PASADENA
DEPARTMENT OF TRANSPORTATION

FINAL DRAFT

City of Pasadena Pedestrian Transportation Action Plan

December 2023

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NOTE: Information contained in this document is for planning purposes and should not be used for final design of any project. All results, recommendations, concept drawings, cost opinions, and commentary contained herein are based on limited data and information and on existing conditions that are subject to change. Existing conditions have not been field-verified. Further analysis and engineering design are necessary prior to implementing any of the recommendations contained herein.

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About the Plan

Introduction

About the Plan

The City's 2023 Pedestrian Transportation Action Plan prioritizes and guides investments to create a safer and more walkable Pasadena. This Plan focuses on the implementation of Pasadena's previous planning efforts and creates tangible and constructible improvements within the context of the City's built environment.

PASADENA WALKS!

This plan represents the next step in the City's long commitment to a more walkable Pasadena by bringing to action the policies and goals developed over previous efforts of creating:

"A community where people can circulate without cars."

Walkability refers to how friendly a place is for walking. It means providing spaces where people feel safe walking, supporting opportunities to make meaningful and active trips by foot, and creating an environment where people choose to walk because it is convenient and enjoyable. Creating more walkable places can lead to significant improvements in the social fabric, health, and economic well-being of a community.

Walkability also implies accessibility—the ability of people of various abilities and ages to safely navigate the pedestrian network. Everyone in Pasadena is a pedestrian. This includes people walking, running, or using a wheelchair or other mobility device. It includes people going to work and school, jogging, shopping, catching the bus, or walking to their car. The term "walking" – as used in this document – includes all these forms of travel, for all purposes, and by all people.

BACKGROUND AND PURPOSE

While the vision of "A community where people can circulate without cars" was memorialized in the 2015 General Plan, planning efforts to make Pasadena,

"...a livable community – one that is walkable, safe and healthy, with engaging places, a sound economy, vibrant and comfortable streets and interesting places of activity."

were present in the 2006 Pasadena Pedestrian Plan. This 2006 plan was itself an evolution of the 1994 and 2004 General Plans that established urban design principles shaped and driven by community values reflecting views of residents. This included the guiding principle that Pasadena be a community where people can circulate without cars.

These planning efforts are part of Pasadena's rich history of shaping itself through plans, back to the 1925 "Bennett Plan" for the Civic Center. Each subsequent iteration is a refinement and evolution of previous plans. The 1994 and 2004 General Plans emphasized then-new transit options such as the Pasadena Area Rapid Transit System (now Pasadena Transit) and Metro Gold Line (now A Line) Light Rail stations as opportunities to define Pedestrian-Friendly Transit Oriented Districts with goals of providing comfortable five- to ten-minute walks from transit stations to retail, office, or housing destinations.

The 2006 Pedestrian Plan provided an overview of related City Plans and Policy Documents of the time and Policies to guide future improvements. These policies were further refined in the 2015 General Plan Mobility Element into three objectives:

Objective 1. Enhance Livability.

Guidelines for greater community health and safety, including:

- Streets that reflect neighborhood character
- Neighborhood Protection Measures

Objective 2. Encourage walking, biking, transit and other alternatives to motor vehicles.

Strategies to encourage non-auto travel, including:

- Walking – Promote official walking tours and events
- Biking – Maintain existing and identify new opportunities for biking infrastructure
- Transit – Assess way to improve availability of transit for underserved populations
- Public Involvement – Ensure community participation at all levels of planning for transportation and pedestrian improvements.

Objective 3. Create a supportive climate for economic viability.

Mobility strategies to improve economic vitality, including:

- Work with existing and potential businesses to assess parking needs and requirements
- Incorporate Green City Action Plan initiatives

Since 2015, the City has followed these policies and pushed these initiatives in:

- Regularly coordinating pedestrian-related traffic safety outreach efforts,
- Including 2015 City of Pasadena General Plan Mobility Element objectives and policies in updates to the 2015 City of Pasadena Bicycle Transportation Action Plan, 2016 City of Pasadena Pedestrian Crossing Design Guidance Report, and 2017 Pasadena Street Design Guide.
- Continuing to fund annual operating programs to better meet the needs of pedestrians through Complete Streets focused Capital Improvement Projects.
- Continuously monitoring the effectiveness of safety efforts through coordination between the City's Department of Transportation and Police Department.
- Continuously seeking grant funding for pedestrian oriented projects,

This current Action Plan builds on these previous efforts. In the last decade, federal and state active transportation and traffic safety grant programs have grown more competitive due to an outsized demand for safer public spaces. These grants have subsequently prioritized more construction-ready projects that address quantifiable needs with measurable benefit.

This Action Plan builds on decades of policy and guidance to achieve the goal of bringing real-world improvements to the pedestrian experience in Pasadena.

PLAN GOALS

The Pedestrian Transportation Action Plan aims to make walking in the City safer, more comfortable, convenient and accessible for pedestrians of all ages and abilities. More specifically, this document and future project implementation efforts as a part of this Plan look to:

- **Improve conditions for people walking**
  Residents stressed that improving safety for pedestrians should be a priority for the community. Throughout the planning process, residents indicated specific

locations and issues where they felt that improvements to the pedestrian environment were needed.

- **Increase the percentage of walking trips**
  Increasing walking trips can have compounding, positive effects. Aside from the health benefits associated with walking, some areas of Pasadena are known for heavy pedestrian activity, encouraging local residents and visitors alike to identify Pasadena as a walking city. This plan should continue to foster a safe, active, and supportive walking environment to increase walking trips.

- **Improve connections to surrounding destinations**
  Pasadena residents indicated that they would like to walk more and that a more walkable Pasadena would improve their ability to access destinations such as schools and parks. They also stated that more walkable environments would promote social interactions and lead to more activity in the City.

- **Reduce the environmental impacts of driving and the number of miles traveled by people who drive**
  One approach in the development of this Plan is to eventually replace driving trips with walking trips, especially for short distances. Paired with residents who take transit service, this strategy can help reduce the environmental impacts of people who drive and help reduce congestion.

PLANNING PROCESS

As the recent COVID-19 pandemic demonstrated, the need to access safe and convenient spaces for physical activity are more important than ever. This Plan identifies opportunities to make Pasadena's streets safer and more active. More specifically, through detailed analyses and community input, the Pedestrian Transportation Action Plan outlines key opportunity corridors and recommendations that can have the most impact towards improving connectivity, access, safety, and equity.

The City and project team conducted a robust community outreach effort and engaged with the Pasadena community during each phase of the Plan development. This included strategic input from the City and project's Advisory Committee, as well as feedback from the community- at-large. Public outreach and engagement efforts, detailed in Chapter 3, provided opportunities for the Pasadena community to provide feedback on specific locations and issues of concern and preferred pedestrian improvements.

	1 Existing Conditions & Data Analyses	2 Preliminary Recommendations	3 Draft & Final Plan
Plan Development	Planning & Policy Review Existing Conditions Analysis Crash Analysis Walking Trip Potential Analysis Crosswalk Analysis	Prioritization Criteria Prioritization Analysis Opportunity Corridors Draft Recommendations	Final Recommendations Implementation Strategy Cost Estimates Draft & Final Plan
Outreach & Engagement	Community Meeting Advisory Committee Meeting Focus Group Sessions Project Survey	Community Meeting Advisory Committee Meetings Walk Audits Community Pop-ups	Community Meeting Advisory Committee Meeting Online Draft Review

Table 1: Planning Process & Phases

2

Pasadena Today

Existing Conditions

Pasadena Today

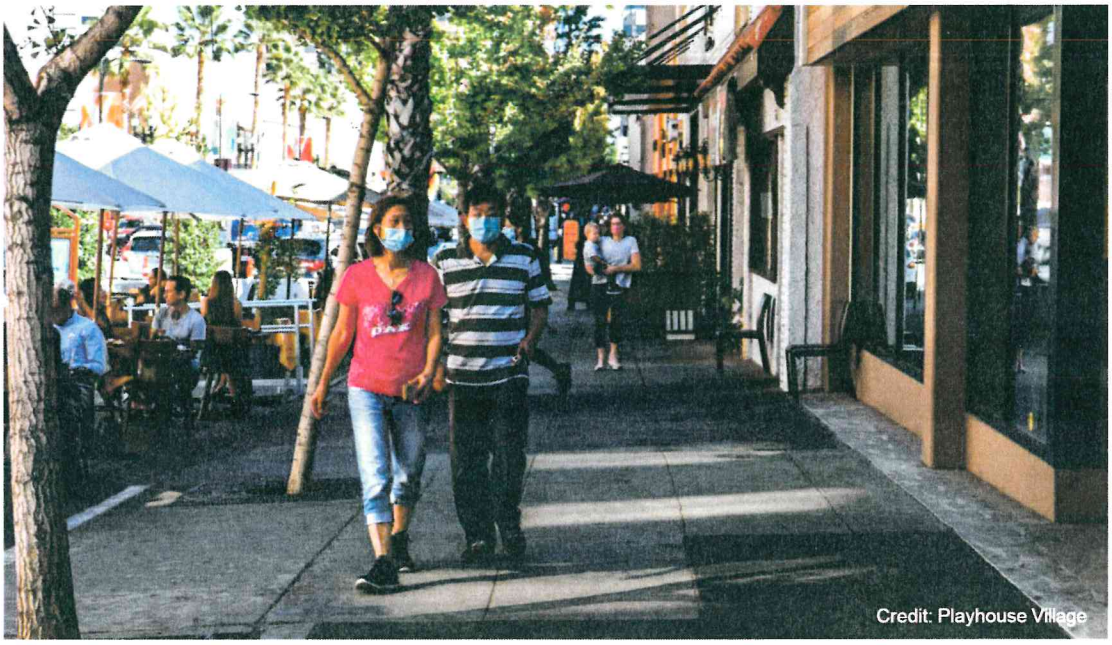
This chapter presents a snapshot of what it is like for people walking in Pasadena today, including a look at existing pedestrian infrastructure, walking trip potential, and pedestrian-related traffic collisions.

Existing Pedestrian Infrastructure

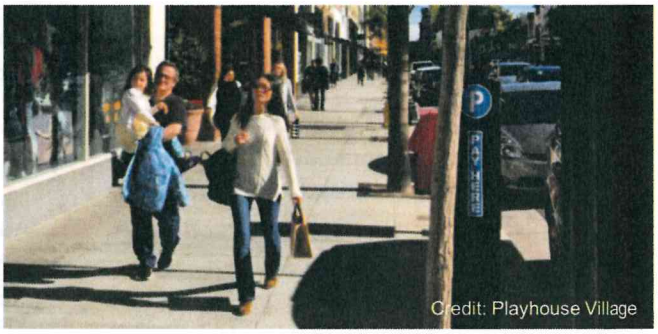
SIDEWALK NETWORK

Primarily made up of sidewalks, off-street walkways, and some shared-use paths, Pasadena's current pedestrian network benefits from its large and vibrant downtown and grid of neighborhoods and commercial corridors. While it is relatively well-connected and paved, the pedestrian network still includes several gaps, including locations where tree roots lift sidewalk panels, short sections with missing or badly damaged sidewalks, or streets that only have a sidewalk along one side.

At the time of this study, comprehensive sidewalk data was not available for analysis. As the City moves towards improving pedestrian infrastructure and implementing priority projects in the future, additional data and inventory on Pasadena's sidewalk conditions in its sphere of influence can provide insight into the quality of the citywide pedestrian network and where to focus sidewalk improvements.


Credit: Playhouse Village

The **existing sidewalks** in the **commercial districts** are well-paved, wide, and are furnished with pedestrian amenities. The sidewalk pavement in some locations consists of pavers to improve the overall aesthetics of the pedestrian realm.



The **existing sidewalks** in **residential areas** are typically paved along both sides of the street. In cases where there is only a sidewalk on one side of the street, it is considered a pedestrian network gap. Sidewalks are typically between 4-5 feet wide but may be wider along major arterials or along commercial areas.

Pasadena has a few **trails or share-use paths** within its city limits. The Arroyo Seco Trail, located in the western area of Pasadena, is the City's longest trail. This trail is made up of a mix of paved concrete, dirt, and gravel and connects to several parks, neighborhoods, and to the Rose Bowl stadium.

Paved and unpaved off-street walkways provide connections and routes through city parks, plazas, and private institutions like California Institute of Technology and Pasadena City College.

CONNECTIVITY AND CROSSWALK QUALITY

Whether walking is for commuting, recreation, or getting to transit, connectivity is key to creating direct routes for pedestrian travel. A connected transportation network is one with a high number of intersections, short distances between street crossing opportunities, and few dead-end street or cul-de-sacs.[1] When connectivity improves, travel distances between destinations decrease and more direct routes increase. This in turn creates more route options and increases the likelihood that people will walk.

The presence and quality of crosswalks are important components of connectivity. To better understand the level of stress a typical pedestrian may experience while crossing the street, the project team conducted a crosswalk analysis using roadway and crossing characteristics data (as follows):

- Traffic volume
- Number of vehicle travel lanes
- Functional roadway classification
- Posted speed limit
- Traffic control device (presence and type)
- Crosswalk markings (presence)
- Locations where crossing is prohibited
- Mid-block crossing locations

The result of the crosswalk analysis is shown in **Map 1**. This map displays low-stress crosswalks as blue dots, high-stress crosswalks as yellow dots, and high-stress + detour crosswalks (crosswalk that require someone to walk over 600 feet to the nearest low-stress crossing) displayed as a red dot.

> "If marked crossings are too far apart, walking distances to get to or across a street may be excessively long and may result in pedestrians crossing where there are no marked crossings. Marked crossings should be spaced with a maximum of 600 feet between each."
>
> **City of Pasadena Pedestrian Crossing Treatment Guidance (2016)**

The majority of crosswalks in the City were found to be low-stress. However, these locations are typically along residential streets or at controlled crossings of streets with lower speed limits and traffic volumes. Crosswalks in the downtown business district are also generally shown as low-stress because of the presence of signalized intersections (controlled crossings) and posted speed limits being less than 40 mph. While data on actual traffic speeds was not available for this analysis, there is general sentiment in the community that people drive at higher speeds than the posted limit.

There are several corridors where there are long stretches of high-stress crossings, mainly located along arterial multi-lane roadways and at uncontrolled intersections.

The crossing analysis assumptions, criteria, data sources, and methodology are further detailed in **Appendix A - Existing Conditions Technical Memo**.

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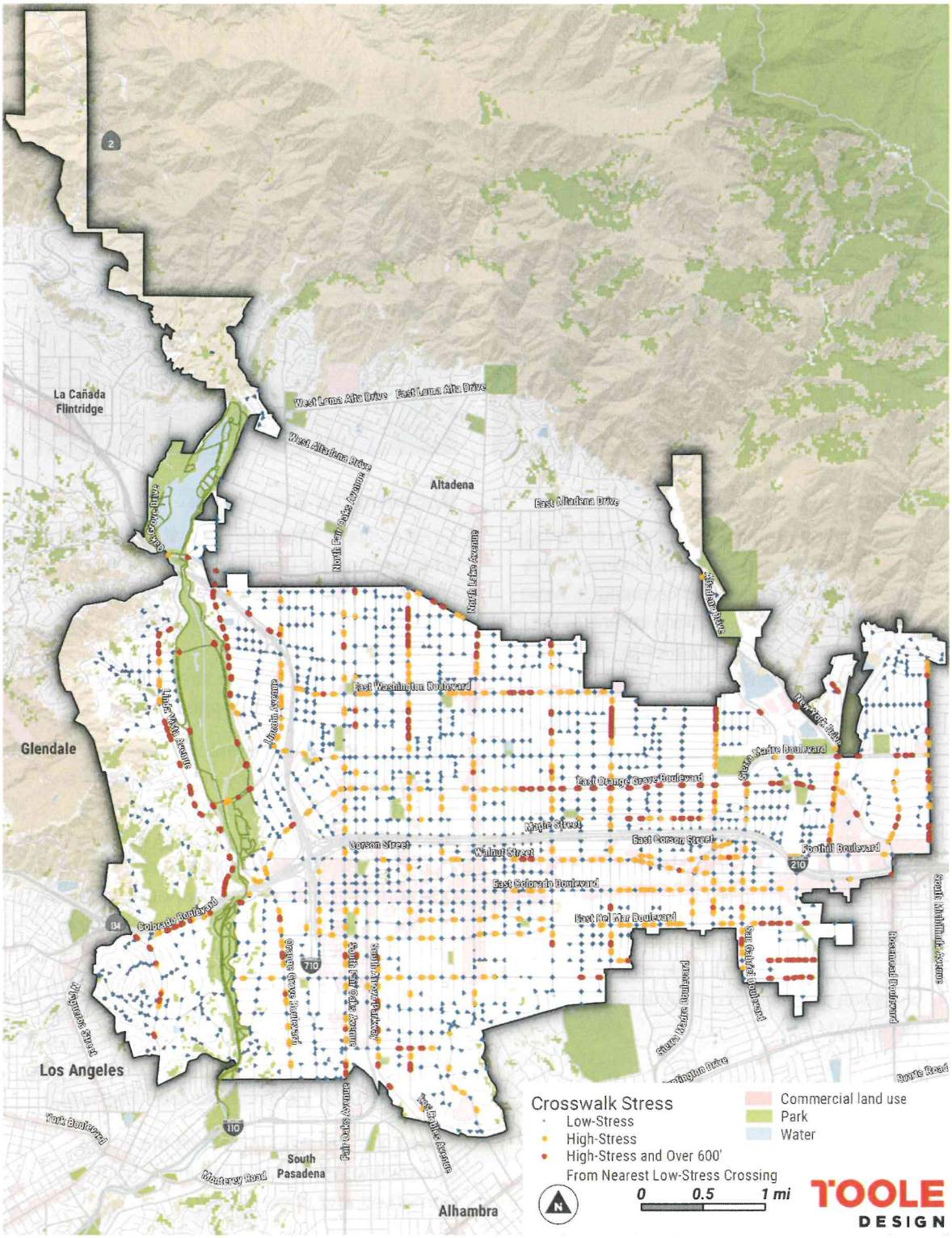
1. Transportation Efficient Communities. Plan for Street Network Connectivity. 2016

Map 1: Crosswalk Stress Analysis



GIS Data sources: City of Pasadena, aerial imagery.

Controlled Crossings

As part of the crosswalk analysis, crossings at signalized or stop-controlled intersections (also known as controlled crossings), were evaluated using two primary criteria – the presence of crosswalk markings and the speed of the roadway being crossed.

Marked controlled crossings along roadways 35 mph or lower are considered lower stress, and 40 mph or greater is considered higher stress. Unmarked controlled crossings where the street is 30 mph or less are consider low stress, while 35 mph is scored high stress (see **Figure 1**).

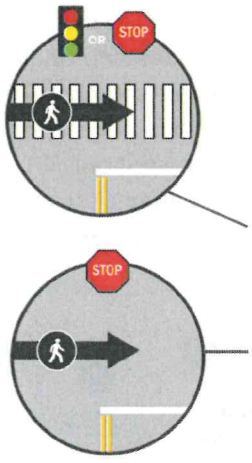
In most cases, pedestrian crossings at signalized intersections have marked crosswalks along each leg (unless crossing is prohibited).

Uncontrolled Crossings

Level of stress when crossing at unsignalized intersections (or uncontrolled crossings), considers whether there are crosswalk markings and pedestrian crossing islands, the number of lanes to be crossed, Average Daily Traffic (ADT) of the street being crossed, and the posted speed limit.

For uncontrolled locations with marked crosswalks, the presence of a crossing island increases the ADT threshold for what is considered a low-stress crossing, but only for locations where two to three lanes are being crossed. Where there are four or more lanes to be crossed, the presence of a crossing island is not considered a less stressful crossing due to the multiple threat scenario (when a driver in one lane stops for someone crossing the street, but those in other lanes may not) and negligible differences between observed driver yielding rates (see **Figure 2**).

Speed has a greater impact on the stress of crossing when that crossing is both unmarked and uncontrolled.

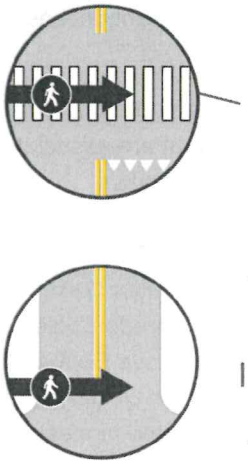


Controlled Crossings

Crosswalk Type	Number of Lanes	Speed (MPH) < = High	30	35	40	45+
Marked	Any					
Unmarked	Any					

low stress | high stress

Figure 1: Crossing at Signalized or Stop-Controlled Crossings (Crosswalk Stress Criteria)



Uncontrolled Crossings

Crosswalk Type	Crossing Island	Number of Lanes	ADT	Speed (MPH) < = 25	30	35	40
Marked	No	2-3	< 8,000				
			8,000+				
		4+	< 5,000				
			5,000+				
	Yes	2-3	< 10,000				
			10,000+				
		4+	< 5,000				
			5,000+				
Unmarked	No	2-3	< 5,000				
			5,000+				
		4+	< 5,000				
			5,000+				

low stress | high stress

Figure 2: Crossing at Uncontrolled Crossings (Crosswalk Stress Criteria)

Crash Analysis

Improving conditions for people walking also means understanding pedestrian safety needs. Crash data is critical to evaluating traffic safety and where safety improvements may be needed. While many parts of Pasadena are highly walkable and provide a safe and comfortable walking environment, even locations with sidewalks and crosswalks experience pedestrian collisions.

High injury network mapping and understanding the crash causation of serious and fatal injury pedestrian crashes in Pasadena is the first step to applying the Safe System Approach (see page 44-45).

To better understand the collision history in Pasadena, crash data from five years of available data from the Transportation Injury Mapping System (TIMS) (2015 to 2019) was reviewed. Data for the years 2020 through 2023 were not used as they were still provisional at the time of this study, as well as traffic variations due to the COVID Pandemic. The following section provides a summary of a pedestrian collision analysis conducted for the City of Pasadena. For additional details on the analysis methodology, data source used, and other trends, refer to **Appendix B – Pedestrian Crash Analysis.**

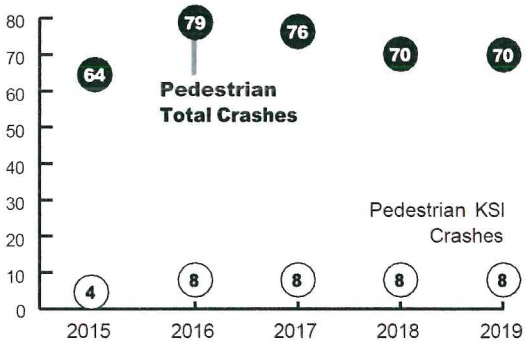
BY MODE

When looking at how frequent and severe crashes are by mode, motor vehicle crashes accounted for the largest share of overall crashes (76 percent of crashes). This finding is expected as there are substantially higher volumes of motor vehicles compared to other modes of travel in Pasadena.

When looking at crashes that resulted in a KSI (killed or severe injury) collision, 2 percent of motor vehicle crashes resulted in a fatality or severe injury.

Pedestrians and motorcyclists tend to have the most severe outcomes when involved in a crash. Ten percent of pedestrian-related crashes and 20 percent of motorcycle-related crashes resulted in a death or serious injury. Although pedestrians represent only 11 percent of overall crashes, they also account for 27 percent of all KSI crashes (see Table 2).

BY YEAR



There are no significant or discernible patterns related to pedestrian crash frequency or injury severity on a year-to-year basis. The number of crashes had minor fluctuations ranging from 64 crashes in 2015 to 79 crashes in 2016 and there were generally 8 KSI crashes on an annual basis.

LOCATION

Crashes are most concentrated along major roads and near locations that are associated with higher levels of trip generators (commercial, retail, restaurants, etc.). Crashes tend to be centrally located in Pasadena between Allen Avenue and N Fair Oaks Avenue. Corridors like E Colorado Boulevard, N Lake Avenue, E Orange Grove Boulevard, E Washington Boulevard, N Fair Oaks Avenue, and Los Robles Avenue had the highest concentration of pedestrian crashes (see **Map 2**). With the exception of Los Robles Avenue, these streets are generally wide streets, have higher vehicles volumes, and have mixed land

uses along the corridors. Los Robles Avenue is generally residential aside from the portion of the corridor that runs west of the Playhouse District area. While high crash corridors in **Map 2** are not normalized by volume or exposure, they reveal patterns in the network that increase pedestrian fatality risk.

Table 2: Crashes by Mode (source: 2015-2019 TIMS)

Mode	# of Crashes	% of Crashes	# of KSI	% of Total KSI	% KSI per Mode
Automobile	2,407	76%	57	44%	2%
Pedestrian	359	**11%**	36	**27%**	10%
Bicyclist	273	9%	10	8%	4%
Motorcycle	137	4%	28	21%	20%
Total	**3,176**	**100%**	**131**	**100%**	**4%**

Traffic speed directly impacts the chances of surviving a crash. While this is true for all modes, pedestrians are especially vulnerable and have a high chance of being seriously injured or killed when speeds reach moderate levels. A pedestrian involved in a crash with a vehicle traveling 20 mph has a 5 percent chance of suffering a serious injury or being killed, while at 40 mph the risk is 85 percent, as illustrated **below in Figure 3**. Higher speeds also increase the likelihood of a crash as stopping distances are greater at higher speed. As a result, speed reduction is a critical element in reducing pedestrian injuries.

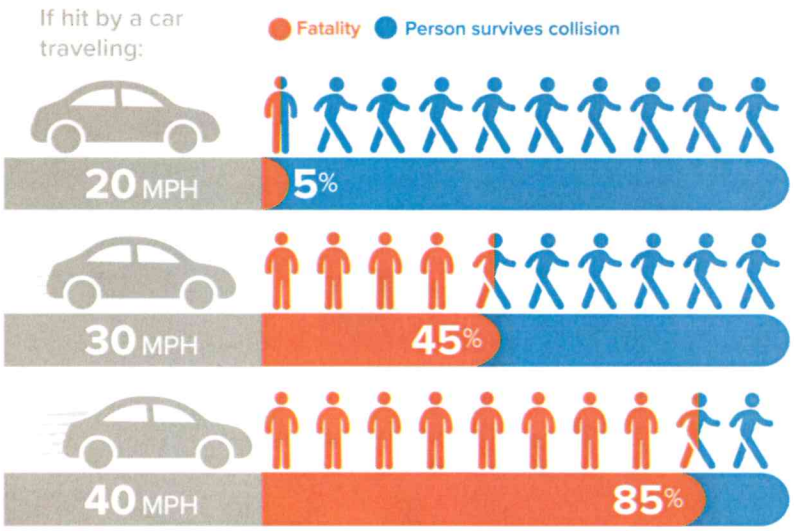
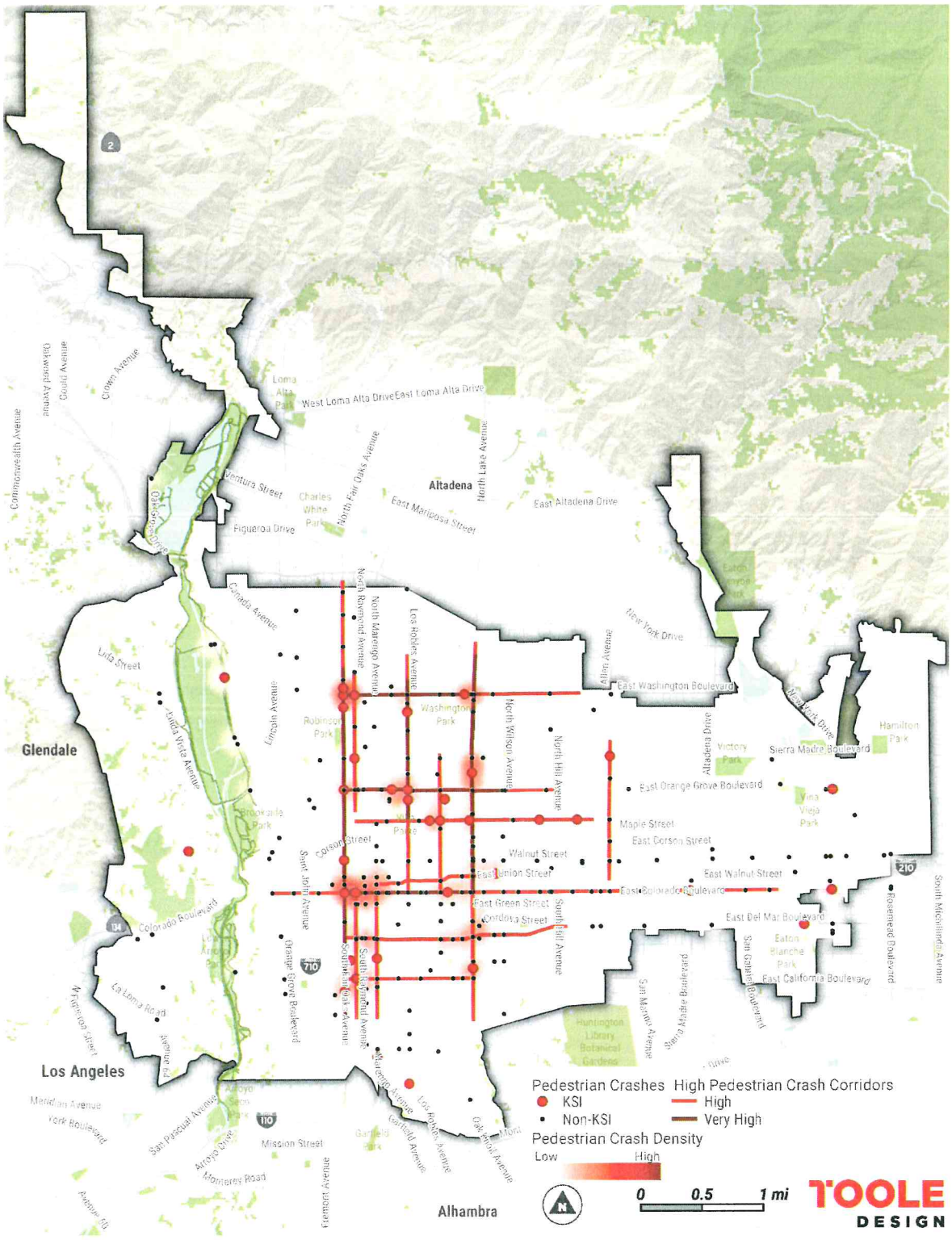


Figure 3: Speed and Severity of Impact

(Source: National Traffic Safety Board. Reducing Speed-Related Crashes Involving Passenger Vehicles. 2017 and Smart Growth America. Dangerous by Design. 2021.)

Map 2: Pedestrian Crashes - High Pedestrian Crash Corridors & Pedestrian KSI Locations



Data source: TIMS 2015-2019

Pedestrian Trip Potential

In addition to evaluating the City's crosswalk stress level and historic collisions, the project team also conducted a **pedestrian trip potential analysis** to determine where people would be most likely to walk in Pasadena if pedestrian infrastructure was improved. When a person walks or uses a mobility aid device from one destination to another, it is considered a pedestrian trip.

Map 3 shows the locations in Pasadena where people would most likely walk if it were convenient and comfortable to do so. Although counts of existing walking trips can provide relatively good insight, these existing trips already internalize the impacts of today's infrastructure for walking. As a result, the walking trip potential analysis is calculated independent of existing facilities and rather, highlights areas where improving pedestrian conditions would have the greatest potential to increase walking.

HIGHER POTENTIAL

Areas with more diverse land uses, higher population densities, and traditional street grids tend to have higher walking trip potential due to their development patterns that support pedestrian travel. The Downtown business district and areas with the highest population densities directly north of I-210 also have some of the highest trip potential scores.

LOWER POTENTIAL

The area west of I-210 scored substantially lower than areas to the east. This primarily reflects the different land uses and development patterns between the west side of the City compared to the central and east side. The area's land use is primarily open space and single-family residential. Areas that have a greater mix of land uses are positively associated with pedestrian trips. Additionally, the street network in this area is not a traditional grid but is made up of curvilinear streets with a large number of cul-de-sacs and dead-end streets. This type of roadway network can lead to long, non-direct trips for people who would like to travel on foot and not in a motor vehicle.

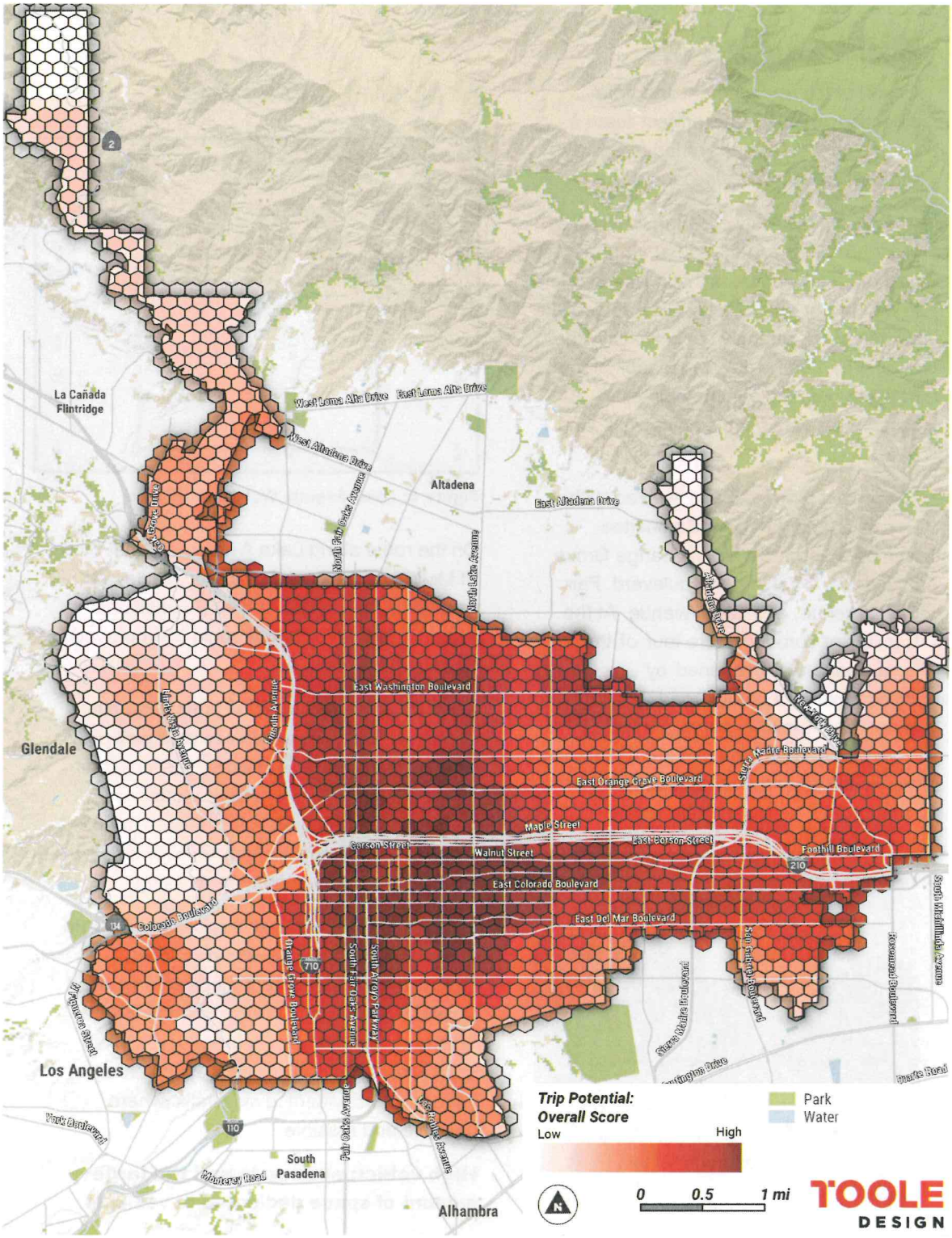
The individual inputs used to create the composite trip potential score can be found in **Table 3** and further detailed in **Appendix C - Pedestrian Trip Potential Analysis**.

Credit: Playhouse Village

Table 3: Walking Trip Potential Variables

Variable	Source	Description	Weight
Intersection Density	(Derived from City's centerline data)	Research into travel mode choice has shown that intersection density is highly correlated with increased bicycling[1] and walking[2]. Locations with a high number of intersections with three or more legs tend to have better connectivity, higher densities, and more destinations; therefore, these are locations in which utilitarian trips are more likely to occur. Intersections are weighted to better reflect how connected they are to routes. Intersections with fewer legs, at cul-de-sacs, or connected to dead-end street receive lower weight.	10%
Population Density	American Community Survey 2019	Population density is another major determinant for both walking and biking trips - the more people in an area, the more people will be walking.	30%
Transit Service	LA Metro, LADOT Commuter Express, Foothill Transit, Glendale	First and last mile connections to and from transit (bus and rail) are sources of walking trips. Stops within 0.25 mi of the hexes reflect a typical distance people are willing to walk to transit[3]. Bus stops with more routes served receive a higher weight.	10%
Population Below the Poverty Line	American Community Survey 2019	Research indicates that people living in households below the Federal poverty line are more likely to depend on transit, walking, or biking to get around[4].	10%
Employment Density	Longitudinal Employer-Household Dynamics (LEHD), 2018	Employment density is another major determinant for walking and biking trips. People walk to areas with high employment for a variety of reasons, including jobs, shopping, or errands. Moreover, some areas with high employment see a lot of midday walking activity.	20%
Destination Density	Business License Data, Park, and Civic Destinations	Destinations are places that people would want to walk to. They include commercial destinations such as stores and restaurants, recreational destinations such as parks and playgrounds, and community destinations such as community centers and libraries.	20%

Map 3: Walking Trip Potential



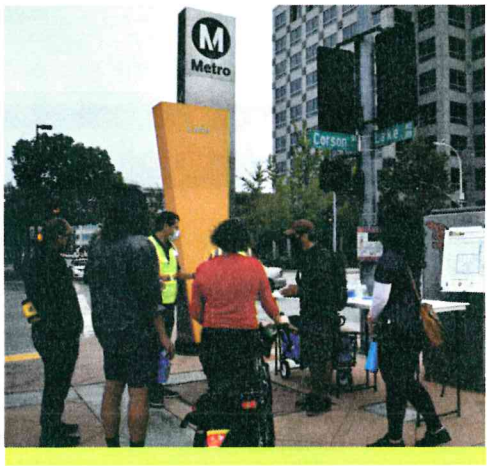
Data sources (see Table 3): City of Pasadena, ACS 2019, LEHD 2018, LA Metro, LADOT, Foothill Transit, Glendale Transit, aerial imagery.

Walk Audits

As part of the engagement and data collection process, the project team also developed routes around three key corridors to conduct "walk audits".

A walk audit is a short group walk on a predetermined route to observe and make note of safety concerns that create barriers to walking or use of a mobility device like a wheelchair. During what is typically the busiest part of the day, these took place between morning commute times to observe the way people drive, walk, and bike.

The project team met and walked with City staff and Advisory Committee members on routes along Orange Grove Boulevard, Washington Boulevard, Fair Oaks Avenue, and Lake Avenue. At the time, these corridors were four of the most frequently mentioned by the community as major roadways needing pedestrian improvements. Based on the project's prioritization criteria and analysis, they were also identified as opportunity corridors.



NEAR LAKE AVENUE

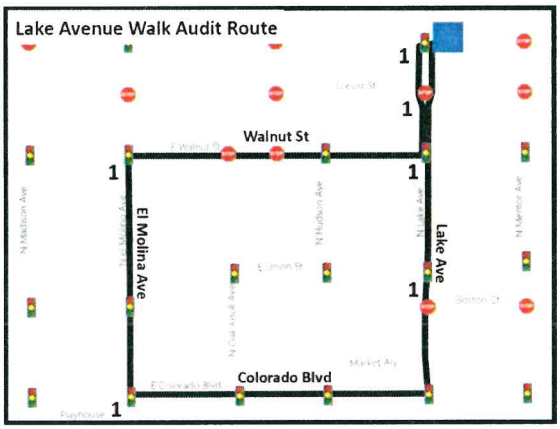


Figure 4: Lake Avenue Walk Audit Route

On the route along Lake Avenue, Walnut Street, El Molino Avenue, and Colorado Boulevard, participants observed multiple conditions where safety and comfort could be improved. Observations included:

Poor alignment, lack of visibility, and conflicts between drivers and people walking at intersections (see locations marked "1" in Figure 4). Participants recommended curb extensions, curb ramps, crosswalk realignment, high-visibility crosswalks as ways to improve safety at crossings.

Sidewalk conditions were uncomfortable due to their narrow widths, the presence of litter, a lack of shade, and limited lighting. Possible improvements recommended by the group include adding lighting and street trees, increased sanitation activities, and widening sidewalks where possible and feasible.

High vehicular speeds and the large amount of space dedicated to vehicles

reduce safety for people walking. Members of the group noted reconfiguring areas along Walnut and Lake Avenue to remove extra turn lanes could improve pedestrian safety. Participants also expressed concern over traffic noise along Lake Avenue.

NEAR LA PINTORESCA PARK

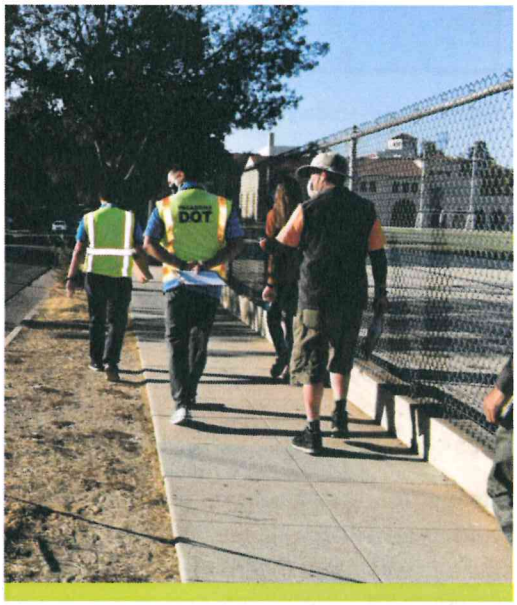
Figure 5: La Pintoresca Park Walk Audit Route

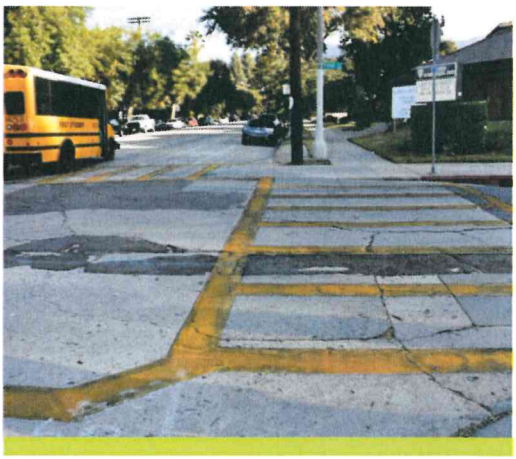
For the route along Penn Street, Marengo Avenue, Washington Boulevard, Fair Oaks Avenue, and Howard Street, participants similarly noted unsafe crossings and sidewalk safety issues along the route, including:

Crossing issues included inadequate curb ramps and poor visibility; participants recommended curb ramp improvements, curb extensions, and midblock crossing options to improve safety.

Uneven sidewalks and limited lighting at night were noted to reduce pedestrian comfort; the group recommended prioritizing sidewalks improvements on Raymond Avenue due to heavy pedestrian traffic from nearby schools.

Driver behavior was also a concern – participants observed speeding on Penn Street and Marengo Avenue, as well as a lack of driver compliance to posted signs. The group recommended reconfiguring Washington Boulevard and Fair Oaks Avenue to prioritize people walking over people driving.





NEAR JEFFERSON PARK

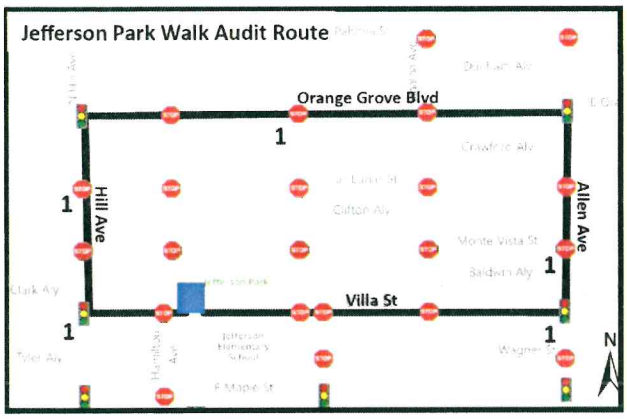
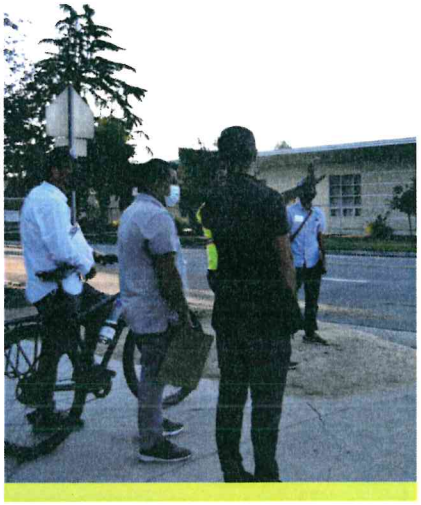


Figure 6: Jefferson Park Walk Audit Route



For the route along Orange Grove Boulevard, Allen Avenue, Villa Street, and Hill Avenue, the area along the route includes Jefferson Park and Jefferson Elementary School, destinations that potentially increase the number of pedestrian and bicycle trips along nearby streets. Participants recommended prioritizing crossing improvements and safe and connected bike facilities.

Crossings along all corridors on the route need improvement, with specific concerns at the locations marked with "1" in Figure 6. Potential improvements suggested by participants included curb extensions, flashing beacons, leading pedestrian intervals, and midblock crossings between signals.

Speeding was noted as a concern, as the group observed excessive vehicle speeds on Villa Street, Hill Avenue, Orange Grove Boulevard, and Allen Avenue. Participants recommended increased signage, better enforcement, and tightening curb radii at intersections. They also proposed reconfiguring the intersection of Sierra Bonita Avenue and Orange Grove Boulevard (removing the left turn lane and adding signalization), as well as reconfiguring the entire Orange Grove Boulevard corridor to better support pedestrian use.

Policy & Planning Framework

The project team reviewed several local and regional plans to better understand the transportation planning context, projects, and priorities for the City. These plans were selected because they provide relevant guidance to Pasadena's process, and incorporating their goals and policies helps align Pasadena's efforts to broader local and regional planning objectives.

The plans reviewed here echo many of the same vision and goal themes, including:

- Multimodal transportation and promoting active modes over driving
- Healthy communities
- Promoting a vibrant economy
- Sustainability and climate resilience

SCAG Connect SoCal: This Plan embodies a collective vision for the region's future, building a planning foundation for how to accommodate growth and direct future transportation investments. It details regional challenges, specifies shared transportation and land use goals, and identifies strategies to realize a more sustainable region.

Pasadena General Plan Mobility Element: Pasadena envisions a more livable and economically strong city for the 21st Century. As oneof eight guiding principles for the General Plan Update: Pasadena will be a city where people can circulate without cars. The vision relies upon an integrated and multimodal transportation system that provides choices and accessibility for everyone living and working in the City.

2006 Pasadena Pedestrian Plan: Provides the overarching framework for this plan as a guiding tool that preserves the walkability of pedestrian areas, improved design to develop pedestrian-projects, integrate pedestrian improvements into street maintenance and traffic management programs, and public education. This comprehensive framework is aimed at improving safety and encourage walking.

Pasadena Street Design Guide: The Street Design Guide is the implementation mechanism of the City of Pasadena's complete streets policy. It is a resource for City staff, policymakers, developers, and the public. The approach to street design described in this guide – the form-based approach – involves designing the form of the street to meet the use and character intended for it.

Pasadena 2021 – 2025 Capital Improvement Projects (CIP) List: As part of the City's annual CIP budget process, the Department of Public Works sends out a "Call for New Projects" which provides the City Council, Commission members, City employees, and the public with a formal means for submitting new project ideas. The projects ideas are then reviewed and prioritized for possible inclusion in the CIP.

Pasadena Pedestrian Crossing Treatment Guidance: This 2016 report outlines pedestrian cross treatments, guidance, and recommendations based on best practices for treatments at controlled and uncontrolled crossings. Included in the report are a set of treatments with an implementation strategy.

California Walks Pedestrian Safety Report: In 2019, the City of Pasadena, California Walks, and UC Berkeley SafeTREC, in collaboration with Pasadena Complete Streets Coalition and Stop4Aidan, conducted a

Community Pedestrian and Bicycle Safety Training. The workshop included walk audits near Colorado Boulevard, Lake Avenue,
Del Mar Boulevard, Arroyo Parkway, and participants developed the following two recommendations: adopt an equity lens in the development of the Pedestrian Transportation Action Plan and explore the use of existing funding mechanisms for pedestrian improvements.

Specific Plans: Are design to implement the goals and policies of the General Plan. There are eight specific plans in the City that regulate development and manage growth. These plans include neighborhood specific design and development standards that reflect the community's vision.

Opportunities & Challenges

Pasadena has many advantages and opportunities for people getting around by foot. However, the community also faces several barriers when it comes to creating safer and more comfortable conditions for people walking. The following list highlights key strengths and challenges that informed the development of recommendations as part of this Pedestrian Transportation Action Plan.

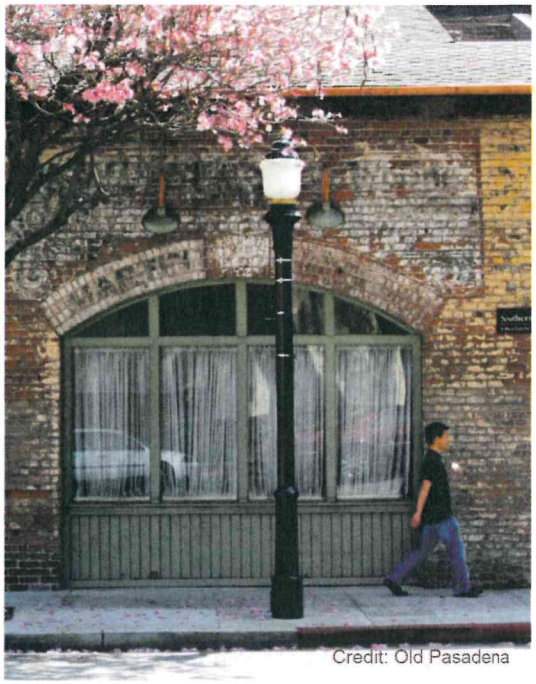
STRENGTHS

Sidewalk Network: Pasadena has a relatively complete pedestrian network and facilities are well-connected between residential areas and commercial corridors.

Walking Trip Potential: With a high density of intersections, proximity to transit, commercial destinations, and other uses, many parts of Pasadena, including the northwest, central, and eastern portions of the City, have high walking trip potential. With pedestrian improvements, these areas and key corridors have a high likelihood of helping replace short driving trips with walking trips.

Low Crosswalk Stress: A high density of intersections and areas with a more grid-like network also mean that many existing crosswalks in Pasadena are low stress and encourage pedestrian activity.

Shaded & Low Volume Residential Streets: With tree canopy and relatively low traffic volumes, residential streets in Pasadena often provide a comfortable experience for people walking for exercise or physical activity.


Credit: Old Pasadena


Credit: Old Pasadena

Active Commercial & Downtown Areas: Old Pasadena, the Playhouse Village District, the Downtown core, Lake Avenue, and other corridors with a high concentration of local businesses are vibrant local destinations that are attractors of pedestrian activity.

CHALLENGES

High Crosswalk Stress & Busy Arterials: Although residential streets often see low traffic volumes, Pasadena's main arterials and even local connectors are often times environments with high-speed conditions, stressful crossings, and a lack of pedestrian-supportive infrastructure. Most crosswalks were found to be low stress, but a significant amount of high stress crossings exist along several major roadways.

Long Blocks Without Crossings: Some of Pasadena's main arterials consist of long blocks with infrequent opportunities for people to safely cross the street, especially on high-speed and multi-laned roadways.

Damaged or Uneven Sidewalks: Lifted or cracked sidewalk pavement create tripping hazards for people walking, but also uneven paths of travel for people using a mobility device like a wheelchair.

ADA Access: Many of Pasadena's intersection corners or crosswalks need to be upgraded to meet today's accessible design standards. Curb ramps should include detectable warning surfaces and also should align directionally with where people are crossing.

PLANNED PROJECTS & FUTURE IMPROVEMENTS:

The City has been planning, designing, or implementing a number of projects that aim to make walking in Pasadena safer and more comfortable. These projects include, but are not limited to:

- Cordova Street Enhancements
- North Lake Avenue Traffic and Pedestrian Safety Enhancement Plan
- Rosemont Avenue Neighborhood Traffic Management Program
- Allen Station A Line (formally Gold Line) Safety Enhancements
- Union Street Protected Bike Lane
- Avenue 64 Complete Streets Project
- North Hill Avenue Complete Streets Project
- Pedestrian Safety at Signalized Intersections Project
- Pasadena Avenue and St John Avenue Complete Street Project
- Columbia Avenue Complete Street Project

While existing and planned projects help further improve walking conditions for Pasadena, it is clear that more comprehensive recommendations for a safer and more walkable Pasadena must leverage identified opportunities, constraints, and feedback from the community.

3

Community & Stakeholder Engagement

Community & Stakeholder Engagement

Given the uncertainty around the COVID-19 pandemic at the time of the project, a variety of outreach and engagement strategies were needed to help minimize barriers to participation and obtain the broadest possible community input. Outreach relied on close ties to the local community, formed in part by Day One's (the project team's local engagement specialist) presence in Pasadena, but also diligence in utilizing both print and digital mediums to promote engagement opportunities. To ensure robust participation and address the challenges of the pandemic, the project team conducted both virtual and in-person (socially-distant) activities throughout the project development process.

Project Engagement Goals

Throughout the project, outreach and engagement focused on:

1. Raising project awareness of what a "Pedestrian Plan" is and how local residents and stakeholders can participate in its development.
2. Engaging the community in the planning and decision-making processes by listening to concerns, needs, and priorities for improving pedestrian conditions in Pasadena.
3. Regularly updating residents wishing to participate in the planning process about upcoming opportunities to weigh in on plan development.
4. Educating the community about evidence-based strategies to improve walkability and pedestrian safety.

Who was Involved?

The public and stakeholder engagement process invited residents from diverse communities and backgrounds to participate in the Plan's development and to remain informed as the project progressed. These included:

1. Pasadena residents, students, community members, and key stakeholders
2. Pasadena residents who rely on walking as a primary form of transportation
3. Pasadena residents who are at higher risk to pedestrian injuries (e.g., mobility impaired; people of color; older adults; young people; etc.)


Opportunity Corridors
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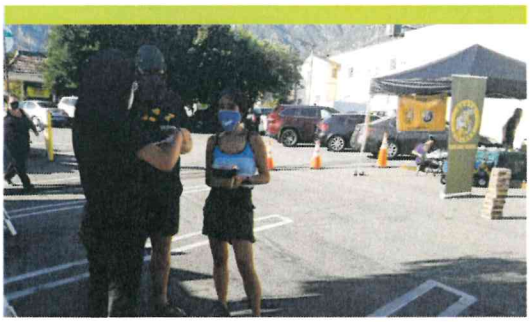
NO MASK
NO SERVICE



PUBLIC ENGAGEMENT GOALS

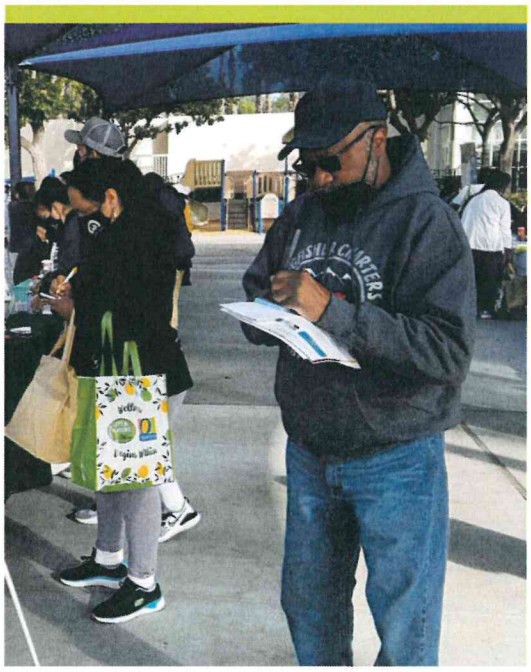
1. Raising awareness and knowledge on Pedestrian Plans
2. Engaging residents in the planning and decision-making processes.
3. Educating the community on evidence-based strategies to improve walkability and pedestrian safety

OUTREACH & ENGAGEMENT TOOLKIT

- Project Survey
- Focus Groups
- Advisory Committee Meetings
- Community Meetings
- Stakeholder Workshops
- Pop-ups
- Walk Audits
- Printed & Digital Flyers, Posters, Community Newsletters, etc.

WHO WAS INVOLVED?

1. Pasadena residents, students, community members, and key stakeholders
2. Pasadena residents who rely on walking to get around
3. Pasadena residents who are at higher risk to pedestrian injuries




PUSH
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Project Survey

As part of project's initial outreach and engagement phase, a project survey was developed for the Pasadena community to provide input on walking conditions and priorities in the City. The survey was conducted primarily online, but with a paper version of the survey that was also made available at two pop-up events. Both the online and in-person surveys were available in English and Spanish.

Overall, 1,612 survey responses were collected between the months of February and May 2021. Participants largely consisted of people who live (91.8%) and work (12.2%) in Pasadena, with a fairly even distribution across most age groups.

KEY FINDINGS

COVID-19 Impacts

Pasadenans found themselves walking for recreation (enjoyment and exercise) more frequently during the COVID-19 pandemic than before. Almost 60% of participants indicated that they walk every day (at the time of the survey). Before the pandemic, only 43% of participants said that they walked every day.

On the other hand, during the COVID-19 pandemic, there was a general decrease in walking activity to get to a destination (work, school, train, bus, shopping, etc.) in Pasadena. Given public health guidelines and restrictions during this time, this was an expected finding. Still, over half of participants indicated that they either walk every day or at least once per week to get somewhere both before (51.2%) and during (53.8%) the pandemic.

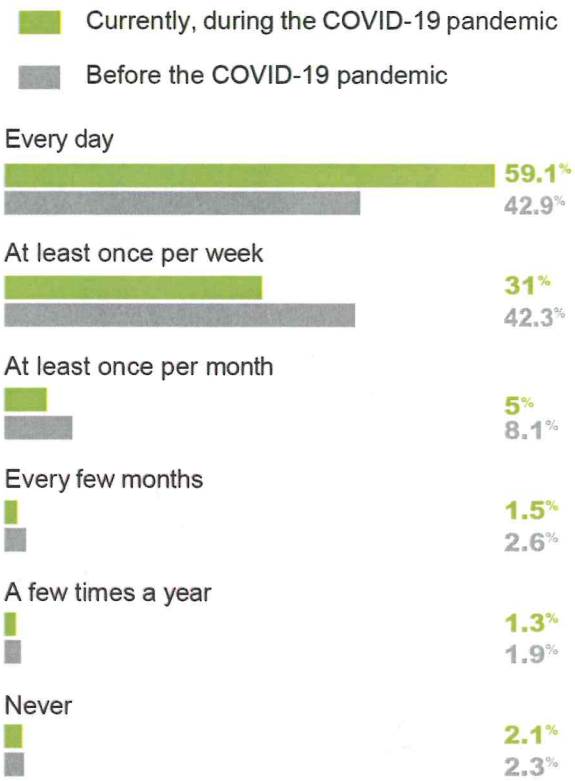
Biggest Challenges People Face Walking in Pasadena

1. People driving too fast on busy streets
2. People driving too fast on residential streets
3. Not enough safe places to cross busy streets
4. Drivers not stopping for people crossing the street

Places Most Important to Improve Walking Conditions in Pasadena

1. Streets with the most pedestrian injuries and crashes
2. Areas that serve people who rely on walking the most
3. Along and across busy streets
4. Streets connecting people to public transit

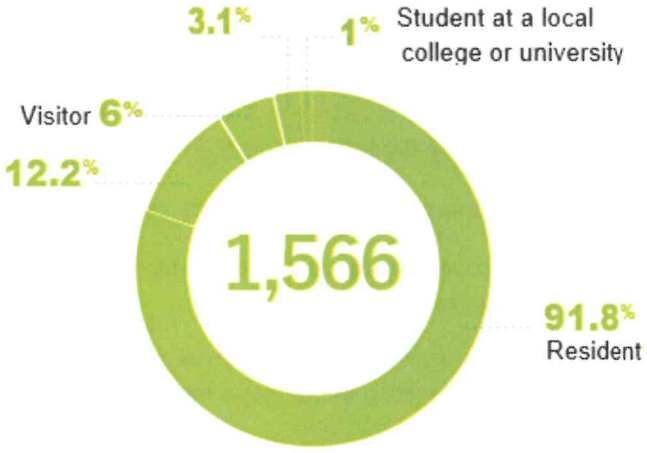
How Often People Walk in Pasadena for Recreation



How Often People Walk in Pasadena to get to a Destination

Survey Participants

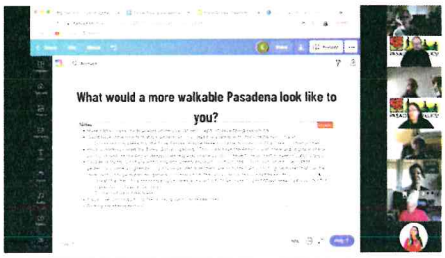
NOTE: There were a total of 1,612 survey participants, but 46 of those participants chose not to answer this question.



Focus Groups

Equity and inclusive representation were pillars in the development of this Plan. Although the project survey provides an overarching view of walking concerns and priorities for Pasadena, an additional nine virtual focus sessions were held between March and April 2021 with specific community groups in Pasadena to learn about their walking experiences. The sessions provided an opportunity to have a more in-depth discussion around key issues and needs for those whose voices were less represented in the project survey. Focus groups included:

- Spanish-speaking Residents
- Community Job Center Workers
- Disability & Accessibility Community
- Washington Middle School Students
- Pasadena High School Students
- Pasadena Senior Residents
- Women Residents in Pasadena



WHAT WE HEARD:

Most focus groups ranged in size from six to twelve participants. While discussions were initially focused on topics specific to each group, it often became more wide-ranging as each discussion progressed. Key takeaways from these sessions included:

1. Sidewalks are too often damaged or uneven
2. Streets that are currently unpleasant to walk on include: Fair Oaks Ave, Orange Grove Blvd, Los Robles Ave, Marengo Ave, Lincoln Ave, Washington Blvd, Raymond Ave.
3. Curb ramps should point towards crosswalks
4. Pedestrian lighting and more mid-block crosswalks are needed
5. Traffic speeds and driver behavior are a barrier to walking along major roadways

Meetings

In addition to the project survey and focus group sessions, the project team hosted several virtual meetings throughout the Plan development process.

ADVISORY COMMITTEE

The Advisory Committee was made up of representatives from a variety of Pasadena organizations, groups, and stakeholders. The goal of the committee was to provide local knowledge and input on pedestrian needs, gather feedback for direction of the project, and help ensure robust community participation in the development of the Plan.

Advisory Committee Meeting 1 (February 2021): The project team introduced the project and shared information on the scope and timeline, as well as upcoming public engagement opportunities.

Advisory Committee Meeting 2 (May 2021): The Advisory Committee and project team reviewed community engagement and planning efforts, project survey results, and initial outcomes of technical analyses.

Advisory Committee Meeting 3 (September 2021): The Advisory Committee and the project team discussed preliminary locations for prioritization and project features most applicable to challenges residents faced on streets and sidewalks.

Advisory Committee Meeting 4 (December 2021): The last Advisory Committee meeting included reviewing recommendations after considering community feedback at the end of the public engagement period. The meeting was also used to discuss next steps for the review of the draft plan.

THE PASADENA COMMUNITY

Three community-wide meetings were held during key stages of the project to both update the Pasadena community on ongoing efforts and provide interactive opportunities for public input and feedback.

Community Meeting 1 (June 2021): The project team highlighted key findings from the project survey, provided engagement updates, and reviewed the walking trip potential map and crosswalk analysis alongside community participants.

Community Meeting 2 (September 2021): A draft map and list of 10 priority corridors selected from the project's prioritization criteria were presented to the community for additional input and feedback.

Community Meeting 3 (January 2021): During the public's draft plan review process, the project team presented project recommendations and priority corridors based on all the feedback received and considered and outlined how to best provide feedback on the draft plan.

Stakeholder Workshops

In June 2021, the project team also organized and met virtually with two of City's key stakeholder groups: the business and school communities.

One workshop included local businesses and business associations like the Playhouse Village and Old Pasadena. The second workshop met with representatives from Pasadena Unified School District, CalTech, Art Center, Pasadena City College, and Pacific Oaks College.

WHAT WE HEARD:

1. Pedestrian crossings near campuses need improvement, particularly ones that are unsignalized or uncontrolled.
2. Mid-block crossings are needed along long blocks and distances between intersections
3. Lack of trees and shade make it uncomfortable for pedestrians to walk
4. Pedestrian safety improvements are needed near Metro A Line (formally Gold Line) stations

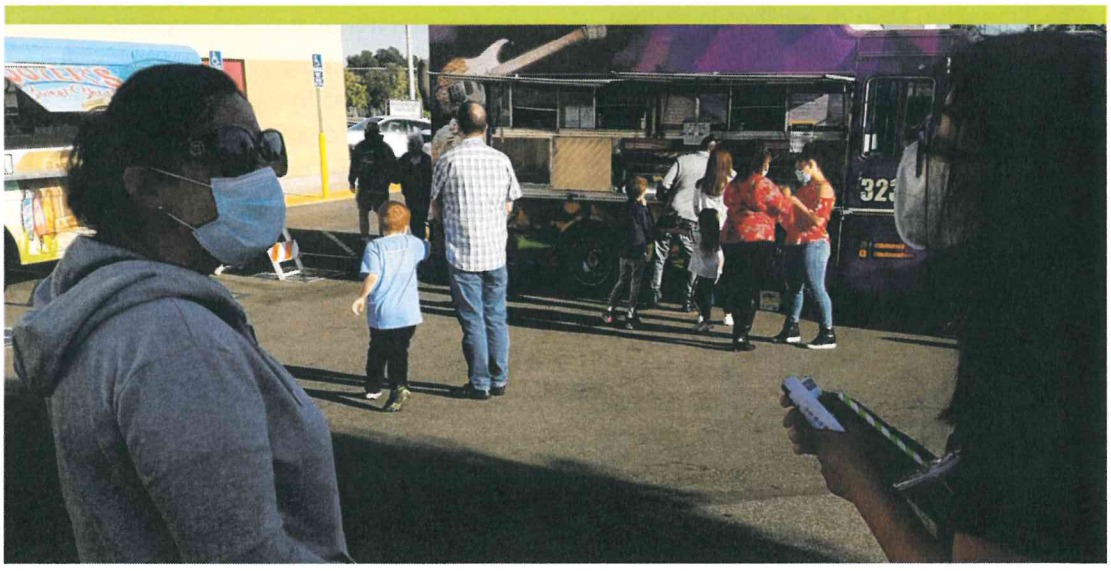
Community Pop-ups

While the project survey, focus groups, and community meetings were all largely conducted online or through virtual platforms, community pop-up tabling events provided a safe and interactive way for the project team to engage in-person with the Pasadena community.

Through the project development process, the project team hosted pop-ups at community events to gather feedback on pedestrian improvement types and potential project corridors. Pop-ups included:

- (April 2021) Rose Bowl
- (April 2021) Laemmle Theatre
- (August 2021) Movie in the Park, Grant Park
- (August 2021) Back 2 School Event
- (October 2021) Memorial Park Concert
- (October 2021) Victory Farmer's Market
- (November 2021) Resource Fair, Robinson Park

Along with these pop-ups, Day One utilized various other engagement efforts with their involvement on projects like the City's Safe Routes to School Program and COVID-19 Vaccination to promote upcoming engagement opportunities.



Community & Stakeholder Engagement Takeaways

The community engagement efforts for this plan covered a wide-range of existing challenges to walking and also developed high-level priorities to be included as project recommendations are developed. The following engagement takeaways shall help develop project recommendations:

Promote High-quality Sidewalk Conditions: Considering the project team did not have a full inventory of sidewalk conditions, the qualitative nature of the community engagement events highlighted the need for sidewalks and curb ramps to be in good repair, present, and accessible for all users. This plan focuses on high priority streets, but the development of an ADA Transition Plan or another inventory could support these efforts at a detailed, citywide level.

Control Speeding Along Busy Arterials: Speeding along busy streets is a primary concern for Pasadena residents according to the citywide survey and participants at the walk audits experienced the similar concerns, especially along wide arterial streets. Establishing a rhythm of stop controls or developing road reconfigurations can helps slow down traffic to encourage more walking trips.

Establish More Crossing Opportunities Along Long Blocks: Similarly, participants during walk audits noted the lack of marked crosswalks. In this instance, residents who have desire to cross outside of a marked crosswalk will do so. Establishing more frequent marked crosswalks can help decrease pedestrian collisions.

Ensure Shade and Pedestrian-scaled Lighting: Shade during the peak summer months and lighting at night are oftentimes concerns that are difficult to capture for pedestrian plans. Through ongoing conversations with community organizations, these concerns were brought to front and highlight a common need to feel comfortable and safe when walking in Pasadena.

Improve Access to Transit: Creating seamless pedestrian connections to local and regional transit is important for the Pasadena community. Not only should residents and visitors be able to easily start their trips on foot, the level of comfort, especially at local bus stops and near Metro A Line (formally Gold Line) stations, should encourage more walking trips as a way to commute longer distances and decrease needless single-occupancy vehicle trips.

4

Prioritization & Implementation

Prioritization & Implementation

This chapter identifies priorities for addressing pedestrian safety and access across the City. It highlights local and regional focuses, priority corridors for improvement, shares guidance and resources for implementation.

Local Priorities

As the City continues to improve walking conditions and experiences in Pasadena, local priorities should guide future pedestrian projects and improvements. These priorities were determined from both the analysis conducted for this Plan and the needs echoed by the Pasadena community.

Intersections & Crossing Opportunities: Improve high stress crossings where possible and create more opportunities for people to safely cross mid-block along streets where intersections are far apart.

Intersections with traffic signals are often the most obvious places for pedestrians to cross streets. However, implementing controlled mid-block crosswalks and improving existing uncontrolled crossings are also important in creating safer opportunities for pedestrians. Roadway design and signal timing should be adapted to improve safety, visibility, and comfort for people of all ages and abilities. Consistent with current City efforts, existing uncontrolled marked crosswalks should be evaluated to determine if warrants for enhanced crosswalk warning devices are met.

Complete Streets and Multimodal Improvements: Implementation efforts should consider ways to also integrate pedestrian priorities identified in this Plan within multimodal and Complete Streets projects.

Active transportation and multimodal projects are often implemented when funding is available or in coordination with planned public infrastructure or private development projects. The City should pursue these opportunities to implement pedestrian improvements along priority corridors. Pedestrian improvements can deliver multiple benefits across all transportation modes, establishing the context in which people make mobility choices and encourage mode shift.

Traffic Safety Education & Programming: Pedestrian projects through capital improvements should be made in concert with programming activities, like Pasadena's existing Safe Routes to School efforts. While street design treatments can help physically slow traffic speeds and impact driver behavior,

the City should also continue to make use of available resources, like the SCAG Go Human Campaign, to make pedestrian and multimodal improvement efforts more visible and to demonstrate the City's commitment to both programmatic and infrastructure solutions. More importantly, traffic safety education and programs represent key opportunities to continue engaging with the Pasadena community on future implementation projects.

Slowing Traffic Speeds: An effective strategy for improving the safety of people walking is to reduce motor vehicle speeds. This can be accomplished through traffic calming treatments (see *Pasadena's 2017 Street Design Guide* and the Pedestrian Treatments Toolkit on page 44 of this Plan), and through changes to the posted speed. Posted speed limit reductions should be considered citywide through default or prima facie policy changes and along specific corridors with special speed zones or engineering and traffic surveys, per California regulations.

Changes to California Speed Limit Legislation

Beginning July 30, 2024, Assembly Bill (AB) 43 will provide municipalities in California with new opportunities to reduce posted speeds. This law, approved on October 8, 2021, grants local jurisdictions the flexibility to prioritize safety and set speed limits based on the context of their own communities. AB 43 gives local agencies the authority to reduce speed limits by five miles per hour in areas found to have the highest number of serious injuries and fatalities based on collision data or where there are high concentrations of "bicyclists or pedestrians, especially those from vulnerable groups such as children, seniors, persons with disabilities, and the unhoused" among other factors[5]. To read the full bill, visit: https://leginfo.legislature.ca.gov/faces/billTextClient.xhtml?bill_id=202120220AB43

Data & Inventory: Data on walking, pedestrian safety, and existing facilities is critical to continue informing future pedestrian projects. This data should include geospatial inventory of sidewalks conditions, crosswalks, pedestrian treatments, curb ramps, issues reported by the community, ADA needs, tree canopy, pedestrian lighting, traffic speeds, and other data associated with the pedestrian network. Additional pedestrian counts, walk audits, community engagement, and crash analyses should be collected or evaluated to consistently assess both community needs and impact of implemented projects.

Quick Build Projects: Most pedestrian safety enhancements can take years to design, fund, and construct. However, many projects can be tested on an interim basis in a shorter amount of time and by using more cost-effective materials to construct the project (e.g. paint and flexible delineators). They can be more quickly installed and provide opportunities to change the design of a street or location before more permanent facilities are implemented. In evaluating future pedestrian improvements, opportunities for quick build within a phased approach should be considered to more effectively test treatments and street design.

Regional Priorities

In addition to more local priorities, pedestrian projects and corridors that provide benefits to the regional transportation system are also critical as the City looks towards implementation.

Metro A (Gold) Line Station Improvements: The Metro A Line (formally Gold Line) is critical to the regional transportation system in connecting San Gabriel Valley communities like Pasadena to each other and towards Downtown and Long Beach. As a result, stations represent key focus points for improving pedestrian access and connectivity. Existing projects that include pedestrian improvements near the Lake Avenue and Allen Avenue stations are already currently in development or have been completed by the City. However, examining additional needs based on feedback received and analysis conducted as part of this Plan will be important in future project considerations near all stations.

Major Arterials Connecting to Neighboring Cities: Pasadena offers a wide range of local destinations for its residents, but it also exists as a subregional destination for many communities nearby. Cities that neighbor Pasadena are connected through major arterials that provide a way for residents and visitors across these cities to enjoy local attractors in the area, boosting local economies and community culture. As the City looks towards implementation, larger multimodal efforts that may include pedestrian improvements should focus on benefiting both local and regional systems.

Pedestrian Priority Corridors

PRIORITIZATION ANALYSIS & METHODOLOGY

Understanding where improvements can have the greatest impact is critical when cities are often faced with limited resources or timing.

To identify where these location opportunities are, the project team conducted a prioritization analysis for both pedestrian crossings and streets across the City. Using equity, safety, connectivity and access as prioritization criteria (see **Table 4** and **Table 5**), corridors were then identified by reviewing high-scoring locations along with input from the public and City staff.

This process aims to help the City prioritize investments along these corridors in the coming years and is meant to be flexible – as funding mechanisms arise such as grant opportunities, new private developments, and capital improvement projects.

Additional details on the analysis and methodology used to identify priority corridors can be found in **Appendix D - Prioritization Analysis & Framework**.

Table 4: Prioritization Criteria for Intersection Crossings

Criteria	Measure	Description	Weight
Equity	California Healthy Places Index (HPI) Score	Locations that score in the lowest HPI percentiles (*HPI measures community conditions that impact health outcomes*). *Data: HPI*	High
Safety	Pedestrian Crash History	Using the results from the pedestrian crash analysis, projects that are along corridors with higher crash frequencies will be prioritized. *Data: TIMS 2015-2019*	High
Connectivity	Quality of Crossing	Locations that were determined to be deficient will be prioritized. Locations that are more than ¼ mile away from the nearest high-quality crossing will receive an additional weight. *Data: Crosswalk Analysis*	Highest
Access	Pedestrian Trip Potential Score	Locations that are in areas that have higher trip potential score will be prioritized. *Data: Pedestrian Trip Potential Analysis*	Medium

Table 5: Prioritization Criteria for Street Segments

Criteria	Measure(s)	Description	Weight
Equity	California Healthy Places Index (HPI) Score	Locations that score in the lowest HPI percentiles (*HPI measures community conditions that impact health outcomes*). *Data: HPI*	High
Safety	Pedestrian Crash History	Using the results from the pedestrian crash analysis, projects that are along corridors with higher crash frequencies will be prioritized. *Data: TIMS 2015-2019*	High
	High-speed, High-volume, and Wide Streets	Prioritize locations that are along high-speed and busy streets. These streets tend to be less comfortable to walk along. *Data: City of Pasadena*	High
Connectivity	Connections to Transit Service & Sidewalk Gap Closures	Locations along transit routes and locations with known sidewalk gaps. *Data: Pasadena Transit, LA Metro, LADOT, Foothill Transit, Glendale Transit (Transit agencies that serve Pasadena)*	Medium
Access	Pedestrian Trip Potential Score (excluding transit)	Locations that are in areas that have higher pedestrian trip potential score. *The transit sub score will be excluded from this measure to avoid double counting.* *Data: Pedestrian Trip Potential Analysis*	Medium

PEDESTRIAN PRIORITY CORRIDORS

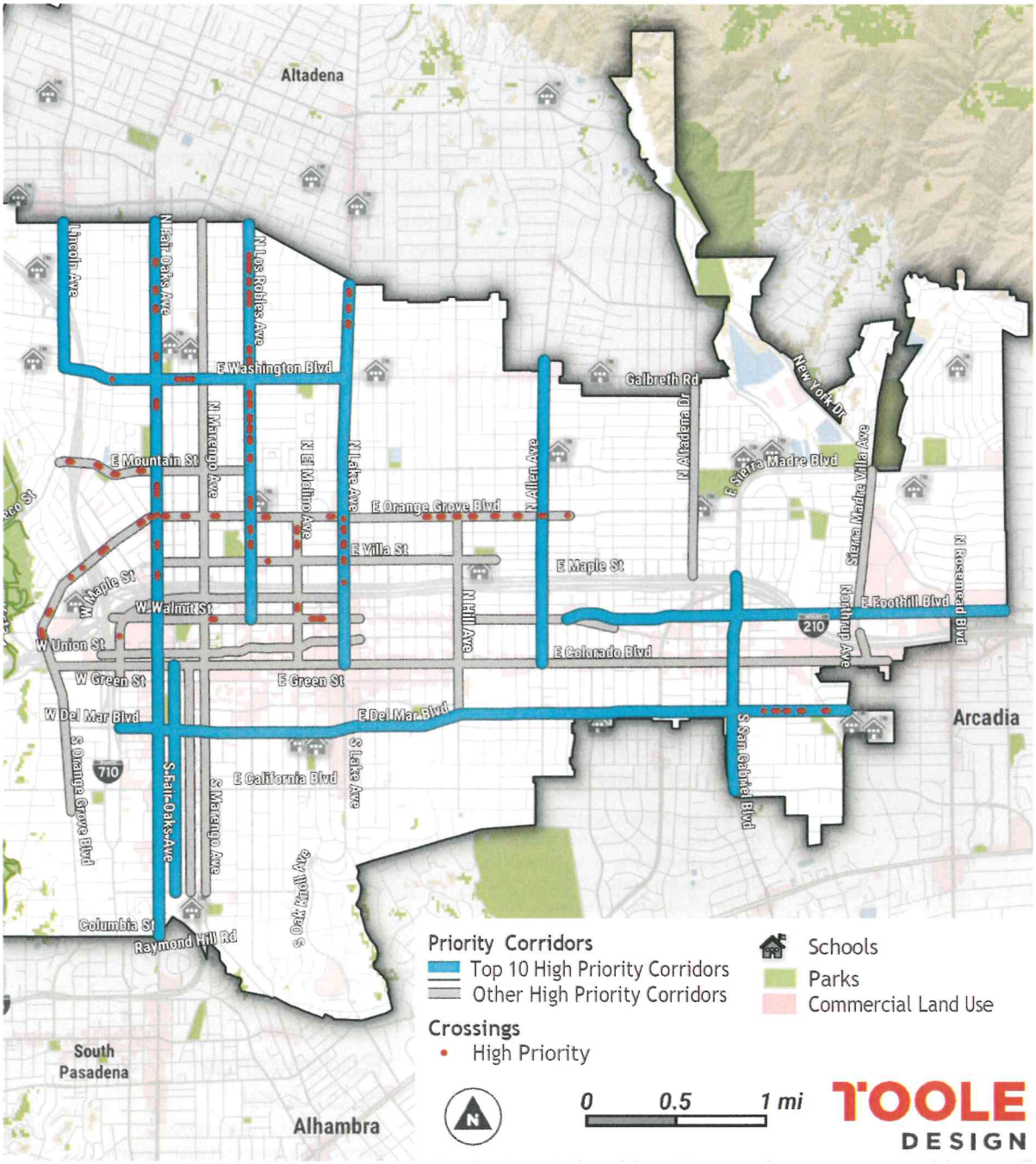
Priority corridors and crossings were determined based on prioritization analysis using data sources such as the Healthy Places Index (HPI) and the Transportation Injury Mapping System (TIMS). Additional sources of information included aerial imagery created by Los Angeles Metropolitan Transportation Authority (Metro), Los Angeles Department of Transportation (LADOT), Foothill Transit, and Pasadena Transit. Public and stakeholder input was critical to corridor identification **(see Appendix D: Prioritization Analysis & Framework).** Based on the prioritization analysis and input from City staff, TAC members, and the Pasadena community, the following streets represent the top 10 priority corridors for pedestrian improvements. These are meant to guide opportunities for implementing potential treatments and highlight locations that can have the greatest impact when considering equity, safety, connectivity, and access altogether. Other high priority corridors are also shown in **Map 4**.

From these top 10 priority corridors, along with feedback from AC members and the Pasadena community, a list of potential infrastructure recommendations have been identified to improve pedestrian conditions along each corridor **(see Appendix E: Potential Corridor Improvements)**. This list provides a set of potential improvements that would be brought back to the community on a corridor-by-corridor basis to obtain additional feedback through the outreach and conceptual design process.

While these identified corridors help focus improvements on priority segments and crossings, they are not a way of excluding projects on other streets within Pasadena. The proposed recommendations, as a part of this Plan, also do not exclude potential improvements at other locations along these corridors. Improving walking conditions across the entire pedestrian network is a priority, and the City will continue to implement smaller standalone projects and larger multimodal improvements as funding allows and as opportunities arise to address community needs and priorities.

- **Allen Avenue** (from north City limit to Colorado Boulevard)
- **Del Mar Boulevard** (from Pasadena Avenue to east City limit)
- **Fair Oaks Avenue** (from north City limit to south City limit)
- **Foothill Boulevard** (from Walnut Street to east City limit)
- **Lake Avenue** (from north City limit to Colorado Boulevard)
- **Lincoln Avenue** (from north City limit to Washington Boulevard)
- **Los Robles Avenue** (from north City limit to Walnut Street)
- **Raymond Avenue** (from Colorado Boulevard to E Glenarm Street)
- **San Gabriel Boulevard** (from Maple Street to California Boulevard)
- **Washington Boulevard** (from Lincoln Avenue to Lake Avenue)

Map 4: Pedestrian Priority Corridors



Pedestrian priority corridors represent street segments that can have the greatest impact towards equity, safety connectivity, and access factors if improved. High priority crossings represent locations that can have the greatest impact towards equity, safety connectivity, and access factors if improved.

Priority corridors and crossings were determined based on prioritization analysis (data sources: HPI, TIMS, City of Pasadena, LA Metro, LADOT, Foothill Transit, Glendale Transit, aerial imagery) and public, stakeholder, and City input. A list of high priority crossings can be found in the Appendices.

The Safe System Approach

Another national resource that should be incorporated in future pedestrian work in Pasadena is the implementation of the Federal Highway Administration's (FHWA) Safe System Approach. A concept that emerged from Sweden, the Netherlands, Australia, and New Zealand, the Safe System Approach seeks to dramatically reduce serious injury and fatal crashes on our roadways through a systems-based approach to prioritizing safety.

PRINCIPLES

The Safe System Approach involves the following six principles:

Figure 7: *Principles of the Safe System Approach (source: Federal Highway Administration (FHWA))*

Death and Serious Injury is Unacceptable

While we want to reduce all crashes, it is critical to prioritize crashes that result in death and serious injuries, since no one should experience either while using the transportation system.

Humans Make Mistakes

People will inevitably make mistakes that can lead to crashes, but the transportation system can be designed and operated to accommodate human mistakes and injury tolerances and avoid death and serious injuries.

Humans Are Vulnerable

People have limits for tolerating crash forces before death and serious injury occurs; therefore, it is critical to design and operate a transportation system that is human-centric and accommodates human vulnerabilities.

Responsibility is Shared

All stakeholders (transportation system users and managers, vehicle manufacturers, etc.) must ensure that crashes don't lead to fatal or serious injuries.

Safety is Proactive

Proactive tools should be used to identify and mitigate latent risks in the transportation system, rather than waiting for crashes to occur and reacting afterwards.

Redundancy is Crucial

Reducing risks requires that all parts of the transportation system are strengthened, so that if one part fails, the other parts still protect people.

ELEMENTS

The elements of the Safe System Approach—safe road users, safe vehicles, safe speeds, safe roads, and post-crash care—should be thought about like spokes of a wheel, all the pieces need to operate safely in the system to achieve the Safe System Approach.

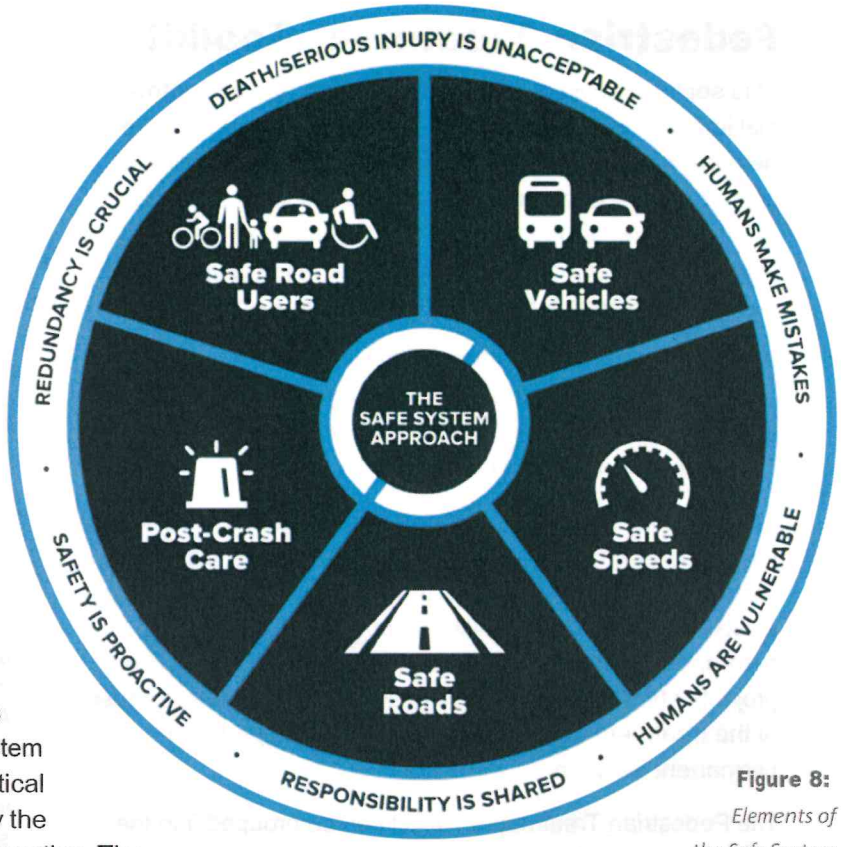


Figure 8: *Elements of the Safe System Approach (source: FHWA)*

FRAMEWORK

In addition to the Safe System Approach principles and elements, the Safe System Approach framework is critical to determining how to apply the Safe System Approach in practice. The framework includes the following as a lens to apply on projects to prioritize safety:

Anticipate Human Error

- Separating Users in Space
- Separating Users in Time

Increase Attentiveness and Awareness

- Increasing Visibility
- Increasing Attentiveness
- Reducing Impairment

Accommodate Human Injury Tolerances

- Reduce Speeds
- Reduce Impact Forces
  - *Intersection Design*
  - *Occupant Protection*
  - *Exterior Vehicle Design*
  - *Automated Braking*
  - *Roadside Crashworthiness*

Pedestrian Treatment Toolkit

This section provides information on a series of treatments that improve pedestrian conditions. The treatments featured here are not an extensive list of every available option to improve the pedestrian experience, but rather a tailored list of common tools that have a demonstrated history of improving pedestrian safety and access. Importantly, nearly all of the tools featured here are already in use in Pasadena.

Additional guidance and feasibility requirements for use of these treatments should be referenced from the City's ***2017 Street Design Guide*** and ***2016 Pedestrian Crossing Treatment Guidance Report***.

The City of Pasadena should consider both Quick Build implementation and permanent projects in their Pedestrian Treatment Toolkit. Quick Build projects can include lower cost solutions and may be installed temporarily before a permanent or more costly solution is provided. Quick Build projects should include data collection on the effectiveness of the treatment to inform improvements as part of a permanent solution.

The Pedestrian Treatments Toolkit can be grouped into the following categories.

Pedestrian Safety Improvements

- Sidewalks
- High Visibility Crosswalks
- Curb Ramps
- Detectable Warning Surfaces
- Pedestrian Refuge Islands
- Curb Extensions
- Raised Intersections & Crossings
- Right-Turn Lane Redesign
- Yield to Pedestrian Signs
- Leading Pedestrian Intervals (LPI)
- Accessible Pedestrian Signals (APS)
- Protected Left Turns
- Right Turn Restrictions
- Pedestrian Recall
- Exclusive Pedestrian Phase
- Pedestrian Scrambles
- Rectangular Rapid Flashing Beacons (RRFB)
- Pedestrian Hybrid Beacon (PHB)
- Lane Reduction
- Protected Intersections

Pedestrian Amenities

- Pedestrian-scaled Lighting
- Tree Canopy / Shade
- Street Furniture

Crash Modification Factor (CMF): "A CMF estimates a safety countermeasure's ability to reduce crashes and crash severity. Transportation professionals frequently use CMF values to identify countermeasures with the greatest safety benefit for a particular crash type or location." For more information, see: http://www.cmfclearinghouse.org/

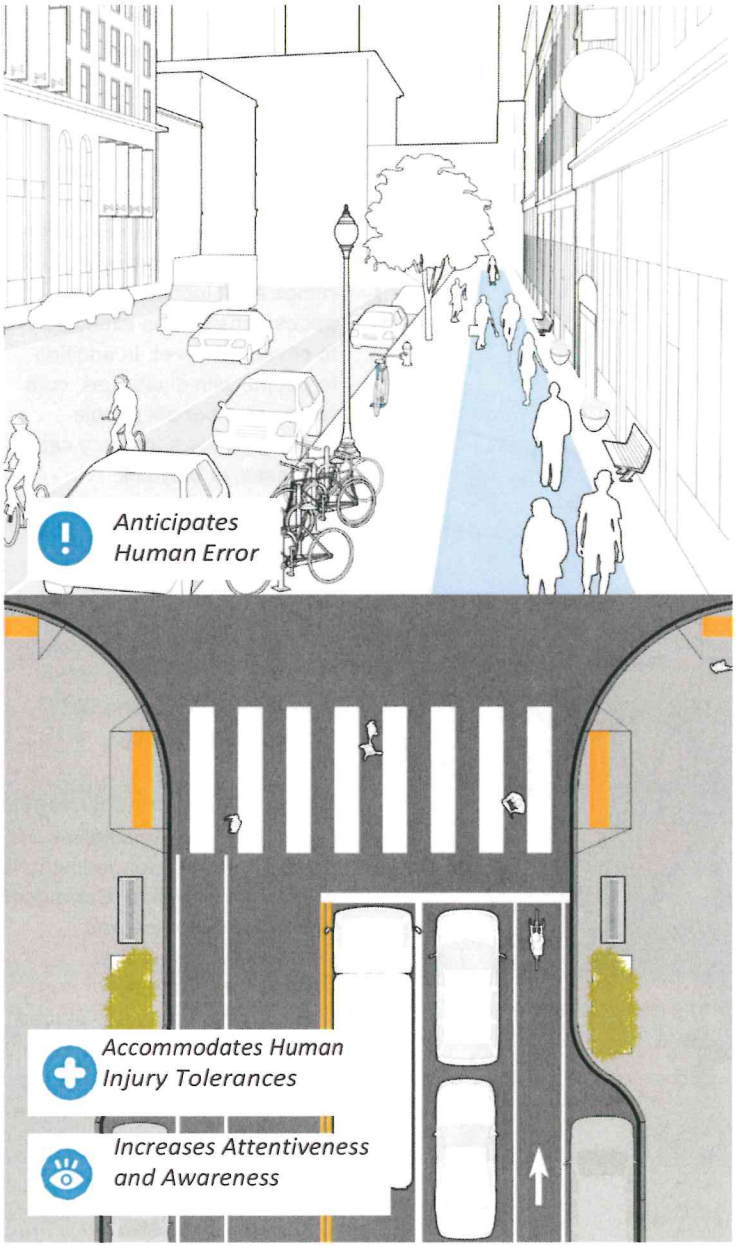
Proven Safety Countermeasures: Specific countermeasures are highlighted by the Federal Highway Administration (FHWA) for their safety effectiveness and benefits. For more information, see: https://safety.fhwa.dot.gov/provencountermeasures/

Where applicable, treatments under the **Safe System Approach** framework are shown alongside three icons:

Anticipates Human Error

Increases Attentiveness and Awareness

Accommodates Human Injury Tolerances



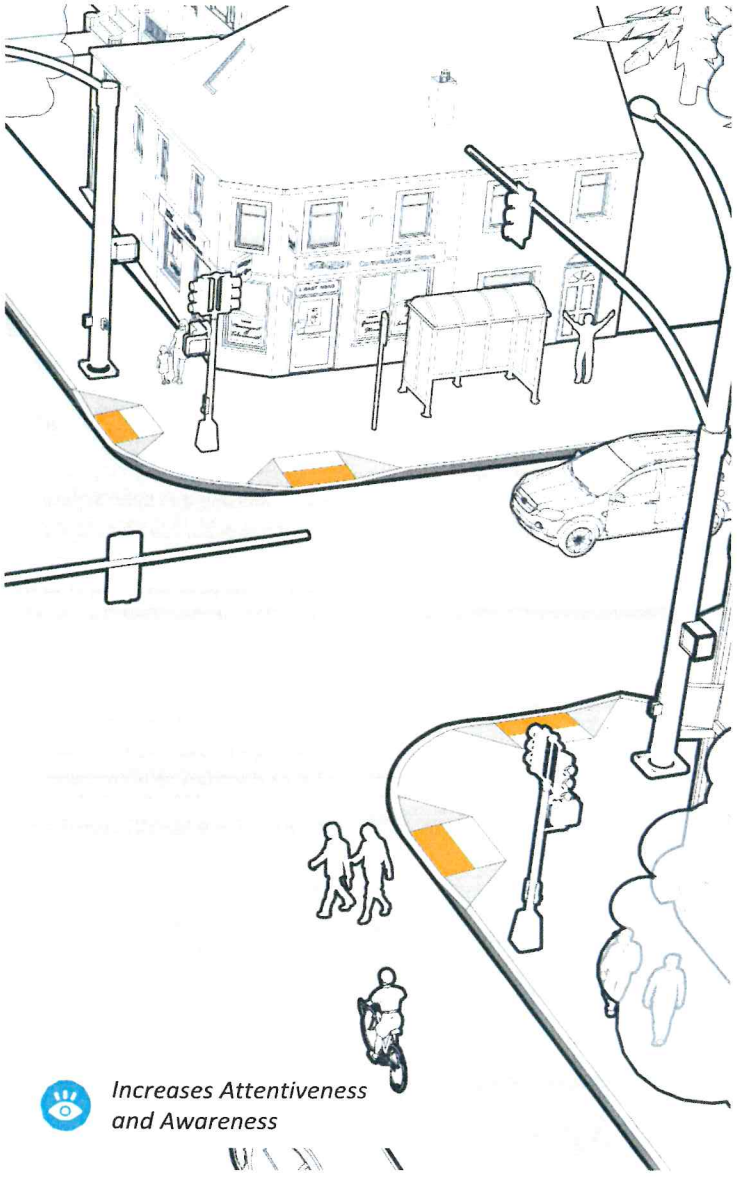
Sidewalks: Sidewalks provide space along a street for pedestrian travel and are the backbone of a city's pedestrian network. For sidewalks to function, they must be kept clear of any obstacles and be wide enough to comfortably accommodate expected pedestrian volumes and different types of pedestrians, including those using mobility assistance devices like wheelchairs, pushing strollers, or pulling carts.

Sidewalks are a Proven Safety Countermeasure with a 65% to 89% crash reduction involving pedestrians walking along streets[6].

High visibility crosswalks: A high visibility crosswalk uses bar, continental, ladder-style markings to increase the visibility of a pedestrian at a crossing.

Motorists are legally required to yield to pedestrians at intersections with or without crosswalks, even where there is no marked crosswalk. However, providing high visibility crosswalks clearly communicates to drivers that pedestrians may be present and helps guide pedestrians to locations where it is best to cross the street.

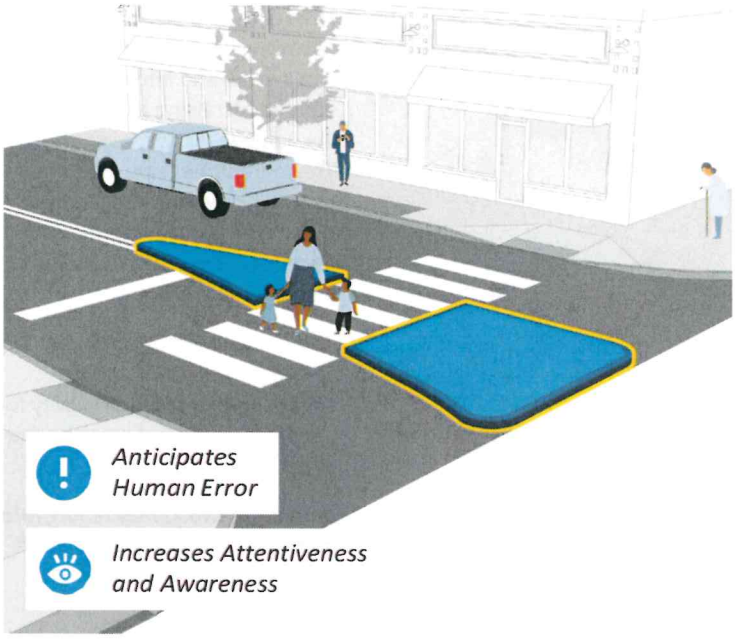
High visibility crosswalks may provide up to 48% reduction in pedestrian crashes[7].



Curb Ramps: The transition for pedestrians from the sidewalk to the street is provided by a curb ramp. The design of curb ramps is critical for all pedestrians, particularly for persons with disabilities. ADA standards require all pedestrian crossings be accessible by providing curb ramps at all locations where pedestrians can be expected to cross the street. In addition to people with disabilities, curb ramps also benefit people pushing strollers, grocery carts, suitcases, or bicycles.

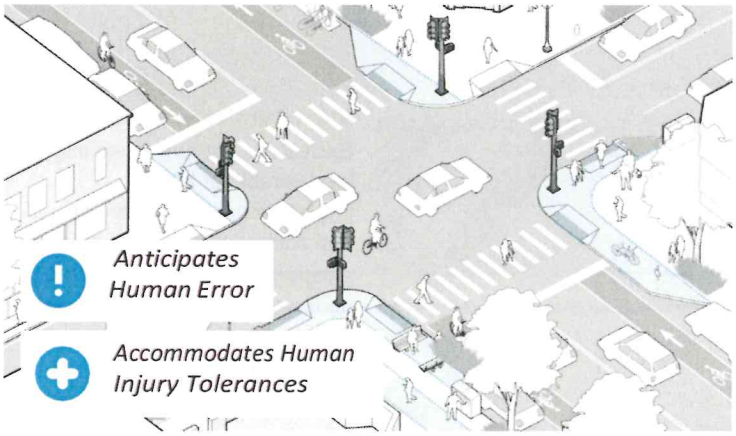
"At intersections, curb ramps should be oriented perpendicular to the natural curb line and oriented to the desired line of travel, typically indicated by the center of the crosswalk." (Pasadena 2017 Street Design Guide)

Detectable Warning Surfaces: Detectable warning surfaces are a hazard warning for pedestrians with low or no vision. Comprised of truncated domes and produced in colors that contrast the sidewalk or curb ramp in which they are placed, detectable warning surfaces function like a pedestrian stop line, alerting persons with vision disabilities to the presence of the street or other vehicular travel way.

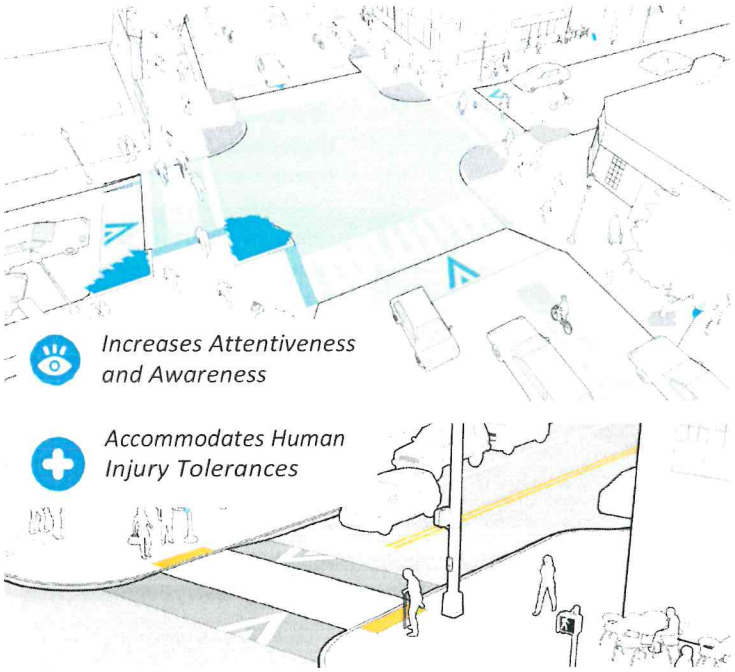


Pedestrian Refuge Islands: Pedestrian islands are raised medians placed in the middle of a street that provide a protected space for people trying to walk across the street. Pedestrian islands improve safety by reducing conflicts with motorists. They are particularly valuable when used at unsignalized crossings along multi-lane streets because they make it easier for pedestrians to find gaps in traffic and allow pedestrians to cross one direction of traffic at a time.

Pedestrian islands are a FHWA Proven Safety Countermeasure with up to 56% pedestrian crash reduction[8].



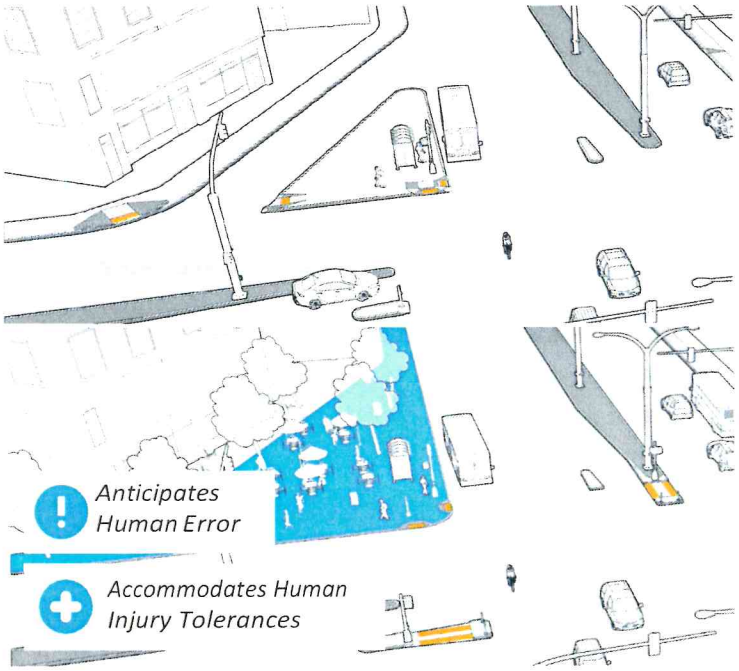
Curb Extensions: Curb extensions, also known as bulb-outs, reduce the width of the street by extending the sidewalk at corners or mid-block. They help improve visibility, calm traffic, and provide extra space on sidewalks for walking and gathering. In addition to shortening crossing distances, curb extensions create more compact intersections, resulting in smaller corner radii and slower turns by people driving.



Raised Crosswalks & Intersections: Raised crosswalks and intersections are created by raising the street to the same level as the sidewalk. These treatments provide many benefits, especially for people with mobility impairments, because there are no vertical transitions to navigate.

They help to increase driver yielding, slow down vehicle speeds, and increase visibility for people walking and crossing the street.

Raised crosswalks may reduce fatal and injury crashes by up to 36%[9].

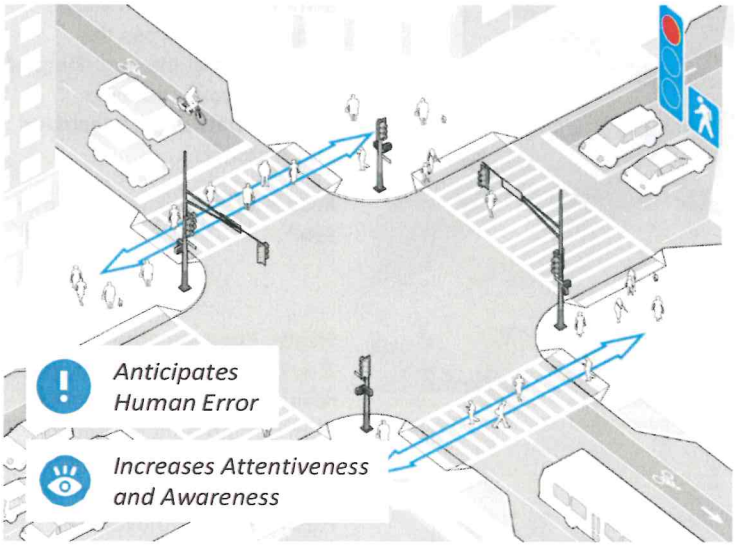


Right-Turn Lane Redesign: Exclusive right-turn lanes might be desirable at busy intersections, but the design and control of these can have a significant impact on safety for pedestrians. Intersections with right-turns slip lanes (see illustration) are potential candidates for redesign.

When slip lanes are eliminated, they reduce the overall crossing distance for pedestrians and slow the speeds of turning traffic which in turn improve pedestrian safety.

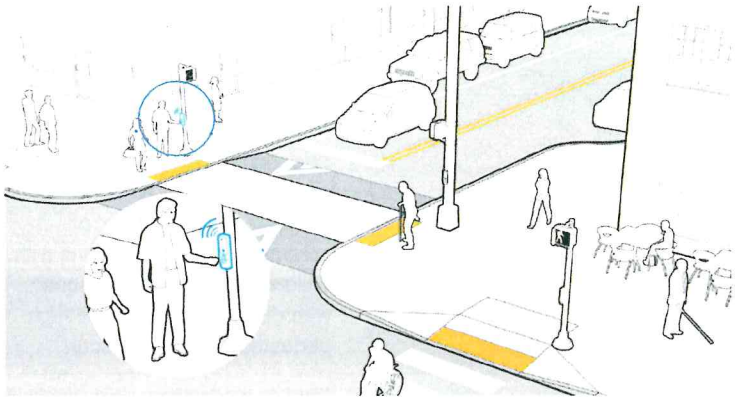
Yield to Pedestrian Signs: In-street yield to pedestrian signs are placed in the street at crosswalks to alert motorists to yield to people crossing the street, increasing both awareness and visibility of pedestrian crossings. They are often used in commercial districts; at school crossings; locations with children, seniors, or persons with disabilities; or where high pedestrian volumes occur.

Yield to pedestrian signs deployed in a gateway configuration have been shown to increase motorist yielding to pedestrians from less than 10 percent to over 90 percent, and to decrease traffic speeds between 4 and 10 miles per hour[10].

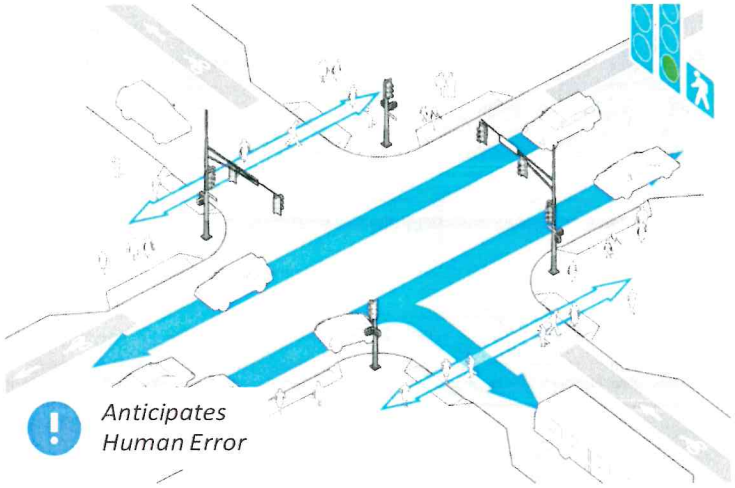


Leading Pedestrian Intervals (LPI): LPIs give pedestrians a 3-7 second head start to establish themselves in the intersection before motorists are given the green light. This allows pedestrians to enter the intersection prior to turning motorists, increasing visibility between all modes. LPIs especially benefit slower pedestrians, including people with disabilities, seniors, and children.

Leading Pedestrian Intervals are a Proven Safety Countermeasure with up to 60% pedestrian crash reduction[11].

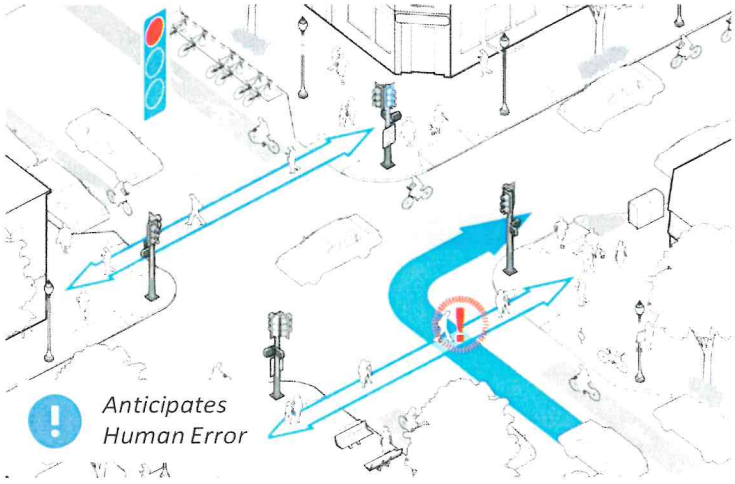


Accessible Pedestrian Signals (APS): APS and accessible detectors are devices that communicate information in non-visual formats about the pedestrian crossing to people with visual and/or hearing disabilities. They may include features such as audible tones, speech messages, detectable arrow indications, and/or vibrating surfaces.

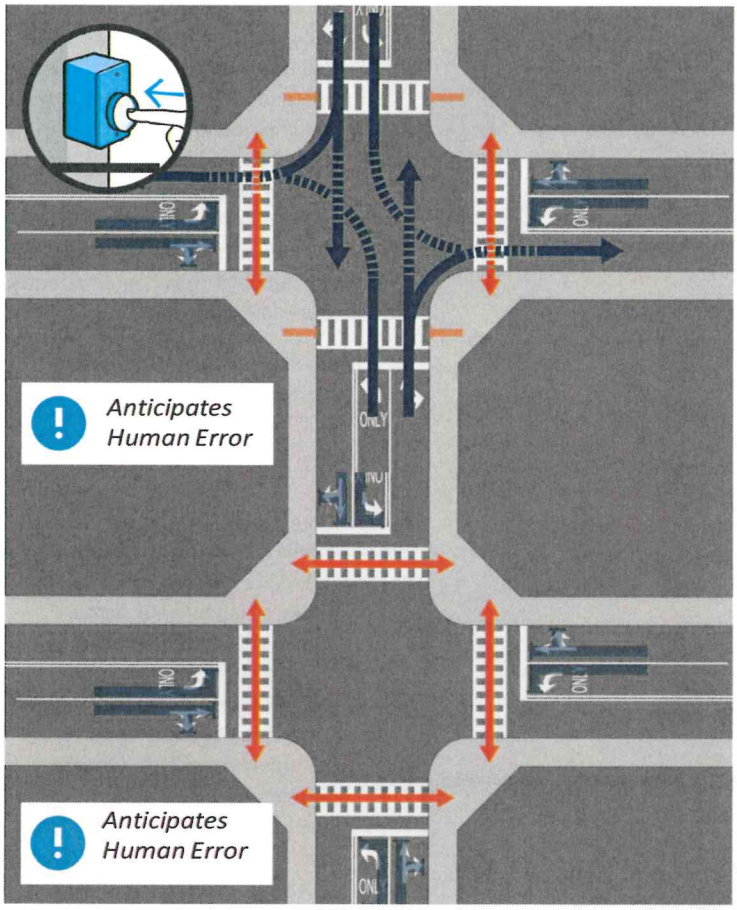


Protected Left Turns: A protected left turn provides a red arrow for left turning motorists while allow both on-coming traffic and pedestrians to cross to eliminate conflicts. It allows pedestrians to cross the intersection at the beginning of a signal cycle, reducing conflicts between pedestrians and motorists.

Reduce all left-turn crashes up to 99%[12].

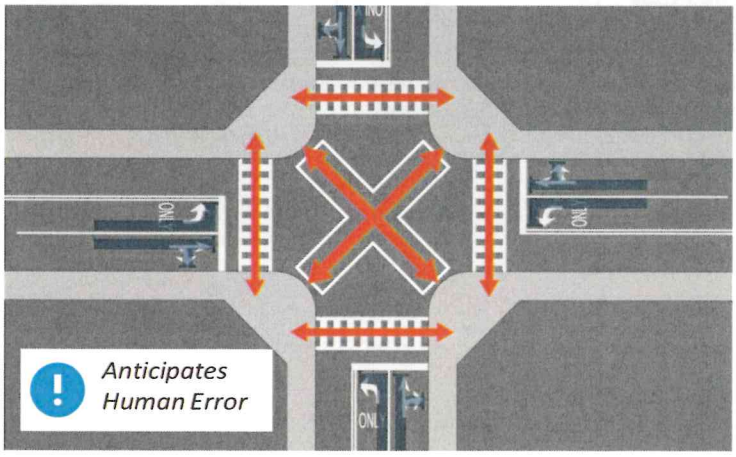


Right Turn on Red Restrictions: Right turn on red restrictions prevent motorists from turning right (or left on intersecting one-way streets) while the traffic signal is red. Restricting this movement eliminates conflicts with pedestrians crossing in front of turning motorists[13].

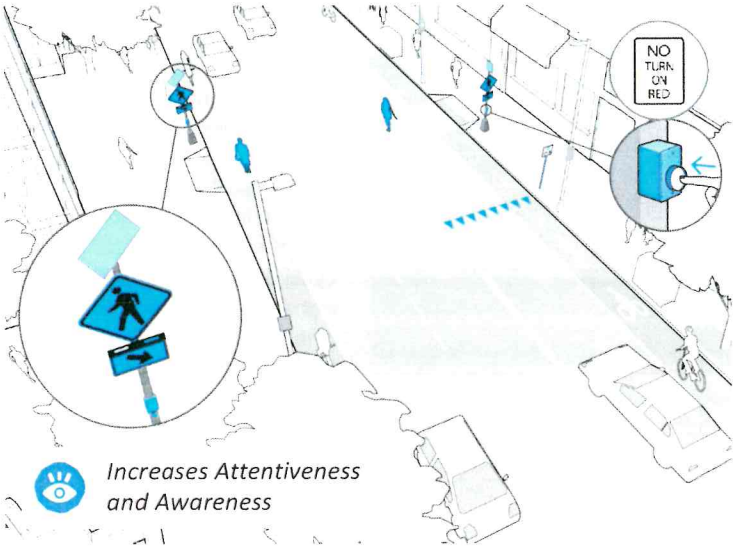


Pedestrian Recall: Pedestrian recall is when a signal is set to automatically allow pedestrians to cross the street without the need to push a button during a green interval. It causes the WALK signal to activate on every cycle of the intersection traffic signal. In areas and locations where pedestrian demand is high, pedestrian recall should be considered to minimize crossing delays and provide convenience and comfort for pedestrians.

Exclusive Pedestrian Phase: An exclusive pedestrian phase stops all motor vehicles at the intersection to allow people to cross the street at every crosswalk. It minimizes exposure of people walking and rolling, minimize delay for people waiting to cross the street, and provide accessibility benefits to people with disabilities.

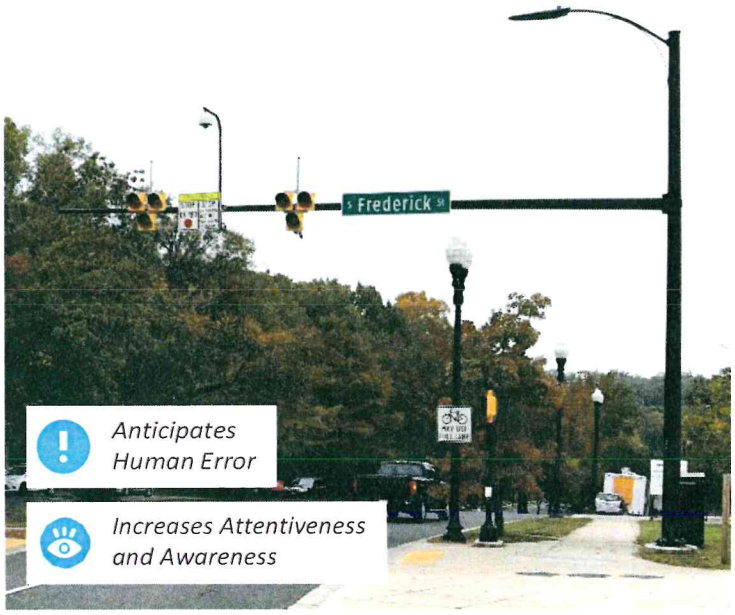


Pedestrian Scrambles: Similar to exclusive pedestrian phasing, pedestrian scrambles stop all vehicle movements at the intersection to give priority to all pedestrians looking to cross the street. Scrambles also provide diagonal crosswalks in the middle of the intersection to allow for more direct crossing movements and eliminating the need to cross two crosswalks to get to an opposite corner.



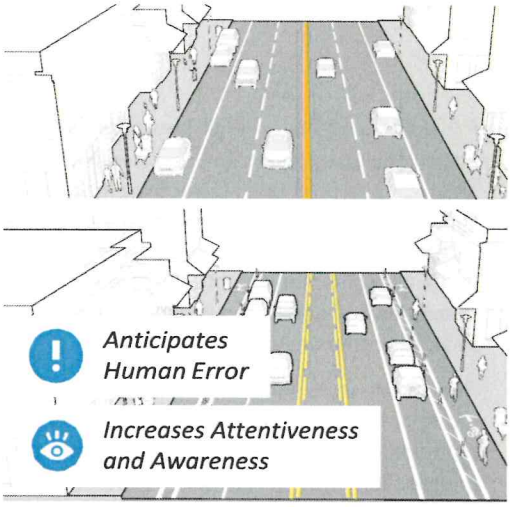
Rectangular Rapid Flash Beacons (RRFBs): RRFBs are pedestrian actuated beacons that use a rapid, irregular flash frequency. They increase driver yielding, increases pedestrian visibility, and slows down vehicle speeds. RRFBs should be installed on roadways with low to medium vehicle volumes and/or roadways with posted speeds under 40mph[14].

RRFBs may reduce pedestrian crashes up to 47 percent.



Pedestrian Hybrid Beacons (PHB): PHBs help pedestrians safely cross busy or higher-speed streets at midblock crossings and uncontrolled intersections. The beacon head consists of two red lights above a single yellow light. Once a pedestrian pushes the button to cross, the signal then initiates a yellow to red lighting sequence directing motorists to slow and come to a stop. The pedestrian signal then flashes a WALK display for the pedestrian to cross.

Pedestrian hybrid beacons are a Proven Safety Countermeasure with up to 69% pedestrian crash reduction[15].



Lane Reduction (including Width Reduction or Lane Removal): Reducing the number of lanes, the width of lanes (lane width reductions), or both can help repurpose space for other roadway users. This treatment helps optimize available space for other multimodal infrastructure like bicycle lane, wider sidewalks, median islands, curb extensions, on-street parking, transit lane, landscaping, or other uses.

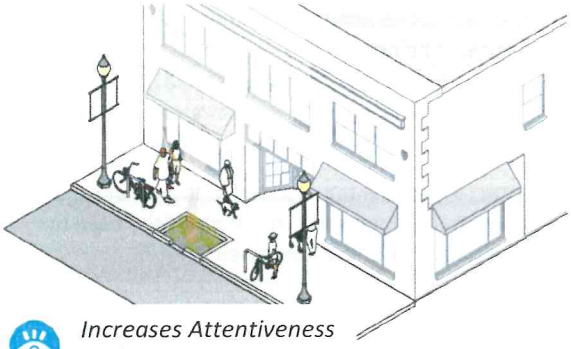
Lane reductions are typically done on streets where traffic volumes do not support the need for additional motor vehicle lanes.

Road diets are a Proven Safety Countermeasure with an overall crash reduction factor of 19% to 47% for all modes[16].

Protected Intersections: Protected intersections are a type of intersection design that improves safety by reducing the speed of turning traffic, improving sight lines, and designating space for all road users.

Protected intersections reduce conflict points between drivers, sidewalk users, and bicyclists by separating all modes. The separation is achieved through corner islands that reduce vehicle turning speeds and provide an area for vehicles to wait while yielding to bicyclists and pedestrians in the crosswalk. Protected intersections eliminate the merging and weaving movements from vehicles typically found in conventional bike lanes and shared streets. By clearly defining pedestrian and bicyclist spaces and mitigating conflicts between vehicles and vulnerable users, protected intersections provide a safer environment for all modes.

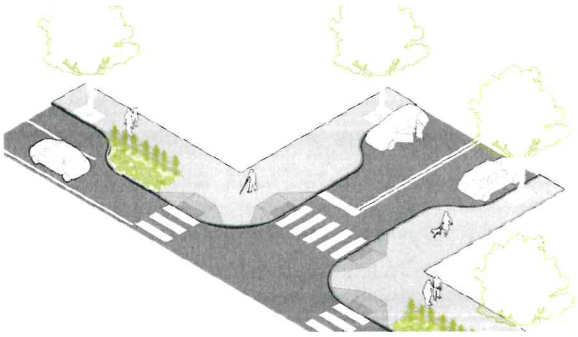
Pedestrian & Street Amenities:



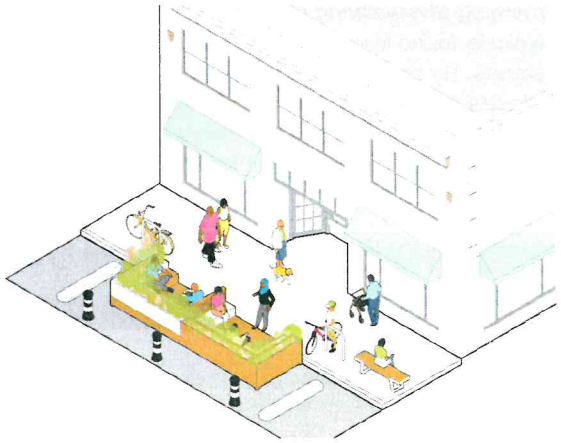
Increases Attentiveness and Awareness

Pedestrian-scaled Lighting: Pedestrian-scale lighting is lighting directed toward the sidewalk and positioned lower than roadway lighting. It is a crucial element in providing a safe multimodal environment and ensures that a pedestrian environment is used frequently and safely, resulting in a safer and healthier community.

Pedestrian-scale lighting should be installed along streets with existing or anticipated high volumes of pedestrian activity and at intersections and crossings.



Tree Canopy / Shade: Street trees provide shade and visual softness to make walking and the use of sidewalks feel more pleasant. Trees can help reduce peak temperatures during summer months and mitigate air pollution. Tree placement will vary based on type of tree species and amount of space in the right-of-way, but should be typically used along sidewalks and trails and in public plazas and parks.



Street Furniture: Street furniture includes an array of elements, including benches, trash and recycling receptacles, bollards, transit stops and shelters, decorative planters and more. Seating is an essential component to each street and includes temporary and permanent fixtures such as chairs, benches, seat walls, steps, public art, and raised planters. The location and type of seating element should respond to adjacent land uses, available shade from either structures or street trees, the presence of parallel parking buffering the seating area from traffic and the width of the amenity zone.

Implementation

Following the adoption of this Plan, the City will seek to incorporate the priority corridors into Pasadena's Capital Improvement Projects (CIP) list. Along with the top 10 corridors, the recommended improvements (Appendix E) and high priority crossings should be used to determine where to invest additional staff resources in developing and implementing projects that have greatest likelihood of impact. Future implementation will require additional field work, feasibility analyses, and warrant studies to further assess applicability of improvements.

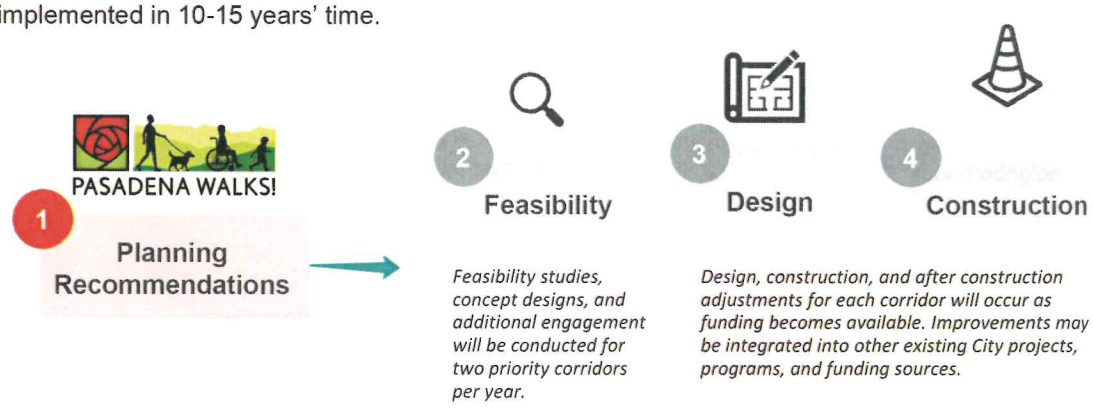
To establish a timeline for implementation, feasibility studies and concept designs should be conducted for two priority corridors per year. At this time, the City will undertake further public engagement, similar to its existing Neighborhood Traffic Management Program (NTMP). This develops a deeper understanding of the specific needs each priority corridor can address and additional improvements that can best meet those needs. Most importantly, future engagement should reflect an equitable process (prioritizing input and participation from those least likely to participate in traditional processes) and aim for equitable outcomes (prioritizing projects that meet the needs of people of all ages, abilities, and backgrounds).

As this stage is completed for a pair of corridors per year, the City shall pursue the necessary funding to both design and construct improvements, with the goal of having all corridors implemented in 10-15 years' time.

Pedestrian improvements should also be integrated into a Local Road Safety Plan (LRSP) under the Safe System Approach (see pages 44 and 45) to be further evaluated for effectiveness in improving safety, mobility and access.

It is important to acknowledge that implementation progress can be and is often iterative and nonlinear. As a goal, the City should pursue implementation under the timeline specified in this section and as funding opportunities are available. However, improvements should also be implemented in alignment with other City investments, planned and programmed street improvements, or considered alongside other multimodal projects. While corridor-wide safety and traffic calming measures will require a dedicated funding source to implement, many pedestrian improvements can be implemented as a part of existing street improvement or maintenance projects.

Pedestrian facilities themselves are typically a relatively small portion of a large roadway improvement project (e.g. restriping, resurfacing or reconstruction). As a result, while multimodal projects often take longer to design and implement, it can also often be more cost effective to do so with limited local funding. Implementing larger corridor-wide pedestrian or multimodal projects is a collaborative process that requires the involvement and support of City elected officials and staff, the public, community institutions and businesses, funding agencies, and others.



Existing Efforts in the City's Capital Improvements Program (CIP) that Address Pedestrian Needs:

Annual Citywide Street Resurfacing and ADA Improvement Program: This project provides for the systematic annual rehabilitation of streets throughout the City as prioritized by the City's Pavement Management Program established in FY 2019. It includes the installation of ADA-compliant curb ramps along all renovated streets.

Annual ADA Sidewalk Improvement Program: This continuing program provides for annual concrete sidewalk improvements and repairs citywide. Sidewalk locations are prioritized based on the City's Accessibility and Disability Commission's criteria, which are: (1) high traffic volume streets; (2) high pedestrian usage; (3) highest vertical deviation; and (4) ADA-related citizen complaints.

Curb Ramp ADA Improvements Program: This project provides installation of new curb ramps along arterial, local, and collector streets that currently lack curb ramps in order to eliminate the City's backlog of over 700 high priority locations. Identified locations have been prioritized and approved by the Accessibility and Disability Commission.

Miscellaneous Sidewalk Repair Program: This program provides for replacement of damaged sidewalks along property frontages where property owners elect to pay the City at time of building permit issuance or sale of property.

Citywide Complete Streets Program: The Citywide Complete Streets Program is a comprehensive process for managing traffic volume, travel speeds, and traffic-related noise in the City's residential neighborhoods. The program relies heavily on community input to determine the best-suited traffic management measures for a particular neighborhood.

Pedestrian Crossing Enhancements Program: This project provides for the installation of enhancements to uncontrolled marked crosswalks, including the design and installation of enhanced pedestrian signage with lights, pedestrian traffic signals, bulb outs, median islands, enhanced crosswalk markings, and other pedestrian safety enhancements.

Arterials Speed Management Program: This project provides for the installation of electronic speed feedback signs or full electronic changeable message boards that will promote compliance to posted speed limits. The program will be aimed at managing vehicular speed along major arterial and collector streets but can be used on local streets, near schools, senior centers, and other high pedestrian or high bicycle use areas at up to 50 locations citywide.

Citywide Continental Crosswalk Implementation: This project provides for the systematic replacement of crosswalk markings throughout the City. Replacement of existing marked crosswalk striping with Continental style crosswalk at 340 signalized intersections and 70 marked uncontrolled crosswalks, citywide.

Bus Stop Improvement Program: This project provides for the installation of new bus benches, bus stop amenities, and concrete paving at various bus stop locations throughout the City. The project also includes the purchase and installation of bus benches and trash receptacles; and the installation and/or repair of sidewalks and parkways at, and/or adjacent to, bus stops to improve pedestrian access.

For more information on programs and funding timelines, visit: https://www.cityofpasadena.net/public-works/engineering-and-construction/capital-improvement-program/#adopted-program

Helping the Homeless and Underserved Pedestrians

During the implementation of the Pasadena Pedestrian Action Plan, the City Department of Transportation will work closely with both the **Homeless Outreach-Psychiatric Evaluation (HOPE) Team** and the **Pasadena Outreach Response Team (PORT)** to assist and provide resources to some of the most underserved members in the community.

The Homeless Outreach-Psychiatric Evaluation Team is a partnership between Pasadena Police and the Los Angeles County Department of Mental Health, whose mission is to provide mental health evaluation and assistance through emergency response.

When to request HOPE services: *For individuals who need immediate assistance to prevent harm to themselves or others.*

The Pasadena Outreach Response Team is a partnership between the Pasadena Public Health Department, Pasadena Fire Department, and Union Station, whose mission is to provide longer-term case management to those in need of mental health, housing, substance abuse assistance, and related social services.

When to request PORT services: *Help with encampments, sleeping on private property, nuisances, concern for someone living on the street, or concern for someone's safety.*

A street outreach team speaks with a woman at an encampment in South LA.

Funding Sources

Numerous regional and state sources exist to fund the pedestrian-related projects recommended in this plan. Having an adopted plan in place demonstrates public support for implementation of pedestrian infrastructure and can increase the likelihood of securing resources in a competitive funding landscape.

The following programs provide competitive funding for pedestrian infrastructure; additional vetting may be required to determine eligibility of the Plan's specific projects.

Urban Greening, California Natural Resources Agency

Part of a statewide initiative to utilize cap-and-trade dollars to fund projects that help reduce greenhouse gas emissions.

Eligibility: Projects that develop green infrastructure, including pedestrian facilities

Current Status: The last round of funding was awarded in March 2020. No additional funding is available at this time, but interested applicants should check the website for updates: https://resources.ca.gov/grants/urban-greening/

Local Highway Safety Improvement Program (HSIP), Caltrans Division of Local Assistance

The purpose of the HSIP program is to achieve a significant reduction in traffic fatalities and serious injuries on all public roads, including non-State-owned public roads and roads on tribal land.

Eligibility: In order to apply for the HSIP funds, an agency must have completed their a Local Roadway Safety Plan (LRSP) or an equivalent of the LRSP, such as Systemic Safety Analysis Report (SSAR) or Vision Zero Action Plan. HSIP funds are eligible for work on any public road or publicly owned bicycle or pedestrian pathway or trail, or on tribal lands for general use of tribal members, that improves the safety for its users.

Current Status: The last round (HSIP Cycle 10) of funding was awarded in March 2021. No additional funding is available at this time, but interested applicants should check the website for updates: https://dot.ca.gov/programs/local-assistance/fed-and-state-programs/highway-safety-improvement-program

Active Transportation Program (ATP), California Transportation Commission
Consolidates many former federal and state programs to fund a wide range of capital and non-capital projects. Preference is given to projects that are located within disadvantaged communities, which has been included as part of this Plan's methodology for priority pedestrian corridors.

Eligibility: Active transportation infrastructure or non-infrastructure projects, quick-build project pilots, and active transportation plans.

Current Status: Applications are available annually. There are five application types (large project, medium project, small project, non-infrastructure only, or plan). More information at: https://catc.ca.gov/programs/active-transportation-program

Local Streets and Roads Program, California Transportation Commission
Uses funds from SB 1 to fund projects on the local streets and roads system.

Eligibility: Projects that support basic road maintenance, rehabilitation, and safety.

Current Status: To be eligible for funding, the City must submit a proposed project list to the California Transportation Commission. More information at: https://catc.ca.gov/programs/sb1/local-streets-roads-program

Solutions for Congested Corridors, California Transportation Commission
Provides $250 million annually to achieve a balanced set of transportation, environmental, and community access improvements that reduce congestion throughout the state.

Eligibility: Projects that implement specific transportation performance improvements (like pedestrian improvements) designed to reduce congestion by providing more transportation choices to residents, commuters, and visitors and are part of a comprehensive corridor plan.

Current Status: The next application cycle will be for fiscal year 2022-2023. More information at: https://catc.ca.gov/programs/sb1/solutions-for-congested-corridors-program

Affordable Housing and Sustainable Communities Program, California Strategic Growth Council

Funds projects that facilitate compact development, including active transportation infrastructure and amenities, with neighborhood scale impacts. Available to government agencies and institutions (including local government, transit agencies and school districts), developers and nonprofit organizations.

Eligibility: Transportation projects that support transit-oriented development and reduce green-house gas emissions, including projects that encourage connection to transit networks as well as pedestrian facilities.

Current Status: Applications are invited through the issuance of Notice of Funding Availability (NOFA) yearly. Subscribe to the AHSC email list to receive notifications and announcements. More information at: https://www.hcd.ca.gov/grants-funding/active-funding/ahsc.shtml

Transformative Climate Communities, California Strategic Growth Council and Department of Conservation

Funds community-led development and infrastructure projects that achieve environmental, health, and economic benefits in disadvantaged communities.

Eligibility: Pedestrian facilities

Current Status: The TCC Program does not currently have funding allocated for the next round of awards, but more information can be found at: https://sgc.ca.gov/programs/tcc/resources/

Local Partnership Program (LPP), California Transportation Commission

Funds public agencies in which voters have approved fees, tolls or taxes dedicated solely to transportation improvements.

Eligibility: Pedestrian facilities, transit facility improvements, and projects that mitigate environmental impacts of new transportation infrastructure on air or water quality.

Current Status: Funding is distributed annually in a formulaic program and a competitive program. The formulaic program distributes 60% of the total funds based on tax/toll/fee revenues, while the competitive program distributes 40% of the total funds in a competitive application process. More information at: https://catc.ca.gov/programs/sb1/local-partnership-program

State Transportation Improvement Program (STIP), Caltrans
Allocates certain state transportation funds for state highway improvements, intercity rail, and regional highway and transit improvements.

Eligibility: Transportation-related capital improvement projects

Current Status: The STIP is a five-year plan, updated every two years. City staff should work with regional transportation authorities to nominate projects for inclusion in the STIP. More information at: https://catc.ca.gov/programs/state-transportation-improvement-program

Metro Active Transport, Transit First/Last Mile Program (MAT), Los Angeles County Metropolitan Transportation Authority
Utilizes Measure M funds (approximately $857 million) over 40 years to support active transportation infrastructure projects throughout Los Angeles County.

Eligibility: Capital projects that improve or grow the active transportation network or expand the reach of transit and are consistent with Metro's First/Last Mile Strategic Plan or Active Transportation Strategic Plan.

Current Status: Program cycles occur every 2-5 years (the last cycle was awarded in 2020 for fiscal years 2021-2025). More information at: https://www.metro.net/projects/metro-active-transport-mat-program/

Sustainable Communities Program, Southern California Association of Governments (SCAG)
Provides a mechanism to promote local jurisdictional efforts and test local planning tools.

Eligibility: Planning efforts related to integrated land use, active transportation, or climate action and greenhouse gas reduction.

Current Status: Calls for applications are released throughout the fiscal year. More information at: https://scag.ca.gov/sustainable-communities-program

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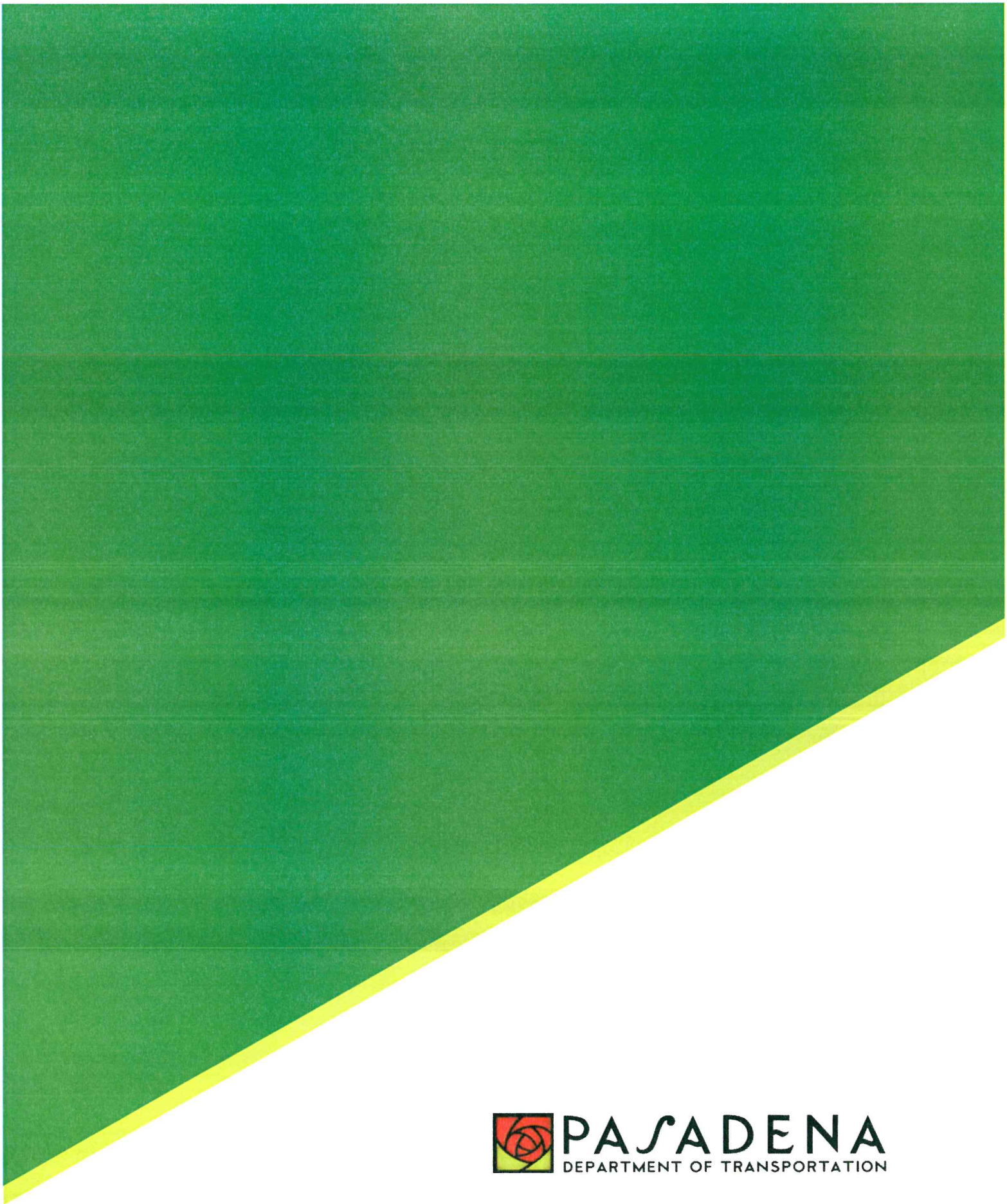

PASADENA
DEPARTMENT OF TRANSPORTATION

A

Appendix A:
Existing Conditions Technical Memo

TOOLE DESIGN

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MEMORANDUM

Re: Existing Condition Technical Memo

Outline

This memo outlines the existing condition analysis focused on the pedestrian network in the City of Pasadena. The process used to assess existing conditions includes summarizing existing pedestrian infrastructure through the development of an existing conditions basemap and general pedestrian network assessment, and through a citywide pedestrian crosswalk analysis. The crosswalk analysis focuses on all marked and unmarked crosswalks throughout the city.

Existing Conditions

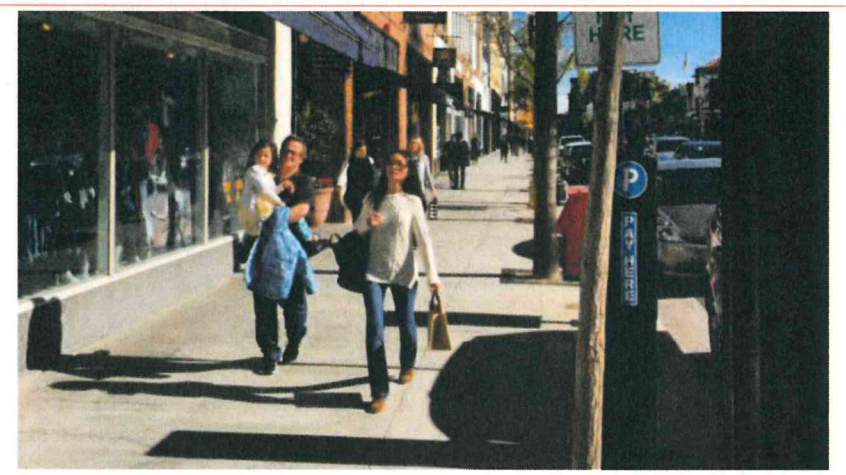
Sidewalk Network

The City of Pasadena's existing pedestrian network is primarily made up sidewalks and off-street walkways with some shared-use paths. The existing sidewalk network data was not available at the time of this analysis. However, aerial imagery and our understanding of Pasadena suggest the existing sidewalk network is relatively comprehensive, paved, and with few gaps. Gaps in the pedestrian network may include locations where tree roots lift sidewalk panels, short sections with missing or badly damaged sidewalks, or streets only having a sidewalk along one side. GIS data with information on sidewalk width, condition, and separation between the sidewalk and moving traffic would also provide insight into the quality of the citywide sidewalk network. The list below may be used to identify sidewalk gaps in the future.

Sidewalk gaps elements

- Gap or absence of paved sidewalk along street
- Narrow sidewalk (less than 4 feet wide; wider for areas with high pedestrian volumes)
- Presence of sidewalk buffer
- Sidewalk pavement in poor condition
- Objects or barriers along sidewalks (utility poles)
- High number of high activity driveways along sidewalk

Table 1: Existing Pedestrian Network

Pedestrian Facility Description	Example in Pasadena
The **existing sidewalks** in the **commercial districts** are well-paved, wide, and are furnished with pedestrian amenities. The sidewalk pavement in some location are installed using pavers to improve the overall aesthetics of the pedestrian realm.	
The **existing sidewalks in residential areas** are typically paved along both sides of the street. In cases where there is only a sidewalk on one side of the street, it is considered a pedestrian network gap. Sidewalks are typically between 4-5 feet wide but may be wider along major arterials or along commercial areas.	
Pasadena has a few **trails or share-use paths** within its city limits. The Arroyo Seco Trail, located in the western area of Pasadena, is the City's longest trail. This trail is made up of a mix of paved concrete, dirt, and gravel and connects to several parks, neighborhoods, and to the Rose Bowl stadium..	

Pedestrian Facility Description

Paved and unpaved off-street walkways provide connections and routes through city parks, plazas, and private institutions like California Institute of Technology and Pasadena City College..

Connectivity and Crosswalks

Connectivity is a key measure to support route directness for walking, whether it's for commuting, recreation or intermodal transportation connections. A highly permeable transportation network is one with a high number of intersections, short distances between street crossing opportunities, and few dead-end streets or cul-de-sacs. As connectivity improves, travel distances decrease and route directness increases, which creates more route options and therefore increases the likelihood that people will walk.

The presence and quality of crosswalks[1] are important components of connectivity. The stress a typical pedestrian may experience while crossing the street was modeled based on roadway and crossing characteristics using data provided by the City of Pasadena. Some data gaps were manually filled either using aerial imagery or by assumptions. The following roadway and crossing characteristics were used in the pedestrian crossing analysis (and can be viewed in Map 2 through Map 7):

- Traffic volume
- Number of vehicle travel lanes
- Functional classification
- Posted speed limit
- Traffic control device
- Crosswalk markings
- Locations where crossing is prohibited
- Mid-block crossing locations

Crossings at signalized intersections were evaluated using a different set of criteria than uncontrolled crossings. Table 2 outlines the scoring criteria for signalized intersections. The primary elements of a high-stress controlled crossing include lack of crosswalk markings and the speed of the roadway being crossed.

[1] Crosswalks are either a portion of the road painted with the distinctive white lines that people are familiar seeing, or where two roads meet at approximately right angles, the extensions of the sidewalks through the intersection. Source: CVC 275

Table 2: High-Stress Crossing Criteria, Controlled Crossings

Traffic Control	crosswalk type	Number of lanes	<=25	30	35	40	45+
Signalized or Stop	Marked	Any	Low-Stress	Low-Stress	Low-Stress	High-Stress	High-Stress
Signalized or Stop	Unmarked	Any	Low-Stress	Low-Stress	High-Stress	High-Stress	High-Stress

High-Stress
Low-Stress

Table 3 outlines the scoring criteria for uncontrolled crossings. The scoring for uncontrolled crossings considers presence of crosswalk markings, pedestrian crossing islands, number of lanes to be crossing, AADT of street being crossed, and the speed limit of the street being crossed. For uncontrolled locations with marked crosswalks, the presence of a crossing island increases the AADT threshold for what is considered a low-stress crossing only for locations where 2-3 lanes are being crossed. Locations with four or more lanes to be crossed are not considered less stressful with the presence of a crossing island due to the multiple threat scenario (when a driver in one lane stops for someone crossing the street, but those in other lanes may not) and negligible differences between observed driver yielding rates.

Table 3: High-Stress Crossing Criteria, Uncontrolled Crossings

Traffic Control	Crosswalk Type	Crossing Island	Number of lanes	ADT	<=25	30	35	40+
Uncontrolled	Marked	No	2-3	< 8,000	Low-Stress	Low-Stress	Low-Stress	High-Stress
				8,000+	Low-Stress	Low-Stress	High-Stress	High-Stress
			4+	< 5,000	Low-Stress	Low-Stress	High-Stress	High-Stress
				5,000+	Low-Stress	High-Stress	High-Stress	High-Stress
		Yes	2-3	< 10,000	Low-Stress	Low-Stress	Low-Stress	High-Stress
				10,000+	Low-Stress	Low-Stress	Low-Stress	High-Stress
			4+	< 5,000	Low-Stress	Low-Stress	High-Stress	High-Stress
				5,000+	Low-Stress	Low-Stress	High-Stress	High-Stress
Uncontrolled	Unmarked	No[2]	2-3	< 5,000	Low-Stress	Low-Stress	High-Stress	High-Stress
				5,000+	Low-Stress	High-Stress	High-Stress	High-Stress
			4+	< 5,000	Low-Stress	High-Stress	High-Stress	High-Stress
				5,000+	Low-Stress	High-Stress	High-Stress	High-Stress

High-Stress
Low-Stress

[2] Assumes all pedestrian crossing islands have marked crosswalks.

Analysis Assumptions

Due to gaps in the available datasets, some assumptions were made, which are outlined in Table 4. Marked crosswalks, pedestrian crossing islands, partial stop-controlled intersections (e.g. two-way stop), number of vehicle travel lanes, posted speed limit, traffic volumes, and crossing prohibited signs throughout the city were not available to our team at the time of the analysis. Most major roadways have number of travel lanes, posted speed limit, and traffic volumes but local and some collectors are missing data.

Table 4: Analysis Assumptions

Variable	Assumption
Traffic Volumes	Local roads with missing AADT, assumed volume is 500. Non-Local roads with missing AADT receive averaged AADT from segments with the same street name or same functional classification.
Crossing Prohibited	Crossing are permitted across all legs at an intersection unless there is a crossing prohibited sign present. Locations with crossing prohibitions were collected using aerial imagery and Google Street View.
Marked Crosswalk	All signalized locations are assumed to have marked crosswalks unless crossing is prohibited via regulatory signage. Unsignalized crosswalks are considered a marked crosswalk only if the City of Pasadena marked crosswalk dataset indicated there are crosswalk markings. All other crosswalks are assumed to be unmarked.
Posted Speed limit	Where speed limit along local roads is missing, assumed speed limit is 25mph.
Controlled Crossing or Crossing with RRFB or PHB	Includes all crossings at signalized and all-way intersections. Crossings at partial-stop (i.e., 2-way) controlled intersections are only considered controlled on the non-main crossing (i.e. lower functional classification). Mid-block crossings with a rectangular rapid flashing beacon (RRFB) or pedestrian hybrid beacon (PHB) are considered controlled crossings. Where leg is controlled by a traffic signal, PHB, RRFB, or stop sign.
Number of lanes	Where number of lanes is missing, assumed number of legs is 2 lanes. Only local roadways have missing lane data.
Pedestrian Crossing Islands	There are no assumed pedestrian crossing islands except for one mid-block crossing on the south side of the Rose Bowl Stadium, one at 125 S Lake Ave, and several across Sierra Madre Blvd (between Villa and Hastings Ranch Dr.)

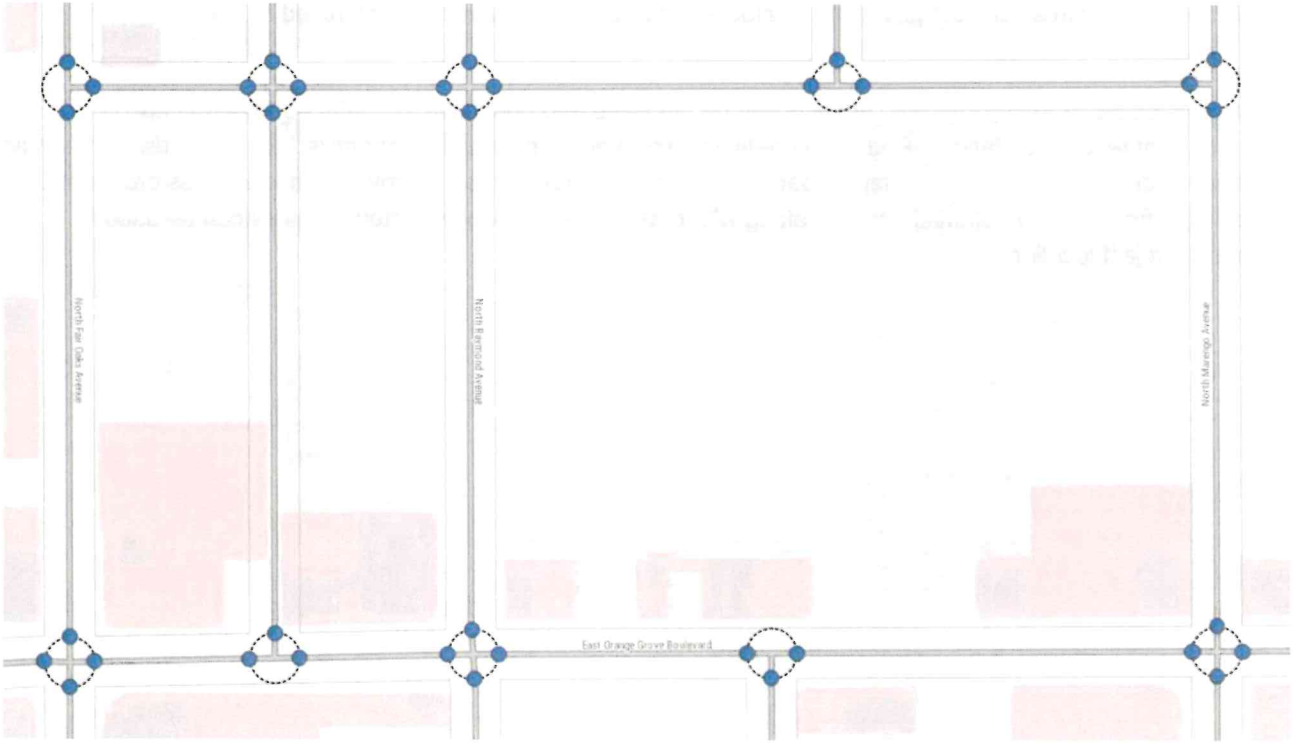
Data Development

Intersections

An intersection dataset was developed by creating a point where three or more street centerline segments intersect. Mid-block crosswalks were manually identified and added to this intersection dataset. The number of legs (approaching streets) at the intersection point was calculated by summing the number of street centerlines at the intersection. Intersection points with fewer than 3 legs were removed from the intersection dataset except for mid-block crosswalk locations.

Crosswalks

To create the crosswalks (both marked and unmarked) dataset, a point was placed along the street centerlines 30 feet from the intersection datapoint. The buffer around each intersection can be adjusted for cartographic or data precision needs. Using an intersection geoprocessing method, a crosswalk data point was created at every instance where the boundary of a buffer intersects a street centerline (see example image below). Mid-block crossing locations are then added to create a complete crosswalk dataset. This method allows for intersection and street centerlines attributes to be joined efficiently using the intersection ID and street centerline ID or joined spatially.



Crosswalk gaps

The majority of crosswalks along residential streets were found to be sufficient due to low vehicle speeds and volumes. At locations with higher volumes, all-way stop-controlled intersections helped improve the quality of the crosswalk. Most pedestrian crossings at signalized intersections have marked crosswalks along each leg unless crossing is prohibited. Most intersections at overpasses/bridges have signed pedestrian crossing prohibitions (see Map 2 for manually collected crossing prohibited locations). These crossing prohibitions require additional travel time/distance, reduce the appeal towards walking, and also increases pedestrian exposure to moving traffic for people walk/rolling. Pedestrian crossing prohibitions are considered a gap in this analysis.

Study limitations

Citywide dataset for the following variables were not available at the time of the analysis:

- **marked crosswalks** – available data is only available near schools
- **pedestrian crossing islands**
- **speed limit** – absent for local roadways
- **traffic volumes** – absent for local roadways
- **crossing prohibited signs** – manually collected

Results

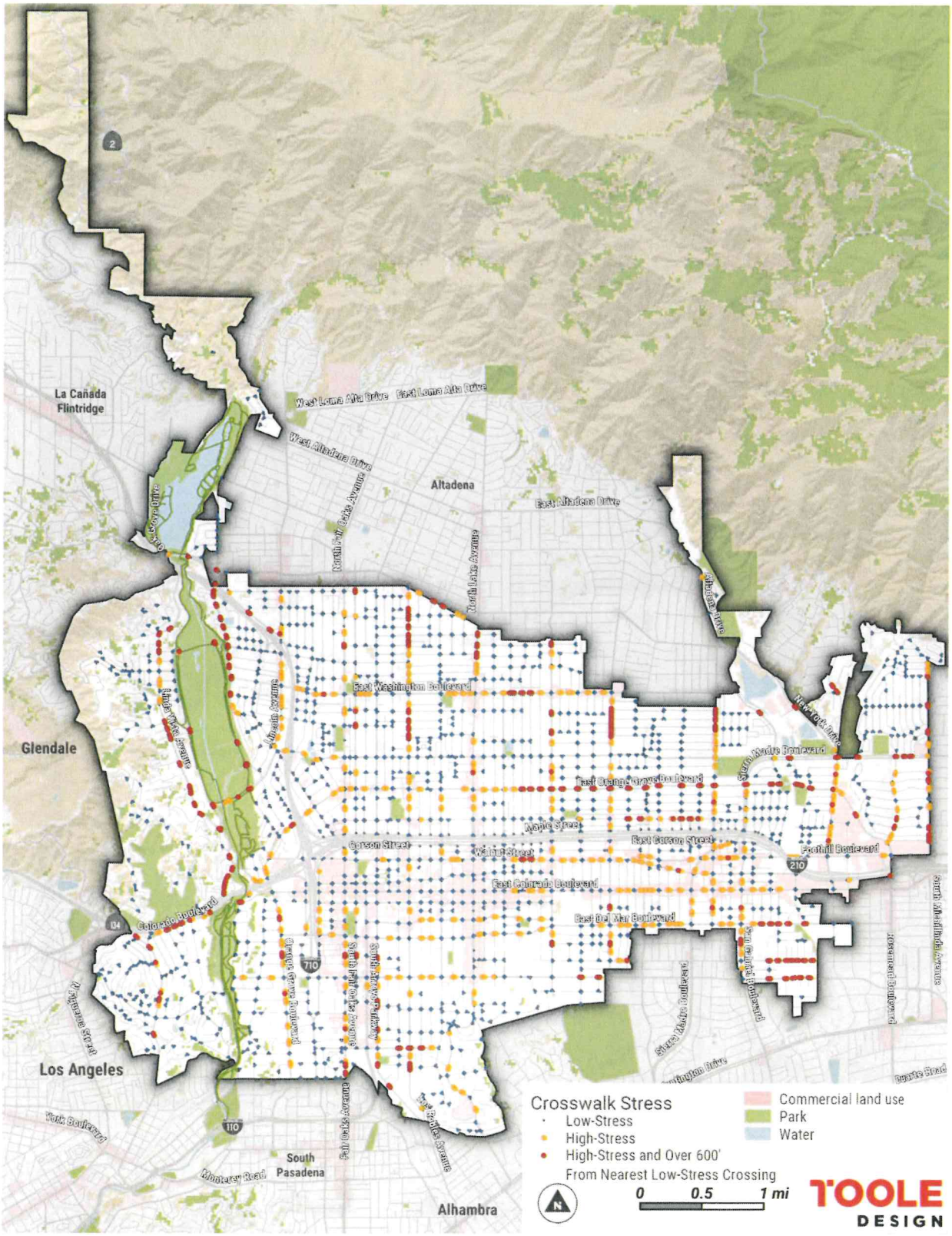
The result of the crosswalk analysis can be viewed in Map 1. This map displays **low-stress** crosswalks as **blue** dots, **high-stress** crosswalks as **yellow** dots, and **high-stress + detour** crosswalks (crosswalk that require someone to walk over 600 feet to the nearest low-stress crossing) displayed as a **red** dot.

The majority of crosswalks in the city were found to be low-stress. However, most of those locations are along local roadways or at controlled crossings with lower speed limits. Crosswalks in the downtown business district were generally scored as low-stress. The large number of low-stress crossings in this area is tied to the number of signalized crossings and the speed limit being less than 40mph. There are several corridors where there are long stretches of high-stress crossings, mainly located along arterial roadways at uncontrolled locations.

Next Steps

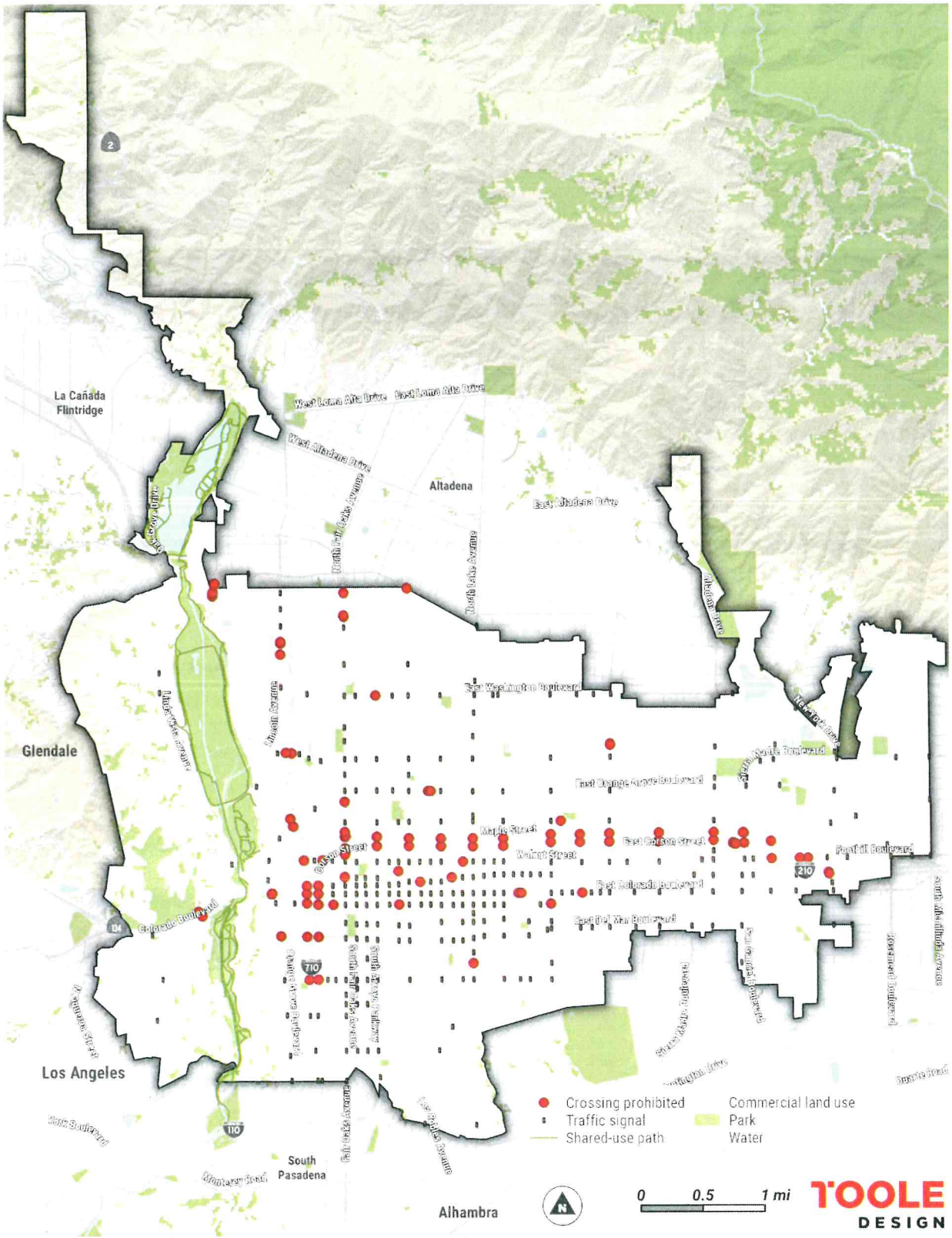
Using the results from this analysis, projects can be identified and prioritized to inform pedestrian network development recommendations. Pedestrian network improvements should be prioritized at high-stress crosswalks that can equitably provide the greatest impact on pedestrian access when improved to a low-stress crosswalk. The output from the trip potential analysis along with crash data and equity-related datasets can be used to prioritize project locations.

Map 1: Pedestrian Crossing Analysis Results



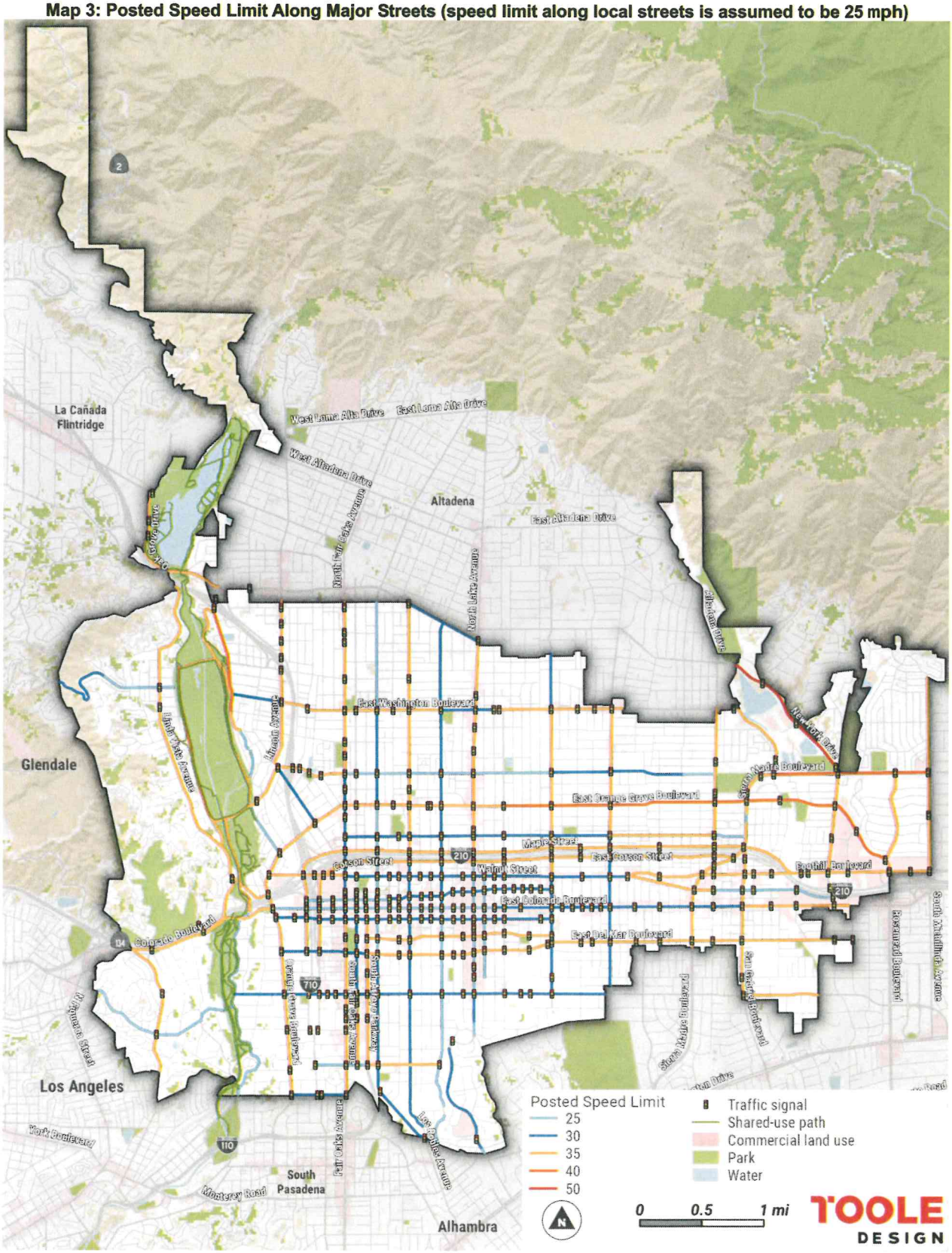
City of Pasadena, GIS aerial imagery

Map 2: Crossing Prohibited Locations



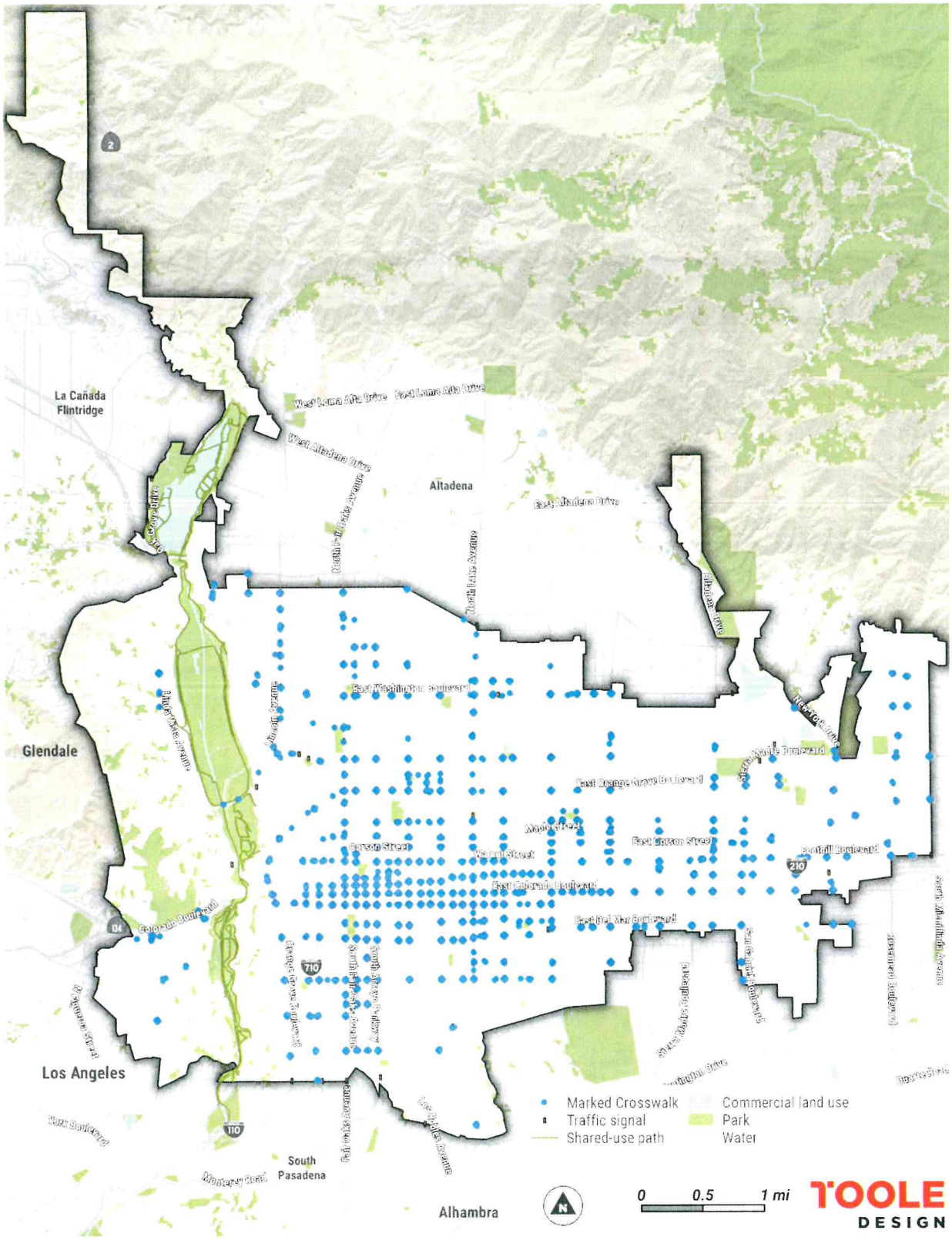
City of Pasadena, GIS aerial imagery

Map 3: Posted Speed Limit Along Major Streets (speed limit along local streets is assumed to be 25 mph)



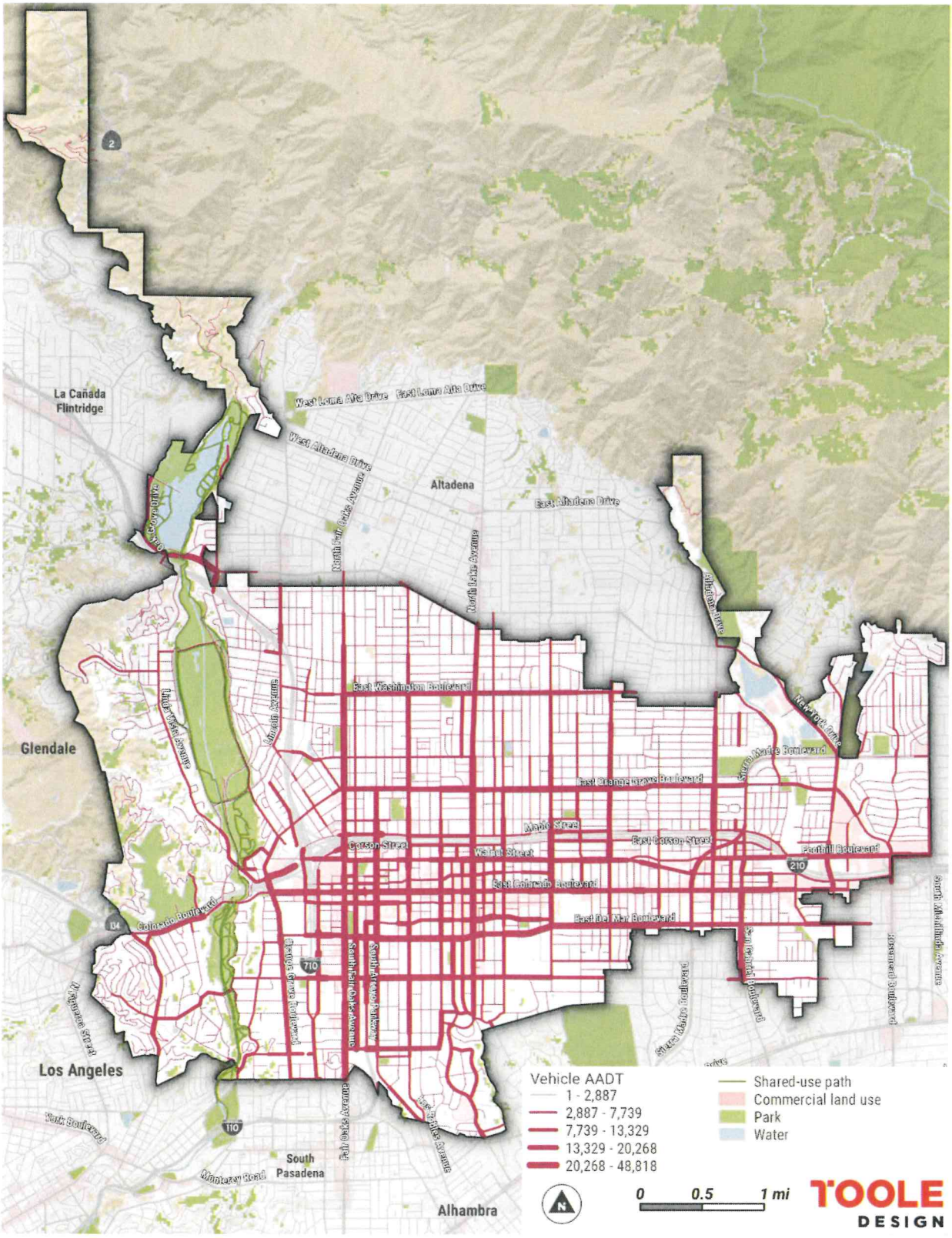
City of Pasadena, GIS aerial imagery

Map 4: Marked Crosswalk Locations



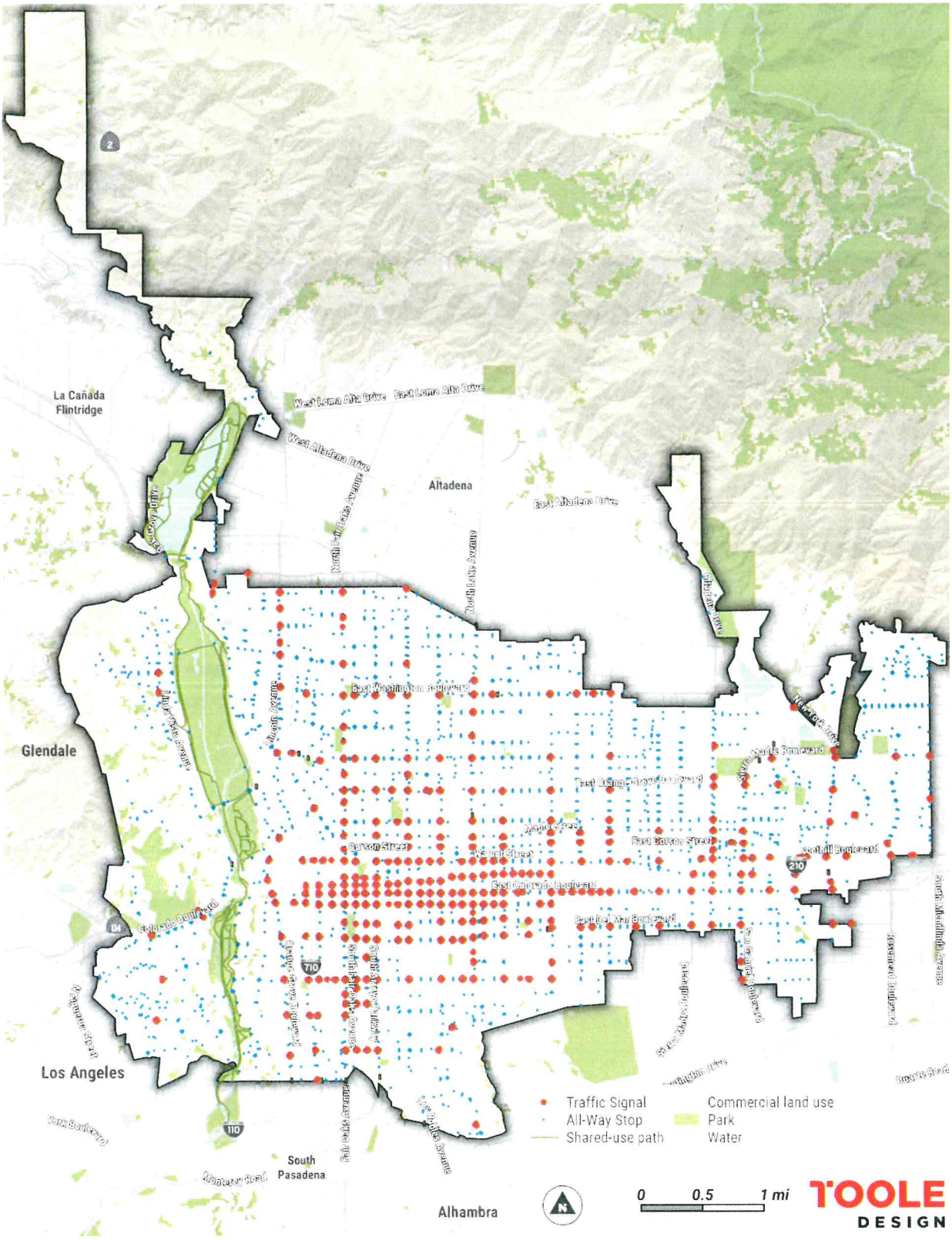
City of Pasadena, GIS aerial imagery

Map 5: Annual Average Daily Traffic Volumes



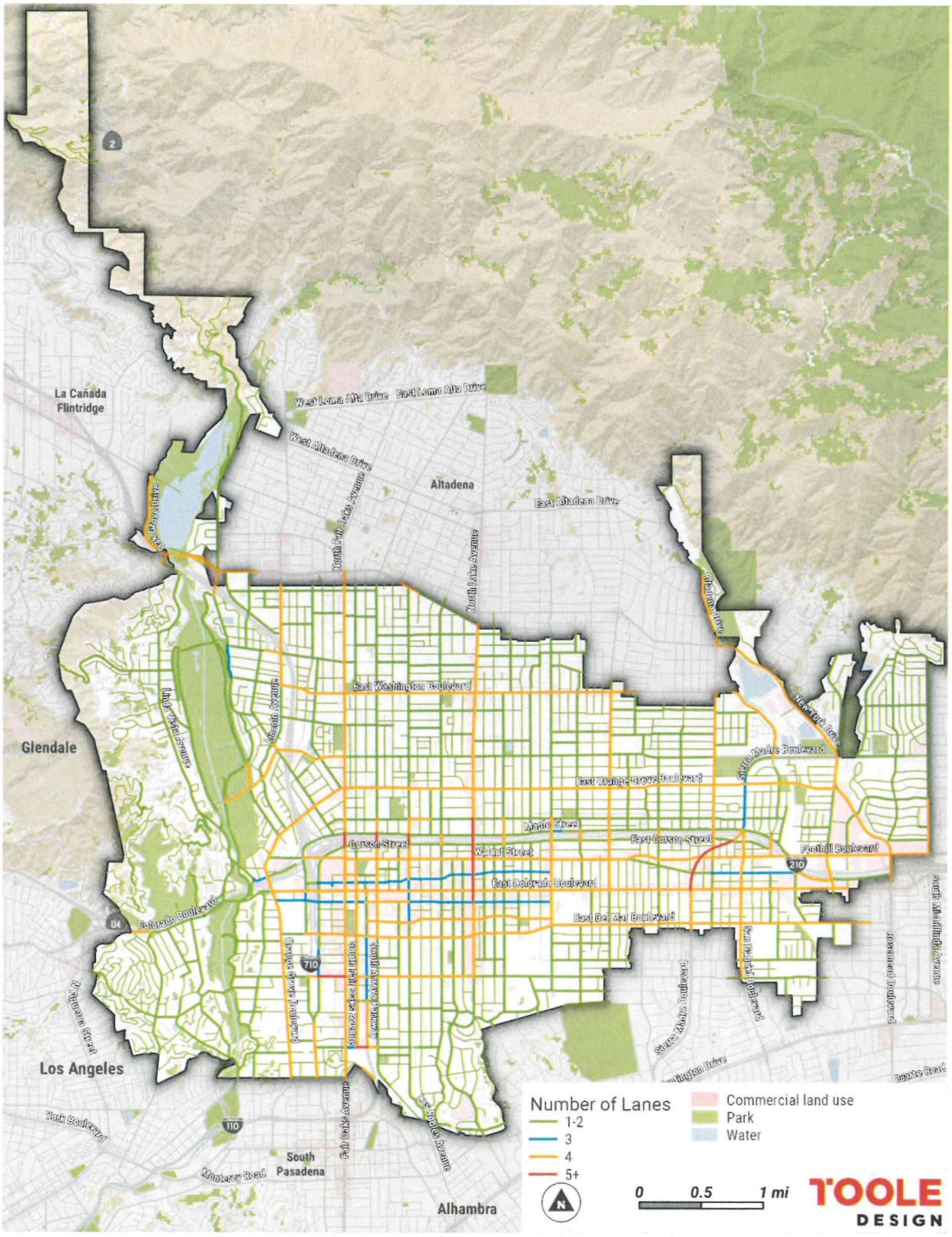
City of Pasadena, GIS aerial imagery

Map 6: Traffic Control



City of Pasadena, GIS aerial imagery

Map 7: Number of Lanes



City of Pasadena, GIS aerial imagery

B

Appendix B:
Pedestrian Crash Analysis

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MEMORANDUM

Re: Pedestrian Crash Analysis

Introduction

This document provides a summary of a pedestrian crash analysis conducted for the City of Pasadena. This memo includes an overview of the crash data used in the analysis, the analysis methodology, and trends.

Crash Data Source

Geocoded crash data is critical to understanding traffic safety and where safety improvements may be needed. While police reported crash data is known to have problems with underreporting, it is often the most complete data source and provides necessary details for informing engineering treatments, such as the location of the collision and dynamics between the parties involved in the crash.

The crash data used for this analysis is from the California Highway Patrol's (CHP) Statewide Integrated Traffic Records System (SWITRS), accessed via the Transportation Injury Mapping System (TIMS), which geocodes the data[1]. A limitation of TIMS is that it does not include Property-Damage Only (PDO) crashes, which are not included in this analysis. Crashes were collected for all streets within the City of Pasadena. The crash data was reviewed and cleaned prior to the crash analysis. Crashes with missing coordinates were processed through a geocoder if the necessary location attributes were available. The following subset of crashes were removed from the analysis dataset:

- Crashes that could not be accurately geocoded
- Crashes that appear to be outside the City of Pasadena
- Crashes coded as being on freeways or freeway ramps (not including surface roads at freeway ramps)

Crash Weighting

In most cases, crash characteristics are summarized by transportation mode involved using the total number of crashes, total number of fatal and serious injury crashes ("KSI", for "killed or seriously injured"), and the total Equivalent Property Damage Only (EPDO) score. EPDO is a method that normalizes crashes to a base unit of property damage only (PDO) crashes to allow for comparison (e.g., a fatal crash is worth approximately 170 PDO crashes). This equivalency is developed based on the expected monetary value of the crash outcomes by severity. By simultaneously accounting for the frequency and severity of crashes, the net burden of a given risk factor or location can be efficiently assessed, which can in turn aid in prioritization efforts. Additionally, subcategories of crashes can be compared based on the average EPDO score per crash type to identify which

[1] Tims.berkeley.edu

types are more likely to result in higher severity injuries. Total EPDO scores are a measure of overall crash intensity and the average EPDO score per crash is a measurement of average crash intensity.

In the EPDO scheme, crashes are weighted based on the average societal costs of crashes associated with a given severity. The weights used in this analysis, presented in Table 1, are drawn from the Caltrans Local Roadway Safety Manual (LRSM). The EPDO scores vary by location type (roadway, signalized intersection, and non-signalized intersection) due to the relative costs associated with the crash severity at those locations. For example, KSI crashes at unsignalized intersections typically result in more persons injured or more severe injuries than at signalized intersections or along segments; hence, KSI crashes at unsignalized intersections have a higher average cost.

Table 1: Crash Weights for Injury Burden (EPDO)[2]

Crash Severity	Location Type	EPDO Score	Comprehensive Crash Cost
Fatality and Serious Injury (KA)	Roadway	164.66	$2,190,000
	Non-Signalized Intersection	190.23	$2,530,000
	Signalized Intersection	119.55	$1,590,000
Other Visible Injury (B)		10.70	$142,300
Complaint of Pain (C)		6.08	$80,900
Property Damage Only (O)		1.00	$13,300

Source: Caltrans Local Roadway Safety Manual (LRSM)

Crash Trends

Crashes by Mode

When looking at the crash frequency and severity of crashes by mode, it's clear that motor vehicle crashes accounted for the largest share of overall crashes (76 percent of crashes). This finding is expected as there are substantially higher volumes of motor vehicles compared to other modes of travel in Pasadena. When looking at crashes that resulted in a KSI, only 2 percent of motor vehicle crashes resulted in a KSI. The crash data used in this analysis does not include Property Damage Only crashes, which would reduce that figure even more if those crashes were included. Pedestrians and Motorcyclists tend to have the most severe outcomes when involved in a crash with 10 percent of pedestrian crashes resulted in a KSI and 20 percent of motorcycle crashes resulting in a KSI. Notably pedestrians represent only 11 percent of overall crashes but 27 percent of KSI crashes.

Table 2: Crashes by Mode, 2015-2019

Mode	# o Crashes	% of Crashes	# of KSI	% of KSI	KSI per Crash
Automobile	2407	76%	57	44%	2%
Pedestrian	359	11%	36	27%	10%
Bicyclist	273	9%	10	8%	4%
Motorcycle	137	4%	28	21%	20%

[2] https://dot.ca.gov/-/media/dot-media/programs/local-assistance/documents/hsip/2020/lrsm2020.pdf

Total	**3176**	**100%**	**131**	**100%**	**4%**

Crashes by Year

There are no significant or discernable patterns related to pedestrian crash frequency or injury severity on a year-to-year basis. The number of crashes had minor fluctuations ranging from 64 crashes to 2015 to 79 crashes in 2016 and there were generally 8 KSI crashes on an annual basis.

Table 3: Pedestrian Crashes by Year, 2015-2019

Year	# of Crashes	% of Crashes	# of KSI	% of KSI	EPDO Total	% EPDO Total	KSI per crash
2015	64	18%	4	11%	1,145	14%	6%
2016	79	22%	8	22%	1,774	22%	10%
2017	76	21%	8	22%	1,821	23%	11%
2018	70	19%	8	22%	1,961	24%	11%
2019	70	19%	8	22%	1,389	17%	11%
Total	**359**	**100%**	**36**	**100%**	**8,090**	**100%**	**10%**

Crashes by lighting condition

Pedestrian crashes occurred most frequently during daylight hours (64 percent of crashes), which is expected as most trips occur during this time. Dark lighting conditions with streetlights accounted for the second highest share of crashes with 31 percent of all crashes and 47 percent of all KSI crashes. Crashes that occurred during dark lighting conditions tend to be more severe compared to daylight conditions, with 15 percent of crashes resulting in a KSI, compared to 8 percent during daylight conditions.

The majority share of KSI crashes that occurred during dark lighting conditions (with or without streetlights) is something to note. Trips occur most often during the day for commuting, recreation, or utility trips. Therefore, there are expected higher rates of exposure and higher crash frequencies during the day. The majority of KSI crashes having occurred during dark lighting conditions in Pasadena highlights the heightened risk for a pedestrian crash to occur and for the crash to be severe.

Table 4: Pedestrian Crashes by Lighting Condition, 2015-2019

Lighting Condition	# of Crashes	% of Crashes	# of KSI	% of KSI	EPDO Total	% EPDO Total	KSI per crash
Daylight	231	64%	18	50%	4,631	57%	8%
Dark - Street Lights	112	31%	17	47%	3,205	40%	15%
Dusk - Dawn	11	3%	1	3%	209	3%	9%
Dark - No Street Lights	3	1%	0	0%	23	0%	0%
-	2	1%	0	0%	22	0%	0%
Total	**359**	**100%**	**36**	**100%**	**8,090**	**100%**	**10%**

Crash Location Type

The overwhelming majority of pedestrian crashes occurred at intersections accounting for 95 percent of crashes, 92 percent of KSI crashes, and 96 percent of the EPDO score. More specifically, pedestrian crashes occurred most frequently at signalized intersections with 72 percent of crashes and 53 percent of KSI crashes having occurred at those locations. While those locations accounted for the majority of crashes, unsignalized intersections tend to have more severe crash outcomes with 17 percent of crashes resulting in a KSI and an average EPDO score of 40.7 compared to 7 percent and 17.07 for signalized intersections.

Pedestrian crashes typically occurred at intersection locations largely because the existing street network design prioritizes pedestrians to cross at intersections (specifically signalized intersections), leading to higher exposure levels at intersections. Additionally, interactions between motorists and pedestrians are often more complex at intersections than at mid-block locations. Factors that may contribute to safety risk at intersections include long wait times that encourage non-compliance with walk signals, short walk signal phases, intersection geometrics that allow for high speed vehicle turning movements, and operational factors such as right turn on red and permissive left-turn phases.

Table 5: Pedestrian Crashes by Location Type, 2015-2019

Location Type	Traffic Signal	# of Crashes	% of Crashes	# of KSI	% of KSI	EPDO Total	% EPDO Total	KSI per crash	Average EPDO
Intersection	Yes	258	72%	19	53%	4,405	54%	7%	17.07
	No	82	23%	14	39%	3,337	41%	17%	40.70
Intersection Total		***340***	***95%***	***33***	***92%***	***7,742***	***96%***	***10%***	***22.77***
Mid-Block	No	19	5%	3	8%	348	4%	16%	18.32
Mid-Block Total		***19***	***5%***	***3***	***8%***	***348***	***4%***	***16%***	***18.32***
Total		**359**	**100%**	**36**	**100%**	**8,090**	**100%**	10%	**22.53**

Crashes by Pedestrian Action

The majority of pedestrian crashes were reported as involving a pedestrian crossing in a crosswalk at an intersection, accounting for 62 percent of crashes and 39 percent of KSI crashes. The second most common reported pedestrian action was crossing not in crosswalk accounting for 17 percent of crashes and 39 percent of KSI crashes. These crashes tend to be the most severe with 23 percent of crashes resulting in a KSI and an average EPDO score of 41.23 which are substantially higher than crashes involving a pedestrian crossing in a crosswalk at an intersection. However, it is unclear exactly where the pedestrian was located in relation to the crosswalk or if the crash occurred at an unmarked crosswalk as the vast majority of these crashes occurred at intersections.

Table 6: Pedestrian Crashes by Pedestrian Action, 2015-2019

Pedestrian Action	# of Crashes	% of Crashes	# of KSI	% of KSI	EPDO Total	% EPDO Total	KSI per crash	Average EPDO
Crossing in Crosswalk at Intersection	224	62%	14	39%	3,983	49%	6%	17.78
Crossing Not in Crosswalk	60	17%	14	39%	2,474	31%	23%	41.23
In Road, Including Shoulder	35	10%	4	11%	764	9%	11%	21.83
Not in Road	17	5%	2	6%	363	4%	12%	21.35

Not Stated	14	4%	2	6%	422	5%	14%	30.14
Crossing in Crosswalk Not at Intersection	9	3%	0	0%	84	1%	0%	9.33
Total	**359**	**100%**	**36**	**100%**	**8,090**	**100%**	**10%**	**22.53**

Crashes by Motorist Pre-Crash Movement

Pedestrian crashes occurred most frequently involving a motorist proceeding straight prior to the crash (39 percent) followed by a motorist making a left turn (36 percent). While both crash types had similar shares of crashes, crashes involving a motorist proceeding straight were substantially more severe. This crash type accounted for 72 percent of KSI crashes, 62 percent of EPDO scores, and were on average more severe (19 percent resulted in KSI and 36.03 average EPDO score). The severity of these crashes is likely related to higher vehicle speeds associated with vehicles traveling straight compared to other movements like turning left or right, which require slower movements.

Table 7: Pedestrian Crashes by Motorist Pre-Crash Movement, 2015-2019

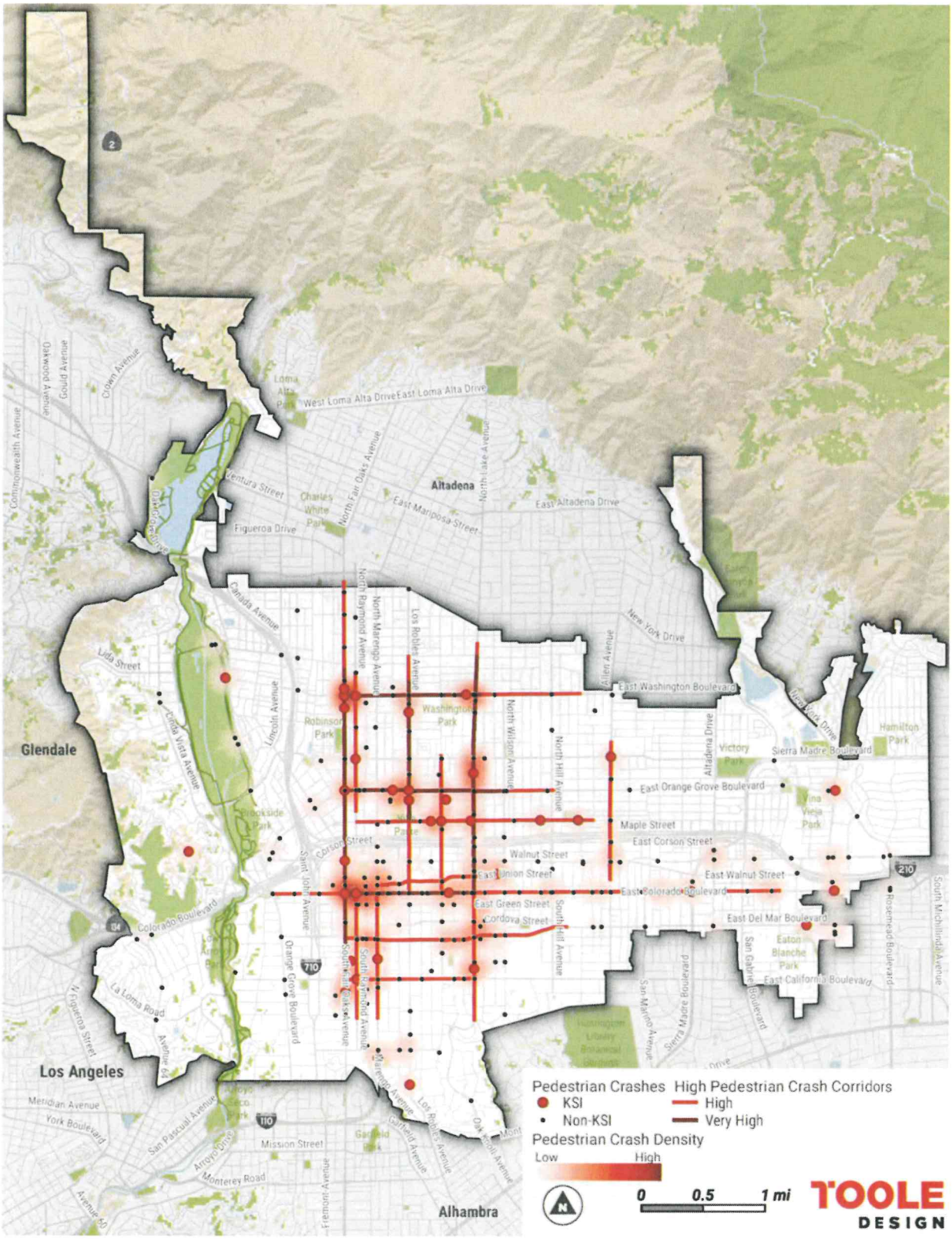
Motorist Pre-Crash Action	# of Crashes	% of Crashes	# of KSI	% of KSI	EPDO Total	% EPDO Total	KSI per crash	Average EPDO
Proceeding Straight	139	39%	26	72%	5,008	62%	19%	36.03
Making Left Turn	129	36%	4	11%	1,703	21%	3%	13.20
Making Right Turn	67	19%	3	8%	886	11%	4%	13.22
Backing	8	2%	1	3%	126	2%	13%	15.75
Entering Traffic	4	1%	1	3%	152	2%	25%	38.00
Stopped	4	1%	1	3%	152	2%	25%	38.00
Changing Lanes	2	1%	0	0%	22	0%	0%	11.00
Slowing/Stopping	1	0%	0	0%	6	0%	0%	6.00
Ran Off Road	1	0%	0	0%	11	0%	0%	11.00
Other	1	0%	0	0%	6	0%	0%	6.00
Other Unsafe Turning	1	0%	0	0%	6	0%	0%	6.00
Making U-Turn	1	0%	0	0%	6	0%	0%	6.00
Not Stated	1	0%	0	0%	6	0%	0%	6.00
Total	**359**	**100%**	**36**	**100%**	**8,090**	**100%**	**10%**	**22.53**

Crash Locations

In addition to mapping the locations of pedestrian crashes, a sliding window analysis was conducted to measure pedestrian crash densities along street corridors. This type of analysis involves calculating crash density estimates along streets throughout the region weighted by crash severity. Crashes that resulted in a fatal or serious injury received a weight of three, all other crashes received a weight of one. Corridors with higher crash frequencies and severities are identified by applying a one-mile moving window aggregation to the street network. The one-mile moving windows were created to form corridors using the roadway street name. In this approach, a virtual "window" is moved along each street at 1/10th mile increments, counting the number of crashes by severity that occurred within each successive one-mile segment. Both intersection and segment crashes were included in this evaluation, as the focus is on overall corridor conditions. The results of this analysis display specific corridors that have a higher number of crashes on a per mile basis.

Crashes are most concentrated along major roads and near locations that are associated with higher levels of trip generators (commercial, retail, restaurants, etc.). Crashes tend to be centrally located in Pasadena with between Allen Ave and N Fair Oaks Ave. Other corridors like E Colorado Blvd, N Lake Ave, E Orange Grove, E Washington Blvd, N Fair Oaks Ave, and Los Robles Ave had the highest concentration of pedestrian crashes. With the exception of Los Robles Ave, these streets are generally wide streets, have higher vehicles volumes, and have mixed land uses along the corridors. Los Robles Ave is generally residential aside from the portion of the corridor that runs west of the Playhouse District area.

Map 1: Pedestrian Crashes In Pasadena



TIMS/SWITRS 2015-2019

C

Appendix C:
Pedestrian Trip Potential Analysis

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MEMORANDUM

Re: Pedestrian Trip Potential Analysis

Trip Potential

Toole Design performed a trip potential analysis to determine where people would be most likely to walk in Pasadena, based on factors that are positively associated with pedestrian trip attraction or generation. A combination of factors related to development patterns and socioeconomic characteristics were selected as the primary elements to estimate a location's pedestrian trip potential.

The results of this analysis highlight areas where enhanced pedestrian infrastructure *may* potentially serve more users. This analysis may also assist the City of Pasadena when prioritizing projects by identifying locations that have the greatest potential for increased walking.

Note that the trip potential analysis estimates where people would walk if it were convenient and comfortable to do so. Counts of existing walking trips can provide insight, but these trips have already internalized the impacts of existing infrastructure for walking. As a result, trip potential is calculated independent of existing facilities.

Methodology

Trip potential variables, as well as their relative weighting, are based on research and experience in similar jurisdictions. Calculated at one-eighth mile-sized hexagonal grid, Toole Design analysts considered the following factors with associated weightings, as presented in Table 1. Raw values were scaled using percentile scaling so that inputs of different units can be compared. The total trip potential score is an aggregate of the individual factor scores.

Table 1: Variables for Trip Potential Analysis

Variable	Measure	Source	Description	Weight
Intersection Density	Intersections per square mile	Derived from City of Pasadena centerline data file	Research into travel mode choice has shown that intersection density is highly correlated with increased bicycling[1] and walking[2]. Locations with a high number of intersections with three or more legs tend to have better connectivity, higher densities, and more destinations; therefore, these are locations in which utilitarian trips are more likely to occur. Intersections are weighted to better reflect how connected they are to routes. Intersections with fewer legs, at cul-de-sacs, or connected to dead-end street receive lower weight.	10%
Population Density	Population per square mile	American Community Survey (ACS), 2019	Population density is another major determinant for both walking and biking trips - the more people in an area, the more people will be walking.	30%
Transit Service	Transit stops within 0.25 mile	LA Metro, Foothill Transit, Glendale Transit, LADOT	First and last mile connections to and from transit are sources of walking trips. Stops within 0.25 mi of the hexes reflect a typical distance people are willing to walk to transit[3]. Bus stops with more routes served receive a higher weight.	10%
Population Below the Poverty Line	Percent of people at or below 150% of the Federal Poverty Line	American Community Survey (ACS), 2019	Research indicates that people living in households below the Federal poverty line are more likely to depend on transit, walking, or biking to get around.[4]	10%
Employment Density	Jobs per square mile	Longitudinal Employer-Household Dynamics (LEHD), 2018	Employment density is another major determinant for walking and biking trips. People walk to areas with high employment for a variety of reasons, including jobs, shopping, or errands. Moreover, some areas with high employment see a lot of midday walking activity.	20%
Destination Density	Destinations per square mile	Business license data, parks, and civic destinations	Destinations are places that people would want to walk to. They include commercial destinations such as stores and restaurants, recreational destinations such as parks and playgrounds, and community destinations such as community centers and libraries.	20%

[1] Built Environment Influences on Healthy Transportation Choices: Bicycling Versus Driving. M Winters, M Brauer, E Setton, K Teschke – Journal of Urban Health, 2010.

[2] Measuring Network Connectivity for Bicycling and Walking. J Dill - 82nd Annual Meeting of the Transportation Research Board, 2003

[3] Comparing Transit Oriented Developments Based on Walkability Indicators. Schlossberg, L Ma, Brown, Na - 82nd Annual Meeting of the Transportation Research Board, 2003

[4] Predicting Transit Ridership at the Stop Level: The Role of Service and Urban Form. J Dill, M Schlossberg, L Ma, C Meyer - 92nd Annual Meeting of the Transportation Research Board, 2013

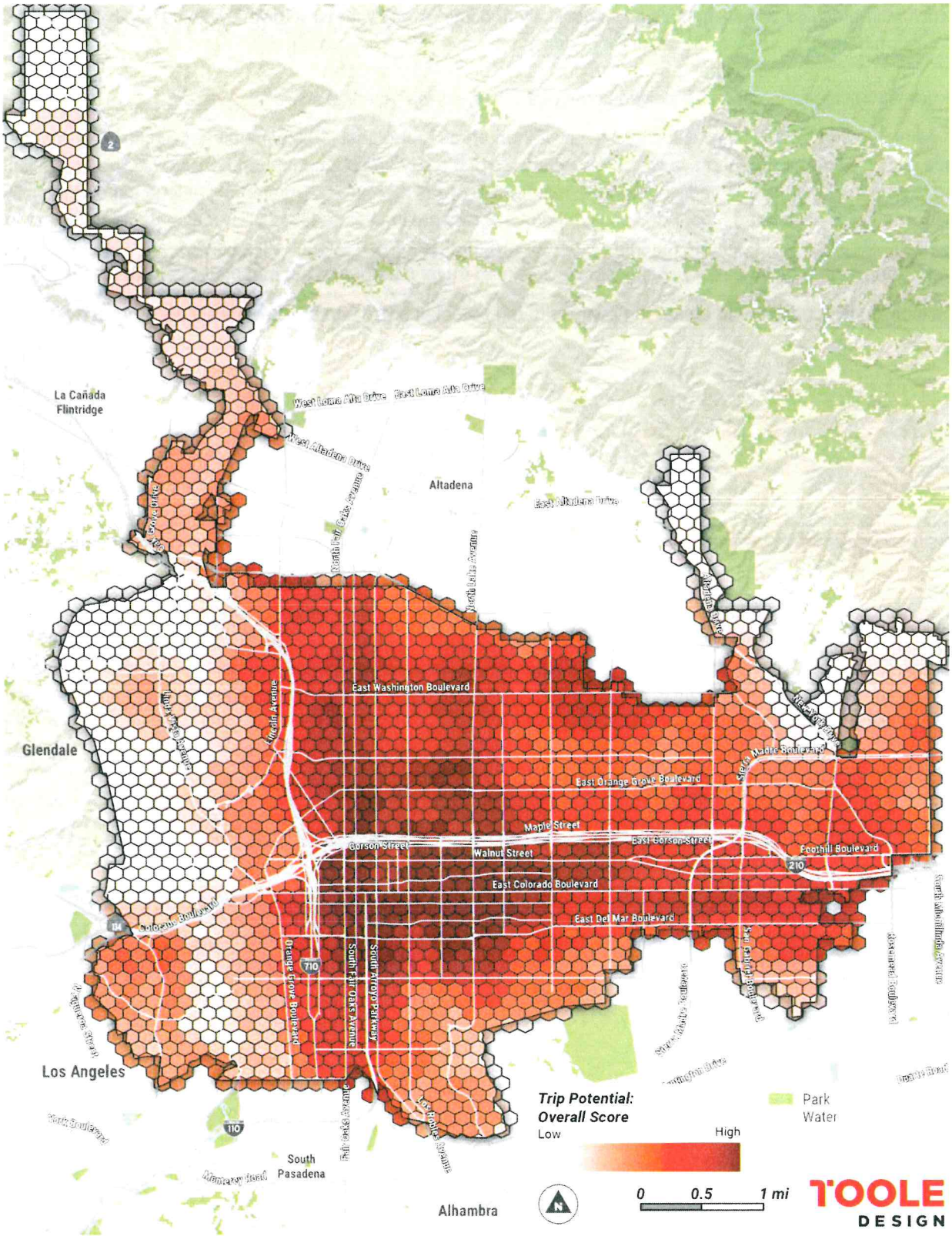
Results

Map 1 illustrates where walking trips are most likely to occur. Areas with more diverse land uses, higher population densities, and traditional street grids tend to have higher trip potential scores due to their development patterns that support pedestrian travel. The downtown business district and areas with the highest population densities directly north of I-210 received some of the highest trip potential scores.

The area west of I-210 scored substantially lower than areas to the east. This primarily reflects the different land uses and development patterns between the west side of the city and the central and east side. The area's land use is primarily open space and single-family residential. Areas that have a greater mix of land uses are positively associated with pedestrian trips. Additionally, the street network in this area is not a traditional grid but is made up of curvilinear streets with a large number of cul-de-sacs and dead-end streets. This type of roadway network can lead to long, non-direct trips for people who would like to travel on foot and not in a motor vehicle.

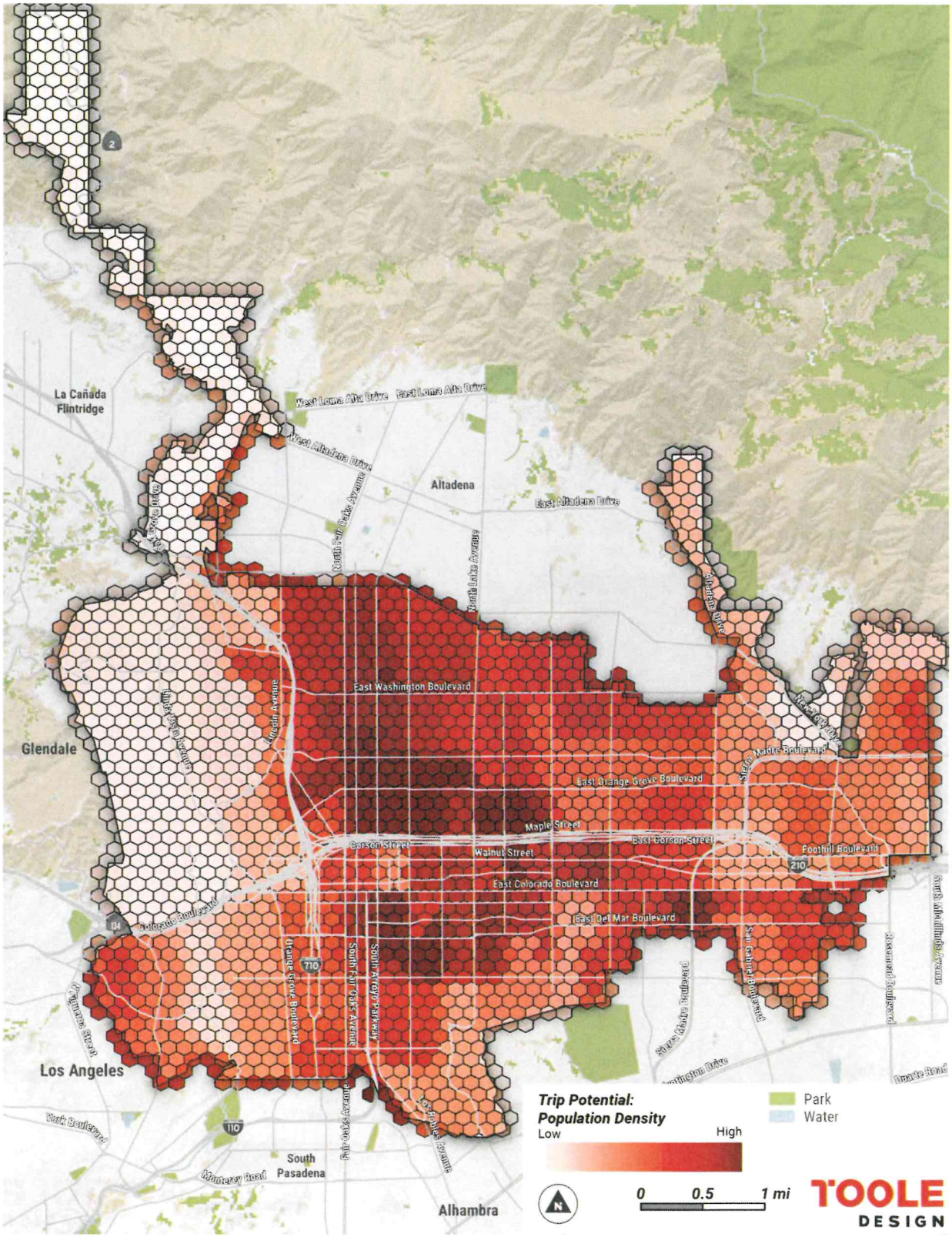
The individual inputs used to create the composite trip potential score can be viewed in Map 2 through Map 6.

Map 1: Trip Potential Results



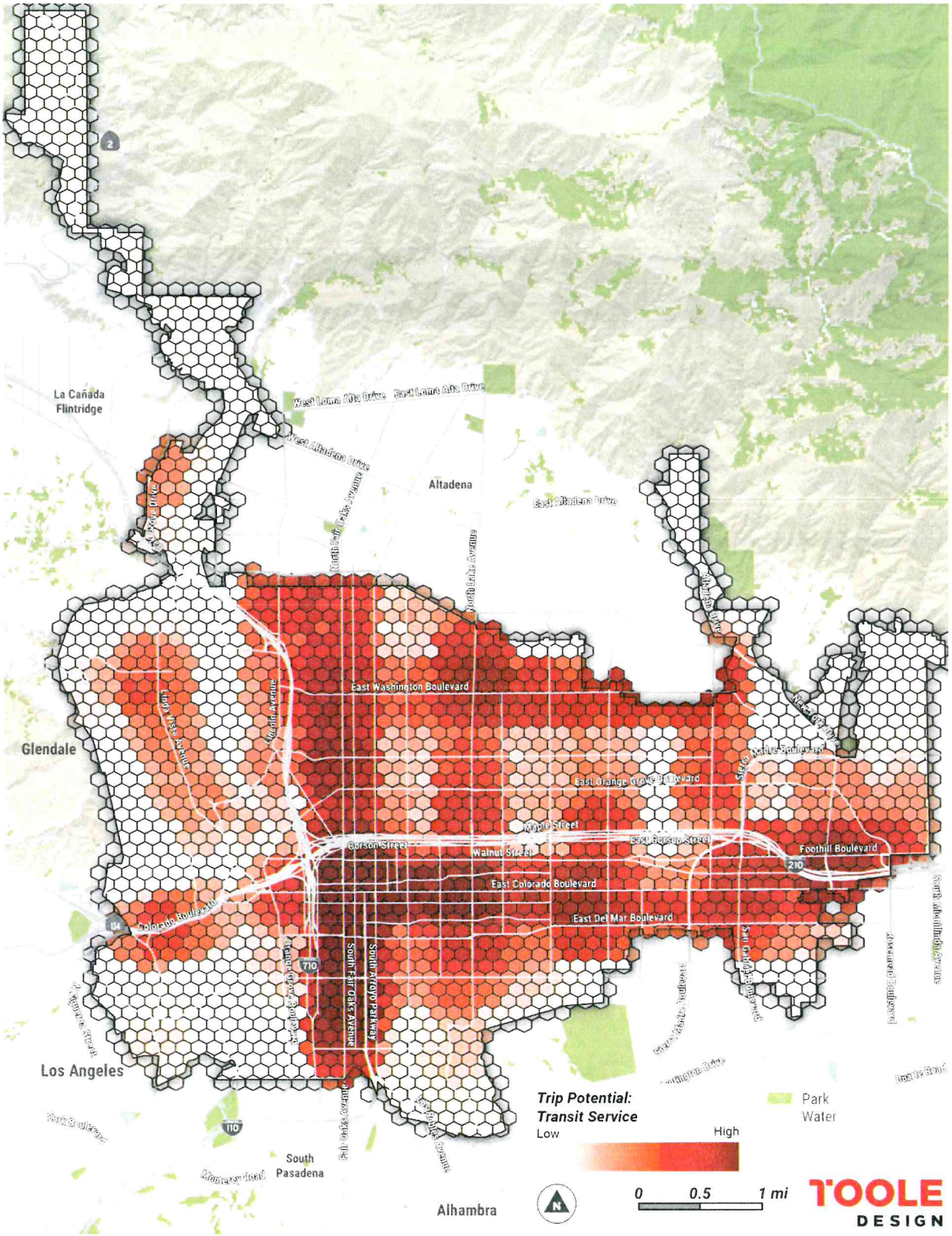
City of Pasadena, ACS 2019, LEHD 2018, LA Metro, Foothill Transit, Glendale Transit, LADOT, GIS aerial imagery

Map 2: Population Density



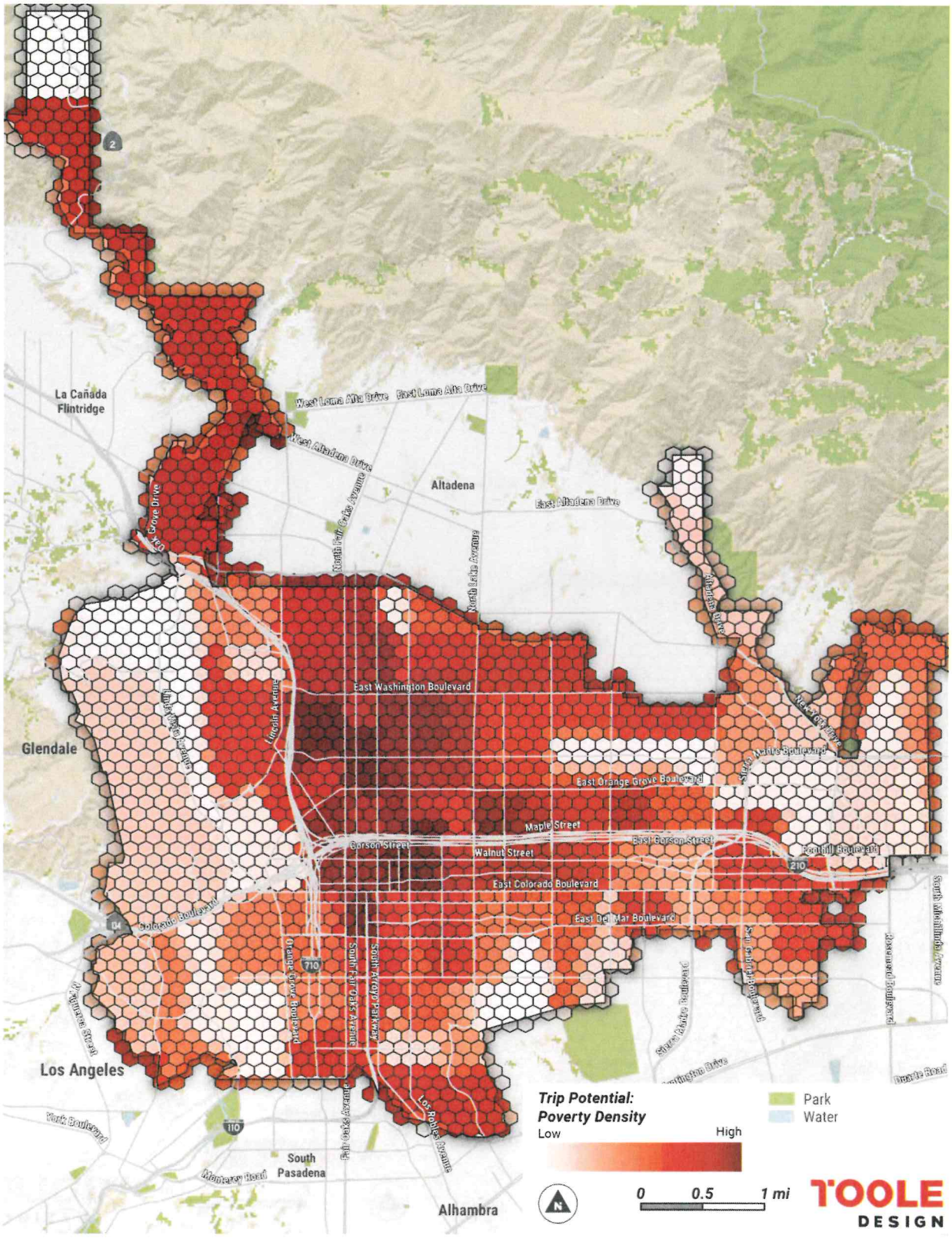
City of Pasadena, ACS 2019

Map 3: Transit Service



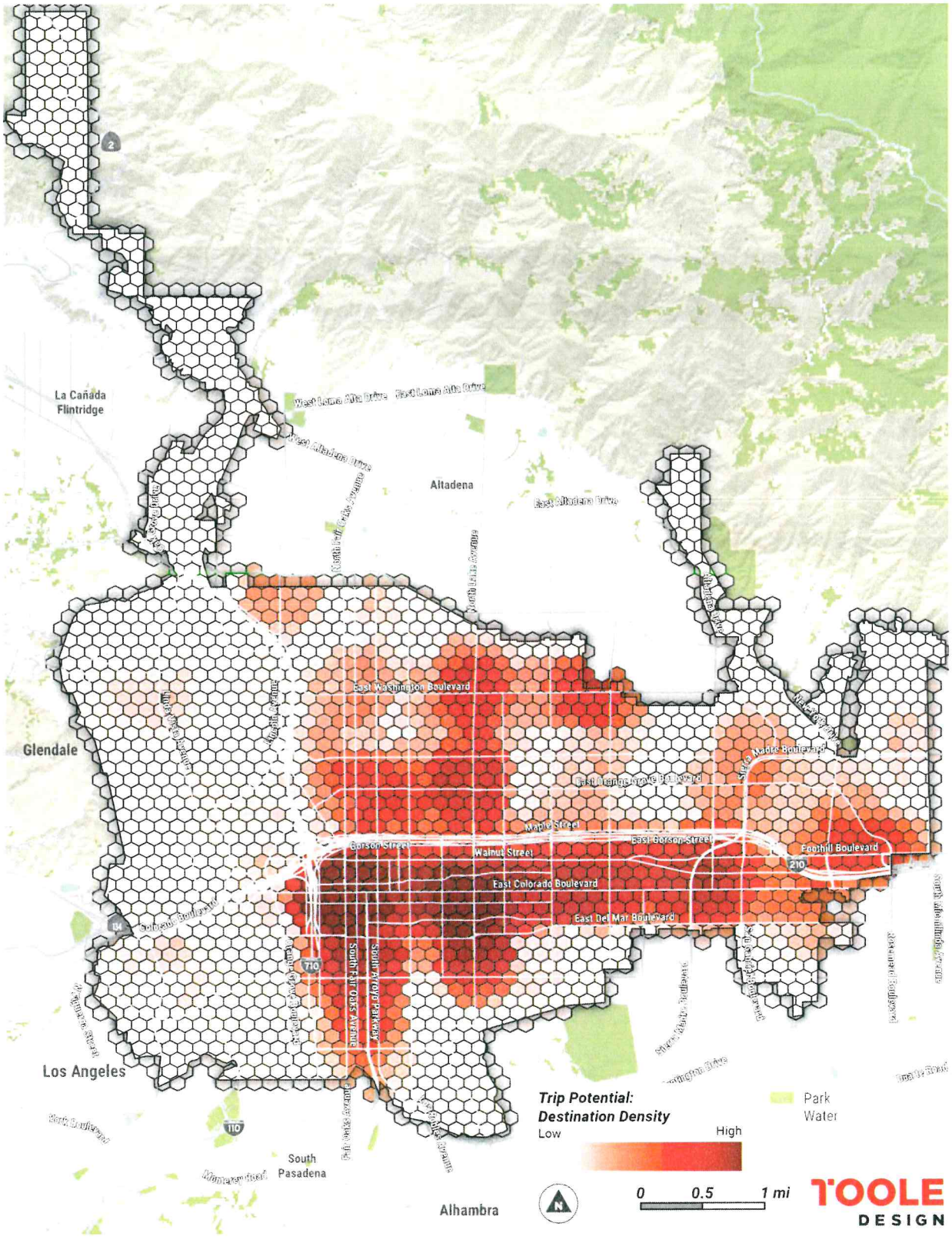
City of Pasadena, LA Metro, Foothill Transit, Glendale Transit, LADOT

Map 4: Poverty Status



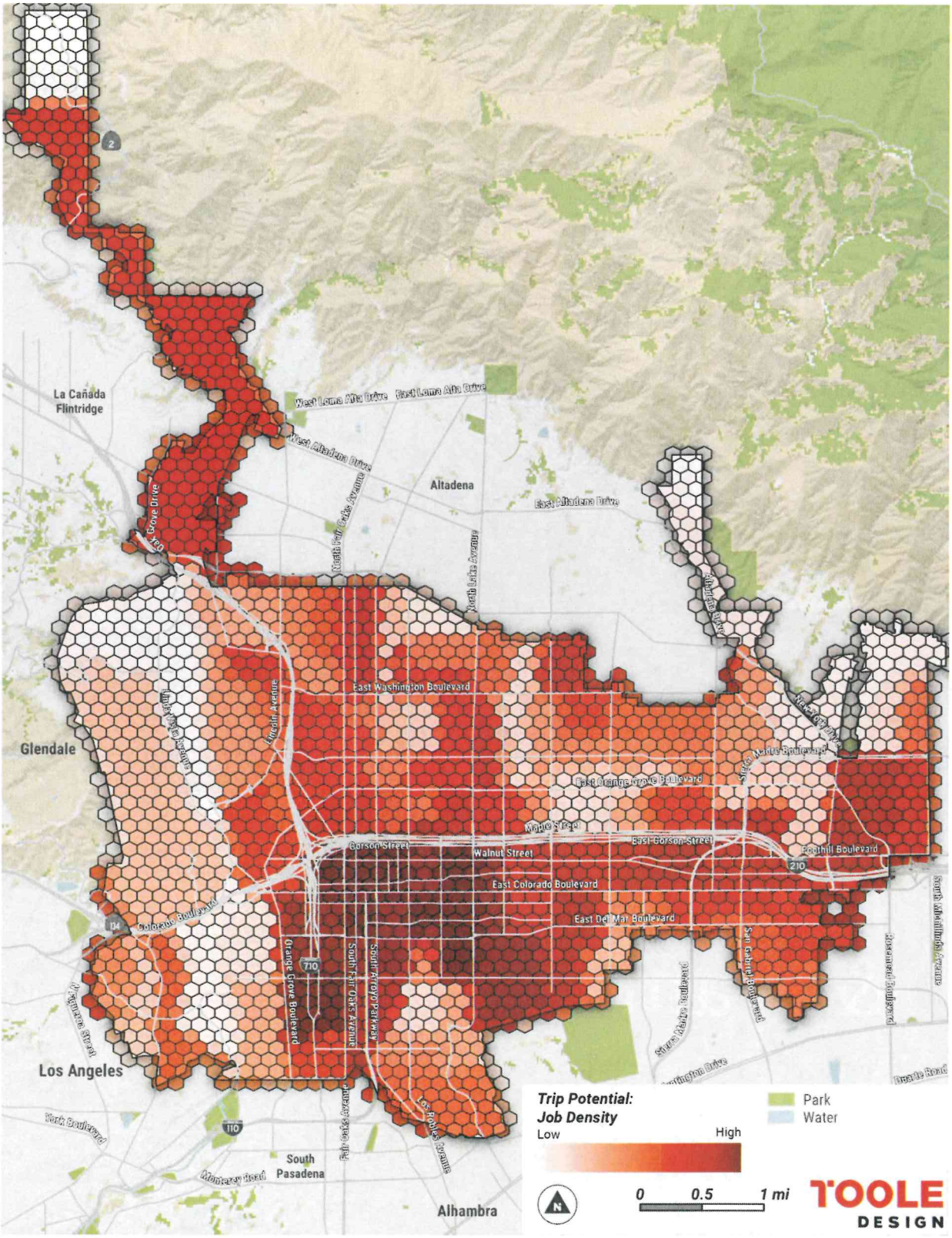
City of Pasadena, ACS 2019

Map 5: Destination Density



City of Pasadena

Map 6: Job Density



City of Pasadena, LEHD 2018

D

Appendix D:
Prioritization Analysis & Framework

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MEMORANDUM

Re: Prioritization Framework and Project Development

This memo outlines the recommended approach to prioritize the pedestrian network in the City of Pasadena. The prioritization analysis will score crossings and streets[1] throughout the city by how well each location meets the prioritization criteria. Using the results from the prioritization analysis, locations will be identified for pedestrian improvements. The prioritization analysis approaches are outlined in this memo.

Methodology & Approach

A prioritization analysis for both pedestrian crossings and streets was recommended for the Pasadena Walks Pedestrian Plan to help inform the project identification process. As noted in the existing conditions analysis, the City of Pasadena already has a mostly built out network of sidewalks. As a result, the majority of pedestrian improvements will focus on enhancing pedestrian crossings along key corridors with a smaller number of sidewalk projects.

Based on Toole Design's prioritization experience, keeping the number of prioritization criteria focused and streamlined can lead to clearer prioritization results, and the proposed prioritization criteria that we have developed reflects this in Table 1 and Table 2.

The prioritization criteria was used to score the existing pedestrian network into high-, medium- and lower-priority "buckets." Priority corridors and crossings have then been identified by reviewing high-scoring locations based on the overall prioritization score, the prioritization sub scores (equity, safety, connectivity, and access), and input from the public, technical advisory committee, and City staff.

Toole Design does not recommend applying a project "ranking" to each project, but rather only display the prioritization bucket (high, medium, and low). These buckets are intended to help the City prioritize investments in coming years while also allowing for the prioritization results to be viewed as flexible. As opportunities arise through other processes (for example, new development), a lower-ranked project may be ripe for implementation as a part of another process and/or funding opportunity.

[1] Street centerline data will be used as sidewalk GIS data is not currently available.

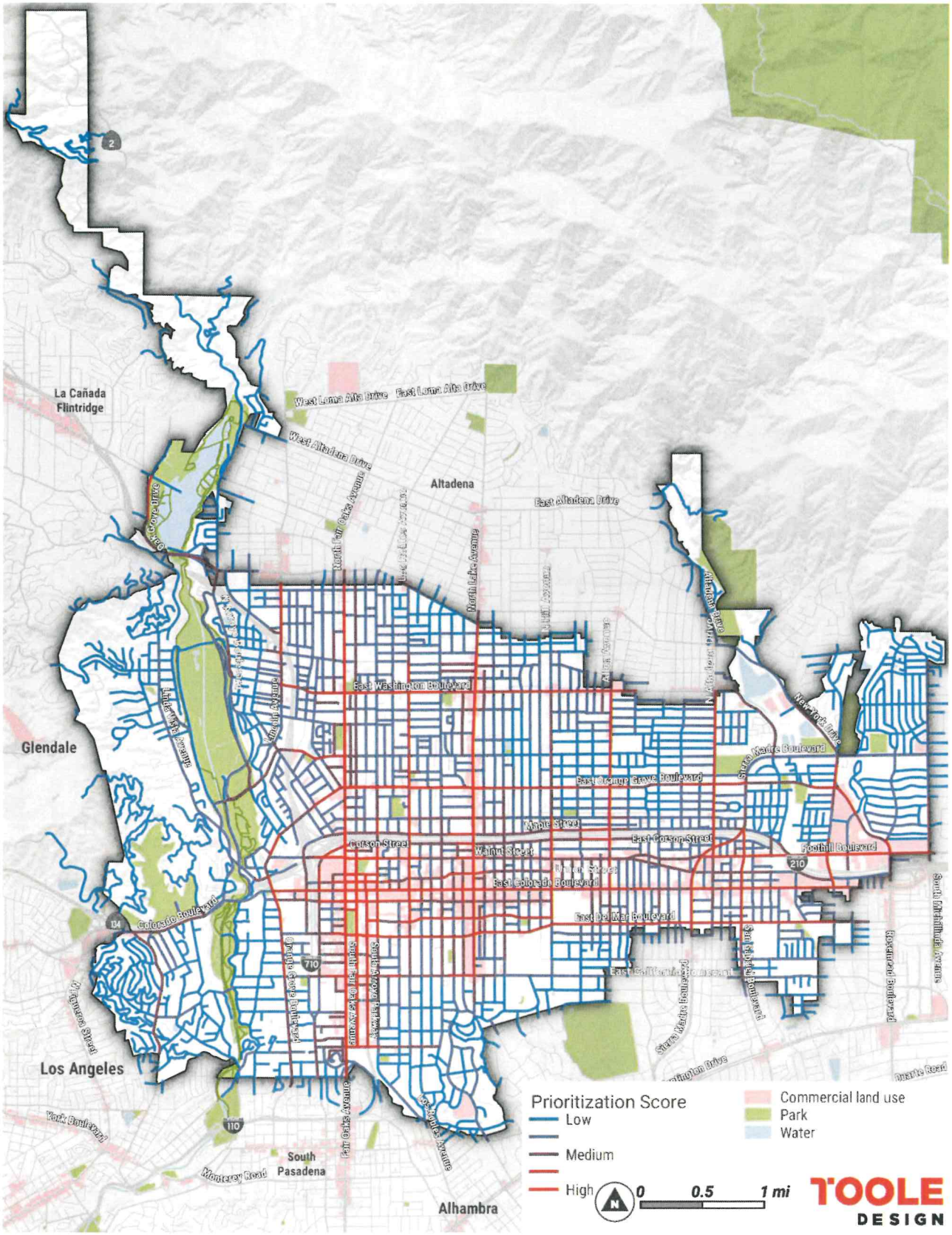
Table 1: Draft Variables for Intersection Prioritization Analysis

Criteria	Measure	Description	Weight
Equity	California Healthy Places Index (HPI)	Locations within communities that score low in the Healthy Places Index will be prioritized.	High
Safety	Pedestrian Crash History (TIMS/SWITRS 2015-2019)	Using the results from the pedestrian crash analysis, project that are along corridors with higher crash frequencies will be prioritized.	High
Connectivity	Quality of Crossing (Crosswalk Analysis)	Locations that were determined to be deficient will be prioritized. Location that are more than ¼ mile away from the nearest high-quality crossing will receive an additional weight.	Highest
Access	Trip Potential Score (Trip Potential Analysis)	Locations that are in areas that have higher trip potential score will be prioritized.	Medium

Table 2: Draft Variables for Street/Sidewalk Prioritization Analysis

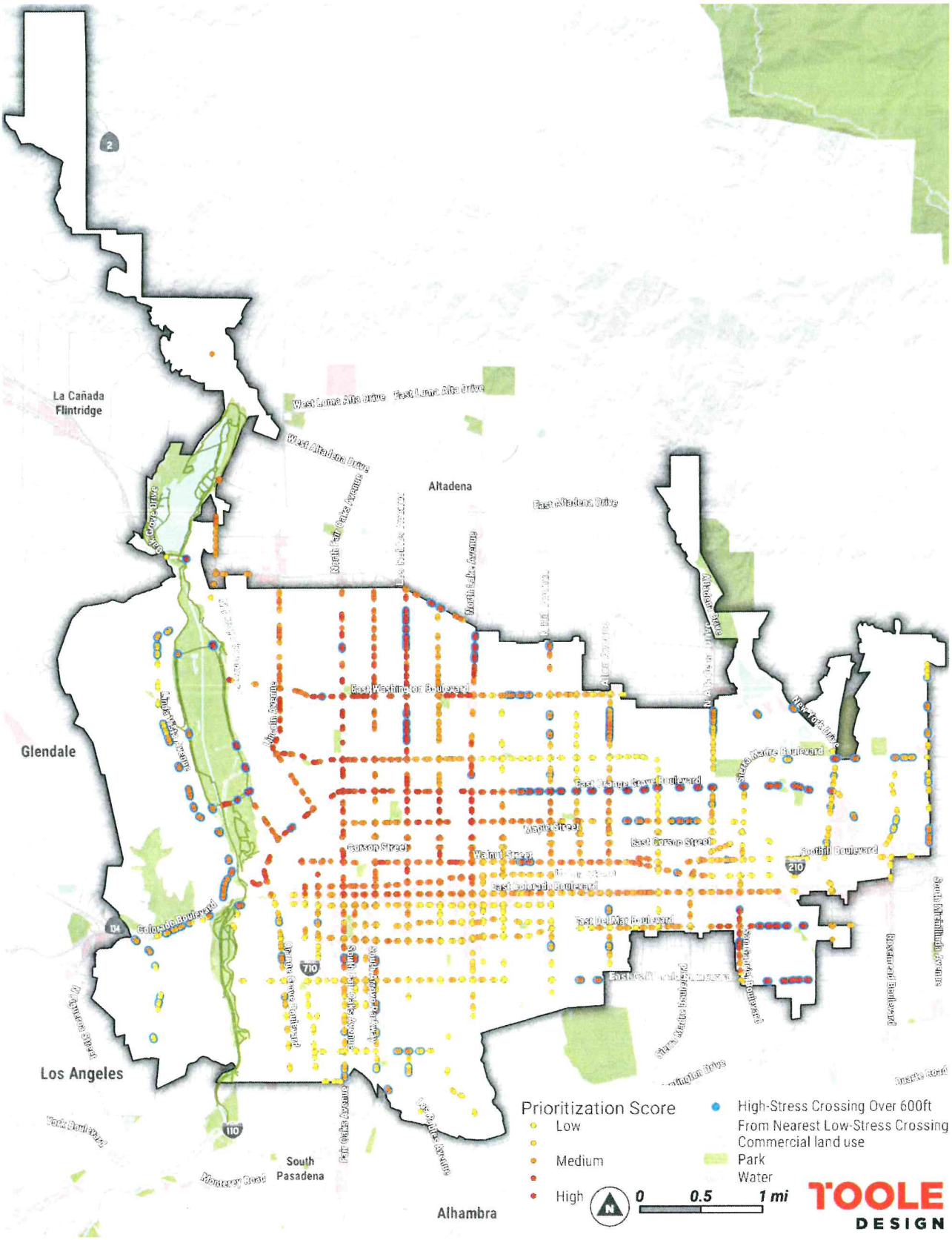
Criteria	Measure	Description	Weight
Equity	California Healthy Places Index (HPI)	Locations within communities that score low in the Healthy Places Index will be prioritized.	High
Safety	Pedestrian Crash History (TIMS/SWITRS 2015-2019)	Using the results from the pedestrian crash analysis, project that are along corridors with higher crash frequencies will be prioritized.	High
	High-speed, high-volume, and wide streets (City of Pasadena)	Prioritize locations that are along high-speed and busy streets. These streets tend to be less comfortable to walk along.	High
Connectivity	Connections to transit service Sidewalk gap closures (City of Pasadena, LA Metro, LADOT, Glendale Transit, Foothill Transit)	Locations along transit routes and locations with known sidewalk gaps will be prioritized.	Medium
Access	Trip Potential Score (excluding transit) (Trip Potential Analysis)	Locations that are in areas that have higher trip potential score will be prioritized. The transit sub score will be excluded from this measure to avoid double counting.	Medium

Map 1 – Prioritization Results of Street Segments



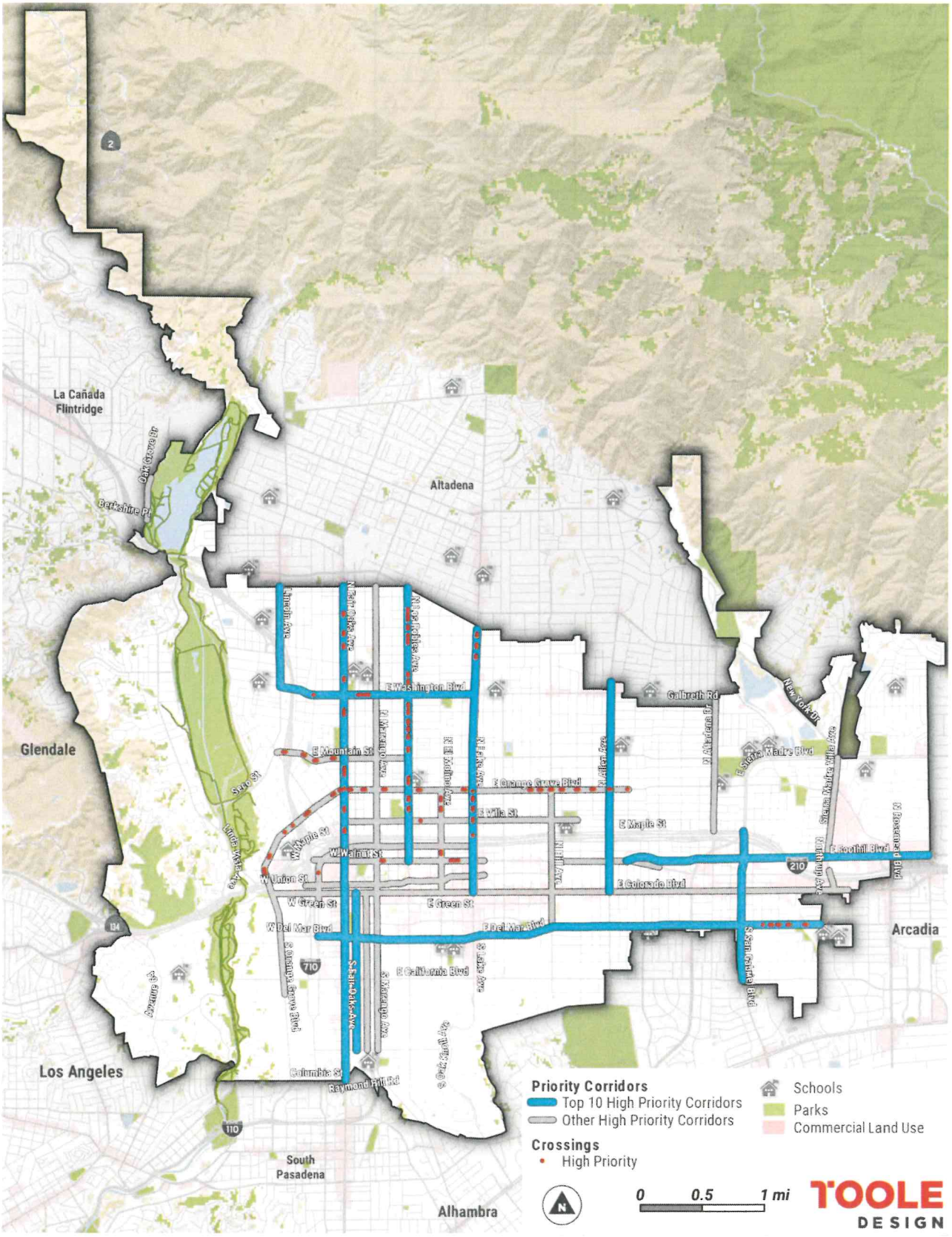
HPI, TIMS/SWITRS, LA Metro, LADOT, Foothill Transit, Glendale Transit, City of Pasadena, GIS aerial imagery

Map 2 – Prioritization Results of Pedestrian Crossings



HPI, TIMS/SWITRS, LA Metro, LADOT, Foothill Transit, Glendale Transit, City of Pasadena, GIS aerial imagery

Map 3 – Pedestrian Priority Corridors



HPI, TIMS/SWITRS, LA Metro, LADOT, Foothill Transit, Glendale Transit, City of Pasadena, GIS aerial imagery

Top 10 Pedestrian Priority Corridors

Street / Roadways	From	To
Allen Ave	north city limit	Colorado Blvd
Del Mar Blvd	Pasadena Ave	east city limit
Fair Oaks Ave	north city limit	south city boundary
Foothill Blvd	Walnut St	east city limit
Lake Ave	north city limit	Colorado Blvd
Lincoln Ave	north city boundary	Washington Blvd
Los Robles Ave	north city limit	Walnut St
Raymond Ave	Colorado Blvd	E Glenarm St
San Gabriel Blvd	Maple St	California Blvd
Washington Blvd	Lincoln Ave	Lake Ave

High Priority Crossings (along Top 10 Pedestrian Priority Corridors)

approach_leg	legs	intersection_name	crossing_street_name	crossing_fc
South	3	Chestnut St and N Fair Oaks Ave	N Fair Oaks Ave	Primary
North	3	Chestnut St and N Fair Oaks Ave	N Fair Oaks Ave	Primary
North	3	N Los Robles Ave and Wickliffe Dr	N Los Robles Ave	Tertiary
South	3	N Los Robles Ave and Wickliffe Dr	N Los Robles Ave	Tertiary
North	3	N Lake Ave and Santa Barbara St	N Lake Ave	Primary
South	3	N Lake Ave and Santa Barbara St	N Lake Ave	Primary
West	3	Sunset Ave and N Orange Grove Blvd	N Orange Grove Blvd	Secondary
East	3	Sunset Ave and N Orange Grove Blvd	N Orange Grove Blvd	Secondary
North	3	Parke St and N Los Robles Ave	N Los Robles Ave	Secondary
South	3	Parke St and N Los Robles Ave	N Los Robles Ave	Secondary
South	4	N Los Robles Ave and Flower St	N Los Robles Ave	Tertiary
North	4	N Los Robles Ave and Flower St	N Los Robles Ave	Tertiary
North	6	E Maple St and N Lake Ave	N Lake Ave	Primary
South	3	N El Molino Ave and Santa Barbara St	N El Molino Ave	Tertiary
North	3	N El Molino Ave and Santa Barbara St	N El Molino Ave	Tertiary
North	3	N Orange Grove Blvd and Kensington Pl	N Orange Grove Blvd	Secondary
South	3	N Orange Grove Blvd and Kensington Pl	N Orange Grove Blvd	Secondary
East	4	N Pasadena Ave and N Orange Grove Blvd	N Orange Grove Blvd	Secondary
South	3	N Lake Ave and Elizabeth St	N Lake Ave	Secondary
South	3	N Lake Ave and Elizabeth St	N Lake Ave	Secondary
East	3	S Kinneloa Ave and E Del Mar Blvd	E Del Mar Blvd	Secondary
West	3	S Kinneloa Ave and E Del Mar Blvd	E Del Mar Blvd	Secondary
South	3	N Los Robles Ave and Dearborn St	N Los Robles Ave	Tertiary
North	3	N Los Robles Ave and Dearborn St	N Los Robles Ave	Tertiary
South	3	Arroyo Ter and N Orange Grove Blvd	N Orange Grove Blvd	Secondary
North	3	Arroyo Ter and N Orange Grove Blvd	N Orange Grove Blvd	Secondary
East	3	E Orange Grove Blvd and Wheeler Ln	E Orange Grove Blvd	Secondary
West	3	E Orange Grove Blvd and Wheeler Ln	E Orange Grove Blvd	Secondary
South	4	N Lake Ave and E Villa St	N Lake Ave	Primary
North	4	N Lake Ave and E Villa St	N Lake Ave	Primary
West	3	N Orange Grove Blvd and Cypress Ave	N Orange Grove Blvd	Secondary
West	3	N Orange Grove Blvd and Cypress Ave	N Orange Grove Blvd	Secondary
South	3	N Fair Oaks Ave and Fair Oaks Dr	N Fair Oaks Ave	Primary
North	3	N Fair Oaks Ave and Fair Oaks Dr	N Fair Oaks Ave	Primary
West	4	210eb Off Mountain and Mountain On 210eb	W Mountain St	Secondary
East	4	210eb Off Mountain and Mountain On 210eb	W Mountain St	Secondary
North	3	N Lake Ave and Elizabeth St	N Lake Ave	Secondary
West	4	E Del Mar Blvd and El Nido Ave	E Del Mar Blvd	Secondary
East	4	E Del Mar Blvd and El Nido Ave	E Del Mar Blvd	Secondary
North	3	N Lake Ave and Topeka St	N Lake Ave	Secondary
South	3	N Lake Ave and Topeka St	N Lake Ave	Secondary
East	3	N Orange Grove Blvd and Manzanita Ave	N Orange Grove Blvd	Secondary
West	3	N Orange Grove Blvd and Manzanita Ave	N Orange Grove Blvd	Secondary
East	3	E Orange Grove Blvd and Summit Ave	E Orange Grove Blvd	Secondary
West	3	E Orange Grove Blvd and Summit Ave	E Orange Grove Blvd	Secondary
West	4	E Orange Grove Blvd and Hamilton Ave	E Orange Grove Blvd	Secondary

High Priority Crossings (along Top 10 Pedestrian Priority Corridors)

East	4	E Orange Grove Blvd and Hamilton Ave	E Orange Grove Blvd	Secondary
East	3	N Hudson Ave and E Walnut St	E Walnut St	Secondary
West	3	N Hudson Ave and E Walnut St	E Walnut St	Secondary
East	3	N Orange Grove Blvd and Cypress Ave	N Orange Grove Blvd	Secondary
East	3	N Orange Grove Blvd and Cypress Ave	N Orange Grove Blvd	Secondary
West	4	Palo Verde Ave and E Orange Grove Blvd	E Orange Grove Blvd	Secondary
North	3	N Fair Oaks Ave and E Claremont St	N Fair Oaks Ave	Primary
South	3	N Fair Oaks Ave and E Claremont St	N Fair Oaks Ave	Primary
West	3	E Washington Blvd and Summit Ave	E Washington Blvd	Secondary
West	3	Summit Ave and E Washington Blvd	E Washington Blvd	Secondary
North	3	N Los Robles Ave and Ladera St	N Los Robles Ave	Tertiary
South	3	N Los Robles Ave and Ladera St	N Los Robles Ave	Tertiary
North	3	N Los Robles Ave and Eldora Rd	N Los Robles Ave	Secondary
South	3	N Los Robles Ave and Eldora Rd	N Los Robles Ave	Secondary
North	3	N Fair Oaks Ave and Painter St	N Fair Oaks Ave	Primary
South	3	N Fair Oaks Ave and Painter St	N Fair Oaks Ave	Primary
South	4	N Los Robles Ave and Douglas St	N Los Robles Ave	Secondary
North	4	N Los Robles Ave and Douglas St	N Los Robles Ave	Secondary
North	3	N Los Robles Ave and Prescott St	N Los Robles Ave	Secondary
South	3	N Los Robles Ave and Prescott St	N Los Robles Ave	Secondary
South	3	N Fair Oaks Ave and W Tremont St	N Fair Oaks Ave	Primary
North	3	N Fair Oaks Ave and W Tremont St	N Fair Oaks Ave	Primary
West	4	E Orange Grove Blvd and N Chester Ave	E Orange Grove Blvd	Secondary
East	4	E Orange Grove Blvd and N Chester Ave	E Orange Grove Blvd	Secondary
North	4	Atchison St and N Los Robles Ave	N Los Robles Ave	Tertiary
South	4	Atchison St and N Los Robles Ave	N Los Robles Ave	Tertiary
West	3	W Mountain St and Barthe Dr	W Mountain St	Secondary
East	3	W Mountain St and Barthe Dr	W Mountain St	Secondary
East	4	E Villa St and N Oakland Ave	E Villa St	Tertiary
South	3	N Fair Oaks Ave and Eureka St	N Fair Oaks Ave	Primary
North	3	N Fair Oaks Ave and Eureka St	N Fair Oaks Ave	Primary
East	3	Summit Ave and E Washington Blvd	E Washington Blvd	Secondary
East	3	E Washington Blvd and Summit Ave	E Washington Blvd	Secondary
North	3	N Fair Oaks Ave and W Claremont St	N Fair Oaks Ave	Primary
South	3	N Fair Oaks Ave and W Claremont St	N Fair Oaks Ave	Primary
East	3	E Orange Grove Blvd and Elmira St	E Orange Grove Blvd	Secondary
West	3	E Orange Grove Blvd and Elmira St	E Orange Grove Blvd	Secondary
North	4	N Fair Oaks Ave and E Orange Grove Blvd	N Fair Oaks Ave	Primary
East	3	E Orange Grove Blvd and Worcester Ave	E Orange Grove Blvd	Secondary
West	3	E Orange Grove Blvd and Worcester Ave	E Orange Grove Blvd	Secondary
West	4	E Orange Grove Blvd and Sinaloa Ave	E Orange Grove Blvd	Secondary
East	4	E Orange Grove Blvd and Sinaloa Ave	E Orange Grove Blvd	Secondary
North	3	N Fair Oaks Ave and Penn St	N Fair Oaks Ave	Primary
South	3	N Fair Oaks Ave and Penn St	N Fair Oaks Ave	Primary
South	4	E Claremont St and N Los Robles Ave	N Los Robles Ave	Secondary
North	4	E Claremont St and N Los Robles Ave	N Los Robles Ave	Secondary
East	3	E Del Mar Blvd and S Sunnyslope Ave	E Del Mar Blvd	Secondary

High Priority Crossings (along Top 10 Pedestrian Priority Corridors)

West	3	E Del Mar Blvd and S Sunnyslope Ave	E Del Mar Blvd	Secondary
West	3	N Orange Grove Blvd and Prospect Blvd	N Orange Grove Blvd	Secondary
South	3	N Fair Oaks Ave and Cedar St	N Fair Oaks Ave	Primary
North	3	N Fair Oaks Ave and Cedar St	N Fair Oaks Ave	Primary
West	4	W Washington Blvd and Sunset Ave	W Washington Blvd	Secondary
North	3	N Lake Ave and Earlham St	N Lake Ave	Primary
South	3	N Lake Ave and Earlham St	N Lake Ave	Primary
North	3	N Los Robles Ave and Ashtabula St	N Los Robles Ave	Secondary
South	3	N Los Robles Ave and Ashtabula St	N Los Robles Ave	Secondary
West	3	Ramona Pl and E Del Mar Blvd	E Del Mar Blvd	Secondary
East	3	Ramona Pl and E Del Mar Blvd	E Del Mar Blvd	Secondary
South	3	Corson St and N Pasadena Ave	N Pasadena Ave	Primary
South	3	N Los Robles Ave and Rio Grande St	N Los Robles Ave	Tertiary
North	3	N Los Robles Ave and Rio Grande St	N Los Robles Ave	Tertiary
East	3	Eastern Ave and E Del Mar Blvd	E Del Mar Blvd	Secondary
South	3	N El Molino Ave and Locust St	N El Molino Ave	Tertiary
North	3	N El Molino Ave and Locust St	N El Molino Ave	Tertiary
East	3	E Walnut St and N Garfield Ave	E Walnut St	Secondary
West	3	E Walnut St and N Garfield Ave	E Walnut St	Secondary
North	3	N Orange Grove Blvd and Live Oaks Ave	N Orange Grove Blvd	Secondary
South	3	N Orange Grove Blvd and Live Oaks Ave	N Orange Grove Blvd	Secondary
West	3	W Mountain St and Chapman Ave	W Mountain St	Secondary
East	3	W Mountain St and Chapman Ave	W Mountain St	Secondary
North	3	N Fair Oaks Ave and Esther St	N Fair Oaks Ave	Primary
South	3	N Fair Oaks Ave and Esther St	N Fair Oaks Ave	Primary
North	3	N Los Robles Ave and Adena St	N Los Robles Ave	Secondary
South	3	N Los Robles Ave and Adena St	N Los Robles Ave	Secondary
South	3	N Los Robles Ave and Highland St	N Los Robles Ave	Tertiary
North	3	N Los Robles Ave and Highland St	N Los Robles Ave	Tertiary
West	3	Morton Ave and W Mountain St	W Mountain St	Secondary
East	3	Morton Ave and W Mountain St	W Mountain St	Secondary
East	3	E Orange Grove Blvd and N Oakland Ave	E Orange Grove Blvd	Secondary
West	3	E Orange Grove Blvd and N Oakland Ave	E Orange Grove Blvd	Secondary
East	4	E Orange Grove Blvd and N Sierra Bonita Ave	E Orange Grove Blvd	Secondary
West	4	E Orange Grove Blvd and N Sierra Bonita Ave	E Orange Grove Blvd	Secondary
South	3	N Los Robles Ave and Jackson St	N Los Robles Ave	Secondary
South	3	N El Molino Ave and Earlham St	N El Molino Ave	Tertiary
North	3	N El Molino Ave and Earlham St	N El Molino Ave	Tertiary
South	3	Yale St and N Fair Oaks Ave	N Fair Oaks Ave	Primary
North	3	Yale St and N Fair Oaks Ave	N Fair Oaks Ave	Primary
West	4	N Holliston Ave and E Orange Grove Blvd	E Orange Grove Blvd	Secondary
East	4	N Holliston Ave and E Orange Grove Blvd	E Orange Grove Blvd	Secondary
West	3	E Walnut St and N Oak Knoll Ave	E Walnut St	Secondary
East	3	E Walnut St and N Oak Knoll Ave	E Walnut St	Secondary
West	3	E Washington Blvd and Iowa Ave	E Washington Blvd	Secondary
East	3	E Washington Blvd and Iowa Ave	E Washington Blvd	Secondary
North	3	N Los Robles Ave and Ashtabula St	N Los Robles Ave	Secondary

High Priority Crossings (along Top 10 Pedestrian Priority Corridors)

South	3	N Los Robles Ave and Ashtabula St	N Los Robles Ave	Secondary
North	3	N Los Robles Ave and Jackson St	N Los Robles Ave	Secondary
North	3	N Los Robles Ave and Jackson St	N Los Robles Ave	Secondary
South	4	N Lake Ave and Atchison St	N Lake Ave	Secondary
North	4	N Lake Ave and Atchison St	N Lake Ave	Secondary
South	3	N Los Robles Ave and Reinway	N Los Robles Ave	Secondary
North	3	N Los Robles Ave and Reinway	N Los Robles Ave	Secondary
North	3	N Los Robles Ave and Highland St	N Los Robles Ave	Tertiary
South	3	N Los Robles Ave and Highland St	N Los Robles Ave	Tertiary
West	4	N Allen Ave and E Orange Grove Blvd	E Orange Grove Blvd	Secondary
East	4	N Allen Ave and E Orange Grove Blvd	E Orange Grove Blvd	Secondary
East	4	N Hill Ave and E Orange Grove Blvd	E Orange Grove Blvd	Secondary
West	4	N Hill Ave and E Orange Grove Blvd	E Orange Grove Blvd	Secondary
South	4	N Lake Ave and E Orange Grove Blvd	N Lake Ave	Primary

E

Appendix E:
Potential Corridor Improvements

Allen Avenue *(from north City limit to Colorado Boulevard)*

Location	Project / Improvements Description
Allen Ave at Las Lunas St	Consider reducing radius of SW and SE corners. New crosswalk, RRFB or HAWK, and curb extensions on the south leg.
Allen Ave at Washington Blvd	Consider directional/dual curb ramps. high visibility crosswalks, LPI, Accessible Pedestrian Signals, Pedestrian Countdown Signals. Consider protected left turn signal phasing.
Allen Ave at Asbury Dr	Consider new crosswalk with RRFB or HAWK signal at north leg. Curb extension at NW corner (existing catch basin) and NE corner with new ped ramp.
Allen Ave at Mountain St	Consider reducing turning radius of SE corner. high visibility crosswalks, LPI, Accessible Pedestrian Signals, Pedestrian Countdown Signals.
Allen Ave at Paloma St	Consider reducing radius of NW corner. New crosswalk with RRFB or HAWK at the north leg. Curb extensions flanking the crosswalk.
Allen Ave at Villa St	Consider high visibility crosswalks, LPI, Accessible Pedestrian Signals, Pedestrian Countdown Signals. Consider protected left turn signal phasing.
Allen Ave at Maple St	Consider directional/dual curb ramps. high visibility crosswalks, LPI, Accessible Pedestrian Signals, Pedestrian Countdown Signals.
Allen Ave at Corson St	Consider high visibility crosswalks. Modify existing landscaped median at south leg to allow wheeled mobility devices and sight impaired people to navigate. Ensure south leg ped signal timing allows for crossing in one phase.
Allen Ave at Walnut St	Consider high visibility crosswalks, LPI, Accessible Pedestrian Signals, Pedestrian Countdown Signals. Consider protected left turn signal phasing.
Allen Ave at Colorado Blvd	Consider high visibility crosswalks, LPI, Accessible Pedestrian Signals, Pedestrian Countdown Signals. Consider protected left turn signal phasing.
Allen Ave from Washington to Maple St	Evaluate the potential for a 4:3 road reconfiguration. This will allow for ped refuge islands and maintain parking.

Del Mar Boulevard *(from Pasadena Avenue to east City limit)*

Location	Project / Improvements Description
Del Mar Blvd and Marengo Ave	Consider a curb extension at the SE corner. high visibility crosswalks, LPI, Accessible Pedestrian Signals, Pedestrian Countdown Signals.
Del Mar Blvd and Euclid Ave	Consider high visibility crosswalks, LPI, Accessible Pedestrian Signals, Pedestrian Countdown Signals.
Del Mar Blvd at Los Robles Ave	Consider NB and SB protected left turn phasing. high visibility crosswalks, LPI, Accessible Pedestrian Signals, Pedestrian Countdown Signals.
Del Mar Blvd at Oak Knoll Ave	Consider LPI, Accessible Pedestrian Signals, Pedestrian Countdown Signals.
Del Mar Blvd at Hudson Ave	Consider high visibility crosswalks, LPI, Accessible Pedestrian Signals, Pedestrian Countdown Signals.
Del Mar Blvd at Lake Ave	Consider curb extension at SE corner (into Lake Ave). igh visibility crosswalks, LPI, Accessible Pedestrian Signals, Pedestrian Countdown Signals.
Del Mar Blvd at Lake Ave (slip lane)	Consider removing slip lane and develop pedestrian plaza.
Del Mar Blvd at Mentor St	Consider high visibility crosswalks, LPI, Accessible Pedestrian Signals, Pedestrian Countdown Signals.
Del Mar Blvd at Wilson Ave	Consider high visibility crosswalks, LPI, Accessible Pedestrian Signals, Pedestrian Countdown Signals.
Del Mar Blvd at Michigan Ave	Consider curb extensions flanking the existing crosswalk, traffic signal (currently in design phase by the City)
Del Mar Blvd at Chester Ave	Consider LPI, Accessible Pedestrian Signals, Pedestrian Countdown Signals.
Del Mar Blvd at Hill Ave	Consider exploring removal of the dedicated WB right-turn lane and replace with a curb extension; there is a drainage inlet here. LPI, Accessible Pedestrian Signals, Pedestrian Countdown Signals.
Del Mar Blvd at Sierra Bonita Ave	Consider LPI, Accessible Pedestrian Signals, Pedestrian Countdown Signals.
Del Mar Blvd at Bonnie Ave	Consider LPI, Accessible Pedestrian Signals, Pedestrian Countdown Signals.
Del Mar Blvd at Allen Ave	Consider high visibility crosswalks, LPI, Accessible Pedestrian Signals, Pedestrian Countdown Signals.
Del Mar Blvd at Berkeley Ave	Curb extensions at the EB and WB approaches. high visibility crosswalks, LPI, Accessible Pedestrian Signals, Pedestrian Countdown Signals.
Del Mar Blvd at Craig Ave	Consider expanding sidewalk on Del Mar at the SE corner to provide wider walking area. LPI, Accessible Pedestrian Signals, Pedestrian Countdown Signals.
Del Mar Blvd at Bonita Ave	Consider a new crosswalk with RRFB or HAWK at east leg, curb extensions flanking the crosswalk.
Del Mar Blvd at Sierra Madre	Consider modifying median islands to ensure clear path of travel at north and south crosswalk legs. high visibility crosswalks, LPI, Accessible Pedestrian Signals, Pedestrian Countdown Signals.
Del Mar Blvd at Altadena Dr	Consider high visibility crosswalks, LPI, Accessible Pedestrian Signals, Pedestrian Countdown Signals.
Del Mar Blvd at El Nido Ave	Consider new crosswalk with RRFB or HAWK at east leg, curb extensions flanking the crosswalk.
Del Mar Blvd at Kinneloa Ave	Consider RRFB or HAWK at existing marked crosswalk (already has in-street yield to ped sign). Ped refuge island.
Del Mar Blvd from Hill Ave to Sierra Bonita Ave	Evaluate potential for addressing sidewalk obstructions on north sidewalk.

Fair Oaks Avenue *(from north City limit to south City limit)*

Location	Project / Improvements Description
Fair Oaks Ave at Tremont St	Consider high visibility crosswalks for both legs of Tremont St.
Fair Oaks Ave at Howard St	Consider nearside curb extensions on the approach to Howard St., high visibility crosswalks. LPI, Accessible Pedestrian Signals, Pedestrian Countdown Signals.
Fair Oaks Ave at Claremont St	Consider new crosswalk and RRFB or HAWK at north leg of Claremont St. Curb Extensions flanking the crosswalk.
Fair Oaks Ave near Robinson Park	Consider high visibility crosswalk at existing midblock crossing.
Fair Oaks Ave at Mountain St	Consider high visibility crosswalks, LPI, Accessible Pedestrian Signals, Pedestrian Countdown Signals. Consider protected left turn signal phasing.
Fair Oaks Ave at Painter St	Consider high visibility crosswalks
Fair Oaks Ave at Villa St	Consider high visibility crosswalks, LPI, Accessible Pedestrian Signals, Pedestrian Countdown Signals. Upgrade curb ramps with tactile surfaces.
Fair Oaks Ave at 210 Overpass	Consider allowing pedestrian access along both sidewalks. Consider road reconfiguration to expand sidewalk space by removing travel lanes.
Fair Oaks Ave at Walnut St	Consider high visibility crosswalks, LPI, Accessible Pedestrian Signals, Pedestrian Countdown Signals.
Fair Oaks Ave at Colorado Blvd	Consider formalizing existing curb extensions with concrete (will be implemented in 2022 by existing City project). Exclusive ped phase.
Fair Oaks Ave at Valley St	Consider adding south crosswalk leg and ped ramp at SE corner. high visibility crosswalks, LPI, Accessible Pedestrian Signals, Pedestrian Countdown Signals.
Fair Oaks Ave at Del Mar Blvd	Consider high visibility crosswalks, LPI, Accessible Pedestrian Signals, Pedestrian Countdown Signals. Reconfigure slip lane and island at the northwest corner.
Fair Oaks Ave at Montana St	Consider LPI, Accessible Pedestrian Signals, Pedestrian Countdown Signals. Nearside curb extensions.
Fair Oaks Ave at Hammond St	Consider high visibility crosswalks, LPI, Accessible Pedestrian Signals, Pedestrian Countdown Signals. Consider protected left turn signal phasing.
Fair Oaks Ave at Bellevue Dr	Consider new signal or pedestrian signal (will be constructed by end of Fiscal Year 2022 by existing City project). Nearside curb extensions. Catch basin at the NW corner, bus zone at the SW corner (farside).
Fair Oaks Ave at Peoria St	Consider high visibility crosswalks, new crosswalk at north leg.
Fair Oaks Ave at Fillmore St	Consider curb extension at SW corner at crosswalk leg. high visibility crosswalks, LPI, Accessible Pedestrian Signals, Pedestrian Countdown Signals. Explore adding the north crosswalk leg.
Fair Oaks Ave at California Blvd	Consider high visibility crosswalks, LPI, Accessible Pedestrian Signals, Pedestrian Countdown Signals.
Fair Oaks Ave at Bellafontaine St	Consider high visibility crosswalks, LPI, Accessible Pedestrian Signals, Pedestrian Countdown Signals.
Fair Oaks Ave at Glenarm St	Consider high visibility crosswalks, LPI, Accessible Pedestrian Signals, Pedestrian Countdown Signals. Consider protected left turn signal phasing.
Far Oaks Blvd	Evaluate potential for addressing missing sidewalks

Foothill Boulevard *(from Walnut Street to east City limit)*

Location	Project / Improvements Description
Foothill Blvd at Craig Ave	Consider high visibility crosswalks, LPI, Accessible Pedestrian Signals, Pedestrian Countdown Signals.
Foothill Blvd at Vista Ave	Consider RRFB or HAWK at existing marked crosswalk, curb extension flanking the crosswalk, in-street yield to peds sign.
Foothill Blvd at Sierra Madre Blvd	Consider exploring curb extension at the SW corner to create a shorter crossing distance. Upgrade curb ramps at the SW and SE corners. Consider nearside curb extensions at the SB Carmelo Ave approach. high visibility crosswalks, LPI, Accessible Pedestrian Signals, Pedestrian Countdown Signals. Ensure ped signal allows for E-W crossing in one phase.
Foothill Blvd at Altadena Dr	Consider high visibility crosswalks, LPI, Accessible Pedestrian Signals, Pedestrian Countdown Signals. Consider protected left turn signals.
Foothill Blvd at San Gabriel Blvd	Consider high visibility crosswalks, LPI, Accessible Pedestrian Signals, Pedestrian Countdown Signals.
Foothill Blvd at Santa Paula Ave	Consider new curb ramps on south sidewalk for both crosswalk legs.
Foothill Blvd at Sierra Madre Villa Ave	Consider high visibility crosswalks, LPI, Accessible Pedestrian Signals, Pedestrian Countdown Signals.
Foothill Blvd at Halstead St	Consider high visibility crosswalks, LPI, Accessible Pedestrian Signals, Pedestrian Countdown Signals.
Foothill Blvd.	Evaluate potential for addressing missing sidewalks

Lincoln Avenue *(from north City limit to Washington Boulevard)*

Location	Project / Improvements Description
Lincoln Ave at Toolen Pl	Consider RRFB or HAWK at existing crosswalk, in-street ped yield sign, curb extensions at existing red curb zones.
Lincoln Ave at Montana St	Consider high visibility crosswalks, nearside curb extensions. Catch basins at the nearside locations. Bus zones at the farside locations.
Lincoln Ave at Wyoming St	Consider nearside curb extensions. Existing fire hydrants at the nearside locations. Bus zones at the farside locations.
Lincoln Ave at 210 fwy (WB ramps)	Consider high visibility crosswalks.
Lincoln Ave at Howard St	Consider high visibility crosswalks, expand sidewalk to accommodate larger bus zone at southeast corner.
Lincoln Ave at Del Monte St	Consider RRFB or HAWK, in-street ped yield sign. Curb extensions flanking the existing crosswalk.
Lincoln Ave at Washington Blvd	Consider high visibility crosswalks, LPI, Accessible Pedestrian Signals, Pedestrian Countdown Signals.
Lincoln between Casita and Windsor	Evaluate potential for addressing missing sidewalks

Lake Avenue *(from north City limit to Colorado Boulevard)*

Location	Project / Improvements Description
Lake Ave at Union St	Consider high visibility crosswalks, LPI, Accessible Pedestrian Signals, Pedestrian Countdown Signals. Close WB right-turn slip lane.
Lake Ave at Colorado Blvd	Consider high visibility crosswalks, LPI, Accessible Pedestrian Signals, Pedestrian Countdown Signals. Explore exclusive pedestrian phase.
Lake Ave at Walnut St	Consider high visibility crosswalks, LPI, Accessible Pedestrian Signals, Pedestrian Countdown Signals. Investigate closure of NB RT lane to expand sidewalk space.
Lake Ave at Maple St	Consider high visibility crosswalks, LPI, Accessible Pedestrian Signals, Pedestrian Countdown Signals. Modify northern median island to allow a clear path of travel at north crosswalk leg.
Lake Ave at Villa St	Evaluate the potential for removing SB and NB RT lanes to expand sidewalk space. high visibility crosswalks, LPI, Accessible Pedestrian Signals, Pedestrian Countdown Signals.
Lake Ave at Santa Barbara St	Consider new crosswalk with RRFB or HAWK at north leg, curb extension at the NW corner, ped refuge island.
Lake Ave at Boylston	Consider HAWK or Ped Signal at existing marked crosswalk at south leg.
Lake Ave at Mountain St	Consider high visibility crosswalks, LPI, Accessible Pedestrian Signals, Pedestrian Countdown Signals. Consider NB and SB protected left turn signal phasing.
Lake Ave at Belvidere St	Consider high visibility crosswalks, LPI, Accessible Pedestrian Signals, Pedestrian Countdown Signals.
Lake Ave at Claremont St	Consider high visibility crosswalks, LPI, Accessible Pedestrian Signals, Pedestrian Countdown Signals. Nearside curb extensions.
Lake Ave at Rio Grande St	Consider NB and SB nearside curb extensions.
Lake Ave at Elizabeth St	Consider RRFB or HAWK at existing marked crosswalk.
Lake Ave at Atchinson St	Consider RRFB or HAWK at existing marked crosswalk, curb extensions flanking the marked crosswalk.
North Lake Ave	Address sidewalk conditions

Los Robles Avenue *(from north City limit to Walnut Street)*

Location	Project / Improvements Description
Los Robles Ave at Woodbury Rd	Consider high visibility crosswalks, LPI, Accessible Pedestrian Signals, Pedestrian Countdown Signals. Consider expanding sidewalk at north leg along Los Robles Ave.
Los Robles Ave at Claremont St	Consider new crosswalk with RRFB at north leg. Consider ped refuge island
Los Robles Ave at Highland St	Consider new crosswalk with RRFB at north side of southern leg of Highland St. Ped refuge island.
Los Robles Ave at Penn St	Consider new crosswalk with RRFB from the SW to the NE corner ped ramps. New street light at SW corner.
Los Robles Ave at Jackson St	Consider RRFB at existing marked crosswalk.
Los Robles Ave at Mountain St	Consider high visibility crosswalks, LPI, Accessible Pedestrian Signals, Pedestrian Countdown Signals.
Los Robles Ave at Buckeye St	Consider ped refuge island at existing marked crosswalk at south leg.
Los Robles Ave at Villa St	Consider high visibility crosswalks, LPI, Accessible Pedestrian Signals, Pedestrian Countdown Signals.
Los Robles Ave at Maple St	Consider high visibility crosswalks, LPI, Accessible Pedestrian Signals, Pedestrian Countdown Signals.
Los Robles Ave at 210 Overpass	Consider expanding sidewalks on east and west sides.
Los Robles at Corson St	Consider high visibility crosswalks, LPI, Accessible Pedestrian Signals, Pedestrian Countdown Signals.
Los Robles Ave at Walnut St	Consider high visibility crosswalks, LPI, Accessible Pedestrian Signals, Pedestrian Countdown Signals. Curb extension at the SW corner on Los Robles Ave. Consider protected left turn signal phasing.
Los Robles Ave at Union St	Consider high visibility crosswalks, LPI, Accessible Pedestrian Signals, Pedestrian Countdown Signals.
Los Robles Ave between Maple and Villa	Evaluate potential for addressing sidewalks and lighting conditions

Raymond Avenue *(from Colorado Boulevard to E Glenarm Street)*

Location	Project / Improvements Description
Raymond Ave at Colorado Blvd	Consider curb extensions at the nearside locations on Raymond. Explore No Right Turn on Red.
Raymond Blvd at California Blvd	Consider high visibility crosswalks, LPI, Accessible Pedestrian Signals, Pedestrian Countdown Signals. SB nearside curb extension (existing catch basin here).
Raymond Ave at Green St	Consider high visibility crosswalks, LPI, Accessible Pedestrian Signals, Pedestrian Countdown Signals. Explore curb extensions at all corners. Address broken sidewalks at this area.
Raymond Ave at Del Mar Blvd	Consider high visibility crosswalks, LPI, Accessible Pedestrian Signals, Pedestrian Countdown Signals.
Raymond Ave at Bellevue Dr	Consider RRFB at existing crosswalk (will be installed in 2022 by existing City project), curb extensions flanking the crosswalk. Catch basin at the NW and NE corners.
Raymond Ave at Pico St	Consider high visibility crosswalks, LPI, Accessible Pedestrian Signals, Pedestrian Countdown Signals.
Raymond Ave at Fillmore St	Consider LPI, Accessible Pedestrian Signals, Pedestrian Countdown Signals. Curb extensions at the NW, SW, SE corners.
Raymond Ave between Fillmore St and Glenarm St	Consider new crosswalk with RRFB or HAWK and ped refuge island, including new curb ramps. (place near Art Center South Campus 870 Building)
Raymond Ave at Glenarm St	Consider high visibility crosswalks, LPI, Accessible Pedestrian Signals, Pedestrian Countdown Signals.
Raymond Ave between Villa and Howard	Address sidewalk conditions

San Gabriel Boulevard *(from Maple Street to California Boulevard)*

Location	Project / Improvements Description
San Gabriel Blvd at La Tierra St	Consider upgrading all curb ramps. high visibility crosswalks, LPI, Accessible Pedestrian Signals, Pedestrian Countdown Signals.
San Gabriel Blvd at Colorado Blvd	Consider high visibility crosswalks, LPI, Accessible Pedestrian Signals, Pedestrian Countdown Signals.
Sierra Madre Blvd at Villa St	Consider adding HAWK or Ped Signal to existing marked crosswalk.
San Gabriel Blvd at Maple St	Consider modifying islands at the north leg to allow continuous path of travel, ensure pedestrian phase allows for crossing with one ped phase. high visibility crosswalks, LPI, Accessible Pedestrian Signals, Pedestrian Countdown Signals.
San Gabriel Blvd at Foothill Blvd	Consider high visibility crosswalks, LPI, Accessible Pedestrian Signals, Pedestrian Countdown Signals. Curb extension at the SB nearside approach (existing catch basing here).
San Gabriel Blvd at Wenger Alley	Consider including signage and pavement markings to keep sidewalk clear of vehicles queueing for Starbucks drive through.
San Gabriel Blvd south of Foothill Blvd	Consider re-planting trees in empty tree wells, or paving empty tree wells.
San Gabriel Blvd at Walnut Stq	Consider formalizing hatched curb extensions at the SW corner (there is a catch basin here). Consider implementing protected left turn signal phasing. high visibility crosswalks, LPI, Accessible Pedestrian Signals, Pedestrian Countdown Signals.
San Gabriel Blvd at Del Mar Blvd	Consider high visibility crosswalks, LPI, Accessible Pedestrian Signals, Pedestrian Countdown Signals.
San Gabriel Blvd at Morningside Blvd	Consider new crosswalk with RRFB or HAWK.
San Gabriel Blvd at California Blvd	Consider high visibility crosswalks, LPI, Accessible Pedestrian Signals, Pedestrian Countdown Signals.
San Gabriel Blvd at San Pasqual St	Consider high visibility crosswalks, LPI, Accessible Pedestrian Signals, Pedestrian Countdown Signals.
San Gabriel Blvd from Oneida St to Yorkshire Rd	Consider new sidewalk on the west and east side.

Washington Boulevard *(from Lincoln Avenue to Lake Avenue)*

Location	Project / Improvements Description
Washington Blvd at Michigan Ave	Consider new crosswalk with RRFB or HAWK and curb extensions flanking the crosswalk. Michigan Ave is a Roseway, a new crossing may benefit pedestrians and bicyclists.
Washington Blvd at Wilson Ave	Consider new crosswalk with RRFB or HAWK and curb extensions flanking the crosswalk. Yellow, school zone crosswalk. New curb ramp at north leg.
Washington Blvd at Catalina Ave	Consider new curb extensions at the nearside approach towards Catalina Ave.
Washington Blvd at Lake Ave	Consider directional/dual curb ramps with tactile surfaces. high visibility crosswalks, LPI, Accessible Pedestrian Signals, Pedestrian Countdown Signals.
Washington Blvd at Hudson Ave	Consider new marked crosswalk with RRFB or HAWK at the west leg. Curb extension flanking the crosswalk.
Washington Blvd at Los Robles	Consider new high visibility crosswalk markings. LPI, Accessible Pedestrian Signals, Pedestrian Countdown Signals.
Washington Blvd at Garfield Ave	Consider new high visibility crosswalk markings. LPI, Accessible Pedestrian Signals, Pedestrian Countdown Signals.
Washington Blvd at Marengo Ave	Consider new crosswalk at the west leg with new curb ramp at the NW corner. New High Visibility Crosswalk Markings, LPI, Accessible Pedestrian Signals, Pedestrian Countdown Signals.
Washington Blvd at Raymond Ave	Consider High Visibility Crosswalk Markings. LPI, Accessible Pedestrian Signals, Pedestrian Countdown Signals. Consider protected left turn signal phasing.
Washington Blvd at Fair Oaks Ave	Consider High Visibility Crosswalk Markings. LPI, Accessible Pedestrian Signals, Pedestrian Countdown Signals.
Washington Blvd at La Pintoresca Park	Consider widening the sidewalk on the north side of Washington Blvd. between Fair Oaks Ave and Raymond Ave
Washington Blvd at Navarro Ave	Consider new crosswalk with RRFB or HAWK and one curb extension on the south leg. Creates connection to existing bus stops.
Washington Blvd at Bresee Ave	Consider new RRFB at existing crosswalk, in-street yield to ped sign. New curb extension at the SW corner (at the crosswalk).
Washington Blvd at El Molino Ave	Consider high visibility crosswalks. LPI, Accessible Pedestrian Signals, Pedestrian Countdown Signals.
Washington Blvd at Glen Ave	Consider High Visibility Crosswalk Markings. LPI, Accessible Pedestrian Signals, Pedestrian Countdown Signals.
Washington Blvd	Consider a 4:3 Road Reconfiguration, address sidewalk conditions
Washington Blvd between Allen Ave and Lake Ave	Consider upgrading or installing bus shelters along Washington Blvd

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