



OAKLAND, CA

Grand Avenue Existing Conditions Summary



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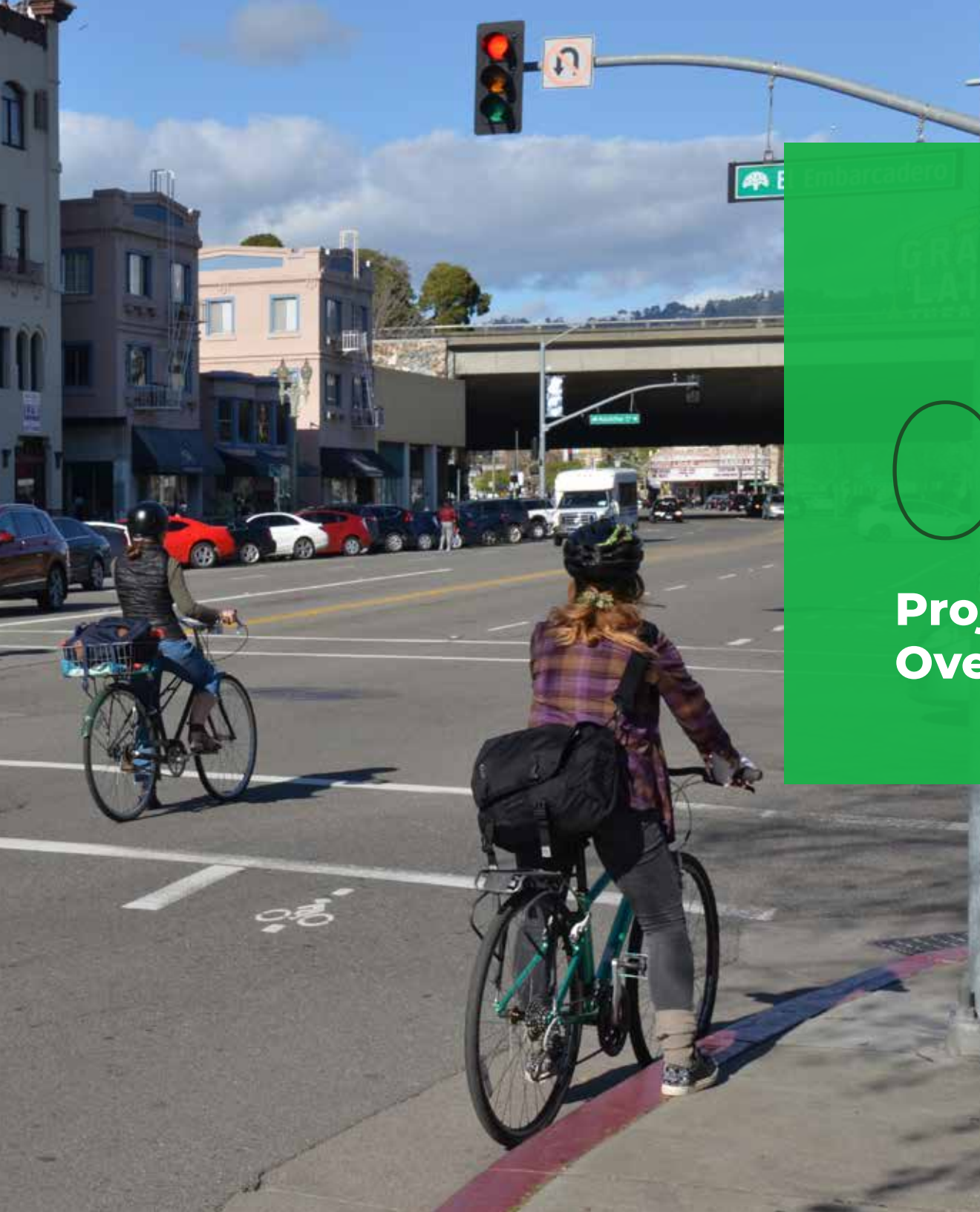
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01

Project Overview

Project Objective

The Grand Avenue Mobility Plan will develop a community-led multimodal mobility plan for the Grand Avenue corridor. The project's study boundaries are between Mandela Parkway and MacArthur Boulevard. Informed by the input of community members and data, the project will develop achievable alternatives for a transformation of this corridor into an inclusive street that satisfies the needs of people using transit, walking, bicycling, scooting, or driving. The Plan will balance the competing needs of addressing safety and mobility inequalities along the corridor while putting people and their lived experience at the center of every design option. This document will provide a summary of the data-driven component of the existing conditions analysis.

This project will study conceptual roadway design changes between Mandela Parkway and MacArthur Boulevard. Figure 1 highlights the 2.3-mile long study area. The study corridor traverses three distinct areas of Oakland: West Oakland, Downtown, and Adams Point.

Unless otherwise stated, references to the Grand Avenue Corridor, Grand Avenue, West Grand Avenue and similar, refer to the study corridor in its entirety.

FIGURE 1: Study Corridor Extents



Communities and Destinations

The Grand Avenue Corridor is home to a diverse group of residents, businesses, community organizations, employers, cultural and community centers, parks, and more. Streets are both transportation infrastructure and public spaces that can be used for community gathering, art, and cultural expression. The corridor's location, design, and adjacent land uses enable it to serve a wide array of people, destinations, and purposes. The arterial corridor divides the boundaries of many neighborhoods across the city. Prescott, McClymonds, Ralph Bunche, Uptown, KoNo, Valdez Triangle, Lake Merritt Office District, and Adams Point are some of the neighborhoods that are situated along the Grand Avenue corridor. Figure 2 includes the land uses and some of the major destinations along the corridor.

Some of the community-oriented destinations along and near the corridor are West Oakland Public Library, De Fremery Park, McClymonds High School, West Grand Head Start, Black Organizing Project Community Center, Eritrean Community Cultural Civic Center, Mandela Parkway and Memorial Park, Lake Merritt, the Cathedral of Christ Light, Children's Fairyland, Lakeview Branch Public Library, St. Vincent de Paul Community Center, the Oakland Veteran's Memorial Building, and others.

Park, open space and trails and bikeways are shown on the following map, Figure 3 on pg. 8. The depicted trail and bikeway system reflects the recent Let's Bike Oakland Plan and shows how residents can connect to community facilities and where there may be gaps in the system.

How buildings orient to the street has one of the greatest effects on pedestrian and bicycle safety and comfort. It enables visual surveillance with windows and doors as well as social interaction with active frontages. Building and streetscape enclosure (how big or small a corridor feels) along a street also has a direct correlation to the speed of traffic along streets.

FIGURE 2: Land Uses and Destinations



FIGURE 3: Parks, Open Space, and Bikeways

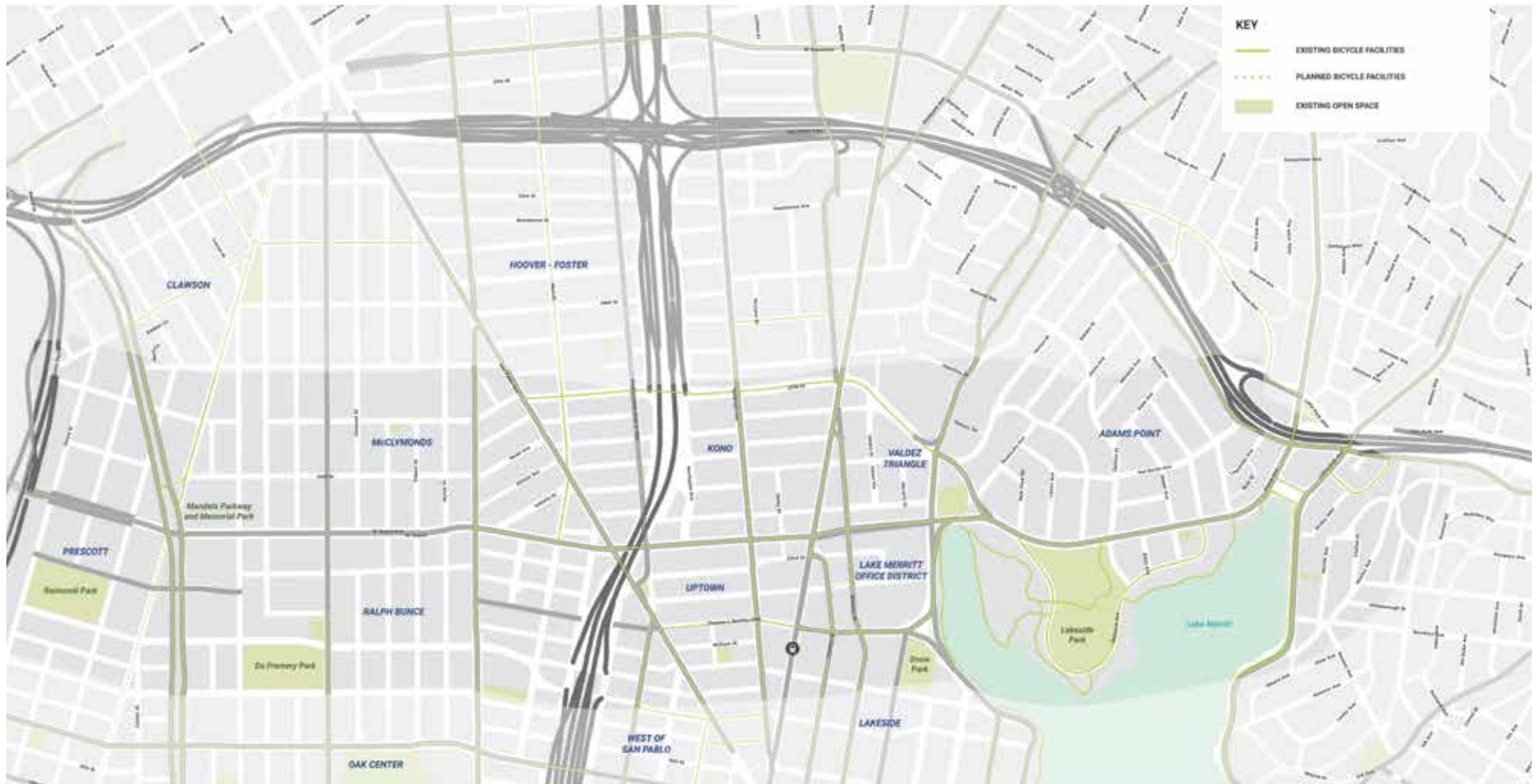
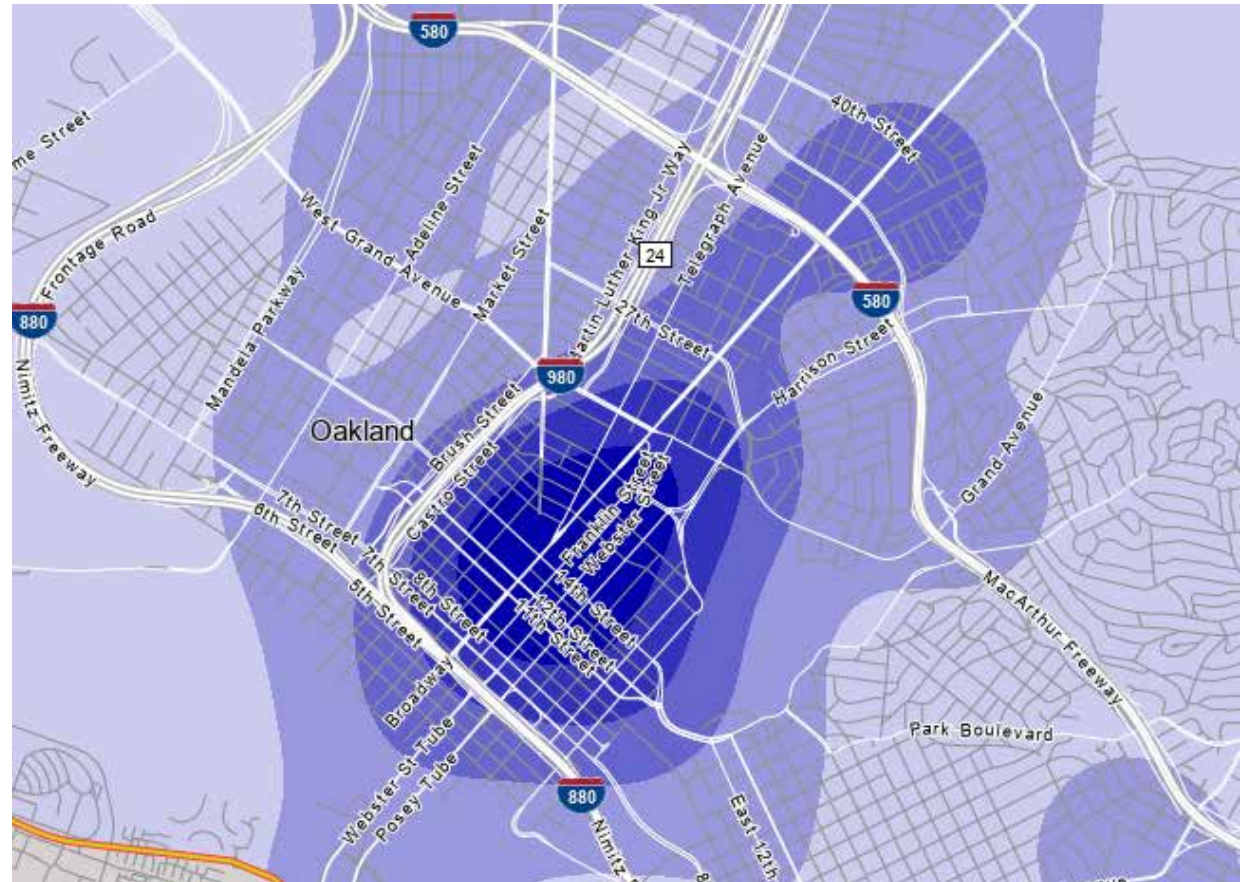


FIGURE 4: Employment Density

Some of the major employment centers served by the corridor include East Bay Municipal Utility District (EBMUD) Central Shop, Downtown Oakland, Lake Merritt Office District, Caltrans District 4 Headquarters, and the Port of Oakland. Based on 2017 U.S. Census data, there are about 109,000 jobs within a roughly eight-minute walk (0.5 miles) of the Grand Avenue corridor. Most of the jobs close to the corridor are concentrated in the Downtown area; employment density decreases radially the further from Downtown. Figure 4 shows the Employment Density around the corridor.



Source: U.S. Census

Over 21% of these jobs are filled by Oaklanders. Of those commuting into Oakland to fill the remainder of the jobs, the top five origin-home cities (with percent of workforce near the corridor) are San Francisco, Alameda, San Leandro, Berkeley, and Hayward (OnTheMap). This data is shown in Table 1.

TABLE 1: Worker Origins
Near Grand Avenue

Worker Origin City (Where Workers Live)	Percent of Workers
Oakland	21.6%
San Francisco	8.6%
Alameda	3.4%
San Leandro	3.4%
Berkeley	3.3%

Source: U.S. Census

There are about 48,000 workers who live within half-a-mile of the corridor. Of these residents, the top five places they travel to get to work (with percent of the workforce) are San Francisco, Oakland, Berkeley, Emeryville, and San Leandro (OnTheMap). Resident workplace data is shown in Table 2.

TABLE 2: Resident
Workplace Destinations

Workplace Destination City (Where Residents Work)	Percent of Workers
San Francisco	30.5%
Oakland	24.8%
Berkeley	6.6%
Emeryville	2.4%
San Leandro	1.9%

Source: U.S. Census

These commute patterns indicate that there is a large imbalance between the number of people who live near the corridor who commute elsewhere and the number of people who may travel along the corridor to get to work (OnTheMap):

- 101,473 workers commute into the area
- 39,754 residents commute outside of the area
- 7,856 residents work within the area

Land Use Contexts

The land use contexts of the corridor vary greatly across the corridor's three areas: West Oakland, Downtown, and Adams Point. Land uses and destinations can be seen in Figure 2 on pg. 7.

West Oakland

MANDELA PARKWAY - SAN PABLO AVENUE/I-980

The land uses around the corridor within West Oakland are primarily industrial uses west of Adeline Street. East of Adeline Street, the land uses transition into residential developments. There are pockets of commercial uses around the Market Street intersection. Residential uses bookend the industrial developments that directly front the corridor.



W Grand Avenue at Adeline



Grand Avenue at Harrison

Downtown

SAN PABLO AVENUE/I-980 - HARRISON STREET

Immediately east of I-980, there are two blocks of residential development. East of Telegraph Avenue, the land uses become denser with buildings rising in height. Building height peaks between Valley Street and Harrison Street. The Downtown area has a mix of residential, commercial, and office uses.



Grand Avenue at Perkins

Adams Point

HARRISON STREET - MACARTHUR BOULEVARD/I-580

Within this area, there are only three blocks of housing south of the corridor. The remainder of the area south of the corridor consists of Lake Merritt, Children's Fairyland, and Eastshore Park. The neighborhood north of the corridor is primarily residential. Some of the fronting uses along the corridor are commercial/retail establishments.

Public Transportation

Promoting transit along Grand Avenue is integral to policies that seek sustained improvements in pedestrian, bicyclist, and vehicle occupant safety. Transit mode share and transit-supportive infrastructure are directly correlated to lower traffic fatality rates. Transit streets focus on people and moving a high-volume of people and space-efficient users within cities.

The Grand Avenue Corridor is served by three AC Transit routes: 12, 805, and NL. Route 12 is a local line that travels along the Adams Point segment and a portion of the Downtown segment of the corridor. Route 805 provides late night and early morning local service to the Adams Point segment and a portion of the Downtown segment of the corridor. Route NL is a transbay route that covers the entirety of the Adams Point and West Grand Avenue segments of the corridor. The NL makes stops at MacArthur Boulevard, Perkins Street, Market Street, Adeline Street, and Mandela Parkway/Peralta Streets along Grand Avenue. The 12 makes stops at



*The Grand Avenue/MacArthur Boulevard
westbound stop under I-580*

MacArthur Boulevard, Perkins Street, El Embarcadero, Euclid Avenue, Park View Terrace, Staten Avenue, Valdez Street, Webster Street, and Broadway. The 805 stops at MacArthur Boulevard, Perkins Street, El Embarcadero, Euclid Avenue, and Park View Terrace. There are no bus routes that travel along the entire study corridor.

The closest BART station is 19th Street BART, which is accessible at Broadway. West Oakland BART is about three-quarters of a mile south on Mandela Parkway. Many buses in this area serve the Uptown Transit Center.



02

Planning and Policy Context

Plan Review

This project reviewed 18 regional, citywide, and community/neighborhood planning documents. Regional documents included documents from Alameda County Transportation Commission (ACTC), Metropolitan Transportation Commission (MTC), and AC Transit. Oakland-specific documents included:

- Oakland Walks!
- Let's Bike Oakland
- AB-617 related documents
- Seaport Air Quality 2020 and Beyond
- Oakland Transit Action Strategy

Community and neighborhood documents included:

- Broadway Valdez District Specific Plan
- Telegraph-Northgate Neighborhood Plan
- West Oakland Specific Plan
- West Oakland Truck Management Plan
- Downtown Oakland Specific Plan (Draft)
- Owning Our Air: The West Oakland Community Action Plan

SUMMARY

The Grand Avenue Corridor has regional significance because of its links between the heart of Oakland and the Bay Bridge and between the Port of Oakland and Downtown. As a key component in the regional transportation network, regional plans from the ACTC, MTC, and AC Transit envision Grand Avenue as a corridor that serves as a transit spine to West Oakland, Downtown, Lake Merritt, the Bay Bridge, and destinations beyond. AC Transit has also indicated that corridors in the West Oakland and MacArthur-Grand corridors are early targets to have 100% zero-emission fleets by 2022. The entire AC Transit fleet will be zero emission by 2040. Some of these planning documents, including the West Oakland Specific Plan, stress the importance of maintaining the corridor for necessary freight and truck movements and keeping large trucks off local streets.

Citywide and community-based documents also stress the importance of the Grand Avenue Corridor as a bridge to and across neighborhoods throughout Oakland. Oakland Walks! and Let's Bike Oakland focus on improving the safety and comfort of walking and bicycling along and across Oakland streets, including this corridor. Neighborhood plans stress the importance of both improving active transportation and public transportation with and across their areas. The Seaport Air Quality Plan, West Oakland Truck Management Plan, and Owning Our Air Plan stress the importance of improving both air quality and other quality-of-life factors for local residents. These plans envision a corridor that safely and comfortably serves local residents and businesses while improving the reach and frequency of transit services.

AB 617 IMPLICATIONS

Signed in 2017, AB 617 directed the California Air Resources Board and local air districts to take measures to protect communities disproportionately impacted by air pollution. Given their proximity to the Port of Oakland, communities in West Oakland are disproportionately affected by emissions from Port-related activities. Increased exposure to emissions has been linked to increases in serious health conditions including asthma and increased cancer risk. Strategies to reduce emissions are codified in plans from the Port (Seaport Air Quality 2020 and Beyond), AC Transit's Clean Corridors Plan, West Oakland Truck Management Plan, and Owning Our Air from the BAAQMD and West Oakland Indicators Project. The products created from this planning process will be consistent with and build upon those documents.

Equity Indicators

The allocation of public resources in the United States, across the Bay Area, and in Oakland have historically favored wealthier white communities over communities of color. Within Oakland, prioritizing infrastructure improvements within disadvantaged communities acknowledges that transit and active transportation options provide economic, social, and health-promoting opportunities if planned in close collaboration with the community.



Communities of Concern

The Metropolitan Transportation Commission's Communities of Concern metric identifies disadvantaged neighborhoods by census tract, using thresholds of high, higher, and highest. MTC uses the following metrics to determine these areas:

- race/ethnicity
- low-income population (greater than 200% living below the poverty line)
- limited English proficiency population
- zero-vehicle households
- seniors 75 and over
- population with a disability
- single-parent families, and
- severely rent-burdened households

Across the corridor, all but one census tract is considered a Community of Concern at the high or highest threshold. The Adams Point area north of the corridor is the neighborhood that is not currently listed as a community of concern. There are five census tracts at the highest threshold,

three in West Oakland and two in Downtown. There are five census tracts at the high threshold, two in West Oakland, two in Downtown, and one in the Adams Point area (MTC). Figure 5 shows the Communities of Concern status around the corridor.

CalEnviroScreen 3.0

The CalEnviroScreen analysis identifies communities that are disproportionately burdened by and vulnerable to multiple sources of pollution. The analysis's indicators fall into four categories:

- **Exposures:** Contact with pollution.
- **Environmental Effects:** Adverse environmental conditions caused by pollution.
- **Sensitive Populations:** Populations with biological traits that may magnify the effects of pollution exposures.
- **Socioeconomic Factors:** Community characteristics that result in increased vulnerability to pollution.

Communities are considered disadvantaged if they rank at or above the 75th percentile (CA OEHHA).

Along the study corridor, the entire West Oakland segment scored above the 75th percentile threshold; no other corridor segment passed the threshold. Some areas in Adams Point ranked in the lowest percentiles. This illustrates the range of communities and needs that change as you travel along the corridor. Figure 6 shows the CalEnviroScreen rankings along the corridor.

FIGURE 5: Communities of Concern

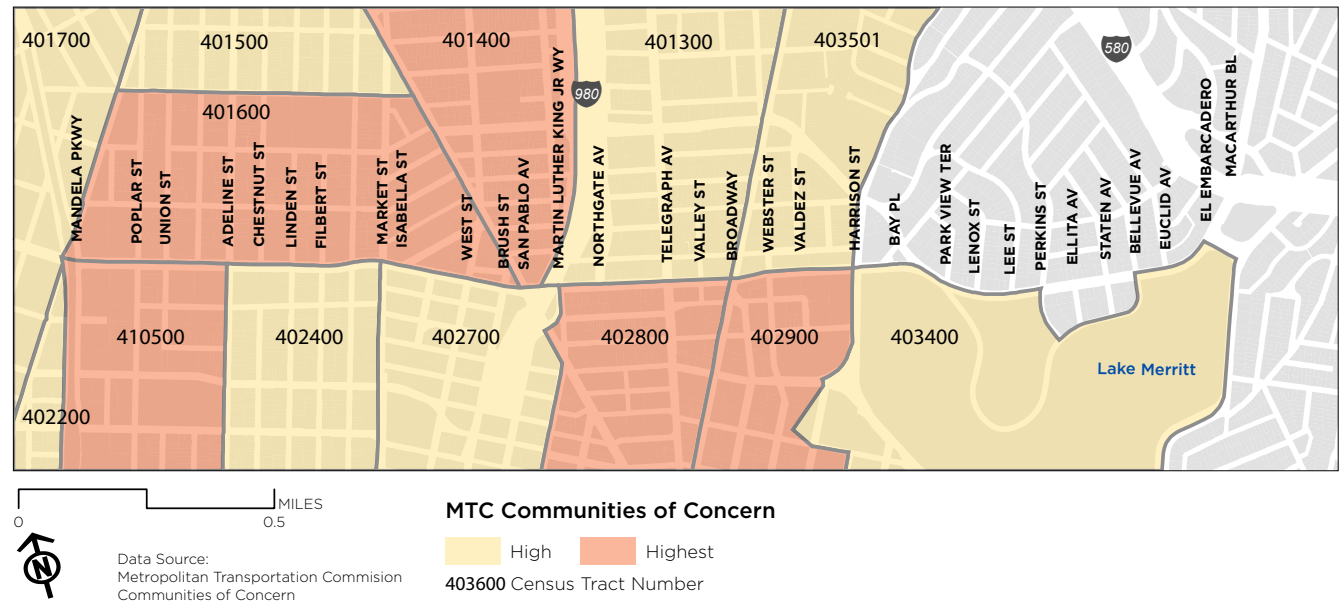
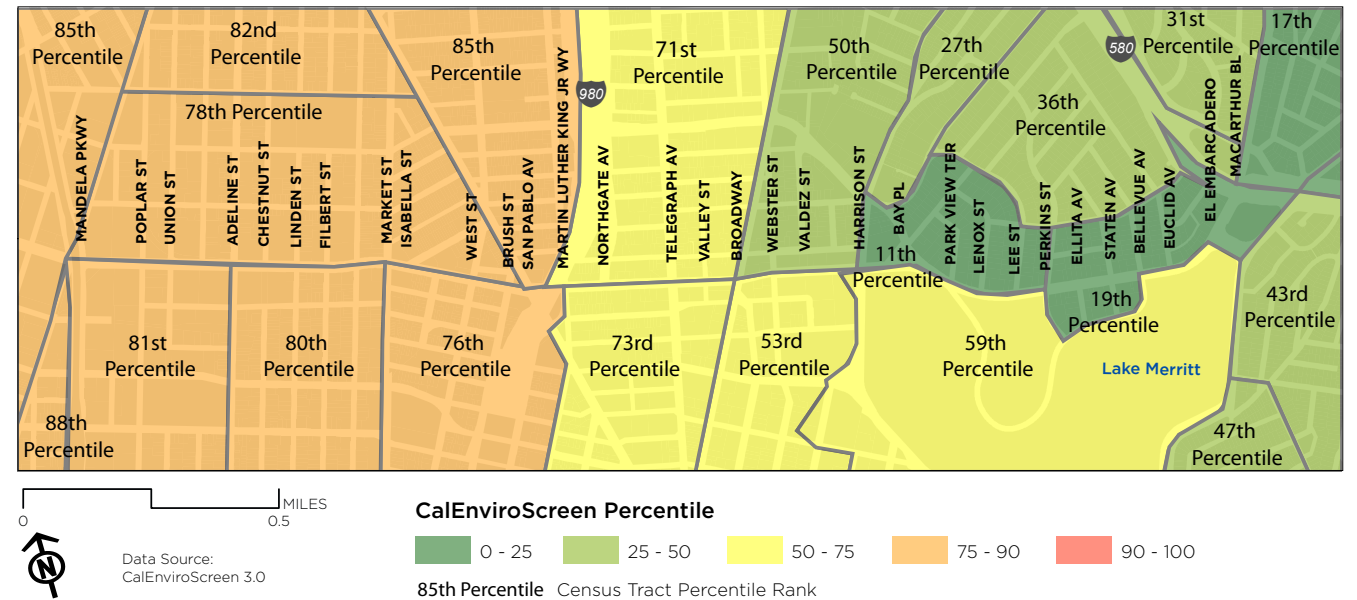


FIGURE 6: CalEnviroScreen



Free and Reduced-Price Meals

The California Department of Education collects information on the number of students that are eligible for free or reduced-price meals. Schools, where over 75% of students are eligible for free or reduced-price meals, are considered disadvantaged. While no school directly fronts the Grand Avenue Corridor, six of the nine public schools within a half-mile of the corridor have a student population where over 75% of students qualify for free or reduced-price meals: These schools are McClymonds High, Street Academy, Westlake Middle, Martin Luther King Jr. Elementary, Ralph Bunche High, and Vincent Academy. These schools and their student population eligible for free and reduced-price meals are shown in Figure 7.

Housing and Transportation Costs

Understanding how much income households are spending on housing and transportation costs can provide an understanding of the financial burdens that residents are experiencing. Based on the analysis, housing and transportation costs are varied both within and across the corridor's three areas. Costs in West Oakland range from 22-40% of household income on average, costs in Downtown range between 22-29% and costs in the Adams Point area range between 30-54%. Overall, the average household spends 39% of its income on housing and transportation. Transportation costs alone ranged between 11-16% across the corridor. The citywide transportation costs average is 15% (Center for Neighborhood Technology). Figure 8 shows the breakdown of household income spent on housing and transportation costs.

FIGURE 7: Free and Reduced-Price Meal Eligibility

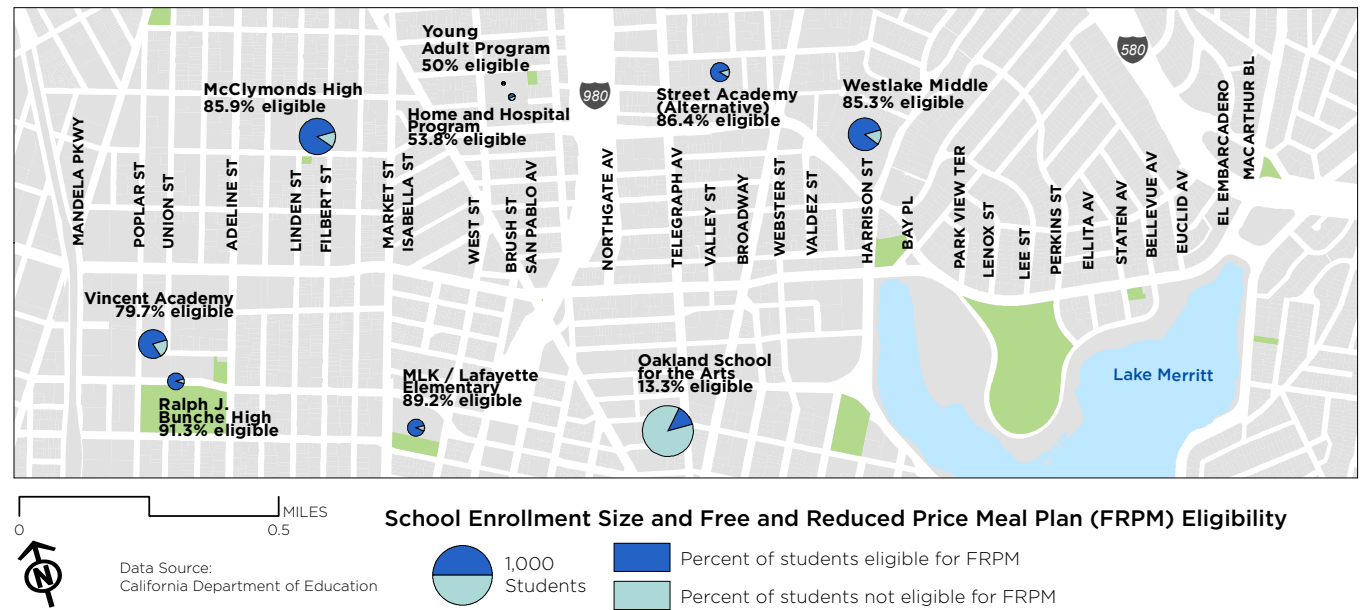
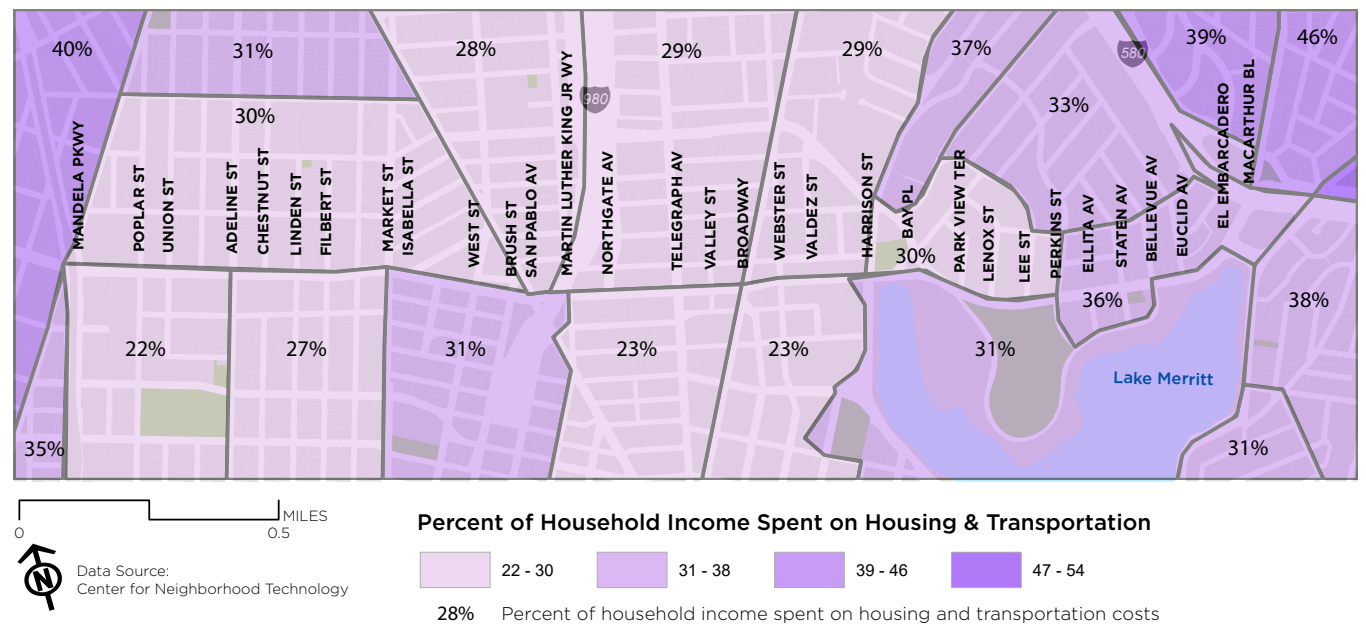


FIGURE 8: Percent of Household Income Spent on Housing & Transportation



Healthy Places Index Data

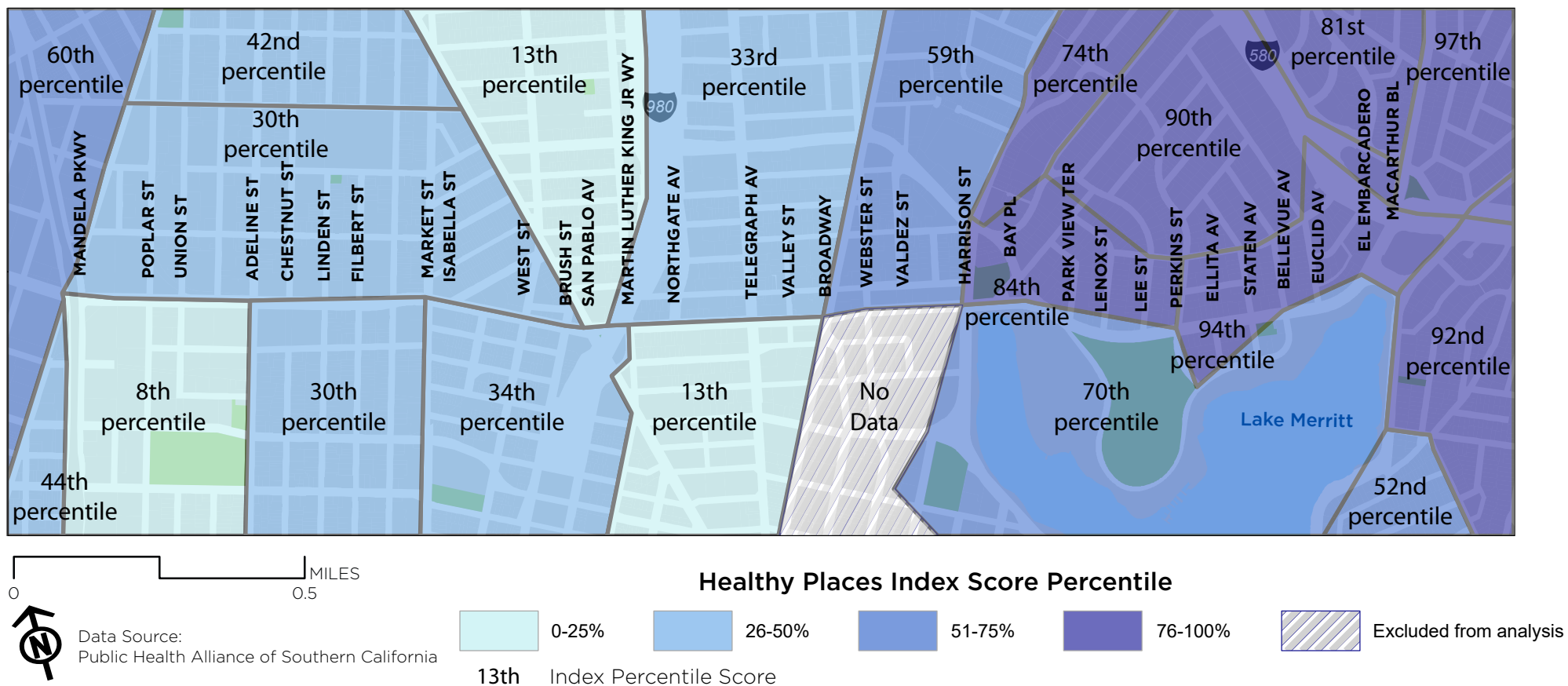
The Healthy Places Index uses 25 individual indicators that analyze public health data in eight areas:

- Economy
- Education
- Healthcare access
- Housing
- Neighborhoods
- Clean environment
- Transportation
- Social environment

The analysis tries to capture a holistic understanding of health and recognizes that health is produced by community factors not directly addressed by the health care system. On the index, lower numbers indicate less healthy communities.

Of analyzed census tracts, three ranked in the bottom quartile, two in West Oakland and one in Downtown. Across the corridor, percentiles ranged from 9th to 98th; a very wide variance that exemplifies the effects of historic disinvestment in certain segments of the Grand Avenue Corridor. Figure 9 displays the Healthy Places Index data.

FIGURE 9: Healthy Places Index



Changes Along the Corridor - Planned and Future Investments

Repaving

The West Grand Avenue segment of the corridor (Campbell Street to Market Street) will be repaved in 2020. As part of the repaving project, two vehicle lanes are being removed after determining that six lanes of traffic is not needed. With the additional space, new buffered bicycle lanes will be striped along with new crosswalks.

Proposed Major Developments

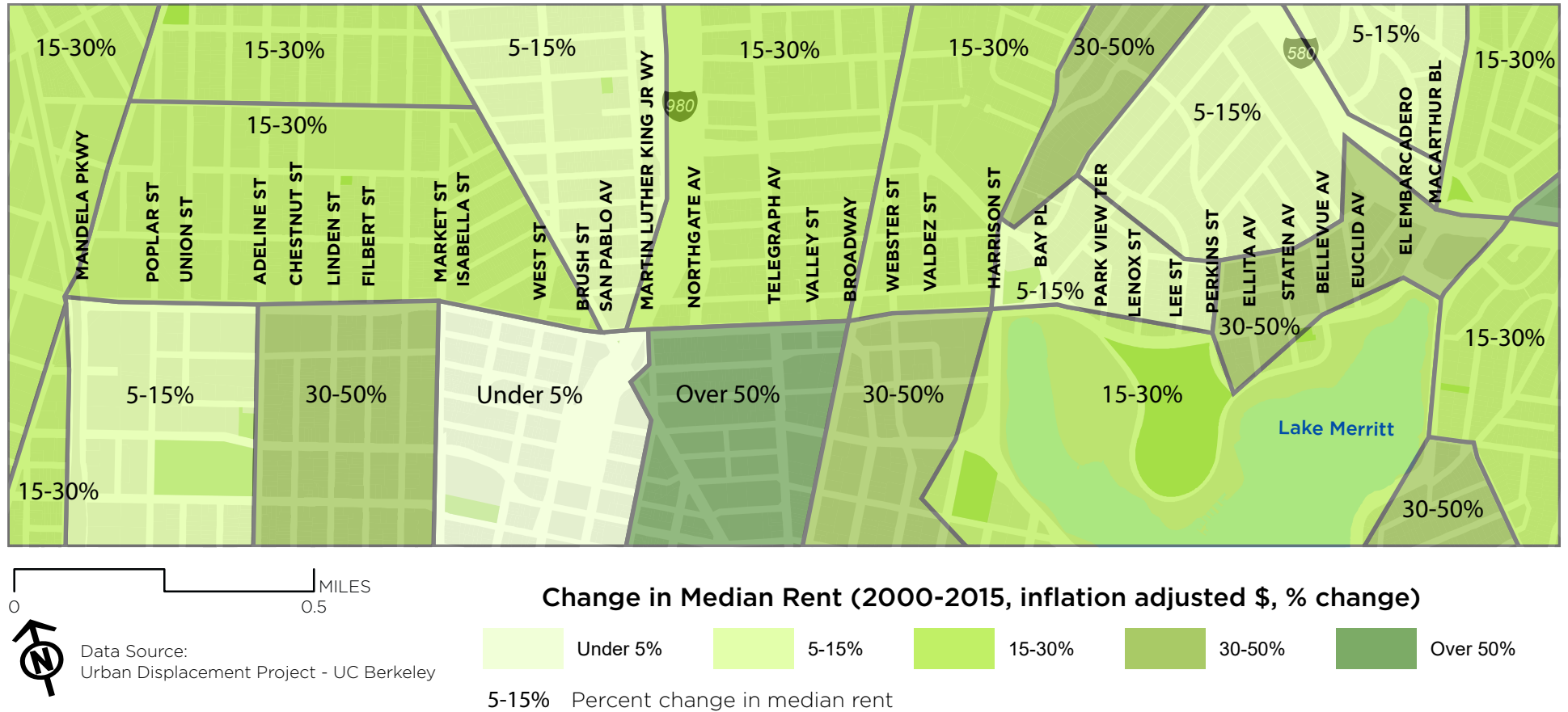
There are multiple current or planned projects along the corridor:

- Ice House is an under-construction development in West Oakland between Filbert Street and Myrtle Street that is building 126 residential units.
- Telegraph Tower, in Downtown at the W. Grand Avenue/Telegraph Avenue intersection is a 28-story 875,000 square foot office tower development.
- The Kaiser Permanente Thrive Center, one block south, will be a 29 story, 1.6 million square foot office tower that will house over 7,000 employees.
- The Moxy Hotel on the southwest corner of Telegraph Avenue and W Grand Avenue will build 173 guest rooms with 3,000 square feet of ground floor retail. The building will rise seven stories and include a rooftop deck.
- 88 Grand is a 35 story, 263 residential tower that will be located at Grand Avenue and Webster Street. The project will include ground floor retail.
- 2270 Broadway will be a 24 story, 223 unit residential tower. The project also includes ground floor retail.
- 500 Grand will be a five story, 40-unit development with 3,000 feet of ground floor retail.

Gentrification Concerns

The aforementioned projects and the outcomes of this study may, understandably, raise concerns about gentrification and the displacement of long-term community members. These concerns are captured in prior planning documents including the West Oakland Specific Plan. Investments in public infrastructure, however well-intentioned, can signal to private developers that areas are primed for new investment and development. These concerns are confirmed according to data from UC Berkeley's Urban Displacement Project. The Urban Displacement Project is a research and action initiative of UC Berkeley. Their research "aims to understand and describe the nature of gentrification and displacement, and also to generate knowledge on how policy intentions and investment can respond and support more equitable development" (Urban Displacement Project).

FIGURE 10: Change in Median Rent (2000-2015)



Between 2000 and 2013, with a few exceptions, rents have risen across the corridor. The average rent increase was as high as 45% in some neighborhoods. Neighborhoods in Downtown and West Oakland experienced larger increases than the Adams Point area (Urban Displacement Project - UC Berkeley). The change in rent across the corridor is shown in Figure 10.

The Urban Displacement Project also provides data about changes in the number of households of color along the corridor. There are areas along the corridor that have lost households of color and others that have gained households of color between 2000 and 2015 (the latest year that data was available). The Adams Point area had the greatest loss of households of color, while the Downtown and West

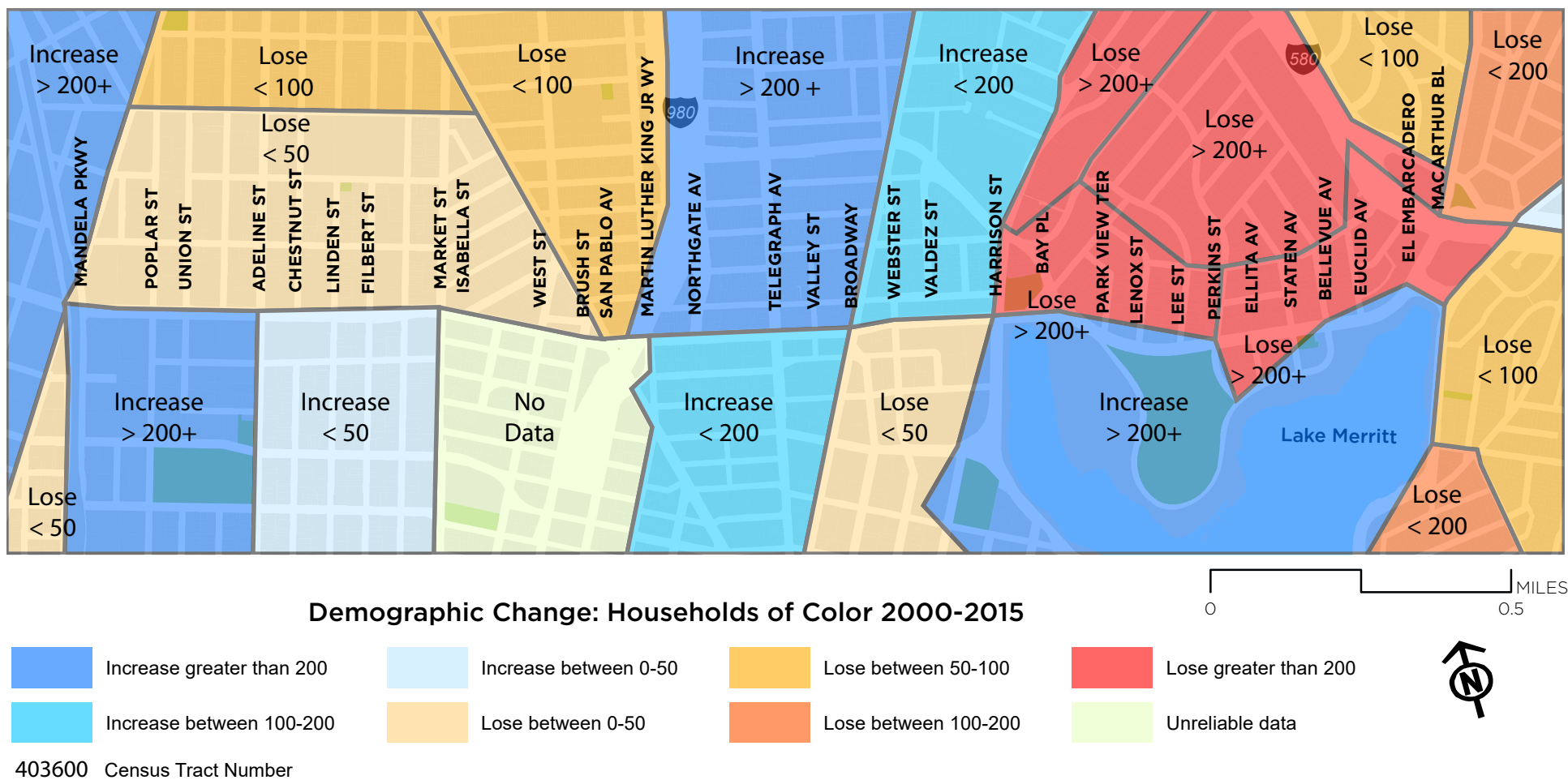
Oakland areas were mixed. Downtown had more census tracts that gained households of color than lost them and the tracts in West Oakland were split (Urban Displacement Project). This data for Grand Avenue is shown in Figure 11.

To both acknowledge and try to minimize this effect, this Plan will balance the competing need to address safety and inequality along the corridor by putting community members and their lived experience at the center of every design option. The Plan will lead a virtuous feedback cycle where every round of engagement will begin by articulating what was heard in prior rounds and how design options reflect the heard community vision and needs.

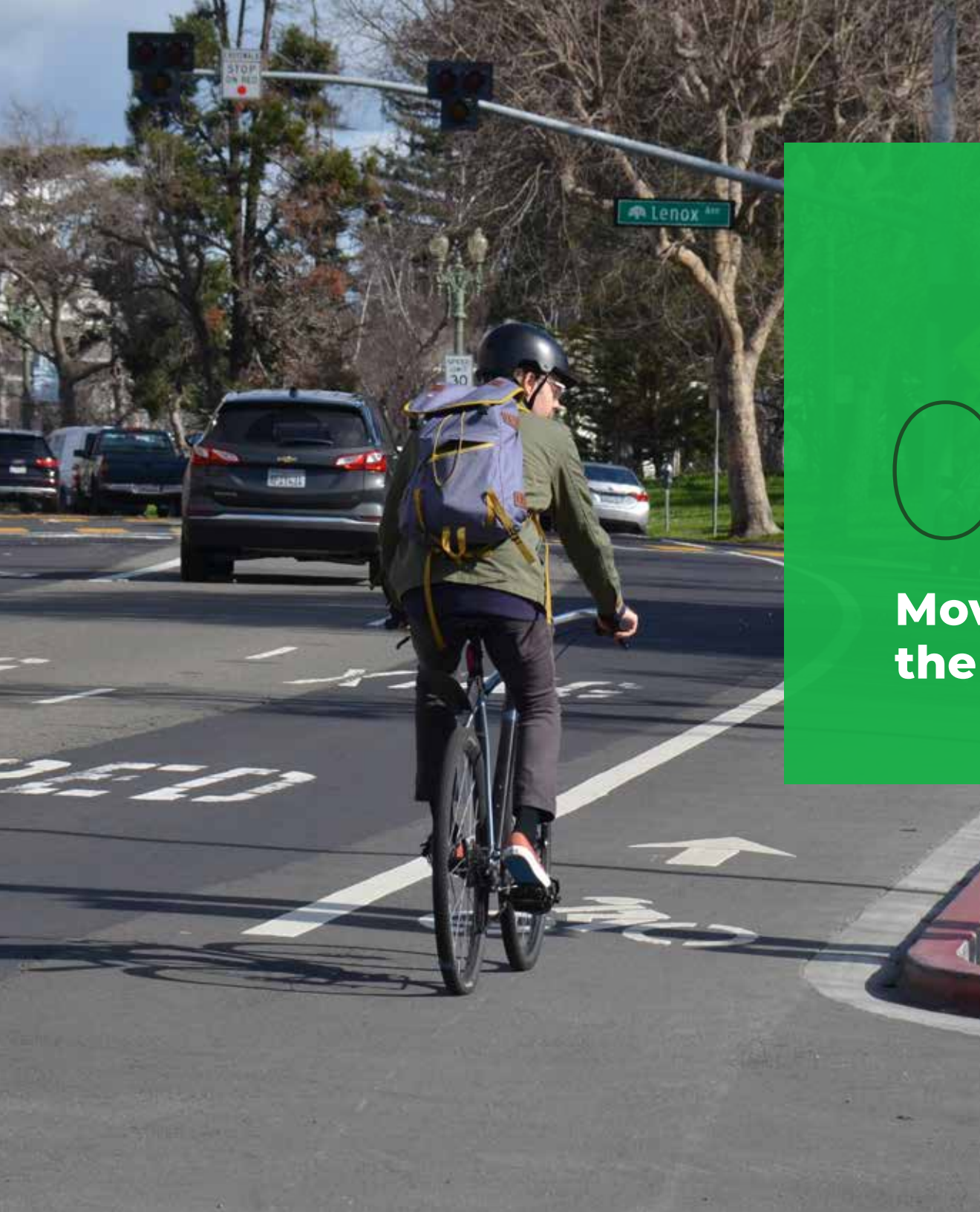
Homelessness

Homelessness is a major issue across California and the Bay Area, especially within some communities of Oakland. The 2019 EveryOne Counts Count and Survey indicated that there are over 8,000 homeless people in Alameda County; over 4,000 of them reside in Oakland. 3,200 of these people are unsheltered (Alameda County EveryOne Home Homeless Count and Survey, 2019). This planning process recognizes that some of these people currently live in tents and makeshift shelters on Grand Avenue, both on the sidewalk, in nearby parks, and parked in cars and recreational vehicles along the corridor. This Plan also recognizes that transportation costs can also be a burden, especially with homeless and other low-income communities. Walking, bicycling, and transit are low-cost transportation options that can help these residents reach employment, job training, health services, and other important destinations.

FIGURE 11: Change in Households of Color (2000-2015)



Data Source:
Urban Displacement Project - UC Berkeley



03

Moving Along the Corridor

Walking

BY THE NUMBERS



Sidewalk Inventory

Sidewalks were inventoried throughout the study area to analyze if there is sufficient width and to document obstructions. The condition of sidewalks varied greatly throughout the corridor. Data will be broken down by corridor segment:

WEST OAKLAND

Sidewalk presence and widths vary greatly. Mandela Parkway offers a wide and protected pedestrian plaza, however many blocks are characterized by missing sidewalks, narrow walkways, and uneven surfaces.

DOWNTOWN

Sidewalk presence and widths generally become wide and uniform in the Downtown area. The sidewalk along the northern leg of Grand Avenue underneath I-980 from San Pablo Avenue to Telegraph Avenue is narrow and contains several obstacles for pedestrians. Upturned sidewalk and several tight sections where parking meters and utilities cause walkways to narrow to 3-4 feet can make this section difficult to navigate.

ADAMS POINT

Sidewalk widths in the Adams Point neighborhood are wide and uniform. Tree and plant buffers along the walkways adjacent to Lakeside Park create a comfortable environment for pedestrians.

Figure 12, Figure 13, and Figure 14 show the results of the sidewalk inventory for each area.

FIGURE 12: West Oakland Sidewalk Inventory

FIGURE 13: Downtown Sidewalk Inventory



FIGURE 14: Adams Point Sidewalk Inventory

Crossing Analysis

A pedestrian crossing analysis was conducted to inventory crosswalks across Grand Avenue, installed crossing enhancement devices, and presence of the median. A list of collisions broken down by involved modes is available in Appendix A.

WEST OAKLAND

Signalized crossings are widely and infrequently spaced. On average, intersections in this section of W Grand Avenue are spaced 366 feet apart; signalized crossings, however, are spaced an average of over 1,000 feet apart. In one section, pedestrians must walk 0.3 miles before reaching the next signalized crossing. Several intersections lack marked crosswalks. Traffic signals make up half of all crossing facility types. The remaining crossing facilities are marked-uncontrolled crosswalks.

DOWNTOWN

Signalized crossings are evenly spaced and occur at all but one intersection. Pedestrians only need to walk one block, or an average of 460 feet, to reach the next signalized crossing. In this section, Valley Street/W Grand Avenue is the only intersection that does not have a traffic signal. At this location, there are two high visibility crosswalks with center medians. The center medians have space for pedestrians seeking refuge, however, the area is not ADA accessible.

ADAMS POINT

Marked crossings occur at every intersection. Pedestrians walking in this section encounter either a traffic signal, HAWK Beacon, or RRFB at every intersection. On average, crossings are spaced 400 feet apart. In several places, parking lots and gas station driveways create potential safety concerns/conflict points as cars move in and out across the sidewalk.

Figure 15, Figure 16, and Figure 17 show the results of the crossing analysis for each area.

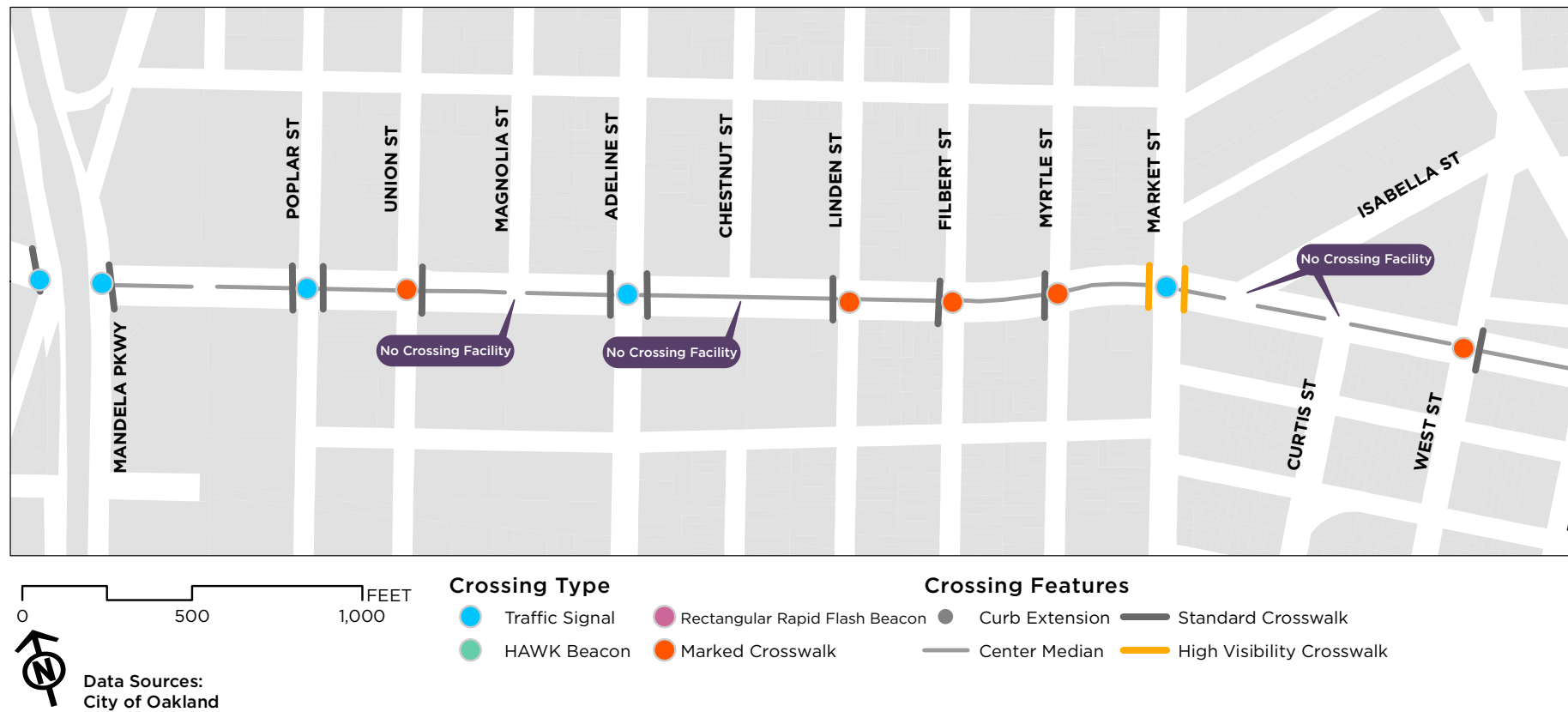
FIGURE 15: West Oakland Crossing Analysis

FIGURE 16: Downtown Crossing Analysis

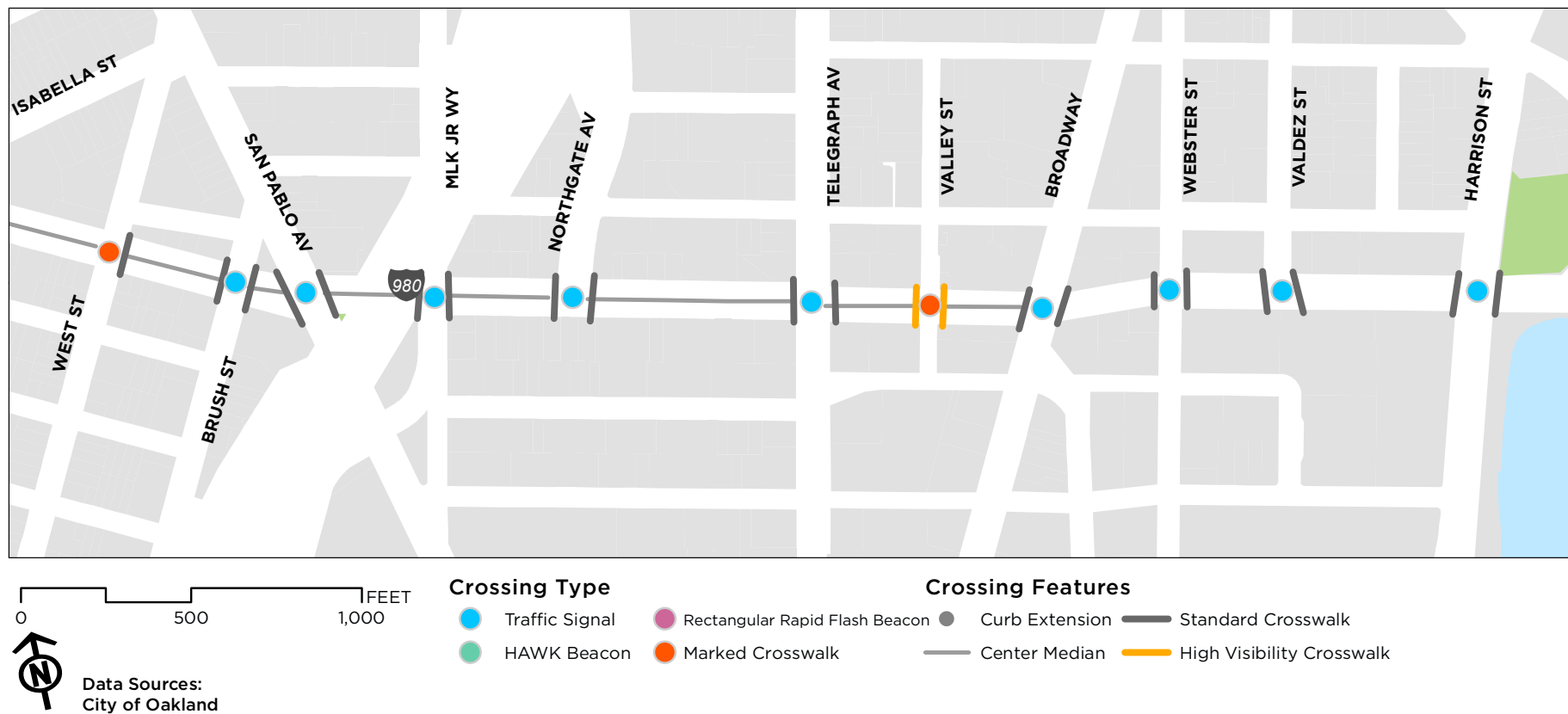
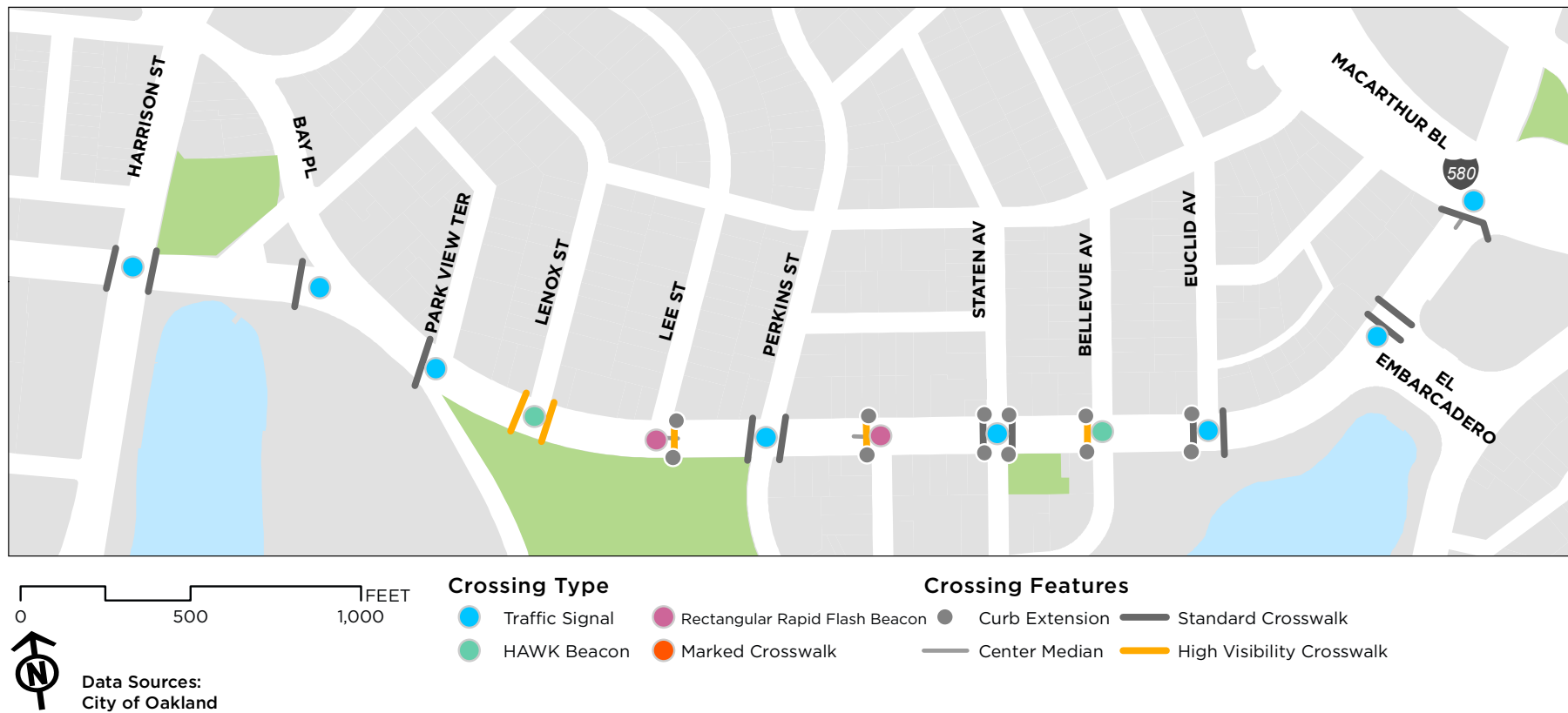


FIGURE 17: Adams Point Crossing Analysis

Drivers Yielding to Pedestrians

In December 2019, a driver yield analysis was conducted at four locations across the corridor: Linden Street in West Oakland, Valley Street in Downtown, and Lee Street and Bellevue Avenue in Adams Point. These locations were selected to ensure that each area had one intersection and that a variety of existing intersection treatments could be observed. The Linden Street crossing is a yellow transverse crosswalk with no advance warning signs or pavement markings, Valley Street is a high visibility crosswalk with advance signs and striping, Lee Street has an Rectangular Rapid Flash Beacon (RRFB), and Bellevue Avenue has a Pedestrian Hybrid Beacon (PHB - also known as a HAWK Beacon). The corridor has two HAWK Beacons and two RRFBs, both in the Adams Point section of the corridor.



The transverse crosswalk markings across W Grand Avenue at Linden Street

The lowest yielding rates were observed at the crossing at Linden Street, the location with the least amount of crossing enhancements and the highest number of travel lanes that need to be crossed. The high-visibility crosswalks and advance yield pavement markings and signs at Valley Street create a yield rate that is still lower than 30%, but did provide

a 10% improvement, compared to Linden Street. The RRFB at Lee Street improved yield compliance to almost 50%. The HAWK Beacon at the Bellevue Avenue crossing had the highest yield compliance rate of 88%; this tracks with the national rate of yield compliance at HAWK Beacons of about 90% (FHWA).

Over 60% of the crossings of Grand Avenue in West Oakland are uncontrolled crossings with no crossing enhancements. No other section of Grand Avenue within the study area has so few unenhanced pedestrian crossings. All four of Adam's Point's uncontrolled crossings have been enhanced with either an RRFB or HAWK Beacon and Downtown only has one uncontrolled crossing. There is a clear discrepancy with the levels of pedestrian infrastructure across the neighborhoods. Part of this is due to the character of the neighborhoods and the surrounding land uses (the fronting uses are much more conducive the pedestrian activity in Downtown and Adam's Point than the more industrial uses in West Oakland). This lack of pedestrian crossing enhancements appears to contribute to very poor yield rates and uncomfortable/highly-stressful crossings.

TABLE 3: Grand Avenue Yield Study Results

Intersection	Driver Yield Rate	Existing Infrastructure
Linden	19%	Transverse crosswalk
Valley	29%	High visibility crosswalks & signage
Lee	46%	RRFB
Bellevue	88%	Pedestrian Hybrid Beacon

Pedestrian Collisions

The locations of pedestrian-involved collisions can be found in Figure 19, Figure 20, and Figure 21. Pedestrian-involved collisions occurred at the following intersections:

- Adeline Street
- Linden Street
- San Pablo Avenue
- MLK Jr. Way
- Northgate Avenue
- Telegraph Avenue
- Valley Street
- Broadway
- Harrison Street
- Bay Place
- Lee Street
- Perkins Street
- Staten Avenue
- Bellevue Avenue
- Euclid Avenue
- El Embarcadero

Pedestrian-involved collisions account for about 17% of collisions along the corridor. Figure 18 identifies the Pedestrian Action, what the pedestrian's action was during the collision. It is important to note that 68% of pedestrian collisions occurred in a marked crosswalk at an intersection, with another 5% occurring in a mid-block crosswalk; in total almost three-quarters of pedestrian-involved collisions occur at a marked crosswalk.

FIGURE 18: Pedestrian Action During Collision

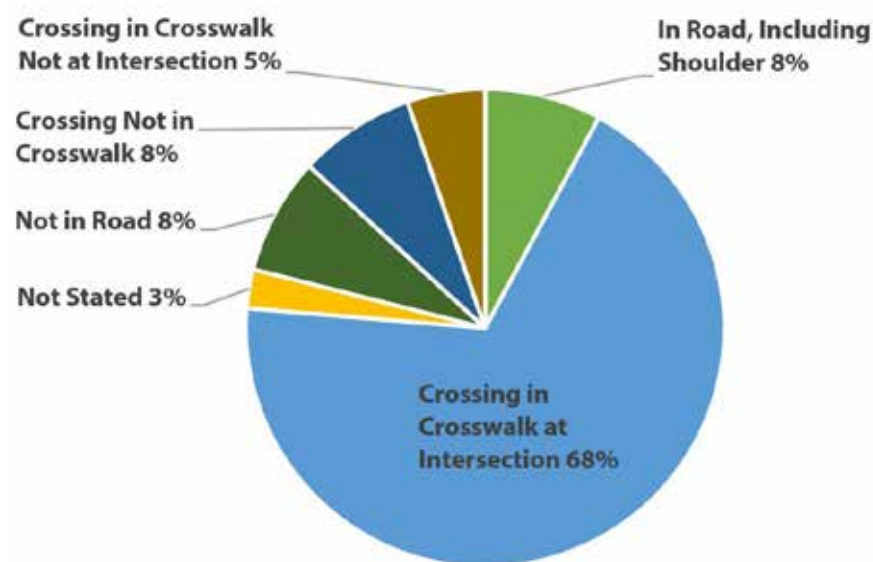


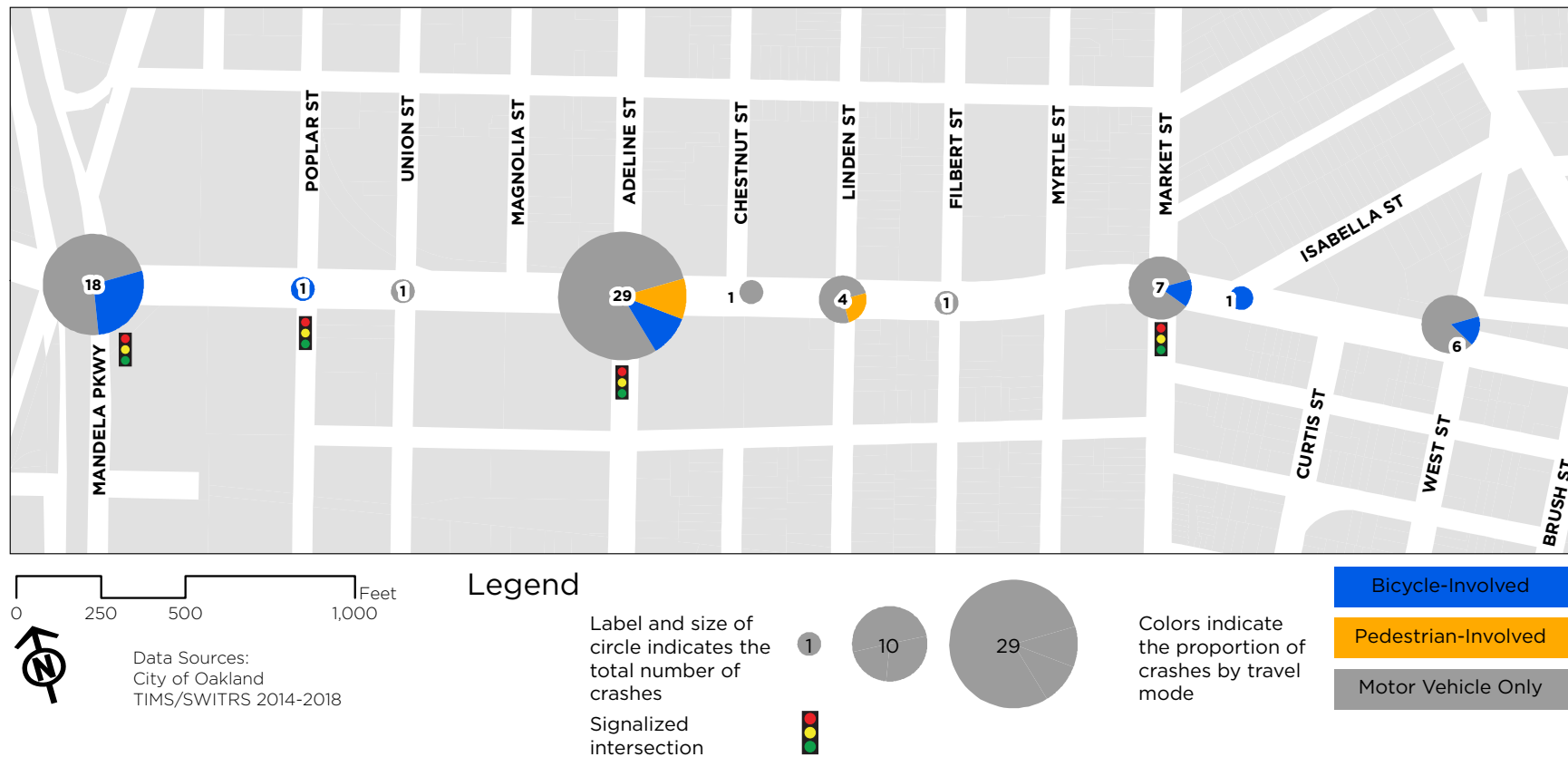
FIGURE 19: West Oakland Collision Locations

FIGURE 20: Downtown Collision Locations

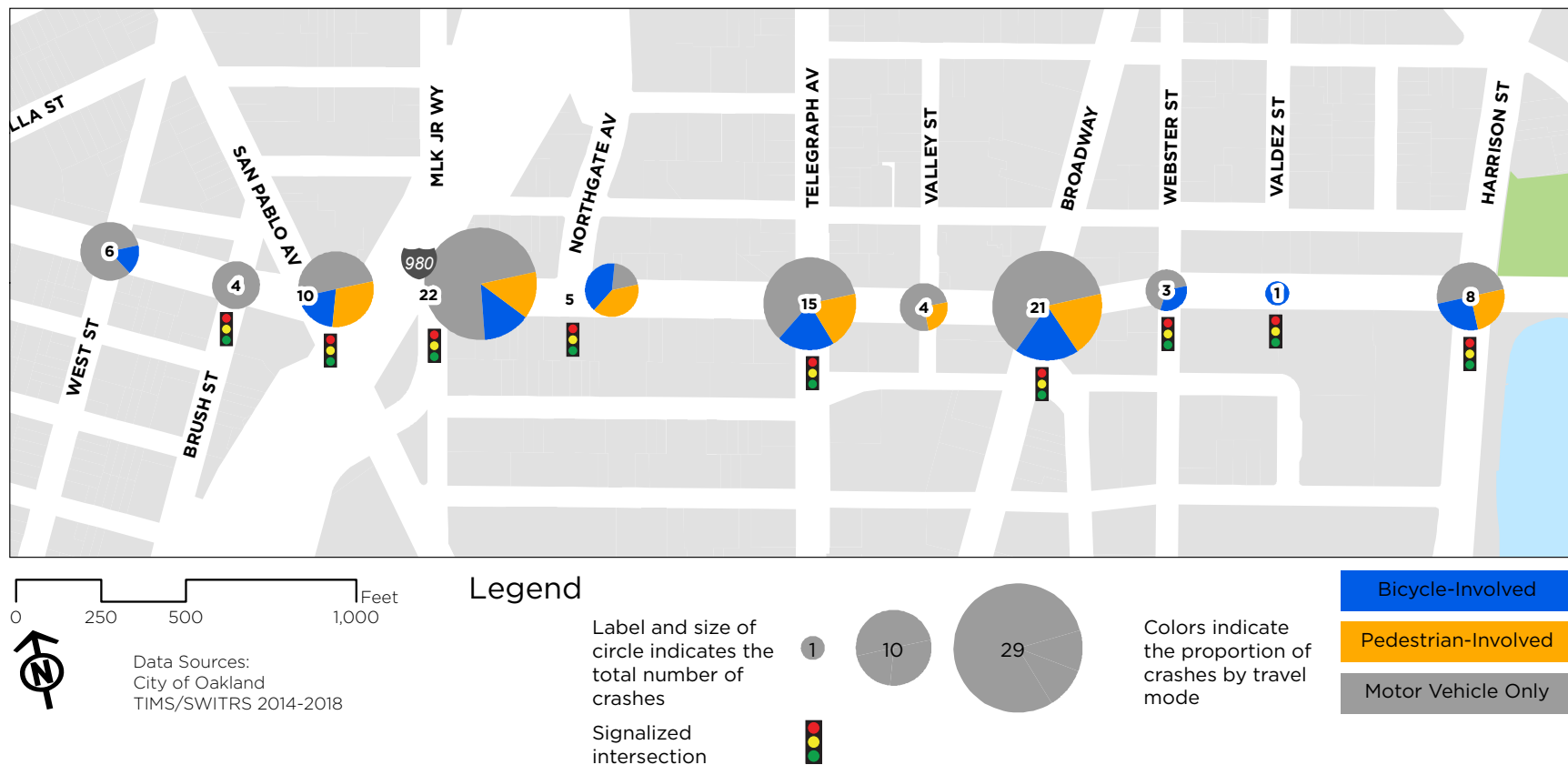
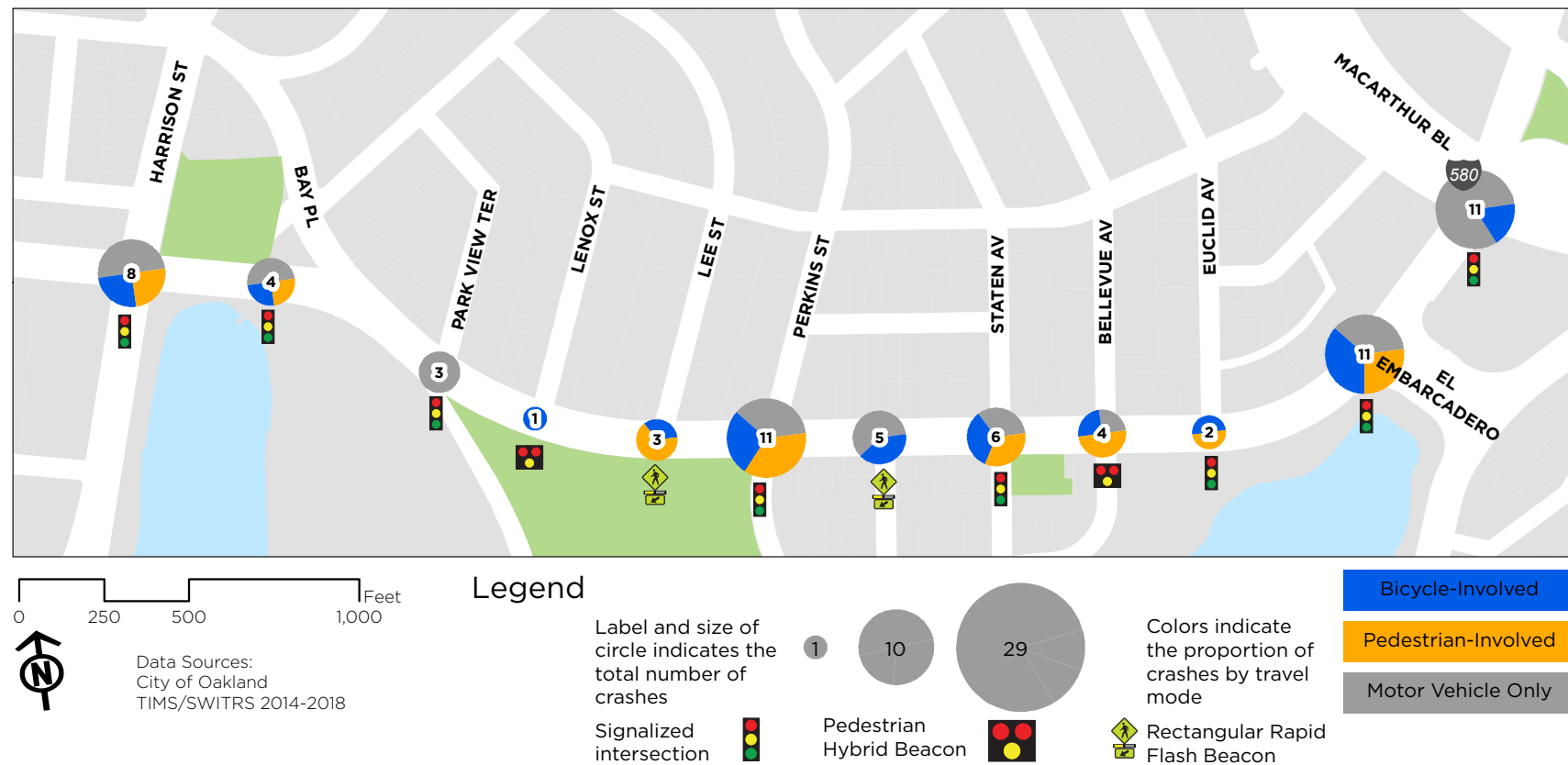


FIGURE 21: Adams Point Collision Locations

Travel Patterns

Based on an analysis of the Streetlight data, walking patterns vary across the three sections of the corridor. Of the pedestrian traffic that passes through the Adeline Street intersection, the majority of pedestrians are walking to destinations within the West Oakland or Downtown areas. Most pedestrian trips that originate in West Oakland tend to stay within West Oakland or Downtown areas. The Bay Bridge pedestrian and bicycle path was also shown to be a destination for pedestrians walking through Adeline Street. Based on an analysis of pedestrians passing through Telegraph Avenue, the Downtown segment of the corridor has many more pedestrian trips than the West Oakland segment.

Walking trips in this segment have a larger range of origins and destinations, spanning East Lake neighborhoods, West Oakland, North Oakland, and Jack London Square. The largest share walking trips through this area originate from areas directly north and south of the Downtown corridor segment.

The Adams Point area of the corridor generates the most pedestrian activity of any segment. Most of these trips start or end north of Lake Merritt or in Downtown. The destinations and higher residential density in this area create the largest pedestrian catchment area, pulling or sending pedestrians from East Lake and Fruitvale to West Oakland to the Oakland Hills to Jack London Square.



Sidewalks in Downtown

WHAT'S THE EXPERIENCE LIKE?

Both walking along and crossing the Grand Avenue Corridor is a story of three neighborhoods. The West Oakland area, in addition to having the most travel lanes and highest vehicle speeds of the corridor, has the most broken or missing sidewalks and the most uncontrolled crosswalks without any infrastructure enhancements. West Oakland was the only segment with missing sidewalks and both West Oakland and Downtown had segments with narrow or constrained sidewalks. Signalized crossings are, on average, the furthest apart in West Oakland at about 1,000 feet apart, compared to about 400 feet in other areas. West Oakland is the only area with minimum standard transverse crosswalks at uncontrolled crossing locations; the one location in Downtown has better pavement markings and signs and the four uncontrolled crossings in Adams Point either have RRFBs or HAWK Beacons.

Within the Downtown area, the sidewalks are continuous and generally wide enough to handle higher volumes of pedestrian traffic. There are some areas within this area that



The sidewalk environment underneath I-980 lacks sufficient lighting, even during the day

have constrained width due to parking meters and other utilities. Crossings within this segment are spaced about 400 feet apart. Walking in the Adams Point area is the most pleasant experience. Sidewalks are uniformly wide and the Lakeside Park frontage area includes a landscaped buffer area. Crossings are spaced about 400 feet apart within the Adams Point area.

Transit

BY THE NUMBERS

Routes

The corridor is served by three AC Transit routes; none of which travel the entire length of the study corridor. The corridor is also briefly served by the Free Broadway Shuttle's Day Route with a stop at Webster. Detailed route characteristics are shown in Table 4 on pg. 46.

- **Route 12:** The 12 travels from 6th Street/Gilman Street in Berkeley to Jack London Square Amtrak via Martin Luther King Jr. Way, Pleasant Valley Avenue, and Broadway.

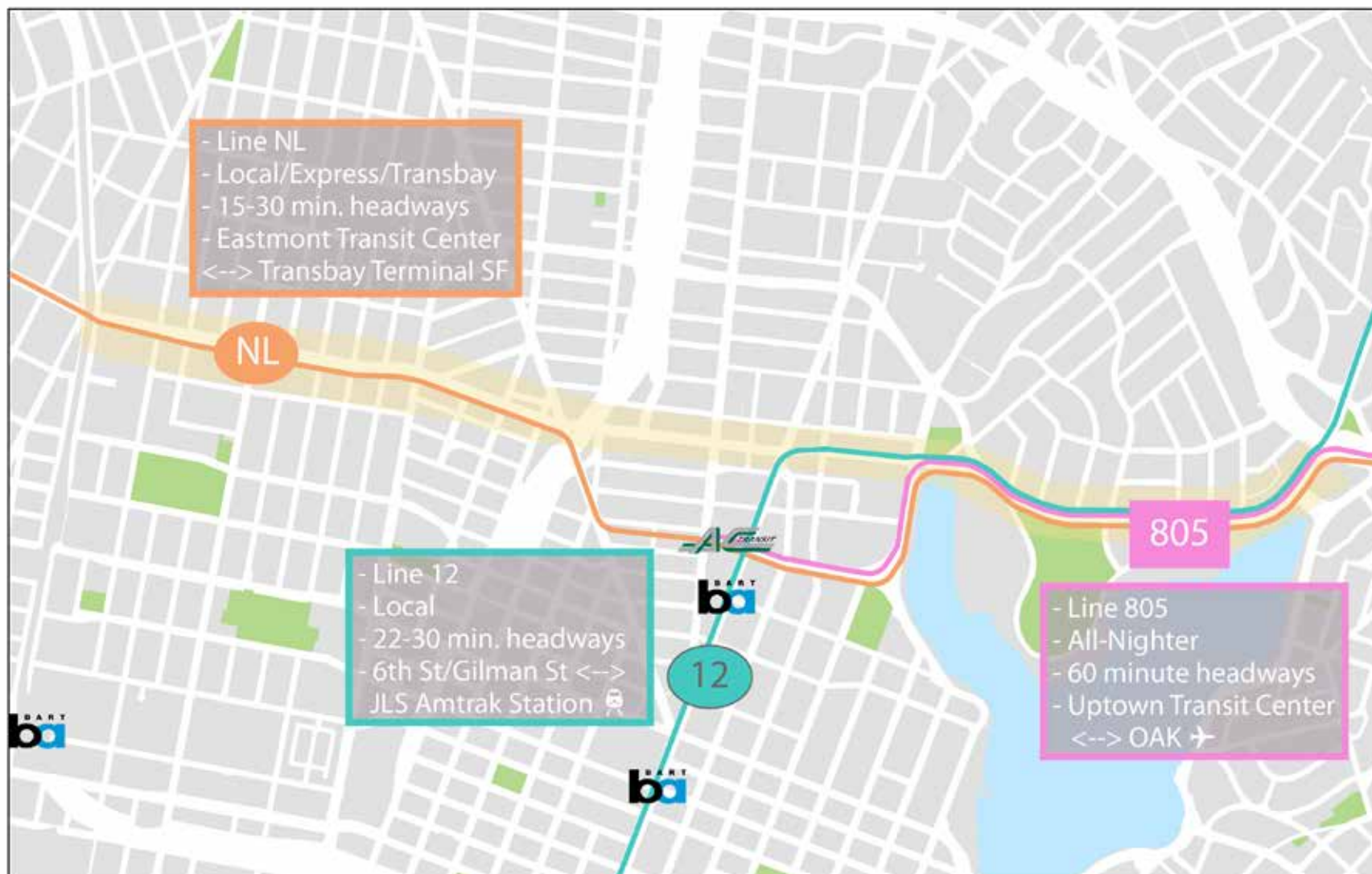


- **Route NL:** The NL provides transbay service from the Eastmont Transit Center to the Transbay Terminal in San Francisco via MacArthur Boulevard and Grand Avenue.
- **Route 805:** The 805 is an All-Nighter line serving the 19th Street BART/Uptown Transit Center and Oakland International Airport via Grand Avenue, MacArthur Boulevard, 73rd Avenue, and Hegenberger Road.

TABLE 4: AC Transit Route Characteristics

Route	Service Type	Service Span	Frequency	Weekday Average Daily Ridership FY 17/18	Year over year Change in Ridership
12	Local	Weekdays 5am–12am Weekends 6am–12am	Weekdays every 22-30 minutes Weekends every 30 minutes	2,801	+10.6%
805	Late night	Weekdays 12am–6:30am	Service every 60 minutes	128	-16.2%
NL	Local Express and Transbay	Weekdays 5am–12am Weekends 5am–12am	Weekdays every 15-30 minutes Weekends every 30 minutes	3,022	-5%

FIGURE 22: AC Transit Routes along Grand Avenue



Transit Travel Speed

Routes 12 and NL were included in the travel speed analysis. The 805 was excluded because it runs overnight in conditions when there are typically minimal traffic-related delays. Slowdowns were most pronounced in the peak direction of the Downtown and Adams Point segments with average speeds decreasing 25% in the eastbound direction during the evening peak hours and 7% in the westbound direction during the morning peak hours when compared with the average travel speed during other periods. Transit travel speeds in the West Oakland segment were relatively consistent throughout the day and by direction. West Oakland had the highest average travel speeds of 14.1 MPH. Table 5 and Table 6 show the average travel speed for each route by corridor segment.

TABLE 5: Westbound Bus Travel Speed (mph)

Route	Period	West Grand Avenue	Downtown	Grand Lake
NL	AM	13.44		9.44
12			8.52	9.80
NL	Midday	14.63		10.06
12			8.73	10.75
NL	PM	14.27		10.06
12			8.90	11.04

TABLE 6: Eastbound Bus Travel Speed (mph)

Route	Period	West Grand Avenue	Downtown	Grand Lake
NL	AM	15.01		12.95
12			10.28	12.47
NL	Midday	14.27		11.38
12			9.05	10.82
NL	PM	12.94		8.84
12			7.42	8.87

Travel Reliability

ROUTE NL

The NL operates in the West Oakland and Adams Point segments. In the peak direction, which is westbound in the morning and eastbound in the evening, the Adams Point segment consistently showed average travel speeds of less than 10 MPH. In contrast, the West Oakland segment showed average speeds of 15-20 MPH. This route experiences the greatest delay at Harrison Street, El Embarcadero, and MacArthur Boulevard/Lakeshore Avenue intersections. Figure 23 and Figure 24 show directional reliability for Route NL.

FIGURE 23: Eastbound Reliability for Route NL

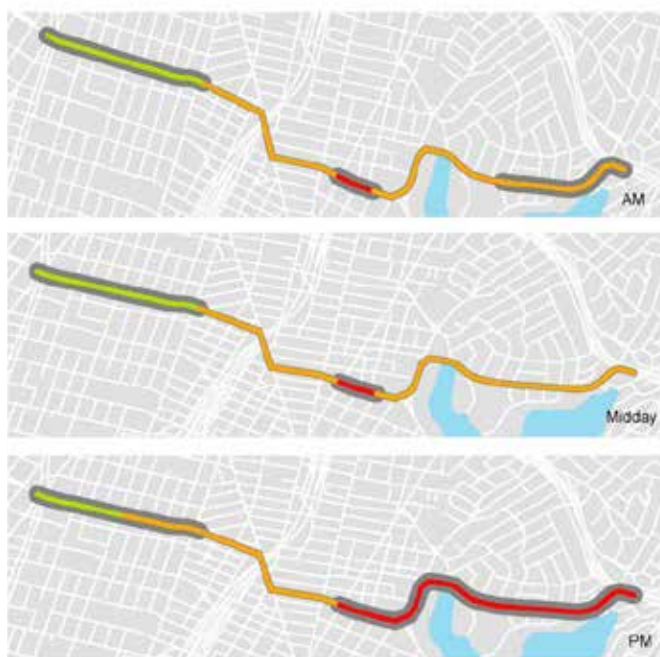


FIGURE 24: Westbound Reliability for Route NL



Travel speed

- < 10 mph
- 10 - 15 mph
- 15 - 20 mph
- > 20 mph

Reliability

- High
- Medium
- Low

Miles 0 0.2 0.4



ROUTE 12

The 12 operates in the Downtown and Adams Point segments. Travel speeds were lower than 15 MPH at all times of day in all directions, on both segments. The evening eastbound trips had the lowest speeds. On the Downtown segment, the route is subject to delays, particularly at Webster Street. In the Adams Point segment, the intersections at Harrison Street, El Embarcadero, and MacArthur Boulevard presented significant delays to service. Figure 25 and Figure 26 show directional reliability for Route 12.

FIGURE 25: Eastbound Reliability for Route 12

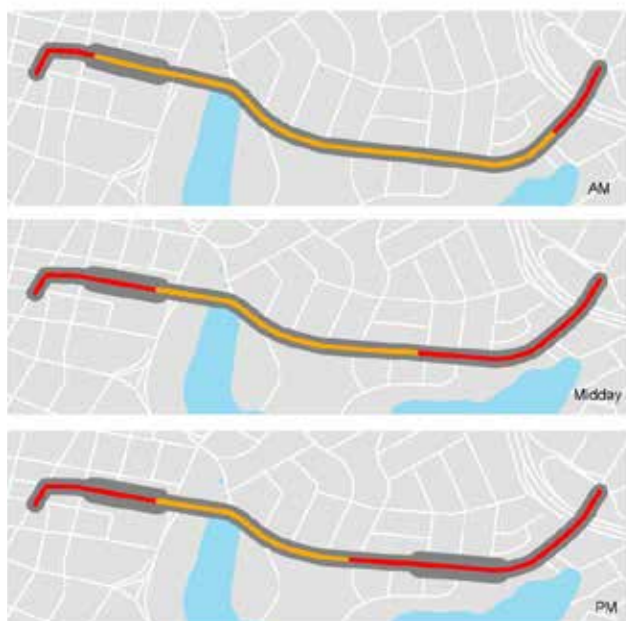
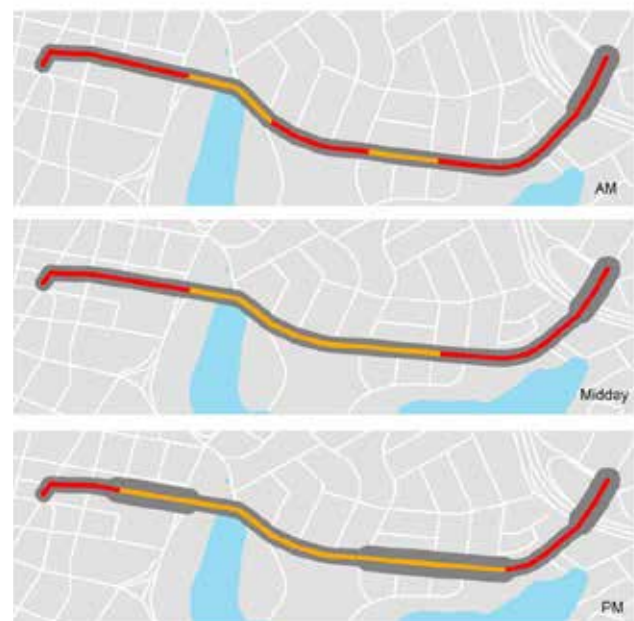


FIGURE 26: Westbound Reliability for Route 12



Route NL showed consistently higher speeds than Route 12. This makes sense because there are more stops on the local line, Route 12. Route NL operates as a limited-stop service with two stops in the Adams Point segment, compared to six on Route 12. Speed of travel can provide an indication of the traffic conditions and other elements in the built environment in which a route is operating. However, it can be also related to the type of route, the distance between stops and the number of intersections and crosswalks on the corridor. Focusing on these conflict points, locations where existing infrastructure could induce delay in transit operations, is an opportunity to address transit service reliability and the resulting delays can include installing transit priority infrastructures such as transit lanes, transit signal priority, and bus bulbouts/boarding islands. The number and type of corridor conflict points are summarized in Table 7.

TABLE 7: Corridor Conflict Points

	West Grand	Downtown	Grand Lake
Intersections	14	8	11
Signalized Intersections	5	7	9
Marked crosswalks	9	8	11
Average distance between stops (Miles)	0.3	0.1	.16 (12) / .4 (NL)
Predominant land use	Industrial / Commercial	Mixed-use Commercial / Retail	Mixed-use retail / residential

Travel Patterns

TRANSIT REACH

Three lines directly serve the corridor, but many other routes cross the Grand Avenue corridor. The BART system is also accessible via 19th Street BART from Broadway.

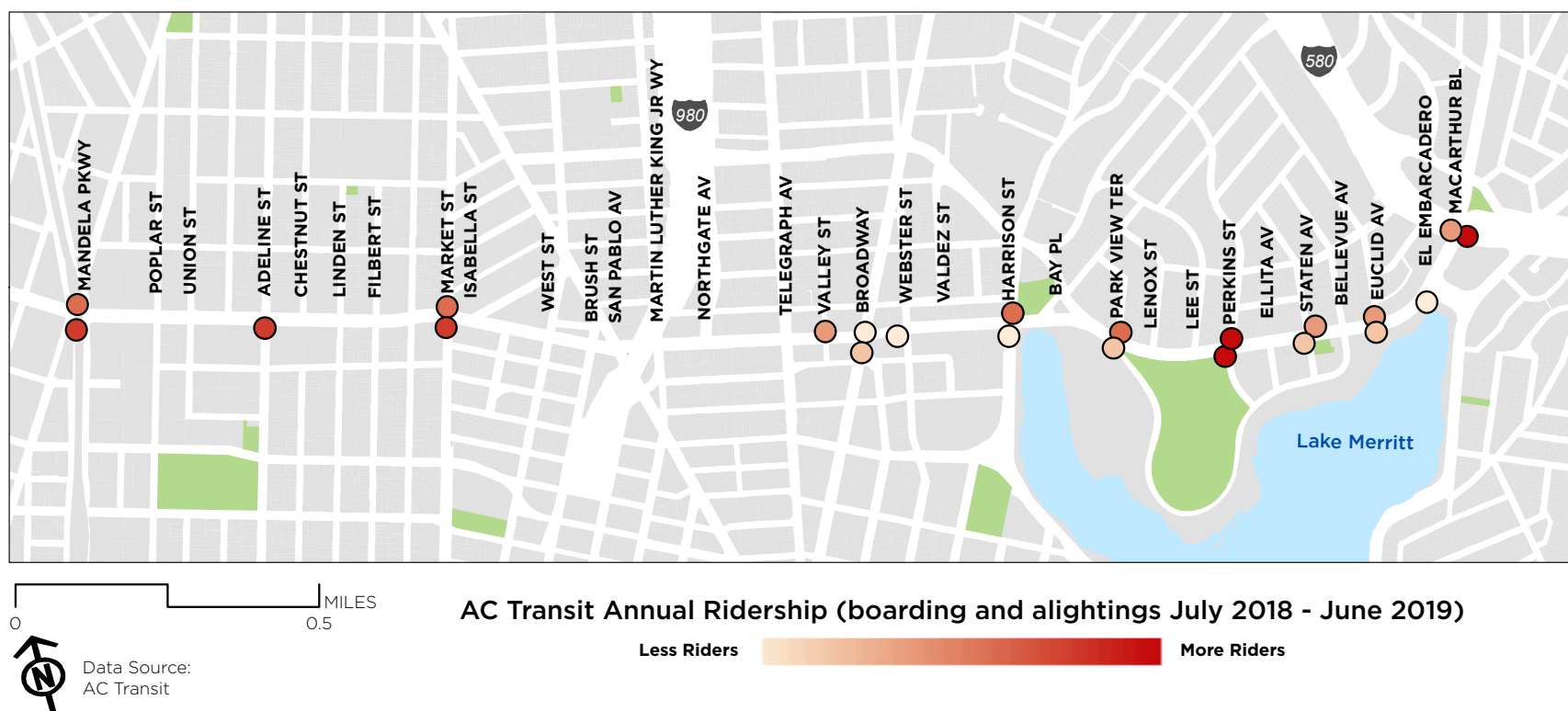
FIGURE 27: Transit Connections from Grand Avenue



RIDERSHIP

Across the corridor, there are 36 AC Transit bus stops that serve the three lines. On average, there are 950 boardings and alightings per day. Two stops are served by both the 12 and NL; these are two stops with the highest ridership activity. Both of these stops are at Grand Avenue/Perkins Street. The eastbound stop has about 158 boardings and alightings daily and the westbound stop has about 150 daily boardings and alightings. The third most active stop was the eastbound stop at MacArthur Boulevard, with about 137 boardings and alightings. Across the corridor, there were 131,950 trips taken that used stops along the corridor between July 2018 and June 2019. About 60% of these bus trips start or end in the Adams Point area and about one-quarter of them start or end in West Oakland. Most of the bus ridership along the corridor is associated with Route 12.

FIGURE 28: AC Transit Ridership (Routes 12 and NL)



STOP INFRASTRUCTURE

There are 36 bus stops in the corridor. All stops have schedule holders, bus stops signage, and are ADA accessible. Ten stops (28%) have benches while seven stops (19%) have shelters. All bus shelters along the corridor, except one, are in the Adams Point section of the corridor. There is a shelter at one of the Broadway stops in Downtown. The only benches present in the West Grand segment are at Adeline Street stops.

WHAT'S THE EXPERIENCE LIKE?

The 12's shortest headway is 22 minutes on weekdays and every half hour on weekends. The 12 doesn't travel very fast through Adams Point and Downtown. The NL runs every 15 minutes at peak and every half hour off-peak. The NL faces similar slowdowns in Adams Point and Downtown as Route 12. AC Transit buses sit in the same traffic as the rest of the vehicles along the corridor.

The overnight All-Nighter route, 805, provides hourly lifeline service between Downtown Oakland and Oakland International Airport. Getting most places on transit via Grand Avenue currently requires at least one transfer to another bus or BART, Amtrak, or the ferry. Grand Avenue connects to many additional AC Transit lines across the corridor. Except for the overnight buses, travel speeds along the corridor are slowed because of traffic congestion and increased dwell times. Less than one-fifth of stations have bus shelters, less than one-third have benches, and none have real-time information; creating typically uncomfortable waiting environments for passengers. Walking or biking to a cross-street for other transit services is currently not a comfortable or low-stress experience, especially in West Oakland.

Bicycling

BY THE NUMBERS

Existing Bicycle Facilities

Bicycle facilities vary across the corridor. The section between Mandela Parkway and Market Street has three traffic lanes in each direction and no designated bicycle facility. The section of Grand Avenue between Market Street and San Pablo Avenue has two traffic lanes in each direction, the fewest within the corridor, plus continuous bike lanes. Grand Avenue between San Pablo Avenue and Telegraph Avenue has a bicycle lane, but three lanes of traffic in many places due to turning lanes. Bicyclists must also mix with turning lanes at several intersections, reducing their degree of separation from traffic. The bike lanes drop between Telegraph Avenue and Webster Street



and reappear east of Harrison Street. Bike lanes continue to El Embarcadero. There is only an eastbound bicycle lane between El Embarcadero and MacArthur Boulevard. Bicycle parking availability is limited and scattered throughout the corridor.

Future Bicycle Facilities

In 2020, W Grand Avenue between Campbell Street and Market Street will be repaved as part of the 2019 3-Year Paving Program. During the repaving, the street will reallocate roadway space by adding buffered bicycle lanes and going from three travel lanes in each direction to two.

Level of Traffic Stress (LTS)

Bikeway Level of Traffic Stress (LTS) summarizes how streets with different traffic and bicycling facilities feel more or less comfortable for cyclists. Lower stress streets have less traffic or higher quality facilities, making them more comfortable to ride along. Conversely, higher stress streets are less comfortable because they have more traffic or lower quality bicycling facilities. The Grand Avenue Corridor has a mix of LTS levels, though the vast majority of its length is fairly high stress. No portions of the corridor are LTS 1.

The LTS score for each of the above segments is listed below with the roadway characteristics that led to the score. LTS scores for the corridor can be seen in Figure 29.



W Grand Avenue at Adeline Street

MANDELA PARKWAY - MARKET STREET:

The western section of the Grand Avenue Corridor, between Mandela Parkway and Market Street, is high stress (LTS 4). This section has three traffic lanes in each direction, no designated bicycle facility, and high vehicle speeds. This section of Grand Avenue also creates a barrier to north-south travel along several lower-stress cross streets, including Poplar, Linden, Filbert, and Myrtle. Intersection improvements at these cross streets would make it easier for bicyclists to cross Grand Avenue.



W Grand Avenue at Market Street, facing Downtown

MARKET STREET - SAN PABLO AVENUE:

The section of Grand Avenue between Market Street and San Pablo Avenue has the lowest level of traffic stress, LTS 2, along the corridor. This section has two traffic lanes in each direction, the fewest within the corridor, plus continuous bike lanes.



An eastbound bicyclist east of Northgate Avenue



A bicyclist traveling eastbound towards Lenox Street



Bicyclists and cars mixing as they cross MacArthur Boulevard

SAN PABLO AVENUE - TELEGRAPH AVENUE:

Heading east from San Pablo Ave, LTS levels increase to LTS 3 until Telegraph Avenue. This section has a bicycle lane, but three lanes of traffic in many places due to turning lanes. Bicyclists must also mix with turning lanes at several intersections, reducing their degree of separation from traffic.

TELEGRAPH AVENUE - WEBSTER STREET:

Between Telegraph Avenue and Webster Street, the bicycle lanes end, increasing bicyclists' exposure to traffic; this is LTS 4.

WEBSTER STREET - HARRISON STREET:

East of Webster Street the bicycle lanes reemerge, and LTS levels drop to LTS 3.

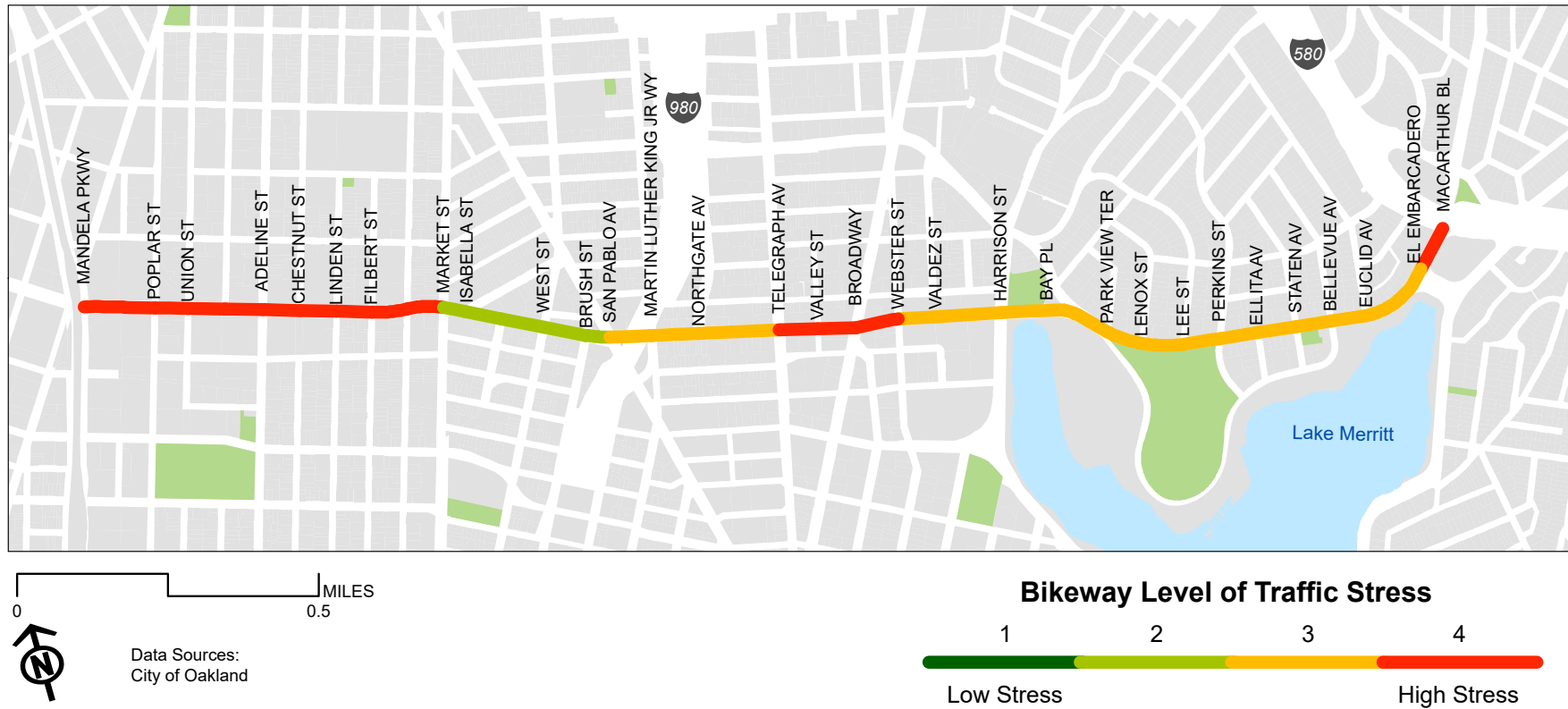
HARRISON STREET - EL EMBARCADERO:

East of Harrison Street, the Grand Avenue Corridor is predominantly LTS 3. Most of this section has bicycle lanes, though in some places they mix with turning lanes and bus stops at intersections. The majority of this section has two lanes in each direction, plus a center turn lane. Other bike lane conflict in this segment includes higher turnover street parking, passenger loading, and commercial loading.

EL EMBARCADERO - MACARTHUR BOULEVARD:

In the block between El Embarcadero and MacArthur Boulevard, there is no bicycle lane in the westbound direction, so LTS increases to 4.

FIGURE 29: Bicycle LTS on Grand Avenue



Bicycle Collisions

The locations of bicycle-involved collisions can be found on the maps in Figure 19, Figure 20, and Figure 21 on pages 40–42. Bicycle-involved collisions occurred at the following intersections:

- Mandela Parkway
- Poplar Street
- Adeline Street
- Market Street
- Isabella Street
- West Street
- San Pablo Avenue
- MLK Jr. Way
- Northgate Avenue
- Telegraph Avenue
- Broadway
- Webster Street
- Valdez Street
- Harrison Street
- Bay Place
- Lenox Street
- Lee Street
- Perkins Street
- Ellita Avenue
- Staten Avenue
- Bellevue Avenue
- Euclid Avenue
- El Embarcadero
- MacArthur Boulevard



Bicyclists-involved collisions account for about 21% of all collisions along the corridor.

Travel Patterns

Based on an analysis of the Streetlight data, compared to other parts of the corridor, there are relatively few bicycle trips along the West Oakland segment of the corridor. This is likely in part to the high-stress experience and lack of bicycle facilities. The bicycle trips that did pass through the Adeline Street intersection tended to have more westerly origins and destinations. The corridor's largest share of bikes passes through the Downtown segment of the corridor. Of bicycle traffic that passes through the Telegraph Avenue intersection (Telegraph Avenue is a Class IV separated bikeway around W Grand Avenue), most origins and destinations are in Downtown, Uptown, Adams Point and to Lake Merritt. Bicyclists were observed traveling from as far as Mandela Parkway to the inner East Lake neighborhoods to Jack London Square to Emeryville. The Adams Point section of the corridor, similar to

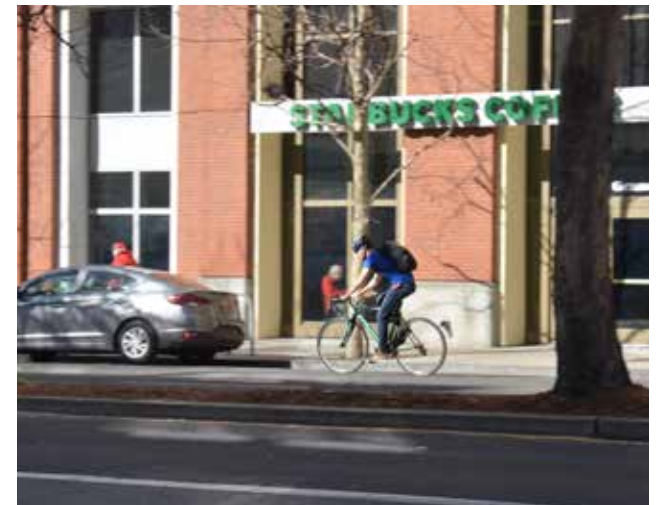
pedestrians, pulls bicyclists from the most areas of the city and beyond. Downtown, Uptown, Adams Point, and Lake Merritt had the largest shares of bicycle origins and destinations.

WHAT'S THE EXPERIENCE LIKE?

Bicycling on most parts of the Grand Avenue Corridor is a stressful experience for many bicyclists. Currently, there are segments of the corridor with no bicycle lanes and other segments with standard bicycle lanes. These are not low-stress facilities. Further, there are several mixing areas and intersection crossings throughout the corridor that are stressful for users. Grand Avenue connects to many other key bicycle corridors including Telegraph Avenue, Adeline Street, Mandela Parkway, and Lake Merritt. E-scooters and similar devices have similar experiences traveling along the corridor.



Top: Bicyclists traveling through the Bay Place intersection



Bottom: A westbound bicyclists approaching Valley Street.

Scooters

Shared electric scooters have been in Oakland since 2018. E-scooters are furnished by many vendors, including Lime, Bird, and Lyft. E-scooters provide additional mobility options for short trips and can also help bridge the first-last mile gap between transit. E-scooters are typically parked on the sidewalk, and when improperly parked, can obstruct sidewalk and interfere with through travel, especially for those with special mobility needs. In addition to shared scooters, personal e-scooters and similar mobility devices have also grown increasingly popular. City of Oakland regulations require that these vehicles be driven in the street and not on the sidewalk; however, some users still use the sidewalk for riding.



Grand Avenue is a popular corridor for e-scooters. Based on shared e-scooter data between June 2018 and February 2020, there are, on average, over 4,800 daily shared e-scooter trips that travel along or cross the Grand Avenue corridor. About 72% of shared e-scooter trips took place in the Adams Point segment of the corridor. About 20% of trips occur in Downtown, and the remaining 8% of trips are in West Oakland. In the over year-and-half of data analyzed, there were over 2 million shared e-scooter trips that touched the Grand Avenue corridor.



Cars

BY THE NUMBERS

Traffic

A traffic operations analysis was conducted to establish baseline vehicle congestion along the corridor. The data was collected during weekdays in October 2019 and was collected for two-hour morning rush (AM) and evening rush (PM) peak periods. Turning movement counts were collected for eight intersections across the corridor. The following intersections were studied:

- Mandela Parkway (south)
- Mandela Parkway (north)
- Adeline Street
- San Pablo Avenue
- Telegraph Avenue
- Broadway
- Harrison Street
- Perkins Street
- MacArthur Boulevard



Findings were measured using Vehicle Level of Service (LOS) analysis. Intersections are assigned a letter grade (A through F) based on average vehicle delay. The City of Oakland's target acceptable minimum threshold is LOS D.

During both the AM and PM periods (at the highest times for congestion), all but two intersections scored below LOS B. San Pablo Avenue and Harrison Street scored LOS C during both periods (City of Oakland). Under optimal operating conditions, all studied intersections along the corridor have excess operating capacity as currently configured. Table 8 on pg. 64 shows the results of LOS Analysis.

A vehicle queuing analysis was also conducted to measure how far cars back-up while waiting to move through an intersection. The analysis found that two locations have queuing spillover (queues where cars fill the block approaching the next traffic signal) at the Mandela Parkway and San Pablo Avenue intersections. This spillover is the result of limited available queuing space due to short block length (a design issue) and not an operational shortcoming due to the number of vehicles. All other queues have excess storage space except at the northbound and southbound approaches at the Telegraph Avenue intersection (City of Oakland).

TABLE 8: Peak Hour Intersection LOS (2019)

ID	Intersection Location	Traffic Control	AM Peak			PM Peak		
			<i>Delay</i>	<i>LOS</i>	<i>Max. V/C</i>	<i>Delay</i>	<i>LOS</i>	<i>Max. V/C</i>
1	Grand Avenue / Mandela Parkway (SB)	Signal	11.0	B	0.66	13.5	B	0.79
2	Grand Avenue / Mandela Parkway (NB)	Signal	10.9	B	0.50	15.1	B	0.72
3	Grand Avenue / Adeline Street	Signal	11.8	B	0.58	10.4	B	0.59
4	Grand Avenue / San Pablo Avenue	Signal	25.0	C	0.80	22.8	C	0.72
5	Grand Avenue / Telegraph Avenue	Signal	16.0	B	0.85	16.2	B	0.75
6	Grand Avenue / Broadway	Signal	10.6	B	0.55	12.4	B	0.63
7	Grand Avenue / Harrison Street	Signal	20.1	C	0.66	25.2	C	0.92
8	Grand Avenue / Perkins Street	Signal	13.1	B	0.73	14.5	B	0.80
9	Grand Avenue / MacArthur Boulevard	Signal	12.3	B	0.68	12.2	B	0.84

Delay is reported in average seconds per vehicle.

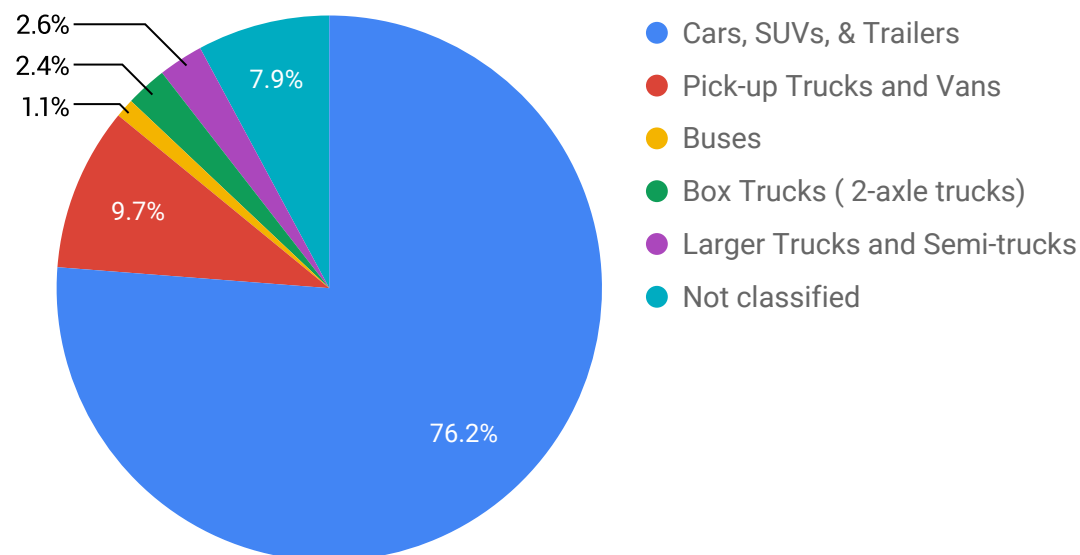
Max. V/C represents the maximum volume to capacity ratio per intersection movement for the identified intersection.

Vehicle Types

In October 2019, at the Mandela Parkway intersection, an analysis was conducted to count the types of vehicles traveling along the corridor. Figure 30 shows the breakdown of vehicle types at the Mandela Parkway intersection.

While data is not currently available for other sections of the corridor, this clearly indicates that cars are the dominant vehicle type (City of Oakland). Despite their smaller-share of roadway use, larger vehicles like trucks have the greatest impact on other users of the roadway and the surrounding environment.

FIGURE 30: Vehicle Types of Grand Avenue at Mandela



Parking

A parking occupancy study was conducted along the corridor to determine the existing parking capacity and use rate. Parking utilization is the percentage of the total parking spaces occupied at a specific point in time. Along the corridor, there are 585 legal parking spaces. Table 9 shows where those parking spaces are along the corridor.

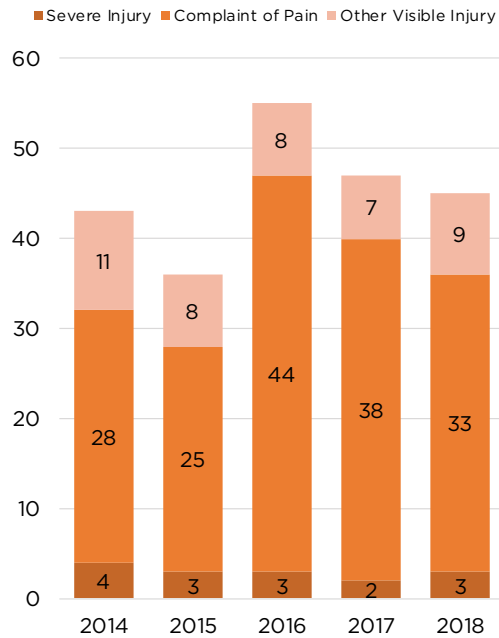
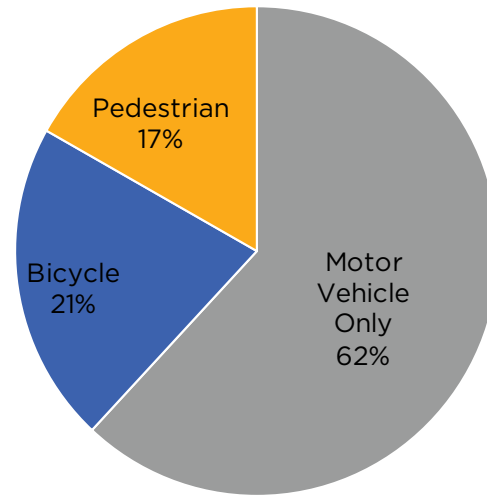
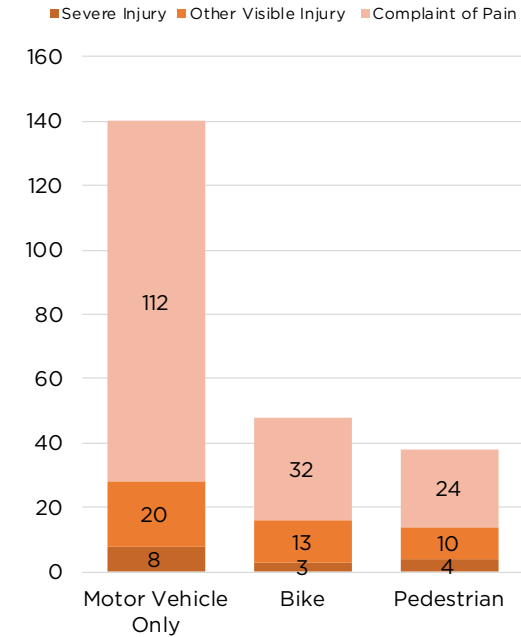
Parking utilization data was collected for four periods (Friday evening, Saturday evening, Friday morning, and Tuesday morning) over a span of 13 days. Counts occurred in October and November 2019. Overall corridor parking utilization is 66% on average; neighborhood averages range between 58% and 72%. The Downtown and Adams Point segments were significantly more utilized on average. The higher residential and commercial/office density in Downtown and Adams Point contribute to a more consistent higher demand for parking in those areas. Table 10 shows the parking utilization rate for each section of the corridor on average and by observation period.

TABLE 9: Grand Avenue Parking Allocation by Area

	West Oakland	Downtown	Adams Point	Total
Total Spaces	263	135	187	585
% of Corridor	45%	23%	32%	100%

TABLE 10: Parking Utilization

Count	West Oakland	Downtown	Adams Point	Corridor-wide
Friday PM	34%	79%	76%	58%
Saturday PM	29%	78%	95%	61%
Friday AM	47%	99%	89%	72%
Tuesday AM	50%	100%	80%	71%
Average	40%	89%	85%	66%

FIGURE 31: Annual Collisions by Severity**FIGURE 32:** Collisions by Mode**FIGURE 33:** Collisions by Mode & Severity

Collisions

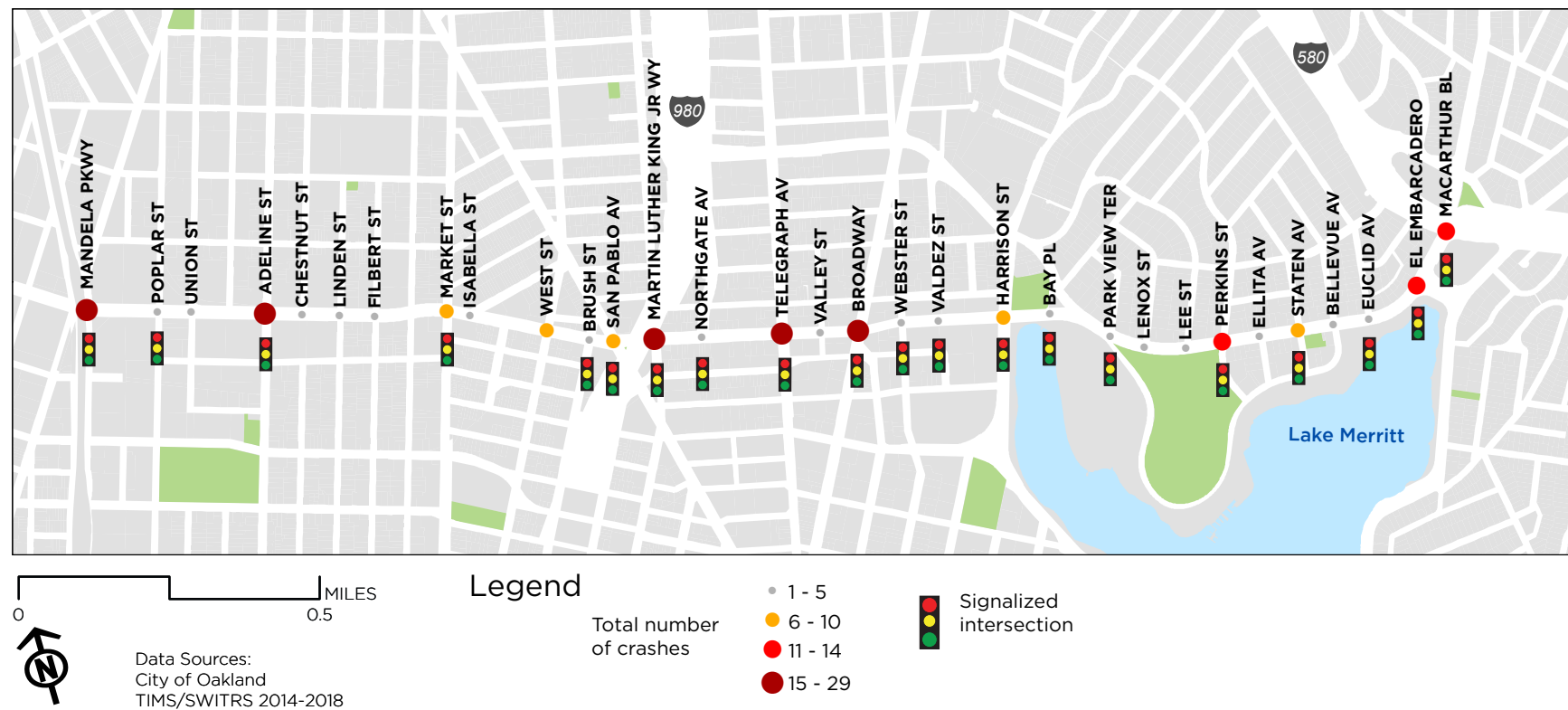
The entirety of the study corridor is within Oakland's "high injury network." This collision analysis aims to better understand the locations and contributing factors of collisions along the study corridor, using data provided by UC Berkeley's Transportation Injury Mapping System (TIMS) between the dates of 1/1/2014 and 12/31/2018 (this is the most recent data available at

the time of publication). All collisions occurring within 75 feet of the study corridor were included in the analysis. There were a total of 226 reported collisions along the study corridor during the 5 years studied, resulting in 284 injuries. These stats only account for collisions reported to the police. Non-reported collisions and close-calls are not included.

Figure 31 shows the number of collisions and their severity for each year. No collisions that resulted in a fatality were reported in the study corridor. Figure 32 shows that 17% of all collisions involved a pedestrian, 21% involved a bicyclist, and 62% were motor vehicle only crashes. Figure 33 further breaks these numbers down by collisions severity for each mode.

Three of the 36 intersections along the corridor did not have any collisions, and five had 15 or more collisions, including Mandela Parkway, Adeline Street, MLK Jr. Way, Telegraph Avenue, and Broadway. Adeline Street had the most collisions of any intersection on the corridor, with a total of 29. Figure 34 below illustrates the total number of collisions aggregated to the closest intersection. As shown in this map, collisions are not distributed equally along this corridor.

FIGURE 34: Total Collisions by Intersection



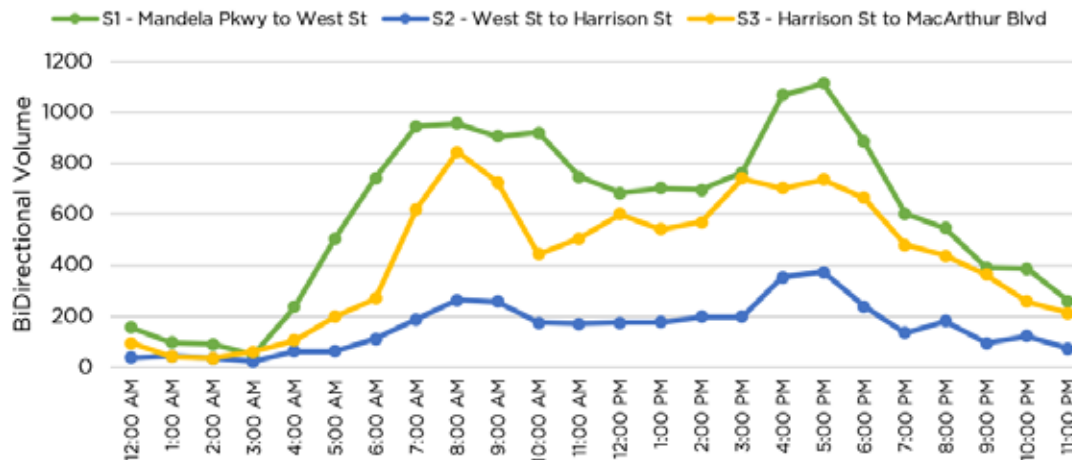
Travel Patterns

WHERE ARE PEOPLE GOING?

Based on an analysis of Streetlight data¹, each of the three corridor segments has slightly different travel patterns. The graphs below explore hourly traffic data for mid-week weekdays in September 2019. In order to be included in this analysis, a trip must travel the full length of the segment, between the start and endpoints.

A review of bi-directional hourly volumes shows that West Oakland has the highest hourly volumes at all hours of the day, as well as the most pronounced rush hour peaks. Downtown, on the other hand, tends to have lower hourly volumes at all hours, with the least pronounced rush hour peaks.

FIGURE 35: Hourly Bi-Directional Traffic Along Corridor Segment



¹ Streetlight Data (Streetlight) provided multimodal counts for vehicles, bicyclists, and pedestrians along the corridor. Streetlight uses anonymized location data from smartphones and connected in-vehicle navigation devices that have been processed through an algorithm that determines the mode of travel to provide counts for each mode. Known limitations of the data include: 1) The population that contributes to this data is limited to those with smartphones or other GPS-enabled devices; undercounting some trips and 2) Modal classification relies on the accuracy of Streetlight's algorithm to classify trips; trips traveling at an uncharacteristic speed may be incorrectly categorized.

A review of average vehicle speeds by hour shows that West Oakland tends to have the fastest traffic, averaging just under 30 MPH for most of the day. In contrast, traffic traveling along Downtown tends to feature speeds around 15 MPH.

Not surprisingly, the traffic speeds observed in the Streetlight data have a relationship to congestion: segments with lower congestion tend to have higher speeds (e.g. West Oakland), while segments with higher levels of congestion tend to have slower speeds (e.g. Downtown). In the graph below, the average hourly congestion is shown by segment, with higher numbers in the Y-axis representing greater levels of congestion.

FIGURE 36: Average Hourly Speed Along Corridor Segment

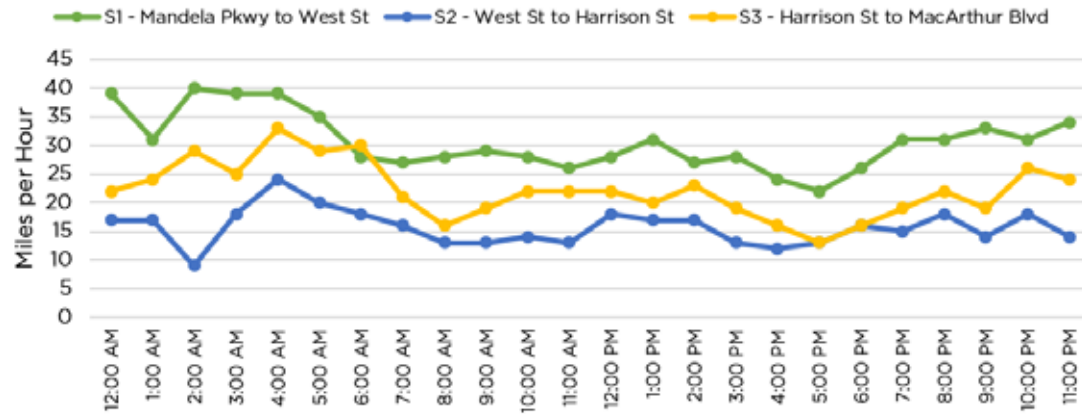
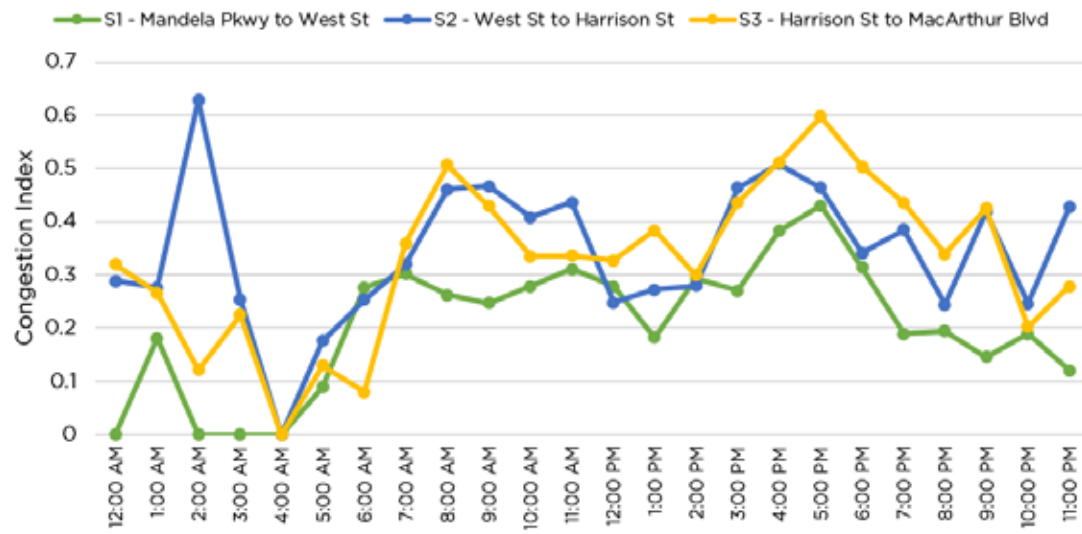


FIGURE 37: Hourly Congestion Along Corridor Segment

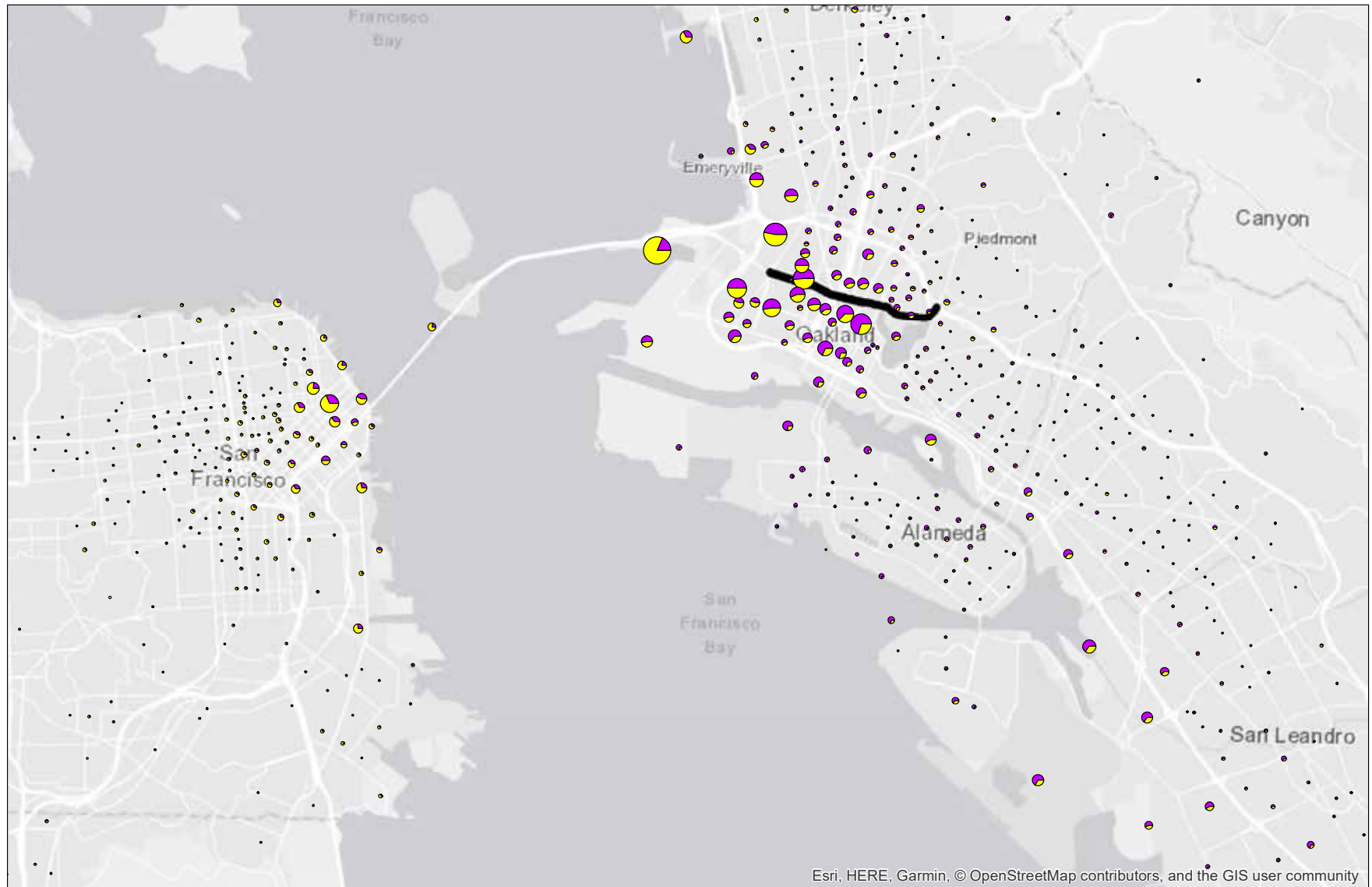


In terms of vehicle trips, within the West Oakland segment, many trips from this area start or end in the Downtown area or residential area immediately west of it. A sizeable number of trips originating from this area travel to Downtown San Francisco. The industrial area south of W Grand Avenue is a popular destination. With the Downtown area, there are many trips that stay within this area. The areas south of the corridor and West Oakland generate a lot of origins and destinations. There are still trips to/from San Francisco from the Downtown Oakland area, but a smaller share of trips than the West Oakland area. The Adams Point area has the largest number of both origins and destinations. This area also has the highest share of trips that originate/end in East Oakland. Figure 38, Figure 39, and Figure 40 show the trip patterns for each of the three corridor segments.




Traffic at the San Pablo intersection

FIGURE 38: Vehicle Trips Passing Through Adeline Street



Segment 1 @ Adeline Street:
All Vehicles
Average Weekday Origins
& Destinations by Block Group

Legend


 Dot Size = # Trips

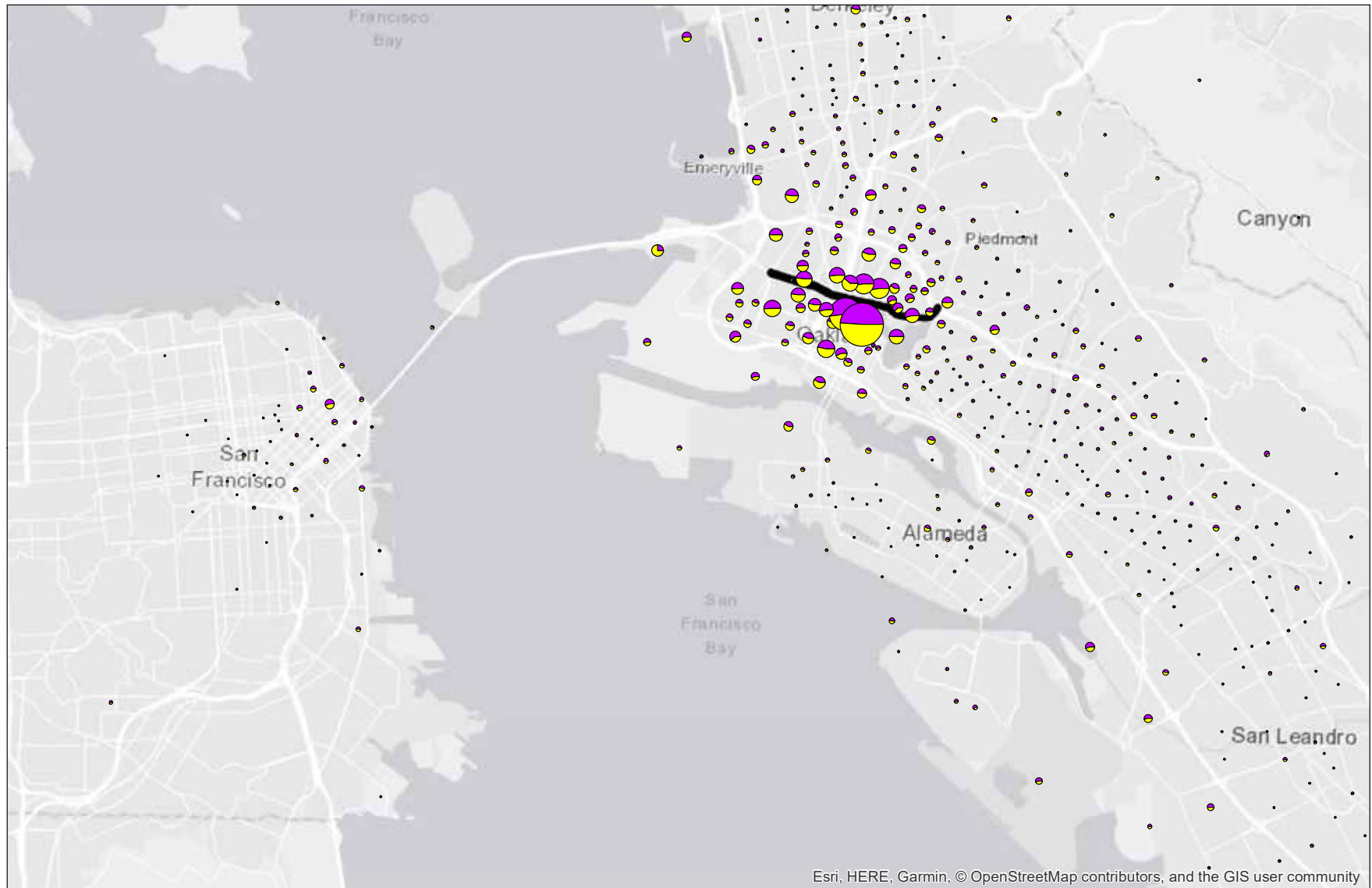
 Origins to Segment
 Destinations from Segment



0 2 4 MILES


Source: Streetlight Data (Average Daily Weekday Trips during Apr. - Jun. & Sept. - Nov. 2018)
 Note: Block groups with less than 10 trips were omitted


FIGURE 39: Vehicle Trips Passing Through Telegraph Street



**Segment 2 @ Telegraph Ave:
All Vehicles
Average Weekday Origins
& Destinations by Block Group**

Legend


Dot Size = # Trips

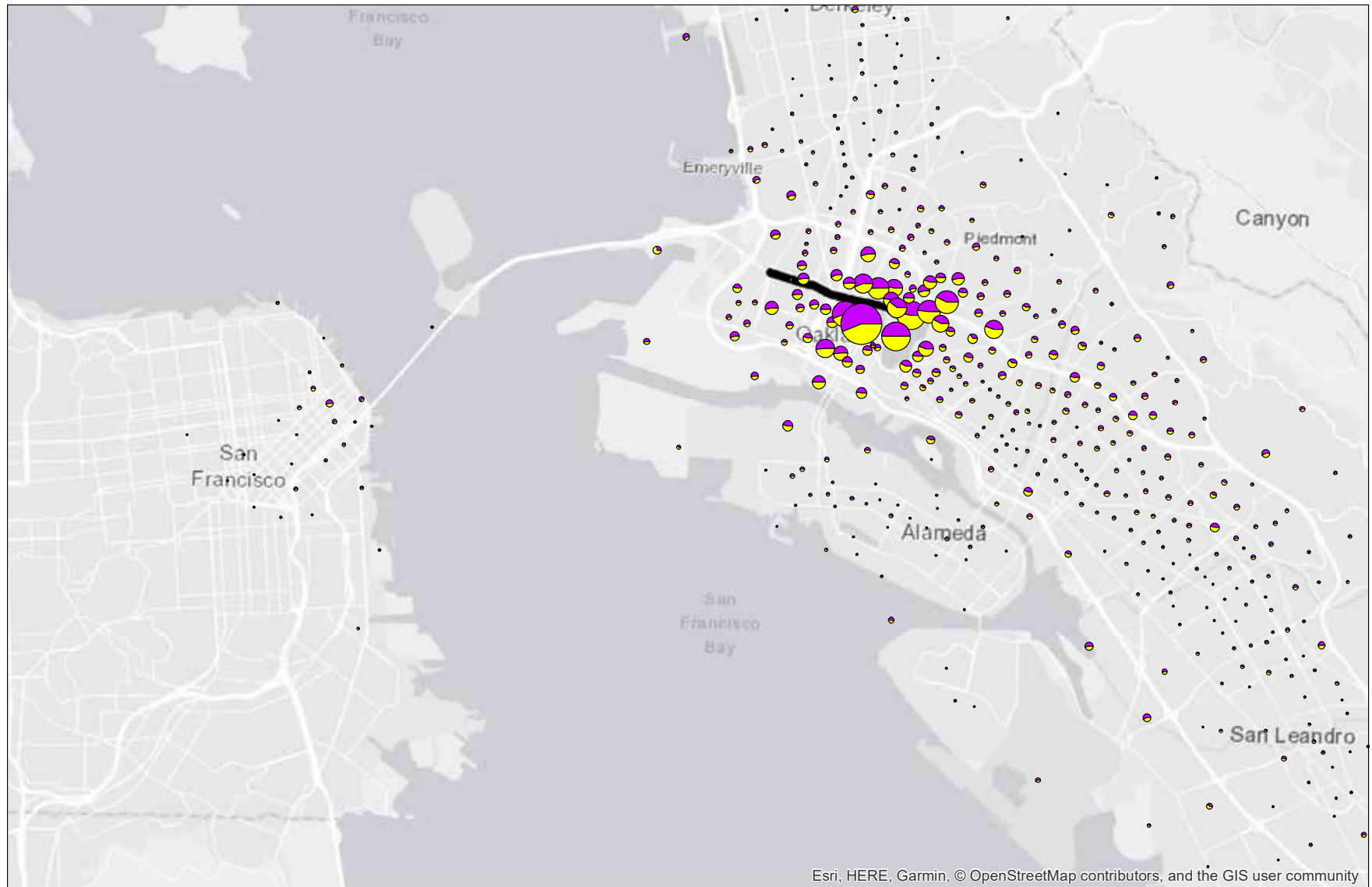
 Origins to Segment
 Destinations from Segment



0 2 4 MILES


Source: Streetlight Data (Average Daily Weekday Trips during Apr. - Jun. & Sept. - Nov. 2018)
Note: Block groups with less than 10 trips were omitted


FIGURE 40: Vehicle Trips Passing Through Perkins Street



Segment 3 @ Perkins St:
All Vehicles
Average Weekday Origins
& Destinations by Block Group

Legend


 Dot Size = # Trips

 Origins to Segment
 Destinations from Segment



0 2 4 MILES

Source: Streetlight Data (Average Daily Weekday Trips during Apr. - Jun. & Sept. - Nov. 2018)
 Note: Block groups with less than 10 trips were omitted

WHAT'S THE DEAL WITH CUT-THROUGH TRAFFIC?

I-580 is a common destination for many vehicles that travel along the Grand Avenue Corridor, including those exiting the Bay Bridge. In some cases, vehicles are using the corridor as a cut-through street to avoid highway congestion. On-ramps are accessible via MacArthur Boulevard, Harrison Street, and via I-980 from Brush Street or Northgate Avenue. Based on an analysis of Streetlight data, between 5 to 8% of eastbound vehicles that travel through the Adeline Street intersection get on I-580. The majority of these vehicles travel east on I-580. Of these I-580-bound vehicles, about 31% of them travel all the way to MacArthur, 28% enter via Northgate Avenue/I-980, and the remaining vehicles scatter to other on-ramps.

Vehicles accessing I-580 accounted for about 20% of eastbound traffic through the Telegraph Avenue intersection. Of these vehicles, 67% of them continue to the MacArthur Boulevard on-ramp and 17% enter via Harrison Street. I-580 bound traffic spikes in the mid-afternoon and overnight hours.

FIGURE 41: Traffic on Grand Avenue at Adeline Street Going to I-580

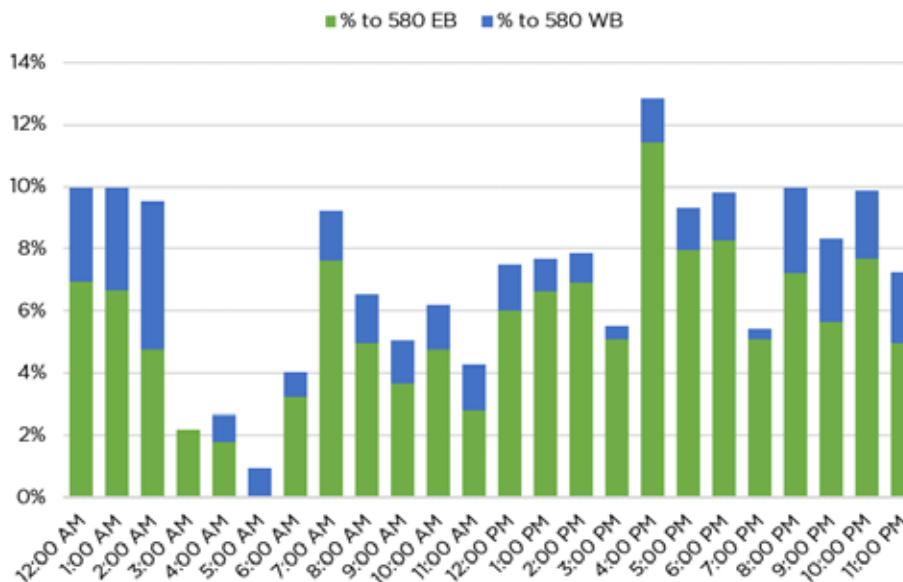
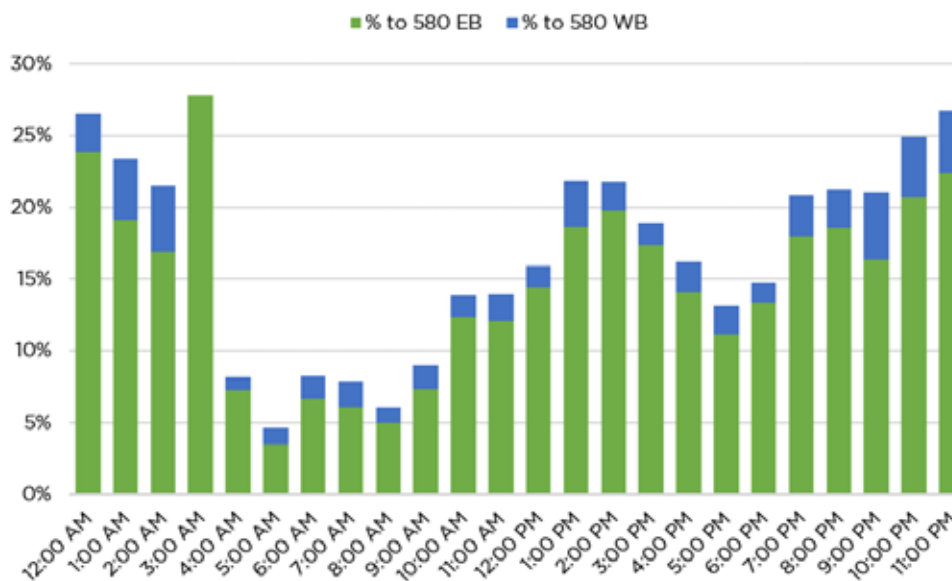


FIGURE 42: Traffic on Grand Avenue at Telegraph Avenue Going to I-580



WHAT'S THE EXPERIENCE LIKE?

Traffic typically flows through intersections with minimal delay and mostly acceptable queuing. Traffic and congestion patterns followed typical morning and afternoon peak periods. Average speeds varied by segment, but are fairly consistent throughout the course of the day; there is a notable increase in average speed in all three areas during the overnight hours. The West Oakland segment experiences the highest on average speeds, around 25-30 MPH. The Downtown segment had the slowest average speeds, around 10-15 MPH. The Adams Point segment has average vehicle speeds of about 15-20 MPH. Shorter distances between traffic signals and increased volumes of pedestrians crossing are some of the factors contributing to slower speeds in the Downtown and Adams Point areas.

Parking conditions vary depending on what neighborhood you are in. Parking is typically more available in the West Oakland area, but very tight in both the Downtown and Adams Point areas.



Afternoon rush hour approaching I-580

Parking on side streets was fairly well utilized across the corridor, even in West Oakland where it was observed that local workers prefer to park on the side streets instead of W Grand Avenue.

Trucks

BY THE NUMBERS

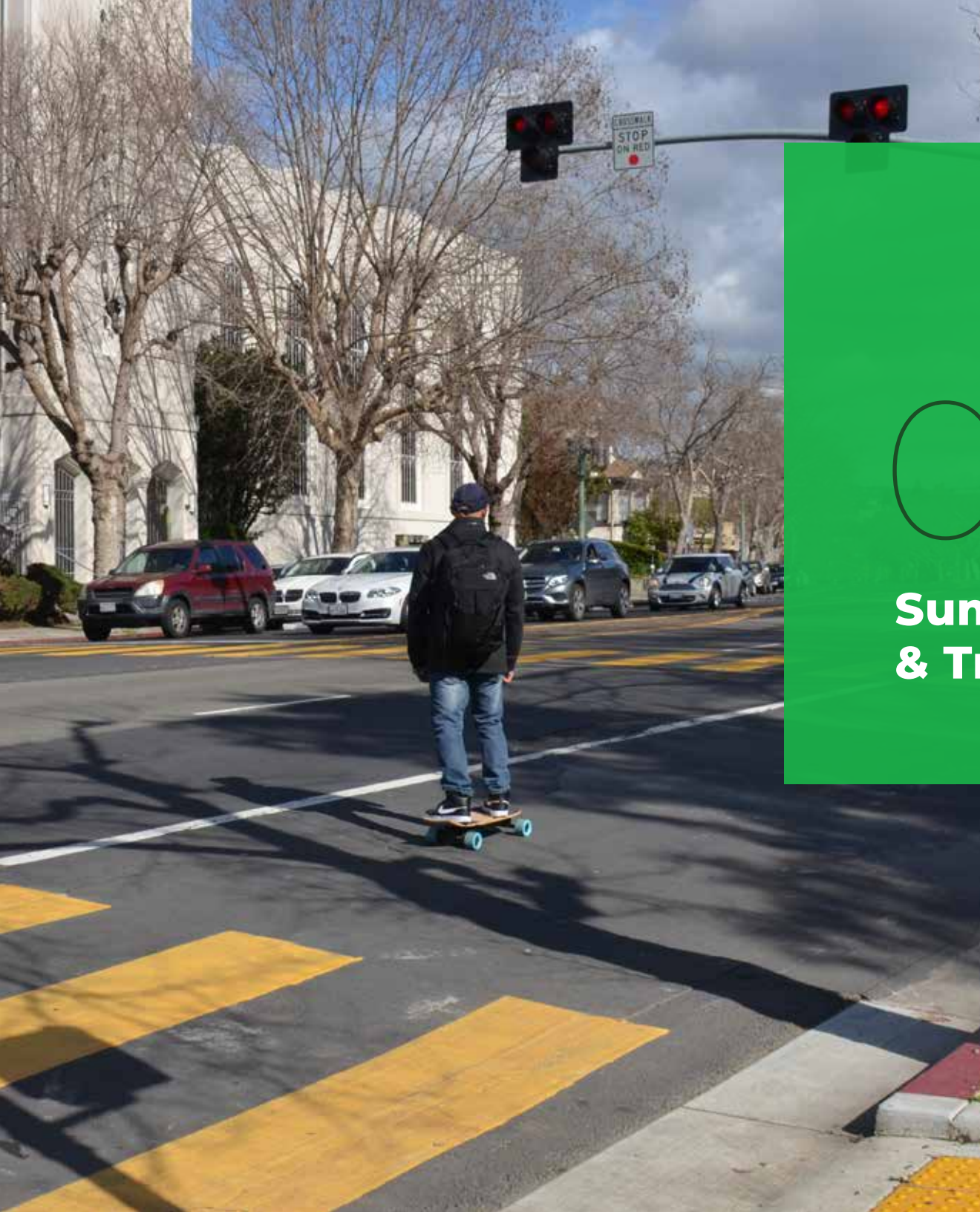
Based on available data from the Mandela Parkway intersections, trucks account for about 5-10% of vehicle traffic along the corridor. Most of the truck traffic is within the West Oakland section of the corridor. A breakdown of vehicle traffic along the corridor can be seen in Figure 30 on pg. 65.

The W Grand Avenue segment of the corridor is a truck route. As large vehicles, trucks pose additional impacts on local communities including emissions, sound, and parking-related problems. These are burdens that residents of West Oakland have had to disproportionately bear. These problems

and solutions towards mitigations are codified in many recently adapted plans including Owning Our Air, West Oakland Truck Management Plan, West Oakland Specific Plan, and Seaport Air Quality 2020.

Improvements include parking regulations, routing changes, engine standard changes, improved signage, and improved/targeted enforcement.





04

Summary & Trends

Key Policy & Plan Objectives

Grand Avenue is a complex corridor that serves an array of both local and regional needs. The corridor transverses three distinct neighborhoods, each with its own unique transportation characteristics, challenges, and needs.

Regional Goals

- Improve transit reliability, speed, and throughput across the corridor
- Provide zero-emission transit services
- Maintain freight access and throughput along the corridor
- Reduce emissions with all Port-related activities
- Minimize the impact of trucks on local neighborhoods

Local Goals

- Serve existing residents' transportation needs
- Improve the safety and comfort of those walking and biking along and across the corridor
- Improve local transit service
- Improve connectivity to Downtown and Adams Point
- Improve connectivity to BART stations
- Improve air quality for local residents
- Minimize the impacts of truck emissions and truck parking in residential areas
- Foster equitable investments across the corridor and neighborhoods

Differences Between Areas

WEST OAKLAND

Grand Avenue is defined by the three areas it travels through. In West Oakland, the corridor is its widest with three travel lanes in each direction and the furthest average distance between signalized intersections. Vehicular traffic is prioritized in the area and this segment has the highest average vehicle speeds. Parking is most-underutilized in this neighborhood. There are no bicycle facilities in this segment of the corridor, nor is there enhanced pedestrian crossing infrastructure at any of the uncontrolled crossings. Land uses fronting the corridor are industrial in the western part of the segment and a mix of residential and commercial in the eastern segment. Residential uses bookend the aforementioned fronting industrial and commercial uses.

DOWNTOWN

Moving east, the character of the street and buildings transform. The corridor slows down with more signalized intersections and with pedestrians and bicyclists present in greater volumes as building heights and density rise. Parking is very well utilized in this segment. There are bike lanes present for part of this segment. There is only one uncontrolled pedestrian crossing of W. Grand Avenue at Valley Street. Distances between crossing are about 400 feet.

ADAMS POINT

The Adams Point section of the corridor is similar in terms of roadway characteristics to Downtown, but the surrounding land uses are very different. North of the corridor, land uses become residential and Lake Merritt is south of the corridor. Commercial uses also begin to front the corridor moving east. Parking is very well utilized in this segment. Bicycle lanes are continuous in the segment except in the one-block segment between El Embarcadero and MacArthur where there is only an eastbound bike lane. There are four uncontrolled pedestrian crossings in this area, but they have all been improved with either RRFB or HAWK Beacons.

Modal Trends

CARS

Vehicles constitute the primary vehicle type using Grand Avenue, but the corridor is used by a number of different vehicle types including trucks and buses. Vehicle traffic typically flows fairly well across the corridor. There are speed slowdowns and increased congestion during peak commute periods. All studied intersections operated above LOS vehicle delay levels and there were no major queuing issues. Vehicle parking is very well utilized in both the Downtown and Adams Point segments.

TRANSIT

Grand Avenue has three AC Transit routes that operate on various segments of the corridor, the 12, NL, and the 805 All-Nighter. None of these routes operate continuously across the entire corridor. The NL has the shortest peak headway along the corridor at 15 minutes. Without signal priority or better bus infrastructure, buses sit in the same traffic as other vehicles have extended dwell times trying to merge

back into traffic. Direct service to local and regional destinations is limited along the corridor. Many additional AC Transit lines cross the corridor and BART is within close proximity of the Broadway intersection.

WALKING

Walking is most challenging in the West Oakland segment of the corridor. This segment has missing and broken sidewalk segments. Parking meters and other utilities also constrain sidewalk width in some segments. All uncontrolled crossings in West Oakland do not have actuated flashing beacons or high visibility pavement markings. The volume of pedestrians is higher in the Downtown and Adams Point segments of the corridor. Sidewalks are usually wider in these areas. Utilities and parking meters in segments of Downtown limited sidewalk width. Some sidewalks in the Adams Point area have landscaped buffers. There is only one uncontrolled crossing in Downtown and the four in Adams Point all have RRFB or HAWK Beacons.

BICYCLING

Bicycling is challenging across the corridor. Bike lanes are not consistently present across the corridor. When present, they are not low-stress facilities and thus limit bicycling potential along the corridor to a small group of willing users. Bicycling is used throughout the corridor but is more popular in the Downtown and Adams Point segments. The corridor could provide lower-stress connections to other key bicycle facilities including Adeline Street, Telegraph Avenue, San Pablo Avenue, and Lake Merritt.

TRUCKS

Trucks primarily use the West Oakland segment of the corridor, closer to the Port of Oakland. W Grand Avenue is a designated truck route. Trucks sometimes idle and park along the corridor, increasing emissions and disrupting the quality-of-life of local residents. Mitigating the many effects of trucks is a priority for West Oakland residents.

Opportunities

There are many opportunities to enhance all modes of transportation along the Grand Avenue Corridor in order to support both local and regional goals.



Pedestrian conditions can be greatly enhanced in West Oakland by repairing and building sidewalks where necessary and by enhancing uncontrolled crossings. Bicycling can be improved across the corridor to become a seamless lower-stress experience for a larger range of the bicycling population. Bus transit can be improved along the corridor using strategies that decrease travel time, improve reliability, and reduce conflicts. This can facilitate both improved and additional transit service throughout the corridor; increasing access to jobs, parks, and community centers, and other destinations. Car flow currently operates fairly well across the corridor, which provides additional options for reallocating space currently reserved for cars. There are also opportunities to reduce the impacts of trucks along the corridor, consistent with other planning efforts, including restricting parking and idling and improving signal coordination to reduce engine emissions.



Each of these neighborhoods has a unique history and culture. There are various design components that can help tell that story and give each area a unique sense of place while providing a relatively seamless transportation experience across the corridor. Decorative crosswalks and pavement markings, public art/ murals, street furniture, and signs, are some potential items that the community can help craft and personalize. Community members can also help identify new pocket parks and plazas along the study area.



This project is designed to serve the existing residents of Oakland while preparing for future growth. Serving current residents means involving residents and community groups in outreach early and often and ensuring that project design considerations are developed to meet the needs of current residents. The project will also strive to recognize the lived experiences of local residents and will frame project outcomes in ways that recognize and respond to the concerns derived from that process and future community engagement.



Create a Vibrant and Safe Corridor

Grand Avenue has the potential to serve all road users in a safe and efficient way. The corridor has a long history of collisions involving automobiles, pedestrians, and bicyclists. These collisions occurred across the corridor and the volume of them is why the corridor is on Oakland's High Injury Network. Improvements to pedestrian and bicycle facilities can create a safer overall roadway by slowing vehicle speeds, improving pedestrian and bicyclist visibility, and increasing their numbers and awareness to drivers. Vibrancy can also develop from changing land uses and design standards to make fronting uses more inviting and welcoming for users of active and shared modes of travel.



Improve Access to Jobs

This project will strive to improve connectivity and accessibility along and across the Grand Avenue Corridor. Improving transit services and frequency on the corridor, improving access to connecting/nearby transit services, and enhancing the overall transit experience can make it a more attractive option while extending its reach and thusly users' access to additional workplaces and other destinations. Enhanced pedestrian and bicycle facilities create additional lower-stress options to reach workplaces or connect to transit services.



Balancing Investments in Street Design with Housing

The investment of transit and active transportation infrastructure is happening as housing unaffordability continues to put pressure on Oaklanders. The City has heard some Oaklanders voice concerns that investments in bike lanes and bus lanes will contribute to displacement, gentrification, and housing unaffordability. The City has also heard that improved bicycle and pedestrian networks and more efficient and effective transit services can help reduce transportation costs as the cost of living in Oakland increases. This plan attempts to be sensitive to these concerns and promote a transparent and collaborative decision-making process.



Collision History



Bicycle Collisions

Collision Date	Intersection	Distance From Intersection (In Feet)	Direction from Intersection	Collision Severity (Injury Type)	Number of Injuries
11/17/2014	Grand Avenue and MacArthur Boulevard	-		Injury (Other Visible)	1
6/18/2016	Grand Avenue and MacArthur Boulevard	5	South	Injury (Complaint of Pain)	1
9/21/2016	Grand Avenue and El Embarcadero Avenue	30	South	Injury (Complaint of Pain)	1
5/1/2014	Grand Avenue and El Embarcadero Avenue	-		Injury (Complaint of Pain)	1
5/15/2014	Grand Avenue and El Embarcadero Avenue	-		Injury (Complaint of Pain)	1
2/4/2018	Grand Avenue and El Embarcadero Avenue	50	North	Injury (Complaint of Pain)	1
4/27/2017	Grand Avenue and Euclid Avenue	120	East	Injury (Other Visible)	1
5/27/2016	Grand Avenue and Staten Avenue	50	East	Injury (Other Visible)	1
6/30/2016	Grand Avenue and Staten Avenue	-		Injury (Complaint of Pain)	1
12/5/2017	Grand Avenue and Ellita Avenue	45	West	Injury (Complaint of Pain)	1

Collision Date	Intersection	Distance From Intersection (In Feet)	Direction from Intersection	Collision Severity (Injury Type)	Number of Injuries
8/1/2017	Grand Avenue and Ellita Avenue	10	North	Injury (Other Visible)	1
8/2/2015	Grand Avenue and Perkins Street	30	West	Injury (Complaint of Pain)	1
7/18/2017	Grand Avenue and Perkins Street	50	West	Injury (Other Visible)	1
11/6/2015	Grand Avenue and Perkins Street	5	South	Injury (Complaint of Pain)	1
3/4/2017	Grand Avenue and Lee Street	-		Injury (Complaint of Pain)	1
6/8/2017	Grand Avenue and Lenox Street	-		Injury (Complaint of Pain)	1
7/19/2017	Grand Avenue and Park View Terrace / Bellevue Avenue	-		Injury (Complaint of Pain)	1
7/24/2015	Grand Avenue and Bay Place	100	West	Injury (Complaint of Pain)	1
11/9/2014	Grand Avenue and Harrison Street	25	West	Injury (Other Visible)	1
8/4/2015	Grand Avenue and Harrison Street	-		Injury (Other Visible)	1
1/3/2015	Grand Avenue and Valdez Street	24	East	Injury (Other Visible)	1
12/20/2014	Grand Avenue and Webster Street	-		Injury (Complaint of Pain)	1
1/8/2018	Grand Avenue and Broadway	-		Injury (Complaint of Pain)	1
5/8/2018	Grand Avenue and Broadway	-		Injury (Complaint of Pain)	1

Collision Date	Intersection	Distance From Intersection (In Feet)	Direction from Intersection	Collision Severity (Injury Type)	Number of Injuries
9/12/2016	Grand Avenue and Broadway	-		Injury (Complaint of Pain)	1
9/18/2017	Grand Avenue and Broadway	-		Injury (Complaint of Pain)	1
7/18/2014	Grand Avenue and Telegraph Avenue	-		Injury (Complaint of Pain)	1
7/18/2017	Grand Avenue and Telegraph Avenue	20	North	Injury (Complaint of Pain)	1
2/16/2017	Grand Avenue and Telegraph Avenue	-		Injury (Severe)	1
4/15/2014	Grand Avenue and Northgate Avenue	80	West	Injury (Other Visible)	1
3/1/2017	Grand Avenue and Northgate Avenue	5	North	Injury (Complaint of Pain)	1
3/4/2014	Grand Avenue and Martin Luther King Jr. Way	75	West	Injury (Other Visible)	1
8/3/2016	Grand Avenue and Martin Luther King Jr. Way	-		Injury (Complaint of Pain)	1
7/19/2018	Grand Avenue and Martin Luther King Jr. Way	-		Injury (Complaint of Pain)	1
5/17/2016	Grand Avenue and San Pablo Avenue	-		Injury (Complaint of Pain)	1
10/9/2018	Grand Avenue and San Pablo Avenue	5	West	Injury (Complaint of Pain)	1
10/11/2014	Grand Avenue and West Street	-		Injury (Other Visible)	1

Collision Date	Intersection	Distance From Intersection (In Feet)	Direction from Intersection	Collision Severity (Injury Type)	Number of Injuries
3/23/2015	Grand Avenue and Isabella Street	-		Injury (Other Visible)	1
11/24/2018	Grand Avenue and Market Street	-		Injury (Complaint of Pain)	1
11/3/2018	Grand Avenue and Adeline Street	-		Injury (Complaint of Pain)	1
3/17/2015	Grand Avenue and Adeline Street	-		Injury (Severe)	2
10/13/2016	Grand Avenue and Adeline Street	-		Injury (Severe)	1
5/16/2017	Grand Avenue and Poplar Street	-		Injury (Complaint of Pain)	1
8/2/2016	Grand Avenue and Mandela Parkway / Peralta Street	-		Injury (Complaint of Pain)	1
3/24/2016	Grand Avenue and Mandela Parkway / Peralta Street	-		Injury (Complaint of Pain)	1
12/18/2017	Grand Avenue and Mandela Parkway / Peralta Street	-		Injury (Complaint of Pain)	1
3/23/2015	Grand Avenue and Mandela Parkway / Peralta Street	-		Injury (Complaint of Pain)	1
8/2/2017	Grand Avenue and Mandela Parkway / Peralta Street	-		Injury (Other Visible)	1

Pedestrian Collisions

Collision Date	Intersection	Distance From Intersection (In Feet)	Direction from Intersection	Collision Severity	Number of Injuries
12/2/2016	Grand Avenue and El Embarcadero Avenue	-		Injury (Complaint of Pain)	1
1/12/2018	Grand Avenue and El Embarcadero Avenue	-		Injury (Other Visible)	1
7/3/2017	Grand Avenue and El Embarcadero Avenue	5	South	Injury (Complaint of Pain)	1
1/26/2015	Grand Avenue and Euclid Avenue	-		Injury (Complaint of Pain)	1
12/5/2014	Grand Avenue and Staten Avenue	13	West	Injury (Complaint of Pain)	1
6/25/2017	Grand Avenue and Staten Avenue	-		Injury (Complaint of Pain)	1
12/1/2016	Grand Avenue and Perkins Street	-		Injury (Complaint of Pain)	1
9/11/2018	Grand Avenue and Perkins Street	-		Injury (Complaint of Pain)	1
4/9/2016	Grand Avenue and Perkins Street	20	South	Injury (Complaint of Pain)	1
1/13/2015	Grand Avenue and Perkins Street	3	North	Injury (Other Visible)	1
1/20/2014	Grand Avenue and Lee Street	-		Injury (Severe)	1

Collision Date	Intersection	Distance From Intersection (In Feet)	Direction from Intersection	Collision Severity	Number of Injuries
7/22/2017	Grand Avenue and Lee Street	250	West	Injury (Complaint of Pain)	1
10/2/2017	Grand Avenue and Lenox Street	-		Injury (Complaint of Pain)	2
6/26/2016	Grand Avenue and Park View Terrace / Bellevue Avenue	20	West	Injury (Complaint of Pain)	1
2/28/2016	Grand Avenue and Park View Terrace / Bellevue Avenue	75	West	Injury (Complaint of Pain)	1
11/16/2015	Grand Avenue and Bay Place	15	West	Injury (Complaint of Pain)	1
4/7/2014	Grand Avenue and Harrison Street	-		Injury (Complaint of Pain)	1
8/29/2016	Grand Avenue and Harrison Street	-		Injury (Complaint of Pain)	1
12/22/2017	Grand Avenue and Broadway	-		Injury (Complaint of Pain)	1
3/16/2015	Grand Avenue and Broadway	-		Injury (Complaint of Pain)	1
5/25/2015	Grand Avenue and Broadway	30	East	Injury (Other Visible)	3
5/10/2014	Grand Avenue and Broadway	-		Injury (Complaint of Pain)	1
7/19/2018	Grand Avenue and Valley Street	-		Injury (Complaint of Pain)	1
12/5/2014	Grand Avenue and Telegraph Avenue	-		Injury (Severe)	1
8/8/2018	Grand Avenue and Telegraph Avenue	24	North	Injury (Severe)	1
12/8/2017	Grand Avenue and Telegraph Avenue	-		Injury (Other Visible)	1

Collision Date	Intersection	Distance From Intersection (In Feet)	Direction from Intersection	Collision Severity	Number of Injuries
5/5/2017	Grand Avenue and Northgate Avenue	-		Injury (Other Visible)	3
1/22/2014	Grand Avenue and Northgate Avenue	4	East	Injury (Other Visible)	1
2/28/2016	Grand Avenue and Martin Luther King Jr. Way	-	West	Injury (Complaint of Pain)	1
4/4/2016	Grand Avenue and Martin Luther King Jr. Way	-		Injury (Other Visible)	1
9/12/2016	Grand Avenue and Martin Luther King Jr. Way	6	North	Injury (Complaint of Pain)	1
12/19/2018	Grand Avenue and San Pablo Avenue	40	North	Injury (Complaint of Pain)	1
2/6/2014	Grand Avenue and San Pablo Avenue	8	West	Injury (Other Visible)	1
12/23/2014	Grand Avenue and San Pablo Avenue	-		Injury (Severe)	1
9/23/2018	Grand Avenue and Linden Street	100	West	Injury (Complaint of Pain)	1
12/12/2018	Grand Avenue and Adeline Street	-		Injury (Other Visible)	1
8/31/2015	Grand Avenue and Adeline Street	-		Injury (Other Visible)	1
1/13/2015	Grand Avenue and Adeline Street	-		Injury (Complaint of Pain)	1

Vehicle Collisions

Collision Date	Intersection	Distance From Intersection (In Feet)	Direction from Intersection	Collision Severity	Number of Injuries
10/13/2015	Grand Avenue and MacArthur Boulevard	-		Injury (Complaint of Pain)	2
2/20/2016	Grand Avenue and MacArthur Boulevard	-		Injury (Other Visible)	2
6/8/2014	Grand Avenue and MacArthur Boulevard	8	South	Injury (Complaint of Pain)	1
12/6/2018	Grand Avenue and MacArthur Boulevard	-		Injury (Complaint of Pain)	1
9/22/2016	Grand Avenue and MacArthur Boulevard	-		Injury (Complaint of Pain)	2
8/14/2018	Grand Avenue and MacArthur Boulevard	30	West	Injury (Complaint of Pain)	1
12/20/2018	Grand Avenue and MacArthur Boulevard	61	East	Injury (Complaint of Pain)	1
6/21/2018	Grand Avenue and MacArthur Boulevard	-		Injury (Complaint of Pain)	1
9/2/2015	Grand Avenue and MacArthur Boulevard	-		Injury (Complaint of Pain)	2
12/15/2015	Grand Avenue and MacArthur Boulevard	50	West	Injury (Complaint of Pain)	1

Collision Date	Intersection	Distance From Intersection (In Feet)	Direction from Intersection	Collision Severity	Number of Injuries
1/27/2014	Grand Avenue and El Embarcadero Avenue	-		Injury (Other Visible)	1
3/7/2016	Grand Avenue and El Embarcadero Avenue	100	West	Injury (Complaint of Pain)	1
3/7/2014	Grand Avenue and El Embarcadero Avenue	90	North	Injury (Complaint of Pain)	1
2/23/2016	Grand Avenue and El Embarcadero Avenue	300	West	Injury (Other Visible)	1
6/16/2018	Grand Avenue and El Embarcadero Avenue	5	North	Injury (Severe)	2
7/15/2018	Grand Avenue and Staten Avenue	20	West	Injury (Complaint of Pain)	1
10/2/2015	Grand Avenue and Staten Avenue	20	East	Injury (Complaint of Pain)	1
7/17/2014	Grand Avenue and Ellita Avenue	20	East	Injury (Complaint of Pain)	1
5/28/2017	Grand Avenue and Ellita Avenue	20	West	Injury (Complaint of Pain)	4
3/17/2018	Grand Avenue and Perkins Street	-		Injury (Severe)	1
8/21/2016	Grand Avenue and Perkins Street	-		Injury (Other Visible)	3
7/22/2018	Grand Avenue and Perkins Street	-		Injury (Complaint of Pain)	1

Collision Date	Intersection	Distance From Intersection (In Feet)	Direction from Intersection	Collision Severity	Number of Injuries
5/16/2014	Grand Avenue and Perkins Street	-		Injury (Complaint of Pain)	1
10/22/2014	Grand Avenue and Park View Terrace / Bellevue Avenue	75	North	Injury (Other Visible)	1
1/8/2016	Grand Avenue and Park View Terrace / Bellevue Avenue	100	West	Injury (Other Visible)	2
11/9/2014	Grand Avenue and Park View Terrace / Bellevue Avenue	25	North	Injury (Complaint of Pain)	1
2/27/2016	Grand Avenue and Park View Terrace / Bellevue Avenue	50	West	Injury (Other Visible)	1
5/22/2015	Grand Avenue and Bay Place	-		Injury (Complaint of Pain)	1
4/28/2016	Grand Avenue and Bay Place	50	East	Injury (Complaint of Pain)	1
8/25/2015	Grand Avenue and Harrison Street	3	North	Injury (Complaint of Pain)	1
7/21/2016	Grand Avenue and Harrison Street	-		Injury (Complaint of Pain)	2
4/9/2018	Grand Avenue and Harrison Street	-		Injury (Complaint of Pain)	1
5/7/2018	Grand Avenue and Harrison Street	-		Injury (Complaint of Pain)	1
8/10/2014	Grand Avenue and Webster Street	-		Injury (Complaint of Pain)	1
10/31/2016	Grand Avenue and Webster Street	-		Injury (Complaint of Pain)	1

Collision Date	Intersection	Distance From Intersection (In Feet)	Direction from Intersection	Collision Severity	Number of Injuries
2/20/2014	Grand Avenue and Broadway	-		Injury (Complaint of Pain)	1
1/24/2017	Grand Avenue and Broadway	-		Injury (Complaint of Pain)	1
6/6/2017	Grand Avenue and Broadway	70	North	Injury (Complaint of Pain)	1
1/24/2018	Grand Avenue and Broadway	-		Injury (Other Visible)	2
6/25/2018	Grand Avenue and Broadway	-		Injury (Complaint of Pain)	2
9/19/2014	Grand Avenue and Broadway	-		Injury (Complaint of Pain)	2
6/9/2017	Grand Avenue and Broadway	35	South	Injury (Complaint of Pain)	1
4/12/2018	Grand Avenue and Broadway	-		Injury (Complaint of Pain)	1
6/18/2015	Grand Avenue and Broadway	-		Injury (Complaint of Pain)	1
8/3/2018	Grand Avenue and Broadway	-		Injury (Other Visible)	1
8/25/2014	Grand Avenue and Broadway	-		Injury (Complaint of Pain)	1
12/7/2017	Grand Avenue and Broadway	-		Injury (Complaint of Pain)	1
7/15/2015	Grand Avenue and Broadway	-		Injury (Complaint of Pain)	2
1/5/2015	Grand Avenue and Valley Street	10	East	Injury (Complaint of Pain)	1
11/1/2016	Grand Avenue and Valley Street	-		Injury (Complaint of Pain)	1
11/9/2017	Grand Avenue and Valley Street	-		Injury (Complaint of Pain)	2
11/26/2016	Grand Avenue and Telegraph Avenue	5	East	Injury (Complaint of Pain)	1

Collision Date	Intersection	Distance From Intersection (In Feet)	Direction from Intersection	Collision Severity	Number of Injuries
6/2/2016	Grand Avenue and Telegraph Avenue	100	East	Injury (Complaint of Pain)	1
2/13/2015	Grand Avenue and Telegraph Avenue	260	West	Injury (Complaint of Pain)	2
10/1/2017	Grand Avenue and Telegraph Avenue	50	West	Injury (Complaint of Pain)	3
3/14/2016	Grand Avenue and Telegraph Avenue	47	South	Injury (Severe)	1
4/10/2015	Grand Avenue and Telegraph Avenue	-		Injury (Complaint of Pain)	1
6/28/2017	Grand Avenue and Telegraph Avenue	16	West	Injury (Complaint of Pain)	1
5/19/2016	Grand Avenue and Telegraph Avenue	30	West	Injury (Complaint of Pain)	2
10/3/2018	Grand Avenue and Telegraph Avenue	-		Injury (Complaint of Pain)	2
2/3/2016	Grand Avenue and Northgate Avenue	10	East	Injury (Complaint of Pain)	1
11/11/2014	Grand Avenue and Martin Luther King Jr. Way	-		Injury (Complaint of Pain)	1
5/13/2014	Grand Avenue and Martin Luther King Jr. Way	-		Injury (Complaint of Pain)	1
11/20/2017	Grand Avenue and Martin Luther King Jr. Way	-		Injury (Complaint of Pain)	1

Collision Date	Intersection	Distance From Intersection (In Feet)	Direction from Intersection	Collision Severity	Number of Injuries
12/14/2017	Grand Avenue and Martin Luther King Jr. Way	-		Injury (Complaint of Pain)	1
7/29/2017	Grand Avenue and Martin Luther King Jr. Way	-		Injury (Complaint of Pain)	1
3/6/2017	Grand Avenue and Martin Luther King Jr. Way	-		Injury (Complaint of Pain)	1
2/22/2016	Grand Avenue and Martin Luther King Jr. Way	-		Injury (Complaint of Pain)	1
1/25/2015	Grand Avenue and Martin Luther King Jr. Way	-		Injury (Complaint of Pain)	1
6/17/2015	Grand Avenue and Martin Luther King Jr. Way	-		Injury (Complaint of Pain)	1
1/24/2018	Grand Avenue and Martin Luther King Jr. Way	-		Injury (Complaint of Pain)	1
2/27/2017	Grand Avenue and Martin Luther King Jr. Way	-		Injury (Complaint of Pain)	1
2/15/2017	Grand Avenue and Martin Luther King Jr. Way	-		Injury (Complaint of Pain)	1
9/4/2016	Grand Avenue and Martin Luther King Jr. Way	-		Injury (Complaint of Pain)	2
7/9/2017	Grand Avenue and Martin Luther King Jr. Way	30	West	Injury (Complaint of Pain)	1
7/1/2018	Grand Avenue and Martin Luther King Jr. Way	-		Injury (Other Visible)	1

Collision Date	Intersection	Distance From Intersection (In Feet)	Direction from Intersection	Collision Severity	Number of Injuries
7/8/2018	Grand Avenue and Martin Luther King Jr. Way	-		Injury (Complaint of Pain)	4
8/27/2014	Grand Avenue and San Pablo Avenue	-		Injury (Complaint of Pain)	1
8/7/2018	Grand Avenue and San Pablo Avenue	-		Injury (Complaint of Pain)	2
12/31/2017	Grand Avenue and San Pablo Avenue	-		Injury (Complaint of Pain)	1
6/16/2017	Grand Avenue and San Pablo Avenue	20	North	Injury (Complaint of Pain)	1
12/29/2015	Grand Avenue and San Pablo Avenue	-		Injury (Complaint of Pain)	1
1/20/2016	Grand Avenue and Brush Street	-		Injury (Complaint of Pain)	1
2/4/2014	Grand Avenue and Brush Street	-		Injury (Complaint of Pain)	1
4/7/2014	Grand Avenue and Brush Street	-		Injury (Complaint of Pain)	1
11/8/2017	Grand Avenue and Brush Street	-		Injury (Complaint of Pain)	1
10/4/2017	Grand Avenue and West Street	-		Injury (Complaint of Pain)	1
8/23/2014	Grand Avenue and West Street	-		Injury (Other Visible)	1

Collision Date	Intersection	Distance From Intersection (In Feet)	Direction from Intersection	Collision Severity	Number of Injuries
12/3/2016	Grand Avenue and West Street	-		Injury (Complaint of Pain)	1
10/7/2018	Grand Avenue and West Street	-		Injury (Complaint of Pain)	1
10/17/2016	Grand Avenue and West Street	-		Injury (Complaint of Pain)	1
3/2/2018	Grand Avenue and Market Street	-		Injury (Complaint of Pain)	1
9/24/2016	Grand Avenue and Market Street	80	West	Injury (Complaint of Pain)	3
6/11/2017	Grand Avenue and Market Street	17	South	Injury (Complaint of Pain)	1
9/22/2016	Grand Avenue and Market Street	-		Injury (Complaint of Pain)	1
7/6/2018	Grand Avenue and Market Street	95	East	Injury (Complaint of Pain)	1
7/27/2017	Grand Avenue and Market Street	20	East	Injury (Complaint of Pain)	1
11/20/2018	Grand Avenue and Filbert Street	-		Injury (Complaint of Pain)	2
8/16/2018	Grand Avenue and Linden Street	-		Injury (Other Visible)	1
12/30/2014	Grand Avenue and Linden Street	-		Injury (Other Visible)	2

Collision Date	Intersection	Distance From Intersection (In Feet)	Direction from Intersection	Collision Severity	Number of Injuries
8/22/2018	Grand Avenue and Linden Street	-		Injury (Complaint of Pain)	1
3/9/2016	Grand Avenue and Chestnut Street	20	East	Injury (Complaint of Pain)	1
3/27/2014	Grand Avenue and Adeline Street	-		Injury (Complaint of Pain)	1
3/23/2016	Grand Avenue and Adeline Street	-		Injury (Complaint of Pain)	2
7/24/2015	Grand Avenue and Adeline Street	-		Injury (Severe)	2
11/10/2017	Grand Avenue and Adeline Street	-		Injury (Complaint of Pain)	1
10/28/2016	Grand Avenue and Adeline Street	-		Injury (Complaint of Pain)	2
9/10/2018	Grand Avenue and Adeline Street	-		Injury (Other Visible)	4
8/9/2016	Grand Avenue and Adeline Street	-		Injury (Other Visible)	1
6/28/2018	Grand Avenue and Adeline Street	-		Injury (Other Visible)	1
7/16/2018	Grand Avenue and Adeline Street	-		Injury (Complaint of Pain)	1
8/31/2018	Grand Avenue and Adeline Street	-		Injury (Other Visible)	1

Collision Date	Intersection	Distance From Intersection (In Feet)	Direction from Intersection	Collision Severity	Number of Injuries
7/24/2018	Grand Avenue and Adeline Street	-		Injury (Complaint of Pain)	1
11/19/2015	Grand Avenue and Adeline Street	-		Injury (Complaint of Pain)	2
2/28/2016	Grand Avenue and Adeline Street	-		Injury (Severe)	1
9/19/2016	Grand Avenue and Adeline Street	-		Injury (Complaint of Pain)	1
5/5/2017	Grand Avenue and Adeline Street	-		Injury (Other Visible)	2
2/2/2016	Grand Avenue and Adeline Street	-		Injury (Complaint of Pain)	1
5/6/2014	Grand Avenue and Adeline Street	-		Injury (Complaint of Pain)	3
12/10/2014	Grand Avenue and Adeline Street	-		Injury (Complaint of Pain)	1
9/26/2016	Grand Avenue and Adeline Street	-		Injury (Complaint of Pain)	1
8/10/2016	Grand Avenue and Adeline Street	20	East	Injury (Complaint of Pain)	2
6/7/2014	Grand Avenue and Adeline Street	5	East	Injury (Complaint of Pain)	2
9/30/2017	Grand Avenue and Adeline Street	-		Injury (Severe)	1

Collision Date	Intersection	Distance From Intersection (In Feet)	Direction from Intersection	Collision Severity	Number of Injuries
5/12/2014	Grand Avenue and Adeline Street	-		Injury (Complaint of Pain)	4
6/23/2015	Grand Avenue and Union Street	-		Injury (Complaint of Pain)	1
6/10/2015	Grand Avenue and Mandela Parkway / Peralta Street	75	West	Injury (Other Visible)	1
2/7/2014	Grand Avenue and Mandela Parkway / Peralta Street	-		Injury (Complaint of Pain)	1
6/6/2014	Grand Avenue and Mandela Parkway / Peralta Street	-		Injury (Severe)	1
6/12/2016	Grand Avenue and Mandela Parkway / Peralta Street	-		Injury (Complaint of Pain)	2
2/28/2015	Grand Avenue and Mandela Parkway / Peralta Street	-		Injury (Other Visible)	1
6/25/2017	Grand Avenue and Mandela Parkway / Peralta Street	-		Injury (Complaint of Pain)	3
1/23/2016	Grand Avenue and Mandela Parkway / Peralta Street	5	West	Injury (Complaint of Pain)	1
6/20/2015	Grand Avenue and Mandela Parkway / Peralta Street	-		Injury (Complaint of Pain)	1
7/18/2014	Grand Avenue and Mandela Parkway / Peralta Street	-		Injury (Complaint of Pain)	2
4/17/2015	Grand Avenue and Mandela Parkway / Peralta Street	-		Injury (Severe)	1

Collision Date	Intersection	Distance From Intersection (In Feet)	Direction from Intersection	Collision Severity	Number of Injuries
8/28/2016	Grand Avenue and Mandela Parkway / Peralta Street	-		Injury (Complaint of Pain)	1
9/13/2018	Grand Avenue and Mandela Parkway / Peralta Street	-		Injury (Complaint of Pain)	2
10/2/2016	Grand Avenue and Mandela Parkway / Peralta Street	-		Injury (Complaint of Pain)	2
10/8/2017	Grand Avenue and Mandela Parkway / Peralta Street	-		Injury (Complaint of Pain)	1

