El Cerrito

Hercules

Pinole

Richmond

San Pablo

Contra Costa County

AC Transit

BART

WestCAT

TECHNICAL ADVISORY COMMITTEE MEETING NOTICE & AGENDA

DATE & TIME: Thursday, November 12, 2020 • 9:00 AM – 11:00 AM

REMOTE ACCESS: https://us02web.zoom.us/j/7321058840?pwd=c1dMVjJydl-BoYk0yYWVVZVlmWHZ4Zz09

MEETING ID#: 732 105 8840 **PASSWORD (if requested):** WCCTAC2020

Remote Participation Only
As a result of the COVID-19 public health emergency, including the County Health Officer and Governor's directives, **there will be no physical location for the TAC Meeting**. TAC members will attend via teleconference and members of the public are invited to attend the meeting and **participate remotely**.

Pursuant to the Governor's Executive Order N-29-20, TAC members: Yvetteh Ortiz, Mike Roberts, Tamara Miller, Lori Reese-Brown, Alan Panganiban, Colin Piethe, Rob Thompson, Nathan Landau and Celestine Do may be attending this meeting via teleconference, as may WCCTAC Alternate TAC Members. Any votes conducted during the teleconferencing session will be conducted by roll call.

The public may observe and address the WCCTAC TAC in the following ways:

Phone Participation
Dial one of the following numbers, enter the participant PIN followed by # to confirm:
+1 669 900 6833
Meeting ID: 732 105 8840
Password: 066620

Public Comment
Members of the public may address the TAC during the initial public comment portion of the meeting or during the comment period for agenda items.

Participants may use the chat function on Zoom or physically raise their hands to indicate if they wish to speak on a particular item.

Written Comment (accepted until the start of the meeting, unless otherwise noted on the meeting agenda). Public comments received by 5:00 p.m. on the evening before the TAC meeting date will be provided to the WCCTAC TAC and heard before TAC action. Comments may be submitted by email to creilly@wcctac.org

Comments may also be submitted via e-mail to creilly@wcctac.org at any time prior to closure of the public comment portion of the item(s) under consideration. All written comments will be included in the record.

Reading of Public Comments: WCCTAC staff will read aloud email comments received during the meeting that include the subject line "FOR THE RECORD" as well as the item number for comment, provided that the reading shall not exceed three (3) minutes, or such other time as the TAC may provide.

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1. **CALL TO ORDER and MEMBER ROLL CALL**
   Estimated Time:* **9:00 AM,** (5 minutes)

2. **PUBLIC COMMENT**
   Estimated Time:* **9:05 AM,** (5 minutes)

   The public is welcome to address the TAC on any item that is not listed on the agenda. Please fill out a speaker card and hand it to staff. Please limit your comments to 3 minutes. Pursuant to provisions of the Brown Act, no action may be taken on a matter unless it is listed on the agenda, or unless certain emergency or special circumstances exist. The WCCTAC TAC may direct staff to investigate and/or schedule certain matters for consideration at a future TAC meeting.

3. **CONSENT CALENDAR**
   Estimated Time:* **9:10 AM,** (5 minutes)

   A. **Minutes from October 8, 2020**
   Recommendation: Approve as presented.
   Attachment: Yes.

4. **REGULAR AGENDA ITEMS**

   A. **Review of October Draft Richmond Area Community-Based Transportation Plan (CBTP)**
   Description: The County, El Cerrito Richmond, and San Pablo jurisdictions are working with the CCTA to develop a CBTP for MTC's identified Communities of Concern. Following extensive public outreach, CCTA released a draft plan in October with a public-review draft anticipated later this month. WCCTAC staff submitted comments on the October Draft and any additional TAC and Board comments would be submitted as part of upcoming public-review draft.

   Recommendation: Review draft plan and provide comments.

   Attachment: Yes

   Presenter/Lead Staff: Matt Kelly, CCTA staff.

   Estimated Time:* **9:15 AM,** (40 minutes)

   B. **Update on Potential Richmond Parkway Corridor Study**
   Description: WCCTAC staff recently met with Caltrans staff to review grant funding opportunities. It followed up by meeting with MTC, CCTA, Richmond, and the County to discuss funding strategies. Staff will report to the TAC on the outcome of these meetings and is also seeking the TAC's feedback on potential next steps.

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* Estimated time for consideration is given as a service to the public. Please be advised that an item on the agenda may be considered earlier or later than the estimated time.

Recommendation: Provide feedback to WCCTAC staff.

Attachment: No

Presenter/Lead Staff: Leah Greenblat, WCCTAC Staff.

Estimated Time:* **9:55 AM**, (15 minutes)

CCTA's Countywide Vision Zero Framework

Description: CCTA staff and its consultant will provide a presentation on CCTA's Vision Zero Framework. TAC members are invited to provide feedback, including making edits directly (in track changes) in the online, Word version of the Policy and Implementation Guide, found at this link.

Recommendation: Receive update and provide feedback.

Attachment: Yes

Presenter/Lead Staff: Colin Clarke, CCTA staff; Eleanor Leshner, Fehr & Peers

Estimated Time:* **10:10 AM,** (50+ minutes)

5. **STANDING ITEMS**

A. **Technical Coordinating Committee (TCC) Report**

Description: TCC representatives will report on the last TCC meeting.

Recommendation: None.

Attachment: No

Presenter/Lead Staff: WCCTAC's TCC Representatives & WCCTAC Staff

Estimated Time:* **10:45 am** (5 minutes)

B. **Staff and TAC Member Announcements**

Recommendation: Receive update.

Attachment: No

Presenter/Lead Staff: WCCTAC's TCC Representatives & WCCTAC Staff

*Estimated Time**: **10:45 am** (5 minutes)

6. **ADJOURNMENT**

Description / Recommendation: Adjourn to the next regularly scheduled meeting of the TAC on Tuesday, January 14, 2020. (The next regular meeting of the WCCTAC Board is Friday, December 11, 2020.)

*Estimated Time****: 11:00 am**

- In compliance with the Americans with Disabilities Act of 1990, if you need special assistance to participate in the WCCTAC TAC meeting, or if you need a copy of the agenda and/or agenda packet materials in an alternative format, please contact Valerie Jenkins at 510.210.5930 prior to the meeting.

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* Estimated time for consideration is given as a service to the public. Please be advised that an item on the agenda may be considered earlier or later than the estimated time.

- If you have special transportation requirements and would like to attend the meeting, please call the phone number above at least 48 hours in advance to make arrangements.
- Handouts provided at the meeting are available upon request and may also be viewed at WCC-TAC's office.
- Please refrain from wearing scented products to the meeting, as there may be attendees susceptible to environmental illnesses. Please also put cellular phones on silent mode during the meeting.
- A meeting sign-in sheet will be circulated at the meeting. Sign-in is optional.

* Estimated time for consideration is given as a service to the public. Please be advised that an item on the agenda may be considered earlier or later than the estimated time.

El Cerrito

Hercules

Pinole

Richmond

San Pablo

Contra Costa County

AC Transit

BART

WestCAT

WCCTAC TAC Meeting Minutes

MEETING DATE: October 8, 2020

MEMBERS PRESENT: Colin Piethe, Contra Costa County; Allan Panganiban, San Pablo; Denee Evans, Richmond; Nathan Landau, AC Transit; Rob Thompson, WestCAT; Mike Roberts and Robert Reber, Hercules; Celestine Do, BART; and Yvetteh Ortiz, El Cerrito

GUESTS: Bill Pinkham, CBPAC West County Representative; Matt Kelly and Hisham Noeimi, CCTA; Thao Nguyen; Jacob Kaminker; Rachel Factor and Kamala Parks, BART; John Cunningham, Contra Costa County

STAFF PRESENT: John Nemeth, Leah Greenblat, Coire Reilly, Joanna Pallock

ACTIONS LISTED BY: WCCTAC Staff

ITEM	ITEM/DISCUSSION	ACTION/SUMMARY
1.	Call to Order	The meeting was called to order at 9:02 a.m.
2.	Public Comment	None.
3.	Consent Calendar: a. Action Minutes from September 10, 2020 – Approve as presented.	Do moved, Landau seconded, motion unanimously passed to approve the Consent Calendar.
Regular Agenda Items		
4.	Update on Safe Routes to BART Grant Program	Rachel Factor reported on the first round of station access grants awarded by BART. Key takeaways included: Projects that competed well for funding had: clear and realistic timelines, secure funding, required minimal Caltrans review, made a compelling case for mode shift, served disadvantaged communities and

		addressed problematic design elements.
5.	Status Report on Measure J, 28b funds (Subregional Needs)	John Nemeth provided information on the existing balance and commitments of Measure J, 28b funds. The TAC discussed possible uses for the funds including: matching funds for a Richmond Parkway Study, supplementing Measure J projects that may have lost or delayed funds and/or supplementing MTC's I-580 Design Alternatives Assessment and STMP projects during a future call for projects.
6.	Potential Richmond Parkway Corridor Study	Leah Greenblat updated the TAC on additional information garnered since the last meeting. She noted that the West County Action Plan contains a Goal and Actions supportive of a potential study. She added that a review of the scope of work suggested that the study would cost about $500K-$1M. CCTA likely does not have planning funds to contribute but assistance from their on-call planning consultant could help with grant preparation. The study appears to be eligible for Caltrans Sustainable Communities and Strategic Partnership grants, although the latter requires MTC support. The TAC supported staff efforts to contact MTC to determine their interest and further refine the scope prior to taking the item to the Board.
7.	Richmond Ferry Ridership Update	WETA staff was expected to attend the meeting to make a presentation. In their place, Mr. Nemeth gave a brief status overview explaining that the WETA Board would be considering a new marketing plan to encourage ridership.

		The WETA Board is expected to give direction to staff at their Board meeting today. This ferry status item will probably be brought to the WCCTAC Board later this month.
8.	TCC Update	The TCC meeting was cancelled, so there was no report given.
9.	Member Agency Updates on Transportation Services	Denee Evans thanked Coire Reilly for participating in a webinar for electric vehicles and climate change related activities. Mr. Reilly announced that the County's E-bike Rebate Program had launched. Ms. Evans and Mr. Pinkham announced that Richmond's Bike Share Program was anticipated to launch in early to mid-November with 250 bicycles located throughout the city as well as low income discounts.
10.	Adjournment	The meeting adjourned at 10:32 AM.

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Steering Committee Draft | Ocotber 2020

Richmond Area Community-Based Transportation Plan

Contra Costa Transportation Authority

CONTRA COSTA
transportation
authority

PLACEWORKS


Cutting 1400 Blvd
NO PARKING
4 AM TO 7 AM
STREET SWEEPING
POLICE

CONTRA COSTA transportation authority

Steering Committee Draft | Ocotber 2020

Richmond Area Community-Based Transportation Plan

Contra Costa Transportation Authority

Prepared By:

PLACEWORKS

1625 Shattuck Avenue
Suite 300
Berkeley, California 94709
510.848.3815


BART

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Executive Summary

This Community-Based Transportation Plan (CBTP) addresses transportation challenges in low-income Communities of Concern (CoC) across areas of Richmond, San Pablo, El Cerrito, and unincorporated Contra Costa County. The CBTP was developed by Contra Costa Transportation Authority (CCTA) with Metropolitan Transportation Commission (MTC) grant funding. In conformance with MTC guidelines, it represents a collaborative effort between CCTA, community members, local stakeholders, and transit operators to identify and fill local mobility gaps that impact low-income and challenged communities.

The CBTP recommends a series of projects and programs identified during community outreach and review of existing studies. These recommendations were prioritized using evaluation criteria developed with plan advisors.

COVID-19 Statement

The COVID-19 pandemic emerged following the outreach process of this CBTP. As a result, community feedback in this plan does not reflect new mobility habits, priorities, and challenges associated with COVID-19 and shelter-in-place orders.

However, development of CBTP recommendations and plan drafting began about four months into the crisis. The transportation environment, as well as the financial feasibility and implementability of various project types, shifted greatly during that time. Projects and programs in this plan reflect pre-COVID community feedback and post-COVID feasibility evaluation.

Predicating the long-term impact of COVID-19 on future mobility habits and gaps is difficult. The MTC CBTP program operates on a 10-year cycle, and CCTA determined that it is in the interest of communities to adopt this plan in the current context, rather than re-initiate the existing conditions, community outreach, and recommendations processes.

Study Area Profile

Demographic Profile

The last Richmond Area CBTP was completed in 2004. The study's target areas were the neighborhoods of North Richmond, the Iron Triangle, Coronado, Santa Fe, Old Town San Pablo, and Parchester Village.[1] At the time, it had a residential population of under 40,000. The 2004 CBTP recommended 11 mobility projects ranging from additional bus and shuttle services to new bicycle and pedestrian paths. Of those, five have been fully implemented and three have been partially implemented.

The current CBTP study area represents a significant expansion from 2004, as shown in Figure ES-1. It includes parts of the cities of Richmond, San Pablo, and El Cerrito, and now includes unincorporated Rollingwood, Montalvin Manor, Tara Hills, and Bayview. The current population exceeds 93,000. In 2017, the median household income in the study area was $53,200, with approximately 46 percent of residents living in poverty (defined here as below 200 percent of the federal poverty threshold).

The study area is more diverse than Contra Costa County as a whole. It contains higher percentages of Hispanic or Latino and Black or African-American residents than the County, the same percentage of Asian residents, and a much lower percentage of white residents. Less than 12 percent of CBTP area residents are white non-Hispanic or Latino, compared to about 45 percent countywide. Approximately 6,500 households in the study area (17 percent of total households) are designated as "Limited English-Speaking Households," as compared to 7 percent of households countywide.

1 Metropolitan Transportation Commission, 2004, Richmond Area Community-Based Transportation Plan, page ES-1.

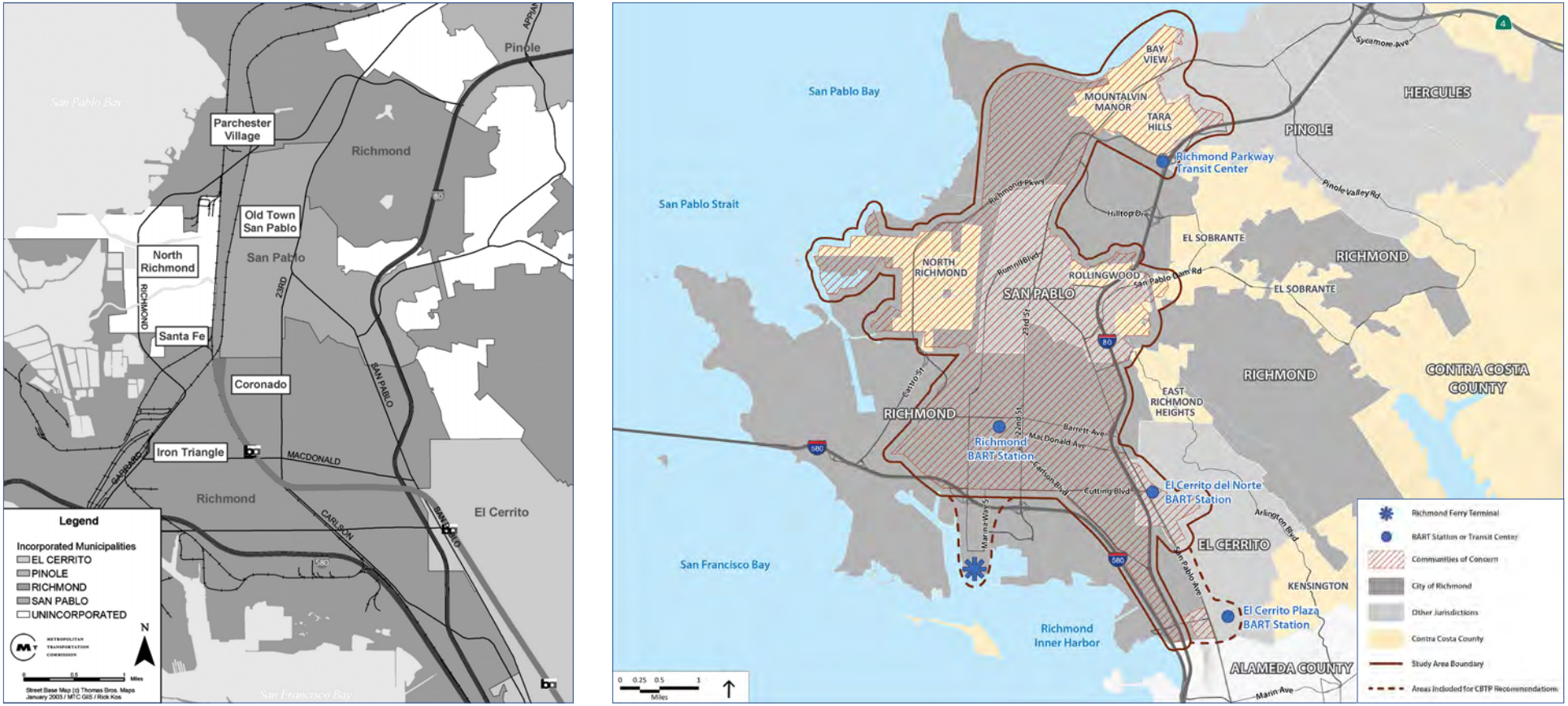


Figure ES-1 2004 and Current Community-Based Transportation Planning (CBTP) Study Areas

Transportation and Transit Profile

Of the approximately 55,000 commuters aged 16 years and over in the study area, about 78 percent travel to work by personal vehicle. Two-thirds of those workers drive alone. Residents of the northwest portions of the study area experience longer commutes—37 minutes or more—than others in the study area. However, there has been a doubling in the use of public transportation in the study area, from 7 percent in 2010 to 14 percent in 2017.

The study area includes the Richmond, El Cerrito del Norte, and El Cerrito Plaza Bay Area Rapid Transit (BART) stations, served by the Richmond-Millbrae and Richmond-Berryessa BART lines. Amtrak service (Capitol Corridor and California Zephyr lines) is available at the Richmond Transit Center, adjacent to the Richmond BART station. These trains provide direct connections to Berkeley, Oakland, San Jose, Sacramento, and points beyond.

Source: Metropolitan Transportation Commission (MTC), 2018; Contra Costa County 2018; Placeworks, 2018.

Local and intercity bus transit is primarily provided by Alameda-Contra Costa Transit District (AC Transit), West Contra Costa Transportation Authority (WestCat), and Golden Gate Transit. AC Transit serves the entire study area through 10 bus routes, 3 transbay routes, and 1 24-hour route. WestCat operates six local and two regional bus routes in the study area.

An active transportation network includes a mix of bicycle facility types that provides some connectivity with transit. Multiple future bicycle projects are proposed adopted plans, including the 2018 Contra Costa County Bicycle and Pedestrian Plan.

Past and Current Studies

The recommendations in this CBTP respond to and build on previous and ongoing transportation studies. Due to the size and multijurisdictional make-up of the study area, understanding common mobility themes and adopted policies was significant to the development of relevant recommendations.

As detailed in Chapter 3, 19 local and countywide studies, spanning 1999 to the present, were reviewed.

Outreach and Engagement

All CBTP recommendations are based on a community coordination campaign consistent with MTC Guidelines.

Outreach and engagement in this plan included the following components:

1. Advisory group oversight
2. Project web page
3. Project awareness campaign
4. County planning events
5. "Pop-up" sessions at events in the study area
6. In-depth interviews with community members

Steering Committee Oversight

A CBTP Steering Committee was convened twice to ensure an inclusive outreach process, provide direction on reaching specific communities, and prioritize outreach opportunities. Members of the Steering Committee included:

- Ben Choi, Richmond City Council
- Elizabeth Pabon-Alvarado, San Pablo City Council
- Janet Abelson, El Cerrito City Council
- Robert Rogers, Office of Supervisor Gioia
- Jan Mignone, President, Richmond Neighborhood Coordinating Council
- Myrtle Braxton-Ellington, Chair, Richmond Commission on Aging
- Trina Jackson, Staff Liaison, Richmond Youth Council
- Cecilia Perez-Mejia, Community Liaison, First Five Contra Costa
- Nikki Beasley, Executive Director, Richmond Neighborhood Housing Service

Project Working Group Oversight

A Project Working Group (PWG) composed of local jurisdiction and transit agency staff convened five times throughout the outreach process to review the Outreach Strategy, help identify stakeholders in various COCs, and provide practical guidance on coordinating outreach events and stakeholders. Members of the PWG for the Pittsburg-Bay Point CBTP included:

- Martin Engelmann, Deputy Executive Director, Planning, CCTA
- Matt Kelly, Senior Transportation Planner, CCTA
- James Hinkamp, Associate Transportation Planner, CCTA
- Aileen Hernandez, Principal Grants Officer, BART
- Celestine Do, Senior Planner BART
- Rachal Factor, Principal Planner, BART
- Nathan Landau, AC Transit
- Ryan Lau, AC Transit
- Denee Evans, Transportation Demand and Sustainability Manager, City of Richmond
- Tawfic Halaby, Senior Civil Engineer, City of Richmond
- Misha Kaur, Paratransit Coordinator, City of Richmond
- Patrick Phelan, Infrastructure Administrator, City of Richmond
- Lori Reese Brown, Transportation Project Manager, City of Richmond
- Lina Velasco, Community Development Director, City of Richmond

- Dane Rodgers, Senior Civil Engineer, City of Richmond
- Ana Bernardes, Engineering Manager/Senior Engineer, City of El Cerrito
- Clayton Johnson, Senior Health Education Specialist, Contra Costa Health Services
- Alexander Zandian, Engineer, Contra Costa County
- Mary Halle, Senior Civil Engineer, Contra Costa County Public Works

Project Web Page

The CBTP team developed a project web page on the CCTA website. The web page included background information on the CBTP process, links to project submittals such as Existing Conditions Reports and Outreach Strategies, and notification of events using customized fliers.

Awareness Campaign

The CBTP team developed a graphics-rich Outreach Awareness Notice in English (see Figure 4-1) and Spanish (see Figure 4-2) to notice the public of outreach events in various COCs. The flier was adapted to each event and posted digitally on websites of agencies and stakeholders involved in the project.

The team also distributed information and fliers about the CBTP outreach process to over 150 Richmond community members at the Martin Luther King Day of Service and Celebration event at Unity Park Community Plaza, and distributed outreach information materials to about 40 ferry riders at the Richmond Ferry Plaza "Energizer Station" on Bike-to-Work Day.

County Planning Events

Contra Costa County is currently updating its General Plan, a process titled *Envision Contra Costa 2040*. The CBTP team attended the following outreach events associated with this process to gauge community mobility priorities in Richmond:

- Contra Costa County General Plan Update Community Meeting, North Richmond. This meeting was held on May 13, 2019, at the Community Heritage Senior Apartments.
- Contra Costa County General Plan Update Community Meeting, Bayview, Montalvin Manor, and Tara Hills. This meeting was held on May 14, 2019, at the Montara Bay Community Center.

Approximately 50 attendees contributed feedback concerning transportation challenges, most related to the pedestrian safety and security, transit delays and frequencies, gaps in bicycle infrastructure, and conditions on San Pablo Avenue.

Pop-Up Sessions

CBTP team members worked with Community Based Organizations (CBO), non-profits, and various local agencies to schedule "pop-up" outreach sessions at pre-scheduled events targeting low-income and other potentially transportation-challenged communities. The goals of these events were to collect detailed feedback about transportation challenges directly from COC residents and record personal narratives describing how these challenges impact daily life. English- and Spanish-speaking CBTP project staff facilitated "map and dot" study board exercises, on-site surveys, and "infrastructure gap" sticker exercises to allow participants to visually identify existing mobility gaps.

The CBTP team also conducted detailed interviews with volunteers, to develop personal vignettes about daily mobility challenges in the study area.

Pop-up sessions were conducted at the following events with the following participation rates:

1. **Greater Richmond Interfaith Program (GRIP) Community Lunch** at GRIP's central location at 165 22nd Street in Richmond on November 26, 2019. Approximately 25 attendees participated in interactive exercises, and eight in-depth interviews were conducted.
2. **Richmond Youth Council Meeting** on December 10, 2019. Youth Councilmembers discussed their transportation needs as well as those faced by the population of Richmond youth they represent. PlaceWorks staff completed detailed interviews of all five councilmembers at the meeting. All five councilmembers, as well as 15 additional meeting attendees, also completed interactive exercises.
3. **Booker T. Anderson Community Center Brown Bag Lunch** on December 13, 2019. Team members interviewed participants in the grocery program about their transportation experiences in Eastshore/Panhandle Annex neighborhoods of Richmond. PlaceWorks staff recorded two detailed interviews and facilitated map exercises and/or discussions with 16 individuals

Key Findings

Table ES-1 summarizes the key findings and feedback from each outreach component.

Table ES-1 Key Findings from Community Outreach Events

Contra Costa County General Plan Update North Richmond Meeting	**Pedestrian Challenges:** • Evening neighborhood safety and lighting conditions in North Richmond neighborhoods • Area-wide sidewalk conditions and gaps on major streets **Bicycle Challenges:** • Gaps in local bicycle infrastructure **Transit Challenges:** • Too many delays and poor system linkages • Insufficient fixed-route coverage across Richmond • Insufficient bus frequencies • Poor BART/transit access • Poorly design bus stops and transit curb management
Contra Costa County General Plan Update Bayview, Montalvin Manor and Tara Hills Meeting	**Transit Challenges:** • Overall lack transit connections to BART and transit types **Pedestrian Challenges:** • Fear of Tara Hills Drive and Shawn Drive due to vehicle speeds • Sidewalk and bicycle gaps and dangerous intersections on San Pablo Avenue

GRIP Community Lunch	**Bicycle Challenges:**
	• Gaps in bicycle facilities on San Pablo Avenue and major corridors.
	• Bike lane on San Pablo Avenue starting at the intersection with Rumrill Boulevard and College Lane does not extend westward towards Richmond.
	• No protected lanes on San Pablo Avenue and Carlson Boulevard.
	• Need bike improvements along Ohio Avenue east of 2nd Street
	• Need better bike lanes on MacDonald behind Nicholl Park
	• Bicycle Conditions Surrounding Nicholl Park area are difficult
	• Cyclists avoid the greenway behind Nicholl Park because of safety issues and lack of lighting.
	Pedestrian Challenges:
	• Dangerous conditions on BART line crossings
	• Lack pedestrian overcrossings in key locations
	  • Over Richmond Parkway at Goodrick Avenue, for access to Point Pinole Park.
	  • Over the train tracks to the West of Richmond so that people can access views of the San Rafael and San Pablo Bay.
	Transit Challenges:
	• Poor Bus Shelter Conditions (8 + comments)
	• Lack of seating and lighting at stops along MacDonald Avenue
	• Lack of Transit Access to Support Services (5 comments)
	• Need for subsidized evening shuttle access to GRIP and other facilities
	• WestCat Route 19 does not provide direct access to Social Security office
	• Need for Dial-a-Ride shuttle between the Richmond BART station and Kaiser Permanente
	• Route 72 is Inconsistent
	Other
	• Large commercial trucks in the 'flats' of Richmond create danger for other drivers and people walking or biking. Children walk in areas that are not safe for pedestrians due to commercial trucks, people speeding, and incomplete sidewalks.

Table ES-1 Key Findings from Community Outreach Events (Continued)

Richmond Youth Council	**Pedestrian Challenges:**
	• Poor pedestrian conditions on San Pablo Avenue
	• Poor pedestrian conditions surrounding Nicholl Park
	• Poor pedestrian conditions surrounding the Shoppes at Hilltop
	  • Lack of sidewalk lighting
	  • Lack of crosswalk reflectors and signalization
	• Students walking to/from Kennedy High School face poor conditions
	• Cutting Boulevard between South 49th Street and the highway has unsafe crossings, which students must use.
	• Unsafe driving Conditions around Pacific East Mall
	  • Roads and signage are confusing for motorists around Central Avenue, which impacts pedestrian safety.
	  • Multiple stop-controlled intersections where you can't see oncoming cross traffic
	Transit Challenges:
	• WestCat bus stop at Cutting Boulevard and Key Boulevard is highly used but has no shelter or seats
	• Many AC Transit stops along San Pablo Avenue lack seats and/or shelters
	• Lack of safety measures for young riders on BART and busses.
	• Inconsistent service and lateness of Route 76 to El Cerrito Del Norte BART
	• Young people feel Lyft/Uber are better alternatives

Booker T. Anderson Community Center Senior Produce Brown Bag	**Pedestrian Challenges:**
	• Difficult to walk near bike paths in Richmond; markings a re confusing
	• Conditions on Potrero Avenue between Carlson and 80 are poor
	  • Intersection of Carlson Boulevard and Potrero Avenue is dangerous
	  • Lack of adequate lighting
	  • Cars use segment to get to highway, but it is also a route to Stege Elementary School and Booker T. Anderson Community Center
	• Area need more and better curb cuts, with gentler slopes, for people in wheelchairs and using mobility devices
	Transit Challenges:
	• Kaiser Permanente and Richmond Care Center are difficult to get to on transit for those who can't walk far
	• AC Transit Routes are unreliable
	• Route 72 needs more busses daily
	• Route 71 bus is often late
	• Stops and shelters on 71 and 40 are inadequate; lack seating
	• There is a general lack of real-time signage along bus routes
	• Signage and timetables along routes are written in font size that is too small to read
	Safety Challenges
	• Iron Triangle needs better lighting and signage for non-auto mobility
	• Overall high crime rates in CBTP area make evening mobility frightening

Recommendations Methodology

Evaluation Criteria

The CBTP project team worked with the PWG to establish four evaluation criteria to rank projects and programs by their ability to improve mobility for challenged communities:

1. **Reflects Community Priorities**
2. **Increases Access**
3. **Is Financially Feasible**
4. **Ease of Implementation**

Scoring Methodology

Recommendations were scored one through five for each evaluation criteria. A score of one reflects the lowest potential for fulfillment of that category; five the highest. For all project and plans, the following score averages were calculated:

- **Area Need Score:** The average score of Criterion 1 (Community Priorities) and Criterion 2 (Increases Access)
- **Project Potential Score:** The average score of Criterion 3 (Financial Feasibility) and Criterion 4 (Ease of Implementation)

Projects and plans were categorized into the following groups based on the results of this scoring system.

High Need + High Potential Recommendations

These recommendations received an Area Need Score of 3.5 or above and a Project Potential Score of 3.5 or above. These are projects and programs consistent with community priorities, have the highest potential to reduce access gaps, and are unlikely to face implementation challenges.

High Need Recommendations

High Need Recommendations received an Area Need Score of 3.5 or above and a Project Potential Score of below 3.5. These projects will fulfill community priorities and increase community access but may be difficult to complete due to funding and costs, cross-jurisdictional management, engineering, and other implementation challenges.

Project Types

Recommendations fall within the following groups of projects and plans:

Active Transportation. These are generally capital improvements that increase safe, healthy, active transportation choices, namely walking and biking, for everyday trips.

Transit. Transit projects may include new routes, expanding operating hours of certain lines, increasing transit line frequency, or improving transit stops with lighting, shelter, and seating.

School Safety. School safety projects provide safe, non-motorized routes between where people live and local schools.

Recommendations

The following tables summarize recommendations across project type. Each table includes recommendations, *Area Need* score, *Project Potential* score, and estimated cost.

High Need + High Potential Recommendations

Active Transportation Projects and Programs

Active Transportation Projects comprise most High Need + High Potential Recommendations. Not only were such projects identified by the community, in current studies and during CBTP advisor coordination, but funding for active transportation and multi-modal safety remains available in the wake of COVID-19.

Table ES-2 High Need + High Potential Active Transportation Projects and Programs

Recommendation	Area Need Score (3.5+)	Project Potential Score (3.5 +)	Estimated Cost
Fill bicycle gaps on street networks surrounding public schools and neighborhood parks:			
Fill bicycle gaps surrounding Nicholl Park/DeJean Middle School by installing a Class III Bike Boulevard Route on Harry Ells Place from Richmond Greenway to Nevin Avenue.	3.5	4.25	$105,000
Fill bicycle gaps surrounding John F. Kennedy High School and Laurel Park by installing a Class III Bike Boulevard Route along entire Berk Avenue/49th Street loop.	4	3.65	$330,000
Fill bicycle gaps surrounding Unity Park Community Plaza by installing a Class III Bike Boulevard Route on 16th Street from McDonald Avenue to Richmond Greenway.	3.75	3.5	$125,000
Install a Class III Super Sharrow Route on Macdonald Avenue from Richmond Parkway to Key Boulevard.	3.75	3.75	$90,000
Increase pedestrian safety along San Pablo Avenue from Cutting Boulevard to Rumrill Boulevard, with crosswalks, signals and lighting improvements coordinated with future transit services planned by WCCTAC and AC Transit.	5	3.5	$3.5 million to $5 million
Close sidewalk gaps, improve existing sidewalk conditions and improve access to bus stops along the west side of San Pablo Avenue between Tara Hills Drive and Murphy Drive in San Pablo.	4.5	4	$750,000 to $1.25 million
Increase pedestrian safety along MacDonald Avenue from San Pablo Avenue to Richmond Parkway, with crosswalks, signals and lighting improvements coordinated with future transit services planned by WCCTAC and AC Transit.	4.5	3.5	$5 million to $10 million
Install or improve ADA-compliant curb ramps in high-use areas of Tara Hills, Montalvin Manor and Rollingwood communities.	4.5	5	$12,000 per ramp
Initiate City of San Pablo and City of El Cerrito *Vision* Zero Plans	3.5	4	$250,000 per plan

Transit Projects and Programs

Public transit projects are a high priority for communities in the Richmond CBTP study area. However, declining transit revenues and loss of funding in the wake of COVID-19 have reduced the current financial feasibility of transit projects. As a result of current conditions, most transit recommendations received a lower *Project Potential* score.

Table ES-3 High Need + High Potential Transit Projects and Programs

Recommendation	Area Need Score (3.5+)	Project Potential Score (3.5 +)	Estimated Cost
Install lighting, signage and shelter improvements consistent with 2019 NACTO and ADA standards at up to 10 bus stops along AC Transit Route 71 and Golden Gate Transit Route 40, or other high-use corridors.	4.5	3.5	$20,000 to $30,000 per stop

School Safety Projects and Programs

As of this draft CBTP, all schools and facilities within the West Contra Costa County School District are closed to classroom learning for the 2020 through 2021 school year. As noted in Section 5.1, these conditions make it difficult to predict implementation of school safety projects. However, funding for previously identified Safe Routes to School programs increases the potential for these projects.

Table ES-4 High Need + High Potential School Safety Projects and Programs

Recommendation	Area Need Score (3.5+)	Project Potential Score (3.5 +)	Estimated Cost
Implement Safe Routes to School infrastructure improvements along segment of Cutting Boulevard that connects El Cerrito Del Norte BART Station and Kennedy High School (between South 45th Street and San Pablo Avenue).	5	4	$400,000 to $700,000
Implement circulation and safety improvements, including potential secondary entrance, on the Verde Elementary School campus.	4.5	3.5	$300,000 to $600,000

High Need Recommendations

Active Transportation Projects and Programs

Table ES-5 High Need Active Transportation Projects and Programs

Recommendation	Area Need Score (3.5 +)	Project Potential Score (below 3.5)	Estimated Cost
Widen sidewalks, improve lighting, and increase maintenance conditions of the Barrett Avenue/BART undercrossing.	3.75	2	$5 million to $8 million
Widen sidewalks, improve lighting, and increase maintenance conditions of the Macdonald Avenue/BART undercrossing.	4	2	$5 million to $8 million
Widen sidewalks, improve lighting, and increase maintenance conditions of the Pennsylvania Avenue/BART overcrossing.	3.75	1.5	$5 million to $8 million
Extend current terminus of recent San Pablo Avenue complete streets improvements from Rivers Street to Rumrill Boulevard.	3.75	2.75	$1.6 million to $2.4 million
Develop pedestrian, bicycle and transit user safety program, including infrastructure, signalization and striping components, on Central Avenue from San Pablo Avenue through Interstate 80 intersection.	4.5	3	$4 million
Develop Barrett Avenue “road diet” program at Interstate 80 to reduce auto speeds and increase pedestrian safety. Components include speed humps, bulb-outs, rapid flashing beacons and lane diet.	4	2.5	$2 million to $4 million
Reduce impacts of commercial truck by-passes on local travel routes with recommendations from the Development Program Report for the North Richmond Area of Benefit, such as truck restriction signage, truck calming measures and improved pedestrian and bicycle infrastructure.	3.75	3.25	$20,000 for signage program to $3 million in infrastructure

Transit Projects and Programs

Table ES-6 High Need Transit Projects and Programs

Recommendation	Area Need Score (3.5 +)	Project Potential Score (below 3.5)	Estimated Cost
Increase the frequency of AC transit Route 76 from 30 minutes to 15 minutes to increase access to BART stations throughout the CBTP study area.	4	1.5	$1.5 million to $2.5 million
Amend the Shoppes at Hilltop loop of WestCat Route 19 to provide direct service to the Richmond Social Security Office at 3164 Garrity Way.	3.5	2.5	$500,000 to $1 million
Program a City-subsidized shuttle service routed from BART Stations in the CBTP study area to social service facilities that support mobility-challenged communities, including: Greater Richmond Interfaith Program, Richmond Senior Citizens Center, El Cerrito Senior Center, San Pablo Senior Center, Richmond Health Center and North Richmond Center for Health.	3.5	2	Up to $350,000
Close gaps in R-Transit programming by expanding holiday and weekend service.	4	1.5	$500,000
Improve coordination between R-Transit program and East Bay Paratransit to avoid duplicating services.	4	3	$50,000
Install new paratransit bays at Richmond Area BART stations to accommodate expanded service and improve vehicle access.	4	1	$750,000

School Safety Projects and Programs

Table ES-7 High Need School Safety Projects and Programs

Recommendation	Area Need Score (3.5 +)	Project Potential Score (below 3.5)	Estimated Cost
Implement a near-term safe routes to school program on streets surrounding Verde Elementary School.	4.5	2.5	$75,000
Improve signalization and striping at I-80/ San Pablo Dam Road Interchange for safety of Riverside Elementary School students.	4.5	2.5	$500,000

1. Introduction

1.1 Metropolitan Transportation Commission Lifeline Transportation Program

In 2001, the Metropolitan Transportation Commission (MTC) published two reports identifying gaps in the provision of transportation services in low-income Bay Area neighborhoods and initiated two programs to allocate funding for transportation improvement projects based on outreach to low-income communities. The Lifeline Transportation Program (LTP) allocates state and federal funds to provide grants for projects that meet mobility and accessibility needs in low-income communities. The Community-Based Transportation Planning (CBTP) Program is an outreach-based program to improve travel needs in specific low-income Communities of Concern (COC) throughout the Bay Area. Each CBTP is a collaborative effort between community members, transit operators, and congestion management agencies to identify local mobility challenges and community-oriented solutions.

The projects identified in CBTPs then become eligible for funding through the LTP. Per its 2018 guidelines, the goal of the LTP is to fund projects that result in improved mobility for low-income residents of the San Francisco Bay Area. Eligible projects must:

- Be developed through an inclusive planning process that engages a broad range of stakeholders,
- Improve a range of transportation choices by adding new or expanded services, and
- Address transportation gaps and/or barriers identified in CBTP Programs.

Both operating projects and capital projects are eligible for funding under the LTP.

LTP Cycle 5, which covers Fiscal Year 2016–2017 through Fiscal Year 2017–2018 was funded by two sources: State Transit Assistance (STA) and Federal Transit Administration (FTA) Section 5307 Urbanized Area Formula funds. Table 1-1 details allocations to Contra Costa County.

Table 1-1 Cycle 5 Lifeline Transportation Program Funding

County and Share of Regional % Low-income Population	FY 2016–2017 ($ Millions)		FY 2017–2018 ($ Millions)		Total ($ Millions) Estimate
	STA Actual	FTA Actual	STA Actual	FTA Estimate	
Contra Costa 14.7%	$1.08 M	$0.50 M	$1.07 M	$0.50 M	$3.10 M
Rest of Bay Area 86.3%	$6.22 M	$2.87 M	$7.19 M	$2.93 M	$19.36 M
Total	**$7.30 M**	**$3.37 M**	**$8.26 M**	**$3.43 M**	**$22.36 M**

Source: Metropolitan Transportation Commission, Lifeline Transportation Program Cycle 5 Guidelines.

1.2 CBTP Guidelines

MTC has established guidelines to ensure that CBTP mobility recommendations are the result of community input. Per the 2018 MTC guidelines:

- All CBTP recommendations must be based on a Community Engagement Plan that includes at least three best practices for outreach to low-income residents.
- Community outreach must be coordinated with community stakeholders, such as Community Based Organizations (CBO) and non-profits working with the underserved.
- Each CBTP must convene a Steering Committee composed of social service, CBO, agency, and/or non-profit leadership to review outreach strategies, recommendation selection criteria, and milestones.
- Each CBTP must identify funding sources for "high-priority" projects.

1.2.1 Communities of Concern

As noted in Section 1.1, CBTP study areas are composed of MTC-identified COCs. These are census tract-based geographies that exhibit either:

1. A low-income population (<200-percent federal poverty level) that exceeds 30 percent and a minority population that exceeds 70 percent; or
2. A low-income population that exceeds 30 percent and a population that surpasses MTC thresholds for at least three of the following:
   - Level of English Proficiency
   - Elderly
   - Zero-Vehicle Households
   - Single-Parent Households
   - Disabled
   - Rent-Burdened Households

1.3 2004 Richmond-Area CBTP

The original Richmond CBTP study area was identified in MTC's 2001 Regional Transportation Plan (RTP). It was limited to Richmond and immediately adjacent areas. MTC initiated the CBTP planning grant program to address transportation gaps in this area and three others in Contra Costa County. The first, and most recent, Richmond CBTP was completed in 2004. The study area included North Richmond, the Iron Triangle, Coronado, Santa Fe, Old Town San Pablo, and Parchester Village, an area with a residential population of under 40,000 people at that time. According to the 2000 U.S. Census, that area contained the greatest density of residents in poverty within Contra Costa County. The 2004 CBTP recommended transit shelter enhancements, additional bus and shuttle services, subsidized taxi and bus pass programs, driver safety workshops, transit information centers, and construction of bicycle and pedestrian paths. Of the 11 2004 Richmond CBTP recommendations, 5 have been fully implemented and 3 have been partially implemented.

1.4 Current Richmond Area CBTP

1.4.1 Study Area

The boundaries of the current Richmond CBTP study area were determined primarily by the location of local COCs according to MTC's 2017 COC database. The current CBTP study area is depicted in Figure 1-1. It is larger and more populous than the 2004 study area, with a residential population of roughly 123,000—about three times the population of the previous CBTP.

As shown in Figure 1-1, the current CBTP study area encompasses COCs in the cities of Richmond, San Pablo, and El Cerrito, as well as unincorporated areas of Contra Costa County, including North Richmond, Rollingwood, Montalvin Manor, Tara Hills, and Bayview. It is roughly bounded by San Pablo Bay to the north, Interstate 80 to the east, Interstate 580 to the south, the Chevron Richmond Refinery and San Pablo Bay to the west, and San Francisco Bay to the south. Major destinations include El Cerrito del Norte and Richmond Bay Area Rapid Transit (BART) stations, Downtown Richmond, Kaiser Permanente Richmond Medical Center, and Contra Costa Community College. The study area encompasses many distinct neighborhoods and 26 public schools.

Key transit and commercial hubs are immediately adjacent the study area, including the recently opened Richmond Ferry Terminal, the El Cerrito Plaza BART station, and the adjacent San Pablo Avenue commercial corridor. These resources and surrounding areas have been integrated into the study area to provide opportunities to include them into comprehensive CBTP recommendations.

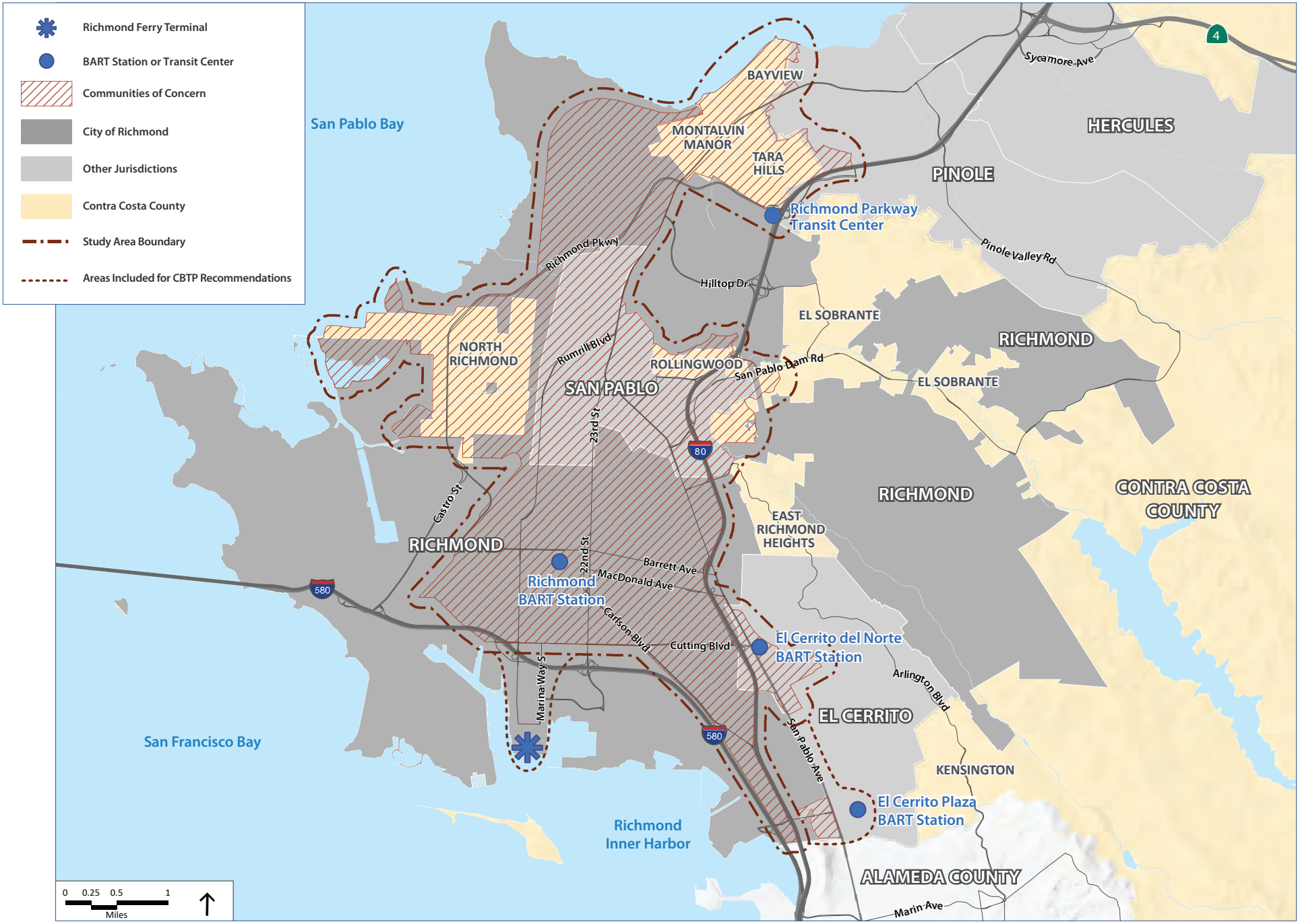


Figure 1-1 Community Based Transportation Plan Study Areat

Source: Metropolitan Transportation Commission (MTC), 2018; Contra Costa County 2018; Placeworks, 2018.

1.4.2 CBTP Advisors

1.4.2.1 Project Steering Committee

Per MTC's 2018 CBTP Guidelines, the Richmond CBTP project team convened a Steering Committee (SC) consisting of representatives from CBOs, non-profits, and agencies with an interest in the CBTP outcome. The role of the SC was to ensure transparency and inclusivity throughout the process, review milestones, and assist in program evaluation. The SC provided input on reaching specific groups in the community, prioritized outreach opportunities, and evaluated the list of policy and project recommendations for the study area. The SC met twice during key points during the process. See Chapter 4 for a complete list of all project SC members.

1.4.2.2 Project Working Group

The project team also convened a Project Working Group (PWG), which included the project team as well as partners from local jurisdictions, transit agencies, and MTC. The PWG met five times throughout the outreach process to provide practical guidance on local input, review deliverables, and provide input on project review criteria and CBTP draft recommendations. See Chapter 4 for a complete list of all PWG members.

1.5 COVID-19 and CBTP Development

The COVID-19 pandemic emerged following the community outreach process of this CBTP (see Chapter 4). As a result, the community feedback that influences recommendations in this CBTP does not reflect the changes in mobility context, habits, priorities, and challenges due to COVID-19 and formal shelter-in-place orders.

However, scoring of the recommendations, which includes financial feasibility and ease of implementation (see Chapter 5) occurred about four months into shelter-in-place regulations. COVID-19 and the resulting mobility habits have shifted the funding and implementation potential of key project types. The projects and programs in this plan reflect pre-COVID community feedback and post-COVID feasibility.

The Contra Costa Transportation Authority determined that it is in the interest of communities in the CBTP study area to adopt this plan in the current context, rather than re-initiate the existing conditions, community outreach, and recommendations processes.

2. Study Area Profile

The current Community-Based Transportation Plan (CBTP) study area is large and diverse, composed of a range of existing land uses. The most common land use is residential, with low- to medium-density housing of about 5 to 20 dwelling units per acre distributed throughout the CBTP area. Mixed-use and commercial areas are concentrated along the San Pablo Avenue and 23rd Street corridors, as well as Richmond's downtown area. Industrial uses are interspersed throughout the western and northern sections of the study area, with a concentration of light and heavy industrial uses around North Richmond.

A full CBTP Study Area Existing Condition Report is provided in Appendix A.

2.1 Demographic Analysis

The demographic profile presented in this report is based on census tract data from the 2010 U.S. Census. Data from the American Community Survey (ACS) five-year estimates (2006–2010 and 2013–2017) are compared to show trends since the last CBTP. In addition, future projections are provided on key demographic variables from the 2017 Regional Transportation Plan (RTP), which MTC published in July 2017. Also known as Plan Bay Area (PBA) 2040, this RTP contains forecasts for population, housing, and employment for the horizon year of 2040.

2.1.1 Population and Housing

The population of the study area in 2017 was approximately 123,414, an increase of 5 percent from the 2010 Census, when the population was 117,754. The study area has seen approximately half the countywide population growth over the past seven years, the latter of which grew 9 percent from 1,049,030 residents in 2010 to 1,147,439 in 2017. This trend is forecasted to reverse in the future, with an expected growth rate of 30 percent from 2018 to 2040 to 159,907 residents within the CBTP study area. This growth rate will be twice of the county's long-term growth rate, which is expected to grow by only 17 percent (less than 1 percent per year) from 2018 to 2040 to a population of 1,338,240.

Household size in the study area is about 16 percent larger than households in Contra Costa County and is expected to increase. Households in the study area increased from 3.22 people in 2010 to 3.27 people in 2017 in the CBTP study area (a growth of 1.6 percent), while households countywide have increased 3.2 percent from 2.77 people to 2.86 people. By 2040, household size in the study area is expected to increase to 3.31 people and be 15 percent higher than the rest of the county, which is projected to increase to 2.89 people per household.

2.1.2 Race and Ethnicity

The study area contains higher percentages of Hispanic or Latino and Black or African-American residents versus Contra Costa County, while having approximately the same percentage of Asian residents and a much lower percentage of white residents versus the county (Table 2-1).

Table 2-1 Race and Ethnicity in the Study Area and Contra Costa Countyt				
Race Category	**2017 ACS % of Population**		**2010 Census % of Population**	
	Study Area	Contra Costa County	Study Area	Contra Costa County
White	12%	45%	14%	49%
Black or African American	17%	8%	23%	9%
American Indian or Alaska Native	<1%	<1%	<1%	<1%
Asian	14%	16%	14%	14%
Native Hawaiian or Other Pacific Islander	<1%	<1%	<1%	<1%
Other	<1%	<1%	<1%	<1%
Two or More Races	3%	5%	2%	3%
Hispanic or Latino	53%	25%	47%	23%
Total	**100%**	**100%**	**100%**	**100%**

Source: 2013–2017 American Community Survey (ACS) 5-year estimates, 2010 U.S. Census. Note: Totals may not add up to 100% due to rounding.

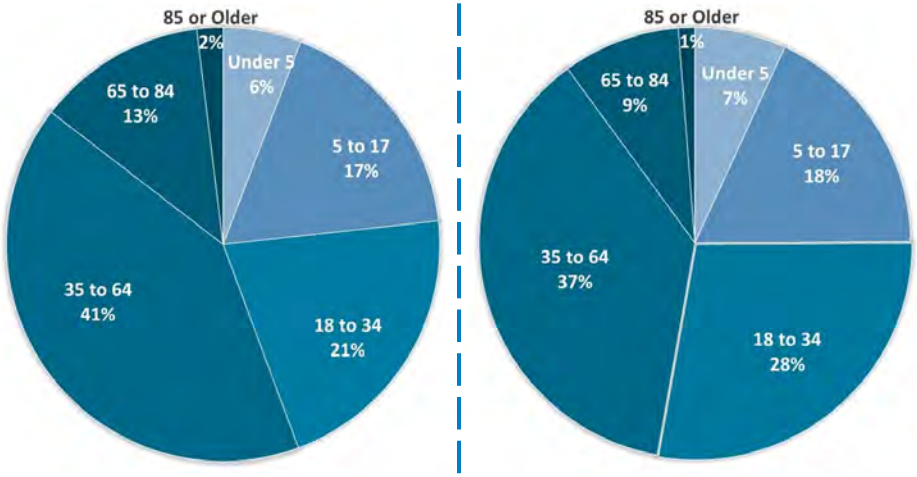


Figure 2-1 Age Distribution, Study Area (2017 ACS 5-Year Estimates)

Source: 2017 ACS 5-Year Estimates (2013-2017).

Figure 2-2 Age Distribution, Contra Costa County (2017 ACS 5-Year Estimates)

Source: 2017 ACS 5-Year Estimates (2013-2017).

2.1.3 Age Distribution

Age distribution in the study area is similar to Contra Costa County, although the senior population is smaller in the study area (see Figures 2-1 and 2-2). Approximately 25 percent of the study area's total population is under 18 years of age, or around 31,000 people. This youth rate is similar to that of Contra Costa County (23 percent). Figure 2-3 shows the percentage of persons under the age of 18 in the study area by census tract. It reveals a greater concentration of young people in the south and west census tracts. Since 2010, it appears that the youth population in both the County and the study area is decreasing as a percentage of total population.

The senior population (65 years of age and older) in the study area constitutes approximately 10 percent of the total population, compared to 15 percent countywide. Figure 2-4 shows the percentage of seniors in the study area by census tract. By 2040, it is expected that the percentage of senior citizens (age 65 years and older) will increase to 21 percent of the area's population, while the youth population will decrease from 27 percent today to 20 percent of the area's total population by 2040.

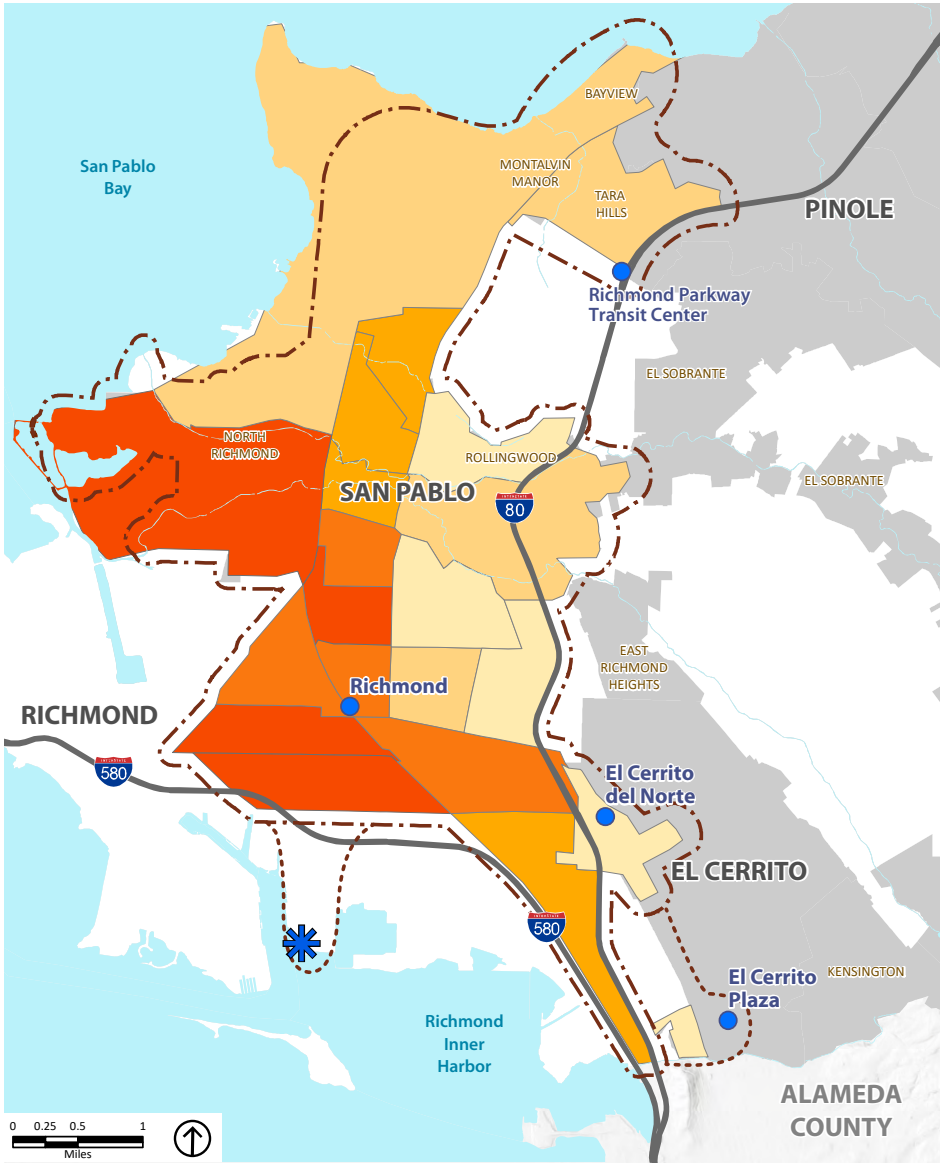


Figure 2-3 Population Under 18 Years of Age

Source: American Community Survey 5-Year Estimates, 2010 and 2017; Contra Costa County 2018; PlaceWorks, 2019.

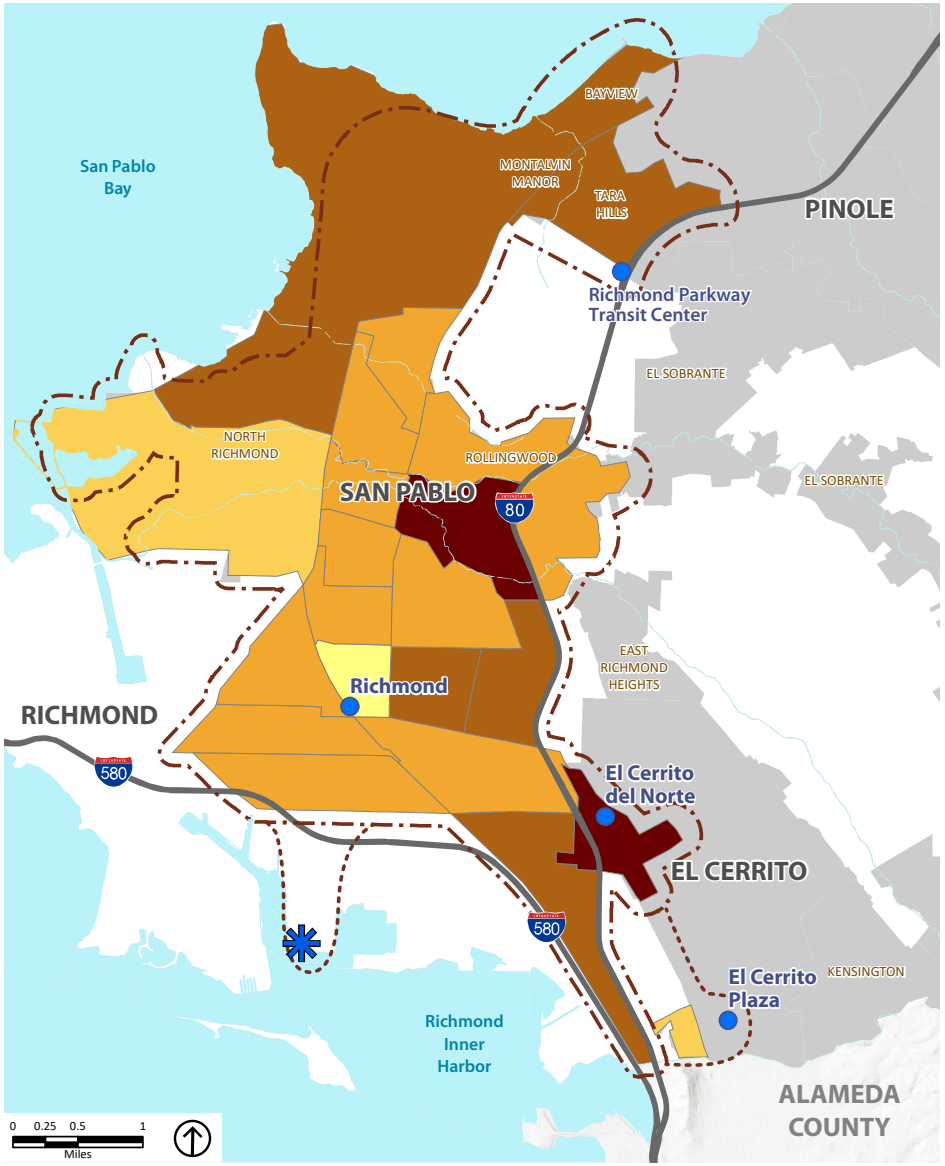


Figure 2-4 Population Age 65 and Over

2.1.4 Language and English Proficiency

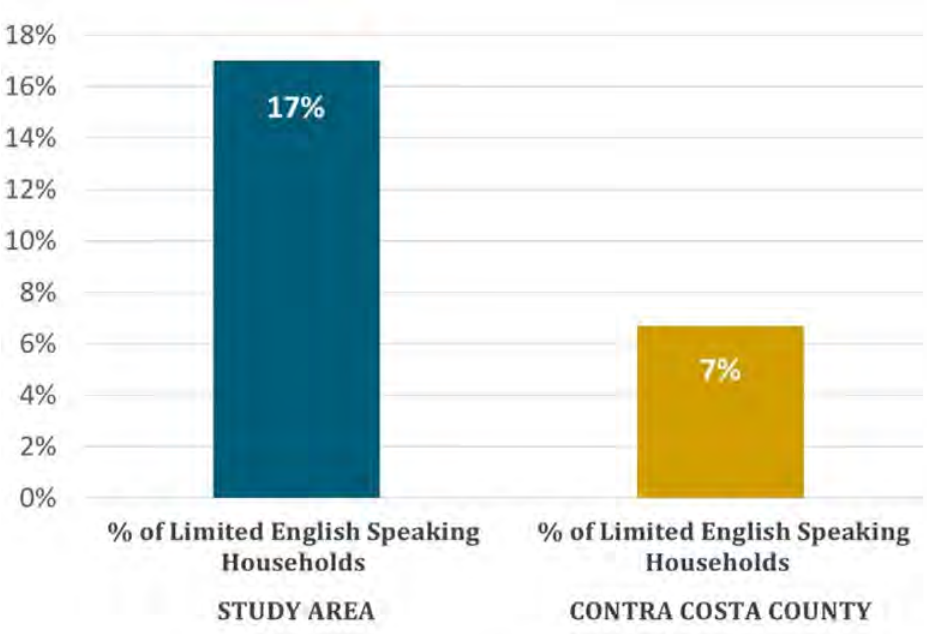
In the Richmond Area CBTP, approximately 6,500 households (17 percent of total households) are designated as "Limited English-Speaking Households." These are households in which all members 14 years and over speak a non-English language, with varying degrees of difficulty with English. This population segment is considerably larger in the study area relative to the countywide rate of 7 percent of total households (Figure 2-5).

2.1.5 Income and Poverty

According to 2017 ACS 5-year estimates, the median household income in the study area is $53,200, as compared $88,500 for the entire county (Figure 2-6). The rate of increase of household income in the study area from 2010 to 2017 was also slower than the county. Census tracts in the study area with the lowest median household income (under $50,000) are located in the Iron Triangle, Atchison Village, and Cortez/Stege neighborhoods in the City of Richmond, as well as the southern half of the City of San Pablo.

Source: American Community Survey 5-Year Estimates, 2010 and 2017; Contra Costa County 2018; PlaceWorks, 2019.

Figure 2-5 Limited English Proficiency, Study Area and Contra Costa County (2017 ACS 5-Year Estimates)



Source: 2017 ACS 5-Year Estimates (2013-2017).

2.1.5.1 Poverty Status

The U.S. Census Bureau uses a set of income thresholds that vary by family size and composition to determine the population living in poverty. If a family's total income is less than the poverty threshold, then that family and every individual in it is considered to be living in poverty. To reflect high living costs and wages in the Bay Area, the poverty threshold used in the CBTP analysis is 200 percent of the federal poverty threshold. These 200-percent thresholds for the 2013–2017 ACS five-year estimates range from $31,754 for a family of two to $101,362 for the largest families (nine people or more). According to 2013–2017 ACS five-year estimates, approximately 46 percent of residents in the study area were living in poverty. This figure is significant when compared to 23 percent in Contra Costa County as a whole.

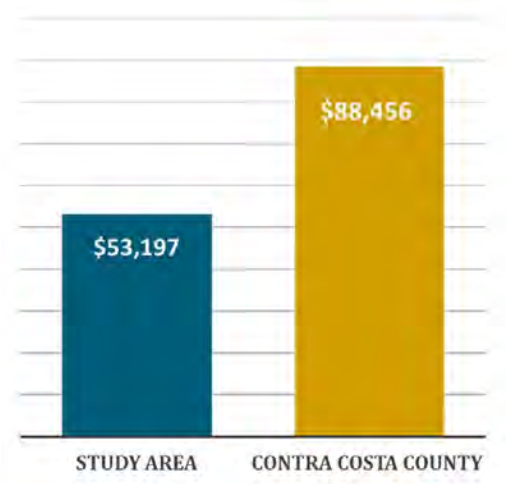


Figure 2-6 Median Household Income, Study Area and Contra Costa County (2017 ACS 5-Year Estimates)

Source: 2017 ACS 5-Year Estimates (2013-2017).

As shown in Figure 2-7, the study area has a relatively significant number of households with annual household income lower than the poverty threshold. Five census tracts in the study area exhibit over 50 percent of the population with income below 200 percent of federal poverty level. These are primarily located in neighborhoods in the southwest section of the study area: Iron Triangle, Atchison Village, Richmore Village/Metro Square, and Cortez/Stege in the City of Richmond, as well as unincorporated North Richmond and the City Center neighborhood in San Pablo.

2.1.5.2 Unbanked Households

Unbanked households do not have an account at an insured institution or do have an account but obtained (nonbank) alternative financial services in the past 12 months. According to Prosperity Now, 16 percent of households in the study area are unbanked.[1]

1 Prosperity Now, formerly Corporation for Enterprise Development, 2014, Local Data Center Mapping Tool, http://assetsandopportunity.org/localdata/

Source: American Community Survey 5-Year Estimates, 2010 and 2017; Contra Costa County 2018; PlaceWorks, 2019.

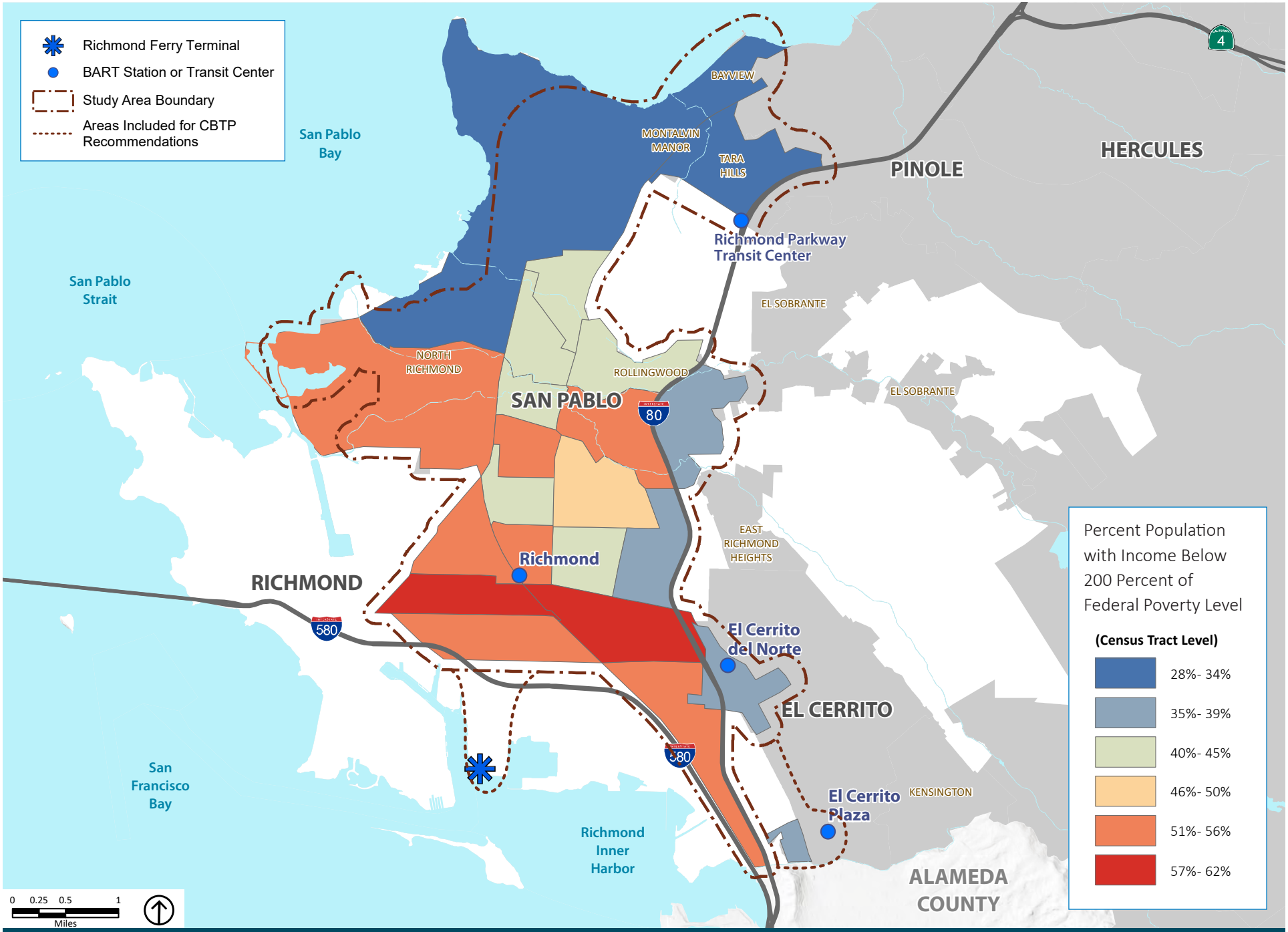


Figure 2-7 Population in Poverty (200% of Federal Poverty Level)

2.1.6 Disability

The U.S. Census separates disability type into sensory (hearing- and sight-impaired) and physical disabilities. Both are considered significant barriers to mobility. As shown in Figure 2-8, populations with high rates of sensory disabilities are concentrated in El Cerrito, Rollingwood, and central Richmond census tracts. Populations with high rates of physical disabilities (Figure 2-9) are concentrated in Tara Hills, Rollingwood, and between the MacArthur and Cutting Boulevard corridors.

2.2 Transportation Patterns

The following sections describe current transportation and commute patterns in the CBTP study area and countywide.

2.2.1 Vehicle Availability

The rate of household vehicle ownership is lower in the study area than Contra Costa County as a whole. As shown in Figures 2-10 and 2-11, the percentage of households without a private vehicle in the study area is 10 percent, as compared to 6 percent countywide. Similarly, 35 percent of households in the study area have one vehicle, compared to 28 percent countywide.

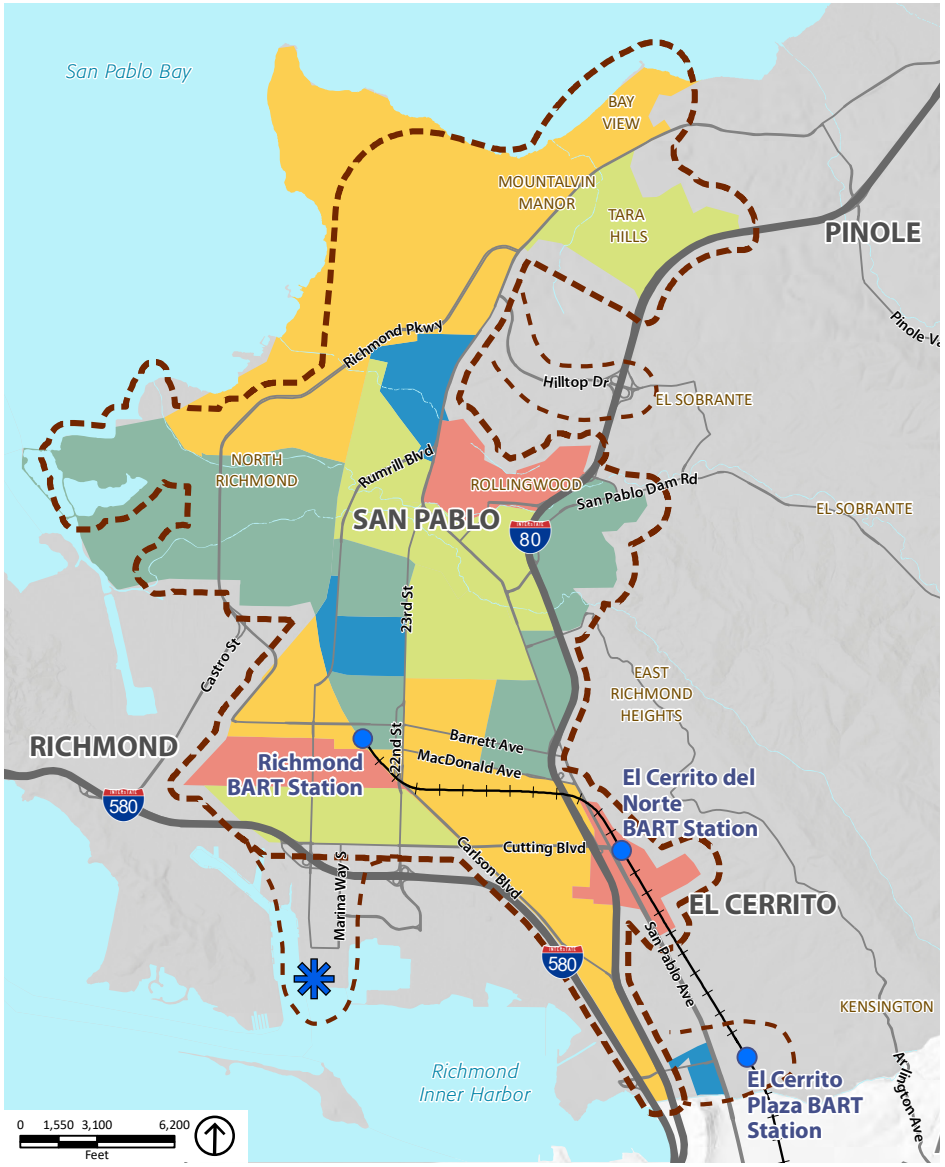


Figure 2-8 Percentage of People with Sensory Disabilities

Source: United States Census Bureau, S1810: Disability Characteristics, 2013-2017 ACS 5-Year Estimates.

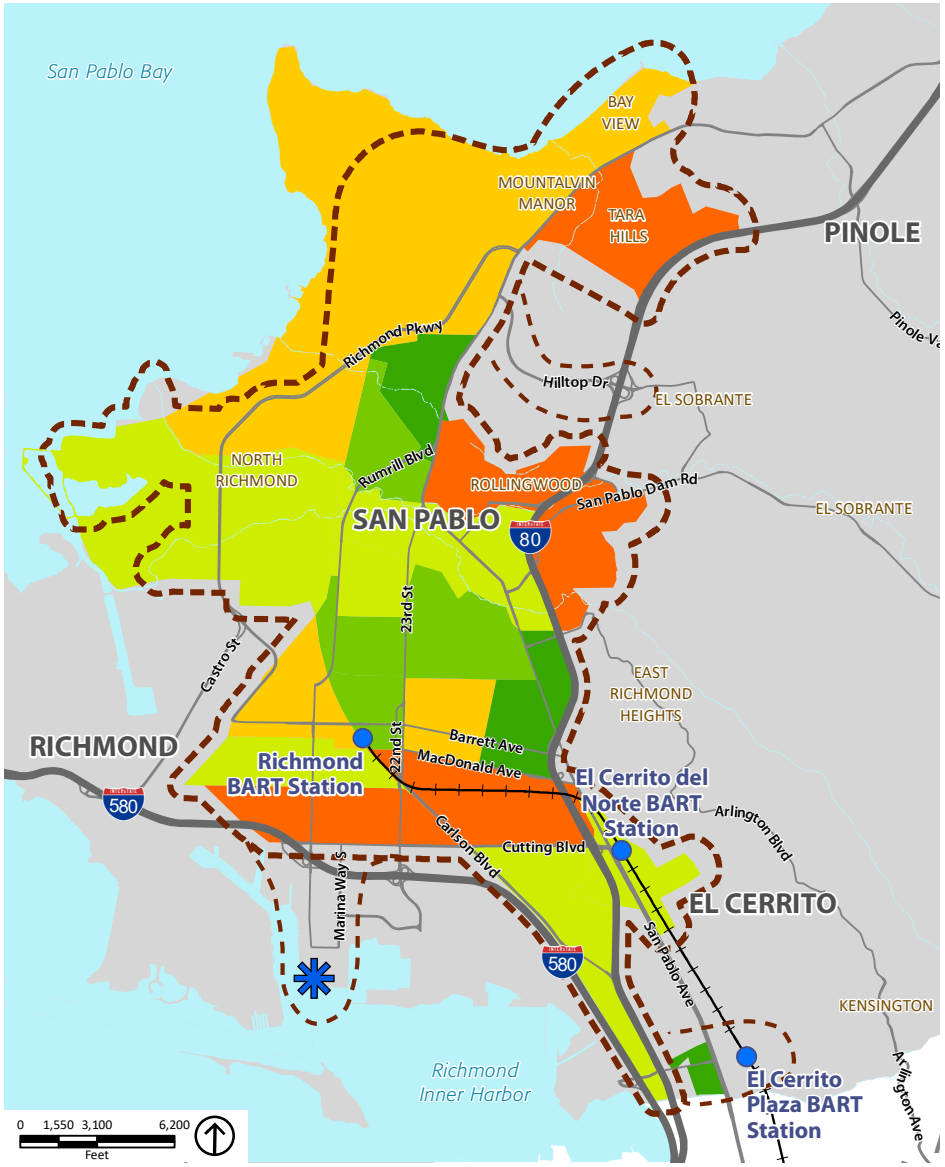


Figure 2-9 Percentage of People with Physical Disabilities

Source: United States Census Bureau, S1810: Disability Characteristics, 2013-2017 ACS 5-Year Estimates.

Figure 2-10
Vehicle Availability, Study Area (2017 ACS 5-Year Estimates)

Source: 2017 ACS 5-Year Estimates (2013-2017).

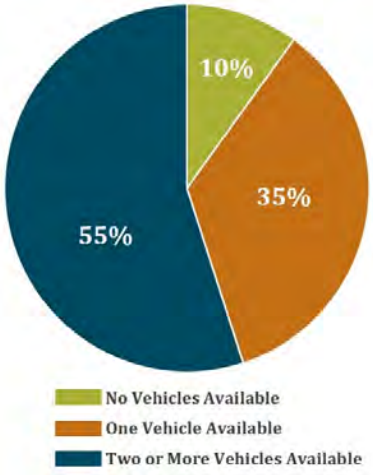
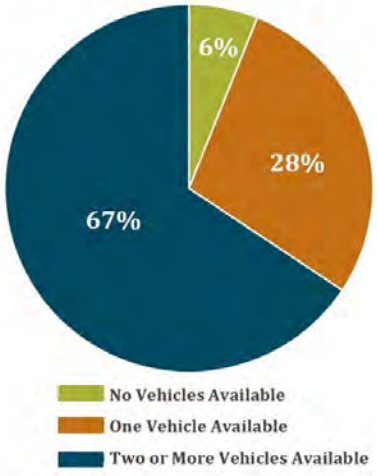


Figure 2-11
Vehicle Availability, Contra Costa County (2017 ACS 5-Year Estimates)

Source: 2017 ACS 5-Year Estimates (2013-2017).



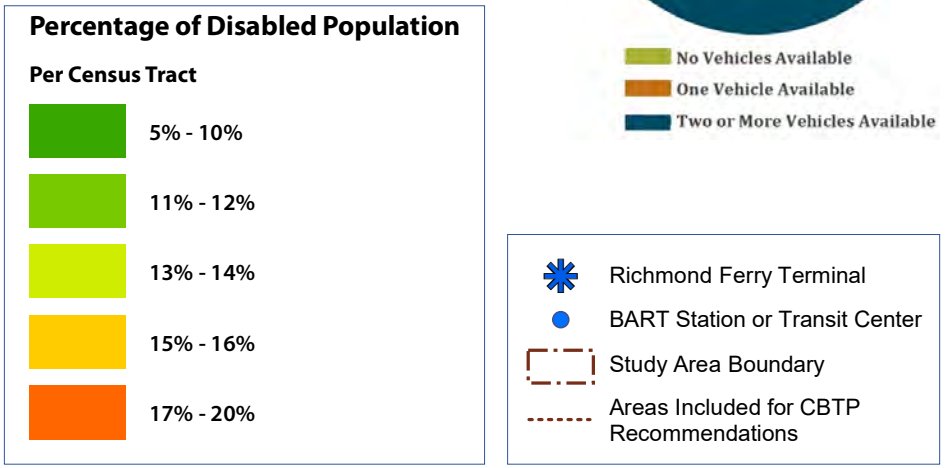


Figure 2-12 shows households with vehicle available by census tract for the study area. Areas with more households without vehicles generally correspond to areas with lower median household incomes. One exception is the area around the El Cerrito del Norte BART station, which has a higher median income than most other census tracts in the study area. Here, proximity to a transit hub likely contributes to reduced vehicle ownership.

The North Richmond area shows high vehicle availability per household. This is likely because the area is not well served by public transportation, and household sizes are larger in comparison to both the study area and Contra Costa County.

2.2.2 Journey to Work

Out of about 55,000 workers aged 16 years and over in the study area, approximately 78 percent travel to work by car, truck, or van. Two-thirds of these workers drive alone (Table 2-2). Using a vehicle as the primary means of transportation to work is slightly less prevalent in the study area than countywide, the latter of which reported 80 percent of workers aged 16 and over primarily use a personal vehicle.

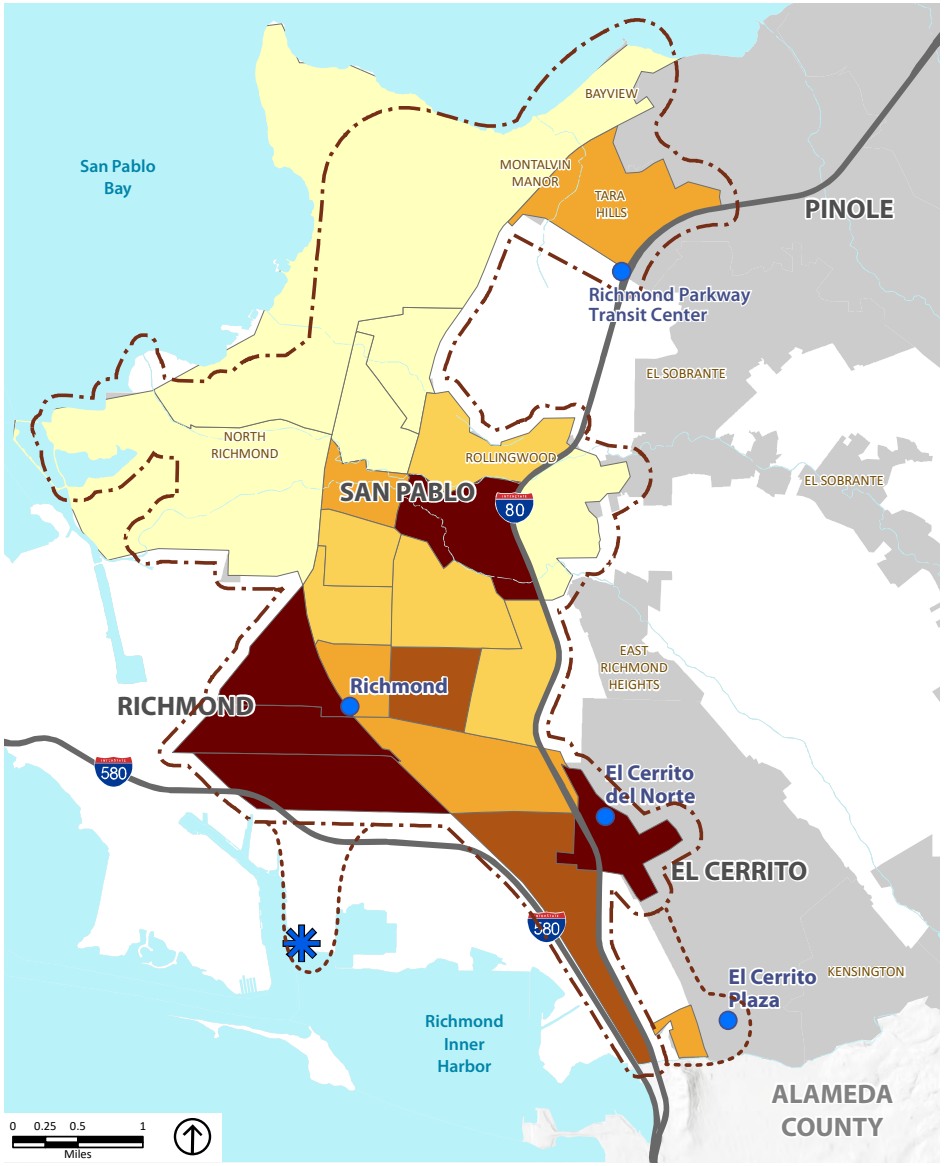


Figure 2-12 Household Vehicle Availability

Source: United States Census Bureau, S1810: Disability Characteristics, 2013-2017 ACS 5-Year Estimates.

Table 2-2 Mode of Travel to Work in the Study area and Contra Costa County

Means of Transportation to Work	2017 ACS (% of Total)		2010 Census (% of Total)	
	Study Area	Contra Costa County	Study Area	Contra Costa County
Car, Truck or Van	78%	80%	87%	82%
» Drove Alone	58%	68%	67%	70%
» Carpooled	21%	12%	20%	12%
Public Transportation	14%	10%	7%	9%
Bicycle	<1%	<1%	<1%	<1%
Walked	2%	2%	2%	2%
Other	1%	1%	2%	1%
Worked at Home	3%	6%	3%	6%
Total Workers 16 and Over	**100%**	**100%**	**100%**	**100%**

Note: Totals may not add up to 100% due to rounding.

Source: 2013–2017 American Community Survey (ACS) 5-year estimates, 2010 U.S. Census.

The use of public transportation in the study area is greater than countywide use. There has been a 100-percent increase in the use of public transportation in the study area, from 7 percent in 2010 to 14 percent in 2017. Much of this increase can be attributed to a rise in BART usage, which is indicated by increases to the "subway" category in the journey to work data for 2010. There appears to be no significant increase in transit use within Contra Costa County as a whole.

The rates of walking and bicycling as primary means of transportation to work are relatively low in the CBTP study area and countywide, at 2 percent and less than 1 percent, respectively.

2.2.3 Long Distance Commute

As evident in Figure 2-13, residents of northwestern Richmond generally experience the longest commutes—over 34 minutes—in the study area. This is probably because neighborhoods such as Montalvin Manor and Bayview are furthest from the three BART stations located in the study area.

2.3 Transportation Network

The following sections describe existing transit service and infrastructure in the study area and summarize gaps in the transportation network in relevant countywide and local plans.

2.3.1 Transit Network

Existing transit facilities in the study area are shown on Figure 2-14.

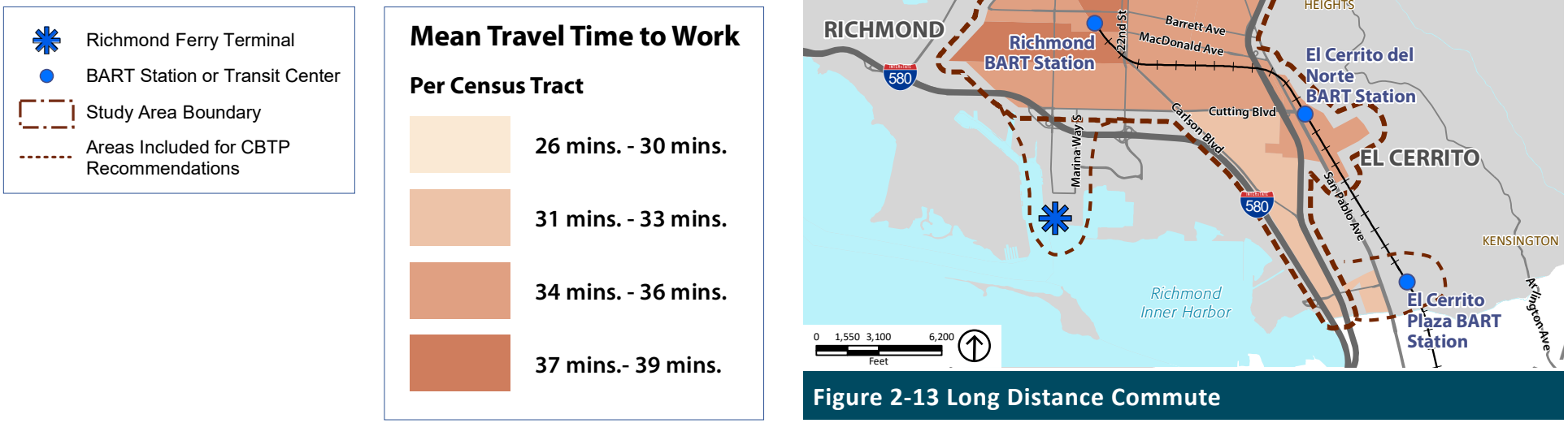


Figure 2-13 Long Distance Commute

Source: United States Census Bureau, S0801: Commuting Characteristics by Sex, 2013-2017 ACS 5-Year Estimates.

Figure 2-14 Existing Transit Facilities

2.3.1.1 Rail

Rail services in the study area are provided by the Richmond-Millbrae and Richmond-Berryessa BART lines. Three BART stations (Richmond, El Cerrito del Norte, and El Cerrito Plaza) are located in the central and southeastern portion of the study area.

Amtrak service (Capitol Corridor and California Zephyr lines) is available at the Richmond Transportation Center, adjacent to the Richmond BART station. These trains provide direct connections to Berkeley, Oakland, San Jose, Sacramento, and points beyond.

Source: Contra Costa County, 2018; Fehr & Peers, 2019; PlaceWorks, 2019.

2.3.1.2 Bus

Local and intercity bus transit is provided primarily by Alameda-Contra Costa Transit District (AC Transit), West Contra Costa Transportation Authority (WestCat), and Golden Gate Transit. AC Transit serves the entire study area through 10 bus routes, 3 transbay routes, and one 24-hour route (Table 2-3).

WestCat operates in western Contra Costa County and provides the study area with six local and two regional bus routes from Hercules, via the Richmond Parkway Transit Center to the El Cerrito del Norte BART station.

Golden Transit operates one bus line (with occasional express service along the same route) in the study area, which runs from the El Cerrito del Norte BART station through Point Richmond to the San Rafael Transit Center.

In addition, Fairfield and Suisun Transit (FAST) operates a SolanoExpress route connecting the El Cerrito del Norte BART station, Fairfield Transportation Center, and Suisun City Train Depot (Amtrak). Solano County Transit (SolTrans) operates a SolanoExpress route that runs from the Vallejo Transit Center to the El Cerrito del Norte BART station.

2.3.1.3 Ferry

The San Francisco Bay Ferry service departs the Richmond terminal six times a day Monday through Friday. AC Transit operates bus service to the Richmond Ferry Terminal via Route 74, which provides direct connections from the ferry terminal to the Richmond Transportation Center (BART and Amtrak Station) and Contra Costa College. Service from the San Francisco Ferry Terminal to the Richmond Ferry Terminal also occurs six times a day on weekdays.

Table 2-3 Transit Routes Serving the Study area

Transit Route	Route Description
AC Transit	
7	El Cerrito del Norte BART to UC Berkeley
70	Richmond BART to Richmond Parkway Transit Center
71	Richmond Parkway Transit Center to El Cerrito Plaza BART
72	Contra Costa College to 12th Street Oakland BART
72M	Point Richmond to 12th Street Oakland BART
72R	Contra Costa College to Oakland Jack London Square Ferry Terminal
74	Contra Costa College to Richmond Ferry Terminal
76	Hilltop Mall to El Cerrito del Norte BART
80	El Cerrito Plaza BART to Ashby Avenue
376	Cutting Boulevard/San Pablo Avenue to Pinole
H	Barrett & San Pablo Avenue to SF Transbay Terminal
L	Princeton Plaza Shopping Center via San Pablo Avenue to SF Transbay Terminal
LA	Richmond Parkway Transit Center to SF Transbay Terminal
800	Richmond BART to San Francisco (All-Night Service)
WestCAT	
16	Pinole to Richmond Parkway Transit Center
17	Bayview to Richmond Parkway Transit Center
18	Tara Hills to Hilltop Mall
19	Hercules Transit Center to Hilltop Mall
JR/JL	Hercules (via Richmond Parkway Transit Center) to El Cerrito del Norte BART
JX/JPX	Hercules (via Richmond Parkway Transit Center) to El Cerrito del Norte BART (Limited Stops)
Golden Gate	
40/40X	El Cerrito del Norte BART

Source: 2013–2017 American Community Survey (ACS) 5-year estimates.

2.3.1.4 Paratransit

Paratransit services include door-to-door individual trips, group trips, or shuttle services. These services are operated by the City of Richmond, R-Transit, that provides low-cost transportation services to people 55 or older or persons with a disability 18 years or older. Patrons must be Richmond residents or live in an adjacent community.

AC Transit also operates East Bay Paratransit, which transports eligible riders in accessible vans equipped with a wheelchair lift. Service is provided during the hours of AC Transit's bus and BART's rail operations. Service is limited to areas within ¾ mile of an operating bus route or BART station, and extends generally from Pinole to Fremont.

2.3.2 Bicycle Network

The existing and proposed bicycle network for the study area is shown on Figure 2-15. The existing network includes a mix of bicycle facility types and provides some connectivity with transit. The proposed bicycle projects in this figure are drawn from a review of the 2018 Contra Costa County Bicycle and Pedestrian Plan.

Figure 2-15 Bicycle Facilities

Source: Contra Costa County, 2018; Fehr & Peers, 2019; PlaceWorks, 2019.

3. Previous Studies and Mobility Gaps

Agencies with jurisdiction in the CBTP study area have adopted studies that expose mobility gaps in the study area and establish projects, plans, and policies to fill those gaps. This section provides a review of these previous studies and the transportation gaps they highlight.

The results of these studies are valuable to understanding and assessing the community input and recommendations outlined in Chapter 4 of this plan.

3.1 Local Studies

El Cerrito 1999 General Plan Circulation Element

This General Plan element describes services and facilities that ensure safe vehicle, pedestrian, transit, bicycle, and emergency movement. It also outlines strategies for promoting and encouraging the use of alternative transportation modes and existing barriers to those modes.

Mobility Gaps Identified

- AC Transit weekend and evening off-peak service on many routes is insufficient.
- As of this plan, El Cerrito had no bike lanes or routes.
- Segment of San Pablo Avenue between Cutting Boulevard and Hill Street lacks crosswalks.
- San Pablo Avenue through the City is becoming an alternative to congested Interstate (I-) 80, impacting bike and pedestrian safety.

West County Action Plan for Routes of Regional Significance

This plan Identifies performance objectives for designated Routes of Regional Significance along segments crucial to closing transportation gaps within the study area and I-80 from the Alameda County line to the Solano County line.

Mobility Gaps Identified

- Multiple routes in the study area that connect subareas, cross county boundaries, or access a regional highway or transit facility, need multi-modal improvements to mitigate impacts of increasing traffic by 2040.
- Segments of Carlson Boulevard, Appian Way, Central Avenue, San Pablo Dam Road, 23rd Street and Richmond Parkway will require expansion of effective local transit service, improved high-capacity transit in West County, more active transportation facilities, and new complete streets enhancements.

2011 City of Richmond Bicycle and Pedestrian Master Plans

These Master Plans identify gaps in the regional connections, pavement quality, bicycle parking, signage and wayfinding, and multi-modal connections throughout the City's bicycle and pedestrian networks. The plans propose bike and pedestrian facilities in focus areas throughout the City.

Mobility Gaps Identified

- Bicycle and pedestrian gaps on several routes in central Richmond, including Macdonald Avenue, Ohio Avenue, Nevin Avenue, Barnett Avenue, 2nd Street, 6th Street, and others

2015 Yellow Brick Road Iron Triangle Walkable Neighborhood Plan

This City of Richmond plan identifies barriers to complete streets in the Iron Triangle Neighborhood and proposed signage and surface treatment strategies to connect community assets on key routes.

Mobility Gaps Identified

- Bicycle and pedestrian accessibility barriers on Richmond Greenway, Richmond BART Station area, Harbour Way, Marina Way, Ohio Avenue, and Macdonald Avenue

2015 South Richmond Connectivity Plan

The plan provides a foundation for multimodal infrastructure in the area as bounded by the I-580 north to Maine Street, west to Harbor Channel and S. 6th Street, and east to San Pablo Avenue. The area includes the Ferry Terminal, Richmond Bay Campus, El Cerrito del Norte BART Station, and El Cerrito Plaza BART Station.

Mobility Gaps Identified

Intersections that impede pedestrian and bicycle activity, including:

- Hoffman Boulevard and Harbour Way
- Marina Bay Parkway and Regatta Boulevard
- Bayview Avenue and Carlson Boulevard
- Central Avenue and San Pablo Avenue
- Lack of network connectivity and services for residents in South Richmond
- Need for more flexible transportation services and supportive facilities, including taxi service, paratransit service, carsharing, ridesharing, and private for-hire transportation services

2015 Rumrill Boulevard/13th Street Complete Streets Study

The Cities of Richmond and San Pablo Rumrill Boulevard and 13th Street Complete Streets Study is a blueprint for a walkable, transit-friendly, and bikeable Rumrill Boulevard in Richmond and San Pablo. The study presents a "community-preferred vision" for the corridor that reduces vehicular lane space to promote pedestrian safety, transit utilization, and the adoption of bikeways. The entire length of the Rumrill Boulevard corridor is within the CBTP project boundary.

Mobility Gaps Identified

- A sidewalk gap on the north side of the 13th Street bridge
- Sidewalks north of Market Avenue are unbuffered and immediately adjacent to travel lanes
- All crosswalks between Brookside Drive and Broadway Avenue are unsignalized
- Wide vehicle lanes and high documented speeds impede bicycle comfort and safety
- Most bus stops on the corridor lack shade, seating, and infrastructure

2017 West Contra Costa County High-Capacity Transit Study

This study evaluates near-term and long-term multimodal high-capacity transit options for Western Contra Costa County. It assesses a series of rapid transit route alternatives to enhance transit connectivity and provide equitable access to transit. These alternatives include a Bus Rapid Transit (BRT) line; a BART extension from Richmond Station to Hercules via Richmond Parkway, with potential stops within the study area; and a San Pablo/Macdonald BRT, with improvements along the way to Hercules Intermodal Transit Center.

Mobility Gaps Identified

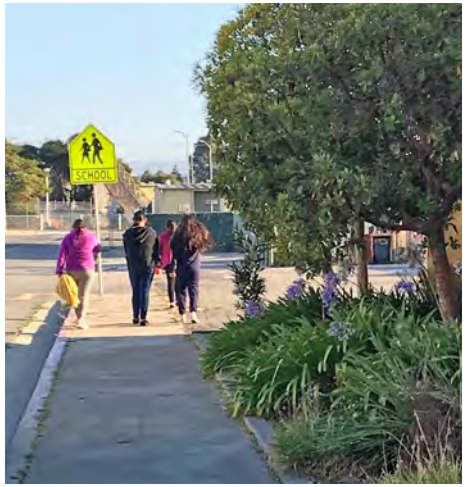
- Barrier of congested I-80 corridor
- Lack of high-speed/capacity alternatives to BART and buses

2017 City of Richmond First/Last Mile Transportation Strategic Plan

This plan identifies gaps in bicycle, pedestrian, and transit networks leading to the Richmond Ferry Terminal and Richmond BART station. The plan evaluated the quality of first mile/last mile access to various amenities, some in the CBTP study area.

Mobility Gaps Identified

- Pedestrian and bicycle access to the El Cerrito del Norte BART Station deemed poor to moderate
- Pedestrian and bicycle access to the Richmond Parkway Transit Center deemed poor
- Pedestrian, bicycle, and transit access to Hilltop Mall deemed poor to moderate
- Bicycle and transit access to bus stops along 13th Street/Rumrill Avenue corridor deemed poor to moderate
- Transit access to stops bus along 23rd Street corridor deemed poor
- Bike and transit access to bus stops along San Pablo Avenue corridor deemed poor
- Lack of paratransit facilities. For example, there are eight bus bays at the Richmond BART station, and only one of the eight is an island designated for paratransit vehicles.



- Inflexible and limited paratransit service: R-Transit, Richmond's paratransit service, operates only on weekdays from 8:30 a.m. to 5 p.m., excluding holidays. Reservations must be made at least one day in advance, with no guarantee of availability.
- Lack of coordination between agencies and outdated, non-integrated operational systems

Richmond General Plan 2030 Circulation Element

The Richmond General Plan Circulation Element establishes policies to address the physical circulation network and various transportation options in the City. The element "seeks to ensure efficient mobility and access for all residents."[1]

1 City of Richmond, General Plan 2030, Circulation Element, page 4.3.

Mobility Gaps Identified

- Richmond has a higher rate of pedestrian and bicycle injuries than cities of comparable size.
- A disproportionate number of collisions involving bicyclists and pedestrians have occurred at the intersection of Harbour Way and Pennsylvania Avenue.
- Only 14 percent of residents commute via transit; less than 3 percent via bike or foot.
- Intersections and corridors that would benefit from improvement include 22nd and 23rd Streets, Barrett Avenue, San Pablo Avenue/23rd Street, San Pablo Avenue/Richmond Parkway, Central Avenue, and San Pablo Dam Road.
- Multiple rail crossings throughout the City present danger to pedestrians and cyclists.
- Equitable access to transit and equitable mobility options are prioritized, but not entirely fulfilled.

San Pablo General Plan 2030 Circulation Element

The San Pablo General Plan 2030 Circulation Element is a policy framework for a "Complete Streets"-oriented circulation plan. It is intended to serve the needs of cyclists, pedestrians, transit users, and motor vehicles.

Mobility Gaps Identified

- Sidewalk and curb conditions on 23rd Street from Dover Avenue to southern City limits are poor.
- There is a pedestrian/bicycle gap on El Portal Gateway between Church Lane and I-80.
- The I-80/San Pablo Dam Road Interchange is unsafe and a barrier to local elementary school students.
- There are sidewalk gaps on San Pablo Avenue between Rivers Street and Lancaster Street.
- The lack of context-sensitive bus stop designs in San Pablo can hinder traffic flow and decrease rider safety.
- There is a gap in Wildcat Creek Trail from 23rd Street to eastern city limit.

2017 City of San Pablo Bicycle and Pedestrian Master Plan

The San Pablo Bicycle and Pedestrian Master Plan presents goals, policies, and strategies for a multimodal transportation system in the City. It was developed to help the City of San Pablo implement its General Plan with detailed analyses and thorough community input about bicycle and pedestrian opportunities. The plan establishes "Priority Pedestrian Zones" and seeks to address barriers such as lack of pedestrian-scale lighting, refuge islands, high-visibility crosswalks, speed bumps, and appropriate landscaping.

Mobility Gaps Identified

- Lack of Class IV bikeways in all of San Pablo
- Bicycle gap on San Pablo Avenue between the planned bike lanes starting at Rumrill Boulevard and the existing lanes starting at Road 20
- Lack of bike facilities on Broadway Avenue from 11th Street to San Pablo Avenue
- Lack of bike facilities on El Portal Drive
- Lack of bicycle facility on the City's western border

3.2 Countywide Studies

To better understand gaps in the transportation network, the following policy documents were evaluated to identify proposed transportation projects and plans in the study area.

2013 Contra Costa County Mobility Management Plan

The Contra Costa County Mobility Management Plan was implemented in 2013 as part of Measure J, which allocates transportation funding for seniors and people with disabilities. To this end, the plan identifies funding priorities specifically for improving transportation services for seniors and people with disabilities in the County. The plan focuses in large part on improving paratransit service and integrating paratransit services among various transportation service providers throughout the County.

Mobility Gaps Identified

- The Americans with Disabilities Act (ADA) eligibility process is standardized within Contra Costa County, but not among transit operators in neighboring counties, which can be a barrier for someone in need of cross-county paratransit services.
- There is a need for a coordinated paratransit vehicle maintenance program for paratransit operators across the entire region. Pooling financial and capital resources into one facility that specializes in the service and maintenance specifically of paratransit vehicles would reduce costs for all operators.

Contra Costa Safe Routes to School, Understanding Needs Moving Ahead 2016

The Safe Routes to School (SR2S) Needs Assessment is a comprehensive assessment of existing SR2S projects and programs occurring throughout Contra Costa County. The purpose was to understand SR2S activities throughout Contra Costa County, estimate funding needed to support future SR2S capital improvements and programs, provide resources to local communities as they plan, design, and implement improvements, and offer technical assistance to school sites.

The assessment estimated the unmet countywide need for future SR2S capital improvements at $243 million, and the unmet countywide cost of all SR2S programs at $58 million annually.

Mobility Gaps Identified

- Roadway conditions surrounding many county schools are unsafe for student cyclists and pedestrians.
- Funding for required SR2S improvements and programs are largely unmet.

2017 Contra Costa Countywide Transportation Plan

The Contra Costa Transportation Authority (CCTA) regularly updates the comprehensive Countywide Transportation Plan (CTP), a long-range policy document that identifies transportation goals and projects at all levels of geography, from regional coordination to local assistance. The CTP was most recently updated in 2017. It includes a 10-year Project List consisting of cost-adjusted projects identified in MTC / ABAG's regional planning blueprint, the 2013 Plan Bay Area. The CTP allows local municipalities to identify potential projects aimed to mitigate existing transportation gaps. The CTP includes potential projects in the CBTP study area.

Mobility Gaps Identified

- Challenges of one-way streets, including 22nd and 23rd Streets in Richmond.
- Lack of bicycle and pedestrian infrastructure and safety at I-80/San Pablo Dam Road interchange.
- Railroad crossing barrier at the Richmond Waterfront on Marina Bay Parkway.
- Unsafe pedestrian conditions at Cutting Boulevard and Carlson Boulevard.
- Costs associated with school bus passes in west Contra Costa County.
- Lack of transit enhancements along San Pablo Dam Road, Macdonald Avenue, Cutting Boulevard, and 23rd Street.
- Lack of stable funding source for improving or expanding paratransit service

2018 Contra Costa Countywide Bicycle and Pedestrian Plan

CCTA also prepared the 2018 Countywide Bicycle and Pedestrian Plan (CBPP) with the goal of increasing walking and cycling, improving bike and pedestrian safety, and developing a functional bike and pedestrian network throughout the County. The CBPP establishes projects to fill gaps in the pedestrian network within a series of Pedestrian Priority Areas. These include accessible walkways, functional curb ramps, safe crossings, traffic calming, direct connections, and streetscape improvements. Similarly, the CBPP includes a network of existing and proposed low-stress bikeways in the County that would benefit from bicycle infrastructure improvements.

Mobility Gaps Identified

Bikeways targeted for improvements include:

- Central Avenue
- San Pablo Avenue
- Carlson Boulevard
- Bayview Avenue
- Cutting Boulevard
- 7th Street/Fred Jackson Way
- Pennsylvania Avenue/13th Street /Rumrill Boulevard

- 23rd Street
- Marina Way South
- Harbour Way South
- Richmond Parkway
- Richmond Greenway
- Hilltop Drive
- Blume Drive

3.3 Current Studies

Ferry to Bridge to Greenway Complete Streets Plan

The Richmond Ferry to Bridge to Greenway Complete Streets Plan (in progress) will provide multimodal strategies on routes leading to the new Richmond Ferry Terminal, the planned multi-use path on the Richmond-San Rafael Bridge, and the Richmond Greenway. Pedestrian and bicycle facilities included in the plan will connect San Francisco, Contra Costa, and Marin Counties for the first time. The plan also identifies near-term multimodal improvements and long-range conceptual recommendations along Cutting Boulevard, Marina Way, Harbour Way, and 23rd Street. The improvements were developed to connect to the Richmond Ferry Terminal, Greenway, and Wellness Trail to alleviate connectivity barriers for communities.

BART Walk and Bicycle Gap Study

The BART Walk and Bicycle Gap Study identifies ways to make walking and bicycling to and from BART stations safe, comfortable, and convenient. The draft study provides specific recommendations to within a quarter-mile radius around the Richmond BART Station area, including:

- Connections to key east–west bikeways on Barrett Avenue and Macdonald Avenue and north–south bikeways along 19th Street.
- Bicycle facilities providing direct connections to the Richmond Wellness Trail.
- Specific pedestrian crossing and sidewalk improvements, such as directional curb ramps, high-visibility crosswalks, lighting, and wayfinding.

San Pablo Avenue Corridor Study

The San Pablo Avenue Multimodal Corridor Study is a joint effort between CCTA, the West Contra Costa Transportation Advisory Committee (WCCTAC) and the Alameda County Transportation Authority (ACTC) to develop a long-term vision and determine near-term improvements for a 12-mile-long segment of San Pablo Avenue through Richmond, San Pablo, El Cerrito, Albany, Berkeley, Emeryville, and Oakland. The project will integrate existing plans into a cohesive "Complete Streets" approach with transit priority treatments, pedestrian safety improvements, and improved bicycle infrastructure. Improvements along San Pablo Avenue could include dedicated bus lanes, queue jump lanes, and signals to bypass congested segments and improve reliability, transit signal priority, signal modernization and coordination, and enhanced bus stops or stations.

West County Express Bus Implementation Plan

The WCCTAC West County Express Bus Implementation Plan will identify opportunities to implement express bus service from Hercules, Pinole, San Pablo, Richmond, and unincorporated areas in west Contra Costa County to destinations in Berkeley, Emeryville, and Oakland. The plan will also address existing service to San Francisco that is at or near capacity.

3.4 Thematic Mobility Challenges

A series of thematic mobility challenges emerges from the evaluation of the previous 19 studies, which span two decades and cover all jurisdictions in the CBTP study area. Many of these challenges are reflected in the community input collected during the preparation of this plan and were identified by the current Project Working Groups and Steering Committee.

1. The most frequently mentioned challenge was the entire San Pablo Avenue Corridor. Nearly every study identifies challenges, plans, and programs associated with mobility on San Pablo Avenue. Issues include the corridor as a barrier, gaps in pedestrian and bicycle infrastructure along the corridor, unsafe intersections, inadequate crossings, poor lighting, and inadequate transit infrastructure. While many of the gaps identified over the past 20 years are addressed by the current San Pablo Avenue Corridor project, new input was collected during the current CBTP outreach process.
2. Pedestrian and bicycle improvements on major corridors. A series of arterials were identified frequently across the spectrum of studies as containing active transportation gaps. The need for sidewalk widening, curb improvements, improved crosswalks, and bikeways on the following corridors is cited repeatedly:
   a. 22nd and 23rd Streets
   b. Central Avenue (between I-80 and San Pablo Avenue)
   c. Macdonald Avenue
   d. San Pablo Dam Road, particularly at the I-80/San Pablo Dam Road interchange
   e. Marina Bay Parkway (at Regatta Boulevard)
   f. Cutting Boulevard (particularly at Carlson Boulevard)
   g. Hilltop Drive and the area around the Shoppes at Hilltop
3. A lack of safe, non-auto access to schools throughout the study area, in part due to many railway and highway crossings.
4. Limited, unreliable, and inflexible paratransit service.
5. Bus stops without amenities and that are difficult to walk to due to poor sidewalk conditions, particularly on:
   a. 23rd Street
   b. Hilltop Drive
   c. 13th Street/Rumrill Avenue corridor


Greater Richmond Interfaith Program
The Souper Center
GRIP
165 22nd Street
510-233-2141
Family Housing & Supportive Services


ENERGIZER
STATION
SOREL
MOUNTAIN
HARD
WEAR
prAna

4. Outreach and Engagement Summary

All CBTP recommendations are based on a diverse community outreach campaign consistent with Metropolitan Transportation Commission (MTC) Guidelines. The Richmond Area CBTP study area encompasses Communities of Concern (COCs) in the cities of Richmond, San Pablo, and El Cerrito, as well as unincorporated North Richmond, Rollingwood, Montalvin Manor, Tara Hills, and Bayview. The study area is defined by multiple distinct neighborhoods and has a population of over 120,000. The project and plans recommended in this CBTP are the result of an outreach and engagement effort intended to reach challenged communities in geographic and demographic cross-sections of the study area.

Outreach and engagement included the following:

1. Oversight by two advisory groups
2. Development of a Contra Costa Transit Authority (CCTA)-approved Outreach Strategy
3. Creation and distribution of awareness materials
4. Feedback at County planning events
5. Interactive CBTP "Pop-Ups" at various events in the study area

4.1 CBTP Advisor Groups

4.1.1 Steering committee

As noted in Chapter 1, a CBTP Steering Committee (SC) was convened to, among other guidance roles, ensure an inclusive outreach process, provide direction on reaching specific groups in the community, and prioritize outreach opportunities. Members of the SC for the Richmond-area CBTP included:

- Ben Choi, Richmond City Council
- Elizabeth Pabon-Alvarado, San Pablo City Council
- Janet Abelson, El Cerrito City Council
- Robert Rogers, Office of Supervisor Gioia
- Jan Mignone, President, Richmond Neighborhood Coordinating Council
- Myrtle Braxton-Ellington, Chair, Richmond Commission on Aging
- Trina Jackson, Staff Liaison, Richmond Youth Council
- Cecilia Perez-Mejia, Community Liaison, First Five Contra Costa
- Nikki Beasley, Executive Director, Richmond Neighborhood Housing Service

4.1.2 Project Working Group

A Project Working Group (PWG) composed of local jurisdiction and transit agency staff convened numerous times throughout the outreach process to review the Outreach Strategy, help identify stakeholders in various COCs, and provide practical guidance on coordinating outreach events and stakeholders. Members of the PWG for the Richmond-area CBTP included:

- Martin Engelmann, Deputy Executive Director, Planning, CCTA
- Matt Kelly, Senior Transportation Planner, CCTA
- James Hinkamp, Associate Transportation Planner, CCTA
- Aileen Hernandez, Principal Grants Officer, BART
- Celestine Do, Senior Planner BART
- Rachal Factor, Principal Planner, BART
- Nathan Landau, AC Transit
- Ryan Lau, AC Transit
- Denee Evans, Transportation Demand and Sustainability Manager, City of Richmond
- Tawfic Halaby, Senior Civil Engineer, City of Richmond
- Misha Kaur, Paratransit Coordinator, City of Richmond
- Patrick Phelan, Infrastructure Administrator, City of Richmond
- Lori Reese Brown, Transportation Project Manager, City of Richmond
- Lina Velasco, Community Development Director, City of Richmond
- Dane Rodgers, Senior Civil Engineer, City of Richmond
- Ana Bernardes, Engineering Manager/Senior Engineer, City of El Cerrito
- Clayton Johnson, Senior Health Education Specialist, Contra Costa Health Services
- Alexander Zandian, Engineer, Contra Costa County
- Mary Halle, Senior Civil Engineer, Contra Costa County Public Works

4.2 Outreach Strategy

Per a CCTA- and Steering Committee-approved Outreach Strategy, public outreach was organized into three phases corresponding with key milestones in the CBTP process. These are summarized as follows.

Phase 1: Establish Area Overview and Preliminary Community Needs

Phase 1 was designed to identify transportation-related challenges faced by those who live, work, and/or access services within various study area COCs. Outreach during this phase consisted of establishing lists of community stakeholders and events for outreach opportunities and developing a flexible Outreach Awareness Notice template (see Section 4.3). The CBTP team met with the PWG three times to review the study area and existing demographics, discuss early outreach strategies and SC formation, and review the draft Outreach Strategy. The CBTP team also met with the SC to introduce and review the draft Outreach Strategy.

Phase 2: Solicit Community Recommendations

In Phase 2, the CBTP team approached stakeholders and potential community event hosts identified in Phase 1. "On-the-ground" outreach was performed in this phase. Members of COCs in the study area were solicited for proposed projects, plans, and ideas to improve mobility. CBTP team members attended community events focused on challenged communities and organized "pop-up workshops" and "meet-and-greets." Interactive exercises and one-on-one interviews were used to gather detailed input from a diverse range of participants. Community feedback collected in Phase 2 is the source of CBTP recommendations presented in Chapter 5 of this plan.

Phase 3: Analyze Potential Programs and Projects

During Phase 3, the CBTP team organized the community-identified mobility challenges and recommendations and worked with stakeholders, CCTA, and the PWG to develop criteria for evaluating and prioritizing the feedback. The CBTP team worked with PWG members to coordinate potential CBTP recommendations with existing planned mobility projects, "ground-truth" recommendations, and assess funding and implementation options for each. A draft CBTP was reviewed by both the PWG and SC, followed by PWG and SC meetings to discuss revisions. The Final CBTP was developed based on these revisions and discussions.

4.3 Outreach Awareness

4.3.1 Flier Noticing

Prior to engagement events, the CBTP team developed a graphics-rich Outreach Awareness Notice in English (see Figure 4-1) and Spanish (see Figure 4-2) to notice the public of outreach events in various COCs. The flier was adapted to each event and posted digitally on websites of agencies and stakeholders involved in the project. The notice was continually updated throughout the outreach process to reflect the status of the project.

The Awareness Notice was also adapted for use as a hard-copy flier for posting at major transit locations and other organizations. Hard-copy fliers were posted on Tri-Delta buses and bus stops, senior centers, community shuttles, and BART stations.

4.3.2 Outreach Events

4.3.2.1 Martin Luther King Day of Service and Celebration

The CBTP team attended the January 21, 2019, Martin Luther King Day of Service and Celebration event at Unity Park on the Richmond Greenway to raise awareness of the CBTP. The event included a bike ride organized by Rich City Rides. The CBTP team distributed information about the CBTP outreach process to community members. The event was attended by over 150 Richmond residents, many of whom spoke to the CBTP about the outreach process and signed the project contact list. Thirty participants received a project flier and others signed up for the project contact list.

4.3.2.2 Bike-to-Work Day at the Richmond Ferry

The Richmond Ferry opened in early 2019. On May 9, 2019, CBTP project staff helped facilitate the "Energizer Station" on Bike-to-Work day at the Ferry Station and distribute information about the CBTP study area and outreach process. Approximately 40 ferry users provided input during this event, all of whom were on their way to board ferries travelling from Richmond to San Francisco. Individuals expressed support for bike and pedestrian improvements connecting the ferry terminal and other transit hubs to Richmond neighborhoods.

Figure 4-1 Richmond Outreach Flyer

HELP IMPROVE TRANSPORTATION OPTIONS IN THE RICHMOND AREA!

PARTICIPATE IN THE RICHMOND AREA COMMUNITY-BASED TRANSPORTATION PLAN

The Richmond Area Community-Based Transportation Plan (CBTP) is an opportunity to improve transportation options and quality of life for neighborhoods in Richmond, North Richmond, San Pablo, and portions of El Cerrito.

The Plan will bring residents, community organizations and transportation agencies together to identify transportation challenges and develop solutions.

The CBTP will:

- Evaluate transportation gaps and barriers identified by the community
- Develop solutions & projects to address these challenges
- Identify possible funding sources to pay for these solutions & projects

How To Participate

Text-based mobile survey:

Please take a few moments to answer our short mobile phone survey about your transportation habits and challenges. To get started, text "CBTP" to (510) 621-6121

Project webpage:

A project webpage is currently under development. Go to www.ccta.net to learn more about the project, project partners and community events!

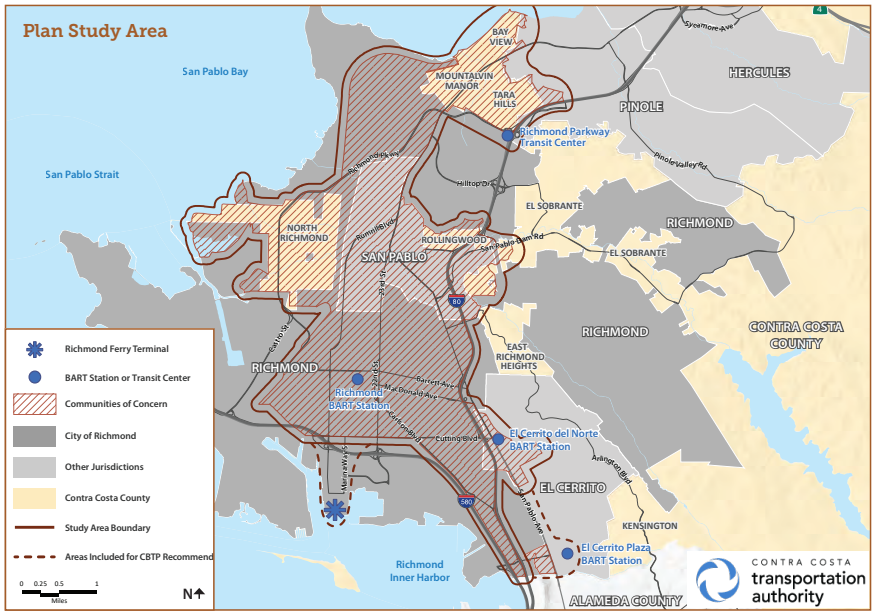


Figure 4-2 Richmond Outreach Flyer (Spanish Verison)

¡AYUDENOS A MEJORAR LAS OPCIONES DE TRANSPORTE EN EL ÁREA DE RICHMOND!

PARTICIPE EN EL PLAN DE RICHMOND DE TRANSPORTE BASADO EN LA COMUNIDAD

El plan de Richmond de transporte basada en la comunidad, o CBTP, es una oportunidad para mejorar las opciones de transporte y la calidad de vida de los vecindarios en la Ciudad de Richmond, North Richmond y San Pablo, incluyendo porciones de El Cerrito.

El plan reunirá residentes, organizaciones comunitarias y agencias de transporte para identificar los desafíos y desarrollar estrategias para superar los.

El CBTP va a:

- Evaluar las brechas y barreras de transporte identificadas por la comunidad
- Desarrollar soluciones y proyectos para resolver estos desafíos
- Identificar las posibles fuentes de financiamiento para pagar las soluciones y proyectos

Cómo Participar

Encuesta móvil basada en texto:

Por favor, dedique un momento para responder a nuestra breve encuesta acerca de sus hábitos y desafíos de transporte por teléfono móvil. Acceda a la encuesta enviando un texto a (510) 621-6121

Página web del proyecto:

La página web del proyecto está en construcción. ¡Visite www.ccta.net para aprender más del proyecto, socios del proyecto y eventos comunitarios!

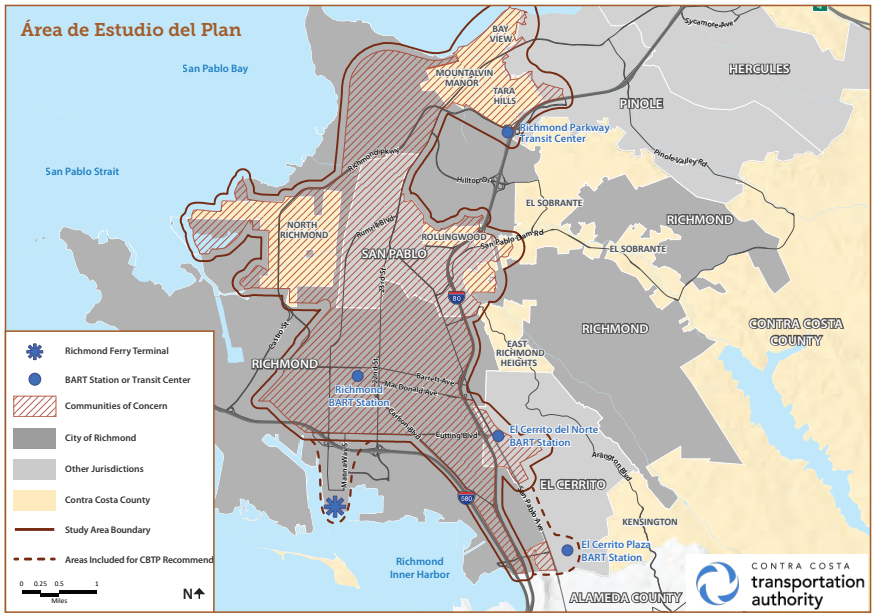


Figure 4-3 Richmond Outreach Locations Map

4.4 Outreach Results

The following sections summarize the methods, participation rates, and results of CBTP outreach events. The locations of all outreach and engagement events are shown on Figure 4-3.

4.4.1 County Planning Events

Contra Costa County is currently updating its General Plan, a process titled *Envision Contra Costa 2040*. The update will establish transportation goals, policies, and implementation plans for multiple unincorporated communities within the CBTP study area. The CBTP team attended the following outreach events associated with this process to gauge community mobility priorities:

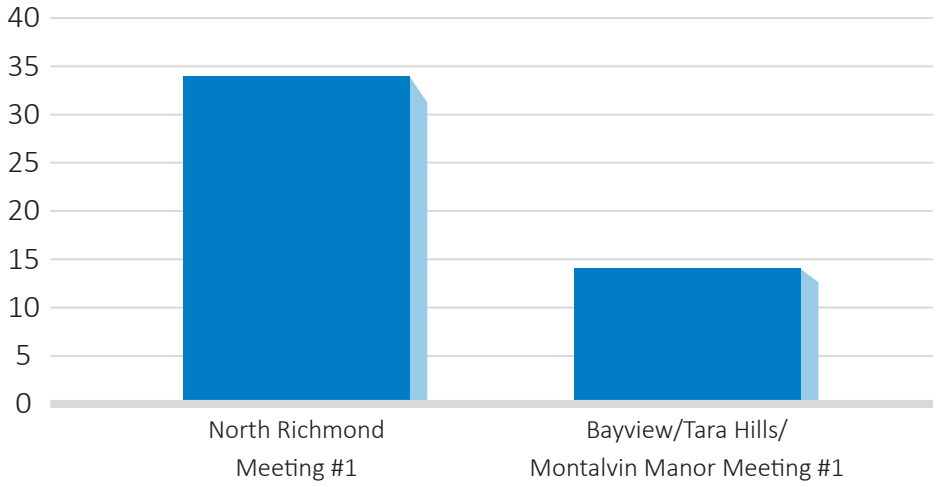
- Contra Costa County General Plan Update Community Meeting, North Richmond. This meeting was held on May 13, 2019, at the Community Heritage Senior Apartments.
- Contra Costa County General Plan Update Community Meeting, Bayview, Montalvin Manor and Tara Hills. This meeting was held on May 14, 2019, at the Montara Bay Community Center.

Unlike CBTP pop-up events, these events were not intended to reach specific mobility-challenged groups. As such, the CBTP team did not solicit feedback directly from participants but coordinated with the General Plan Update team for insight into individuals, events, and organizations to partner with, and participated in discussions and exercises about perceived Countywide mobility gaps. Awareness information and fliers about upcoming CBTP outreach events were distributed.

4.4.1.1 Participation

Thirty-four people attended the North Richmond Community Meeting and about 14 people participated in the Bayview, Montalvin Manor, and Tara Hills Community Meeting, as shown in Figure 4-4.

Figure 4-4: County Planning Event Attendance



4.4.1.2 Major Themes

CBTP team members recorded participant feedback at the North Richmond Community Meeting. The entire unincorporated North Richmond area is within the CBTP study area. The following mobility-related themes were expressed:

- Evening neighborhood safety and lighting conditions in North Richmond neighborhoods
- Area-wide sidewalk conditions and gaps on major streets
- Transit delays and poor system linkages
- Insufficient fixed-route coverage and bus frequencies
- Poor BART/transit access
- Challenges of communitywide ingress and egress
- Gaps in local bicycle infrastructure
- Poorly design bus stops and transit curb management

The unincorporated areas of Bayview, Montalvin Manor, and Tara Hills are also within the CBTP study area. During the General Plan Update meeting, CBTP staff recorded the following mobility challenges voiced by participants during group exercises:

- Lack of transit connections and transit types
- Fear of walking and biking on major corridors such as Tara Hills Drive and Shawn Drive due to vehicle speeds
- Sidewalk and bicycle gaps and dangerous intersections on San Pablo Avenue
- The intersection of Richmond Parkway and San Pablo Avenue

The CBTP team used some of these larger themes as starting points for discussion and feedback during the CBTP pop-up event process described below.

4.4.2 CBTP Pop-Up Events

CBTP team members worked with CBOs, non-profits, and various local agencies to schedule "pop-up" outreach sessions at pre-scheduled events targeting low-income and other potentially transportation-challenged communities. The goals of these events were to collect detailed feedback about transportation challenges directly from COC residents and record personal narratives describing how these challenges impact daily life. English- and Spanish-speaking CBTP project staff set up information and feedback tables at each event, with the following visual elements to prompt discussion:

- Project Information and Awareness Flier
- Poster-sized Study Area Map Boards
- Poster-sized Existing Transportation Network Boards
- Existing and Proposed Bicycle and Pedestrian Network Maps

PlaceWorks staff facilitated the following exercises with attendees to achieve the goals of the pop-up events. Raw results of these exercises are provided in Appendix B.

- **Map and Dot Exercises.** CBTP team members used study area boards to allow participants to illustrate transportation gaps and challenges. Participants highlighted mobility challenges and recommendations with color-coded dot stickers and used markers to illustrate travel routes, gaps, and potential solutions.

- **Interview Vignettes.** CBTP team members used CCTA-approved questions to interview volunteers about personal information, mobility gaps they encounter daily, and ideas for overcoming them. The goal of these interviews was to record true narratives of mobility gaps faced by challenged communities in the study area. Parts of these interviews are highlighted in sidebars of this chapter.

The CBTP team categorized feedback from these sessions into the following four groups of mobility challenges:

1. **Pedestrian Mobility Challenges:** These are challenges related to gaps in, and conditions of, pedestrian facilities and infrastructure. This category also includes physical barriers to pedestrian mobility, such as dangerous railroad and highway intersections.
2. **Bicycle Mobility Challenges:** These are challenges related to gaps in, and conditions of, bikeways. This category also includes physical barriers to bicycling, such as dangerous railroad and highway intersections.
3. **Transit Challenges:** Challenges related to transit access, bus stops, and shelters, fixed-route planning and service, paratransit service, and transit cost.
4. **Safety and Other Challenges:** These are challenges to safe and secure mobility, disabled access, and student access and safety.

4.4.2.1 Greater Richmond Interfaith Program Community Lunch

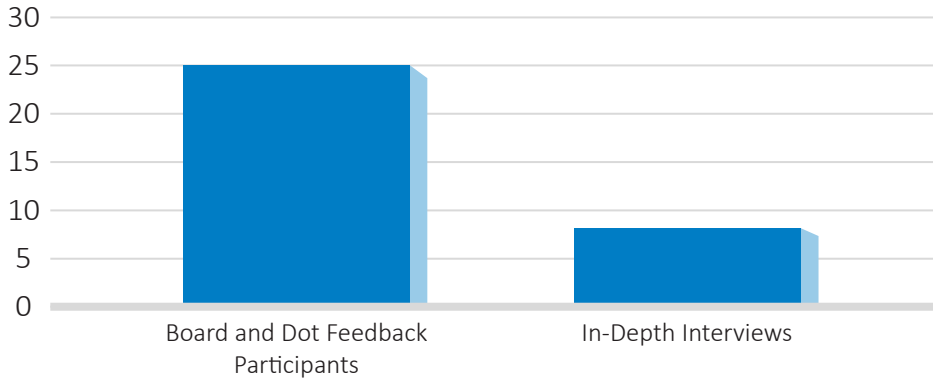
The Greater Richmond Interfaith Program (GRIP) is a Richmond-based coalition of congregations from varied faiths, dedicated to supporting communities in need to gain self-sufficiency.[1] As part of its comprehensive assistance program, GRIP maintains a free lunch program for community members between 11:30 a.m. and 1:00 p.m. daily, at its central location at 165 22nd Street in Richmond. According to GRIP staff, the program serves community members from throughout the CBTP study area.

CBTP team members attended a GRIP lunch service and set up a pop-up booth in the parking lot on November 26, 2019. Individuals supported by the event participated in the feedback process as they entered and exited the GRIP facility. The CBTP team also interviewed GRIP staff about their mobility challenges getting to and from the GRIP location, as well as those they hear from their clients.

Participation

PlaceWorks staff recorded eight detailed interviews and facilitated map exercises and/or discussions with about 25 individuals, as shown in Figure 4-5.

Figure 4-5: GRIP Popup Event Responses



Feedback

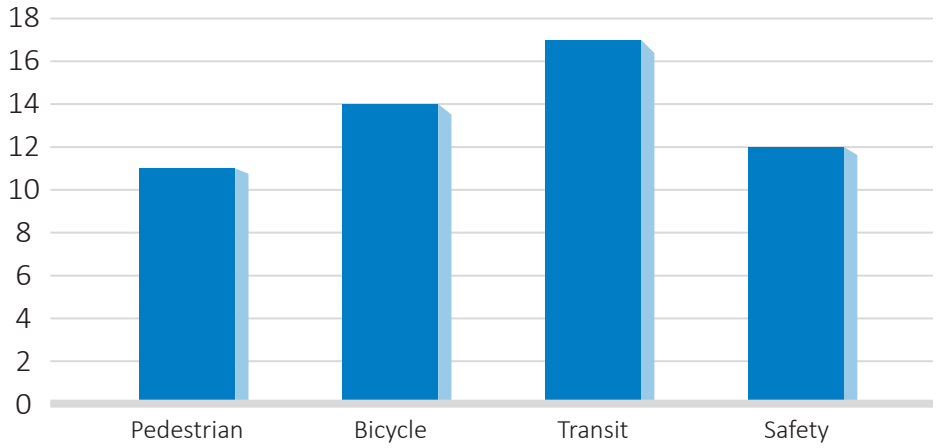
GRIP participants described multiple mobility barriers across the spectrum of bicycle, pedestrian, transit, and safety issues. Many individuals at this event were very low-income and without automobiles. Most were frequent visitors to multiple City and community-based support facilities, such as GRIP. As such, they were familiar with the challenges of routinely accessing these facilities, as well as the routes connecting the facilities to one another and to bus stops and BART stations. Seniors at this event described mobility gaps associated with lack of direct access to the Richmond social security office and other senior services. Participants expressed mobility challenges related to bus frequency and inconsistency, conditions for pedestrians and cyclists accessing GRIP and other facilities and transit hubs, street and bus stop lighting, neighborhood and corridor safety, homelessness, and crime. Given the location of the event, responses were generally focused on the central Richmond portion of the CBTP study area.

1 Greater Richmond Interfaith Program website, Organization and Mission webpage, https://gripcares.org/grid/grip-organization-and-mission/, accessed May 2, 2020.

Summary of Results

Figure 4-6 shows that of the 54 unique responses resulting from the Board and Dot exercises and in-depth interviews, 11 targeted pedestrian mobility gaps, 14 targeted bicycle mobility gaps, and 17 targeted transit mobility gaps. Twelve responses were specifically related to unsafe or perceived unsafe conditions.

Figure 4-6: GRIP Popup Event Feedback by Type



A major theme across all categories was the impact of substandard lighting and lack of safety features on non-auto mobility (roughly 12 comments highlighted these issues as barriers). Note that this input about the impact of safety on a specific mode of travel is categorized within that travel mode, not within the "Safety" category. Thus:

- Comments about subjects such as inadequate lighting or substandard fencing for sidewalks are categorized under "Pedestrian."
- Comments regarding lighting or sight lines on bike lanes are categorized under "Bicycle."
- Comments regarding bus stop lighting, poor shelters, or driver behavior are categorized under "Transit."
- Comments about neighborhood, personal, or other safety concerns not targeting mobility are categorized under "Safety."

Participant Input

The following are patterns of mobility concerns and barriers recorded during the event. They have been clarified for readability and/or transferred from markings on maps. However, they include original insight and ideas, and have not been ground-truthed against current conditions and/or ongoing plans and projects. The latter process occurred during the evaluation and prioritization of CBTP recommendations presented in Chapter 5 of this study.

Bicycle Challenges

Participants identified:

- Gaps in bicycle facilities on San Pablo Avenue and other major corridors.
  - Bike lane on San Pablo Avenue starting at the intersection with Rumrill Boulevard and College Lane does not extend westward towards Richmond.
  - Add protected lanes on San Pablo Avenue and Carlson Boulevard.
  - Need bike improvements along Ohio Avenue east of 2nd Street, like traffic-separated facilities.
  - Need better bike lanes on Macdonald Avenue behind Nicholl Park.
- Bicycle Conditions Surrounding Nicholl Park area.
  - Cyclists avoid the Richmond Greenway adjacent to Nicholl Park because of safety issues and lack of lighting.
  - There needs to be better bike lanes and lighting on Macdonald Avenue adjacent to Nicholl Park.

Pedestrian Challenges

Participants identified:

- Sidewalk conditions on BART line crossings are difficult and dangerous for pedestrians
  - Barrett Avenue undercrossing
  - Macdonald Avenue undercrossing
  - Pennsylvania Avenue overcrossing
- Lack of pedestrian overcrossings in key locations
  - Need a pedestrian bridge over Richmond Parkway at Goodrick Avenue, for access to Point Pinole Park.
  - Need a pedestrian crossing over the train tracks to the west of Richmond so that people can access views of San Rafael and San Pablo Bay.

"Children use the pedestrian undercrossings below the BART/railroad tracks at Barrett Avenue and Macdonald Avenue to get to and from school, but the lighting and waste, like broken glass and needles, is bad. The same is true for other pedestrian ramps overcrossings…over the BART/ Train tracks, especially the entrance ramp on 13th Street."

– **Orlando and Elaine,** Hilltop residents with school-aged children

"I travel from Antioch to Richmond a few days a week because there are so many good services in Richmond but I have…family in Antioch. I walk to [Contra Costa County] Employment & Human Services on Macdonald, but I wish it was easier to get to by transit because Macdonald can by intimidating to a woman at night."

– **Brooke,** age 21, off- and on-homeless

Transit Challenges

Participants identified:

- Poor Bus Shelter Conditions (more than 8 comments)
  - Lack of seating and lighting at stops along Macdonald Avenue, specifically 21st, and 23rd, and 25th Streets; Civic Center
- Lack of Transit Access to Support Services (5 comments)
  - Need subsidized evening shuttle access to GRIP and other facilities
  - WestCat Route 19 does not provide direct access to Social Security office
  - Improve transit access to the Richmond Care Center
  - Dial-a-ride shuttle between the Richmond BART station and Kaiser Permanente
- Specific Route Challenges
  - Route 72 is inconsistent and frequently late
  - Route 76 toward El Cerrito Del Norte BART is highly used and frequently late

Safety Challenges

Participants identified:

- Area Surrounding Nicholl Park
  - Segment of Macdonald Avenue adjacent to Nicholl Park feels unsafe now due to street litter, cars, and encampments.
  - Most of the neighborhood surrounding Nicholl Park is "sketchy."
  - Macdonald Avenue in this area is described as a "war zone" due to homeless and lack of lighting.
  - Commercial Truck Cut-Throughs
  - Large commercial trucks in the 'flats' of Richmond create danger for other drivers and people walking or biking. Children walk in areas that are not safe for pedestrians due to commercial trucks, people speeding, and incomplete sidewalks.
  - There should be a timing mechanism for when commercial trucks are allowed to pass through certain areas.

- Shields-Reid Area
  - Area north of Chesley Avenue is dangerous, and many kids using Shields-Reid Park and Community Center, as well as churches in the neighborhood.
  - Fred Jackson Way, Hensley Street, and others are full of "road-racers" who speed down streets without enforcement.
  - Residents of future senior housing complex in the area will be in danger.

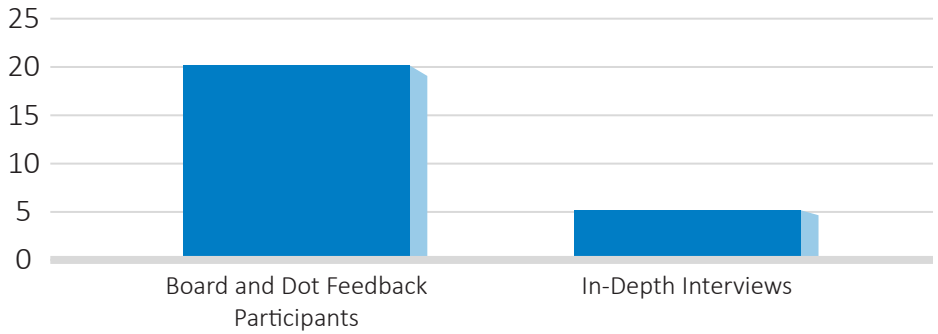
4.4.2.2 Richmond Youth Council Meeting

PlaceWorks staff reached out to Trina Jackson, Staff Liaison to the Richmond City Youth Council, and Project Steering Committee member, who organized a CBTP input segment during a monthly Richmond Youth Council, on December 10, 2019. During this agenda item, youth councilmembers discussed their transportation needs as well as those faced by the population of Richmond youth they represent. PlaceWorks staff supplied a large map clipped to foam core, markers, and stickers so councilmembers were able to locate specific areas in need of transportation improvements. This item ran for approximately 45 minutes.

Participation

PlaceWorks staff completed detailed interviews of all five councilmembers at the meeting, as shown in Figure 4-7. All five councilmembers, as well as 15 additional meeting attendees, also provided location and segment input via dot-and-board exercises.

Figure 4-7: Richmond Youth Council Meeting Responses

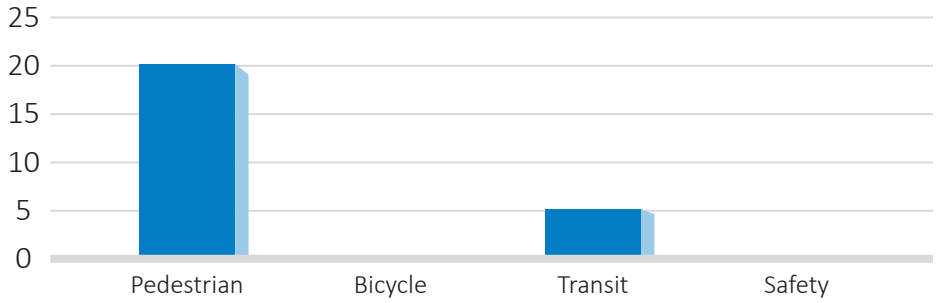


Feedback

Summary of Results

Figure 4-8 shows that of the 30 total unique comments the CBTP project team solicited from councilmembers and attendees, 20 were focused on pedestrian mobility gaps and 10 targeted transit mobility gaps. No feedback about bicycle-related challenges or safety-specific issues was collected at this event.

Figure 4-8: Richmond youth Council Meeting Feedback by Type



Like the feedback from the GRIP outreach event, a theme of the input from this event was the impact of poor lighting conditions on mobility, particularly along San Pablo Avenue and surrounding the Shoppes at Hilltop. Another common concern was about unsafe pedestrian crossings at specific locations along San Pablo Avenue, Macdonald Avenue, and Cutting Boulevard.

Participant Input

Bicycle Challenges

While there were no comments specially targeting bicycle improvements, many recommendations that were made regarding pedestrian street safety would be beneficial to cyclists, particularly those concerning street lighting and crosswalk safety.

Pedestrian Challenges

Participants identified:

- Poor pedestrian conditions on San Pablo Avenue
- Poor pedestrian conditions surrounding Nicholl Park
  - Crosswalk on Macdonald Avenue is mid-block and has no signal
  - Signage does not alert drivers
- Poor pedestrian conditions surrounding the Shoppes at Hilltop
  - Lack of sidewalk lighting
  - Lack of crosswalk reflectors and signalization
- Student pedestrian safety surrounding Kennedy High School
  - Cutting Boulevard between South 49th Street and the highway has unsafe crossings, which students must use.
- Unsafe driving conditions around Pacific East Mall
  - Roads and signage are confusing for motorists around Central Avenue, which impacts pedestrian safety.
  - Multiple stop-controlled intersections where you can't see oncoming cross traffic.

"I definitely don't feel safe walking down San Pablo [Avenue] at night. It is dark starting from Central Avenue in El Cerrito and continuing all the way north through Richmond. I see people crossing at night and cars don't see them and slam on their breaks."

– **Ashlee,** Richmond Youth Councilmember and a Berkeley City College student

"The AC transit bus stop at San Pablo Avenue and Potrero Avenue has a shelter but nowhere to sit. I always drive past and see people sitting on the lawn in front of Denny's because there are no seats."

– **Kashaf**

Transit Challenges

Participants identified:

- Inadequate bus stops and shelters
  - WestCat bus stop at Cutting Boulevard and Key Boulevard is highly used but has no shelter or seats
  - Many AC Transit stops along San Pablo Avenue lack seats and/or shelters
- Lack of safety measures for young riders on BART and buses.
- Inconsistent service and lateness of Route 76 to El Cerrito Del Norte BART
  - Lyft/Uber are better alternatives

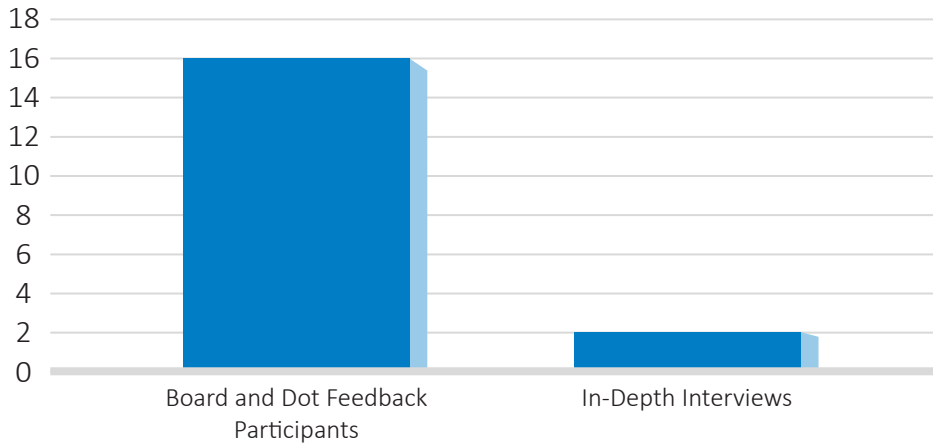
4.4.2.3 Senior Produce Brown Bag at the Booker T. Anderson Community Center

The Booker T. Anderson Community Center, located in the Eastshore/Panhandle Annex neighborhoods of Richmond, hosts a bi-monthly produce service for Richmond seniors. CBTP team members interviewed participants about their transportation experiences on December 13, 2019, while they waited to receive groceries.

Participation

PlaceWorks staff recorded two detailed interviews and facilitated map exercises and/or discussions with 16 individuals. See Figure 4-9.

Figure 4-9: Senior Produce Brownbag Responses

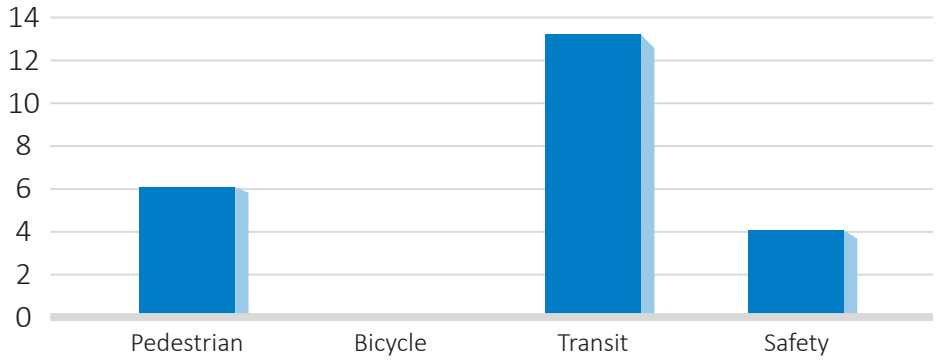


Feedback

Summary of Results

Figure 4-10 shows that of the 23 unique comments PlaceWorks staff received during the Booker T. Anderson Senior Brown Bag event, 6 were regarding pedestrian improvements, 13 were regarding transit improvements, and 3 responses concerned safety and other improvements.

Figure 4-10: Senior Brown Bag Feedback by Type



The majority occurrence of transit- and paratransit-related comments is not surprising, given the reliance on public transit by the elderly and those with disabilities. Similarly, participants expressed no bicycle barriers, but rather indirect impacts of the bicycle network on pedestrian movement. While the quantity of feedback about safety was relatively low, comments suggested an overall concern for well-being in the study area and sense of risk.

Participant Input

Pedestrian Challenges

Participants identified:

- Difficult walking on/near bike paths in Richmond
  - Marked lanes for cyclists going one way or the other makes it scary for those walking slowly, or with a cane or wheelchair
- Poor conditions on Potrero Avenue between Carlson Boulevard and Highway 80
  - Intersection of Carlson Boulevard and Potrero Avenue is dangerous
  - Lack of adequate lighting along this stretch
  - Many cars use this segment to get to highway, but it is also a route to Stege Elementary School [4949 Cypress Avenue] and Booker T. Anderson Community Center.
- Area needs more and better curb cuts, with gentler slopes, for people in wheelchairs and using mobility devices

Transit Challenges

Participants identified:

- Kaiser Permanente and Richmond Care Center are difficult to get to on transit for those who can't walk far
- AC Transit Routes that are popular with seniors are also unreliable
  - Route 72 needs more buses daily
  - Route 71 bus is often late
- Conditions of stops along well-travelled AC Transit Routes make it difficult to use public transit
  - Bus stops in the area generally lack seating
  - Routes 71 and 40, specifically, are missing seating and shelters at key stops
  - Resulting standing can cause back and knee pain for seniors
  - Stops on Route 71 are without adequate signage
  - There is a general lack of real-time adequate signage along bus routes
  - Signage and timetables along routes are written in font size that is too small to read
- Paratransit is unreliable
  - Participants have experienced not being picked up at all following scheduled pick-ups

"I go to the Eastmont Town Center in Oakland for services and medical appointments. It's really hard to get there on transit from Richmond. Paratransit is totally unreliable. I am…happy that the Lifelong Over 60 Health Center in Berkeley picks me up from home..."

– **Joanna,** 62 years old

Safety Challenges

Participants identified:

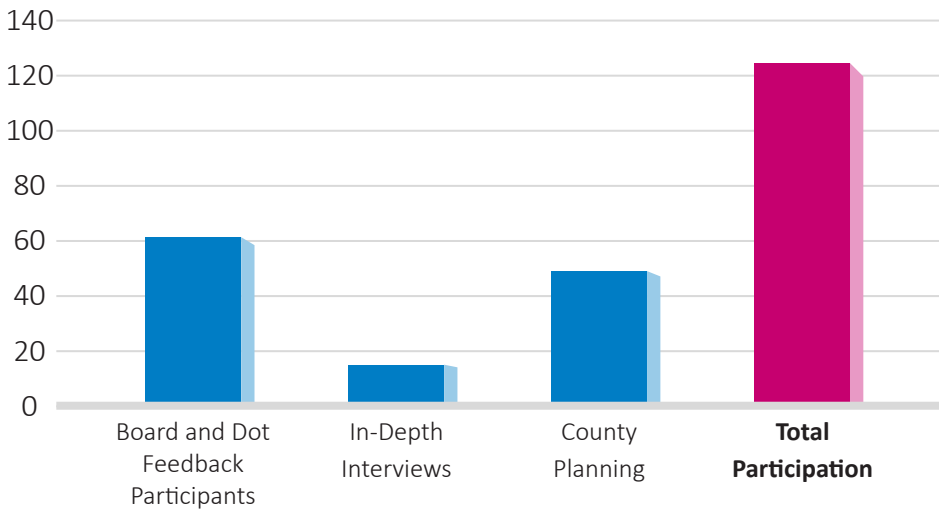
- Sense of unsafe conditions in the Central Richmond business area (Iron Triangle) at night
  - Area needs better lighting
  - Area needs better signage
- Overall high crime rates in CBTP area make going out in the evening frightening

4.5 Outreach Summary

4.5.1 Total Participation

As shown in Figure 4-11, over 120 community members provided input during the Richmond-area CBTP outreach process this figure also shows the number of participants at each outreach event. The CBTP team performed 15 in-depth interviews with volunteer interviewees, including teen councilmembers, low-income mothers, and senior citizens. Over 60 people provided feedback by participating in visual and mapping techniques, and just under 50 people attended County planning events.

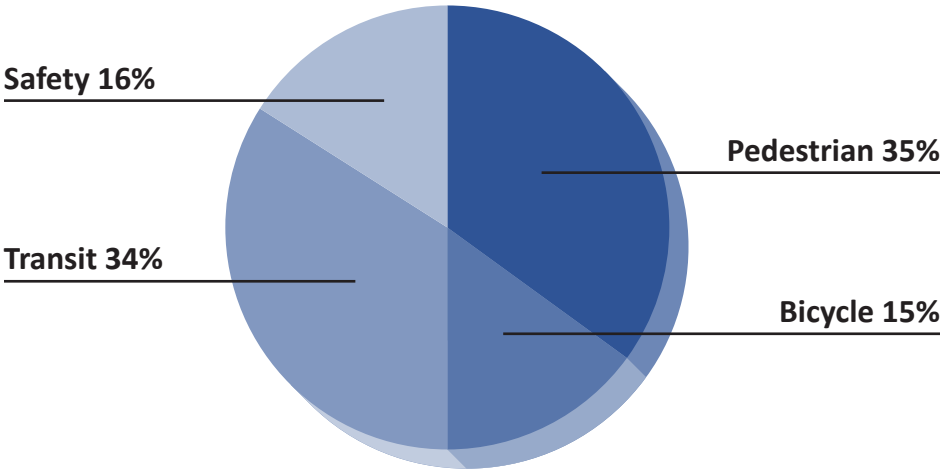
Figure 4-11: Total Outreach Counts

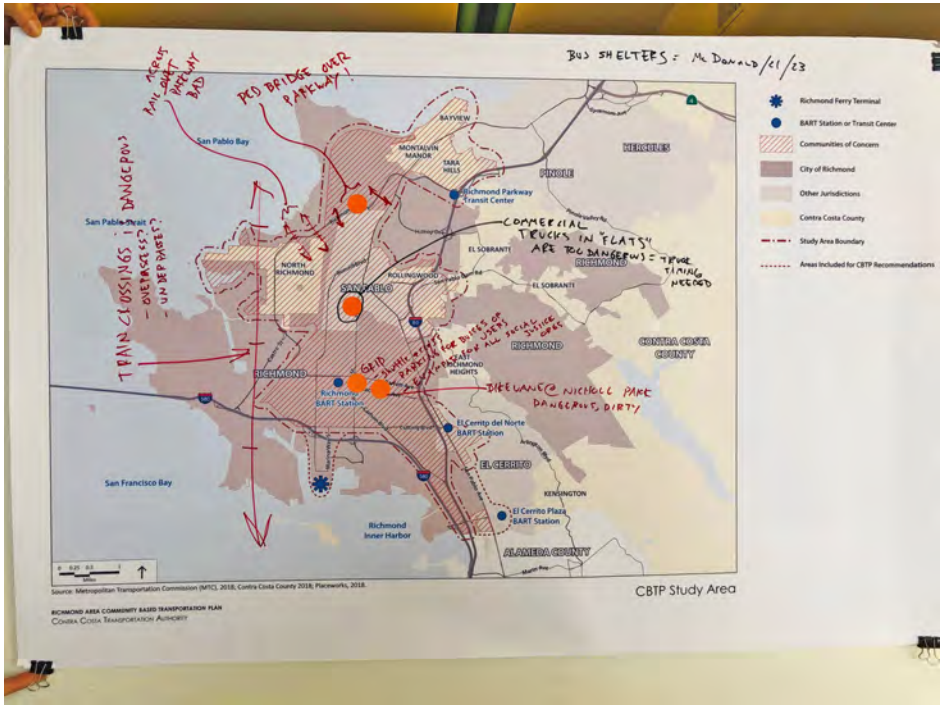


4.5.2 Feedback Summary

As shown in Figure 4-12, members of COCs in the Richmond area confront transit and pedestrian mobility barriers at about the same rate, and bicycle and safety barriers at about half that rate. However, safety and security are integral to barrier-free active mobility, and as such, many concerns about walking, cycling, and transit relate to issues such as improper lighting, sense of isolation, and poor network conditions. Safety concerns outside the context of a specific travel mode were largely about fear of travel due to perceived risks in certain neighborhoods and overall lack of safety around community destinations such as parks or schools.

Figure 4-12: Total Responses Collected by Type





5. Methodology and Recommendations

This chapter identifies all recommended projects and plans. It outlines the evaluation criteria, evaluation methodology, and scoring approach used to identify and rank those recommendations. Potential funding sources, a key consideration in the evaluation process, are summarized.

5.1 COVID-19 and CBTP Development

As explained in Section 1.5, the COVID-19 pandemic emerged following the community outreach process of this CBTP. As a result, the community and stakeholder feedback in this plan does not reflect the changes in mobility context, habits, priorities, and challenges due to COVID-19 and formal shelter-in-place orders.

However, the scoring process was developed following shelter-in-place regulations. These regulations prompted significant shifts in the financial feasibility and implementation potential of key project types. For example, AC Transit has responded to reduced ridership by suspending operation of weekday-only local lines. Conversely, East Contra Costa County BART stations have been serving more than double the system average, as compared to normal ridership. This reaffirms that there are major transit needs in the area that require fulfillment both during and post-COVID.

The Contra Costa Transportation Authority decided to adopt this plan in the current context, rather than re-initiate the existing conditions, community outreach, and recommendations processes. The evaluation and scoring of recommendations in this plan reflect post-COVID feasibility conditions.

5.2 Evaluation Criteria

The CBTP project team worked with the Project Working Group (PWG) on February 3, 2020, to establish four evaluation criteria deemed appropriate to rank projects by their ability to improve mobility for challenged communities. Criteria such as diverse community benefit, degree of transportation improvement, current relevance, future technological challenges, usability and access, available funding, potential for cross-jurisdictional challenges, and ability to resolve mobility barriers were discussed.

Ultimately, the following four criteria were selected to score projects and plans:

1. **Reflects Community Priorities**
2. **Increases Access**
3. **Is Financially Feasible**
4. **Ease of Implementation**

5.2.1 Reflects Community priorities

This criterion is the degree to which a project or plan is consistent with the priorities and needs of residents, community stakeholders, and leaders in Communities of Concern (COC). Projects were ranked highly under this criterion if they:

- Reflect a theme in the community feedback collected during the CBTP outreach process described in Chapter 4;
- Are consistent with community mobility challenges identified in past plans and studies and the existing conditions analysis prepared for this CBTP;
- Support transportation goals established in current plans and studies; and
- Are consistent with projects prioritized in the previous Bay Point CBTP, but not yet implemented.

5.2.2 Increases Access

This criterion is the potential of a project to improve access to key facilities and locations across the study area. As noted in Chapter 1, the current CBTP study area encompasses COCs in the cities of Richmond, San Pablo, and El Cerrito, as well as unincorporated areas of Contra Costa County, including North Richmond, Rollingwood, Montalvin Manor, Tara Hills, and Bayview. Given the geographic scale and diversity of mobility gaps across the study area, projects with one of two benefits score highly under this criterion: those that would improve connectivity between systems and those that would facilitate mobility for groups challenged by limited options.

5.2.3 Is financially Feasible

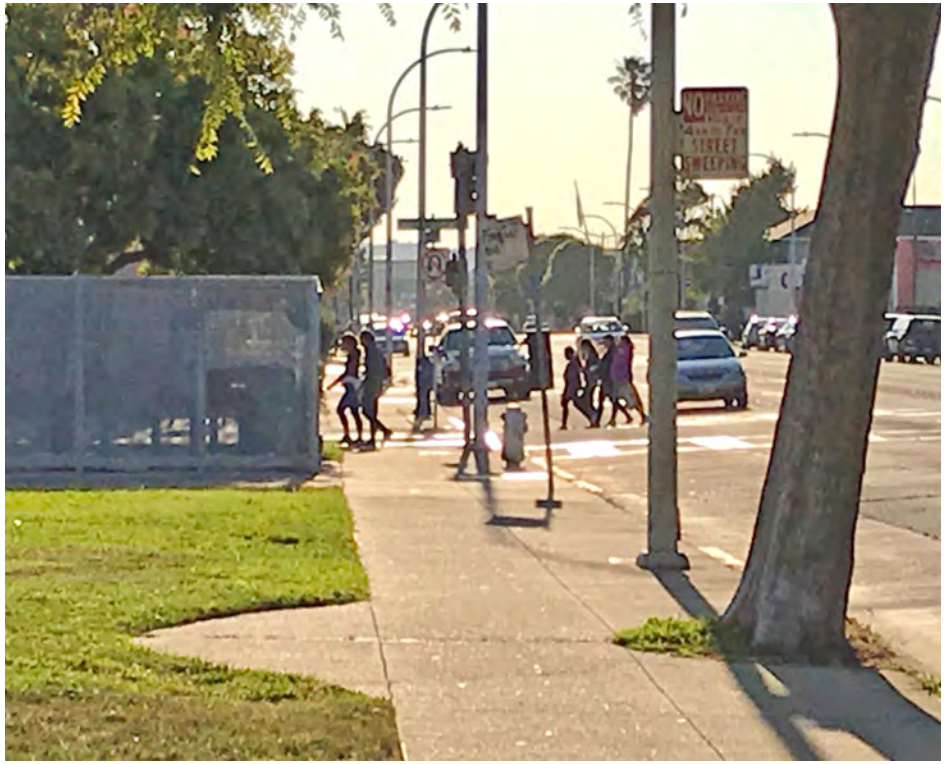
Cost and feasibility are important considerations for evaluating projects. This criterion considers more than the anticipated budget of a project, as one project may be more expensive than another but it may be eligible for a range of different funding sources, while the other project may be less expensive but does not fit into readily available funding categories.

MTC's CBTP guidelines are developed to ensure that mobility recommendations are the result of community input. Assessing the financial feasibility of projects is a tool to identify projects that are likely to find further support and move quickly to implementation. Projects were ranked under this criterion by estimates of hard costs, analyzing the potential for funding based on project type, and reviewing historical financial challenges.

Many of the recommendations outlined in this plan, especially those relating to transit service, are outside the committed funding sources. These needs must be addressed in future allocations of funding, such as pursuit of outside grant funding sources.

Ranking projects under this criterion included reviewing potential funding sources for local and countywide mobility projects. These include:

- **Senate Bill 375 -** California Senate Bill (SB) 375, passed in 2008, directs the California Air Resources Board (CARB) to set up regional targets for reducing greenhouse gas (GHG) emissions with regional Metropolitan Planning Organizations (MPOs). The GHG targets are implemented through the MPO's regional Sustainable Communities Strategies (SCS). Below are a list of funding and grants offered by MTC as part of their SCS in fulfillment of SB 375.
  - **Lifeline Transportation Program -** funds offered by MTC for projects that are identified through a collaborative, inclusive, community-driven process, and that address transportation gaps and barriers identified in Community Based Transportation Plans or other local planning efforts in low-income neighborhoods.
  - **One Bay Area Grant Program (OBAG) -** These grants are rewarded to transit-oriented development projects located in Priority Development Areas—areas targeted for compact growth identified in Plan Bay Area (MTC's SCS). Priority is given to cities and counties that have been proactive in creating more housing and who have accepted a proportionally higher allocation of housing units through the Regional Housing Needs Assessment (RHNA) process.



  - **Caltrans Active Transportation, Complete Streets, and Safe Routes to School Programs -** Active Transportation grants fund transportation improvements that foster healthy activity, namely walking and biking. Complete Streets grants improve sidewalks and curbs that connect to important destinations. Safe Routes to School grants fund projects that provide safe walking and biking routes between neighborhoods and local schools.
  - **Bay Area Air Quality Management District (BAAQMD) Grants -** BAAQMD offers a variety of funding sources for projects that reduce air pollution in the Bay Area, like their Carl Moyer Program, which provides grants to replace or upgrade heavy-duty diesel vehicles.
- **Measure J, Countywide Transportation Sales Tax -** Measure J provides half-cent sales tax revenue for transportation projects through 2034. The expenditure plan that guides the Measure includes $360 million for local street and roads, as well as $123 million for transit projects supporting seniors and the disabled.

- **Transportation n for Livable Communities (TLC) -** These funds are intended to support local efforts to achieve more compact, mixed-use development, and development that is pedestrian-friendly or linked into the overall transit system.
- **California Air Resources Board (CARB) Sustainable Transportation Equity Project (STEP) -** This is a pilot program launched in 2020 that funds transportation and planning projects that reduce GHG emissions in California.
- **Federal Transit Administration (FTA) Section 5310 -** Enhanced Mobility of Seniors and People with Disabilities Program - As the title suggests, this program funds projects that improve mobility for seniors and people with disabilities by identifying and removing barriers and improving transportation services like paratransit. This project is part of the FAST Act of 2015.
- **TRANSPAC Subregional Transportation Mitigation Program (STMP) -** TRANSPAC (Transportation Partnership and Cooperation) is a Regional Transportation Planning Committee for Central Contra Costa County. The STMP collects mitigation fees from new developments and allocates it to the most appropriate and effective regional transportation projects that increase the capacity of transportation systems to accommodate new development.
- **Highway Safety Improvement Program (HSIP) Grants -** These grants, administered by the Federal Highway Administration, fund projects that are meant to significantly reduce traffic fatalities on public roads. The HSIP program is a part of the 2015 FAST Act.
- **Regional Surface Transportation Block Grant -** These are grants provided by the FTA to states and localities for different transportation projects, including highway improvements, bridge or tunnel projects on public roads, pedestrian and bicycle infrastructure, and transit capital projects.
- **Land and Water Conservation Fund (LWCF) -** Created by congress in 1964, Land and Water Conservation Funds are used to purchase land for all types of parks, from national parks to community trails and neighborhood ball parks.
- **Recreational Trails and Greenways Grant Program -** Funded by Proposition 68, this program will fund projects that provide nonmotorized infrastructure development and enhancements that promote new or alternate access to parks, waterways, and outdoor recreational pursuits to encourage health-related active transportation.

5.2.4 Ease of Implementation

Numerous factors influence the ease or difficulty of initiating, completing, and putting a project into action. While a recommended project or program may align with community priorities, likely benefit many and appear a candidate for funding, assessing the challenges of implementation remains critical. Determining that the challenges of implementation of a single project are significant, facilitates the identification of other, more implementable projects that achieve the same benefits.

Factors used to assess the ease of implementation of recommendations include:

- Required cross-agency coordination
- Cross-jurisdictional physical footprint
- Engineering complexity
- Lack of technological "future proofing;" i.e., the potential that a project will become obsolete due to new technologies

5.3 Evaluation Process

As noted, the evaluation criteria outlined in Section 5.2 were developed in consultation with the PWG and then applied to candidate projects. This was part of a larger evaluation process that included:

1. Developing lists of potential projects and plans directly from community members during the outreach process, for review by the PWG. The PWG weighed in as a group and individually to identify projects with high potential based on recommendations.
2. Working with the PWG to develop the evaluation criteria outlined in Section 5.2.
3. Applying the four criteria to potential projects and plans, including:
    - Assessing candidate projects against existing mobility plans to identify those supportive of relevant mobility goals or redundant with implemented projects.
    - Assessing the feasibility of candidate projects in terms of required agency coordination, funding potential, and historic implementation challenges.
4. Presenting the draft CBTP to the project Steering Committee for document review and evaluation of recommendations.
5. Revising and finalizing priority projects and plans based on comments of the Steering Committee.

5.3.1 Criteria Scoring Categories

Recommendations were scored one through five for each evaluation criterion. A score of one reflects the lowest potential for fulfillment of that category; five the highest. For all project and plans, the following score averages were calculated:

- **Area Need Score:** The average score of Criterion 1 (Reflects Community Priorities) and Criterion 2 (Increases Access)
- **Project Potential Score:** The average score of Criterion 3 (Financial Feasibility) and Criterion 4 (Ease of Implementation)

Projects and plans have been categorized into three groups based on the results of this scoring system.

High Need + High Potential Recommendations

These recommendations received an Area Need Score of 3.5 or above and a Project Potential Score of 3.5 or above. These projects and programs are consistent with community priorities, as reflected in mobility gaps identified in the CBTP outreach process, ongoing studies, and recommendations of the previous CBTP. These projects have the highest potential to reduce broad or specific access gaps that currently challenge community members.

In addition, these recommendations are also unlikely to face significant implementation challenges, as shown in high average scores for financial feasibility and ease of implementation.

High Need + High Potential Recommendations should be considered for near-term planning and implementation.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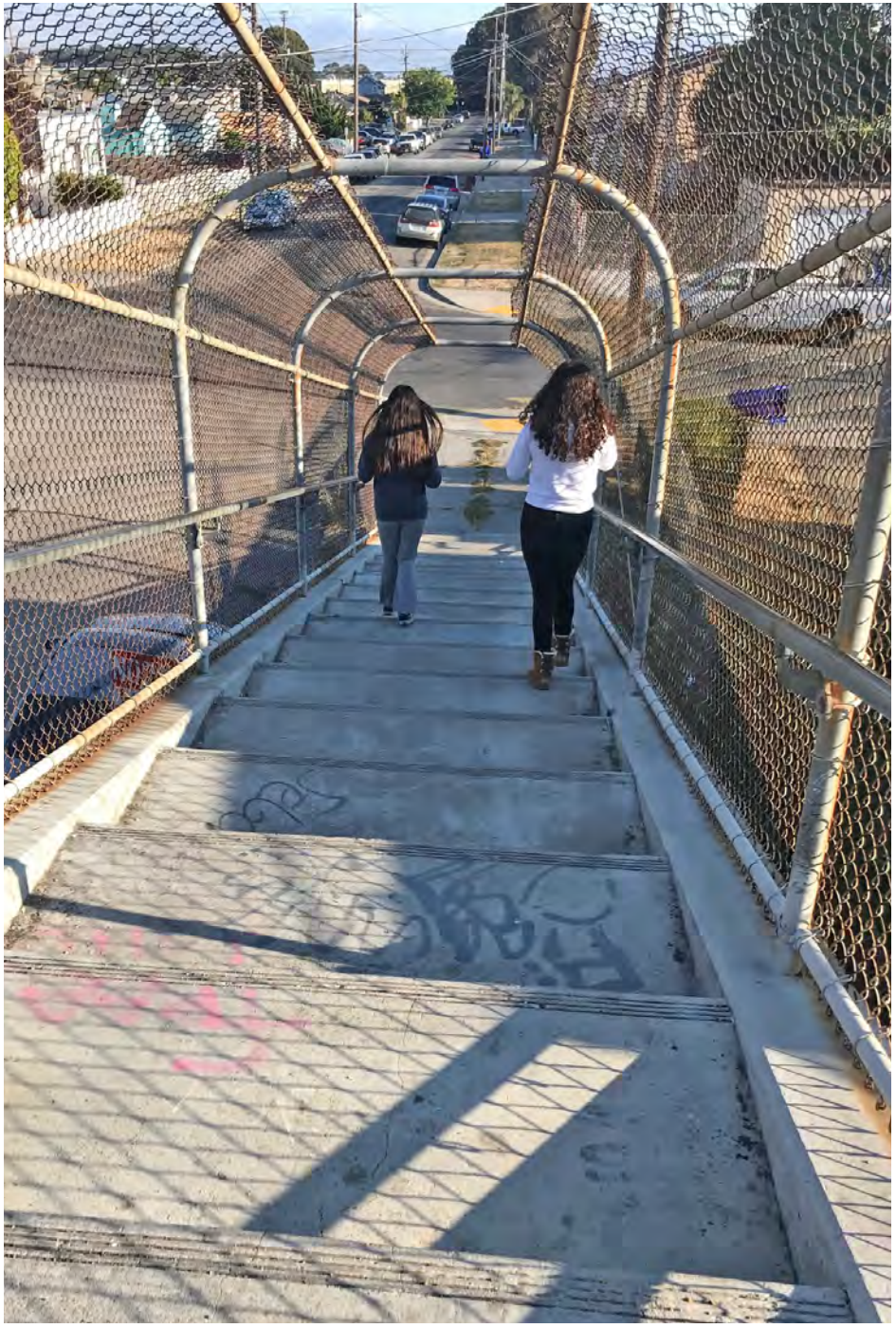


High Need Recommendations

High Need Recommendations received an Area Need Score of 3.5 or above and a Project Potential Score of below 3.5. These projects will fulfill community priorities and increase community access but may be difficult to complete due to funding and costs, cross-jurisdictional management, engineering, and other implementation challenges.

These projects should be considered for the future. They reflect the community's needs and past study results. The jurisdictions, agencies, and stakeholders that would likely need to coordinate on implementation should remain open to future management structures. Creative funding sources should be researched.

5.3.2 Project Types

Recommendations fall within the following three types of projects and plans:

Active Transportation. These are generally capital improvements that increase safe, healthy, active transportation choices, namely walking and biking, for everyday trips. Examples include improvements to trails and greenways, separated bike paths and cycle tracks connecting to jobs, grocery stores and transit, intersection improvements, and providing bike lockers and storage at important destinations like job centers and transit hubs.

Transit. Transit projects may include new routes, expanding operating hours of certain lines, increasing transit line frequency, or improving transit stops with lighting, shelter, and seating.

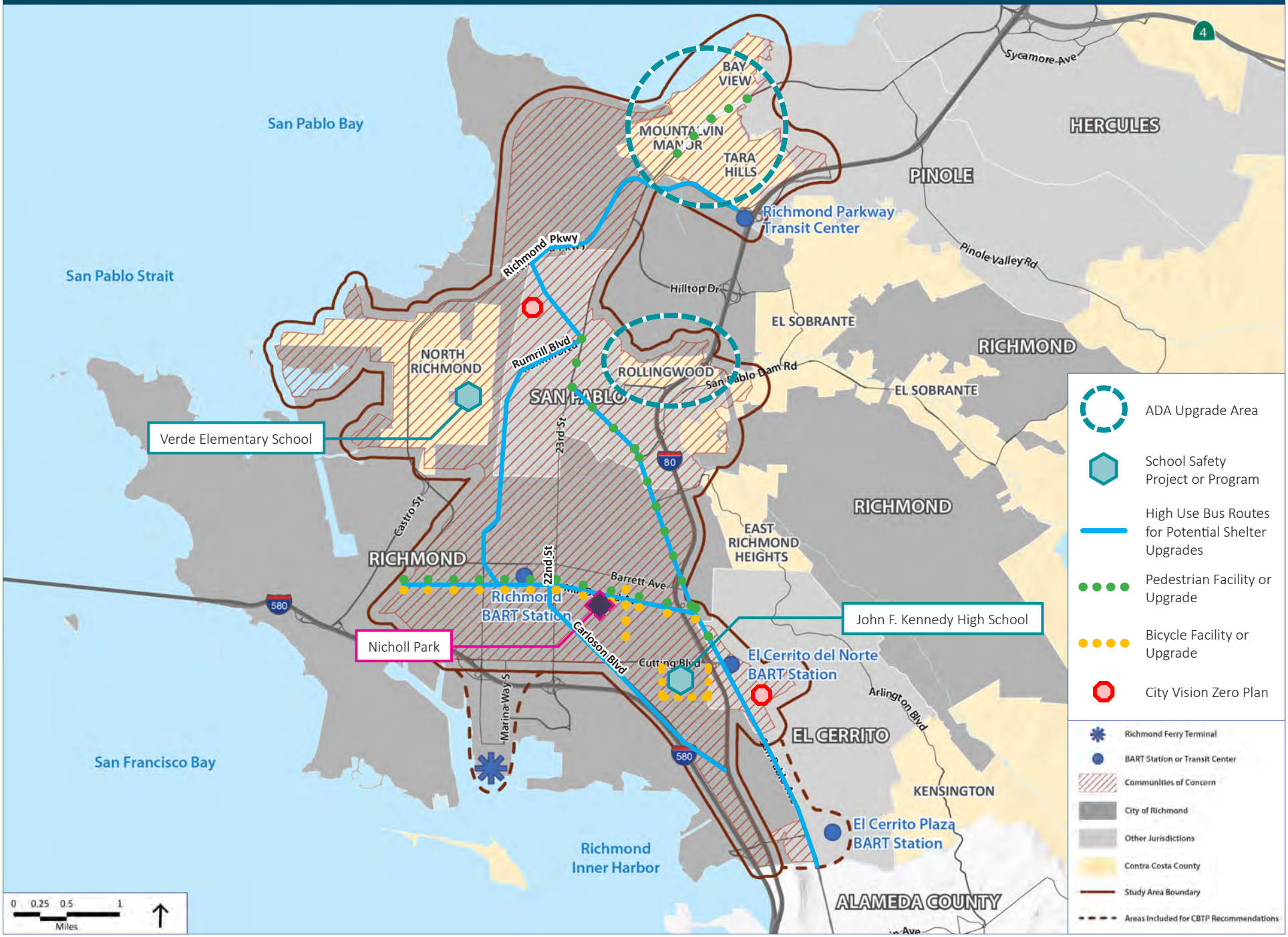
School Safety. School safety projects provide safe, non-motorized routes between where people live and local schools. Projects include enhancing school-adjacent crosswalks with signals and flashing beacons, providing neighborhood bike path access directly to schools, and improving lighting along these and other routes commonly traveled by students.

5.4 Recommended Projects and Plans

The following section includes all recommended projects and plans across the three categories for the Richmond CBTP study area, as identified by the scoring system described in Section 5.3.

High Need + High Potential Recommendations are shown on Figure 5-1.

Figure 5-1 High Need + High Potential Recommendations



5.4.1 High Need + High Potential Recommendations

As noted in Section 5.3, High Need + High Potential Recommendations are those projects and programs most consistent with community priorities. They have the highest potential to reduce access gaps that currently challenge community members. In addition, they are financially feasible and would face minimal implementation challenges. They received scores of 3.5 or above for both Area Need and Project Potential.

The following tables summarize recommendations across project type. Each table includes recommendations, Area Need score, Project Potential score, and estimated cost.

5.4.1.1 Active Transportation Projects and Programs

Active Transportation Projects, including bicycle and pedestrian programs and related capital improvements, comprise the majority of the High Need + High Potential Recommendations. Not only were such projects identified by the community, in current studies and during CBTP advisor coordination, but funding for active transportation and multi-modal safety remains available in the wake of COVID-19 mobility changes.

Table 5-1 High Need + High Potential Active Transportation Projects and Programs

Recommendation	Area Need Score (3.5+)	Project Potential Score (3.5 +)	Estimated Cost
Fill bicycle gaps on street networks surrounding public schools and neighborhood parks:			
Fill bicycle gaps surrounding Nicholl Park/DeJean Middle School by installing a Class III Bike Boulevard Route on Harry Ells Place from Richmond Greenway to Nevin Avenue.	3.5	4.25	$105,000
Fill bicycle gaps surrounding John F. Kennedy High School and Laurel Park by installing a Class III Bike Boulevard Route along entire Berk Avenue/49th Street loop.	4	3.65	$330,000
Fill bicycle gaps surrounding Unity Park Community Plaza by installing a Class III Bike Boulevard Route on 16th Street from McDonald Avenue to Richmond Greenway.	3.75	3.5	$125,000
Install a Class III Super Sharrow Route on Macdonald Avenue from Richmond Parkway to Key Boulevard.	3.75	3.75	$90,000
Increase pedestrian safety along San Pablo Avenue from Cutting Boulevard to Rumrill Boulevard, with crosswalks, signals and lighting improvements coordinated with future transit services planned by WCCTAC and AC Transit.	5	3.5	$3.5 million to $5 million
Close sidewalk gaps, improve existing sidewalk conditions and improve access to bus stops along the west side of San Pablo Avenue between Tara Hills Drive and Murphy Drive in San Pablo.	4.5	4	$750,000 to $1.25 million
Increase pedestrian safety along MacDonald Avenue from San Pablo Avenue to Richmond Parkway, with crosswalks, signals and lighting improvements coordinated with future transit services planned by WCCTAC and AC Transit.	4.5	3.5	$5 million to $10 million
Install or improve ADA-compliant curb ramps in high-use areas of Tara Hills, Montalvin Manor and Rollingwood communities.	4.5	5	$12,000 per ramp
Initiate City of San Pablo and City of El Cerrito *Vision* Zero Plans	3.5	4	$250,000 per plan

5.4.1.2 Transit projects and Programs

Public transit projects, including improved paratransit programming, are a high priority for communities in the Richmond CBTP study area. This is reflected in feedback on AC Transit routes, improved BART access, and upgrades to bus stop amenities along major corridors.

However, declining transit revenues and loss of funding in the wake of COVID-19 have reduced the current financial feasibility of transit projects. As a result of current conditions, most transit recommendations received a lower *Project Potential* score and fall under the High Need Recommendations category.

5.4.1.3 School Safety projects and Programs

As of this draft CBTP, all schools and facilities within the West Contra Costa County School District are closed to classroom learning for the 2020 to 2021 school year. As noted in Section 5.1, these conditions make it difficult to predict implementation of school safety projects. However, funding for previously identified Safe Routes to School programs increases the potential for these projects.

Table 5-2 High Need + High Potential Transit Projects and Programs

Recommendation	Area Need Score (3.5+)	Project Potential Score (3.5 +)	Estimated Cost
Install lighting, signage and shelter improvements consistent with 2019 NACTO and ADA standards at up to 10 bus stops along Routes 71 and 40, or high-use corridors.	4.5	3.5	$20,000 to $30,000 per stop

Table 5-3 High Need + High Potential Transit Projects and Programs

Recommendation	Area Need Score (3.5+)	Project Potential Score (3.5 +)	Estimated Cost
Implement Safe Routes to School infrastructure improvements along segment of Cutting Boulevard that connects El Cerrito Del Norte BART Station and Kennedy High School (between South 45th Street and San Pablo Avenue).	5	4	$400,000 to $700,000
Implement circulation and safety improvements, including potential secondary entrance, on the Verde Elementary School campus.	4.5	3.5	$300,000 to $600,000

5.4.2 High Need Recommendations

As noted in Section 5.3, High Need Recommendations are consistent with community priorities and have high potential to reduce access gaps. However, they may be more difficult to complete than High Need + High Potential Recommendations due to funding, management, engineering, and other implementation challenges. They received an Area Need Score of 3.5 or above, and a Project Potential Score below 3.5.

5.4.2.1 Active Transportation Projects and Programs

Table 5-4 High Need Active Transportation Projects and Programs

Recommendation	Area Need Score (3.5 +)	Project Potential Score (below 3.5)	Estimated Cost
Widen sidewalks, improve lighting, and increase maintenance conditions of the Barrett Avenue/BART undercrossing.	3.75	2	$5 million to $8 million
Widen sidewalks, improve lighting, and increase maintenance conditions of the Macdonald Avenue/BART undercrossing.	4	2	$5 million to $8 million
Widen sidewalks, improve lighting, and increase maintenance conditions of the Pennsylvania Avenue/BART overcrossing.	3.75	1.5	$5 million to $8 million
Extend current terminus of recent San Pablo Avenue complete streets improvements from Rivers Street to Rumrill Boulevard.	3.75	2.75	$1.6 million to $2.4 million
Develop pedestrian, bicycle and transit user safety program, including infrastructure, signalization and striping components, on Central Avenue from San Pablo Avenue through Interstate 80 intersection.	4.5	3	$4 million
Develop Barrett Avenue “road diet” program at Interstate 80 to reduce auto speeds and increase pedestrian safety. Components include speed humps, bulb-outs, rapid flashing beacons and lane diet.	4	2.5	$2 million to $4 million
Reduce impacts of commercial truck by-passes on local travel routes with recommendations from the Development Program Report for the North Richmond Area of Benefit, such as truck restriction signage, truck calming measures and improved pedestrian and bicycle infrastructure.	3.75	3.25	$20,000 for signage program to $3 million in infrastructure

5.4.2.2 Transit Projects and Programs

Table 5-5 High Need Transit Projects and Programs

Recommendation	Area Need Score (3.5 +)	Project Potential Score (below 3.5)	Estimated Cost
Increase the frequency of AC transit Route 76 from 30 minutes to 15 minutes to increase access to BART stations throughout the CBTP study area.	4	1.5	$1.5 million to $2.5 million
Amend the Hilltop Mall loop of WestCat Route 19 to provide direct service to the Richmond Social Security Office at 3164 Garrity Way.	3.5	2.5	$500,000 to $1 million
Program a City-subsidized shuttle service routed from BART Stations in the CBTP study area to social service facilities that support mobility-challenged communities, including: Greater Richmond Interfaith Program, Richmond Senior Citizens Center, El Cerrito Senior Center, San Pablo Senior Center, Richmond Health Center and North Richmond Center for Health.	3.5	2	Up to $350,000
Close gaps in R-Transit programming by expanding holiday and weekend service.	4	1.5	$500,000
Improve coordination between R-Transit program and East Bay Paratransit to avoid duplicating services.	4	3	$50,000
Install new paratransit bays at Richmond Area BART stations to accommodate expanded service and improve vehicle access.	4	1	$750,000

5.4.2.3 School Safety Projects and Programs

Table 5-6 High Need School Safety Projects and Programs

Recommendation	Area Need Score (3.5 +)	Project Potential Score (below 3.5)	Estimated Cost
Implement a near-term safe routes to school program on streets surrounding Verde Elementary School.	4.5	2.5	$75,000
Improve signalization and striping at I-80/ San Pablo Dam Road Interchange for safety of Riverside Elementary School students.	4.5	2.5	$500,000

CONTRA COSTA
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PLACEWORKS

Vision Zero & Systemic Transportation Safety "How To" Policy and Implementation Guide

Countywide Technical Procedures for Local Jurisdictions in Contra Costa

Contra Costa Transportation Authority (CCTA)

October 30, 2020 Draft-1

WC16-3343.01

Contributors include:

FEHR & PEERS

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1. Introduction

The increased occurrence of transportation-related fatalities and severe injuries has contributed to a national epidemic and public health crisis, which is preventable. Roadway collisions are the eighth leading cause of fatalities globally, and the leading cause of fatalities for people between ages 15 and 29.[1] In California, 22 percent of transportation-related fatalities between 2008 and 2017 involved people walking, compared with 14 percent nationally over the same time period.[2] In the nine-County Bay Area, prior to the onset of the COVID-19 pandemic and its effects on transportation behavior, transportation collisions resulted in more than 400 fatalities and 2,000 severe injuries on average every year.[3] Public health concerns are further complicated by transportation-related air pollution, greenhouse gas emissions, and time spent traveling in sedentary positions. And, vehicle-involved collisions often worsen traffic congestion due to "rubber neck" onlookers slowing down to witness injuries or property damage.

Every person who drives also walks (or uses a personal assistive mobility device) for part of every trip. Vision Zero focuses attention on safety for all people and the shortcomings of the transportation system, including the built environment, policies, and technologies that influence behavior. The Safe System Approach sets shared responsibility on transportation and public health professionals, policymakers, decision-makers, and traffic safety officials. Because human error is inevitable, the transportation system should be forgiving, by design. A culture shift toward a systemic approach to safety is essential to avoid repeating trends using the past car-centric approach and treatments. There is a demonstrated relationship between speed – which directly affects the amount of kinetic energy transferred during a collision – and collision frequency and severity. Higher speed (i.e., too fast for conditions or above the posted speed limit) is recognized as one of the fundamental factors that influences collision severity, and can be avoided with more appropriate design.

The Contra Costa Transportation Authority (CCTA) is committed to support jurisdictions in preventing mobility- and transportation-related fatalities and severe injuries on public rights-of-way, private driveways, and parking facilities. Agencies responsible for project implementation, along with private property owners and developers, need to serve as crucial partners in order to achieve this goal. Any loss of life or injury can be prevented, especially when people using non-vehicular transportation modes lack a similar amount of physical protection provided to people traveling in multi-ton vehicles, which require compliance with carefully designed and regulated manufacturing requirements. Moreover, the greater loss of life and rate of injury in low-income communities and communities of color, is unjust.

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[1] World Health Organization (2020). *Global Health Observatory Data.* Accessed at https://www.who.int/gho/road_safety/mortality/number_text/en/

[2] Caltrans (2020). "Rethinking Traffic Safety" - Safety Briefing Presentation June 2020.

[3] Staff report, September 9, 2020, Metropolitan Transportation Commission, Administration Committee Agenda Item 3a – 20-1174: Regional Safety Data System & Safety Report Contract.

CCTA launched their Vision Zero Framework & Systemic Safety Approach effort to serve as the basis for transportation planning, policy, design, construction, and funding throughout Contra Costa. To date, this effort has focused on countywide data collection and analysis, stakeholder engagement, and developing technical resources such as this "How To" Guide. Through this effort, CCTA is encouraging each local jurisdiction – cities, unincorporated communities within the county, BART, and East Bay Regional Parks District in cooperation with professionals in public health, emergency response, and law enforcement – to adopt and implement Vision Zero by committing to eliminate all transportation-related fatalities and severe[4] injuries using a collaborative, culturally sensitive, and multi-disciplinary approach. Vision Zero is encouraged to be integrated consistently countywide as standard practice in local and regional transportation planning and engineering. Having an adopted Vision Zero Action Plan and/or Local Road Safety Plan increases the opportunities for jurisdictions to compete for state and regional funding.

1.1 Context

Developing a Contra Costa framework for Vision Zero is a key implementation recommendation of the 2018 Countywide Bicycle and Pedestrian Plan (2018 CBPP).[5] The collision analysis and community outreach conducted as part of the 2018 CBPP highlights the need to address transportation safety issues throughout Contra Costa, particularly for vulnerable communities and people walking and bicycling. Countywide collision patterns from 2008 through 2017 reveal high and disproportionate rates of injuries and fatalities involving people walking and bicycling as compared to people driving vehicles, which underscores the importance of Vision Zero efforts (see *Appendix C. Countywide Collision Analysis Summary and Common Bicycle and Pedestrian Collision Patterns* for more details). The number of collisions that involve a person walking has increased from approximately 200 in 2008 to over 250 in 2017 and, in addition to these collision trends, an increasing number of people are using personal powered mobility devices (e.g., wheelchairs, scooters, and bicycles), which has heightened the urgency of

Contra Costa Safety Context

- On average, from 2008 through 2017, eight people walking or bicycling were involved in a collision on a Contra Costa road every week.
- People walking and biking account for 38% of injuries and fatalities on Contra Costa roads, even though they represent 20% of all collisions.

Source: Transportation Injury Mapping System (TIMS), 2008– 2017.

[4] Model Minimum Uniform Crash Criteria (MMUCC) 4th Edition. defines severe injuries as incapacitating injuries. Accessible at: https://crashstats.nhtsa.dot.gov/Api/Public/ViewPublication/811631

[5] Countywide Bicycle and Pedestrian Plan Update, 2018, Contra Costa Transportation Authority, *see Implementation Action 1 "Develop a Vision Zero and Systematic Safety approach for Contra Costa."* Pg. 68.

implementing safety improvements. Further, the COVID-19 pandemic has significantly changed travel patterns (e.g., routes, distribution, volume, frequency) and has resulted in a decrease in the rate of minor injury collisions per vehicle-miles traveled (VMT), but an increase in the rate of fatal and severe injury collisions.[6]

Through this effort, CCTA acknowledges Contra Costa's diverse populations and that low-income communities, people of color, and immigrants are disproportionately represented in fatal or severe injury collisions. Although Communities of Concern[7] in Contra Costa – defined by the Metropolitan Transportation Commission (MTC) as census tracts having concentrations of both low-income and non-white populations – include 20 percent of the county population, they account for 28 percent of collisions involving all transportation modes that result in a fatality or severe injury. Improving equity is highlighted as a key goal in the 2018 CBPP[8] and is an integral component of Vision Zero throughout planning and implementation. Vision Zero is also integral to funding appropriation, when jurisdictions' budgets are more limited, and when projects are cost-engineered to reduce scope or change materials. Equity in risk-taking is also essential. People bicycling, walking, or using mobility devices should not be expected to take a disproportionate amount of risk compared to people traveling in vehicles. Equitable strategies – such as prioritizing safety improvements in areas that have been historically underserved, and leading robust engagement by including people who are most vulnerable and have not been included in past regional and local planning processes – are fundamental to achieving Vision Zero.

Relevant Policies & Plans

This "How To" Guide also addresses key considerations related to the following legislation and policy:

Local and Regional

- MTC Resolution No. 4400 – Regional Safety/Vision Zero Policy adopted by MTC on June 24, 2020 as the designated Metropolitan Planning Organization (MPO), to support achievement of safety targets. This Resolution establishes a region-wide policy of intent to work with MTC's local partner agencies to encourage and support actions towards eliminating traffic fatalities and severe injuries in the Bay Area by 2030. MTC is implementing a $500,000 grant through Caltrans' Systemic Safety Analysis Report (SSAR) Program to develop a comprehensive regional safety data system and safety report within one year (with a provision to extend for two additional years).
- Contra Costa Local Plans and Studies – *Appendix B. Contra Costa Local Plan Review* presents recent, local safety-related plans and studies, including Contra Costa County's ongoing Vision Zero Action

[6] *Transportation Injury Mapping System (TIMS), Safe Transportation Research and Education Center, University of California, Berkeley. 2020. "Provisional weekly police-reported injury crashes on state highways in California." Accessed at* https://tims.berkeley.edu/covid19.php

[7] MTC defines communities of concern as census tracts that have a concentration of both minority and low-income residents. See Plan Bay Area 2040 Appendix A for more information: https://www.planbayarea.org/sites/default/files/pdf/Draft_Plan_Bay_Area/Appendices_to_Draft_Equity_Analysis_Report.pdf

[8] Countywide Bicycle and Pedestrian Plan Update, 2018, Contra Costa Transportation Authority, see *Goal 5 "equitably serve all of Contra Costa's communities while ensuring that public investments are focused on projects with the greatest benefits."* Pg 19.

Plan, San Pablo SSAR, Railroad Avenue Complete Streets Study, and Iron Horse Trail Corridor Plan, among several other active transportation and corridor plans.

State & National

- Regional and statewide mandates for greenhouse gas (GHG) reductions and climate change adaptation policies and laws such as California State Assembly Bill (AB) 32 and Senate Bill (SB) 375.
- The transition replacing the level-of-service (LOS) method with vehicle-miles traveled (VMT) in transportation analysis for California Environmental Quality Act (CEQA) compliance as part of SB 743 implementation, which can result in more efficient urban development near transit and a higher prioritization of projects for people walking and bicycling, to avoid or mitigate VMT impacts after environmental review of transportation and land use projects and plans.
- July 2020 interim guidance as part of Caltrans' Land Development and Intergovernmental Review (LDIGR) process, which incorporates safety impact analysis as part of the CEQA review process for transportation and land use development projects and plans.
- Other funding opportunities for projects primarily for people walking and bicycling, including SB 1 (gas tax) and the California Air Resources Board (CARB) Cap-and-Trade Program.
- California 2020-2024 Strategic Highway Safety Plan (SHSP), which offers strategies to reduce roadway fatalities and severe injuries, along with specific actions to implement strategies.
- New funding opportunities for jurisdictions in California to prepare Local Road Safety Plans (LRSPs), which are required to qualify for Federal Highway Administration (FHWA) Highway Safety Improvement Program (HSIP) funds appropriated by the California Transportation Commission (CTC)
- Opportunities for collaboration and efficiency within each jurisdiction (e.g., Planning and Public Works departments) and interagency combining of funds (e.g., County Health Services and local transportation agencies) for programs with shared goals, and varying metrics and indicators. For example, SB 1000 requires environmental justice be addressed in each jurisdiction's General Plan, which could result in opportunities to simultaneously achieve safety-related equity and climate goals.

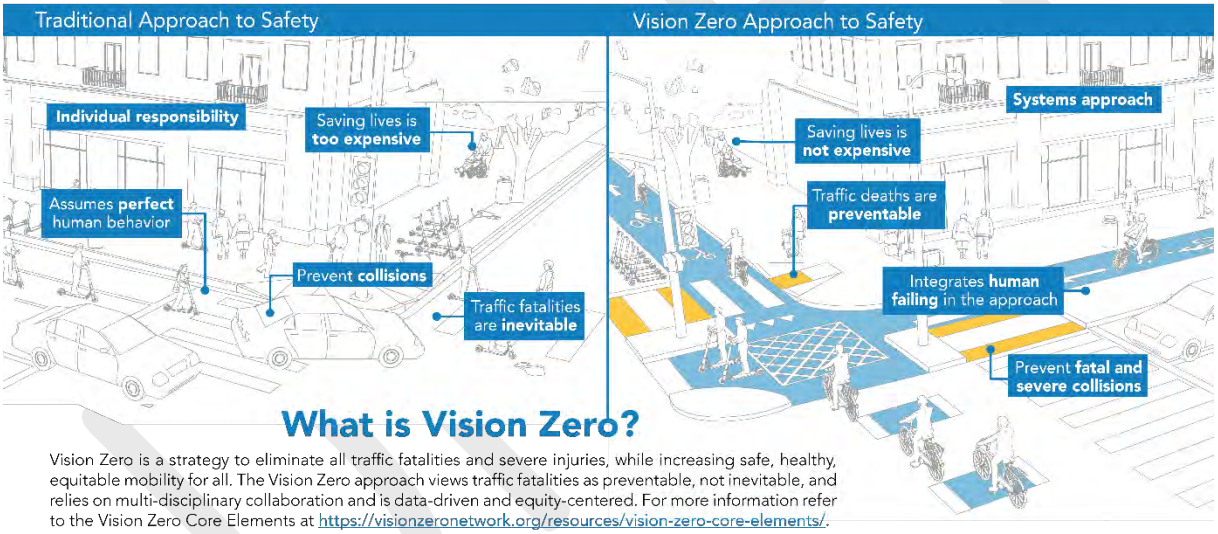
Global

- United Nations General Assembly Resolution A/70/L.44 – initiates Second Decade of Action for Improving Global Road Safety 2021-2030 with a goal to provide access to safe, affordable, accessible, and sustainable transportation systems for all by 2030

1.2 Vision Zero and the Safe System Approach

CCTA encourages each jurisdiction to adopt and implement a Vision Zero Action Plan. CCTA, in coordination with the County Health Services' Community Wellness & Prevention Program (CWPP), seeks to help eliminate transportation-related fatalities and severe injuries, while improving access to healthy and equitable multimodal mobility for all people who share the road and off-street private and public rights-of-way, such as shared-use paths (e.g., Iron Horse, Contra Costa Canal, Delta De Anza, Ygnacio Canal, Ohlone Greenway, and Lafayette-Moraga trails). Safety and public health should be prioritized in transportation planning, policy, and design compared to past approaches that focused on minimizing vehicular travel time for convenience and maximizing throughput of vehicles instead of people.

Vision Zero includes a collaborative and multi-disciplinary approach that brings together diverse stakeholders to address complex challenges. Vision Zero acknowledges that many factors such as infrastructure design, human behavior, policies, automated monitoring and enforcement, and technology contribute to safer mobility and set clear actions in support of achieving zero transportation-related fatalities and severe injuries.



Inset 1. Comparison of Traditional vs. Vision Zero Approach to Safety
Source: Fehr & Peers

The Safe System Approach

The "Safe System" approach outlines strategies to reach Vision Zero. This approach focuses on influencing system-wide practices, policies, and designs to lessen the severity of collisions, and has been employed effectively in countries such as Sweden, the Netherlands, Australia, and New Zealand for more than 30 years. These early adopters have seen at least a 50 percent reduction in transportation-related fatalities. Japan does not provide on-street vehicular parking in public places – enhancing quality-of-life and reducing the probability and frequency of vehicular conflicts with people in public space (a vehicle purchase is only

permitted after proof of off-street parking space). The key principles and elements of a Safe System approach (as defined by the FHWA) are shown in **Inset 2**.[9]

Encouraging safer, more context-appropriate travel speeds and building "safety nets" into the design of streets and crossings will enable CCTA to downgrade fatal collisions to a survivable collision, and a severe injury collision into a minor injury collision. This is important because one of the most significant factors influencing the frequency and severity of collisions is vehicle speed, which directly affects the amount of kinetic energy transferred during a collision, as shown in **Inset 3**.

Inset 2. Key Principles & Elements of a Safe Systems Approach
Source: FHWA

Inset 3. Vehicle Speed comparison to probability of Injury or Fatalities of People Walking
Source: San Francisco MTA Vision Zero Action Plan

[9] FHWA "Zero Deaths – Saving Lives through a Safety Culture and a Safe System." https://safety.fhwa.dot.gov/zerodeaths/zero_deaths_vision.cfm

Another way to approach Vision Zero and systemic safety focuses on three themes:[10]

- **Focus on what works** – focus on design approaches that are proven to reduce potential multimodal conflicts, reduce speeds where collisions are more likely, improve laws, reform emphasis on enforcement, analyze emergency response and trauma care, and provide more safety education and outreach for all ages and abilities.
- **Accelerate Advanced Technology** – leverage the application of and encourage automated driving systems (ADS) to improve safety performance through partnerships among the public sector, private sector, and public health and safety advocacy groups.
- **Culture shift** – A safety culture can be nurtured through a Safe System approach — the view that people driving will occasionally, but inevitably, make mistakes and that the overall transportation system should be designed to eliminate fatalities and severe injuries. The occasional mistake should not result in a fatality or severe injury.

1.3 Introducing the "How To" Guide

This guide is intended to be used by jurisdictions in Contra Costa to leverage industry best practices while implementing Vision Zero and Systemic Safety-related policies, programs, and projects. The guide summarizes best practices and indicates the role of CCTA and jurisdictions for each core element. The "How To" Guide draws from the Institute of Transportation Engineers (ITE) and the Vision Zero Network's *Core Elements for Vision Zero Communities*,[11] and is organized by the following chapters:

1. **How to Develop Vision Zero Leadership and Commitment.** This chapter focuses on the core elements of achieving public, high-level, and ongoing commitment, authentic community engagement, and strategic planning.
2. **How to Take a Data-Informed Approach**. This chapter focuses on the core elements of equity-focused analysis and programming, responsive and high-frequency injury location-specific planning, proactive and systemic planning, and comprehensive monitoring and evaluation.
3. **How to Encourage Safer Speeds and Create Safer Routes**. This chapter focuses on the core elements related to context-appropriate speeds on roadways and pathways, complete streets for all, and project delivery.

The guide includes information, resources, and data analysis conducted by CCTA as part of the Contra Costa Vision Zero & Systemic Safety Framework. As part of this effort, CCTA is leading countywide scale elements such as data collection, technical assistance for jurisdictions, and technical analysis. For example, CCTA is developing a Vision Zero Database, which includes collision data and built environment data, such as the

[10] Rand's 2018 report *Road to Zero: A Vision for Achieving Zero Roadway Deaths by 2050.* Accessed at https://www.rand.org/pubs/research_reports/RR2333.html

[11] ITE & Vision Zero Network. *Core Elements for Vision Zero Communities.* Accessed at https://visionzeronetwork.org/resources/vision-zero-core-elements/

location of crosswalks and channelized right turn lanes collected in partnership with Ecopia Tech.[12] CCTA has used this Database to develop the Countywide Safety Priority Locations Maps and Common Bicycle and Pedestrian Collision Patterns. CCTA, along with MTC, can continue to provide local jurisdictions with resources and technical assistance, and advance local safety planning and project development. Local jurisdictions are commonly responsible for project implementation. This guide also includes the following research compilations and resources as appendices and additional resources to jurisdictions:

- Appendix A. Vision Zero Best Practices Review
- Appendix B. Contra Costa Local Plan Review
- Appendix C. Contra Costa Countywide Collision Analysis Summary and Common Bicycle and Pedestrian Collision Patterns
- Appendix D. Contra Costa Countywide Safety Priority Locations Maps
- Appendix E. CCTA Countywide Bicycle and Pedestrian Countermeasure Toolbox
- Appendix F. Vision Zero Core Elements Resource Library
- Appendix G. List of CCTA Vision Zero Database Variables

[12] Ecopia Tech uses artificial intelligence to analyze high-resolution aerial imagery to develop GIS inventories of built environment factors such as the location of sidewalks, crosswalks, channelized right turn lanes. For more details, visit https://www.ecopiatech.com

2. How to Develop Vision Zero Leadership & Commitment

Achieving a goal of zero fatalities and severe injuries requires interagency and intra-agency (interdepartmental) coordination across departments, and authentic public engagement during the planning and implementation process.

2.1 Public, High-Level & Ongoing Commitment

Successful Vision Zero planning efforts[13] rely on having key elected officials and public agency leaders (especially from transportation planning, engineering, law enforcement, and public health departments) commit to a goal of eliminating transportation-related fatalities and severe injuries within a specific timeframe. This commitment to Vision Zero sets a consistent tone and direction for funding (programming and appropriation prioritization) decisions, policies, data collection & analysis, and practices across all departments and agencies that address transportation safety issues.

A commitment to Vision Zero should include:

- A policy statement adopted by the Town or City Council, and Board of Supervisors, committing to eliminate transportation-related severe injuries and fatalities within a specific timeframe
- Interdepartmental and interagency coordination to ensure consistency and accountability between internal departments and partner agencies (e.g., public works, planning, public health, emergency services)

The path toward Vision Zero can look different in each community, but an overall commitment should be consistent countywide. In some cases, such as Berkeley, this commitment might be initiated by local grassroots groups advocating for Vision Zero. In other cases, such as Fremont, commitment can start from elected officials or city staff in a more "top-down" approach.

Suggested Next Steps for each Jurisdiction

2.1.1 Adopt a Vision Zero policy statement, e.g., as part of a City Council Resolution, committing to zero transportation-related severe injuries and fatalities within a specified timeframe, and that reflects

[13] Vision Zero Network. *Vision Zero NYC 2-Year Progress Report (2016) & Vision Zero Seattle 2-Year Progress Report (2017).* Accessed at http://www.nyc.gov/html/visionzero/assets/downloads/pdf/vision-zero-year-two-report.pdf and http://www.seattle.gov/Documents/Departments/beSuperSafe/VZ_2017_Progress_Report.pdf

best practices for street design elements and programs to mitigate human error. All planning, design, construction, operation, and maintenance of projects should reflect the Safe System approach.

2.1.2 Facilitate discussions and share materials to educate elected officials, agency leadership, and staff on Vision Zero and the Safe System approach, including potential trade-offs related to more traditional approaches to traffic operations. Stakeholder education and discussions can also:

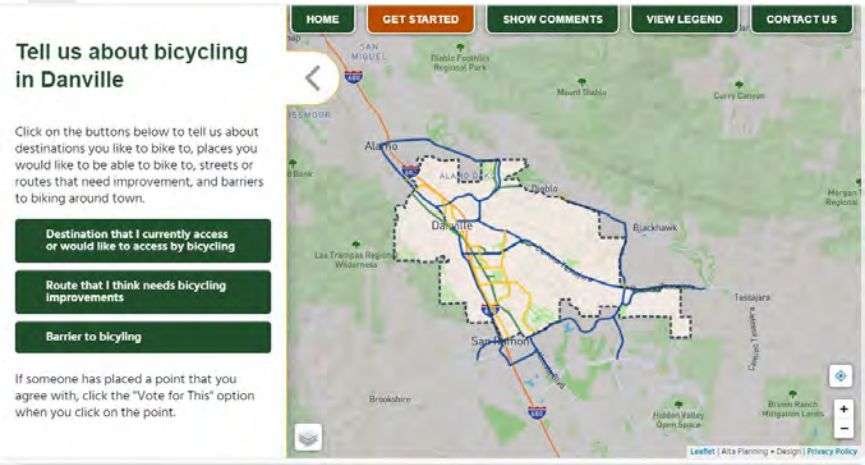
a. Frame Vision Zero as a multifaceted strategy that is not only a transportation concern, but also a public health, economic development, equity, and environmental concern.
b. Humanize the issue by supplementing collision data with compelling stories of lived experiences by organizing a forum to remember those killed in a collision or discussing how specific collisions could have been prevented and how to prevent them through the lens of systemic safety.

2.1.3 Encourage interdepartmental and/or interagency coordination by establishing a task force, working group, or repurposing an existing group with broad representation (e.g., public works, planning, safety, public health, and emergency services) to coordinate, collaborate, and hold each other accountable for Vision Zero goals. This group could establish action items, provide updates on progress, share and update local data for countywide analysis and prioritization, evaluate projects, distribute educational material, and provide outreach & awareness strategies.

2.1.4 Educate department heads and city staff on Vision Zero, specifying the role each department or agency plays in addressing transportation safety issues.

2.2 Authentic Engagement

Meaningful and accessible community engagement connects with people "where they are" and in a culturally appropriate manner. This is especially important in Contra Costa, which is home to many diverse communities with safety challenges and opportunities that vary across urban, suburban, and rural communities, and open space areas. Many communities – in Contra Costa and nationally – are moving away from the more traditional "weeknight community



Inset 4. Danville Bike Plan Public Input Map– Danville, CA

meeting" outreach strategy, and instead meeting people at pop-up events such as temporary demonstration projects (e.g., "living preview" installations that show how a future, more permanent project might operate) or information booths at local events and community gathering places such as transit stations, commercial and community centers, cultural events, and farmers markets. During the COVID-19 pandemic, while "Shelter-In-Place" orders have been in effect, jurisdictions have experienced success holding publicly accessible video conference meetings, administering online surveys, and sharing interactive mapping tools to reach the public.

Authentic engagement provides opportunities for interactive feedback, such as through a walking audit, voting exercise, or other interactive activities, and communicates information effectively using concise and visually compelling resources. In most cases, having translated written materials and options for an interpreter in real-time is also important to gather representative feedback. Another strategy is to collaborate directly with community-based organizations (CBOs) and community leaders who can help design an effective engagement strategy and/or summarize community input.

Several cities in Contra Costa have used demonstration projects to test new strategies, such as the Yellow Brick Road in Richmond's Iron Triangle neighborhood. During the community-led planning and design process, roadways and sidewalks were painted to appear as yellow brick intended to calm traffic and highlight the neighborhood's network of walkways. As the community realized that public space could be reimagined, support increased to make the project permanent.

Inset 5. Iron Triangle Yellow Brick Road Walkable Neighborhood Plan Demonstration Project– Richmond, CA

Considering Post-Collision Care

When a person is injured in a collision, they rely on emergency first responders to quickly locate them, stabilize their injury, and transport them to medical facilities. Post-crash care also includes forensic analysis at the crash site, traffic incident management, mental health services and legal support for people affected by collisions and their families, and data on collisions and injuries.[14]

Suggested Next Steps for each Jurisdiction

2.2.1 Meet people where they are. Offer different formats for community engagement activities to include pop-up events and more accessible and interactive ways to gather feedback (e.g., walking audit, bike ride, youth activities, small groups, and one-on-one interactions)

a. Include short-duration, time-flexible online surveys with meaningful distribution, and a minimum participation possibility of two to four weeks

2.2.2 Collaborate with non-governmental, community-based organizations (CBOs), and community leaders, hire staff and contractors representative of the community, and encourage community consultants (with local knowledge) to compete for contracts to be compensated for time and expertise

2.2.3 Reduce barriers to participating in outreach activities and transportation decisions by prioritizing outreach efforts in low-income communities, communities of color, and immigrant communities, while providing participants with reasonable accommodation, translation and interpreter services, childcare, food, and stipends

2.2.4 Use demonstration projects to gather community input on, gain support for, and iteratively adjust initial project recommendations

Further Considerations for Engagement During COVID-19 Pandemic

1. Consistently connect with community-based organizations, faith-based institutions, senior centers, community centers, and parent, student, and teacher organizations
2. Consider using digital engagement strategies such as web-based townhalls, blogposts, podcasts, virtual focus groups, online surveys, story maps, map-based surveys, social media posts, and digital advertisements
3. Non-digital engagement strategies include phone-banking, mobile-based texting, mailers, street art, and posting at local grocery stores
4. Participants can be compensated through e-gift cards or virtual credit for specific apps, such as DoorDash, Postmates, or InstaCart

[14] World Health Organization (WHO) (2016). "Post-crash response: Supporting those affected by road traffic crashes." Accessible at https://www.who.int/violence_injury_prevention/publications/road_traffic/Post-crash_response_booklet.pdf

Case Study: SCAG Demonstration Projects

To support cities in their effort to address transportation safety concerns, the Southern California Association of Governments (SCAG) initiated *Go Human!*, a community outreach and safety marketing campaign to reduce traffic collisions in Southern California and promote active transportation. As part of the campaign, SCAG implemented demonstration projects at locations identified on their Regional High-Injury Network. Quick-build demonstration projects provide temporary "living previews" or "pop-ups" of potential strategies to address specific safety issues identified at their locations. By partnering with local advocacy groups and community-based organizations (CBOs), SCAG showcased potential safety improvements in real time, gathering feedback (and excitement) from people that use the area. These projects have helped win grant proposals to implement longer-term improvements. Example projects:

- Glendora's Roll to the Stroll event
- Meet on the Beach
- Envision San Jacinto

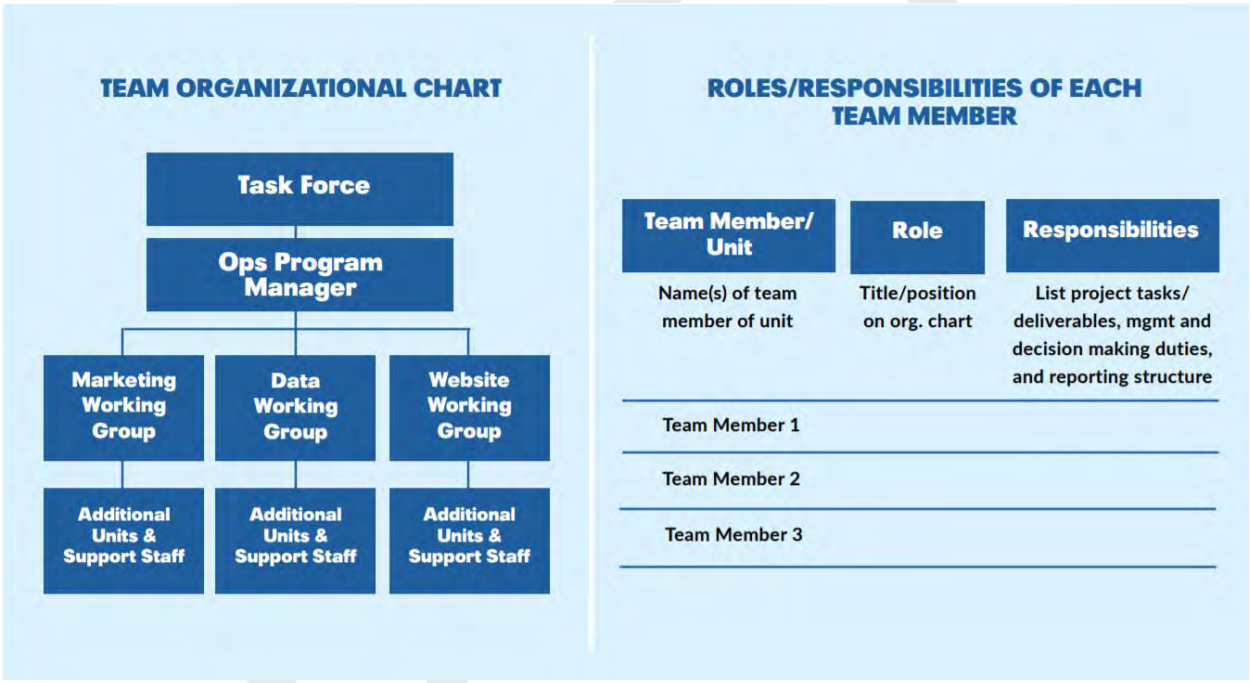
SCAG

gohuman

Inset 6.SCAG Go Human Demonstration Projects
Source: SCAG

2.3 Strategic Planning

Strategic planning for Vision Zero goes beyond a typical safety plan, where a problem is identified and treatments are proposed. Instead, strategic planning often takes the form of a Vision Zero Action Plan, which typically consists of goals, measurable strategies, and a clear timeline for achieving zero fatalities and severe injuries. The Action Plan and corresponding strategies can be built using the Safe System approach, which recognizes that people will inevitably make mistakes and that system designers and policymakers have a shared responsibility to set practices and policies to lessen the severity of collisions. Clear assigned individual responsibility and a feeling of ownership of each action is important for holding (elected and staff) government officials accountable in achieving Vision Zero. Lead and supporting agencies (with a specific job title, name, email address, and phone number) should be identified for each action, as well as clear measures of effectiveness and implementation timelines (see example below).



Inset 7. Example Table for Tracking Progress and Accountability for Next Steps
Source: Vision Zero Network

Building and maintaining a comprehensive database to inform safety planning and analysis also helps inform strategic planning decisions. To inform the Countywide Vision Zero Framework, CCTA is developing a Contra Costa Vision Zero Database, including data regarding safety and the built environment. This database was used to inform the development of Countywide Priority Safety Locations (see section *3.5 Responsive Planning* section), and Countywide Common Collision Patterns Summary (see section *3.6 Proactive, Systemic Planning*). Vision Zero outreach and awareness and education campaigns are also important for public engagement, accountability, and progress.

Why Develop a Vision Zero Action Plan?

1. Makes your city more competitive for grant funding opportunities. Caltrans requires a Local Road Safety Plan to qualify for HSIP funding. In 2019, Caltrans confirmed that a Vision Zero Action Plan satisfies the Local Road Safety Plan requirement.
2. Ensures transparency on how safety issues are being addressed and how projects are being prioritized. It's unjust and inequitable to focus City resources on infrastructure improvements in part based on how organized and vocal neighbors are instead of focusing on locations and populations that are disproportionately impacted by fatalities or injuries.
3. Supports satisfying statewide climate change adaptation mandates, including reducing greenhouse gas emissions, lowering vehicle-miles of travel, and developing dense, compact communities.

Suggested Next Steps for each Jurisdiction

2.3.1 Adopt a two-year project-based action plan, every two years, with a goal of achieving Vision Zero within 15 to 20 years (e.g., by 2035 or 2040).

i. Incorporate forward-thinking policies, goals, objectives, and actions that prioritize safety throughout land-use and transportation-related decisions,

2.3.2 Set goals with a clear timeline for implementation, by defining success using measurable metrics, identifying a responsible organization and individual, and determining necessary resources.

2.3.3 Publish a summary of any necessary funding, training, construction or maintenance projects, and collaboration with, and approval or participation from, other agencies (county, MPO, state), e.g., met vs. unmet needs.

2.3.4 Ensure program transparency by maintaining a comprehensive website (e.g., with links to MTC and CCTA resources), establishing a taskforce with publicly available agendas and meeting minutes, and regularly meeting with residents and community leaders.

2.3.5 Develop actionable strategies, such as:

a. Prioritize proven pathway and roadway design strategies and countermeasures.
b. Focus enforcement on strategies to reduce fatalities and injuries (e.g., speeding, unsafe vehicle maneuvers at and near crosswalks or trail crossings, e.g., Iron Horse Trail and Contra Costa Canal Trail) with care to reduce bias and disproportionate impact to communities of color.
c. Use effective education strategies, and outreach and awareness strategies, including relevant translations and interpretation, and tailored to specific audiences (e.g., people driving).

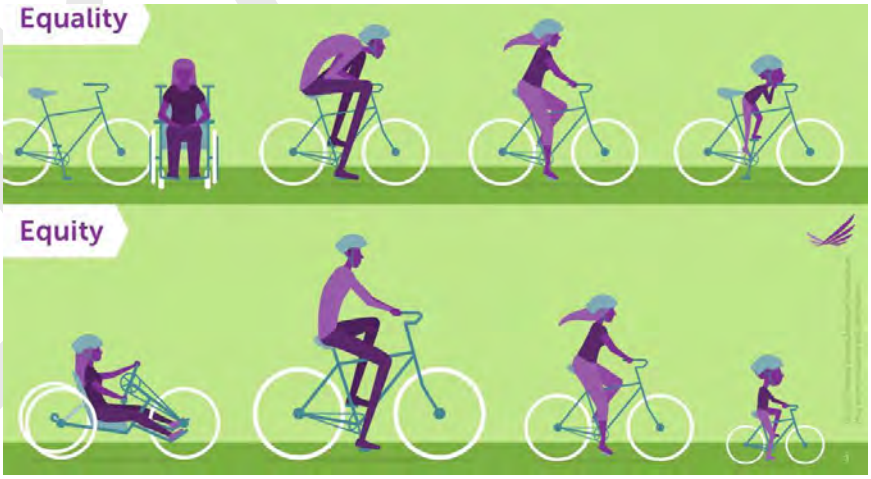
2.3.6 Coordinate with CCTA to contribute to and maintain a robust database to inform a data-informed approach.

3. How to Take a Data-Informed Approach

Planning and implementation of Vision Zero and the Safe System approach should be an equitable, data-informed process. Data analysis proactively considers collision risk, particularly answering the who, when, where, and why of transportation-related safety issues. Based on the data-informed approach, programming and appropriation of funds should focus on the demographic groups and locations who have experienced the highest burden of transportation-related safety issues. Data-informed insights should also be supplemented and balanced with stories and lived experiences and perceptions from community members (see *2.2. Authentic Engagement* section). For instance, if potential safety concerns discourage or prevent people from walking or bicycling at a certain location, it may not be reflected in the data.

3.4 Equity-Focused Analysis & Programs

Improving equity is highlighted as a key goal in the 2018 CBPP[15] and is an integral component of Vision Zero. Recent events have highlighted the systemic inequities built into American society, and transportation infrastructure, programming, operations, and service are no exception. "Equity in place is not simply the maturation toward inclusion. Equity is a tailored strategy that closes the gap between opportunity and access, ultimately eliminating privilege. We have a history of transportation being unapologetically used as a tool to exacerbate inequity and create a greater distance between opportunity and access."[16] Lack of access can be a barrier to financial stability and success, and the speed limits, geometric street dimensions, and even whether a street runs in one direction or two are among the ways transportation planning and engineering can embolden inequities. People of color consistently experience worse mobility outcomes than white people, with longer (time and



Inset 8. The Difference Between Equality and Equity
Source: Robert Wood Johnson Foundation

[15] Countywide Bicycle and Pedestrian Plan Update, 2018, Contra Costa Transportation Authority, see *Goal 5 "equitably serve all of Contra Costa's communities while ensuring that public investments are focused on projects with the greatest benefits."* Pg 19.
[16] AARP Livable Communities National Conference 11/13/2018, Keith Benjamin, Director of Traffic and Transportation for the City of Charleston, South Carolina.

distance), more expensive, and more difficult trips to access employment and other critical needs. These barriers have a major, cumulative, and compounding impact on economic stability and wealth accrual, widening the wealth gap.

Integrating equity throughout Vision Zero is important at all stages of the process – budgeting, programming, appropriating, planning, design, construction, operation, monitoring, enforcement, and continuous improvement – and is especially imperative to address ethnic and racial inequality and to avoid perpetuating inequities by treating mobility, livability, and safety as optional or inaccessible. Studies show that low-income communities, communities of color, and immigrant communities often experience a disproportionate amount of transportation-related injuries and fatalities, lack infrastructure to facilitate safer access and mobility, and are more likely to be stopped by law enforcement personnel.[17] In Contra Costa, Communities of Concern – defined by MTC as census tracts having concentrations of both low-income and non-white populations – experience a disproportionate number of collisions that result in a fatality or severe injury.[18] Communities of Concern are located in the following Contra Costa County communities: Richmond, San Pablo, North Richmond, Rodeo, Concord, Bay Point, Pittsburg, and Antioch. Although Communities of Concern include 20 percent of the county population, they account for 28 percent of collisions involving all transportation modes that result in a fatality or severe injury (See *Appendix C. Contra Costa Countywide Collision Analysis Summary and Common Bicycle and Pedestrian Collision Patterns*). Communities of Concern also account for 39 percent of collisions involving people walking and 26 percent of collisions involving people bicycling. Youth, seniors, and people with disabilities are also disproportionately affected by transportation safety issues.[19] Equity-focused analysis and programming should account and plan for people of all races, ethnicities, gender identity, incomes, ages, and abilities, with an initial focus on those groups, across different (or concentrated in particular) geographic areas, who have disproportionately been affected as compared to wealthier and/or white communities.

[17] See Vision Zero Network for more information on disparities in collisions and safety enforcement at http://visionzeronetwork.org/wp-content/uploads/2017/05/VisionZero_Equity.pdf

[18] MTC defines communities of concern as census tracts that have a concentration of both minority and low-income residents. See Plan Bay Area 2040 Appendix A for more information: https://www.planbayarea.org/sites/default/files/pdf/Draft_Plan_Bay_Area/Appendices_to_Draft_Equity_Analysis_Report.pdf

[19] Streetsblog (2011). "Older Pedestrians Remain Most Threatened by Traffic." Accessible at https://nyc.streetsblog.org/2011/06/09/report-older-pedestrians-remain-most-threatened-by-traffic/; Centers for Disease Control (2020). "Child Passenger Safety: Get the Facts." Accessible at https://www.cdc.gov/motorvehiclesafety/child_passenger_safety/cps-factsheet.html

Suggested Next Steps for each Jurisdiction

3.4.1 Prioritize safety improvements for Black, Indigenous, and People of Color (BIPOC), in Communities of Concern, and/or in Environmental Justice Communities.[20]

3.4.2 Define the study area and monitor success metrics at the neighborhood level to better understand the unique challenges people experience in various communities.

3.4.3 Understand the history of socioeconomic, racial, and ethnic segregation and disinvestment in the community and determine which neighborhoods have experienced years or decades of underinvestment.

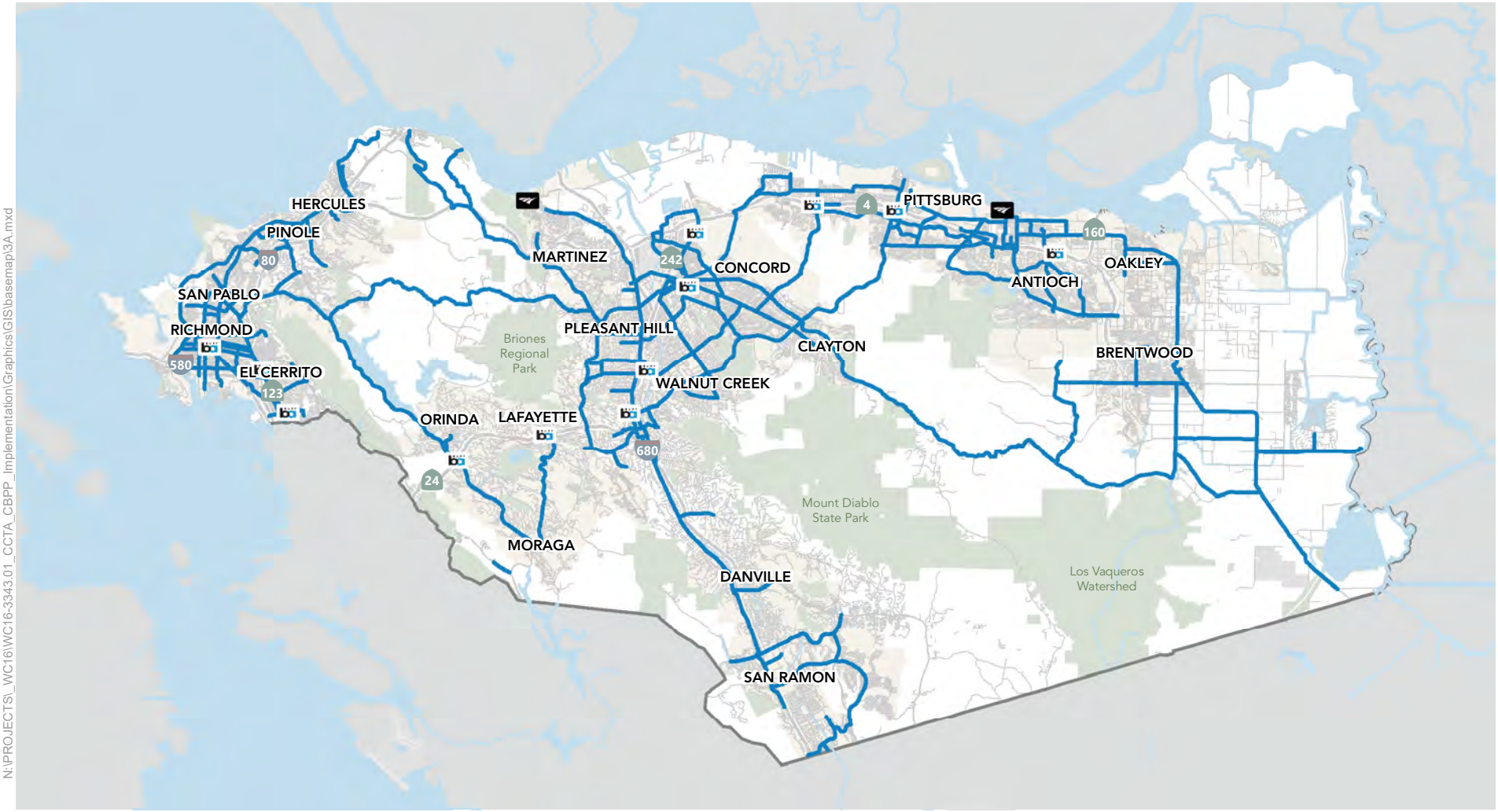
3.4.4 Reduce the emphasis on enforcement by prioritizing system design and engineering, cultural education, and socioeconomic equity.

3.5 Responsive Planning

Responding to past collision patterns and common, high-frequency injury locations is critical to achieving Vision Zero goals. A common approach to understand geographic collision trends is to map – and regularly update – a community's collision locations to guide priority actions, funding, and track jurisdictional traffic safety performance. CCTA will continue to develop Countywide Priority Safety Locations maps, which is commonly referred to as a "High Injury Network," with input from each jurisdiction, to determine which locations experience a disproportionate number of collisions that result in a fatality or severe injury based on collision data and community input (e.g., crowdsourcing map online).

To inform the Countywide Vision Zero Framework, CCTA analyzed countywide collision data to develop three Countywide Safety Priority Locations maps: one illustrating safety priority locations based on all collisions (**Figure 1**, including vehicle-to-vehicle collisions), one based only collisions with people walking or using mobility devices for accessibility, e.g., wheelchairs (**Figure 2**), and one based only collisions with people biking (**Figure 3**). *Appendix D. Contra Costa Countywide Safety Priority Locations – All Modes, Bicycle, and Pedestrian Maps* also includes a more detailed map series for each of the countywide planning subareas. Although collision "hot spots" represent priority investment locations to avoid future collisions based on the location of past collisions, all collision locations should be mapped for analysis, countywide.

[20] For information on California EPA's EnviroScreen 3.0, see https://oehha.ca.gov/calenviroscreen/report/calenviroscreen-30



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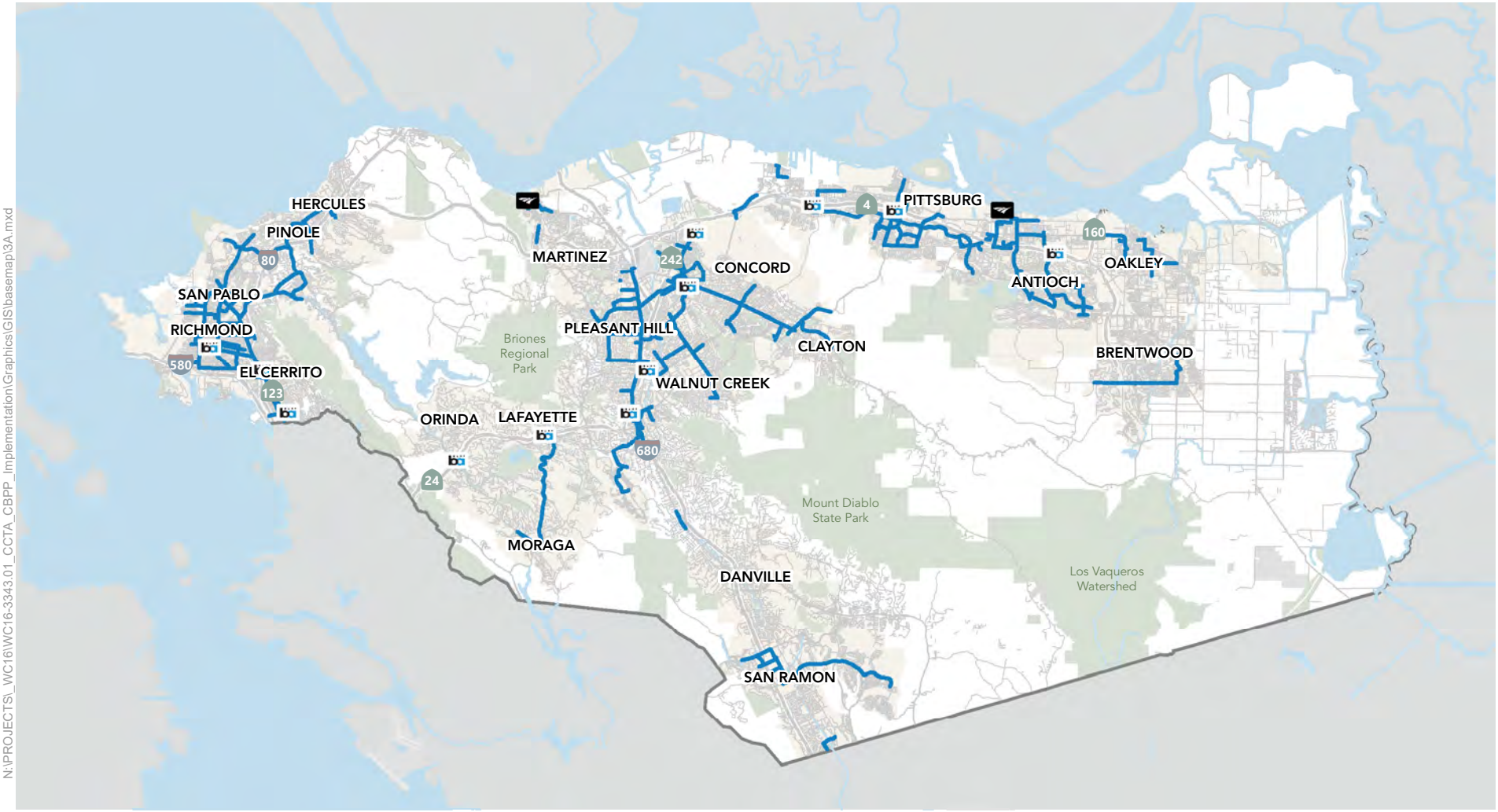
Safety Priority Locations

Incorporated Areas

Figure 1

Countywide Safety Priority Locations – All Modes



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Safety Priority Locations

Incorporated Areas

Figure 2

Countywide Safety Priority Locations - People Walking

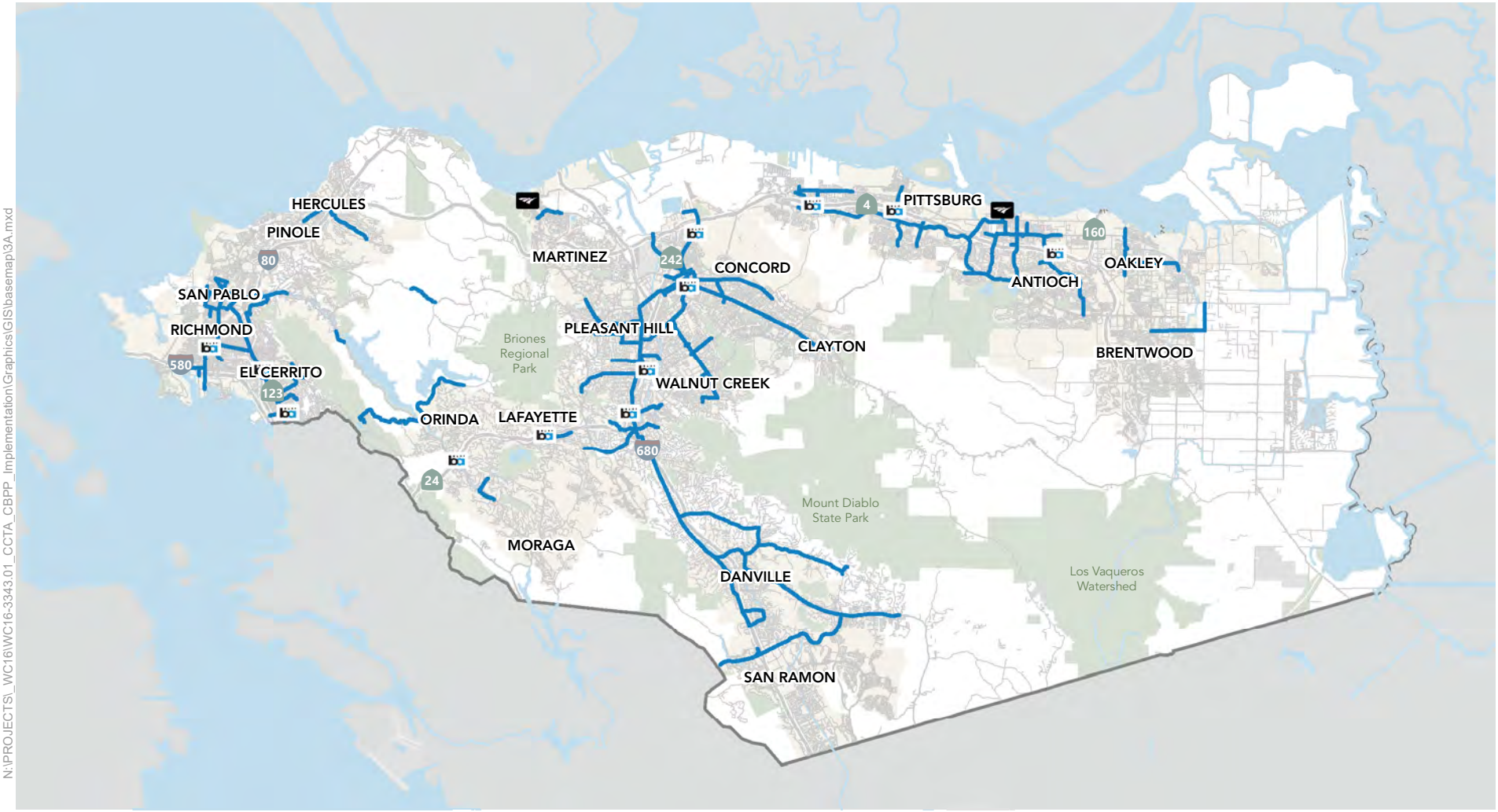

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Figure 3

Countywide Safety Priority Locations - People Biking

Suggested Next Steps for each Jurisdiction

3.5.1 Identify priority safety locations in your community that are shown on the Contra Costa Safety Priority Location Map online.

3.5.2 Analyze local collision data to identify additional local safety priority (high-frequency injury) locations, and risk factors in your community.

3.5.3 Prioritize projects located within the Contra Costa Safety Priority Location Map (online) and crowdsource public input before specific locations experience a severe injury or fatality.

3.5.4 Advocate for federal legislation from the U.S. Congress and consistent national policy from USDOT to replace the patchwork of local approaches.

3.5.5 Regularly collect, update, improve and publicly share data on transportation-related fatalities and severe injuries in an easy-to-understand and visually compelling format (e.g., dashboard). Data should be collected from SafeTREC Transportation Injury Mapping System (TIMS),[21] Statewide Integrated Traffic Records System (I-SWITRS),[22] police and hospital records, and local public health reporting.

3.6 Proactive, Systemic Planning

A proactive, systems-based approach to safety is integral to Vision Zero because it identifies top risk factors to mitigate collision severity and the probability of future collisions. Instead of focusing only on where collisions occurred in the past, in a more reactive way, a systemic approach proactively identifies potential safety issues based on travel behavior, roadway design, and other built environment factors that contribute to collisions that result in a fatality or severe injury. This kind of data is used to first determine and then address the underlying risk factors influencing roadway safety: the where, how, and why severe collisions happen, along with the characteristics of people who are more likely to be affected.

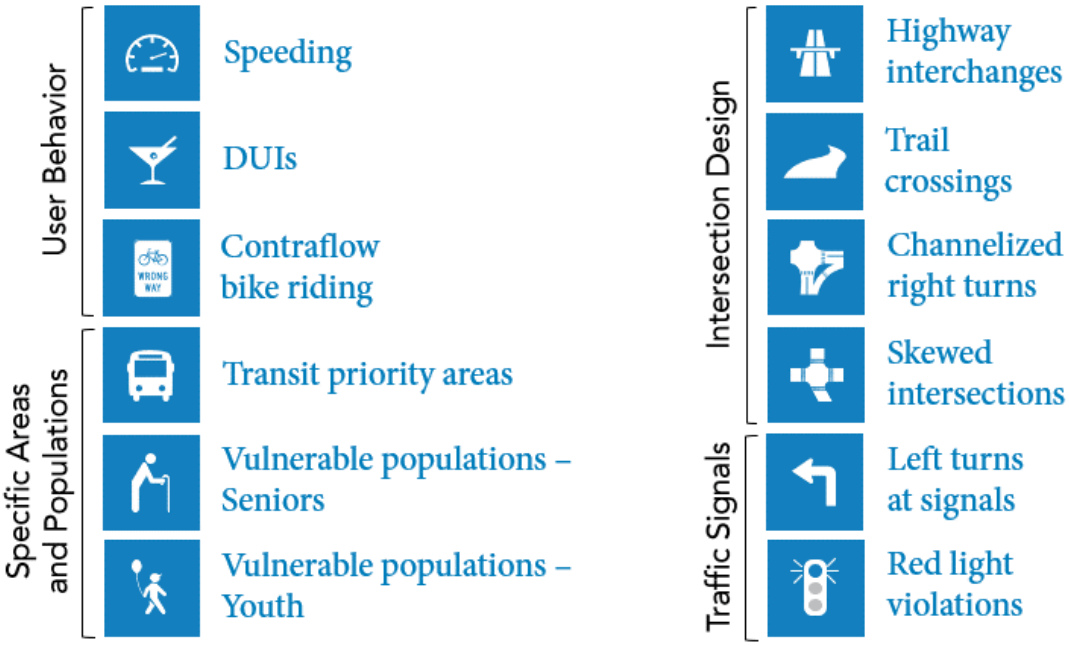
Achieving zero transportation-related severe injuries and fatalities requires investments that proactively address the root causes of collisions resulting in a fatality or severe injury. Understanding the trends associated with these collisions will prepare CCTA and local jurisdictions to address the systemic causes underlying traffic safety issues, and develop a system that is safer for people using all types of transportation methods. By analyzing data from the Contra Costa Vision Zero Database, including built environment factors such as the

[21] For more information on TIMS, visit https://tims.berkeley.edu

[22] For more information on California Highway Patrol's SWITRS data, visit https://www.chp.ca.gov/programs-services/services-information/switrs-internet-statewide-integrated-traffic-records-system

location of crosswalks and channelized right turn lanes collected in partnership with Ecopia Tech,[23] CCTA identified the Common Bicycle and Pedestrian Collision Patterns presented below (see *Appendix C. Contra Costa Countywide Collision Analysis Summary and Common Bicycle and Pedestrian Collision Patterns* for more details). Understanding these trends will help CCTA and local jurisdictions prioritize and address key underlying traffic safety issues – even at locations that have not yet experienced fatal or severe injury collisions – to develop a system that is safer for all people.

Contra Costa Common Collision Patterns (based on 2008 through 2017 data)



Suggested Next Steps for each Jurisdiction

3.6.1 Use the Contra Costa Common Collision Patterns to consider the "*Who? Where? When? How? and Why*" of traffic fatalities and severe injuries in your community.

3.6.2 Analyze local collision data against built environment factors (e.g., sidewalk gaps, skewed intersections, channelized right turn lane) using the *Contra Costa Vision Zero Database* (see

[23] Ecopia Tech uses artificial intelligence to analyze high-resolution aerial imagery to develop GIS inventories of built environment factors such as the location of sidewalks, crosswalks, channelized right turn lanes. For more details, visit https://www.ecopiatech.com

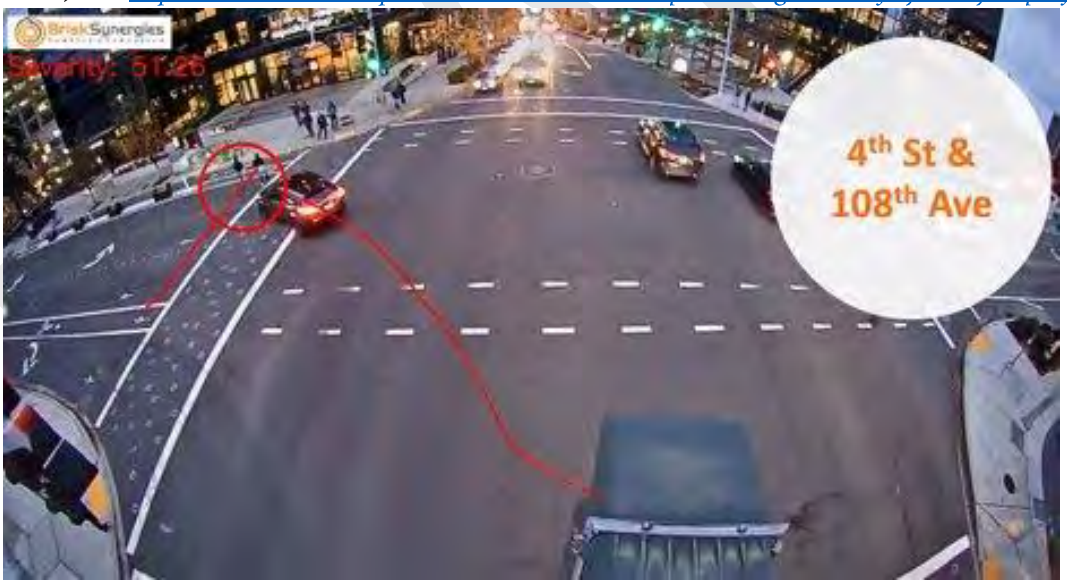
Appendix G for more details) – to identify additional common collision patterns that may be relevant at the local level.

3.6.3 Match Common Collision Patterns to Toolbox measures (see *Appendix E. Countywide Bicycle and Pedestrian Countermeasure Toolbox*) and develop project recommendations.

Case Study: Bellevue "Near-Miss" Proactive Collision Analysis

There are often early indicators at locations that could be safer. Analyzing "near-miss" events contributes to a more comprehensive database than what is typically available through collision records. "Near-miss" events refer to proactively identifying potential traffic conflicts determined by observing patterns of driver, pedestrian, and bicyclist behavior in a given roadway design context. The City of Bellevue in Washington state partnered with Brisk Synergies (now Transoft) to analyze video of roadway activity at 40 locations using artificial intelligence (AI). This analysis leveraged Bellevue's existing traffic camera system, without any additional hardware, to simultaneously detect, differentiate, count, and track the movements of people walking, bicycling, and driving – to develop a predictive collision analysis system. The technology works by tracking where collisions have occurred or are most likely to occur based on near-miss conflicts. City staff then used this analysis in support of more rapid project development, prioritization, and deployment.

To learn more, visit https://www.bellevuereporter.com/news/bellevue-pioneering-road-safety-analysis-project/



Inset 9. Example Footage from "Near-Miss" Analysis
Source: Transoft/Brisk Synergies

3.7 Comprehensive Evaluation & Adjustments

Vision Zero planning is an iterative process and should include routine evaluations to inform adjustments after the initial plan. The process of comprehensively evaluating and adjusting plans and priorities should be collaborative and engage a variety of stakeholders. Monitoring Vision Zero efforts and outcomes, updating and

sharing data regularly, and institutionalizing Vision Zero across a jurisdiction's planning, engineering, and policy work can help build trust and set expectations for accountability.

Vision Zero policies and action plans should be reevaluated and adjusted to meet community needs as circumstances, collision trends, and travel behavior change. For example, past Vision Zero action plans may not have considered the influence of emerging mobility options such as privately owned mopeds, shared e-bikes, e-scooters, transportation network company (TNC) services (e.g., Uber, Lyft), and automated vehicles (AVs). As an electric bicycle (e-bike) rebate program[24] is introduced to Contra Costa County and as a dockless shared e-bike fleet is expected to be deployed in Richmond by late 2020, regulating emerging modes of transportation is an important policy area that Contra Costa can lead.

Suggested Next Steps for each Jurisdiction

3.7.1 Release quarterly and annual public progress reports on the government website and report progress to the (Town or) City Council or Board of Supervisors.

3.7.2 Use temporary pilot, quick-build and/or demonstration projects (e.g., "living previews") to test strategies within shorter timeframes and for less cost investment and use lessons learned to inform interactive improvements and/or longer-term projects.

3.7.3 Study, evaluate, and develop policies to maximize community benefits and minimize risks related to emerging technology (e.g., micromobility, automated vehicles).

a. Partner with CCTA to leverage new and emerging (and safety-proven) technologies to proactively inform decision-making, improve non-vehicular service, and address the safety of first-mile/last-mile connections between transit stops and other traveler destinations. These technologies may include, but not be limited to, shared mobility (bicycles, scooters, mopeds), mobility-on-demand online platforms, and vertiports for Unmanned Aerial Systems (UAS) urban transport of people, goods, and services.
b. Address how these technology services function within and among service boundaries and provide a seamless experience countywide.

[24] 511 Contra Costa – *Electric Bicycle Rebate Program.* Accessed at: https://511contracosta.org/biking/electric-bicycle-rebate/

4. How to Encourage Safer Speeds and Create Safer Routes

Safer, context-appropriate speed limits and roadways, bikeways, and walkways are fundamental to the Safe System approach and achieving Vision Zero. These elements are essential in developing policies and designing private and public rights-of-way that enable safer mobility for people using all transportation methods and account for human error. Managing speeds is critical to achieving zero fatalities because the kinetic transfer of energy from vehicles traveling at high speeds is much higher than at lower speeds, and results in more fatalities and more injuries that increase in severity as speeds increase.

4.8 Complete Streets for All

Vision Zero includes the integration of the Complete Streets concept into communitywide plans and projects to encourage a safer, well-connected transportation network for all people. A Complete Street is designed to be safer for all people including people walking, running, rolling, bicycling, riding transit, or driving. Daily decisions should consider all of these at every stage of the design process for all transportation and land use development projects. The Safe System approach calls for the separation of people using different transportation methods in both space and time. Strategies such as allocating separate rights-of-way for people walking, bicycling, or driving provides spatial separation, and dedicated signal phasing for people walking and people driving vehicles provides temporal separation.

The 2018 CBPP identified potential Complete Streets project locations based on the Low-Stress Countywide Bicycle Network and provides design guidelines for facilities for people walking and bicycling that can be referenced in Complete Streets planning (see *2018 CBPP, Appendix C. Best Practices*). Many of the Complete Streets studies were identified for right-of-way-constrained arterials, where collisions are concentrated but multimodal trade-offs will be required to develop recommendations. Further integrating Complete Streets planning and design with Vision Zero goals can help ensure that travel ways are safer for all people. The *Countywide Bicycle and Pedestrian Countermeasure Toolbox*, provided as an appendix to this guide (see *Appendix E*), presents various Complete Streets strategies proven to enhance safety and address various roadway and land use contexts.

Suggested Next Steps for each Jurisdiction

4.8.1 Institutionalize Complete Streets practices by integrating them into daily decision-making

4.8.2 Prioritize local Complete Streets projects for implementation and coordinate with CCTA Planning to apply for grant funding if needed

4.8.3 Select and apply Safe System Actions from the *Countywide Bicycle and Pedestrian Countermeasure Toolbox* (see *Appendix E*) to make streets, including private and public rights-of-way, safer for all people

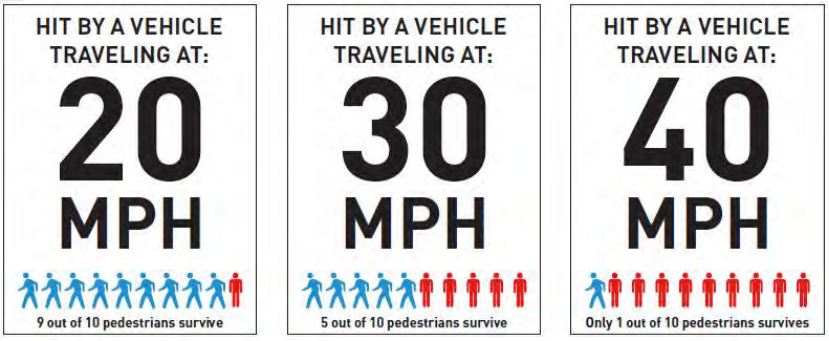
4.8.4 Leverage CCTA design guidelines and adapt based on local context

a. Adopt a Complete Streets policy statement, e.g., as part of a City Council Resolution, consistent with the California Complete Streets Act of 2008 (AB 1358) and the Authority's Complete Streets Policy, that ensures that the street network accommodates people using all transportation modes.
b. Document the level of effort to implement these policies, including during requests for funding, peer review of project design, and as part of the compliance requirement in the biennial Growth Management Plan (GMP) Checklist.

4.9 Context-Appropriate Speeds

Context-appropriate speeds refers to travel speeds being set and managed to achieve safer conditions for specific roadway contexts and to protect people using all transportation methods, particularly those most at risk in collisions, such as people walking and bicycling. Speeds are critically important because the likelihood of a fatality or severe injury increases substantially the faster a vehicle is moving at the time of collision. Proven speed management policies and practices such as road diets, traffic-calming measures, speed limit reductions, and automated speed enforcement (ASE) are often prioritized by Vision Zero plans to attain this goal.

Many jurisdictions outside of the State of California have seen success by reducing speed limits and/or implementing ASE to reduce speeds on higher-speed corridors. California, however, has historically set vehicle speed limits based on the 85th percentile speed, which is a metric based on how fast people drive vehicles on a given roadway; as a result, the faster that people tend to drive on a roadway, the higher the speed limit. California does not currently permit the use of ASEs to manage speeds. However, AB



Inset 10. Probability of Pedestrian Survival Based on Vehicle Speed
Source: City of Seattle, Vision Zero Action Plan

2363[25] required California's Secretary of Transportation to establish and convene a Zero Traffic Fatalities Task Force to examine the use of the 85th percentile methodology for establishing speed limits. In January 2020, the Task Force released a report concluding that California's speed limit policies need to evolve to encourage safety before expeditious vehicular mobility on roadways, and to give local jurisdictions greater flexibility in managing and reducing speeds on local roadways. The task force also concluded that automated speed enforcement is an effective countermeasure to reduce vehicular speeds. As findings from the task force are integrated into actionable policy, CCTA and local jurisdictions could revisit the determination of context-appropriate speeds on different types of roadways (e.g., neighborhood street, local road, collector, arterial, state highway, and interstate highway), considering land use context, proactive and systemic planning, and collision locations.

The *Countywide Bicycle and Pedestrian Countermeasure Toolbox* (see *Appendix E),* provided as part of an additional resource to this guide, and the design guidelines developed as part of the 2018 CBPP, present strategies for managing speeds for different roadway and land-use contexts.

Suggested Next Steps for each Jurisdiction

4.9.1 Identify high-speed corridors based on speed surveys and Safety Priority Locations Maps. The concentration of locations on high-speed arterials reveals a relationship between speed and traffic collisions resulting in fatal or severe injuries.

4.9.2 Study and implement infrastructure changes that prioritize safety over speed, such as reducing travel lanes or adding self-enforcing traffic-calming measure (e.g., lane narrowing).

4.9.3 Stay up-to-date with state guidance on setting speed limits and adjust policies to align with safety goals (e.g., setting appropriate speed limits, particularly where many people walk and bike).

4.9.4 Select and apply countermeasures from *Appendix E. Countywide Bicycle and Pedestrian Countermeasure Toolbox* to prioritize the safety of people before speed, convenience, or volume of vehicles.

[25] Assembly Bill 2623, Zero Traffic Fatalities Task Force, 2018. Accessed at: https://leginfo.legislature.ca.gov/faces/billTextClient.xhtml?bill_id=201720180AB2363

Inset 11. Space Needed to Transport 60 People by Bus, Bike or Car
Source: Cycling Promotion Fund

4.10 Project Delivery

CCTA and jurisdictions can implement Vision Zero and safety-related projects by leveraging resources developed as part of the Contra Costa Vision Zero Framework & Systemic Safety Approach on projects such as active transportation plans, priority safety corridor studies, Local Road Safety Plans (LRSPs), Systemic Safety Analysis Reports (SSARs), and Highway Safety Improvement Programs (HSIP) projects. Consistency between these programs and different project types can help jurisdictions leverage state and federal grant funding opportunities to expedite safety projects and make progress toward Vision Zero. Grant funding opportunities for safety projects are summarized in **Table 1** below (see *2018 CBPP, Appendix F – Funding Sources* for more details).

The change from using level of service (LOS) to vehicle-miles traveled (VMT) in transportation analysis for California Environmental Quality Act (CEQA) as part of SB 743 implementation, has also elevated the relevancy of connectivity projects eliminating gaps in the bikeway and walkway network. Research shows that encouraging multimodal transportation reduces vehicle miles traveled and vehicle ownership per capita, the two strongest predictors of transportation-related fatalities.[26] Therefore, projects that focus on people bicycling and walking may increasingly be recommended more frequently to mitigate VMT impacts as part of the environmental review process for transportation and land use projects and plans, and could be funded through a development fee program. Caltrans released interim guidance in July 2020 as part of its *Land Development and Intergovernmental Review (LDIGR) Safety Review Practitioners Guidance* that institutionalizes safety as part of SB 743. As part of this new guidance, Caltrans recommends that lead agencies develop Safety Impact

[26] Understand the relationship between vehicle-miles of travel and traffic safety at https://pubmed.ncbi.nlm.nih.gov/28806611/

Analysis guidelines and establish a fee program to fund safety projects. Finally, SB 1000[27] requires jurisdictions with "disadvantaged communities" to incorporate Environmental Justice in their General Plans, either through a separate Environmental Justice element or integrating Environmental Justice principles in each element. Incorporating Environmental Justice in General Plans provides cities and counties the opportunity to leverage grant funding from multiple sources to holistically address safety, health, and access concerns.

Suggested Next Steps for Each Jurisdiction

4.10.1 Incorporate Vision Zero and Safe Systems approach into General Plans, Specific Plans, and Community-Based Transportation Plans (e.g., adopt policies to reduce vehicle-miles traveled, increase bicycling and walking, and encourage an unobstructed travelway).

4.10.2 Regularly apply for grant funding from statewide programs that focus on safety such as Local Road Safety Plans (LRSPs), Systemic Safety Analysis Reports (SSARs), Highway Safety Improvement Programs (HSIP), and other programs.

4.10.3 Apply for grant funding from statewide programs that encourage active transportation such as the Active Transportation Program, Cap-and-Trade, and SB 1 (gas tax).

i. Work collaboratively with the CCTA Planning Department to, e.g., develop creative funding mechanisms ideally for physically protected and separated infrastructure.

4.10.4 Leverage funding for collaborative efforts that can achieve multiple goals, e.g., work with Communities of Concern28 to apply for grant funding and advance potential projects through the Lifeline Transportation Program and other sources, such as SB 1000.

4.10.5 Similar to the necessity of workplace culture change to improve environmental and economic sustainability and racial equity, integrate Vision Zero within existing programs, e.g., as part of transportation impact analysis during environmental review, in-lieu fee programs, and Complete Streets policy implementation to prioritize or extend repaving projects.

[27] See SB-1000, General Plans, Safety, and Environmental Justice, 2016. Accessible at: https://leginfo.legislature.ca.gov/faces/billNavClient.xhtml?bill_id=201520160SB1000

[28] MTC defines communities of concern as census tracts that have a concentration of both minority and low-income residents. See Plan Bay Area 2040 Appendix A for more information: https://www.planbayarea.org/sites/default/files/pdf/Draft_Plan_Bay_Area/Appendices_to_Draft_Equity_Analysis_Report.pdf

Table 1. Potential Funding Sources Related to People Bicycling, Walking, or Using Mobility Devices

Funding Source	Administrator	Timeframe	Class I Bicycle Path	Class II Bicycle Lane	Class III Bicycle Route	Class IV Protected Bikeways	Pedes-trian Project	Other Project	Planning and Programs
Congestion Mitigation and Air Quality Improvements Program (CMAQ)	FHWA	Annual	◒	●	●	●	●	◒	◒
Surface Transportation Block Grant (STBG)	FHWA	Annual	●	●	●	●	●	●	●
Highway Safety Improvement Program (HSIP) Grants	FHWA	Annual	◒	●	◒	●	●	●	○
Caltrans Transportation Planning Grants	Caltrans	Annual	○	○	○	○	○	○	●
Local Transportation Fund (LTF)	Caltrans	Annual	●	●	●	●	●	●	○
California State Parks Recreational Trails Program (RTP)	FHWA/CA DPR	Annual	●	○	○	○	○	○	○
Land and Water Conservation Fund (LWCP)	US NPS/CA DPR	Biennial	●	○	○	○	○	○	○
Active Transportation Program (ATP)	Division of Local Assistance, Office of State Programs	Biennial	●	●	●	●	●	●	●
Transportation Development Act (TDA)	Caltrans	Annual	●	●	●	●	●	●	●
Affordable Housing and Sustainable Communities Program (AHSC)	SGC	Annual	◒	◒	◒	◒	◒	◒	◒
California Office of Traffic Safety Pedestrian and Bicycle Safety Grants	OTS	Annual	○	○	○	○	○	○	●
East Bay Regional Park District (EBRPD) Measure WW	EBRPD	-	●	●	●	●	●	○	○
Metropolitan Transportation Commission (MTC) One Bay Area Grants (OBAG)	MTC	5 year	●	●	●	●	●	●	●

Table 1. Potential Funding Sources Related to People Bicycling, Walking, or Using Mobility Devices

Funding Source	Administrator	Timeframe	Class I Bicycle Path	Class II Bicycle Lane	Class III Bicycle Route	Class IV Protected Bikeways	Pedes-trian Project	Other Project	Planning and Programs
Bay Area Air Quality Management District (BAAQMD) County Program Manager Fund	BAAQMD	Annual	●	●	●	●	○	○	○
BAAQMD Transportation Fund for Clean Air (TFCA)	BAAQMD	Annual	●	●	●	●	○	○	○
Measure J, Transportation for Livable Communities (TLC)	CCTA	Annual	●	●	●	●	●	◒	◒
Measure J, Pedestrian, Bicycle and Trail Facilities (PBTF) program	CCTA	Annual	●	●	●	●	●	○	○
California Strategic Growth Council (SGC) Transformative Climate Communities (TCC) Program	SGC	Annual	●	●	●	●	●	●	●
SB 1	CA Transportation Commission	Annual	●	●	●	●	●	●	●
California Natural Resources Agency Environmental Enhancement and Mitigation Program	CA Natural Resources Agency	Annual	○	○	○	○	○	○	●
California Natural Resources Agency Urban Greening Program	CA Natural Resources Agency	Annual	●	○	○	○	○	○	○
Community Development Block Grant (CDBG) Program	HUD	Annual	●	●	●	●	●	●	○
Better Utilizing Investments to Leverage Development (BUILD) Transportation Discretionary Grant Program	FHWA	Annual	●	●	●	●	○	○	○

Notes:

● Indicates that funds may be used for this category, ○ indicates that funds may not be used for this category, and ◒ indicates that funds may be used, though restrictions apply.

A. Vision Zero Best Practices Review

Vision ZERO

Memorandum

Date:	March 25, 2020
To:	Matt Kelly, CCTA
From:	Eleanor Leshner, Inder Grewal and Meghan Mitman, Fehr & Peers
Subject:	Best Practices Review – Contra Costa Vision Zero Framework & Systemic Safety Approach (DRAFT)

WC16-3343.01

The Contra Costa Transportation Authority (CCTA) is advocating Vision Zero as a viable policy for adoption by local jurisdictions, one that can be integrated as standard practice in local and regional transportation planning and engineering. Developing a countywide framework for Vision Zero — which is a strategy to eliminate all traffic fatalities and serious injuries — was a key recommendation of the 2018 update of the Countywide Bicycle and Pedestrian Plan (2018 CBPP Update). The collision analysis and community outreach conducted as part of the 2018 CBPP Update highlights the need to address traffic safety issues across the county, particularly for people walking and biking. The 2018 CBPP Update recommends developing a Vision Zero Framework and Systemic Safety Approach as an implementation action to address safety issues in a proactive, systemic, data- driven, and equitable manner.

Through its role in countywide planning, policy and funding, CCTA is uniquely positioned to work with local jurisdictions to implement Vision Zero. Focusing on the three themes of planning, policy, and funding, this review explores best practices for county-level transportation authorities to integrate and promote Vision Zero. The Best Practices align with the Institute of Transportation Engineer's (ITE)

Core Elements for Vision Zero Communities, which is a national benchmark for Vision Zero efforts.[1] For each of the strategies presented in Table 1, this memorandum presents a definition, best practice example, and discussion of its applicability to the Contra Costa Vision Zero Framework.

Table 1: Summary of Best Practice Topics and Strategies

Topic	Strategy
Planning	Public, High-Level, and Ongoing Commitment
	Authentic Engagement
	Strategic Planning
	Equity-Focused Analysis and Programs
	Proactive, Systemic Planning
	Responsive, Hot Spot Planning
Policy	Complete Streets for All
	Context Appropriate Speeds
Funding	Project Delivery
	Comprehensive Evaluation and Adjustments

Key Takeaways

This section summarizes key takeaways for best practices that CCTA can employ for countywide Vision Zero-related planning, policy, and funding activities. Some of these elements are included in the scope of the Contra Costa Vision Zero Framework project ("Contra Costa VZ"), others are or could be implemented by local agencies ("Local Agencies"), and others are recommended for future consideration by CCTA ("CCTA Future").

[1] More information on the *ITE Core Elements for Vision Zero Communities* is available at https://visionzeronetwork.org/resources/vision-zero-core-elements/

Planning

- Focus on achieving high-level commitment from elected officials and buy-in from the public (Contra Costa VZ; Local Agencies)
- Collaborate with relevant county agencies, such as Contra Costa Health Services (CCHS) and Contra Costa County Sherriff's Office (CCTA Future; Local Agencies)
- Coordinate countywide tasks such as data collection, marketing strategies, and technical assistance for implementation of Vision Zero and safety-related projects (Contra Costa VZ; CCTA Future)
- Meet communities "where they are" using authentic engagement and temporary demonstration projects such as "pop-up" protected bikeways or "car-free" days on main streets[2] (CCTA Future; Local Agencies)
- Define equity and determine how equity will be measured, integrated in the allocation of funding, and enforced (CCTA Future; Local Agencies)
- Develop collision typologies or profiles that take into consideration historical collision trends and contextual factors such as roadway type, travel mode, vehicle movement, land use characteristics, victims and/or other factors (e.g., presence of crosswalk, presence of bike lanes, time of day, lighting, etc.) to better understand countywide collision trends and prioritize safety improvements (Contra Costa VZ)
- Develop countywide High-Injury Networks (HINs) to spatially prioritize safety improvements (Contra Costa VZ; Local Agencies)

Policy

- Use the Contra Costa Vision Zero Framework to incorporate systemic safety principles and practices in Complete Streets planning, policy, and design (CCTA Future; Local Agencies)
- Develop guidelines for context appropriate vehicle speed limits by roadway type, land use characteristics, and/or Complete Streets concepts, especially as California refines statewide practices (CCTA Future)

[2] See examples of SCAG's Go Human! pop up events at http://gohumansocal.org/Pages/Events.aspx

Funding

- Select funding priorities based on the countywide HINs, collision profiles, and geographic and socioeconomic equity metrics (CCTA Future)
- Ensure consistency between Vision Zero and Local Road Safety Plans, Systemic Safety Analysis Reports, and Highway Safety Improvement Programs to maximize access to state and federal roadway safety funds (Local Agencies)
- Assess and consistently evaluate the safety, equity, and other community outcomes related to the Contra Costa Vision Zero Framework – as well as local Vision Zero Action Plans – to refine and adjust the countywide Vision Zero approach (CCTA Future; Local Agencies)

Planning

As a county-level transportation planning agency, CCTA leads collaborative, cross-jurisdictional processes that promote a safe, user-friendly, and integrated (with land use priorities) transportation system. CCTA also helps coordinate a consistent set of plans, policies, and design concepts across multiple jurisdictions to achieve a common set of goals. For example, the Countywide Transportation Plan (CTP) and the 2018 CBPP Update serve as a framework for local transportation planning efforts, and CCTA provides technical assistance to local jurisdictions in the form of data collection, management, and analysis to inform local decision-making. CCTA also leads planning for the county's Regional Routes of Significance – roadways that connect two or more planning areas of Contra Costa, cross county boundaries, carry significant through traffic, and/or provide access to a regional highway or transit facility.

The planning-related core elements of Vision Zero are:

- Public, High-Level, and Ongoing Commitment
- Authentic Engagement
- Strategic Planning
- Equity-Focused Analysis and Programs
- Proactive, Systemic Planning
- Responsive, Hot Spot Planning

The following sections outline best practices for CCTA and local Contra Costa jurisdiction consideration in support of these core elements, including Vision Zero-related actions that are in progress, as well as recommended future Vision Zero-related actions.

Public High-Level, and Ongoing Commitment

Successful Vision Zero efforts rely on having key elected officials and public agency leaders (especially from transportation, law enforcement, and public health departments) commit to a goal of eliminating traffic fatalities and serious injuries within a specific timeframe. This commitment is typically the first step in developing Vision Zero as a principle and policy toward safer streets. Beyond this high-level commitment, cross-departmental and interagency collaboration enable a comprehensive approach and are critical to Vision Zero planning and implementation in respective communities. Based on peer agency interviews, effective coordination and collaboration across groups can also be a challenging aspect of implementing Vision Zero that requires continuous collaborative effort.

A best practice example of achieving this kind of commitment comes from Montgomery County, Maryland.[3] In 2016, the Montgomery County Council adopted a resolution to develop a Vision Zero Action Plan. The County Executive's Office spearheaded the effort based on their direct access to and ability to coordinate across a diverse group of stakeholders. The County Executive's office organized six working groups consisting of representatives from various County departments including transportation, planning, public health, and law enforcement, as well as state-level agencies and advocacy groups. These stakeholder groups developed a holistic understanding of systemic traffic safety issues within the county to craft a multi-agency effort to address these issues. By taking leadership at a regional level, Montgomery County has further inspired and supported local jurisdictions to adopt Vision Zero policies and implement safety projects.

Likewise, CCTA is leading the way for Vision Zero adoption and implementation by spearheading the Contra Costa Vision Zero Framework and by incorporating and acknowledging Vision Zero in the 2018 CBPP Update and Countywide Transportation Plan (CTP). While CCTA is not the executive administrative body for Contra Costa County, it is similarly well positioned to coordinate a diverse group

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[3] See Montgomery County's Vision Zero Action Plan at https://www.montgomerycountymd.gov/visionzero/action.html

of stakeholders like in Montgomery County's case. CCTA's Board of Commissioners – comprising 11 appointed Mayors, Councilmembers, and County Board of Supervisors – can also help lead the county and local jurisdictions toward Vision Zero goals.

CCTA has formed a Vision Zero Working Group (VZWG) of representatives from each of Contra Costa's four Regional Transportation Planning Committees (RTPCs) as well as key advocacy groups and regional partners such as Bike East Bay, Bike Concord, the Metropolitan Transportation Commission (MTC), and UC Berkeley Safe Transportation Research and Education Center (SafeTREC). Furthermore, CCTA has an established relationship with the California Department of Transportation (Caltrans) to coordinate countywide planning efforts with state-level policymaking. By engaging stakeholders from the start of the process, CCTA is achieving high-level commitment to Vision Zero. Moving forward, CCTA plans to coordinate with and seek feedback from local jurisdictions, RTPCs, and other key county agencies such as Contra Costa Health Services (CCHS) and the County Sherriff's Office.

Authentic Engagement

Authentic engagement is important to Vision Zero and goes beyond traditional community engagement efforts to connect with diverse communities "where they are" and in a culturally relevant manner. This is especially important in Contra Costa, which is home to many diverse communities; safety challenges and opportunities vary across urban, suburban, and rural communities, and open space areas. Many communities are moving away from the more traditional weeknight community meeting outreach strategy, and are focused instead on "meeting people where they are" through pop-up events such as temporary demonstration projects or information booths at local events, and community "hubs" such as farmers markets, transit stations, and community centers.

A best practice example of a regional approach to authentic community engagement comes from the Southern California Association of Government's (SCAG) *Go Human!* Campaign,[4] which promotes safe active transportation in Southern California communities. This campaign has focused on temporary demonstration projects at locations identified on their Regional High-Injury Network and a countywide safety marketing campaign. Demonstration projects provide temporary "living previews" or "pop-ups" of

[4] See SCAG's Go Human! Campaign at http://gohumansocal.org/Pages/About.aspx

potential strategies to address specific safety issues identified at their locations. By partnering with local advocacy groups and community-based organizations (CBOs), SCAG has demonstrated benefits of potential safety improvement projects and strategies in real-time, as well as feedback gathered from people that use the area, effectively "meeting the community where they are." These types of demonstration projects have been successful both at generating excitement about safety projects as well as assisting local jurisdictions in winning grant proposals to implement longer-term improvements.

Vision Zero marketing and education campaigns are also highly important… and based on peer agency interviews these are sometimes overlooked. In Southern California, SCAG has played a strong role in developing a consistent road safety brand, messaging, and marketing campaign that local jurisdictions and partner organizations (e.g., schools) can use throughout the region. SCAG used focus group testing to develop its road safety brand and marketing campaign, and also conducts an online survey to evaluate how well their campaigns are reaching people driving, walking, and biking regionwide.

Several Contra Costa jurisdictions are already employing innovative public engagement strategies for safety studies. For example, in developing *Pittsburg Moves*, the City of Pittsburg's active transportation plan, the city conducted several pop-up outreach events at community events and implemented a temporary demonstration project near the Pittsburg Center BART Station to test recommended safety strategies and gather feedback from the community. The City initially considered a more traditional outreach effort, such as hosting weeknight community meetings. However, these types of events have typically attracted a smaller number of participants – for example, it would not be uncommon for the number of City staff and consultants at an evening meeting to outnumber members of the public. To encourage broader public participation, the City decided to test-host a pop-up event, which proved to be successful in reaching more people – and a more representative sample of the City's population. Some of the elements of the demonstration project on Railroad Avenue have also become permanent. For instance, the City, in collaboration with Caltrans, installed a leading pedestrian interval (LPI) at a Caltrans signal on the corridor, which has since become a permanent feature at this intersection. The success of the *Pittsburg Moves* demonstration project has inspired the City to organize additional pop-up events as part as the ongoing Railroad Avenue Complete Streets study. Other recent examples of demonstration projects as effective tools for public outreach and refining ultimate project design and implementation include the Yellow Brick Road project in Richmond's Iron Triangle neighborhood, the

Telegraph Avenue Complete Streets project in nearby Oakland, and the Safer Taylor Street project in San Francisco.

Similar to SCAG, CCTA could further promote authentic public engagement activities and support local project implementation by leading demonstration projects or providing local jurisdictions and community groups with the best practice resources, materials, and/or funding to implement these types of projects. In the future, CCTA could also help further education and marketing efforts by developing a regional Vision Zero and safety marketing campaign, similar to SCAG, and provide local jurisdictions with marketing and outreach materials that they can tailor to their respective communities.

Strategic Planning

Strategic planning for Vision Zero often takes the form of a Vision Zero Action Plan, which typically consists of explicit goals, measurable strategies, and a clear timeline for achieving Vision Zero and often follows the "Safe Systems" approach.[5] A Safe Systems approach acknowledges that people make mistakes and focuses on influencing system-wide practices, policies, and designs to lessen the severity of crashes, such as encouraging safer, more context-appropriate travel speeds and building "safety nets" into street design to prevent or mitigate severe and fatal collisions.

Best practices for developing local Vision Zero action plans are well documented by the *Vision Zero Network*.[6] These action plans also reflect specific priorities and concerns unique to each jurisdiction. In the Bay Area, the cities of Fremont and Berkeley are examples of small-to-medium sized cities that have recently developed Vision Zero Action Plans. Fremont's Vision Zero Action Plan focuses on technology-oriented strategies, as well as implementing quick-build projects, separated bikeways, and protected intersections. Berkeley's Vision Zero Action Plan focuses on equity as well as engineering strategies to reduce speeds on higher speed arterials. Berkeley's Plan also prioritized engagement of victims' families and committed to post-crash care and victim remembrance.

To support Vision Zero action planning at the local jurisdiction level, CCTA can provide technical assistance to ensure these plans reflect best practices and are consistent with countywide transportation

[5] See "Systems Approach" at https://www.ite.org/technical-resources/topics/safe-systems/
[6] See Vision Zero Network Case Studies at https://visionzeronetwork.org/resources/case-studies/

plans. As part of the Contra Costa Vision Zero Framework, CCTA is developing countywide High Injury Networks (HINs), a Vision Zero Database, and a Vision Zero "How to" Guide to assist cities in developing local Vision Zero action plans. By leading key aspects of data collection, management, and analysis, CCTA will enable local jurisdictions to focus on "core elements" that are best suited for local jurisdictions to lead, such as authentic engagement and project delivery.

Equity-Focused Analysis and Programs

Elevating equity and meaningful community engagement, particularly in low-income communities and communities of color, should be a priority in all stages of Vision Zero work. Nationwide studies have concluded that low-income communities, communities of color, and immigrant communities often carry a disproportionate burden of traffic-related injuries and fatalities, lack infrastructure to facilitate safe access and mobility, and are more likely to be stopped by law enforcement.[7] In Contra Costa County, many neighborhoods – such those located in Antioch, Bay Point, Concord (Monument Corridor), Martinez, Pittsburg, Richmond and San Pablo – have been identified as disadvantaged communities[8] and continue to grapple with a legacy of community underinvestment. Countywide collision trends indicate that lower-income, non-white communities in Contra Costa carry a significant burden of fatal and serious injury collisions, especially those adjacent to high speed arterial roadways. While strategic enforcement can be an important tool for Vision Zero programs, ITE's *Core Elements for Vision Zero Communities* recognizes that achieving zero traffic fatalities should focus primarily on roadway safety infrastructure investment, innovative engineering, and effective programming in neighborhoods most impacted by unsafe roadway conditions. Residents across Contra Costa should be included in the development of Vision Zero-related projects, from planning, design, and construction, in order to best meet community needs. At a countywide level, geographic equity is also important to ensure all communities within Contra Costa benefit from investments in traffic safety projects and programs.

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[7] See Vision Zero Network for more information on disparities in collisions and safety enforcement at http://visionzeronetwork.org/wp-content/uploads/2017/05/VisionZero_Equity.pdf

[8] See California Environmental Protection Agency's (CalEPA) California Communities Environmental Health Screening Tool, Version 3.0 (CalEnviroScreen 3.0), accessible at https://oehha.ca.gov/calenviroscreen/report/calenviroscreen-30

Several cities, including San Francisco and Berkeley in the Bay Area, have placed equity at the forefront of their Vision Zero process by clearly defining what equity means and developing methods for incorporating equity in their decision-making process. For example, San Francisco overlays their High-Injury Network (HIN) with MTC's Communities of Concern to prioritize corridors for safety treatments.[9] HIN corridors located in Communities of Concern are given a higher priority in Vision Zero implementation. In Berkeley, the City incorporates equity in their project prioritization process by focusing on neighborhoods that were historically "redlined" by the Federal Housing Administration (FHA). Through detailed analysis, the City found that these areas are directly correlated with the highest concentration of traffic collisions, poverty, and non-white residents. Berkeley uses this equity metric to help determine how infrastructure funding and resources will be allocated spatially as part of implementing their Vision Zero Action Plan. Some Vision Zero cities have also incorporated hospital data in their collision analyses to better understand the race and socioeconomic status of collision victims, which is not provided in California's Statewide Integrated Traffic Records System (SWITRS) database that is typically used in collision analyses.

As a planning, policy, and funding agency, CCTA can help address historical inequities in community and infrastructure investment across the county by prioritizing communities most burdened by traffic safety issues for Vision Zero-related safety improvement projects. To inform project prioritization, CCTA is developing a HIN and collision profiles to better understand countywide trends; the HIN helps determine where investment need to be made based on historical collision trends, and the collision typology analysis will inform which roadway users and contexts are most likely impacted by fatal and serious injury collisions. CCTA should further consider prioritizing projects based on whether they fall in a disadvantaged community and/or would benefit vulnerable roadways users (e.g., communities of older adults, Safe Routes to School projects, etc.).

Proactive, Systemic Planning

A proactive, systems-based approach to safety is integral to Vision Zero as it identifies top risk factors to mitigate crash severity and potential collisions. Instead of reactively focusing only on where collisions

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[9] See Page 2-1 of MTC's Plan Bay Area 2040 Equity Report for definition of Communities of Concern at http://2040.planbayarea.org/sites/default/files/2017-07/Equity_Report_PBA%202040%20_7-2017.pdf

have occurred in the past, systemic safety analysis proactively identifies potential safety issues based on travel behavior, roadway design, and other built environment factors that contribute to fatal and serious injury collisions. Systemic safety data is used to determine and address the underlying risk factors that influence roadway safety: the where, how, and why serious collisions happen, along with who is likely to be affected.

A best practice example of proactive, systemic planning comes from the Orange County Transportation Authority (OCTA). OCTA recently developed a data-driven Systemic Safety Plan to improve transportation safety countywide, with a focus on people walking and bicycling. The Plan analyzed collision data to develop crash typologies that identify key trends and specific conditions that place people walking and biking most at risk. OCTA was then able to develop focused countermeasures to address the most prevalent collision typologies, which included strategies such as: signal timing adjustments, intersection design measures, new signage, innovative bikeway designs, new pedestrian crossings, and low-cost, quick-build strategies.

CCTA is currently developing collision typologies to identify trends associated with serious and fatal collisions in Contra Costa County. Achieving a Vision Zero goal of zero traffic fatalities will require investments that proactively address the underlying risk factors related to fatal and serious injury collisions. Understanding the trends associated with fatal and serious injury collisions will help CCTA and local jurisdictions to address underlying traffic safety issues – even at locations that have not yet experienced fatal or severe injury collisions – to develop a system that is safer for all users.

Responsive, Hot Spot Planning

Responding to historic collision patterns and "hot spots" complements systemic, proactive planning and is therefore also important to achieve Vision Zero goals. A common Vision Zero approach to understand geographic collision trends is to map – and regularly update – a community's fatal and serious injury crash locations to guide priority actions, funding, and track jurisdictional traffic safety performance. Vision Zero agencies typically develop a High-Injury Network (HIN) to determine which roadways carry a disproportionate burden of fatal or serious injury collisions based on collision data and community input.

For instance, Denver's HIN shows that 50% of all traffic fatalities in Denver occur on just 5% of roads.[10] Other cities also show that traffic fatalities disproportionately effect pedestrians and cyclists, despite the two groups representing a smaller commute mode share. In this way, HINs can help spatially pinpoint any collision "hotspots" that need to be addressed.

CCTA is currently developing three Countywide HINs as part of its Vision Zero effort: one focused on all collisions (including vehicle-to-vehicle collisions), one focused on bicyclist-involved collisions only, and one focused on pedestrian-involved collisions only. The Countywide HINs will identify roadways where fatal and serious injury collisions have been – and are likely to be – located. Note that since the Countywide HINs identify roadways at an aggregate, countywide level, local jurisdictions may find value in developing their own HINs that may identify additional locations and local safety trends that require attention at a local level.

Policy

From a Countywide policy perspective, CCTA can focus on advocating for policy-related core elements of Vision Zero such as:

- Complete Streets for All
- Context Appropriate Speeds

[10] See Pages 3 to 10 for Denver's HIN at https://www.denvergov.org/content/dam/denvergov/Portals/705/documents/visionzero/Denver-Vision-Zero-Action-Plan.pdf

Complete Streets for All

Vision Zero promotes the integration of Complete Streets concepts into communitywide plans and projects to encourage a safe, well-connected transportation network for people using all modes of transportation. A Complete Street is one that is designed to be safe for all users including people walking, biking, taking transit, and driving. Another aim of Complete Streets is to transform day-to-day transportation decisions so that all users are considered at every stage of the design process for all road projects. The adoption of Complete Streets policies has increased significantly over the past 10-15 years. For example, the State of California passed the State Complete Streets Act, Assembly Bill 1358, in 2008, which requires municipalities to incorporate a Complete Streets policy in their general plan.

The 2018 CBPP update identified potential Complete Streets project locations based on the Low-Stress Countywide Bicycle Network and provides design guidelines for bicycle and pedestrian facilities that can be referred to in Complete Streets planning. Many of the Complete Street studies were identified for right-of-way-constrained arterials, where collisions are concentrated but multimodal tradeoffs will be required to develop recommendations.

Further integrating Complete Streets planning and design with Vision Zero goals can help ensure roadways are safe for all users. To better inform Vision Zero and Complete Streets planning efforts, CCTA is developing a Vision Zero database including safety and built environment data. As part this effort, CCTA is developing an inventory of sidewalks and crosswalks in Priority Pedestrian Areas (PDAs), which were identified in the 2018 CBPP Update, using a big data vendor (Ecopia Tech). This type of data will help identify gaps in the pedestrian network and assist future local planning efforts. By developing this database, providing technical assistance to local jurisdictions, and funding Complete Streets and safety projects, CCTA can help encourage and facilitate Complete Streets implementation.

Context Appropriate Speeds

Context appropriate speeds refers to travel speeds being set and managed to achieve safe conditions for the specific roadway context and to protect all roadway users, particularly those most at risk in collisions such as people walking and biking. Speeds are critically important since the likelihood of a fatality or severe injury increases substantially the faster a vehicle is moving at the time of collision. Studies have shown that a person walking is 90% likely to survive a collision if the vehicle is traveling at 20 mph,

compared to 60% if the vehicle is traveling at 30 mph and 20% if the vehicle is traveling at 40 mph.[11] Proven speed management policies and practices, such as road diets, traffic calming measures, speed limit reductions, and automated speed enforcement (ASE) are often prioritized by Vision Zero plans to reach this goal.

Outside of the State of California many jurisdictions, such as Boston, have worked to reduce speed limits; in 2017, Boston reduced the default speed limit on city streets from 30 mph to 25 mph, in an effort to reduce the probability of fatal and severe injury collisions. A study conducted by the Insurance Institute for Highway Safety (IIHS) analyzed the effects of Boston speed limit reductions and found that after the speed limit was lowered, the odds of vehicle speeds exceeding 35 mph decreased by approximately 30 percent. [12] Vehicle speeds exceeding 30 mph decreased by approximately nine percent and vehicle speeds exceeding 25 mph decreased by three percent.

As another example, Montgomery County has reduced speed limits on County-owned roadways to adjust to changing land use context surrounding specific roadways, especially in locations with new residential and/or mixed-use development. In addition, Montgomery County, Washington D.C., New York City and Philadelphia, have adopted Automated Speed Enforcement (ASE) to reduce speeds on higher-speed corridors. ASEs have reduced speeds and traffic fatalities on these corridors by providing constant speed enforcement while reducing the need to dedicate limited police resources to speed management.

California has historically set vehicle speed limits based on the 85th percentile speed, which is a metric based on how fast people drive on a given roadway; as a result, the faster people tend to drive on a roadway, the higher the speed limit. Moreover, California does not currently permit the use of ASEs to manage speeds. However, AB 2363 required California's Secretary of Transportation to establish and convene a Zero Traffic Fatalities Taskforce to examine the use of the 85th percentile methodology for establishing speed limits. In January 2020, the Taskforce released a report concluding that California's

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[11] Kumfer, W., LaJeunesse, S., Sandt, L., and Thomas, L. (2019). "Speed, Kinetic Energy, and the Safe Systems Approach to Safer Roadways." ITE Journal, Vol 89, No. 4, 32-36.
[12] See the Insurance Institute for Highway Safety study on Boston's speed limit reduction at https://www.iihs.org/news/detail/city-drivers-slow-down-for-lower-speed-limit-in-boston

speed limit policies need to evolve to promote safety over expeditious mobility on roadways, and to give local jurisdictions greater autonomy in managing speeds on local roadways. As findings from the Taskforce begin to permeate through actionable policy, CCTA can take a leading role in defining context appropriate speeds on different types of roadways, with consideration of the land use context, proactive and systemic planning, and collision hotspots.

Funding

Although CCTA does not have jurisdiction over local roadways and state highways, one of the main ways CCTA can influence the adoption of Vision Zero policies and implementation of related projects is through funding. Its role as a funding agency enables CCTA to effectively partner with local, regional, and state agencies for project implementation and influence municipal-level policy and decision-making. As a funding agency leading the Contra Costa Vision Zero Framework, CCTA can support the following funding-related core elements of Vision Zero:

- Project Delivery
- Comprehensive Evaluation and Adjustments

Project Delivery

Project delivery refers to how decision-makers, planners and engineers advance projects for safe, equitable, multimodal travel by prioritizing projects that address the most pressing safety issues, securing funding, and implementing these projects on the ground. Project delivery is essential to achieving Vision Zero goals around safety, health, and equity-related outcomes, and is typically spearheaded by local jurisdictions. However, project delivery begins with how funds are allocated, which is often decided at a regional or county level.

Regional funding agencies, such as the Mid-America Regional Council (MARC) in the Kansas City Area and Atlanta Regional Commission (ARC), have taken innovative approaches to project funding to further Vision Zero goals. For example, MARC has developed quantitative measures of safety and equity for roadway asset management and ARC has determined and monitored the percentage of funding allocated to environmental justice communities. As another example, Los Angeles' Vision Zero program uses the HIN to assign an intersection score to prioritize intersections in their funding process. In addition to considering the number of fatal collisions, additional "points" are added if a fatality at the

intersection involved vulnerable roadway users such as a child or senior, or if the intersection is in a disadvantaged community. This strategy ensures that vulnerable roadway users and disadvantaged communities are prioritized through Vision Zero project delivery.

Contra Costa HIN and collision profiles, alongside equity metrics such as MTC's *Communities of Concern*,[13] can help guide project prioritization at the countywide level. CCTA could also weave equity goals into its funding decisions by tracking what percentage of the HIN falls within Communities of Concern or allocating a certain percentage of Vision Zero-related safety funding to Communities of Concern, or a combination thereof.

CCTA and local jurisdictions can also implement Vision Zero goals by leveraging resources developed as part of the Contra Costa Vision Zero Framework on active transportation plans, corridor studies, Local Road Safety Plans (LRSPs), Systemic Safety Analysis Reports (SSARs), and Highway Safety Improvement Programs (HSIP) projects. Consistency between these programs and different project types would help leverage additional state and federal grant funding opportunities to implement safety projects.

Comprehensive Evaluation and Adjustments

Vision Zero is an iterative process and should include routine evaluations that can inform any needed adjustments. The process of comprehensively evaluating and adjusting Vision Zero plans and priorities should be collaborative and engage a variety of stakeholders.

For example, after San Francisco adopted Vision Zero in 2014, the City undertook numerous interventions and programs to help achieve their goal, ranging from public education campaigns to upgrading pedestrian and bicycle facilities. While San Francisco had seen some successes toward this goal by 2017, local stakeholders voiced concerns whether Vision Zero could be achieved by 2024 based on the progress thus far. To address these concerns, San Francisco organized a one-day workshop to bring stakeholders from City departments, local advocacy groups, and leading transportation safety researchers to discuss what "Bold Ideas" could be implemented to help achieve Vision Zero by 2024. [14] In this

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[13] See MTC's Communities of Concern at http://opendata.mtc.ca.gov/datasets/mtc-communities-of-concern-in-2018-acs-2012-2016

[14] For more information, see the *Vision Zero San Francisco Bold Ideas Workshop Summary Report* at

context, Bold Ideas referred to transportation policies and technologies that would require significant public investment and/or cross-agency cooperation to realize. Through this workshop – and subsequent working groups – San Francisco has worked to update its Vision Zero strategy, which shows how Vision Zero is an iterative process.

Vision Zero frameworks and action plans should be reevaluated and adjusted to meet the fluidity of community needs, collisions trends, and travel behavior. For example, several years ago, Vision Zero action plans may not have considered the influence of emerging mobility trends such as shared e-bikes and e-scooters or transportation network company (TNC) services (e.g., Uber, Lyft). As shared e-bikes are implemented in Richmond later this year, for example, this may be an important topic to monitor in Contra Costa. As a county-level funding agency, CCTA can monitor and evaluate how funds allocated to traffic safety projects and programs are being used and the outcomes they produce, such as those related to safety, equity, and other community outcomes. CCTA can use these evaluations to strategically tailor traffic safety planning and funding priorities moving forward.

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https://visionzerosf.org/wp-content/uploads/2018/06/Bold-Ideas-for-Vision-Zero-Workshop-Report-2018.pdf

B. Contra Costa Local Plan Review

Memorandum

Date: March 6, 2020

To: Matt Kelly, CCTA

From: Eleanor Leshner and Inder Grewal, Fehr & Peers

Subject: Existing Safety Plan Review – Contra Costa Vision Zero Framework & Systemic Safety Approach

WC16-3343.01

This memorandum summarizes recent traffic safety plans and projects in Contra Costa County to lay the foundation for the development of the Contra Costa Vision Zero Framework & Systemic Safety Approach project. This summary describes countywide plans, systemic safety plans, active transportation plans, and corridor plans that focus on safety and have been completed since 2015 or are ongoing as of Winter 2020. Contra Costa organizations and local jurisdictions have recently adopted or implemented several important safety projects the Vision Zero Framework can build on. Several recent projects have focused on addressing systemic safety issues as well as incorporating robust public outreach, "pop-up" temporary demonstration (i.e., "living preview") installations, and design innovations such as Class IV separated bikeways.

Countywide Plans

Countywide Bicycle & Pedestrian Plan Update (Contra Costa Transportation Authority)

In 2018, the Contra Costa Transportation Authority (CCTA) adopted the Countywide Bicycle & Pedestrian Plan (2018 CBPP) Update. The 2018 CBPP reflects many new policies, best practices, and standards developed since the 2009 CBPP, through the following four approaches:

- Focus on the "interested but concerned" group of bicyclists, who represent most of the population and need clearly separated facilities to feel safe and comfortable

- Use level of traffic stress (LTS) to evaluate how stressful a roadway is for bicyclists and create a network of low-stress bikeways that better serve bicycle riders of all ages and skill levels, promote safer travel behavior across all modes, and could attract more riders that identify with the "interested but concerned" group
- Incorporate new practices and standards that focus on making crosswalks and bikeways safer and more connected, including traffic-separated bikeways
- Encourage local agencies to develop "complete streets" plans – both alone and collaboratively – to identify designs for streets and implement low-stress facilities for walking and biking

Key elements of this cross-jurisdictional and multifaceted project included a comprehensive collision analysis, the development of a low-stress countywide bikeway network (CBN), and identification of priority pedestrian areas (PPA). The project also conducted various "pop up" community outreach events countywide (at BART stations, farmers markets, and community events) and an online townhall to provide different opportunities for community engagement and "meet people where they are." The plan also provides design guidelines for innovative facilities such as Class IV separated bikeways and protected intersections. One of the key implementation actions recommended in this plan was for CCTA to develop a Vision Zero framework and Systemic Safety approach for the County.

Contra Costa Transportation Authority Safe Routes to School (Contra Costa Transportation Authority)

In 2016, CCTA completed their Safe Routes to School (SR2S) Needs Assessment, which comprehensively evaluated SR2S programs and projects throughout the county. The countywide SR2S needs assessment involved extensive outreach focused on creating partnerships between county agencies, school districts, and local jurisdictions to streamline the ongoing identification and delivery of SR2S projects. Based on this assessment, CCTA developed an online SR2S resource guide, synthesizing best practices, case studies, model policies and programs, and standards and guidelines in one place. The tools provided in the resource guide help local jurisdictions strategically address engineering, programming, and funding challenges for school-related access and safety projects.

Contra Costa County Vision Zero Action Plan (Contra Costa County)

Contra Costa County is in the process of developing a Vision Zero Action Plan to address severe injury and fatal collisions on County-owned roadways, largely located in unincorporated areas. The Vision Zero Action Plan will identify key collision trends, priority corridors, and an implementation strategy to address identified trends. The comprehensive implementation strategy will encompass engineering, education, and enforcement measures.

Systemic Safety Plans

The Systemic Safety Analysis Report (SSAR) and Local Roadway Safety Plan (LRSP) programs are statewide programs that support local agencies in developing a holistic approach to systemic traffic safety. SSARs take a proactive safety approach that focuses on evaluating an entire roadway network using a defined set of criteria to identify high-risk roadway characteristics. Systemic analysis acknowledges that historical collision data is not sufficient to prioritize countermeasures across a system. Likewise, LRSPs also take a proactive approach to roadway safety by creating a framework to systematically identify and analyze problems and recommend safety improvements. Projects identified in SSARs and LRSPs will be considered for Highway Safety Improvement (HSIP) funding.

San Pablo SSAR

In 2018, the City of San Pablo conducted a SSAR to evaluate roadway safety at four specific intersections. To achieve some of project's systemic goals, the San Pablo SSAR report comprised the following elements:

- Analysis of bicycle and pedestrian collision data to identify collision trends and the main contributors to collisions resulting in severe injuries and fatalities
- Analysis of how different roadway and bike facility types affect pedestrian and bicycle safety
- Prioritization and cost-benefit analysis of site-specific infrastructure improvements to address primary collision types throughout the City

The projects identified in the SSAR will be considered as potential candidates for HSIP funding.

Local Road Safety Plan

In 2019, Caltrans released a new funding application for jurisdictions to develop Local Roadway Safety Plans (LRSP). Several Contra Costa jurisdictions have been awarded funding for the development of a LRSP, which are listed below. None of these cities have started their LRSP as of yet.

- Antioch
- Concord
- El Cerrito
- Lafayette
- Pittsburg
- Pleasant Hill
- Richmond
- San Ramon
- Walnut Creek

Future cycles of the HSIP will require jurisdictions to have an adopted Local Road Safety Plan. Caltrans has confirmed that this Contra Costa Vision Zero Framework will "check the box" for CCTA member jurisdictions to apply for HSIP funding in the future.

As part of developing the Contra Costa Vision Zero Framework, CCTA will develop resources including a Vision Zero database and "how to" guide to assist local jurisdictions in the adoption of Vision Zero policies and implementation of safety projects. These resources could also set the groundwork for local jurisdictions to develop robust LRSPs. Caltrans is also likely to release additional LRSP funding and CCTA will share application materials with local jurisdictions if and when this funding becomes available.

Active Transportation Plans (ATPs)

The Active Transportation Program in California was created through Senate Bill 99 to encourage increased use of active modes of transportation, such as walking and biking, and to meet state-mandated greenhouse gas (GHG) emissions reduction goals. ATPs typically contain goals, policies, and recommendations for developing and implementing pedestrian and bicycle networks, as well as education, encouragement, enforcement, and evaluation programs. ATPs often contribute to roadway safety by identifying deficiencies or risks in the active transportation network, through analysis of network gaps and collision trends and development of countermeasure strategies. The projects described below are examples of ATPs that have taken a more proactive approach to safety and/or have developed walking and biking networks with a focus on making them safe and comfortable for people of all ages and abilities, and therefore have moved beyond conventional collision analysis. ATPs that have taken a more conventional approach to safety analysis are listed below.

Pittsburg Moves

The City of Pittsburg is currently finalizing their ATP, known as *Pittsburg Moves*. The purpose of Pittsburg Moves is to increase walking and biking in the City by identifying and prioritizing improvements that enhance safety, accessibility, and connectivity between housing, schools, transit, parks, community centers, and commercial areas. The City conducted a comprehensive crosswalk assessment to identify potential safety enhancements on marked crosswalks located on high-volume, high-speed roadways. This assessment helped identify appropriate countermeasures to enhance crosswalk safety, such as median refuges, high visibility striping, and flashing beacons. A "pop-up" demonstration project (a.k.a. "living preview") was conducted near the Pittsburg Center BART Station to test the recommended safety strategies and gather feedback from the community. The Plan also provides a formal commitment to Vision Zero and sets the goal of eliminating all bicycle and pedestrian severe injuries and fatalities in Pittsburg by 2040.

City of Concord Bicycle, Pedestrian, and Safe Routes to Transit Plan

In 2016, the City of Concord adopted their Bicycle, Pedestrian, and Safe Routes to Transit Plan, which focuses on the development of a pedestrian and bicycle network that is safe and comfortable for all ages and abilities. The Plan focuses on improving access to transit stops and stations as well as the Iron Horse Trail, Lime Ridge Open Space, and the Contra Costa Canal Trail, and includes "human-centered" design guidelines for pedestrian and bicycle facilities. The plan also recommends wayfinding signs and maps, secure places to park bicycles, and other education and encouragement programs as features that support the recommended pedestrian and bicycle networks.

Other Recent Active Transportation Plans

Other ATPs that have been developed over the past five years – or are currently under development – in Contra Costa County include:

- Danville Town-wide Bicycle Master Plan (ongoing)
- Pleasant Hill Citywide Bicycle and Pedestrian Master Plan (ongoing)
- City of San Ramon Bicycle Master Plan (2018)
- Brentwood Pedestrian Connectivity Study (2018)
- City of San Pablo Bicycle and Pedestrian Master Plan (2017)
- The City of El Cerrito Active Transportation Plan (2016)
- Town of Moraga Walk Bike Plan (2016)

Corridor Studies

Several Contra Costa cities have recently conducted major corridor safety studies to improve safety on arterial roadways. The studies have generally sought to provide safe access to transit, implement complete streets designs, reduce potential conflicts between vehicles and active modes, and improve access to key destinations for people walking and biking by incorporating innovative analysis methods and community engagement techniques. Several key projects are summarized below, and projects still in early planning stages are listed below for reference.

San Pablo Avenue Safe Routes to Transit, El Cerrito

As part of the San Pablo Avenue Specific Plan, the Safe Routes to Transit study seeks to improve transit access for people walking and biking in midtown El Cerrito. Given the limited right-of-way on San Pablo Avenue and the number of competing users, the study recommends installing Class II buffered bike lanes with bus boarding islands and pedestrian safety enhancements within the study area. The bus boarding islands would reduce conflicts between buses and bicyclists since the buffered bike lane would be installed between the

boarding island and the sidewalk. This study seeks to manage demand on the corridor by improving transit operations and creating safe routes to transit, therefore making public transit a more attractive alternative to driving in a more suburban setting.

Rumrill Boulevard Complete Streets, San Pablo

The City of San Pablo is currently in the design and permitting phase of the Rumrill Boulevard Complete Streets project. Located in a diverse area of the city, Rumrill Boulevard has historically served as an automobile-oriented corridor and represents a gap in the existing bicycle and pedestrian network, which poses safety concerns for the neighborhoods surrounding the corridor. The project seeks to reorient the corridor to serve the needs of all users and all modes by reallocating roadway space. Improvements include Class IV separated bikeways along the length of the corridor, bicycle supportive infrastructure (e.g., bike parking), new crosswalks, flashing beacons at crosswalks, ADA ramps, improved lighting, and new traffic signals.

Yellow Brick Road Iron Triangle Walkable Neighborhood Plan, Richmond

In 2019, the City of Richmond completed final plans for the Yellow Brick Road Iron Triangle Walkable Neighborhood Plan. The decade-long, community-driven planning and design process seeks to improve walkability to key destinations within Richmond's Iron Triangle Neighborhood as well as safety on both east-west and north-south pedestrian-oriented corridors. These corridors will include yellow-colored brick roadways and sidewalks intended to calm traffic and highlight the neighborhood's pedestrian network.

Richmond-San Rafael Bridge "People Path," Richmond

In November 2019, the Metropolitan Transportation Commission (MTC) and Caltrans opened the pilot project for the Richmond-San Rafael Bridge Bicycle and Pedestrian Path. The two-way separated "People Path" separates people walking and biking from vehicles with a moveable concrete barrier and replaces a maintenance lane on the upper deck of the bridge. The path provides an important active transportation link between Contra Costa County and Marin County and fills a critical gap in the planned 500-mile long San Francisco Bay Trail. In addition to implementing the path on the bridge, the project includes buffered bicycle lanes and protected intersections on Richmond roadways leading up to the bridge, and provides a direct route from the Richmond BART station. One of the challenges in implementing this project is the level of traffic congestion on the Richmond-San Rafael Bridge. Public officials and residents from both counties have lobbied to restrict active modes on the bridge during peak commute hours and instead use the "People Path" as an additional vehicle lane to mitigate congestion. However, MTC and Caltrans have determined that a bicycle and pedestrian facility on the bridge would encourage travel by active transportation modes during peak commute hours and serve as a transportation demand management (TDM) strategy. The new path is a temporary demonstration project and Caltrans will evaluate its use and traffic impacts over a four-year period to determine whether to implement a permanent path.

Railroad Avenue Complete Streets Study, Pittsburg

The City of Pittsburg is currently conducting a transportation planning and engineering study to improve multimodal access and safety along Railroad Avenue near the Pittsburg Center BART Station. The complete streets study prioritizes the travel modes in the following order: pedestrian and bicycle access, transit operations, and motor vehicle mobility. This project has taken an innovative approach to analyzing safety along the corridor: in addition to analyzing historical collision data, the project analyzes "near-miss" traffic incidents[1] involving all travel modes using high-resolution cameras and Brisk Synergies software. This kind of near-miss analysis is an innovative systemic safety tool since it seeks to proactively address potentially fatal or harmful interactions between people walking and bicycling, and motor vehicles.

Monument Boulevard Corridor Community-Based Transportation Plan, Concord

In 2020, CCTA, in partnership with the City of Concord, anticipates completing the Monument Boulevard Corridor Community-Based Transportation Plan (CBTP). This CBTP seeks to update the Monument Boulevard Corridor to be more compatible with land use and demographic-related changes along the corridor since the first CBTP was adopted for this area in 2006. As part of the public outreach process, roadway users expressed concerns related to pedestrian and bicycle safety, with an emphasis on SR2S. The plan recommends SR2S improvements including low-stress bikeways and a "bicycle school bus," among others. Additional recommended infrastructure improvements include enhanced crossings at specified distances, traffic signal coordination, closure of sidewalk gaps, and consolidation of commercial driveways.

Iron Horse Trail Corridor Plan, Contra Costa County

Contra Costa County is currently addressing public comments on the draft Iron Horse Corridor Active Transportation Study. The study analyzes opportunities and constraints for the entire length of the 18.5-mile long Iron Horse Trail Corridor within Contra Costa boundaries. Through collaboration with multiple cities, extensive public outreach, and data analysis, the study finds that the greatest safety issues are related to intersection crossings and trail access. To address these concerns, the study proposes building a bicycle superhighway, a long-distance bicycle route that is entirely separated from vehicular traffic. This long-term vision would eliminate at-grade intersection crossings and increase access points from key destinations along the corridor. Implementing a bicycle superhighway would require significant coordination between the County, the five local jurisdictions along the corridor, and the East Bay Regional Park District.

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[1] Near-miss traffic incidents refer to "incidents in which no property was damaged, and no personal injury was sustained, but where, given a slight shift in time or position, damage or injury easily could have occurred." (OSHA)

Marsh Creek Corridor Multi-Use Feasibility Study, Contra Costa County

Contra Costa County is currently exploring the feasibility of designing a non-motorized trail along a 12-mile stretch of the Marsh Creek Road corridor between Round Valley Regional Preserve and the Clayton city limits. Marsh Creek Road serves as an alternative route to State Route 4 for vehicles traveling between central and east Contra Costa, where vehicles often travel at high speeds. Through extensive public outreach and an evaluation of trail alignment alternatives, the study seeks to leverage the corridor's rural terrain to provide a useful and enjoyable transportation corridor for non-motorized travel, including pedestrians, bicyclists, and equestrian users.

Other Recent Corridor Studies

Other corridor studies that have been recently completed in the past year– or are currently under development – in Contra Costa County include:

- Lincoln Avenue Complete Street Project, Walnut Creek (ongoing)
- Pleasant Hill Road, Lafayette (ongoing)
- Pleasant Hill Road Complete Streets Study, Pleasant Hill (2019)
- ConnectOrinda Plan, Orinda (2019)

Conclusion

In the past five years, many important safety-projects have been completed, or are ongoing. Several have incorporated proactive collision data collection and/or analysis methods, such as 'near-miss' data collection and analysis in Pittsburg. Several projects have also included robust public outreach, such as the "pop-up" events as part of the Iron Horse Trail Corridor Plan, Marsh Creek Corridor Multi-Use Feasibility Study, and others, which serve to "meet people where they are" and broaden community engagement. Recent plans and projects, such as the 2018 CBPP Update and Richmond-San Rafael Bridge "People Path," have also incorporated innovative design treatments, such as Class IV separated bikeways and protected intersections. These projects will serve as a foundation to develop the Countywide Vision Zero Framework and Systemic Safety Approach.

C. Countywide Collision Analysis Summary and Common Bicycle and Pedestrian Collision Patterns

Vision ZERO

Countywide Collision Analysis Summary and Common Bicycle and Pedestrian Profiles

FEHR PEERS

10-28-2020

CONTRA COSTA transportation authority

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Data Source

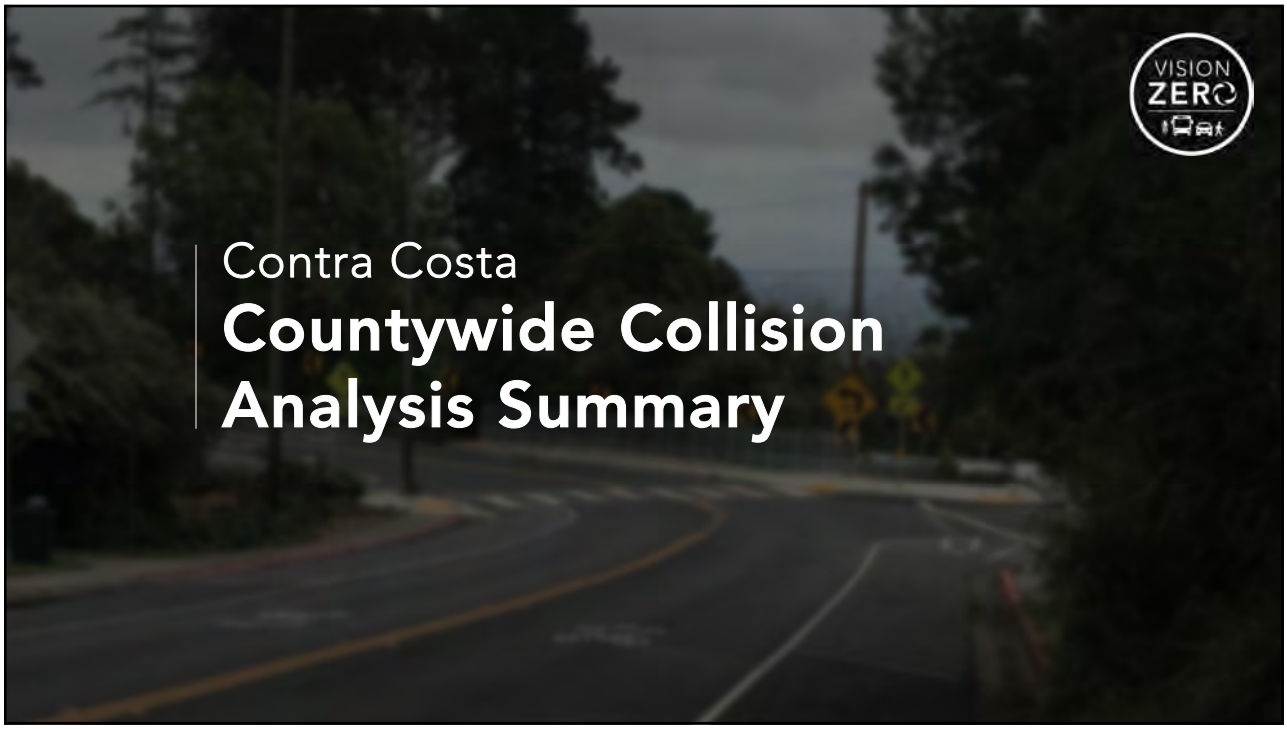
- Collision data source:
  - Statewide Integrated Traffic Records System (SWITRS) maintained by the California Highway Patrol (CHP), accessed using UC Berkeley SafeTREC's Transportation Injury Mapping System (TIMS) platform.
- Date range of collision data analyzed:
  - 1/1/2008 to 12/31/2017
- Data excluded to focus on collisions involving people walking and using mobility devices, and people biking:
  - Collisions occurred on freeways
  - Collisions resulting in property damage only (PDO) rather than an injury or fatality

Key Definitions

Collision analysis is presented for the following categories by mode:

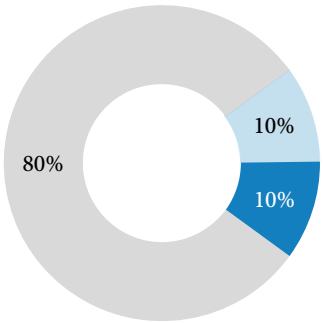
- "Pedestrian" or "pedestrian-involved" collisions, which involve people walking or using personal assisted mobility device (e.g., wheelchair)
- "Bicycle" or "bicycle-involved" collisions, which involve people bicycling (at least one party bicycling).*
- "Vehicle-only" collisions, which involve only people driving, and do not involve people walking or biking.
- "All collisions," which includes "vehicle-only" collisions as well as collision that involve people walking and biking.

** Note that SWITRS data does not currently distinguish between bicycle, e-bike, and e-scooter collisions*



All Collisions

Countywide
2008–2017



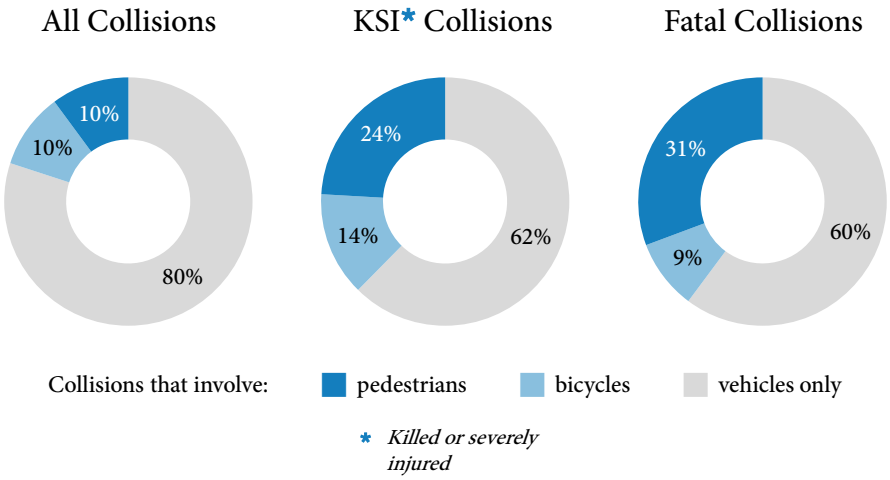
2,048 collisions involved **bicyclists** between 2008 and 2017

2,101 collisions involved **pedestrians** between 2008 and 2017

Collisions that involve: pedestrians bicycles vehicles only

Collisions by Mode

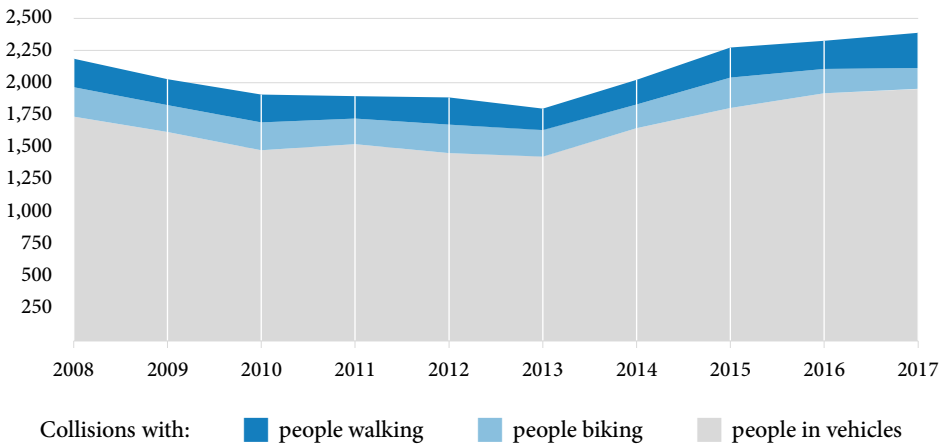
Countywide
2008–2017



People walking are involved in 10% of all countywide collisions, but account for **31% of all fatal collisions**

All Collisions by Mode

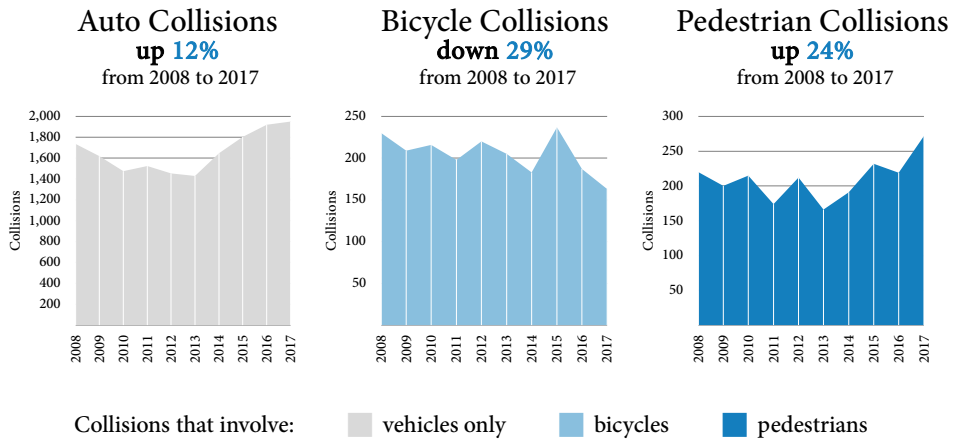
Countywide
2008–2017



The number of collisions in Contra Costa County **increased 9%** from 2008 to 2017.

All Collisions by Mode

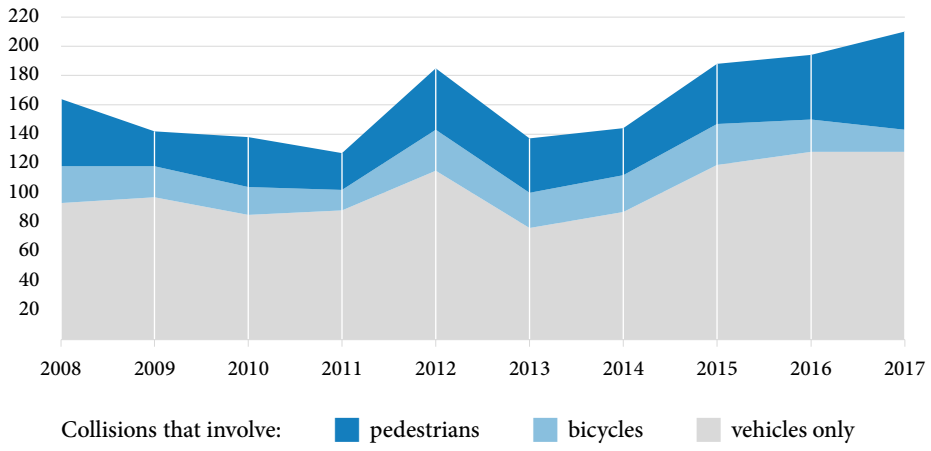
Countywide
2008–2017



Over that same time period (from 2008 to 2017), collisions involving people walking **increased 24%**

KSI Collisions by Mode

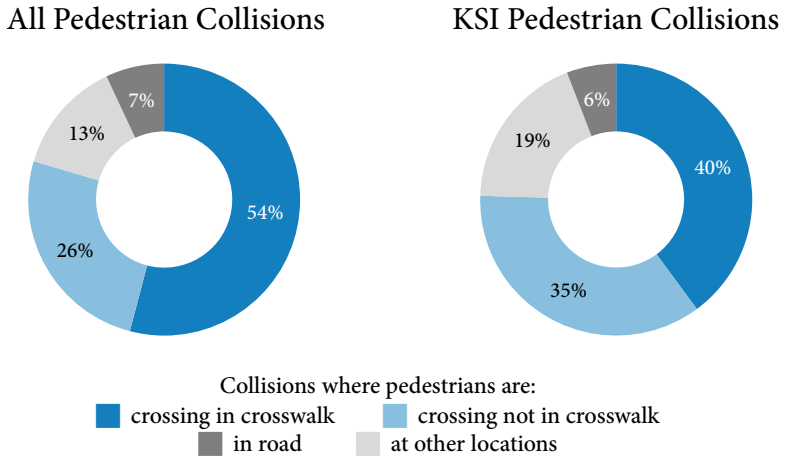
Countywide
2008–2017



From 2008 to 2017, total KSI collisions **increased 28%** and pedestrian KSI collisions **increased 46%**

Pedestrian Action

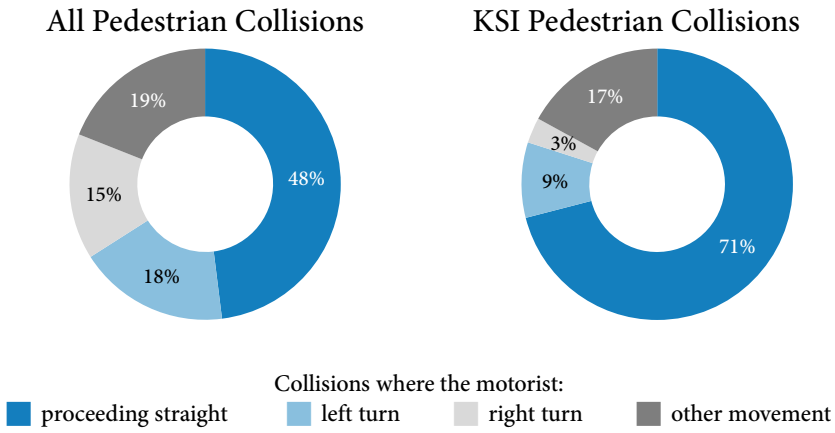
Pedestrian Collisions
2008–2017



Most pedestrian collisions happen **in crosswalks**

Action Before Collision

Countywide
2008–2017

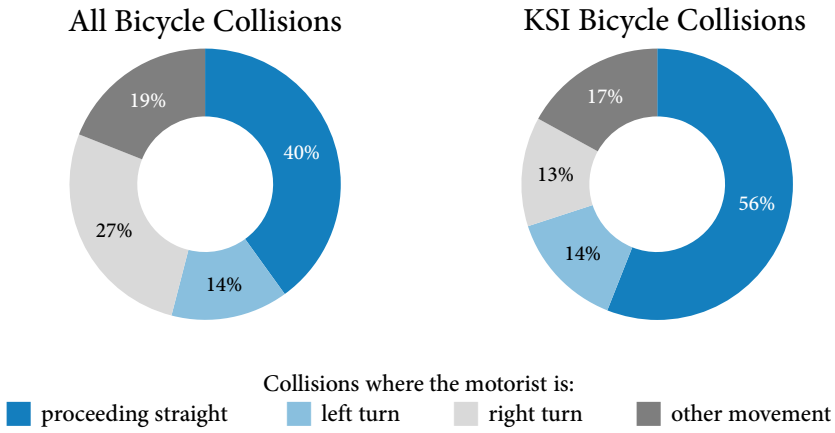


About **half** of all pedestrian collisions involve a driver **proceeding straight** before the collision, and **a third** involve **right or left turns.***

* The remainder occur due to some other movement before collision

Action Before Collision

Countywide
2008–2017



40% of all bicycle collisions involve a driver **proceeding straight** before the collision, more than **25%** involve **right turns** and almost **15%** involve **left turns.***

* The remainder occur due to some other movement before collision

Primary Collision Factors (PCF)

Traffic Signs and Signals
Includes drivers not observing the rules of a particular signal or sign, such as a vehicle not stopping at the limit line, stop bar, or crosswalk at an intersection, as well as the running of red lights.

Wrong Side of Road
Includes driving or bicyclists riding on the wrong side of the road, passing improperly when there are double solid yellow lines, and driving improperly across highway medians.

Unsafe Speed
Includes instances of people driving at a speed greater than is reasonable or prudent given the roadway conditions.

Improper Turning
Includes turns at intersections and turning off road, improper signaling during lane changes, illegal U-turns, turning from a lane that does not allow turns, or making a turn that is signed as prohibited.

Continued >>

Primary Collision Factors (PCF)

Automobile ROW
Includes drivers observing their right-of-way improperly, such as not yielding to oncoming traffic during a left turn, not yielding properly at a stop sign, and not yielding when entering a road from a driveway.

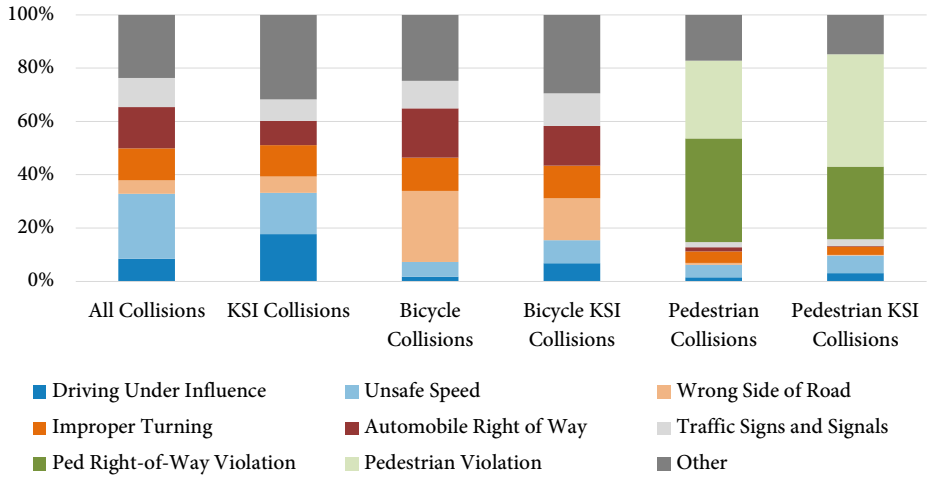
Driving Under Influence
Includes driving or bicycling under the influence of alcohol or a drug.

Pedestrian ROW Violation
Includes drivers violating a pedestrian's right-of-way, such as drivers not yielding at a crosswalk.

Pedestrian Violation
Includes instances with pedestrians not following a rule of the road, such as crossing outside of a crosswalk and not yielding to vehicles, crossing during the red phase of a signal, or suddenly leaving the curb.

Primary Violation

Countywide
2008–2017



Common primary collision factors include **unsafe speeds, DUIs, improper turning, wrong-way bike riding, pedestrian violations**, and other **right-of-way violations**

Collision Types

* Definitions from the CHP Collision Investigation Manual

Hit Object
A motor vehicle strikes a fixed object or other object.

Head-On
Two vehicles, approaching from opposite directions, make direct contact. For example, the front of one vehicle collides with the front of another. Or prior to impact, one vehicle skids sideways, causing the side of the skidding vehicle to collide with the front of the other.

Overturned
A vehicle overturns and no prior collision caused the overturning. This would include a motorcyclist losing control, causing the vehicle to lie down on its side.

Broadside
One motor vehicle strikes another vehicle at an angle greater than that of a sideswipe.

Continued >>

Collision Types

* Definitions from the CHP Collision Investigation Manual

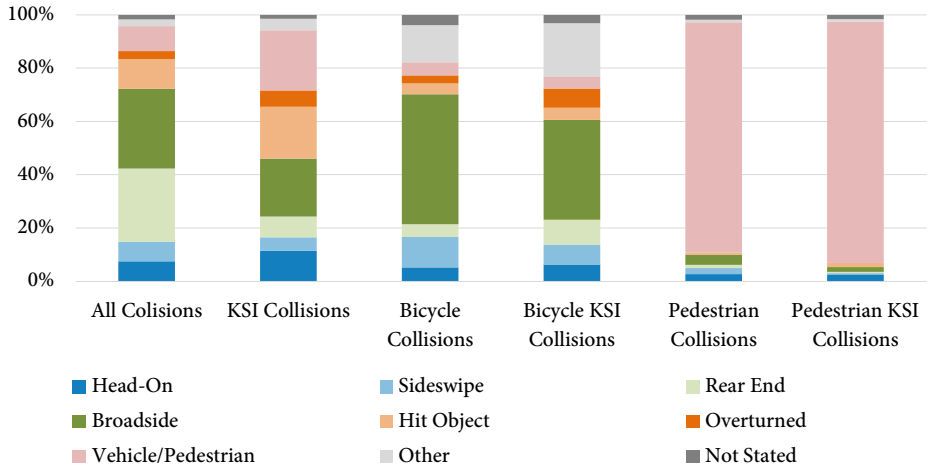
Sideswipe
One motor vehicle strikes the side of another with a glancing blow. For example, two vehicles are proceeding in the same direction or from opposite directions, and the side of one vehicle strikes the side of the other.

Vehicle/Pedestrian
A vehicle strikes a pedestrian.

Rear-End
Two vehicles, traveling in the same direction, make direct contact. For example, the front of one vehicle strikes the rear of another vehicle, or one vehicle approaches the other from the rear and skids sideways during a braking action, causing the side of the skidding vehicle to strike the rear of the other.

Collision Type

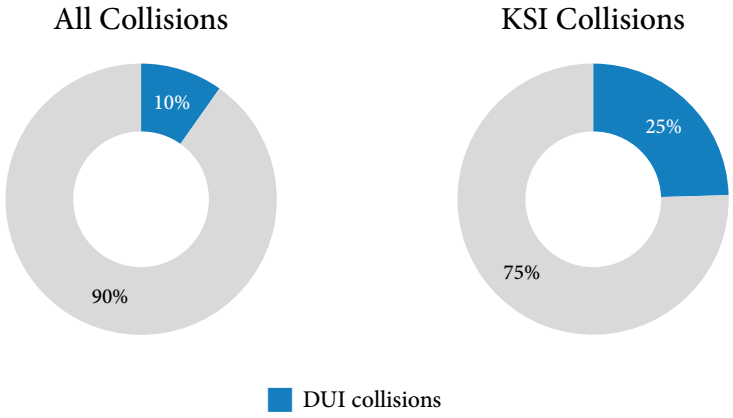
Countywide
2008–2017



Common collision types include **rear-end**, **broadside**, **hit object**, **sideswipe**, and **pedestrian** collisions

Driving Under the Influence

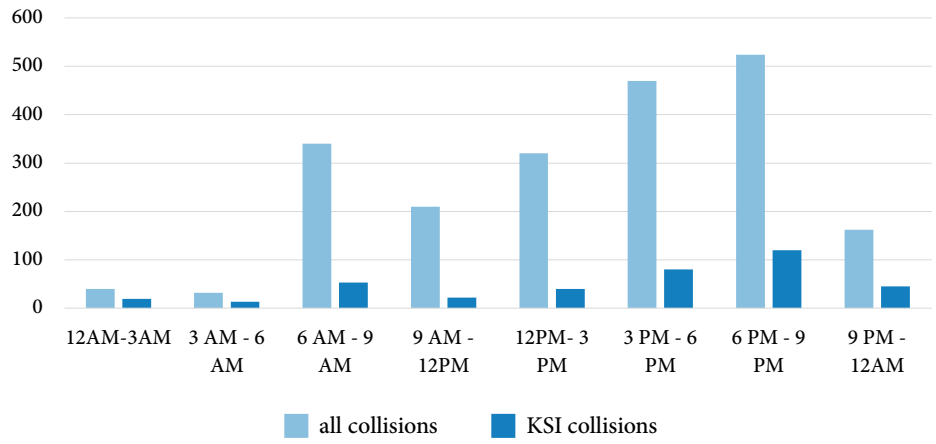
Countywide
2008–2017



DUIs make up **10%** of **all collisions** but **25%** of **KSI collisions**

Time of Day

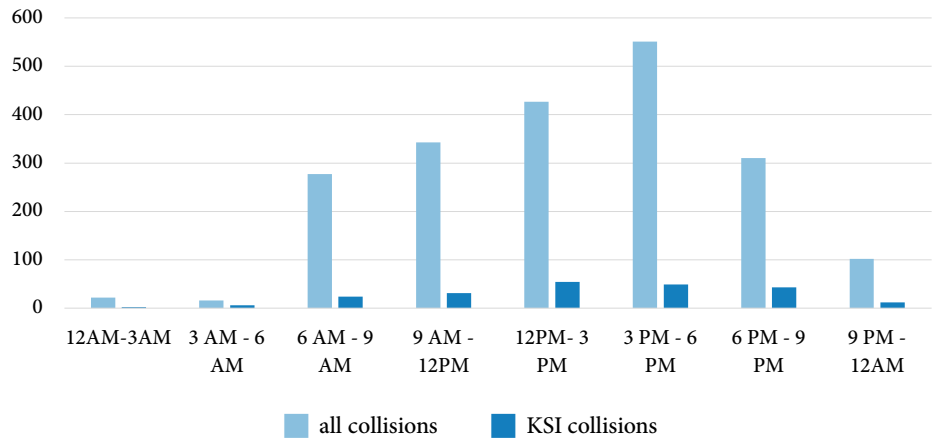
Pedestrian Collisions
2008–2017



Pedestrian collisions are more common in the **afternoon**, **evening**, and **at-night.**

Time of Day

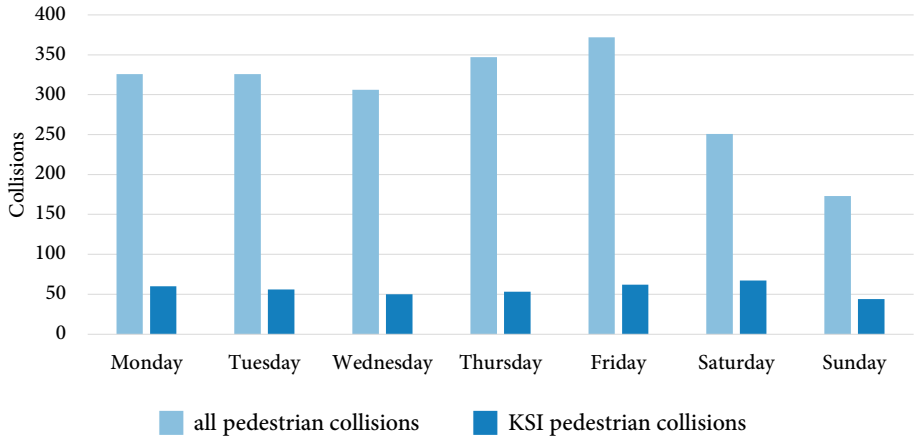
Bicycle Collisions
2008–2017



Bicycle collisions tend to occur **throughout the day**, and are more common **afternoon.**

Day of Week

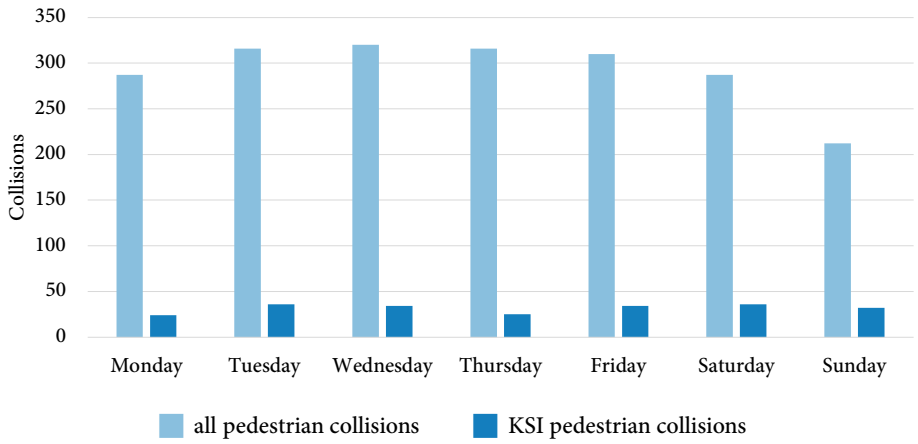
Pedestrian Collisions
2008–2017



Pedestrian collisions tend to occur **throughout the week**, and are more common on **weekdays.**

Day of Week

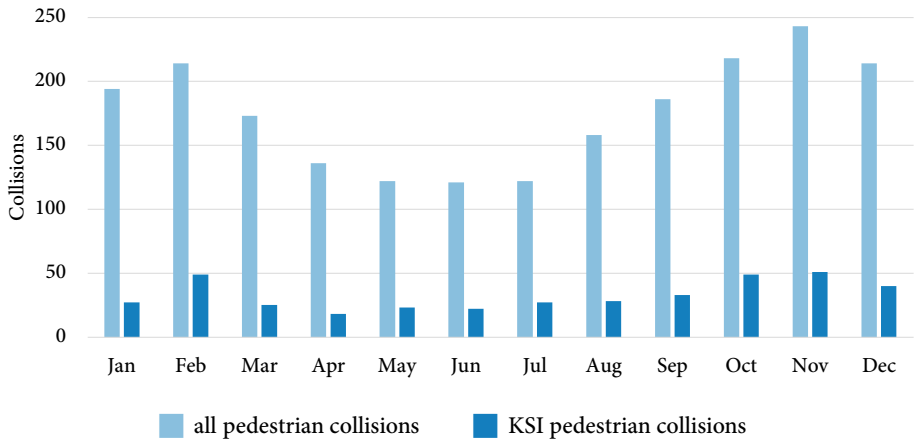
Bicycle Collisions
2008–2017



Bicycle collisions tend to occur **throughout the week**, including on **weekends.**

Month of Year

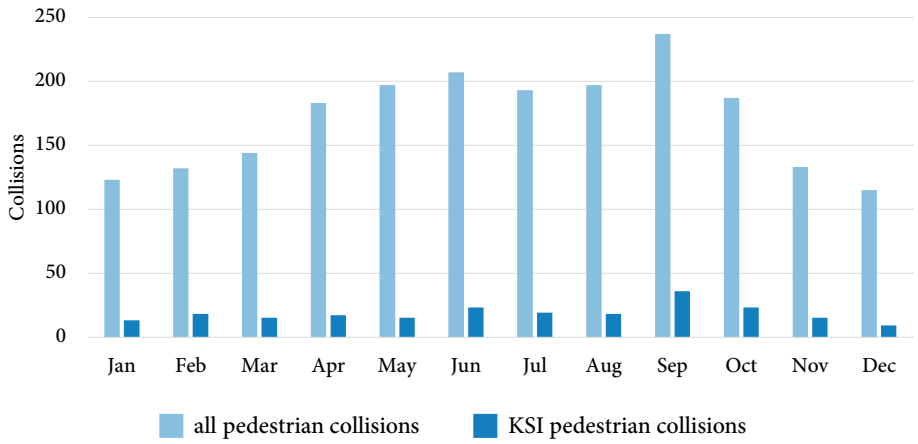
Pedestrian Collisions
2008–2017



Pedestrian collisions occur **throughout the year**, and are more common during the **fall** and **winter months.**

Month of Year

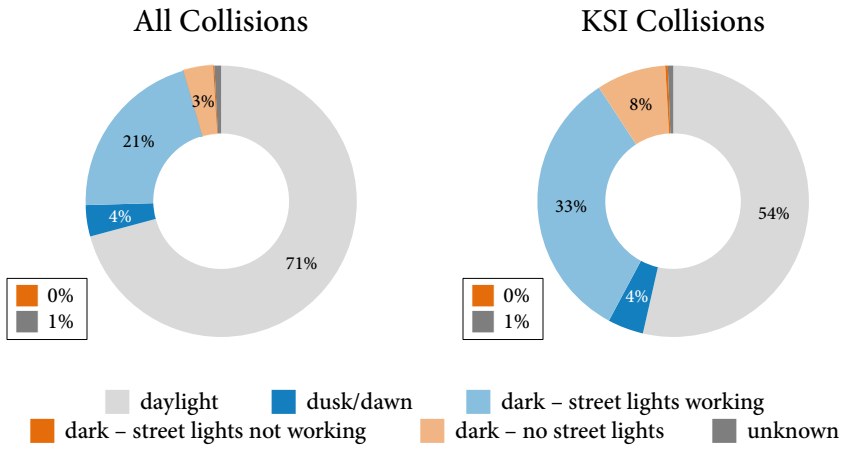
Bicycle Collisions
2008–2017



Pedestrian collisions occur **throughout the year**, and are more common during the **spring, summer** and **early fall**

Lighting Conditions

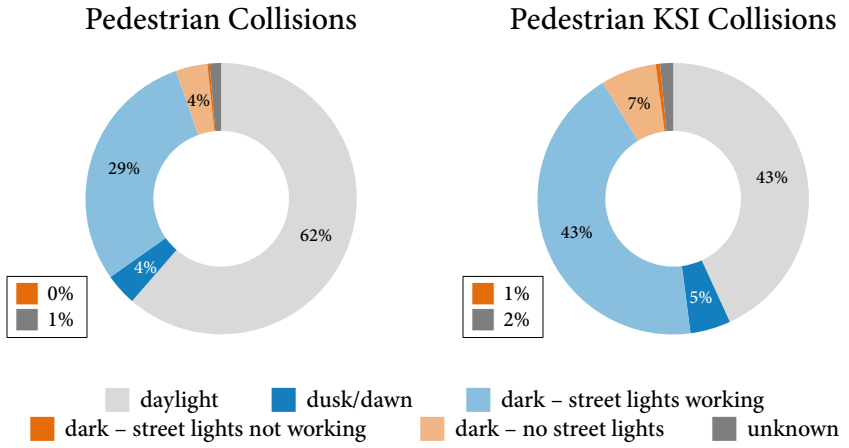
All Collisions
2008–2017



Most collisions occur during **daylight conditions**, but KSI collisions are more likely during **dark conditions** (with or without street lights)

Lighting Conditions

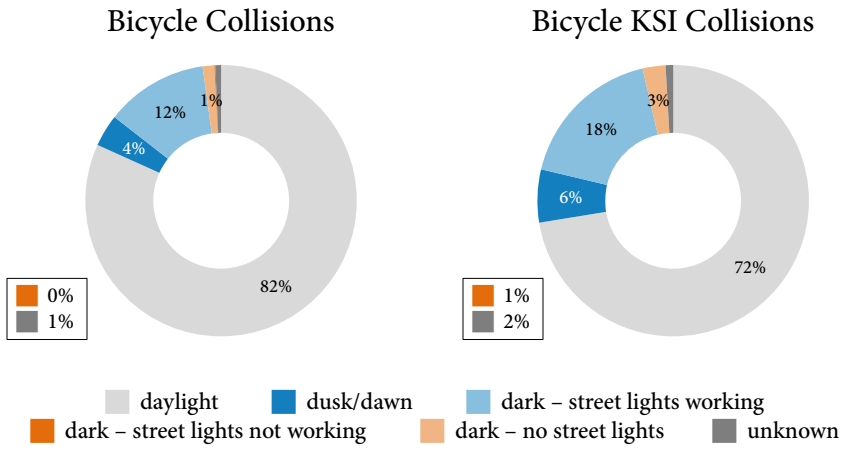
Pedestrian Collisions
2008–2017



Pedestrian KSI collisions are also more likely during dark conditions (with or without street lights)

Lighting Conditions

Bicycle Collisions
2008–2017

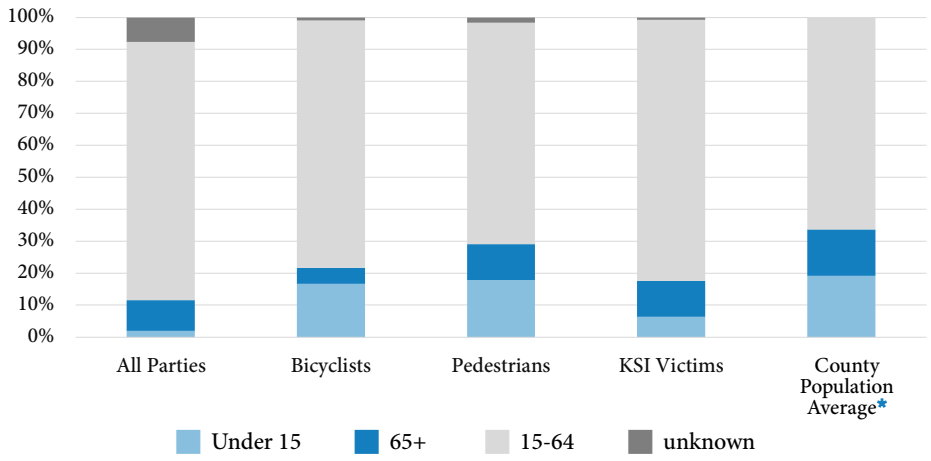


Most bicycle collisions occur during **daylight conditions**, but KSI bicycle collisions are more likely during **dark conditions** (with or without street lights)

Parties by Age

Countywide 2008–2017

* Contra Costa Average Age Distribution estimated using 2017 American Community Survey 5-Year Estimates

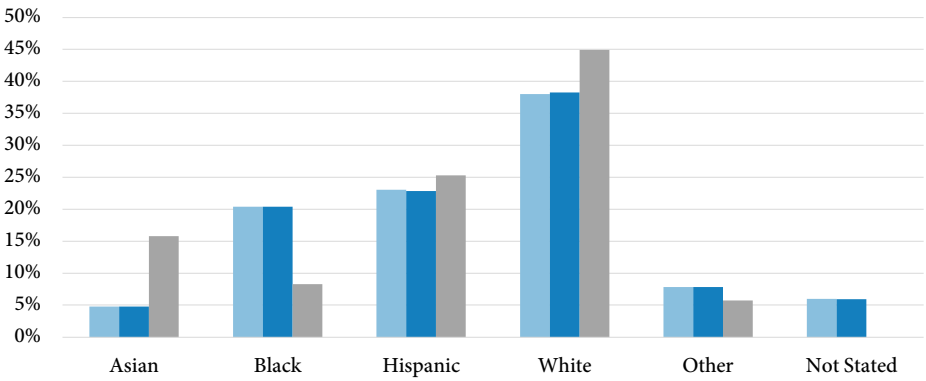


People **aged 15-64** are **more likely** to be involved in a **collision**. However, **people aged <15 or 65+** are **more likely** to be involved in **pedestrian/bicycle** and **KSI collisions.**

Parties by Race

Countywide 2008–2017

Note that race data is only collected at the party-level and is determined at the discretion of the reporting officer when the collision is reported.



Pedestrian collisions: all parties pedestrians County population average*

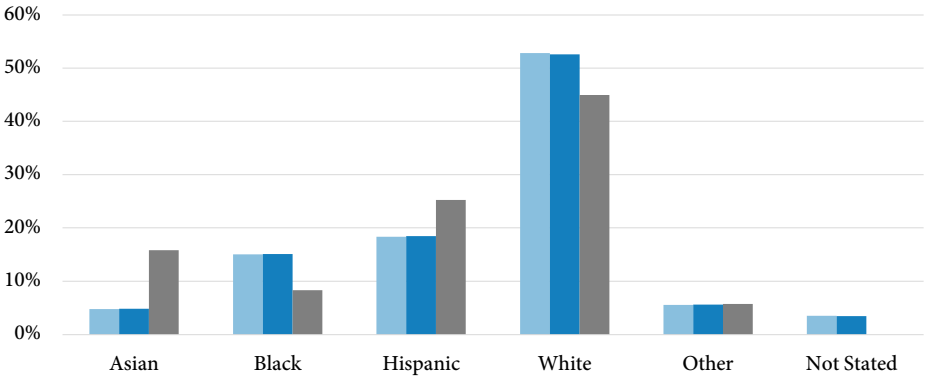
* Contra Costa Average Age Distribution estimated using 2017 American Community Survey 5-Year Estimates

EL72

Parties by Race

Countywide 2008–2017

Note that race data is only collected at the party-level and is determined at the discretion of the reporting officer when the collision is reported.



Bicycle collisions: all parties bicyclist County population average*

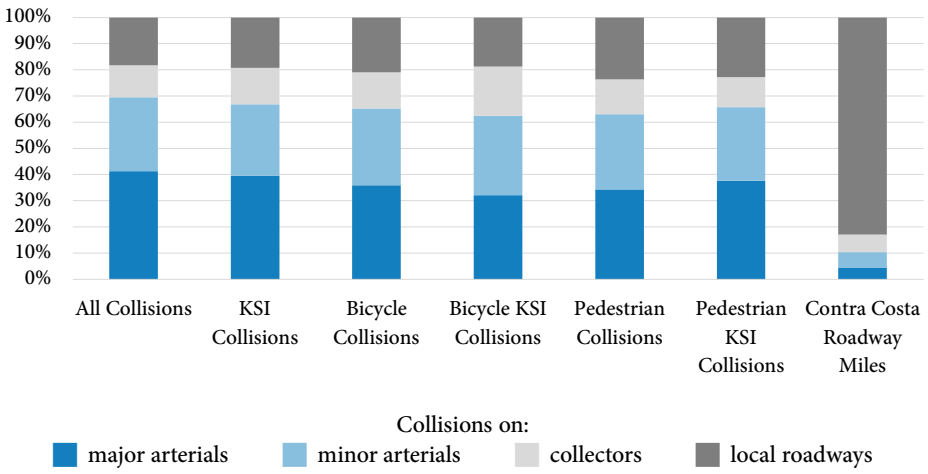
* Contra Costa Average Age Distribution estimated using 2017 American Community Survey 5-Year Estimates

Slide 52

EL72 @Eleanor Add disclaimer note
Eleanor Leshner, 10/23/2020

Roadway Type

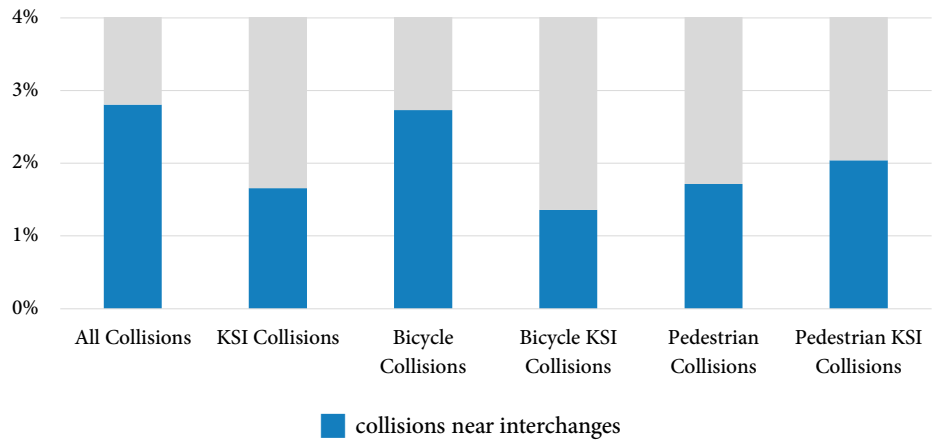
Countywide
2008–2017



The **majority** of pedestrian & bicycle collisions occur on **arterial roadways**

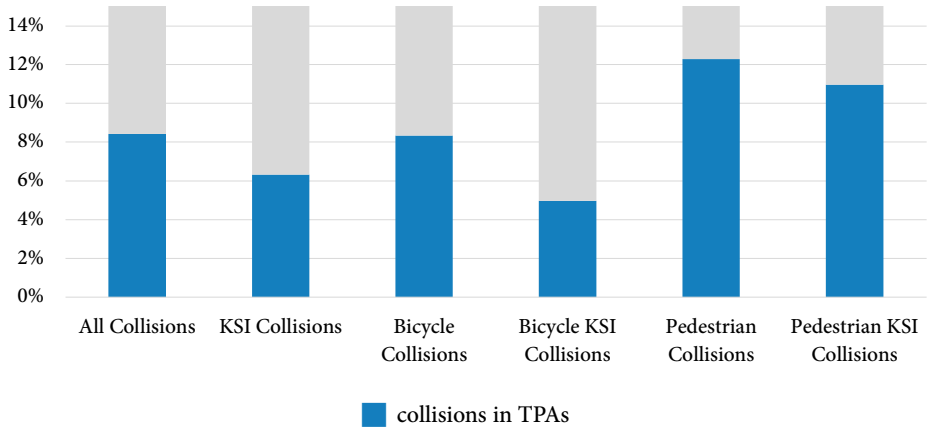
Near Interchanges

Countywide
2008–2017



Although a smaller proportion collisions occurs near **interchanges**, **pedestrian KSI & bicycle** (all injury levels) collisions are **more common**

Transit Priority Areas (TPAs) Countywide 2008–2017

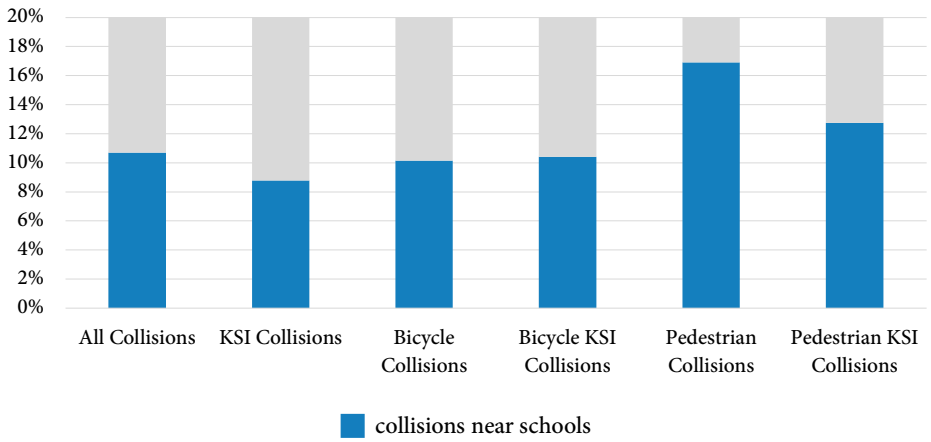


Transit Priority Areas (TPAs) are defined as areas within a half-mile walk of transit stations with 15-minute headways or better during peak periods

Pedestrian KSI collisions are **more common** in **Transit Priority Areas**

Near Schools

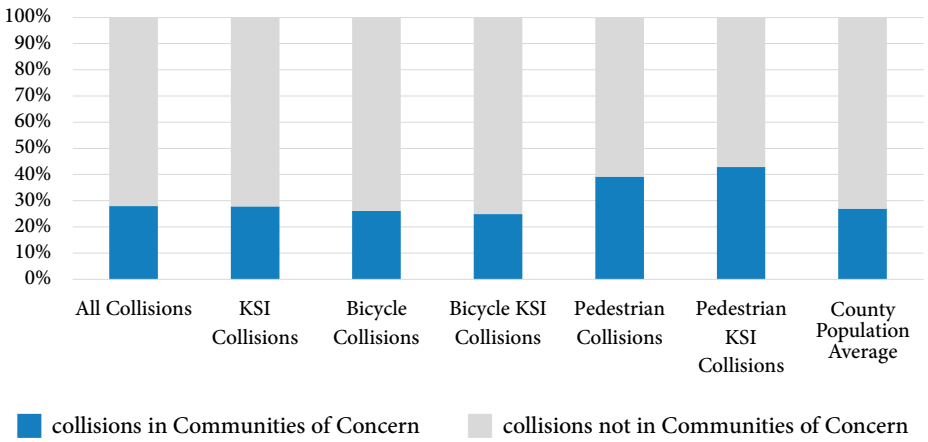
Countywide
2008–2017



Pedestrian collisions are **more common** near **schools**

Communities of Concern

Countywide 2008–2017

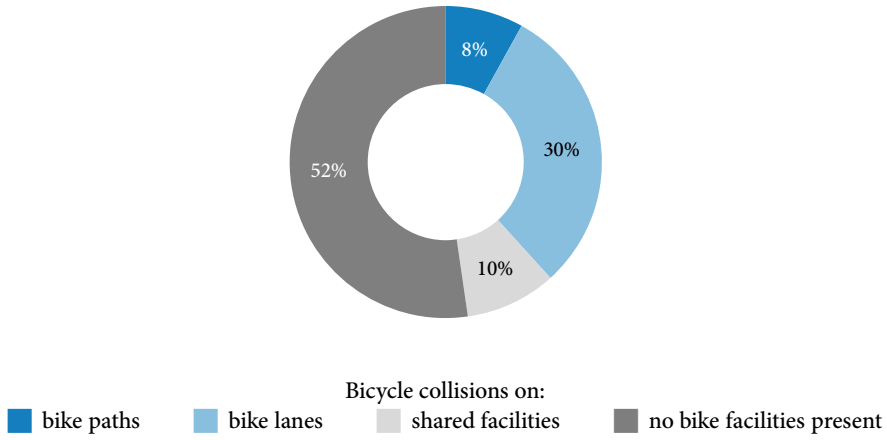


Communities of Concern are defined by the Metropolitan Transportation Commission as census tracts having concentrations of both low-income and non-white populations; Contra Costa population average estimated using 2017 American Community Survey 5-Year Estimates

Pedestrian collisions are **more common** in **Communities of Concern**

Existing Bike Facilities

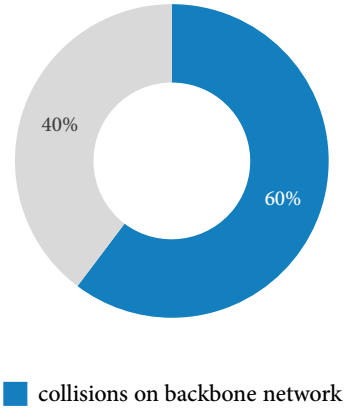
Countywide
2008–2017



Bicycle collisions are **more common** where **no bicycle facilities are present**

Countywide Bicycle Network

Bicycle Collisions 2008–2017



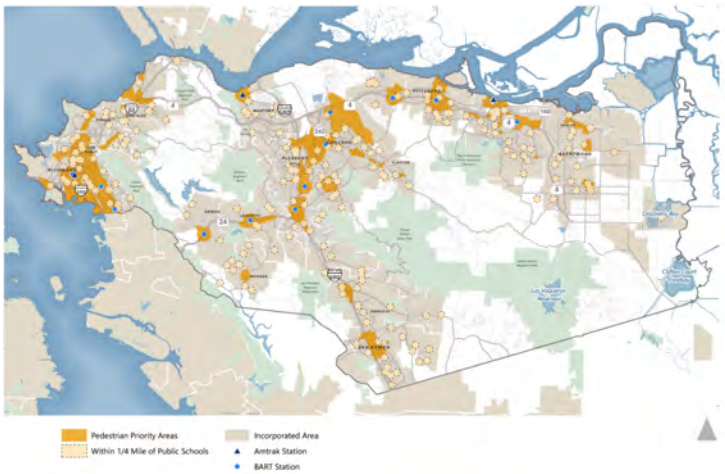
CCTA's 2018 Countywide Bicycle and Pedestrian Plan Update identifies the Low-Stress Countywide Bicycle Network, where bicycle improvements are prioritized to create a low-stress backbone bicycle network across Contra Costa.

The majority of bicycle collisions occur along the **Countywide Bicycle Network**, which are prioritized for low-stress improvements

Contra Costa

Priority Pedestrian Areas (PPAs) Collision Analysis Summary

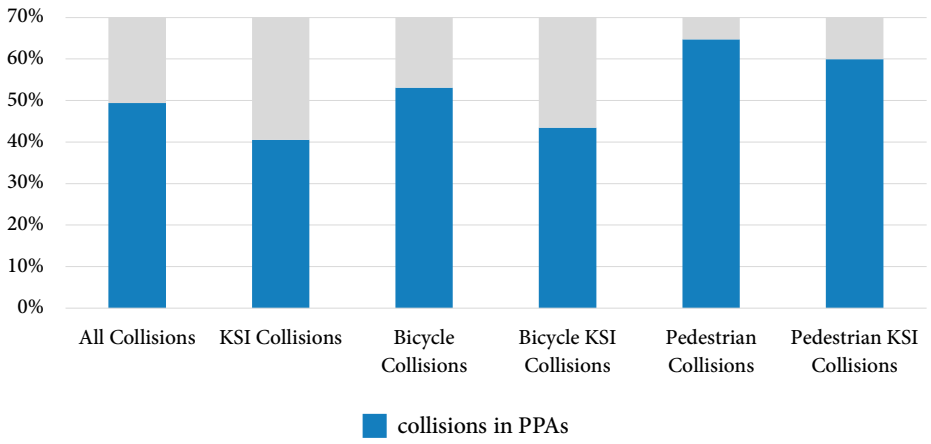
Pedestrian Priority Areas (PPAs)



CCTA's 2018 Countywide Bicycle and Pedestrian Plan Update identifies Priority Pedestrian Areas (PPAs), which include areas within walking distance of schools and major transit stops and locations with the greatest concentrations of pedestrian collisions.

PPA Summary

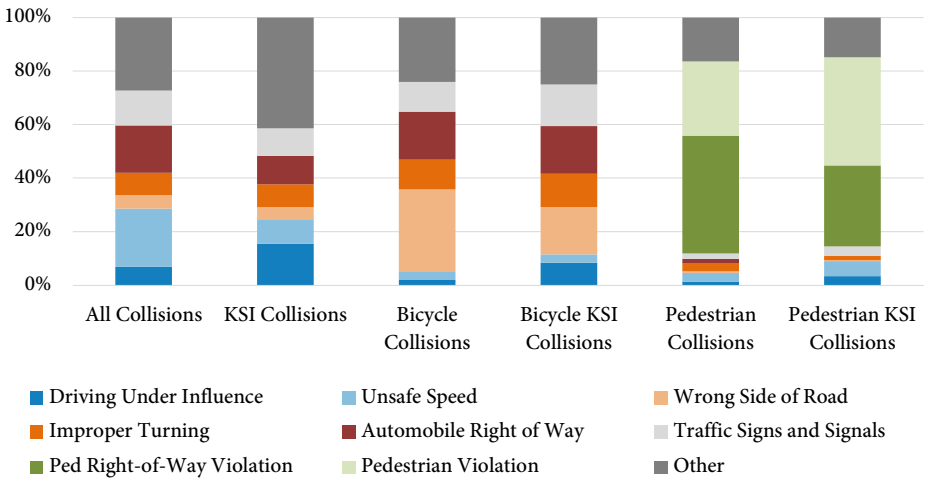
PPAs
2008–2017



Two-thirds of pedestrian collisions and **half of bicycle** collisions occur in **Priority Pedestrian Areas** defined in the 2018 Countywide Bicycle & Pedestrian Plan Update

Primary Violation

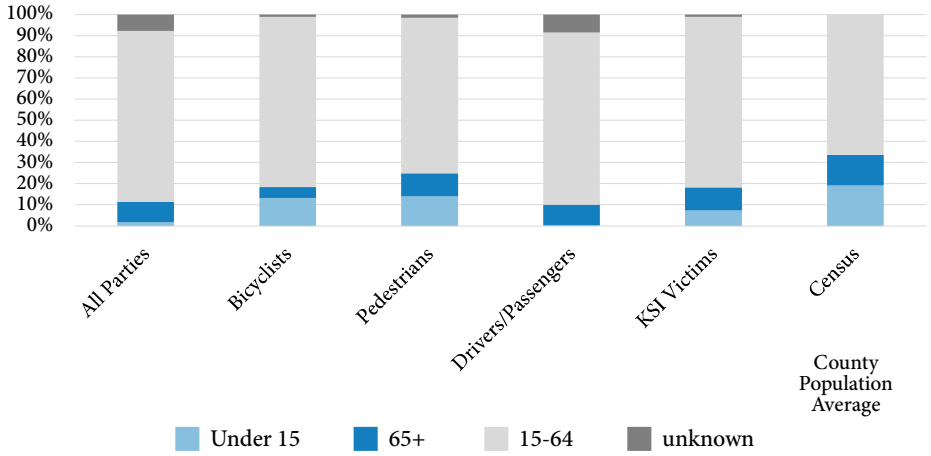
PPAs
2008–2017



Common primary collision factors in PPAs are similar to countywide trends, and include **unsafe speeds, DUIs, improper turning, wrong-way bike riding, pedestrian violations**, and other **right-of-way violations**

Parties by Age

PPAs
2008–2017

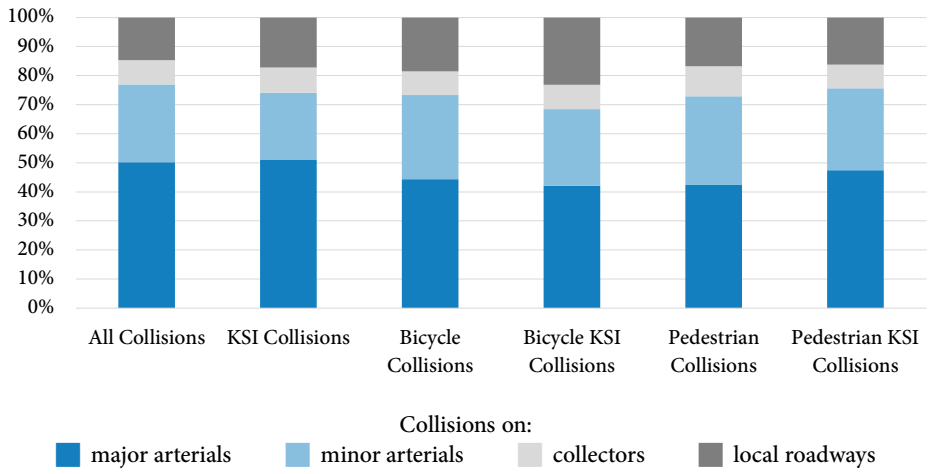


Contra Costa Average Age Distribution estimated using 2017 American Community Survey 5-Year Estimates

In PPAs, **youth (<15) and seniors (65+)** are more likely to be involved in **pedestrian/bicycle** and **KSI collisions** compared to all collision trends

Roadway Type

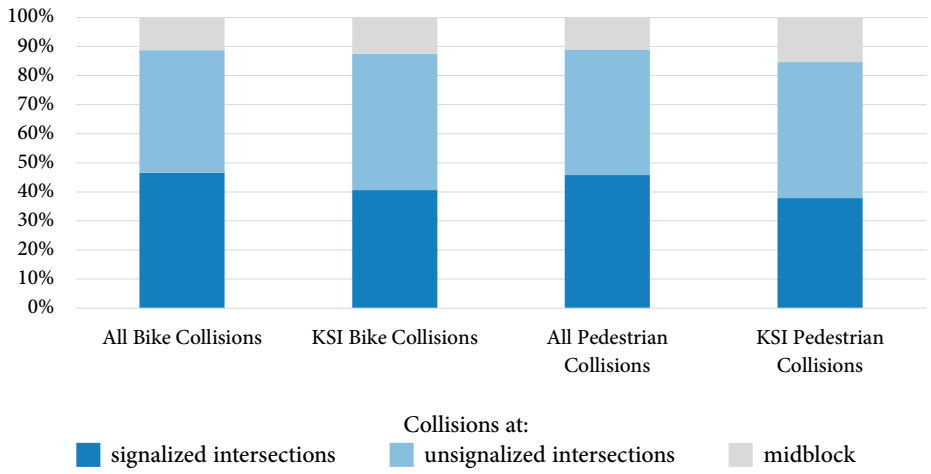
PPAs
2008–2017



Compared to countywide trends, collisions in PPAs are even more likely to occur on **arterial roadways**

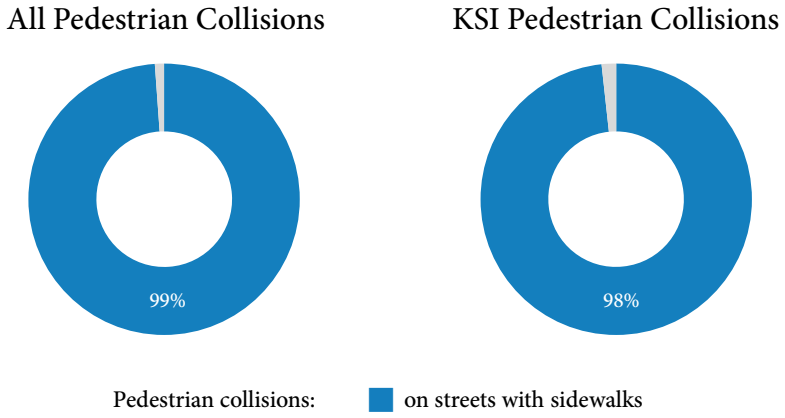
Location Type

PPAs
2008–2017



Collisions in PPAs are more likely to occur **at intersections** (signalized or unsignalized) compared to midblock

Sidewalks PPAs 2008–2017

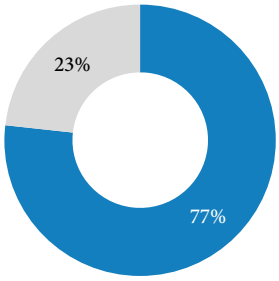


Most pedestrian collisions in PPAs occur where sidewalks are present, but **KSI collisions** are **twice as likely** where **sidewalk gaps** exist

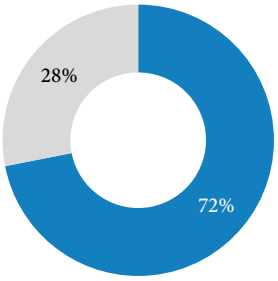
Crosswalks

PPAs
2008–2017

All Pedestrian Collisions



KSI Pedestrian Collisions

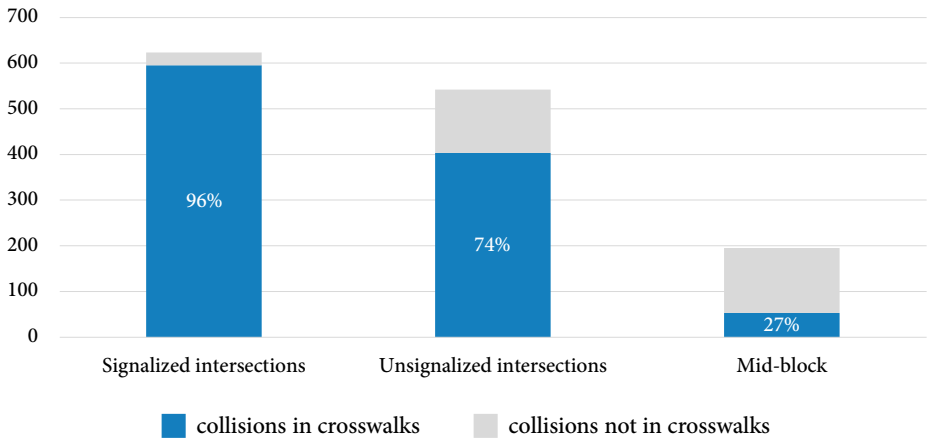


Pedestrian collisions: collisions at marked crosswalks

Most pedestrian collisions in PPAs occur where crosswalks are marked, but **KSI collisions** are **more likely** where **crosswalks** are **not marked**

Crosswalk Location

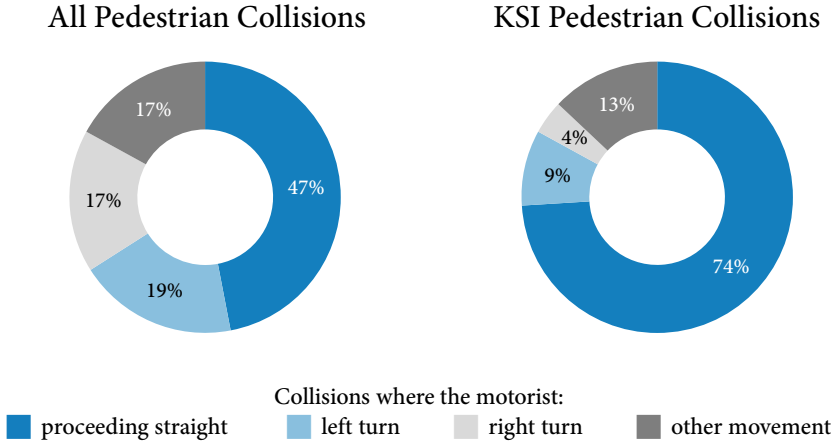
PPAs
2008–2017



Pedestrian collisions are more likely to occur **outside of marked crosswalks** at **unsignalized intersection** or **mid-block** locations

Action Before Collision

PPAs
2008–2017

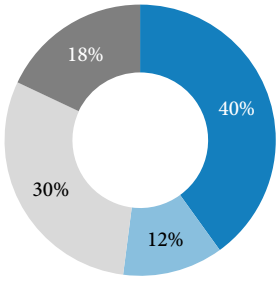


Similar to countywide trends, **pedestrian KSI** collisions in PPAs are more likely to occur when a driver is **proceeding straight**

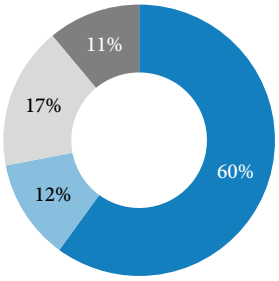
Action Before Collision

PPAs
2008–2017

All Bicycle Collisions



KSI Bicycle Collisions



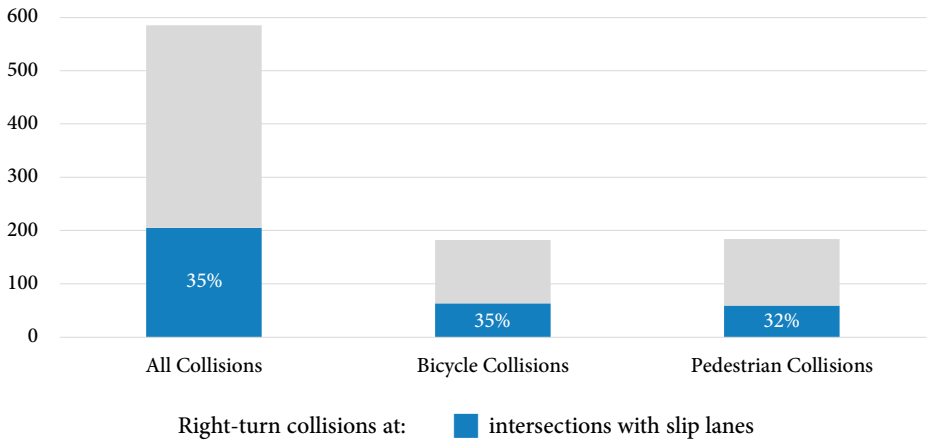
Collisions where the motorist:

proceeding straight | left turn | right turn | other movement

Compared countywide trends, **bicycle** collisions in PPAs are more likely to occur when a driver is **proceeding straight** or **turning right**

Channelized Right Turns

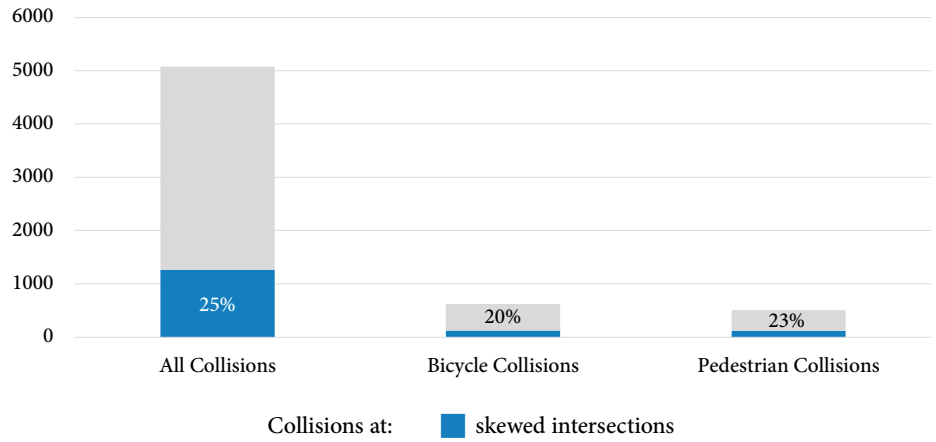
PPAs
2008–2017



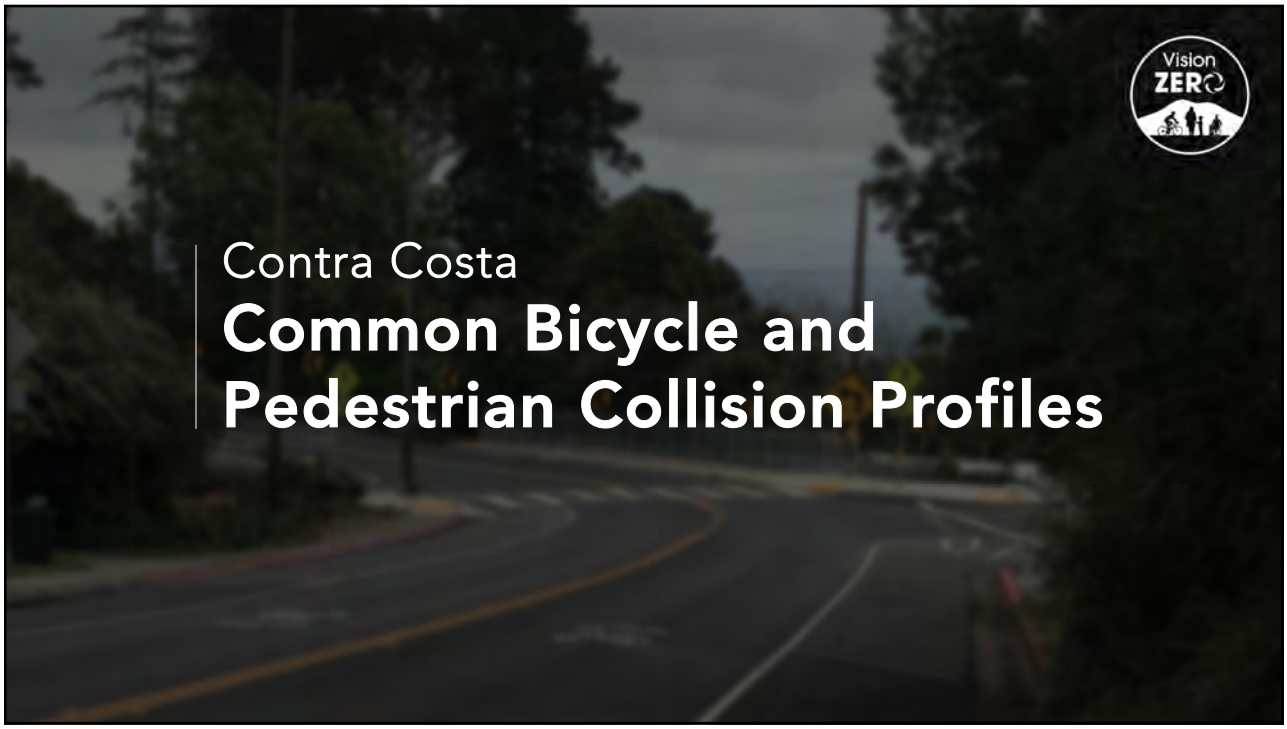
One-third of pedestrian & bicycle collisions involving a right-turn happen at intersections with **channelized right turn lanes**

Skewed Intersections

PPAs
2008–2017



About 20% of pedestrian and bicycle collisions occur at **skewed intersections**



Common Bicycle and Pedestrian Collision Patterns

User Behavior

- Speeding
- DUIs
- Contraflow bike riding

Specific Areas and Populations

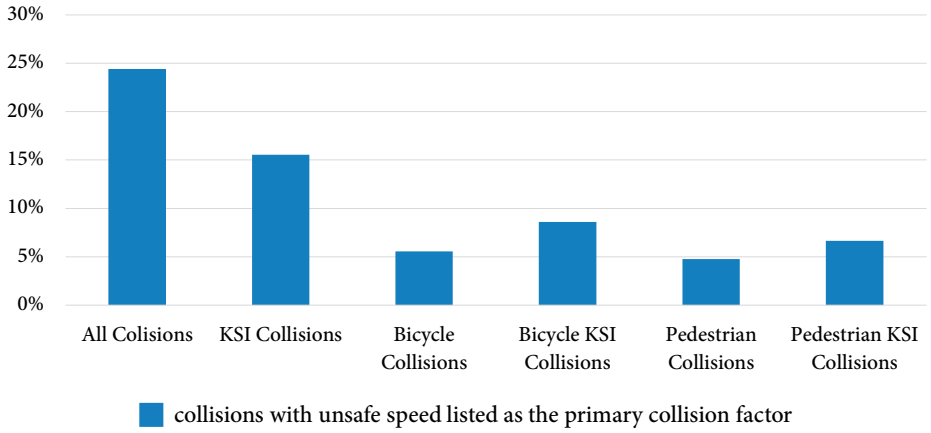
- Transit priority areas
- Vulnerable populations – Seniors
- Vulnerable populations – Youth

Built Environment Factors

- Highway interchanges
- Trail crossings
- Channelized right turns
- Skewed intersections
- Left turns at signals
- Red light violations

Profile 1
Speeding

Unsafe speeds is a common collision profile and key systemic safety issue across Contra Costa. Vehicles often travel faster than the posted speed limit. Since injuries and fatalities increase exponentially with vehicle speeds, especially for people walking and biking, reducing speeds is the most critical way to improve safety. Potential countermeasures for this profile include traffic calming, speed warning signs, increased enforcement (including automated once allowed in California), and driver education.



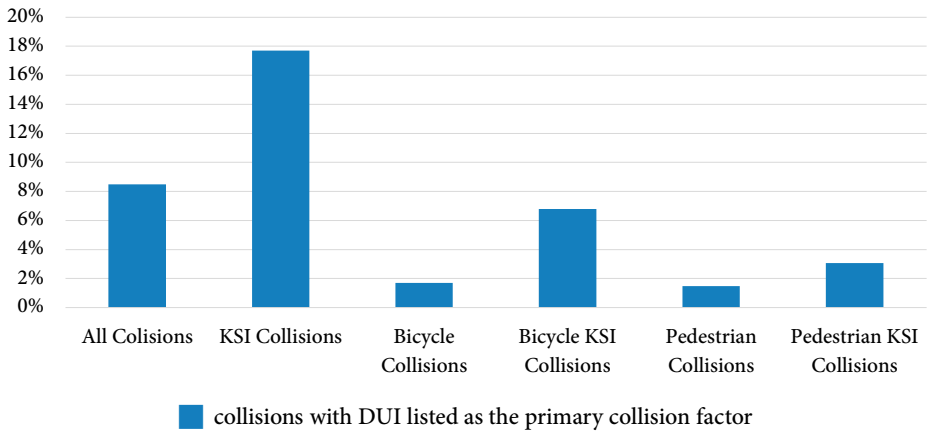
Vision ZERO

7% of pedestrian KSI collisions

9% of bicycle KSI collisions

Profile 2
DUIs

Driving under the influence (DUI) of alcohol, drugs, or medication is a common collision profile in Contra Costa – and has a strong influence on KSI collisions. The proportion of collisions where DUI is considered the primary collision factor (PCF) more than doubles from 8% of all collisions to 18% of all KSI collisions. Potential strategies to address this collision profile include enforcement activities (e.g., sobriety checkpoints), marketing campaigns, and education. In areas where DUI is especially prevalent, design redundancy, such as center medians and rumble strips, may also be effective.



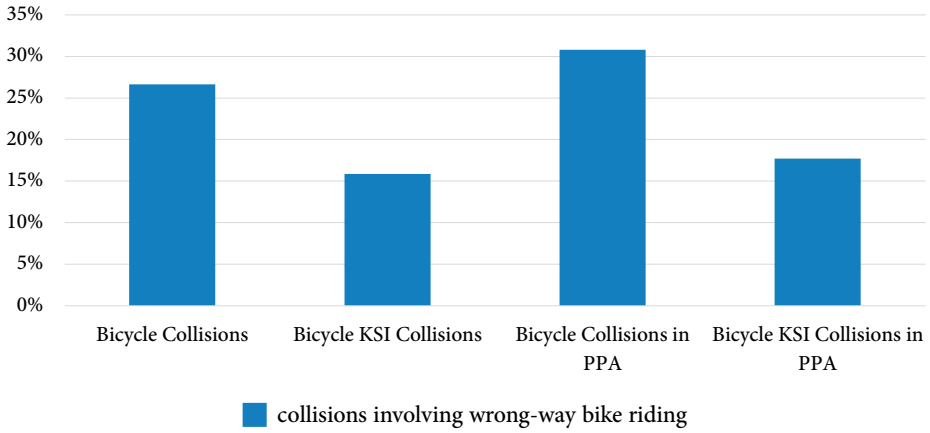
Vision ZERO

3% of pedestrian KSI collisions

7% of bicycle KSI collisions

Profile 3
Contraflow Bike Riding

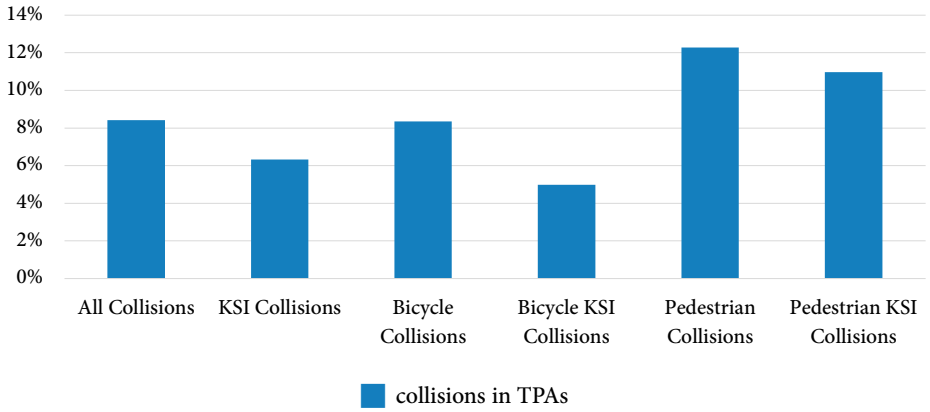
Wrong way riding collisions denote a collision that occurs when a bicyclist travels in the opposite direction of vehicular traffic. This can occur when existing facilities do not exist or when existing facilities do not meet bicyclists' desire lines. For example, if an adequate crossing does not exist where a bicyclist wants to cross the street, they may ride in the wrong direction to access a signalized crossing. Potential solutions include installing bicycling facilities or bicycle crossings at key desire lines. Bicyclist education is also important to address risky behaviors when appropriate facilities are in place.



15% of bicycle KSI collisions

Profile 4
Transit Priority Areas (TPAs)

Pursuant to CEQA Guidelines relating to VMT (section 15064.3), CCTA defines Transit Priority Areas (TPAs) as areas within a half-mile walk of transit stations with 15-minute headways or better during peak periods, such as BART stations. Improving access for people walking and biking can make transit more convenient, which is a key goal of the 2018 CBPP Update. Therefore, improving safety for people walking and biking to/from transit is key, considering that 11% of pedestrian KSI collisions countywide occur within TPAs.

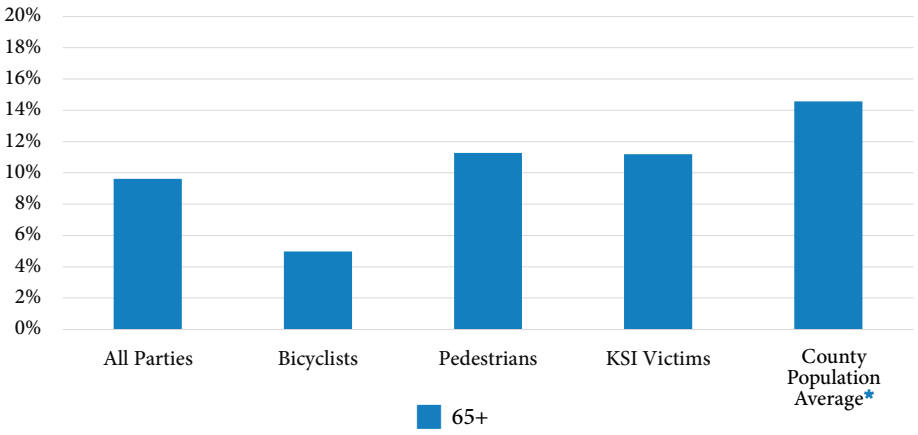


11% of pedestrian KSI collisions

5% of bicycle KSI collisions

Profile 5
Seniors

Seniors (65 years old and older) are involved in 11% of pedestrian-involved collisions. Incorporating senior-friendly design, such as slower crossing times at signals, or focusing pedestrian improvements near senior centers are some potential countermeasures to consider for this profile.



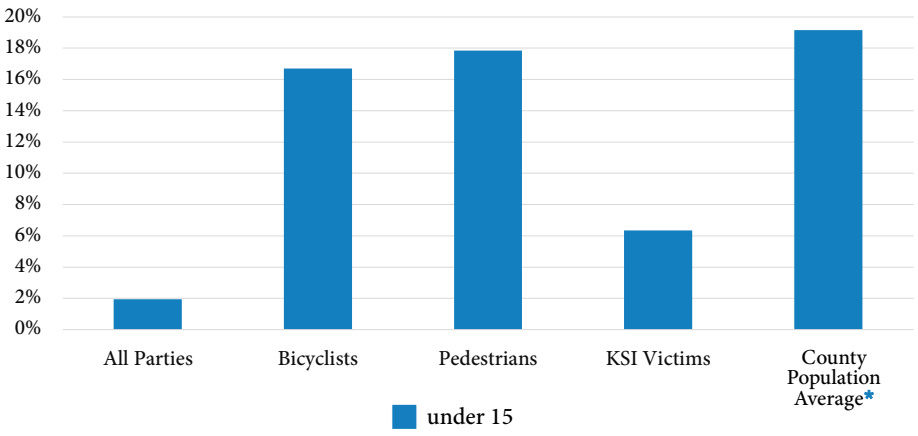
Vision ZERO

12% of pedestrian collisions

5% of bicycle collisions

Profile 6
Youth

Youth (less than 15 years old) are involved in a disproportionate share of pedestrian-involved collisions. Opportunities for Safe Routes to School (SRTS) projects and programs are numerous and can include education, encouragement, and engineering strategies.



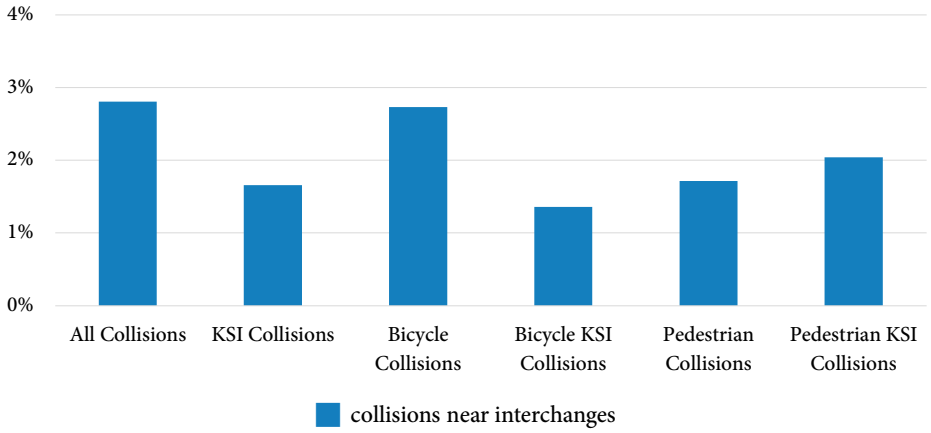
Vision ZERO

18% of pedestrian collisions

17% of bicycle collisions

Profile 7
Highway Interchanges

Interchanges tend to be difficult to navigate for pedestrians and bicyclists due to high volume of fast-moving vehicles and land use and roadway designs that do not signal for the presence of multi-modal users. This challenge was highlighted as part of community and stakeholder outreach during the development of the 2018 CBPP Update. Although this profile represents a smaller number of collisions, this may reflect lower levels of walking and biking near interchanges. Potential countermeasures include reducing curb radii at ramps and providing single lane ramps, where possible, to minimize conflict points.



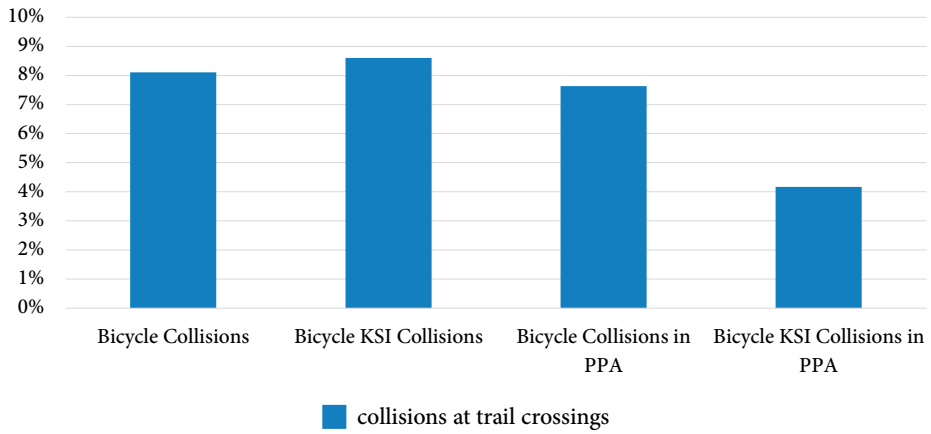
Vision ZERO

2% of pedestrian KSI collisions

1% of bicycle KSI collisions

Profile 8
Trail Crossings

Contra Costa has a well-developed system of trails that provide separated connections for people walking and biking, such as the Iron Horse Trail. However, where these trails intersect with other roadways can present potential conflicts between road users. Potential improvements at trail crossings include enhanced crossings (e.g., rectangular rapid flashing beacons – RRFB) or grade-separated crossings (e.g., pedestrian/bicycle bridge).

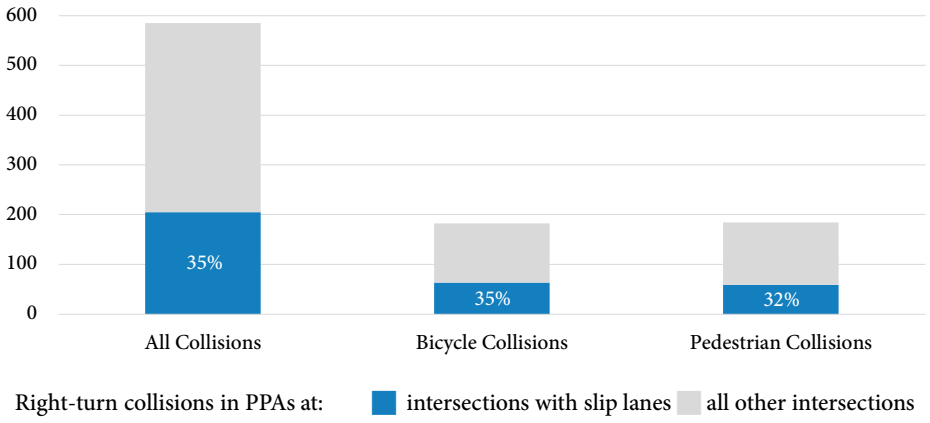


Vision ZERO

4% of bicycle KSI collisions

Profile 9
Channelized Right Turns

About one-third of collisions at signalized intersections in PPAs that involve a right-turning vehicle occur at intersections with channelized right-turn lanes (i.e., slip lanes). Slip lanes facilitate fast moving vehicles and make the pedestrian experience less comfortable. Potential countermeasures to address this collision profile include improvements that slow speeds and improve visibility such as closing slip lanes and reducing curb radii.



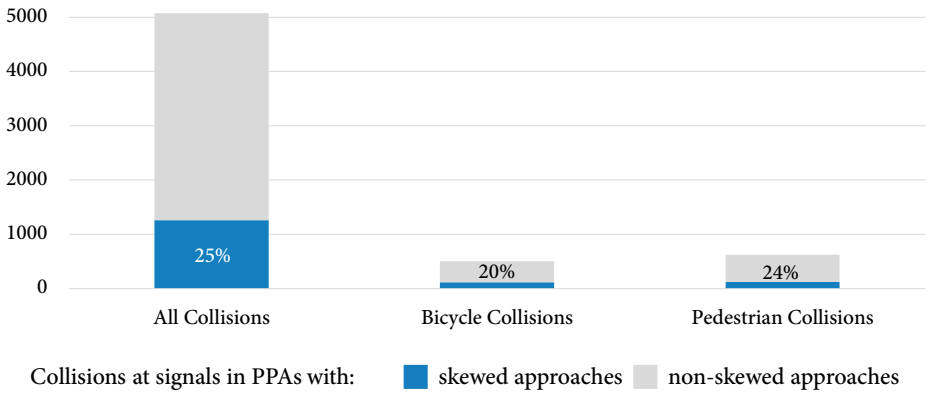
Vision ZERO

2% of pedestrian KSI collisions in PPA

1% of bicycle KSI collisions in PPA

Profile 10
Skewed Intersections

Many intersections across Contra Costa are not orthogonal and have skewed or offset approaches. About one-quarter of all collisions occurred at skewed intersections. These intersections may have longer or less intuitive pedestrian crossings. Motorists may have limited visibility of pedestrians and vehicles on the intersecting roadway. Potential counter-measures include "tightening up" approaches, crosswalk daylighting (i.e., prohibiting parking for at least 20' adjacent to a crosswalk), or channelizing turns to improve sight lines and encourage slower speeds.



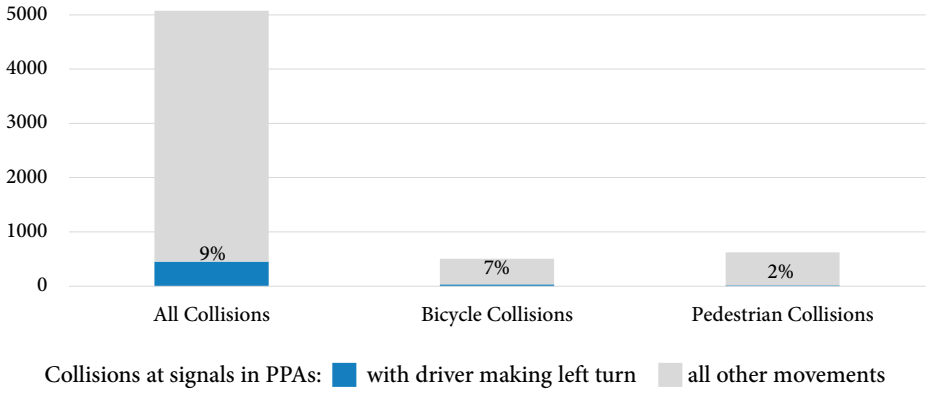
Vision ZERO

8% of pedestrian KSI collisions in PPA

6% of bicycle KSI collisions in PPA

Profile 11
Left Turns at Signals

About one-quarter of collisions at signalized intersections in PPAs involve a left-turning vehicle. This could be related to permitted rather than protected left turn phases at signalized intersections. Potential approaches to addressing this collision profile include providing a Leading Pedestrian Interval, installing protected left turn phases (where feasible), or using split signal phasing. In some cases prohibiting left turns in a grid network may also be an option to address this collision type. Finally, a road diet may allow for left turn pockets to be provided if current right of way does not allow for this.



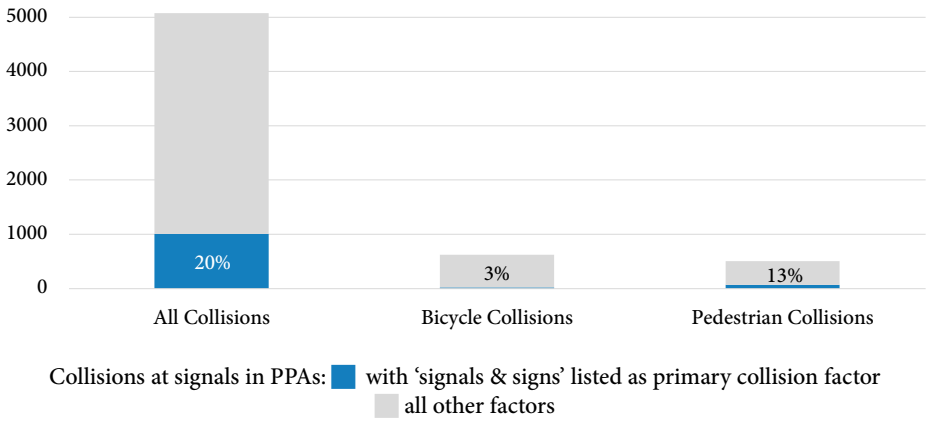
Vision ZERO

1% of pedestrian KSI collisions in PPA

1% of bicycle KSI collisions in PPA

Profile 12
Red Light Violations

Red light violations occur when either a motorist, bicyclist, or pedestrian enters an intersection against the signal. Approximately 20% of all collisions at signalized intersections in PPAs had 'signals & signs' listed at the primary collision factor (PCF), which is how red light violations are typically categorized in collision databases. Potential countermeasure to address this collision profile could include signal timing adjustments to allow for longer clearance intervals or shorter cycle lengths, or green paint for increased bicyclist visibility. Enforcement and red light cameras may also be considered.



Vision ZERO

3% of pedestrian KSI collisions in PPA

3% of bicycle KSI collisions in PPA

Other Potential Patterns

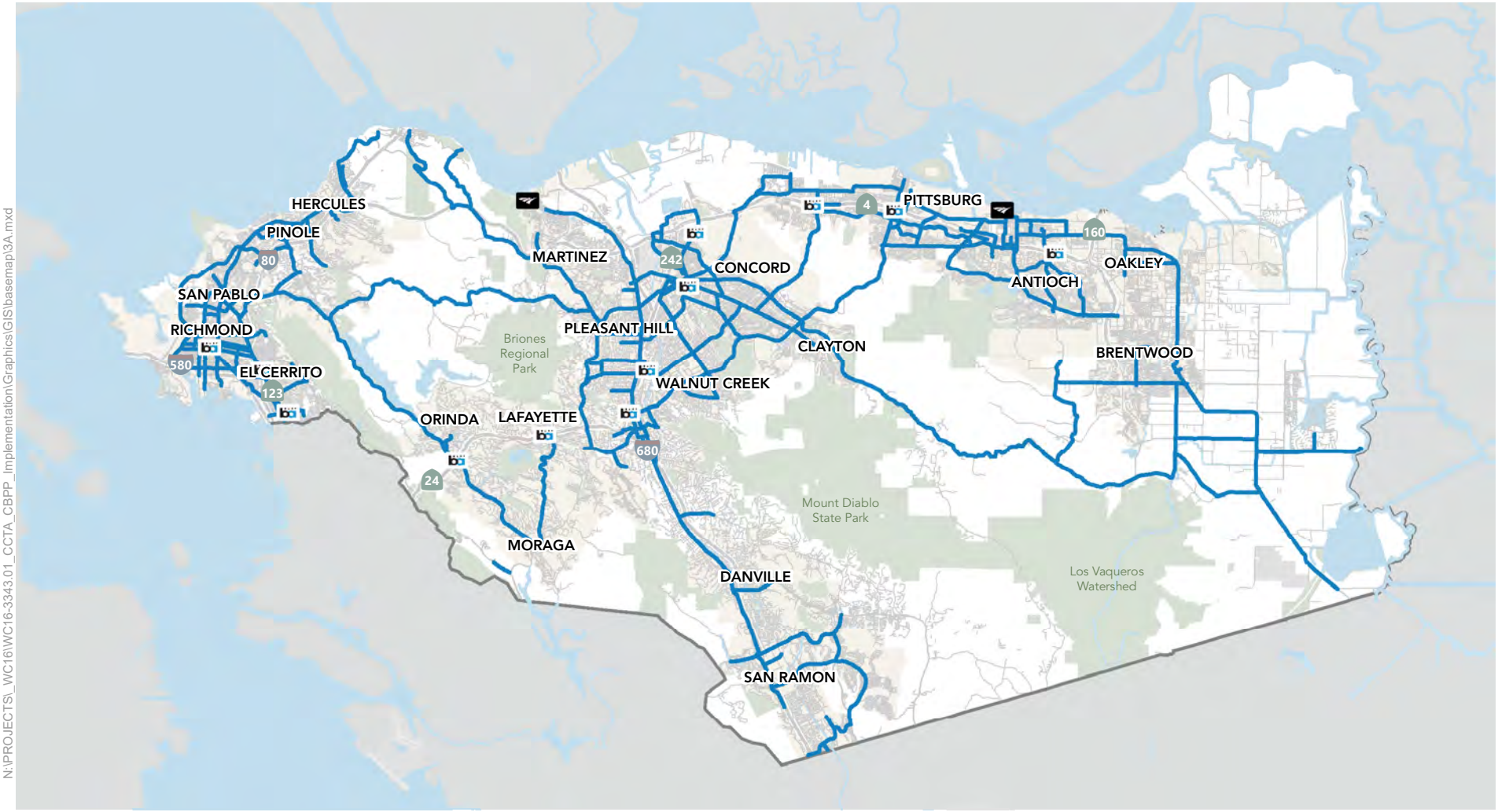
During CCTA's Vision Zero Working Group #3 on 10/6/20, the following ideas were generated regarding other potential patterns to investigate, if data is available and/or as part of forthcoming Pedestrian Needs Assessment

- User Behavior
  - Distracted driving and distracted walking, which is often underreported in Police Collision Reports, since collision parties are unlikely to admit that they were on their phone at the time of the collision
  - Driving while fatigued/tired
  - Pedestrians crossing outside crosswalks, especially near schools
- Specific Areas & Populations
  - School drop-off areas (related to congestion, queuing, and risky maneuvers)
- Built Environment Factors
  - Improper turning, both at intersections and driveways
  - Lighting
  - Pedestrian facility gaps (e.g. sidewalk gaps or unmarked crosswalks)
  - Sight distance concerns (e.g., related to trees and brush)

CONTRA COSTA transportation authority

D. Countywide Safety Priority Locations – All Modes, Bicycle, and Pedestrian Maps

Vision ZERO



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BART

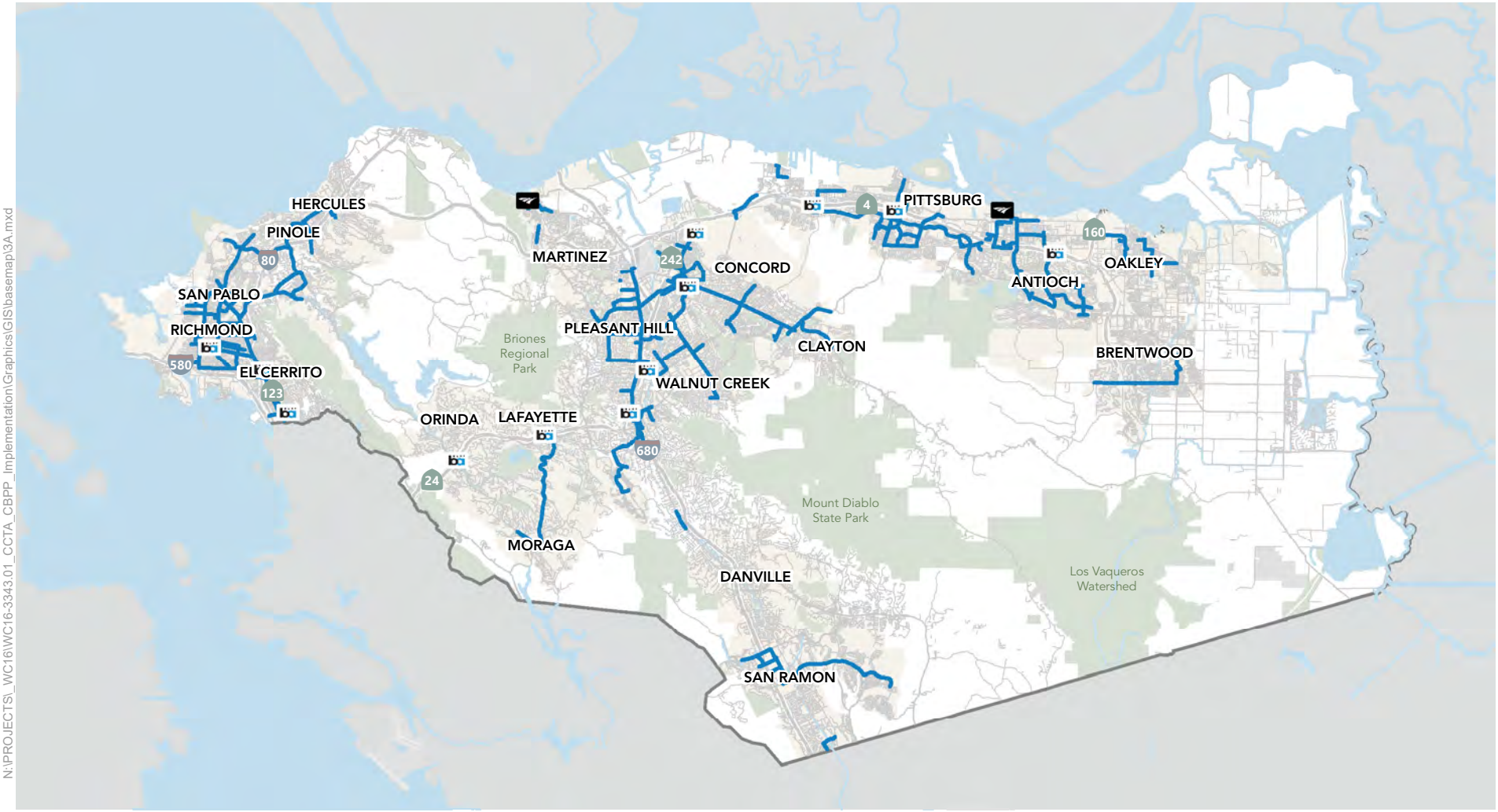
Amtrak

Safety Priority Locations

Incorporated Areas

Figure 1

Countywide Safety Priority Locations – All Modes



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N

BART

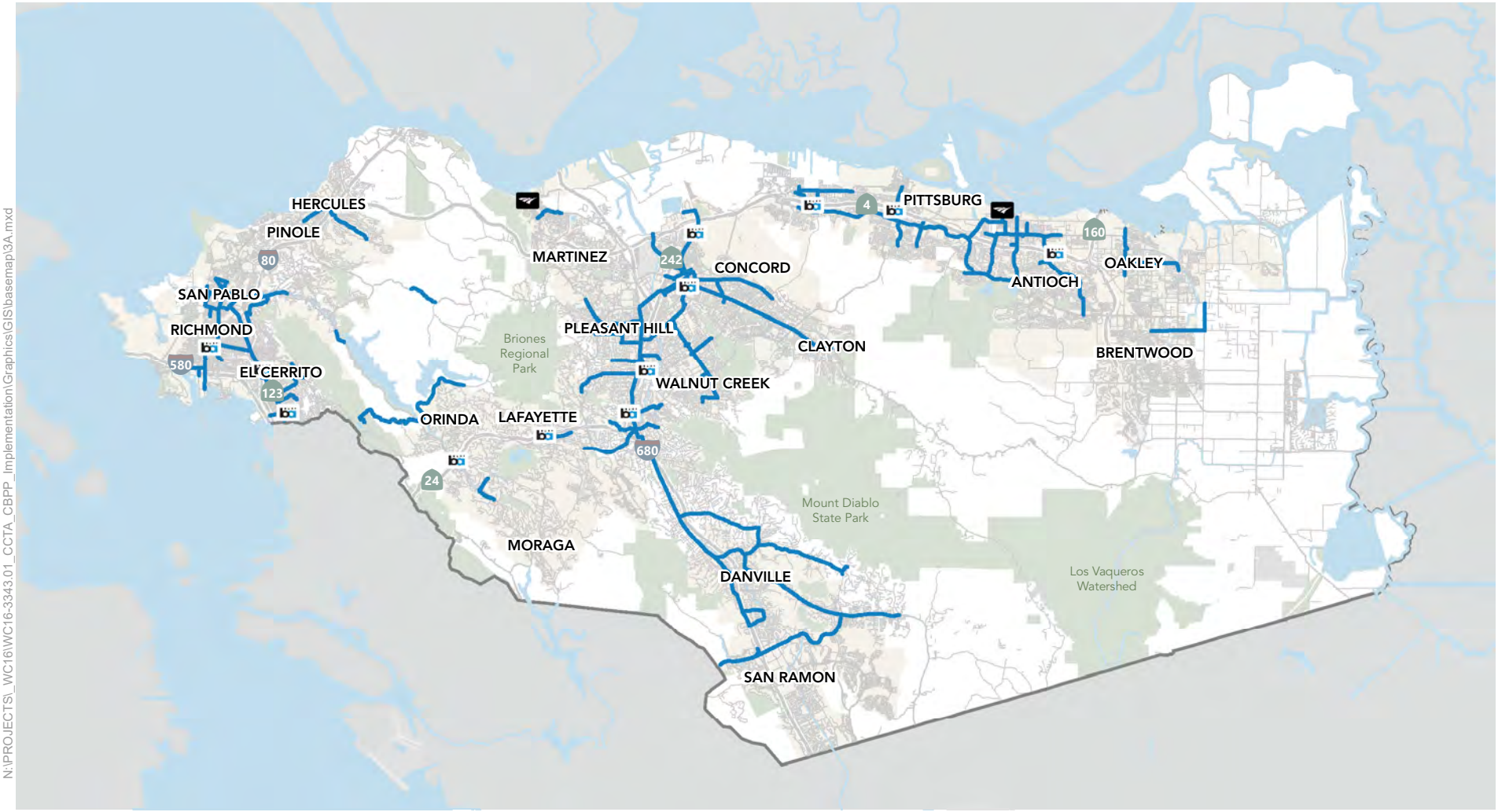
Amtrak

Safety Priority Locations

Incorporated Areas

Figure 2

Countywide Safety Priority Locations - People Walking



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BART
Amtrak
Safety Priority Locations
Incorporated Areas

Figure 3

Countywide Safety Priority Locations - People Biking

E. Countywide Bicycle and Pedestrian Countermeasure Toolbox

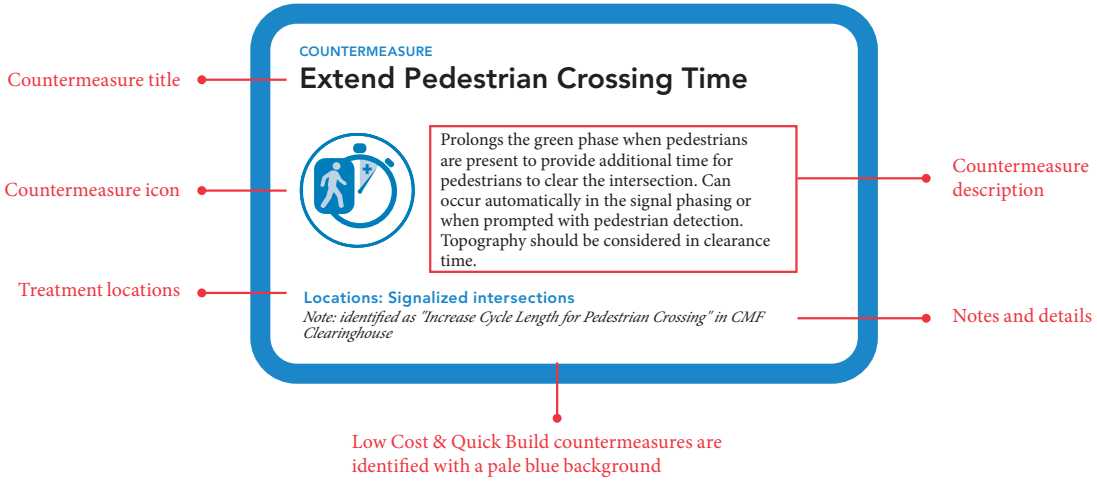
DRAFT Countywide Bicycle & Pedestrian Countermeasure Toolbox

Summary

This Toolbox presents 47 safety countermeasures applicable in different roadway contexts across Contra Costa.

Many of these countermeasures are recommended for addressing the collision profiles identified in the How To Guide. As noted in the figure below, for each countermeasure, a description and the recommended treatment locations are noted. A full list of countermeasures is presented on the following page.

What You'll See in This Toolbox:



SUMMARY OF COUNTERMEASURES

A. SIGNAL TIMING & PHASING

Additional Signal Heads
Extend Pedestrian Crossing Time
Flashing Yellow Turn Phase
Leading Pedestrian Interval
Install Traffic Signal
Pedestrian Phase Recall
Permissive Lefts To Protected
Separate Right-Turn Phasing
Pedestrian Scramble
Reduce Cycle Lengths

B. INTERSECTION & ROADWAY DESIGN

Close Slip Lane
Raised Intersection
Convert Two-Way Stop to All-Way Stop
Install Sidewalk
Protected Intersection
Raised Median
Paint and Plastic Median
Hardened Centerline
Left Turn Enhanced Daylighting/Slow Turn Wedge
Realign Intersection to 90 Degrees
Road Diet
Widen Shoulder
Roundabout
Paint and Plastic Mini Circle
Splitter Island

C. SIGNS & MARKINGS

Advance Stop Markings
Advance Yield Markings
Prohibit Right-Turn-On-Red
Yield To Pedestrians Sign

D. PEDESTRIAN CROSSINGS

ADA Ramps & Audible Push Button Upgrades
Extended Time Pushbutton
Install Pedestrian Countdown Timer
Pedestrian Hybrid Beacon (PHB)
Curb Extensions
Paint and Plastic Curb Extension
High-Visibility Crosswalk
Pedestrian Detection
Pedestrian-Level Lighting
Pedestrian Median Barrier
Raised Crosswalk
Restripe Crosswalk
Upgrade Curb Ramp
Pedestrian Refuge Island
Paint and Plastic Pedestrian Refuge Area
Rectangular Rapid Flashing Beacon

E. OTHER

Access Management/Close Driveway
Intersection, Street-Scale Lighting

A. SIGNAL TIMING & PHASING

COUNTERMEASURE

Additional Signal Heads

Additional signal heads allow drivers to anticipate signal changes farther away from intersections, decreasing the likelihood of driver error resulting in a collision with a pedestrian.

Locations: Signalized Intersections

COUNTERMEASURE

Pedestrian Phase Recall

Signals can be put in “recall” full time or for key time periods of day such as peak business hours or school drop-off/pick-up times. During these periods the “WALK” signal would be displayed every signal cycle without prompting by a pedestrian push button.

Locations: Signalized intersections

COUNTERMEASURE

Extend Pedestrian Crossing Time

Increases time for pedestrian walk phases, especially to accommodate vulnerable populations, such as children and the elderly.

Locations: Signalized intersections

COUNTERMEASURE

Permissive Lefts to Protected

Provides a protected green arrow phase for left turning vehicles while showing a red light for both on-coming traffic and parallel pedestrian crossings. Eliminates conflicts between pedestrians and left-turning vehicles.

Locations: Signalized Intersections

COUNTERMEASURE

Flashing Yellow Turn Phase

Flashing yellow turn arrow alerts drivers to proceed with caution and decide if there is a sufficient gap in oncoming traffic to safely make a turn. To be used only when a pedestrian walk phase is not called. Protected-only phases should be used when pedestrians are present.

Locations: Signalized Intersections

COUNTERMEASURE

Pedestrian Scramble

A form of pedestrian "WALK" phase at a signalized intersection in which all vehicular traffic is required to stop, allowing pedestrians to safely cross through the intersection in any direction, including diagonally.

Locations: Signalized Intersections

COUNTERMEASURE

Leading Pedestrian Interval

Gives people walking a head start, making them more visible to drivers turning right or left. “WALK” signal comes on a few seconds before the cars get their green light. May be used in combination with No Right Turn on Red restrictions.

Locations: Signalized Intersections

COUNTERMEASURE

Reduce Cycle Lengths

Traffic signal cycles should be kept short (preferably 90 seconds maximum) to reduce pedestrian delay. When delay is significant, pedestrians are more inclined to ignore signal indications.

Locations: Signalized Intersections

COUNTERMEASURE

Coordinated Signal Operation

Interconnected signal systems provide coordination between adjacent signals to better facilitate travel through a corridor. When implemented, the number of stops is reduced, and therefore the opportunity to run red lights is also reduced.

Locations: Signalized Intersections

COUNTERMEASURE

Extend Green Time For Bikes

Prolongs the green phase when bicyclists are present to provide additional time for bicyclists to clear the intersection. Can occur automatically in the signal phasing or when prompted with bicycle detection. Topography should be considered in clearance time.

Locations: Signalized Intersections

COUNTERMEASURE

Extend Yellow and All Red Time

Extending yellow and all red time allows drivers and bicyclists to safely cross through a signalized intersection before conflicting traffic movements are permitted to enter the intersection.

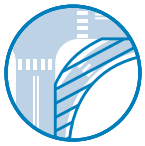
Locations: Signalized Intersections

VISION ZERO

B. INTERSECTION & ROADWAY DESIGN

COUNTERMEASURE

Close Slip Lane

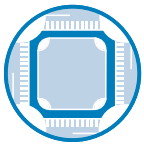


Modifies the corner of an intersection to remove the sweeping right turn lane for vehicles. Results in shorter crossings for pedestrians, reduced speed for turning vehicles, better sight lines, and space for landscaping and other amenities.

Locations: Signalized Intersections

COUNTERMEASURE

Protected Intersection

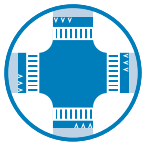


Protected intersections use corner islands, curb extensions, and colored paint to delineate bicycle and pedestrian movements across an intersection. Slower driving speeds and shorter crossing distance increase safety for pedestrians. Separates bicycles from pedestrians.

Locations: Signalized Intersections

COUNTERMEASURE

Raised Intersection



Elevates the intersection to bring vehicles to the sidewalk level and increases the visibility of pedestrians. Serves as a traffic calming measure by extending the sidewalk context across the road.

Locations: Unsignalized Street Crossings

COUNTERMEASURE

Raised Median

A concrete or landscaped area between the two directions of travel. Increases safety by reducing vehicular speeding and reducing pedestrian crossing distance.

Locations: Unsignalized Street Crossings

COUNTERMEASURE

Convert Two-Way Stop to All-Way Stop

Converting two-way stops to all-way stops prevents motorists, bicyclists, and pedestrians from having to cross free-flowing lanes of traffic at a side-street stop-controlled intersection and reduces the risk of collision.

Locations: Unsignalized Street Crossings

COUNTERMEASURE

Lane Narrowing

A reduction in lane width produces a traffic calming effect by encouraging motorists to travel at slower speeds, lowering the risk of collision with bicyclists, pedestrians, and other motorists.

Locations: Along the Road

COUNTERMEASURE

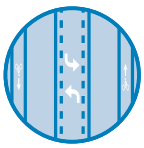
Install Sidewalk

Sidewalks and walkways are "pedestrian lanes" that provide people with space to travel within the public right-of-way that is separated from roadway vehicles. They are associated with reduced crashes where pedestrians were walking along the roadway.

Locations: Along the Road

COUNTERMEASURE

Road Diet

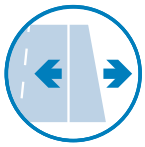


Depending on the street, road diets may change the number of lanes, turn lanes, center turn lanes, bike lanes, parking lanes, and/or sidewalks. Road diets optimize street space to benefit all users by improving the safety and comfort of pedestrians and bicyclists, and reducing vehicle speeds and the potential for rear end collisions.

Locations: Along the Road

COUNTERMEASURE

Widen Shoulder

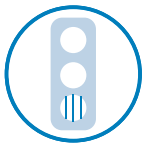


Widened shoulders create greater separation between vehicles and pedestrians and also provide motor vehicle safety benefits, such as space for inoperable vehicles to pull out of the travel lane.

Locations: Along the Road

COUNTERMEASURE

Programmable Signals/Visors/Louvers



These may be installed at traffic signals to limit the field of view of a particular signal head. They are applicable in cases when where the road user could be misdirected, particularly at skewed or closely-spaced intersections when the road user sees the signal indications intended for other approaches before seeing the signal indications for their own approach.

Locations: Signalized Intersections

COUNTERMEASURE

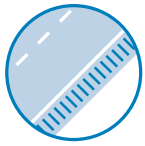
Roundabout

Roundabouts are circular intersections designed to eliminate left turns by requiring traffic to travel in a counter-clockwise direction and exit to the right. Installed to manage vehicular speeds, reduce pedestrian exposure, improve safety at intersections through eliminating angle collisions, and help traffic flow more efficiently.

Locations: Signalized Intersections, Unsignalized Street Crossings, Roundabouts

COUNTERMEASURE

Edge Line/Center Line Rumble Strips



Rumble strips can be installed along the edge line or center line to address roadway departure and head-on crashes caused by distracted, drowsy, or otherwise inattentive drivers who drift from their lane.

Locations: Along the Road

COUNTERMEASURE

Signal Head Improvements

Improving signal head visibility reduces the likelihood of crashes caused by traffic signal violations. Installing backplates, increasing the size of signal displays, and installing LED lenses should all be considered as potential countermeasures.

Locations: Signalized Intersections

COUNTERMEASURE

Traffic Circles

Installed at stop-controlled intersections to facilitate a circular flow at an intersection, which result in slower speeds through the intersection.

Locations: Along the Road, Unsignalized Intersections

VISION ZERO

C. BIKEWAY DESIGN

COUNTERMEASURE

Bicycle Crossing (Solid Green Paint)

Solid green paint across an intersection that signifies the path of the bicycle crossing. Increases visibility and safety of bicyclists traveling through an intersection.

Locations:

COUNTERMEASURE

Bike Box

A designated area at the head of a traffic lane at a signalized intersection that provides bicyclists with a safe and visible way to get ahead of queuing traffic during the red signal phase.

Locations: Signalized Intersections

COUNTERMEASURE

Bicycle Signal/Exclusive Bike Phase

A traffic signal directing bicycle traffic across an intersection. Separates bicycle movements from conflicting motor vehicle, streetcar, light rail, or pedestrian movements. May be applicable for Class IV facilities when the bikeway is brought up to the intersection.

Locations: Signalized Intersections

COUNTERMEASURE

Class II Bike Lane

Using designated lane markings, pavement legends, and signage, bike lanes provide dedicated street space for bicyclists, typically adjacent to the outer vehicle travel lane.

Locations: Along the Road

COUNTERMEASURE

Bike Detection

Bike detection is used at signalized intersections, either through use of push-buttons, in-pavement loops, or by video or infrared cameras, to call a green light for bicyclists and reduce delay for bicycle travel. Discourages red light running by bicyclists and increases convenience of bicycling.

Locations: Signalized Intersections

COUNTERMEASURE

Class IV Separated Bikeway

Space on the roadway set aside for the exclusive use of bicycles and physically separated from vehicle traffic. Types of separation may include, but are not limited to, grade separation, flexible posts, physical barriers, or on-street parking.

Locations: Along the Road

COUNTERMEASURE

Class I Bicycle Path or Mixed Use Trail

Provides a completely separate right of way that is designated for the exclusive use of people riding bicycles and walking with minimal cross-flow traffic. Paths and trails offer opportunities for the lowest stress bicycle travel.

Locations: Along the Road

COUNTERMEASURE

Green Bike Lane Conflict Zone Markings

Green pavement within a bicycle lane to increase visibility of bicyclists and to reinforce bicycle priority. The green pavement can be either as a corridor treatment or as a spot treatment in conflict areas such as frequently used driveways.

Locations: Along the Road

COUNTERMEASURE

Two-Stage Turn Queue Bike Box

This roadway treatment provides bicyclists with a means of safely making a left turn at a multi-lane signalized intersection from a bike lane or cycle track on the far right side of the roadway. In this way, bicyclists are protected from the flow of traffic while waiting to turn. Usage could be mirrored for right-turns from a one-way street with a left-side bikeway.

Locations: Signalized Intersections

VISION ZERO

D. PEDESTRIAN CROSSINGS

COUNTERMEASURE

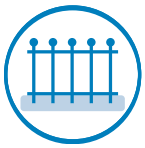
Install Pedestrian Countdown Timer

Displays "countdown" of seconds remaining on the pedestrian signal. Countdown indications improve safety for all road users, and are required for all newly installed traffic signals where pedestrian signals are installed.

Locations: Signalized Intersections

COUNTERMEASURE

Pedestrian Median Barrier



Pedestrian median barriers restrict pedestrians from crossing the median at locations where nearby crossings are available and midblock crossings may have poor sight distance or insufficient crossing enhancements for the conditions.

Locations: Along the Road

COUNTERMEASURE

Pedestrian Hybrid Beacon (PHB)

Pedestrian-activated beacon used at mid-block crosswalks and side-street stop-controlled intersections to notify oncoming motorists to stop with a series of red and yellow lights. Also known as a High-intensity Activated crossWalK (HAWK) beacon

Locations: Unsignalized Street Crossings, Roundabouts

COUNTERMEASURE

Raised Crosswalk

The crosswalk is elevated to match the sidewalk to make pedestrians more visible to approaching vehicles. Typically located at midblock crossings or across free right turns, they encourage motorists to yield to pedestrians and reduce vehicle speed. An entire intersection may be raised similarly.

Locations: Unsignalized Street Crossings, Roundabouts

COUNTERMEASURE

Curb Extensions

Widens the sidewalk at intersections or midblock crossings to shorten the pedestrian crossing distance, to make pedestrians more visible to vehicles, and to reduce the speed of turning vehicles.

Locations: Intersection Geometry, Unsignalized Street Crossings

COUNTERMEASURE

Pedestrian Refuge Island

Pedestrian refuge islands provide a protected area for pedestrians at the center of the roadway. They reduce the exposure time for pedestrians crossing the intersection. They simplify crossings by allowing pedestrians to focus on one direction of traffic at a time.

Locations: Signalized Intersections, Unsignalized Street Crossings

COUNTERMEASURE

High-Visibility Crosswalk

A crosswalk that is designed to be more visible to approaching drivers. Crosswalks should be designed with continental markings and use high-visibility material, such as inlay tape or thermoplastic tape instead of paint.

Locations: Signalized Intersections, Unsignalized Street Crossings

COUNTERMEASURE

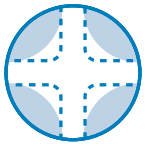
Rectangular Rapid Flashing Beacon

Pedestrian-activated flashing lights and additional signage enhance the visibility of marked crosswalks and alert motorists to pedestrian crossings.

Locations: Unsignalized Street Crossings, Roundabouts

COUNTERMEASURE

Reduce Curb Radius



Decreasing curb radii can improve safety for bicyclists and pedestrians by requiring motorists to reduce vehicle speeds by marking sharper turns. Smaller radii provide larger pedestrian waiting areas at corners, improve sight distances, and shorten crossing distances.

Locations: Intersection Geometry, Unsignalized Street Crossings

VISION ZERO

E. SIGNS & MARKINGS

COUNTERMEASURE

Advance Stop Markings

A stop bar placed ahead of the crosswalk at stop signs and signals reduces conflict with pedestrians from vehicles encroaching on the crosswalk.

Locations: Signalized Intersections, Unsignalized Street Crossings

COUNTERMEASURE

Advance Yield Markings

Yield lines are placed 20 to 50 feet in advance of multi-lane pedestrian crossings to increase visibility of pedestrians. Used in conjunction with Yield to Pedestrian signage. Can reduce the likelihood of a multiple-threat crash.

Locations: Unsignalized Street Crossings

COUNTERMEASURE

Prohibit Right-Turn-on-Red

Prohibiting right-run-on-red movements should be considered at skewed intersections, or where exclusive pedestrian "WALK" phases, Leading Pedestrian Intervals (LPIs), sight distance issues, or high bike/ped volumes are present. Can help prevent crashes between vehicles turning right on red from one street and through vehicles on the cross street, and crashes involving bicyclists and pedestrians.

Locations: Signalized Intersections

COUNTERMEASURE

Bicycle Wrong Way SIgns

Bicycle "Wrong Way" signs can be installed on sidewalks or the left side of the roadway to discourage bicyclists from traveling the wrong way in the road or on the crosswalk.

Locations: Along the Road

COUNTERMEASURE

Pedestrian Signage

Pedestrian signage uses bright color and reflective properties to attract the attention of motorists. It provides advance warning of the potential of pedestrians in the roadway and alerts them to modify their speed.

Locations: Unsignalized Street Crossings

F. OTHER

COUNTERMEASURE

Access Management

Vehicles entering and exiting driveways may conflict with pedestrians and with vehicles on the main road, especially at driveways within 250 feet of intersections. Consolidating driveways near intersections with high crash rates related to driveways may reduce potential conflicts.

Locations: Along the Road

COUNTERMEASURE

Intersection & Street-Scale Lighting

Street and intersection lighting helps make pedestrians and other road users or hazards more visible to motorists at night, improving driver perception and reaction time and reducing the risk of collision.

Locations: Unsignalized Street Crossings, Roundabouts

COUNTERMEASURE

Remove Obstructions For Sightlines

Remove objects that may prevent drivers and pedestrians from having a clear sightline. May include installing red curb at intersection approaches to remove parked vehicles (also called "daylighting"), trimming or removing landscaping, or removing or relocating large signs.

Locations: Along the Road, Signalized Intersections, Unsignalized Street Crossings, Roundabouts

F. Vision Zero Core Elements Resource Library

Appendix F. Vision Zero Core Elements Resource Library

What is Vision Zero

- What is Vision Zero?
  - Resource – *What is Vision Zero?* – Vision Zero Network
  - Resource – *Core Elements for Vision Zero Communities* – Institute of Transportation Engineers (ITE) and Vision Zero Network (VZN)
  - Resource – *Vision Zero and Safety* – National Association of City Transportation Officials (NACTO)
  - Report: *Road to Zero: A Vision for Achieving Zero Roadway Deaths by 2050* – National Safety Council and RAND Corporation
  - Report: *Dangerous by Design* –Smart Growth America and National Complete Streets Coalition
- What does "Safe System" mean for Vision Zero?
  - Webinar: *Safe Systems: The Foundation of Vision Zero* – Vision Zero Network
  - Webinar: *Safe Systems — What Does it Mean for Vision Zero?* – Vision Zero Network
  - Resource: *Primer on the Safe System Approach* – Institute of Transportation Engineers (ITE)
  - NACTO Guide: City Limits: Setting Safe Speed Limits
  - FHWA – Local Road Safety Plans: Your Map to Safer Roadways

Public, High-Level & Ongoing Commitment

- Achieving Commitment in Mid-Sized, Suburban Communities
  - Webinar: *Vision Zero Approach for Mid-Sized Cities: Fremont, California* – Vision Zero Network
- Vision Zero Policy Statements
  - Webpage: *Vision Zero Resolutions and Directives* – Vision Zero Network
- Reframing Transportation Safety Conversations
  - Summary: How Does Vision Zero Differ from the Traditional Traffic Safety Approach in U.S. Communities? – Vision Zero Network

- Webinar: Global Learnings for the U.S. Vision Zero Movement – Vision Zero Network
- Report: The State of Transportation Equity and Health – Smart Growth America (see Chapter 1 "Reframe the Transportation Conversation)
- Article: The Central Role of Public Health in Vision Zero – Vision Zero Network
- Series: 2019 Community Health Needs Assessments for Contra Costa County – Kaiser Permanents
- Factsheet: Complete Streets Fight Climate Change – Smart Growth America

- Best Practices for Inter-departmental Coordination
  - Webinar: Creating and Sustaining a Strong Task Force
  - Case Study: Vision Zero from the Inside-Out; A Case Study on Prioritizing Interdepartmental Coordination & Accountability – Vision Zero Network
  - Case study: Joint Departmental Vision Zero Budget Requests: An L.A. Case Study – Vision Zero Network

Authentic Engagement

- Best Practices for Authentic Engagement
  - Webinar: Centering Community in the Public Engagement Process – Vision Zero Network
  - Case Study: The Green Line's Process Altered the Rules of Engagement – Trusted Advocate Pilot, St-Paul/Minneapolis
  - Webinar: Words Matter: Effective Vision Zero Messaging – Vision Zero Network
- Tools for Effective Engagement
  - Resources & Framework: IAP2 Resources & Framework – International Association For Public Participation
  - Tool: Street Story: A Platform for Community Engagement – UC Berkeley Safe Transportation Research and Education Center (SafeTREC)
- Strategies for Engaging Youth
  - Webinar: *Building Our Future: Engaging and Empowering Youth in Vision* Zero – Vision Zero Network

Strategic Planning

- Developing a Vision Zero Action Plan with Performance- and Outcomes-Based Metrics and Indicators
  - Guidelines: *Developing Effective Vision Zero Action Plans* – Vision Zero Network
  - Guidelines: *Vision, Strategies, Action: Guidelines for an Effective Vision Zero Action Plan* – Vision Zero Network
  - Example Action Plans: (*See Action Plans section)* – Vision Zero Network
  - Report: *The Road to Zero: A Vision for Achieving Zero Roadway Deaths by 2050*– Rand Corporation
  - Guide: *How to Develop a Pedestrian Safety Action Plan* – Federal Highway Administration
  - Guide: *Guide to Developing a Vision Zero Plan* – University of North Carolina, Chapel Hill
  - Program: *See and Be Seen* – Active Transportation Safety and Healthy Living Program, City of Lancaster

Equity-Focused Analysis & Programs

- Integrating Equity into Vision Zero
  - Report: *At the Intersection of Active Transportation and Equity* – Safe Routes Partnership
  - Article: *Five Ways Vision Zero Should Address Race and Income Injustice* – Bike Portland
  - Principles: *Principles of Mobility Justice* – Untokening Collective
  - Resource: *Vision Zero: A Health Equity Road Map for Getting to Zero in Every Community* – Prevention Institute
- Equity Analysis and Programming
  - Guidelines: *Equity Strategies for Practitioners* – Vision Zero Network
  - Report: *Environmental Justice Analysis in Transportation Planning State of the Practice* – FHWA
  - Memo: *Equity-Oriented Performance Measures in Transportation Planning* – APA
- Enforcement and Equity
  - Blog: *Dropping Enforcement from the Safe Routes to School 6 E's Framework* – Safe Routes Partnership
  - Presentation: *Being Black and Brown in public: How Safety, Harassment, and Policing Shape Mobility* – Charles T. Brown, Rutgers University
  - Guidelines: *Steps to Fight Racism in Traffic Enforcement* – Governors Highway Safety Association

- Toolkit: *Law Enforcement Interactions Toolkit* -Governor's Highway Safety Association

Responsive Planning

- Identification of Safety Priority (High-Frequency Injury) Locations
  - Webinar: *How Data Can Focus Vision Zero Efforts* – Vision Zero Network
  - Article: *Vision Zero Analysis at a Regional Scale* – David Wasserman (Fehr & Peers)
  - Case study: *HIN (High Injury Network) for the WIN* – Vision Zero Network
  - Report: *Collision Reporting Research: Assessing the Collision Data Needs of Transportation Engineers* – ITE

Proactive, Systemic Planning

- Best Practices for Proactive, Systemic Planning
  - Webinar: *Developing a Proactive, Systems-Based Approach to Safety* – Vision Zero Network
  - Article: *How Data Helps Cities Achieve Vision Zero Goals* – Government Technology
- Proactive Safe System Actions
  - Resource: *Proven Safety Countermeasures* – FHWA

Comprehensive Evaluation & Adjustments

- Example Vision Zero Evaluation Reports
  - Report: *Vision Zero Year Three Report* – New York City
  - Report: *Vision Zero 2019 Update* – City of Seattle
- Considering Micromobility in Safety Planning
  - Guide: *NACTO Guidelines for Regulating Shared Micromobility* – National Association of City Transportation Officials (NACTO)
  - Policy Statement: *APBP's Policy Statement: Shared Micromobility Programs* – Association of Pedestrian and Bicycle Planners (APBP)
  - Report: *Understanding and Tackling Micromobility* – Governors Highway Safety Association
- Considering Automated Vehicles in Safety Planning

- Article: *Safeguarding Safety for Road Users Now While Planning for an Autonomous Future* – ITE
- Guide: *Blueprint for Autonomous Urbanism* – NACTO

Complete Streets for All

- Design Guidelines for Complete Streets
  - Design Guidelines: *Best Practices: Pedestrian and Bicycle Treatments* – CCTA
  - Design Guidelines: *NACTO Urban Street Design Guide* – NACTO
  - Design Guidelines: *Multimodal Access Design Guidelines – BART*
  - Guide: *Applying Design Flexibility and Reducing Conflicts* – FHWA
  - Guide: *Guidance to Improve Pedestrian and Bicycle Safety at Intersections* – NCHRP
  - Guide: *Guide for Improving Pedestrian Safety at Uncontrolled Crossing Locations* – FHWA
  - Guide: *Designing for All Ages & Abilities* – NACTO
  - Guide: *United Nations Sustainable Development Goal 3.6* – United Nations
  - Collection: *Livable Communities Library* – AARP
- Proven Actions That Improve Safety
  - Guide: *Proven Safety Countermeasures* – FHWA
  - Resources: *Traffic Safety Resources* – Caltrans
  - Training Materials: *Roadway Safety Training and Materials* – Caltrans
  - Blog: "*Daylighting" Makes San Francisco Crosswalks Safer* – SFMTA
  - Study: *Sight Distance Study in Iowa* – NACTO
- Slow Streets
  - Project Example: *Neighborhood Slow Zones* – NYC DOT
  - Report: *Slow Streets Program Report* – Oakland Department of Transportation

Context-Appropriate Speeds

- Speed-Related Research
  - Report: *CalSTA Report of Findings - AB 2363 Zero Traffic Fatalities Task Force* – CalSTA
  - Research: *Speed Management* – Insurance Institute for Highway Safety (IIHS)

- Resources for Speed Management
  - Guide: *Setting Safe Speed Limits on Urban Streets* – NACTO
  - Guide: *Design Speed* – NACTO
  - Webinar: *Promising Practices to Manage Speeds* – Vision Zero Network
  - Plan: *Speed Management Program Plan* – National Highway Traffic Safety Administration (NHTSA)
  - Manual: *Speed Management Manual for Decision Makers and Practitioners* - World Health Organization (WHO)
  - Primer: *Traffic Calming* – FHWA
  - Webinar: *Integrating Pedestrian Safety to Roundabout Designs* – Transoft

Project Delivery

- Funding Resources and Guidelines
  - Resource: *Funding Sources* – CCTA
  - Program Information: *Local Road Safety Plan* – Caltrans
  - Program Information: *Highway Safety Improvement Program* – Caltrans

G. List of CCTA Vision Zero Database Variables

CCTA Vision Zero Framework

Vision Zero Database Variables (Draft)

Category	Data	Data Type
Collisions (Source: TIMS/SWITRS, 2008-2017)	Presence of collisions (2007-2018)	Point
	Collision Severity	Point, range
	Collision Type	Point, range
	Violation Category	Point, range
	Primary Collision Factor Violation Code	Point, range
	Pedestrian Action	Point, range
	At intersection or mid-block location	Point, binary
	Driver Behavior (turning left, right)	Point, range
	Victim Behavior (turning left, right)	Point, range
	Victim's Age	Point, range
Pedestrian Facilities (Source: Ecopia Tech data collection)	Presence of crosswalks	Polygon
	Type of crosswalk (e.g. continental, high visibility)	Polygon, range
	Crosswalk location (mid-block vs. intersection)	Polygon, binary
	Presence of sidewalks + sidewalk width	Line, range
	Presence of advance yield limit lines (i.e. sharks teeth)	Point
Bike Facilities (Source: 2018 CBPP)	Presence of bicycle facilities	Line, range
Roadways (Source: Ecopia Tech (width), OpenStreetsMap (OSM) & Caltrans (classification))	Roadway width	Line, range
	Roadway classification	Line, range

Category	Data	Data Type
Intersection Approaches (Source: OSM or inferred based on functional class)	Number of lanes (inferred)	Line, range
	Operating speed or speed limit (inferred)	Line, range
	Roadway volumes (inferred)	Line, range
	Presence of median (inferred)	Line, binary
Intersections (Source: inferred based on functional class (traffic control), Ecopia Tech (skewed angle, channelized turns))	Signal Inventory / Traffic Control (i.e. signalized, stop-controlled) (inferred)	Point, binary
	Skewed angle intersection (intersection geometry)	Point, binary
	Presence of channelized right turn lanes	Point, binary
Interchanges (Source: OSM)	Presence of interchange	Point
Demographics (Sources: Census data, MTC, CalEnviroScreen)	MTC's Communities of Concern	Polygon (Census Tract)
	CalEnviroScreen 3.0 results	Polygon (Census Tract), range
	Presence of senior population	Polygon (Census Tract), range
Schools (Source: 2018 CBPP)	Presence of schools	Point
Transit (Source: 2018 CBPP (rail) and local transit agencies (bus))	Presence of rail transit stations	Point
	Presence of bus stations	Point

CCTA Vision Zero Working Group
Meeting 3

FEHR & PEERS

10-06-2020

CONTRA COSTA
transportation
authority

Agenda

1. Introductions
2. Project Overview
3. Overview of Vision Zero “How To” Implementation Guide
4. Present Countywide Collision Analysis & Collision Profiles
5. Breakout Group Discussion on Collision Profiles
6. Breakout Group Report Back
7. Discuss Next Steps

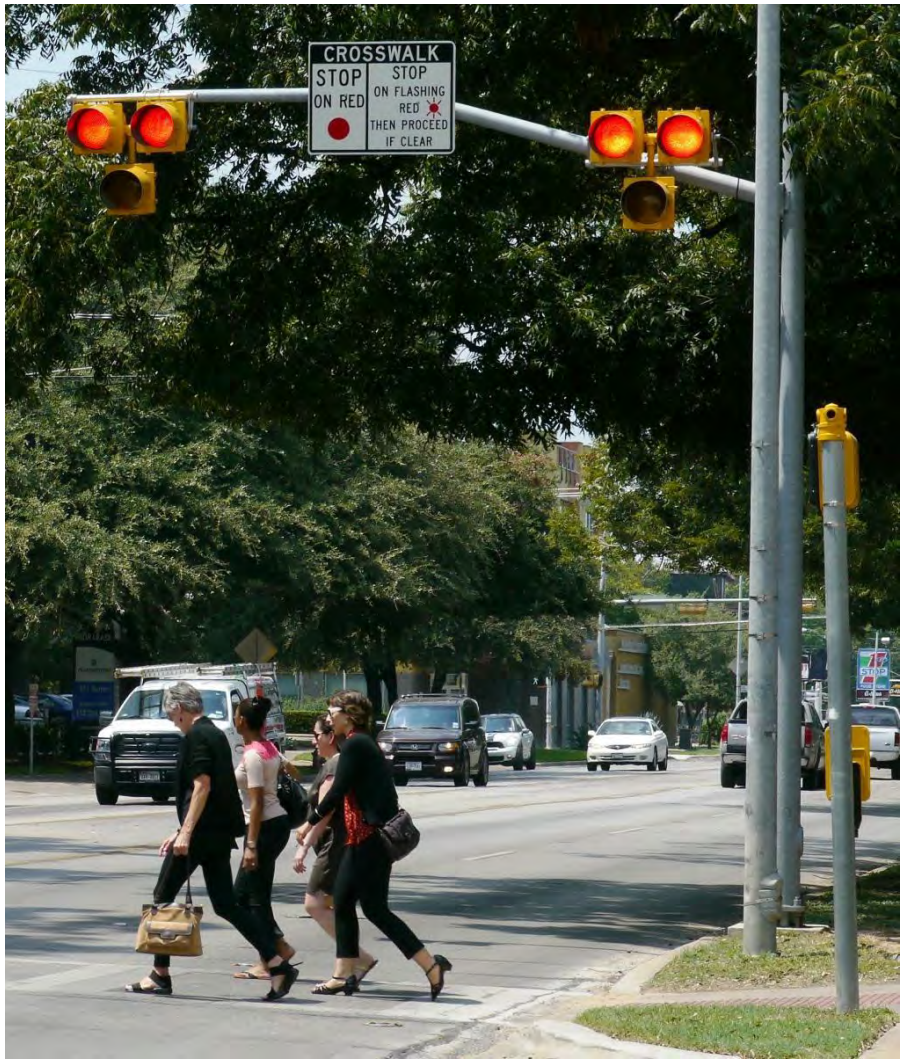
Proposed Meeting Outcomes

- Introduce “How-To” Guide for review
- Discuss & gather feedback/recommendations on collision profiles

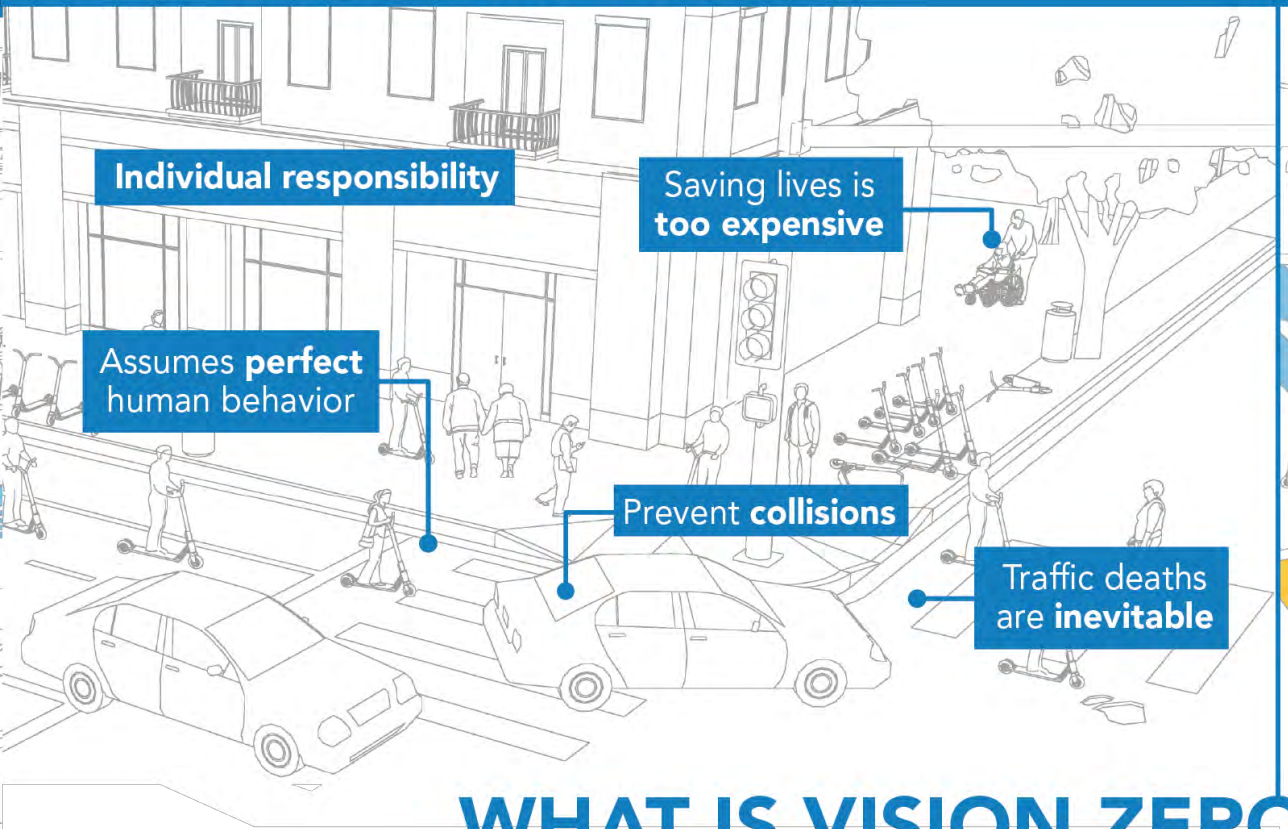
Project Overview

Project Goals

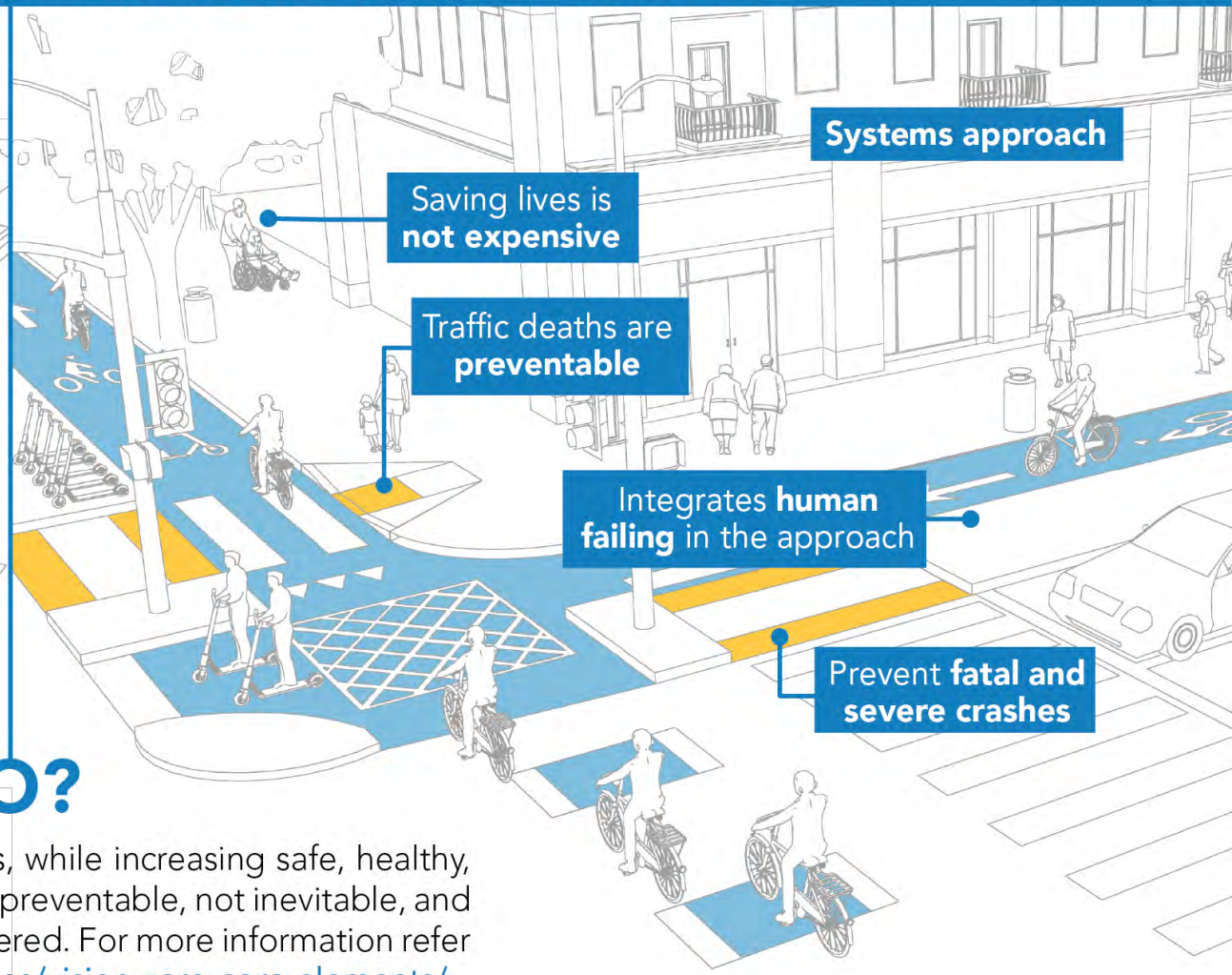
- Advocate Vision Zero as standard practice
- Collect & analyze traffic safety data
- Develop “How To” guide for local jurisdictions



TRADITIONAL APPROACH TO SAFETY



VISION ZERO APPROACH TO SAFETY

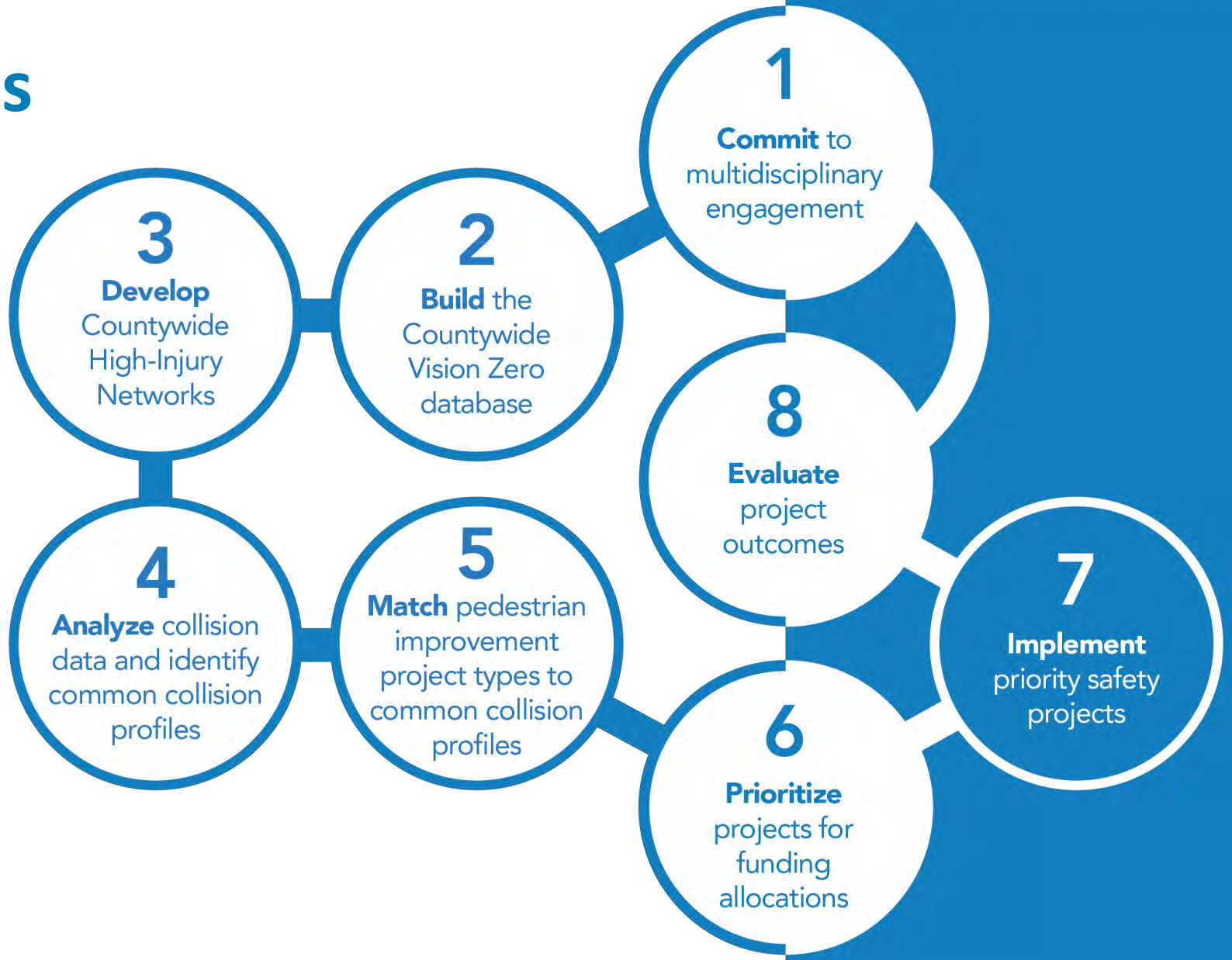


WHAT IS VISION ZERO?

Vision Zero is a strategy to eliminate all traffic fatalities and severe injuries, while increasing safe, healthy, equitable mobility for all. The Vision Zero approach views traffic fatalities as preventable, not inevitable, and relies on multi-disciplinary collaboration and is data-driven and equity-centered. For more information refer to the Vision Zero Core Elements at https://visionzeronetwork.org/resources/vision-zero-core-elements/.

Roles

CCTA ROLES SHARED ROLES LOCAL ROLES



Project Status

Complete

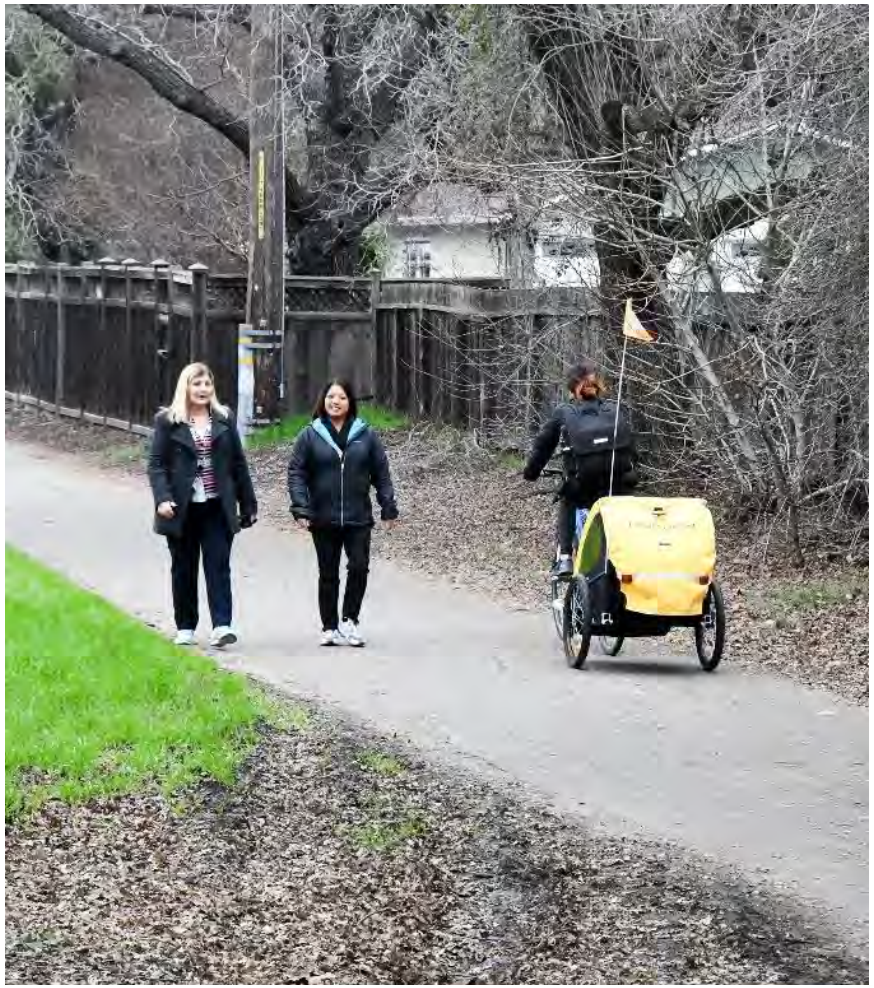
- Best practice review
- Local plan review
- Mapping high concentrations of injuries

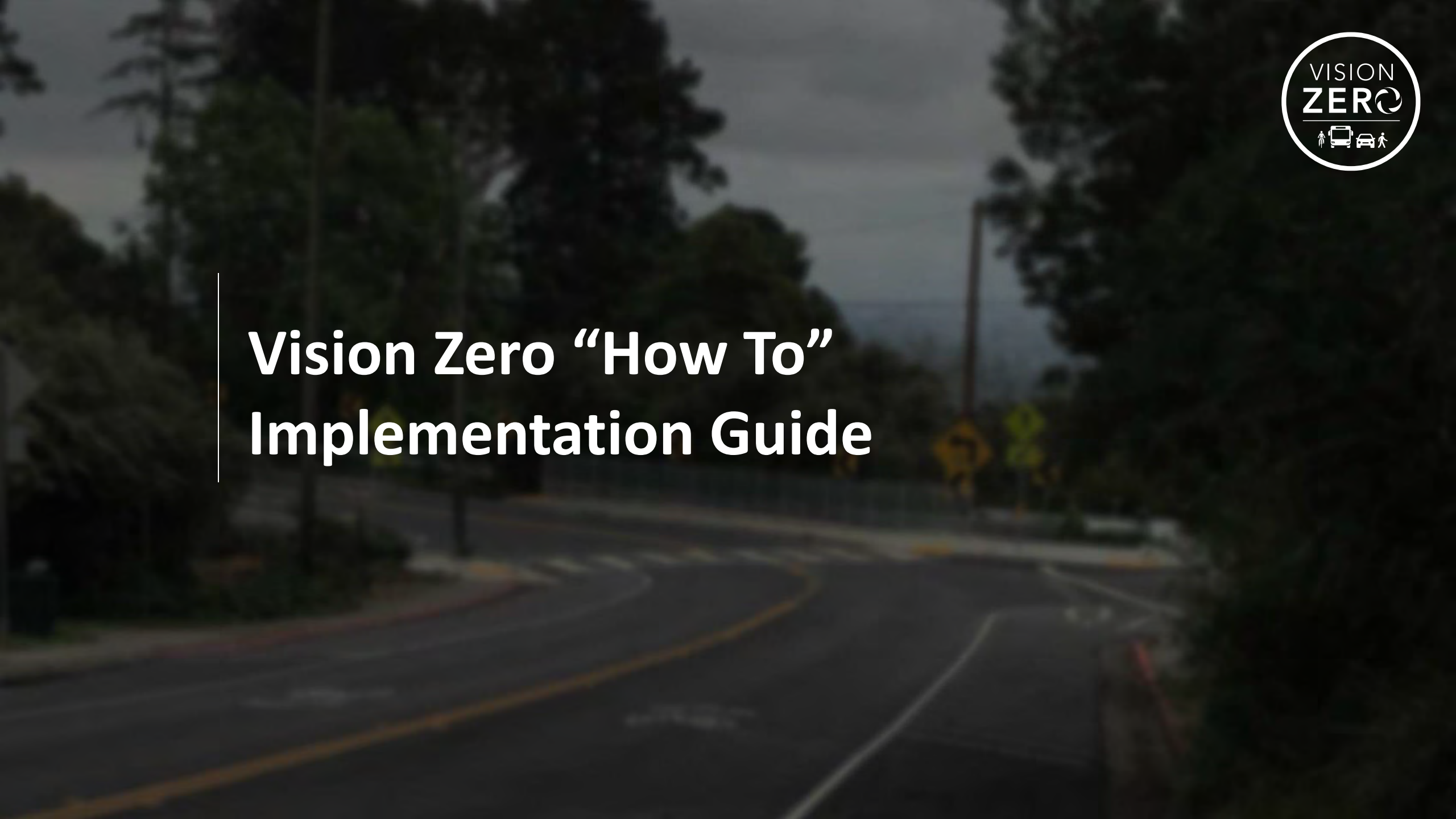
In-progress

- Collision profiles/typologies
- Vision Zero “How To” Implementation Guide
- Vision Zero database

Future actions

- RTPC Presentations/“Roadshow”
- Typical pedestrian improvement projects & pedestrian needs assessment

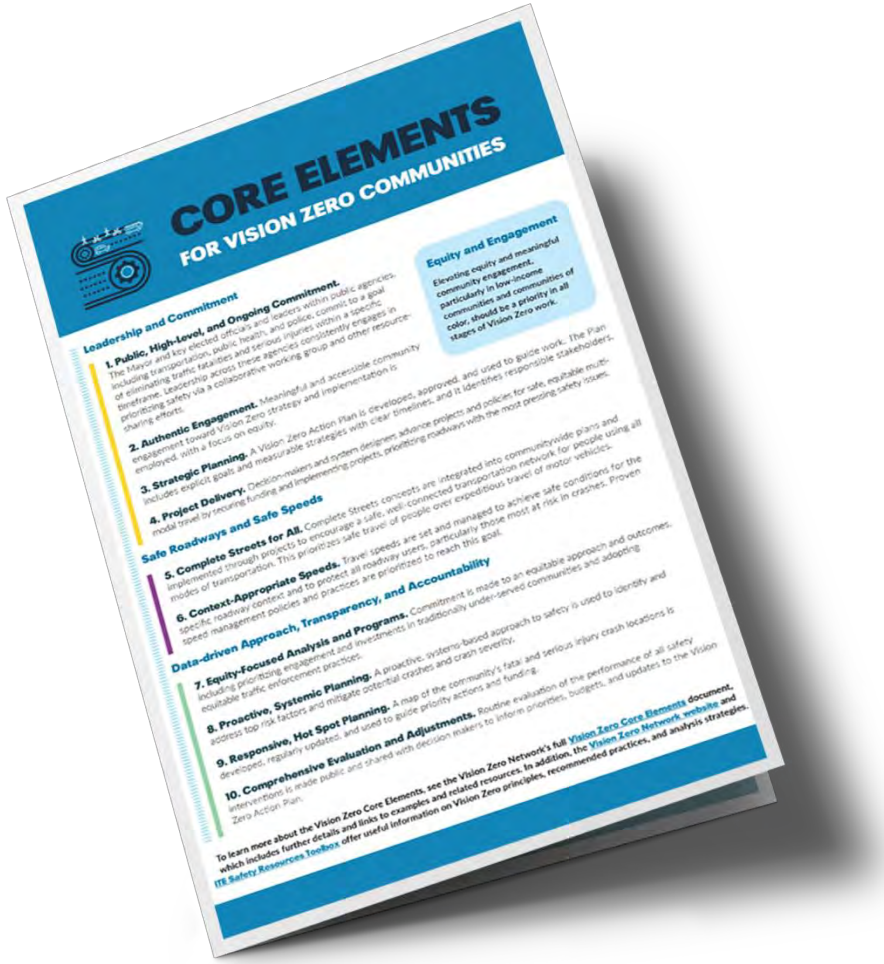




Vision Zero “How To” Implementation Guide

“How To” Guide

- Inspired by *ITE Core Elements for Vision Zero Communities*
- Highlights best practices for each Core Element
- Indicates role of CCTA & local jurisdictions
- Summarizes data analysis and resources developed to-date
- Refers to external resources to stay up-to-date



“How To” Guide

How to Develop Vision Zero Leadership & Commitment

- Public High-Level, and Ongoing Commitment
- Authentic Engagement
- Strategic Planning

“How To” Guide

How to Take a Data-Driven Approach

- Equity-Focused Analysis and Programs
- Responsive, Hot Spot Planning
- Proactive, Systemic Planning
- Comprehensive Evaluation and Adjustments

“How To” Guide

How to Build Safe Roadways & Ensure Safe Speeds

- Complete Streets for All
- Context Appropriate Speeds
- Project Delivery

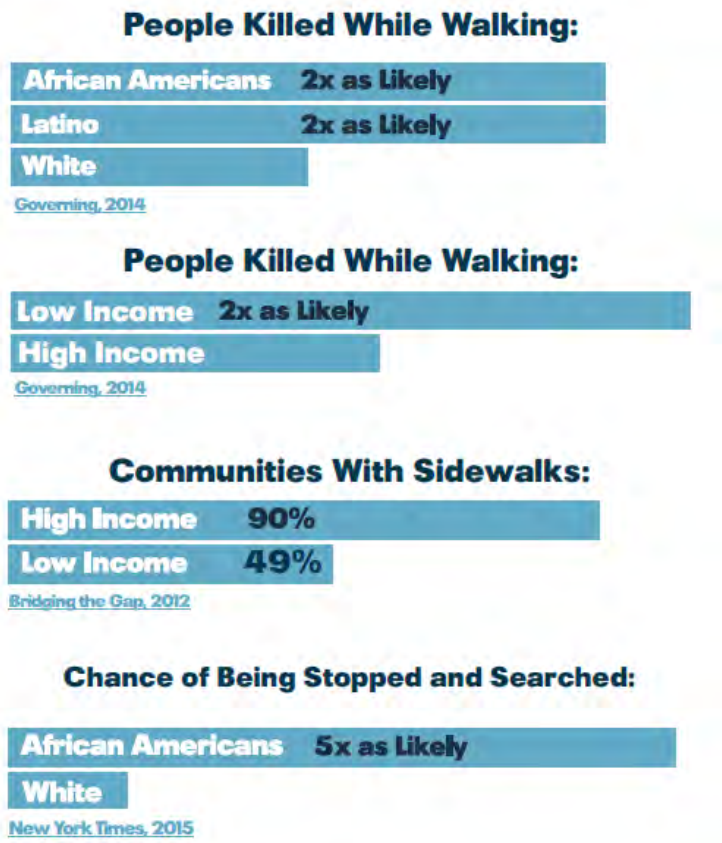
Public, High-Level & Ongoing Commitment

- Example Vision Zero policies
- Education materials & approaches
- Inter-departmental & agency collaboration

Source: City of Richmond

Equity-Focused Analysis & Programs

- External resources on defining, analyzing, and programming for equity
- Understanding historical context of segregation and disinvestment
- Project prioritization using equity metric(s) (e.g., project located in MTC “Community of Concern”)



Source: Vision Zero Network

Proactive, Systemic Planning

- Underlying collision risk factors: the who, where, how, and why collisions happen
- Using travel behavior, roadway design, built environment factors to ID profiles
- Resources on countywide collision profiles and how to develop local profiles

Draft Countywide Collision Profiles

Speeding

DUIs

Channelized right turns

Skewed intersections

Left turns at signals

Red light violation

Complete Streets for All

- Integrate Complete Streets concepts
- Leverage CCTA pedestrian & bicycle design guidelines
- Select & apply safety countermeasures to make streets safer for all users

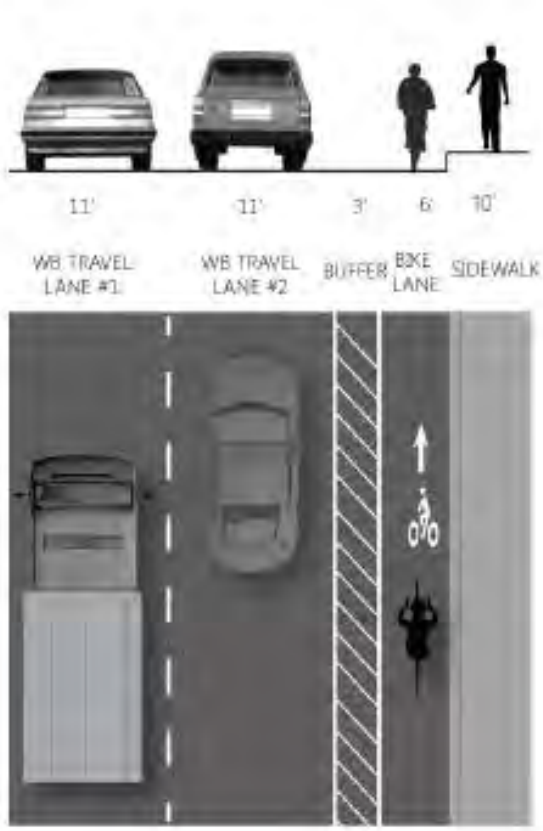
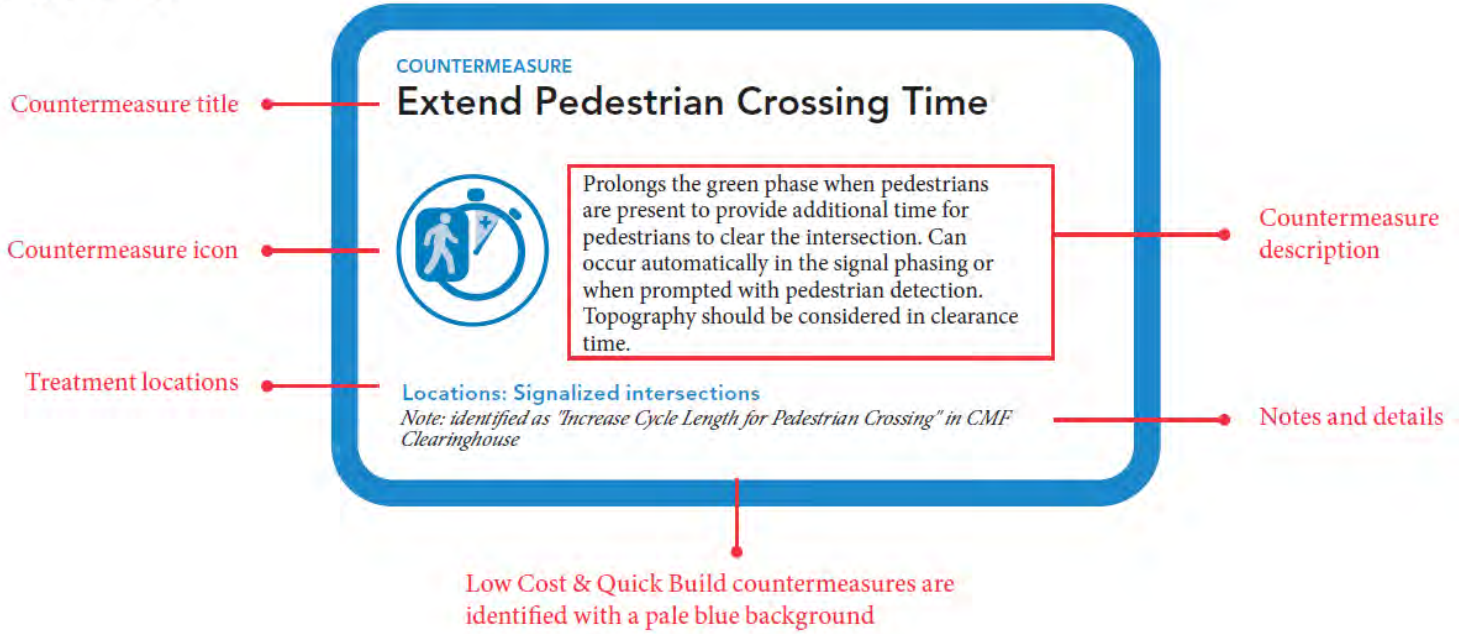


Figure D-8 Buffered Bicycle Lanes Preferred Width

Complete Streets for All

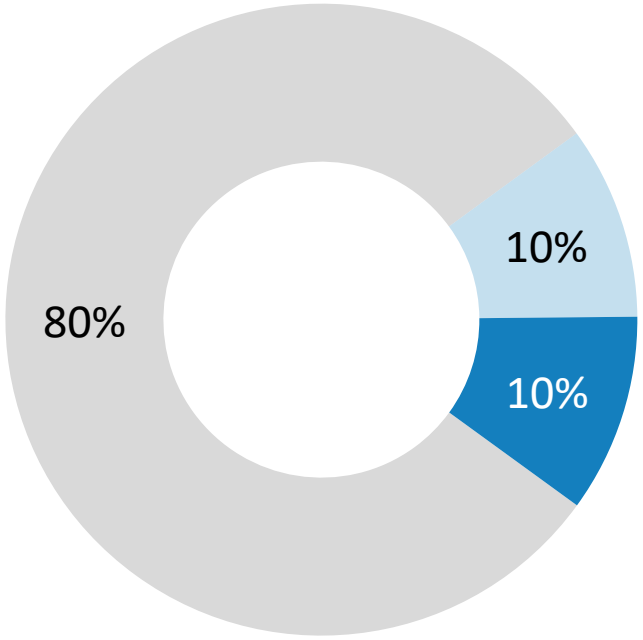
What You'll See in This Toolbox:



Countywide Collision Analysis Summary & Collison Profiles

Collisions by Mode

Countywide
2008-2017



2,048 collisions involved **bicyclists** between 2008 and 2017

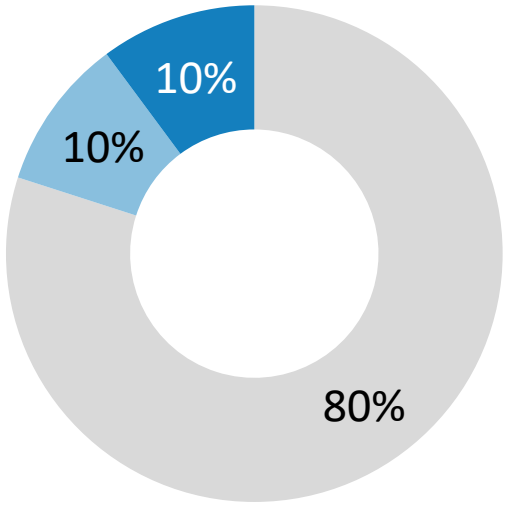
2,101 collisions involved **pedestrians** between 2008 and 2017

Collisions that involve: pedestrians bicycles vehicles only

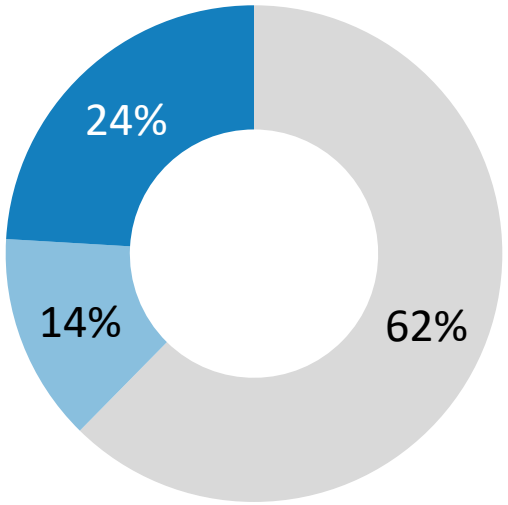
Collisions by Severity

Countywide
2008-2017

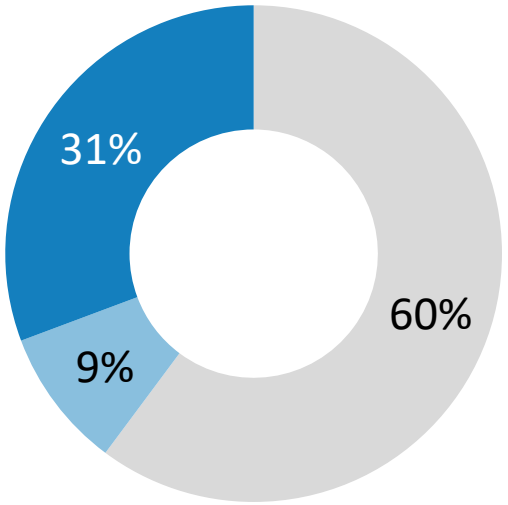
All Collisions



KSI* Collisions



Fatal Collisions

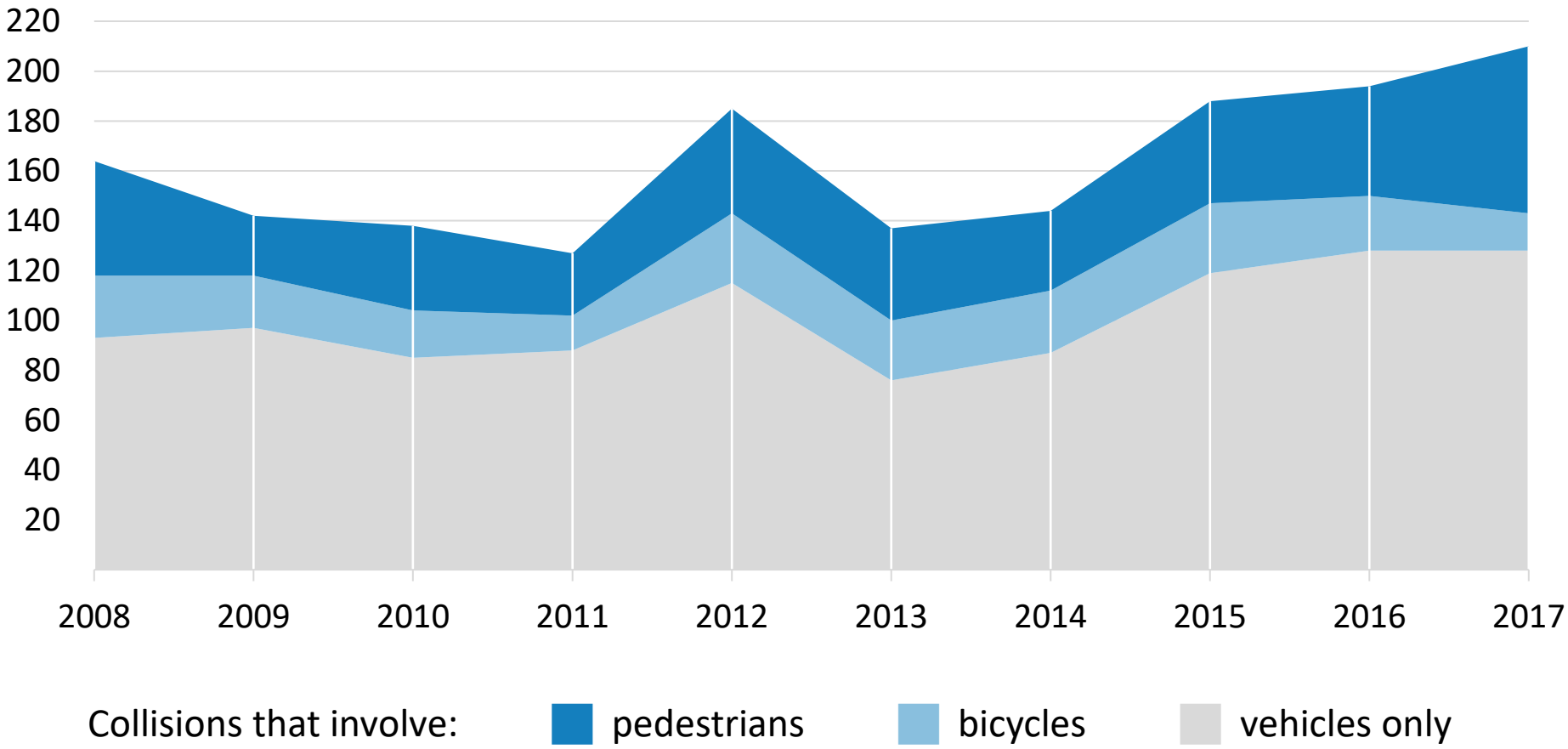


Collisions that involve: pedestrians bicycles vehicles only

* Killed or severely injured

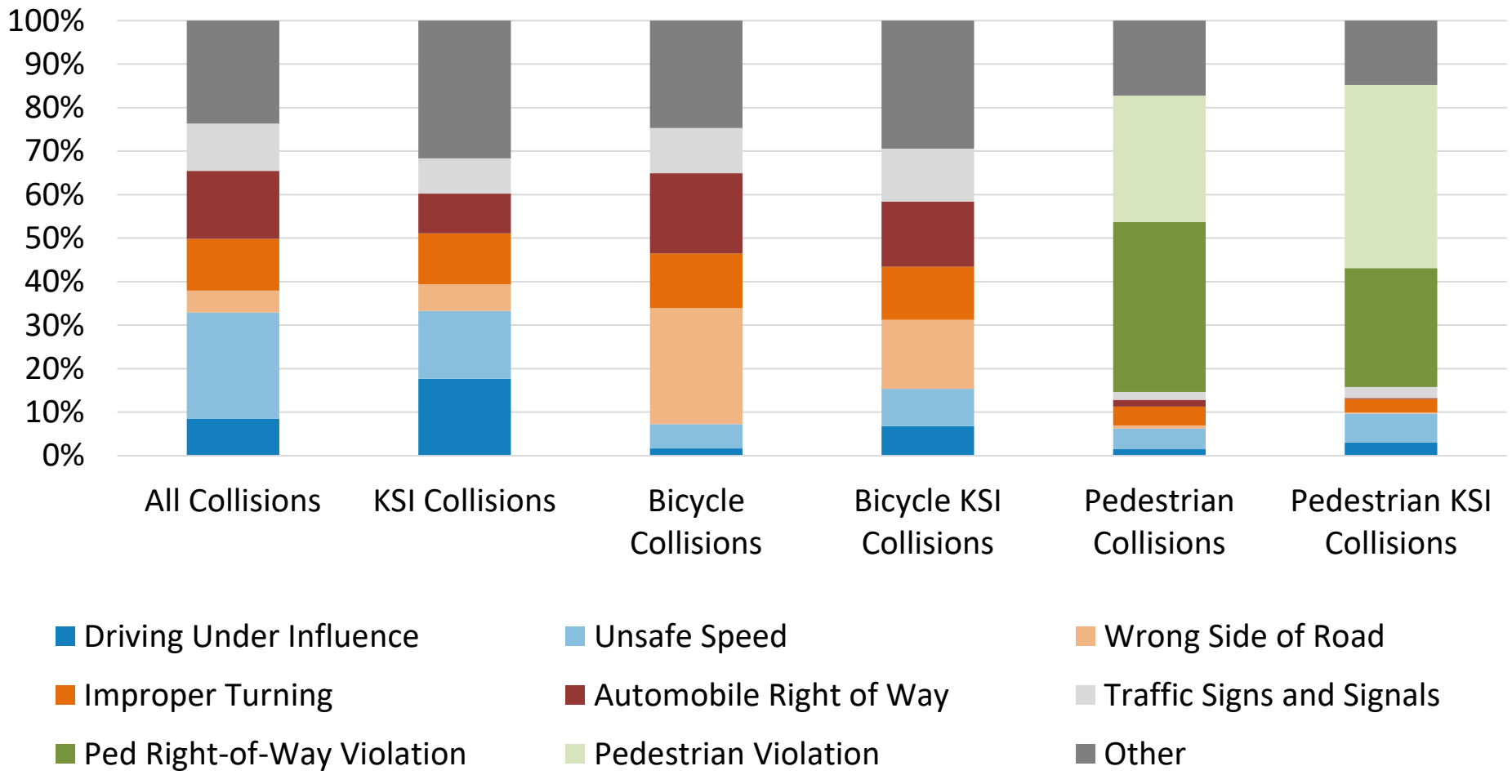
Increasing KSIs

Countywide
2008-2017



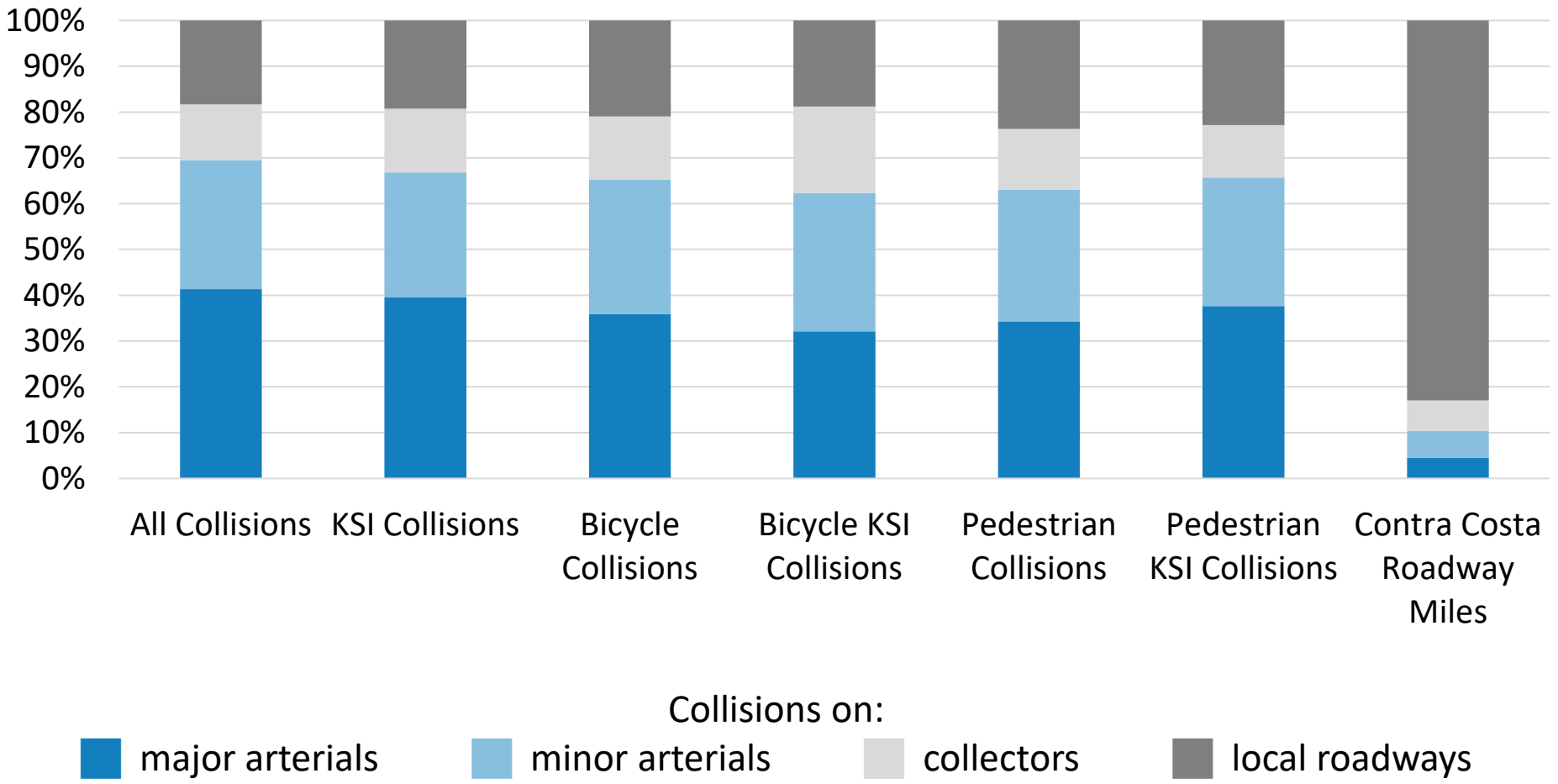
Primary Violation

Countywide
2008-2017



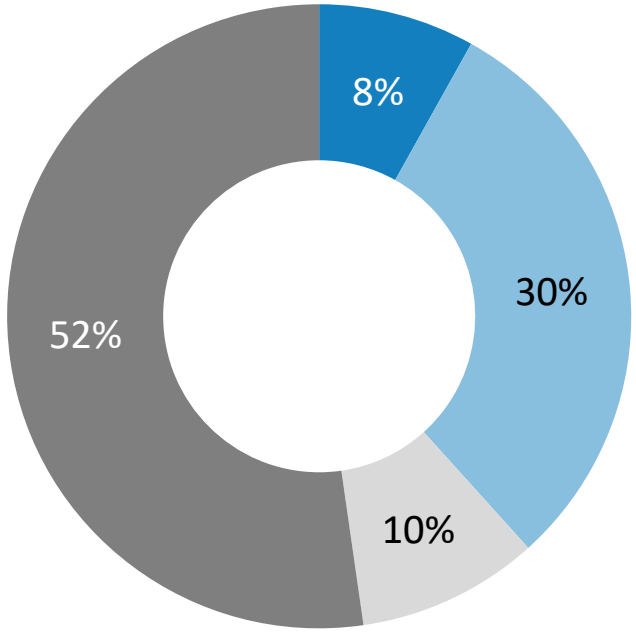
Roadway Type

Countywide
2008-2017



Existing Bike Facilities

Countywide
2008-2017

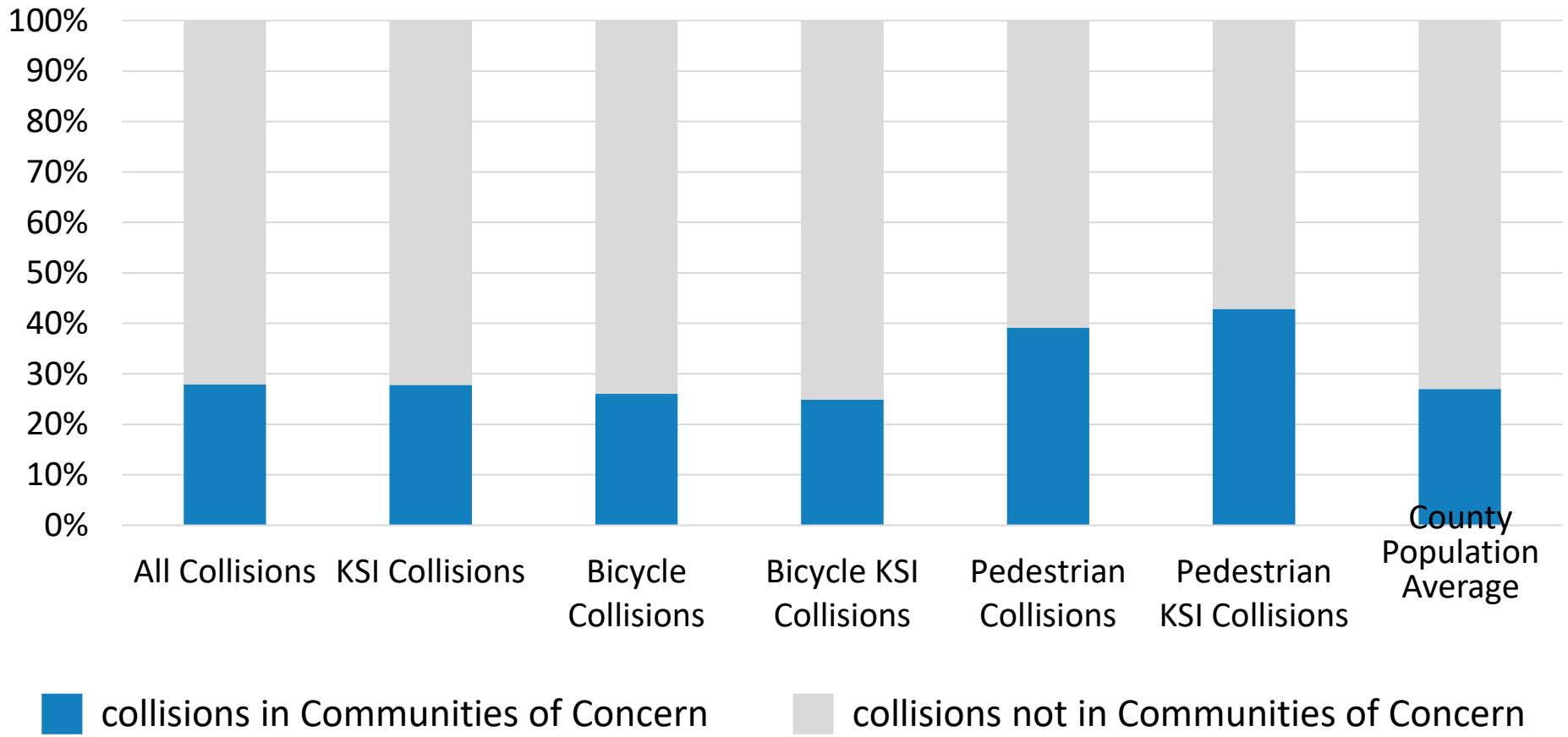


Bicycle collisions on:

- bike paths
- bike lanes
- shared facilities
- no bike facilities present

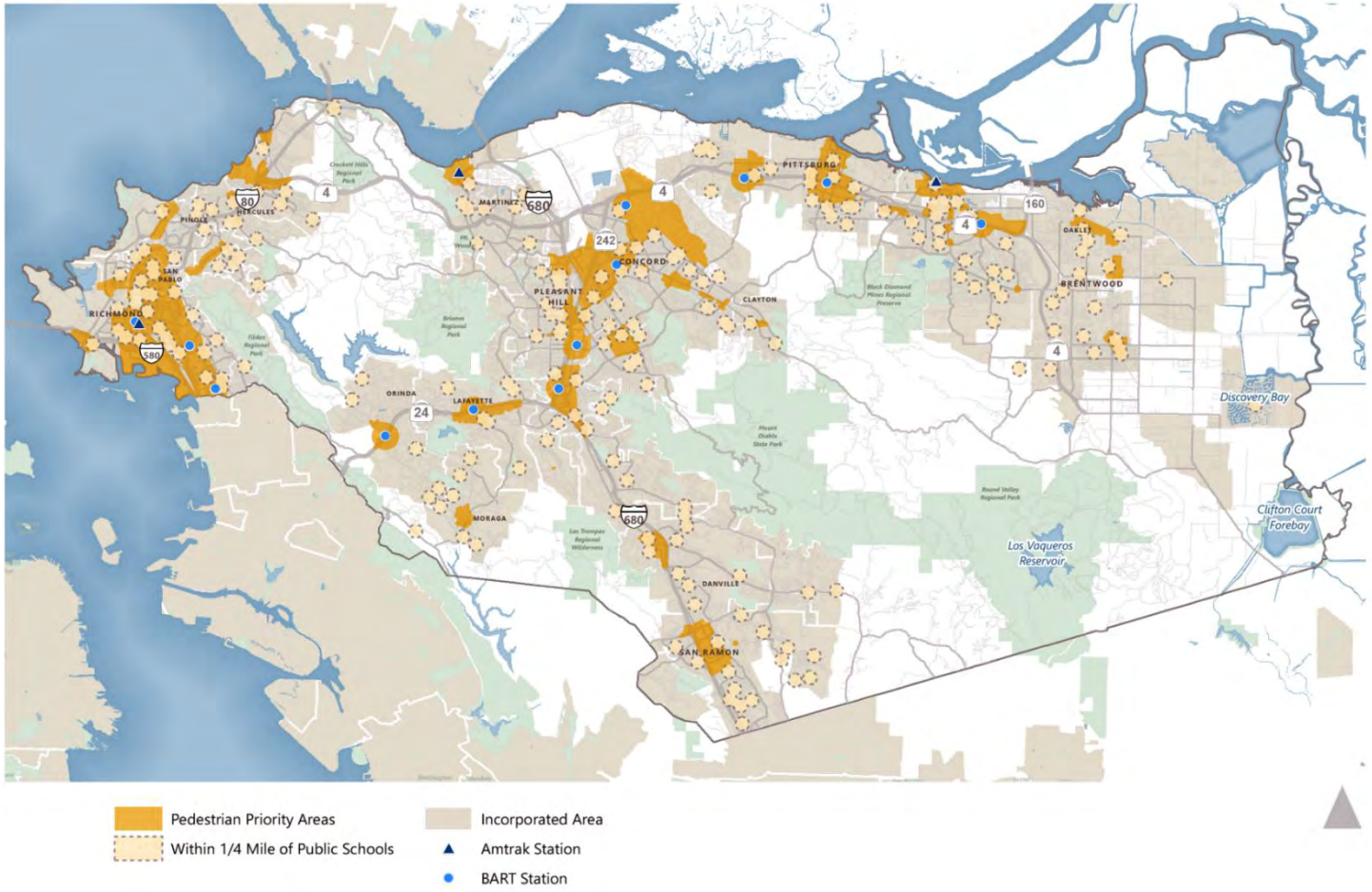
Communities of Concern

Countywide
2008-2017



Communities of Concern are defined by the Metropolitan Transportation Commission as census tracts having concentrations of both low-income and non-white populations; Contra Costa population average estimated using 2017 American Community Survey 5-Year Estimates

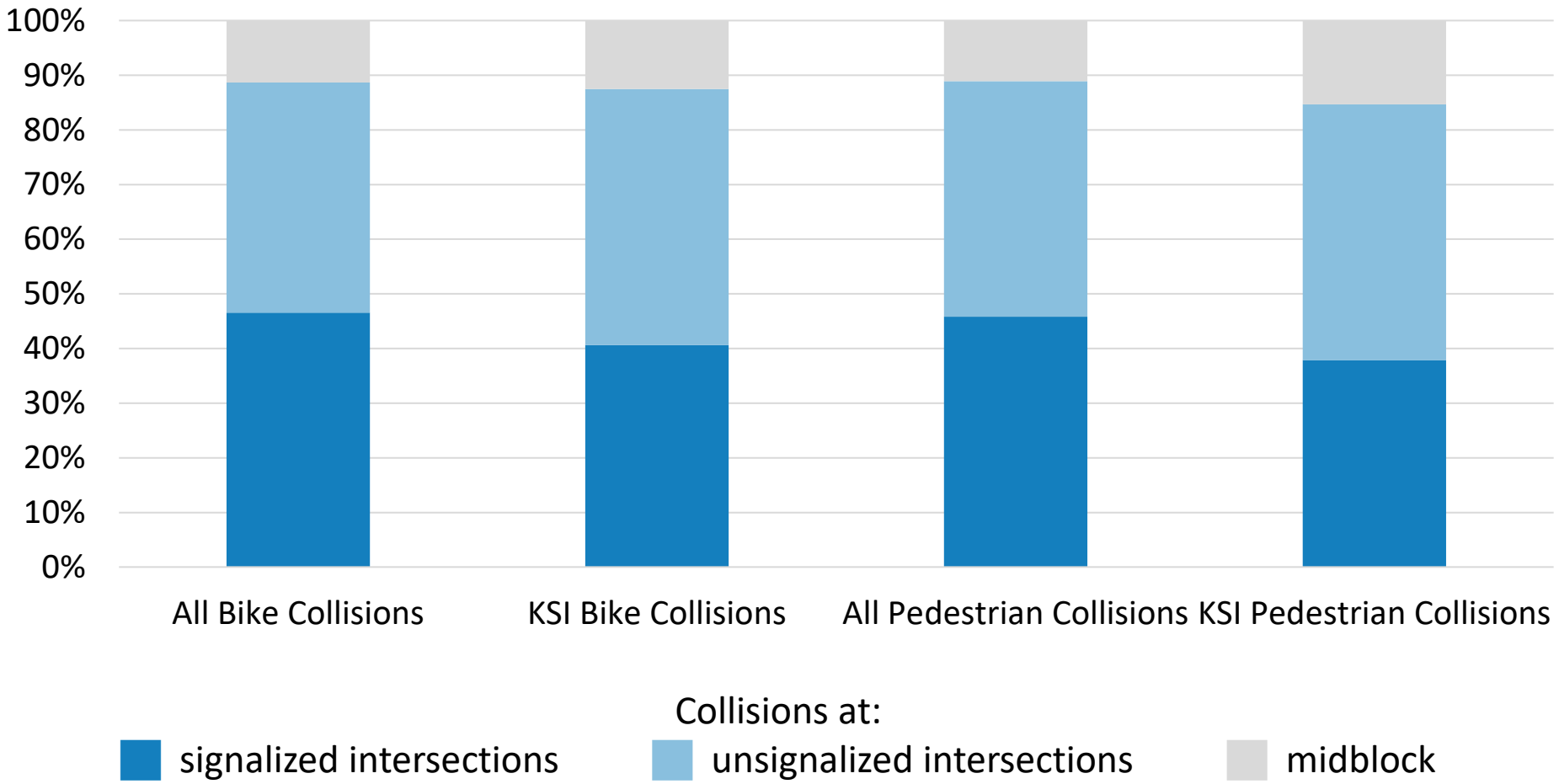
Pedestrian Priority Areas (PPAs)



CCTA's 2018 Countywide Bicycle and Pedestrian Plan Update identifies Priority Pedestrian Areas (PPAs), which include areas within walking distance of schools and major transit stops and locations with the greatest concentrations of pedestrian collisions.

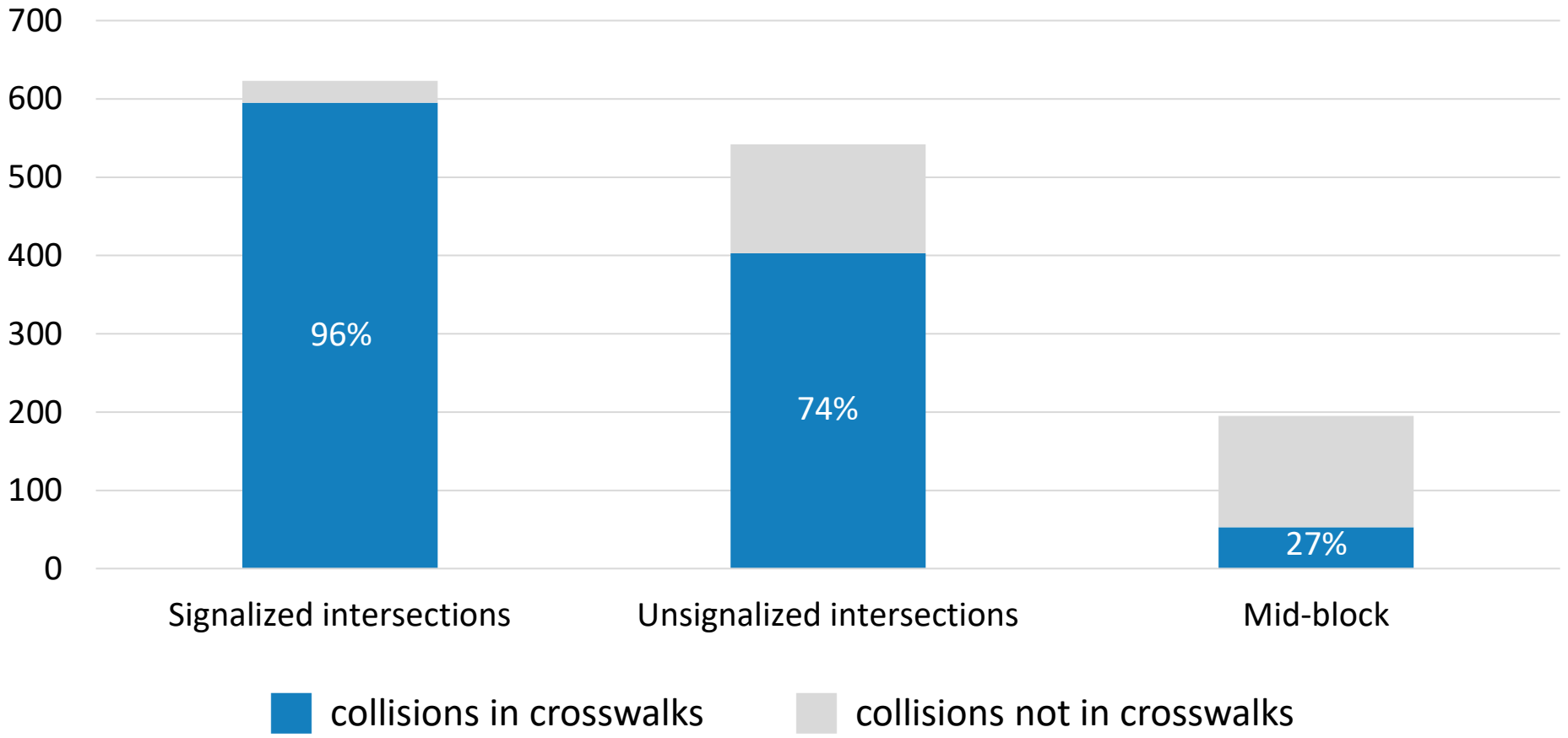
Location & Control Type

PPAs
2008-2017



Location & Marked Crosswalks

PPAs
2008-2017



Contra Costa

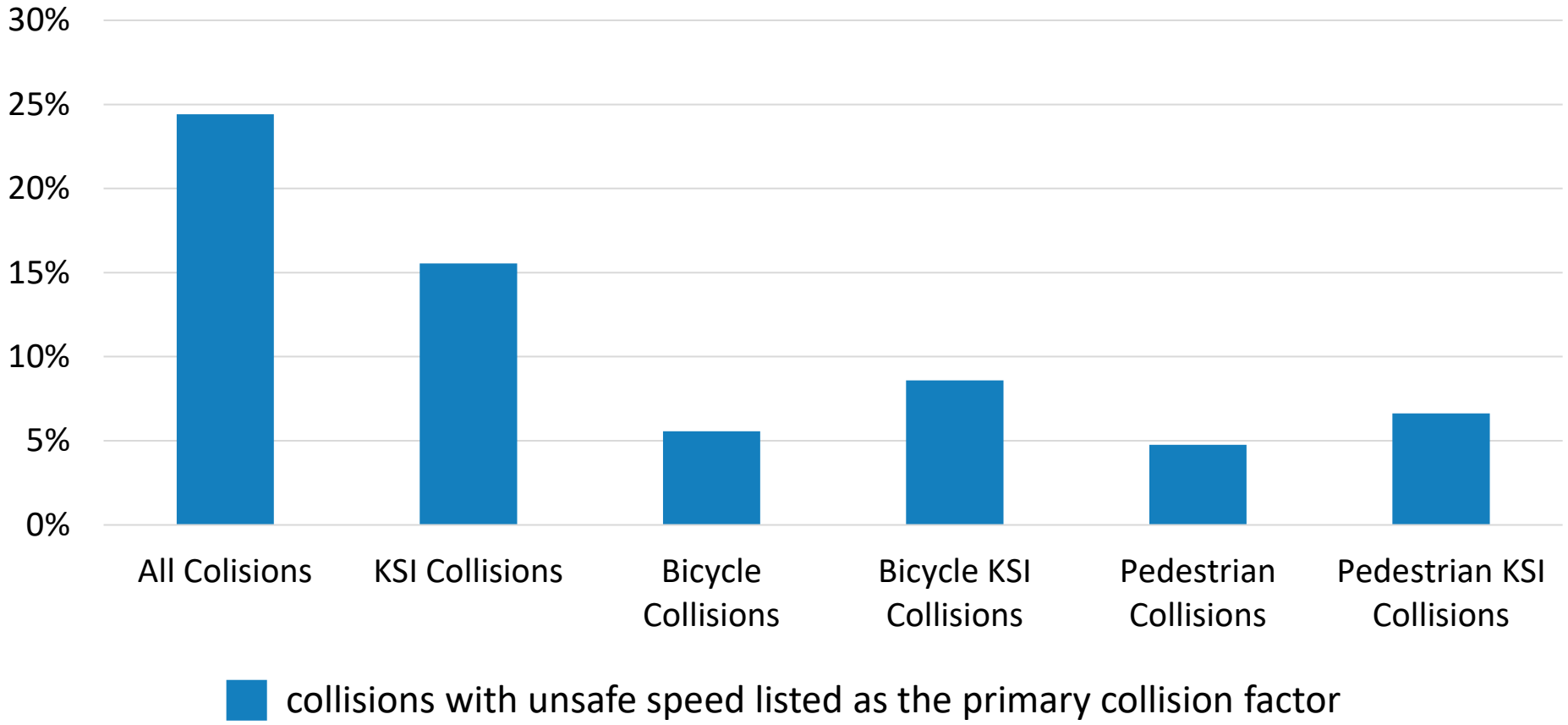
Common Collision Profiles

Common Collision Profiles

- Speeding
- DUIs
- Channelized right turns
- Skewed intersections
- Left turns at signals
- Red light violation
- Highway interchanges
- Trail crossings
- Contraflow bike riding
- Transit priority areas
- Vulnerable populations – Seniors
- Vulnerable populations – Youth

Profile 1
Speeding

Unsafe speeds is a common collision profile and key systemic safety issue across Contra Costa. Vehicles often travel faster than the posted speed limit. Since victim injuries and deaths increase exponentially with vehicle speeds, especially for people walking and biking, reducing speeds is the most critical way to improve safety. Potential countermeasures for this profile include traffic calming, speed warning signs, increased enforcement (including automated once allowed in California), and driver education.

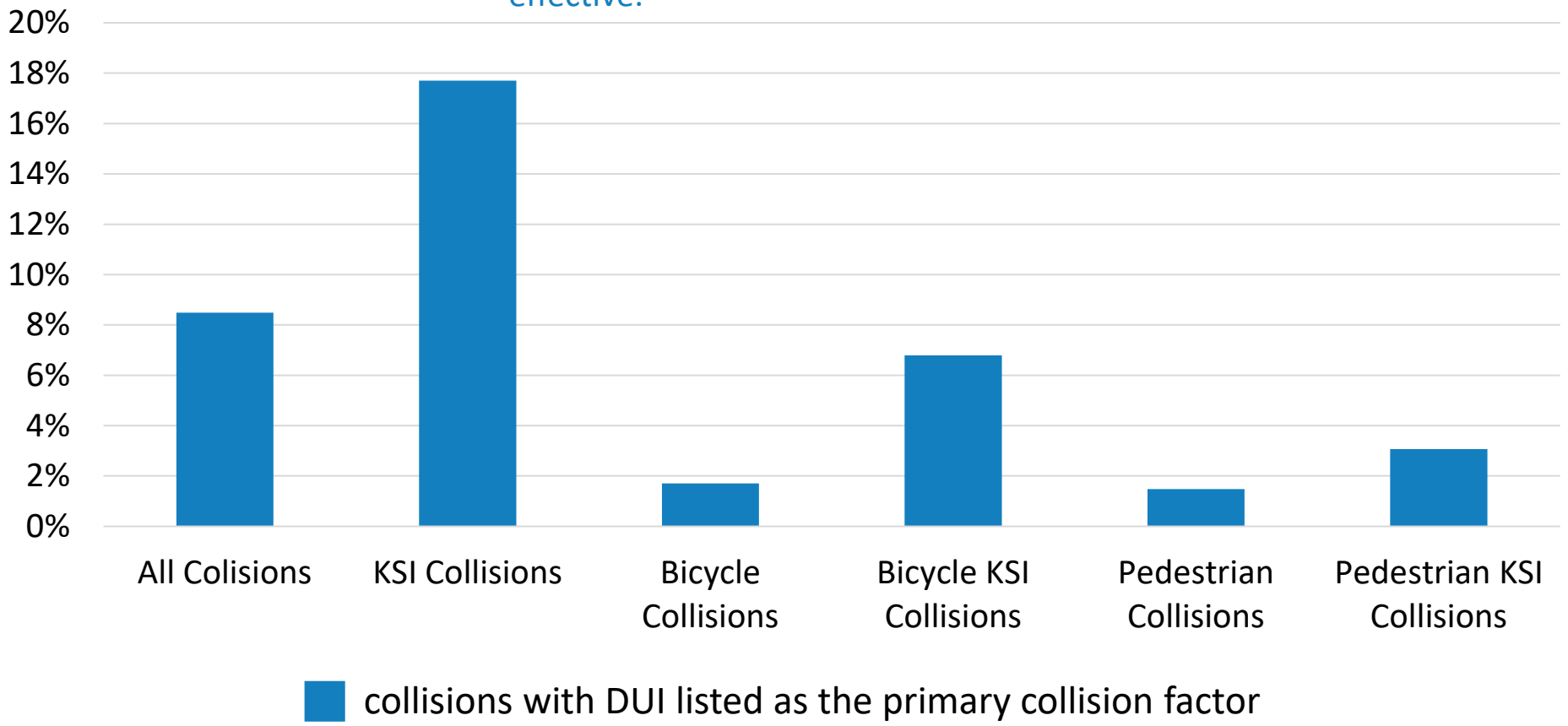


7%
of pedestrian KSI collisions

9%
of bicycle KSI collisions

Profile 2
DUIs

Driving under the influence (DUI) of alcohol, drugs, or medication is a common collision profile in Contra Costa – and has a strong influence on KSI collisions. The proportion of collisions where DUI is considered the primary collision factor (PCF) more than doubles from 8% of all collisions to 18% of all KSI collisions. Potential strategies to address this collision profile include enforcement activities (e.g., sobriety checkpoints), marketing campaigns, and education. In areas where DUI is especially prevalent, design redundancy, such as center medians and rumble strips, may also be effective.

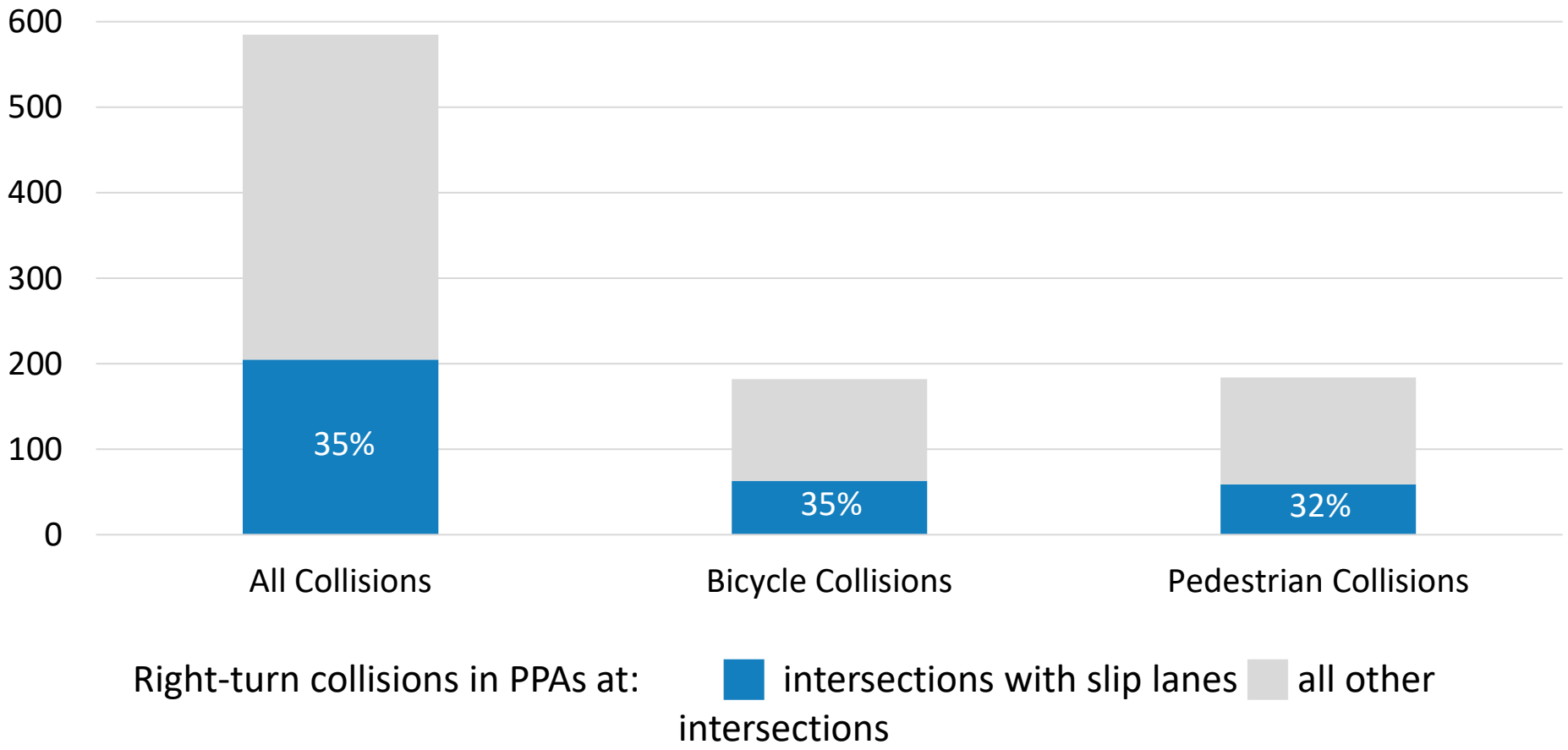


3%
of pedestrian KSI collisions

7%
of bicycle KSI collisions

Profile 3
Channelized Right Turns

About one-third of collisions at signalized intersections in Priority Pedestrian Areas (PPAs) that involve a right-turning vehicle occur at intersections with channelized right-turn lanes (i.e., slip lanes). Slip lanes facilitate fast moving vehicles through the conflict point with a pedestrian crossing. Potential countermeasures to address this collision profile include improvements that slow speeds and improve visibility such as closing slip lanes and reducing curb radii. Redesigning slip lanes to slow approach angles (similar to a roundabout entry) and provide a raised crossing area also potential countermeasures.

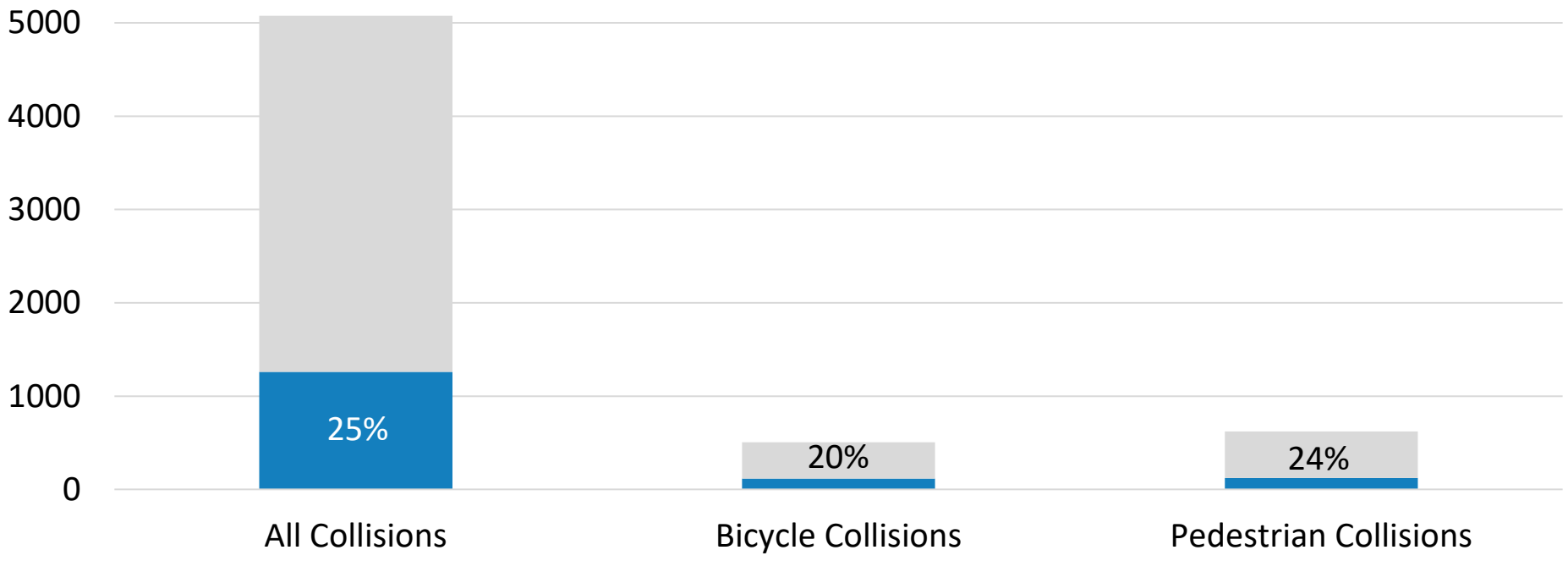


2%
of pedestrian KSI collisions in PPA

1%
of bicycle KSI collisions in PPA

Profile 4
Skewed Intersections

Many intersections across Contra Costa are not orthogonal and have skewed or offset approaches. About one-quarter of all collisions occurred at skewed intersections. These intersections may have longer or less intuitive pedestrian crossings. Motorists may have limited visibility of pedestrians and vehicles on the intersecting roadway. Potential counter-measures include "tightening up" approaches, crosswalk daylighting (i.e., prohibiting parking for at least 20' adjacent to a crosswalk), or channelizing turns to improve sight lines and encourage slower speeds.

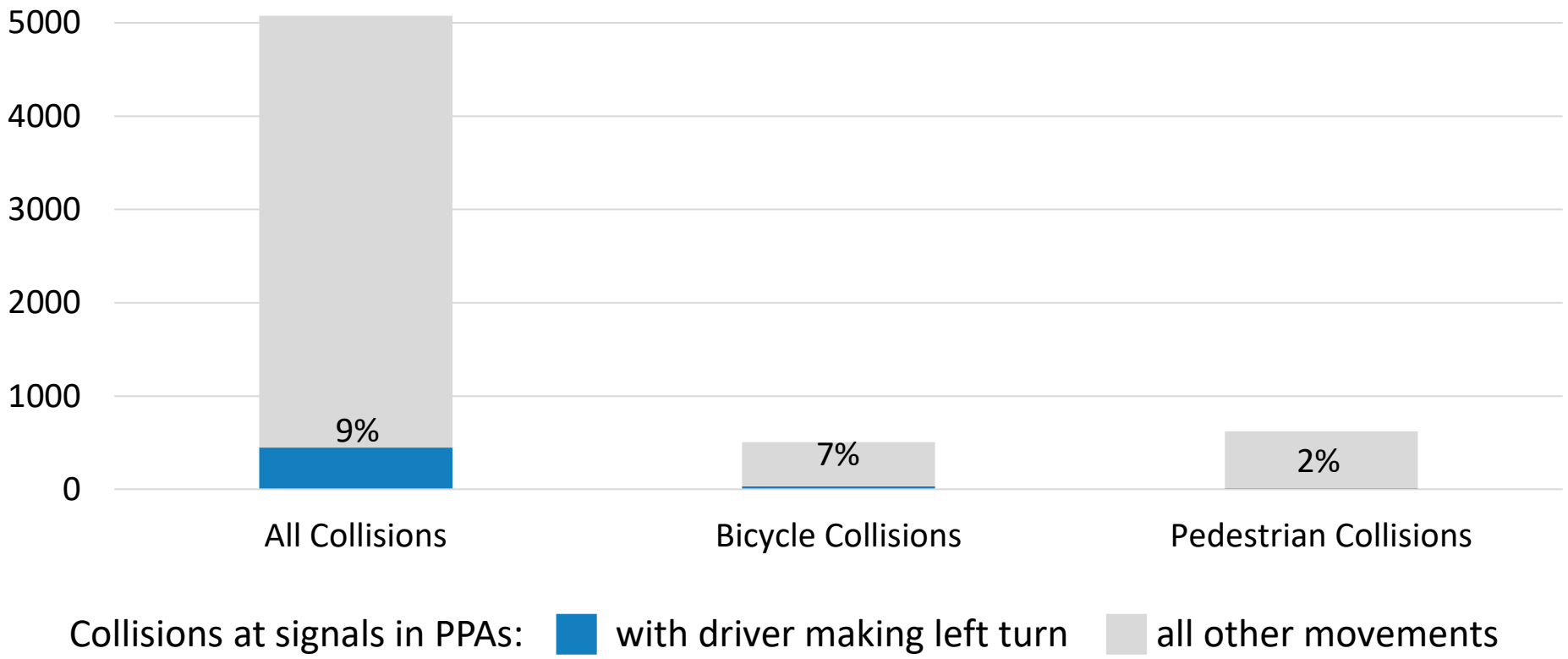


8%
of pedestrian KSI collisions in PPA

6%
of bicycle KSI collisions in PPA

Profile 5
Left Turns at Signals

About one-quarter of collisions at signalized intersections in PPAs involve a left-turning vehicle. This could be related to permitted rather than protected left turn phases at signalized intersections. Potential approaches to addressing this collision profile include providing a Leading Pedestrian Interval, installing protected left turn phases (where feasible), or using split signal phasing. In some cases prohibiting left turns in a grid network may also be an option to address this collision type. Finally, a road diet may allow for left turn pockets to be provided if current right of way does not allow for this.

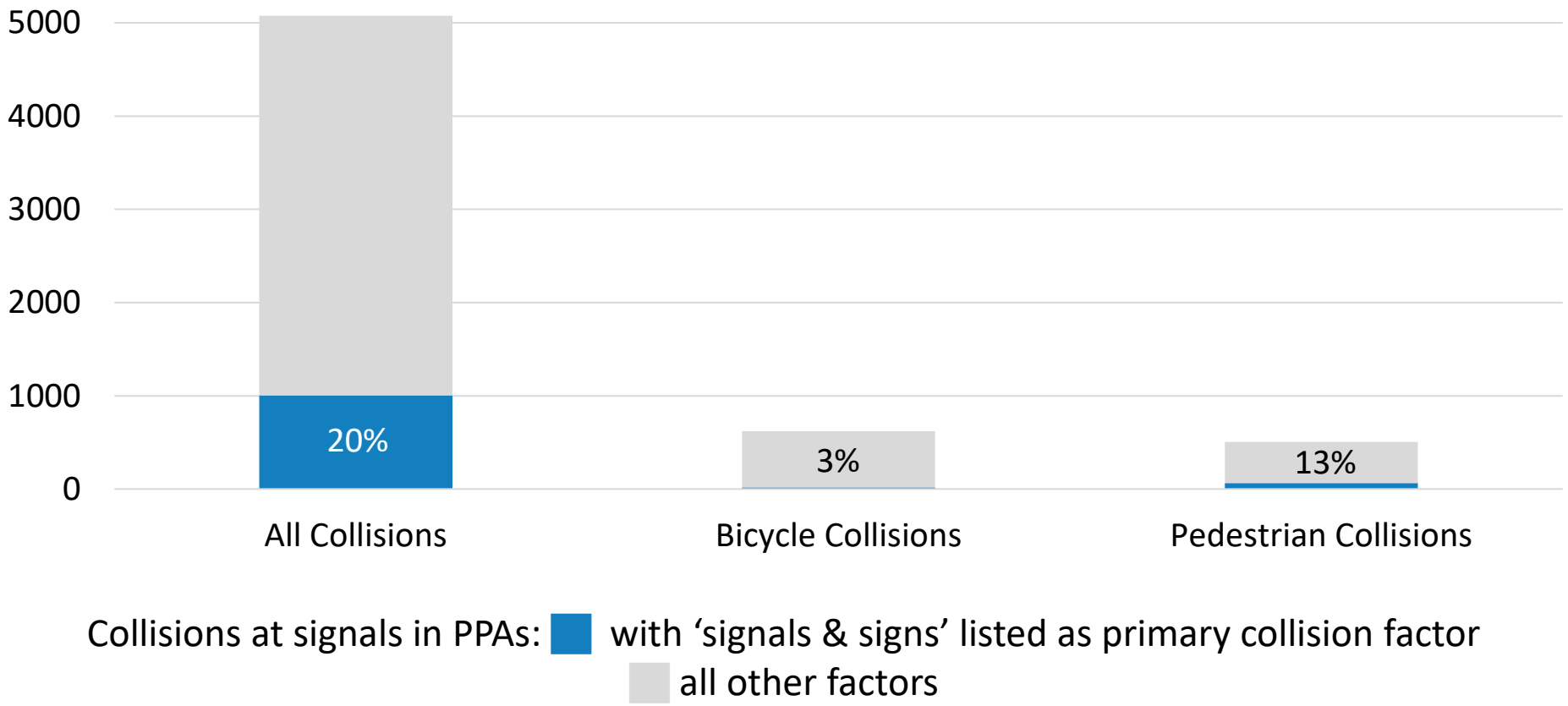


1%
of pedestrian KSI collisions in PPA

1%
of bicycle KSI collisions in PPA

Profile 6
Red Light Violation

Red light violations occur when either a motorist, bicyclist, or pedestrian enters an intersection against the signal. Approximately 20% of all collisions at signalized intersections in PPAs had 'signals & signs' listed at the primary collision factors, which is how red light violations are typically categorized in collision databases. Potential countermeasure to address this collision profile could include signal timing adjustments to allow for longer clearance intervals or shorter cycle lengths, or green paint for increased bicyclist visibility. Enforcement and red light cameras may also be considered.

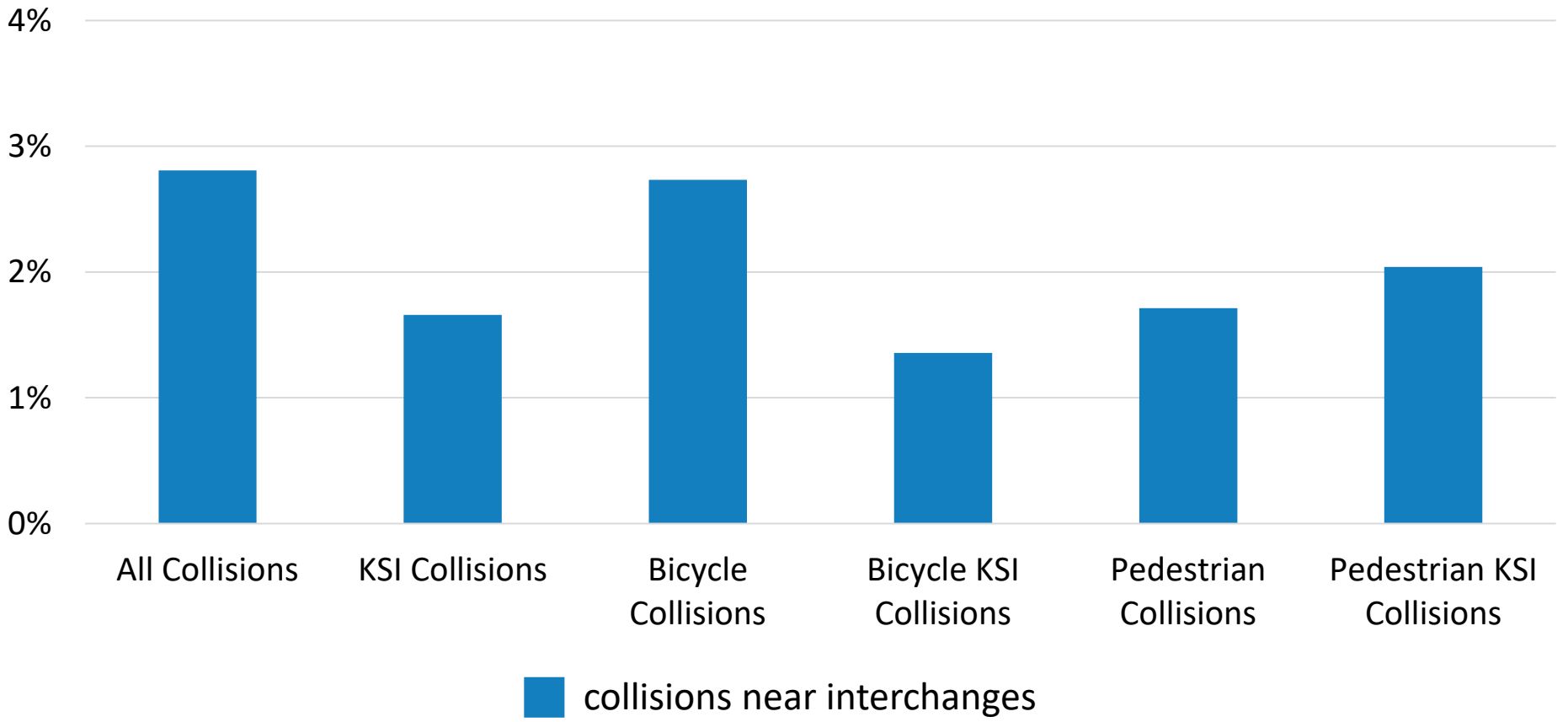


3%
of pedestrian KSI collisions in PPA

3%
of bicycle KSI collisions in PPA

Profile 7
Highway Interchanges

Interchanges tend to be difficult to navigate for pedestrians and bicyclists due to high volume of fast-moving vehicles and land use and roadway designs that do not signal for the presence of multi-modal users. This challenge was highlighted as part of community and stakeholder outreach during the development of the 2018 CBPP Update. Although this profile represents a smaller number of collisions, this may reflect lower levels of walking and biking near interchanges. Potential countermeasures include reducing curb radii at ramps and providing single lane ramps, where possible, to minimize conflict points.

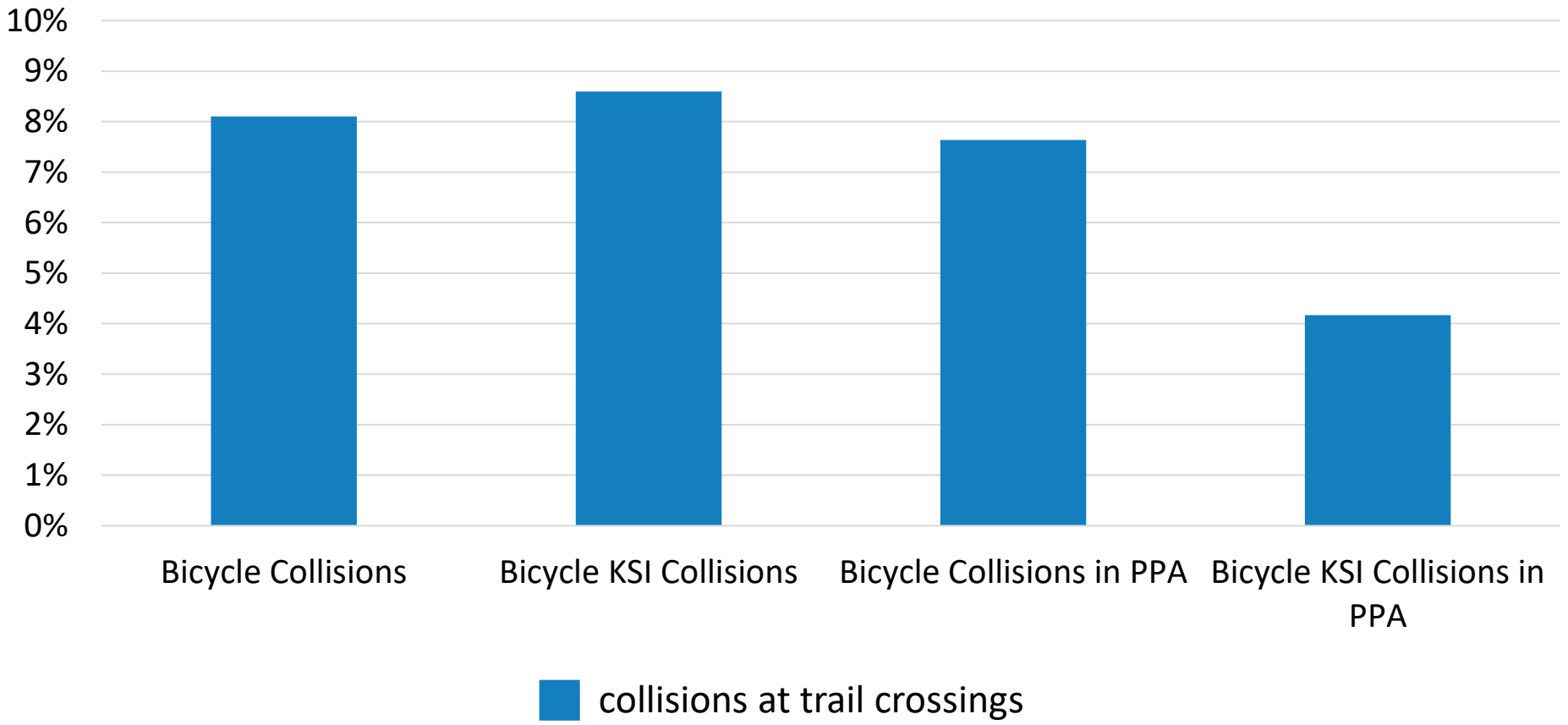


2%
of pedestrian KSI collisions

1%
of bicycle KSI collisions

Profile 8
Trail Crossings

Contra Costa has a well-developed system of trails, such as the Iron Horse Trail, that provide separated connections for people walking and biking. However, trail crossings of major roadways can present stressful experiences and significant conflict points. Potential improvements at trail crossings include enhanced crossings (e.g., rectangular rapid flashing beacons (RRFBs) or pedestrian hybrid beacons (PHBs)) or grade-separated crossings (e.g., pedestrian/bicycle bridge).

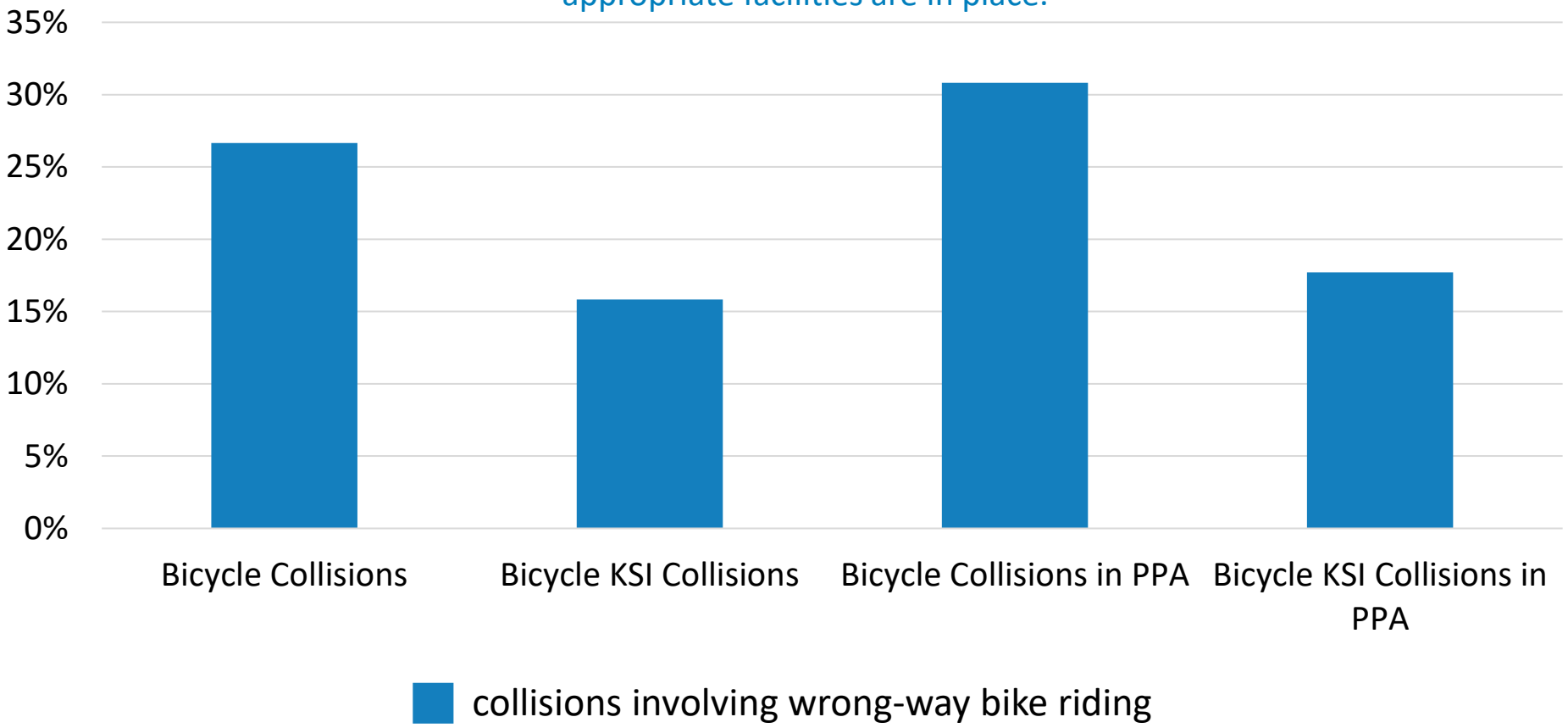


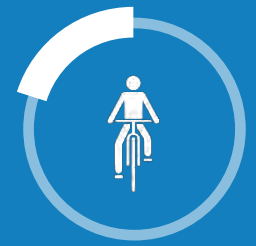
VISION ZERO

4%
of bicycle KSI collisions

Profile 9
Contraflow Bike Riding

Wrong way riding collisions denote a collision that occurs when a bicyclist travels in the opposite direction of vehicular traffic. This can occur when existing facilities do not exist or when existing facilities do not meet bicyclists' desire lines. For example, if an adequate crossing does not exist where a bicyclist wants to cross the street, they may ride in the wrong direction to access a signalized crossing. Potential solutions include installing bicycling facilities or bicycle crossings at key desire lines. Bicyclist education is also important to address risky behaviors when appropriate facilities are in place.

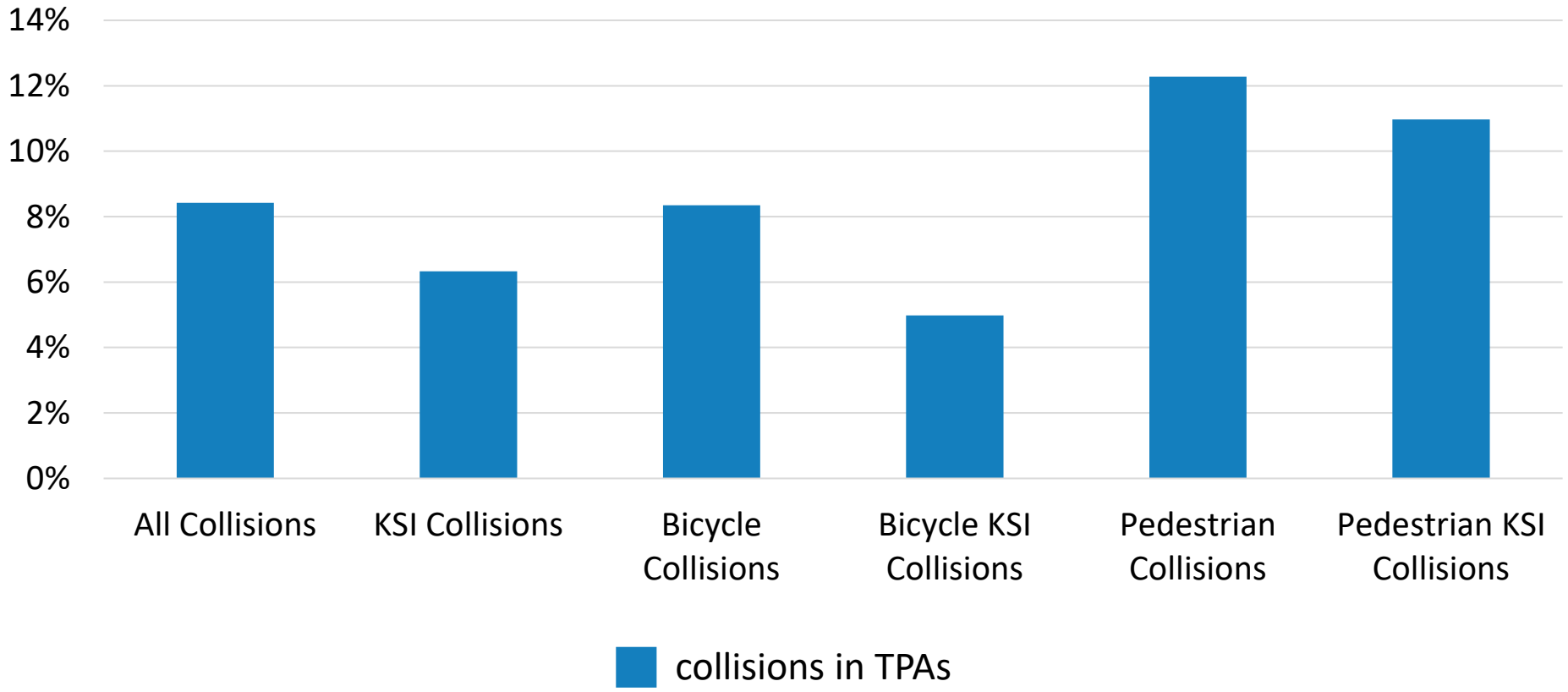




15%
of bicycle KSI collisions

Profile 10
Transit Priority Areas (TPAs)

CCTA defines Transit Priority Areas (TPAs) as areas within a half-mile walk of transit stations with 15-minute headways or better during peak periods, such as BART stations. Improving access for people walking and biking can make transit more convenient, which is a key goal of the 2018 CBPP Update. Therefore, improving safety for people walking and biking to/from transit is key, considering that 11% of pedestrian KSI collisions countywide occur within TPAs.



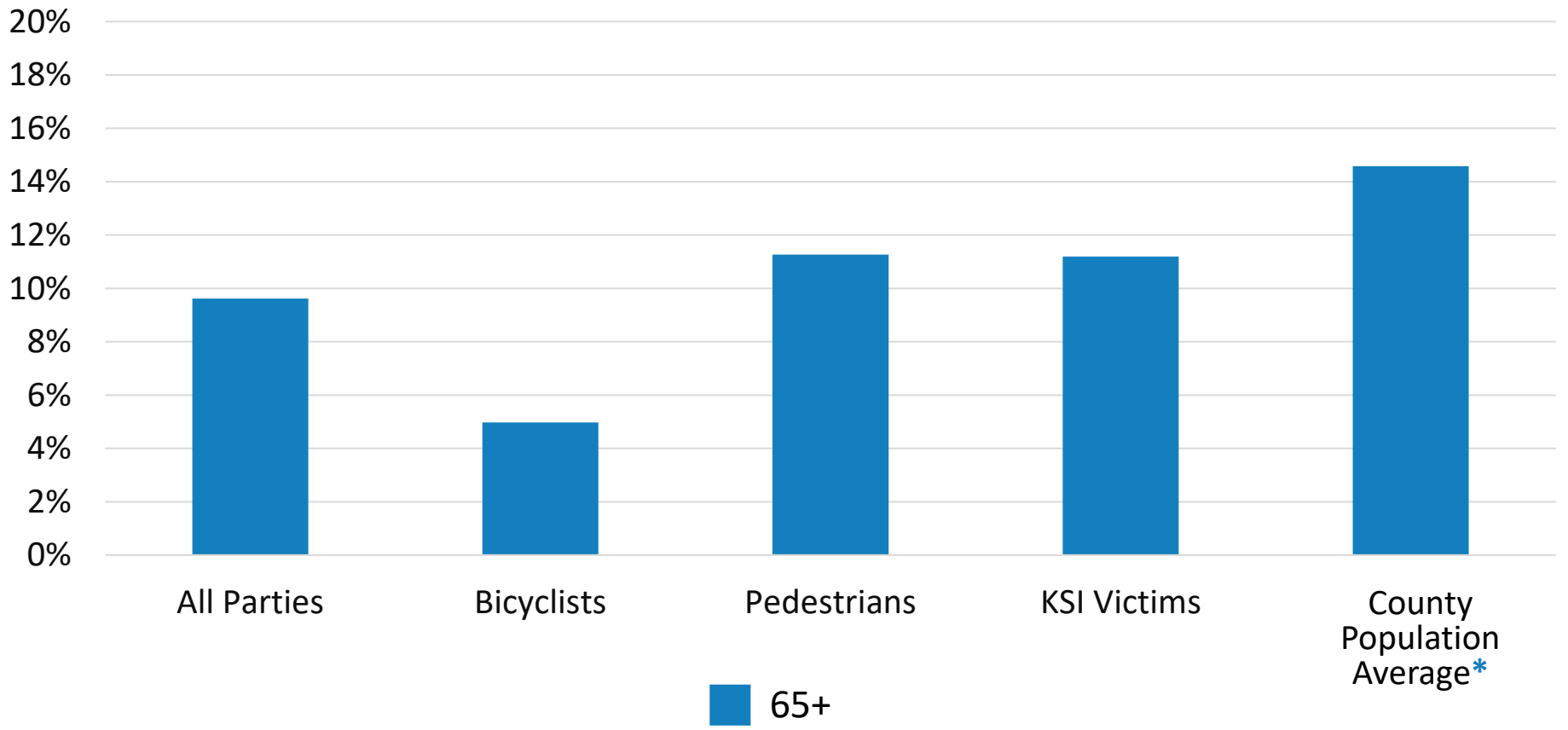
VISION ZERO

11%
of pedestrian KSI collisions

5%
of bicycle KSI collisions

Profile 11
Seniors

Seniors (65 years old and older) are involved in 11% of pedestrian-involved collisions. Incorporating senior-friendly design, such as slower crossing times at signals, or focusing pedestrian improvements near senior centers are some potential countermeasures to consider for this profile.

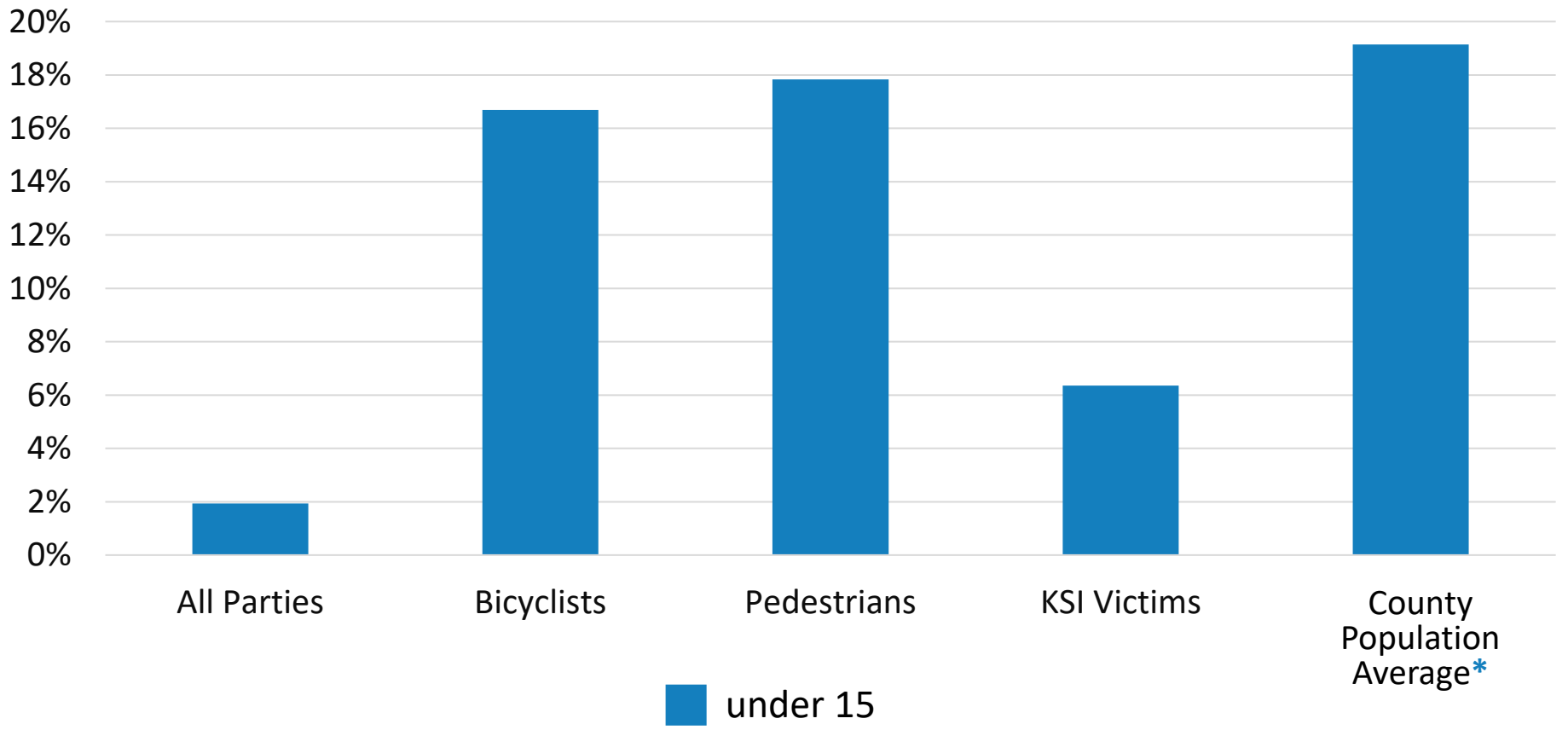


11%
of countywide pedestrian collisions

5%
of countywide bicycle collisions

Profile 12
Youth

Youth (less than 15 years old) are involved in a disproportionate share of pedestrian-involved collisions. Opportunities for Safe Routes to School (SRTS) projects and programs are numerous and can include education, encouragement, and engineering strategies.



18%
of countywide pedestrian collisions

17%
of countywide bicycle collisions

BREAKOUT GROUP DISCUSSION

NEXT STEPS

Next Steps

- Finalize “How To” Guide
- Finalize Collision Profiles
- Vision Zero RTPC “Roadshow” & TAC Input
- Countywide Pedestrian Needs Assessment
- Countywide Micromobility Policy