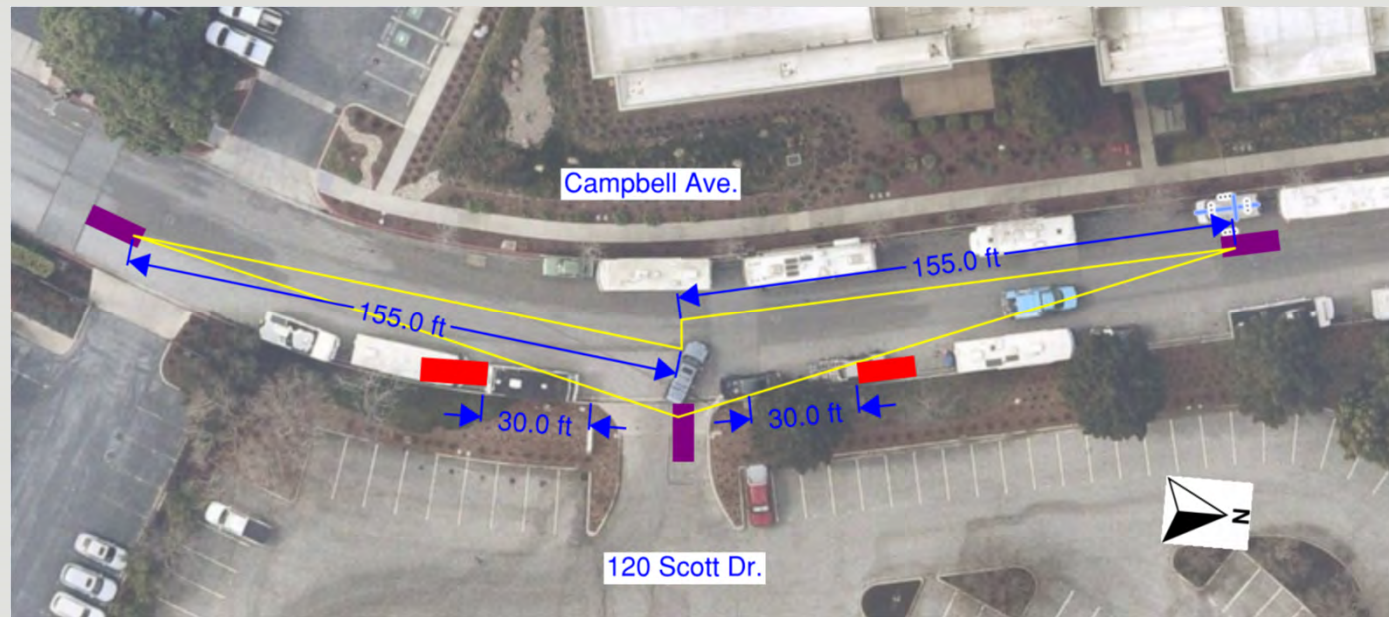
US Customary				
Design speed (mph)	Brake reaction distance (ft)	Braking distance on level (ft)	Stopping sight distance	
			Calculated (ft)	Design (ft)
15	55.1	21.6	76.7	80
20	73.5	38.4	111.9	115
25	91.9	60.0	151.9	155
30	110.3	86.4	196.7	200
35	128.6	117.6	246.2	250
40	147.0	153.6	300.6	305
45	165.4	194.4	359.8	360
50	183.8	240.0	423.8	425
55	202.1	290.3	492.4	495
60	220.5	345.5	566.0	570
65	238.9	405.5	644.4	645
70	257.3	470.3	727.6	730
75	275.6	539.9	815.5	820
80	294.0	614.3	908.3	910

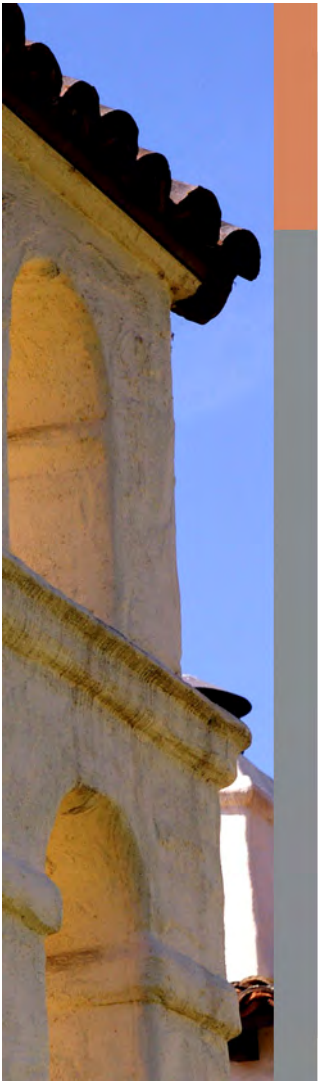




RECOMMENDATIONS (120 SCOTT DR.)

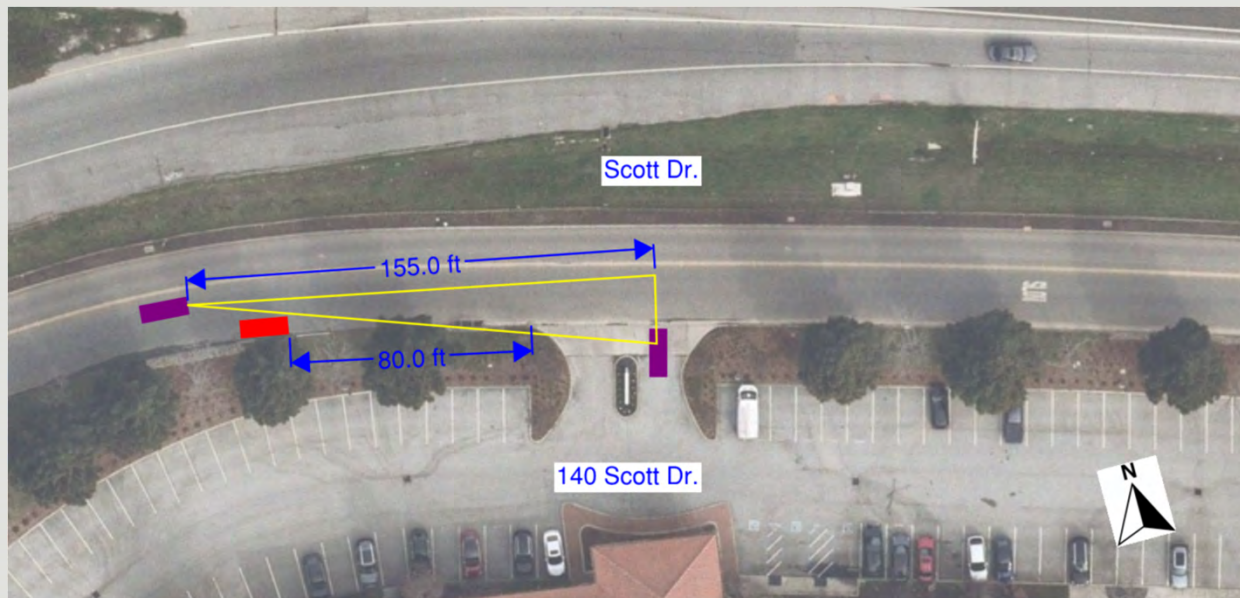
- North side: 30' new red curb (i.e., 1 total parking space)
- South side: 30' new red curb (i.e., 1 total parking space)

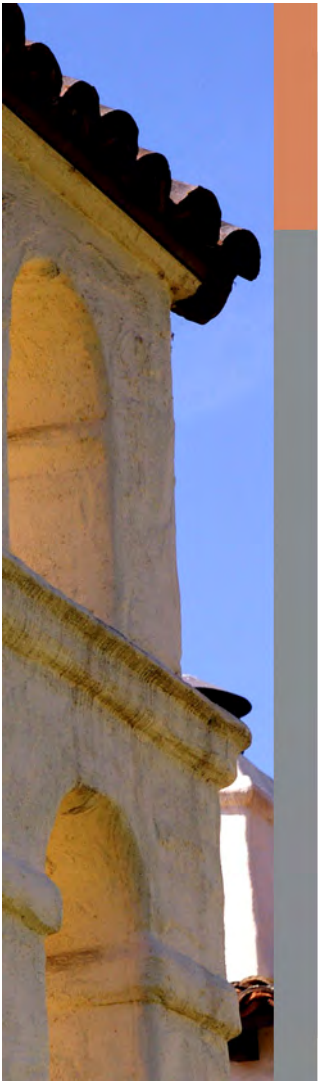




RECOMMENDATIONS (140 SCOTT DR.)

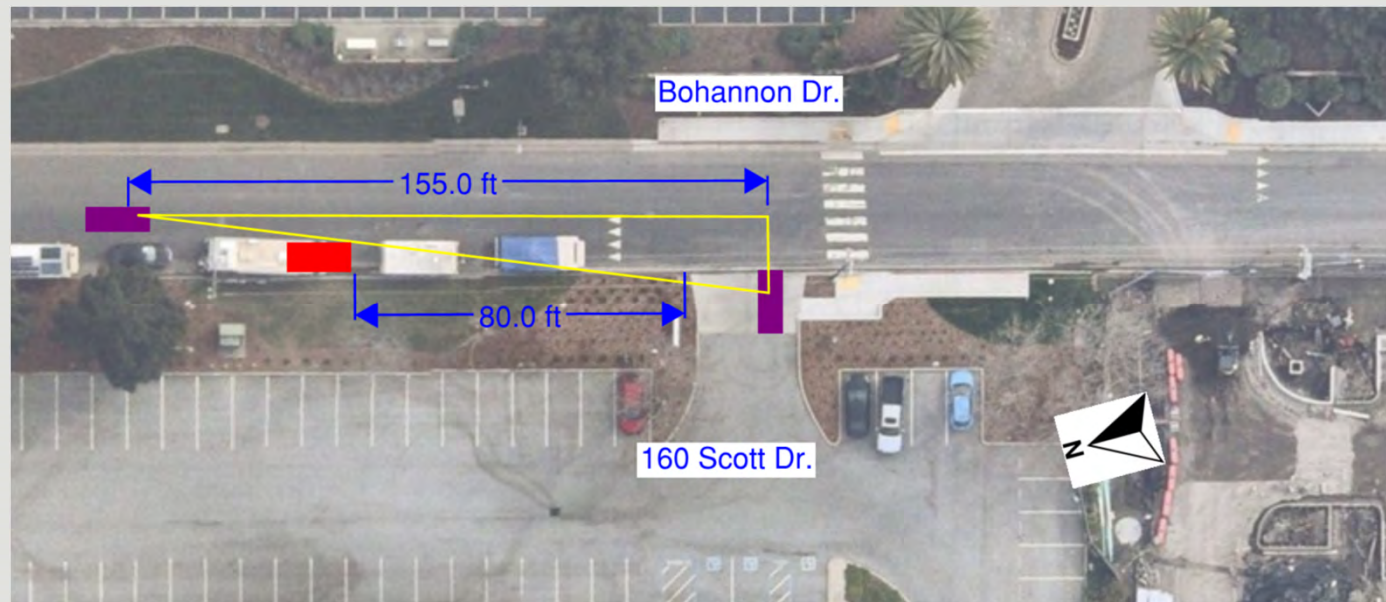
- West side: 80' new red curb (i.e., 4 total parking spaces)
- East side: 60' existing red curb





RECOMMENDATIONS (160 SCOTT DR.)

- North side: 70' new + 10' existing red curb (i.e., 3 total parking spaces)
- South side: 50' existing red curb





NEXT STEPS

- 15-day appeal period
- Implementation

Locations	Proposed additional red curbs
120 Scott Drive	North side: 30' new (i.e., 1 space) South side: 30' new (i.e., 1 space)
140 Scott Drive	East side: no action needed West side: 80' new (i.e., 4 spaces)
160 Scott Drive	North side: 70' new + 10' existing (i.e., 3 space) South side: no action needed



**THANK YOU &
QUESTIONS**

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Complete Streets Commission work plan

Public Works Department
 701 Laurel Street, Menlo Park CA 94025
 Approved September 24, 2024



Work plan goals		
<p>The Complete Streets Commission provides advice and recommendations to the City Council on realizing the City's adopted goals for Complete Streets, the Transportation Master Plan, Vision Zero, and the Climate Action Plan. It provides transportation-related input on major land use and development projects, to promote safe transportation infrastructure and alternative modes of transportation.</p>		
<ol style="list-style-type: none"> Advise the City Council on the implementation of the Transportation Master Plan: <ul style="list-style-type: none"> Evaluate and propose key transportation corridors for project prioritization Advise and make recommendations on the Middle Avenue Complete Streets Project—including ongoing pilots for Nealon Park frontage parking and Blake St. temporary closure Advise and make recommendations on the Middlefield Road Safe Streets Project Provide input and recommendations on the City's major development projects by evaluating them based on impact on public streets, safety, and transportation accessibility—especially bicycle/pedestrian/public transportation accessibility. Advise and provide input to the City Council on citywide transportation policies/programs: <ul style="list-style-type: none"> Evaluate and recommend citywide bike rack inventory and make recommendations Advise on Vision Zero strategies and program implementation Evaluate driveway stopping sight distance policy Advise on implementation of Senate Bill 413 (i.e., crosswalk daylighting law) Support the Council's ongoing initiatives to improve access to Downtown and support downtown businesses. Support the implementation of the Safe Routes strategies to School strategy and advocate for community engagement, program continuity and design implementation: <ul style="list-style-type: none"> Participate in the Safe Routes to School program task force meetings and advocate for community engagement, program continuity and design implementation Support projects serving other community based destinations (e.g., work, shop and recreation) Advise on the City Council's role as a stakeholder with regard to regional multimodal projects to increase sustainable transportation for Menlo Park. 		
Work plan history		
Action	Date	Notes
Work plan recommended to CSC	July 10, 2024	Commission approval

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SUBCOMMITTEES (MEMBERS)

- Transportation Corridors Subcommittee (Cole)
- Safe Routes to School Program Evaluation Subcommittee (Cebrian)
- Neighborhood Traffic Management Program Subcommittee (Altman, Cebrian)
- Middle Avenue Complete Streets Project Subcommittee (Cole, King)

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El Camino Real Complete Streets Study

Menlo Park Complete Streets Commission

August 14, 2024

Phase 1 Summary

Study Overview

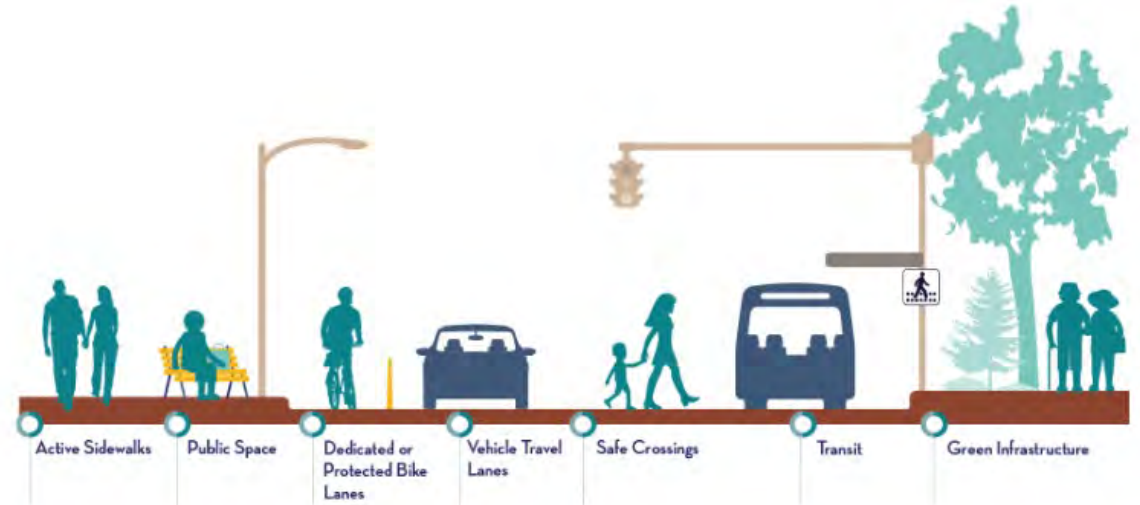
Carolyn Mamaradlo, San Mateo County Transportation Authority (SMCTA)



What are “Complete Streets”?

A complete street provides mobility options for people of all ages and abilities, particularly people who are walking, biking, using personal mobility devices, and riding transit.

Complete streets offer several benefits, including enhanced safety and quality of life by providing a balanced variety of options for travel.

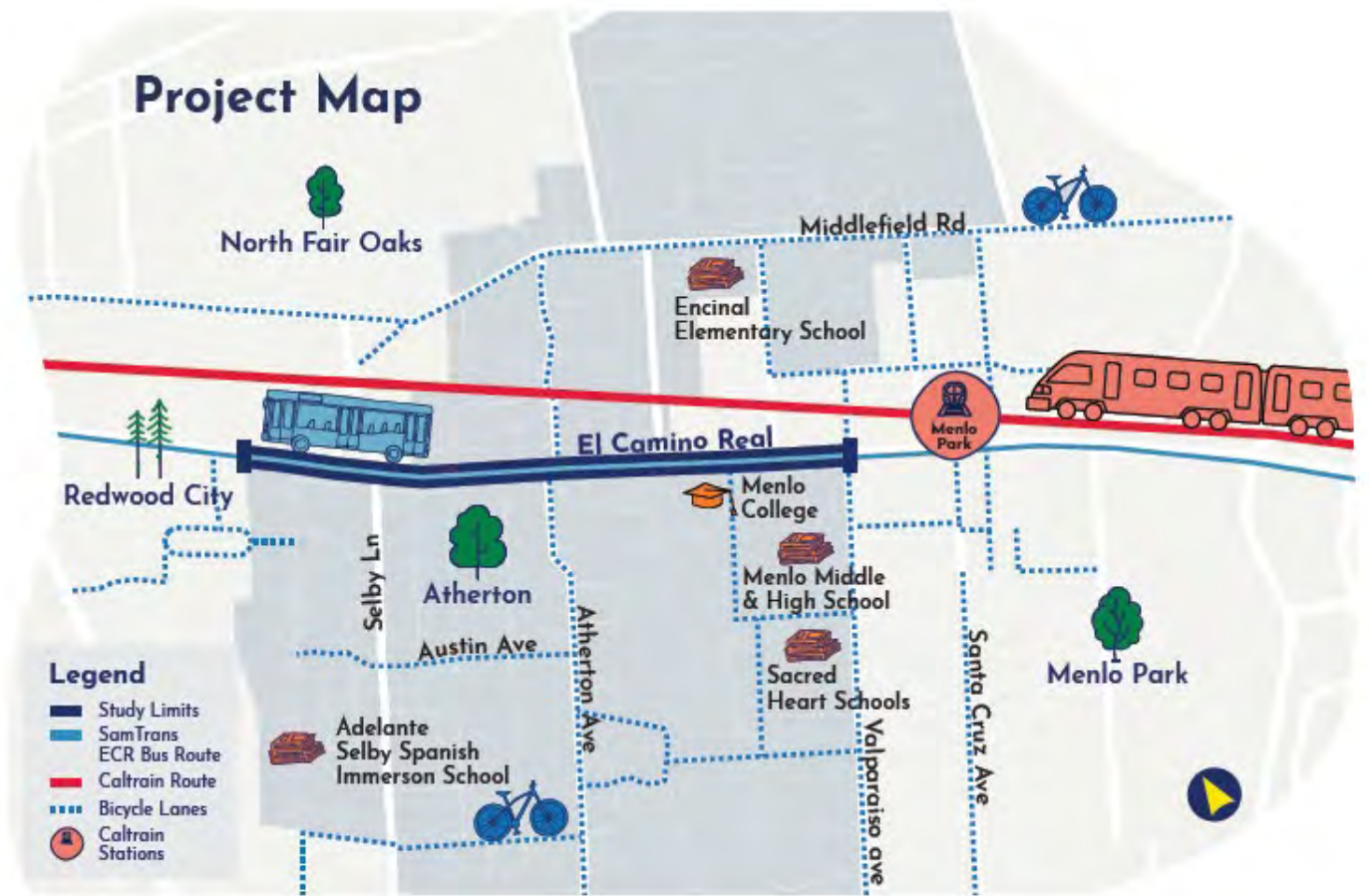


Source: City of Santa Fe, NM



Background

- Town of Atherton received Funding from TA Cycle 6 Pedestrian & Bicycle Program to Complete Street options for El Camino Real (ECR)
- ECR through Atherton lacks dedicated pedestrian and bicycle facilities
- El Camino Real is a State Highway under the purview of Caltrans
- Prepare for Project Initiation Document (PID) phase



Project Overview

Project Goals:



Improved Safety and Quality of Life



Improved Connectivity



Enhanced Equity and Access

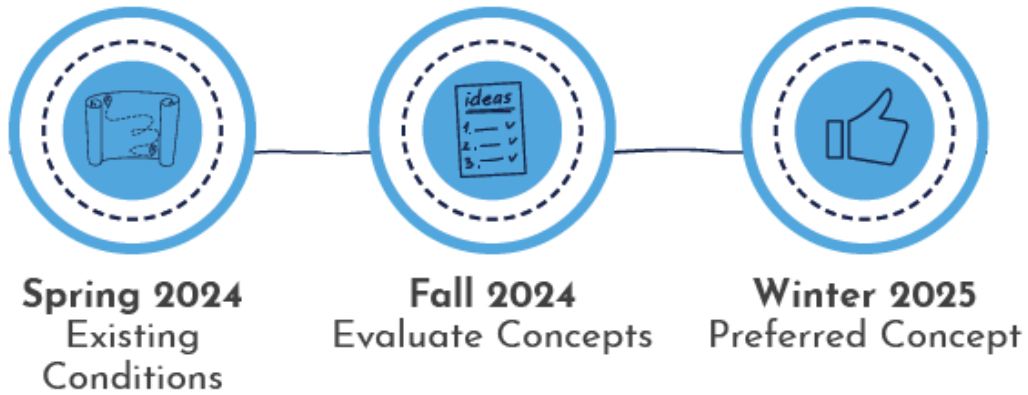


Expand Travel Options



Project Overview

Timeline:








Funding Sources:

- Measure A funding through the 2022 SMCTA Pedestrian and Bicycle Program
- Town of Atherton
- City of Menlo Park
- SamTrans



Existing Conditions



-  Vehicle Lanes
-  Sidewalk
-  No sidewalks
-  On Street Parking
-  SamTrans Bus Stop

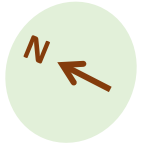
North Bound Traffic

El Camino Real

South Bound Traffic



Oakwood Dr Selby Ln Fifth Ave Stockbridge Ave Almedral Ave Tuscaloosa Ave Atherton Ave Isabella Ave Watkins Ave Alejandra Ave Menlo College Encinal Ave Valparaiso Ave





Existing El Camino Real Roadway Characteristics



Crash Analysis



Phase 1 Engagement Results: What We Heard



Public Engagement

Engagement Tactics:

- Project webpage
- Multilingual factsheet and FAQ
- Online survey + interactive map
- 3 Focused Listening Sessions
- 3 Pop up events
- 2 CBO Meetings
- Technical Working Group Meeting #1
- Virtual Community Meeting



What We Heard: Pedestrian Safety and Infrastructure

- The quality of pedestrian infrastructure
- The risks of crossing multiple lanes of traffic and being ignored by drivers
- Walking along corridor at night and early morning



Image: Mapping Exercise at Pop Ups

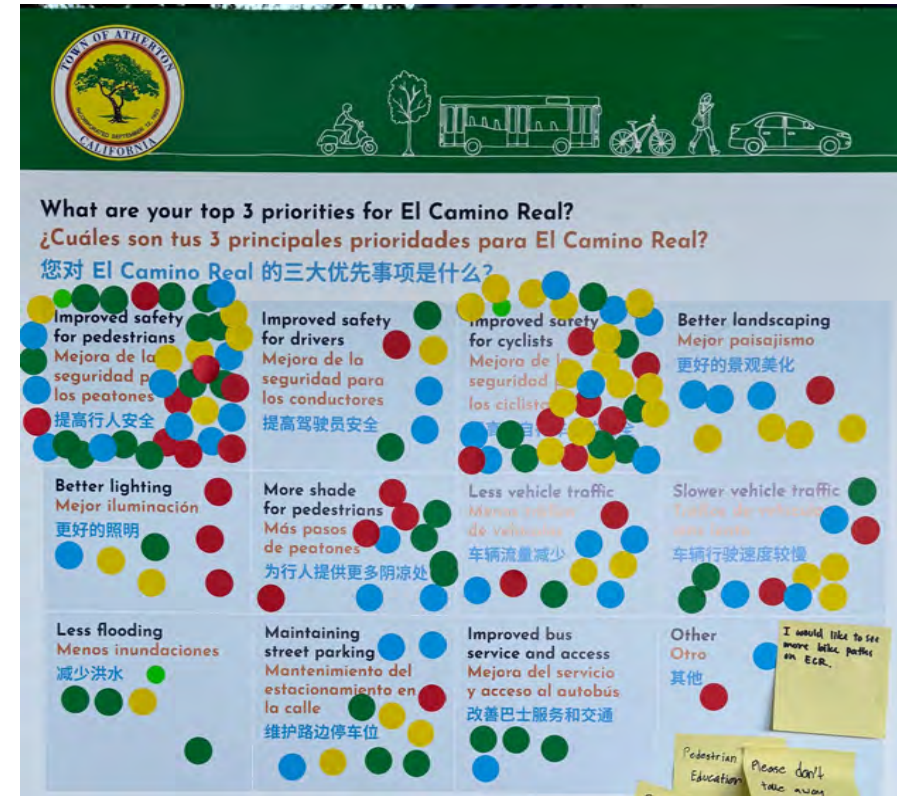


What We Heard: Bicycle Lanes and Safety

- Many community members expressed that they would travel more by bike if it felt safe to do so.
- Parents and school administrators cited safety concerns for students biking to school regardless of whether bike lanes were to be installed.

Key suggestions to make the corridor more bike-friendly include:

- Replacing dirt paths with paved sidewalks
- Improving street level lighting
- Adding protected bike lanes and improving connectivity to other segments of the corridor
- Narrowing or reducing traffic lanes to make space for bike lanes



What We Heard: Public Transportation and Bus Stops

- Many community members from North Fair Oaks and surrounding equity priority communities depend on El Camino Real bus service to commute to work and move through the larger area.
- Community members shared concerns about:
 - Lack of visibility and lighting surrounding bus stops
 - Difficulty accessing bus stops during the rain
 - Unreliable bus service, including delays and inaccurate schedules



What We Heard: Flooding on El Camino Real

- Worsens traffic and the experience commuting by car
- Forces pedestrians and cyclists onto the road from the road shoulder
- Turns the dirt paths on the corridor into mud
- Makes some of the bus stops along the corridor inaccessible



What We Heard: Traffic and the Driver Experience

- Difficulty seeing pedestrians walking along the road shoulder
- Congestion caused by drivers attempting to turn left along the corridor
- Visibility issues when turning on to El Camino Real due to parked cars, overgrown landscaping, etc.
- Unsafe driver behavior such as speeding and ignoring pedestrian hybrid beacons
- Parking on the corridor



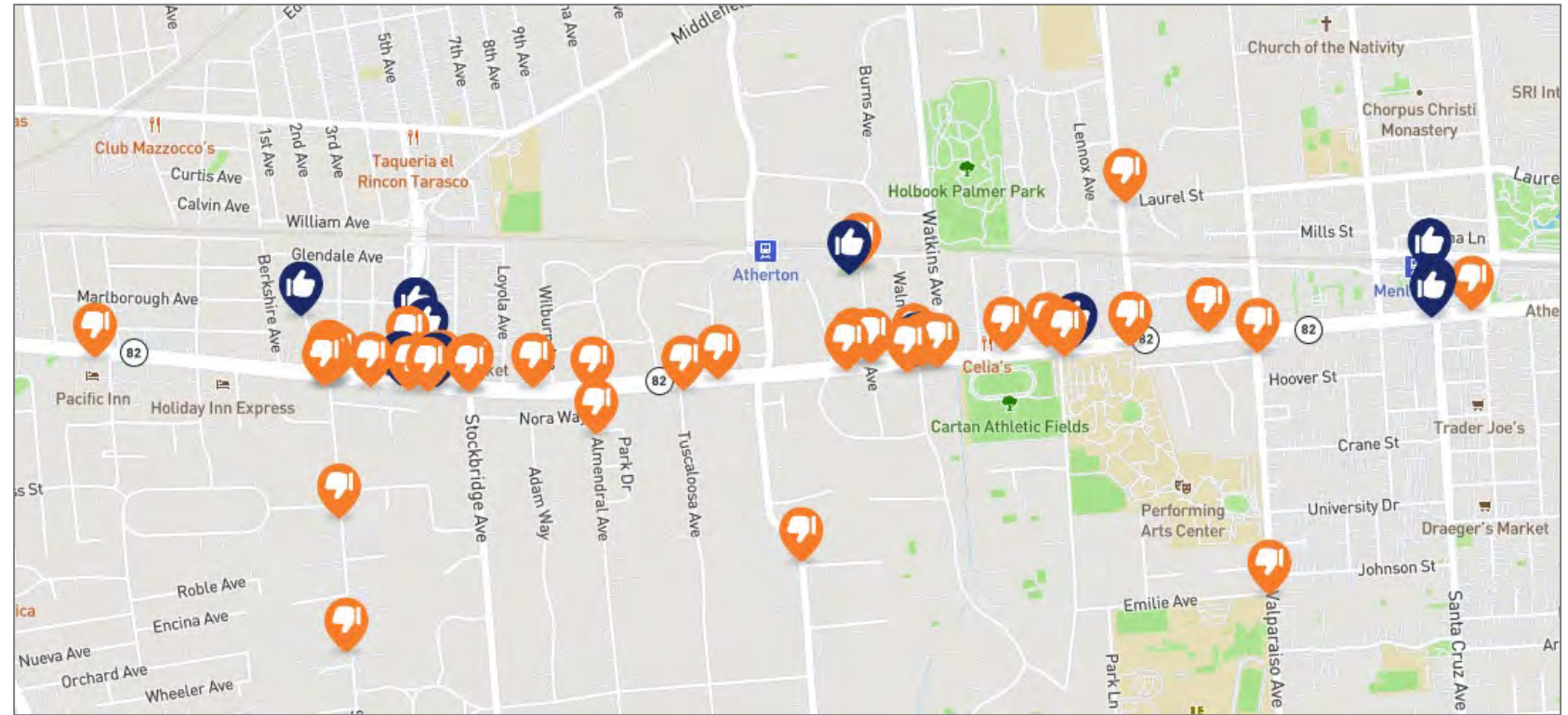
Survey and Activity Map



April to June 2024



59 markers added to the map



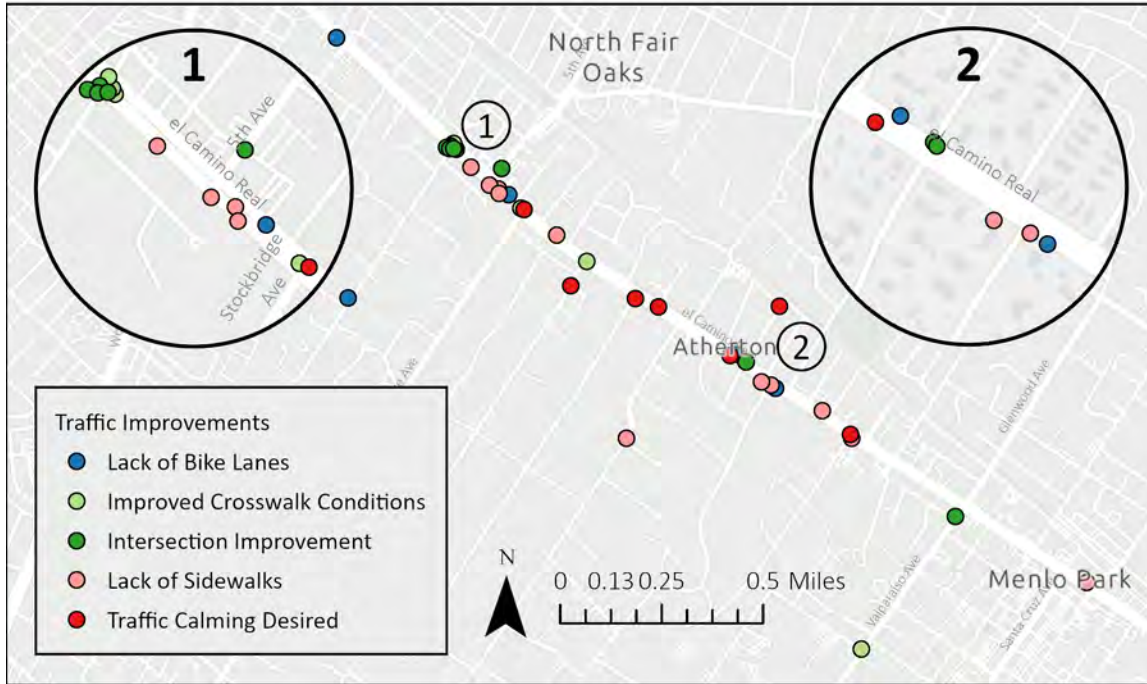
Activity Map

Atherton Phase 1 Survey Responses: Collisions & Near Misses

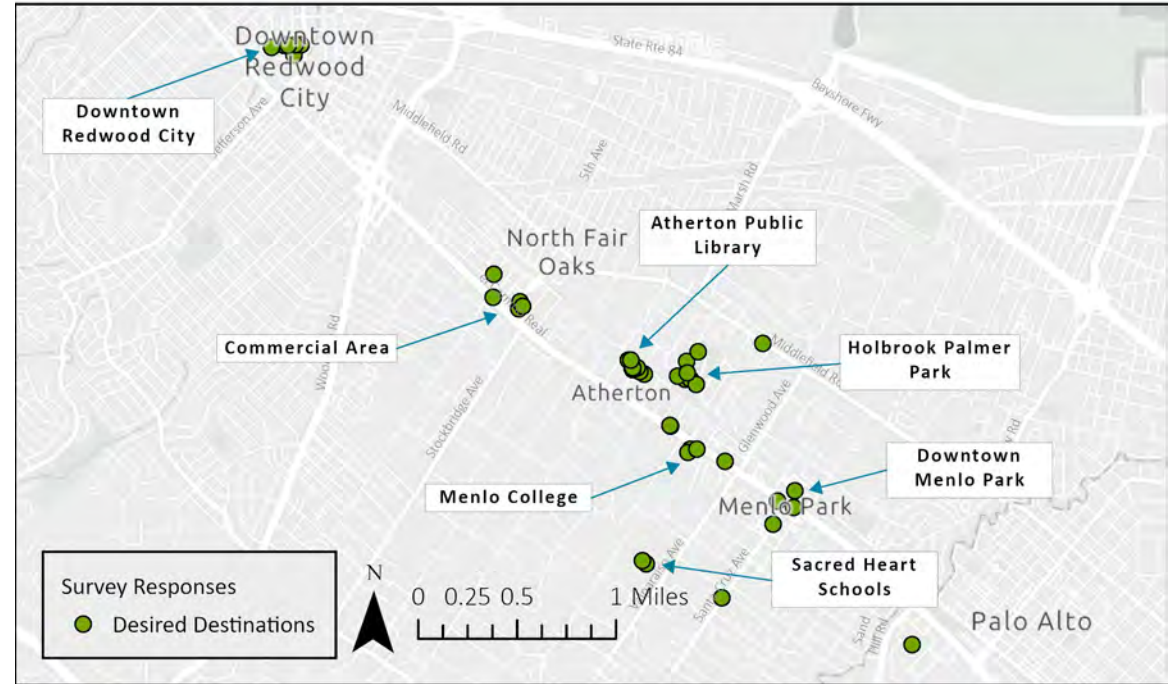


Activity Map

Atherton Phase 1 Survey Responses: Traffic Improvements

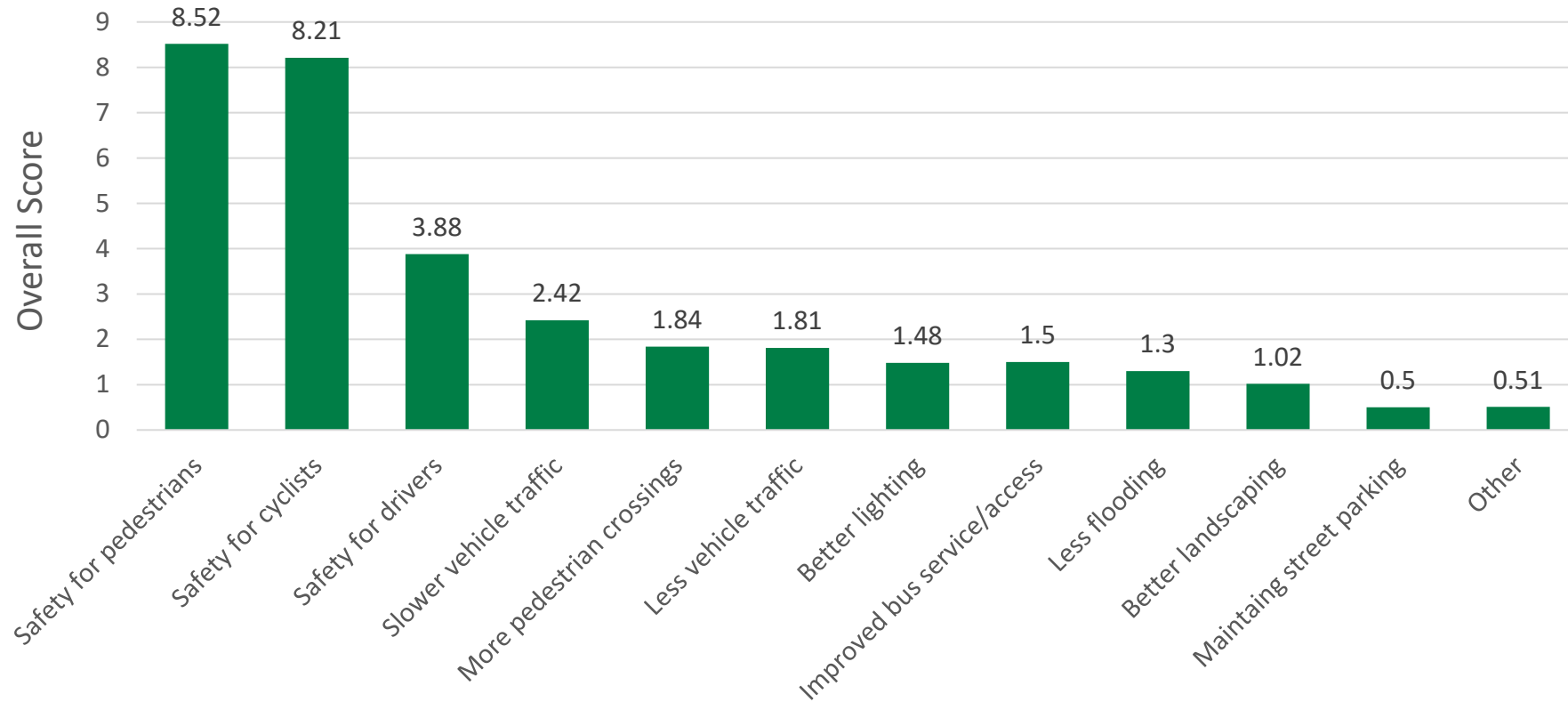


Atherton Phase 1 Survey Responses: Desired Destinations



Survey

Top Priorities for Travel on El Camino Real



Next Steps



Next Steps

- The project team is preparing a report of the Existing Conditions and Mobility Profile analysis.
- In Phase 2 of engagement, the project team will ask for feedback on concept design alternatives.





Thank You!

Carolyn Mamaradlo
Senior Project Manager
MamaradloC@samtrans.com



STAFF REPORT

Complete Streets Commission

Meeting Date: 8/14/2024
Staff Report Number: 24-008-CSC

Regular Business: Review the University of California, Berkeley's Safe Transportation Research and Education Center's safety assessments on Santa Cruz Avenue and Sand Hill Road

Recommendation

Staff recommends that the Complete Streets Commission (Commission) review the University of California, Berkeley's Safe Transportation Research and Education Center's (SafeTREC) safety assessments on Santa Cruz Avenue and Sand Hill Road (Attachment A).

Policy Issues

This safety assessment stems from and supports the City's adopted Vision Zero Action Plan goal (VZAP) to eliminate all traffic fatalities and serious injuries by 2040.

Background

In January and February of 2024, the City applied through SafeTREC's Complete Streets Safety Assessments Program and was selected to receive a free technical safety assessment on Santa Cruz Avenue and Sand Hill Road. These corridors were selected by City staff due to their pivotal functions for all users and connectivity in the City while also being identified as high collision corridors in the VZAP.

SafeTREC is a research center affiliated with the UC Berkeley School of Public Health and the Institute of Transportation Studies that "seeks to inform decision-making and empower communities to improve roadway safety for all".

The program is funded by the California Office of Traffic Safety, through the National Highway Traffic Safety Administration. These safety assessments mainly focus on pedestrian and bicycle safety and are conducted by teams that include professional transportation engineers.

While both corridors serve commuters and recreational users, Santa Cruz Avenue is also a primary school route due to the many schools and day cares along the corridor (e.g., Hillview Middle School, St. Raymond Catholic Elementary School).

Staff requested that the assessment focus on these ten intersections:

- Santa Cruz Avenue between University Drive and Orange Avenue - six intersections: at University Drive, Johnson Street, St. Raymond Catholic Elementary School Driveway, San Mateo Drive, Olive Street, and Orange Avenue
- Sand Hill Road between Oak Avenue and Sharon Park Drive - three intersections: at Oak Avenue, Santa Cruz Avenue, and Sharon Park Drive

- Alpine Road and Junipero Serra Boulevard

On April 24, SafeTREC conducted field assessments at these ten intersections. The field visits were accompanied by City staff (e.g., Public Works – Transportation Division and Police Department – Traffic) and Menlo Park community stakeholders. Field assessments along Santa Cruz Avenue were conducted during school drop-off/pick-up hours.

Analysis

SafeTREC has submitted a draft assessment report (Attachment A) that includes relevant Menlo Park safety statics, the assessment methodologies/ procedures, and a set of draft recommendations for the ten intersections.

Currently, staff is reviewing the report in detail, but is also circulating it to the Commission and other key stakeholders for input concurrently due to a potential near term grant opportunity. A summary of key elements in the report is provided below:

- Based on 2021 data from the California Office of Traffic Safety, the City of Menlo Park was ranked 12 out of 93 cities of similar population size for people killed or injured in a traffic crash (with a ranking of “one” indicating the worst). Additional statics are included in Chapter Three of the report.
- A benchmarking analysis of the City’s transportation and safety policies and programs to the national best practices revealed that Menlo Park generally meets or exceeds national best practices. Detailed evaluations are included in Chapter Four of the report.
- Chapter Five of the report details the April 24 field assessment results and recommendations. For each of the ten intersection and select street segments, the report provided a set of recommended measures intended to address observed pedestrian and bicycle safety concerns as well as other feedback provided by stakeholders during the field assessment.

Based on initial staff review, certain recommendations (e.g., high visibility crosswalks, intersection striping extensions, quick-build bulb-outs) can be implemented through the City’s on-call contractors. However, other extensive recommendations (e.g., High intensity Activated crosswalk [HAWK] signal, turn restrictions, two-way separated bike lanes) will require additional analyses and/or community engagement. Table 1 summarizes the finding by categories.

Table 1: Evaluation of draft intersection/ corridor measures		
Locations	Ready to finalize	Need additional analyses and/or public engagement
Santa Cruz Ave. (assessed section of the corridor)	<ul style="list-style-type: none"> None 	<ul style="list-style-type: none"> Two-way separated bike lane on one side of the street (driveway and transition constrains)
Santa Cruz Ave. / University Dr.	<ul style="list-style-type: none"> Leading pedestrian interval Signal head upgrade Truncated domes 	<ul style="list-style-type: none"> Signal operation modification
Santa Cruz Ave. / Johnson St.	<ul style="list-style-type: none"> Left turn pocket Yield line relocation 	<ul style="list-style-type: none"> Left turn restriction to Johnson St. during school hours
Santa Cruz Ave. / St. Raymond Catholic Elementary School driveway	<ul style="list-style-type: none"> Bike marking through driveway 	<ul style="list-style-type: none"> Left turn restriction to Santa Cruz Ave. during morning peak hours
Santa Cruz Ave. / San Mateo Dr.	<ul style="list-style-type: none"> Bulb-out at southwest corner Bicycle wayfinding signs 	<ul style="list-style-type: none"> Crosswalk on west leg of Santa Cruz Ave.
Santa Cruz Ave. / Olive St.	<ul style="list-style-type: none"> Signal timing at Elder Ave.to match school activities Yield line relocation 	<ul style="list-style-type: none"> Class II bike lanes on Olive St. (parking removal needed) Speed feedback signs
Santa Cruz Ave. / Orange Ave.	<ul style="list-style-type: none"> Bulb-out at southeast corner 	<ul style="list-style-type: none"> New signal installation Shift northbound bike lane
Sand Hill Rd. / Oak Ave.	<ul style="list-style-type: none"> Bike ramp on south side ADA curb ramps Bicycle wayfinding signs High visibility crosswalks 	<ul style="list-style-type: none"> No right turn on red on Oak Ave. Bike signal
Sand Hill Rd. / Santa Cruz Ave.	<ul style="list-style-type: none"> High visibility crosswalks Green bike lane markings ADA curb ramps Bicycle wayfinding signs 	<ul style="list-style-type: none"> No right turn on red on all four approaches Protected intersection configuration Speed feedback signs
Sand Hill Rd. / Sharon Park Dr.	<ul style="list-style-type: none"> Class II bike lane on Sharon Park Dr. between Sharon Rd. and Sand Hill Rd. (no parking removal required) Bicycle video detection Yield to pedestrian sign on southbound Sharon Park Dr. 	<ul style="list-style-type: none"> None
Alpine Rd. / Junipero Serra Blvd.	<ul style="list-style-type: none"> Bike box on Junipero Serra Blvd. 	<ul style="list-style-type: none"> Coordinate with Santa Clara County on cycle track feasibility on Junipero Serra Blvd. Two-stage bike crossing options

Next steps

Currently, staff is gathering feedback from key stakeholders that attended the April 24 field assessment. Then staff will consolidate and provide SafeTREC a set of relevant feedback to finalize the assessment report.

Additionally, staff has identified the San Mateo County Transportation Authority's Pedestrian and Bicycle Program as a potential grant funding opportunity to continue the "ready to finalize" recommended measures into the next phases (e.g., finalize recommendations, design, and implementation). Staff will seek City Council support through a resolution for the grant application on August 27.

Impact on City Resources

This assessment is funded through SafeTREC's Complete Streets Safety Assessments Program.

Environmental Review

This assessment is not a project within the meaning of the California Environmental Quality Act (CEQA) Guidelines §15378 as it will not result in any direct or indirect physical change in the environment.

Public Notice

Public Notification was achieved by posting the agenda, with the agenda items being listed, at least 72 hours prior to the meeting.

Attachments

A. Draft safety assessment report

Report prepared by:
Kevin Chen, Senior Transportation Engineer

Report reviewed by:
Azalea A. Mitch, Public Works Director



Menlo Park Complete Streets Safety Assessment

PS 24048

Issues, Opportunities, and Suggested Strategies



Draft Report

July 2024

Disclaimer text. This report was produced in cooperation with the [insert site]. Funding for this program was provided by a grant from the California Office of Traffic Safety (OTS) through the National Highway Traffic Safety Administration. The opinions, findings, and conclusions are those of the authors and not necessarily those of the OTS, the University of California, and/or the agencies supporting or contributing to this report. This report does not constitute a standard, specification, or regulation. The agency that is the subject of this report is hereby granted a non-exclusive right to copy and distribute this report for its own or its stakeholders' non-commercial use. All other uses of this report require written permission from the University of California, Berkeley Safe Transportation Research and Education Center (SafeTREC).

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Acknowledgments

The CSSA team thanks the agency staff and community members from City of Menlo Park who provided invaluable contributions to the benchmarking review and field audit to make the Complete Streets Safety Assessment in this community a success. Their knowledge and insight were instrumental to the completion of this project.

Disclosures

This report was developed with the best information available to the authors at that time.

This report summarizes crash data reported in the Statewide Integrated Traffic Records System (SWITRS) retrieved from the [Transportation Injury Mapping System \(TIMS\)](#). The current version of 2022 and 2023 SWITRS data is provisional and is subject to change when it is finalized.

The benchmarking analysis aims to provide the City of Menlo Park with information on current best practices and how the City compares. Cities have differing physical, demographic, and institutional characteristics that may make certain goals or policies more appropriate in some jurisdictions than others. Ultimately, the City of Menlo Park staff will need to determine where resources and efforts are best utilized to meet local development and infrastructure goals for people walking and biking.

The recommendations presented in this report are based on limited field observations and limited time spent in the City of Menlo Park by the CSSA technical evaluators. These recommendations are based on general knowledge of best practices in pedestrian and bicycle design and safety and are intended to guide local staff in making decisions for future safety improvement projects. The recommendations might not incorporate all factors that may be relevant to the pedestrian and bicyclist safety issues.

As this report is conceptual in nature, conditions may exist in the focus areas that were not observed and may not be compatible with recommendations in this report. Before finalizing and implementing any physical changes, staff may need to conduct more detailed studies or further analysis to refine or discard the recommendations in this report if they are found to be contextually inappropriate or appear not to improve pedestrian and bicyclist safety or accessibility due to conditions including, but not limited to, high vehicular traffic volume, high speeds, physical limitations on space or sight distance, or other potential safety concerns.

Executive Summary

The City of Menlo Park staff requested that the Safe Transportation Research and Education Center at the University of California, Berkeley, conduct a Complete Streets Safety Assessment (CSSA) study for a corridor along Santa Cruz Avenue between University Drive and Orange Avenue as well as a corridor along Sand Hill Road between Oak Avenue and Junipero Serra Boulevard within the city. The CSSA technical evaluator conducted the CSSA field visit for the City of Menlo Park on April 24, 2024 to observe and document field conditions.

The objectives of the CSSA are to improve pedestrian and bicycle safety and to enhance walkability and accessibility for all pedestrians and bicyclists in Menlo Park.

The CSSA is organized into three core activities:

1. Reviewing historical crash data and trends with an emphasis on crashes involving people walking and biking;
2. Conducting a benchmarking assessment of policies, programs, standards, and guidelines; and
3. Conducting a complete streets field audit of specific locations with suggestions to enhance conditions for people walking and biking.

This report is organized into the following chapters:

1. Introduction
2. Safe System Approach
3. Background and Crash History
4. Benchmarking Analysis Results and Suggested Enhancements
5. Complete Streets Field Audit Results and Recommendations

Background

The City of Menlo Park is located in San Mateo County with a population of approximately 31,690. Per the OTS rankings, in 2021, Menlo Park was ranked 12 out of 93 cities of similar population size for people killed or injured in a traffic crash (with a ranking of “one” indicating the worst). For pedestrians and bicyclists killed or injured in a crash, Menlo Park ranked 61/93 and 3/93 respectively. Menlo Park ranked 1/93 for bicyclists under aged 15 killed and injured in a crash, indicating Menlo Park was ranked the worst for bicyclists under aged 15 compared to similar sized cities. With regards to speed related crashes, Menlo Park ranked 4/93, indicating a high ranking compared to similar sized cities. This ranking is based on several weighted factors including population, daily vehicle miles traveled, crash records, crash trends, and others. For more information on OTS rankings, please refer to <https://www.ots.ca.gov/data-sources/>.

The Safe System Approach

The U.S. Department of Transportation, California Department of Transportation, and California Office of Traffic Safety have all adopted the Safe System Approach. The Safe System Approach

considers five elements of a safe transportation system — safe road users, safe vehicles, safe speeds, safe roads, and post-crash care — in an integrated and holistic manner. Creating a Safe System means shifting a major share of the responsibility from individual road users to those who design, operate, and maintain the transportation network. The Safe System Approach anticipates human mistakes by designing and managing road infrastructure to keep the risk of mistakes low, and if a mistake does lead to a crash, reducing the impact to the human body to limit the potential for fatality or serious injury.

The CSSA project team identified and selected the Santa Cruz Avenue corridor between University Drive and Orange Avenue, and the Sand Hill Road corridor between Oak Avenue and Sharon Park Drive for comprehensive walk audits based on crash history and conversations with the applicant to understand local safety concerns. During the field assessment, the CSSA project team integrated the Safe System elements into a discussion with participants to prompt safety improvements at the study locations. To develop comprehensive recommendations that address the Safe System Approach, the CSSA project team also reviews responses from local agency staff to the benchmarking survey, especially those related to local plans and policies that are already in place or underway.

The CSSA focuses primarily on infrastructure-related countermeasures, with an emphasis on improving the safety of people walking and biking. Prioritizing safe target speeds and changing road geometry to manipulate crash angles can help reduce the risk of fatal and severe injuries. Through the benchmarking assessment, the CSSA team also provides some non-infrastructure insight on safety countermeasures such as education, outreach, and post-crash care. All elements of the Safe System Approach can be applied to corridor and intersection studies moving forward to create an approach that creates layers of protection for all road users.

Benchmarking Analysis and Potential Improvements

To assess pedestrian and bicyclist safety conditions in City of Menlo Park, the CSSA team conducted a benchmarking analysis to understand how the existing conditions compared to national best practices. Through an electronic benchmarking survey conducted with City staff, the CSSA team identified their active transportation policies, programs, and practices and categorized these into three groups:

- Areas where the City is exceeding national best practices
- Areas where the City is meeting national best practices
- Areas where the City appears not to meet national best practices

While suggestions are provided for each category, local agencies have differing physical, demographic, and institutional characteristics that may make certain goals or policies more appropriate in some jurisdictions than others. Ultimately, county or local agency staff may determine where resources and efforts are best utilized for meeting local development and infrastructure goals for pedestrians and bicyclists.

Suggestions for potential improvement or further enhancement to City of Menlo Park existing

programs and policies are presented in Chapter 4.

Complete Streets Audit and Potential Improvements

The Santa Cruz Avenue corridor between University Drive and Orange Avenue and the Sand Hill Road corridor between Oak Avenue and Sharon Park Drive were selected for a comprehensive walk audit based on crash history and conversations with the City staff to understand local safety concerns. Positive practices, as well as pedestrian and bicycle safety and accessibility issues were identified during the field audit. Many of the strategies suggested in this report are appropriate for grant applications, including Office of Traffic Safety (OTS) or Active Transportation Program (ATP) funding. The strategies may also be incorporated into a bicycle or pedestrian master plan, documents that could set forth bicycle, pedestrian, and streetscape policies for the City, identify, and prioritize capital improvement projects.

The suggestions presented in this report are based on limited field observations and time spent in the community by the CSSA team. These suggestions, which are based on general knowledge of best practices in traffic engineering and planning in pedestrian and bicycle design and safety, are intended to guide staff in making decisions for future safety improvement projects in City of Menlo Park, and they may not incorporate all factors which may be relevant to walking and bicycling safety issues.

As this report is conceptual in nature, conditions may exist in the focus areas that were not observed and may not be compatible with suggestions in this report. Before finalizing and implementing any physical changes, City staff may choose to conduct more detailed studies or further analysis to refine or discard the suggestions in this report if they are found to be contextually inappropriate or appear not to improve bicycling safety or accessibility due to conditions including, but not limited to, high vehicular traffic volume or speeds, physical limitations on space or sight distance, or other potential safety concerns.

1. Introduction

The Complete Streets Safety Assessment (CSSA) is a statewide program of the University of California, Berkeley Safe Transportation Research and Education Center (SafeTREC). Through this program, the CSSA project team conducts crash data analysis, a benchmarking review of local policies, programs and practices, and a transportation safety assessment of select sites to identify safety improvements that align with the Safe System Approach.

The City of Menlo Park Planning and Engineering Division requested that the Safe Transportation Research and Education Center (SafeTREC) at University of California, Berkeley conduct a Complete Streets Safety Assessment (CSSA) for the city. The objective of the CSSA is to improve safety and accessibility for all people walking and biking in the City of Menlo Park.

As part of the City's Circulation Elements update of their general plan, the city is addressing the California State requirement of planning for "Complete Streets" by putting in a complete streets policy in place. Through this policy, the city will plan for multimodal transportation networks that meet the needs of all users of roadways in upcoming developments and projects currently in the planning and development stages. This circulation element incorporates the policy to create equitable and actionable programs, policies, and designs for a sustainable future. Menlo Park's Circulation Element classifies Santa Cruz Avenue as a Minor Arterial with High Intensity, pedestrian-oriented retail street. Sand Hill Road is classified as a Primary Arterial and a major thoroughfare with limited mixed commercial frontage.

Per City's staff request, the CSSA project team selected the Santa Cruz Avenue corridor between University Drive and Orange Avenue, and the Sand Hill Road corridor between Oak Avenue and Sharon Park Drive for a comprehensive walk audits. These areas were selected also based on crash history and conversations with the applicant to understand local safety concerns. During the field assessment, the CSSA project team integrated the Safe System elements into a discussion with participants to prompt safety improvements at the study locations.

The CSSA project team facilitated a kickoff conference call with local staff on March 15, 2024 to better understand the community's needs. The CSSA technical evaluators conducted a site visit with local staff on April 24, 2024 to observe and document field conditions. Following the field audit, the CSSA technical evaluators shared with the local agency staff their preliminary recommendations for site-specific improvements based on their observations and current best practices for designing transportation systems for people walking and biking.

This report provides an overview of the Safe System Approach and summarizes the findings of the crash data assessment, the benchmarking analysis, and the observations and recommendations from the field audit. Additionally, this report includes four appendices covering pedestrian and bicyclist improvement options, a resource list, and street connectivity.

2. The Safe System Approach

Traffic crashes can irreversibly change the course of human lives, touching victims, their families and loved ones, and society overall. The costs of traffic crashes include substantial economic and societal impacts, such as medical costs, lost productivity, and reduced quality of life. Cities, counties, and tribes need to work to solve the complex problem of traffic safety in their communities to reduce the number injuries and deaths. The Complete Streets Safety Assessment (CSSA) program provides an opportunity to integrate the Safe System Approach (SSA) into programs, policies, and design decisions related to active transportation improvements to address the underlying road safety concerns in communities statewide. Moreover, the goal of a Complete Street is to ensure the safe and adequate accommodation of all road users.

The Safe System Approach to road safety started internationally as part of the Vision Zero proclamation that no one should be killed or seriously injured on the road system.^{1, 2} It is founded on the principle that people make mistakes and that the road system should be adapted to anticipate and accommodate human mistakes and the physiological and psychological limitations of humans.³ The Safe System Approach acknowledges the vulnerability of the human body — in terms of the amount of kinetic energy transfer a body can withstand — when designing and operating a transportation network to minimize serious consequences of crashes and ensures that if crashes occur, they “do not result in serious human injury.”⁴

Countries that have adopted the Safe System Approach have had significant success reducing highway fatalities, with reductions in fatalities between 50% and 70%.⁵ The Safe System Approach is the foundation for the National Roadway Safety Strategy released by the United States Department of Transportation in 2022. Statewide, the California Office of Traffic Safety and Caltrans have both adopted the Safe System Approach and a Vision Zero goal for road safety planning. The principles and elements of the Safe System Approach can be seen in Figure 2.1.

¹ Johansson, R. (2009). Vision Zero - Implementing a policy for traffic safety. *Safety Science*, 47, 826-831.

² Tingvall, C., & Haworth, N. (1999). An Ethical Approach to Safety and Mobility. Paper presented at the 6th ITE International Conference Road Safety and Traffic Enforcement. 6-7 September 1999, Melbourne, Australia.

³ Belin, M.-Å., Tillgren, P., & Vedung, E. (2012). Vision Zero - a road safety policy innovation. *International Journal of Injury Control and Safety Promotion*, 19, 171-179.

⁴ World Health Organization (2011). Retrieved on: June 3, 2024 [Decade of Action for Road Safety 2011-2020](#) (PDF).

⁵ World Resources Institute (2018). Sustainable and Safe: A Vision and Guidance for Zero Road Deaths. Retrieved on June 3, 2024 <https://www.wri.org/publication/sustainable-and-safe-vision-and-guidance-zero-road-deaths>

⁶ World Health Organization (2011). Decade of Action for Road Safety 2011-2020. Retrieved on: June 3, 2024 [Decade of Action for Road Safety 2011-2020](#) (PDF).

⁷ World Health Organization (2011). Decade of Action for Road Safety 2011-2020. Retrieved on: June 3, 2024 [Decade of Action for Road Safety 2011-2020](#) (PDF).



Figure 1 U.S. Department of Transportation Safe System Approach Graphic

Preliminary Statewide Integrated Traffic Records System (SWITRS) crash data for 2022 suggests that traffic crashes caused nearly 4,500 preventable deaths and over 200,000 injuries in California. People walking, biking, and rolling are especially vulnerable to death or serious injuries when a crash occurs. Through collective action on the part of all roadway system stakeholders — from traffic engineers, planners, public health professionals, and vehicle manufacturers to law enforcement and everyday users — we can move to a Safe System Approach that anticipates human mistakes, with the goal of eliminating fatal and serious injuries for all road users.

2.1 Influence on Roadway Design and Operation

Kinetic energy has long been identified as the cause of injury, such that if a crash occurs, the peak forces at the point of contact determine the degree of injury.^{6 7 8} Managing the forces of kinetic energy to a level that the human body can tolerate is critical to the Safe System Approach⁹.

⁶ Haddon, W. (1980). Advances in the epidemiology of injuries as a basis for public policy. *Public Health Reports*, 95(5), 411–421.

⁷ De Haven, H. (1942). Mechanical analysis of survival in falls from heights of fifty to one hundred and fifty feet. *Reproduced in Injury Prevention*, 6(1), 62–68 (2000).

⁸ Gangloff, A., 2013. Safety in accidents: Hugh DeHaven and the development of crash injury studies. *Technol. Cult.* 54 (1), 40–61.

⁹ Tools like the [Safe System Project-Based Alignment Framework](#) developed by the Federal Highway Administration provide practitioners to assess and compare roadway locations and potential improvements through a SSA lens.

In the transportation system, kinetic energy risk is present based on three factors:

1. Exposure: the presence (or potential presence) of two or more users or a user and a fixed object
2. Likelihood: the chance that a conflict occurs between those users/objects based roadway design, intersection control, or other contextual conditions
3. Severity: the intensity of the energy should the conflict occur (driven by speed, mass, and angle), which is not mitigated by other factors (such as in-vehicle occupant protection)

Systemic assessments of roadway networks can identify and proactively address when these risk factors are high, meaning the consequence of a mistake could be severe.

The Institute of Transportation Engineers (ITE) and the Road to Zero Coalition articulate that to anticipate human mistakes, best practices for a Safe System seek to:

- Separate users in a physical space (e.g., sidewalks, dedicated bicycle facilities);
- Separate users in time (e.g., pedestrian scrambles, dedicated turn phases);
- Alert users to potential hazards; and
- Accommodate human injury tolerance through interventions that reduce speed or impact force.

Recent guidance from the Federal Highway Administration (FHWA) characterizes engineering and infrastructure countermeasures and strategies along a hierarchy to help transportation practitioners prioritize efforts that will facilitate increased application of the Safe System Approach principles as seen in Figure 2.2. Specifically, the Safe System Roadway Design Hierarchy breaks down efforts into four tiers and seeks to: (1) eliminate severe conflicts through physical separation; (2) reducing vehicle speed; (3) manage conflicts in time; and (4) increase attentiveness and awareness.¹⁰ The FHWA further clarifies a combination of strategies from multiple tiers would be the most effective, reinforcing the Safe System principle that redundancy is crucial.

¹⁰ Hopwood, C., Little, K., and D. Gaines. (2024). Safe System Roadway Design Hierarchy: Engineering and Infrastructure-related Countermeasures to Effectively Reduce Roadway Fatalities and Serious Injuries (FHWA-SA-22-069). US Department of Transportation, Washington, D.C.



Figure 2: Federal Highway Administration Safe System Roadway Design Hierarchy Graphic

Nearly one in three – 31.7% of the 4,428 – traffic fatalities in California in 2022 was associated with excessive speed or traveling at speeds deemed unsafe for the driving conditions.¹¹ In 2021 through AB43, California authorized local governments to reduce speed limits on many roads, including state highways, in business and residential areas and other roads identified as “safety corridors” without following the “85th percentile rule” which often caused transportation agencies to raise speed limits. This new authority aligns with the Safe System approach and allows local jurisdictions to target speeds based on user context. Moreover, Caltrans issued Design Information Bulletin (DIB) 94 in 2024 related to “complete streets” which provides local agencies with more flexibility to design context-sensitive facilities to better serve the needs of all travelers, including guidance for selecting treatment tools based on speed and volume context.

For vulnerable users, such as people walking, biking, or otherwise not in a vehicle, speed is a determining factor in survivability. Figure 2.2 depicts how a person’s chance of surviving being struck by a vehicle increases from 20% at 40 miles per hour (mph) to 60% at 30 mph to 90% at 20 mph. Moreover, as drivers increase the speed of the vehicle, their peripheral vision narrows. This results in decreased depth perception and a reduced ability to notice others on the road, such as people walking and biking. Reducing speed in the presence of vulnerable users is a key Safe System strategy. Approaches include:

- Physical roadway designs (width, horizontal alignment) to limit speeds;
- Traffic calming treatments that induce slower speeds;
- Traffic signal timing that minimizes high-speed flow; and
- Traditional or automated enforcement¹² that discourages speeding

¹¹ National Highway Traffic Safety Administration (2023). Traffic Safety Facts: California 2018-2022.

¹² Assembly Bill (AB) 645 was signed into law in October 2023 authorizing six California cities (Glendale, Long Beach, Los Angeles, Oakland, San Francisco, and San Jose) to pilot automated speed cameras for five years.



Figure 3 Increasing driver vehicle speed reduces vulnerable road user crash survivability and narrows the driver’s field of vision.

Many traffic safety efforts continue to lean on individuals to “do the right thing” to stay safe rather than apply lessons learned from the public health sector to invest in system-wide safety interventions. Ederer (2023) proposed the Safe Systems Pyramid¹³, which acknowledges kinetic energy as the root cause of injury and introduces a public health-based intervention framework to address this cause with strategies that require the least individual effort and have the broadest population impact. For example, interventions that require more individual effort (e.g., driver education programs, educational campaigns) have the least impact on improving system-wide safety, and those that change the context of transportation have the largest impacts on safety (e.g., affordable housing near transit, zoning reform). This framework provides guidance when transportation decision-makers cannot do it all, giving priority towards projects and interventions that will most impact safety outcomes.¹⁴

¹³ Ederer, D., Thompson Panik, R., Botchwey, N., & Watkins, K. (2023). Adaptation of the Health Impact Pyramid into the Safe System Pyramid. *Transportation Research Interdisciplinary Perspectives*. Vol. 21. <https://doi.org/10.1016/j.trip.2023.100905>.

¹⁴ Mitman, M. et al, (2024). Why and How to Focus on Kinetic Energy Risk, *ITE Journal: The Journey to Safer Communities*. 39-45. <https://ite.ygsclicbook.com/pubs/itejournal/2024/march-2024/live/index.html#p=38>



Figure 4 The *Safe Systems Pyramid* adapts public health principles, like the *Health Impact Pyramid* and *Hierarchy of Controls*, to more fully address roadway safety needs.

Strategies at the base of this pyramid focus on reducing and limiting exposure upstream that affect where, when, and how people enter the transportation system and become exposed to risk. This includes Vehicle Miles Traveled (VMT) mitigation, in terms of both the duration of travel as well as the location and mode. Middle-of-the-pyramid strategies look for opportunities, on top of exposure mitigation, to limit conflicts through the separation of users in space and time, and limit severity through speed management and reduced angles of crashes. Less preferred strategies in this framework focus on educational interventions that are conditional on individual behavior change. In alignment with the SSA, education can be effective when they are combined with efforts from other tiers in the pyramid to strengthen redundancies.

Conventional safety practice is primarily reactive, largely based on data provided to engineers and planners in crash reports. However, the primary purpose of crash reports is to document the moment of the crash and the time immediately preceding it to determine “fault” across the involved parties (such as needed for insurance claims). As such, it shifts the responsibility for the crash to an individual, rather than assessing opportunities to intervene at the system level. The Safe Systems Pyramid recommends focusing on root causes of the crash by considering the W’s of safety:

- Who was involved; what is their personal story?
- Where were they traveling from and to? Why were they on this road?
- Why were they traveling on that day, at that time?
- Why did they use their selected travel mode?
- Why was the road they were traveling on designed the way it is?

Creating a Safe System means shifting a major share of the responsibility from individual road users to those who design the road transport system. “Individual road users have the responsibility to abide by laws and regulations”¹⁵ and do so by exhibiting due care and proper behavior in the transportation system. While road users are responsible for their own behavior, a safe system requires a shared responsibility with those who design, operate, and maintain the transportation network: including the automotive industry, law enforcement, elected officials, and government bodies.¹⁶ In a Safe System, roadway system designers and operators take on the highest level of ethical responsibility to look at crashes holistically and systemically, and recognize that crashes are not only caused by a driver’s error.

2.2 Integrating the Safe System Approach into the CSSA

The Safe System Approach involves anticipating human mistakes by designing and managing road infrastructure to keep the risk of mistakes low, and if a mistake does lead to a crash, reducing the impact to the human body, so it does not lead to a fatality or serious injury. The first step in incorporating the Safe System Approach into the CSSA is a benchmarking analysis. The benchmarking analysis, based on the Safe System elements, evaluates the local agency’s programs and policies and how their existing efforts incorporating best practices related to access and comfort for people walking and biking compare to national best practices. The aim is to fully institutionalize SSA in the local agency’s program, practices, and policies, rather than on a case-by-case basis, and by identifying and removing barriers to its adoption.

The CSSA project team will identify some focus areas (i.e., intersections and corridors) to conduct a comprehensive walk audit based on crash history and conversations with the applicant to understand local safety concerns. During the field assessment, the CSSA project team will integrate the Safe System elements into a discussion with participants to prompt safety improvements at the study locations, considering the “Ws” of safety noted above.

The CSSA field assessment focuses primarily on infrastructure-related countermeasures, with an emphasis on improving the safety of people walking and biking. Specifically, the CSSA seeks to reduce speeds to a target speed for the road context, separate road users in space and time for that context, and change road geometry to manipulate crash angles as proactive strategies to address kinetic energy risk for fatal and serious injuries.

This CSSA report compiles a set of considerations for the local agency to both institutionalize a Safe System Approach into programs, practices, and policies, and to directly apply the SSA lens through field assessments and countermeasure selection.

¹⁵ World Health Organization (2011). Decade of Action for Road Safety 2011-2020. Retrieved on: June 3, 2024 [Decade of Action for Road Safety 2011-2020](#) (PDF).

¹⁶ World Health Organization (2011). Decade of Action for Road Safety 2011-2020. Retrieved on: June 3, 2024 [Decade of Action for Road Safety 2011-2020](#) (PDF).

3. Background and Crash History

Menlo Park is located in San Mateo County with a population of approximately 31,690. Of its residents, the majority, with 60.3% percent, identified as White and about 17.3% identified as Hispanic or Latino.¹⁷ The median household income in Menlo Park in 2022 was \$198,273, higher than the statewide median household income of \$91,905.¹⁸ It had an estimated daily vehicle miles traveled on local roads of 148,705 in 2021.¹⁹ The vicinity of Menlo Park is shown in Figure 3.1.

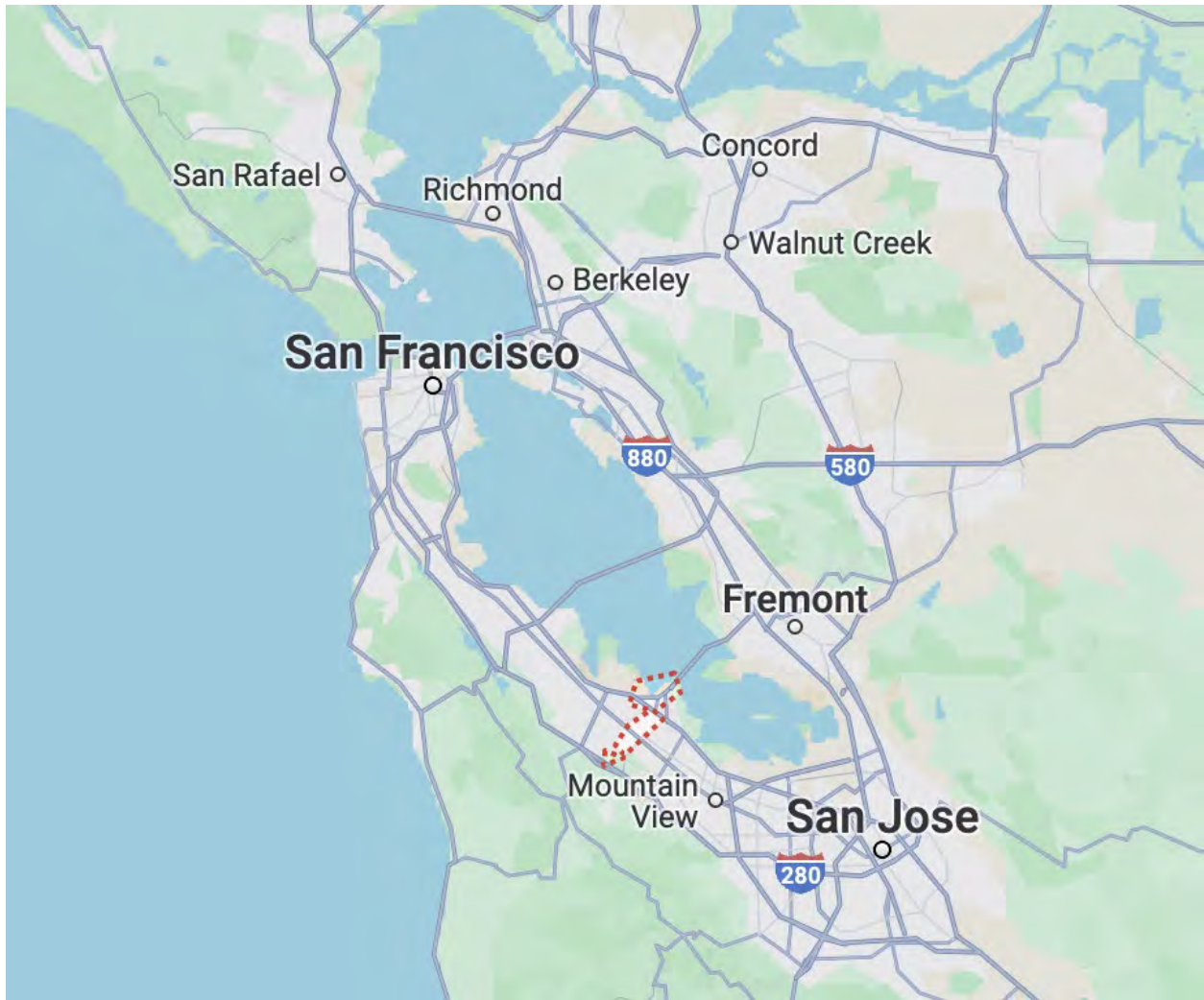


Figure 3.1 Menlo Park Vicinity Map

¹⁷ QuickFacts. United States Census Bureau. Retrieved from <https://www.census.gov/quickfacts/fact/table/>

¹⁸ Profiles. United States Census Bureau. Retrieved from <https://data.census.gov/profile/>

¹⁹ California Office of Traffic Safety. OTS Crash Rankings. Retrieved from <https://www.ots.ca.gov/media-and-research/crash-rankings/>.

3.1 Overview of Pedestrian and Bicyclist Safety

One of the goals of the Complete Streets Safety Assessments is to make walking and biking safer and more accessible for all residents and visitors in Menlo Park. In this section, we will provide a summary of traffic crashes by statewide ranking, detailed analyses of crashes involving pedestrians and bicyclists to determine high risk groups, high priority locations and behaviors that need to be addressed, when crashes are occurring, as well as discuss the importance of underreported and near-miss crashes.

Office of Traffic Safety Ranking for Pedestrian and Bicycle Crashes

The California Office of Traffic Safety (OTS) maintains rankings to facilitate comparison between cities with similar sized populations to identify and address potential emerging or ongoing traffic safety issues. The rankings are based on the Empirical Bayesian (EB) Ranking Method that gives weights to many different factors, such as population, vehicle miles traveled, and crash counts. Rankings are available for Incorporated Cities, and only includes local streets and state highways within the city limits. Counties are also assigned a statewide ranking. Data for the OTS rankings are taken from the Statewide Integrated Traffic Records System (SWITRS), California Department of Transportation, and the California Department of Finance. The most current OTS statistics (2021) grouped Menlo Park within group D, as compared to 93 cities in California with a population between 25,001-50,000.

OTS crash rankings are only indicators of potential problems and there are many external factors that may either understate or overstate a city's ranking. Per the OTS rankings, in 2021, Menlo Park was ranked 12 out of 93 cities of similar population size for people killed or injured in a traffic crash (with a ranking of "one" indicating the worst). For pedestrians and bicyclists killed or injured in a crash, Menlo Park ranked 61/93 and 3/93 respectively. Menlo Park ranked 1/93 for bicyclists under aged 15 killed and injured in a crash, indicating Menlo Park was ranked the worst for bicyclists under aged 15 compared to similar sized cities. With regards to speed related crashes, Menlo Park ranked 4/93, indicating a high ranking compared to similar sized cities.

3.2 Pedestrian and Bicycle Crash Data

Crash data is vital to compete for funding at the state and federal levels to implement safety improvements. The Statewide Integrated Traffic Records System (SWITRS) maintained by the California Highway Patrol is the official traffic records database for the state. It captures reported crashes that resulted in injury or death. The 2022-2023 SWITRS data used is provisional as of June 2024 and subject to change before it is finalized. The CSSA team retrieved SWITRS crash data for San Jose from the [Transportation Injury Mapping System \(TIMS\)](#) database for 2019 through 2023. TIMS is a tool developed by SafeTREC to provide quick, easy, and free access to SWITRS that has been geo-coded by SafeTREC to make it easy to map crashes. The data presented below includes police-reported crashes that occurred within the city limits.

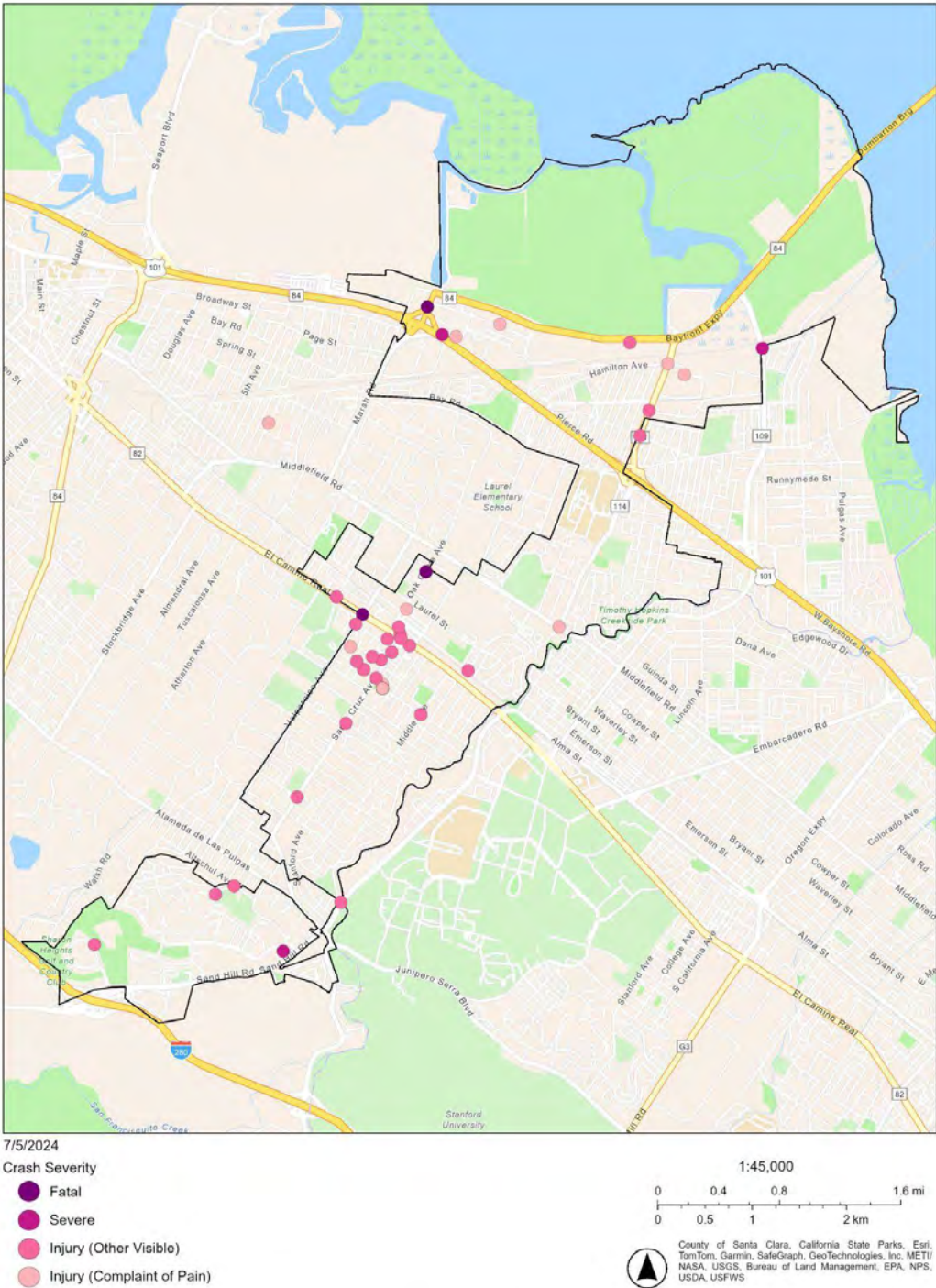
In this five-year period, 2019 to 2023, there were 157 crashes involving pedestrians or bicyclists in Menlo Park, including three fatal crashes and 14 serious injury crashes. The majority (88%) of the crashes occurred on local roads.

Pedestrian Crashes

From 2019 to 2023, there were 48 crashes involving pedestrians in Menlo Park. Among the 53 victims of these pedestrian crashes, there were three people killed and three people seriously injured. The majority of pedestrian crashes resulted in minor injury²⁰ with 88%, or 42 crashes. The majority of victims (94%) in pedestrian crashes were people walking. In Menlo Park, females (57%) were more likely to be injured in a pedestrian crash than males, which is dissimilar from county, state, and national trends. Over one-third (36%) of victims in pedestrian crashes were aged 65 or older. The top Primary Collision Factor (PCF) violations a driver's failure to yield the right-of-way to a pedestrian, speeding, pedestrian failure to yield to a driver, and unsafe turning.

Figure 3.2 shows the spatial distribution of pedestrian crashes by severity. Fatal and serious injury crashes are distributed primarily in the northern part of the city with three crashes, including two crashes near the intersection of US-101 and Marsh Road and another near the Bayfront Expressway, and in Central Menlo Park with two crashes. Two-third of the fatal and serious injury pedestrian crashes were on a state highway compared to 21% of all pedestrian crashes in Menlo Park. Many minor injury pedestrian crashes were concentrated in downtown Menlo Park. Pedestrian crashes were clustered on Oak Grove Avenue (seven crashes), University Drive (six crashes), Santa Cruz Avenue (four crashes), and El Camino Real (four crashes).

²⁰ Minor injury is the sum of two victim-degrees of injury categories: suspected minor injury and possible injury.



Data source: Statewide Integrated Traffic Record System (SWITRS) 2019-2023. 2022 and 2023 data are provisional as of June 2024.

Figure 3.2 Map of Pedestrian Crashes in Menlo Park, 2019-2023

Figure 3.3 and Figure 3.4 show an analysis of pedestrian-related crashes in Menlo Park.

Figure 3.3 shows the distribution of when pedestrian crashes occurred. Crashes were much more likely to occur on a weekday than weekend and during daylight (73%) when the weather was clear (90%). The majority of pedestrian crashes occurred on Tuesday and Wednesday, accounting for 44% of crashes, and between noon and 6:00 p.m., accounting for 48% of crashes. About 15% of pedestrian crashes occurred when it was dark with street lights and another 8% of crashes were in the dark with no street lights.

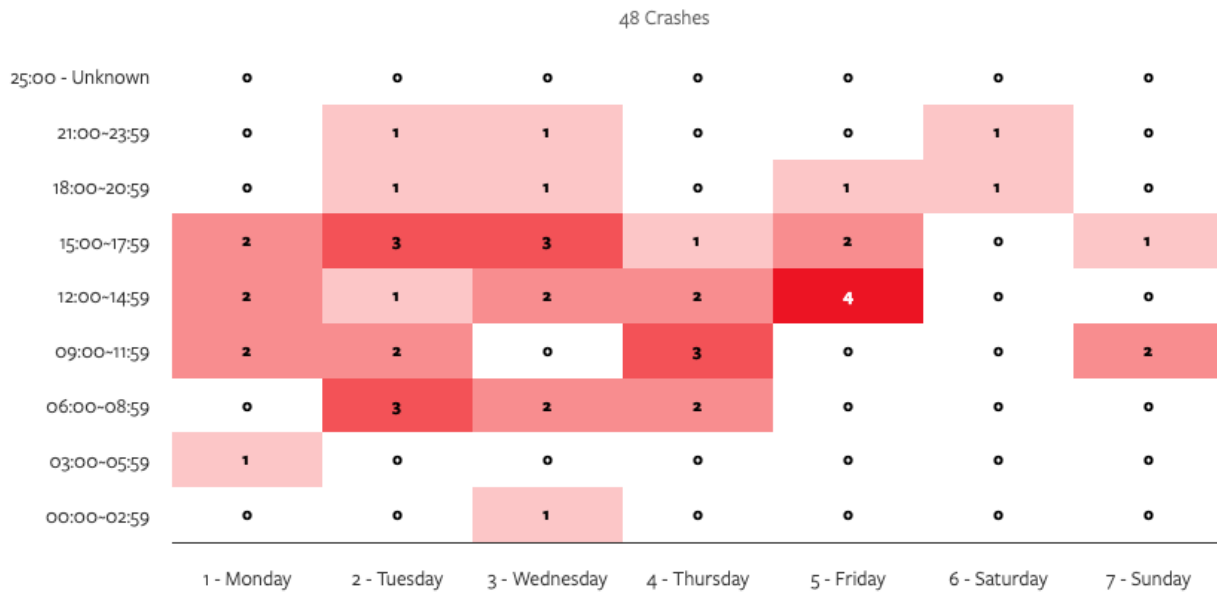


Figure 3.3 Pedestrian Crashes by Day of Week and Time of Day in Menlo Park, 2019-2023

Figure 3.4 shows the distribution of where pedestrian crashes occurred. The majority of pedestrian crashes, 46% occurred when someone was crossing in a crosswalk, followed by in the road including shoulders at 29%.

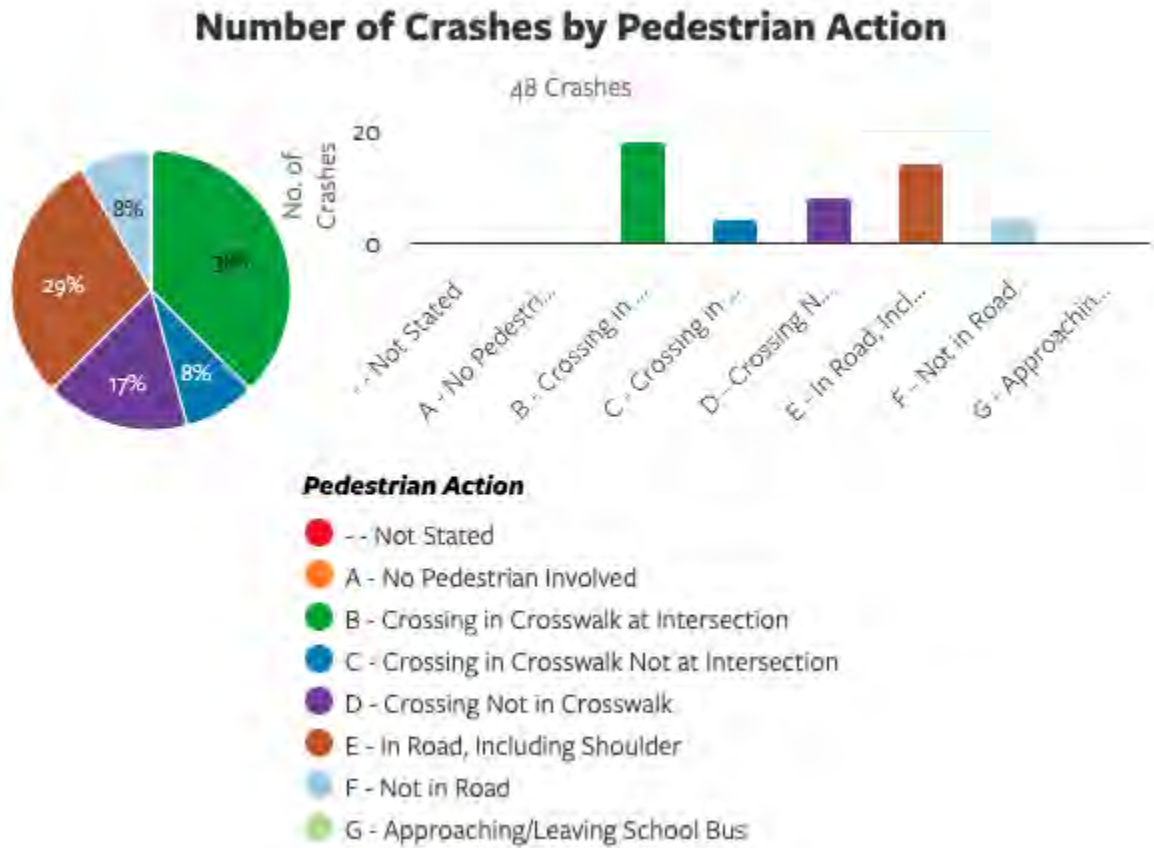


Figure 3.4 Pedestrian Crashes by Pedestrian Action in Menlo Park, 2019-2023

Bicycle Crashes

From 2019 to 2023, there were 111 crashes involving bicycles in Menlo Park. Among the 117 people injured in these bicycle crashes, there were 11 people seriously injured and no one killed. The majority of bicycle crashes resulted in minor injury²¹ with 90%, or 100 crashes. The vast majority of victims in these crashes were bicyclists, accounting for 96% of people injured. Of people injured, 71% were male. Over 40% of victims were youth aged 19 or younger and 9% were people aged 65 and older. The top Primary Collision Factor (PCF) violations were improper turning (26%), unsafe speed (22%), and automobile right-of-way (22%).

Figure 3.5 shows the spatial distribution of bicycle crashes by severity. Serious injury crashes are distributed throughout the city with two crashes each on Santa Cruz Avenue and Willow Road. Almost all the serious injury bicycle crashes, 91%, occurred on a local road. Bicycle crashes were clustered along Willow Road (14 crashes), Santa Cruz Avenue (9 crashes) and on Oak Grove Avenue (seven crashes). Only 8% of bicycle crashes occurred on a state highway.

²¹ Minor injury is the sum of two “victim degree of injury” categories: suspected minor injury and possible injury.

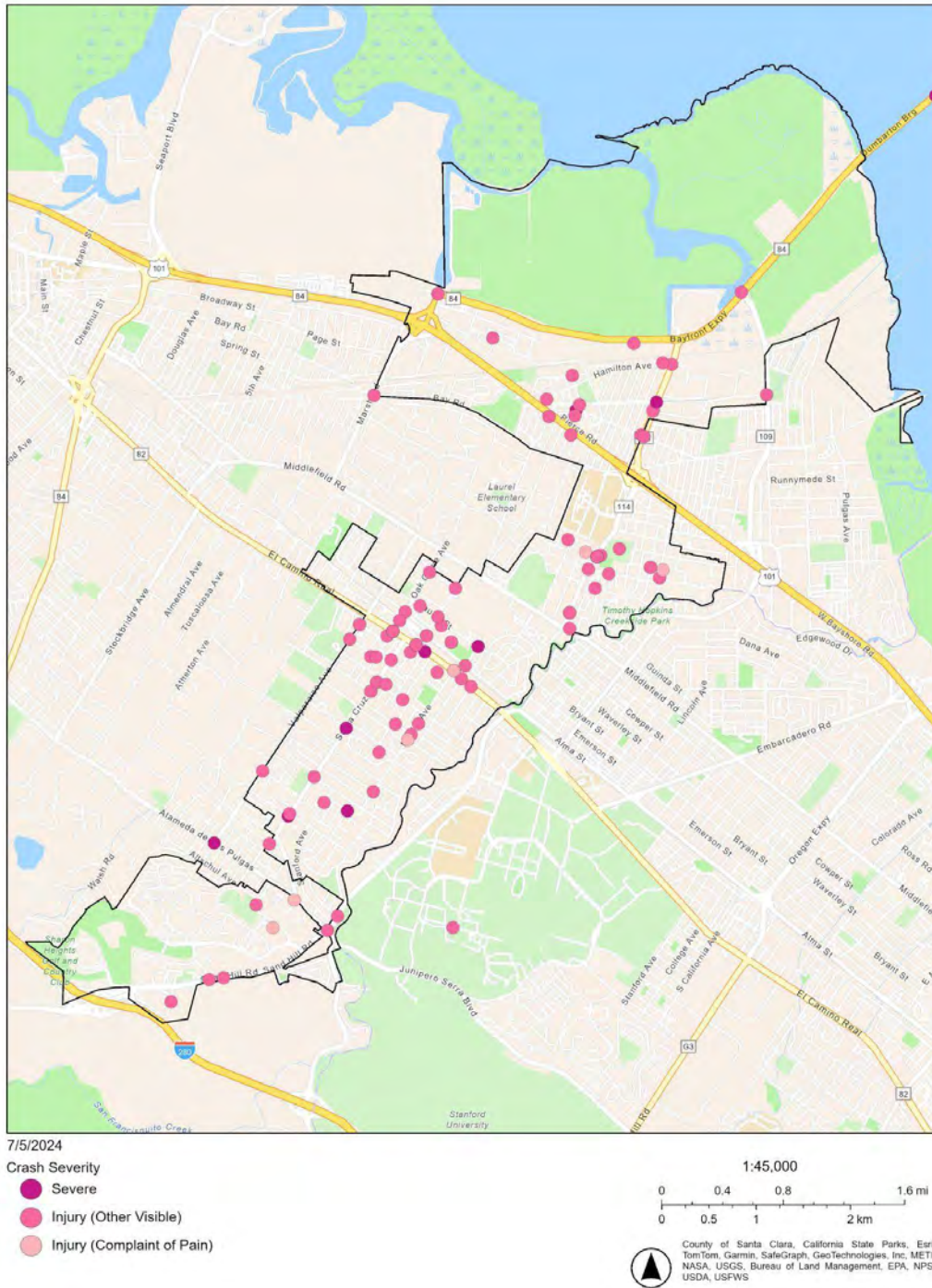


Figure 3.5 Map of Bicycle Crashes in Menlo Park, 2019-2023

Figure 3.6 shows the distribution of when bicycle crashes occurred. Crashes were much more likely to occur on a weekday than weekend and during daylight (86%) when the weather was clear (87%). The majority of bicycle occurred on Monday, followed by Wednesday and Friday,

accounting for 21%, 20%, and 18% respectively. Crashes peaked between 6:00 a.m. to 8:59 a.m. with 33 crashes and 3:00 p.m. to 5:59 p.m. with 31 crashes. The windows with the highest number of crashes were Monday morning from 6:00 a.m. to 8:58 a.m. and Friday afternoon from 3:00 p.m. to 5:59 p.m. About 9% of bicycle crashes occurred when it was dark with street lights.

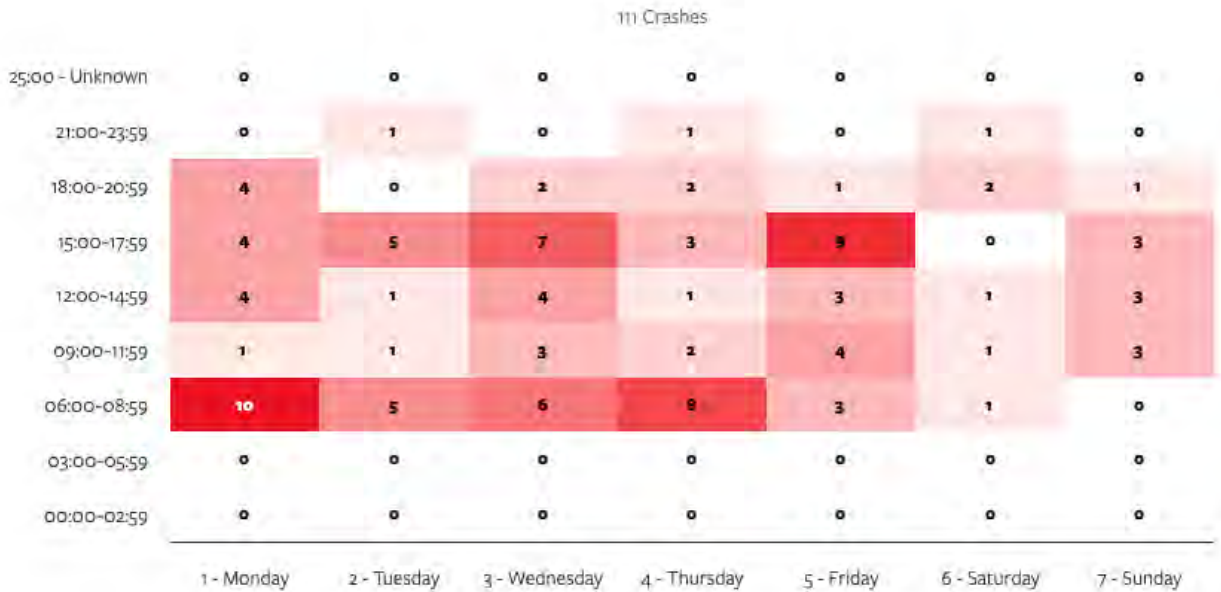


Figure 3.6 Number of Bicycle Crashes per Day of Week per Time in Menlo Park, 2019-2023)

Figure 3.7 shows the distribution of where bicycle crashes occurred. The majority of bicycle crashes, 71%, were reported as other²², followed by broadside (18%).

²² According to the California Highway Patrol Crash Investigation Manual (HPM 110.5), “other” is selected for a crash where a vehicle is involved with a bicycle.

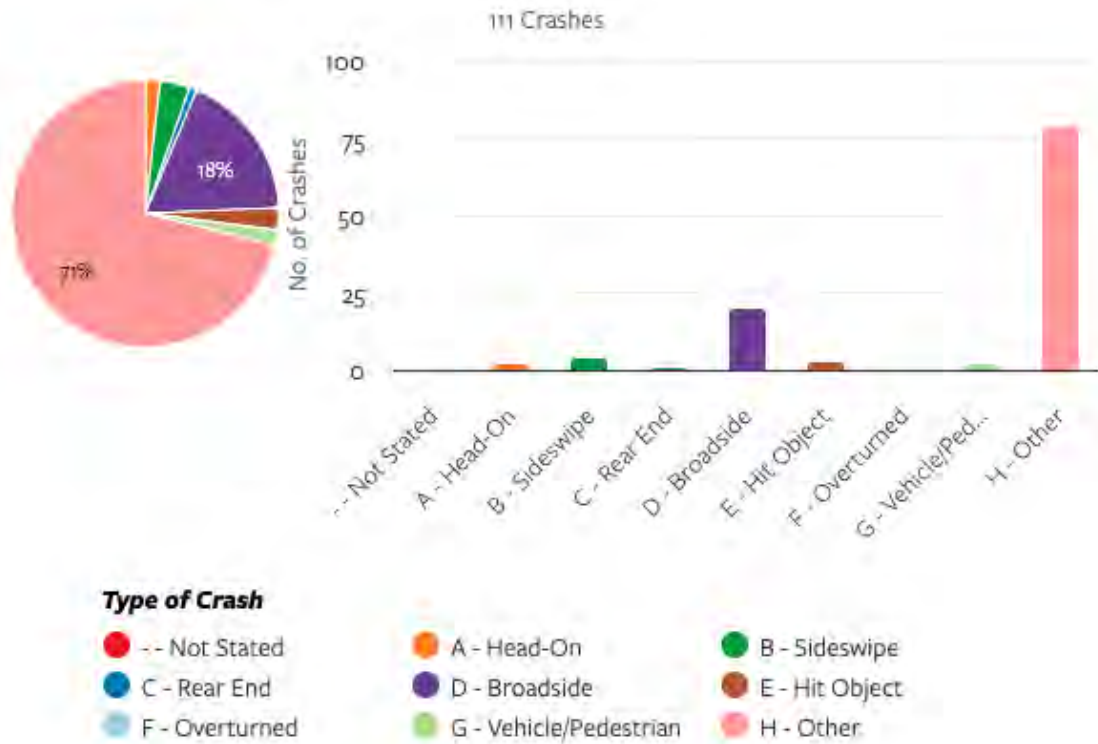


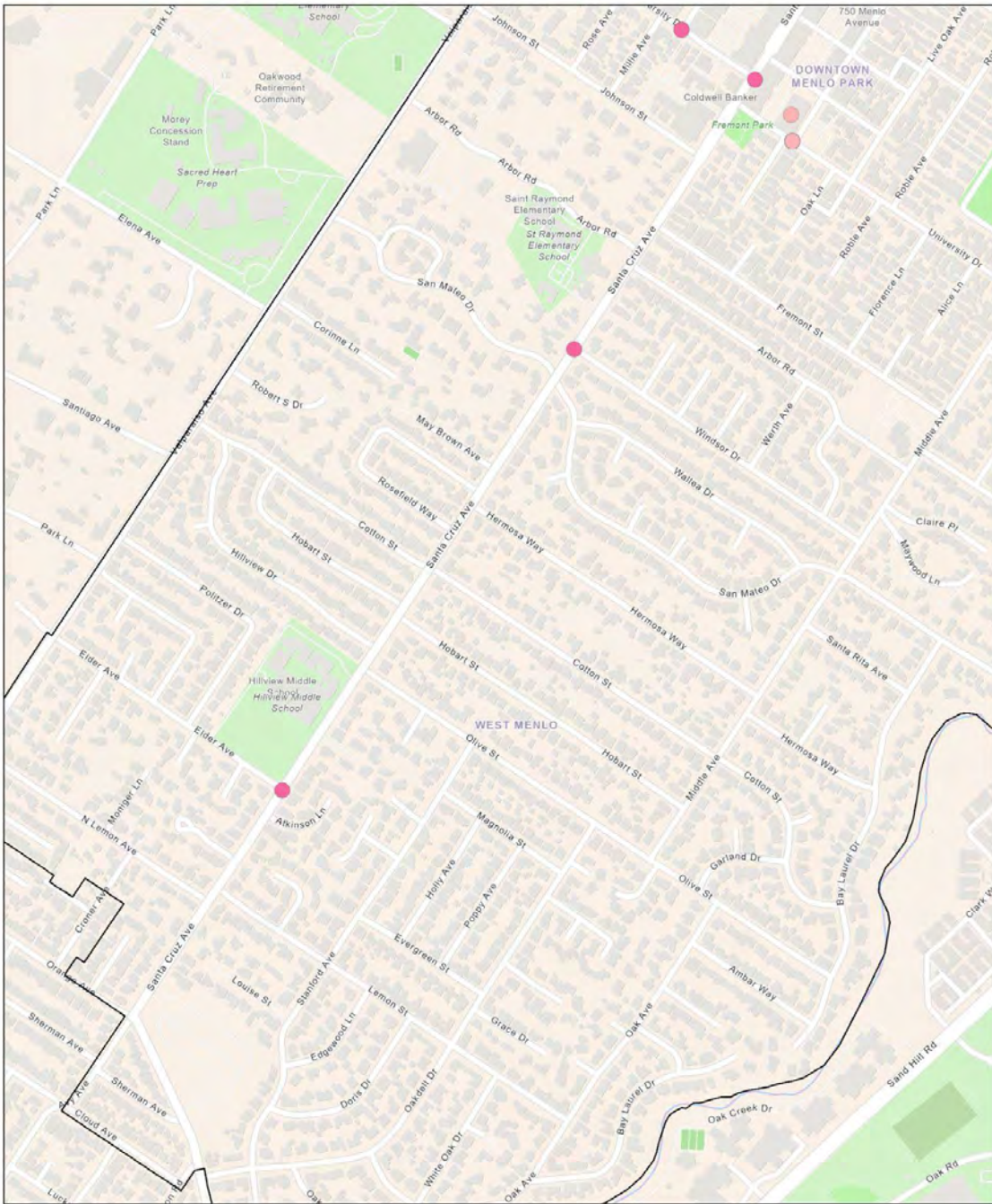
Figure 3.7 Number of Bicycle Crashes by Type of Crash in Menlo Park, 2019-2023

3.3 Areas of Focus

The areas of focus for the Menlo Park CSSA study include the downtown area and the intersections of Santa Cruz Avenue near St. Raymond Catholic Elementary School, Santa Cruz Avenue and University Drive, Santa Cruz Avenue and San Mateo Drive, Santa Cruz Avenue and Olive Street, and Santa Cruz Avenue and Orange Avenue. Study areas in the southern portion of Menlo Park include the intersections of Sand Hill Road and Oak Avenue, Sand Hill Road and Santa Cruz Avenue, Sand Hill Road and Sharon Park, and Santa Cruz Avenue and Junipero Serra Boulevard.

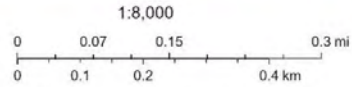
Pedestrian Crashes in and around the Study Focus Areas

The following figures depicts the pedestrian crashes that happened in the focus areas of this study. Figure 3.8 shows three pedestrian crashes on Santa Cruz Avenue in the focus area between 2019 and 2023 which resulted in minor injuries. In the southern part of Menlo Park, there were no crashes at the identified intersections. Figure 3.9 shows the pedestrian crashes in the southern part of Menlo Park.



7/5/2024

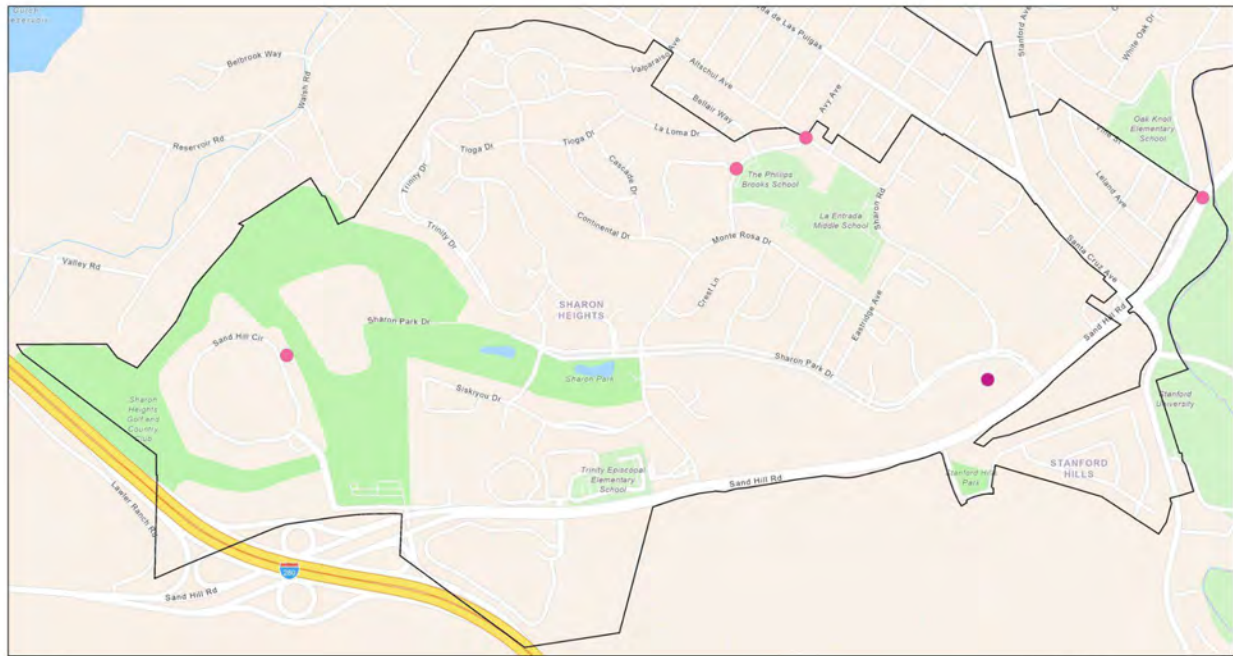
- Crash Severity**
- Injury (Other Visible)
 - Injury (Complaint of Pain)



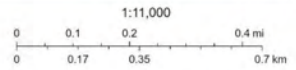
Esri Community Maps Contributors, County of San Mateo, California, County of Santa Clara, California State Parks, © OpenStreetMap, Microsoft, Esri, TomTom, Garmin, SafeGraph, GeoTechnologies, Inc, METI/NASA, USGS, Bureau of Land Management, EPA, NPS, US Census

Data source: Statewide Integrated Traffic Record System (SWITRS) 2019-2023. 2022 and 2023 data are provisional as of June 2024.

Figure 3.8 Pedestrian Crashes in and around Focus Areas in Downtown Menlo Park, 2019-2023



7/5/2024
 Crash Severity
 ● Severe
 ● Injury (Other Visible)



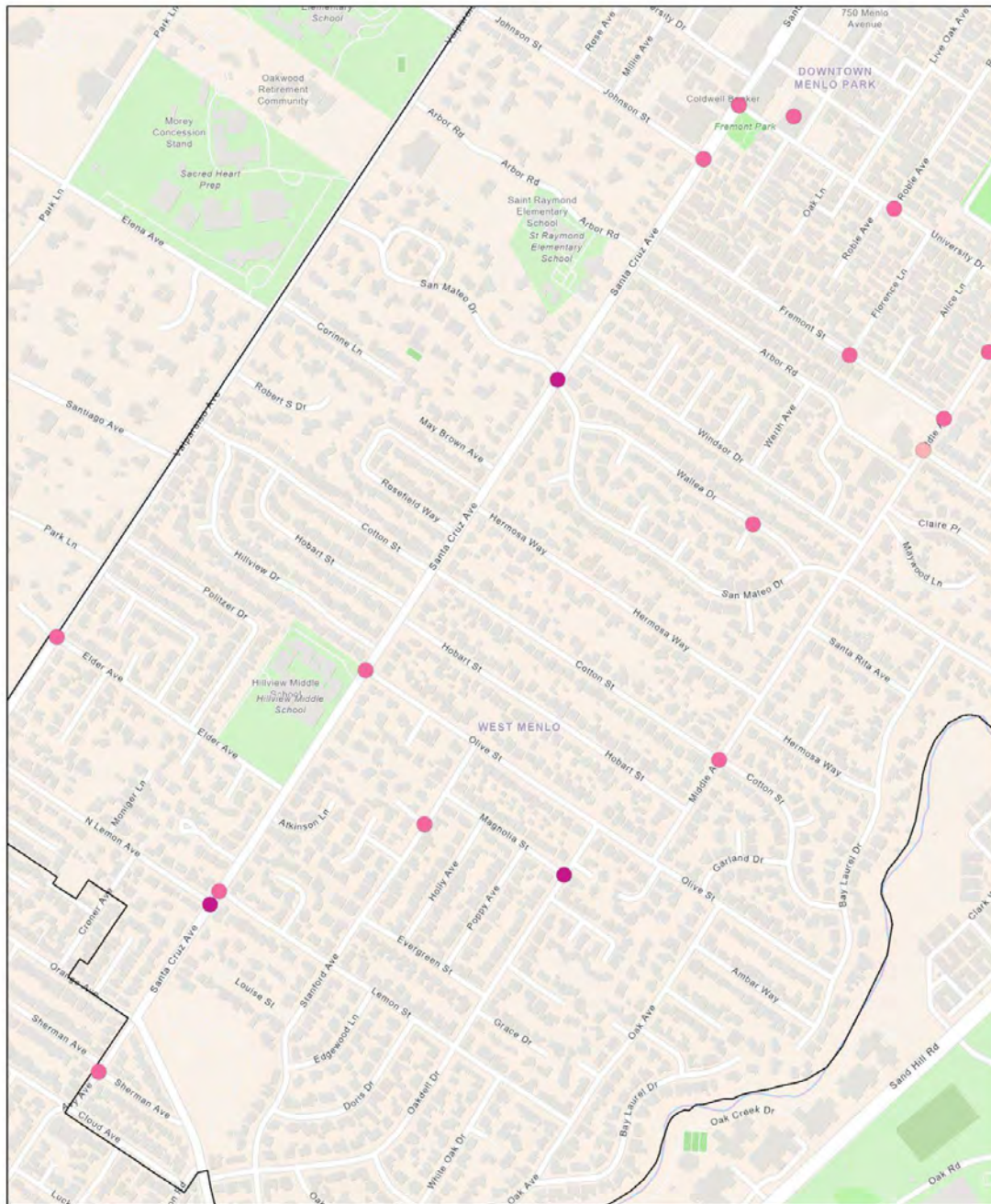
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 Esri Community Maps Contributors, California State Parks, Esri, TomTom, Garmin, SafeGraph, GeoTechnologies, Inc, METNUSA, USGS, Bureau of Land Management, EPA, NPS, US Census Bureau, USDA, USFWS

Data source: Statewide Integrated Traffic Record System (SWITRS) 2019-2023. 2022 and 2023 data are provisional as of June 2024.

Figure 3.9 Pedestrian Crashes in and around Focus Areas in Southern Menlo Park, 2019-2023

Bicycle Crashes in and around the Study Focus Areas

The following figure depicts the bicycle crashes that happened in the focus areas of this study. Figure 3.10 shows seven bicycle crashes on Santa Cruz Avenue in the focus area between 2019 and 2023, including two crashes which resulted in serious injuries. In the southern part of Menlo Park, there were four minor injury bicycle crashes on Sand Hill Road as seen in Figure 3.11.

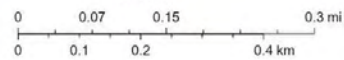


7/5/2024

Crash Severity

- Severe
- Injury (Other Visible)
- Injury (Complaint of Pain)

1:8,000



Esri Community Maps Contributors, County of San Mateo, California, County of Santa Clara, California State Parks, © OpenStreetMap, Microsoft, Esri, TomTom, Garmin, SafeGraph, GeoTechnologies, Inc, METI/NASA, USGS, Bureau of Land Management, EPA, NPS, US Census

Data source: Statewide Integrated Traffic Record System (SWITRS) 2019-2023. 2022 and 2023 data are provisional as of June 2024.

Figure 3.10 Bicycle Crashes in and around Focus Areas in Downtown Menlo Park, 2019-2023

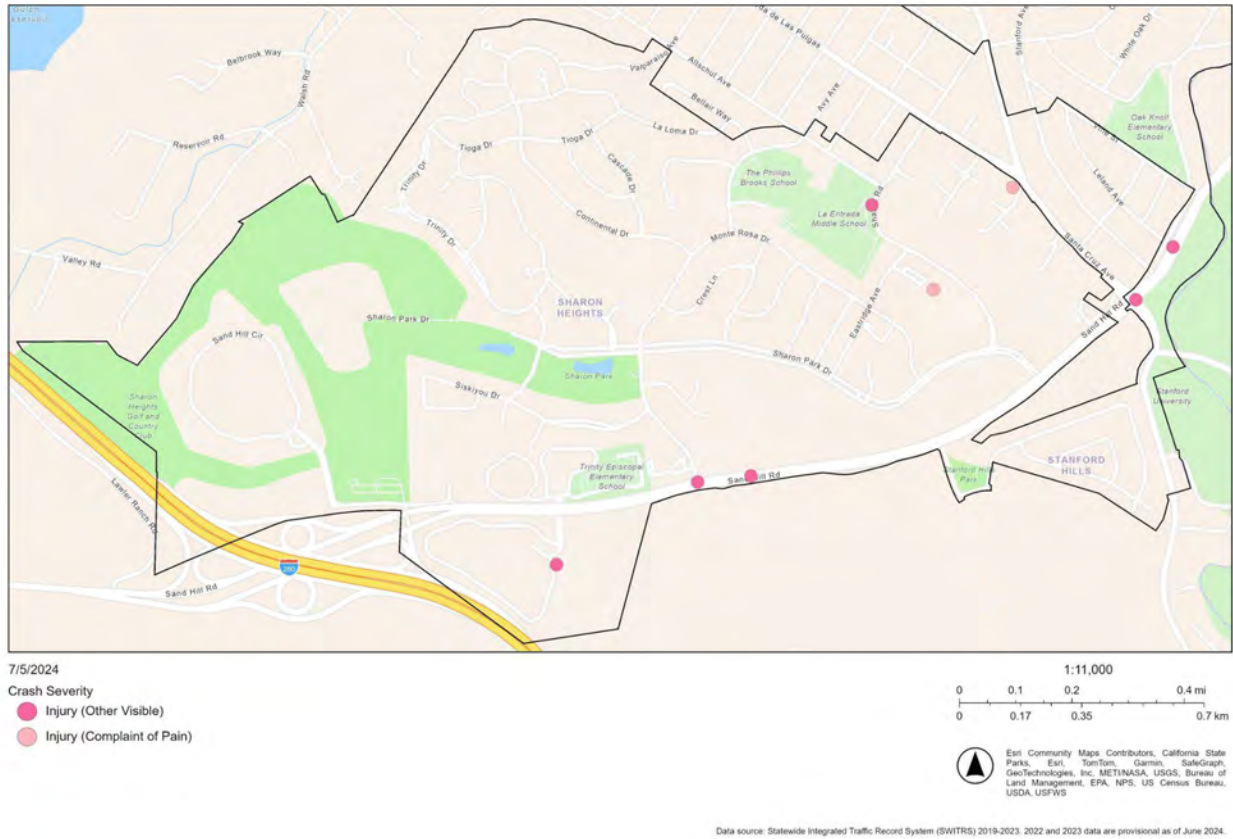


Figure 3.11 Bicycle Crashes in and around Focus Areas in Southern Menlo Park, 2019-2023

3.4 Street Story

Despite our best efforts, pedestrian and bicycle crash underreporting is common. Research suggests that a crash is less likely to be reported if there is no injury, little property damage, or only one party is involved.^{23, 24, 25} Street Story (<https://streetstory.berkeley.edu/>) is a crowdsourced community engagement tool developed by UC Berkeley SafeTREC) that allows residents, community groups, and agencies to collect information about traffic crashes, near-misses, general hazards and safe locations to travel. Once a record has been entered, the information is added to a map and aggregate table of publicly accessible data.

²³ Stutts, J.C. and W.W. Hunter (1998). Police reporting of pedestrians and bicyclists treated in hospital emergency rooms. Transportation Research Record J. Transportation Research Board. 1998 (1635), 88-92. Available at: https://safety.fhwa.dot.gov/ped_bike/docs/00144.pdf.

²⁴ Sciortino, S. et al (2005). San Francisco pedestrian injury surveillance: mapping, under-reporting, and injury severity in police and hospital records. Accident Analysis & Prevention, 37(6), 1102-1113. doi: [10.1016/j.aap.2005.06.010](https://doi.org/10.1016/j.aap.2005.06.010).

²⁵ Loo, B.P. and K. Tsui (2007). Factors affecting the likelihood of reporting road crashes resulting in medical treatment to the police. Injury Prevention, 13(3), 186-189. doi: [10.1136/ip.2006.013458](https://doi.org/10.1136/ip.2006.013458)

Staff can use this free tool to collect information from residents for local needs assessments, transportation safety planning efforts, safety programs and project proposals.

Jurisdictions can create custom boundaries through the Street Story tool to collect data for local needs assessments or to support local traffic safety planning efforts, safety programs, and project proposals. At the time of this report, five reports were input in Street Story for Menlo Park. Of the Street Story reports, there were one crash report, one near-miss, two hazards, and one safe place to walk or bike report. For hazard reports, top reasons indicated signs, signals or markings were not working or missing, people don't yield, and people drive at unsafe speeds.

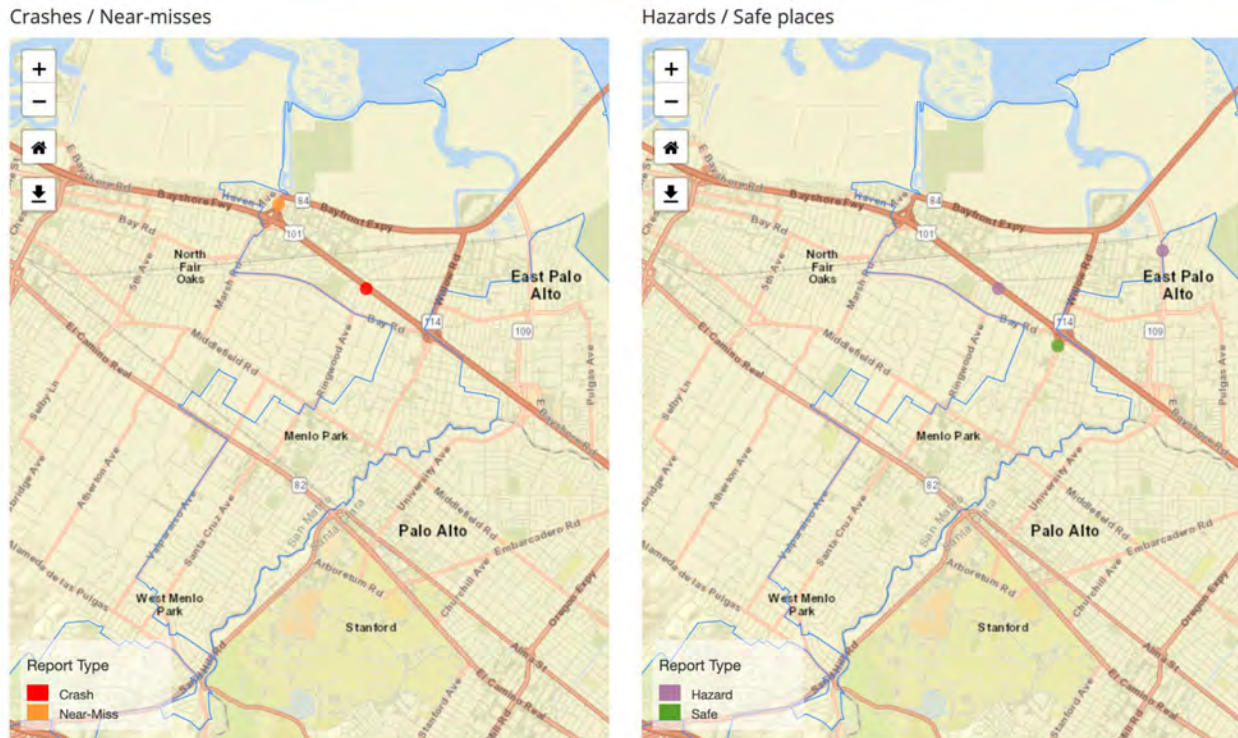


Figure 3.12 Street Story Report Map

4. Benchmarking Analysis Results and Recommendations

To assess pedestrian and bicycle safety conditions in Menlo Park, the CSSA team conducted a benchmarking analysis to understand how the site's existing conditions compares to current national best practices, including consistency with the Safe System approach. Through a holistic view of first anticipating human mistakes and keeping impact energy levels to the human body at tolerable levels, the Safe System Approach aims to eliminate fatal and serious injuries for all road users.²⁶

An electronic questionnaire was sent to the CSSA site's staff with an optional interview. Their responses are denoted by the yellow fill in the benchmarking matrix seen in Tables 4-1 through Table 4-5. The benchmarking questionnaire was separated into five categories:

- Enhancing Safety through Accessibility
- Policies and Programs
- Safety Data Collection and Assessment
- Pedestrian and Bicycle Network Planning and Design
- Pedestrian and Bicycle Support Programs

Each benchmarking category addresses one or more of the Safe System Approach elements (Safe Road Users, Safe Vehicles, Safe Speeds, Safe Roads, and Post-Crash Care) while also incorporating best practices related to access and comfort for people walking and biking. Suggestions for better aligning each topic with best practice benchmarks are also noted for the City of Menlo Park staff's consideration.

The CSSA team compared staff's benchmarking questionnaire responses for each category against national best standards. The CSSA team also reviewed the county's website and relevant documents to identify the city's pedestrian and bicycle policies, programs, and practices. Based on these findings, the CSSA team assigned one of three ratings to each category:

- Exceeds national best practices;
- Meets national best practices; or
- Does not meet national best practices.

Suggestions are provided for each category. However, Menlo Park has differing physical, demographic, and institutional characteristics that may make certain goals or policies more

²⁶ Goughnour, E. et al. (2021). Primer on Safe System Approach for Pedestrians and Bicyclists. FHWA-SA-21-065. = Federal Highway Administration, Washington, D.C. Available at: https://safety.fhwa.dot.gov/ped_bike/tools_solve/docs/fhwas21065.pdf.

appropriate in some jurisdictions compared to others. Ultimately, Pleasant Hill staff may determine where resources and efforts are best placed for meeting local development and infrastructure goals for pedestrians and bicyclists.

4.1 Enhancing Safety through Accessibility

In order to improve traffic safety, it is important to consider the needs of all road users. This may include removing obstacles that prevent people with disabilities from traveling safely and comfortably by separating users in time and space, designing road networks to make road users more visible, or improving driver education and vehicle technologies. Key areas to consider in this category are safe road users and safe roads.

Table 4.1. Benchmarking Analysis for Enhancing Safety through Accessibility

Benchmark Topic	Exceeds National Best Practices	Meets National Best Practices	Does Not Meet National Best Practices
1. Implementation of Americans with Disabilities Act (ADA) Improvements	Uses Public Right-of-Way Accessibility Guidelines (PROWAG) for ADA improvements with consistent installation practices	Has clear design guidelines but no regular practices for ADA compliance	Has minimal design guidelines and practices related to ADA requirements
2. ADA Transition Plan for Streets and Sidewalks	Has an ADA transition plan in place and an ADA coordinator	Partial or outdated ADA transition plan or an ADA coordinator	No transition plan or ADA coordinator

4.1.1 Implementation of Americans with Disabilities Act (ADA) Improvements

Implementation of ADA improvements is key to making walking accessible and safe for everyone, regardless of ability or age. [U.S. Access Board Public Right-of-Way Accessibility Guidelines](#)

Suggestions for Potential Improvement

- Continue adding ADA ramps at intersections that currently lack them and upgrade non-compliant ramps.
- Develop an ADA improvement program for items such as dual curb ramps, truncated domes, and audible pedestrian signals that apply consistent treatments. The program may provide an inventory, prioritization plan, and funding source for such improvements.

4.1.2 ADA Transition Plan for Streets and Sidewalks

ADA Transition Plans identify gaps and issues in the city's current ADA infrastructure, prioritize projects for implementation, and set forth the process for bringing public facilities into compliance with ADA regulations. Transition Plans typically include a range of locations, such as public buildings, sidewalks, ramps, and other pedestrian facilities. Some cities also have ADA Coordinators, who are responsible for administering the Plan and reviewing projects for accessibility considerations.

Suggestions for Potential Improvement

- Consider prioritizing sub-areas within the city that exhibit the greatest pedestrian activity.
- Expand the ADA Transition Plan to include the public right-of-way, particularly the downtown area, other priority development areas, bus stops, and schools.
- Consider having a part-time, trained ADA coordinator to review projects for accessibility and implement the ADA Transition Plan.
- Provide ADA standards and best practice training for engineering staff at all levels.
- Ensure safety for all users is prioritized and accessibility is maintained during construction and road maintenance projects. It is vital to ensure that dedicated space is maintained for vulnerable users during construction and road maintenance projects.
- Create a policy that details how to maintain accessibility and provide designated space for pedestrians and bicyclists through a Construction Management Plan (CMP).

4.2 Policies and Programs, Safety Implementation Plans and Policies

Policies, programs, and plans play a critical role in keeping people safe on California roadways. Collectively, they signal a proactive approach to identifying risks and strategies to mitigate them. Key areas to consider in this category are safe road users, safe roads, and safe vehicles.

Table 4.2. Benchmarking Analysis for Policies and Programs, Safety Implementation Plans and Policies

Benchmark Topic	Exceeds National Best Practices	Meets National Best Practices	Does Not Meet National Best Practices
1. Transportation Advisory Committee	Has a formal, active/ on-going Transportation Advisory Committee guided by a charter or mission that includes the safety of vulnerable road users and whose activities focus on improving pedestrian and bicycle safety.	Has an ad-hoc Transportation Advisory Committee or one not guided by a charter or mission that specifically includes safety of vulnerable road users. Note: City's Planning Commission may act as Transportation Advisory Committee	Does not have a Transportation Advisory Committee
2. Traffic Calming or Speed Management Program	Has a speed management program that is reviewed annually alongside the CIP project list. Major arterials and neighborhood corridors include proactive speed management strategies and countermeasures are implemented to reach safe target speeds.	Has a traffic calming program but funding and implementation of countermeasures are ad-hoc and reactive.	Explores traffic calming features other than speed humps.
3. Speed Limit Setting	Regularly surveys speed and identifies locations with high deviation from target speeds. The agency uses best practices for speed management in combination with allowances from AB 43 to lower speed limits. Lower speed limits are implemented using a	Seeks to include 15 mph speed limits in school zones or commercial corridors.	Continues to use the 85th percentile to set speed limits.

Benchmark Topic	Exceeds National Best Practices	Meets National Best Practices	Does Not Meet National Best Practices
	<p>consistent approach that prioritizes areas with historic underinvestment.</p> <p>https://leginfo.ca.gov/faces/billNavClient.xhtml?bill_id=202120220AB43</p>		
4. Safe Routes to Schools	<p>Has an ongoing Safe Routes to Schools program that is included as part of the agency's safety monitoring and is integrated with other policies and programs.</p>	<p>Has obtained funding for recent projects but has no communitywide Safe Routes to Schools program.</p>	<p>Does not have a Safe Routes to Schools program and has not obtained recent funding.</p>
5. Systemic Signalized Intersection Enhancements	<p>Has a systemic signalized intersection enhancement program that follows a Safe System-based framework and proactively implements FHWA's Proven Safety Countermeasures to manage speed and crash angles and to consider risk exposure.</p>	<p>Reactively implements Proven Safety Countermeasures at signalized intersections.</p>	<p>Does not routinely implement proven safety countermeasures (LPs, protected left turns, roundabouts, medians, countdown signals, etc.) at signalized intersections.</p>
6. Systemic Enhancements for Unsignalized and Uncontrolled Crossings	<p>Has a crosswalk enhancement program that proactively implements a Safe Transportation for Every Pedestrian (STEP)-consistent countermeasure at uncontrolled crossings.</p>	<p>Has a crosswalk policy that is STEP-consistent but is only reactive to implementing Proven Safety Countermeasures.</p>	<p>Does not have a policy or set practices for addressing crosswalk installation or enhancements using Proven Safety Countermeasures.</p>

Benchmark Topic	Exceeds National Best Practices	Meets National Best Practices	Does Not Meet National Best Practices
7. Safe System Policy	Has a Safe System policy with redundancy built in for transportation projects with a checklist for the full set of incorporation of the Safe System elements. The policy includes all users and modes, affects new construction and maintenance, considers local context, and provides guidance for implementation.	Has a Safe System policy, but does not identify how redundancy can be incorporated through the Safe System elements.	Does not have a Safe System policy.

4.2.1 Transportation Advisory Committee

Advisory committees serve as important sounding boards for new policies, programs, and practices. Responding to public concerns through public feedback mechanisms represents a more proactive and inclusive approach to bicycle and pedestrian safety compared with a conventional approach of reacting to crashes.

Suggestions for Potential Improvement

Consider establishing a Formal Advisory Committee with regularly scheduled meetings to bring all transportation projects to the general committee to provide opportunities for focused complete streets discussion.

4.2.2 Traffic Calming or Speed Management Program

Advisory committees serve as important sounding boards for new policies, programs, and practices. Responding to public concerns through public feedback mechanisms represents a more proactive and inclusive approach to bicycle and pedestrian safety compared with a conventional approach of reacting to crashes.

Suggestion for Potential Improvement

Consider establishing a Formal Advisory Committee with regularly scheduled meetings to bring all transportation projects to the general committee to provide opportunities for focused complete streets discussion.

Traffic calming programs and policies set forth a consensus threshold for neighborhood requests and approvals, as well as standard treatments and criteria.

Suggestions for Potential Improvement

- Increase the amount of dedicated funding available for traffic calming each year.
- Expand the city’s traffic calming toolbox to include other tools, such as raised crosswalks, raised intersections, chicanes, and traffic diverters. The city should review their speed management program annually alongside the CIP project list to identify major arterials and neighborhood corridors for proactive speed management.
- Expand the city’s practices to include proactive traffic calming measures instead of only responding to community requests. The city could consider allocating a portion of funding to proactive traffic calming, such as on bicycle boulevard streets or safe routes to schools, and then allocate the remaining funding to react to specific community requests.
- The following resources offer traffic calming best practices:
 - [Traffic Calming to Slow Vehicle Speeds | US Department of Transportation](#)
 - [Traffic Calming Guidelines from the City of Danville \(PDF\)](#)
 - [Neighborhood Traffic Management Program from the City of Anaheim](#)
 - [ITE Technical Resources — Traffic Calming Measures:](#)

4.2.3 Speed Limit Setting

Agencies should regularly survey speeds and identify locations with high deviations from target speeds. Local municipalities use best practices for speed management from AB 43 to lower speed limits. Implementing lower speed limits is accomplished by using a consistent approach that prioritizes areas with historic underinvestment.

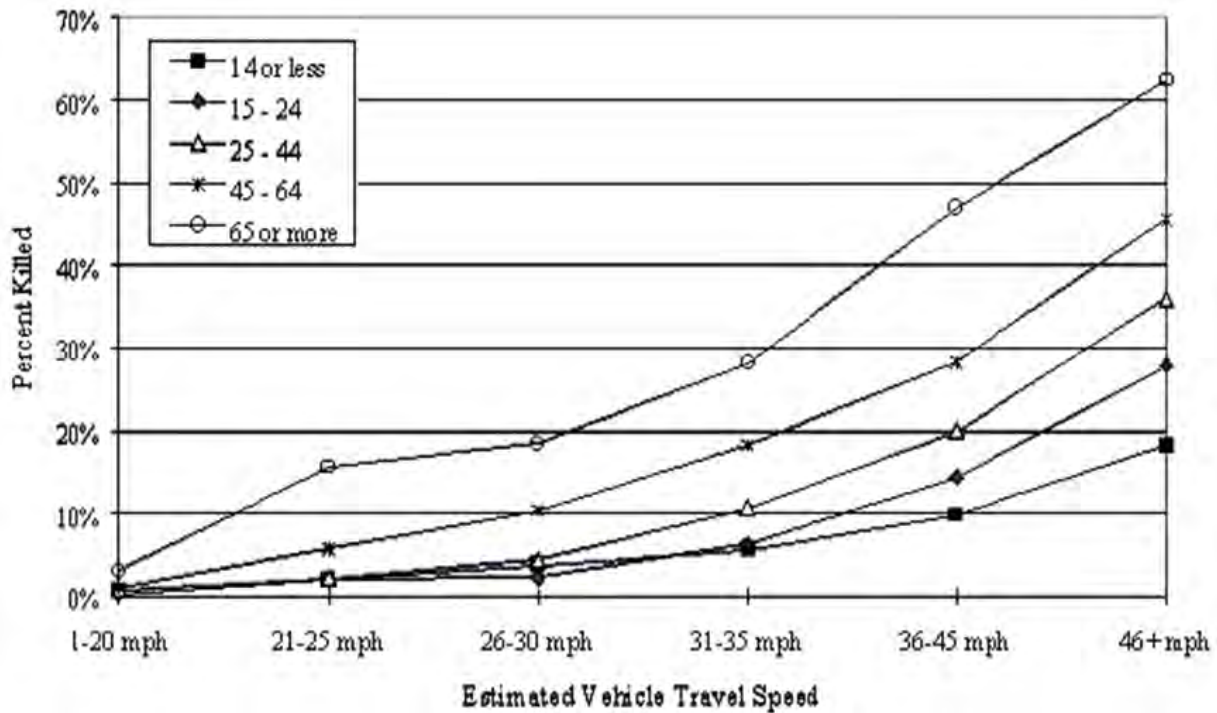


Figure 4-1. Relationship between Vehicle Speed, Victim Age, and Fatalities

Suggestions for Potential Improvement

- Install traffic calming measures, signal coordination, and similar tools to maintain slower speeds appropriate for an urban community, particularly on streets that will be reviewed in the next speed survey.
- After complete streets improvement and other safety measures are installed, conduct off-cycle speed surveys to review the speed limit and determine whether it needs to be reduced based on the improvements.
- Consider pedestrian volumes and known complete streets safety issues when setting speed limits and employ traffic calming strategies in locations where speed surveys suggest traffic speeds are too high for pedestrian and bicyclist safety.
- Ensure complete streets design standards have appropriate target design speeds for urban areas and do not contribute to a routine need for traffic calming.
- Consider the use of 15 MPH school zones.
- Additional information on AB 43:
 - San Francisco’s Speed Limit Setting in Business Districts: [News Release: San Francisco Lowers Speed Limits in Targeted Business Districts Under New State Law](#)

4.2.4 Safe Routes to Schools

Safe Routes to School (SRTS) programs encourage children to safely walk or bicycle to school. The Marin County Bicycle Coalition was an early champion of the concept, which has spread nationally (refer to best practices at <https://www.saferoutesinfo.org>). SRTS programs are

important both for increasing physical activity (and reducing childhood obesity) and for reducing morning traffic associated with school drop-off (as much as 30% of morning peak hour traffic).

Suggestions for Potential Improvement

- Form an ongoing steering committee for the program (or each school) composed of city staff, school district staff, PTA leaders, and other stakeholders that meet regularly to monitor efforts and identify new opportunities.
- Consider a safe routes to school plan for all schools that are integrated with other policies and programs to conduct walk audits, identify recommended safety improvements, and secure funding for those improvements.

4.2.5 Systemic Signalized Intersection Enhancements

A systemic signalized intersection enhancement program follows a Safe System-based framework and proactively implements FHWA's proven safety countermeasures to manage speed and crash angles and to consider risk exposure. Proven safety countermeasures at signalized intersections include Leading Pedestrian Intervals (LPIs), protected left turns, roundabouts, medians, and countdown signals,

Suggestion for Potential Improvement

Consider establishing a systemic signalized intersection enhancement program that follows a Safe System-based framework. FHWA resources include:

- [Federal Highway Administration: Safe System-Based Framework and Analytical Methodology for Assessing Intersections](#)
- [Federal Highway Administration: Proven Safety Countermeasures \(PDF\)](#)
- [Federal Highway Administration: Safe Transportation for Every Pedestrian \(STEP\) National Cooperative Highway Research Program: Application of Pedestrian Crossing Treatments for Streets and Highways](#)

4.2.6 Systemic Enhancements for Uncontrolled and Unsignalized Intersection Crossings

A systemic crosswalk enhancement program proactively implements a Safe Transportation for Every Pedestrian (STEP)-consistent countermeasure at uncontrolled crossings

Suggestions for Potential Improvement

- Develop a citywide crosswalk policy for the installation, removal, and enhancement of crosswalks at controlled and uncontrolled locations. Ensure that it is consistent with best practices and recent research. This includes removing crosswalks only as a last resort and providing midblock crossings where they serve pedestrian desire lines.
- Consider developing a treatment selection "tool" to assist staff with the identification of applicable treatments in a given context.

- When crosswalk enhancements are identified, add them to a prioritized list that will be upgraded over time as funding is available.
- [Federal Highway Administration STEP Guide for Improving Pedestrian Safety at Uncontrolled Crossing Locations](#) (PDF)

4.2.7 Safe System Policy

A Safe System policy with redundancy built in for transportation projects includes all users and modes, affects new construction and maintenance, considers local context, and provides guidance for implementation.

Suggestion for Potential Improvement

Consider adopting a Safe System Approach, based on the following resources:

- [National Safety Council: Safe System Approach](#)
- [California Office of Traffic Safety: What is a Safe System Approach](#)
- [SafeTREC: Safe System Strategies for Bicyclists and Pedestrians Toolkit](#) (PDF)
- [SafeTREC: Conducting Community Engagement with a Safe System Lens](#) (PDF)
- [Vision Zero Network: Demystifying the Safe System Approach](#)
- [California Active Transportation Safety Information Pages \(CATSIP\): Safe System Approach to Road Safety](#)
- [U.S. Department of Transportation Federal Highway Administration: Zero Death and Safe System](#)
- [U.S. Department of Transportation: Safe Streets and Road Users for All \(SS4A\) Grant Program](#)

4.3 Safety Data Collection and Assessment

Collecting and assessing data improves effectiveness, efficiency and overall system performance. Data can inform how to build safer roads for all modes of travel, including walking, biking, rolling, and driving. Key areas to consider in this category are safe road users.

Table 4.3. Benchmarking Analysis for Safety Data Collection and Assessment

Benchmark Topic	Exceeds National Best Practices	Meets National Best Practices	Does Not Meet National Best Practices
1. Collection of Pedestrian and Bicyclist Volumes	Collects pedestrian and bicyclist volumes routinely with intersection counts and has a GIS database of counts. The database identifies key origin and destination locations that identifies patterns and needs in agencies policies and programs, especially in underserved communities	Collects pedestrian and bicyclist volumes on a project-by-project basis, but not routinely. Key origins and destinations are identified in a Bike, Pedestrian, or Active Transportation Plan but need to be updated	Does not collect pedestrian and bicycle volumes
2. Inventory of Bikeways, Parking, Informal Pathways, and Key Bicycle Opportunity Areas	Maintains and routinely updates an AI-based inventory of missing and existing bikeways in GIS and includes bikeway projects in the CIP	Has a partial, static inventory of missing facilities and opportunity areas through Bike, Pedestrian, or Active Transportation Plans	Does not have an inventory of missing/existing bikeways, parking, informal pathways, or key bicycle areas
3. Inventory of Sidewalks, Informal Pathways, and Key Pedestrian Opportunity Areas	Maintains and routinely updates an AI-based inventory of missing and existing sidewalks and crosswalks in GIS and includes sidewalk and crosswalk projects in the CIP	Maintains an inventory of missing sidewalks, crosswalks, informal pathways, or pedestrian opportunity areas	Does not have an inventory of missing sidewalks, crosswalks, informal pathways, or pedestrian opportunity areas
4. Inventory of Traffic Control Equipment (Signs, Markings, and Signals)	Maintains and updates an inventory of signs, markings, other countermeasures, and signals (including phasing) in GIS	Has some GIS-based inventories of signs, markings, other countermeasures, and signals	Does not have a GIS-based inventory of signs, markings, countermeasures, and signals

Benchmark Topic	Exceeds National Best Practices	Meets National Best Practices	Does Not Meet National Best Practices
5. Crash History and Crash Reporting Practices	Employs a data-driven systemic safety or Vision Zero approach to regularly analyze crash data. Crash reporting is shared to key stakeholders in real-time and reporting details are consistent through the agency	Reviews data only following fatalities or other high-profile incidents	Does not have set practices for data review
6. Safety Action Plan	Has an LRSP that identifies routine data collection and assessment. Prioritized project list is updated based on crash data assessment	Completes crash data assessment on a project-by-project basis. Does not have an action plan that identifies regularity of assessment	Crash data assessment is ad-hoc and dependent on grant funded projects

4.3.1 Collection of Pedestrian and Bicyclist Volumes

Pedestrian and bicyclist volume data and a GIS database are important for understanding where people walk and bike. This establishes baseline data prior to project implementation and can help in prioritizing projects, developing crash rates, and determining appropriate bicycle and pedestrian infrastructure. The database helps to identify patterns and needs of underserved communities in local jurisdictions policies and programs.

Suggestions for Potential Improvement

- Routinely collect pedestrian and bicycle volumes by requiring them to be counted in conjunction with manual intersection turning movement counts.
- [Metropolitan Transportation Commission: Traffic Data Collection in the San Francisco Bay Area](#) (PDF)
- Geocode pedestrian volume data with GIS software along with other data such as pedestrian control devices and crashes to analyze data for trends or hotspots related to pedestrian safety.

4.3.2 Inventory of Bikeways, Parking, Informal Pathways, and Key Bicycle Opportunity Areas

A GIS-based inventory of bikeways, parking, informal pathways, and key bicycle opportunity areas enables project identification and prioritization, as well as project coordination with new development, roadway resurfacing, etc. This data set can be made available on a city's website for knowledge sharing with the public as well as agencies.

Suggestions for Potential Improvement

- Migrate the inventory of bikeways, bike parking, and future bike improvements into a GIS format for quick mapping and sharing.
- Identify a staff person responsible for maintaining the GIS data set.

4.3.3 Inventory of Sidewalks, Informal Pathways, and Key Pedestrian Opportunity Areas

A GIS-based sidewalk inventory enables project identification and prioritization, as well as project coordination with new development, roadway resurfacing, etc. This data set can be made available on a city's website for knowledge sharing with the public as well as agencies.

Suggestions for Potential Improvement

- Create a citywide inventory of existing and missing sidewalks, informal pathways and key pedestrian opportunity areas in GIS.
- Consider establishing a program to help property owners repair damaged sidewalks outside their property. This can be a condition for the sale of the property.

4.3.4 Inventory of Traffic Control Equipment (Signs, Markings, and Signals)

Cities have a wide variety of traffic control devices that regulate how bicyclists and pedestrians should use the street and interact safely with drivers. However, some cities do not have inventories of how, when, and where these are installed. Creating a database of this information allows city staff to know where infrastructure may be out of date or in need of updates. For example, countdown signals are an important pedestrian safety countermeasure. The 2012 *California Manual of Uniform Traffic Control Devices* (MUTCD) requires the installation of countdown pedestrian signals for all new signals. The CA MUTCD also requires the installation of bike detection at all actuated signals. Bike detection is a basic building block of the bike network that makes sure that bikes can trigger traffic signals. Inventorying bike detection and countdown signals allows city staff to approach safety from a systems perspective and develop projects to close gaps in biking and walking infrastructure over time.

Suggestions for Potential Improvement

- Develop a city or countywide crosswalk inventory in GIS and maintain it over time. This would allow for a systemic safety approach to enhancing crosswalks and allow the city to prioritize all crosswalk enhancement projects citywide for implementation over time and as money is available.
- Ensure that locations with pedestrian desire lines have safe crosswalks. An updated crosswalk policy can help determine the appropriate crossing treatment at uncontrolled locations without marked crosswalks.
- Include maintenance records within the GIS inventory of signs, markings and signals.
- Develop a proactive monitoring program to ensure the quality and proper functioning of traffic control devices.

4.3.5 Crash History and Crash Reporting Practices

Safety is typically approached through both proactive and reactive measures. Identifying and responding to crash patterns on a regular basis and in real-time is an important reactive approach to bicycle and pedestrian safety, which may be combined with other proactive measures. This is the traditional way most cities have approached safety. However, many are now looking to proactive safety to address safety issues on a systemwide basis. This is often paired with a policy goal of getting to zero fatality or serious injury crashes (commonly referred to as “Vision Zero”).

Suggestions for Potential Improvement

- Adopt a data driven systemic safety approach, which would include a systems approach to identifying, prioritizing, and ultimately implementing safety countermeasure and/or a formal commitment to Vision Zero.
- Work with elected officials and department heads to adopt a Vision Zero policy formally stating the city’s commitment to reducing the number of traffic-related fatalities and severe injuries to zero.
- Additionally, with sufficient pedestrian volume data, the city could prioritize crash locations based on crash rates (i.e., crashes/daily pedestrian volume), a practice that results in a complete safety needs assessment. Treatments could then be identified for each location and programmatic funding allocated in the city’s Capital Improvements Program (CIP).

4.3.6 Safety Action Plan

A Local Road Safety Plan (LRSP) or Caltrans-approved safety report identifies dedicated, annual funding streams for bicycle and pedestrian projects within underserved communities. Bicycle and pedestrian projects can also be integrated into the other work that the city does, including repaving and other routine roadway network maintenance.

Dedicated annual funding streams may include general city funds, local and regional impact fees, county tax measure funds, and local tax measure funds. Some grant opportunities include the Highway Safety Improvement Program (HSIP), Congestion Mitigation and Air Quality

Improvement Program (CMAQ), Active Transportation Program (ATP), Safe Routes to School Grant (SRTS), TDA Article 3 (SB 821), and Safe Streets for All (SS4A).

Suggestions for Potential Improvement

- Partner with other agencies and continue applying for grant funding for both infrastructure and non-infrastructure projects.
- Integrate bicycle and pedestrian projects into the site plan review process for new development.
- Secure additional funding for repaving projects to allow for “quick build” projects and other bicycle and pedestrian safety improvements to be integrated into those projects.
- Establish a dedicated funding source for pedestrian and bicycle projects.

4.4 Pedestrian and Bicycle Network Planning and Design

Safe, comfortable, and connected pedestrian and bicycle networks allow people of all ages and abilities to navigate roads to get where they want to go. Key areas to consider in this category are safe road users and safe roads.

Table 4.1 Benchmarking Analysis for Pedestrian and Bicycle Network Planning and Design

Benchmark Topic	Exceeds National Best Practices Key Strength	Meets National Best Practices Enhancement	Does Not Meet National Best Practices - Opportunity
1. Complete Streets Policy	Has a Complete Streets policy that includes all users and modes, affects new construction and maintenance, considers local context, and provides guidance for implementation	Has a Complete Streets policy that is narrow in scope or applies only to public works projects	Does not have a Complete Streets policy
2. Active Transportation Plan	Has a recently updated Active Transportation Plan (or similar) with a strategic prioritized list of projects that reflects current best practices (e.g., Level of Traffic Stress analysis, inclusion of Class IV protected bicycle facilities)	Has a Pedestrian or Bicycle Master Plan, but it may be outdated, and/or no recent projects from the Plan have been completed	Does not have a Pedestrian or Bicycle Master Plan
3. Existing bike network	Existing bike network includes best practice low stress facilities such as protected bikeways, bike boulevards, and protected intersections citywide or countywide	Bike network primarily includes Class I, II, and III facilities. There are gaps within the bike network and facilities do not accommodate all users	Bike network is not regularly maintained or routes are unclear to users
4. Existing pedestrian facilities	Existing pedestrian facilities includes low-stress facilities and frequent use of landscape strips, medians, frequent crosswalks, and roadways are primarily two-to-four lane roads	Narrow sidewalks or sidewalk gaps, crosswalks with few or no safety enhancements, crosswalks are minimal, and roadways are primarily arterials	Missing key marked crosswalks and sidewalks, with few ADA improvements and no safety enhancements, and no pedestrian countdown signals

5. Bike Network Implementation Practices	Age 8 to 80 bicyclist considerations are included in the agency's policies and level of traffic stress is considered. A Bike or Other Safety Plan identifies low-stress networks and funding mechanisms to implement a low-stress network city/countywide	Spot locations have been identified through safety plan(s) for a low-stress network. Plan also identifies additional proven countermeasures to be implemented as part of the project	Treatments are implemented where they fit within the right-of-way, and vehicle LOS is not affected
6. Pedestrian Network Implementation Practices	Pedestrian priority areas (PPA) are identified in a safety plan and the agency has policies prioritizing PPAs, crosswalk spacing, and design enhancements.	Spot PPA locations have been identified through safety plan(s). The plan also identifies additional proven countermeasures to be implemented as part of the project	Treatments are implemented on a project-by-project basis
7. Design guidelines and standards	Uses national best practices focused on bicycle and pedestrian safety for roadway and facility design guidelines and standards	Local standards reference national best practices, but are static or out of date, with minimal customized design policies for pedestrian and bicycle accommodations	Does not have comprehensive design guidelines or standards for pedestrian or bicyclist treatments
8. Attention to Bicycle Crossing Barriers	Separated bikeways and other innovative treatments, including geometric enhancements, are provided at intersections and interchanges	Higher-stress bike treatments are installed at some intersections and interchanges	Bike treatments are not installed at intersections or through interchanges
9. Attention to Pedestrian Crossing Barriers	Has a recently updated policy and comprehensive inventory of barriers. Has design guidelines and funding in place for addressing barriers	Has no policy, but has identified some barriers and taken steps to improve pedestrian access	Does not have a policy or practices for addressing barriers to walking

10. Intersection Control Evaluations	Uses intersection control evaluations to assess alternative traffic control (e.g., roundabout, signal, stop signs) performance (safety, ped/bike, etc.) and select appropriate control based on desired performance.	Uses relaxed warrants for traffic signals and/or all-way stops. If asked to by community or stakeholder may consider a roundabout or neighborhood traffic circle.	Uses MUTCD Warrants and/or does not have a practice of using Intersection Control Evaluations
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4.4.1 Complete Streets Policy

Complete Streets Policies are formal statements showing a city’s commitment to planning and designing for all modes of travel and travelers of all ages and abilities.

Suggestions for Potential Improvement

Consider adopting a Complete Streets Policy. The following jurisdictions have established practices for complete streets, including implementation of these policies through multimodal level of service thresholds, and may serve as models:

- Boston, Massachusetts: [Boston’s Complete Streets](#)
- Philadelphia, Pennsylvania: [Philly Free Streets](#) (Facebook)

4.4.2 Active Transportation Plan

This type of plan includes a large menu of policy, program, and practice suggestions, as well as site-specific (and prototypical) engineering treatment suggestions. Bicycle and Pedestrian Master Plans document a jurisdiction’s vision for improving walkability, bikeability, and bicycle and pedestrian safety; establish policies, programs, and practices; and outline the prioritization and budgeting process for project implementation.

Suggestions for Potential Improvement

- Implement the low-hanging projects in the Bicycle and Pedestrian Master Plan and seek grant funding for major projects.
- Pursue additional funding opportunities for programs identified by the Plan.
- Provide regular updates to the Plan, including bicycle and pedestrian facilities and design guidelines that address the needs of bicyclists and pedestrians of all ages and abilities.
- Develop high injury networks for walking and biking to identify routes with the highest incidences of fatal and severe injuries for pedestrians and bicyclists. This will create a systematic safety analysis that can help in prioritizing limited resources.
- Consider identifying existing and missing bicycle and pedestrian infrastructure for safety improvement.

4.4.3 Existing bike network

Innovative features such as protected bikeways, bike boulevards, and protected intersections citywide or countywide can decrease the level of traffic stress experienced by bicyclists, make biking more comfortable, and, in so doing, appeal to a wide range of bicyclists. Level of traffic stress refers to the level of comfort or discomfort a bicyclist might experience. Research conducted by the Mineta Institute in San Jose establishes levels of traffic stress on a scale of 1 to 4 with LTS 1 at the level that most children can tolerate and LTS 4 at the level characterized by “strong and fearless” cyclists (see: <http://transweb.sjsu.edu/project/1005.html>). A bicycle network that is attractive to the majority of the population would have low stress and high connectivity.

Suggestions for Potential Improvement

- Continue to identify funding sources and implement the proposed projects identified in the Bicycle and Pedestrian Master Plan.
- Develop design standards for bike boulevards, trails, paths, and landscaping for bicycle networks.
- Create a GIS data for the existing bike network to identify gaps and opportunities for improvements.

4.4.4 Existing Pedestrian Facilities

Installation of pedestrian facilities that include low- stress facilities and frequent use of landscape strips, medians, and frequent crosswalks are best practices. Narrow sidewalks or sidewalk gaps, crosswalks with few or no safety enhancements, and minimal number of crosswalks discourage people from walking as a means of transportation.

Suggestions for Potential Improvement

- Continue to identify funding sources and implement the proposed projects identified in the Bicycle and Pedestrian Master Plan.
- Create a GIS database for existing pedestrian infrastructure to identify gaps, inventory assets, and create opportunities for systemic safety analysis of all crosswalks.

4.4.5 Bike Network Implementation Practices

Considering the safety and comfort of people biking leads to better projects that can encourage new biking trips and enhance safety for active transportation users today and in the future.

Bicycle Level of Traffic Stress (LTS) was originally developed by researchers at the Mineta Transportation Institute. LTS assesses the comfort and connectivity of bicycle networks.

Suggestions for Potential Improvement

- Prioritize bicycle projects to align with roadway resurfacing and projects that are near school sites.

- Secure enough funding for repaving and other complete streets projects to allow for installation of protected bike and pedestrian facilities and intersection improvements.
- Prioritize Use Level of Traffic Stress (LTS) to strategically implement bikeways and traffic calming treatments that would improve LTS of existing bikeways.

4.4.6 Pedestrian Network Implementation Practices

Considering the safety and comfort of people walking leads to better projects that can encourage new walking trips and enhance safety for active transportation users today and in the future.

Suggestions for Potential Improvement

- Prioritize pedestrian projects to align with roadway resurfacing and projects that are near school sites.
- Identify pedestrian priority areas and have a policy in place for crosswalk spacing and design enhancements
- Secure enough funding for repaving and other complete streets projects to allow for installation of protected bike and pedestrian facilities and intersection improvements.

4.4.7 Design Guidelines and Standards

Design guidelines and development standards create a clear set of documents that guide how all transportation improvements should be installed citywide. As a result, they can create a consistent, high-quality biking and walking experience.

Suggestions for Potential Improvement

Consider adopting national bicycle and pedestrian safety best practices for roadway and facility design guidelines and standards:

- [NACTO Urban Street Design Guide](#) (PDF)
- [CROW Design Manual for Bicycle Traffic](#)
- [FHWA Separated Bike Lane Planning and Design Guide](#) (PDF)
- [MassDOT Separated Bike Lane Planning & Design Guide](#)
- [ITE Recommended Practice for Accommodating Pedestrians and Bicyclists at Interchanges](#)
- [AASHTO Guide for the Development of Bicycle Facilities](#) (PDF)
- [AASHTO Guide for the Planning, Design, and Operation of Pedestrian Facilities](#) (PDF)

4.4.8 Attention to Bicycle Crossing Barriers

Crossing barriers — such as railroads, freeways, and major arterials — may discourage or even prohibit bicycle access and are often associated with vehicle-bicycle crashes. Large intersections and interchanges and uncontrolled crossings can often deter bicyclists due to high speeds, high number of conflict points with vehicles, and high level of exposure. Identifying and removing barriers and preventing new barriers is essential for improving bicyclist safety and access.

Suggestions for Potential Improvement

- Use green routinely to highlight conflict zones at large intersections and interchanges.
- To slow speeds at critical intersections, use smaller corner radii utilizing small design vehicles appropriate for urban areas and updated standard plans to reflect this.
- Review design of slip/trap-right lanes at intersections and implement improvements.
- Implement best practice guidance on bicycle accommodation through interchanges and expressways, as appropriate, using the ITE's Recommended Practice: Guidelines to Accommodate Bicyclist and Pedestrians at Interchanges plus consideration of protected bike lane design.
- Consider pedestrian barriers and needs when conducting bicycle barriers assessment.

4.4.9 Attention to Pedestrian Crossing Barriers

Similar to bicyclists crossing deterrence, crossing barriers may also discourage or even prohibit pedestrian access and can create safety challenges for pedestrians. These can be similar to the biking barriers or present additional challenges.

Suggestions for Potential Improvement

- To slow speeds at critical intersections, use smaller corner radii utilizing small design vehicles appropriate for urban areas and updated standard plans to reflect this.
- Review design of slip/trap-right lanes at intersections and implement improvements.
- Identify and create an inventory of pedestrian barriers with targeted recommendations for phased improvements.
- Consider pedestrian barriers and needs in conducting bicycle barriers assessment.

4.4.10 Intersection Control Evaluations

Providing alternative traffic controls such as roundabouts, signals, and stop signs may improve pedestrian and bicycle safety by reducing speeds and controlling vehicle conflicts. Installing bicycling signals and limiting stop signs on bicycle routes may enhance bicycle mobility and safety. The CA MUTCD defines warrants for installing signals and stop signs.

Suggestion for Potential Improvement

- Develop specific signal and stop sign warrants that are pedestrian- and bicycle-friendly.

4.5 Pedestrian and Bicycle Support Program

Pedestrian and bicycle support programs are critical for improving safety for people walking and biking. Key areas to consider in this category are safe road users, safe speeds, and post-crash care.

Table 4.2 Benchmarking Analysis for Safety Data Collection and Assessment

Benchmark Topic	Exceeds National Best Practices Key Strength	Meets National Best Practices Enhancement	Does Not Meet National Best Practices - Opportunity
1. Pedestrian and Bicycle Safety Education Program	Pedestrian and bicycle education programs are data-driven and focused on local safety context; education programs are customized for different groups. The program includes education for drivers/motorists.	Has some traffic safety education programs that address pedestrians and bicyclists	Does not have pedestrian and bicycle safety education programs
2. Enforcement	Police Department applies for annual OTS funding, and conducts sustained and data-driven enforcement efforts focused on education, behavior, and locations related to most severe bicycle and pedestrian crashes; enforcement is effective is KSI crashes decrease and there is lower racial disproportionality in traffic citations	Police Department conducts some data-driven enforcement activities related to bicyclist and pedestrian safety	Enforcement is not data-driven or Police Department does not have Traffic Safety Officer(s)
3. Pedestrian Walking Audit Program	Has significant and ongoing programs that include regular walking audits	Has no safety program, but has conducted walking audits sporadically	Does not have a pedestrian safety program and has not conducted a walking audit
4. Bicycling Safety Audit Program	Has significant and ongoing programs which include bicycling audits	Has no safety program, but has conducted biking audits	Does not have bicycling safety audit programs
5. Vehicle Miles Traveled (VMT) Mitigation Strategies	Has a VMT Mitigation Strategy that uses the most recent guidance from CAPCOA to measure potential impacts of pedestrian and bicycle facilities	Mitigation measures identified in CAPCOA are used independently on a project-by-project basis	Does not use CAPCOA mitigation strategies

6. Coordination with Emergency Response	Emergency response is involved in all aspects of bicycle/pedestrian facility planning and design (including pilot testing), and they balance response times with bicyclist/pedestrian safety. Agency also works with emergency response to implement policies providing information on traffic incident management	Emergency response is involved in some aspects of bicycle/pedestrian facility planning and design	Emergency response is not involved in bicycle/pedestrian facility planning and design
7. Coordination with Health Agencies	Coordinates regularly with health agencies in the planning of bicycle and pedestrian facilities and/or programs and collection of crash data	Health agencies have programs to promote healthy lifestyles through active transportation	Health agencies are not involved in bicycle/pedestrian safety or active transportation
8. Coordination with Transit Agencies	Bicycles are accommodated on all transit vehicles with overflow capacity available. The agency partners with transit providers to ensure safe and comfortable routes for biking and walking to transit stops and stations, including on roadways with both frequent bus service and bicycle facilities	Bicycles are accommodated on buses only, with accommodation limited to rack capacity. Some transit stops and stations safe and comfortable routes for biking and walking access	Bicycles are not accommodated on transit. There are few bicycle and pedestrian accommodations for accessing transit stops and stations

4.5.1 Pedestrian and Bicycle Safety Education Program

Engineering treatments are often not enough on their own to realize full safety benefits associated with the treatment. Safety education programs complement engineering treatments and increase compliance. Education campaigns target drivers and people of all ages, especially school-age children where safe walking and biking habits may be instilled as lifelong lessons.

Suggestion for Potential Improvement

- Conduct a formal education campaign about street safety targeting drivers, pedestrians, and bicyclists. This includes advertisements on buses and bus shelters, an in-school curriculum, community school courses, public service announcements, and a range of other strategies. Consider a focus on speed and safe driving.

4.5.2 Enforcement

Enforcement of pedestrian and bicycle right-of-way laws and speed limits is an important complement to engineering treatments and education programs.

Suggestions for Potential Improvement

- Implement sustained pedestrian safety enforcement efforts and involve the media. Use enforcement as an opportunity for education by distributing pedestrian safety pamphlets in lieu of, or in addition to, citations.
- Train officers in pedestrian safety enforcement principles.
- Establish a radar gun check-out program for trained community volunteers to record speeding vehicles' license plate numbers and send letters and/or document occurrences.

4.5.3 Pedestrian Walking Audit Program

Walking audits provide an interactive opportunity to solicit feedback from key stakeholders about the study area and to discuss the feasibility of potential solutions. The audits can be led by city staff, advocacy groups, neighborhood groups, or consultants.

Suggestion for Potential Improvement

- Include regular walking audits in citywide pedestrian safety programs, based on the suggestions of this CSSA. This effort may complement other “green” or health-oriented programs within the city.

4.5.4 Bicycling Safety Audit Program

Consensus is more readily reached on a vision and action plan for safety enhancements when city staff and key stakeholders ride along study corridors and experience key route and crossing challenges and best practices.

Suggestions for Potential Improvement

- Include regular bicycling audits in the citywide bicycle safety programs. Encourage interdepartmental participation.
- Routinely conduct bicycle safety audits of key corridors throughout the city, including those with recent improvements, those with heavy bicycle demand, and those with high crash rates.
- Collaborate with schools on projects beyond the school district boundaries.

4.5.5 Vehicle Miles Traveled (VMT) Mitigation Strategies

A VMT mitigation strategy should use the most recent guidance from California Air Pollution Control Officers Association (CAPCOA) to measure potential impacts of pedestrian and bicycle facilities.

Suggestion for Potential Improvement

- [CAPCOA Handbook for Analyzing Greenhouse Gas Emission Reductions, Assessing Climate Vulnerabilities, and Advancing Health and Equity](#) (PDF)

4.5.6 Coordination with Emergency Response

Emergency response requires special roadway design considerations that sometimes conflict with bicycle and pedestrian treatments. One example is the design of turning radii at intersections. Bicyclists and pedestrians benefit from the reduced vehicle speeds of smaller radii, but larger vehicles, such as fire trucks, have more difficulty performing the turn within the smaller space. These conflicts require consensus building between the city and the respective departments. Consensus building could include pilot testing of alternative treatments, such as a model traffic circle in an open field.

Suggestions for Potential Improvement

- Include the Fire Department early in the process as a stakeholder.
- Balance the trade-off between traffic calming safety treatments such as roundabouts or partial street closures and longer emergency response times.
- Encourage emergency and transit responders to participate in test runs of roadway designs that are aimed to reduce speed and improve bicycling access.
- Implement policies providing information on tragic incident management.

4.5.7 Coordination with Health Agencies

Involving non-traditional partners such as public health agencies, pediatricians and others in the planning or design of pedestrian and bicycle facilities may create opportunities to be more proactive about pedestrian and bicycle safety, identify pedestrian and bicycle safety challenges and education venues, and secure funding. Additionally, underreporting of pedestrian-vehicle and bicycle-vehicle crashes could be a problem that may be partially mitigated by involving the medical community in pedestrian and bicycle safety planning.²⁷

Suggestion for Potential Improvement

Consider coordinating with the health agencies in your community.

²⁷ Sciortino, S., Vassar, M., Radetsky, M. and M. Knudson, "San Francisco Pedestrian Injury Surveillance: Mapping, Underreporting, and Injury Severity in Police and Hospital Records," *Accident Analysis and Prevention*, Volume 37, Issue 6, November 2005, Pages 1102-1113

4.5.8 Coordination with Transit Agencies

Providing safe and comfortable biking and walking routes to transit stops and stations, and the ability to take bicycles on-board transit vehicles increases the likelihood of multi-modal trips.

Suggestion for Potential Improvement

- Work with transit agencies, Caltrans, and other relevant partners to improve access and safety to stations and bus stops.

4.6 Additional Areas to Consider for Safety Improvements

The following topics were not included in the 2024 benchmarking survey. However, they remain important strategies to consider in improving safety for people walking and biking

4.6.1 Surrogate Safety Measures for Proactive Monitoring

Innovative data collection techniques such as hard braking, speed, and near miss data can provide additional insights into crashes. Community feedback tools such as Street Story can assist local jurisdictions to collect data. [Street Story: A Platform for Community Engagement](#)

4.6.1 Surrogate Safety Measures for Proactive Monitoring

Innovative data collection techniques such as hard braking, speed, and near miss data can provide additional insights into crashes. Community feedback tools such as Street Story can assist local jurisdictions to collect data. See: [Street Story: A Platform for Community Engagement](#).

4.6.2 Roadway Surfaces for Bicycle Facilities

The quality of a roadway surface along bikeways is an important consideration when choosing to bike. Rough surface in a bike lane creates an uncomfortable bicycling experience and may also pose safety hazards.

Suggestion for Potential Improvement

- Prioritize maintenance of roadways where bicycle facilities are present, particularly for closing gaps in the bikeway network or where improved pavement quality is needed on popular bicycle routes.
- Prioritize debris removal on roadways where bicycle facilities are present.
- Assess the need for new and enhanced crosswalks and curb ramps with each repaving project. Include consideration of lane reductions and quick build projects such as paint and plastic median refuges and bulb outs, high-visibility crosswalks, and advanced yield markings.

4.6.3 Sidewalk Furniture or Other Sidewalk Zone Policies

Street furniture encourages walking by accommodating pedestrians via benches to rest on along the route or wait for transit; trash receptacles to maintain a clean environment; street trees for shade, etc. Uniform street furniture requirements also enhance the design of the pedestrian realm and may improve economic vitality.

Suggestion for Potential Improvement

- Adopt a Street Furniture Ordinance to include locations and furniture amenities other than those associated with transit stops, as appropriate.

4.6.4 Street Tree Requirements

Street trees enhance the pedestrian environment by providing shade and a buffer from vehicles, which increase pedestrian safety. Street trees may also enhance property values, especially in residential neighborhoods. However, street trees, when improperly selected, planted, or maintained, may cause damage to adjacent public utilities.

Suggestion for Potential Improvement

- Develop a Street Tree Ordinance to provide guidance on permissible tree types and permitting requirements, also specifying a requirement for new tree plantings associated with development projects.

4.6.5 Bicycling Supportive Amenities and Wayfinding

In addition to designating roadway or paths in a bicycle network, supportive amenities (including parking, water fountains, and maintenance stations) can encourage bicycling. Wayfinding can both encourage bicycling and enhance safety by guiding cyclists to facilities that have been enhanced for bicyclist use or to local retail opportunities for economic growth.

Suggestions for Potential Improvement

- Create and deploy a bicycle wayfinding strategy city/countywide as recommended in the Bicycle and Pedestrian Master Plan.
- Develop a Biking Guide that includes a bike map and bicycle locker and rack locations.

4.6.6 Bicycle Parking Requirements

Safe and convenient bicycle parking is essential for encouraging bicycle travel (especially in lieu of vehicle travel). Bicycle parking can also facilitate last-mile connections between two modes, such as bicycle parking at a transit station. To be effective, bicycle parking needs to be visible and secure and have enough capacity to accommodate bicycle demand, both long-term and short-term. Long-term and short-term parking can be implemented through a bicycle parking ordinance.

Suggestions for Potential Improvement

- Implement short-term and long-term, secure bicycle parking at all new development, consistent with the APBP Bicycle Parking Guidelines, 2nd edition.
- Locate bicycle racks to be convenient for bicyclists, out of the way of pedestrians, and with good visibility for security, consistent with the *APBP Bicycle Parking Guidelines, 2nd edition*.
- Consider implementation of “branded” racks for the city (with a unique design or city’s symbol).

4.6.7 General Plan: Provision for Pedestrian and Bicycle Nodes

Planning principles contained in a city's General Plan can provide an important policy context for developing pedestrian-oriented, walkable areas. Transit-oriented development, higher densities, and mixed uses are important planning tools for pedestrian-oriented areas. The General Plan identifies pedestrian priority areas, which are zones in which high volumes of pedestrian traffic are encouraged and accommodated along the sidewalk.

Suggestions for Potential Enhancement

- Create an overlay district for pedestrian priority areas with special pedestrian-oriented guidelines, such as relaxing auto Level of Service standards and prioritizing pedestrian improvements. Prioritize sidewalk improvement and completion projects in these nodes.
- Utilize vehicle miles traveled (VMT) for future transportation impact analysis.

4.6.8 General Plan: Safety Element

SB 99 and AB 747 involve safety evacuation during natural disasters. Local jurisdictions should identify creative solutions on how to evacuate residents safely and efficiently while maintaining and implementing low-stress pedestrian and bicycle facilities.

On safety evacuation routes, agencies should identify creative solutions for evacuating residents safely and efficiently while maintaining and implementing low-stress pedestrian and bicycle facilities.

4.6.9 General Plan: Densities and Mixed-Use Zones

Planning principles contained in a city's General Plan can provide an important policy context for developing bicycle-oriented and walkable areas. Transit-oriented development, higher densities, and mixed uses are important planning tools for pedestrian-oriented areas.

Suggestion for Potential Improvement

- Utilize vehicle miles traveled (VMT) for future transportation impact analysis.
- Consider allowing moderate to high densities in the downtown and mixed-use zones as well as progressive parking policies, such as shared parking and demand-based pricing.
- Consider multi-modal trade-offs in the transportation impact analysis for new development, so that the safety and needs of people walking and biking are weighed heavily and vehicular delay is not the primary performance measure.
- Ensure that wide sidewalks, high quality, protected bike lanes, and intersection safety improvements are included in all new development projects, particularly where densities are higher.
- Strongly weigh walking and biking performance measures as well as safety metrics in determining appropriate intersection improvements and street design.

4.6.10 Specific Plans, Overlay Zones, and Other Area Plans

When specific plans, overlay zones, or any other area plans are being developed, the City/County can specifically request the bicyclist and pedestrian-oriented design, walkability, or placemaking be stressed in these plans.

Suggestion for Potential Improvement

- Emphasize bicyclist and pedestrian-oriented design, walkability, and/or placemaking in all new specific plans, overlay zones, and other area plans.

4.6.11 Historic Sites

Historic walking routes or bike trails, such as the famous Freedom Trail in Boston, encourage active transportation and enhance economic vitality.

Suggestions for Potential Improvement

- Continue to implement the goals, policies and programs that support walking trips included in the Historic Preservation and Community Design Element of the General Plan to showcase natural or local sites of interest, and link key features of the city. Maps of the tour route and historic documentation materials could be made available online or as a mobile app in addition to wayfinding signs, maps, and plaques throughout the city. Consider other areas of the city for walking tours and historic signs.
- Consider upgrading History Walk signs with larger text to improve legibility and wayfinding.

4.6.12 Economic Vitality

Improving bicycle and pedestrian safety and walkability can enhance economic vitality. Similarly, enhancing economic vitality through innovative funding options such as Business Improvement Districts (BIDs), parking management, and facade improvement programs can lead to more active areas and encourage walking and bicycling.

Suggestions for Potential Improvement

- Activate the built environment in business areas through BIDs and façade improvement programs.
- Use wayfinding, walking routes, and events to direct pedestrians to commercial areas throughout the area.
- Install bicycle parking in commercial areas and provide safe, comfortable bike facilities in commercial areas to make it convenient and fun to get to local businesses.

4.6.13 Post-Crash Care

An agency's adopted LRSP or Caltrans-approved Safety Plan should include resources for the agency to implement identified countermeasures for medical rehabilitation, on-going advocacy group engagement, and resources for the adjudication process to ensure offenders receive proper sentencing and treatment.

Suggestions for Potential Improvement

Consider reviewing your agency's LRSP and add resources for implementing identified countermeasures for medical rehabilitation, on-going advocacy group engagement, and resources for the adjudication process to ensure offenders receive proper sentencing and treatment.

4.6.14 Proactive Approach to Institutional Coordination

Institutional coordination associated with multiple agencies and advocacy groups is a critical part of the work of any municipality. Non-local control of right-of-way and differing policies regarding pedestrian and bicyclist accommodation can make the work complex.

Suggestions for Potential Improvement

- Work with local school districts to establish a policy on neighborhood-sized and oriented schools as part of a Safe Routes to School policy.
- Work with the school districts to establish suggested walking routes and address potential barriers to pedestrian or bicycle access.

5. Complete Streets Audit Results and Recommendations

5.1 Overview

Complete Streets audits are typically conducted as an initial step to improve the street environment for all travel modes within the selected area. Many individuals can participate, including residents, stakeholders, and affiliated individuals. During the audits, positive practices are observed, and issues and opportunity areas are noted. Observations are made of the interactions among motorists, pedestrians, and bicyclists. Observations are based on the behavior of these different road users, particularly at intersections. For each opportunity area, the group discusses possible suggestions to address safety and operational concerns. Complete Streets audits are highly interactive, with many observations noted in the field. The audits are a means to observing and learning how to “see through the eyes of pedestrians and bicyclists.”

This chapter presents observations and suggestions made during the kickoff meeting and field audit conducted on Wednesday, April 24, 2024.

Suggestions in this chapter are based on best practices and discussions with the participants regarding local needs and feasibility. It may be noted that these suggestions are based on limited field observations and time spent in the City of Menlo Park by the CSSA evaluators. These suggestions are intended to guide city staff in making decisions for future safety improvement projects in the city; they may not incorporate all factors relevant to pedestrian and bicycling safety issues in the city. This report is conceptual in nature, and conditions may exist in the focus areas that were not observed and may not be compatible with the suggestions presented below. Before finalizing and implementing any physical changes, city staff may choose to conduct more detailed studies or further analysis to refine or discard the suggestions in this report if they are found to be contextually inappropriate or appear not to improve bicycling or pedestrian safety or accessibility due to conditions including, but not limited to, high vehicular traffic volume or speeds, physical limitations on space or sight distance, or other potential safety concerns.

5.2 Background

City of Menlo Park staff requested that the field audit examine six intersections along the Santa Cruz Avenue corridor between University Drive and Orange Avenue as well as four intersections along the Sand Hill Road corridor between Oak Avenue and Sharon Park Drive.

Section 5.3 presents key issues and suggestions identified during the audit that can be applied citywide. Subsequent sections address each focus area; each concludes with a tabular and graphical summary of suggestions for that area.

5.3 General City-Wide Suggestions

The following general suggestions for physical enhancements are appropriate citywide improvements to enhance pedestrian and bicycle safety. These are discussed in detail below.

Table 5-1: General Suggestions for physical improvements

Pedestrian	Details
Left-side signs on medians	At uncontrolled locations where it is feasible to add a raised median to protect a sign, do this so that each approach sees a pair of warning signs on its side of the street.
Left-side warning signs: symbol orientation	Pedestrian symbol (W11-2) or trail crossing signs (W11-15) installed on the left side of street may depict users <u>approaching</u> , just as the W16-7p Downward Pointing Arrow always points into the approach. (MUTCD 2A.06 Design of Signs specifically allows mirror images. However, sign catalogs may not designate a unique product code.)
Upstream sightlines	Prohibit parking for at least 1 car length upstream of crosswalk, to keep sightlines open to approaching traffic. A curb extension can ensure compliance and is a good place for crosswalk warning signs. “Bike corrals” (in-street racks) can also utilize this area.
Advance Limit Lines	Install 4’ in advance of controlled crosswalks, to deter motorists from encroaching.
Yield Lines	Install on multi-lane approaches to uncontrolled crosswalks, 20’-50’ before the crosswalk.
Curb extensions	Enable pedestrians to make a starting decision where they can see and be seen. Calm inbound right turns by reducing the physical radius. Shorten crosswalks.
Interim curb extensions	Consider Painted Safety Zone / Interim Curb Extension treatments at locations where the need is current, but hardscape curb extensions are subject to future funding.
Crosswalk markings	At uncontrolled crosswalks, incorporate wide longitudinal elements (e.g., “ladder rungs”) for long-distance visibility by approaching drivers.
Center islands on side streets	Calm inbound turns. May enable bicyclists preparing to turn left or proceed through to wait further forward than they otherwise would.
Directional curb ramps	Provide 2 ramps per corner, aligned with sidewalks, rather than diagonal ramps.
Accessibility	Ensure that signal actuation is ADA compliant.
Leading Ped. Interval	Display WALK phase (typically) 3 seconds before same-direction green indication, so pedestrians can occupy the curb lane.

Centerline	Install no-passing (double yellow) centerline 50' back from crosswalk.
Bicycle	Details
Detection	Install bicycle and motorcycle detection at through, left turn, and bicycle lanes at all actuated approaches.
Right turn lanes	Where total width is insufficient for marking an adjacent bike lane, install sharrows left- aligned in the lane and add a R118(CA) "Except Bicycles" plaque to right-turn only signs.
Wayfinding	Install bicycle guide signage to destinations served by bike routes, with the name of the destination, the direction, and optionally the distance.

Advance Limit Lines

At approaches to controlled crosswalks (i.e., at signals or STOP signs), installing an advance limit line a short distance (typically 4 feet) before the crosswalk can remind motorists to stop far enough back that their vehicle's front end does not encroach into the crosswalk. Such encroachment can be a safety issue at multi-lane approaches when the front end of a vehicle waiting hides a low pedestrian (child or wheelchair user) approaching across another lane.

Corner curb extensions

At intersections with conventional corners and no curb extensions, pedestrians preparing to cross a street typically make their crossing decisions before stepping off the curb, i.e., while on the sidewalk. Due to substantial corner radii at most intersections, this places them over 10 feet outside of the first travel lane they will enter. Corner curb extensions (bulb-outs) enable pedestrians to safely make their decision near the outside travel lane, where they are more visible to approaching motorists and have a considerably shorter distance to cross. Raised curb extensions also enable crosswalk warning sign assemblies to be installed closer to the travel lanes where they are more visible to motorists. One resource for curb extensions is NACTO's Urban Street Design Guide section:

<https://nacto.org/publication/urban-street-design-guide/street-design-elements/curb-extensions/>

Curb extensions attached to the street's existing curb can be expensive to construct because they may preserve drainage along the street and provide accessible slopes and curb ramps. However, the same safety benefits can be obtained with less expense and without modifying drainage if the extension area is segmented into "floating" islands between which pedestrians, including wheelchair users, travel at existing street grade.

Figure 5-1: Segmented floating corner island treatment



(Temporary Traffic Calming Curbs, Calgary, AB)

Interim curb extensions

Many cities are now deploying treatments consisting only of painted lines, colored paint or epoxy fill, and tubular delineators to rapidly and inexpensively create corner-bulb installations in advance of funding availability for hardscape versions. These go by various names such as “Painted Safety Zones” (San Francisco), “Painted Curb Extensions” (Pasadena), “Painted Bulbouts” (Denver) and “Interim curb bulbs” (Seattle).

San Francisco MTA writes:

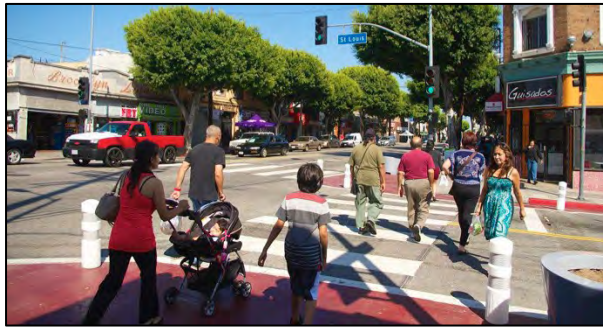
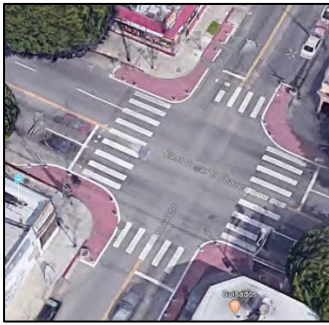
Painted safety zones are painted road areas that wrap around sidewalk corners to make pedestrian crossing intersections more visible to people driving. Painted safety zones are often flanked by delineators (white posts) and encourage people who drive to slow down, especially when making turns.

<https://www.sfmta.com/getting-around/walk/pedestrian-toolkit>

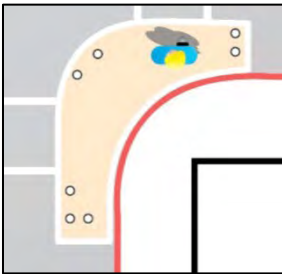
Seattle DOT (SDOT) writes:

Interim curb bulbs may be appropriate in locations where there is a safety need and a permanent solution is not feasible in the short term, and/or where there is a planned capital improvement within 5 years. At intersections with curb and gutter, an interim curb bulb can only be done [where] there are existing curb ramps. In some cases, curb bulbs may also be integrated with bioretention to manage storm water runoff from the right-of-way.

<https://streetsillustrated.seattle.gov/urban-design/adaptive-design/intersection-treatments/>



Los Angeles (Cesar Chavez & St Louis)



Pasadena Street Design Guide



Los Angeles – Pico & Curson



San Francisco (16th St & Kansas St)

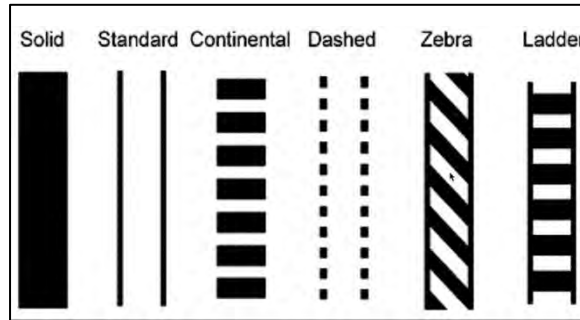
Figure 5-2: Paint and delineator curb extensions

Crosswalk marking patterns – high visibility and contrast edge

The standard crosswalk marking scheme at controlled approaches has 2 transverse lines and no fill pattern. Many cities use the standard pattern at controlled approaches and a high-visibility pattern at uncontrolled approaches. The following description from San Francisco MTA's crosswalk design guidelines describes the safety advantages of high-visibility markings:

Because of the low approach angle at which drivers view pavement markings, the use of longitudinal stripes in addition to or in place of the standard transverse markings can significantly increase the visibility of a crosswalk to oncoming traffic. While research has

not shown a direct link between increased crosswalk visibility and increased pedestrian safety, high-visibility crosswalks have been shown to increase motorist yielding and channelization of pedestrians, leading the Federal Highway Administration (FHWA) to conclude that high-visibility pedestrian crosswalks have a positive effect on pedestrian and driver behavior.



(Figure 12 from FHWA report HRT-04-100, “Safety Effects of Marked Versus Unmarked Crosswalks at Uncontrolled Locations Final Report and Recommended Guidelines”)

Figure 5-3: Crosswalk marking patterns (FHWA)

Table 5-2 suggested treatments for several crosswalk elements.

Table 5-2: Suggested crosswalk treatments

Elements	Approach	Controlled		Uncontrolled	
	Median	None or painted	Raised	None or painted	Raised
Crosswalk markings		2-line		High visibility (ladder)	
Warning signs at crosswalk		None		Curbside, 2-sided (“2-sign”)	Curbside: 1-sided Median: 2-sided (“4-sign”)
RRFBs on crosswalk signs		None		If needed	
Advance markings & signs		Advance limit line 4’ upstream		Yield line 20’-50’ upstream R1-5 Yield Here signs at yield lines	
Advance warning signs		None		If needed, per MUTCD	

Low-vision pedestrians (persons who are not completely blind) benefit from a continuous “contrast edge” for guidance when crossing streets. The solid transverse lines in the “solid,”

“standard,” “zebra” and “ladder” patterns provide this; the “continental” and “dashed” patterns do not. For all crosswalks at uncontrolled approaches that currently use the continental pattern, it is suggested to add two solid transverse lines to create a ladder pattern.

In prior decades, “artistic” crosswalks were constructed in which the transverse border was a wide cast concrete strip with no retroreflective white marking (12-inch line). Over time the contrast between these strips and the middle of the crosswalk is reduced so the strips no longer provide an effective contrast edge for low-vision pedestrians. 12-inch transverse lines (white for non- school crosswalks, yellow for school crosswalks) may always be incorporated.

Leading Pedestrian Interval

Leading Pedestrian Interval (LPI) traffic signal phasing displays the pedestrian signal’s WALK indication for 3-7 seconds before the green indication for same-direction traffic. LPI gives pedestrians a head start to occupy the crosswalk before turning vehicles. A 2000 study by the Insurance Institute for Highway Safety (IIHS) found that LPI reduces conflicts between turning vehicles and pedestrians.

Field Evaluation of a Leading Pedestrian Interval Signal Phase at Three Urban Intersections. Van Houten, Retting, Farmer, Van Houten. Transportation Research Record (TRR) 2000.

It is suggested that the city consider implementing LPI at signals with high pedestrian activity, prohibiting right-turn-on-red as needed per recent research findings. This discussion may be initiated with Caltrans for the signalized intersections along Main Street.

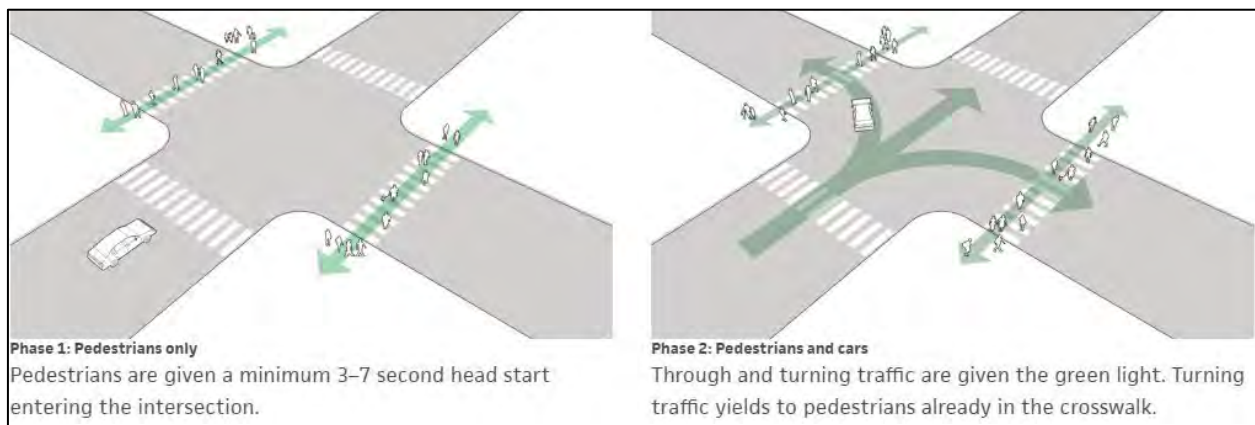


Figure 5-4: Leading Pedestrian Interval Phases

Center islands on side streets

Adding pill-shaped center islands just behind the crosswalks side streets at some intersections can improve safety in several ways:

- Calm right turns from the major street
- Calm left turns onto the major street

- Calm through movements on the side street
- Provide a modest refuge for pedestrians crossing the side street, especially slow ones
- Enable the limit lines to be moved forward for better sightlines
- Provide a sheltered place for bicycle users approaching on the side street to prepare to cross or enter the major street

Figure 5-5 shows such an island on a 40-foot residential street in Sunnyvale CA (Canary Drive, at Inverness Way). The island is 6 feet wide and 20 feet long.



Figure 5-5 Median Island on residential street

Bicycle guide signage

The city of Menlo Park’s low-stress bicycle route network can be enhanced with state-of-the-practice MUTCD-compliant bikeway network guide signage as shown in Figure 5-6. The example shows BIKE ROUTE signs customized with the City of Oakland’s “Oak Tree” logo in one corner. Custom (non-MUTCD) city-identity plaques can also be added atop the BIKE ROUTE sign.

Decision Point signs are installed in advance of a street or path intersection where travelers may want to change course to continue their current route or follow a different route.

Confirmation signs are installed after the decision-point intersection to reassure users that they made the correct choice.

Turn Point signs are used as needed wherever the route does not continue straight. The destination plaques below the BIKE ROUTE signs can have arrows and optional distances as appropriate.



Figure 5-6: Bicycle Guide Signs

Focus Areas

The following section addresses the focus areas of this study, which includes the Santa Cruz Avenue corridor and the Sand Hill Road corridor.

The first section will analyze the Santa Cruz Avenue corridor between University Drive and Orange Avenue, specifically focusing on the following intersections along the corridor:

1. Santa Cruz Avenue and University Drive
2. Santa Cruz Avenue and Johnson Street
3. St. Raymond Catholic Elementary School Driveway

4. Santa Cruz Avenue and San Mateo Drive
5. Santa Cruz Avenue and Olive Street
6. Santa Cruz Avenue and Orange Avenue

The second section will analyze the Sand Hill Road corridor between Oak Avenue and Sharon Park Drive, including an adjacent intersection on Alpine Road, specifically focusing on the following intersections along the corridor:

7. Sand Hill Road and Oak Avenue
8. Sand Hill Road and Santa Cruz Avenue
9. Sand Hill Road and Sharon Park Drive
10. Alpine Road and Junipero Serra Boulevard

Santa Cruz Avenue Corridor Between University Drive and Orange Avenue

The City intends to improve traffic safety by making it more comfortable for pedestrians and bicycle users to travel along and across Santa Cruz Avenue. Santa Cruz Ave contains numerous side street stop-controlled intersections, which are challenging for pedestrians to cross safely. Some of the intersections on Santa Cruz Ave are high priority locations identified in the Vision Zero Action Plan.



Santa Cruz Avenue is the access corridor for Hillview Middle School, and a significant number of students ride bicycles or walk to school using Santa Cruz Avenue, which serves as a main route for school children. The community has expressed a strong desire to improve active transportation safety for school children, in particular bicyclists and e-bicyclists who frequently use this segment before and after school. Vehicular speeds are also high on Santa Cruz Avenue and the 85th percentile speed is between 30 and 35 miles per hour.

Santa Cruz Avenue is a two-lane minor arterial street serving as one of the city's primary east-west connections. The study area falls west of the City's Downtown Area between University Drive and Orange Avenue. There are bicycle lanes on both sides of the roadway and a two-way-left-turn-lane on Santa Cruz Avenue between Johnson Street and Olive Street. The width of the street varies between approximately 40 and 50 feet wide. On-street parking is allowed in certain segments of the corridor. Most of the intersections west of University Drive are side-street-stop controlled and unprotected for pedestrians crossing Santa Cruz Avenue. Some of the crossings have Rectangular Rapid Flashing Beacon installed to increase driver awareness of pedestrians crossing the roadway at the mid-block/unprotected intersections. The speed limit for this section is posted at 25 mph.

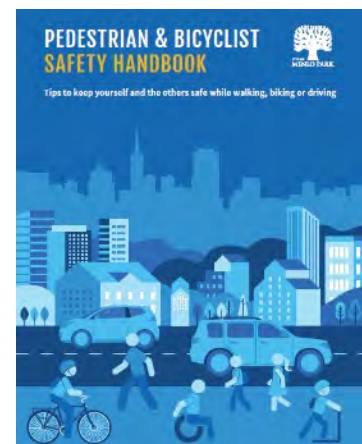


The traffic safety related issues heard from residents, school staff, city staff, and Menlo Park police for the Santa Cruz Avenue corridor are summarized as follows:

- Speeding of e-bikes
- Bikes don't stop at stop signs
- Bikers don't wear helmets
- Garbage cans block bike lanes
- Left turns and right turns conflict with bikes
- Kids ride bikes on crosswalks
- Enforcement is not an option

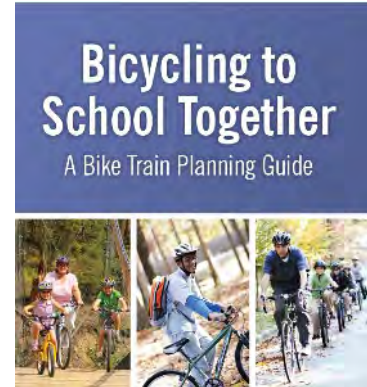
Most of these issues cannot be solely handled through engineering solutions. The “3 Es” needed are: Education, Engineering, and Enforcement. The “3 Es” represents a comprehensive approach to solving issues and ensuring the effectiveness and sustainability of the solutions. Education raises awareness of the issues, provides skill development and provides the required knowledge of safety and promotes behavioral changes. Engineering is essential for ensuring safety, reliability, and to meet engineering standards. Enforcement ensures compliance with regulations and increases accountability.

The report focuses on engineering solutions. However, a few education and enforcement suggestions are also included in this section.



Educational Programs

- Print and distribute the Menlo Park Pedestrian and Bicycle safety handbook to all students and parents
- Provide bicycle lights to e-bikers and enforce that only e-bikes with lights can be used to commute to school. Send messages to parents that don't have lights and parked in the school.
- Implement Bike Train program for school children. A Bike Train program is a community initiative designed to promote safe and enjoyable bicycling for children, particularly as a means of getting to and from school. It involves a group of children riding their bikes together along a pre-planned route, accompanied by adult supervisors. This kind of program enhances bike safety since a group of bicyclists is more visible to motorists than individual riders, and thereby reducing vehicle and bicycle conflicts.
- Continue encouraging students to use helmets while riding their bikes. If needed parents should be informed if someone is consistently not wearing their helmet while riding their bikes.



Enforcement Programs

- Increase the number of police allocated to traffic enforcement either by hiring or reallocating more resources.

Analysis

The Average Daily Volume (both directions) on Santa Cruz Avenue just in front of the Hillview Middle School is approximately 14,600 vehicles per day (vpd), with the highest volume of 1,620 vehicles per hour (vph) during the p.m. peak hour (3 p.m. – 4 p.m.). During the a.m. peak hour, the highest volume is at 1,380 vph between 7 a.m. and 8 a.m. Both peak hours coincide with the school timings. Figure 4-8 shows the distribution of trip start times for the trips that pass through the study corridor.

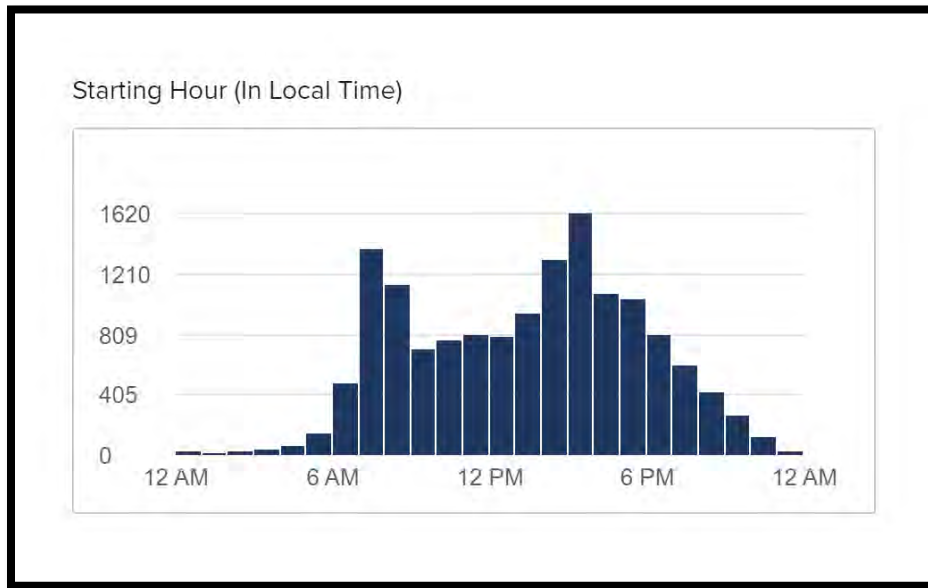


Figure 5-7: Santa Cruz Avenue Trip Start Time

Figure 5-8 shows the number of trips by each primary mode for the trips that travel on Santa Cruz Avenue. The primary mode of travel is cars (85 %), but commercial vehicle volume as shown is also high at 5.08%. Walking and bicycling modes of travel are also high, with bicycle trips being at over 4%.

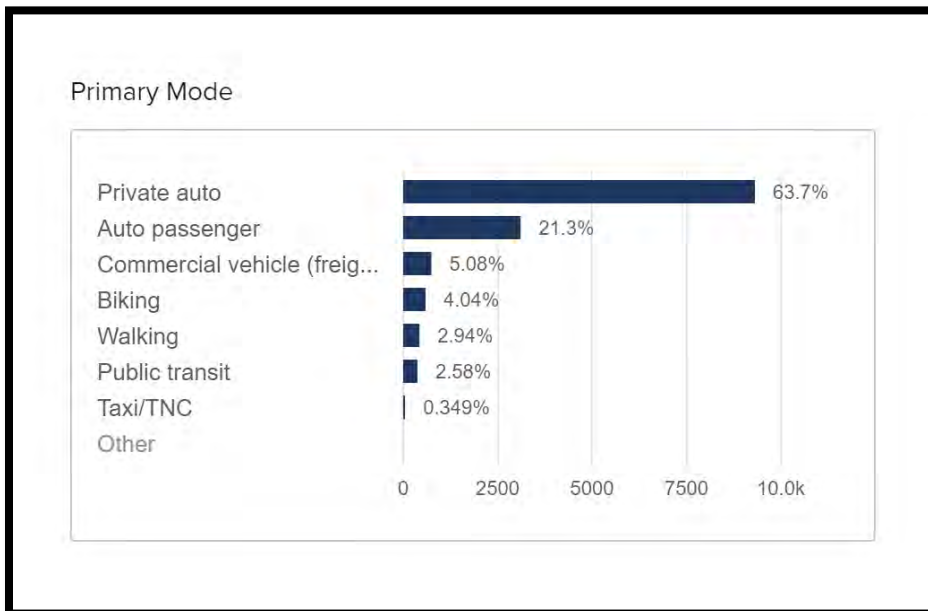


Figure 5-8: Santa Cruz Avenue Modes of Travel

Figure 5-9 shows the number of trips for each purpose for the trips that use the Santa Cruz corridor. Trip purpose is determined by the destination type of the trip. For example: If a person is traveling to work, the purpose of the trip is 'Work.' If a person is traveling to a restaurant, the purpose is 'Eat.'

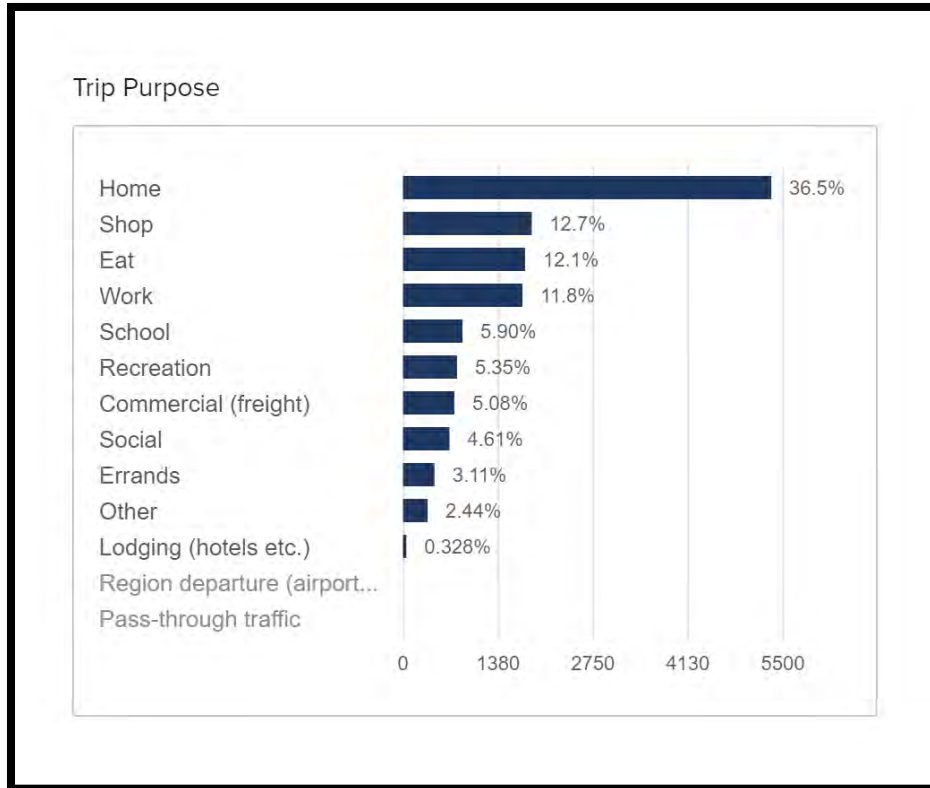


Figure 5-9: Santa Cruz Avenue Trip Purpose

Figure 5-10 shows the length of individual trips in miles. As shown in the figure, approximately over 55% of the trips are between 2 and 8 miles, which shows that most of the trips are City of Menlo Park internal trips. The average trip mile is 8.5 miles.

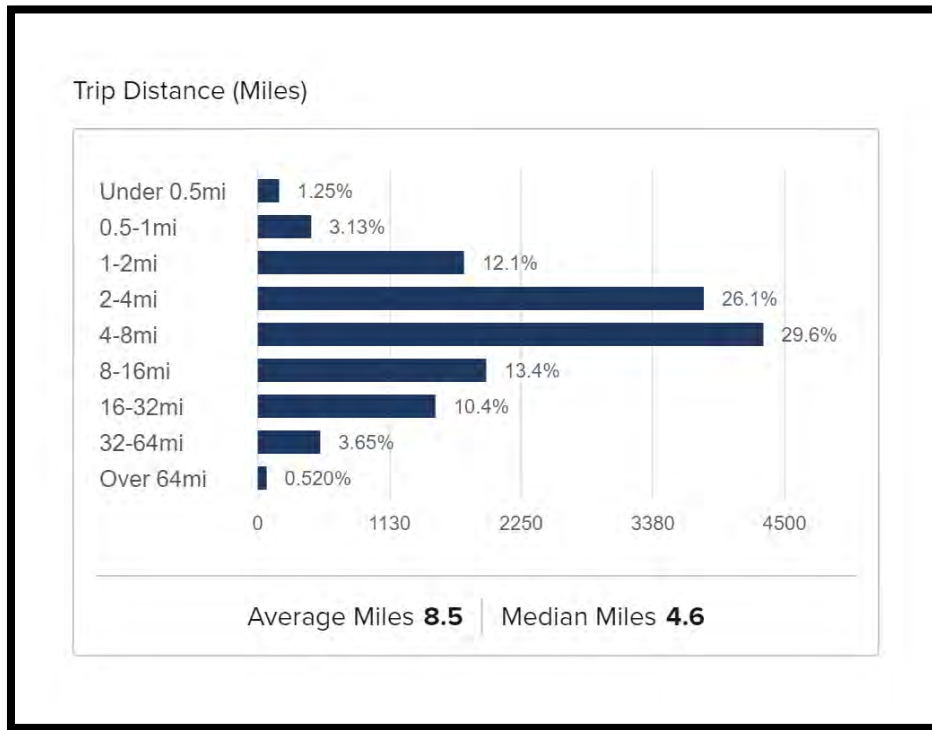


Figure 5-10: Santa Cruz Avenue Trip Distance

5.3.1 FOCUS AREA #1: Intersection of Santa Cruz Avenue and University Drive

The intersection of Santa Cruz Avenue and University Drive is a three-legged signalized intersection. The eastbound and the westbound traffic signal phases are operating as split phases to accommodate the westbound left turn lane. Crosswalks are present on the south and west legs of the intersection. The crosswalk striping across Santa Cruz Avenue has decorative crosswalk marking. The intersection is shown in Figure 5-11.



Figure 5-11: Intersection of Santa Cruz Avenue and University Drive

Suggestions for Improvements

The following are suggestions for improvements:

- Install a leading pedestrian interval at the intersection to make pedestrians more visible to right-turn vehicles.
- Upgrade 8” signal heads to 12” to make them more visible to drivers and bicyclists.
- Modify the traffic signal to remove the split phasing for the east-west movement and convert it to provide protected or protected/permission left turn phasing for the westbound left turn movement. Additionally, operations analysis should be conducted to determine the best operation for the intersection.
- Install truncated dome on the northside of the crosswalk on the west leg.



5.3.2 FOCUS AREA #2: Intersection of Santa Cruz Avenue and Johnson Street

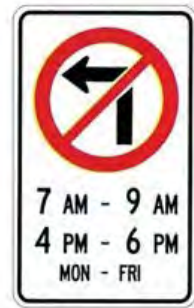
Suggestions for Improvements

The following are the suggestions for improvements. This intersection serves as an example, but the suggestions apply to many intersections along the Santa Cruz Avenue corridor:

- Convert the two-way left turn lane to a left turn only lane for 50 feet next to the intersection to reduce driver confusion, as pictured in Fig 4-13. Drivers are not utilizing

the two-way left turn lane and, instead, wait in the through lane before trying to make a left turn at the intersection. Drivers are much more familiar with driving along corridors with left turn lanes, so changing this into a left turn only lane would reduce driver confusion. There are no driveways along the corridor so there are very few drivers that utilize the two-way left turn lane to make the left turn from the other direction.

- Move the yield marking and its signage from 20 feet to 40 feet away from the crosswalk to give bicyclists and cars more time to stop and yield to pedestrians, as pictured in Fig 4-13. California Manual of Uniform Traffic Control Devices (CA MUTCD) suggests the placement of the yield marking anywhere between 20 to 50 feet from the crosswalk. Moving the yield marking further behind the crosswalk will warn bicyclists in the bike lane and cars who are unable to see the pedestrian crossings earlier, giving them more time to stop for a pedestrian and time to see the left-turning cars that are turning at the intersection.
- Provide a visual cue to drivers coming from the side street to expect bicycles, either using a green marking through the intersection or sharrows, as pictured in Fig 4-14. These visual cues should be used both at the intersections and at critical driveway locations such as the St. Raymond Catholic Elementary School driveway.
- Conduct a study to determine the possibility of restricting left turns to Johnson Street during school hours. This type of restriction requires a study to be conducted and alternative routes to be identified to ensure that such a change does not result in even more confusion. Because left turn restriction enforcement is not always possible, conflicting through movement cars may not be expecting any illegal left turns at the intersection during school hours, which may cause potential confusion.
- Rotate the crosswalk ahead sign to face the correct direction and properly indicate that there is a crosswalk ahead.
- Prioritize implementation of mandated daylighting to prevent cars from parking within 20 to 25 feet from the crosswalk. Focus enforcement on these intersections along Santa Cruz Avenue to enhance overall corridor safety, given that sight distance issues have been identified at these intersections.



Figures 5-12 and 5-13 illustrate the suggested concepts for the intersection of Santa Cruz Avenue and Johnson Street.



Figure 5-12: Intersection of Santa Cruz Avenue and Johnson Street Concept Plan

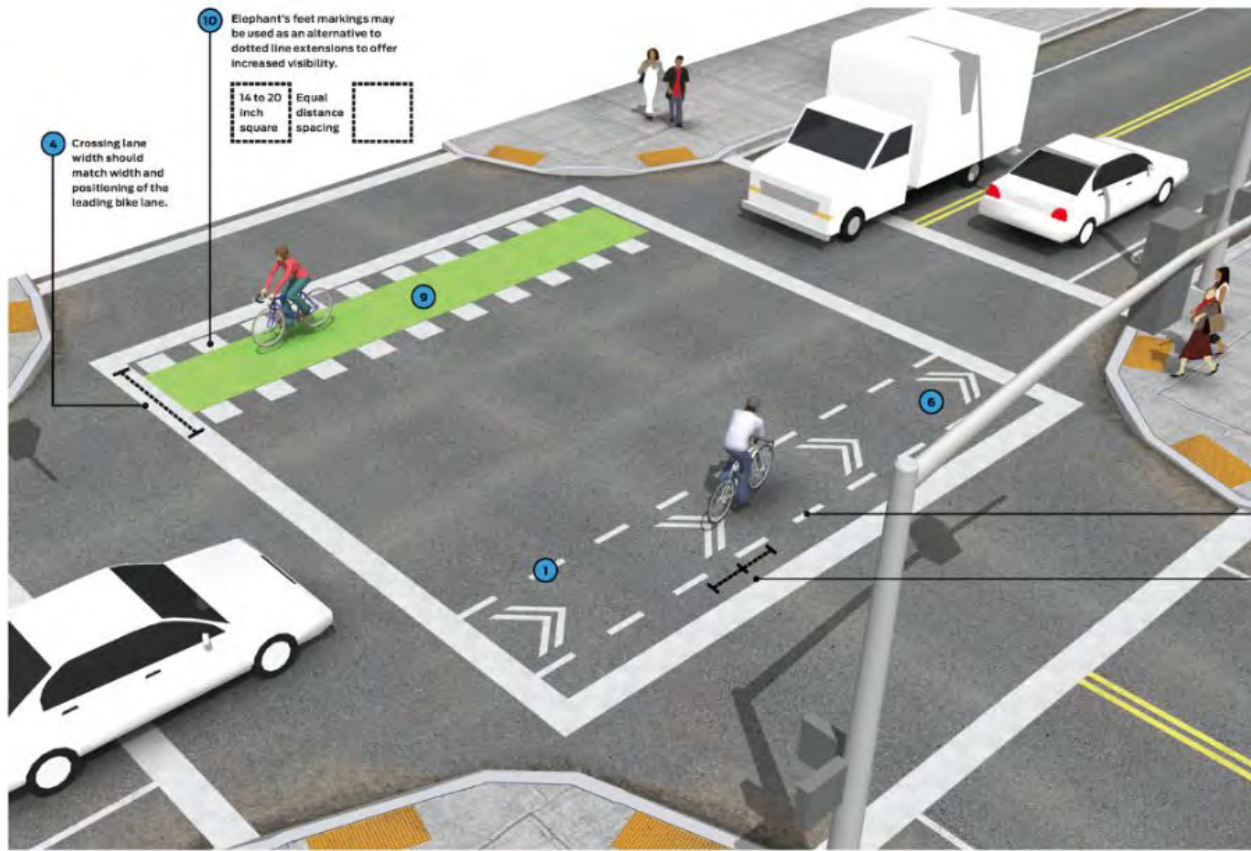


Figure 5-13: Intersection of Santa Cruz Avenue and Johnson Street Concept Plan

5.3.3 FOCUS AREA #3: St. Raymond Catholic Elementary School Driveway

Suggestions for Improvements

The following are suggestions for improvements, as further illustrated above in Section 4.2.2:

- Paint green or sharrow bike lane markings at the driveway to visually warn cars to expect bicycles.
- Conduct a study to restrict left turn on to Santa Cruz Avenue during school time (AM peak). No left turn signage during peak periods would alleviate the considerable backup that currently builds up on the driveway during the AM peak. The current two-way left turn lane is ineffective, as most drivers do not utilize the two-way left turn lane and instead wait for gaps in both directions before turning left into Santa Cruz Avenue.

Figure 5-14 shows the St. Raymond Catholic Elementary School Driveway, which gets congested during the AM peak period.



Figure 5-14: St. Raymond Catholic Elementary School Driveway

5.3.4 FOCUS AREA #4: Intersection of Santa Cruz Avenue and San Mateo Drive

Suggestions for Improvements

This intersection has already been identified as one that needs improvement as part of Menlo Park's Transportation Improvement Program because it is the main access to the bike bridge. The following are suggestions that aligns with the city's existing plans for improvement:

- Install more prominent wayfinding signage for the bike bridge.
- Install bulb-out on the southwest corner of the intersection on San Mateo Drive.
- Install high-visibility crosswalk on the southside of San Mateo Drive leg.

5.3.5 FOCUS AREA #5: Intersection of Santa Cruz Avenue and Olive Street

Suggestions for Improvements

The following are suggestions for improvements:

- Assign two crossing guards to the two heavily used crosswalks (N-S and E-W) to adequately manage the large number of students that are entering and exiting the school.
- Install High-Intensity Activated Crosswalk (HAWK) pedestrian signals at the intersection to increase pedestrian safety and reduce traffic. The HAWK system shows flashing red and yellow lights when pedestrians are crossing but remains blank throughout the day, therefore only impacting drivers when pedestrians are crossing the intersection.
 - Extend the HAWK times to give children more time to cross the street and meter traffic at the intersection specifically during the school break when there are a lot of children crossing.
 - Along with the HAWK, install no-left turn blank out signs that restrict drivers coming out of Olive Street only when pedestrians are crossing.
 - Install bollards on Olive Street to separate pedestrian walking areas from vehicular traffic areas.



- Retime the signal at Elder Avenue according to school drop-off and pick-up times to reduce traffic flow in front of the school during peak periods. Delays may also encourage drivers to use alternative routes if they drive through the intersection on a regular basis.
- Implement class II bike lanes on Olive Street.
- Move shark tooth payment marking to properly align with its corresponding sign.
- Install speed radar signs to discourage speeding.

Figure 5-15 shows the crosswalk at the Santa Cruz Avenue and Olive Street intersection.



Figure 5-15 Santa Cruz Avenue and Olive Street intersection

5.3.6 FOCUS AREA #6: Intersection of Santa Cruz Avenue and Orange Avenue

Suggestions for Improvements

This intersection has already been identified as one that needs improvement as part of Menlo Park's Transportation Improvement Program. The following are the suggestions that aligns with the city's existing plans for improvement:

- Install traffic signal as according to the completed signal warrant analysis.
- Reduce curb radius at the southeast corner of the intersection to reduce car speeds around the turn.
- Bring bike lane to the left side of the northbound Santa Cruz Avenue right-turn lane so the two do not conflict.

General Suggestions for Improvement

The following are suggestions for improvements:

- Trim trees that block signs, as pictured in Fig 5-16.

- Implement two-way separated bike lane on one side of the street with a buffer of either parked cars or bollards to increase bike rider safety, as pictured in Figures 5-17 and 5-18.
 - A two-way separated bike lane creates a much safer 12-foot bike lane, especially because the majority of bikers go in the same direction for the morning peak and the opposite direction for the afternoon peak and would benefit from the extra lane during these periods.
 - The separate protected lane allows faster ebikes to overtake regular bikers safely. It also provides a much larger buffer for bikers to maneuver around the garbage cans that often block the bike lane, as pictured in Fig 5-19.
 - This would require drivers to look for bikers coming from both directions when turning onto the roadway from a driveway or side street. Proper signage should be installed to inform drivers to look for bikes coming from both directions.

Figures 5-16, 5-17, 5-18, and 5-19 illustrate the improvements outlined above.



Figure 5-16 Trees blocking street sign



Figure 5-17 Existing one-way bike lane

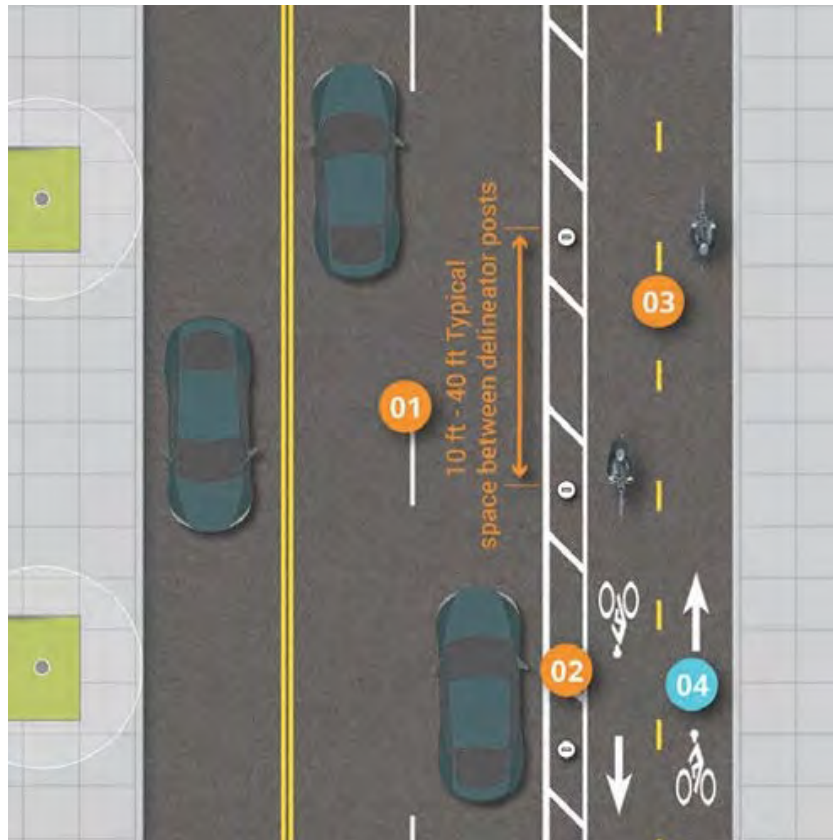


Figure 5-18 Two-Way Bike Lane Concept



Figure 5-19 Garbage cans blocking bike lane

Sand Hill Road Corridor Between Oak Avenue and Junipero Serra Boulevard

The city would like to reduce speeding and improve bicycle safety on Sand Hill Road corridor. Sand Hill Road between Oak Avenue and US-280 has large, signalized intersections and drivers speed through the intersections. The 85th percentile speed on this corridor is at 45 mph. Some of the intersections on Sand Hill Road are high priority locations identified in the Vision Zero Action Plan.





Sand Hill Road is a four-lane major east-west arterial that carries regional traffic and provides access to US-280 freeway. There are bicycle lanes on both sides of the roadway and the directional traffic is separated by a median. The width of the street is approximately 60 to 70 feet wide. On-street parking is not allowed on Sand Hill Road. Most of the intersections are large and are signalized. The speed limit for this section is posted at 40 mph. Sand Hill Road provides access to Stanford University.

Analysis

The Average Daily Volume (both directions) on Sand Hill Road just east of Santa Cruz Avenue is approximately 30,900 vehicles per day (vpd), with the highest volume of 2,620 vehicles per hour (vph) during the p.m. peak hour (3 p.m. – 4 p.m.) and 2,370 vph during the a.m. peak hour (7 a.m. – 8 a.m.). Figure 4-21 shows the distribution of trip start times for the trips that pass through the study corridor.

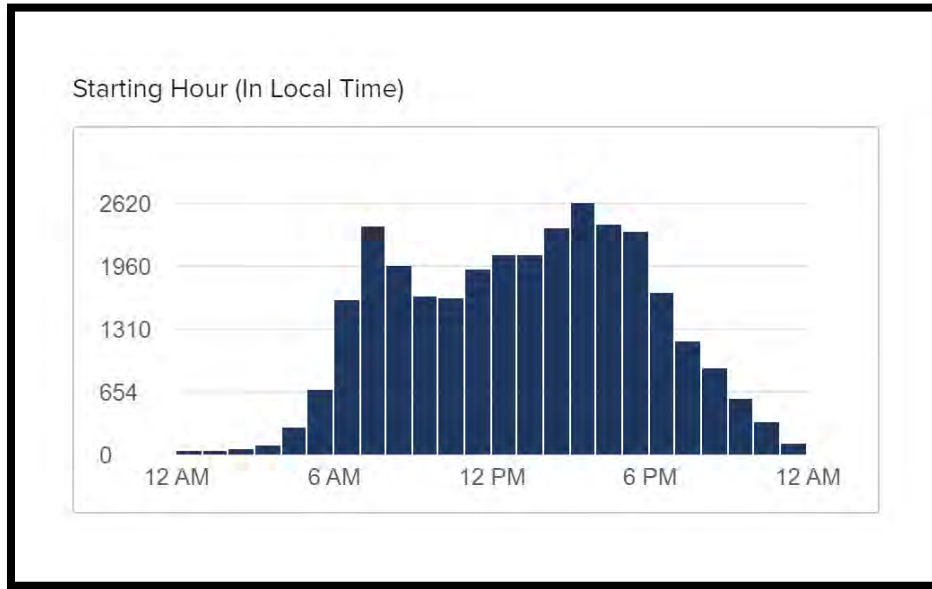


Figure 5-20: Sand Hill Road Trip Start Time

Figure 5-21 shows the number of trips by each primary mode for the trips that travel on Sand Hill Road. As expected, the primary mode of travel is cars (89.8%), but commercial vehicle volume as shown is also very high at 8.54%.

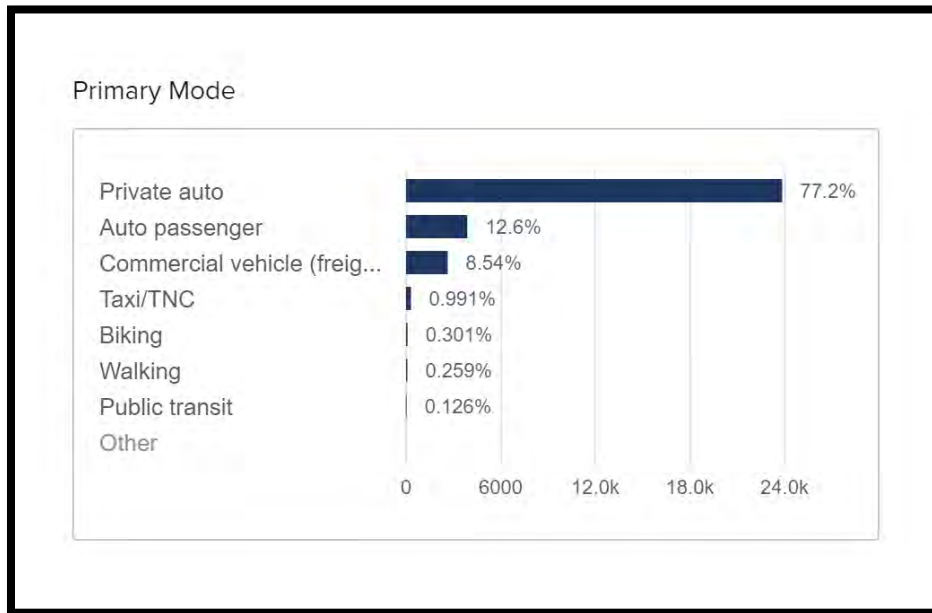


Figure 5-21: Sand Hill Road Modes of Travel

Figure 5-22 shows the number of trips for each purpose for the trips that use Sand Hill Road.

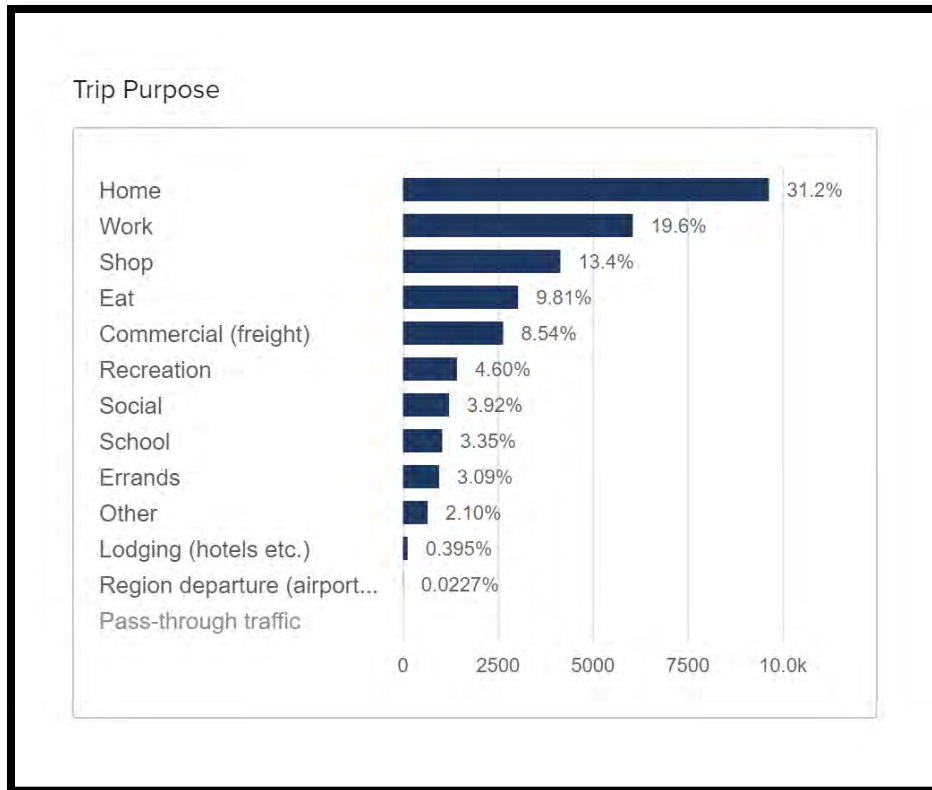


Figure 5-22: Sand Hill Road Trip Purpose

Figure 5-23 shows the length of individual trips in miles. As shown in the figure, approximately 46% of the trips are over 16 miles, which shows that Sand Hill Road carries regional trips by providing access to US-280 freeway.

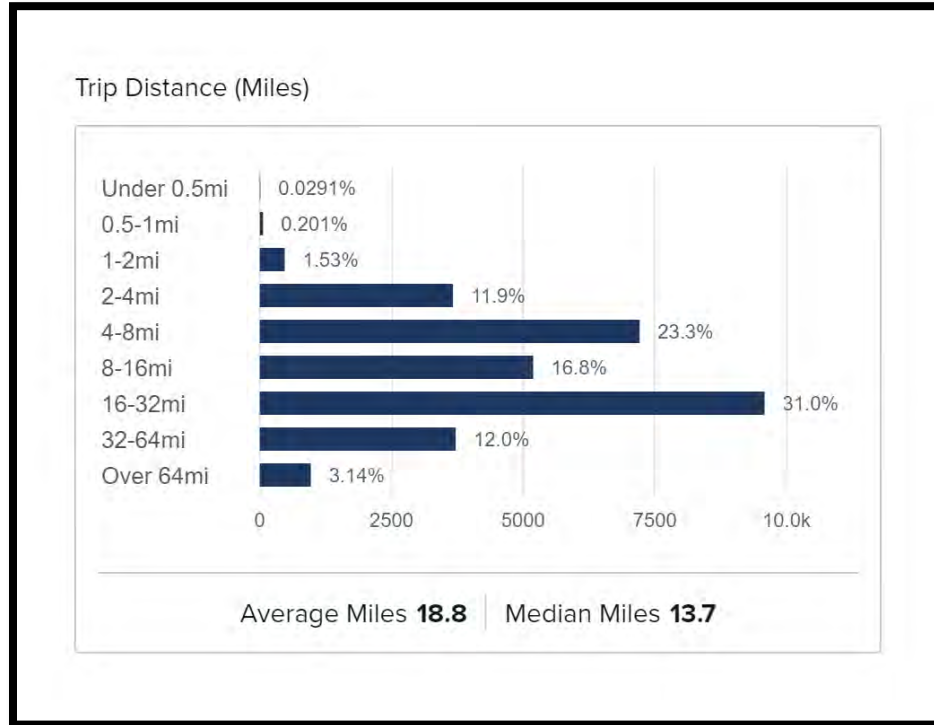


Figure 5-23: Sand Hill Road Trip Distance

5.3.7 FOCUS AREA #7: Intersection of Sand Hill Road and Oak Avenue

The intersection of Sand Hill Road and Oak Avenue is a three-legged signalized intersection with crosswalks on the north and west leg of the intersection. There is a pedestrian/bicycle bridge on the southside of the intersection that provides direct access to Stanford University, and it is heavily used by the university staff and students. However, bicyclists from Oak Avenue must press the pedestrian push button to cross Sand Hill Road, which is difficult to press without having to get off their bicycles. There is no bike lane striping at this intersection to cross Sand Hill Road. The intersection is shown in Figure 5-24.



Figure 5-24: Intersection of Sand Hill Road and Oak Avenue

Suggestions for Improvements

This intersection has already been identified as one that needs improvement and Stanford University had conducted some studies to make improvements at the intersection to provide better access to the bike bridge located on the south side of the intersection. The following are suggestions align with the city's existing plans for improvement:

- Install a bicycle push button on southbound Oak Avenue sidewalk to allow bikers to push the button while remaining in the right turn lane, as pictured in Fig 4-26, making it easier to cross the intersection. Explore the possibility of bike detection using existing and/or upgraded cameras along with a pavement marking to visually inform bikers, as pictured in Fig 4-26.
- Restripe the faded bike lanes.
- Reconstruct the northwest corner and move pedestrian signal pole and signal.
- Upgrade ADA ramps to meet ADA requirements.
- Increase pedestrian crossing time.
- Convert existing crosswalks to high-visibility crosswalks.
- Install wayfinding signage to the trail.
- Remove median island located within the intersection to allow left turns from Sand Hill Road into Oak Avenue.
- Install two-stage left-turn boxes on westbound Sand Hill Road and southbound Oak Avenue for bikers to use to make left turns instead of having to make the left turn from the left turn lanes on the high-speed roadway.
- Install two-way bicycle signals on northwest and southwest corners.
- Prohibit right-turns on red on southbound Oak Avenue and westbound Sand Hill Road to protect bikers and pedestrians.

Figure 5-25 illustrates the proposed bike push button and pavement marking installations for the Sand Hill Road and Oak Avenue intersection



Fig 5-25 Bicycle Detector Pavement Marking and Push Button

Figure 5-26 shows an illustration of suggested improvements based on the study conducted by Stanford University to improve bicycle crossing at the intersection.

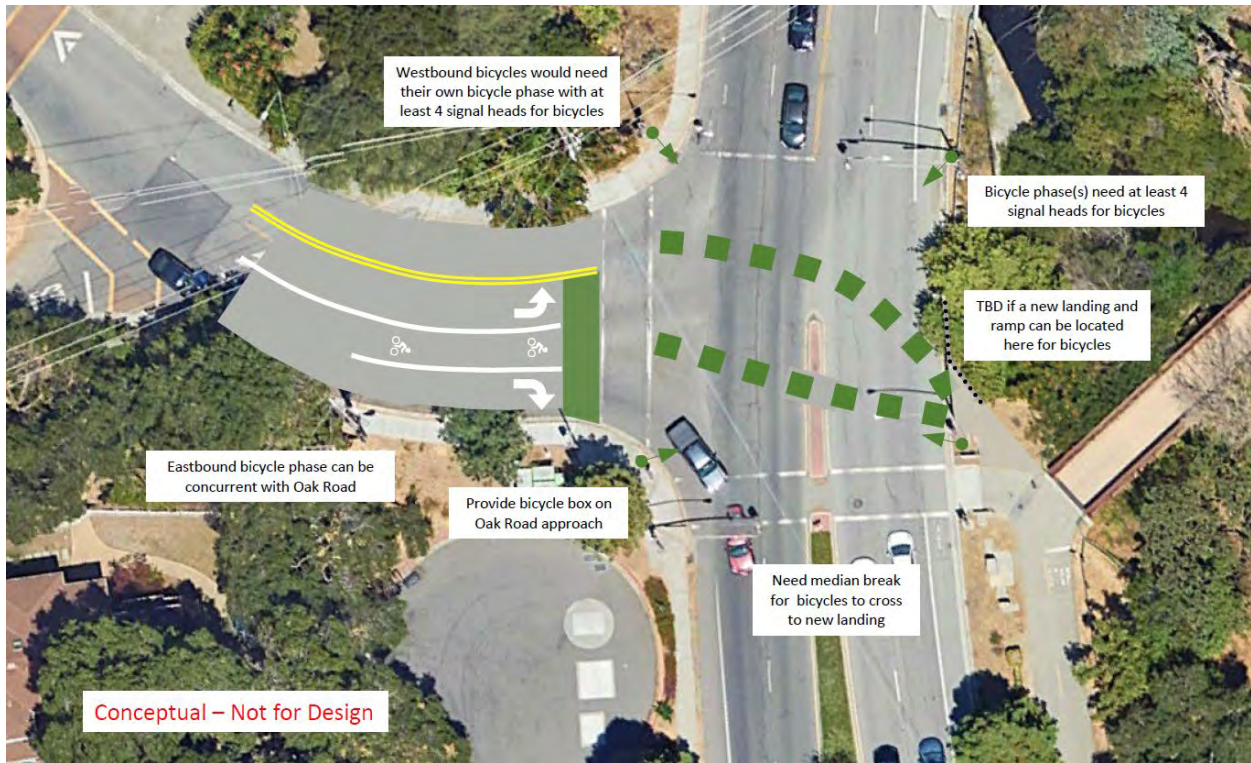


Fig 5-26 Illustration from Standard University Study

5.3.8 FOCUS AREA #8: Intersection of Sand Hill Road and Santa Cruz Avenue

Suggestions for Improvements

The following are suggestions for improvements:

- Install flashing speed advisory signs on Sand Hill Road between Oak Avenue and Santa Cruz Avenue in westbound direction as well as between Sharon Park Drive and Santa Cruz Avenue in the eastbound direction to reduce speeding.
- Install high-visibility crosswalks on all four sides.
- Install green bike lane marking west of the intersection for the westbound direction along with bollards, if feasible, to separate the bike lane to prevent drivers from using the bike lane to make right turns.
- Upgrade ADA ramps to meet ADA standards.
- Install lighted cat-tracks through the intersection for the left-turn lanes to guide drivers through the large, high-traffic intersection. Explore whether this is a maintenance hazard.
- Install wayfinding signage to the bike path along Sand Hill Road.



- Conduct analysis to determine if no right turn on red is a good option for this intersection. Right turn on red would improve pedestrian safety and reduce conflict between vehicles and pedestrians. However, a study must be conducted to understand its implication on the overall traffic congestion at the intersection.



- Consider designing a protected intersection for this intersection. Protected intersections aim to enhance the safety and efficiency of intersections for all users, particularly bicyclists and pedestrians. Protected intersections have been successfully implemented in various cities around the world, particularly in countries like the Netherlands, which is renowned for its bicycle-friendly infrastructure. In California, cities like Davis, Fremont, Oakland, and others have begun incorporating protected intersection designs to improve safety for all road users.

5.3.9 FOCUS AREA #9: Intersection of Sand Hill Road and Sharon Park Drive

Suggestions for Improvements

The following are suggestions for improvements:

- Investigate if video detection cameras can detect bicycles at this intersection for southbound Sharon Park.
- Add green bicycle striping on Sand Hill Road near the intersection for the westbound direction and bollard along with a solid white line to restrict right-turning cars from blocking the bike lane at the intersection.
- Install green bike lane marking west of the intersection for the westbound direction to prevent cars from using the bike lane to turn into Sand Hill Road. Add bollards to separate the bike lane if feasible.
- Install a yield to pedestrians sign for left-turning cars for southbound Sharon Park.
- Consider adding Class II/Sharrow bike lanes on Sharon Park to guide bicyclists through the intersection.
- Restripe crosswalk to replace worn-out striping, as pictured in Fig 5-27.



Figure 5-27 shows the poor crosswalk striping on the Sand Hill Road intersection.



Figure 5-27 Worn out crosswalk striping

5.3.10 FOCUS AREA #10: Intersection of Sand Hill Road and Junipero Serra Boulevard

Suggestions for Improvements

The following are suggestions for improvements:

- Install green striping in the transition from bike lane to right-turn lane to guide bicyclists across the right-turn lane.
- Install bike boxes on Junipero Serra Boulevard and southbound Santa Cruz Avenue.
- Explore two-stage crossing for bikers as they are in direct conflict with the high volume of left-turners coming out of Junipero Serra Boulevard without a separate signal that can be triggered for bikers to cross.
- Consider a bicycle box on Junipero Serra at the intersection.
- Consider installing a cycle track on the southside of Junipero Serra.

Appendix A: Glossary of Pedestrian Improvement Measures

Appendix B: Glossary of Bicycle Improvement Measures

Appendix C: Resources List and References

Appendix D: Street Connectivity

About the Program

The Complete Streets Safety Assessment (CSSA) conducts comprehensive transportation safety assessments that focus on pedestrian and bicycle safety. The aim of the CSSA is to help communities identify and implement traffic safety solutions that lead to improved safety and accessibility for all users, especially people walking and biking, on California's roadways.

The Safe Transportation Research and Education Center (SafeTREC) is a University of California, Berkeley research center affiliated with the Institute of Transportation Studies and the School of Public Health. Our mission is to inform decision-making and empower communities to improve roadway safety for all. We envision a world with zero roadway fatalities or serious injuries and a culture that prioritizes safe mobility.

For more information, visit: <https://safetrec.berkeley.edu> or email us at safetrec@berkeley.edu.

Contributing Authors

This report was written by: **xxxxx**

Berkeley SafeTREC

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Tentative Complete Streets Commission agenda			
#	Title	Item type	Commission action
1	Comprehensive shuttle study – outreach memo	Informational	No action
2	Comprehensive shuttle study – draft recommendations	Regular	Recommendation
3	Vision Zero Action Plan strategies/program implementation	Regular	Recommendation
4	Middlefield Road safe streets project	Regular	Recommendation

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