Harbor Community Benefit Foundation

HARBOR COMMUNITY OFF-PORT LAND USE STUDY

A LOOK AT THE PORT OF LOS ANGELES, SAN PEDRO, AND WILMINGTON

HARBOR COMMUNITY BENEFIT FOUNDATION

raimi + associates

OCTOBER 2017

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HARBOR COMMUNITY BENEFIT FOUNDATION

October 1, 2017

Greetings:

On behalf of the Board of Directors and staff of the Harbor Community Benefit Foundation (HCBF), enclosed please find a copy of our "Harbor Community Off-Port Land Use Study." This report, completed with the assistance of our consultant Raimi + Associates, is an important discussion of the impacts of the activities of the Port of Los Angeles and Port-related businesses on the surrounding communities of Wilmington and San Pedro. Raimi + Associates have compiled a wealth of data that portrays those impacts, providing local residents and organizations a better understanding of and ability to respond to the adverse conditions affecting people due to their proximity to the Port.

The HCBF was formed six years ago as one outcome of the 2008 settlement of a dispute related to the TraPac terminal expansion. Knowing that such an expansion would increase the environmental hazards associated with the Port's activities, a group of organizations and individuals appealed the Port's approval of the terminal expansion. In the resulting agreement, the Port created a fund, administered by HCBF, to mitigate the impacts of its activities on Port community residents. Over the last six years the HCBF has granted $5.2 million of approximately $8 million available to 58 community groups serving Wilmington and San Pedro. These grants have improved the community's aesthetics, health care access, respiratory and circulatory health, and community pride, while educating youth about ecology and their ocean environment.

As part of the TraPac agreement, the HCBF was obligated to undertake an assessment of the Port's impact on surrounding land uses. This Study, along with complementary studies on the noise levels in Wilmington and San Pedro, is intended to help HCBF prioritize our grant making to target specific issues and concerns raised by the assessment.

The study also identifies other industrial activities and impacts that were found to have little or no nexus to Port activities. These additional impacts were included with the intention to inform the surrounding communities but not to imply that the Port is responsible for mitigating non-Port related impacts. The accompanying report is not intended, on its own, to establish a legal nexus between Port activities and any specific proposed impact or any particular mitigation intervention that HCBF might propose. We did not have the funds or the mission to complete a study that would establish a legal nexus between any particular mitigation project and Port impacts. Instead, this report effectively compiles information and insights into the lives of Port community residents, the challenges they confront in living adjacent to a large industrial complex, and the adverse health and well-being direct and indirect impacts of that adjacency. The report also may well serve as a jumping-off point for further, future research.

We hope that you find the Harbor Community Off-Port Land Use Study a useful resource. We thank Raimi + Associates, many community residents, and environmental experts, who ensured that the report faithfully portrayed the Port communities, for their hard work in producing and vetting the report.

Sincerely,

David C. Sloane
Chair, Board of Directors
Harbor Community Benefit Foundation

More at
www.hcbf.org

Collaborating to build a safe, healthy, and beautiful San Pedro and Wilmington.

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ACKNOWLEDGMENTS

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EXECUTIVE SUMMARY

CONTEXT

Sea ports are a critical ingredient to keep our current global economic system running. International producers benefit by having access to global markets and American consumers benefit by having easy access to goods imported from all over the world.

The Port of Los Angeles is the busiest port in the United States by container volume. This massive port is also next to the Port of Long Beach, which is the second busiest port in the country. These two ports combined create the ninth busiest container port in the world. They shape much of the economy and infrastructure in the immediate region.

The communities of San Pedro and Wilmington border the Port of Los Angeles. While residents and businesses in these communities also reap these consumer benefits, they bear a disproportionate burden of the Port- and related off-Port activities. Since the Port of LA has expanded over the past few decades, these communities have experienced increased impacts to their economic, aesthetic, environmental, and social conditions – all which can impact health.

PROBLEM/PURPOSE

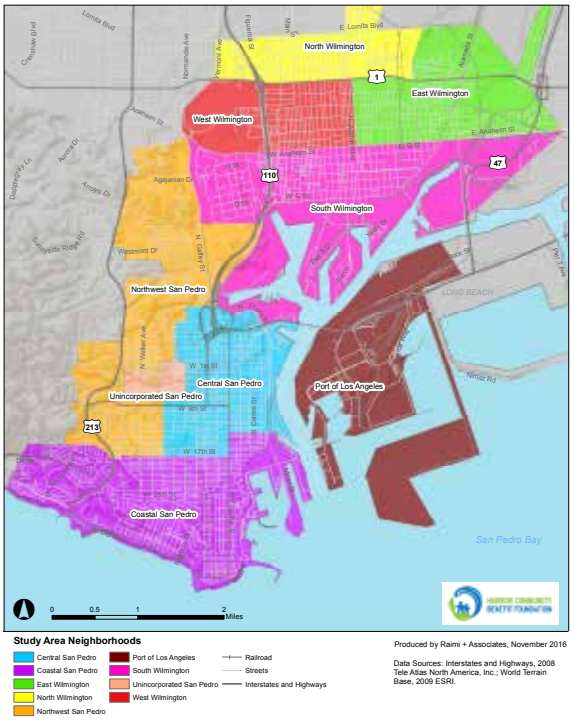
The Port of LA has numerous community mitigation programs in place to lessen the negative impacts, however they are limited in how and where they can spend their revenues based on the California State Lands Commission's (CSLC) public trust doctrine. This legal framework requires that "there must be a nexus that can be justified, documented, and that is proportional to a port's impacts and/or operations and the proposed off-site project". Because of this, previous Port of L.A. impact studies only analyzed direct impacts of Port activities. However, community members experience a host of "off-Port" impacts from the Port of Los Angeles and Port-related businesses which are important to understand and document.

The Harbor Community Benefit Foundation commissioned the Harbor Community Off-Port Land Use Study to:

1. Explore and document off-Port community impacts in San Pedro and Wilmington;
2. Explore the relationship between these impacts with the Port of Los Angeles operations and related activities;
3. Inform future activities of the Harbor Community Benefit Foundation and community groups.

While this document does not create a legal nexus to alter what the CSLC considers a Port impact, it offers theoretical causal pathways about and documents, visualizes, and quantifies the types of Port- and off-Port impacts that residents experience every day. The Harbor Community Benefit Foundation hopes that the information provided here is used to inform future decision making.

Study Area Neighborhoods



KEY FINDINGS

ROAD AND RAIL MOBILITY, SAFETY, AND INFRASTRUCTURE

This chapter explores industrial land use impacts on walkability, truck and vehicle collisions, truck volumes, and railroad crossings and infrastructure.

- Industrial land uses and urban form create unpleasant walking environments and increased exposure to pollutants. In the study area, blocks with industrial uses are almost twice as large as blocks with non-industrial uses. This reduces the number of intersections which negatively impacts pedestrian activity.
- Truck traffic and parked trucks reduce pedestrian visibility, increasing the perception of crime in these areas. Reduced visibility due to trucks also leads to a higher density of vehicle collisions along certain routes.
- Many at-grade railway crossings increase traffic delays and lack enhanced safety infrastructure which poses a safety risk to pedestrians and bicyclists.

LAND USE

This chapter examines incompatible land uses, Port and Port-related businesses, vacant property, storage yards, and aesthetic and visual impacts.

- The visual impact of a poorly maintained and barren industrial landscape takes away from the beauty of the bay and poorly affects property values.
- Two percent of all parcels in the study area assessed as a lower-intensity use (i.e., commercial, recreational, residential, or institutional), but are zoned for a higher-intensity use (i.e., industrial, manufacturing, warehousing, processing, etc.)
- Port-related businesses (PRBs) are three times as likely to locate in San Pedro and Wilmington than in the City of Los Angeles overall. PRB's demand for land near the Port of L.A. competes with other community-serving uses and businesses.
- We worked with community groups (Long Beach Alliance for Children with Asthma (LBACA) and Coalition for a Safe Environment (CFACE)) and local residents to collect and ground truth new data on chassis, truck, and container storage yards. There are 383 parcels with these storage uses totaling 329 acres of land. These storage yards create a nuisance for residents by harboring rodents and increasing air pollution, noise pollution, and large truck traffic through residential neighborhoods.

HAZARDOUS AND POLLUTING LAND USES

- This chapter documents and analyzes the location and proximity of hazardous and polluting land uses in the study area.
- Beach water quality is worse close to the Port of L.A. operations, limiting safe recreational opportunities for residents.
- East and South Wilmington are in the highest percentile of pollution burden in the state according to CalEnviro Screen.
- 62% of the study area residents live within 1,000 feet of hazardous or polluting land use and face a higher risk of cancer and other health related disorders.
- The study area has 8 times the number of cleanup sites 65 times the number of groundwater impact sites per square mile compared to L.A. County.

ACCESS TO NEIGHBORHOOD GOODS AND SERVICES

This chapter focuses on understanding the effect of on- and off-Port activities on the availability of neighborhood goods and services in the study area.

- San Pedro and Wilmington have fewer child care slots per 100 children than L.A.

County.

- L.A. County has approximately 1.4 times the number of medical facilities compared to the study area.
- The study area has more than twice the number of fast food restaurants per capita compared to the City of L.A. (84 fast food restaurants).
- 54% of study are residents live within a quarter-mile of a fast food restaurant and only 23% live within quarter-mile of a healthy food option.

EMPLOYMENT AND REAL ESTATE

- This chapter analyzes Port-related employment opportunities and how on- and off-Port activities correlate with residential property values.
- South and East Wilmington and Northwest and Central San Pedro have the highest number of port-related jobs.
- Of all the employed residents in the study area – we estimate that only 3.5% them work in "port- or port-related" jobs in the full study area.
- Resident assumptions that San Pedro's cost per square foot increases as distance to the shoreline increases seems to be correct, inverse to other coastal communities where proximity to the beach yields more expensive real estate values.
- In our exploratory statistical model of residential real estate values, assessed price per square foot has a positive correlation with distance from beach, distance to industrial or manufacturing parcels, distance to rail lines, distances to storage yards, and number of Port-related businesses within a quarter-mile.

RECOMMENDATIONS

The final chapter in this study presents recommendations collected from a peer review expert panel, community stakeholders, and the HCBF Board of Directors. This study explores a broad array of topics which opened up additional research questions worthy of study. The most important recommendation is that this study is widely distributed among community members, businesses, decision makers, Port staff, City staff, public health professionals, and other interested parties so that discussions about community improvement can be more data informed for better health, environmental justice, and economic prosperity for all!

HARBOR COMMUNITY BENEFIT FOUNDATION

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INTRODUCTION

INTRODUCTION

OVERVIEW

The Port of Los Angeles (the Port or LA Port) is the busiest port in the United States by volume and is a massive physical presence in the San Pedro Bay, covering about 7.5 thousand acres of land and 32 miles of waterfront.[1] The Port moved 8.2 million twenty-foot equivalent units (TEUS) of cargo valued at $270 billion in 2015. In terms of economic impacts, 133,000 jobs in Los Angeles and 479,000 jobs in the five-county Southern California region are directly and indirectly related to the Port of Los Angeles.[2]

Many businesses that serve the Port or Port-related activities and operations are in San Pedro and Wilmington because of proximity and ease of access to the Port of Los Angeles, other similar industries in the area, and transportation infrastructure. Many institutional and systemic policies, laws, and practices - such as zoning designations - along with the history and legacy of industries in the area and prolonged civic disinvestment of residents, facilitate continued concentration and expansion of hazardous and polluting land uses. These industries bring an array of externalities that negatively impact the health of Wilmington and San Pedro residents, economic development, and the physical environment of the area.

While economic gains from the Port of Los Angeles primarily benefit the region and state, the negative impacts from concentrated goods movement operations and related industries are more localized. The Port of Los Angeles operations and related activities come at a steep cost to nearby communities, and Wilmington and San Pedro community residents experience numerous impacts related to the Port's presence. A great deal of research on the environmental impacts of Port and Port-related activities have been conducted over recent years in Wilmington and San Pedro.[3] [4] [5] [6] [7] However, less is known about results of Port and Port-related operations on Wilmington and San Pedro. This study of off-Port impacts aims to shed light on some of these effects.

THIS STUDY HAS THREE PRIMARY GOALS:

1. *Explore and document off-Port community impacts in San Pedro and Wilmington;*
2. *Explore the relationship between these impacts with the Port of Los Angeles operations and related activities;*
3. *Inform future activities of the Harbor Community Benefits Foundation and community groups.*

A secondary goal of this report is to provide a resource to community stakeholders, including residents, local institutions, public agencies, local businesses, and other foundations in identifying and implementing strategies to improve neighborhood conditions and livability in Wilmington and San Pedro. Additionally, this study investigates novel pathways of impact that have not been extensively documented in previous research. This is done by weaving together spatial analyses, secondary quantitative data, direct observations and groundtruthing, and qualitative stakeholder interviews.

1 Port of Los Angeles. 2016. About the Port. Available from https://www.portoflosangeles.org/idx_about.asp.

2 Port of Los Angeles. 2016. Facts and Figures. Available from https://www.portoflosangeles.org/about/facts.asp.

3 Landrum & Brown. 2012. Report #1: Noise Measurement Report: Wilmington School & Residence, Sound Attenuation Program. Available at http://hcbf.org/wp-content/uploads/2014/06/2012.12.14.Report-1.Wilmington-Noise-Measurement-Report_with-Attachments3.pdf/

4 Port of Los Angeles. 2006. Port of Los Angeles Portwide Light and Glare Survey Findings.

5 South Coast Air Quality Management District. 2015. MATES IV: Multiple Air Toxics Exposure Study. Available at http://www.aqmd.gov/home/library/air-quality-data-studies/health-studies/mates-iv.

6 California Air Resources Board. 2003. Community Air Quality Monitoring: Special Studies Wilmington. Available from https://www.arb.ca.gov/ch/reports/wilmington_sb25_report.pdf.

7 California Air Resources Board. 2006. Diesel Particulate Matter Exposure Assessment Study for the Ports of Los Angeles and Long Beach. Available from https://www.arb.ca.gov/ports/marinevess/documents/portstudy0406.pdf.

BACKGROUND

The Harbor Community Benefit Foundation (HCBF) was established to facilitate a port community mitigation fund as part of the settlement between the Port of Los Angeles and the TraPac Appellants in 2008. The purpose of the mitigation fund is to compensate the Wilmington and San Pedro communities for the damages from Port and Port-related activities. The resulting TraPac Memorandum of Understanding (TraPac MOU)[8] also established funding for an off-port land use impacts study to examine the effects of port-related land uses and activities in San Pedro and Wilmington, which this report fulfills. In August 2014, HCBF released a Request for Proposals (RFP) for the completion of a study of the off-port land use impacts on the communities of San Pedro and Wilmington. Through a competitive proposal and interview process, HCBF selected Raimi + Associates to lead the study with advisory support from The Civic Engine.

In this report, we identify Port and Port-related land uses and analyze how these land uses and activities affect the communities of Wilmington and San Pedro. The land use analysis clarifies the range of pathways through which Port land uses can impact Wilmington and San Pedro, including the health and wellbeing of residents, economic development of the area, safety impacts, and the ability of residents to access vital neighborhood resources and services. Guided by an Ad Hoc Advisory Committee and HCBF staff, we shared a draft report with an expert external peer review panel January 2017 and released a draft report in February 2017. Based on external feedback, in October 2017, HCBF requested minor modifications and more attractive graphic design.

8 Port of Los Angeles. Implementation Agreement of the TraPac Memorandum of Understanding. 2008. Available from https://www.portoflosangeles.org/Board/2010/July/072210_Item14_trans5.pdf.

Image 1: Container storage yard visible from residential street in Wilmington. Photo source: Beth Altshuler, 2015.

STUDY METHODOLOGY

OVERVIEW

This study weaves together an array of qualitative and quantitative data from primary and secondary data sources and existing evidence. The study's initial step was a literature review of primary and secondary research, gray literature, and review of previous community engagement data and surveys to comprehend and document known and well-studied impacts. We also gathered information on specific topics, where literature or data did not exist, by conducting stakeholder interviews with key community leaders and reviewing historic documents, maps, and photos. The interviews provided important perspectives from the community and key stakeholders who are disproportionately burdened by the Port and Port-related activities.

Next, the consultant team coordinated with the Ad-Hoc Advisory committee (HCBF staff and three board members) to document our holistic understanding of Port and Port-related impacts by creating causal pathway diagrams. These pathways, or causal models, are used to describe how environmental and social conditions, and risk and resilience factors influence community outcomes.[9] The causal pathways provide a visual representation of plausible ways in which the Port and Port-related businesses, infrastructure, and activities impact the communities of Wilmington and San Pedro, through various intermediary factors. These pathways can also support possible interventions for preventing or mitigating impacts.

After reviewing existing research and data on Port-related activities and information and creating numerous plausible causal pathways, the project team prioritized the following topics for analysis:

- Road and rail
- Land use
- Hazardous and polluting land uses
- Access to neighborhood goods and services
- Employment and real estate

Within each of these topics, we prioritized a list of indicators or research questions to study and obtained appropriate data. There are numerous other valid causal pathways that future research should explore, but due to limited resources and a desire to highlight HCBF stakeholder priorities, this study maintains a focus on the selected research topics. We based the final causal pathways presented in this report on literature and our best understanding of impacts, given the results of our quantitative and qualitative analysis.

We used maps and associated spatial analysis to understand the geographic distribution of impacts. The study presents findings by neighborhoods (or study subareas), where feasible. We subdivided San Pedro into four neighborhoods: Northwest San Pedro, Coastal San Pedro, Central San Pedro, and Unincorporated San Pedro; and Wilmington into four neighborhoods: East Wilmington, North Wilmington, South Wilmington, and West Wilmington. We also included the Port of Los Angeles as a study subarea. A more robust discussion of the study area and neighborhood subareas appears in Chapter 1: Community Profile.

NEXUS CRITERIA FOR COMMUNITY IMPACTS FROM PORT AND PORT-RELATED ACTIVITIES

The team identified a set of criteria to better understand the interrelation between Port and Port-related activities and impacts in the communities of San Pedro and Wilmington. In consultation with the Ad Hoc Advisory Committee and HCBF staff, the consultant team devised nexus evaluation criteria:

9 Bhatia R. 2011. Health Impact Assessment: A Guide for Practice. Available from http://www.pewtrusts.org/~/media/assets/2011/01/01/bhatia_2011_hia_guide_for_practice.pdf.

NEXUS CRITERION 1: IS THE SOURCE AN ESTABLISHED PORT OR PORT-SERVING LAND USE OR ACTIVITY?

A "yes" response means that the proximal source activity of the impact of interest is a Port or Port-related land use, activity, or operation. For example, truck and train traffic through the study area is a source of numerous community impacts and is an established Port-serving activity.

NEXUS CRITERION 2: IS THE IMPACT A DIRECT RESULT OF THE PORT OR PORT-SERVING LAND USE OR ACTIVITY?

A "yes" response means that the distal impact of interest is a direct result of the Port or Port-related activities. For example, air pollution in the study area is a major community concern and is the direct result of multiple Port and Port-serving activities – such as truck traffic traveling through the area, ships idling in the harbor, and drayage trucks on Port property.

NEXUS CRITERION 3: IS THE IMPACT AN INDIRECT RESULT OF THE PORT OR PORT-SERVING LAND USE OR ACTIVITY?

A "yes" response means the distal impact of interest is an indirect result of Port or Port-related activities. For example, increased crime in the study area and a decreased sense of safety could be linked to the overabundance of aesthetic and visual impacts from the heavily industrialized landscape, trash and vandalism, and vacant and abandoned properties in the area. Social science research supports these linkages. Although not a direct impact of the Port or Port-related activities, the presence of the Port and related industries and activities can be indirectly linked to these outcomes.

NEXUS CRITERION 4: IS THE CAUSAL PATHWAY LOGICAL AND PLAUSIBLE?

A "yes" response means that the causal pathway is plausible and makes sense. As much as feasible, linkages and correlations are based on evidence-based literature.

NEXUS CRITERION 5: IS THERE GENERALIZABLE EMPIRICAL EVIDENCE TO SUPPORT THE CAUSAL PATHWAY?

A "yes" response means that there is evidence or data to support relationships in the causal pathway.

NEXUS CRITERION 6: IS THERE A DISTANCE-BASED RELATIONSHIP TO PORT OR PORT-SERVING USE OF ACTIVITY?

A "yes" response means that the impact is reduced as distance to the Port- or Port-related impact increases. For example, environmental quality impacts decrease as the distance increases from polluting land uses.

NEXUS CRITERION 7: IS THERE A TEMPORAL-BASED RELATIONSHIP TO PORT DEVELOPMENT IN THE STUDY AREA?

A "yes" response means that changes in the impact correspond with changes in Port development, infrastructure, or goods movement volume changes. For example, impacts from polluting and hazardous land uses in the study area have concentrated and intensified over time since the early 1900's.

NEXUS CRITERION 8: IS THERE A DISPROPORTIONATE BURDEN/IMPACT RELATIVE TO THE CITY/REGION?

A "yes" response means that there is an undue burden from the impact of concern in the study area compared to another geography, such as the City or County of Los Angeles.

NEXUS CRITERION 9: IS THERE LOCAL QUALITATIVE EVIDENCE TO SUPPORT THE PATHWAY?

A "yes" response means that community stakeholders expressed concerns linking the community impact and Port or Port-related activities.

DOCUMENT OVERVIEW

The study's contents are presented in the following seven chapters:

1. **COMMUNITY PROFILE:** Provides an overview of the study area, including information about the boundaries and geography of the study area and subarea neighborhoods and demographic information about study area residents.
2. **ROAD AND RAIL MOBILITY, SAFETY, AND INFRASTRUCTURE:** Explores industrial land use impacts on walkability, truck and vehicle collisions, truck volumes, and railroad crossings and infrastructure.
3. **LAND USE:** Examines incompatible land uses, Port and Port-related businesses, vacant property, storage yards, and aesthetic and visual impacts.
4. **HAZARDOUS AND POLLUTING LAND USES:** Documents and analyzes the location and proximity of hazardous and polluting land uses in the study area.
5. **ACCESS TO NEIGHBORHOOD GOODS AND SERVICES:** Focuses on understanding the effect of on- and off-Port activities on the availability of neighborhood goods and services in the study area, using a select set of neighborhood goods and services as indicators.
6. **EMPLOYMENT AND REAL ESTATE:** Analyzes Port-related employment opportunities and how on- and off-Port activities correlate with residential property values.
7. **RECOMMENDATIONS:** Presents a list of recommendations to be considered and implemented by the Harbor Community Benefit Foundation (or other foundations), the City of Los Angeles, The Port, local residents and businesses, and community based organizations.

The first six chapters are organized by the following sections:

- An overview of the community impact;
- Discussion of the nexus criteria and causal pathway;
- Description of research questions and methodology;
- Presentation of findings via tables, figures, images, and maps; and
- List of data sources.

1. COMMUNITY PROFILE

COMMUNITY PROFILE

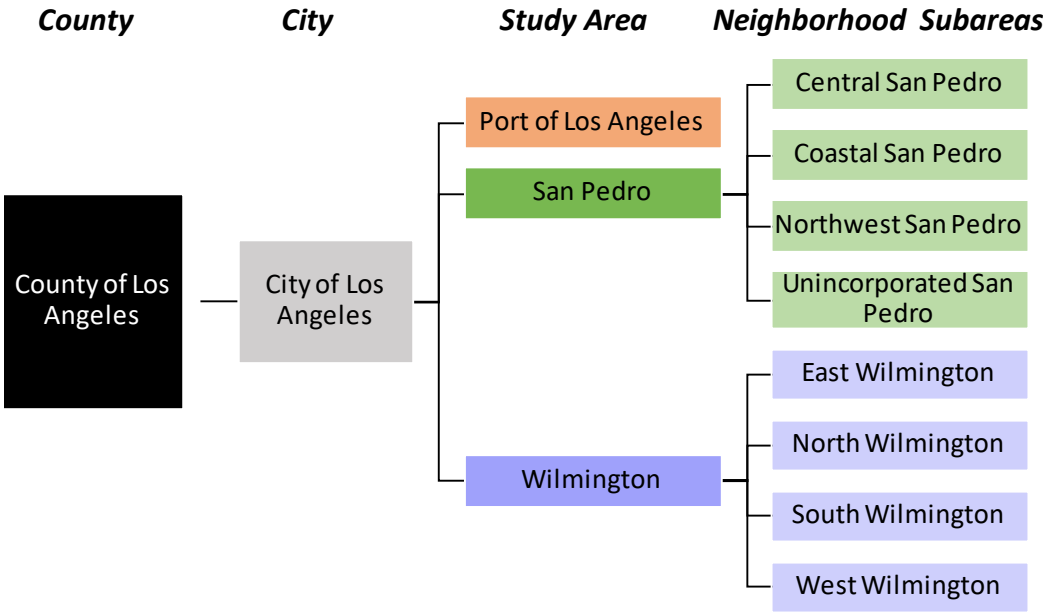
OVERVIEW

The Community Profile provides an overview of the study area, including information about the size of the study area and neighborhoods, population density, and community demographics, such as residents' age, race and ethnicity, and socioeconomic status.

STUDY AREA

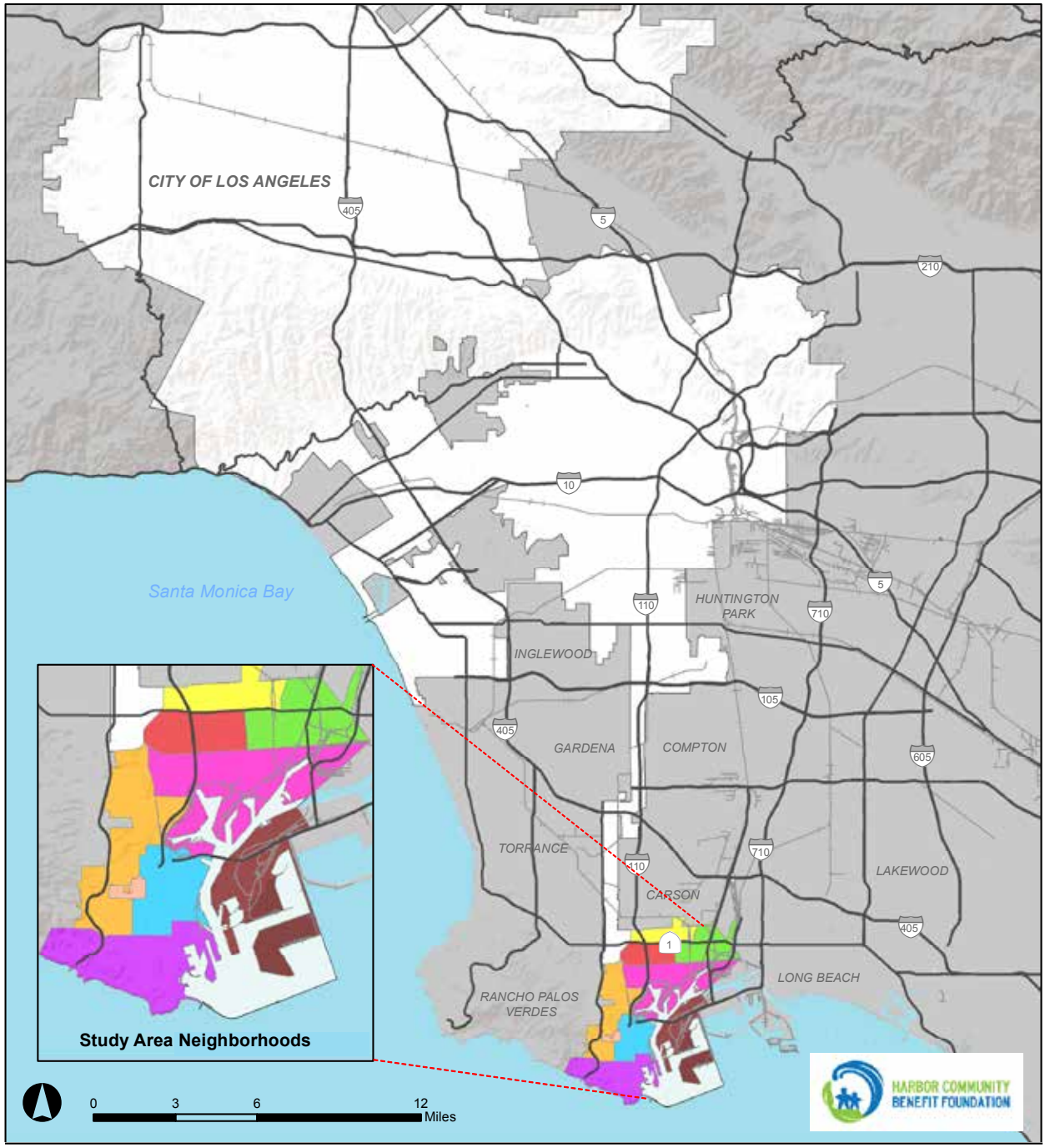
The study area includes the communities of Wilmington and San Pedro, including a small unincorporated area of San Pedro and the Port of Los Angeles. As shown in Map 1: Study Area in Perspective, the study area is situated in the southernmost portion of Los Angeles, about 20 miles south of the City's downtown. Interstate 110 separates Wilmington and San Pedro from the majority of the City to the north. The study area is comprised of the communities that are to the immediate north and west of the Port of Los Angeles.

As shown in Map 2: Study Area Neighborhoods, we divide the study area into neighborhood subareas. Unlike some neighborhoods, Wilmington and San Pedro do not have official geographic boundaries. For the purposes of our analysis, we created neighborhood boundaries from multiple inputs, including the designated City of Los Angeles Neighborhood Council boundaries,[1] input from community residents, and input from the Ad Hoc Advisory Committee. These study area neighborhoods are the boundaries we used in the analysis. Maps 3 and 4 show Census Block and Census Tracts boundaries also utilized in this study. As we selected these boundaries to best suit the analysis, discrepancies may exist when compared to other data sources and references. We present data at the most detailed scale possible, and when feasible, summarize information by geographic designations.



1 City of Los Angeles. 2015. Neighborhood Councils Empower LA: Department of Neighborhood Empowerment. Available at http://empowerla.org/councils/.

Map 1: Study Area in Perspective

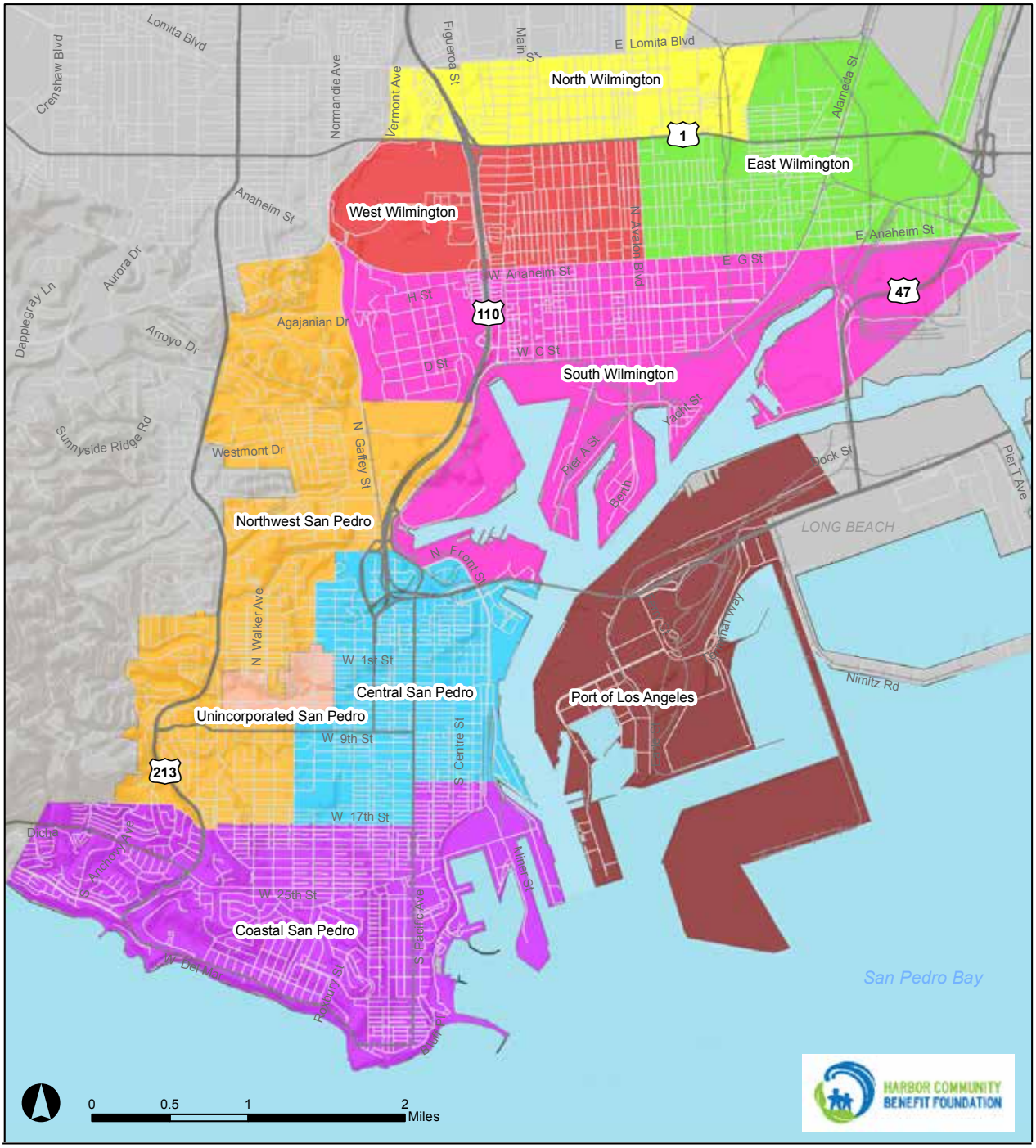


City of Los Angeles
Railroad
Interstates and Highways
Central San Pedro
Coastal San Pedro
East Wilmington
North Wilmington
Northwest San Pedro
Port of Los Angeles
South Wilmington
Unincorporated San Pedro
West Wilmington

Produced by Raimi + Associates, November 2016

Data Sources: TIGER/Line Shapefile, 2013 US Census; Interstates and Highways, 2008 Tele Atlas North America, Inc.; World Terrain Base, 2009 ESRI.

Map 2: Study Area Neighborhoods



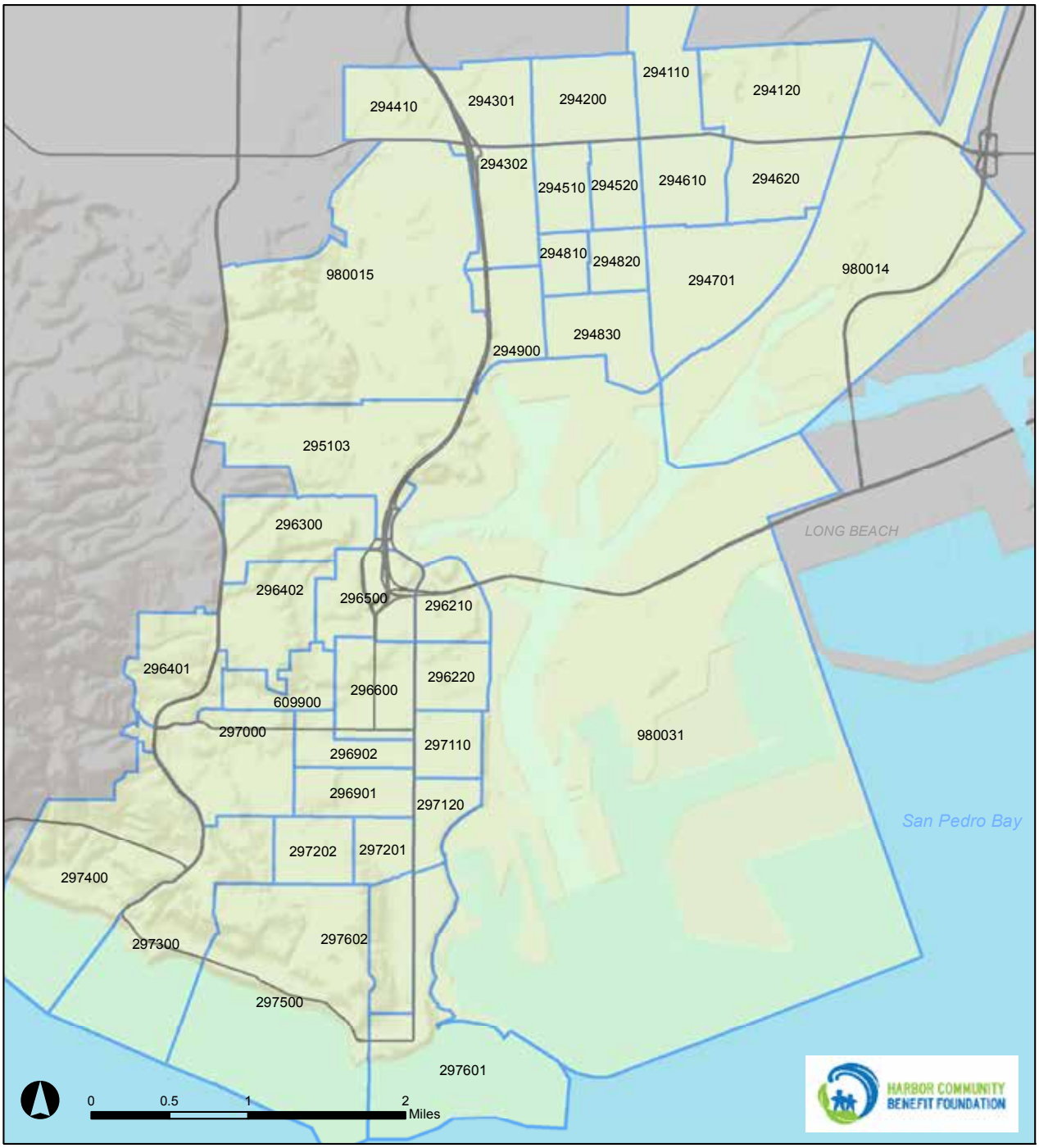
Study Area Neighborhoods

- Central San Pedro
- Coastal San Pedro
- East Wilmington
- North Wilmington
- Northwest San Pedro
- Port of Los Angeles
- South Wilmington
- Unincorporated San Pedro
- West Wilmington
- Railroad
- Streets
- Interstates and Highways

Produced by Raimi + Associates, November 2016

Data Sources: Interstates and Highways, 2008 Tele Atlas North America, Inc.; World Terrain Base, 2009 ESRI.

Map 3: Census Tracts



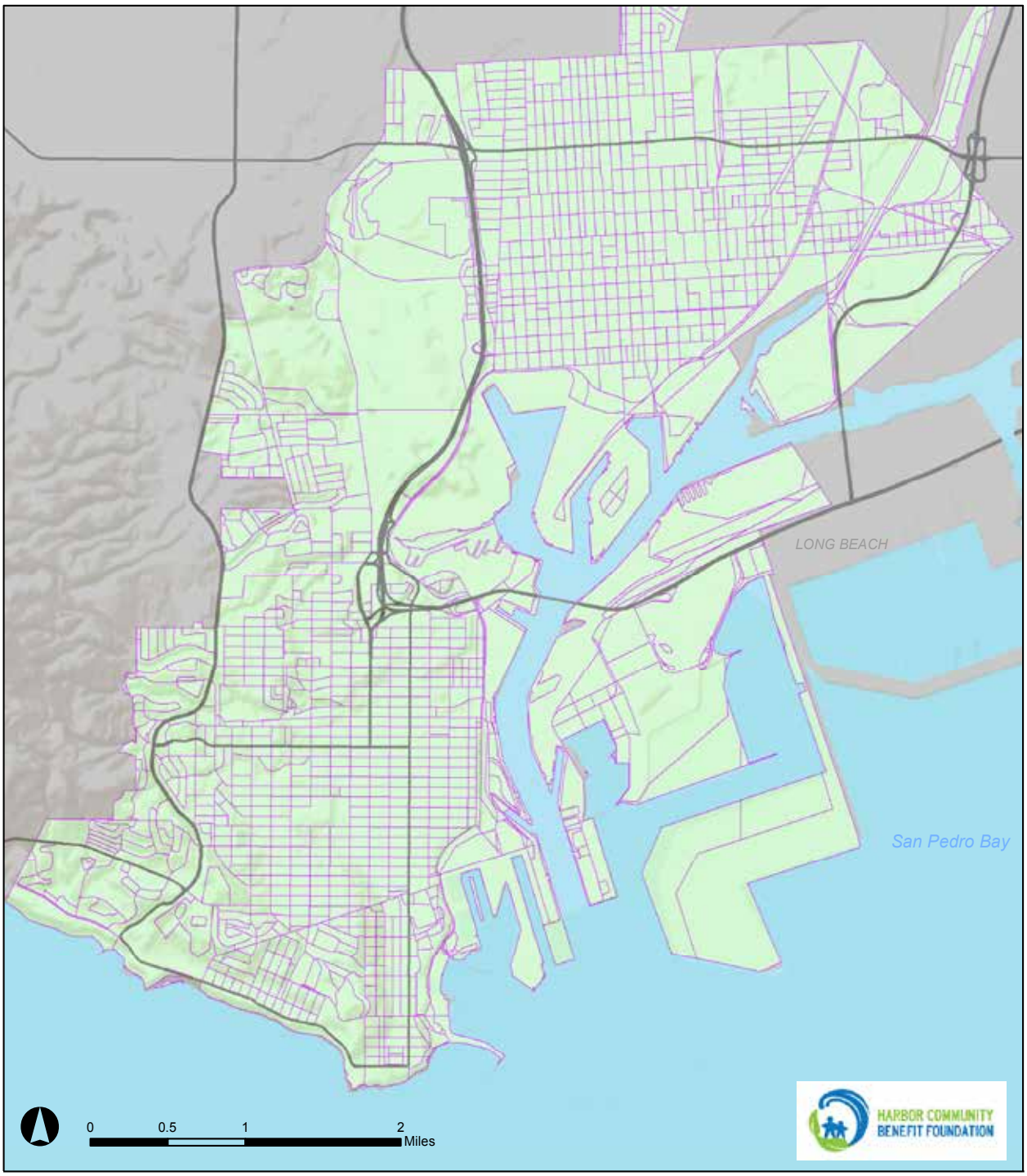
Census Tracts

Interstates and Highways

Produced by Raimi + Associates
November 2016

Data Sources: Census boundaries, 2010 US Census Bureau, Interstates and Highways, 2008 Tele Atlas North America, Inc.; World Terrain Base, 2009 ESRI.

Map 4: Census Blocks



Census Blocks

Interstates and Highways

Produced by Raimi + Associates
November 2016

Data Sources: Census boundaries, 2010 US Census Bureau, Interstates and Highways, 2008 Tele Atlas North America, Inc.; World Terrain Base, 2009 ESRI.

POPULATION

There are 135,327 people who reside in the study area, which is about 4% of the population of the City of Los Angeles. As shown in Table 1, close to 80,000 people live in San Pedro and nearly 55,000 people live in Wilmington. Just over 1,000 residents live on Terminal Island, which is part of the Port of Los Angeles. Residential institutions on Terminal Island include a U.S. Coast Guard Base and a federal correctional institution.

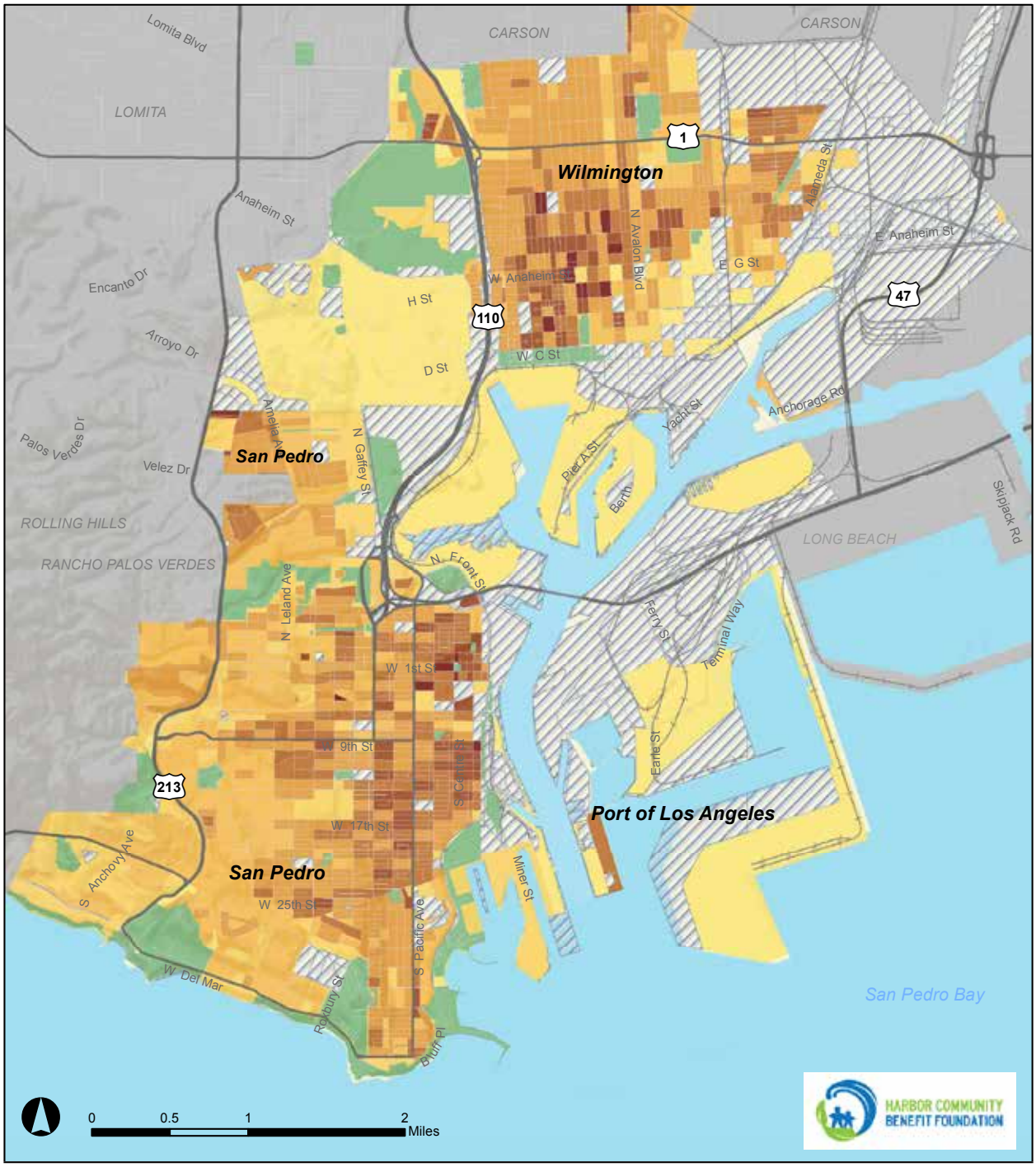
The overall study area has a lower population density when compared to the City of Los Angeles. This may be due in part to large areas of non-residential and industrial uses in East and South Wilmington and the Port of Los Angeles. However, certain neighborhoods, such as Central San Pedro, West Wilmington, Unincorporated San Pedro, and North Wilmington, have much higher population densities than the City of Los Angeles overall. Central San Pedro is the most densely populated neighborhood in the study area, followed by West Wilmington. Figure 1 depicts population density in a bar chart and Map 5: Population Density visually depicts population density across the study area.

Table 1: Study Area Population Density, by Neighborhood

Neighborhood Subareas	Total Population	Area (Square Miles)	Population Density (Residents per Square Mile)
County of Los Angeles	9,818,605	4,751	2,067
City of Los Angeles	3,792,621	503	7,540
Study Area	135,327	21.74	6,225
San Pedro	79,704	9.11	8,749
Central San Pedro	29,470	1.97	14,959
Coastal San Pedro	27,132	3.47	7,819
Northwest San Pedro	21,068	3.46	6,089
Unincorporated San Pedro	2,034	0.21	9,686
Port of Los Angeles	1,035	3.09	335
Wilmington	54,588	9.54	5,722
East Wilmington	12,880	2.33	5,528
North Wilmington	13,361	1.40	9,544
South Wilmington	11,282	4.30	2,624
West Wilmington	17,065	1.51	11,301

Data source: U.S. Census Bureau, 2010 Decennial Census

Map 5: Population Density



Legend

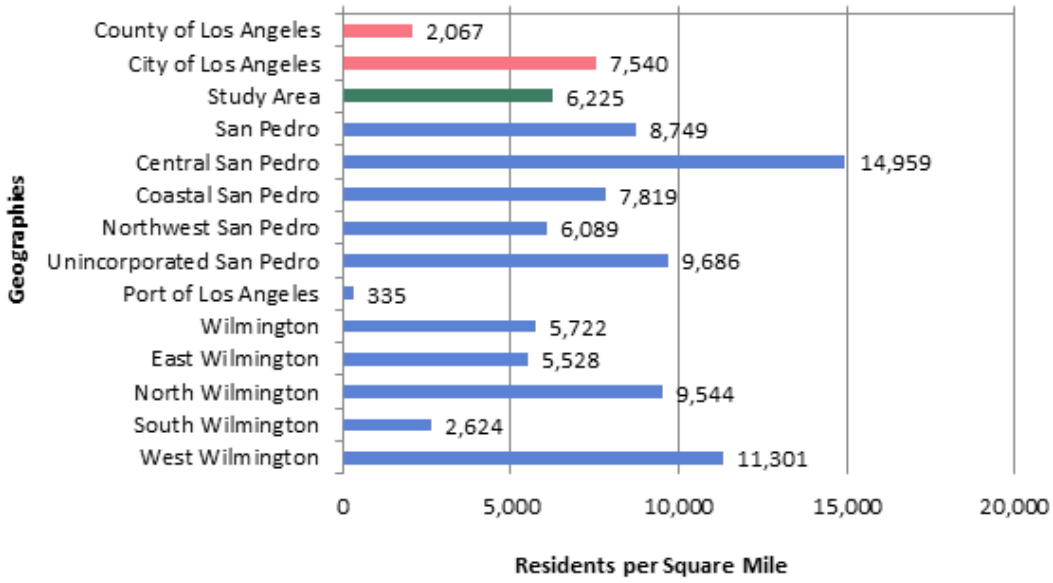
Population Density (People per Square Mile [SM])

- Population 0
- Less than 500 per SM
- 500 to 5,000
- 5,000 to 10,000
- 10,000 to 20,000
- 20,000 to 30,000
- 30,000 to 50,000
- Greater than 50,000
- Railroad
- Interstates and Highways
- Streets
- Parks and Recreational Areas
- San Pedro Bay

Produced by Raimi + Associates
February 2016

Data Sources: Interstates and Highways, 2008 Tele Atlas North America, Inc.; World Terrain Base, 2009 ESRI; US Census 2010

Figure 1: Population Density



Data sources: 2010 U.S. Census Bureau

On average, children and older adults are more sensitive to environmental stressors because of increased biological susceptibilities. Children breathe, eat, and drink more per their body weight when compared to adults, and their bodies are still developing and growing. Environmental pollutants and stressors can impact children's development in ways that may affect them over their entire lifetime.[2] In addition, older adults often have preexisting chronic health conditions that can predispose them to negative effects from environmental exposures.[3]

Overall, the study area has a slightly higher percentage of residents who are under 5, under 18, and over 65 years old compared to the City and County of Los Angeles, as shown in Table 2. A higher percentage of Wilmington residents are also younger. South Wilmington has the highest concentration of residents under age 5 (10%) and under age 18 (35%). Coastal (15%) and Northwest San Pedro (17%) have higher proportions of older adults than the other neighborhoods. In Unincorporated San Pedro, which has convalescent hospital and medical center, 85% of residents are over age 65. Maps 6, 7, and 8 show the percentage of residents within each age group: under 5, under 18, and over 65.

2 U.S. Environmental Protection Agency. 2016. Children Are Not Little Adults! Available from https://www.epa.gov/children/children-are-not-little-adults.

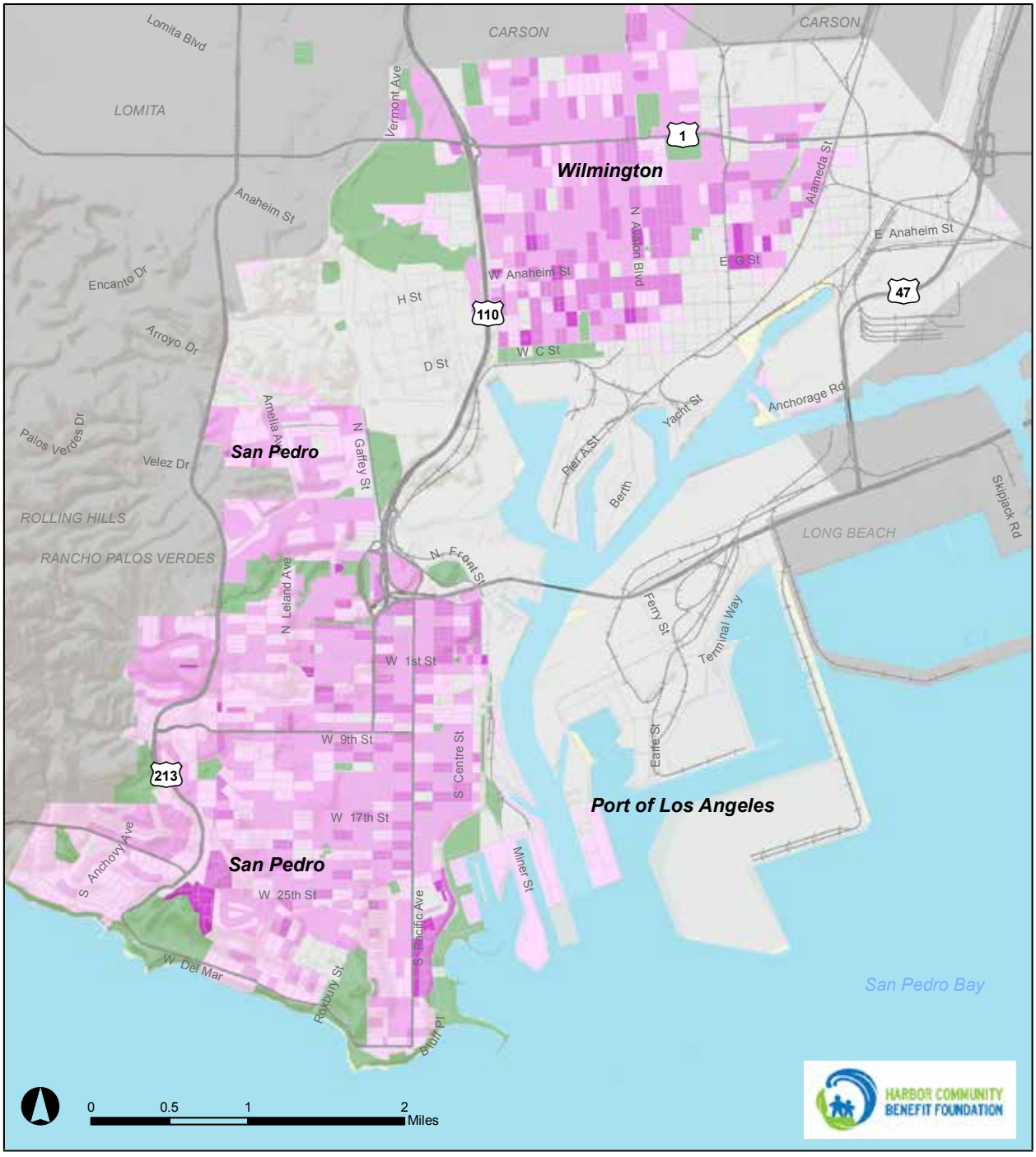
3 Geller AM and Zenick H. 2005. Aging and the Environment: A Research Framework. Environmental Health Perspectives. 113(9): 1257-1262.

Table 2: Age Groups, by Neighborhood

Neighborhood Subareas	Total pop	Pop under 5 years		Pop under 18 years		Pop over 65 years	
		#	%	#	%	#	%
County of Los Angeles	9,818,605	645,793	6.7%	2,402,208	24.5%	1,065,699	10.9%
City of Los Angeles	3,792,621	251,097	6.6%	874,525	23.1%	396,696	10.5%
Study Area	135,327	10,167	7.5%	36,064	26.6%	15,602	11.5%
San Pedro	79,704	5,366	6.7%	18,766	23.5%	11,819	14.8%
Central San Pedro	29,470	2,295	7.8%	8,068	27.4%	2,595	8.8%
Coastal San Pedro	27,132	1,784	6.6%	6,093	22.5%	4,000	14.7%
Northwest San Pedro	21,068	1,157	5.5%	4,190	19.9%	3,553	16.9%
Unincorporated San Pedro	2,034	130	6.4%	415	20.4%	1,671	82.2%
Port of Los Angeles	1,035	-	-	-	-	14	1.4%
Wilmington	54,588	4,801	8.8%	17,298	31.7%	3,783	6.9%
East Wilmington	12,880	1,103	8.6%	4,102	31.8%	1,052	8.2%
North Wilmington	13,361	991	7.4%	3,688	27.6%	1,226	9.2%
South Wilmington	11,282	1,142	10.1%	3,963	35.1%	594	5.3%
West Wilmington	17,065	1,565	9.2%	5,545	32.5%	911	5.3%

Data source: 2010 U.S. Census Bureau, 2010 Decennial Census

Map 6: Percentage of Residents Under 5 Years Old



Legend

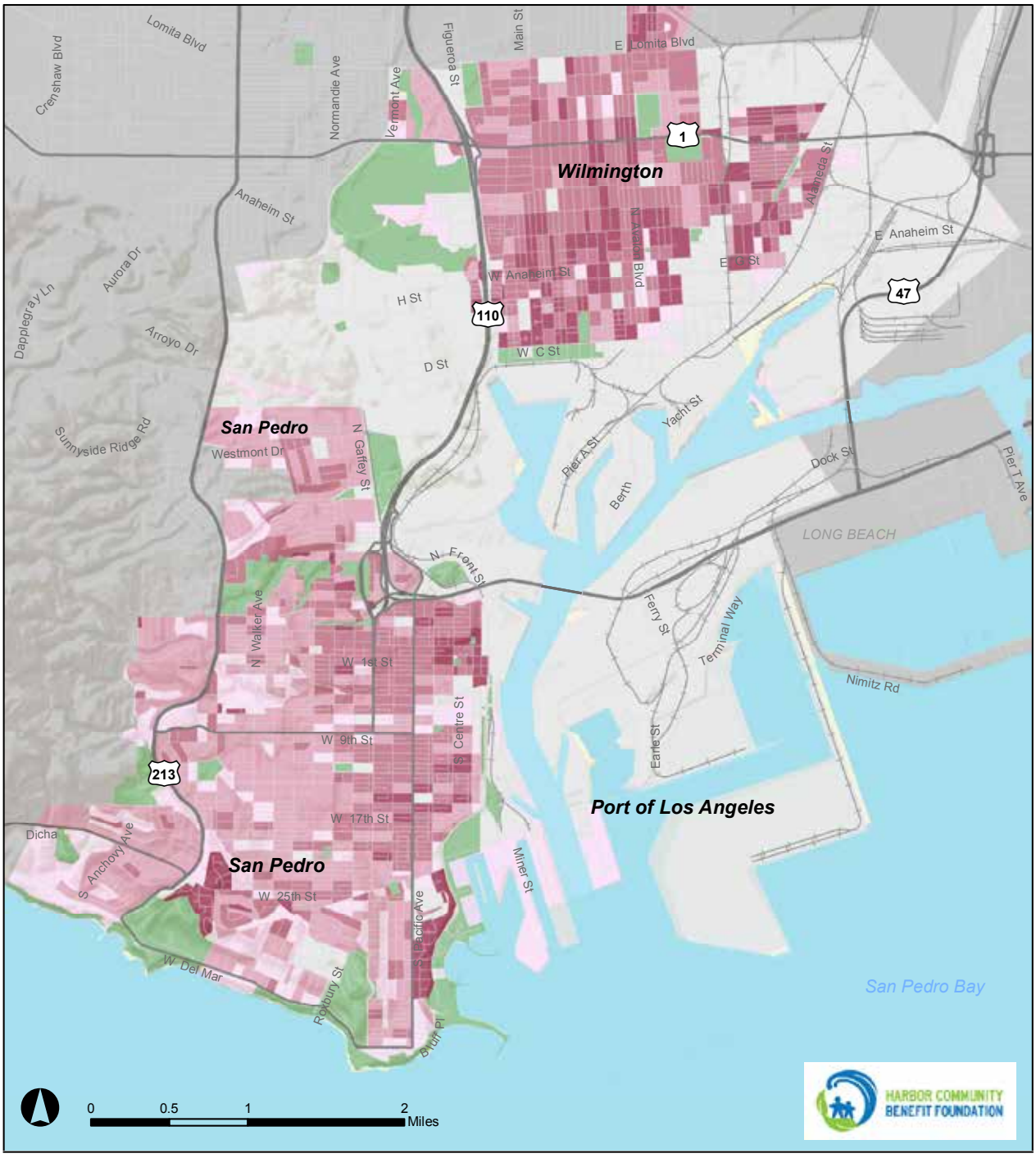
Population Under 5 Years Old
- Under 5%
- 5% to 10%
- 10% to 15%
- Greater than 15%

- Fewer than 20 Residents
- Streets
- Railroad
- Interstates and Highways
- Parks and Recreational Areas
- San Pedro Bay

Produced by Raimi + Associates. January 2016.

Sources: Interstates and Highways; 2008 Tele Atlas North America, Inc.; World Terrain Base, 2009 ESRI; US Census 2010.

Map 7: Percentage of Residents Under 18 Years Old



Legend

- Railroad
- Interstates and Highways
- Streets
- Parks and Recreational Areas
- San Pedro Bay
- Fewer than 20 Residents

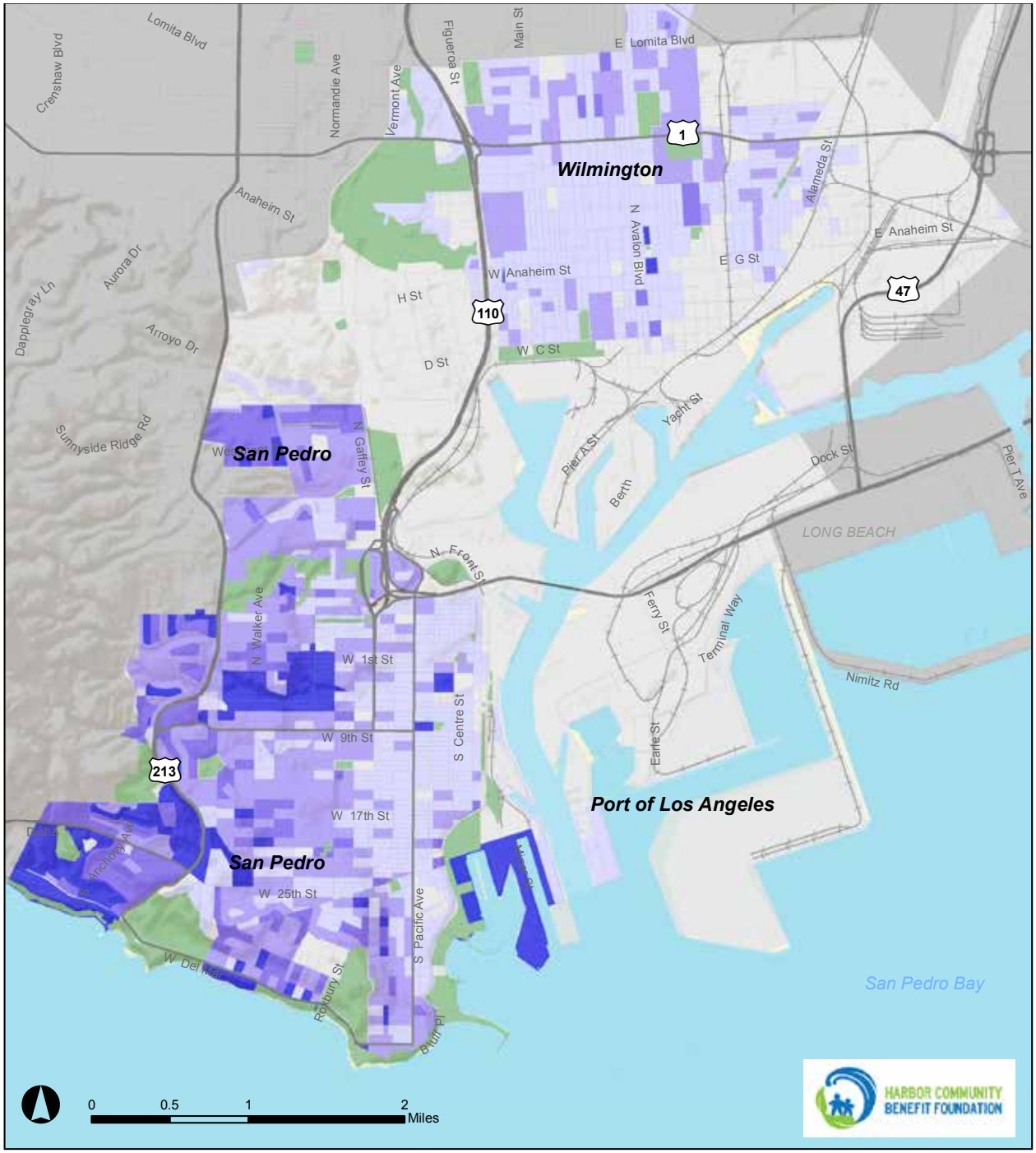
Population Under 18 Years Old

- Under 15%
- 15% to 25%
- 25% to 35%
- Greater than 35%

Produced by Raimi + Associates.
January 2016.

Sources: Interstates and Highways; 2008 Tele Atlas North America, Inc.; World Terrain Base, 2009 ESRI; US Census 2010.

Map 8: Percentage of Residents Over 65 Years Old



Legend

- Streets
- Railroad
- Interstates and Highways
- Parks and Recreational Areas
- San Pedro Bay
- Fewer than 20 Residents

Population Over 65 Years Old

- Under 10%
- 10% to 20%
- 20% to 30%
- Greater than 30%

Produced by Raimi + Associates. January 2016.

Sources: Interstates and Highways; 2008 Tele Atlas North America, Inc.; World Terrain Base, 2009 ESRI; US Census 2010.

RACE AND ETHNICITY

Racial categories in U.S. Census data reflect social definitions of race that are recognized by the United States federal government. These racial categories do not define race biologically, anthropologically, or genetically. In reality, people may identify as one or multiple races. In addition, ethnic categories in U.S. Census data refer to shared cultural practices, regardless of race. The U.S. Census defines ethnicity as "Hispanic/Latino" and "Not Hispanic/Latino." Hispanic or Latino usually refers to persons of Cuban, Mexican, Puerto Rican, South or Central American, or other Spanish culture or origin. The Census considered race and ethnicity as independent and allows individuals to identify as one or multiple races within either ethnic category. For the purposes of our analysis, we define "people of color" as people who identify as either a non-white racial category and/or Hispanic/Latino.

Evidenced-based research concerning environmental justice has demonstrated that communities of color are more likely to be exposed to environmental pollutants and suffer from poor health outcomes due to a range of social and economic factors and stressors that limit their abilities to resist negative outcomes, and conversely, to rebound from adversity.[4,5] These social and health inequities are often persistent. Communities of color face a "triple jeopardy" of disparities.[6] The groups most likely to suffer the worst outcomes from pollution usually have the highest exposures and experience a greater share of the health burden from environmental exposures.[7,8,9] In addition, the cumulative impact of exposures to multiple stressors, including physical pollutants and socioeconomic pressures, magnify the risks that communities of color experience from environmental and hazardous land uses. Neighborhood conditions that contribute to health—such as pollution, housing, and healthy food—are often highly correlated with race.

The racial and ethnic makeup of the study area is similar to the race and ethnicity composition of the County and City of Los Angeles as a whole, but with variation among the subareas (Table 3).

Over 90% of the residents in Wilmington are non-White and/or Hispanic/Latino (see Map 9: Concentration of Residents who are Non-White and/or Hispanic/Latino).

4 Gee GC and Payne-Sturges DC. 2004. Environmental Health Disparities: A Framework Integrating Psychosocial and Environmental Concepts. Environmental Health Perspectives, 112(17), 1645-1653.

5 Morello-Frosch R and Lopez R. 2006. The Riskscape and the Color Line: Examining the Role of Segregation in Environmental Health Disparities. Environmental Research. 102(2): 181- 196.

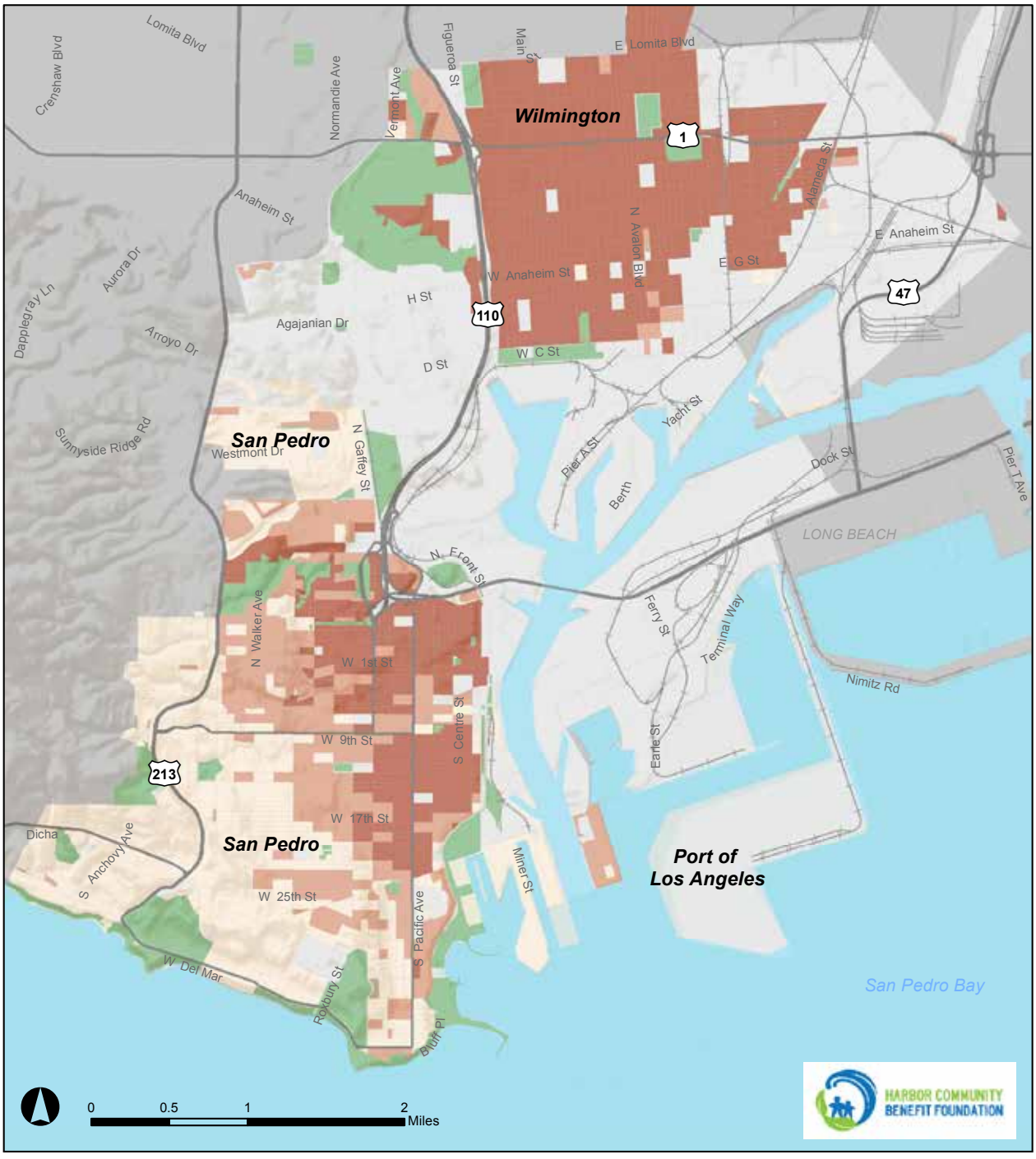
6 Morello-Frosch R. 2009. Synthesizing the Science of Cumulative Impacts: Implications for Policy. Unpublished Presentation. UC Berkeley.

7 O'Neill MS, Jerrett M, Kawachi I, et al. 2003. Health, Wealth, and Air Pollution: Advancing Theory and Methods. Environmental Health Perspectives. 111(16): 1861-1870.

8 Lejano RP and Smith CS. 2006. Incompatible Land Uses and the Topology of Cumulative Risk. Environmental Management. 37(2): 230 - 246.

9 Jerrett M, Gale S, and Kontgis C. 2009. What GIS Tells Us About Environmental and Public Health: Academic Research Synthesis. Using Maps to Promote Health Equity. Available from https://opportunityagenda.org/files/field_file/GIS%20Environmental%20and%20Public%20Health%20-%20Jerrett.pdf.

Map 9: Concentration of Residents who are Non-White and/or Hispanic/Latino



Non-White and/or Hispanic/Latino Population

- Less than 50%
- 50% to 75%
- 75% to 100%
- Fewer than 20 Residents
- Streets
- Railroad
- Interstates and Highways
- Parks and Recreational Areas
- San Pedro Bay

Produced by Raimi + Associates. January 2016.

Sources: Interstates and Highways; 2008 Tele Atlas North America, Inc.; World Terrain Base, 2009 ESRI; US Census 2010.

Table 3: Race and Ethnicity

Locations	Total Pop	Non-White Population		White Population	
		#	%	#	%
County of Los Angeles	9,818,605	7,090,284	72.21%	2,728,321	27.8%
City of Los Angeles	3,792,621	2,705,713	71.3%	1,086,908	28.66%
Study Area	135,327	101,069	74.7%	34,258	25.31%
San Pedro	79,704	48,600	61.0%	31,104	39.02%
Central San Pedro	29,470	23,972	81.3%	5,498	18.66%
Coastal San Pedro	27,132	13,335	49.1%	13,797	50.85%
Northwest San Pedro	21,068	9,844	46.7%	11,224	53.28%
Unincorporated San Pedro	2,034	1,449	71.2%	585	28.76%
Port of Los Angeles	1,035	711	68.7%	324	31.30%
Wilmington	54,588	51,758	94.8%	2,830	5.18%
East Wilmington	12,880	12,541	97.4%	339	2.63%
North Wilmington	13,361	12,048	90.2%	1,313	9.83%
South Wilmington	11,282	10,778	95.5%	504	4.47%
West Wilmington	17,065	16,391	96.1%	674	3.95%

Data source: 2010 U.S. Census Bureau, 2010 Decennial Census

EDUCATIONAL ATTAINMENT AND INCOME

Income is one of the strongest and most consistent predictors of health and disease.[10,11] Research consistently indicates that people with low incomes have a variety of greater health risks than those with higher incomes, such as greater risk of low birth weight babies and increased rates of injuries, violence, and cancer or other chronic conditions.[12] Young children in low-income families are more likely to be exposed to environmental lead and have elevated blood lead levels; low-income African American children have the greatest lead exposure risk.[13] Low-income adults and children in low-income families are more likely to lack health insurance and access to care.[14]

Even after controlling for educational attainment and occupational status, family income is associated with a 3.6 times higher risk of dying prematurely among working-age adults earning less than $15,000 when compared with those earning over $70,000 per year (salaries are reported in 1984 dollars).[15] This relationship follows a gradient: an individual's chance of staying healthy improves with each incremental rise in income. Conversely, earning higher incomes is associated with better health,

10 Yen IH and Syme LS. 1999. The Social Environment and Health: A Discussion of the Epidemiologic Literature. Annual Review of Public Health, 20(287-308).

11 Bhatia R and Katz M. 2001. Estimation of Health Benefits from a Local Living Wage Ordinance American Journal of Public Health, 91(9), 1398-1402.

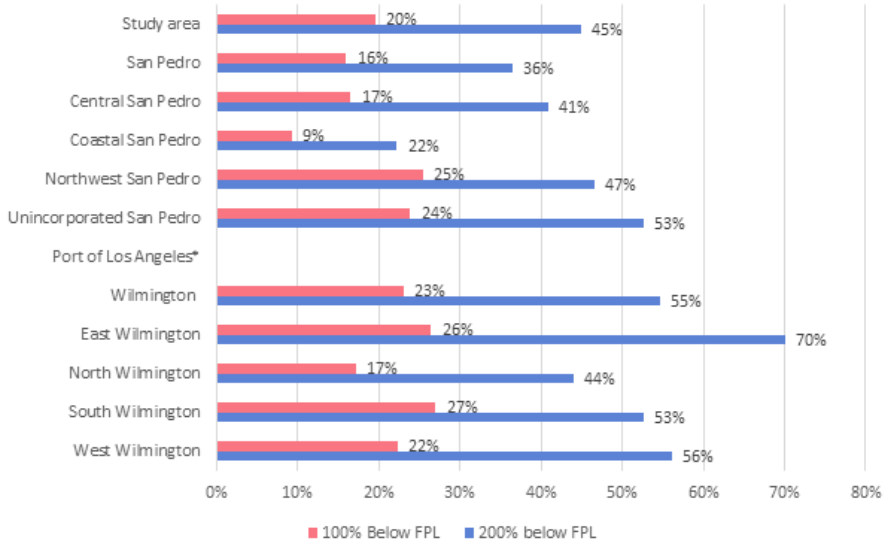
12 Yen IH and Syme LS. 1999. The Social Environment and Health: A Discussion of the Epidemiologic Literature. Annual Review of Public Health, 20(287-308).

13 Centers for Disease Control and Prevention. 1998. Health in America Tied to Income and Education. Available from http://www.cdc.gov/nchs/pressroom/98news/hus-pr98.htm.

14 Centers for Disease Control and Prevention. 1998. Health in America Tied to Income and Education. Available from http://www.cdc.gov/nchs/pressroom/98news/hus-pr98.htm.

15 Institute of Medicine of the National Academies. 2006. Genes, Behavior, and the Social Environment: Moving Beyond the Nature/ Nurture Debate. Available from http://orsted.nap.edu/openbook.php?record_id=11693&page=25.

Figure 2: Population with Annual Household Income Below 100% and 200% of Federal Poverty Level



** No estimate is available for the Port of Los Angeles neighborhood due to the small population size.*
Data source: U.S. Census Bureau, 2010 – 2014 American Survey 5-Year Estimates

improved nutrition, and longer lives.[16] Individuals and families with stable, comfortable incomes have jobs that are more likely to provide health insurance. In addition, they are more likely to be able to afford to pay for health care, may have access to better schools, may learn more health-supporting behaviors, and may have more time for leisure and a low-stress lifestyle.

Figure 2 displays the federal poverty levels (FPLs) below 100% and 200% of household incomes for the study area and the neighborhoods. In 2014, the FPL for a family of four people was $23,850. However, health care researchers have suggested that, on average, most families require income twice that of the 100% FPL to afford the necessities.[17] Therefore, the number and percentage of people below 200% of the FPL, or $47,700, may be a more accurate reflection of economic hardship.[18]

Overall, 45% of the study area population are below 200% of the FPL. Within San Pedro, 25% and 47% of Northwest San Pedro are below 100% and 200% of the FPL, respectively. In Unincorporated San Pedro, 53% of residents are below 200% of the FPL. Many of these residents are hospitalized or live within the skilled nursing facility. Coastal San Pedro has the lowest percentage of households below 200% of poverty (22%) in the study area.

In Wilmington as a whole, over half (55%) of residents are below 200% of the FPL. East Wilmington residents are more likely to live in poverty: 70% of residents are below 200% of the FPL. Poverty also greatly affects other areas in Wilmington, such as West Wilmington (56%) and South Wilmington (53%). For further information, please refer to Map 10: Concentrated Poverty: Percent of Residents Below 100% of Federal Poverty Level and Map 11: Concentrated Poverty: Percent of Residents Below 200% of Federal Poverty Rate.

Completing major educational milestones, such

16 Institute of Medicine of the National Academies. 2006. Genes, Behavior, and the Social Environment: Moving Beyond the Nature/ Nurture Debate. Available from http://orsted.nap.edu/openbook.php?record_id=11693&page=25.

17 Greenberg M. 2009. It's Time for a Better Poverty Measure. Center for American Progress. Available at https://cdn.americanprogress.org/wp-content/uploads/issues/2009/08/pdf/better_poverty_measure.pdf.

18 Additional research suggests that even 200% FPL may even be too low as estimate. The annual income needed for self-sufficiency – which is the amount of income necessary to meet basic needs without public or private subsidies or assistance - in Los Angeles County was calculated over $72,000 for a family of four per the County of Los Angeles' Community Health Assessment (two adults, one preschooler, and one school age child).

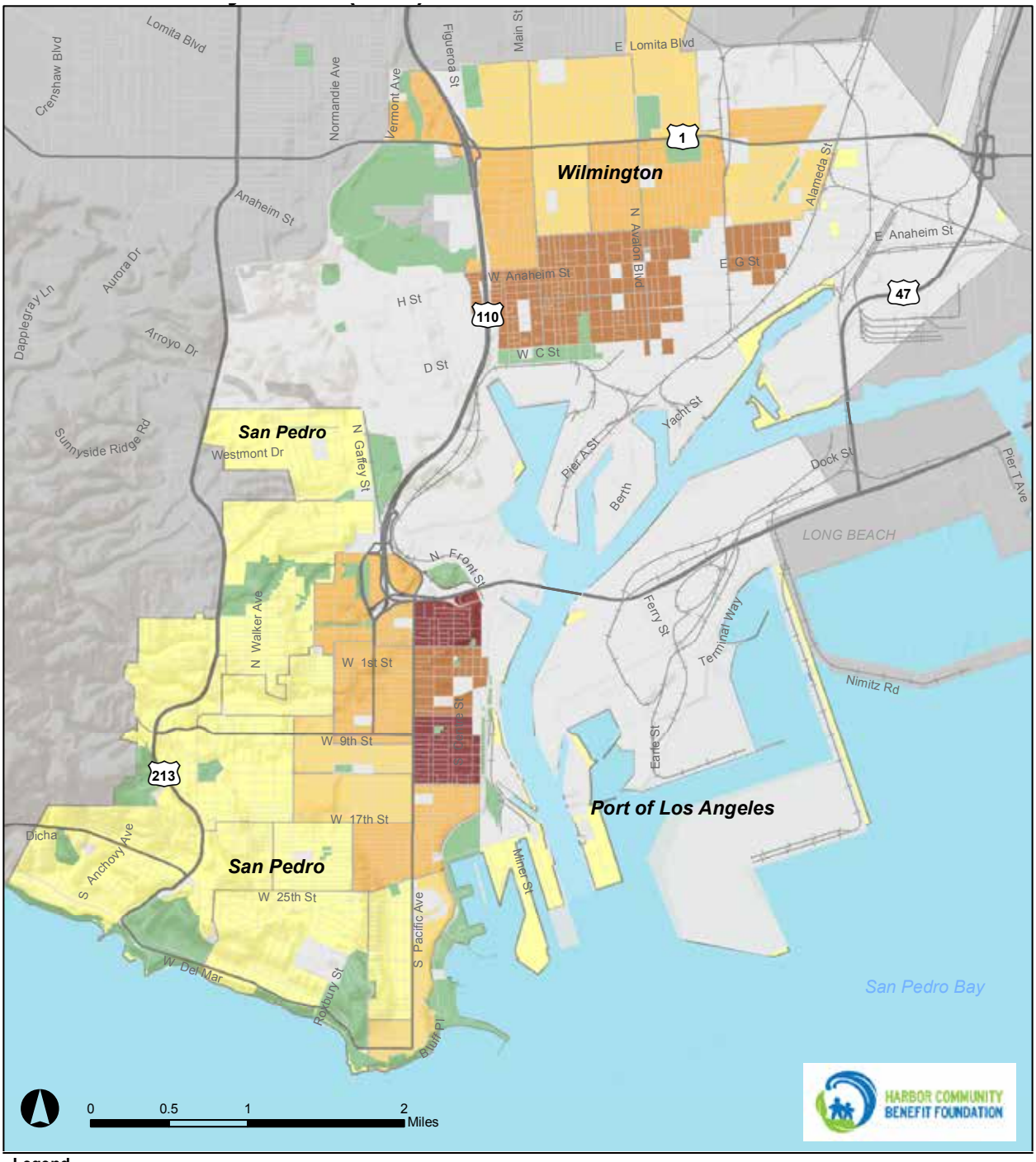
as graduating from high school, has numerous economic and health benefits: higher incomes, better working conditions, better health management (nutrition, exercise, substance abuse), reduced overall stress, and greater access to social and economic resources. Higher levels of educational attainment are usually positively associated with income. Conversely, lack of education correlates with greater negative health risks. Research indicates that individuals with less than a high school education who were exposed to particulate matter experienced a 2.7 times higher risk of lung cancer mortality when compared to people with higher educational attainment.[19]

Educational attainment refers to the highest level of education that a person has completed. Figure 3 highlights the percentage of residents who have and have not completed high school in the study area and corresponding neighborhoods. Compared to the City of Los Angeles, residents in the study area have a lower rate of high school graduation. East Wilmington has the lowest high school completion rate at 51%, followed by West Wilmington at 54%, and South Wilmington at 63%. Central, Coastal, and

Northwest San Pedro's high school completion rate is higher than the study area average of 71%. Refer to Map 12: Percentage of Residents Over 25 Who Did Not Complete High School.

19 Health Effects Institute. 2000. Reanalysis of the Harvard Six Cities Study and the American Cancer Society Study of Particulate Air Pollution and Mortality. Special Report. Available January, 2010, from http://pubs.healtheffects.org/view.php?id=6.

Map 10: Concentrated Poverty: Percent of Residents Below 100% of Federal Poverty Level



Legend

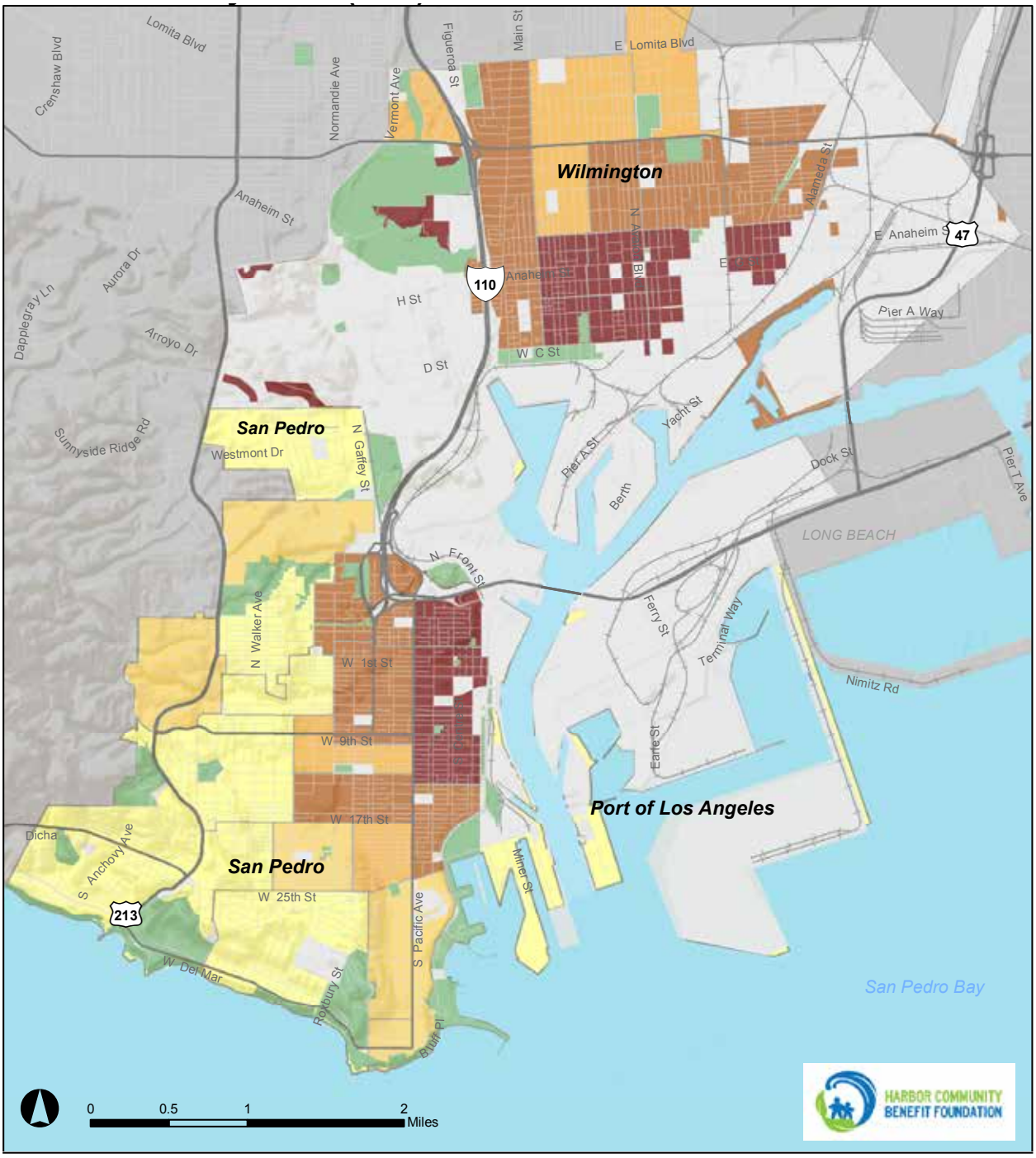
Population Below 100% FPL
- Under 10%
- 10% to 20%
- 20% to 30%
- 30% to 40%
- Above 40%
- Fewer than 20 Residents
- Railroad
- Interstates and Highways
- Streets
- Parks and Recreational Areas
- San Pedro Bay

Note: In 2010, the Federal Poverty Line for a family of four was $22,050.

Produced by Raimi + Associates. January 2016.

Sources: Interstates and Highways; 2008 Tele Atlas North America, Inc.; World Terrain Base, 2009 ESRI; US Census 2010.

Map 11: Concentrated Poverty: Percent of Residents Below 200% of Federal Poverty Rate



Legend

Population Below 200% FPL
- Less than 20%
- 20% to 35%
- 35% to 50%
- 50% to 65%
- Greater than 65%

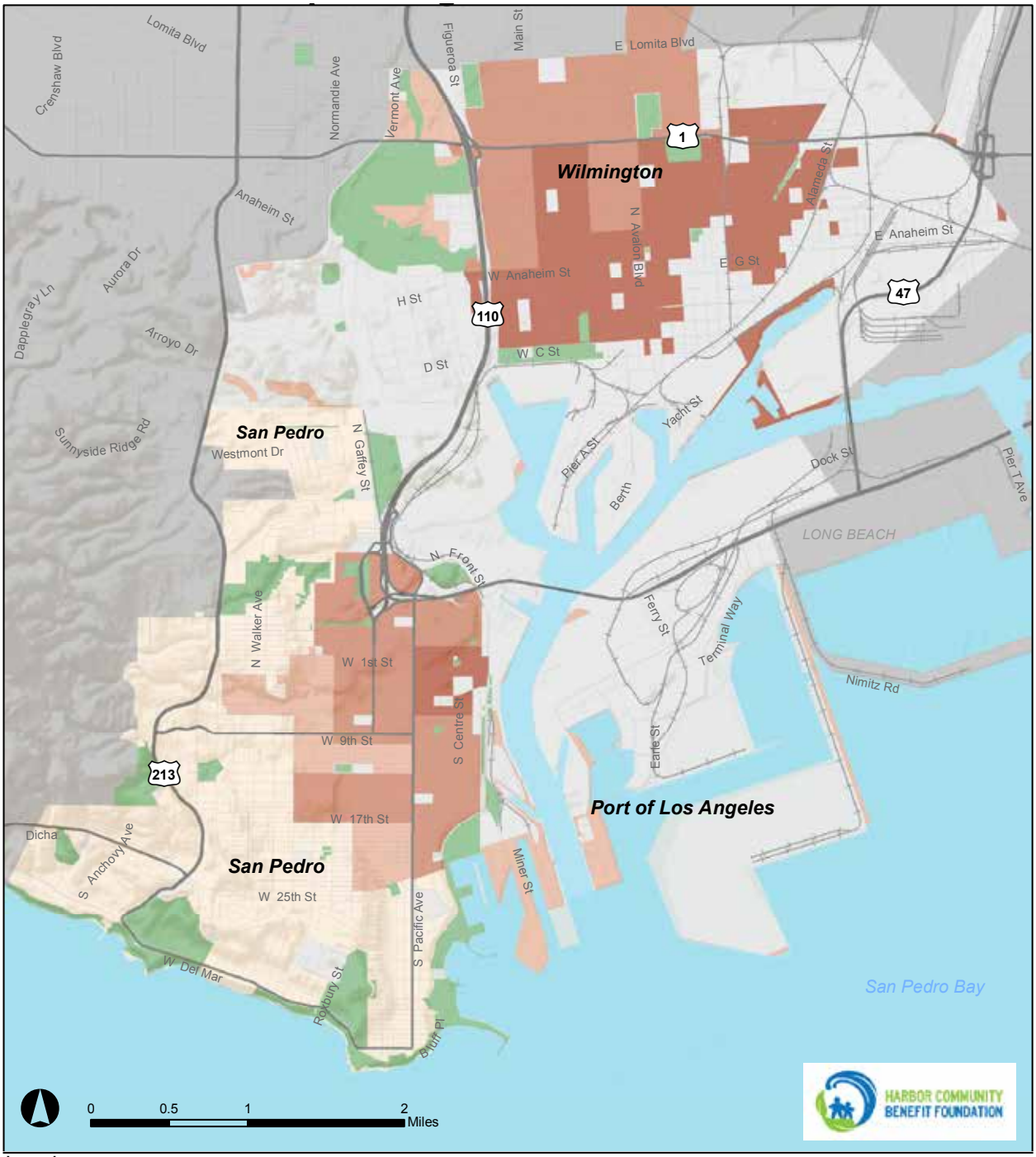
- Fewer than 20 Residents
- Railroad
- Interstates and Highways
- Streets
- Parks and Recreational Areas
- San Pedro Bay

Note: In 2010, the Federal Poverty Line for a family of four was $22,050.

Produced by Raimi + Associates. January 2016.

Sources: Interstates and Highways; 2008 Tele Atlas North America, Inc.; World Terrain Base, 2009 ESRI; US Census 2010.

Map 12: Percentage of Residents Over 25 Who Did Not Complete High School



Legend

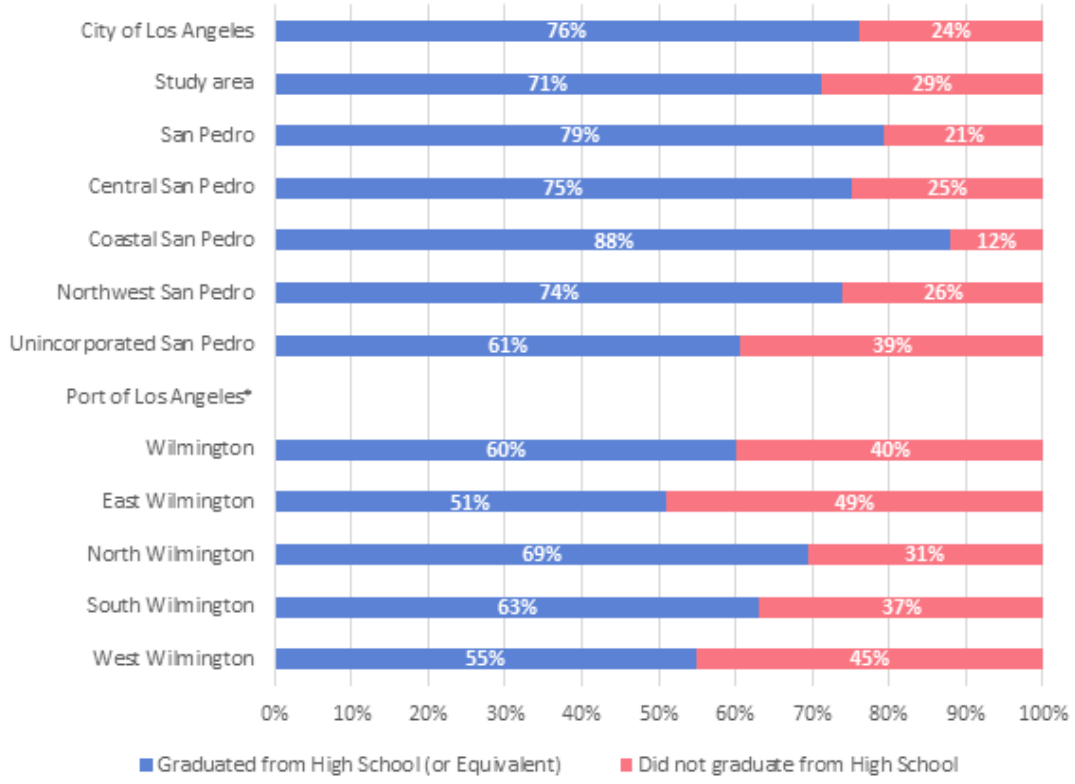
Residents Over 25 without High School Degree
- Less than 15%
- 15% to 30%
- 30% to 45%
- Greater than 45%

- Fewer than 20 Residents
- Streets
- Railroad
- Interstates and Highways
- Parks and Recreational Areas
- San Pedro Bay

Produced by Raimi + Associates.
January 2016.

Sources: Interstates and Highways; 2008 Tele Atlas North America, Inc.; World Terrain Base, 2009 ESRI; US Census, 2010.

Figure 3: Educational Attainment

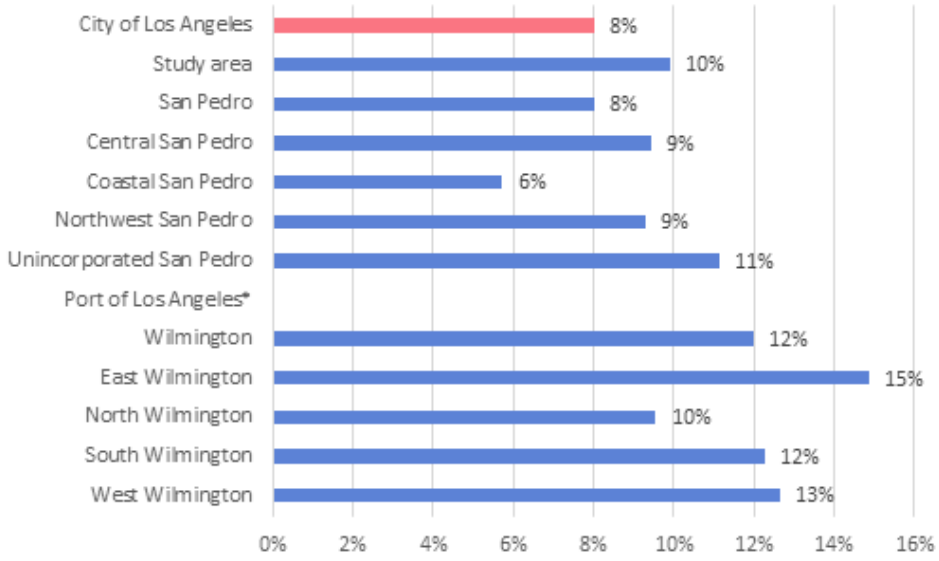


** No estimate is available for the Port of Los Angeles neighborhood due to the small population size.*

Data source: High school graduation rates of population 25 years and older; U.S. Census Bureau, 2010 – 2014 American Survey 5-Year Estimates

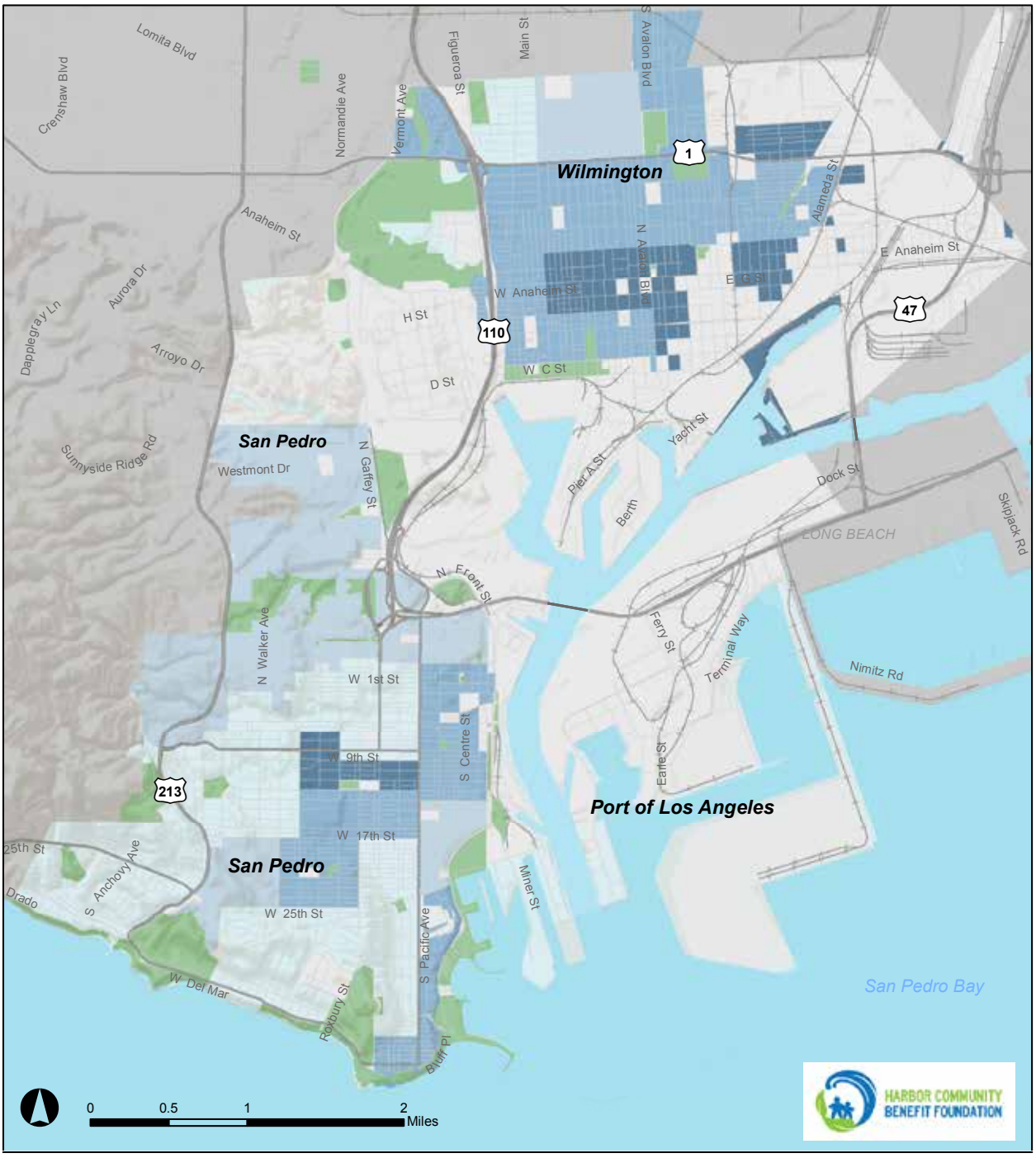
Figure 4 shows the unemployment rates among workers 16 years and older in the study area. Unemployment rates are higher in the study area compared with the City of Los Angeles. Parts of the study area show a substantially higher unemployment rate, such as East, West, and South Wilmington. Coastal San Pedro has the lowest unemployment rate at 5.7%, which is roughly half that of the study area as a whole (9.9%). Refer to Map 13: Percentage of Unemployed Workers Age 16 and Older.

Figure 4: Unemployment Rate



** No estimate is available for the Port of Los Angeles sub area due to the small population size. Data source: Unemployment rate of workers 16 years and older; U.S. Census Bureau, 2010 – 2014 American Survey 5-Year Estimates*

Map 13: Percentage of Unemployed Workers Age 16 and Older



Legend

Unemployed Workers 16 Years and Older

- Under 5%
- 5% to 10%
- 10% to 15%
- Greater than 15%
- Fewer than 20 Residents
- Railroad
- Interstates and Highways
- Parks and Recreational Areas
- San Pedro Bay

Produced by Raimi + Associates.
January 2016.

Sources: Interstates and Highways; 2008 Tele Atlas North America, Inc.; World Terrain Base, 2009 ESRI; US Census, 2010.

2. ROAD & RAIL MOBILITY, SAFETY, & INFRASTRUCTURE

ROAD & RAIL MOBILITY, SAFETY, & INFRASTRUCTURE

OVERVIEW

Port operations rely heavily on truck and rail mobility throughout the study area. Both freight trucks and trains that haul containers and other materials in and out of the Port of Los Angeles can cause or contribute to several localized environmental, health, and safety impacts in San Pedro and Wilmington. The following sections describe the impacts of trucks and rail on walkability, injuries, noise, and safety in the study area.

The volume of truck and train movement in the study area is significant. On a typical weekday, approximately 10,000 individual trucks travel through the study area, principally along the 110 and 710 freeways and CA-47.1,2 An average of 34 trains travel daily along the Alameda Corridor, the primary railroad corridor connecting the Ports of Los Angeles and Long Beach to downtown Los Angeles 20 miles to the north. This equates to approximately 1,020 trains per month moving through the study area on their way to and from the Port of Los Angeles.

1 California Air Resources Board. 2006. Evaluation of Port Trucks and Possible Mitigation Strategies. Available at https://www.arb.ca.gov/msprog/onroad/porttruck/fullrpt.pdf.

2 Caltrans. 2014. Truck Traffic: Annual Average Daily Truck Traffic. Available at http://www.dot.ca.gov/trafficops/census/.

To understand the nexus between the Port of Los Angeles and the impacts that truck and train movement have in Wilmington and San Pedro, this chapter contains three sections that explore the following research questions:

INDUSTRIAL LAND USE IMPACTS ON WALKABILITY

- Do industrial/manufacturing uses impair walkability?

TRUCK VOLUMES, TRUCK COLLISIONS, AND VEHICLE COLLISIONS

- What street segments have the highest incidence of vehicle collisions?
- Where do truck-involved collisions occur?

AT-GRADE RAILROAD CROSSINGS AND RAIL IMPACTS

- What are the locations of at-grade railroad crossings?
- What are the safety issues/collisions at the at-grade railroad crossings?
- Are any schools near at-grade railroad crossings?

INDUSTRIAL LAND USE IMPACTS ON WALKABILITY

CONTEXT

Walkability is a measure of the effectiveness of community design and environment in encouraging people to walk instead of driving personal vehicles to reach shopping, schools, and other common destinations. Walkability has numerous benefits, such as improved health, increased environmental sustainability, financial benefits, and social cohesion.

- **HEALTH:** Walkability supports more physical activity. The average resident of a walkable neighborhood weighs 6 to 10 pounds less than someone who lives in a sprawling neighborhood. Cities with good public transit and access to amenities promote emotional wellbeing.
- **ENVIRONMENT:** Increased walking as a means of transportation reduces the number of miles traveled in an automobile, which results in decreased emissions of greenhouse gases and other pollutants.
- **FINANCES:** Walkable communities allow pedestrians to save money on car ownership, maintenance, and gas. Additionally, walkable neighborhoods have higher property values.[3,4]
- **SOCIAL AND COMMUNITY:** Commuting by car is negatively correlated with participation in community activities. Driving can also increase stress levels.[5]

In addition to affecting walkability, the proliferation of industrial uses can also affect bikeability. Both walking and bicycling produce health and economic benefits. Walking and bicycling are relatively inexpensive modes of travel. They also decrease health care costs by increasing physical activity and improving overall health.[6] The San Francisco Department of Public Health evaluated the walkability and bikeability literature to create the Pedestrian Environmental Quality Index and the Bicycle Environmental Quality Index. Table 4 below lists some of the evidence-based factors that influence pedestrian and bicyclist comfort and safety.

In addition to the more easily quantifiable items in the table below, another urban design factor that can affect walkability is whether surrounding land uses present a welcoming aspect to the street/sidewalk. Streets with multiple vibrant and active retail uses per block are ideal. Conversely, big traditional box stores or industrial uses, comprised of large masonry expanses with no doors or windows generally do not support an area's walkability.

3 SCAG. *RTP / SCS. Appendix: Plan Performance - Public Health Performance. Draft December 2015.* http://scagrtpscs.net/Documents/2016/draft/d2016RTPSCS_PublicHealth.pdf

4 Litman TA. 2014. *Economic Value of Walkability. Victoria Transport Policy Institute.* http://www.vtpi.org/walkability.pdf

5 Walkable Neighborhoods. 2016. WalkScore. Available at https://www.walkscore.com/walkable-neighborhoods.shtml.

6 Southern California Association of Governments. 2016. Active Transportation: Health and Economic Impact Study. Available at http://www.scag.ca.gov/programs/Documents/AT-HealthImpactStudy/2016ATHealthEconomicImpactStudy_REPORT.pdf.

Table 4: Indicators of Pedestrian and Bicyclist Comfort and Security

Indicators of Pedestrian and Bicyclist Comfort and Security					
	Intersection Safety	Traffic Volume	Street Design	Land Use	Perceived Safety
Pedestrians	• Crosswalks • High visibility crosswalk • Intersection lighting • Traffic control • Pedestrian/ Countdown signal • Wait time • Crossing speed • Pedestrian refuge island • Curb ramps • Intersection traffic calming features • Pedestrian engineering countermeasures	• Number of vehicle lanes • Posted speed limit • Traffic volume • Street traffic calming features	• Continuous sidewalk • Width of sidewalk • Width of throughway • Large sidewalk obstructions • Sidewalk impediments • Trees • Driveway cuts • Presence of a buffer • Planters/gardens	• Public seating • Public art/ historic sites • Retail use and public places	• Pedestrian-scale lighting • Illegal graffiti • Litter • Empty spaces • Visibility and line of site
Bicyclists	• Dashed intersection bicycle lane • No turn on red signs • Bicycle pavement treatment and amenities	• Number of vehicle lanes • Vehicle speed • Traffic calming features • Parallel parking adjacent to bicycle lane/ route • Traffic volume • Percentage of heavy vehicles	• Presence of marked area for bicycle traffic • Width of bicycle lane • Trees • Connectivity of marked bicycle network • Pavement condition • Driveway cuts • Street grade	• Presence of street lighting • Presence of bicycle lane or shared roadway signs (sharrows)	• Line of site • Bicycle parking • Retail use

Adapted from: Program on Health, Equity, and Sustainability. San Francisco Department of Public Health. Available at http://www.sfhealthequity.org/

Image 2: Street Maps at the Same Scale

Source: Allan B. Jacobs, *Great Streets*, MIT Press, Cambridge, MA, 1993, pp. 221, 225, 249. Reprinted in Reid Ewing, *Pedestrian and Transit-Friendly Design: A Primer for Smart Growth*, Smart Growth Network, August 1999, p. 4. <http://www.epa.gov/dced/pdf/pdfd_primer.pdf>

Academic studies have documented positive correlations between walkability and street connectivity.[7] Researchers can measure street connectivity using intersection density (i.e., number of intersections per square mile) or its corollary, block size (i.e., block length or perimeter in linear feet). Image 2 shows street maps at the same scale from Venice, Italy; Los Angeles, CA; and Irvine, CA. In Venice, a famously walkable city, the block lengths are very short, providing countless pedestrian routes to get from point A to B. The Los Angeles section shows a mostly connected grid with some occasional barriers (freeway ramps and dead ends). The Irvine section shows very large blocks that offer limited pedestrian route options.

The U.S. Green Building Council's LEED for Neighborhood Development Rating System states that walkable blocks should be 400 linear feet or shorter to maximize for intersection density and route possibilities. Among urban planning professionals, block length/perimeter is a useful indicator to simply assess physical walkability.

NEXUS BETWEEN THE PORT OF LOS ANGELES AND INDUSTRIAL LAND USE IMPACTS ON WALKABILITY

Figure 5 depicts the plausible causal pathway describing how the footprint of and activity from industrial and manufacturing land uses impact walkability in Wilmington and San Pedro. The study area is adjacent to the Port and includes numerous parcels that are zoned and function as industrial and/or manufacturing uses. These parcels are more likely to take up an entire block or create superblocks that disrupt the street grid, which reduces intersection density and limits pedestrian routes and ease of wayfinding. These industrial and manufacturing uses also create unpleasant externalities for pedestrians, such as unattractive or walled-off businesses, air pollution, and other safety hazards, unpleasant odors, and noise.

Industrial and manufacturing land uses can negatively affect health through increased exposure to air pollution and other hazards. The lack of safe places to cross and unpleasant walking environment can deter residents from walking or bicycling instead of driving. Finally, industrial and manufacturing uses attract truck traffic in the study area between the Port of Los Angeles and other destinations. Some study area corridors are lined with parked trucks, which block or reduce visibility for drivers to see pedestrians and for pedestrians to see vehicles, neighbors, and businesses. These could increase the risk of a pedestrian-vehicle collision and/or decrease a pedestrian's sense of real and perceived safety and their willingness to walk.

7 Frank LD, Sallis JF, Conway TL, et al. 2006. Many Pathways from Land Use to Health. Journal of the American Planning Association. 72(1): 75 – 87.

Figure 5: Pathway Diagram of Industrial Land Use Impacts on Walkability

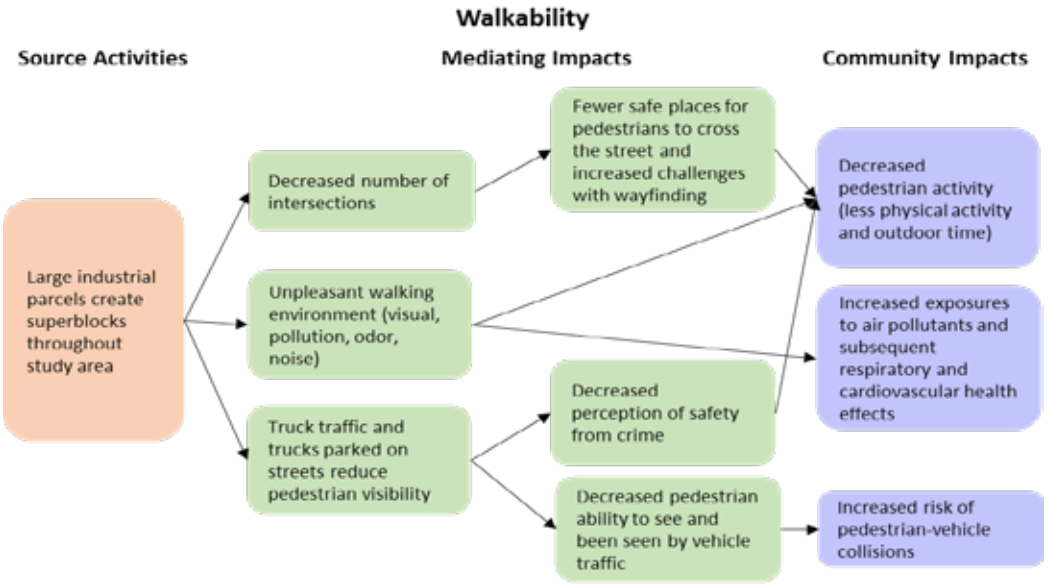


Table 5 uses nine criteria to assess the nexus between walkability and industrial land uses in the study area.

Table 5: Nexus Criteria for Industrial Land Use Impacts on Walkability

Nexus Criteria for Industrial Land Use Impacts on Walkability		
Criteria	**Yes, No, Possibly, Unsure, N/A**	**Notes**
1. Is the source an established Port or Port-serving land use or activity?	Yes	Parcels zoned industrial and manufacturing in this area are most likely directly or indirectly Port-serving businesses
2. Is the impact a direct result of the Port or Port-serving land use or activity?	Yes	The large parcels disrupt the street grid and environmental quality. The industrial and manufacturing uses increase truck activity
3. Is the impact an indirect result of the Port or Port-serving land use or activity?	Yes	Pedestrian routes are limited
4. Is the causal pathway logical and plausible?	Yes	Individual components of this pathway are well documented
5. Is there generalizable empirical evidence to support the causal pathway?	Yes	
6. Is there a distance-based relationship to Port or Port-serving use or activity?	Yes	Along rail and truck routes leading to Port
7. Is there a temporal-based relationship to Port development in the study area?	No and Yes	No - the current street grid is very similar to the 1938 map Yes - there are an increased number of large trucks traveling through the neighborhoods to go to these large parcels
8. Is there a disproportionate burden/impact relative to the city/region?	N/A	Did not analyze
9. Is there local qualitative evidence to support the pathway?	Yes	Including stories that this lengthens children's walking routes to schools

RESEARCH QUESTIONS AND METHODOLOGY

This section explores the relationship between walkability and Port-related land uses. It specifically examines the following research question: Are blocks with industrial or manufacturing land uses more likely to have a larger block perimeter, and thus decreased neighborhood walkability, when compared to non-industrial or manufacturing blocks?

As a proxy for walkability, we used ArcGIS to calculate block perimeter length using Census block boundaries. We then grouped each block into one of four categories:

A. Less than 1,600 feet (Highest level of walkability based on block perimeter length)

B. 1,600 to 2,400 feet

C. 2,400 to 4,000 feet

D. Greater than 4,000 feet (Lowest level of walkability based on block perimeter length)

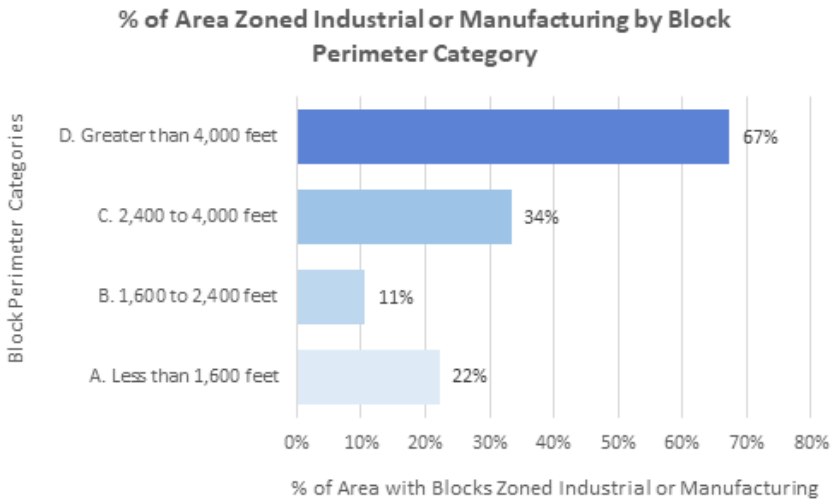
To represent Port-or Port-related uses, we selected any blocks that contained parcels zoned industrial or manufacturing (outlined in red on Map 14: Walkability Impacts of Industrial Land Uses).

FINDINGS

We assigned a color gradient to the Walkability Impacts of Industrial Land Uses based on each block's perimeter in linear feet. The lightest color yellow highlights the blocks with perimeters of 1,600 feet or less (an average of 400 feet per block), which is considered very walkable. Most blocks in the study area have perimeters between 1,600 and 2,400 feet, or an average block length of 400 to 600 square feet, which is considered moderately good walkability. Very large commercial and industrial parcels frequently bisect the blocks in the study area, which disrupts the otherwise walkable street grid. This is especially prevalent in Wilmington's residential neighborhoods. The area far west of San Pedro has poor walkability due to the hilly topography of the area and the large size of some of the parcels.

We outline blocks that contains one or more parcels zoned industrial or manufacturing in red on the walkability map. Figure 6 shows the percentage of area with industrial or manufacturing zoning by block perimeter category. For example, two-thirds (67%) of the area in blocks that have greater than 4,000 feet perimeter is zoned industrial or manufacturing. Conversely, only 22% of the area in blocks with perimeters that are less than 1,600 feet and only 11% of the area in blocks with perimeters between 1,600 and 2,400 feet contain industrial or manufacturing uses. Thus, large blocks tend to contain more industrial uses.

Figure 6: Percent of Area Zoned Industrial or Manufacturing by Block Perimeter Category

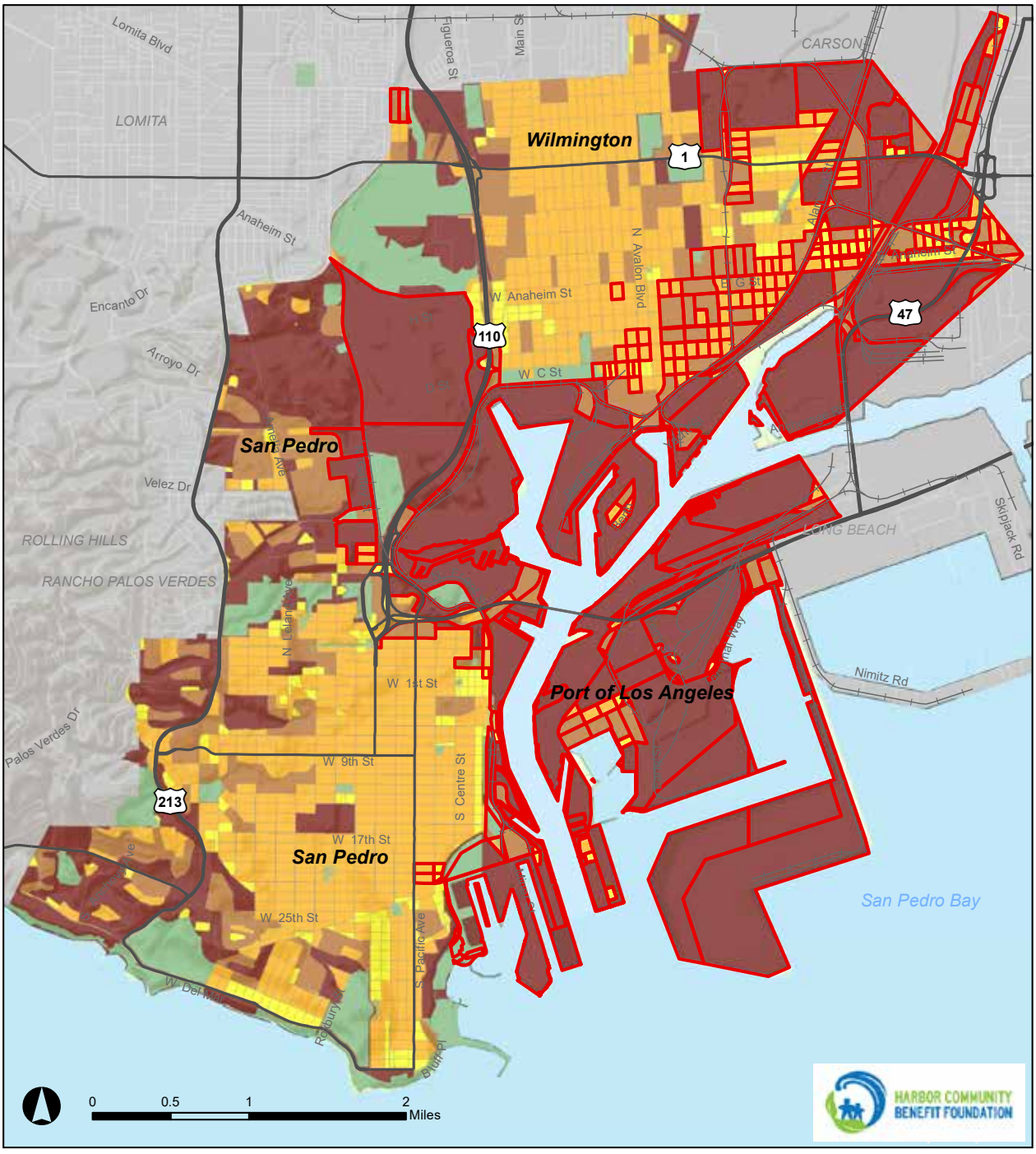


Data sources: Zoning data, 2015 City of Los Angeles Department of City Planning; Block boundaries, 2010 U.S. Census Bureau

Figure 7 shows the average block perimeter by neighborhood. Across all neighborhoods, industrial or manufacturing blocks have almost twice the perimeter of non-industrial or manufacturing blocks. Other than the Port of Los Angeles, the largest difference occurs in Northwest San Pedro, where many industrial or manufacturing blocks have 2.5 times the perimeter of the non-industrial or manufacturing blocks. Coastal San Pedro also shows similar significant division.

Image 3: Disconnected pedestrian pathway in San Pedro. Photo source: HCBF, 2017.

Map 14: Walkability Impacts of Industrial Land Uses



Block Perimeter (linear feet)

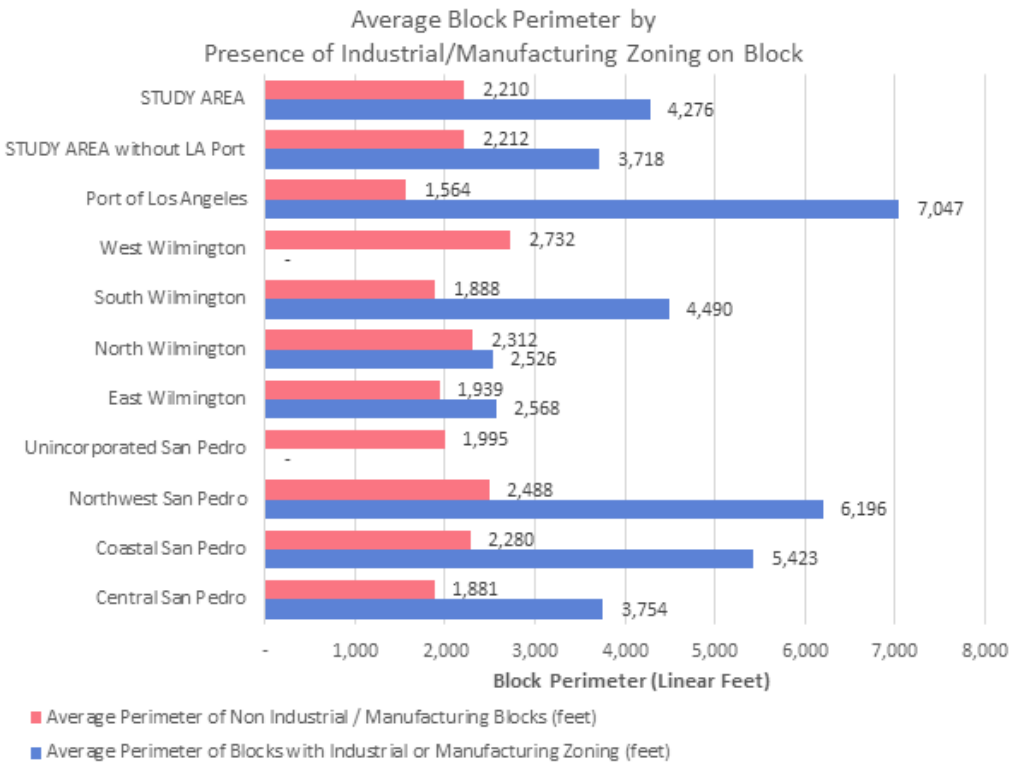
- Less than 1,600 feet
- 1,600 to 2,400 feet
- 2,400 to 4,000 feet
- Greater than 4,000 feet
- Parks and Recreational Areas
- Interstates and Highways
- Streets
- Railroads
- Blocks with Industrial or Manufacturing Zoning

According to the US Green Building Council's LEED for Neighborhood Development Rating System, walkable blocks should be 400 linear feet or shorter. This analysis defines a walkable block as having a perimeter of 1,600 feet or less (400'x4 blocks).

Produced by Raimi + Associates, October 2016.

Data Sources: City of Los Angeles, Zoning 2015; Interstates and Highways, 2008 Tele Atlas North America, Inc.; World Terrain Base, 2009 ESRI, US Census.

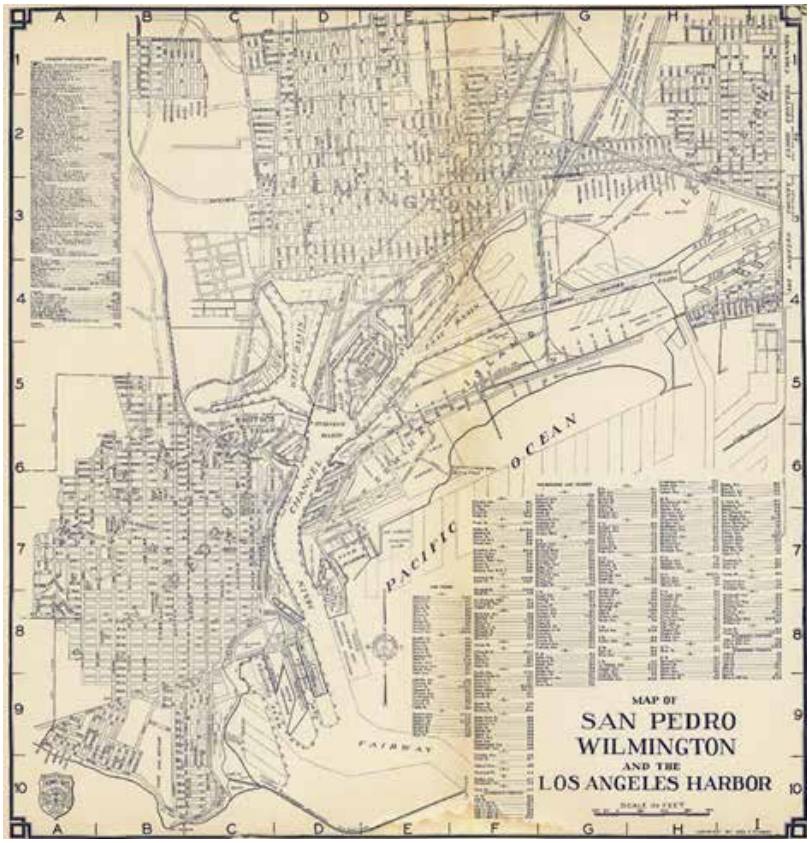
Figure 7: Average Block Perimeter by Presence of Industrial/Manufacturing Zoning on Block



Data sources: Zoning data, 2015 City of Los Angeles Department of City Planning; Block boundaries, 2010 U.S. Census Bureau

While most of the nexus criteria information can stand on its own, item 7 asks if there is a temporal-based relationship between Port development and the study area. As evidenced in Image 4, the street grid from 1938 is similar to the street grid today. Very large superblocks that exist today also existed in 1938. Over time, the number and size of trucks that pass through the study area and the number of smaller Port-related businesses in the study area have greatly increased. These changes constitute a temporal-based relationship between industrial/manufacturing uses and walkability.

Image 4: 1938 Map of San Pedro, Wilmington, and the Los Angeles Harbor, California



Source: Thomas Brothers. 1938. David Rumsey Historical Map Collection. Available at http://www.davidrumsey.com/luna/servlet/detail/RUMSEY~8~1~248678~5515995:Map-of-San-Pedro,-Wilmington-and-th#

DATA SOURCES

Table 6 below identifies the data sources used in the analysis of the impact of industrial and manufacturing land uses on walkability in the study area.

Table 6: Data Sources for Analysis of Industrial and Manufacturing Land Uses on Walkability

Data	Year	Description	Source
Block perimeters	2010	Block boundaries used in the calculation of block perimeter lengths	U.S. Census blocks, 2010
Zoning	2015	Parcels zoned industrial or manufacturing	City of Los Angeles, Department of City Planning

TRUCK VOLUMES, TRUCK COLLISIONS, AND VEHICLE COLLISIONS

CONTEXT

Trucks play an important role in moving goods and materials in and out of the Port of Los Angeles. An estimated 16,000 trucks operate in the Port of Los Angeles.[8] The connections between the presence and concentration of truck traffic and health effects have been well-documented.[9] While poor air quality and noise are commonly cited issues of Port and Port-related truck traffic, we could not find existing research that documents the impacts of truck traffic on collision frequency and severity in the study area. Truck traffic and trucks parked on roadways impact community health and wellbeing by reducing visibility on the street, which can result in increased collisions. Trucks moving through the study area can also increase damage to street infrastructure (i.e., pot holes and uneven pavement) by increasing the wear and tear of roadways. Truck movement is a major concern for community residents. This section examines truck volumes, truck collisions, and vehicle collisions in the study area.

NEXUS BETWEEN THE PORT OF LOS ANGELES AND TRUCK VOLUMES, TRUCK COLLISIONS, AND VEHICLE COLLISIONS

Figure 8 below depicts a possible causal pathway describing how Port and Port-related operations impact truck volumes, truck collisions, and vehicle collisions. Air quality impacts from truck traffic have been well studied. Increased truck volume in the area can also lead to increased collisions and decreased willingness to walk or bike in the study area by impacting actual and perceived public safety. Trucks parked along streets also decreases the comfort of pedestrians by decreasing "eyes on the street," or the ability of pedestrians to see and be seen by others nearby. "Eyes on the street" create natural surveillance that can increase the comfort of pedestrians and other users of the roadway.

8 Port of Los Angeles. 2016. Port of Los Angeles – Clean Truck Program – Gate Move Data Analysis: Report Period: 7/1/16 – 7/31/16. Available from https://www.portoflosangeles.org/ctp/ctp_Cargo_Move_Analysis.pdf.

9 Health Effects Institute Panel on the Health Effects of Traffic-Related Air Pollution. 2010. Traffic-Related Air Pollution: A Critical Review of the Literature on Emissions, Exposure, and Health Effects. Available from http://pubs.healtheffects.org/view.php?id=334.

Figure 8: Pathway Diagram of Impacts of Truck Volumes, Truck Collisions, and Vehicle Collisions

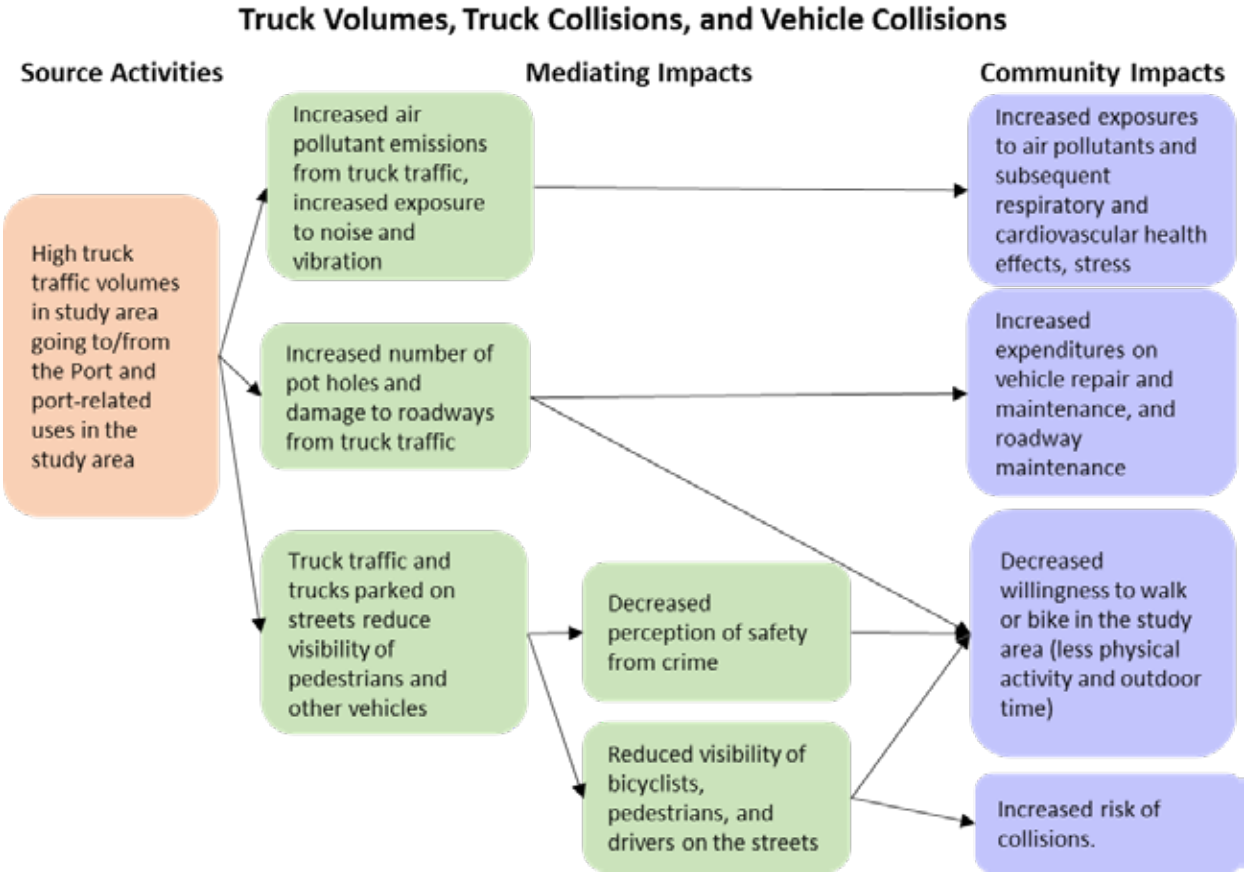


Table 7 describes the nexus between the Port and Port-related operations and impacts from increased truck volume and truck and vehicle-related collisions in the study area. The trucks in the area serve established Port or Port-serving activities and the Port of Los Angeles is responsible for the concentration of trucks in the study area. Empirical evidence supports the link between increased truck traffic and air pollution and the resulting negative health effects. However, the literature does not provide extensive information about the impact of truck traffic on truck and vehicle collisions and wear and tear on the roadways. Many truck-related collisions are either along or near designated truck routes through the study area. In addition, several community stakeholders have raised concerns over truck volume.

Table 7: Nexus Criteria for Truck Volume, Truck Collisions, and Vehicle Collisions

Truck Volume, Truck Collisions, and Vehicle Collisions		
Criteria	**Yes, No, Possibly, Unsure, N/A**	**Notes**
1. Is the source an established Port or Port-serving land use or activity?	Yes	Trucks operating in the study area primarily move materials and goods in and out of the Port of Los Angeles.
2. Is the impact a direct result of the Port or Port-serving land use or activity?	Yes	Port-related activities directly account for the presence of trucks in the study area.
3. Is the impact an indirect result of the Port or Port-serving land use or activity?	Yes	Vehicle collisions may either be a direct impact (i.e., collision with trucks), or indirectly related (e.g., trucks parked on street obscure visibility that then leads to collision with another vehicle or biker).
4. Is the causal pathway logical and plausible?	Yes	
5. Is there generalizable empirical evidence to support the causal pathway?	Possibly	Empirical evidence supporting parked trucks and impacts on perceived safety and increased damage to roadways is limited. Evidence supporting increased trucks and impacts on air quality and health effects and cardiovascular health is substantial.
6. Is there a distance-based relationship to Port or Port-serving use or activity?	Unsure	Many of the truck-involved collisions are near or along truck designated routes.
7. Is there temporal-based relationship to Port development in the study area?	Unsure	Did not examine.
8. Is there a disproportionate burden/impact relative to the city/region?	Unsure	Did not examine.
9. Is there local qualitative evidence to support the pathway?	Yes	Many community stakeholders discussed have concerns regarding the safety of trucks in the study area, and related truck and vehicle collisions.

RESEARCH QUESTIONS AND METHODOLOGY

We identified data about truck volume and collisions from the California Department of Transportation and the California Highway Patrol. We mapped truck volume data by number of axles along state and federal highway truck routes. Unfortunately, truck counts along non-highway streets within the study area were unavailable.

We also mapped collision data to the closest cross street and tabulated collisions by neighborhood. Using state collision data, we identified all vehicle collisions between 2010 and 2014 in a density map. We based the density of collisions near at-grade railroad crossings on the ArcGIS Kernel Density Tool, which calculates the density of features in an area around other features. The tool calculated the number of collisions from the railroad crossings using a kernel function to fit a smoothly tapered surface to each point. In addition, we mapped injuries and deaths from vehicle collisions. Using the all vehicle collisions data set, we extracted collisions that the California Department of Transportation and the California Highway Patrol classified as "truck-involved."

This section sought to answer these research questions:

- What is the average daily truck volumes on highways and arterials?
- How many truck-related collisions are in the study area?

FINDINGS

TRUCK VOLUMES

As shown in Map 15: California Highway Truck Routes and Annual Average Daily Truck Traffic Volumes, the highest number of daily trucks in the study area (9,836 trucks) drive through CA-47 just north of Badger Avenue Bridge, which connects the southeast corner of Wilmington to the Port Complex. Over half of these trucks are five-axle vehicles. The second highest volume of trucks (8,037) occurs at the intersection of Interstate 110 and the Pacific Coast Highway. Slightly less than half of these trucks have five axles. These counts may underestimate the number of trucks in the study area, as the database only included trucks on designated highway truck routes. We did not capture truck counts on residential streets or other arterials.

Community residents have voiced concerns over the large number of trucks in the area. Several community stakeholders have stated that trucks illegally park on or use residential streets. One resident stated that:

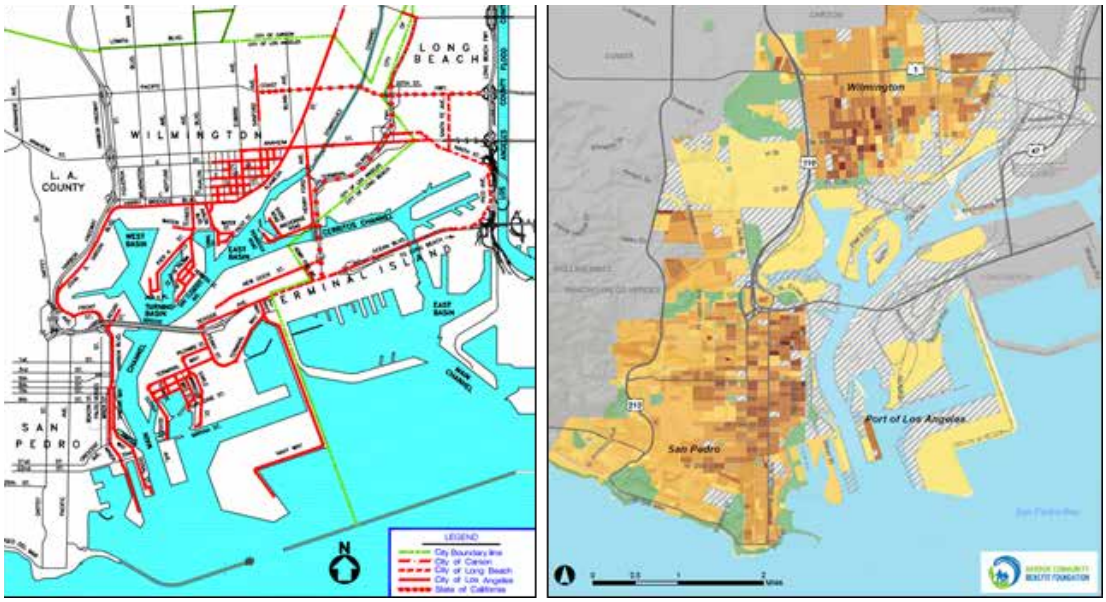
"Trucks idle at stations – wasting time, money, and spewing pollution."

Additionally, community residents report that truck count data are often not accurate and do not capture the multiple stops throughout the study area that trucks make on a consistent basis.

"Traffic analysis doesn't accurately show all the stops the trucks make [throughout the study area]."

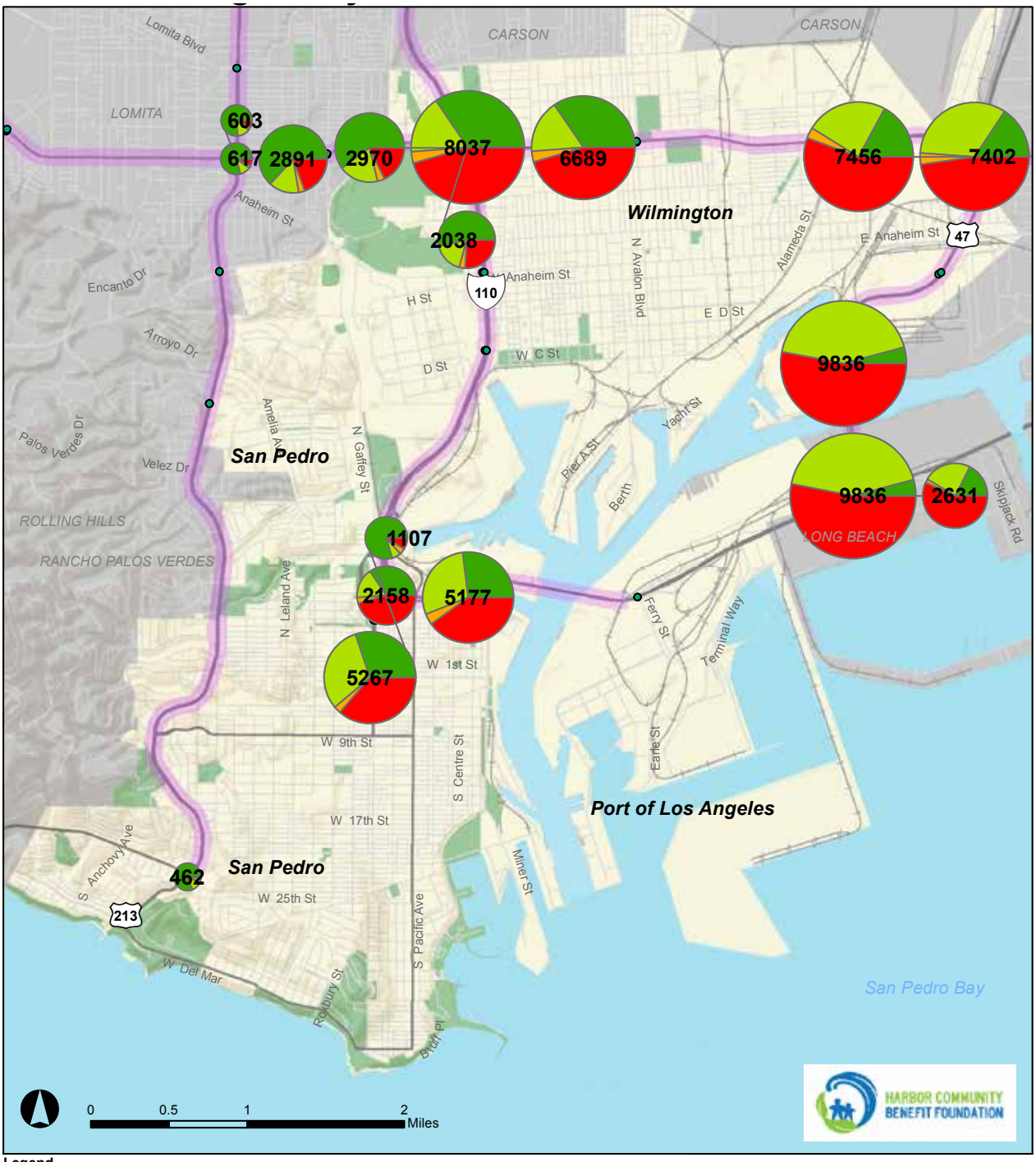
The literature does not include a more comprehensive analysis of truck counts on all roadways, but information on additional truck corridors in the study area suggest that truck count data from the California Department of Transportation is incomplete. Trucks use many additional streets to move heavy container loads in and around the Port of Los Angeles, as shown in Figure 9. Some of these designated truck routes cut through or are close to residential areas.

Figure 9: Port of Los Angeles Heavy Container Corridor and Study Area Population Density



Data source: Port of Los Angeles

Map 15: California Highway Truck Routes and Annual Average Daily Truck Traffic Volumes



Legend

Ave. Daily Truck Traffic Volume

2,000

- TwoAx_Vol
- ThreAx_Vol
- FourAx_Vol
- FiveAx_Vol
- CA Highway Truck Network
- Streets
- Interstates and Highways
- Railroad
- Parks and Recreational Areas
- San Pedro Bay

Produced by Raimi + Associates. January 2016.

Sources: Interstates and Highways, 2008 Tele Atlas North America, Inc.; World Terrain Base, 2009 ESRI; Caltrans 2011 Truck Network and 2014 Annual Average Daily Truck Traffic.

TRUCK COLLISIONS

Community residents have expressed concerns about the ubiquity of large trucks in the study area and photographs confirm that there are large trucks on every major street. Community residents reported that they often must drive behind a truck that limits their ability to see the street conditions ahead. In addition, these large trucks pose safety concerns for residents because the trucks make wide turns and occupy multiple lanes of traffic. As trucks turn, they can temporarily block lanes of traffic in both directions and diminish visibility of cars driving around the trucks. Moving or parked trucks can also temporarily block the line of sight of other nearby cars. Further, truck drivers have limited visibility of the roadway, which increases the risk of collisions. The images below show trucks on roadways in the study area.

Image 5: Truck making a wide right-hand turn on to Pacific Coast Highway and coming close to a car driving in the opposite direction. Photo source: Magali Sanchez-Hall, 2016

Image 6: Truck making a left turn out of a residential area in Wilmington, temporarily blocking lanes in either direction. Photo source: Magali Sanchez-Hall, 2016

As shown in Table 8 and Map 16: Truck Involved Collisions, there were 128 truck-involved collisions in the study area between 2010 and 2014. This corresponds to approximately 4% of all collisions in the study area. The highest collision densities occur near 1st Street and Gaffey Street in San Pedro and near the I-110 and Pacific Coast Highway intersection, as shown in Map 17: Truck-Involved Collisions - Density. Wilmington had nearly twice the number of truck-related collisions than San Pedro. The neighborhoods with the highest amount of collisions were Central San Pedro and North Wilmington. Wilmington also had a higher number of injuries. There were two reported fatalities involving trucks in the study area, both in Wilmington.

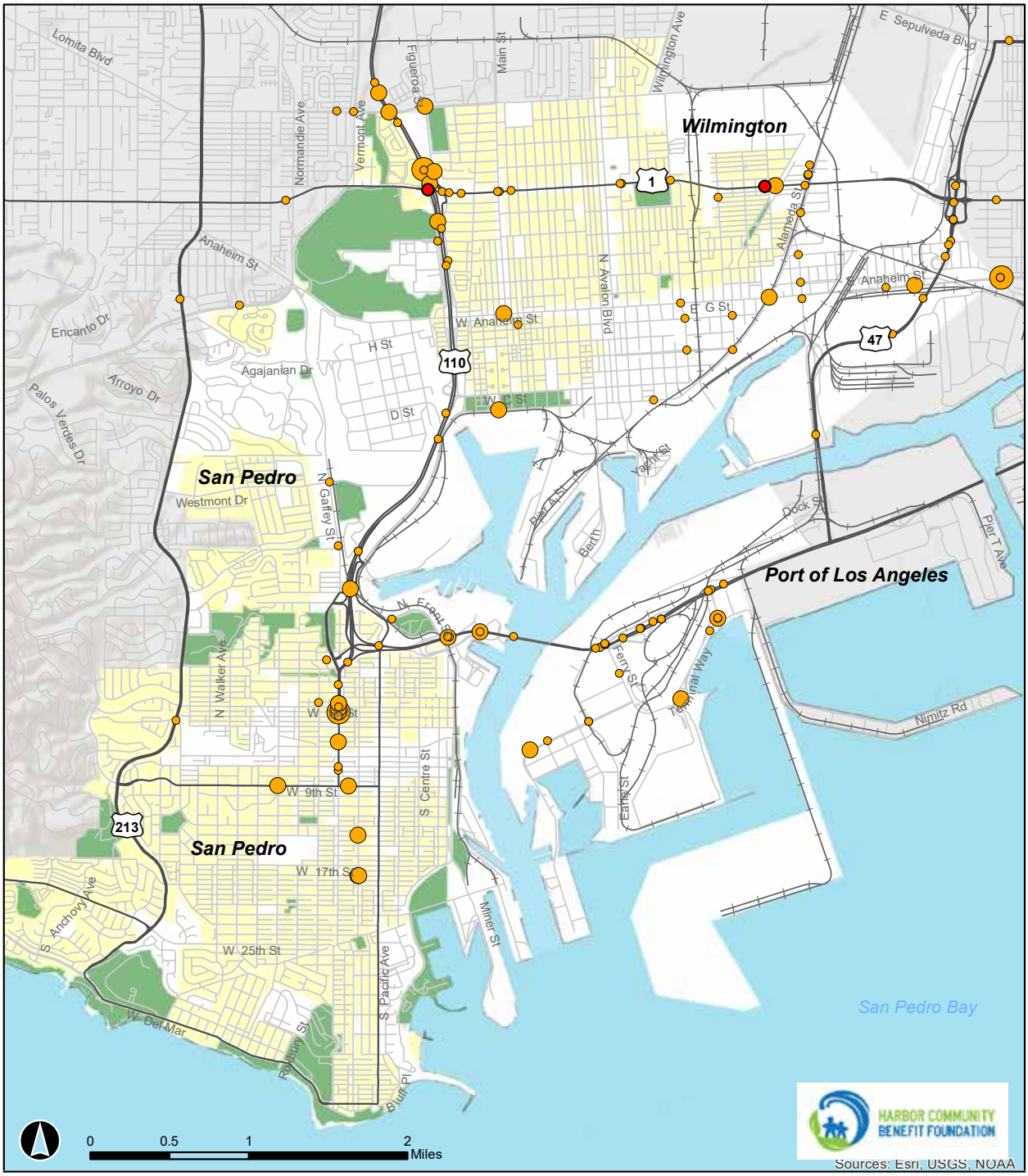
Community stakeholders shared concerns about large trucks driving on small local or residential streets. To investigate this, we mapped truck-involved collisions that occurred on residential areas. As shown in Map 18: Truck-Involved Collisions in Residential Areas, 11 truck-related collisions occurred within or adjacent to residential neighborhoods, suggesting some trucks are utilizing local streets where they are prohibited. Trucks may be using local roads because there are many industrial businesses located in some of these residential areas. Almost 10% of all injuries resulting from vehicle collisions involved a pedestrian and about 5% involved bicyclists.

Table 8: Truck-Involved Collisions

Neighborhood	Area (Sq Miles)	Collisions		Injuries	
		#	Collisions per Sq Mile	#	Injuries per Sq Mile
Study Area	21.7	128	5.9	161	7.4
San Pedro	9.1	33	3.6	49	5.4
Central San Pedro	2	26	13.0	41	20.8
Coastal San Pedro	3.5	-	-	-	-
Northwest San Pedro	3.5	7	2.0	8	2.3
Unincorporated San Pedro	0.2	-	-	-	-
Port of Los Angeles	1.5	26	17.3	29	3.1
Wilmington	9.5	69	7.3	83	36.1
East Wilmington	2.3	22	9.6	24	17.1
North Wilmington	1.4	18	12.9	24	5.6
South Wilmington	4.3	19	4.4	24	16.0
West Wilmington	1.5	10	6.7	11	7.3

Data sources: Truck-involved collisions, 2010 – 2014, Statewide Integrated Traffic Records System (SWITRS), California Highway Patrol.

Map 16: Truck-Involved Collisions



Legend

Injuries
- 1
- 2
- 3 - 4
- 5 - 7

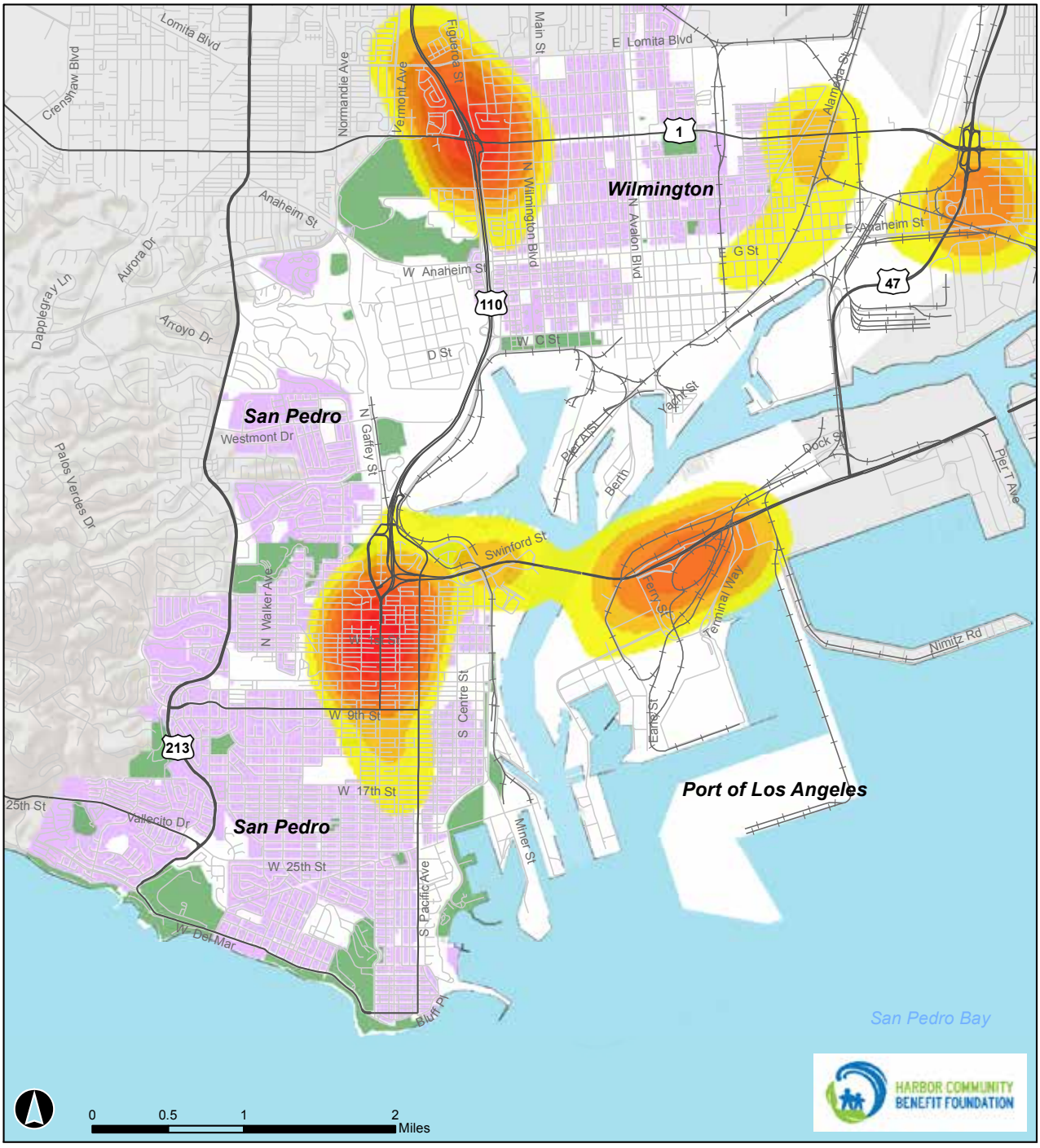
Deaths
- 1

- Parks and Recreational Areas
- Residential Zoning
- Railroad
- Interstates & Highways
- Streets

Produced by Raimi + Associates, Sept 2016

Data Sources: Interstates and Highways, 2008 Tele Atlas North America, Inc.; World Terrain Base, 2009 ESRI, City of Los Angeles Zoning, Federal Railroad Administration, Los Angeles County GIS Data Portal. Statewide Integrated Traffic Records System (SWITRS)

Map 17: Truck-Involved Collisions - Density



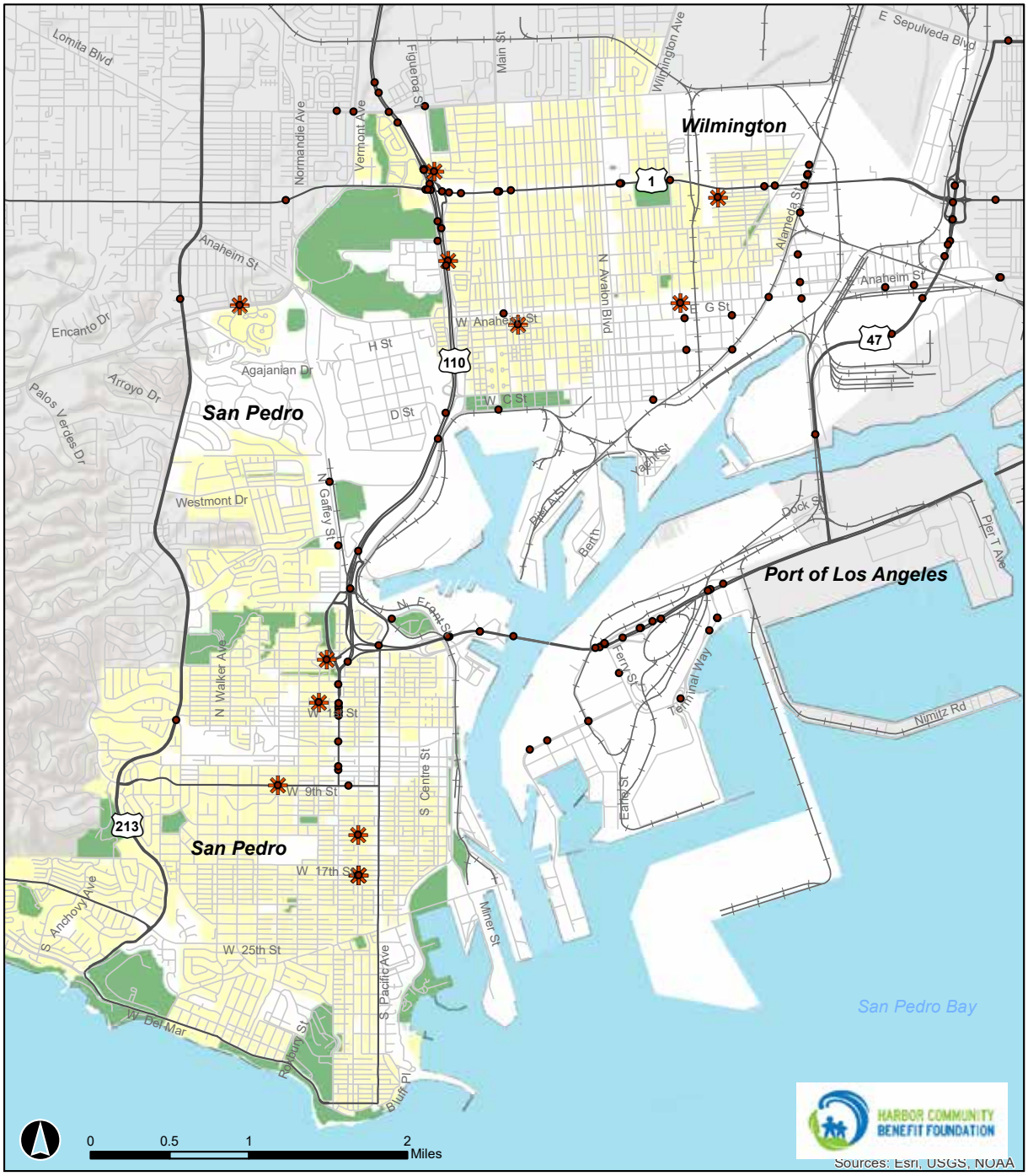
High Number of Collisions
Moderate Number of Collisions
Low Number of Collisions

Parks and Recreational Areas
Railroad
Interstates & Highways
Streets
Residential Land Uses

Produced by Raimi + Associates, Sept 2016

Data Sources: Interstates and Highways, 2008 Tele Atlas North America, Inc.; World Terrain Base, 2009 ESRI, City of Los Angeles Zoning, Federal Railroad Administration, Los Angeles County GIS Data Portal. Statewide Integrated Traffic Records System (SWITRS)

Map 18: Truck-Involved Collisions in Residential Areas



Legend

- Truck Collisions in Residential Areas
- Other Truck Collisions
- Parks and Recreational Areas
- Residential Zoning
- Railroad
- Interstates & Highways
- Streets

Produced by Raimi + Associates, Sept 2016

Data Sources: Interstates and Highways, 2008 Tele Atlas North America, Inc.; World Terrain Base, 2009 ESRI, City of Los Angeles Zoning, Federal Railroad Administration, Los Angeles County GIS Data Portal. Statewide Integrated Traffic Records System (SWITRS)

VEHICLE COLLISIONS

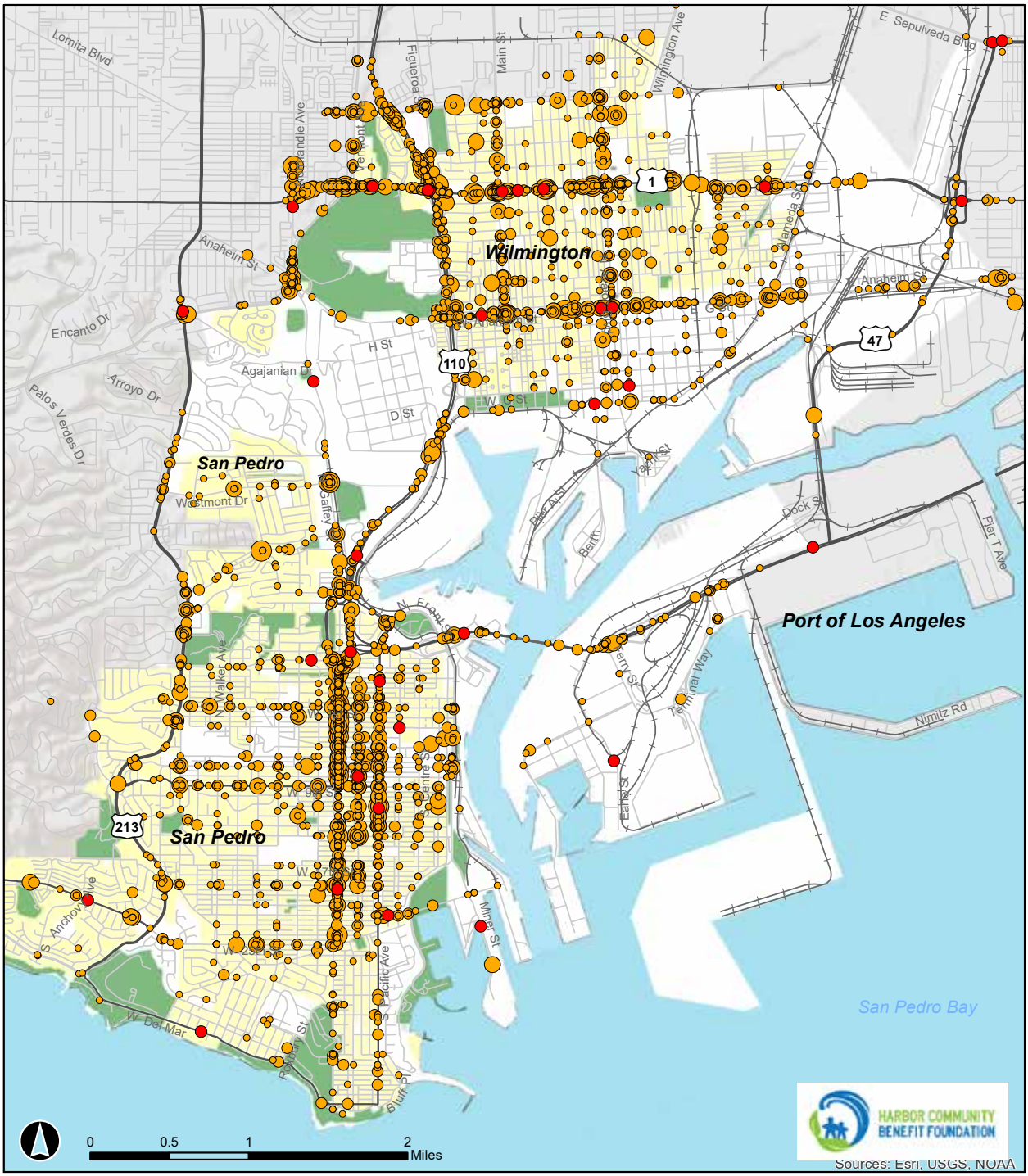
As discussed earlier, the presence of trucks in the study area may reduce visibility on the streets, which may contribute to an increased number of vehicle collisions. Map 19: Vehicle Collisions and Map 20: All Vehicle Collisions - Density show a high density of collisions along South Gaffey Street and Pacific Avenue in San Pedro and along the Pacific Coast Highway and at Avalon and Anaheim Street in Wilmington. As shown in Table 9, during the four-year period between 2010 and 2014, there were a total of 2,895 collisions, including truck collisions, in the study area. The highest number of incidents occurred in Central San Pedro (1,028). Central San Pedro also the highest number of injuries and fatalities of all the study area neighborhoods. Overall, there are a higher number of vehicle collisions in San Pedro.

Table 9: All Vehicle Collisions by Neighborhood

Neighborhood	Area (Sq Miles)	Total Collisions		Fatalities		Injuries	
		#	Collisions per Sq Mile	#	Fatalities per Sq Mile	#	Injuries per Sq Mile
Study Area	21.7	2,895	133.4	27	1.2	4,035	185.94
San Pedro	9.1	1,648	181.1	14	1.5	2,292	251.87
Central San Pedro	2	1,038	519.0	7	3.5	1,480	740.00
Coastal San Pedro	3.5	275	78.6	5	1.4	358	102.29
Northwest San Pedro	3.5	301	86.0	2	0.6	415	118.57
Unincorporated San Pedro	0.2	34	170.0	-	-	39	195.00
Port of Los Angeles	1.5	59	39.3	1	0.7	71	47.33
Wilmington	9.5	1,188	125.1	12	1.3	1,672	176.00
East Wilmington	2.3	193	83.9	1	0.4	264	114.78
North Wilmington	1.4	343	245.0	3	2.1	525	375.00
South Wilmington	4.3	228	53.0	3	0.7	290	67.44
West Wilmington	1.5	424	282.7	5	3.3	593	395.33

Data sources: All vehicle collisions, 2010 – 2014, Statewide Integrated Traffic Records System (SWITRS), California Highway Patrol.

Map 19: Vehicle Collisions – Deaths and Injuries



Legend

Injuries
- 1
- 2
- 3 - 4
- 5 - 7

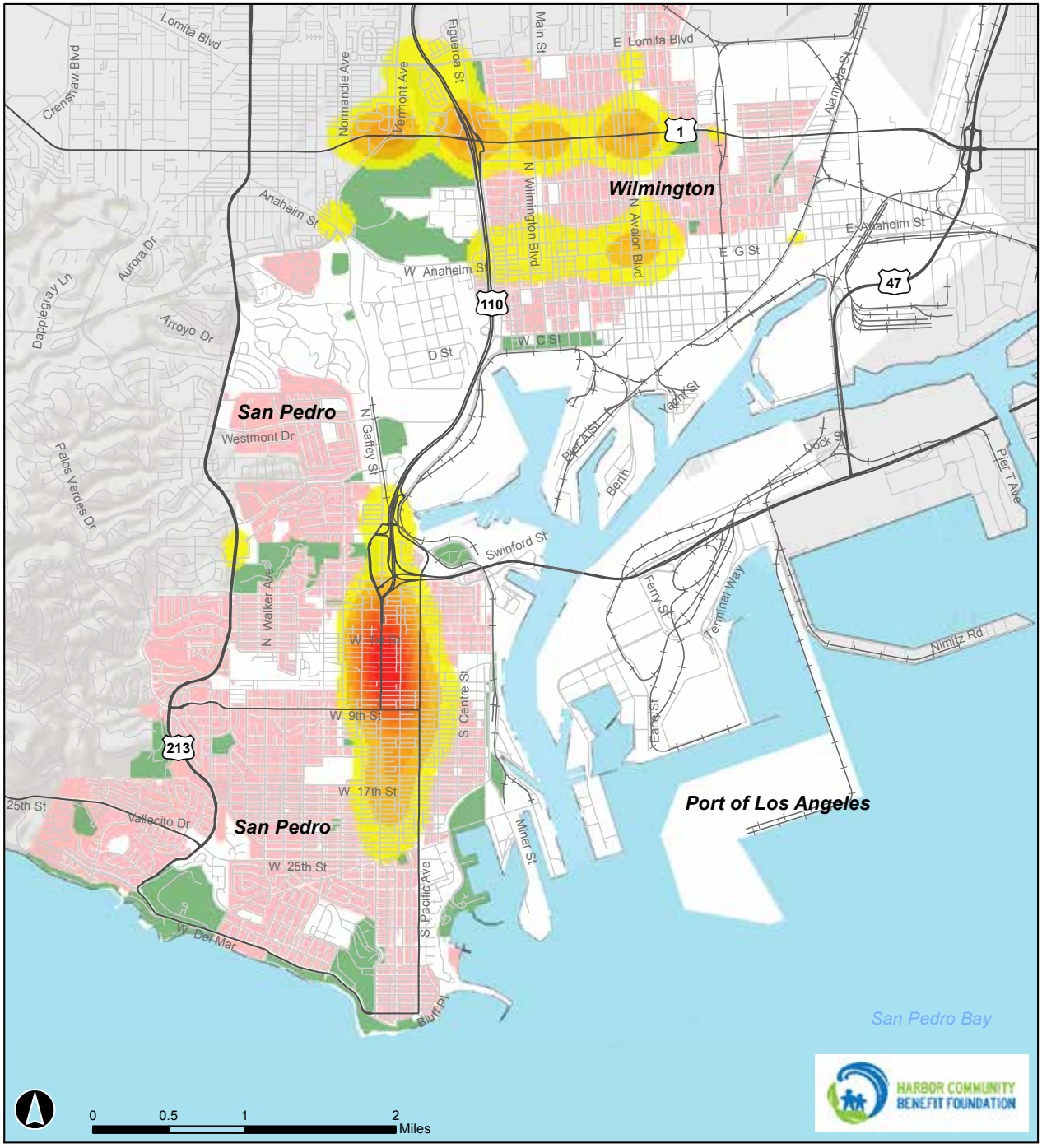
Deaths
- 1

- Residential Zoning
- Parks and Recreational Areas
- Railroad
- Interstates & Highways
- Streets

Produced by Raimi + Associates, Sept 2016

Data Sources: Interstates and Highways, 2008 Tele Atlas North America, Inc.; World Terrain Base, 2009 ESRI, City of Los Angeles Zoning, Federal Railroad Administration, Los Angeles County GIS Data Portal. Statewide Integrated Traffic Records System (SWITRS)

Map 20: All Vehicle Collisions - Density



High Number of Collisions
Moderate Number of Collisions
Low Number of Collisions

Parks and Recreational Areas
Railroad
Interstates & Highways
Streets
Residential Land Uses

Produced by Raimi + Associates, Sept 2016

Data Sources: Interstates and Highways, 2008 Tele Atlas North America, Inc.; World Terrain Base, 2009 ESRI, City of Los Angeles Zoning, Federal Railroad Administration, Los Angeles County GIS Data Portal. Statewide Integrated Traffic Records System (SWITRS)

In summary, there are more total vehicle collisions in San Pedro—and a higher corresponding number of related injuries and deaths—but a higher number of truck collisions and related injuries and deaths in Wilmington.

DATA SOURCES

Table 10 below describes the data sources used in this analysis of truck volume and collisions.

Table 10: Data Sources

Data	Year	Description	Source
Truck routes	2011	Truck routes along state and federal highways	California Department of Transportation, 2011 Truck Network
Annual Average Daily Truck Traffic	2014	Daily truck traffic volumes at key highway areas by vehicle number of axles	California Department of Transportation
Vehicle and Truck Collisions	2010-2014	Locations of all vehicle collisions including truck-, bike-, and pedestrian-involved and injuries/deaths from collisions	Statewide Integrated Traffic Records System, California Highway Patrol. Accessed through UC TIMS.
City of Los Angeles Zoning	2012	Residential zones	City of Los Angeles

AT-GRADE RAILROAD CROSSINGS AND RAIL IMPACTS

CONTEXT

Train and rail is a significant mode of transportation for moving goods and materials in and out of the Port of Los Angeles. Rail lines located in the study area cross streets in residential and commercial areas, resulting in many at-grade crossings and increased noise exposures.[1] On average, 34 trains travel through the study area each day along the Alameda Corridor.[2] The Alameda Corridor cuts through the southern and eastern portions of Wilmington. The volume of trains moving along the Alameda Corridor has varied over time due to changes in demand for imported goods and materials. At the peak of the economic boom in 2006, an average of 55 trains per day used the Corridor. Train volume decreased to 42 trains per day in 2011 after the economic downturn.[3] The Alameda Corridor Transportation Authority expects train volume along the corridor to increase over time and anticipates that the freight line could handle upwards of 100 trains a day by 2020.[4] Increases in train volume through the study area would significantly affect residents because of increased noise and collisions.

Community residents and business owners expressed multiple concerns about rail impacts in the study area related to noise, injuries, traffic delays at railroad crossings, and potential safety hazards.

1 An at-grade railroad crossing is an intersection where a railway line crosses a road at the same level, as opposed to the railway line crossing over or under using a bridge or tunnel.

2 Alameda Corridor Transportation Authority. 2016. Alameda Corridor Train Counts. Available at http://www.acta.org/pdf/CorridorTrainCounts.pdf.

3 Alameda Corridor Transportation Authority. 2012. Press Release: Alameda Corridor Marks 10th Anniversary. Available at http://www.acta.org/newsroom/Releases/Alameda_Corridor_Marks_10thAnniversary.pdf.

4 Railway – technology.com. Alameda Corridor Freight Line, United State of America. Available at http://www.railway-technology.com/projects/alameda/.

NOISE

Trains operate daily during all hours of the day and night.[5,6] Train movement and operations in the study area are major sources of environmental noise,[7] which can impact stress levels, blood pressure, and heart disease. Noise exposure affects sleep and concentration and can also lead to delayed learning in children. Elevated noise can also increase aggression and even interfere with normal conversation.

TRANSPORTATION SAFETY

Lack of adequate safety and warning devices at many crossings at railroad crossings could result in collisions with moving trains. Traffic delays near at-grade crossings could also contribute to increased traffic-related injuries due to increased frustrations and stress caused by long wait times.[8] Research indicates that excessive wait times at railroad crossings leads to non-compliant behavior by motorists, including ignoring active warning devices such as barriers, flashing lights, and already-lowered gates.[9]

5 Community stakeholder interviews. 2015. Interviews conducted by Raimi + Associates.

6 Los Angeles Harbor Department. 2011. Draft EIS/EIR – Berths 302-306 APL Container Terminal Project. Available at https://www.portoflosangeles.org/EIR/APL/DEIR/deir_apl.asp.

7 Landrum & Brown. 2012. Report #1: Noise Measurement Report. Available at http://hcbf.org/wp-content/uploads/2014/06/2012.12.14.Report-1.Wilmington-Noise-Measurement-Report_with-Attachments3.pdf.

8 Cooper DL and Ragland DR. 2009. Driver Behavior at Rail Crossings: Cost-Effective Improvements to Increase Driver Safety at Public At-Grade Rail-Highway Crossings in California. California PATH Research Report UCB-ITS-PRR-2009-24. Available at http://www.path.berkeley.edu/sites/default/files/publications/PRR-2009-24.pdf.

9 Larue G. 2016. Waiting Times at Level Crossings Leading to Motorists' Risky Behavior. Available at http://www.acri.net.au/waiting-times-at-level-crossings-leading-to-motorists-risky-behaviours/.

DELAYS AT RAILROAD CROSSINGS

Community residents voiced concerns that train traffic through the study area causes delays in emergency response times. The average train that runs on the Alameda Corridor is between 6,000 to 8,000 feet in length (1.14 and 1.5 miles, respectively) and carries more than 300 rail containers.[10] Some trains are more than 10,000 feet long (1.90 miles). When trains travel through the study area, they create temporary barriers between sections of the neighbor. With an average train speed of 40 miles per hour,[11] it would take approximately three minutes on average for a 10,000-foot train to pass through an intersection. However, the total wait time for vehicles at railroad crossings could be much longer because of the time it takes for the gates to clear and cars to move through the intersection. In general, delays at at-grade crossings increase as vehicle and train traffic increase.[12]

These wait times may delay ambulances, police, or other emergency responders from reaching their destinations and critically affect emergency response times. In one part of Wilmington with large superblock industrial parcels, there is only one access road, which crosses an at-grade rail road crossing. This puts this area at a high risk if an emergency vehicle needs to travel during a train crossing. Long wait times are also inconvenient for residents and visitors to the area. One resident stakeholder explained her spouse is delayed by long wait times at railroad crossings once per month: "the wait times can be more than ten minutes – which has a very significant impact to residents' transportation, stress, and quality of life."

10 Alameda Corridor Transportation Authority. 2012. Press Release: Alameda Corridor Marks 10th Anniversary. Available at http://www.acta.org/newsroom/Releases/Alameda_Corridor_Marks_10thAnniversary.pdf.

11 Alameda Corridor Transportation Authority. 2012. Press Release: Alameda Corridor Marks 10th Anniversary. Available at http://www.acta.org/newsroom/Releases/Alameda_Corridor_Marks_10thAnniversary.pdf.

12 Federal Highway Administration. Highway-Rail Grade Crossings. https://www.fhwa.dot.gov/policy/2002cpr/pdf/ch26.pdf.

NEXUS BETWEEN THE PORT OF LOS ANGELES AND AT-GRADE RAILROAD CROSSINGS AND RAIL IMPACTS

Figure 10 below depicts the plausible causal pathway describing how trains, railroad lines, and associated rail infrastructure impact Wilmington and San Pedro. The railroad lines and spurs that carry goods and materials to, from, and through the Port of Los Angeles can create traffic delays at railroad crossings and increase the risk of injuries from uneven tracks. These delays result in increased stress and frustration of neighborhood residents affected by delays, as well as delayed emergency response times. The lack of safety warnings at railroad crossings can increase the risk of bike, pedestrian, and vehicle collisions with moving trains. Numerous trains passing through the study area throughout the day increase noise and vibration, which can result in sleep disturbances, increased stress, and reduced ability to concentrate.

Figure 10: Pathway Diagram of Impacts of At-Grade Railroad Crossings and Rail Impacts

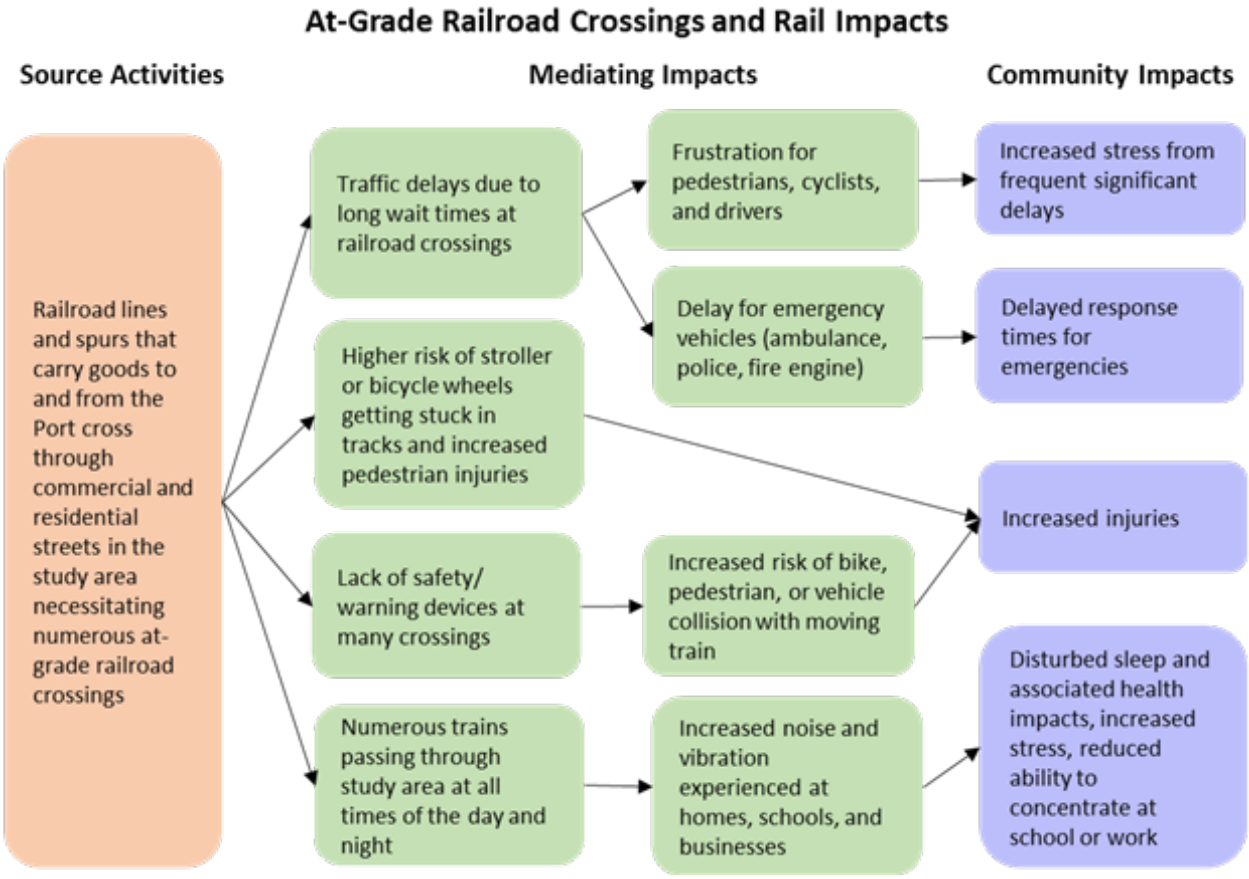


Table 11 below describes the nexus between the impacts from at-grade railroad crossings and the Port of Los Angeles based on the nine criteria outlined.

Table 11: Nexus Criteria for At-Grade Railroad Crossings and Rail Impacts

At-Grade Railroad Crossings and Rail Impacts		
Criteria	**Yes, No, Possibly, Unsure, N/A**	**Notes**
1. Is the source an established Port or Port-serving land use or activity?	Yes	The railroad lines were built to primarily serve the Port of Los Angeles and the movement of goods and materials through the study area.
2. Is the impact a direct result of the Port or Port-serving land use or activity?	Yes	The presence of trains in and out of the study area are direct Port-related activities.
3. Is the impact an indirect result of the Port or Port-serving land use or activity?	No	The impacts described directly relate to Port-related activities.
4. Is the causal pathway logical and plausible?	Yes	
5. Is there generalizable empirical evidence to support the causal pathway?	Yes	A large amount of evidence supports the connection between increased noise and vibration and delays at railroad crossings with intermediate and community impacts. 1 2 3 4 5 6 7 [8]
6. Is there a distance-based relationship to Port or Port-serving use or activity?	Yes	The railroad lines directly connect with the Port of Los Angeles.
7. Is there a temporal-based relationship to Port development in the study area?	Yes	We did not explore the data, but according to resident stakeholders, trains have gotten longer and more frequent over the last 20 years.
8. Is there a disproportionate burden/ impact relative to the city/region?	Yes	Most the railroad lines are in the East and South Wilmington, leading to the Port of Los Angeles.
9. Is there local qualitative evidence to support the pathway?	Yes	Numerous community residents and groups discussed rail impacts on the study area.

Train movement through the study area and the location of railroad lines are the direct result of Port-related activities, as the trains and the railroad lines were built to connect the Port of Los Angeles to other parts of the region and the nation. Therefore, it is reasonable to assume that all the unintended consequences from the movement of trains and rail infrastructure are also the direct outcomes of Port-related activities. In addition, empirical evidence supports a pathway from the effects of at-grade railroad crossings attributed to the Port of Los Angeles and mediating and community impacts. Community residents and stakeholders also raised these impacts as important concerns.

RESEARCH QUESTIONS AND METHODOLOGY

We synthesized quantitative and qualitative data from several sources to assess how the associated operations of the Port of Los Angeles affect safety near at-grade railroad crossings and noise impacts from train movement. Key steps included:

- Mapping data from at-grade railroad crossings and at-grade crossing characteristics using publicly available secondary data. We verified this information by engaging community researchers in the study area and reviewing Google Earth satellite images.
- Using the California Public Utilities Commission Crossing Inventory List to identify characteristics of all railroad crossings in the study area. We used information in this database to describe safety features of active at-grade crossings in the study area.
- Identifying and mapping the locations of collisions; public, private, and charter schools; and early childhood education and head start centers that fell within a certain distance of railroad crossings.
- Mapping Census blocks with their centroids within a quarter-mile of at-grade crossings or railroad tracks.
- Calculating the density of collisions near at-grade railroad crossings with the ArcGIS Kernel Density Tool,[13] which calculates the density of features in an area around other features. The tool calculated the number of collisions from the railroad crossings using a kernel function to fit a smoothly tapered surface to each point.

13 ESRI. 2016. Kernel Density. Available at http://pro.arcgis.com/en/pro-app/tool-reference/spatial-analyst/kernel-density.htm.

The analysis sought to answer the following questions within the study area:

1. Where are the locations of at-grade railroad crossings?
2. What are the safety issues or collisions at the at-grade railroad crossings?
3. What are the resident and school proximity to at-grade railroad crossings?
4. What are the noise impacts from the movement of trains?

FINDINGS

LOCATION AND CONDITION OF AT-GRADE RAILROAD CROSSINGS

The At-Grade Railroad Crossings maps (full study area map, Wilmington map, and San Pedro map) and Table 12 below depict the number of at-grade crossings in the study area by neighborhoods. There are 99 at-grade railroad crossings in the study area. Roughly 75% of these crossings are in Wilmington. South Wilmington has the highest number of at-grade crossings in the study area (51% of crossings), likely because South Wilmington has a dense network of rail lines and rail infrastructure leading into the Port of Los Angeles. San Pedro has 12 at-grade crossings, or 12% of all at-grade crossings in the study area. Neither Unincorporated San Pedro nor West Wilmington have any at-grade crossings.

Table 12: Number of At-Grade Crossings in the Study Area, by Neighborhood

Neighborhood	# of At-Grade Crossings	% of total at-grade crossings in study area
Study Area	99	100%
San Pedro	12	12.12%
Central San Pedro	5	5.05%
Coastal San Pedro	3	3.03%
Northwest San Pedro	4	4.04%
Unincorporated San Pedro	0	0.00%
Port of Los Angeles	74	74.75%
Wilmington	16	16.16%
East Wilmington	7	7.07%
North Wilmington	51	51.52%
South Wilmington	0	0.00%
West Wilmington	13	13.13%

Sources: Community workers with the Coalition for a Safe Environment (CFASE) and Long Beach Alliance for Children with Asthma (LBACA), 2016; Caltrans GIS Data: California Highway – Rail Crossings, Google Earth Images, 2016.

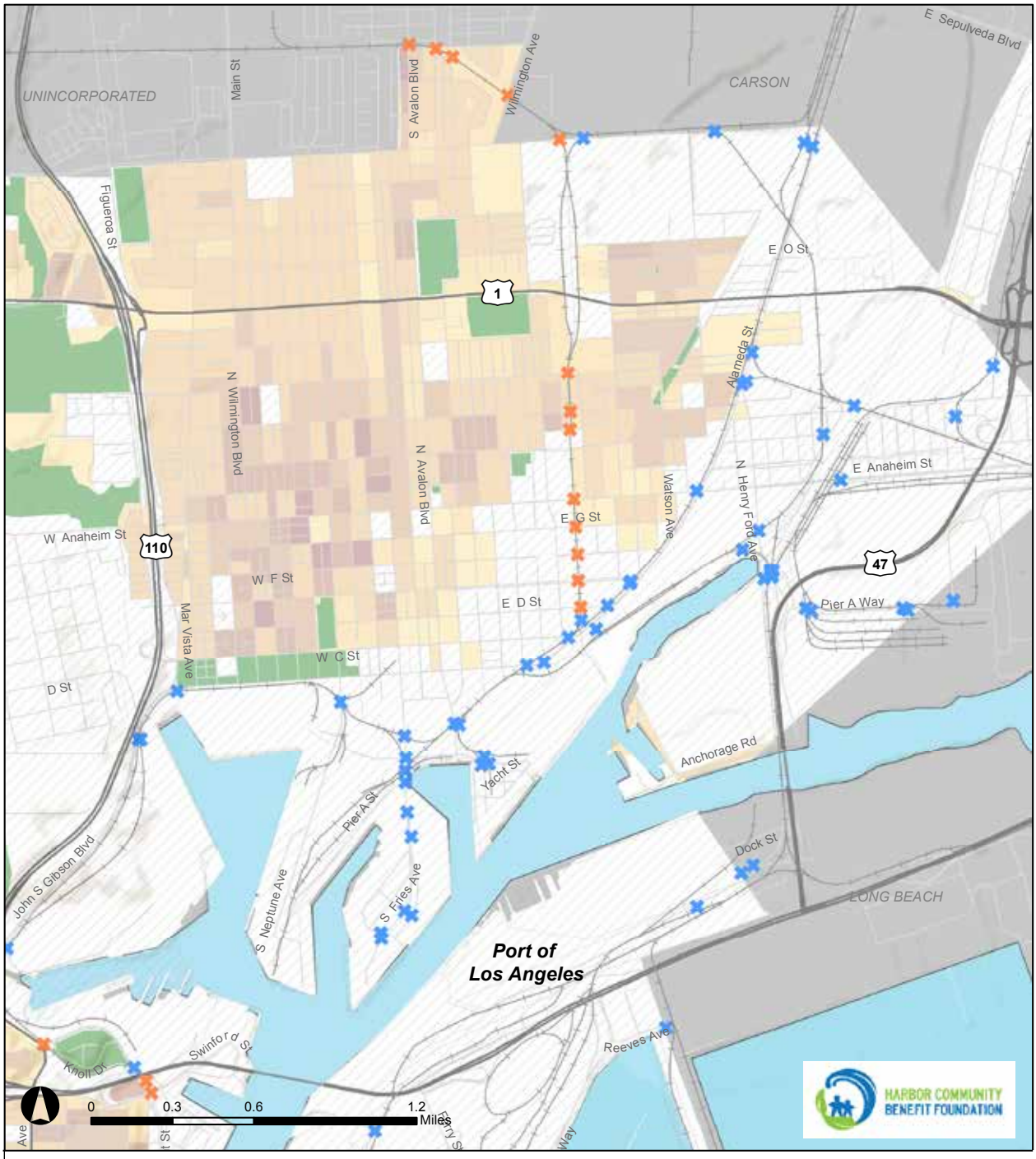
Map 21: At-Grade Railroad Crossings

- Ground-Truthed At-Grade Railroad Crossings
- At-Grade Railroad Crossings
- Railroad
- Interstates and Highways
- Streets
- Parks and Recreational Areas
- Residential Zoning

Produced by Raimi + Associates, September 2016

Data Sources: Railroad lines, 2016 US Census TIGER/Line; Zoning data, 2015, City of Los Angeles Department of City Planning; Locations of at-grade crossings: 2013, Caltrans GIS Data and 2016 verified by community workers and Google Earth satellite images; Interstates and Highways, 2008 Tele Atlas North America, Inc.; World Terrain Base, 2009 ESRI.

Map 22: At-Grade Railroad Crossings: Wilmington



- Ground-Truthed At-Grade Railroad Crossings
- At-Grade Railroad Crossings
- Railroad
- Interstates and Highways
- Streets
- Parks and Recreational Areas

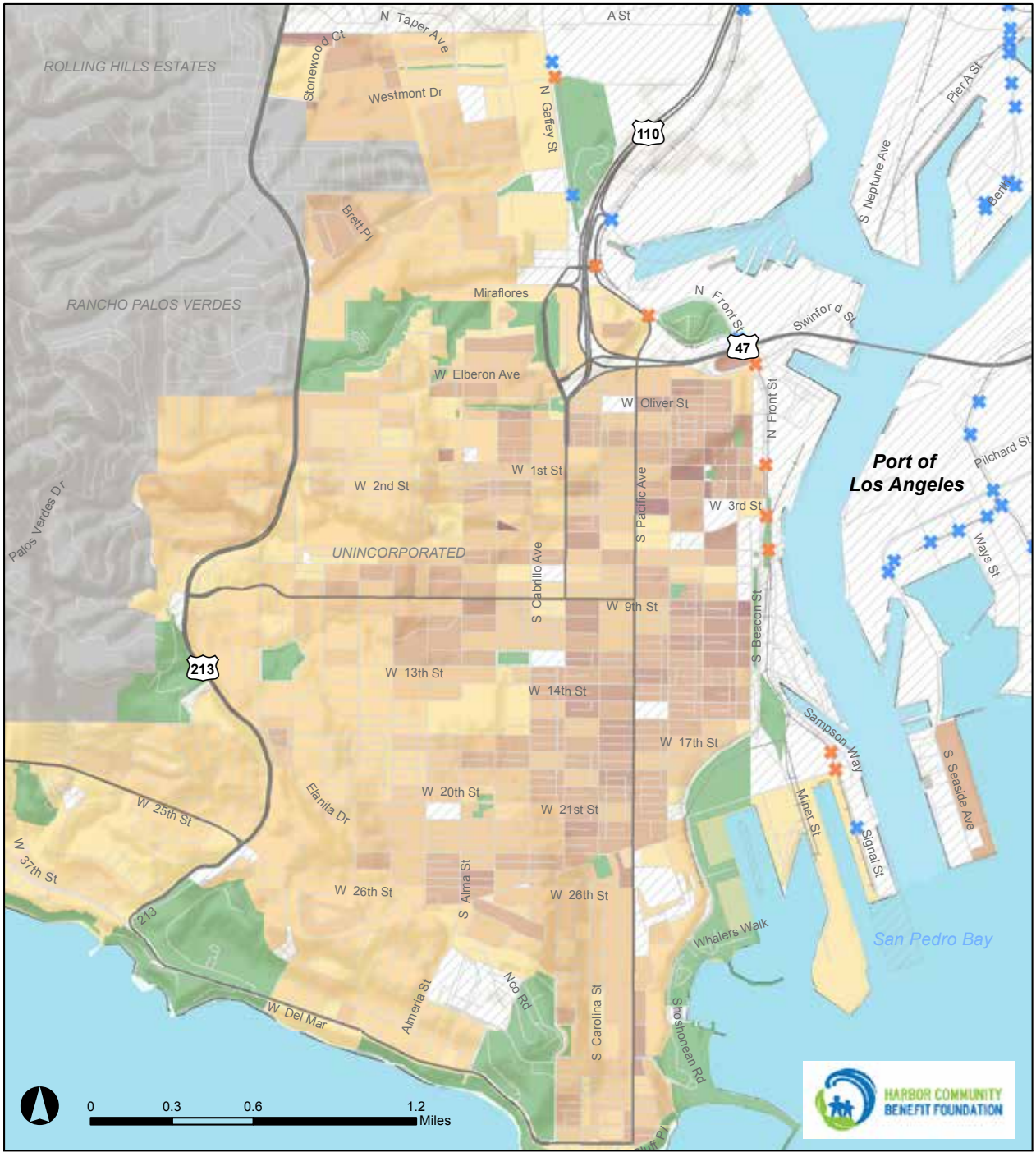
Population Density (People per Square Mile)

- Less than 500
- 500 to 5,000
- 5,000 to 10,000
- 10,000 to 20,000
- 20,000 to 30,000
- 30,000 to 50,000
- Greater than 50,000

Produced by Raimi + Associates, September 2016

Data Sources: Zoning data, 2015, City of Los Angeles Department of City Planning; Locations of at-grade crossings: 2013, Caltrans GIS Data and 2016, verified by community workers and review of Google Earth satellite images; US Census Bureau, 2010; Interstates and Highways, 2008 Tele Atlas North America, Inc.; World Terrain Base, 2009 ESRI.

Map 23: At-Grade Railroad Crossings: San Pedro



- Ground-Truthed At-Grade Railroad Crossings
- At-Grade Railroad Crossings
- Railroad
- Interstates and Highways
- Streets
- Parks and Recreational Areas

Population Density (People per Square Mile)

- Less than 500
- 500 to 5,000
- 5,000 to 10,000
- 10,000 to 20,000
- 20,000 to 30,000
- 30,000 to 50,000
- Greater than 50,000

Produced by Raimi + Associates, September 2016

Data Sources: Railroad lines, 2016 US Census TIGER/Line; Zoning data, 2015, City of Los Angeles Department of City Planning; Locations of at-grade crossings: 2013, Caltrans GIS Data and 2016 verified by community workers and Google Earth satellite images; Population density, 2010 US Census Bureau; Interstates and Highways, 2008 Tele Atlas North America, Inc.; World Terrain Base, 2009 ESRI.

Across the study area, at-grade crossings vary in the types of warning and safety features. Table 13 below describes the usual types of warning and safety features for railroad crossings.

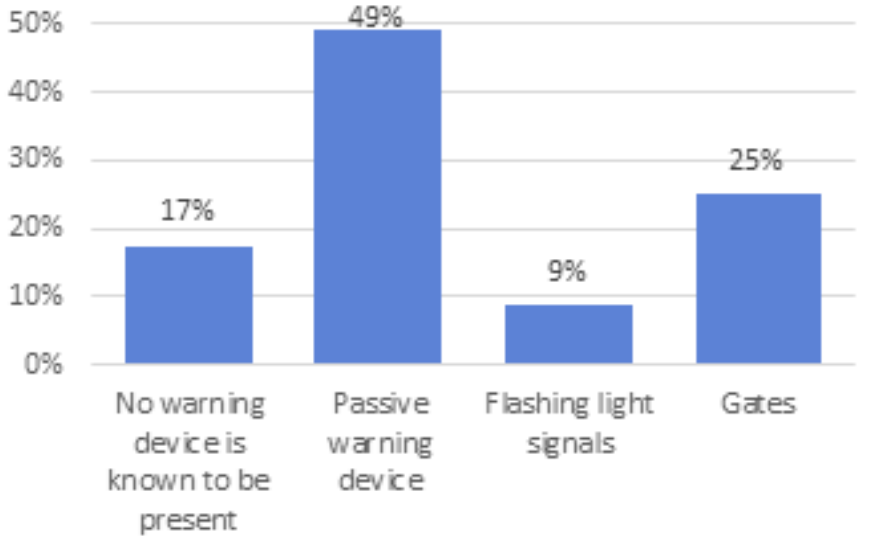
Table 13: Types of Warning and Safety Features for At-Grade Crossings

Warning and safety features at railroad crossings	Description
Flashing-light signals	Flashing lights at railroad crossings provide warnings for pedestrian, bicyclists, and drivers of an approaching train.
Gates	Traffic control device that when in the down position, the gate arm extends across the approaching lanes of traffic. Gates are used in conjunction with flashing-light signals.
Passive warning system	Control systems consisting of only signs (i.e., "Stop," "Yield," "RR Xing") and/or pavement markings that identify the location of an at-grade crossing and advise road users to slow down or stop at the grade crossing, as necessary, to yield to any rail traffic occupying or approaching the at-grade crossing.

Data source: California Department of Transportation. 2014. California Manual on Uniform Traffic Control Devices. Chapter 8: Traffic Control for Railroad and Light Rail Transit Grade Crossings.

Figure 11 describes the types and percentages of warnings located at at-grade crossings in the study area. Approximately 49% of crossings in the study area have only passive warning devices. No warning devices were present in 17% of at-grade crossings. Only 25% of at-grade crossings had any physical barrier between the road and rail (gates), and only 9% had any type of flashing light signals. The overwhelming majority of at-grade crossings (66%) rely on passive warning devices or had no devices at all, increasing the risk of collisions with moving trains at these intersections.

Figure 11: Warning Devices for At-Grade Crossings in the Study Area



Source: California Public Utilities Commission, 2016

At-grade railroad crossings vary widely in the study area. The images below depict the conditions of some crossings in Wilmington and San Pedro. Some crossings have flashers and gates, while others have no physical guards or any warning devices or signs.

Pedestrian safety concerns with railroad crossings include a lack of pedestrian barriers, warning lights, warning signs, and flashers, as well as a lack of public safety signage and sidewalk markers.

Image 7: A line of trucks waiting near the Watson Yard on E. Lomita Blvd in Wilmington, near an at-grade railroad. Photo source: Zita Villamil, 2016

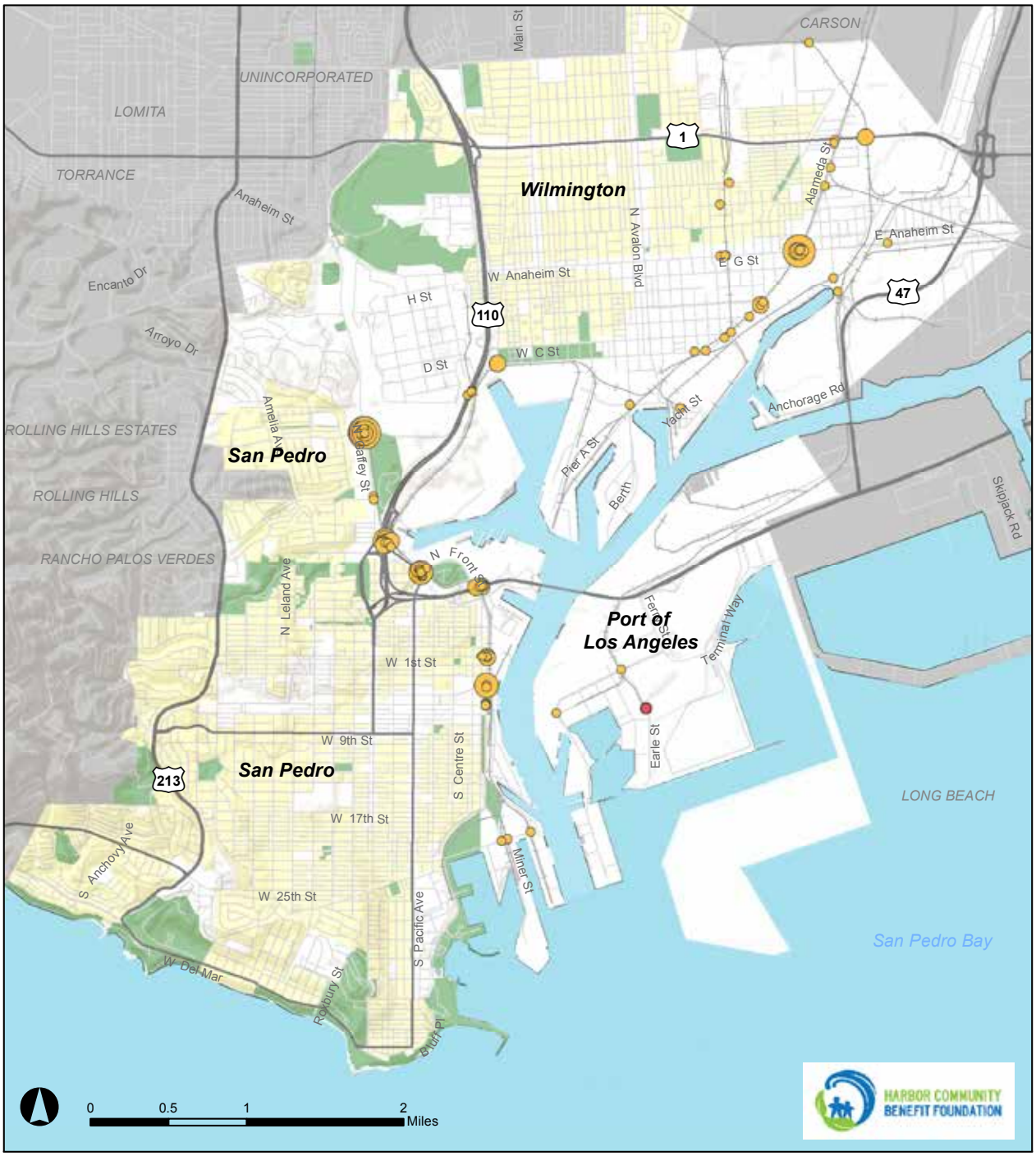
Image 8: An at-grade crossing in Wilmington with only passive warning devices, such as signs to warn motorists, pedestrians, and bicyclists of approaching trains. Photo source: Magali Sanchez-Hall, 2016

Image 9: People attempting to cross an at-grade crossing with no warning devices in Wilmington. Photo source: Magali Sanchez-Hall, 2016

Image 10: Incomplete Gaffey pathway in San Pedro. Photo source: HCBF, 2017.

Community residents expressed concerns about traffic safety near at-grade crossings within the study area. Map 24: Vehicle Collisions Injuries and Deaths within 250 feet of At-Grade Railroad Crossing shows the location and number of collisions resulting in injuries and deaths within 250 feet of an at-grade crossing.

Map 24: Vehicle Collisions Injuries and Deaths within 250 feet of At-Grade Railroad Crossing



Injuries
- 1
- 2
- 3 - 4
- 5 - 7

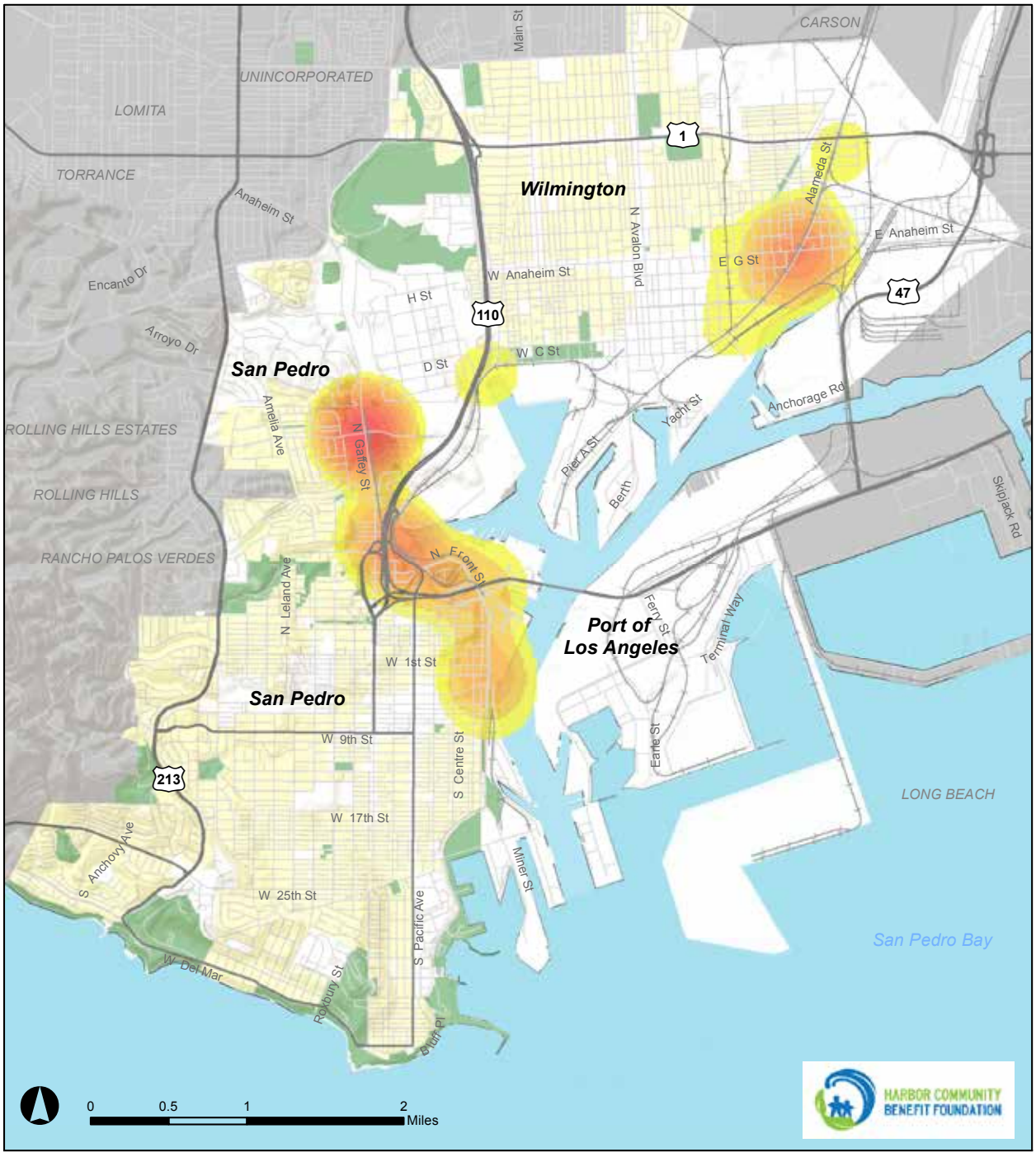
Deaths
- 1

- Railroad
- Interstates and Highways
- Streets
- Parks and Recreational Areas
- Residential Zoning

Produced by Raimi + Associates, September 2016

Data Sources: Collisions, 2010-2014 SWITRS; Railroad lines, 2016 US Census TIGER/Line; Zoning data, 2015, City of Los Angeles Department of City Planning; Locations of at-grade crossings: 2013, Caltrans GIS Data and 2016, verified by community workers and review of Google Earth satellite images; Interstates and Highways, 2008 Tele Atlas North America, Inc.; World Terrain Base, 2009 ESRI.

Map 25: Vehicle Collisions within 250 feet of At-Grade Railroad Crossings – Density



High Number of Collisions
Moderate Number of Collisions
Low Number of Collisions

Railroad
Interstates and Highways
Streets
Parks and Recreational Areas
Residential Zoning

Produced by Raimi + Associates, September 2016

Data Sources: Statewide Integrated Traffic Records System, 2010-2014; Zoning data, 2015, City of Los Angeles Department of City Planning; Locations of at-grade crossings: 2013, Caltrans GIS Data and 2016, verified by community workers and review of Google Earth satellite images; Interstates and Highways, 2008 Tele Atlas North America, Inc.; World Terrain Base, 2009 ESRI.

Table 14: Collisions within 250 Feet of At-Grade Crossings, 2010 – 2014

Collisions	Total #	% of Total	All Collisions				Pedestrian-related Collisions		Bicyclist-related Collisions	
			Deaths	Deaths per year	Injuries	Injuries per year	Deaths	Injuries	Deaths	Injuries
All Collisions	3,287	100%	33	6.6	4,590	918	9	437	2	229
Collisions Near At-Grade RR Crossings	123	3.7%	1	0.2	169	33.8	0	9	0	8

Data source: Statewide Integrated Traffic Records System (SWITRS), 2010 - 2014

From 2010 to 2014, there were 123 total collisions within 250 feet of an at-grade railroad crossings, which resulted in 169 injuries and 1 death. Table 14 shows the number of collisions within 250 feet of an at-grade crossing in the study area. Four percent of all collisions in the study area occurred near an at-grade railroad crossing. Map 25: Vehicle Collisions within 250 feet of At-Grade Railroad Crossings – Density demonstrates that a high number of vehicle collisions have occurred within at-grade crossings in Wilmington along the Alameda Corridor in Wilmington and along N. Gaffey St., N. Pacific Ave, and S. Harbor Blvd in San Pedro.

RESIDENT AND SCHOOL PROXIMITY TO AT-GRADE RAILROAD CROSSINGS

Railroad lines cross many dense residential neighborhoods in the study area. Table 15 details the number of residents by neighborhood within a quarter-mile of an at-grade crossing. The literature suggests that a quarter-mile constitutes a comfortable walking distance. Therefore, train horn blasts and safety hazards from locomotives moving through at-grade crossings are more likely to affect residents within a quarter-mile of an at-grade crossing than residents who live further away. In the study area, almost 18%, or about 24,000 people, live near an at-grade crossing. More than a quarter of Wilmington residents (26% or 13,972 people) live near an at-grade crossing. The same is true for 13% of San Pedro residents.

A disproportionately large number of Wilmington residents live near an at-grade crossing. For example, 66% of East Wilmington residents live within 250 feet of an at-grade crossing. In addition, several at-grade crossings impede the ability of Wilmington residents who live to the south of Pacific Coast Highway to move freely and easily throughout the study area.

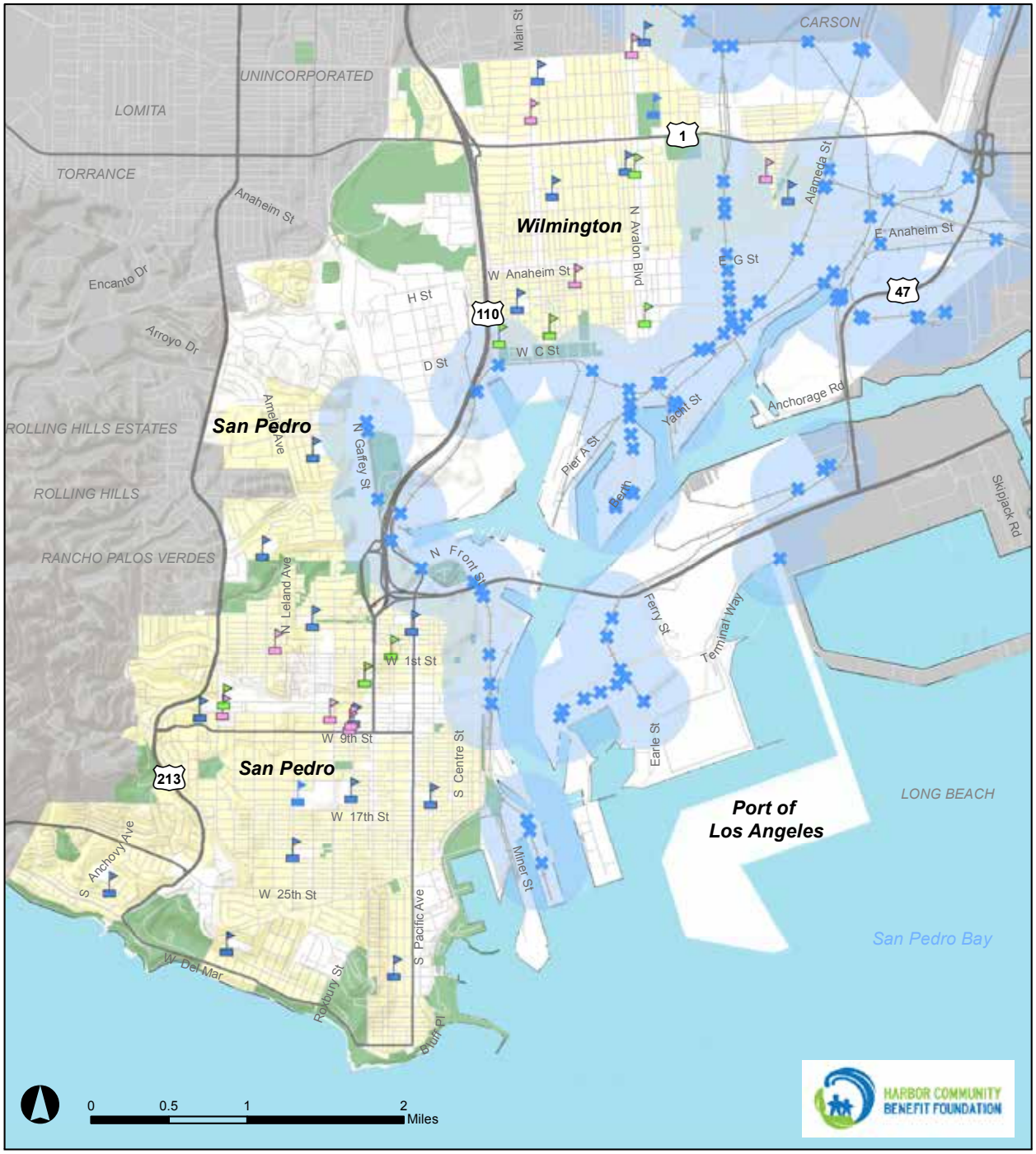
At-grade crossings near schools may also increase the risk of injury for school children that walk or bike to school. Four schools in Wilmington are within a quarter-mile of an at-grade railroad crossing: Broad Avenue Elementary School is in North Wilmington; Wilmington Park Elementary and Holy Family School are in East Wilmington; and Volunteers of America Head Start is in South Wilmington. The four schools represent approximately 28% of the total number of schools in Wilmington (n = 14). No at-grade crossings are within a quarter-mile of any school in San Pedro, although community members have noted that students living in Wilmington cross numerous railroad crossings on their way to and from schools in San Pedro. Map 26: Schools and Proximity to At-Grade Railroad Crossings shows the location of public and private schools in relation to at-grade railroad crossings in the study area.

Table 15: Residents Living within a Quarter-Mile of an At-Grade Railroad Crossing, by Neighborhood

Neighborhood	Total Pop	# of At-Grade Crossings	# Residents	% of Total Pop
Study Area	135,327	99	24,025	17.75%
San Pedro	79,704	12	10,035	12.59%
Central San Pedro	29,470	5	8,061	27.35%
Coastal San Pedro	27,132	3	25	0.09%
Northwest San Pedro	21,068	4	1,949	9.25%
Unincorporated San Pedro	2,034	0	0	0.00%
Wilmington	54,588	74	13,972	25.60%
East Wilmington	12,880	16	8,532	66.24%
North Wilmington	13,361	7	2,700	20.21%
South Wilmington	11,282	51	2,740	24.29%
West Wilmington	17,065	0	0	0.00%
Port of Los Angeles	1,035	13	18	1.74%

Data sources: Community workers with the Coalition for a Safe Environment (CFASE) and Long Beach Alliance for Children with Asthma (LBACA), 2016; Caltrans GIS Data: California Highway – Rail Crossings, Google Earth Images, 2016; U.S. Census Bureau Decennial Census, 2010

Map 26: Schools and Proximity to At-Grade Railroad Crossings



At-Grade Railroad Crossing
Quarter mile walk from RR Crossing
Residential Zoning
Parks and Recreational Areas

Railroad
Interstates and Highways
Streets

Schools
Early Childhoold Education and Head Start
Private and Charter Schools
Public Schools

Produced by Raimi + Associates, September 2016

Data Sources: Schools, 2014 County of Los Angeles Location Management System; Railroad lines, 2016 US Census TIGER/Line; Zoning data, 2015 City of Los Angeles Department of City Planning; Interstates and Highways, 2008 Tele Atlas North America, Inc.; World Terrain Base, 2009 ESRI.

RAIL NOISE IMPACTS

In 2012, Landrum & Brown conducted a study at select locations in Wilmington in order to assess a variety of noise levels.[14] The study authors selected sites to specifically measure noise around the Port, including back up beepers, trucks, lifts, road noise, railroad noise, and noise from Port-related facilities, determined by volume of container trucks associated with the facilities.

The loudest noise source from Port-related activities are train horns. The Code of Federal Regulations, which regulates the use of locomotive horns at public highway-rail grade crossings, requires conductors to sound train horns four times when approaching an at-grade crossing.[15] The horns are required to generate sound levels between 96 and 110 dBA 100 feet in front of the locomotive.[16] Warning bells on at-grade crossing guards, when present, also generate high noise levels. The noise produced by trains varies considerably depending on the speed of the train, car length, weather conditions, and other factors. In addition to periodic noise events, such as horn blasts that occur throughout the day, continuous lower frequency sounds can become increasingly irritating over time and lead to significant health effects. Common structural barriers cannot mitigate these lower frequency sounds.[17]

Train horns expose homes and schools near at-grade roadway crossings to very high noise levels throughout the day. At night, when ambient noise levels are lower, residents can hear loud train horns at considerable distances from the train. The Landrum & Brown study observed that during the night, up to two trains per hour passed on rail segments that were adjacent to residential areas.[18]

As described earlier, trains moving to and from the Port of Los Angeles operate throughout the day and night. Environmental noise generated by the movement of trains and horn blasts can have significant impacts on the health of nearby community residents, such as impacts on stress levels, heart disease, and sleep quality. One community health worker highlighted health impacts from light, noise, and vibration impacts caused by trains:

"The trains cause my clients sleep disturbance because of the light, noise, and vibration. When they've sought mitigations from the rail company, the representative told residents to buy thicker curtains. Even if that were a sufficient solution, thick curtains for an entire home are beyond my community members' financial means."

Based on the analysis of Port-related noise impacts in Wilmington, the most impacted areas are those adjacent to rail lines with at-grade crossings that run parallel along McFarland Avenue and Alameda Boulevard, as shown in Images 11 and 12. Another high impact area is located in North Wilmington along the freight corridor. Image 11 highlights the areas of the greatest impact in red.

14 Landrum & Brown. 2012. Wilmington School and Residence Sound Attenuation Program. Report #1: Noise Measurement Report. Available at http://hcbf.org/wp-content/uploads/2014/06/2012.12.14.Report-1.Wilmington-Noise-Measurement-Report_with-Attachments3.pdf.

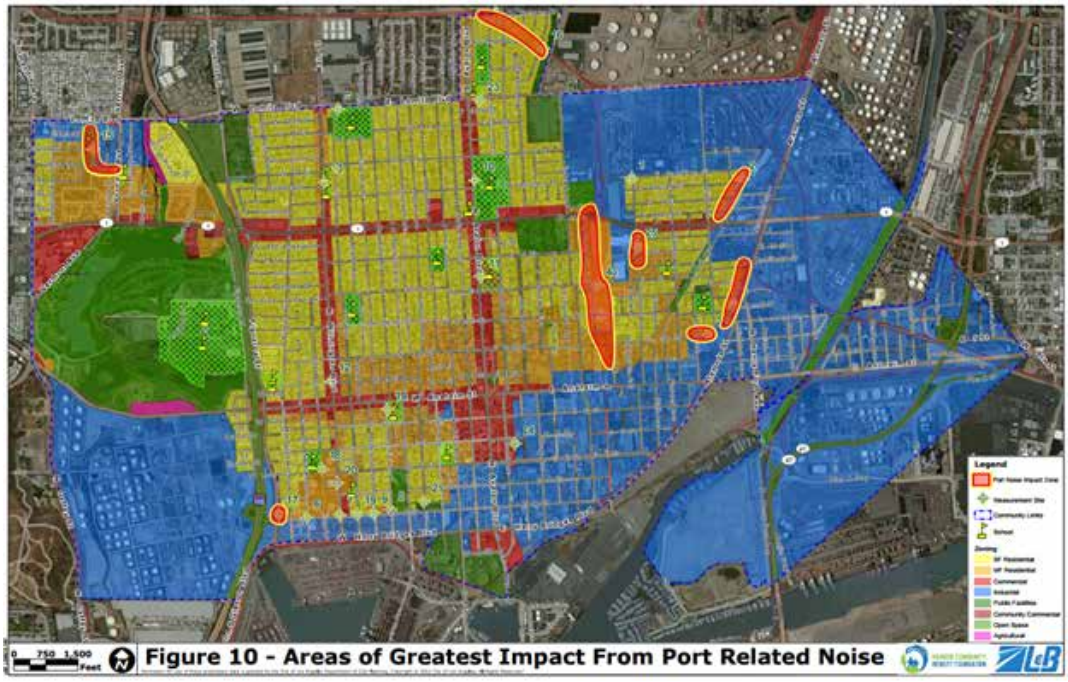
15 U.S. Department of Transportation, Federal Railroad Administration. The Train Horn Rule and Quiet Zones. Available at https://www.fra.dot.gov/Page/P0889

16 U.S. Department of Transportation, Federal Railroad Administration. The Train Horn Rule and Quiet Zones. Available at https://www.fra.dot.gov/Page/P0889

17 Health Canada. 2014. Health Impacts and Exposures to Sound from Wind Turbines: Updated Research Design and Sound Exposure Assessment. Available at https://www.canada.ca/en/health-canada/services/environmental-workplace-health/consultations/health-impacts-exposure-sound-wind-turbines-updated-research-design-sound-exposure-assessment.html

18 Landrum & Brown. 2012. Wilmington School and Residence Sound Attenuation Program. Report #1: Noise Measurement Report. Available at http://hcbf.org/wp-content/uploads/2014/06/2012.12.14.Report-1.Wilmington-Noise-Measurement-Report_with-Attachments3.pdf.

Image 11: Areas of Greatest Impact from Port-Related Noise in Wilmington



Source: Landrum & Brown. 2012. Wilmington School and Residence Sound Attenuation Program. Report #1: Noise Measurement Report. http://hcbf.org/wp-content/uploads/2014/06/2012.12.14.Report-1.Wilmington-Noise-Measurement-Report_with-Attachments3.pdf

Image 12: Train Lmax Noise Contours for Wilmington

Source: Landrum & Brown. 2012. Wilmington School and Residence Sound Attenuation Program. Report #3: Noise Contour Development Methodology Report. Available at http://hcbf.org/wp-content/uploads/2014/06/2013.12.13-Report-3.-Noise-Contour-Development-Methodology-Report.pdf

Noise impacts are measured with the A-weighted decibel scale (dBA), which assesses noise based on the amplitude (volume or loudness) and frequency (pitch) combinations that relate to human sensitivity. Topography, humidity, air temperature, wind, and physical barriers such as trees and buildings can all affect how far sound waves travel away from their source and how quickly sound levels decrease. Table 16 below describes sound levels and loudness of illustrative noises. The scale considers fifty dBA to be quiet, 70 dBA to be moderately loud, and 90 dBA to be very loud.

Table 16: Sound Levels and Loudness of Illustrative Noises in Indoor and Outdoor Environments
Numbers in Parentheses are the A-Scale Weighted Sound Levels for that Noise Event

dB(A)	OVER-ALL LEVEL	COMMUNITY (Outdoor)	HOME OR INDUSTRY	LOUDNESS Human Judgement of Different Sound Levels
120		Military Jet Aircraft Take-Off With After-Burner From Aircraft Carrier @ 50 Ft. (130)	Oxygen Torch (121)	120 dB(A) 32 Times as Loud
110	UNCOMFORTABLY LOUD	Concord Takeoff (113)*	Riveting Machine (110) Rock-N-Roll Band (108-114)	110 dB(A) 16 Times as Loud
100		Boeing 747-200 Takeoff (101)*		100 dB(A) 8 Times as Loud
90	VERY LOUD	Power Mower (96) DC-10-30 Takeoff (96)* Motorcycle @25 Ft. (90)	Newspaper Press (97)	90 dB(A) 4 Times as Loud
80		Car Wash @ 20 Ft. (89) Boeing 727 w/ Hushkit Takeoff (96)* Diesel Truck, 40 MPH @ 50 Ft. (84) Diesel Train, 45 MPH @ 100 Ft. (83)	Food Blender (88) Milling Machine (85) Garbage Disposal (80)	80 dB(A) 2 Times as Loud
70	MODERATELY LOUD	High Urban Ambient Sound (80) Passenger Car, 65 MPH @ 25 Ft. (77) Freeway @ 50 Ft. From Pavement Edge, 10:00 AM (76 +or- 6) Boeing 757 Takeoff (76)*	Living Room Music (76) TV-Audio, Vacuum Cleaner	70 dB(A)
60		Propeller Airplane Takeoff (67)* Air Conditioning Unit @ 100 Ft. (60)	Cash Register @ 10 Ft. (65-70) Electric Typewriter @ 10 Ft. (64) Dishwasher (Rinse) @ 10 Ft. (60) Conversation (60)	60 dB(A) 1/2 as Loud
50	QUIET	Large Transformers @ 100 Ft. (50)		50 dB(A) 1/4 as Loud
40		Bird Calls (44) Lower Limit Urban Ambient Sound (40)		40 dB(A) 1/8 as Loud
20	JUST AUDIBLE	(dB[A] Scale Interrupted) Desert at Night		
10	THRESHOLD OF HEARING			

Source: Landrum & Brown. 2012. Wilmington School and Residence Sound Attenuation Program. Report #1: Noise Measurement Report. http://hcbf.org/wp-content/uploads/2014/06/2012.12.14.Report-1.Wilmington-Noise-Measurement-Report_with-Attachments3.pdf

We also conducted an analysis of residential impact from train operations for this analysis. We chose 700 feet as the highest impact zone based on distance to a locomotive Lmax noise contour of 65 dBA. Noise above this threshold can interfere with normal conversation.[19] Table 17 below depicts the outcomes of the analysis. About 9% of Wilmington residents live within 700 feet from a railroad track, most of whom reside in East Wilmington. About 24% of residents and nearly 24% of children in East Wilmington live within this buffer and are disproportionately affected by noise from trains moving through the study area. Approximately 5% of San Pedro residents live within 700 feet of a railroad line. No residents living within Unincorporated San Pedro, West Wilmington, and the Port of Los Angeles are within this distance of a railroad line.

19 Landrum & Brown. 2013. Report #3: Noise Contour Development Methodology Report. Available at http://hcbf.org/wp-content/uploads/2014/06/2013.12.13-Report-3.-Noise-Contour-Development-Methodology-Report.pdf.

Table 17: Number of Residents within 700 feet of Railroad Tracks, by Neighborhood

Neighborhood	Total	Total Children < 18 years	Population Living within 700 feet of a Railroad Track			
			# pop	% of total pop	# Children < 18 years	% of < 18 years
Study Area	135,327	36,064	8,857	6.54%	2,520	6.99%
San Pedro	79,704	18,766	3,646	4.57%	958	5.10%
Central San Pedro	29,470	8,068	2,317	7.86%	679	8.42%
Coastal San Pedro	27,132	6,093	1,077	3.97%	218	3.58%
Northwest San Pedro	21,068	4,190	252	1.20%	61	1.46%
Unincorporated San Pedro	2,034	415	0	0.00%	0	0.00%
Wilmington	54,588	17,298	5,211	9.55%	1,562	9.03%
East Wilmington	12,880	4,102	3,122	24.24%	976	23.79%
North Wilmington	13,361	3,688	1,449	10.84%	411	11.14%
South Wilmington	11,282	3,963	640	5.67%	175	4.42%
West Wilmington	17,065	5,545	0	0.00%	0	0.00%
Port of Los Angeles	1,035	0	0	0.00%	0	0.00%

Data sources: U.S. Census Bureau Decennial Census, 2010; U.S. Census TIGER/Line Shapefiles, 2016

DATA SOURCES

Table 18 below shows the data sources used in the analysis of at-grade railroad crossing and rail impacts.

Table 18: Data Sources for Analysis of At-Grade Railroad Crossings and Rail Impacts

Data	Year	Description	Source
Railroad tracks	2016	Location of railroad tracks throughout the study area	U.S. Census, TIGER/Line Shapefiles
Vehicle Collisions	2010-2014	Locations of all vehicle collisions including truck-, bike-, and pedestrian-involved and injuries/deaths from collisions	Statewide Integrated Traffic Records System, California Highway Patrol.
At-Grade Railroad Crossings	2016	Groundtruthed locations of at Grade Railroad crossings using Google Earth & community workers in the study area	Coalition for a Safe Environment (CFASE), Long Beach Alliance for Children with Asthma (LBACA), Raimi + Associates (Google Earth)
California Highway-Rail Crossings	2013	Locations of at-grade railroad crossings with highways	Caltrans GIS Data: California Highway – Rail Crossings
At-Grade Crossing Characteristics	2016	Database of California Railroad Crossings	California Public Utilities Commission
Public, Private, & Charter Schools. Early Childhood Education and Head Start Centers	2015	Locations of schools and early childhood education centers	The County of Los Angeles' Location Management System (LMS), Los Angeles County GIS Data Portal
Demographic information	2010	Population count data	U.S. Census Bureau Decennial Census

3. LAND USE

LAND USE

OVERVIEW

Port and Port-related land uses in the study area have expanded and intensified over time. Port-related businesses were established in San Pedro and Wilmington for convenient access to the Port and other transportation infrastructure and complementary industries. Port-related businesses are primarily industrial and involve higher intensities of land uses and are often more hazardous than businesses located in other places in San Pedro and Wilmington.[1] Evidence also indicates that social and demographic factors often drive the siting of hazardous and polluting sources in predominantly low-income communities and neighborhoods of color, creating environmental inequities.[2,3]

The impacts of these land uses near residential and commercial areas are multifold. The purpose of this chapter is to provide an examination of the Port-related or Port-serving businesses and related land uses in the study area to understand how these land uses have impacted the community and their nexus with the Port of Los Angeles or Port-related operations and activities.

1 Boone CG. 1999. Creating a Toxic Neighborhood in Los Angeles County: A Historical Examination of Environmental Inequity. Urban Affairs Review. 35: 163 - 187.

2 Pastor M, Sadd J, and Hipp J. 2001. Which Came First? Toxic Facilities Minority Move-In, and Environmental Justice. Journal of Urban Affairs. 23(1): 1-21.

3 Pastor M, Sadd, J, and Morello-Frosch, R. 2007. Still Toxic After All These Years: Air Quality and Environmental Justice in the San Francisco Bay Area. Available at http://cjtc.ucsc.edu/docs/bay_final.pdf.

This chapter examines incompatible land uses, Port-related and Port-serving businesses, vacant property, storage yards, and aesthetic and visual impacts in the study area. Specifically, the research questions are:

- What businesses are linked to Port-related activities?
- What types of activities are these businesses conducting? Which of these are considered hazardous?
- How many and what percentage of total businesses in San Pedro and Wilmington do these identified businesses make up?
- Which parcels have conflicts between their actual use and their zoning designations?
- What nuisance businesses are serving Port workers (i.e. adult entertainment, bars, liquor stores, etc.)?

INCOMPATIBLE LAND USES

CONTEXT

As operations have grown at the Port of Los Angeles over its 109-year history, land uses in the surrounding Wilmington and San Pedro neighborhoods have also changed to reflect the dynamic goods movement industry. The history and development of Wilmington and San Pedro and their land uses are inextricably intertwined with that of the Port's. As the Port of Los Angeles and related goods movement industries and activities expanded and intensified in the 20th century, land use pressures in these communities also intensified. Rail and transportation infrastructure were built through these neighborhoods to connect the Port with other parts of the City and the region. Other industrial and manufacturing industries—such as oil and gas extraction and production facilities, chemical plants, and hazardous waste facilities—clustered in Wilmington and San Pedro due to

complementary land uses and economic location patterning.[4]

More importantly, racism and imbalances in power between community residents and the Port of Los Angeles and government institutions also played significant roles in limiting the capacity of residents to resist the placement of undesirable land uses in their neighborhoods or the expansion of Port and Port-related operations.[5,6] As one community stakeholder expressed, "The Port likes poor people to live [in these areas] because they don't complain." As a consequence, polluting and hazardous facilities concentrated in the area, and commercial, residential, and other sensitive land uses were drawn into conflict with high intensity land uses. Strong empirical evidence documents these persistent environmental inequities in Southern California.[7,8,9,10]

Incompatible land uses are uses that are in conflict, such as residential areas interspersed within an industrial zone. Incompatible land uses have the potential to negatively affect the health and wellbeing of community residents through increased exposures to air and water pollution, noise, physical hazards, and traffic. These increased exposures lead to increases in asthma, injury and death, lung disease, heart disease, and stress among community members. Incompatibility can also serve as a marker of cumulative risk from multiple sources of pollution.[11]

This section aims to explore the extent to which incompatible land uses exist in the study area and examine the connection with the Port of Los Angeles and Port-related operations and activities. Our analysis considers mismatches in land uses between assessed uses and zoning designations as a measure of incompatibility.

NEXUS BETWEEN THE PORT OF LOS ANGELES AND INCOMPATIBLE LAND USES

Figure 12 depicts the plausible causal pathway describing how Port and Port-related operations impact incompatible land uses in the study area. Port-related businesses were established in the area due to proximity with other complementary businesses and needed infrastructure, which increased economic pressures to intensify land uses of nearby parcels. Additionally, land uses evolved over time, and certain sections of the study area that were traditionally residential or commercial slowly intensified over time. Wilmington and San Pedro residents also historically lacked the political power to resist incompatible land uses, further contributing to the clustering of industrial and manufacturing uses in these neighborhoods. These effects resulted in higher intensity of land uses in the study area, which led to disproportionate exposures to environmental pollution and hazards and impacts on the communities' health and well-being.

4 Brulhart M. 1998. Economic Geography, Industry Location and Trade: The Evidence. The World Economy. 21(6): 775-801.

5 Pastor M, Sadd J and Morello-Frosch R. 2007. Still Toxic After All These Years: Air Quality and Environmental Justice in the San Francisco Bay Area. Available at http://cjtc.ucsc.edu/docs/bay_final.pdf.

6 Pastor M, Sadd J and Hipp J. 2001. Which Came First? Toxic Facilities, Minority Move-In, and Environmental Justice. Journal of Urban Affairs. 23(1): 1-21.

7 Boone, CG. 1999. Creating a Toxic Neighborhood in Los Angeles County: A Historical Examination of Environmental Inequity. Urban Affairs Review. 35: 163-187.

8 Morello-Frosh R, Pastor M and Sadd J. 2001. Environmental Justice and Southern California's "Riskscape": The Distribution of Air Toxics Exposures and Health Risks among Diverse Communities. Urban Affairs. 36(4):551-578.

9 Morello-Frosh R, Pastor M, Porras C et al. 2002. Environmental Justice and Regional Inequality in Southern California: Implications for Future Research. Environmental Health Perspectives. 110 (Suppl 2): 149-154.

10 Pastor M, Morello-Frosh R and Sadd JL. 2005. The Air is Always Cleaner on the Other Side: Race, Space, and Ambient Air Toxic Exposures in California. Journal of Urban Affairs. 27(2); 127-148.

11 Lejano RP and Smith CS. 2006. Incompatible Land Uses and the Topology of Cumulative Risk. Environmental Management. 37(2): 230-246.

Figure 12: Pathway Diagram of Impacts from Incompatible Land Uses

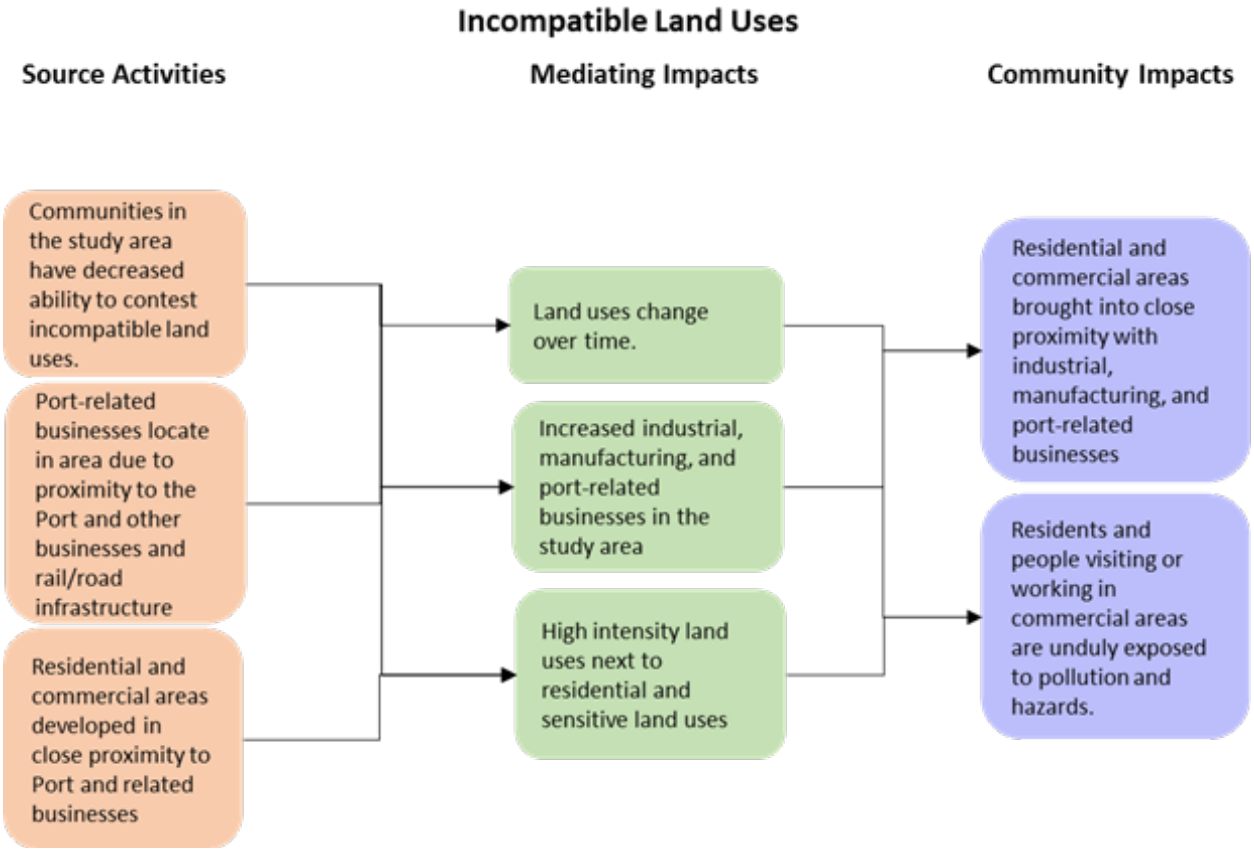


Table 19 describes the nexus between the Port and Port-related operations and the impacts from incompatible land uses in the study area based on the nine criteria outlined. Industries related to goods movement and other industrial businesses located in the study area for convenient access to the Port of Los Angeles, for other complementary industries, and for proximity to transportation infrastructure.

The emergence of side-by-side locations of incompatible land uses and vulnerable populations in the study area was not by chance: it is the direct result of the economic pressures that Port and Port-related operations and activities placed on land uses in Wilmington and San Pedro. Social and economic factors critically affect the ability of residents to resist incompatible land uses in their neighborhoods. The pathway is plausible and is supported by empirical evidence. As demonstrated in the findings, certain neighborhoods within the study area are disproportionately impacted with incompatible land uses compared to the City of Los Angeles. Many community stakeholders also expressed concerns over these issues.

Table 19: Nexus Criteria for Incompatible Land Uses

Incompatible Land Uses		
Criteria	**Yes, No, Possibly, Unsure, N/A**	**Notes**
1. Is the source an established Port or Port-serving land use or activity?	Yes	Many of the parcels that are in conflict include Port-related uses.
2. Is the impact a direct result of the Port or Port-serving land use or activity?	Yes	The clustering of intense land uses within close proximity to residential and other sensitive area are the direct result of the Port and Port-related operations in the study area.
3. Is the impact an indirect result of the Port or Port-serving land use or activity?	Yes	Many of these intense land uses locate to the study area doe to proximity with other similar operations.
4. Is the causal pathway logical and plausible?	Yes	
5. Is there generalizable empirical evidence to support the causal pathway?	Yes	
6. Is there a distance-based relationship to Port or Port-serving use or activity?	Yes	
7. Is there temporal-based relationship to Port development in the study area?	Unsure	Did not examine.
8. Is there a disproportionate burden/impact relative to the city/region?	Yes	Our analysis shows that the study area is disproportionately impacted compared with the City of Los Angeles.
9. Is there local qualitative evidence to support the pathway?	Yes	Community stakeholder discussed incompatible land uses as a concern for increasing exposure to pollution and hazards.

RESEARCH QUESTIONS AND METHODOLOGY

The analysis aims to understand the extent of incompatible land uses in the study area. We use an analysis of mismatched land uses, defined as differences between the assessed and zoned uses of parcels, as a measure of incompatibility. In particular, we are concerned about differences in land uses that resulted in lower intensity uses—such as residential, commercial uses, and parks and open spaces—in areas zoned for high intensity industrial or manufacturing uses. For the purposes of this analysis, we refer to these parcels as "Assessed Low/Zoned High."

Several factors explain the differences between assessed and zoned uses. As described above, the long history of Port operations in the study area, combined with gradual land use changes over time, resulted in pockets of industrial and manufacturing uses next to or within less intense uses. Industrial and manufacturing uses in the study area grew and intensified over the years, which led to residential islands within industrial/manufacturing zones or pockets of industrial or manufacturing uses within residential areas. This mixing of incompatible uses is currently the state of land use in Wilmington and San Pedro. Mismatched land uses are a measure of such an effect.

The analysis consists of a spatial comparison of zoning land use designations with the assessed land uses in the study area. Zoned land uses are the permitted uses of the area as designated by the City of Los Angeles, while the County of Los Angeles tracks and assesses how the parcel is being used for tax purposes. Assessed uses reflect the actual use of the land. We spatially joined zoning designations to intersecting parcels using ArcMap. We excluded Unincorporated San Pedro from this analysis because it is not part of the City of Los Angeles and zoning data was not available for this neighborhood.

We identified parcels with mismatched land uses with the highest potential negative impacts and excluded other types of mismatch, such as residential uses in commercial zones. We also specifically identified mismatched parcels that are either:

- Zoned industrial or manufacturing and assessed nonindustrial, or
- Zoned non-industrial and assessed industrial.

In addition, we highlighted mismatched parcels with the highest potential for negative impacts: residential areas within industrial and manufacturing zones.

High-intensity industrial and manufacturing assessed uses include:

- Industrial
- Light manufacturing
- Industrial use parking lot
- Warehousing, distribution, storage
- Open storage
- Processing plants

Lower-intensity assessed uses include:

- Commercial
- Residential
- Miscellaneous (which includes utility, government owned property, petroleum and gas, dump sites)
- Recreational
- Institutional

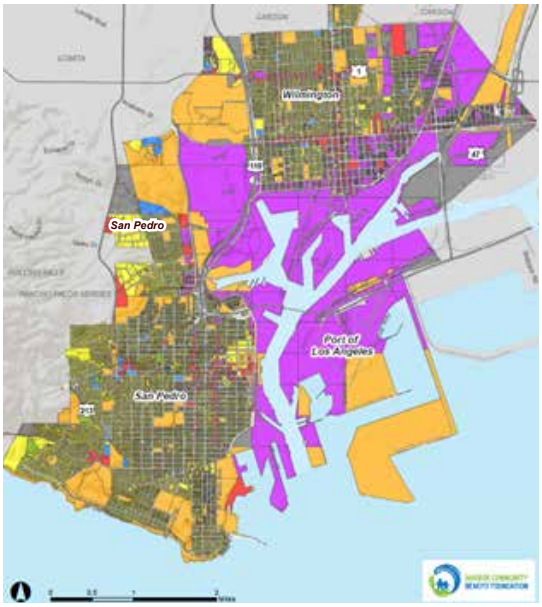
As many of the miscellaneous assessed uses include high intensity uses, such as petroleum and gas and dump sites, we also conducted a secondary sensitivity analysis of mismatched land uses excluding these miscellaneous uses. We identified, mapped, and displayed these parcels in tabular format.

FINDINGS

There are 31,802 parcels in the study area. After comparing the County of Los Angeles Assessor's data with the zoning designations of land uses in the neighborhoods, we found 1,122 parcels with conflicting or mismatched land use designations, meaning these parcels were either zoned as industrial and assessed as non-industrial uses or assessed as industrial and zoned as non-industrial uses. The maps and tables on the following pages describe the extent of mismatching land uses in the study area.

Full maps on the following pages are of the existing land uses as designated in the City of Los Angeles zoning map and the Los Angeles County Office of the Assessor. Map 27 and 28 show a side-by-side visual comparison of differences and potential conflicts in the uses based on differences in uses as depicted by the various colors.

Map 27: Assessed Uses



Map 28: Zoned Uses

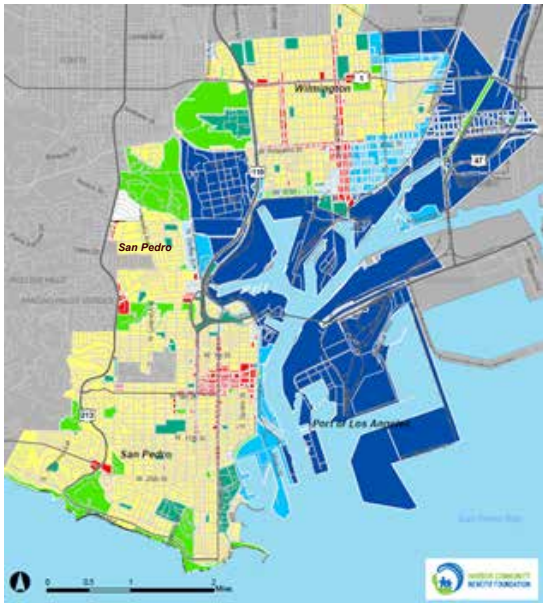


Table 20: All Mismatches in Land Uses, by Neighborhood

Neighborhoods	# Total Parcels	# Mismatched Parcels	% of Parcels
City of Los Angeles	795,628	19,509	2.45%
Study Area	31,802	1,032	3.25%
San Pedro	19,879	199	1.00%
Central San Pedro	5,167	119	2.30%
Coastal San Pedro	6,848	17	0.25%
Northwest San Pedro	7,864	63	0.80%
Wilmington	11,349	815	7.18%
East Wilmington	3,420	361	10.56%
North Wilmington	3,097	40	1.29%
South Wilmington	2,479	407	16.42%
West Wilmington	2,353	7	0.30%
Port of Los Angeles	86	18	20.93%

Data sources: Zoning designations, 2015, City of Los Angeles; Assessor's land use data, 2015, Los Angeles County Office of the Assessor

As Table 20 indicates, over 3% of the study area parcels and over 7% of Wilmington's parcels have mismatched uses. The neighborhoods of East and South Wilmington are the most affected, outside of the Port of Los Angeles. Over 10% and 16% of parcels in East and South Wilmington, respectively, have mismatched uses. One percent of parcels in all of San Pedro and 2.3% of parcels in Central San Pedro have mismatched uses. Map 34: Mismatched Land Uses, Excluding Miscellaneous Uses illustrates this pattern and shows many affected parcels in East and South Wilmington. Compared to the City of Los Angeles, the study area has 1.32 times the number of mismatched parcels.

Table 21 depicts the number of parcels that were assessed at lower intensity uses but zoned for high intensity uses. These results are a subset of data from Table 20 above, and include only mismatched land uses that fit this description. These parcels are referred to as "assessed low/zoned high" and indicate an increased risk of exposure to environmental pollution and hazards exposures among community residents. Compared with the City of Los Angeles, the study area is 1.09 times more likely to have "assessed low/zoned high. In Wilmington, 5.6% of parcels are "assessed low/zoned high," with East and South Wilmington disproportionately impacted.

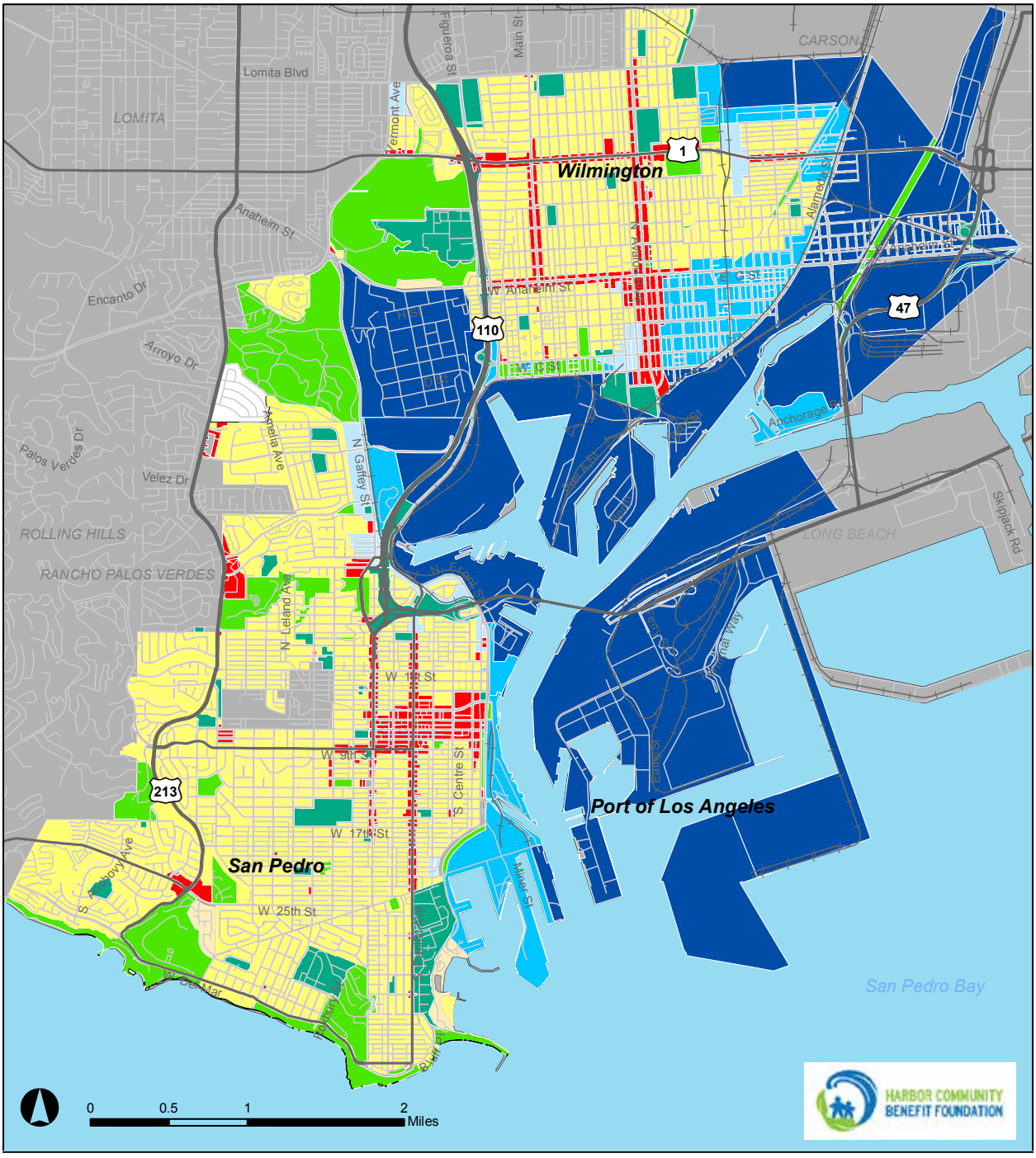
Table 21: Parcels Assessed Low/Zoned High, by Neighborhood

Locations	# Total Parcels	# Parcels Assessed Low/Zoned High	% of Parcels
City of Los Angeles	795,628	18,258	2.29%
Study Area	31,802	792	2.49%
San Pedro	19,879	143	0.72%
Central San Pedro	5,167	88	1.70%
Coastal San Pedro	6,848	10	0.15%
Northwest San Pedro	7,864	45	0.57%
Wilmington	11,349	631	5.56%
East Wilmington	3,420	330	9.65%
North Wilmington	3,097	36	1.16%
South Wilmington	2,479	265	10.69%
West Wilmington	2,353	0	0.00%
Port of Los Angeles	86	18	20.93%

Data sources: Zoning designations, 2015, City of Los Angeles; Assessor's land use data, 2015, Los Angeles County Office of the Assessor

Of the parcels "assessed low/zoned high," the highest percentage of assessed uses include miscellaneous (50%), which is a catch-all category that includes multiple uses such as government-owned property, petroleum and gas uses, and dump sites. Commercial uses represented almost 31% of assessed uses, and residential made up close to 19% of uses. Table 22 depicts the breakdown of assessed uses of parcels "assessed low/zoned high."

Map 29: Existing Zoning Designations



Legend

- Railroad
- Interstates and Highways
- Streets

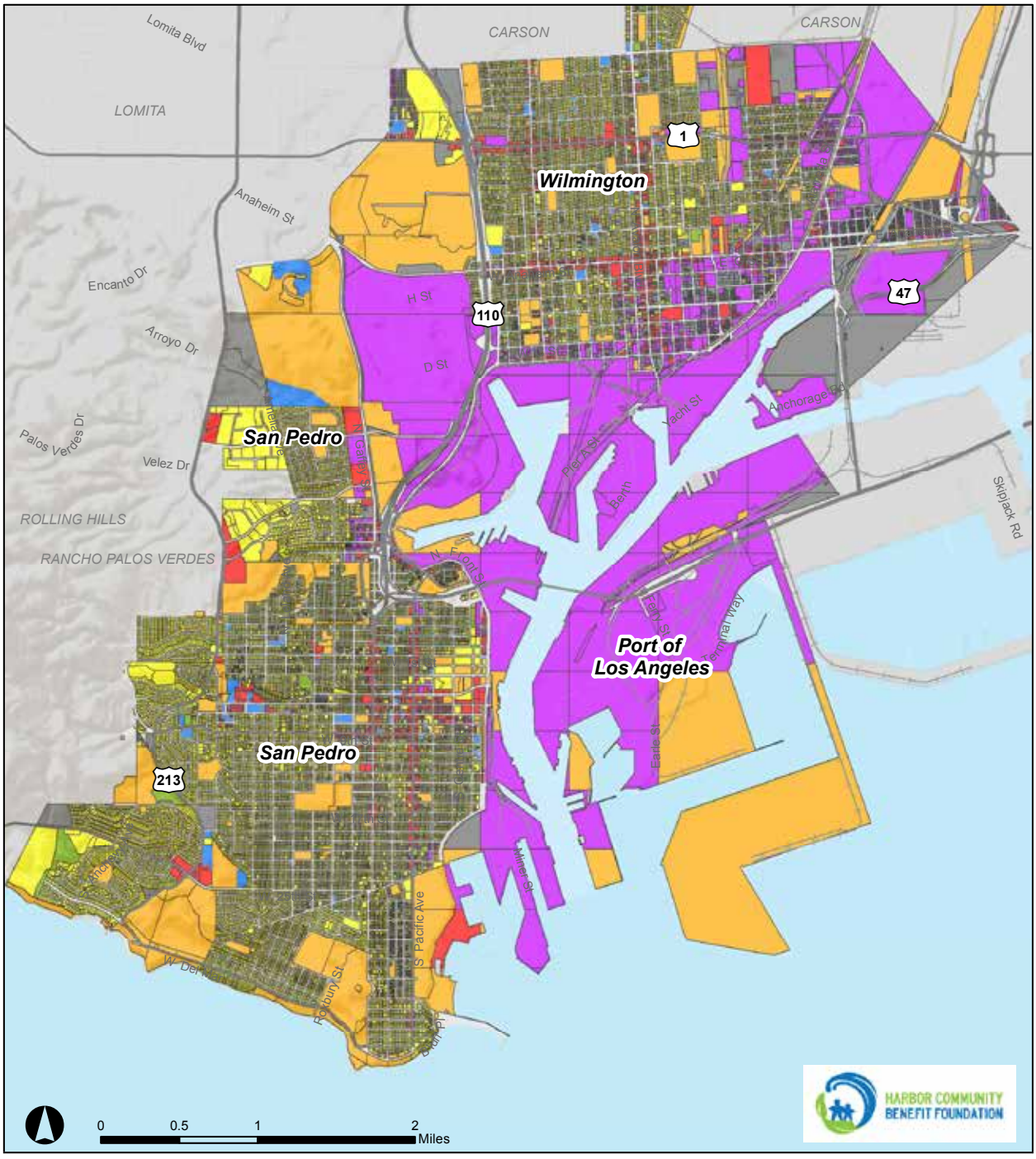
Land Uses

- Limited industrial
- Light industrial
- Heavy industrial
- Residential
- Commercial
- Open space
- Parking
- Public facilities
- Agricultural
- Other
- San Pedro Bay

Sources: Zoning data, 2015, City of Los Angeles Department of City Planning; Interstates and Highways, 2008 Tele Atlas North America, Inc.; World Terrain Base, 2009 ESRI.

Produced by Raimi + Associates

Map 30: Existing Zoning Designations



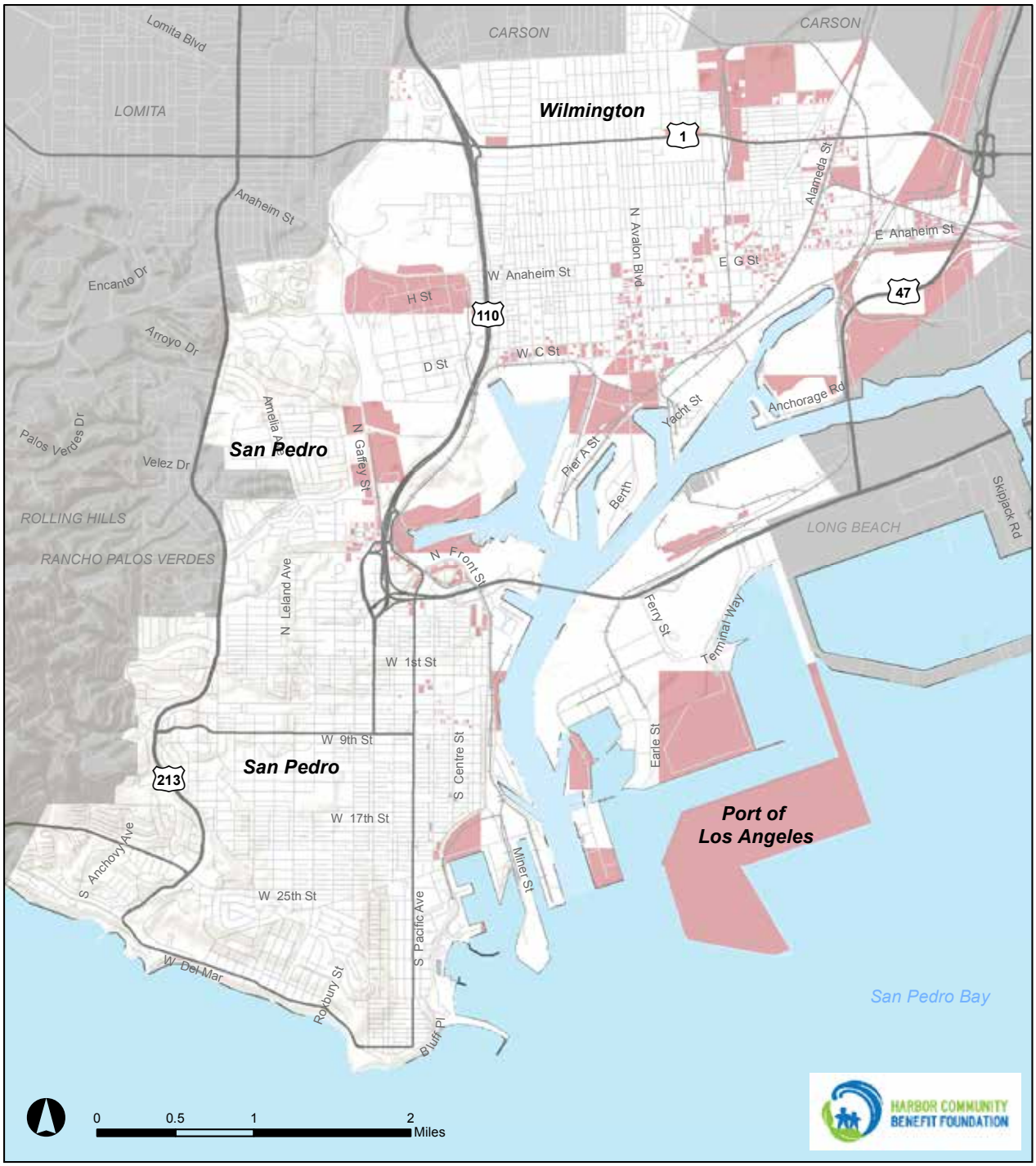
Assessed Uses

- Commercial
- Industrial
- Institutional
- Vacant
- Miscellaneous
- Recreational
- Residential
- Railroad
- Interstates and Highways
- Streets
- San Pedro Bay

Produced by Raimi + Associates.
August 2016

Sources: Parcel data, 2015, Los Angeles County Office of the Assessor; Interstates and Highways, 2008 Tele Atlas North America, Inc.; World Terrain Base, 2009 ESRI.

Map 31: Mismatched Land Uses



Mismatched Parcels

Streets

Railroad

Interstates and Highways

Data Sources: Assessors Parcel Data, 2016, Los Angeles County Office of the Assessor; Zoning data, 2015, City of Los Angeles Department of City Planning; Interstates and Highways, 2008 Tele Atlas North America, Inc.; World Terrain Base, 2009 ESRI.

Produced by Raimi + Associates, October 2016.

Table 22: Assessed Uses of Parcels Assessed Low/Zoned High

Assessed uses	# Parcels	% of total
Miscellaneous	396	50.00%
Commercial	243	30.68%
Residential	147	18.56%
Recreational	5	0.63%
Institutional	1	0.13%
Total	792	100.00%

Data sources: Zoning designations, 2015, City of Los Angeles; Assessor's land use data, 2015, Los Angeles County Office of the Assessor

Table 23 provides further information about a subset of parcels in Table 3 that were assessed as residential in areas zoned as industrial or manufacturing uses. These parcels are particularly vulnerable because they represent residential areas with the greatest amount of exposures to pollution and hazards. These are typically residential areas surrounded by industrial and manufacturing uses ("residential island"). Less than 1% of residential parcels fall into this category; however, over 5% and 2% of residential parcels in East and South Wilmington are affected. Map 32: Residential Uses in Industrial and Manufacturing Zones: Wilmington and Map 33: Residential Uses in Industrial and Manufacturing Zones: San Pedro depict the "residential islands" of Wilmington and San Pedro's industrial zones.

As an additional analysis, we excluded miscellaneous assessed uses from the mismatched land use data, as many of these uses include high intensity uses, such as petroleum, gas, and dump sites. We conducted this sensitivity analysis to see whether and how these patterns hold true if miscellaneous uses are removed. We show the results in Table 24 and Map 34: Mismatched Land Uses, Excluding Miscellaneous Uses. With miscellaneous uses removed, the disproportionate number of mismatched land uses between the entire study area and the City of Los Angeles disappears. However, Wilmington overall, and the neighborhoods of East and South Wilmington, are still disproportionately impacted. South Wilmington and East Wilmington are 5 times and 2.22 times more likely to have mismatched land uses compared with the City of Los Angeles, respectively.

Table 23: Residential Assessed Uses in Areas Zoned as Industrial or Manufacturing Uses, by Neighborhood

Neighborhoods	# Total Parcels Assessed Residential	# Parcels Assessed Residential/Zoned as High Intensity	% of parcels
Study Area	26,498	147	0.55%
San Pedro	18,687	47	0.25%
Central San Pedro	4,410	38	0.86%
Coastal San Pedro	6,651	4	0.06%
Northwest San Pedro	7,626	5	0.07%
Wilmington	7,811	100	1.28%
East Wilmington	1,867	41	2.20%
North Wilmington	2,801	2	0.07%
South Wilmington	1,015	57	5.62%
West Wilmington	2,128	0	0.00%
Port of Los Angeles	0	0	0.00%

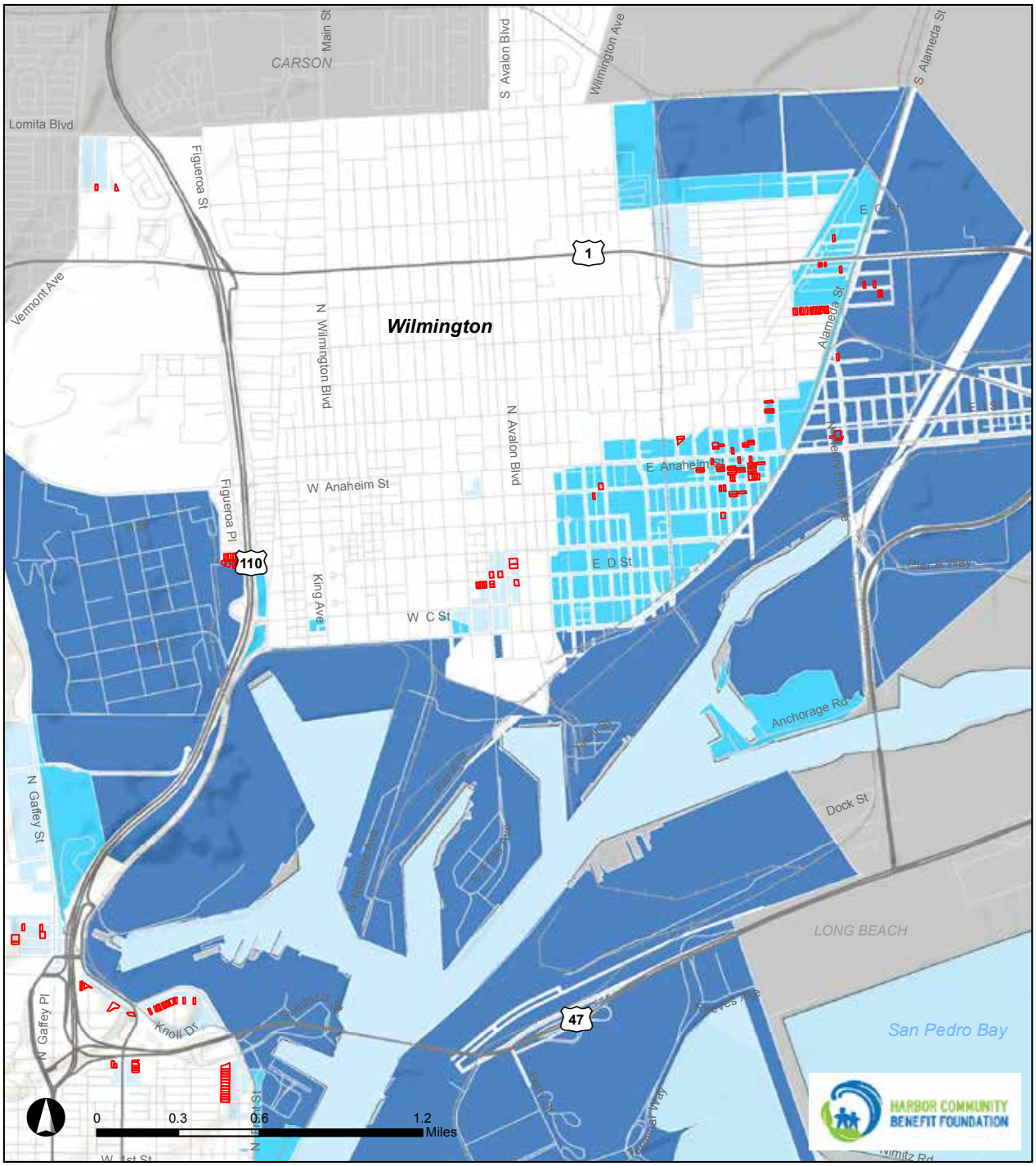
Data sources: Zoning designations, 2015, City of Los Angeles; Assessor's land use data, 2015, Los Angeles County Office of the Assessor

Table 24: Mismatched Land Uses in Study Area, Excluding Miscellaneous Uses

Locations	# Total Parcels	# Mismatched Parcels	% of Parcels
City of Los Angeles	795,628	18,981	2.39%
Study Area	31,802	636	2.00%
San Pedro	19,879	148	0.74%
Central San Pedro	5,167	86	1.66%
Coastal San Pedro	6,848	13	0.19%
Northwest San Pedro	7,864	49	0.62%
Wilmington	11,349	488	4.30%
East Wilmington	3,420	175	5.12%
North Wilmington	3,097	10	0.32%
South Wilmington	2,479	296	11.94%
West Wilmington	2,353	7	0.30%
Port of Los Angeles	86	0	0.00%

Data sources: Zoning designations, 2015, City of Los Angeles; Assessor's land use data, 2015, Los Angeles County Office of the Assessor

Map 32: Residential Uses in Industrial and Manufacturing Zones: Wilmington



Parcels Assessed Low/ Zoned High

- Residential

Industrial and Manufacturing Zones

- Limited industrial
- Light industrial
- Heavy industrial

- Streets
- Railroad
- Interstates and Highways

Data Sources: Assessors Parcel Data, 2016, Los Angeles County Office of the Assessor; Zoning data, 2015, City of Los Angeles Department of City Planning; Interstates and Highways, 2008 Tele Atlas North America, Inc.; World Terrain Base, 2009 ESRI.

Produced by Raimi + Associates, October 2016.

Map 33: Residential Uses in Industrial and Manufacturing Zones: San Pedro

Parcels Assessed Low/ Zoned High

- Residential

Industrial and Manufacturing Zones

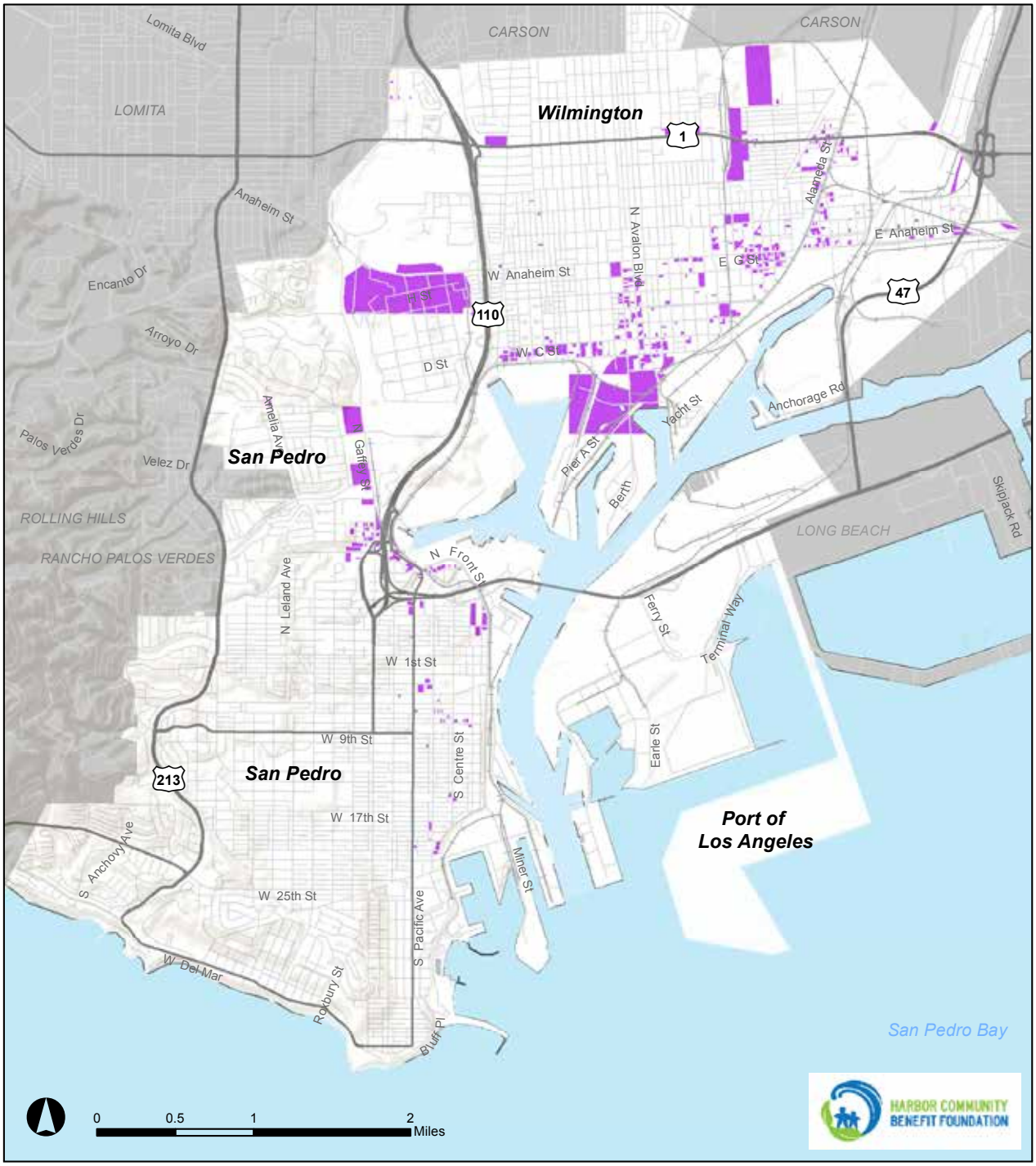
- Limited industrial
- Light industrial
- Heavy industrial

- Streets
- Railroad
- Interstates and Highways

Data Sources: Assessors Parcel Data, 2016, Los Angeles County Office of the Assessor; Zoning data, 2015, City of Los Angeles Department of City Planning; Interstates and Highways, 2008 Tele Atlas North America, Inc.; World Terrain Base, 2009 ESRI.

Produced by Raimi + Associates, October 2016.

Map 34: Mismatched Land Uses, Excluding Miscellaneous Uses



Mismatched Parcels, Excluding Misc.

Railroad

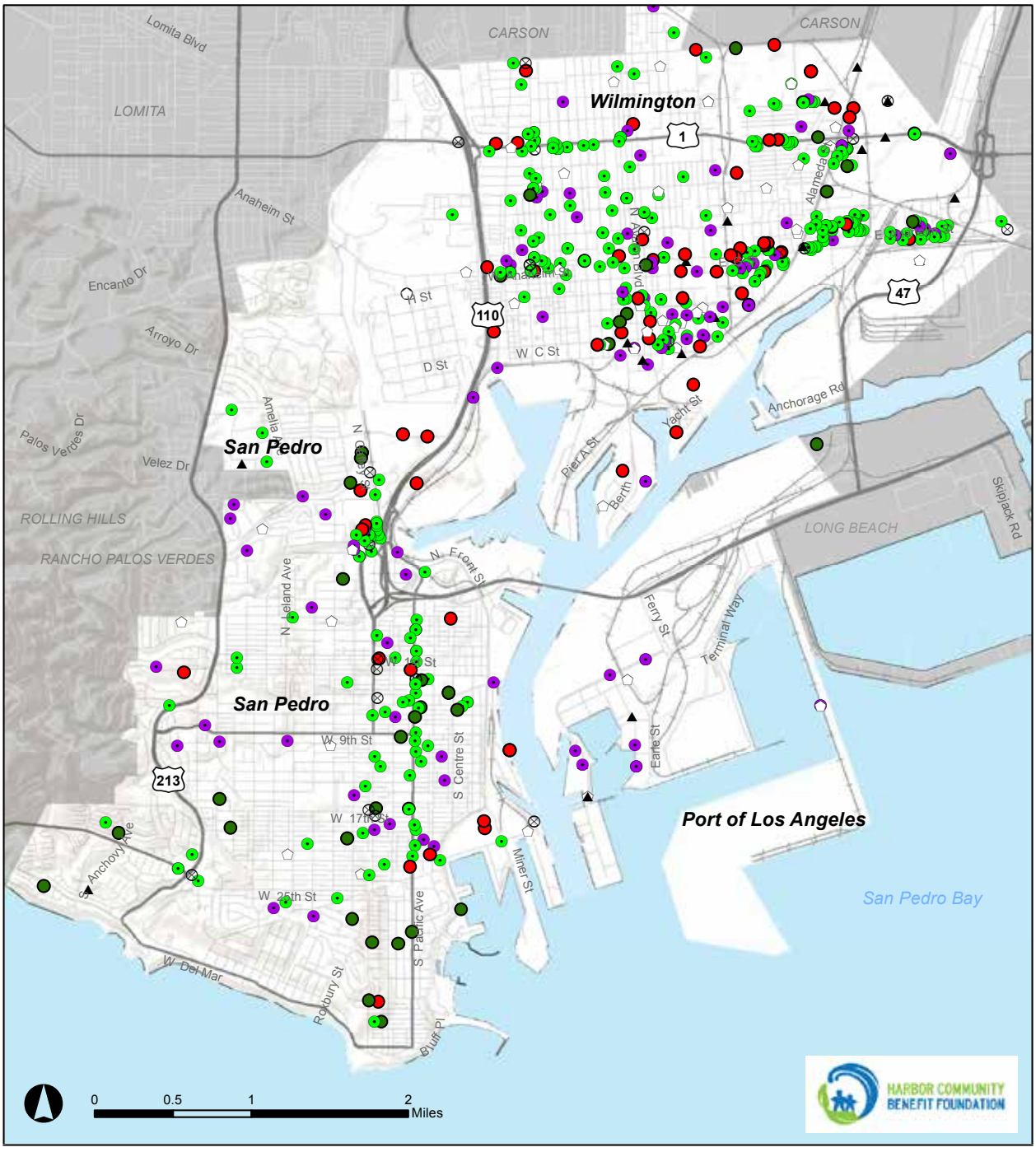
Interstates and Highways

Streets

Data Sources: Assessors Parcel Data, 2016, Los Angeles County Office of the Assessor; Zoning data, 2015, City of Los Angeles Department of City Planning; Interstates and Highways, 2008 Tele Atlas North America, Inc.; World Terrain Base, 2009 ESRI.

Produced by Raimi + Associates, October 2016.

Map 35: Port-Related Businesses



Port-Related Businesses

North Amer Industrial Classification System (NAICS)

- Automotive Repair and Parts
- Chemical, Mineral, Oil/Gas
- Commercial Industrial Machinery
- Fuel and Gasoline
- General Freight and Transportation
- Warehousing and Storage
- Other
- Railroad
- Interstates and Highways
- Streets
- Study Area

Data Sources: Active business licenses, City of Los Angeles, 2015; Interstates and Highways, 2008 Tele Atlas North America, Inc.; World Terrain Base, 2009 ESRI.

Produced by Raimi + Associates, October 2016

DATA SOURCES

Table 25 below is of the data sources included in the analysis of incompatible land uses.

Table 25: Data Sources

Data	Year	Description	Source
Zoning designations	2015	Zoning designations for the City of Los Angeles (Zoning designations exclude Unincorporated San Pedro, as this area of the study area is not part of the City of Los Angeles)	City of Los Angeles Department of City Planning
County Assessor's land use parcel data	2015	Assessment records of real and personal property in the County of Los Angeles, as well as a GIS Tax Parcel Base Map	Los Angeles County Office of the Assessor

PORT-RELATED AND PORT-SERVING BUSINESSES

CONTEXT

As described in the Incompatible Land Use section of this chapter, Port and Port-related operations and activities grew in the study area over more than 100 years of Port operations. Thus, land uses intensified within Wilmington and San Pedro. Complementary businesses clustered in these neighborhoods due to convenient access to the Port of Los Angeles and other similar businesses, and proximity to infrastructure. Port-related and Port-serving businesses were established and/or expanded their operations within the study area over this time. The high concentration of polluting and hazardous facilities in communities of color and lower-income communities has been highly documented in environmental justice literature. The location of polluting and hazardous facilities in communities of color is not merely an extension of spatial patterning due to economic efficiencies that maintain land use patterns. It is also a function of racism and classism that results in systematic power imbalances. This section aims to examine the nature and types of Port-related and Port-serving businesses that have clustered within the study area. From this point forward, we will refer to Port-related and Port-serving businesses as Port-related businesses or PRBs.

NEXUS BETWEEN THE PORT OF LOS ANGELES AND PORT-RELATED AND PORT-SERVING BUSINESSES

As previously shown in Figure 12, the causal pathway describes how Port and Port-related operations impact land uses in the study area, which in turn impacts the community. Table 26 describes the nexus between the Port of Los Angeles and related businesses operating within San Pedro and Wilmington. These businesses are related to Port activities, either directly or indirectly, and are therefore a direct result of the Port of Los Angeles. As previously described, these industrial and manufacturing businesses accumulated in this area due to proximity to the Port and transportation infrastructure and complementary industries. Empirical evidence supports the causal pathway as shown in Figure 12. Our analysis, as outlined in the findings below, shows that neighborhoods within the study area are disproportionately impacted compared with the City of Los Angeles.

Table 26: Nexus Criteria for Port-Related and Port-Serving Businesses

Port-Related and Port-Serving Businesses		
Criteria	**Yes, No, Possibly, Unsure, N/A**	**Notes**
1. Is the source an established Port or Port-serving land use or activity?	Yes	These businesses either relate to Port activities or serve Port functions, such as truck repair and washes, etc.
2. Is the impact a direct result of the Port or Port-serving land use or activity?	Yes	
3. Is the impact an indirect result of the Port or Port-serving land use or activity?	Yes	
4. Is the causal pathway logical and plausible?	Yes	
5. Is there generalizable empirical evidence to support the causal pathway?	Yes	High concentrations of polluting and hazardous sources in lower-income communities and communities of color have been well documented in environmental justice literature. 1,2
6. Is there a distance-based relationship to the Port or Port-serving use or activity?	Yes	Based on visual review of Port-Related Businesses Map Density Map, these businesses tend to cluster closer to the Port of Los Angeles.
7. Is there a temporal-based relationship to the Port development in the study area?	Unsure	Did not examine.
8. Is there a disproportionate burden/impact relative to the city/region?	Yes	Compared with the City of Los Angeles, the study area is disproportionately impacted.
9. Is there local qualitative evidence to support the pathway?	Yes	Many community stakeholders discussed the concentration of Port and Port-related uses.

RESEARCH QUESTIONS AND METHODOLOGY

We used a listing of active businesses registered with the City of Los Angeles Office of Finance to understand the landscape of PRBs in Wilmington and San Pedro. We excluded the neighborhood of Unincorporated San Pedro from this analysis because it is not part of the City of Los Angeles. The active business license database contained address data along with the North American Industry Classification System (NAICS) codes, which is a six-digit code system used by the federal government to classify business establishments. We excluded businesses lacking NAICS codes from the analysis and geocoded the addresses of the remaining businesses using an online batch geocoder.[12]

The NAICS codes associated with PRBs are defined as business categories that have a high likelihood of serving or supporting Port- and goods movement-related activities and are in the study area because of their locational proximity to the Port and related transportation infrastructure.

12 Zwefelhofer DB. 2016. Batch Geocoding. Available at http://www.findlatitudeandlongitude.com/batch-geocode/#.WA97uvkrKUn.

Table 27 below outlines the NAICS codes and their descriptions of designated PRBs. It also notes whether the industrial uses related to these codes could be potentially hazardous to community residents. These uses are related to:

- Automotive body and repair;
- Automotive accessories;
- Chemical and petroleum production;
- Fuel distribution and gasoline stations;
- Commercial and industrial machinery repair and maintenance;
- Metal and mineral processing;
- Transportation and warehousing; and
- General freight trucking operations.

We based the density analysis of PRBs in the study area on the ArcGIS Kernel Density Tool[13] that calculates the density of features in an area around other features. The tool calculated the number of PRBs using a kernel function to fit a smoothly tapered surface to each point. Table 27 outlines the NAICS codes used to identify PRBs.

We mapped and counted PRBs by neighborhood and classification and standardized data per capita where possible. We conducted a descriptive comparison of data and compared it to city and county information when feasible. We identified several business classifications as potentially hazardous based on their NAICS code.

13 ESRI. 2016. Kernel Density. Available at http://pro.arcgis.com/en/pro-app/tool-reference/spatial-analyst/kernel-density.htm.

Table 27: Designated Port-Related Business North American Industry Classification System (NAICS) Codes Included in the Analysis

NAICS	Description	Potentially Hazardous
811120	Automotive body, paint, interior, and glass repair	Yes
532100	Automotive equipment, rental and leasing	
811110	Automotive mechanical and electrical repair and maintenance	Yes
441300	Automotive parts, accessories, and tire stores	
424600	Chemical and allied products	Yes
811310	Commercial and industrial machinery and equipment repair and maintenance	Yes
532400	Commercial and industrial machinery and equipment rental and leasing	
541330	Engineering services	
454310	Fuel dealers	Yes
447100	Gasoline stations	Yes
484110	General freight trucking, local	
423800	Machinery, equipment, and supplies	Yes
423500	Metal and mineral (except petroleum)	Yes
423100	Motor vehicle and motor vehicle parts and supplies	
211110	Oil and gas extraction	Yes
811190	Other automotive repair and maintenance (including oil change and lubrication shops and car washes)	Yes
424700	Petroleum and petroleum products	Yes
423930	Recyclable materials	
488000	Support activities for transportation (including MV towing)	
336000	Transportation equipment manufacturing	
493100	Warehousing and storage	Yes

This analysis has limitations. We made assumptions about which NAICS codes best relate to industries that support and/or are related to Port operations and activities. Businesses with these NAICS codes may not operate directly with Port operations or support Port-related activities. We did not conduct an extensive review of operations of each of these businesses beyond the information we have from the active business database. Additionally, some of the information on the NAICS codes may be incorrect. However, even given these limitations, we believe this analysis provides a better understanding of the types of industries operating within the study area and identified those with a disproportionality of potentially hazardous impacts.

FINDINGS

The total number of active businesses in the study area is 7,906. Of these, we excluded 1,131 (14.3%) that did not have designated NAICS codes. Of the remaining 6,775 businesses in the study area, there are 602 PRBs (8.9%). Table 28 describes the number of total businesses and PRBs in each neighborhood. Compared with the City of Los Angeles, the study area has approximately three times the number of PRBs. Four percent of businesses in San Pedro and 16% of Wilmington businesses are PRBs. Outside of the Port of Los Angeles, East and South Wilmington have the highest percentage of PRBs.

Table 28: Total Businesses and Port-Related Businesses, Within Neighborhood

Location	# All Businesses	Port-Related Businesses	
		Number	Percent
City of Los Angeles	508,647	15,861	3%
Study Area	6,775	602	9%
San Pedro	4,232	173	4%
Central San Pedro	1,885	73	4%
Coastal San Pedro	1,339	45	3%
Northwest San Pedro	1,003	55	6%
Wilmington	2,509	412	16%
East Wilmington	706	173	25%
North Wilmington	383	36	9%
South Wilmington	741	135	18%
West Wilmington	679	68	10%
Port of Los Angeles	34	17	50%

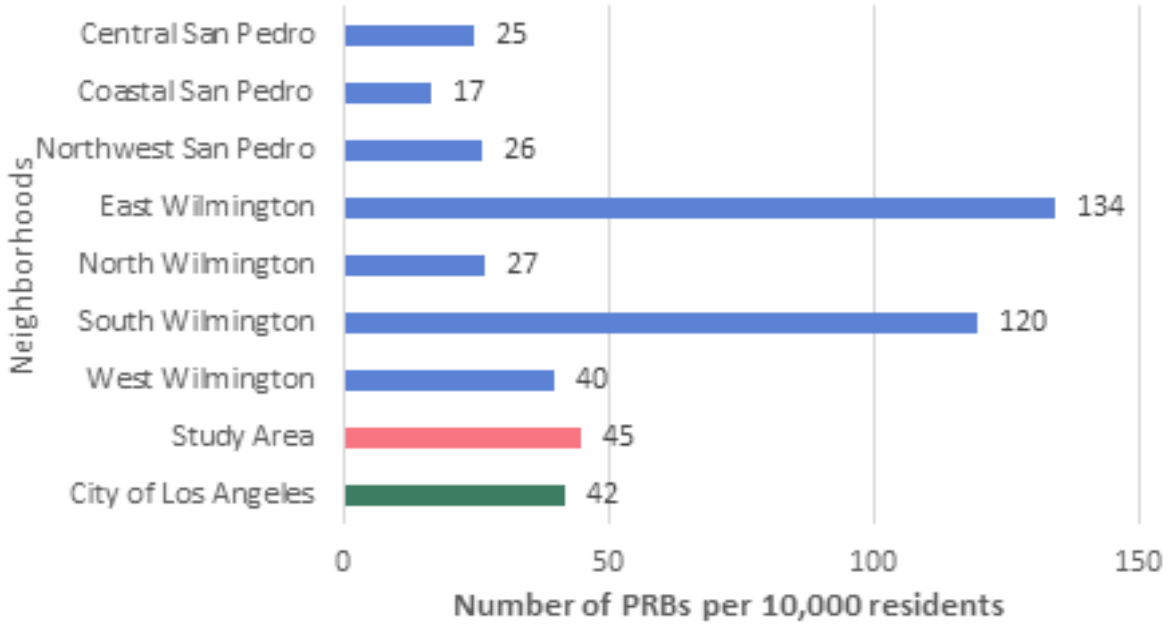
Data source: Active Business Licenses, City of Los Angeles, 2016

Compared to the City of Los Angeles, the study area is disproportionately impacted by PRBs. The neighborhoods of East and West Wilmington far exceed that of the City of Los Angeles. East and South Wilmington have about 3.2 and 2.9 times the number of PRBs per capita than the City of Los Angeles, respectively. Figure 13 shows the number of PRBs per 10,000 residents by neighborhoods.

Table 29 shows the PRBs by neighborhood and NAICS category. We also calculated a rate of PRBs per 10,000 residents to standardize information.

The Port-Related Businesses and Hazardous Port-Related Business maps following Table 29 depict the locations of PRBs and potentially hazardous PRBs in the study area. We include a more expansive discussion of sources of pollution and physical hazards in the study area in Chapter 4.

Figure 13: Number of Port-Related Businesses by Neighborhood

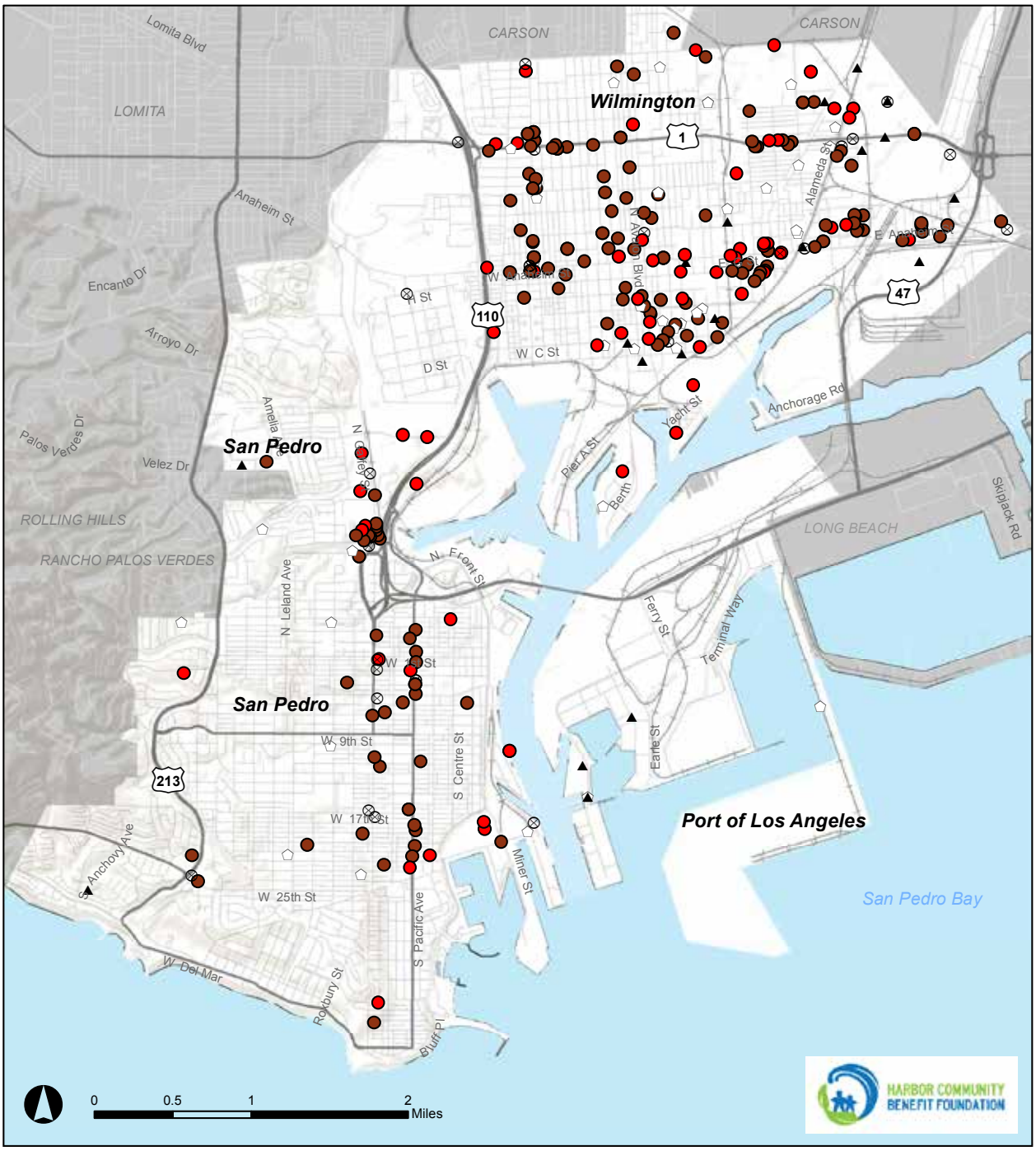


Data source: Active Business Licenses, City of Los Angeles, 2016

Table 29: Port-Related Businesses by Neighborhood and NAICS Category

NAICS Categories	Central San Pedro	Coastal San Pedro	NW San Pedro	Port of Los Angeles	East Wilmington	North Wilmington	South Wilmington	West Wilmington	Study Area Total	City of Los Angeles
Automotive body paint interior and glass repair	2	1	2	0	10	4	7	5	31	741
Automotive equipment rental and leasing	2	1	3	0	1	0	1	1	9	468
Automotive mechanical and electrical repair and maintenance	10	7	6	0	23	8	21	19	94	2,481
Automotive parts, accessories, and tire stores	8	3	2	0	29	3	7	6	58	1,290
Chemical and allied products	0	0	1	0	3	0	1	0	5	230
Commercial and industrial machinery and equipment repair and maintenance	2	2	1	1	5	3	3	1	18	381
Commercial and industrial machinery and equipment rental and leasing	0	0		1	0	0	6	2	9	454
Engineering services	7	9	4	1	0	0	1	0	22	1,513
Fuel dealers	1	1	1	0	6	1	3	1	14	103
Gasoline stations (incl. convenience stores with gas)	7	1	1	0	6	1	3	2	21	627
General freight trucking, local	4	2	6	0	10	1	10	4	37	983
Machinery, equipment, and supplies	0	1	2	1	4	2	8	2	20	876
Metal and mineral	0	0	0	1	1	0	1	0	3	262
Motor vehicle and motor vehicle parts and supplies	5	2	5	0	28	1	5	5	51	941
Oil and gas extraction	0	1	0	0	0	0	0	0	1	118
Other automotive repair and maintenance	6	3	3	0	10	4	7	9	42	1,266
Petroleum and petroleum products	1	0	0	2	4	0	5	0	12	64
Recyclable materials	2	2	0	0	8	1	5	2	20	393
Support activities for transportation	9	4	8	10	6	2	20	6	65	1,373
Transportation equipment manufacturing	1	0	2	0	1	0	1	0	5	103
Warehousing and storage	6	5	8	0	18	5	20	3	65	1,194
Total Port-Related Businesses	73	45	55	17	173	36	135	68	602	15,861
Population	29,470	27,132	21,068	1,035	12,880	13,361	11,282	17,065	133,293	3,792,621
Rate per 10,000 residents	25	17	26	164	134	27	120	40	45	42
Data source: Active Business Licenses, City of Los Angeles, 2016; U.S. Census Bureau, 2010 Decennial Census										

Map 36: Hazardous Port-Related Business



Hazardous Port-Related Businesses

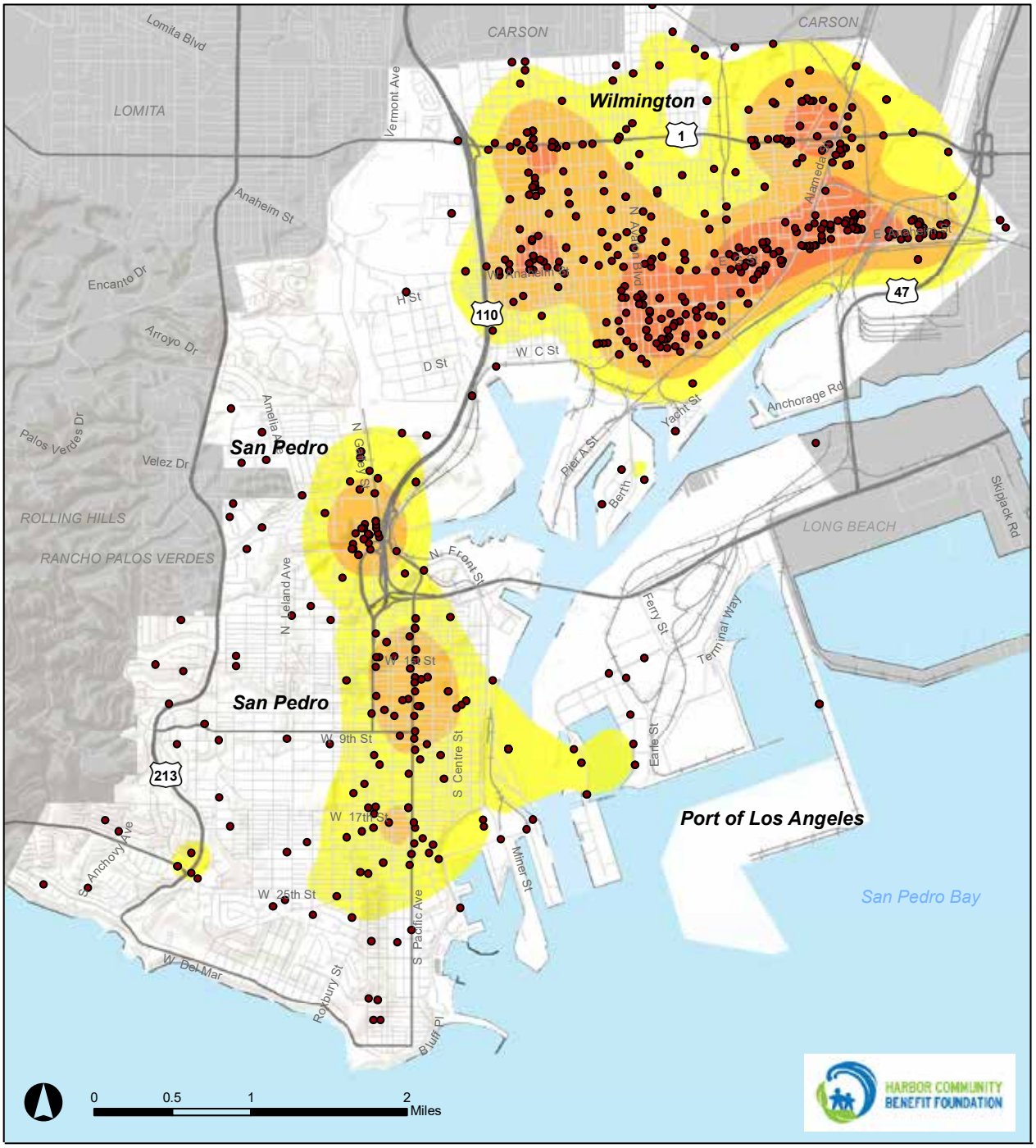
North Amer Industial Classification System (NAICS)

- Automotive Repair
- Chemical, Mineral, Oil/Gas
- Commercial Industrial Machinery
- Fuel and Gasoline
- Warehousing and storage
- Railroad
- Interstates and Highways
- Streets
- Study Area

Data Sources: Active business licenses, City of Los Angeles, 2015; Interstates and Highways, 2008 Tele Atlas North America, Inc.; World Terrain Base, 2009 ESRI.

Produced by Raimi + Associates, October 2016

Map 37: Port-Related Businesses – Density



Low Number of PRBs
Moderate Number of PRBs
High Number of PRBs

Port-Related Businesses
Railroad
Interstates and Highways
Streets
Study Area

Data Sources: Active business licenses, City of Los Angeles, 2015; Interstates and Highways, 2008 Tele Atlas North America, Inc.; World Terrain Base, 2009 ESRI.

Produced by Raimi + Associates, October 2016

The largest number of PRBs in Wilmington and San Pedro are related to automotive and truck repair and maintenance (47%). These include businesses that repair and maintain automobiles and/or sell automotive parts and accessories. Warehousing and storage businesses also have a significant presence in the study area with 65 facilities (11%). There are also 107 (18%) businesses related to transportation services, such as general freight trucking (6%) and support activities for transportation (11%, n = 65). About half of the general freight trucking businesses in the study area are in East and South Wilmington (n = 20). Of the chemical and allied products businesses, 80% are in East and South Wilmington.

Depicted in a different way, Table 30 below shows the percentage of total businesses in each neighborhood and the percentage of total PRBs in each neighborhood. Disparities exist in the proportion of PRBs in the study area neighborhoods. Again, the same patterns of disproportionate impacts.

Approximately 62% of businesses and 29% of PRBs in the study area are in San Pedro. Comparatively, Wilmington is home to 37% of all businesses, but contains 68% of PRBs in the study area.

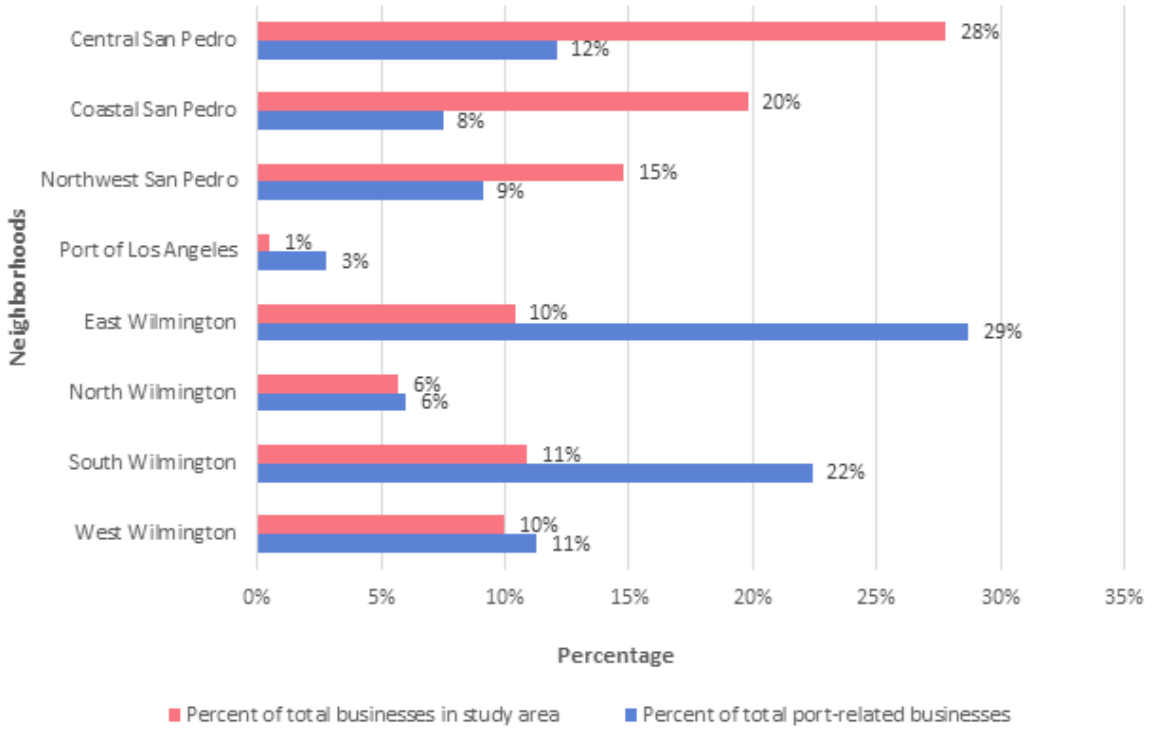
Table 30: Total Businesses and Port-Related Businesses, Between Neighborhoods

Neighborhoods	Total Businesses		Total Port-related Businesses	
	#	% of Total Businesses	#	% PRBs in Study Area
Study Area	6,775	100%	602	100%
San Pedro	4,232	62%	173	29%
Central San Pedro	1,885	28%	73	12%
Coastal San Pedro	1,339	20%	45	7%
Northwest San Pedro	1,003	15%	55	9%
Wilmington	2,509	37%	412	68%
East Wilmington	706	10%	173	29%
North Wilmington	383	6%	36	6%
South Wilmington	741	11%	135	22%
West Wilmington	679	10%	68	11%
Port of Los Angeles	34	0.5%	17	3%

Data source: Active Business Licenses, City of Los Angeles, 2016; U.S. Census Bureau Decennial Census, 2010

East and South Wilmington are especially impacted. While 21% of all study area businesses are in East and South Wilmington, a disproportionate 51% of all study area PRBs are in these same two neighborhood subareas. These PRBs represent approximately 25% of all businesses in East Wilmington and 18% in South Wilmington. Figure 14 below depicts the disparity evident in the East and South Wilmington neighborhoods.

Figure 14: Total Businesses and Port-Related Businesses, Between Neighborhoods



Data source: Active Business Licenses, City of Los Angeles, 2016

In summary, the study area is disproportionately impacted by PRBs compared to the City of Los Angeles. In particular, East and South Wilmington have eight and six times the number of PRBs compared to the City of Los Angeles, respectively. The largest number of PRBs in Wilmington and San Pedro are related to automotive and truck repair and maintenance.

DATA SOURCES

Table 31 below is of the data sources included in the analysis of the PRBs.

Table 31: Data Sources

Data	Year	Description	Source
Active businesses	2016	Active businesses registered with the Office of Finance	City of Los Angeles Office of Finance

VACANT PROPERTY

CONTEXT

Several community stakeholders expressed concern that the distressed vacant parcels associated with heavily industrial and hazardous land uses can have negative impacts in the community. Vacant properties can attract crime, vandalism, litter, and illegal dumping, and can increase perceptions of social disorder within a community. These parcels have economic impacts on surrounding homes and businesses by decreasing the market value of properties. Vacant land can also affect physical health through injury, the buildup of trash, attraction of rodents that spread diseases, and by discouraging adults and children from going out into their neighborhood to play or engage in outdoor physical activity.[14,15] Additionally, polluted and vacant parcels may require expensive environmental remediation. This may be a significant barrier to redevelopment and might be a contributor to the lack of redevelopment and conversion of these parcels to other uses.

14 Garvin E, Branas C, Keddem S et al. 2013. More Than Just an Eyesore: Local Insights and Solutions on Vacant Land and Urban Health. Journal of Urban Health. 90(3): 412-426.

15 Sampson RJ and Raudenbush SW. 2004. Seeing Disorder: Neighborhood Stigma and the Social Construction of "Broken Windows." Social Psychology Quarterly. 67(4): 319-342.

NEXUS OF PORT OF LOS ANGELES AND VACANT PROPERTY IN THE STUDY AREA

Figure 15 shows a plausible causal pathway describing how Port of Los Angeles operations and corresponding pressures on local land uses may affect the amount and type of vacant parcels in the study area. Increased Port and Port-related operations and activities increase negative aesthetic impacts and create an environment that is less desirable for non-industrial or Port-related businesses. This deterring effect, combined with Port-related and industrial businesses leaving and not being replaced, results in a significant amount of vacant and abandoned properties in the area. The increased presence of vacant properties impacts residential property value, increases stress and anxiety of residents living near vacant parcels, and can lead to decreased real and perceived safety and disinvestment in the neighborhood. These impacts affect the community negatively through increased risks to mental and physical health.

Figure 15: Pathway Diagram of Impacts from Vacant Property

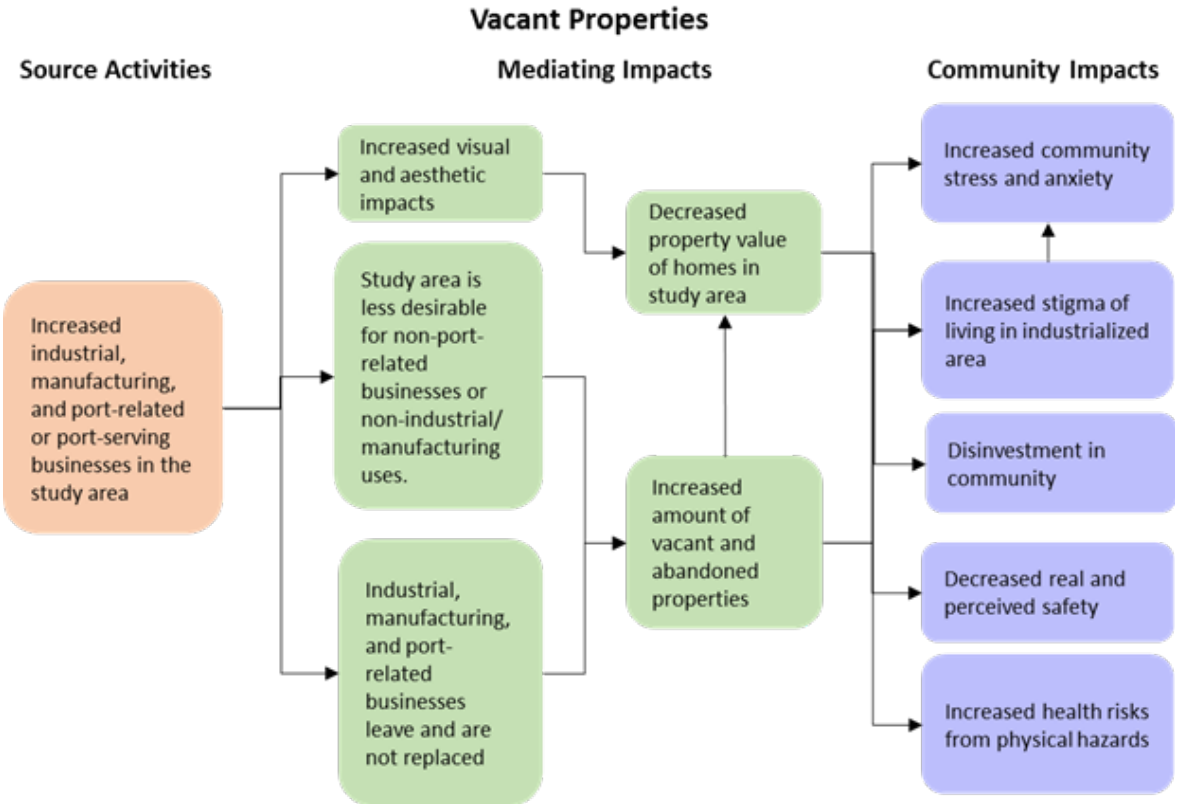


Table 32 below describes the nexus between the impacts from vacant properties and the Port of Los Angeles based on the nine criteria outlined. More than half of the vacant parcels in the study area have industrial uses and are likely to be established Port or Port-serving land uses. The spatial distribution of vacant parcel land uses is also indicative of this, as industrial vacant properties are more likely to be located near the Port of Los Angeles, as shown in Map 38: Vacant Parcels. Most vacant parcels in the study area, in terms of number and area of vacant properties, are highest in East and South Wilmington, which are immediately to the north of the Port of Los Angeles. The number of vacant parcels in the study area is likely a secondary result of pressures from the Port and Port-related operations and activities in the area. In addition, a great deal of evidence links the impacts of vacant land to community wellbeing. Community stakeholders have also expressed concerns over the prevalence of vacant properties, particularly industrial vacant parcels.

Table 32: Nexus Criteria for Impacts from Vacant Properties and the Port of Los Angeles

Vacant Properties		
Criteria	**Yes, No, Possibly, Unsure, N/A**	**Notes**
1. Is the source an established Port or Port-serving land use or activity?	Possibly	More than half of the vacant properties are industrial-related uses and are likely to be established Port or Port-serving land use or activity.
2. Is the impact a direct result of the Port or Port-serving land use or activity?	Possibly	More than half of the vacant properties are industrial-related uses and are likely to be related and/or support Port operations and activities.
3. Is the impact an indirect result of the Port or Port-serving land use or activity?	Yes	Vacant property is also likely the secondary result of pressures that the Port and Port-related operations placed on land uses in the study area.
4. Is the causal pathway logical and plausible?	Yes	
5. Is there generalizable empirical evidence to support the causal pathway?	Yes	Yes, a great deal of evidence links the impacts of vacant land on community wellbeing.3 4 5
6. Is there a distance-based relationship to Port or Port-serving use or activity?	Yes	As demonstrated by the map, a clear distance-based relationship to the Port is evident. Most of the industrial use vacant parcels are located close to the Port in Wilmington.
7. Is there a temporal-based relationship to Port development in the study area?	Unsure	Did not examine
8. Is there a disproportionate burden/impact relative to the city/region?	No	
9. Is there local qualitative evidence to support the pathway?	Yes	Community stakeholders highlighted vacant and abandoned properties as concerns.

RESEARCH QUESTIONS AND METHODOLOGY

We identified vacant properties using the County of Los Angeles Office of the Assessor's land use data, which provide information about property type and use categories. These properties were associated with several assessed uses, including residential, commercial, or industrial. We identified, mapped, and enumerated the properties by neighborhood. We also made comparisons with the County of Los Angeles where feasible.

This analysis sought to answer the following questions within the study area:

1. Where are vacant parcels in the study area?
2. What is the total area of vacant parcels in the study area?
3. Are there any spatial patterns of the general uses of vacant parcels?

There are limitations to this analysis. The County of Los Angeles Assessor's data may not be accurate in terms of vacant property designations.[16] However, these data are the best available data on vacant property in the County of Los Angeles and provide a deeper understanding about the issue if vacant parcels within the study area.

16 Stone C. 2015. Mapping LA's Not-So-Vacant Lots. Available from http://www.lamag.com/citythinkblog/mapping-l-a-s-not-so-vacant-lots/.

FINDINGS

Table 33 below details the number and area of parcels in the study area and the County. Nearly 7% of all the parcels in the study area are vacant. This is equivalent to 2,101 parcels (or 39.4 million square feet). Vacant properties are concentrated in East and South Wilmington, which represents over 23 million square feet or about 58% of all vacant land in the study area. A larger percentage of parcels in Unincorporated San Pedro (9.6%) are also vacant.

The study area overall is not disproportionately impacted by vacant properties compared with the County. Wilmington and San Pedro combined had fewer vacant parcels and a smaller percentage of vacant area. Per the Assessor's data, 7.3% of parcels (or approximately 42 million square feet of land) Countywide are considered vacant. However, East and South Wilmington have more than three times as many vacant parcels compared to the County of Los Angeles.

Table 33: Vacant Parcels, by Neighborhood

Locations	Number of Parcels			Area of Parcels (Square Feet)		
	# Total Parcels	# Vacant Parcels	% Vacant Parcel	Total Area	Vacant Parcel Area	% Vacant Parcel Area
County of Los Angeles	2,391,896	174,630	7.3%	144 billion	42 billion	29.0%
Study Area	31,802	2,101	6.6%	1.4 billion	39,446,165	2.8%
San Pedro	20,372	460	2.3%	1. 1 billion	10,432,782	1.0%
Central San Pedro	5,169	189	3.7%	92,548,947	1,144,930	1.2%
Coastal San Pedro	6,848	111	1.6%	116,084,210	2,408,658	2.1%
Northwest San Pedro	7,867	113	1.4%	855,262,620	6,443,837	0.8%
Unincorporated San Pedro	488	47	9.6%	4,072,287	435,357	10.7%
Wilmington	11,344	1,629	14.4%	255,488,646	27,851,281	10.9%
East Wilmington	3,420	847	24.8%	58,615,172	6,876,305	11.7%
North Wilmington	3,097	185	6.0%	74,096,700	3,385,063	4.6%
South Wilmington	2,474	505	20.4%	87,637,618	16,233,146	18.5%
West Wilmington	2353	92	3.9%	35,139,156	1,356,767	3.9%
Port of Los Angeles	86	12	14.0%	84,103,962	1,162,102	1.4%

Data source: Los Angeles County Office of the Assessor, 2015

Spatial patterns in the general use of the vacant parcels in the study area are evident, as shown in Table 34 below. Most of the vacant parcels in San Pedro are residential. Over 93% of vacant parcels in Coastal San Pedro and Unincorporated San Pedro are residential. Most of the vacant parcels in Wilmington are industrial. Just over 75% of the 847 vacant parcels in East Wilmington have industrial uses. The visual pattern is also evident on the Vacant Parcels map that follows.

Table 34: Vacant Parcels, by Neighborhood and General Use Category

Neighborhoods	# Vacant parcels	Vacant Parcel General Use Categories							
		Commercial				Misc.		Residential	
Study Area	2,101	#	%	#	%	#	%	#	%
San Pedro	460	35	7.61%	68	14.78%	29	6.30%	328	71.30%
Central San Pedro	189	25	13.23%	47	24.87%	21	11.11%	96	50.79%
Coastal San Pedro	111	4	3.60%	2	1.80%	1	0.90%	104	93.69%
Northwest San Pedro	113	3	2.65%	19	16.81%	7	6.19%	84	74.34%
Unincorporated San Pedro	47	3	6.38%	0	0.00%	0	0.00%	44	93.62%
Wilmington	1,629	102	6.26%	1003	61.57%	214	13.14%	309	18.97%
East Wilmington	847	28	3.31%	636	75.09%	88	10.39%	94	11.10%
North Wilmington	185	7	3.78%	47	25.41%	26	14.05%	105	56.76%
South Wilmington	505	56	11.09%	318	62.97%	100	19.80%	31	6.14%
West Wilmington	92	11	11.96%	2	2.17%	0	0.00%	79	85.87%
Port of Los Angeles	12	0	0.00%	4	33.33%	8	66.67%	0	0.00%

Notes: Highlighted percentages greater than 50%; Excluded information on recreational parcels since, there was only one vacant residential parcel in East Wilmington

Data source: Los Angeles County Office of the Assessor, 2015

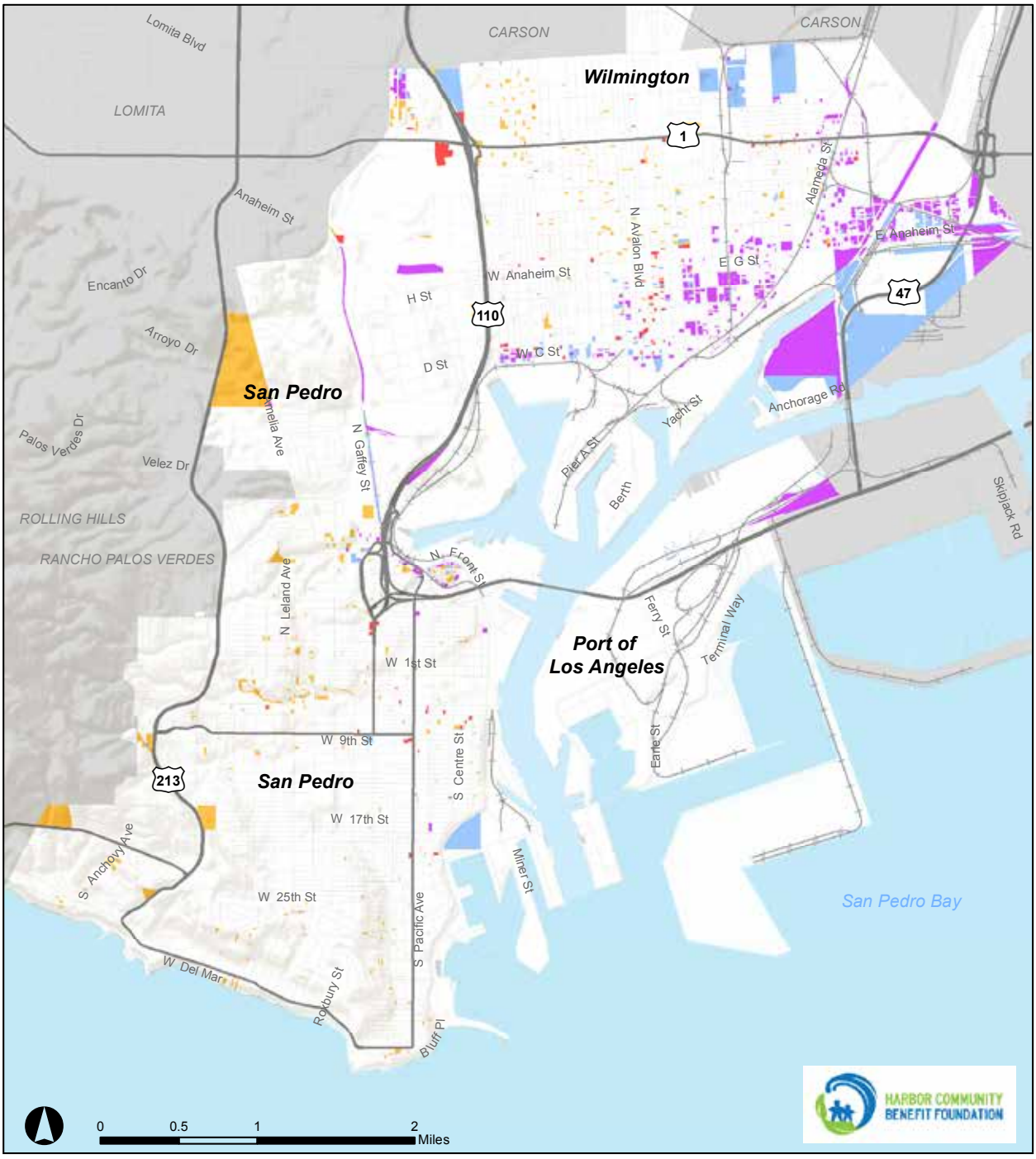
Community residents expressed concern about how vacant parcels affect the community. The broken windows theory states that unkempt private property and the presence or urban disorder, such as vandalism, invites and normalizes crime in affected areas and contributes to additional antisocial behavior.[17] A resident commented, "Vacant and distressed parcels are a snowball effect that invites negative activities, lack of investment in revitalization, crime, and homelessness." They further explained that these impacts also affect business owners in San Pedro, especially in the downtown area. As the resident described, "Dysfunction in civic life breeds symptoms, such as social disorder, addiction, and homelessness." Another community stakeholder expressed, "Drugs have gotten worse over time in the last eight or nine years, and especially for the last four to five years. More people are living on the streets, and they create lots of trash. Streets are littered." Homelessness has increased across all of Los Angeles County. In the City, homelessness increased by 11% between January of 2015 and May 2016.[18]

In summary, there are just over 2,100 vacant parcels in the study area, totaling about 1.4 million square feet. About 14% of parcels in Wilmington and 2.3% of parcels in San Pedro are considered vacant. The majority of vacant properties in San Pedro have residential uses. The majority of vacant properties in Wilmington have industrial uses and are predominantly located in East and South Wilmington.

17 Kelling GL and Wilson JQ. 1982. Broken Windows: The Policy and Neighborhood Safety. The Atlantic. Available at http://www.theatlantic.com/magazine/archive/1982/03/broken-windows/304465/.

18 Holland G and Jamison P. 2016. L.A. sees another sharp rise in homelessness and outdoor tents. Available at http://www.latimes.com/local/lanow/la-me-ln-homeless-count-20160504-story.html.

Map 38: Vacant Parcels



General Use of Vacant Parcels

- Commercial
- Industrial
- Miscellaneous
- Recreational
- Residential

- Railroad
- Interstates and Highways
- Streets
- San Pedro Bay

Sources: Parcel data, 2015, Los Angeles County Office of the Assessor; Interstates and Highways, 2008 Tele Atlas North America, Inc.; World Terrain Base, 2009 ESRI.

Produced by Raimi + Associates.
August 2016

DATA SOURCES

Table 35 below is of the data sources used in the analysis of vacant parcels in the study area.

Table 35: Data Source

Data	Year	Description	Source
Assessor's land use parcel data	2015	Assessment records of real and personal property in the County of Los Angeles, as well as a GIS Tax Parcel Base Map	Los Angeles County Office of the Assessor

CHASSIS, TRUCKS, AND CONTAINER STORAGE YARDS

CONTEXT

Many community stakeholders have voiced concerns over the presence of truck parking lots, which are lots that store truck chassis and container storage and are also known as container storage yards (CSYs). Community concerns are two-fold: first, these large storage and parking lots are non-compliant with regulations and zoning restrictions; and second, they increase air and noise pollution from increased truck traffic in and out of the area. Community stakeholders are also concerned that businesses use these lots to fumigate storage containers, which leads to increased exposures to environmental pollutants. Stacked containers may also harbor rodents and other vectors that may increase the spread of infectious diseases. Community residents also complained that stacked containers and large industrial fenced in lots are an aesthetic eyesore in neighborhoods.

NEXUS

Figure 16 depicts a feasible causal pathway describing how chassis, truck, and container storage yards impact San Pedro and Wilmington. These land uses are in the area due to proximity with the Port and other complementary businesses and needed infrastructure. The nexus with the Port of Los Angeles and goods movement activities is definitive, as these lots are used to warehouse truck parts, store containers used to move goods coming in and out of the Port, and park trucks. Wilmington and San Pedro residents also historically lacked the political power needed to resist incompatible land uses, further contributing to the clustering of chassis, truck, and container storage yards in the study area. The presence of these storage lots has several community impacts.

Figure 16: Pathway Diagrams of Impacts from Chassis, Trucks, and Container Storage Yards

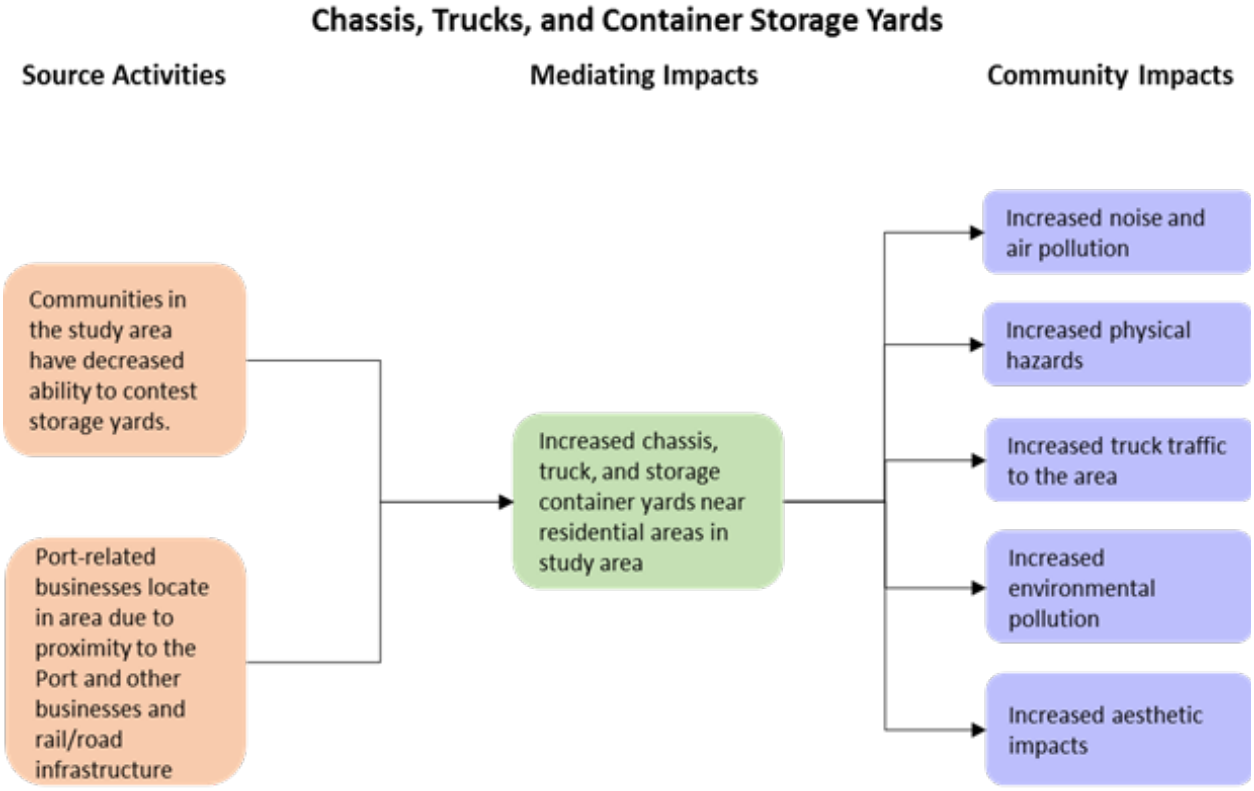


Table 36 below describes the interconnection between the impacts from chassis, trucks, and container storage yards and the Port of Los Angeles based on nine criteria outlined. There is a clear and direct connection of the presence and location of these storage lots in the study area with the Port of Los Angeles. They locate in the study area to be near to the Port, other Port-related operations, and to easily access transportation infrastructure. Several community stakeholders have expressed concerns over the presence of these large lots near some residential areas.

Table 36: Nexus Criteria for Impacts from Chassis, Trucks, and Container Storage Yards

Chassis, Trucks, and Container Storage Yards		
Criteria	Yes, No, Possibly, Unsure, N/A	Notes
1. Is the source an established Port or Port-serving land use or activity?	Yes	The chassis, trucks, and container storage yards are a direct and established Port-serving land use.
2. Is the impact a direct result of the Port or Port-serving land use or activity?	Yes	The clustering of these land uses near residential and other sensitive area are the direct result of the Port and Port-related operations in the study area.
3. Is the impact an indirect result of the Port or Port-serving land use or activity?	No	
4. Is the causal pathway logical and plausible?	Yes	
5. Is there generalizable empirical evidence to support the causal pathway?	Possibly	
6. Is there a distance-based relationship to Port or Port-serving use or activity?	Yes	The overwhelming majority of these storage yards are in East and South Wilmington, which is close to the Port and Port-related operations.
7. Is there a temporal-based relationship to Port development in the study area?	Unsure	Did not examine.
8. Is there a disproportionate burden/impact relative to the city/region?	Unsure	Did not examine.
9. Is there local qualitative evidence to support the pathway?	Yes	Community stakeholders have voiced concern over CSYs.

RESEARCH QUESTIONS AND METHODOLOGY

Coalition for a Safe Environment (CFASE) and the Long Beach Alliance for Children with Asthma (LBACA) are local non-profit community-based organizations that have strong ties to the Wilmington and San Pedro communities. They organized community residents to "groundtruth," or verify through on-the-ground fieldwork, the location and condition of CSYs and lots used to store chassis and trucks in the study area. Groundtruthing took place from June 4 to June 12, 2016 in Wilmington and San Pedro.

Staff from CFASE and LBACA and a team of eight community workers were deployed with cameras, pens, clipboards, and maps to collect notes on the location and photographs of the chassis, truck, and container storage yards. Community workers were given a map and list of potential sites to verify. Workers were also asked to identify any new locations of these storage yards.

After data collection was completed, we digitized, geocoded, and mapped locations of storage yards based on the information from the groundtruthing. Additionally, we used National Agriculture Imagery Program (NAIP) satellite images (2014) and the parcel map from the County of Los Angeles to confirm the location of affected parcels.

FINDINGS

CHASSIS, TRUCK, AND CONTAINER STORAGE PREVALENCE

Community workers identified a total of 383 parcels with storage yards of any type in San Pedro and Wilmington, which accounted for 328 areas in San Pedro and Wilmington. These included:

- 9 parcels storing chassis,
- 17 parcels storing trucks, and
- 357 parcels storing shipping containers.

San Pedro has seven parcels used for storage of chassis, trucks, and/or containers. These parcels are relatively small and do not present themselves in a noticeable aggregation. In comparison, there are over 310 acres of chassis, truck, and container storage yards in Wilmington, comprising a significant portion of the East, North, and South Wilmington neighborhoods. There were no chassis, truck, or container storage yards found in West Wilmington. In Wilmington, 350 parcels are used primarily as CSYs. This number does not include the additional 26 parcels used exclusively for chassis and truck storage. Many of these parcels are large (over one acre) and occupy most or all of a block. The clustering of uses in Wilmington closely follows the rail lines that bisect the eastern half of the study area.

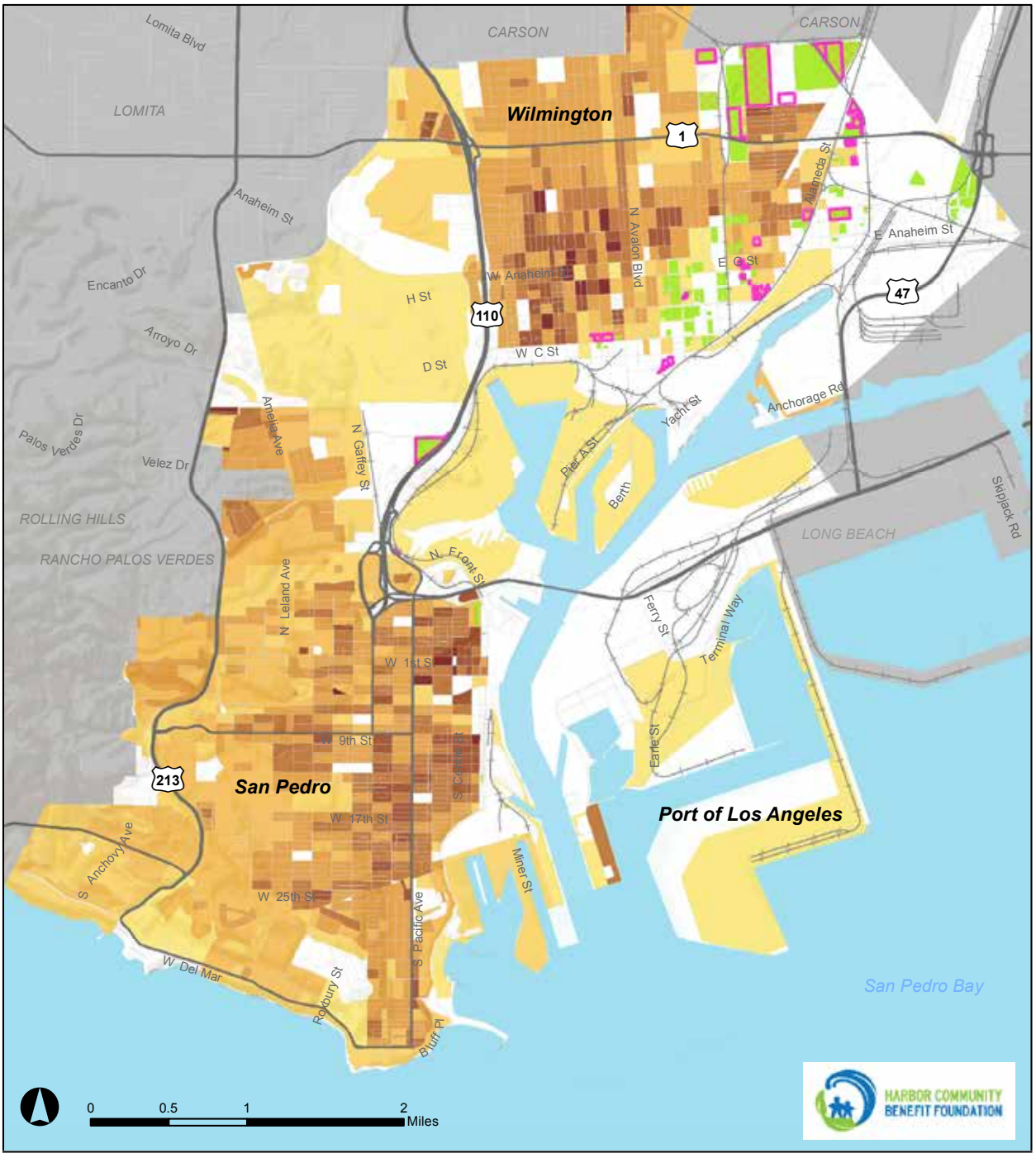
Maps 39, 40, and 41 illustrate how closely many East, North, and South Wilmington residents live to active Port uses. Indeed, several parcels in these neighborhoods allow for two or three storage types simultaneously. Specifically, 80% of parcels have only one use present, but 17% (or 64 parcels) have two uses, and 2% (or 8 parcels) have at least three uses. Allowing for double-counting uses within the same parcel, there are 24 parcels storing chassis, 81 storing trucks, and 357 storing shipping containers. Table 20 below describes the number and area of storage yards in the study area.

Table 37: Number and Area of Storage Yards in the Study Area

Neighborhoods	Parcels Storing Chassis		Parcels Storing Trucks		Parcels storing Containers		Total # of Parcels (All types)	Total Acres (All types)
	Total # of Parcels	Total Acres	Total # of Parcels	Total Acres	Total # of Parcels	Total Acres		
Study Area	9	1.2	17	14.56	357	312.8	383	328.59
San Pedro	-	-	-	-	7	16.2	7	16.2
Central San Pedro	-	-	-	-	3	3.79	3	3.79
Coastal San Pedro	-	-	-	-	3	0.97	3	0.97
Northwest San Pedro	-	-	-	-	1	11.41	1	11.41
Unincorporated San Pedro	-	-	-	-	-	-	0	0
Wilmington	9	1.2	17	14.56	350	296.5	376	312.39
East Wilmington	9	1.2	12	8.89	141	180.29	162	190.37
North Wilmington	-	-	-	-	15	55.59	15	55.59
South Wilmington	-	-	5	5.67	194	60.76	199	66.43
West Wilmington	-	-	-	-	-	-	0	0

Data source: Community workers in San Pedro and Wilmington, Coalition for a Safe Environment (CFASE) and the Long Beach Alliance for Children with Asthma (LBACA)

Map 39: Chassis, Truck, and Container Storage Yards



Truck Parking

Chassis Storage

Container Storage Yards

Railroad

Interstates and Highways

Streets

Population Density
(People per Square Mile [SM])

Population 0

Less than 500 per SM

500 to 5,000

5,000 to 10,000

10,000 to 20,000

20,000 to 30,000

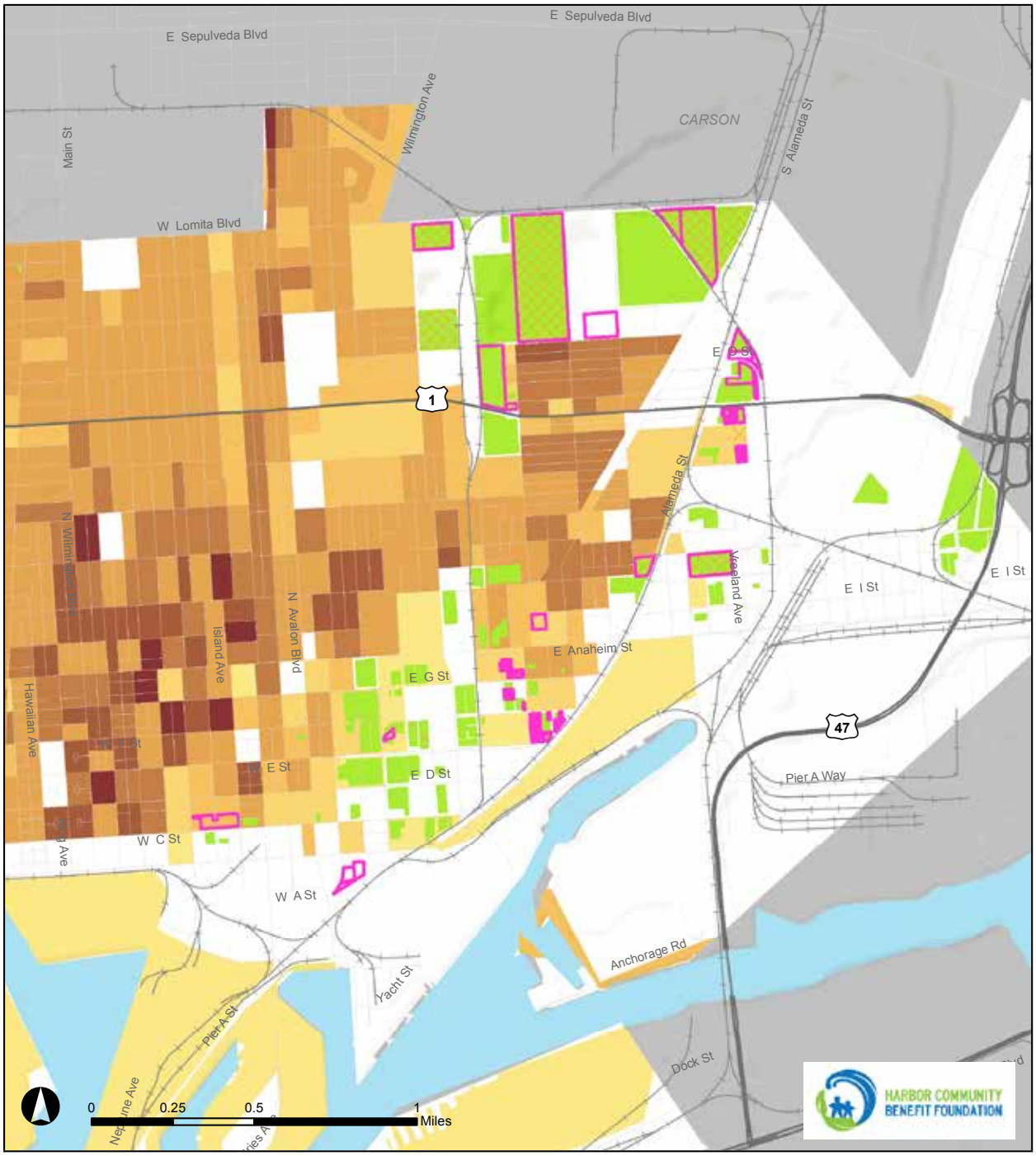
30,000 to 50,000

Greater than 50,000

Produced by Raimi + Associates, November 2016

Data Sources: Data verified by community workers; Interstates and Highways, 2008 Tele Atlas North America, Inc.; World Terrain Base, 2009 ESRI; US Census 2010 Decennial Census

Map 40: Chassis, Truck, and Container Storage Yards: Wilmington



Truck Parking
Chassis Storage
Container Storage Yards

Railroad
Interstates and Highways
Streets

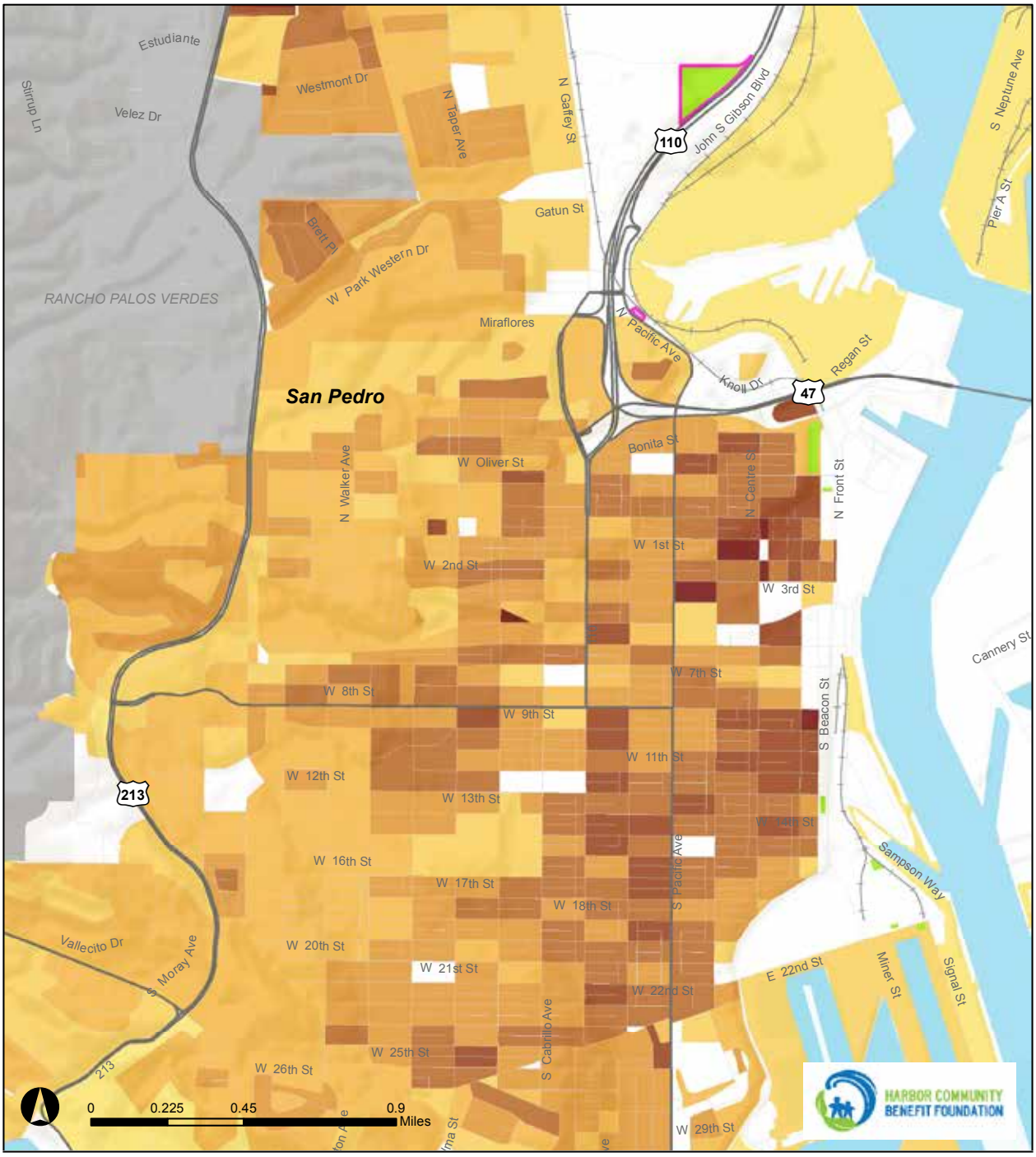
Population Density (People per Square Mile [SM])

Population 0
Less than 500 per SM
500 to 5,000
5,000 to 10,000
10,000 to 20,000
20,000 to 30,000
30,000 to 50,000
Greater than 50,000

Produced by Raimi + Associates, November 2016

Data Sources: Data verified by community workers; Interstates and Highways, 2008 Tele Atlas North America, Inc.; World Terrain Base, 2009 ESRI; US Census 2010 Decennial Census

Map 41: Chassis, Truck, and Container Storage Yards: San Pedro



Truck Parking

Chassis Storage

Container Storage Yards

Railroad

Interstates and Highways

Streets

Population Density
(People per Square Mile [SM])

Population 0

Less than 500 per SM

500 to 5,000

5,000 to 10,000

10,000 to 20,000

20,000 to 30,000

30,000 to 50,000

Greater than 50,000

Produced by Raimi + Associates, November 2016

Data Sources: Data verified by community workers; Interstates and Highways, 2008 Tele Atlas North America, Inc.; World Terrain Base, 2009 ESRI; US Census 2010 Decennial Census

CONTAINER FUMIGATION IMPACTS

In addition to the visual impacts, community stakeholders reported that containers in the storage yards are often fumigated with pesticides that kill microorganisms and pests before transport. Some countries require this process to prevent the spread of parasites, bacteria, and diseases into the importing country. Interviewees expressed concerns over the use of fumigants in off-Port container storage yards within proximity to residential areas and other sensitive land uses. We contacted the Los Angeles County Department of Agriculture Commissioner/ Weights and Measures in May 2016 to request information on permitted fumigation sites in the study area. We only identified two permitted sites in the study area, both on Port property. We did not identify any permitted off-Port fumigation sites in the study area. Future research could focus on contacting container storage operators in the study area to inquire about fumigation practices.

Commonly used fumigants are often odorless and colorless, making it difficult for neighbors to recognize their exposure risk. Some fumigants, like methyl bromide, contribute to the destruction of the ozone layer.[19] Chronic exposure to fumigants and other pesticides can also have health impacts on workers applying the fumigant and to residents living nearby.[20] [21] Children have unique biological susceptibilities to pesticides.[22]

Methyl bromide and sulfuryl fluoride are commonly used fumigants.[23] Acute, high-intensity exposure to methyl bromide is extremely toxic. According the U.S. Environmental Protection Agency, some methyl bromide human health effects include:[24]

- Pulmonary edema (after inhalation of fumes), which affects respiratory function, kidney damage, and possible heart damage and liver swelling.
- Neurological effects with acute exposure symptoms, including headaches, dizziness, fainting, apathy, weakness, confusion, speech impairment, visual effects, numbness, twitching, and tremors; in severe cases, paralysis and convulsions are possible.
- Irritation of the eyes, skin, and mucous membranes of the upper respiratory tract.
- Itching, redness, and blisters after dermal exposure.
- Kidney damage after inhalation of high concentrations.
- Increased incidence of death from testicular cancer among men occupationally exposed to the fumigant (causation not yet established).

19 Butler JH and Rodriguez JM. 1996. Methyl Bromide in the Atmosphere. In the Methyl Bromide Issue; Bell CH, Price N, Chakrabarti B, Eds.; Wiley: West Sussex, England; Vol. 1, pp 27-90.

20 Calvert GM, Mueller CA, Fajen JM, et al. 1998. Health effects associated with sulfuryl fluoride and methyl bromide exposure among structural fumigation workers. American Journal of Public Health. 88(12): 1774 – 1780.

21 Alavanja MCR, Hoppin JA and Kamel F. 2004. Health Effects of Chronic Pesticide Exposure: Cancer and Neurotoxicity. Annual Review of Public Health. 25: 155 – 197.

22 U.S. Environmental Protection Agency. Pesticides and Their Impact on Children: Key Facts and Talking Points. Available at https://www.epa.gov/sites/production/files/2015-12/documents/pest-impact-hsstaff.pdf.

23 Calvert GM, Mueller CA, Fajen JM, et al. 1998. Health effects associated with sulfuryl fluoride and methyl bromide exposure among structural fumigation workers. American Journal of Public Health. 88(12): 1774 – 1780.

24 Technology Transfer Network - Air Toxics Web Site: Methyl Bromide. U.S. Environmental Protection Agency https://www3.epa.gov/airtoxics/hlthef/methylbr.html

DATA SOURCES

Table 38 describes the data sources used in the chassis, truck, and container storage yards analysis.

Table 38: Data Sources

Data	Year	Description	Source
Location of chassis, truck, and container storage yards	2016	Community researchers verified the location, use, and condition of storage yards in the study area	Community workers, Coalition for a Safe Environment (CFASE) and the Long Beach Alliance for Children with Asthma (LBACA)
Population density	2010	Demographic data collected at the Census block level	U.S. Census, 2010 Decennial Census

AESTHETIC AND VISUAL IMPACTS

CONTEXT

Aesthetic and visual impacts in the study area from the Port of Los Angeles and related Port operations and activities include:

- The massive footprint of the Port of Los Angeles in San Pedro Bay, and
- Port-related industrial and manufacturing uses in the area.

The enormity of the Port of Los Angeles is an all-consuming presence on the visual landscape of the San Pedro Bay. The Port dominates views of San Pedro Bay from San Pedro and other vantage points. The skylines of San Pedro and Wilmington consist of crowded Port-related structures. Port and Port-related operations and activities affect land uses in the study area, which in turn impact the aesthetics of Wilmington and San Pedro. High intensity land uses, including goods movement-related uses (e.g. railroad lines and warehouses) and Port-related industrial and manufacturing uses, combined with an increased number of vacant and abandoned parcels in certain areas of Wilmington and San Pedro, can lead to disrepair and disinvestment of the surrounding area. Similar to the discussion on vacant properties, visual and aesthetic impacts in the study area can have economic implications on surrounding homes and businesses by decreasing their market value and impacting the physical safety and mental wellbeing of community residents. 25 30F26 Residential proximity to industrial activity affects residents' perception of neighborhood disorder and their ability to control their lives.27 This section aims to describe and explore the aesthetic and visual impacts that the Port of Los Angeles and related Port operations and activities in the study area.

25 Garvin E, Branas C, Keddem S, et al. 2013. More Than Just an Eyesore: Local Insights and Solutions on Vacant Land and Urban Health. Journal of Urban Health. 90(3): 412-426.

26 Sampson RJ and Raudenbush SW. 2004. Seeing Disorder: Neighborhood Stigma and the Social Construction of "Broken Windows." Social Psychology Quarterly. 67(4): 319-342.

27 Downey L and Van Willigen M. 2005. Environmental Stressors: The Mental Health Impacts of Living Near Industrial Activity. Journal of Health and Social Behavior. 46(3); 289-305.

NEXUS BETWEEN THE PORT OF LOS ANGELES AND AESTHETIC AND VISUAL IMPACTS IN THE STUDY AREA

Figure 17 below describes a feasible pathway depicting how the footprint of and activity from the Port of Los Angeles and Port-related operations and activities impact aesthetics of the neighborhoods and views of the San Pedro Bay. Increasing industrial and manufacturing uses, along with the Port's large physical presence in the area, results in an increased amount of vacant and abandoned properties, devaluation and disinvestment in the area, and impeded views of the San Pedro Bay dominated by the industrial landscape. Even where permanent structures do not block visual access to the water or shoreline, massive cargo and cruise ships often impede those views and can dominate the landscape. In combination, these impacts result in increased community stress and anxiety, continued disinvestment in the area, and decreased property value of homes and businesses in the area.

Figure 17: Pathway Diagram of Aesthetic and Visual Impacts

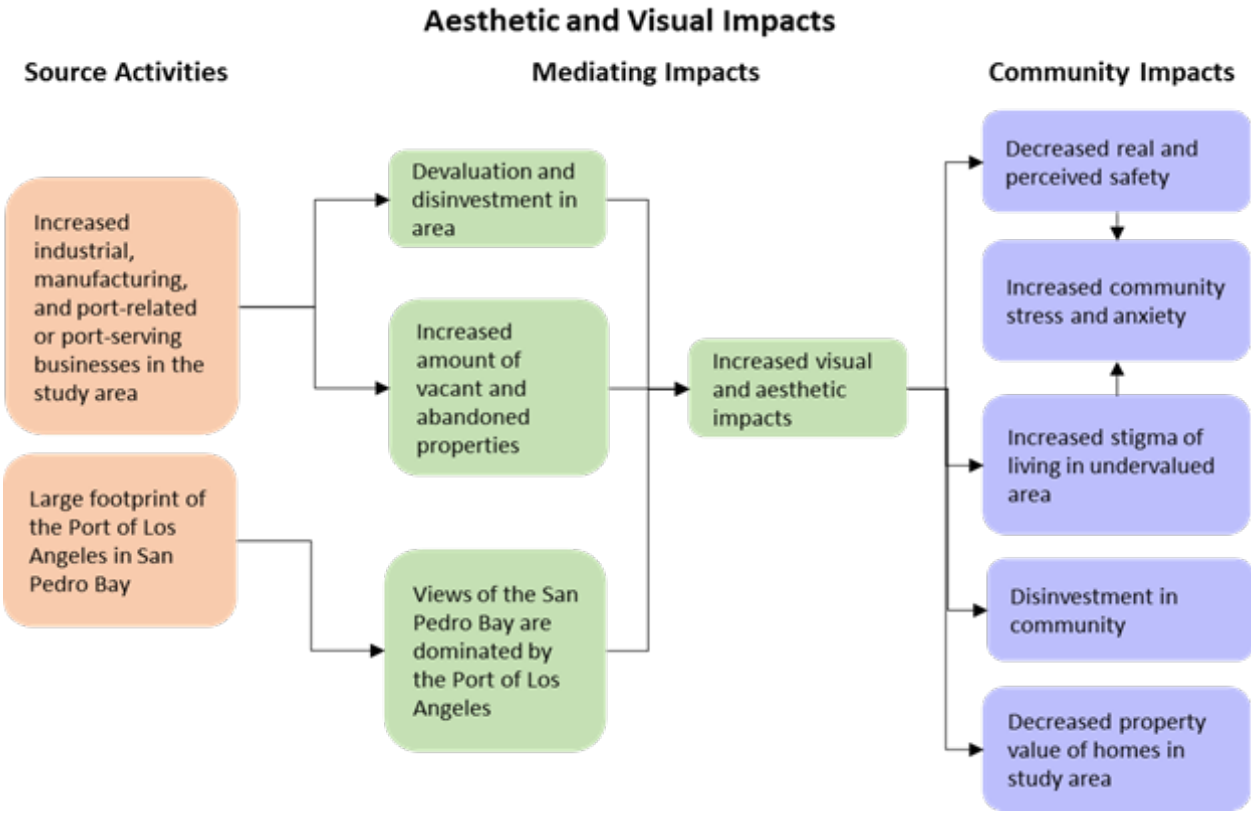


Table 39 describes the nexus between the aesthetic and visual impacts and the Port of Los Angeles and Port-related operations and activities. Impacts on the views of San Pedro Bay from elevated areas in San Pedro are directly related to the Port. The natural views would not be affected if the Port were not present. Aesthetic impacts in the neighborhoods are also related to Port and Port-related operations and activities in the area, which intensified land uses in the neighborhoods and resulted in an industrial environment which contributed to disinvestment in the community and devaluation in property value. Moreover, community stakeholders expressed their dismay and concern over aesthetic and visual impacts in the area and how these can affect economic opportunities, along with the health and wellbeing of Wilmington and San Pedro residents.

Table 39: Nexus Criteria for Aesthetic and Visual Impacts

Aesthetic and Visual Impacts		
Criteria	Yes, No, Possibly, Unsure, N/A	Notes
1. Is the source an established Port or Port-serving land use or activity?	Yes	Direct impacts from the Port itself, as viewed from San Pedro, or from the industrial landscape that is the result of the Port and Port-related operations in the study area.
2. Is the impact a direct result of the Port or Port-serving land use or activity?	Yes	
3. Is the impact an indirect result of the Port or Port-serving land use or activity?	Yes	
4. Is the causal pathway logical and plausible?	Yes	
5. Is there generalizable empirical evidence to support the causal pathway?	Yes	High intensity land uses, industrial sprawl, and increased vacant and abandoned properties have negative impacts on community wellbeing.
6. Is there a distance-based relationship to Port or Port-serving use or activity?	Yes	The strongest impacts are directly due to looking at the Port of Los Angeles and port-related activities in the study area.
7. Is there a temporal-based relationship to Port development in the study area?	Yes	Over time, expansion of Port and Port-related operations changed the aesthetics and visual views within the study area.
8. Is there a disproportionate burden/impact relative to the city/region?	Yes	Compared to other coastal communities in Los Angeles, Wilmington and San Pedro is disproportionately impacted.
9. Is there local qualitative evidence to support the pathway?	Yes	Community stakeholders have expressed concerns.

RESEARCH QUESTIONS AND METHODOLOGY

This analysis aims to understand the aesthetic and visual impacts in the study area as it relates to the Port of Los Angeles and Port-related operations and activities. Qualitative data from interviews with community stakeholders and photographs of the study area were used to understand these impacts.

The analysis sought to answer the following questions within the study area:

- What are the visual and aesthetic impacts in the study area?
- What are community concerns related to visual and aesthetic impacts?

FINDINGS

IMPACTS ON THE VIEWS OF SAN PEDRO BAY

The Port of Los Angeles very clearly dominates the viewshed from Wilmington and San Pedro. Its colossal presence can be seen from many vantage points throughout the study area. The Port's hulking, immense industrial footprint extends far out into the Bay. Tall cranes, sometimes as tall as 140 feet or 15 stories high, loom in the distance and impact the skyline, a persistent reminder of the neighborhoods' proximity to one of the country's busiest Ports. As the Port of Los Angeles continues to expand and larger ships and cranes come into operation, impacts on the study area's viewshed will also increase.

Views from the Port-facing slope of the San Pedro hills are greatly impacted by the Port, and some residents raised concerns of how much the Port detracts from the natural element and beauty of the San Pedro Bay. As one San Pedro resident commented about the industrial sprawl, "When you create an ugly landscape, the eye doesn't have a place to rest." Residents are also concerned with how these industrial views may impact property values. A resident stated that, "home values are different based on what side of the street they are on and whether they have views of the cranes or not." Most importantly, interviewed residents felt that the Port of Los Angeles and related structures are unsightly and unattractive and can lead to other negative community impacts.

As one San Pedro community stakeholder expressed, "the Port creates almost all of our problems. In reality…[this] Port town is kept down and not maintained [as] it should be and [it] doesn't have the income level that it really should have. The only reason…we're part of the City of Los Angeles is because we're next to the Port." Stakeholders maintain that if it were not for the Port of Los Angeles, San Pedro and Wilmington would have some of the best and most expensive coastal views.

As seen below in the photos, views of the Port of Los Angeles are inescapable. Even driving around in San Pedro on residential streets, impacts of crane structures peek out from behind homes and buildings at every intersection. Views of the Vincent Thomas Bridge, an iconic community landmark, are also obstructed by Port-related structures. Container ships, waiting to enter the Port, dot the horizon, idling out in the San Pedro Bay just beyond the breakwater.

Image 13: View of Terminal Island and Pier 400 of the Port of Los Angeles from Lookout Point Park in San Pedro. Photo source: Beth Altshuler, 2015

Image 14: View of the breakwater and container ships in San Pedro Bay from Lookout Point Park in San Pedro. Photo source: Beth Altshuler, 2015.

Image 15: View of Vincent Thomas Bridge and the Port of Los Angeles from Lookout Point Park in San Pedro. Photo source: Beth Altshuler, 2015

Image 16: View of the Port of Los Angeles from Lookout Point Park in San Pedro. Photo source: Beth Altshuler, 2015

Image 17: View from San Pedro of the Port of Los Angeles. Photo source: Tina Yuen, 2015.

Image 18: View of cranes on Port property and Vincent Thomas Bridge from San Pedro. Photo source: Beth Altshuler, 2015

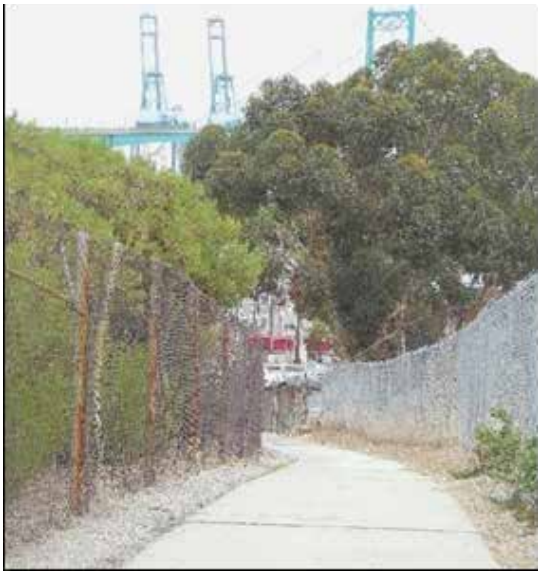


Image 19: View from Signal St. in San Pedro of the Port of Los Angeles and the Vincent Thomas Bridget. Photo source: Tina Yuen, 2015.

Image 20: View of the Port of Los Angeles from Signal St. in San Pedro. Photo source: Tina Yuen, 2015.

Image 21: View of Vincent Thomas Bridge and the Port-related structures from Northwest San Pedro. Photo source: Tina Yuen, 2015

Image 22: View of the container storage yards from San Pedro. Photo source: Beth Altshuler, 2015

Image 23: View of the Port of Los Angeles cranes behind a home in San Pedro. Photo source: Tina Yuen, 2015

AESTHETIC IMPACTS OF PORT OF LOS ANGELES AND RELATED OPERATIONS AND ACTIVITIES

Port-related operations intensify land uses, which dramatically impacts the aesthetics of the study area. High intensity of land uses in certain locations within the study area create a barren industrial landscape. Neighborhoods, such as East and South Wilmington, lack any sort of distinguishing buildings or landmarks. Everything looks similar: a vast scenery of industrial sprawl. Many places of the study area are populated with boarded up buildings, empty lots, mismatched corrugated metal fencing, barbed wire, large industrial buildings, and large block sizes, which in total creates a menacing and uninviting environment for pedestrians.

Additionally, since industrial and residential uses are not fully separated, people live very close to active industrial uses. Large trucks and trains also move through these neighborhoods, resulting in a great deal of dirt, diesel exhaust, and noise impacts in the study area. Constant truck traffic also result in street damage. As a community stakeholder described, "Heavy truckload has its wear and tear on the community. Trucks create potholes. People driving the trucks aren't a bunch of environmentalists. They also litter, and it spills over into the community."

These visual impacts bleed over into other parts of the community. The study area is affected by vandalism and graffiti, large amounts of litter and illegal dumping, and empty and vacant properties, as shown in the photos below.

Storage containers are often stacked many feet high. While container storage yards within proximity to the Port of Los Angeles and other Port-related operations are necessary, the conflict occurs when these land uses occur in or adjacent to residential or other sensitive areas. Stacked containers create large metal towers and walls that are visual eyesores and distort the horizon.

Image 24: Storage containers stacked high in a CSYs in Wilmington. Photo source: Zita Villamil, 2016.

Image 25: Storage containers looming over a residential block. Photo source: Beth Altshuler, 2016

Image 26: Metal fencing and barbed wires next to residential homes in Wilmington. Photo source: Beth Altshuler, 2015

Image 27: Tanks at the Plains LPG (formerly Amerigas) site loom in the background of the North San Pedro neighborhood near Mary Star High School. October 2010 file photo. (Scott Varley / Staff Photographer) http://www.dailybreeze.com/2014/06/19/activists-pushing-for-removal-of-rancho-lpg-chemical-tanks-in-san-pedro-find-sympathetic-ear-in-sacramento/

Image 28: Container Storage Yard with truck chassis in Wilmington. Photo source: Zita Villamil, 2016

Image 29: Trucks parked in parking lot. Photo source: Martha Romo, 2016

Image 30: Industrial landscape in Wilmington. Photo source: Beth Altshuler, 2015

Image 31: Barren industrial landscape in Wilmington. Photo source: Magali Sanchez-Hall, 2016

Image 32: Sterile industrial landscape in Wilmington. Photo source: Magali Sanchez-Hall, 2016

Image 33: View of smoke rising from industrial operations in the background in Wilmington. Photo source: Magali Sanchez-Hall, 2016

Image 34: Truck parking lot in Wilmington. Photo source: Magali Sanchez - Hall, 2016

Image 35: View of the Tesoro Refinery from the Pacific Coast Highway in Wilmington. Photo source: Beth Altshuler, 2015

Image 36: Empty lot in Wilmington surrounded by barbed wire and metal fencing in Wilmington. Photo source: Beth Altshuler, 2015

Image 37: Empty lot in Wilmington surrounded by barbed wire and metal fencing. Photo source: Beth Altshuler, 2015

Image 38: Illegal dumping in Wilmington. Photo source: Magali Sanchez-Hall, 2016

Image 39: Illegal dumping in Wilmington. Photo source: Magali Sanchez - Hall, 2016

Image 40: Litter and illegal dumping in Wilmington. Photo source: Zita Villamil, 2016

Image 41: Litter near a railroad line in Wilmington. Photo source: Magali Sanchez-Hall, 2016

Image 42: Vandalism and litter next to a railroad line in Wilmington. Photo source: Magali Sanchez-Hall, 2016

DATA SOURCES

Table 40 below is of the data source used in the analysis of aesthetic and visual impacts.

Table 40: Data Sources

Data	Year	Description	Source
Photos	2015, 2016	Photographs of the Wilmington and San Pedro	Various
Stakeholder interviews	2015, 2016	Interviews with community stakeholders and residents	Raimi + Associates conducted interviews

4. HAZARDOUS AND POLLUTING LAND USES

HAZARDOUS AND POLLUTING LAND USES

OVERVIEW

Hazardous land uses and sources of pollution (soil, water, and air) are enormous concerns in Southern California. Increases in the concentration of hazardous waste facilities, regulated air pollution facilities, toxic release inventory facilities, clean up and inspection enforcement sites, and ground water impact sites increase health risks. As described in other chapters of this report, the Port and Port-related businesses are primarily industrial and involve higher intensities of land uses, which are often enormous sources of pollution and physical hazards. The history and development of Wilmington and San Pedro are inextricably interconnected with that of the Port's. As operations at the Port of Los Angeles have intensified over time, a direct correlation can be seen in the surrounding neighborhoods. Thus, neighborhood residents are at increased risks for negative health outcomes due to their proximity to these uses.

Sensitive land uses are defined as areas where occupants or users are more susceptible to the adverse effects of exposure to toxic chemicals, pesticides, and other pollutants. These populations include infants and children, older adults, people with acute illnesses, and people with chronic diseases or disabilities. Extra care and protection must be taken when dealing with contaminants and pollutants near areas recognized as sensitive land uses, which include senior services, recreational facilities and play areas, schools, childcare facilities, and health care centers and clinics, including mental health counseling services and centers. Schools include early education and head start programs, public grade schools (K-12), private schools, and charter schools.

This section aims to explore the location and proximity of hazardous and polluting land uses near sensitive land uses. Specifically, the research questions are:

- Where and what are the stationary sources of pollution polluters and hazardous land uses?
- Where are the areas with incompatible land uses, such as industrial areas next to or near residential areas and sensitive receptors?

HAZARDOUS LAND USES AND POLLUTION SOURCES

CONTEXT

Air quality and toxic air contaminants in the study area, from the cumulative impacts of multiple sources of pollution, have also been longstanding environmental health concerns for Wilmington and San Pedro community members. Table 41 below describes criteria air pollutants[1] and their associated health effects. The study area has high levels of emissions from stationary and mobile sources of pollution, along with a wide variety of other environmental hazards, and face elevated health risks as a consequence.[2] The U.S. Environmental Protection Agency (USEPA) and California Air Resources Board (CARB) have designated the South Coast Air Basin as an

1 Criteria air pollutants have national air quality standards that define allowable concentrations of these substances in ambient air.

2 Los Angeles Collaborative for Environmental Health and Justice. 2010. Hidden Hazards: A Call to Action for Healthy, Livable Communities. Available from https://dornsife.usc.edu/assets/sites/242/docs/hidden-hazards-low-res-version.pdf.

extreme nonattainment area[3] for 1-hour ozone and non-attainment area for particulate matter (PM) 10 and 2.5 micrometers.[4] Overall, the Los Angeles region suffers from increased cancer risks that greatly exceed the standards of the federal Clean Air Act.[5]

Table 41: Criteria Air Pollutants and Associated Health Effects

Air Pollutant	Health Effects
Ozone	Eye irritation, airway constriction, and shortness of breath and can aggravate existing respiratory diseases such as asthma, bronchitis, and emphysema.
Carbon Monoxide (CO)	Reduced oxygen-carrying capacity of the blood resulting in fatigue, impaired central nervous system function, and induced angina.
Particulate Matter (PM10 and PM 2.5)	Impaired lung function, exacerbation of acute and chronic respiratory disease, including bronchitis and asthma, emergency room visits and hospital admissions, and premature death.
Nitrogen Dioxide (NO2)	Acute and chronic respiratory disease.
Lead	Behavioral and IQ problems in children, learning problems, hyperactivity.
Sulfur Dioxide (SO2)	Acute and chronic respiratory disease.
Adapted from Table 5 in the Health Effects of Road Pricing in San Francisco, California Health Impact Assessment (pg. 30); Additional information from U.S. Environmental Protection Agency.	

These cumulative impacts are primarily due to the overwhelming presence and concentration of industrial and hazardous land uses in the neighborhoods surrounding the Port of Los Angeles, including goods-movement transportation impacts from the multitude of trains, trucks, and ships moving freight in and out of the Port. A great deal of empirical evidence supports the cumulative impacts from the dense concentration of multiple hazardous and polluting land uses in the area, as well as concerns from community residents and groups. These neighborhoods are also areas with several sensitive land uses, which increases exposures of environmental contaminants to the most susceptible populations.

Community residents and local organizations have also raised concerns over environmental injustices and disproportionate environmental pollution exposures in the study area. According to a pollution disparity index conducted on major greenhouse gas-emitting facilities in California, eight of the top ten facilities that disproportionately pollute in communities of color are in Los Angeles County.5F Wilmington alone is home to three of these facilities: Tesoro Wilmington Refinery, ConocoPhillips Wilmington Refinery, and Valero Wilmington Refinery.

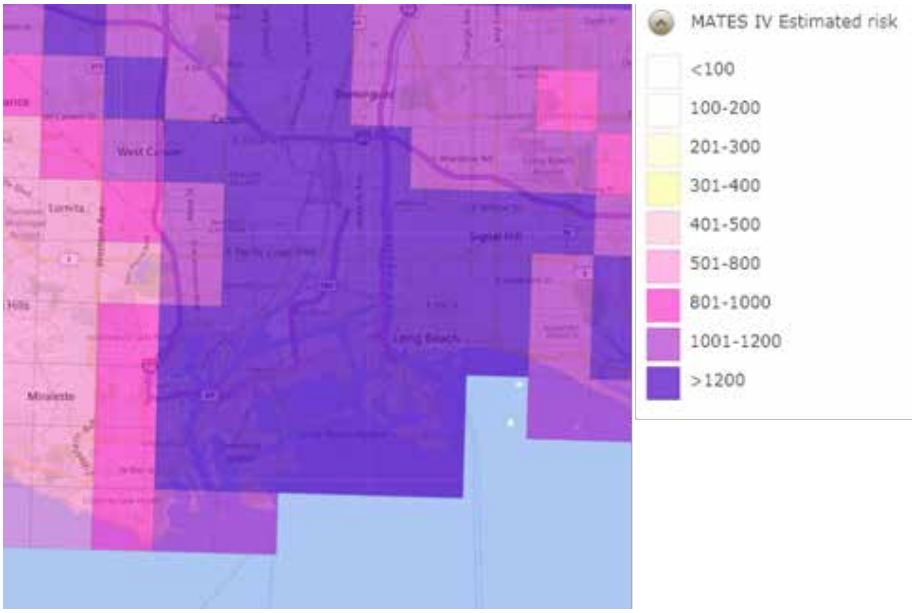
In total, these impacts combine to cumulatively increase health risks in the area. Figure 18 below depicts the estimates of the cancer risk in and around the study area from the South Coast Air Quality Management District's (SCAQMD) Multiple Air Toxic Exposure Study (MATES-IV).6F

3 A nonattainment area is a location where air pollution levels persistently exceeds National Ambient Air Quality Standards, or that contributes to ambient air quality in a nearby area that fails to meet standards.

4 Los Angeles Harbor Department. 2008. Berths 97-109 [China Shipping] Container Terminal Project Environmental Impact Review.

5 Los Angeles Collaborative for Environmental Health and Justice. 2010. Hidden Hazards: A Call to Action for Healthy, Livable Communities. Available from https://dornsife.usc.edu/assets/sites/242/docs/hidden-hazards-low-res-version.pdf.

Figure 18: MATES IV Estimates of Cancer Risk per Million Population in the Study Area



Data source: South Coast Air Quality Management District, MATES IV Carcinogenic Risk Interactive Map, 2015.

The cancer risk increases with increased proximity to the Port of Los Angeles; as shown in Figure 18, residents living nearest to the Port have a maximum lifetime cancer risk of over 1,200 in a million, which is the highest in the district.[7] The drastic increase in risk is explained in part because the Port of Los Angeles and related freight movement activities are some of the large sources of diesel emission in the South Coast Air Basin.[6] Diesel particulate matter is a major contributor to the air toxics risks and accounts for 84% of the total cancer risk in the region.[7,8] While PM2.5 concentrations at community monitors in Wilmington has been on the decline since 2005 and have been below California standards, PM10 concentrations have remained elevated above state thresholds.[9]

CARB acknowledges that multiple air pollution exposures are a risk to the public's health, especially in disproportionately impacted communities, such as Wilmington and San Pedro facing additional socioeconomic stressors and vulnerabilities. In 2001 and 2002, the agency conducted an air quality monitoring study in Wilmington as part of a larger statewide evaluation of large industrial facilities.[10] Two elementary schools in Wilmington were chosen as air monitoring sites. The 24-hour state PM10 standard (50 mcg/m3) was exceeded at both monitoring locations. Exceedance rates were

6 California Air Resources Board. 2006. Diesel Particulate Matter Exposure Assessment Study for the Ports of Los Angeles and Long Beach. Available from https://www.arb.ca.gov/ports/marinevess/documents/portstudy0406.pdf.

7 South Coast Air Quality Management District. 2008. MATES III (Multiple Air Toxics Exposure Study III) Fact Sheet. Available from http://bos.ocgov.com/legacy3/newsletters/pdf/MATESIII-factsheetfinal.pdf.

8 South Coast Air Quality Management District. 2008. Air Toxics Study Shows 15 Percent Reduction in Cancer Risk. Available from http://www.aqmd.gov/home/library/public-information/2008-news-archives/mates-iii-cancer-risk-results.

9 The Port of Los Angeles. 2010. Air Quality Monitoring. Available from http://www.portoflosangeles.org/environment/air_quality.asp.

10 California Air Resources Board. 2003. Community Air Quality Monitoring: Special Studies - Wilmington. Available from http://www.arb.ca.gov/ch/reports/wilmington_sb25_report.pdf.

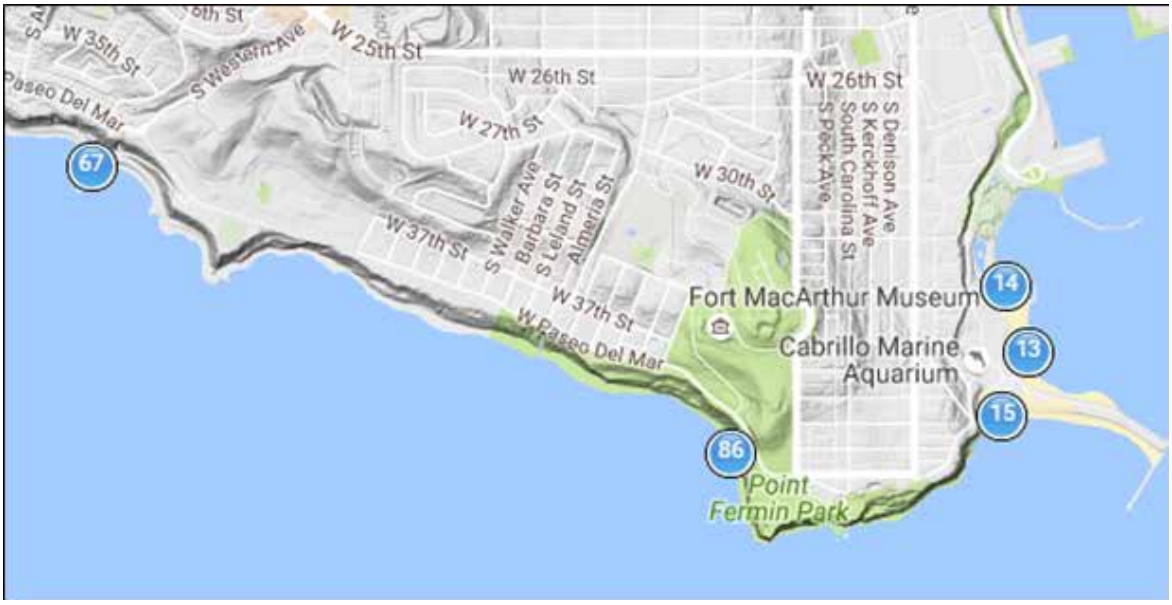
similar between one school and the other comparison sites, but were noticeably elevated at the other elementary school. The difference suggests that nearby sources of particulate matter emissions have measurable impacts on air pollution levels.[11] The elementary school with elevated measurements is within 2,000 feet of two major sources of air pollution, Interstate-110 and the Port of Los Angeles.

Regional and local air quality varies in comparison due to many factors, such as weather and proximity to pollution sources. However, air quality at both the regional level and within the study area is poor. Local variations in exposures have been shown to worsen air quality at the community level. The study area is impacted by multiple local sources of pollution, and as demonstrated in the special air monitoring study in Wilmington, differences in air pollution concentrations vary widely over short distances and nearby sources of pollution can have substantial impacts.

Stakeholder interviewees also identified beach water quality as a concern, especially among the beaches inside the breakwater. The breakwater is the physical barrier built out into the San Pedro Harbor to provide coastal defense for the Ports of Los Angeles and Long Beach. Interviewees were concerned that the breakwater prevented adequate flow of water into and out of the harbor, and negatively impacted water quality of the beaches inside the breakwater. The beach water quality at five local beaches in San Pedro were examined, as depicted below in Map 42. For comparative purposes, two beaches are inside the breakwater, and three are outside the breakwater.

11 California Air Resources Board. 2003. Community Air Quality Monitoring: Special Studies - Wilmington. Available from http://www.arb.ca.gov/ch/reports/wilmington_sb25_report.pdf.

Map 42: Location of San Pedro Beaches



Source: Heal the Bay Beach Report Card, 2016

Inside breakwater:

- Cabrillo Beach - Harborside at boat launch (14)
- Cabrillo Beach - Harborside at restrooms (13)

Outside breakwater:

- Cabrillo Beach - Oceanside (15)
- Wilder Annez, San Pedro (86)
- Royal Palms State Beach (67)

Image 43: Inner Cabrillo Beach in San Pedro with a sign warning visitors not to swim. Photo source: Chuck Bennett / Staff Photographer. http://www.dailybreeze.com/2015/06/18/san-pedros-cabrillo-harbor-is-it-too-dirty-for-dogs/

In Table 42, we highlight the annual total maximum daily load (TMDL)[12] violations among five beaches in San Pedro. The two beaches inside the breakwater saw 47 times more TMDL violations than the three beaches outside of the breakwater combined.

Table 42: Annual TMDL Violations of San Pedro Beaches

Annual TMDL Violations					
Year	Inside breakwater		Outside breakwater		
	Cabrillo Beach- Harborside at boat launch (14)	Cabrillo Beach - Harborside at restrooms (13)	Cabrillo Beach - Oceanside (15)	Wilder Annez, San Pedro (86)	Royal Palms State Beach (67)
2016	24	31	--	1	--
2015	35	38	1	2	2
2014	37	90	--	--	3
2013	89	95	--	--	1
2012	50	113	--	1	--
2011	20	140	1	--	--
2010	8	125	--	--	--
2009	--	--	--	--	--
2008	--	--	1	--	2
2007	--	--	2	--	--
2006	--	--	--	--	2
Total	263	632	5	4	10
Data source: Heal the Bay Beach Report Card, 2016					

Table 43 demonstrates that both wet and dry weather conditions affect the beach water quality inside and outside the breakwater. During wet weather conditions, the beaches inside the breakwater experienced worse water quality compared to the three beaches outside of the breakwater. During dry weather conditions, the beaches inside the breakwater had a higher number of A+ and A scores and fewer D and F scores. In addition, the beaches outside the breakwater received no scores worse than a B during dry weather conditions.

12 TMDLs are a calculation of the maximum amount of pollution that a waterbody (river, lake, or the ocean) can handle before it can no longer meet its beneficial uses (e.g., habitat and recreation).

Table 43: Frequency of Annual Grades by Weather, Years 1994 - 2016

Weather	Grade	Inside breakwater		Outside breakwater		
		Cabrillo Beach- Harborside at boat launch (14)	Cabrillo Beach - Harborside at restrooms (13)	Cabrillo Beach - Oceanside (15)	Wilder Annez, San Pedro (86)	Royal Palms State Beach (67)
Wet	A+	0	0	7	6	3
	A	0	0	9	10	12
	B	3	0	6	2	5
	C	4	0	0	4	1
	D	5	1	1	0	1
	F	10	15	0	0	1
Dry	A+	1	0	6	9	4
	A	12	1	17	14	18
	B	3	1	0	0	1
	C	5	0	0	0	0
	D	1	2	0	0	0
	F	0	11	0	0	0

Data source: Heal the Bay Beach Report Card, 2016. The annual grades for wet and dry weather were calculated for the years 1994 - 2016 and enumerated by grade.

NEXUS BETWEEN THE PORT OF LOS ANGELES AND HAZARDOUS AND POLLUTING LAND USES

Figure 19 depicts a plausible causal pathway describing how Port and Port-related operations impact hazardous and polluting land uses in the study. Port and Port-related businesses become established in the area due to proximity with other complementary businesses and needed transportation infrastructure. Simultaneously, residential and commercial areas were already located near the Port. These factors increased exposure to risks and pollution.

Figure 19: Pathway Diagram of Impacts from Hazardous and Polluting Land Uses

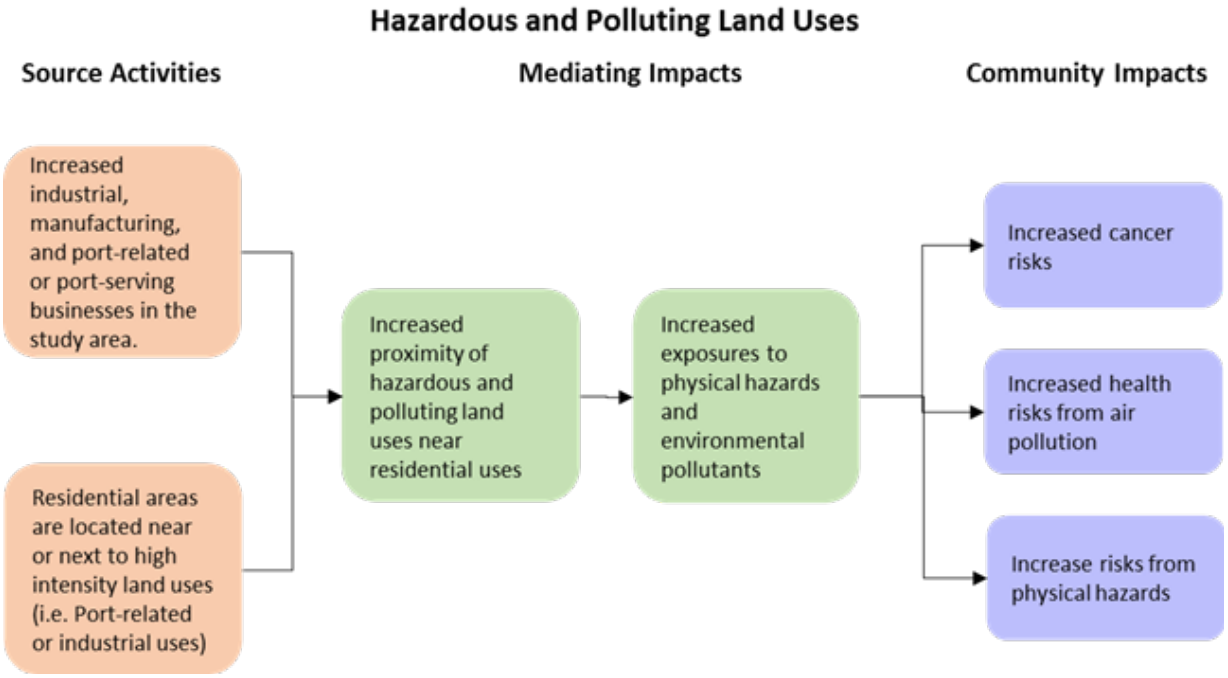


Table 44 below describes the nexus between the Port and Port-related operations and impacts from hazardous and polluting land uses in the study area based on the nine criteria outlined. The hazardous and polluting facilities are likely an established Port or Port-related land use or activity, as these facilities and uses clustered in the study area due to proximity with the Port and other related industries. Environmental Justice evidence-based literature regarding the location of hazardous and polluting land uses in and near communities or color and low-income communities support this understanding. Many of the hazardous and polluting sources and facilities are clustered in East and South Wilmington, closest to the Port of Los Angeles. Additionally, data from the CalEnviroScreen (Version 2.0) and MATES IV data shows that there is disproportionate impact in the area, largely stemming from Port and Port-related operations and activities. Community stakeholders have also expressed great concern about the proximity of hazardous and polluting sources to residential and other sensitive land uses.

Image 44: Industrial pollution in San Pedro. Photo source: Kathleen Woodfield, 2017.

Table 44: Nexus Criteria for Hazardous and Polluting Land Uses

Hazardous and Polluting Land Uses		
Criteria	Yes, No, Possibly, Unsure, N/A	Notes
1. Is the source an established Port or Port-serving land use or activity?	Likely	Hazardous and polluting land uses are most likely an established Port or Port-serving land use or activity, however, not all of these land uses may be categorized as such.
2. Is the impact a direct result of the Port or Port-serving land use or activity?	Yes	The impact of residential exposure to hazardous and polluting land uses is a direct result of the Port or Port-serving land use or activity, and located to the study area due to increased proximity to Port and Port-serving industries and related infrastructure.
3. Is the impact an indirect result of the Port or Port-serving land use or activity?	Yes	
4. Is the causal pathway logical and plausible?	Yes	
5. Is there generalizable empirical evidence to support the causal pathway?	Yes	Evidence supports that these uses cluster near other similar uses, and the citing and expansion in low-income communities and communities of color.
6. Is there a distance-based relationship to Port or Port-serving use or activity?	Yes	Many of these businesses are clustered in East and South Wilmington, close to the Port of Los Angeles.
7. Is there a temporal-based relationship to Port development in the study area?	Unsure	Did not examine.
8. Is there a disproportionate burden/ impact relative to the city/region?	Yes	Disproportionate impact is shown in CalEnviroScreen V2.0 and MATES IV data.
9. Is there local qualitative evidence to support the pathway?	Yes	Many community stakeholders are concerned about the proximity of hazardous and polluting sources to residential and other sensitive land uses.

RESEARCH QUESTIONS AND METHODOLOGY

Information on the location of regulated sites and facilities are from various state and federal agencies, as listed on the Table 52 of data sources. Regulated facilities were geocoded and mapped based on the location data provided and summarized and tabulated by neighborhood. Comparisons are made to the County of Los Angeles data. Rate per square mile and rate per 1,000 residents were also calculated to standardize the results. CalEnviroScreen (Version 2.0) data was also used to depict disproportionate impacts in the area.

Population density data was included to visually depict the location of pollution and hazardous sources in densely populated areas of the study area.

HAZARDOUS AND POLLUTING SOURCES:

- Clean up sites: These are hazardous waste facilities and sites regulated by the California Department of Toxic Substances Control that are currently undergoing investigation and/or clean up.
- Groundwater impact sites: These are sites regulated by the California State Water Resources Board and identify cleanup sites and permitted underground storage tanks.
- Hazardous waste facilities: These facilities are permitted and regulated by the California Department of Toxic Substances Control as sites that contain hazardous waste.
- Inspection and enforcement sites: Information on inspection and enforcement information of permitted hazardous waste facilities are from the Department of Toxic Substances Control. This includes information on permits and corrective action at hazardous waste facilities.
- Solid waste facilities: These are solid waste facilities or sites permitted and regulated by California's Department of Resources Recycling and Recovery.
- Sources of air pollution: These facilities are criteria air pollutants and toxic air contaminants reporting, regulated by the California Air Resources Board (CARB).
- Toxic release inventory: Toxic Release Inventory (TRI) data is submitted by stationary facilities on the release of over 650 chemicals and chemical categories under the Emergency Planning and Community Right-to-Know Act and Pollution Prevention Act. Covered facilities report the quantities of chemicals using their best available data.

The research question this analysis sought to answer is:

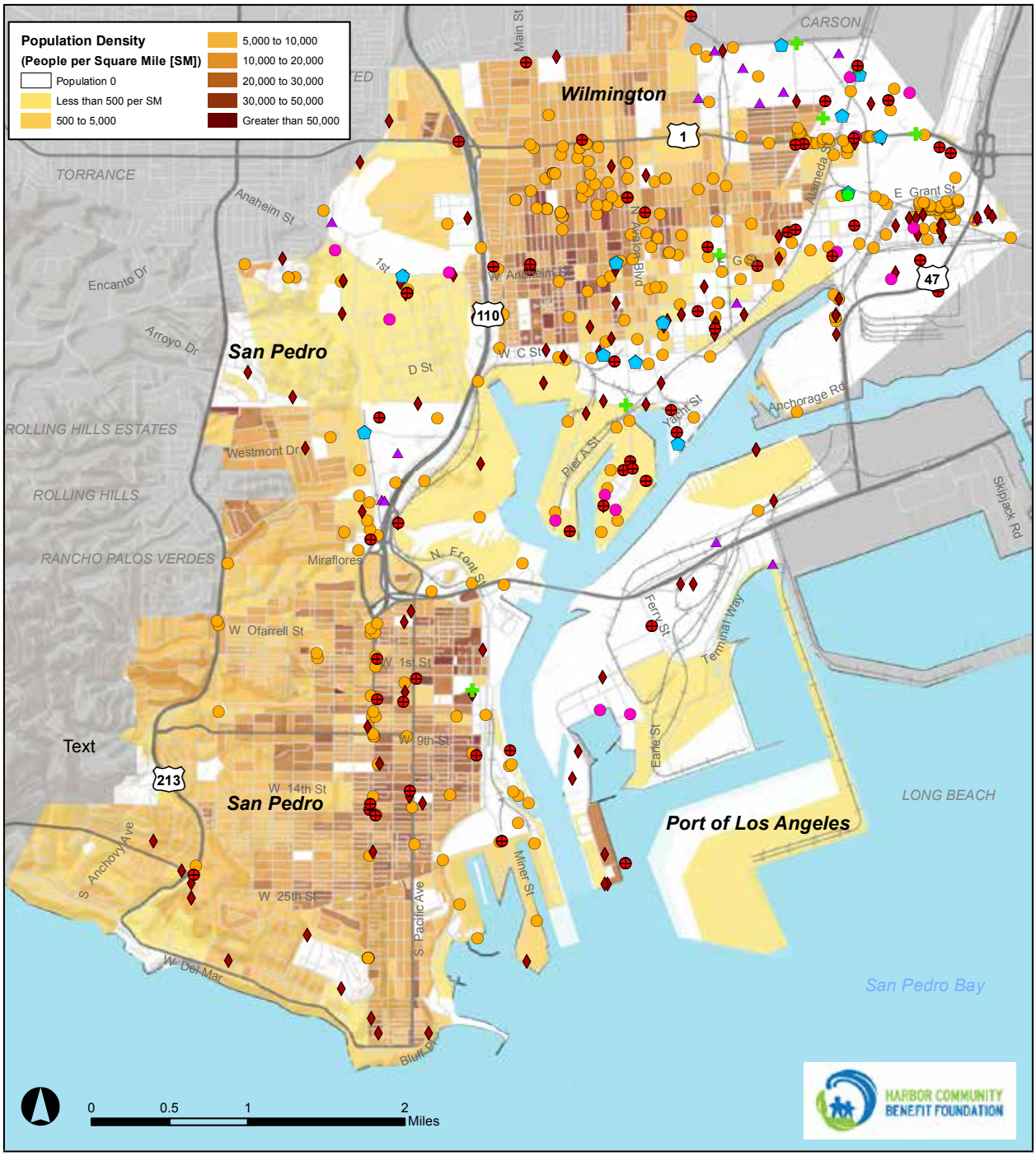
- Where and what are the stationary sources of pollution and hazardous land uses in the study area?

FINDINGS

The three tables below (Table 45, Table 46, and Table 47) enumerate the number of regulated hazardous waste facilities, inspection and enforcement sites, cleanup sites, and the rate for square mile and per 1,000 residents. As shown in each of these tables, East and South Wilmington neighborhoods stand out as areas with the highest rates of pollution sources compared to other neighborhoods of the study area. Compared to the County of Los Angeles, the overall study area has higher rates of these sources of pollution per square mile and capita. In some instances, the difference is dramatic; for cleanup sites, there are eight times the number of cleanup sites per square mile in the study area compared with the County.

The Hazardous and Polluting Sources and Population Density map depicts the location of these land uses in or adjacent to densely populated areas. Many of these facilities and sources are in densely populated areas of the study areas.

Map 43: Hazardous and Polluting Sources and Population Density



Sources of Pollution and Hazardous Waste

- Sources of Air Pollution
- Intermodal Transfer Facilities
- Toxic Release Inventory Facilities
- Inspections Enforcements Sites
- Permitted Hazardous Waste Facilities
- Clean Up Sites
- Solid Waste Facilities
- GroundwaterImpact
- Railroad
- Interstates and Highways
- Streets

Produced by Raimi + Associates, November 2016

Data Sources: CA Air Resources Board, 2015; CA State Water Resources Control Board, 2015; CalRecycle, Solid Waste Information System (SWIS), 2015; CA Department of Toxic Substances Control, 2014; LA Open Data, 2015; Population density, 2010 US Census Bureau; Interstates and Highways, 2008 Tele Atlas North America, Inc.; World Terrain Base, 2009 ESRI.

Table 45: Permitted Hazardous Waste Facilities

Location	Population	Area (sq miles)	# Hazardous Waste Facilities	Rate (# per sq mile)	Rate per 1,000 residents
County of Los Angeles	9,818,605	4,751	272	0.06	0.028
Study Area	135,327	21.74	12	0.55	0.089
San Pedro	79,704	9.11	1	0.11	0.013
Central San Pedro	29,470	1.97	0	0.00	0.000
Coastal San Pedro	27,132	3.47	0	0.00	0.000
Northwest San Pedro	21,068	3.46	1	0.29	0.047
Unincorporated San Pedro	2,034	0.21	0	0.00	0.000
Port of Los Angeles	1,035	3.09	0	0.00	0.000
Wilmington	54,588	9.54	11	1.15	0.202
East Wilmington	12,880	2.33	5	2.15	0.388
North Wilmington	13,361	1.4	0	0.00	0.000
South Wilmington	11,282	4.3	5	1.16	0.443
West Wilmington	17,065	1.51	1	0.66	0.059

Data sources: California Department of Toxic Substances Control, 2014 and U.S. Census Bureau Decennial Census, 2010

Table 46: Inspection and Enforcement Sites

Location	Population	Area (sq miles)	# Inspection/ enforcement sites	Rate per sq mile	Rate per 1,000 residents
County of Los Angeles	9,818,605	4,751	74	0.016	0.0075
Study Area	135,327	21.74	6	0.28	0.044
San Pedro	79,704	9.11	0	0.00	0.000
Central San Pedro	29,470	1.97	0	0.00	0.000
Coastal San Pedro	27,132	3.47	0	0.00	0.000
Northwest San Pedro	21,068	3.46	0	0.00	0.000
Unincorporated San Pedro	2,034	0.21	0	0.00	0.000
Port of Los Angeles	1,035	3.09	0	0.00	0.000
Wilmington	54,588	9.54	6	0.629	0.110
East Wilmington	12,880	2.33	3	1.288	0.233
North Wilmington	13,361	1.4	0	0.00	0.000
South Wilmington	11,282	4.3	3	0.698	0.266
West Wilmington	17,065	1.51	0	0.00	0.000

Data source: California Department of Toxic Substances Control, 2014 and U.S. Census Bureau Decennial Census, 2010

Table 47: Cleanup Sites

Location	Pop	Area (Sq miles)	# Cleanup sites	Rate per sq mile	Rate per 1,000 residents
County of Los Angeles	9,818,605	4,751	2,951	0.62	0.301
Study Area	135,327	21.74	109	5.01	0.805
San Pedro	79,704	9.11	30	3.29	0.376
Central San Pedro	29,470	1.97	8	4.06	0.271
Coastal San Pedro	27,132	3.47	14	4.03	0.516
Northwest San Pedro	21,068	3.46	8	2.31	0.380
Unincorporated San Pedro	2,034	0.21	0	0.00	0.000
Port of Los Angeles	1,035	3.09	12	3.88	11.594
Wilmington	54,588	9.54	67	7.02	1.227
East Wilmington	12,880	2.33	22	9.44	1.708
North Wilmington	13,361	1.4	3	2.14	0.225
South Wilmington	11,282	4.3	39	9.07	3.457
West Wilmington	17,065	1.51	3	1.99	0.176

Data sources: California Department of Toxic Substances Control, 2014 and U.S. Census Bureau Decennial Census, 2010

Table 48 below depicts the number and density of solid waste facilities in the study area. Sixteen solid waste facilities are in the study area. There are over 11 times more solid waste facilities per square mile in the study area compared with the County of Los Angeles. East and North Wilmington are disproportionately impacted with a rate of 2.15 and 2.14 solid waste facilities per square mile, respectively. This is almost 36 times the number of facilities compared with the County of Los Angeles.

Table 48: Solid Waste Facilities

Location	Pop	Area (sq miles)	# Solid waste facilities	Rate per sq mile	Rate per 1,000 residents
County of Los Angeles	9,818,605	4,751	296	0.06	0.030
Study Area	135,327	21.74	15	0.69	0.111
San Pedro	79,704	9.11	3	0.33	0.038
Central San Pedro	29,470	1.97	0	0.00	0.000
Coastal San Pedro	27,132	3.47	0	0.00	0.000
Northwest San Pedro	21,068	3.46	3	0.87	0.142
Unincorporated San Pedro	2,034	0.21	0	0.00	0.000
Port of Los Angeles	1,035	3.09	2	0.65	1.932
Wilmington	54,588	9.54	10	1.05	0.183
East Wilmington	12,880	2.33	5	2.15	0.388
North Wilmington	13,361	1.4	3	2.14	0.225
South Wilmington	11,282	4.3	1	0.23	0.089
West Wilmington	17,065	1.51	1	0.66	0.059

Data sources: CalRecycle, Solid Waste Information System, 2015 and U.S. Census Bureau Decennial Census, 2010

There are several groundwater impacts within the study area, which is considerably higher than the rest of the County, as shown in Table 49 below. There is a higher density of these sites in the study area. There are 65 times more groundwater impact sites per square mile in the study area than the County of Los Angeles. When we separate the date by neighborhood subarea and standardize it per capita, the disproportionate in East and West Wilmington becomes very apparent.

Table 49: Groundwater Impact Sites

Location	Pop	Area (Sq miles)	# Groundwater impact sites	Rate per sq mile	Rate per 1,000 residents
County of Los Angeles	9,818,605	4,751	1,078	0.23	0.11
Study Area	135,327	21.74	321	14.77	2.372
San Pedro	79,704	9.11	82	9.00	1.029
Central San Pedro	29,470	1.97	34	17.26	1.154
Coastal San Pedro	27,132	3.47	24	6.92	0.885
Northwest San Pedro	21,068	3.46	22	6.36	1.044
Unincorporated San Pedro	2,034	0.21	2	9.52	0.983
Port of Los Angeles	1,035	3.09	2	0.65	1.932
Wilmington	54,588	9.54	237	24.84	4.342
East Wilmington	12,880	2.33	104	44.64	8.075
North Wilmington	13,361	1.4	8	5.71	0.599
South Wilmington	11,282	4.3	56	13.02	4.964
West Wilmington	17,065	1.51	69	45.70	4.043

Data sources: California State Water Resources Board, GeoTracker, 2015 and U.S. Census Bureau Decennial Census, 2010

As shown in Table 50, there are 64 regulated stationary sources of air pollution in the study area. This equates to 2.94 sites per square mile in the study area. Central San Pedro, East Wilmington, North Wilmington, and South Wilmington are the neighborhoods that are the most impacted in the study area. Additionally, as shown in Table 51, there are a total of 16 TRI facilities in the study area. In both the stationary sources of air pollution and TRI facilities, the study area, especially Wilmington, is disproportionately affected.

Table 50: Regulated Stationary Sources of Air Pollution

Location	Pop	Area (Sq miles)	# Air pollution regulated sites	Rate per sq mile	Rate per 1,000 residents
County of Los Angeles	9,818,605	4,751	1,041	0.22	0.106
Study Area	135,327	21.74	64	2.94	0.473
San Pedro	79,704	9.11	15	1.65	0.188
Central San Pedro	29,470	1.97	10	5.08	0.339
Coastal San Pedro	27,132	3.47	3	0.86	0.111
Northwest San Pedro	21,068	3.46	2	0.58	0.095
Unincorporated San Pedro	2,034	0.21	0	0.00	0.000
Port of Los Angeles	1,035	3.09	5	1.62	4.831
Wilmington	54,588	9.54	44	4.61	0.806
East Wilmington	12,880	2.33	13	5.58	1.009
North Wilmington	13,361	1.4	6	4.29	0.449
South Wilmington	11,282	4.3	22	5.12	1.950
West Wilmington	17,065	1.51	3	1.99	0.176

Data sources: California Air Resources Board, 2015 and U.S. Census Bureau Decennial Census, 2010. Includes state regulated facilities that emit toxic air contaminants and/or criteria air pollutants.

Table 51: Toxic Release Inventory Facilities

Location	Pop	Area (Sq miles)	# Toxic Release Inventory	Rate per sq mile	Rate per 1,000 residents
County of Los Angeles	9,818,605	4,751	351	0.074	0.0357
Study Area	135,327	21.74	16	0.74	0.118
San Pedro	79,704	9.11	1	0.11	0.013
Central San Pedro	29,470	1.97	0	0.00	0.000
Coastal San Pedro	27,132	3.47	0	0.00	0.000
Northwest San Pedro	21,068	3.46	1	0.29	0.047
Unincorporated San Pedro	2,034	0.21	0	0.00	0.000
Port of Los Angeles	1,035	3.09	2	0.65	1.932
Wilmington	54,588	9.54	13	1.36	0.238
East Wilmington	12,880	2.33	5	2.15	0.388
North Wilmington	13,361	1.4	0	0.00	0.000
South Wilmington	11,282	4.3	8	1.86	0.709
West Wilmington	17,065	1.51	0	0.00	0.000

Data sources: U.S. Environmental Protection Agency, 2015 and U.S. Census Bureau Decennial Census, 2010.

The Hazardous and Polluting Sources and Population Density map shows the pollution and hazardous sources in the study overlaid on data from CalEnviroScreen Version 2.0. The CalEnviroScreen is a screening methodology that can be used to help identify Californian communities that are disproportionately burdened by multiple sources of pollution. The tool can also be used to assess cumulative impacts, or the exposures and public health or environmental effects from all sources of pollution in a geographic area. Scores are by census tracts. Parts of East Wilmington, South Wilmington, and Central San Pedro, have the highest scores, making them disproportionately impacted and especially vulnerable to the cumulative impacts of the numerous pollution sources.

Community stakeholders raised concerns regarding the Rancho LPG facility located at 2011 N. Gaffey St. in San Pedro, which is a liquefied petroleum gas (LPG) storage facility used for the storage of butane.[13] Interviewees reported that the facility uses a rail spur[14] to store and move the highly volatile and flammable liquefied gas to and from the Port of Los Angeles within proximity to residential areas and commercial districts. A long-time San Pedro resident described the danger associated with storing highly flammable butane on rail cars near residential areas:

"These rail cars are filled with explosive gas and fuel…these rail cars are basically stored on train tracks that are close to residents and schools. Rancho…uses its tracks and cars as a secondary storage facility."

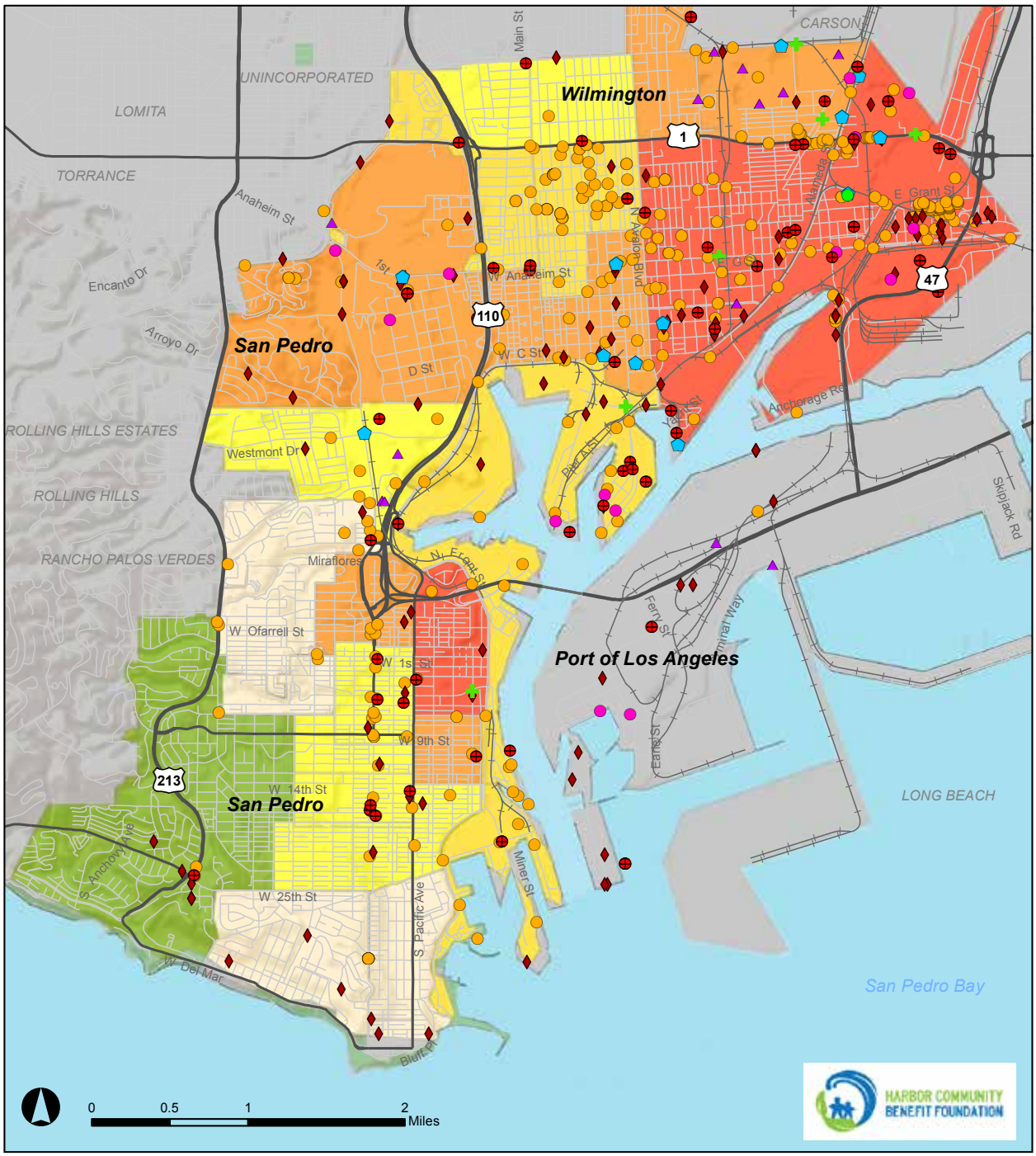
In summary, hazardous and polluting sources disproportionately impact the study area compared to the County of Los Angeles. Wilmington, and the neighborhoods of East, North, and South Wilmington, are particularly affected.

13 Rancho LPG Holdings LLC. 2016. Welcome to Rancho LPG. Available at http://www.rancholpg.com/.

14 A rail spur is a secondary track used by railroads to allow users at a location to load and unload railcars without interfering with other railroad operations.

Image 45: View of Rancho Liquefied Petroleum Gas (LPG) storage facility from the Field of Dreams Soccer Complex in San Pedro. Photo source: HCBF, 2017.

Map 44: Stationary Sources of Pollution and Hazardous Waste



Sources of Pollution and Hazardous Waste

- Sources of Air Pollution
- Intermodal Transfer Facilities
- Toxic Release Inventory Facilities
- Inspections Enforcements Sites
- Permitted Hazardous Waste Facilities
- Clean Up Sites
- Solid Waste Facilities
- GroundwaterImpact

CalEnviroscreen Percentile

Percentile

- 30% and Lower
- 31-50%
- 51-70%
- 71-80%
- 81-90%
- 91-100% (highest scores)

- Railroad
- Interstates and Highways
- Streets

Produced by Raimi + Associates, November 2016
Data Sources: CA Air Resources Board, 2015; CA State Water Resources Control Board, 2015; CalRecycle, Solid Waste Information System (SWIS), 2015; CA Department of Toxic Substances Control, 2014; LA Open Data, 2015; CalEnviroscreen Version 2.0, Cal EPA OEHHA; Interstates and Highways, 2008 Tele Atlas North America, Inc.; World Terrain Base, 2009 ESRI.

DATA SOURCES

Table 52 below is of the data sources included in the analysis of hazardous and polluting sources in the study area.

Table 52: Data Sources

Data	Year	Description	Source
CalEnviroScreen scores	2014	CalEnviroScreen Version 2.0 is a screening methodology that can be used to help identify Californian communities that are disproportionately burdened by multiple sources of pollution. Scores are by census tracts.	California Environmental Protection Agency, Office of Environmental Health Hazard Assessment (OEHHA)
Stationary sources of air pollution	2015	Data is on sources of air pollution regulated by the state air board: toxic air contaminants and criteria air pollutants. Criteria air pollutants includes ozone, carbon monoxide, nitrogen dioxide, sulfur dioxide, PM10, and PM2.5 Air toxics may cause or contribute to an increase in deaths, or pose a present or potential hazard to human health.	California Air Resources Board, Facility Search Engine
Clean up sites	2014	Identifies current involvement at a facility or site undergoing investigation and/or clean up	California Department of Toxic Substances Control, EnviroStor
Groundwater impact sites	2015	Includes information regarding groundwater cleanup sites	California State Water Resources Board, GeoTracker
Hazardous waste facilities	2014	Hazardous waste facilities are permitted and regulated by the state	California Department of Toxic Substances Control, EnviroStor
Intermodal transfer facilities	2014	The Location Management System (LMS) database includes location of intermodal transfer facilities	The County of Los Angeles' Location Management System (LMS), Los Angeles County GIS Data Portal
Inspection and enforcement sites	2014	This includes information on permits and corrective action at hazardous waste facilities	California Department of Toxic Substances Control, EnviroStor
Solid waste facilities	2015	Data on solid waste facilities or sites permitted and regulated by the state. The types of facilities found in this database include landfills, transfer stations, material recovery facilities, composting sites, transformation facilities, waste tire sites, and closed disposal sites.	CalRecycle, Solid Waste Information System
Toxic Release Inventory (TRI)	2015	Toxic Release Inventory data is submitted by facilities on releases of over 650 chemicals and chemical categories under the Emergency Planning and Community Right-to-Know Act and Pollution Prevention Act. Covered facilities report the quantities of chemicals using their best available data	US Environmental Protection Agency

PROXIMITY OF SENSITIVE RECEPTORS TO HAZARDOUS AND POLLUTING LAND USES

CONTEXT

A large body of evidence supports that increased proximity to pollution sources, such as goods movement related to sources of pollution, results in increased health risks.[15] [16] [17] [18] [19] Distribution centers, rail yards, high traffic freeways and roads, and ports within or close to residential areas and other sensitive land uses increase exposures to diesel particulate matter and other air pollutants. CARB classifies diesel particulate matter as a toxic air contaminant. Other sources of pollution in the study area include refineries and chrome plating facilities. Refineries release an assortment of pollutants and increase the risk of cancer of nearby residents. Chrome platers emit hexavalent chromium, which is one of the most potent toxic air contaminants.

For the purposes of this analysis, sensitive individuals are defined as those that are biologically more susceptible to pollution exposures – such as children, older adults, and those with preexisting conditions (chronic diseases or disabilities). Land uses where sensitive individuals are most likely to spend time include schools and playgrounds, parks, daycare centers, nursing homes, hospitals, and residential areas.

CARB published guidelines on the siting of sensitive land uses near sources of air pollution.[20] Table 53 shows the CARB-recommended buffer distances around pollution sources. As these recommendations are now 11 years old, the guidelines may be outdated. However, these are the most updated siting guidelines currently available from CARB. This section aims to examine the proximity of sensitive land uses to polluting and hazardous land uses.

15 Zhu Y, Hinds WC, Kim S et al. 2002. Study of Ultra-Fine Particles Near a Major Highway with Heavy-Duty Diesel Traffic. Atmospheric Environment. 36:4323-4335.

16 Brunekreef B, Janssen NA, de Hartog J, et al. 1997. Air pollution from truck traffic and lung function in children living near motorways. Epidemiology. 8:298-303.

17 California Air Resources Board. 2003. Revised Staff Report: Initial Statement of Reasons for Proposed Rulemaking. Airborne Toxic Control Measure for In-Use Diesel-Fueled Transport Refrigeration Units (TRU) and TRU Generator Sets, and Facilities Where TRUs Operate. Available at http://www.arb.ca.gov/regact/trude03/revisor.doc.

18 California Air Resources Board. 2006. Diesel Particulate Matter Exposure Assessment Study for the Ports of Los Angeles and Long Beach. Available from https://www.arb.ca.gov/ports/marinevess/documents/portstudy0406.pdf.

19 California Air Resources Board. 2003. Ambient Air Monitoring for Hexavalent Chromium and Metals in Barrio Logan: May 2001 through May 2002. Available at https://www.arb.ca.gov/ch/barriologan_finalreport_10.14.03.pdf.

20 California Air Resources Board. 2005. Air Quality and Land Use Handbook: A Community Health Perspective. Available from https://www.arb.ca.gov/ch/landuse.htm.

Table 53: California Air Resources Board's (CARB) Recommendations on Siting New Sensitive Land Uses

Source category	Buffer distance	Advisory recommendations
Freeway and high traffic roads	500 feet	Avoid siting new sensitive land uses within 500 feet of a freeway, urban roads with 100,000 vehicles/day, or rural roads with 50,000 vehicles/day.
Distribution centers	1,000 feet	Avoid siting new sensitive land uses within 1,000 feet of a distribution center (that accommodates more than 100 trucks per day, more than 40 trucks with operating transport refrigeration units (TRUs) per day, or where TRU unit operations exceed 300 hours per week).
Rail yards	1,000 feet	Avoid siting new sensitive land uses within 1,000 feet of a major service and maintenance rail yard. Within one mile of a rail yard, consider possible siting limitations and mitigation approaches
Ports	--	Avoid siting of new sensitive land uses immediately downwind of ports in the most heavily impacted zones. Consult local air districts or the ARB on the status of pending analyses of health risks.
Refineries	--	Avoid siting new sensitive land uses immediately downwind of petroleum refineries. Consult with local air districts and other local agencies to determine an appropriate separation.
Chrome platers	1,000 feet	Avoid siting new sensitive land uses within 1,000 feet of a chrome plater.
Dry cleaners using perchloroethylene	300/500 feet	Avoid siting new sensitive land uses within 300 feet of any dry cleaning operation. For operations with two or more machines, provide 500 feet.
Gasoline dispensing facilities	300 feet	Avoid siting new sensitive land uses within 300 feet of a large gas station (defined as a facility with a throughput of 3.6 million gallons per year or greater).

Data source: CARB. 2005. Air Quality and Land Use Handbook: A Community Health Perspective. Available from https://www.arb.ca.gov/ch/handbook.pdf.

NEXUS BETWEEN THE PORT OF LOS ANGELES AND PORT-RELATED AND PROXIMITY TO HAZARDOUS AND POLLUTING LAND USES

A plausible causal pathway describing how the Port and Port-related operations impact hazardous and polluting land uses in the study area was shown in Figure 19. Table 44 shows the nexus criteria between the Port and Port-related operations and impacts from hazardous and polluting land uses in the study area. These same issues would apply to sensitive populations that are at greater risk due to their increased biological susceptibility.

RESEARCH QUESTIONS AND METHODOLOGY

Demographic information from Census blocks within 1,000 feet of hazardous and polluting land uses were included if their centroid fell within the buffer distance. Population demographic includes total population, population under five years old, and population over 65 years old.

Sensitive receptors include child care facilities, schools, health care facilities, recreational programs and facilities, and senior services. Location data on these land uses were taken from the County of Los Angeles Location Management System and the California Department of Social Services. These locations were geocoded and mapped based on the location information provided.

A proximity analysis of sensitive land uses to sources of pollution was conducted.

- A 500 foot buffer was drawn around all regulated stationary sources of pollution.
- A 1,000 foot was chosen as a buffer around TRI facilities and facilities regulated by CARB for criteria air pollutants and toxic air contaminants.

The 500 and 1,000 foot buffers around pollution sources were chosen based on approximate recommendations for siting of new sensitive land uses near pollution sources, as referenced in Table 53.[21] Sensitive land uses that fell within these buffer distances were enumerated and categorized. This proximity analysis only explored intrinsic biological susceptibility to hazardous and polluting sources, and did not examine extrinsic social vulnerabilities, such as socioeconomics factors, that also increase risks.

FINDINGS

As shown in Table 54, 84,337 or 62% of study area residents live within 1,000 feet of hazardous and polluting land uses. Close to half of San Pedro residents (49%) and most (81%) of Wilmington residents live within 1,000 feet of these undesirable land uses. This includes about 53% and 84% of the children under five years of age in San Pedro and Wilmington, respectively. In terms of adults over 65, about 39% and 79% reside within this impact zone in San Pedro and Wilmington, respectively. A large percentage of residents in Wilmington are within this impact zone, and East, West, and South Wilmington are heavily affected areas.

21 California Environmental Protection Agency and Air Resources Board. 2005. Air Quality and Land Use Handbook: A Community Health Perspective. Available at http://www.arb.ca.gov/ch/landuse.htm.

Table 54: Population within 1,000 feet of Hazardous and Polluting Land Uses

Location	Total Population in Study Area			Population within 1,000 feet of Hazardous and Pollution Source					
	Total Pop	Total pop under 5 years old	Total pop over 65 years old	Pop	% of pop	Pop under 5 years old	% of Pop under 5 years old	Pop over 65 years old	% of pop over 65 years old
Study Area	135,327	10,167	15,616	84,337	62.32%	6,845	67.33%	7,601	48.67%
San Pedro	79,704	5,366	11819	38,886	48.79%	2,826	52.66%	4,630	39.17%
Central San Pedro	29,470	2,295	2595	21,678	73.56%	1,696	73.90%	1,819	70.10%
Coastal San Pedro	27,132	1,784	4000	11,877	43.77%	857	48.04%	1,452	36.30%
Northwest San Pedro	21,068	1,157	3553	4,609	21.88%	217	18.76%	712	20.04%
Unincorporated San Pedro	2,034	130	1671	722	35.50%	56	43.08%	647	38.72%
Port of Los Angeles	1,035	-	14	1,018	98.36%	-	-	-	-
Wilmington	54,588	4,801	3783	44,433	81.40%	4,019	83.71%	2,971	78.54%
East Wilmington	12,880	1,103	1052	11,818	91.75%	1,004	91.02%	951	90.40%
North Wilmington	13,361	991	1226	5,949	44.53%	435	43.90%	578	47.15%
South Wilmington	11,282	1,142	594	10,693	94.78%	1,075	94.13%	586	98.65%
West Wilmington	17,065	1,565	911	15,973	93.60%	1,505	96.17%	856	93.96%

Data sources: U.S. Census Bureau, 2010 Decennial Census; CA Air Resources Board, 2015; CA State Water Resources Control Board, 2015; CalRecycle, Solid Waste Information System (SWIS), 2015; CA Department of Toxic Substances Control, 2014; LA Open Data, 2015; TRI, U.S. EPA, 2015

There are 124 sensitive land uses in the study area as shown in Table 55 below. There are more sensitive land uses in San Pedro than Wilmington. Unincorporated San Pedro has 29.5 health care facilities per 10,000 residents. This area is primarily comprised of medical centers and a convalescent hospital. Additionally, as Central San Pedro is a large commercial district in San Pedro, it also has a high number of health care and child care facilities. Services and resources - such as recreational facilities, child care facilities, and health care facilities – are less readily available in Wilmington compared with San Pedro. The Sensitive Land Uses map depicts the location of sensitive land uses within the study area.

Table 55: Sensitive Land Uses in Study Area

Location	Pop	Senior Services	Rec. programs & facilities	Schools	Child care facilities	Health care facilities	Total	Total per 10,000 pop
Study Area	135,327	5	19	35	34	31	124	9.16
San Pedro	79,704	4	15	21	22	24	86	10.79
Central San Pedro	29,470	2	6	8	11	15	42	14.25
Coastal San Pedro	27,132	-	3	5	2	1	11	4.05
Northwest San Pedro	21,068	-	4	5	8	2	19	9.02
Unincorporated San Pedro	2,034	2	2	3	1	6	14	68.83
Port of Los Angeles	1,035	-	-	-	-	-	-	-
Wilmington	54,588	1	4	14	12	7	38	6.96
East Wilmington	12,880	1	2	2	2	4	11	8.54
North Wilmington	13,361	-	1	5	3	-	9	6.74
South Wilmington	11,282	-	1	4	4	2	11	9.75
West Wilmington	17,065	-	-	3	3	1	7	4.10

Data sources: California Department of Social Services, 2016 and County of Los Angeles Location Management System (LMS), Los Angeles County GIS Data Portal, 2014

Table 56: Recreational Programs and Facilities, Schools, and Child Care Facilities within 500 feet of Regulated Stationary Sources of Pollution

Location	Pop	Recreational programs & facilities		Schools		Child care facilities	
		#	Rate per 10,000 pop	#	Rate per 10,000 pop	#	Rate per 10,000 pop
Study Area	135,327	4	0.30	9	0.67	15	1.11
San Pedro	79,704	1	0.13	5	0.63	9	1.13
Central San Pedro	29,470	-	-	2	0.68	7	2.38
Coastal San Pedro	27,132	-	-	1	0.37	-	-
Northwest San Pedro	21,068	-	-	1	0.47	2	0.95
Unincorporated San Pedro	2,034	1	4.2	1	4.92	-	-
Port of Los Angeles	1,035	0	0.00	0	0.00	0	0.00
Wilmington	54,588	3	0.55	4	0.73	6	1.10
East Wilmington	12,880	2	1.55	-	-	3	2.33
North Wilmington	13,361	-	-	-	-	-	-
South Wilmington	11,282	1	0.89	1	0.89	3	2.66
West Wilmington	17,065	-	-	3	1.76	-	-

Data sources: California Department of Social Services, 2016 and County of Los Angeles Location Management System (LMS), Los Angeles County GIS Data Portal, 2014; CA Air Resources Board, 2015; CA State Water Resources Control Board, 2015; CalRecycle, Solid Waste Information System (SWIS), 2015; CA Department of Toxic Substances Control, 2014; LA Open Data, 2015; TRI, U.S. EPA, 2015

As shown in Table 56, several schools and child care facilities are near these sources of hazardous land uses and pollution. Several health care facilities, primarily in Central San Pedro, are affected by proximity to pollution sources, as shown in Table 57.

Table 57: Senior Services and Health Care Facilities within 500 feet of Regulated Stationary Sources of Pollution

Location	Pop	Senior Services		Health care facilities	
		#	Rate per 10,000 pop	#	Rate per 10,000 pop
Study Area	135,327	2	0.15	12	0.89
San Pedro	79,704	1	0.13	10	1.25
Central San Pedro	29,470	-	-	10	3.39
Coastal San Pedro	27,132	-	-	-	-
Northwest San Pedro	21,068	-	-	-	-
Unincorporated San Pedro	2,034	1	4.92	-	-
Port of Los Angeles	1,035	0	-	-	-
Wilmington	54,588	1	0.18	2	0.37
East Wilmington	12,880	1	0.78	-	-
North Wilmington	13,361	-	-	-	-
South Wilmington	11,282	-	-	1	0.89
West Wilmington	17,065	-	-	1	0.59

Data sources: California Department of Social Services, 2016 and County of Los Angeles Location Management System (LMS), Los Angeles County GIS Data Portal, 2014; CA Air Resources Board, 2015; CA State Water Resources Control Board, 2015; CalRecycle, Solid Waste Information System (SWIS), 2015; CA Department of Toxic Substances Control, 2014; LA Open Data, 2015; TRI, U.S. EPA, 2015

In the analysis of proximity to TRI facilities and regulated sources of air pollution, as shown in Table 58 and the Sensitive Land Uses map there are 24 sensitive land uses within 1,000 feet of a TRI facility or a source of air pollution. Several schools and child care facilities are close to these pollution sources. All the recreational programs and facilities are more than 1,000 feet away from a TRI facility or regulated air pollution source.

Table 58: Recreational Programs and Facilities, Schools, and Child Care Facilities within 1,000 feet of Toxic Release Inventory facilities and air pollution sources

Location	Pop	Recreational programs and facilities		Schools		Child care facilities	
		#	Rate per 10,000 pop	#	Rate per 10,000 pop	#	Rate per 10,000 pop
Study Area	135,327	-	-	7	0.52	6	0.44
San Pedro	79,704	-	-	5	0.63	4	0.50
Central San Pedro	29,470	-	-	5	1.70	4	1.36
Coastal San Pedro	27,132	-	-	-	-	-	-
Northwest San Pedro	21,068	-	-	-	-	-	-
Unincorporated San Pedro	2,034	-	-	-	-	-	-
Port of Los Angeles	1,035	-	-	0	0.00	0	0.00
Wilmington	54,588	-	-	2	0.37	2	0.37
East Wilmington	12,880	-	-	-	-	-	-
North Wilmington	13,361	-	-	1	0.75	-	-
South Wilmington	11,282	-	-	1	0.89	1	0.89
West Wilmington	17,065	-	-	-	-	1	0.59

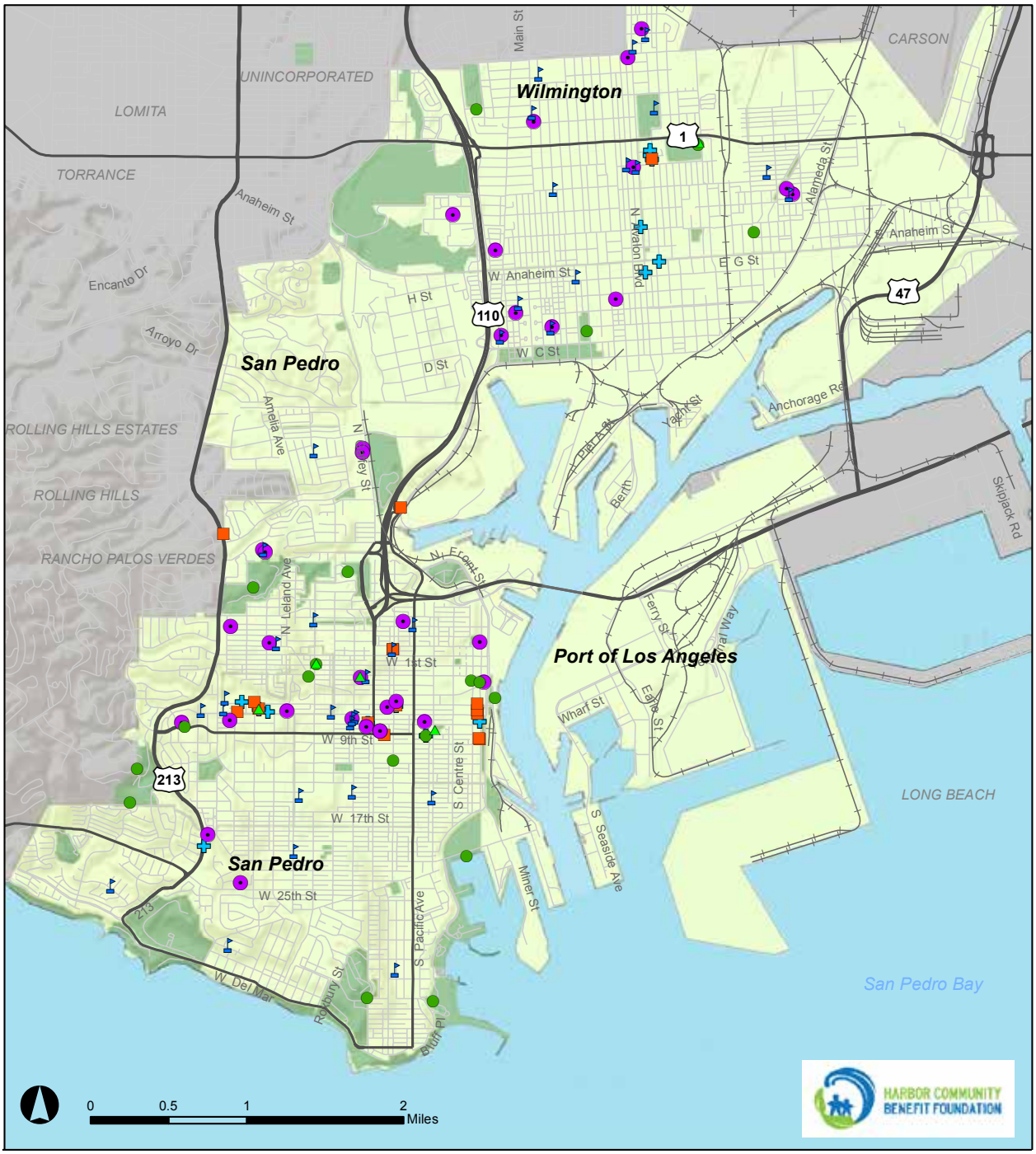
Data sources: California Department of Social Services, 2016 and County of Los Angeles Location Management System (LMS), Los Angeles County GIS Data Portal, 2014; CA Air Resources Board, 2015; TRI, U.S. EPA, 2015

Table 59: Senior Services and Health Care Facilities within 1,000 feet of Toxic Release Inventory Facilities and Air Pollution Sources

Location	Pop	Senior Services		Health care facilities	
		#	Rate per 10,000 pop	#	Rate per 10,000 pop
Study Area	135,327	1	0.074	10	0.74
San Pedro	79,704	1	0.125	9	1.13
Central San Pedro	29,470	1	0.34	8	2.71
Coastal San Pedro	27,132	-	-	-	-
Northwest San Pedro	21,068	-	-	1	0.47
Unincorporated San Pedro	2,034	-	-	-	-
Port of Los Angeles	1,035	-	-	-	-
Wilmington	54,588	-	-	1	0.18
East Wilmington	12,880	-	-	-	-
North Wilmington	13,361	-	-	-	-
South Wilmington	11,282	-	-	-	-
West Wilmington	17,065	-	-	1	0.59

Data sources: California Department of Social Services, 2016 and County of Los Angeles Location Management System (LMS), Los Angeles County GIS Data Portal, 2014; CA Air Resources Board, 2015; TRI, U.S. EPA, 2015

Map 45: Sensitive Land Uses



Sensitve Land Uses

- Senior Services
- Recreation Programs & Facilities
- Schools
- Child Care Centers
- Mental Health Care Facilities
- Health Care Facilities
- Railroad
- Interstates and Highways
- Streets
- Parks and Recreational Areas
- Study Area

Sensitive land uses are defined as areas where occupants or users are more susceptible to the adverse effects of exposure to toxic chemicals, pesticides, and other pollutants.

Produced by Raimi + Associates, August 2016

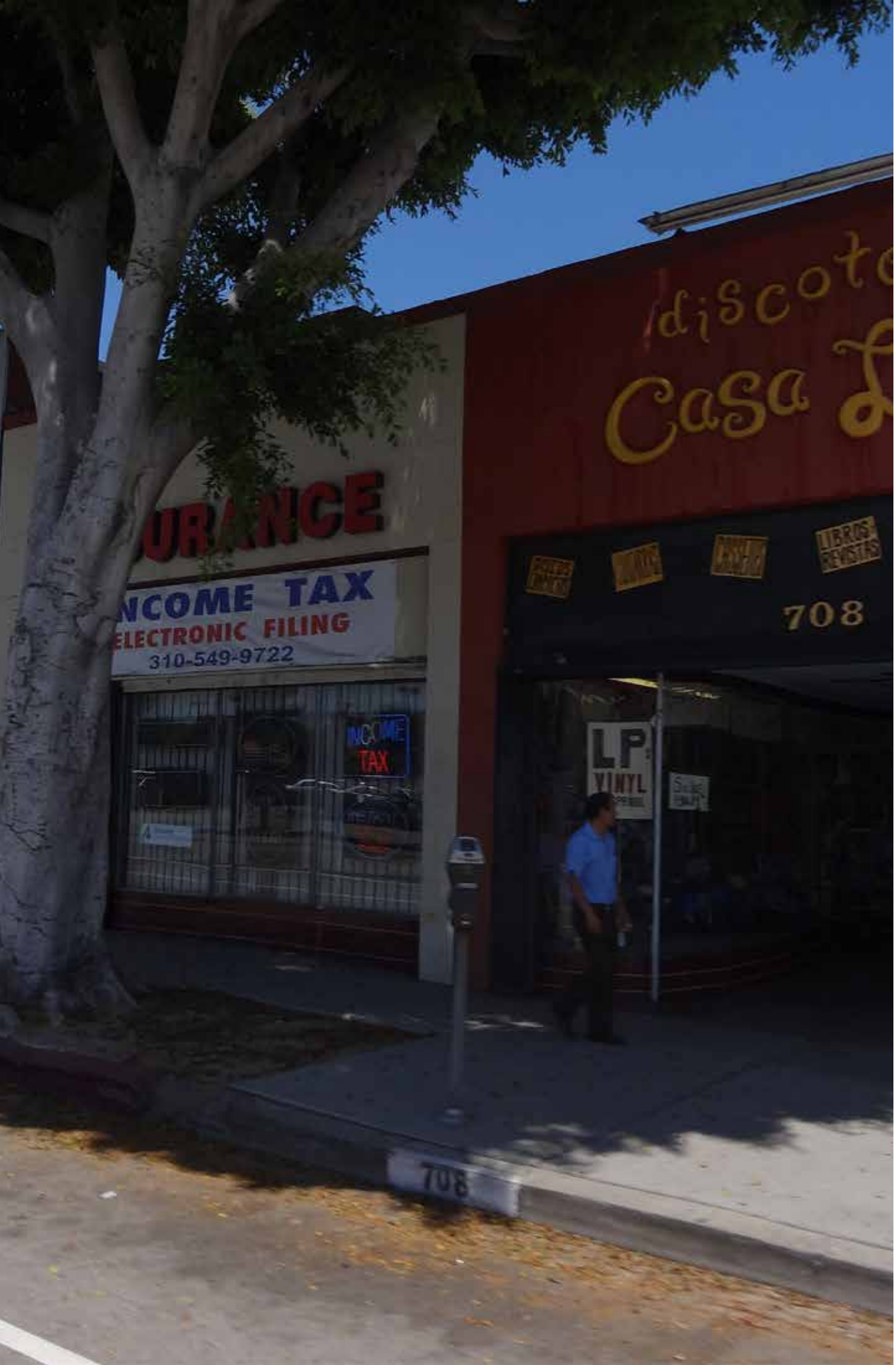
Data Sources: CA Child Care Licensing Program, 2016; Points of Interest, LA Open Data, 2015; Interstates and Highways, 2008 Tele Atlas North America, Inc.; World Terrain Base, 2009 ESRI.

DATA SOURCES

Table 60 below is of the data sources included in the analysis of sensitive land uses.

Table 60: Data Sources

Data	Year	Description	Source
Child care facilities	2016	Includes only licensed center-based child care and infant care programs. Family or home-based child care facilities were excluded because addresses were not provided.	California Department of Social Services, Child Care Licensing Program
Schools	2014	Schools includes public, private, and charter schools, grades K – 12.	County of Los Angeles Location Management System (LMS), Los Angeles County GIS Data Portal
Recreational programs and facilities	2014	Data on recreational programs and facilities.	County of Los Angeles Location Management System (LMS), Los Angeles County GIS Data Portal
Senior Services	2014	Data on senior services. Services provided include recreational programs and services for older adults, emergency food, assistance, adult day care, and information and referral services for older adults.	County of Los Angeles Location Management System LMS), Los Angeles County GIS Data Portal
Health care facilities	2014	Includes location of health care facilities and mental health care facilities and service types.	County of LA Location Management System LMS), LA County GIS Data Portal



5. ACCESS TO NEIGHBORHOOD GOODS & SERVICES

ACCESS TO NEIGHBORHOOD GOODS & SERVICES

OVERVIEW

Access to essential neighborhood goods and services is important to the health and wellbeing of community residents. A healthy retail environment can benefit the community by providing retail goods and services that promote nutritional health by offering better access to affordable, quality food, and a vibrant economy that contributes to the economic wellbeing of individuals. Having access to local and affordable quality child care means that caregivers are better able to work outside of the home and contribute to the economy. Community health care facilities translate to increased access to health care services and resources that are necessary for good health.

Port and Port-related operations and activities can contribute both positively and negatively to neighborhood goods and services in the study area. For example, Port operations create a niche market for transportation-related and goods movement-related services, such as truck repair or distribution warehouses. One systematic review found associations between workers in male-dominated industries, like transportation and manufacturing, and alcohol consumption.[1] These industries crowd out the market for common neighborhood resources and services. Additionally, industrial land uses create an inhospitable atmosphere. While this is probably not the primary reason these goods and services businesses do not locate in the study area, it is likely a contributing reason. Port and Port-related operations may also indirectly affect access to neighborhood goods and services by impacting neighborhood quality. Increased truck and rail volume, and environmental and noise pollution affect the vitality and attractiveness of the study area.

This chapter focuses on understanding the effects of on- and off-Port activities on the availability of neighborhood goods and services in the study area, using a select set of neighborhood goods and services as indicators. Isolating the effects of the Port-related activities on retail and services is a challenge because of the nature of causality. Current zoning in the Wilmington and San Pedro, as well as the significant presence of other large industries, complicates the causal relationship.

NEIGHBORHOOD SERVICES AND RESOURCES

CONTEXT

This section aims to give insight into the current status of access to key neighborhood goods and services. Land use development for community benefit requires an analysis of both positive and negative effects on access to neighborhood goods and services. Lack of access to neighborhood goods and services affects the livability and character of Wilmington and San Pedro and forces residents and other visitors to seek resources, services, shopping, and entertainment outside of the area. Several community interviewees also expressed concern that neighborhood services and resources have been outcompeted by the expanding industrialization of the area, the increasing hazardous and polluting land uses, and the goods movement industries in Wilmington and San Pedro. Community stakeholders have also identified a lack of neighborhood services, including child care facilities and medical facilities, and limited access to healthy and affordable foods in Wilmington and San Pedro.

1 Roche AM, Lee NK, Battams S, et al. 2015. Alcohol Use Among Workers in Male-Dominated Industries: A Systematic Review of Risk Factors. Safety Science. 78:124-141.

Research indicates that access to goods and services has significant effects on human health and behavioral outcomes. For example, licensed child care is an essential service because it provides working caregivers the opportunity to work outside of the home while receiving high-quality child care for their children. Children who received child care that met accreditation standards with well-trained staff and low adult-child ratios exhibited 1) more advanced cognitive, language and pre-academic outcomes, 2) more positive peer interactions, 3) more cooperative and compliant interactions with adults, 4) fewer behavior problems, and 5) more positive mother-child interaction when compared to children who received lower-quality care.[2]

Access to affordable, healthy foods can improve nutritional health. Residents of communities with access to a full-service grocery store or supermarket are more likely to eat more fruits and vegetables and have lower rates of chronic diseases compared to residents of communities with limited access to healthy retailers.[3,4] Individuals who live in communities without access to supermarkets are more likely to have higher body weights and rates of premature death and chronic diseases.[5,6,7,8] Individuals with low incomes often also lack access to a car or other reliable forms of transportation, which increases reliance on foods that are immediately available to them in their neighborhoods.[9]

In addition, one interviewee noted that businesses do not market goods and services to neighborhood residents, but to truckers and other workers who travel through the area and need quick services. This may contribute to the increased availability of fast foods and drive-through restaurants in the area.

Access to physical and mental health care is another important determinant of health and wellbeing and medical and mental health care facilities are important neighborhood resources. Preventive health services and screenings reduce the incidence and severity of illnesses and are less expensive than the cost of treating acute and chronic health conditions.[10]

2 California Department of Public Health. 2015. Healthy Communities Data and Indicators Project: Licensed daycare center slots. Available from https://www.cdph.ca.gov/programs/Documents/HCI_Licensed%20Daycare%20Center_760_Narrative_11-13-15.pdf.

3 Zenk SN, Lachance LL, Schulz AJ et al. 2009. Neighborhood Retail Food Environment and Fruit and Vegetable Intake in a Multiethnic Urban Population. American Journal of Health Promotion, 23 (4), pp. 255-264.

4 Rose D and Richards R. 2004. Food Store Access and Household Fruit and Vegetable Use among Participants in the U.S. Food Stamp Program. Public Health Nutrition, 7(8), p. 1081.

5 Morland K, Wing S, and Diez RA. 2002. The Contextual Effect of the Local Food Environment on Residents' Diets: The Atherosclerosis Risk in Communities Study. American Journal of Public Health, 92(11), pp. 1761-1767.

6 Moore LV, Diez Roux AV, Nettleton JA, et al. 2008. Associations of the Local Food Environment with Diet Quality – A Comparison of Assessments Based on Surveys and Geographic Information Systems: The Multi-Ethnic Study of Atherosclerosis. American Journal of Epidemiology, 167(8), pp. 917-924.

7 Ahern M, Brown C, and Dukas SA. 2011. National Study of the Association between Food Environments and County-Level Health Outcomes. The Journal of Rural Health, p. 367.

8 University of California Los Angeles, Center for Health Policy. 2008. Designed for Disease: The Link Between Local Food Environments and Obesity and Diabetes. Available from http://healthpolicy.ucla.edu/publications/search/pages/detail.aspx?PubID=190.

9 PolicyLink. 2010. Equitable Development Toolkit: Access to Healthy Food. Available from http://www.policylink.org/sites/default/files/access-to-healthy-food_0.pdf.

10 Agency for Healthcare Research and Quality.

In addition, some types of retail, such as liquor stores and fast food restaurants, are associated with negative community impacts. One study found that communities in Los Angeles County with higher concentration of liquor stores tend to have higher rates of negative events related to alcohol, such as motor vehicle collisions involving alcohol and alcohol-related deaths.[11] The literature also describes associations between higher concentrations of liquor stores in communities and higher numbers of childhood accidents, assaults, and abuse injuries, and increased criminal activity, including violent crime.[12,13] The presence of fast food restaurants is associated with higher diet-related disease rates.[14]

NEXUS BETWEEN THE PORT OF LOS ANGELES AND ACCESS TO NEIGHBORHOOD GOODS AND SERVICES

Figure 20 below depicts a plausible causal pathway describing how the Port of Los Angeles and Port-related operations and activities impact the availability of neighborhood goods and resources, either by increasing or decreasing the availability of goods and resources.

Port and related businesses establish themselves in the study area, which brings Port and transportation-related workers into the study area. Businesses have shaped land uses to serve these interests, which leads to the creation of an industrial atmosphere that is not conducive to non-industrial uses or neighborhood resources. Neighborhood services and resources are also possibly crowded out of the study area, either due to the lack of suitable commercial real estate or the increased prevalence of hazardous and pollution sources that make establishing services or resources in the study area difficult. With the high number of Port and Port-related workers in the area, the retail services in the study may also be more oriented to serving this market. All of these impacts can lead to the lack of convenient neighborhood resources and goods and increased prevalence of retail and services that are more oriented to Port and Port-related workers.

2012. National Healthcare Disparities Report. Available from http://www.ahrq.gov/research/findings/nhqrdr/index.html.

11 Los Angeles County Public Health Department, Substance Abuse Prevention and Control, Office of Health
Assessment and Epidemiology. 2011. Reducing Alcohol-Related Harms in Los Angeles County: A Cities and
Communities Health Report.

12 Freistler B, Greunewald L, Ring L et al. 2008. An Ecological Assessment of the Population and Environmental
Correlates of Childhood Accident, Assault, and Child Abuse Injuries. Alcoholism: Clinical and Experimental Research. 32(11): 1969-1975.

13 Stewart K. 2005. How Alcohol Outlets Affect Neighborhood Violence. Pacific Institute for Research and
Evaluation. Available from http://resources.prev.org/documents/AlcoholViolenceGruenewald.pdf.

14 Morland K, Wing S, Diez Roux A, et al. 2002. Neighborhood Characteristics Associated with the Location of Food Stores and Food Service Places. Am J Prev Med; 22:23-29.

Figure 20: Pathway Diagram of Impacts on Neighborhood Goods and Services

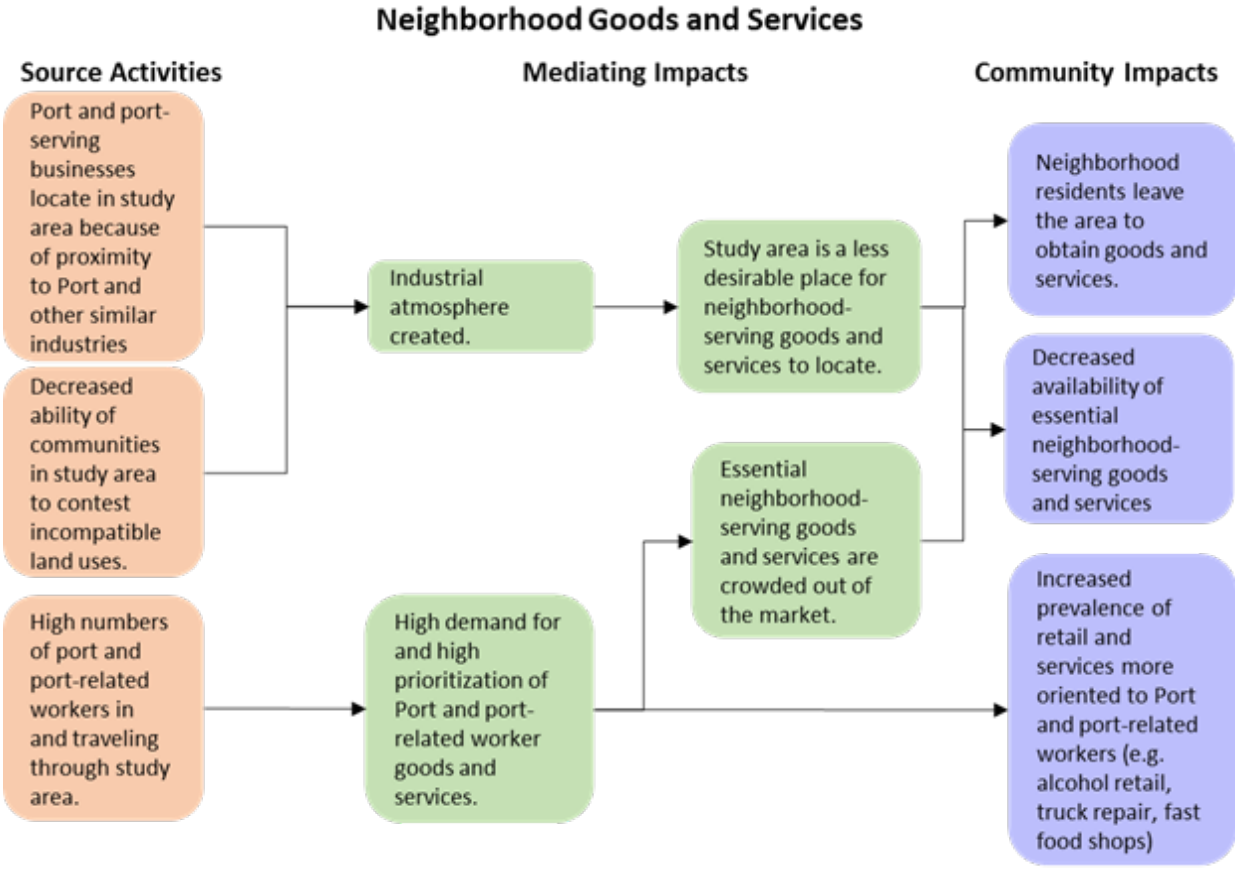


Table 61 describes the nexus between the Port and Port-related operations and activities based on the nine criteria outlined. The impact of the Port of Los Angeles on the availability and prevalence of neighborhood goods and services is indirect and works through the intensification of land uses and economic pressures in the study area. Compared to the County of Los Angeles, Wilmington and San Pedro have fewer child care facilities and healthy food retail outlets. Community stakeholders have also expressed concern over the availability of these needed resources.

Table 61: Nexus Criteria for Hazardous and Polluting Land Uses

Neighborhood Goods and Services		
Criteria	**Yes, No, Possibly, Unsure, N/A**	**Notes**
1. Is the source an established Port or Port-serving land use or activity?	No	
2. Is the impact a direct result of the Port or Port-serving land use or activity?	No	
3. Is the impact an indirect result of the Port or Port-serving land use or activity?	Possibly	The impact on the availability and prevalence of neighborhood goods and services are possibly indirectly related to pressures on land uses in the study area due to proximity to the Port of Los Angeles.
4. Is the causal pathway logical and plausible?	Yes	
5. Is there generalizable empirical evidence to support the causal pathway?	Unsure	
6. Is there a distance-based relationship to Port or Port-serving use or activity?	N/A	
7. Is there a temporal-based relationship to Port development in the study area?	Unsure	Did not examine.
8. Is there a disproportionate burden/impact relative to the city/region?	Yes	As shown, the study area has fewer neighborhood resources compared to the city.
9. Is there local qualitative evidence to support the pathway?	Yes	Community stakeholders have expressed concerns that the study area lacks needed community resources, such as grocery stores and child care facilities.

RESEARCH QUESTIONS AND METHODOLOGY

We used the prevalence of healthy food retail, fast food retail, health care services, child care facilities, and off- and on-site liquor licenses in the study area as proxy measures or indicators of the availability of neighborhood goods and services.

CHILD CARE FACILITIES

We included licensed, pending license, or on-probation child care facilities registered with the California Department of Social Services in the analysis. We excluded child care facilities that were inactive, closed, or unlicensed. The data tables downloaded from the state website also included the type of license for each

facility and the total number of child care slots per license. Some child care facilities had more than one license (such as facilities that provide both child and infant care); we removed these redundancies for analysis. We could not map home-based family day care facilities because addresses were not available for these facilities. However, we identified home-based day care facilities through city and county data and included these facilities in the data tables. We could only map center-based daycare facilities. We compared information on level of service at the child care centers to data at the County level.

HEALTH CARE FACILITIES

We selected health care facilities according to the categories in the County of Los Angeles Location Management System (LMS): health clinics, health centers, health screening and testing, health education and counseling, and hospital and medical centers. Mental health care facilities were selected based on categories: mental health programs, mental health centers, and mental health counseling. The database contained address and location data.

FOOD ENVIRONMENT

We used three different measures to assess the food environment within the study area:

- The modified Retail Food Environment Index (mRFEI) from the Centers for Disease Control and Prevention (CDC);
- The food desert designation from the U.S. Department of Agriculture; and
- The location of food retail and community gardens.

The modified Retail Food Environment Index (mRFEI) assesses the number of healthy and less healthy food retailers within a given geographic area.[15] CDC defines healthy food retailers as places where fresh fruits and vegetables can be purchased, which includes supermarkets, larger grocery stores, supercenters, and produce stores within the census tracts or one-half mile from tract boundaries. CDC calculates the mRFEI as a percentage per census tract:

$$\frac{(\#\ \text{healthy retail})}{(\#\ \text{healthy retail} + \#\ \text{unhealthy retail})}$$

According to the mRFEI, areas with a score of less than 5 have "poor access" to healthy retail food, scores of 5 to 10 have "fair access," scores above 10 to 25 have "good access," and scores above 25 have "high access." We assessed census tracts designated as poor or no access to determine their demographic composition.

In Table 70, we list information on the locations of food deserts, farmers' markets, grocery and produce stores, and community gardens. We geocoded and mapped addresses of locations within neighborhoods. We included community gardens in the analysis because they can be a good source of nutritious, locally grown, and low-cost fruits and vegetables for community residents. We assessed both availability and proximity to food sources in the study area. We identified quarter- and half-mile buffers[16] around food deserts and healthy food sources and assessed the demographics of residents within these buffers.

15 Centers for Disease Control and Prevention. 2008. Census Tract Level State Maps of the Modified Retail Food Environment Index (mRFEI). Available at http://www.center-trt.org/content/docs/Training_Resources/Healthy_Food_and_Beverage_Access/census-tract-level-state-maps-mrfei_TAG508.pdf.

16 These are typical buffered distances to determine adequate access.

ALCOHOL RETAIL

The state of California classifies liquor licenses into two main categories: on-sale and off-sale liquor licenses. On-sale licenses allow customers to consume alcohol at an establishment, such as a bar or restaurant; off-sale licenses authorize the sale of all types of alcoholic beverages for consumption off the premises in original, sealed containers. For example, the state can grant off-sale licenses to supermarkets or liquor stores. We calculated and mapped on-sale and off-sale liquor license rates per 10,000 residents.

LIMITATIONS

There are some notable limitations to this analysis. For example, the analysis did not assess the likelihood of residents who live in these neighborhoods but choose to go to a medical facility, grocery store, or restaurant outside of their immediate neighborhood or study area. Further, we assumed that increased fast food restaurants result in increased options for unhealthier foods. However, fast food restaurants are not monolithic and may also serve healthy food options, such as salads and fruit. In addition, this analysis did not determine or estimate the catchment area for medical facilities, which may extend outside of the study area. Despite the limitations of this analysis, it does help to assess the level of service for the study area neighborhoods by standardizing rates and comparing them to the County of Los Angeles.

RESEARCH QUESTIONS

The purpose of this analysis is to investigate access to needed neighborhood resources and services, specifically child care facilities, medical care facilities, liquor retail, and healthy food retail based on proximity and availability of resources and goods within the study area.

This section aims to explore the availability of neighborhood goods and resources in the study area. The research question that guided this analysis is:

How has the expansion of Port lands and Port-related activities off Port property impacted the availability of goods, services, and resources in the neighborhoods?

FINDINGS

The industrialization and higher intensity of the land uses in the study area comes at a great opportunity cost to community residents because it decreases the availability and accessibility of needed resources and services and impacts the quality of life in these communities. Some residents and key community stakeholders feel that businesses and facilities in the study area are oriented towards Port and Port-related workers. A local community organizer commented:

"The character of the community is shifting from residential to industrial. Businesses cater to folks working here or passing through. Drive-through restaurants...there are no sit-down restaurants, grocery stores."

A City Council District representative expressed similar concerns:

"Because of the high industrial uses, there are limited businesses and gathering places. There is a need for supermarkets. The three that are there are very crowded," referring to Food4Less, El Super, and Northgate Gonzalez Market in Wilmington.

Residents have voiced concern that expanding industrialization and the heavy presence of Port-related or Port-serving businesses preclude other non-goods movement uses that would primarily serve residents. Port-related or serving businesses also compete for commercial space within the community and decrease the likelihood that non-industrial or goods movement-related business owners, developers, and other investors would invest in areas that are already dominated by industrial and Port-related uses. The presence of industrial land uses, potential hazards due to Port-related activity, and vacant and abandoned properties may discourage investment in businesses and land uses that are not associated with goods movement. As one long-time San Pedro resident noted,

"Blight discourages investment because the neighborhoods look industrial."

Below, we describe findings related to child care facilities, liquor licenses, and fast food restaurants. Overall, the study area has fewer child care slots per residents, more on- and off-sale liquor licenses, and more fast food restaurants when compared with the County of Los Angeles.

CHILD CARE FACILITIES

There are 69 child care facilities in the study area, which correspond to a maximum of 2,468 child care slots. The number of slots refers to the number of children these facilities could accept at maximum capacity. As shown in Table 62, San Pedro has 46 child care facilities and Wilmington has 23 facilities. School age day care serves children aged 5 to 17 years of age. As the public database did not provide addresses of family home daycares, we could not determine family home daycare locations by neighborhoods. Instead, we present information about family home daycares in aggregate by community: Wilmington or San Pedro.

Table 63 shows that the study area has about 243 child care slots per 1,000 children under the age of 5 years. Wilmington and San Pedro have about 220 and 263 slots, respectively. The County of Los Angeles has a rate of 368 child care slots per 1,000 children under the age of 5, which is higher than the level of child care service in either San Pedro or Wilmington. The County of Los Angeles also had 1.4 and 1.7 times the number of child care slots than San Pedro and Wilmington, respectively. Map 46: Center-Based Child Care Facilities shows the location of these facilities in the study area. We did not map family-based day cares because the public database did not provide address location for these entities.

Table 62: Child Care Facilities and Availability

Locations	Facility type							
	Day care centers		Family day care homes		Infant care		School age day care centers	
	# of facilities	# of child care Slots	# of facilities	# of child care Slots	# of facilities	# of child care Slots	# of facilities	# of child care Slots
County of Los Angeles	2,661	161,533	3,118	42,836	448	10,222	418	23,254
Study area	33	1,980	29	386	6	72	1	30
San Pedro	21	1,066	19	254	5	63	1	30
Wilmington	12	914	10	132	1	9	0	0

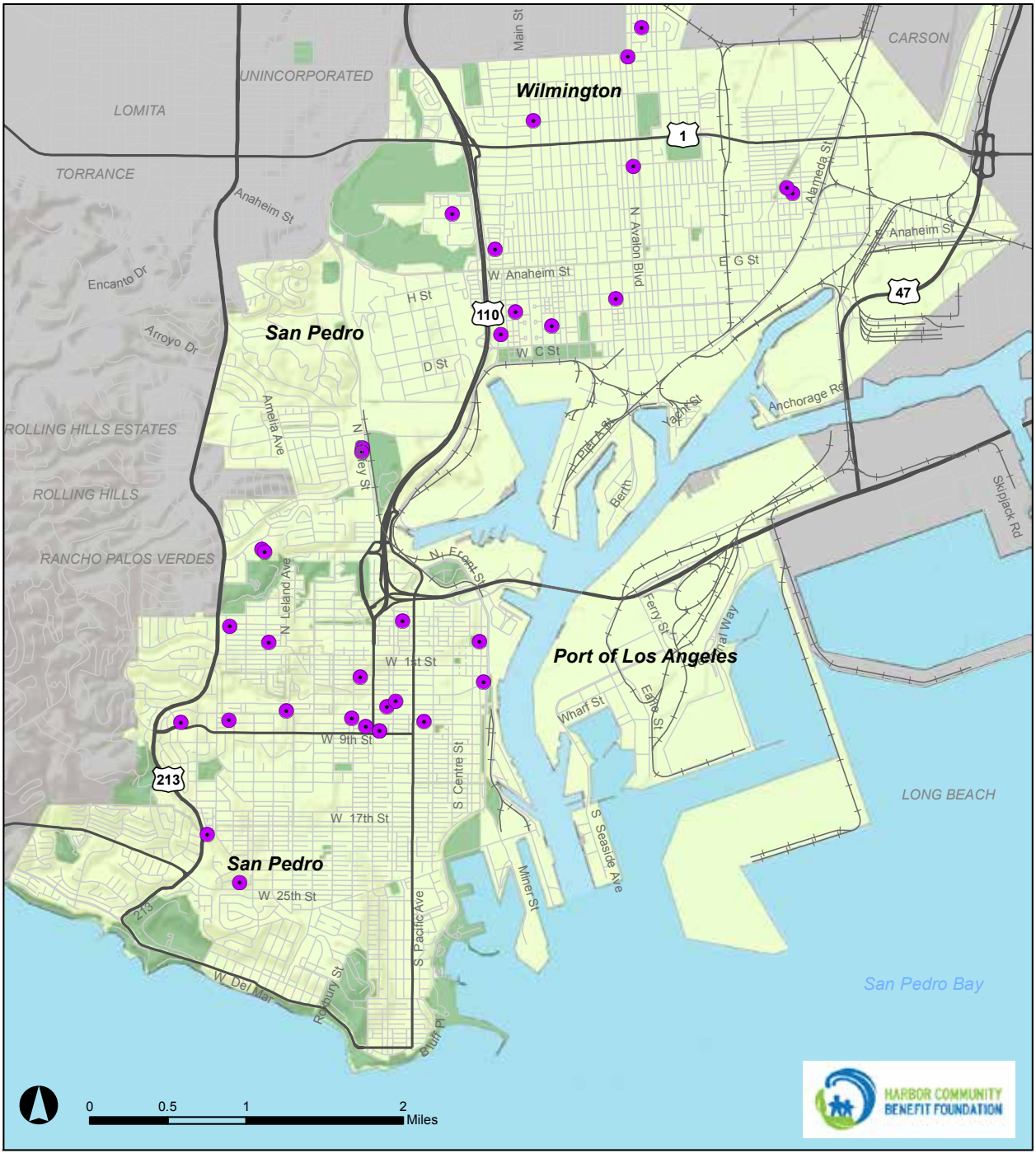
Data source: California Department of Social Services, Community Care Licensing Facility Search, 2016.

Table 63: Availability of Child Care (Standardized)

Location	# Child care facilities	# slots	Pop under 5 years	# Slots per 1,000 children under 5 years
County of Los Angeles	6,645	237,845	645,793	368
Study area	69	2,468	36,064	243
San Pedro	46	1,413	18,766	263
Wilmington	23	1,055	17,298	220

Data source: California Department of Social Services, Community Care Licensing Facility Search, 2016 and U.S. Census Bureau Decennial Census

Map 46: Center-Based Child Care Facilities



Child Care Centers
Railroad
Interstates and Highways
Streets
Parks and Recreational Areas
Study Area
San Pedro Bay

Note: Only child care centers with address information were mapped. This map does not include home-based child care facilities, as address information was not provided.

Produced by Raimi + Associates, August 2016

Data Sources: CA Department of Social Services, Child Care Licensing Program, 2016; Interstates and Highways, 2008 Tele Atlas North America, Inc.; World Terrain Base, 2009 ESRI.

MEDICAL FACILITIES

There are 14 health care facilities and 17 mental health care facilities in the study area. Table 64 breaks down the medical facilities by neighborhoods and rate per 10,000 residents. Unincorporated San Pedro has the highest rate of medical facilities, with 29.5 facilities per 10,000 residents. This high rate is primarily due to the presence of a convalescent hospital, medical centers, and a rehabilitation center in the neighborhood. When we exclude medical facilities in Unincorporated San Pedro, the rate decreases to 1.88 medical facilities per 10,000 residents.

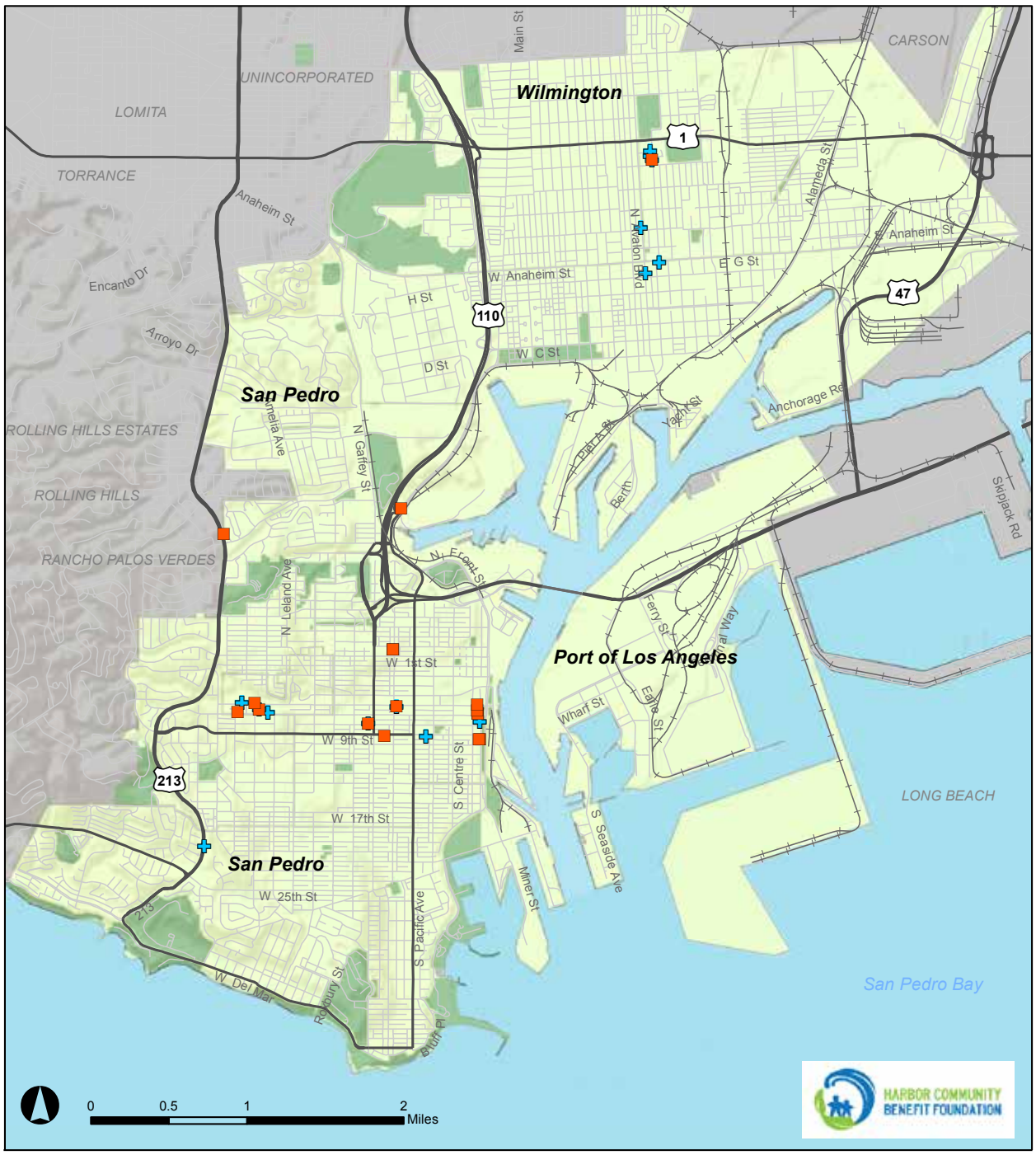
After the Port of Los Angeles, North Wilmington had the least number of facilities: no medical facilities are in this neighborhood. Disparities in availability of medical facilities in the study area is evident when compared with the County. The County of Los Angeles has roughly 1.4 times the number of medical facilities than the study area. Map 47: Medical Facilities depicts the locations of mental health care facilities and health care facilities in the study area.

Table 64: Medical Facilities by Neighborhoods

Neighborhoods	Total pop	Health care facilities		Mental health care facilities		Total facilities	
		#	Rate per 10,000 pop	#	Rate per 10,000 pop	#	Rate per 10,000 pop
County of Los Angeles	9,818,605	1,690	1.72	1,480	1.51	3,170	3.23
Study Area	135,327	14	1.03	17	1.26	31	2.29
San Pedro	79,704	8	1.00	16	2.01	24	3.01
Central San Pedro	29,470	4	1.36	11	3.73	15	5.09
Coastal San Pedro	27,132	1	0.368	-	-	1	0.37
Northwest San Pedro	21,068	-	-	2	0.949	2	0.95
Unincorporated San Pedro	2,034	3	14.8	3	14.7	6	29.50
Port of Los Angeles	1,035	-	-	-	-	-	-
Wilmington	54,588	6	1.10	1	0.18	7	1.28
East Wilmington	12,880	3	2.3	1	0.776	4	3.11
North Wilmington	13,361	0	0	0	0	0	0.00
South Wilmington	11,282	2	1.8	0	0	2	1.77
West Wilmington	17,065	1	0.586	0	0	1	0.59

Data sources: Location Management System (LMS), Los Angeles County GIS Data Portal, 2014 and U.S. Census Bureau Decennial Census, 2010

Map 47: Medical Facilities



Medical Facilities

- Mental Health Care Facilities
- Health Care Facilities

- Railroad
- Interstates and Highways
- Streets
- Parks and Recreational Areas
- Study Area
- San Pedro Bay

Produced by Raimi + Associates, August 2016

Data Sources: Mental health care facilities and health care facilities, Location Management Services (LMS), County of Los Angeles GIS Data Portal, 2015; Interstates and Highways, 2008 Tele Atlas North America, Inc.; World Terrain Base, 2009 ESRI.

FOOD ENVIRONMENT

The study area has a total of 15 healthy food options, which is 1.1 options per 10,000 residents, as shown in Table 65. The neighborhood with the highest rate of healthy food is East Wilmington, which has 2.3 locations per 10,000 people. Conversely, North Wilmington and Unincorporated San Pedro do not have any healthy food location within their boundaries.

Image 46: Fast Food Restaurants and Liquor Store at Seaport Plaza at 1110 N. Gaffey St. in San Pedro. Photo source: Beth Altshuler, 2015

Table 65: Availability of Healthy Foods by Neighborhood

Neighborhoods	Total pop	Healthy Food Options				Total	Rate per 10,000 pop
		Community Gardens	Grocery Stores	Produce Stores	Farmers Markets		
City of Los Angeles	3,792,621	39	236	152	36	463	1.22
Study Area	135,327	2	7	4	2	15	1.11
San Pedro	80,739	2	5	2	1	10	1.24
Central San Pedro	29,470	2	1	1	1	5	1.70
Coastal San Pedro	27,132	-	1	-	-	1	0.37
Northwest San Pedro	21,068	-	3	1	-	4	1.90
Unincorporated San Pedro	2,034	-	-	-	-	-	-
Port of Los Angeles	1,035	-	-	-	-	-	-
Wilmington	54,588	-	2	2	1	5	0.92
East Wilmington	12,880	-	1	1	1	3	2.33
North Wilmington	13,361	-	-	-	-	-	-
South Wilmington	11,282	-	-	1	-	1	0.89
West Wilmington	17,065	-	1	-	-	1	0.59

Data sources: Farmers markets, California Federation of Certified Farmers' Markets, 2011; Grocery and produce stores, Dun & Bradstreet, 2011; Community gardens, University of Southern California Spatial Sciences Institute, 2012; U.S. Census Bureau Decennial Census, 2010.

As shown in Table 66, there are 84 fast food restaurants in the study area, which is about 6.2 restaurants per 10,000 residents. Compared to the number of healthy food locations in the study area, there are 5.59 times more fast food restaurants than places where people can obtain healthy foods. The neighborhood with the highest number and density of fast foods is Central San Pedro, with close to 12 restaurants per 10,000 residents. Compared to the City of Los Angeles, there are 1.08 times more fast food restaurants in the study area. Central San Pedro has more than twice the amount of fast food restaurants per capita than the City of Los Angeles.

Table 66: Availability of Fast Foods by Neighborhoods

Neighborhoods	Total pop	Fast Food Restaurants	Rate per 10,000 pop
City of Los Angeles	3,792,621	2,170	5.72
Study Area	135,327	84	6.21
San Pedro	80,739	57	7.06
Central San Pedro	29,470	35	11.88
Coastal San Pedro	27,132	12	4.42
Northwest San Pedro	21,068	10	4.75
Unincorporated San Pedro	2,034	0	0.00
Port of Los Angeles	1,035	0	0.00
Wilmington	54,588	27	4.95
East Wilmington	12,880	5	3.88
North Wilmington	13,361	5	3.74
South Wilmington	11,282	4	3.55
West Wilmington	17,065	13	7.62
Data sources: Fast food restaurants, Dun & Bradstreet, 2011 and U.S. Census Bureau Decennial Census, 2010			

Substantial portions of people living in the study area live in areas considered to have "no" or "poor" access to healthy foods. Table 67 depicts the number of people in the study area that this affects. Over 25,000 residents, or 19%, live in these areas. A significant proportion of children under 18 (19%), low income residents (21%), and people of color (20%), reside in areas with disproportionately fewer healthy food options and more unhealthy food options.

Table 67: Population Living within Areas with "No" or "Poor" Access to Healthy Food Retail (based on mRFEI)

	Total pop	People living within areas with "no or poor access to healthy food retail	
		#	Percent
Study Area	135,327	25,668	19%
San Pedro	79,704	12,462	15%
Wilmington	54,588	12,185	22%
Port of Los Angeles	1,035	1,021	99%
Children Under 5 years	10,167	1,988	20%
Children Under 18 years	36,064	6,888	19%
Adults Over 65 years	15,616	1,967	13%
People living below 200% of federal poverty level	61,084	12,640	21%
People of Color (Hispanic/Latino and/or Non-White)	101,069	20,213	20%
Data sources: mRFEI from the CDC; 2010-2014 American Community Survey 5-Year Estimates, and U.S. Census Bureau Decennial Census, 2010. Census tracts and blocks were selected if the centroids of their polygon were within area with no or poor access to healthy food retail, based on the mRFEI.			

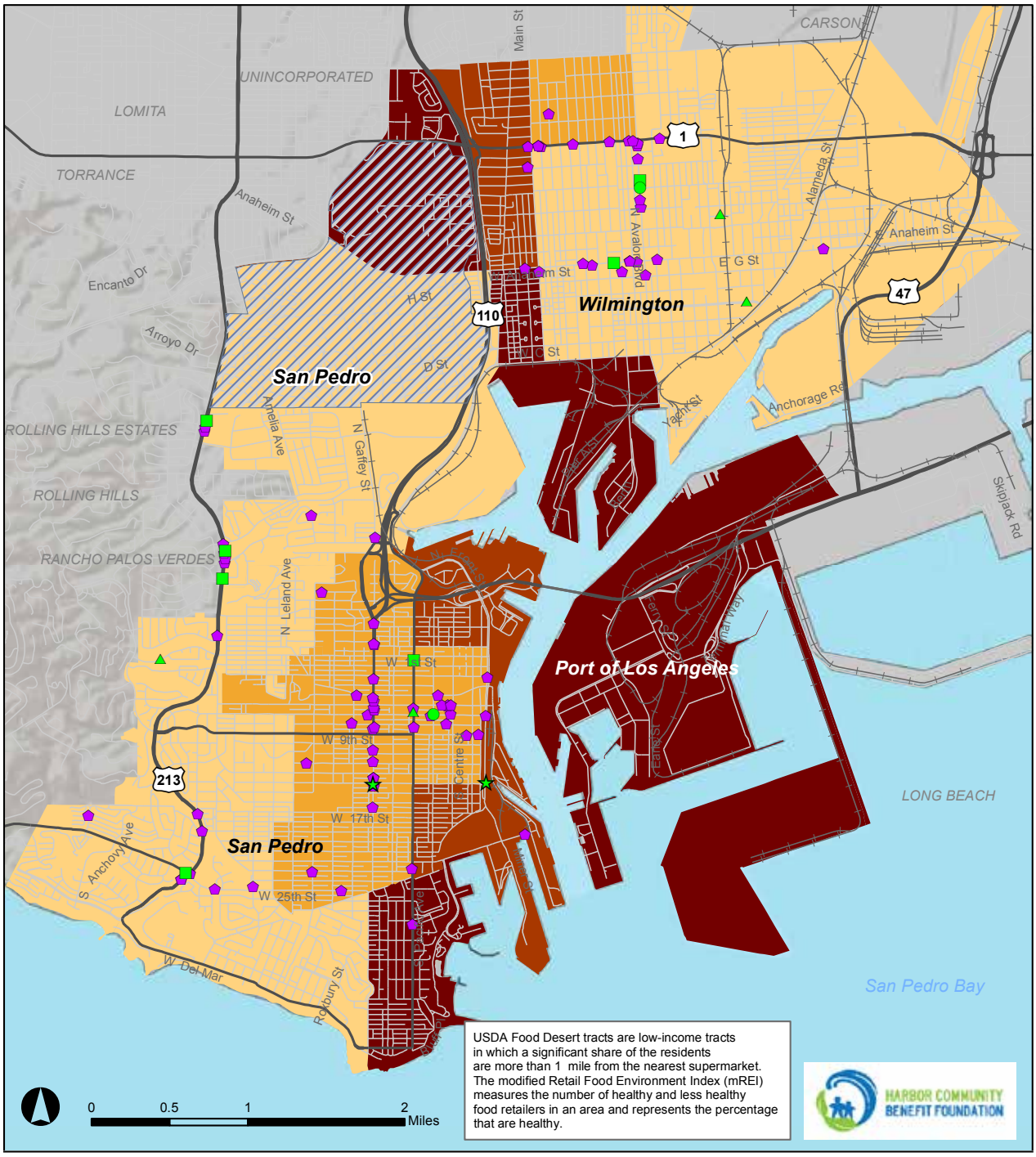
A quarter-mile is a standard measure of proximity and accessibility because it is considered to be a comfortable walking distance. Table 68 below shows the number and percentage of people living within a quarter mile of fast food or healthy food. More people live within walking distance to a fast food restaurant than a healthy food option in the study area. Approximately 54% of residents within the study area live within a quarter mile of a fast food restaurant. This is more than twice the amount of people that live within the same distance from a healthy food option. Only 23% of residents live within a quarter mile of a healthy food option. Geographically, this disparity is greatest in Wilmington. The Food Access map details the location of fast food restaurants and healthy food options overlaid on the mRFEI score by census tracks.

Table 68: Population Living within a Quarter Mile of Fast Food or Healthy Food Options

	Total pop	Within ¼ mile of fast food restaurant		Within ¼ mile of healthy food option	
		# pop	Percent	#	Percent
Study Area	135,327	73,508	54%	30,483	23%
San Pedro	79,704	46,556	58%	20,676	26%
Wilmington	54,588	26,952	49%	9,807	18%
Port of Los Angeles	1,035	-	-	-	-
Children Under 5 years	10,167	5,937	58%	2,544	25%
Children Under 18 years	36,064	20,438	57%	8,546	24%
Adults Over 65 years	15,616	7,084	45%	2,916	19%

Data sources: Fast food restaurants, Dun & Bradstreet, 2011; 2010-2014 American Community Survey 5-Year Estimates and U.S. Census Bureau Decennial Census, 2010. Census blocks were selected if the centroids of their polygon were within a quarter mile distance.

Map 48: Food Access



Food Environment

- Community gardens
- Farmers markets
- Grocery stores
- Produce stores
- Fast food restaurants
- USDAFoodDesert2013

Modified Retail Food Environment Index

MRFEI

- No Healthy Retail Food Outlet (No Access)
- Index Score 0.01 - 5.0 (Poor Access)
- Index Score 5.0 - 10.0 (Fair Access)
- Index Score 10.0 - 25.0 (Good Access)
- Index Score Greater than 25.0 (High Access)

- Railroad
- Streets
- Interstates and Highways

Produced by Raimi + Associates, August 2016

Data Sources: Food Desert, 2013 U.S. Department of Agriculture; mREI, 2011 Centers for Disease Control and Prevention;Farmers' Markets, 2011 California Federation of Certified Farmers' Markets; Grocery and Produce Store Data, 2011 Dun & Bradstreet; Community Gardens, 2012 USC SSI; Interstates and Highways, 2008 Tele Atlas North America, Inc.; World Terrain Base, 2009 ESRI.

OFF- AND ON-SALE LIQUOR LICENSES

The study area contains 197 on-sale liquor licenses and 115 off-sale liquor licenses (Table 69). Central San Pedro has the highest rate of on-sale and off-sale liquor licenses per capita, with just over 42 on-sale liquor facilities per 10,000 residents and 14 off-sale facilities per 10,000 residents. The Port of Los Angeles is also notable for its high number of on- and off-sale alcohol outlets per capita.

Across all on- and off-sale liquor licenses, the study area has more alcohol outlets than the City of Los Angeles. The study area has 1.15 times the number of on-sale liquor licenses per capita and 1.28 times the number of off-sale liquor licenses per capita. This disparity is greater in subareas, such as Central San Pedro with 56 alcohol outlets per 10,000 residents. East and West Wilmington also have a higher rate of off-sale liquor licenses compared to the City of Los Angeles. The On-Sale Liquor License Rate per 10,000 Residents map and Off-Sale Liquor License Rate per 10,000 Residents map show the locations of these alcohol outlets overlaid on top of the rate of these licenses per 10,000 residents.

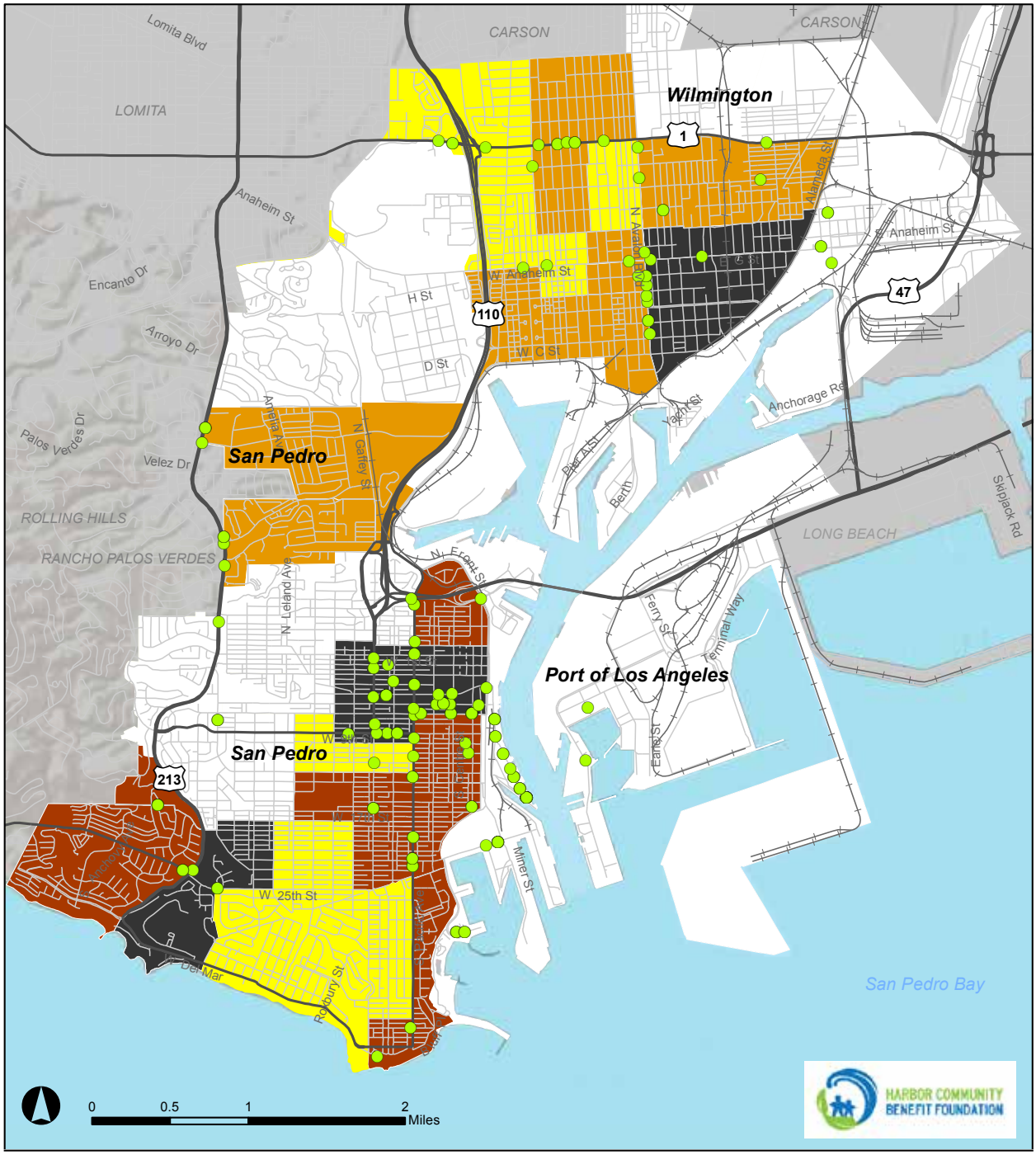
Table 69: On-Sale and Off-Sale Liquor Licenses

	Pop	On-sale Liquor Licenses		Off-Sale Liquor Licenses		Total	
		#	Rate per 10,000 pop	#	Rate per 10,000 pop	#	Rate per 10,000 pop
City of Los Angeles	3,792,621	4,772	12.58	2,510	6.62	7,282	19.20
Study Area	135,327	197	14.56	115	8.5	312	23.06
San Pedro	79,704	157	19.7	66	8.28	223	27.98
Central San Pedro	29,470	27	9.16	14	4.75	41	13.91
Coastal San Pedro	27,132	115	42.39	38	14.01	153	56.39
Northwest San Pedro	21,068	15	7.12	14	6.65	29	13.76
Unincorporated San Pedro	2,034	0	0	0	0	0	0.00
Port of Los Angeles	1,035	2	19.32	1	9.66	3	28.99
Wilmington	54,588	38	6.96	48	8.79	86	15.75
East Wilmington	12,880	10	7.76	12	9.32	22	17.08
North Wilmington	13,361	7	5.24	12	8.98	19	14.22
South Wilmington	11,282	12	10.64	7	6.2	19	16.84
West Wilmington	17,065	9	5.27	17	9.96	26	15.24

Data source: California Alcohol Beverage Control, 2012

In summary, the communities of San Pedro and Wilmington have fewer child care resources, less access to healthy food when compared to fast food restaurants, fewer medical facilities, and more alcohol outlets when compared to the City or County of Los Angeles. It would be reasonable to describe this area as disproportionately impacted in terms of limited access to health-promoting neighborhood factors and increased access to unhealthy factors. Although it is difficult to isolate the effects of the Port on these outcomes, the impact of the Port and Port-related operations and activities could plausibly explain the impacts on access to neighborhood resources.

Map 49: On-Sale Liquor License Rate per 10,000 Residents



On-Sale Liquor Licenses

Rate per 10,000 Residents

- Less than 10.40
- 10.40 to 23.70
- 23.70 to 57.37
- Greater than 57.37

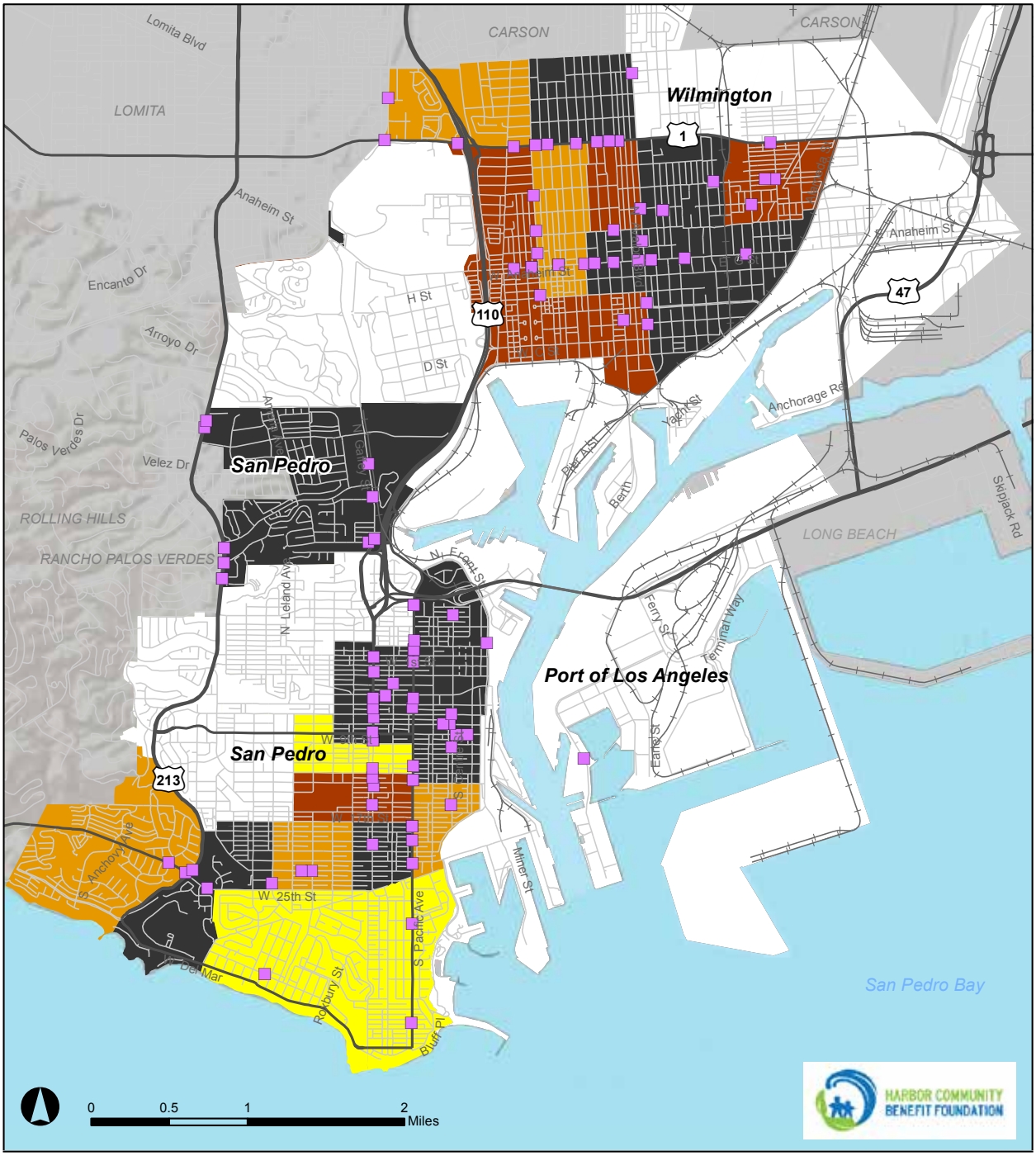
- On-Sale Liquor Licenses
- Railroad
- Interstates and Highways
- Streets

Rates were calculated per 10,000 people and shown in quartiles. The data included in this layer are of all liquor licenses through September 2012. Areas shown in white are census tracts without liquor licenses or the population density was less than 500 persons per square mile.

Produced by Raimi + Associates, April 2016

Data Sources: Liquor licenses, 2012 California Alcohol Beverage Control; Neighborhood Councils, City of Los Angeles, 2013; US Census, 2010; Interstates and Highways, 2008 Tele Atlas North America, Inc.; World Terrain Base, 2009 ESRI.

Map 50: Off-Sale Liquor License Rate per 10,000 Residents



Off-Sale Liquor Licenses

Rate per 10,000 Residents

- Less than 3.78
- 3.78 to 6.92
- 6.92 to 10.57
- Greater than 10.57

- Off-Sale Liquor License
- Railroad
- Interstates and Highways
- Streets

Rates were calculated per 10,000 people and shown in quartiles. The data included in this layer are of all liquor licenses through September 2012. Areas shown in white are census tracts without liquor licenses or the population density was less than 500 persons per square mile.

Produced by Raimi + Associates, April 2016

Data Sources: Liquor licenses, 2012 California Alcohol Beverage Control; Neighborhood Councils, City of Los Angeles, 2013; US Census, 2010; Interstates and Highways, 2008 Tele Atlas North America, Inc.; World Terrain Base, 2009 ESRI.

DATA SOURCES

Table 70 describes the data included in the analysis of neighborhood goods and resources.

Table 70: Data Sources

Data	Year	Description	Source
Child care facilities	2016	Data includes both child care centers and home-based family day care facilities. Categories include: day care centers, family day care homes, infant care, and school age day care centers.	California Department of Social Services, Community Care Licensing Facility Search
Population data	2010	Population count data	U.S. Census Bureau Decennial Census
Medical facilities	2014	The Location Management System (LMS) database includes location of health care facilities and mental health care facilities and service types.	LMS, Los Angeles County GIS Data Portal
Population data	2010	Population count data	U.S. Census Bureau Decennial Census
Food deserts	2013	Data presents a spatial overview of food access indicators for low-income and other census tracts using measures of supermarket accessibility	Food Access Research Atlas, U.S. Department of Agriculture
Modified Retail Food Environment Index (mRFEI)	2011	The mRFEI was calculated for each census tract by dividing the # of healthy food retailers by the # of healthy and less healthy food retailers and multiplying that by 100. Healthy food retailers include supermarkets, larger grocery stores, supercenters, and produce stores within census tracts or ½ mile from the tract boundary.1	Centers for Disease Control and Prevention (CDC), Division of Nutrition, Physical Activity, and Obesity
Fast food restaurants	2011	Database includes location information of fast food restaurants, under the retail category of fast food, pizza, sandwiches.	Dun & Bradstreet
Farmers' Markets	2011	Location of certified farmers' markets	California Federation of Certified Farmers' Markets
Grocery and produce stores	2011	Database includes location information of grocery and produce stores, under the retail categories of fruit/vegetable market and general grocery	Dun & Bradstreet
Community gardens	2012	Database includes location information of community gardens	University of Southern California Spatial Sciences Institute
Liquor licenses	2012	Off and on-sale liquor licenses. On-sale license includes the sale of and consumption of alcohol on the premises (e.g. restaurants, bars). Off-sale license includes sale of alcoholic beverages for consumption off the premises (e.g. liquor stores).	California Alcohol Beverage Control

6. EMPLOYMENT & REAL ESTATE

EMPLOYMENT + REAL ESTATE

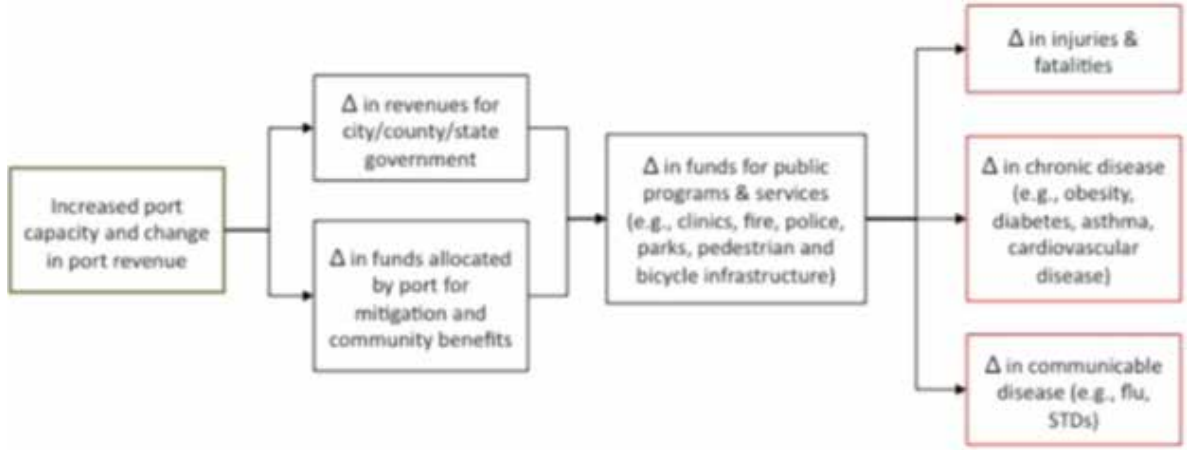
OVERVIEW

The Port of Los Angeles' actions have a significant influence on the economies of Wilmington and San Pedro, as well as regional, state, and national economies. This section looks at a small piece of how the Port of Los Angeles' operations and related activity impacts economic factors within the study area.

On the one hand, the Port and related businesses (those in the trade, transportation, utility, and goods-producing sectors) offer employment opportunities and many people who work at the Port and in related businesses frequent local businesses, keeping numerous restaurants, gas stations, truck repair shops, and retail stores in business. On the other hand, activity from these jobs has environmental and human health costs for the workers and residents in the study area. San Pedro and Wilmington residents experience a tension between supporting personal and community economic growth opportunities and protecting environmental and human health.

When the Port wants to expand operations (which increases their revenue and local tax revenues), they are often required to allocate additional community mitigation funds for public programs and services. These funds aim to offset the negative Port externalities that residents bear. Figure 21 shows a proposed pathway to assess the health effects of Port revenue and Port funding. Note that this figure does not indicate whether increased revenues and funds would be substantial enough to have a net positive impact on human health given the negative health impacts of increased port capacity.

Figure 21: Port Revenue and Port Funding Effects



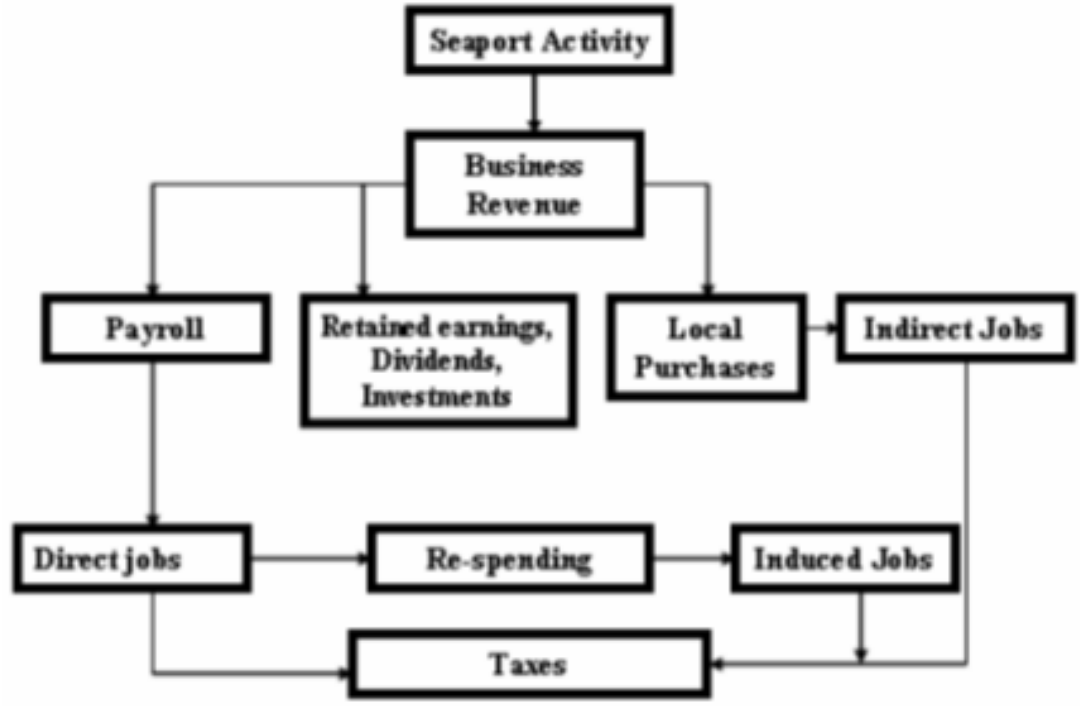
Data source: Human Impact Partners for the U.S. Environmental Protection Agency. 2010. Los Angeles and Long Beach Maritime Port Health Impact Assessment Scope Working Draft. Available from https://archive.epa.gov/region9/nepa/web/pdf/drafthiascope4portsoflalb.pdf

In 2007, the Port of Los Angeles commissioned a study to assess the economic impacts of the Port. Figure 22 was presented in the economic impact study to show potential economic impact pathways. This figure does not illustrate the direct and indirect negative economic impacts of the Port. For example, a 2006 Pacific Institute report estimates that "freight transport will cost California residents $200 billion over the next 15 years in health costs, and most of this is borne by low-income communities of color near freight transport hubs."[1] The Pacific Institute report also describes the high environmental hazard exposure that dock workers face and the low wages and lack of health insurance benefits among truck drivers.

In addition to an uncertain cost-benefit balance related to employment, Port expansion and activities and Port-related uses in and through the Wilmington and San Pedro neighborhoods may have a negative impact on residential real estate values.

1 Pacific Institute. November 2006. *Paying with Our Health. The Real Cost of Freight Transport in California.* www.pacinst.org/reports/freight_transport

Figure 22: Flow of Economic Impacts Generated by Marine Activity



Data Source: Martin Associates for the Port of Los Angeles. 2007. Economic Impacts of the Port of Los Angeles. https://www.portoflosangeles.org/DOC/REPORT_2007_Economic_Impacts.pdf

EMPLOYMENT

CONTEXT

The Port of Los Angeles justifies the immediate neighborhood impacts of Port and Port-related activity by citing the amount of economic benefit the Port of Los Angeles brings to the community, the region, and the state. According to the Port of Los Angeles website:

"The Port of Los Angeles is one of the world's largest trade gateways and the scope of its economic contributions to the regional economy is far-reaching. The Port is connected directly and indirectly with tens of billions of dollars in industry sales each year in the Southern California region. Those sales translate into hundreds of thousands of local jobs and billions of dollars in wages, salaries, and state and local taxes.

Regional Port of Los Angeles benefits include:

- 133,000 jobs in Los Angeles (about one in 14)
- 479,000 (or one in 18) jobs in the five-county Southern California region
- 1.5 million jobs in the United States
- $76 billion in California trade value
- $270 billion in U.S. trade value
- $5.8 billion in local and state tax revenue

Approximately 70% of the regional direct, indirect, and induced benefits connected to the Port occurs within Los Angeles County."[2]

The Port employs nearly 1,000 employees directly. It also abides by a labor agreement to hire residents within 10 miles of the Port and residents from high unemployment zip codes throughout the City of Los Angles for 30% of construction work hours through the Harbor Worksource Center.[3] We could not find any information sharing the annual results of these labor agreements and are uncertain as to whether the Port complies with the local hire policy, the number of people employed under these policies, or the economic impact to the study area.

NEXUS BETWEEN THE PORT OF LOS ANGELES AND STUDY AREA EMPLOYMENT

While this section is primarily exploratory, describing the nature of employment in the study area, Figure 23 shows a simple pathway diagram of employment in the study area.

2 Port of Los Angeles. "The Port of Los Angeles: An Economic Powerhouse" https://www.portoflosangeles.org/finance/economic_impact.asp

3 Port of Los Angeles. "Employment." https://www.portoflosangeles.org/contact/employment.asp

Figure 23: Pathway Diagram of Study Area Employment

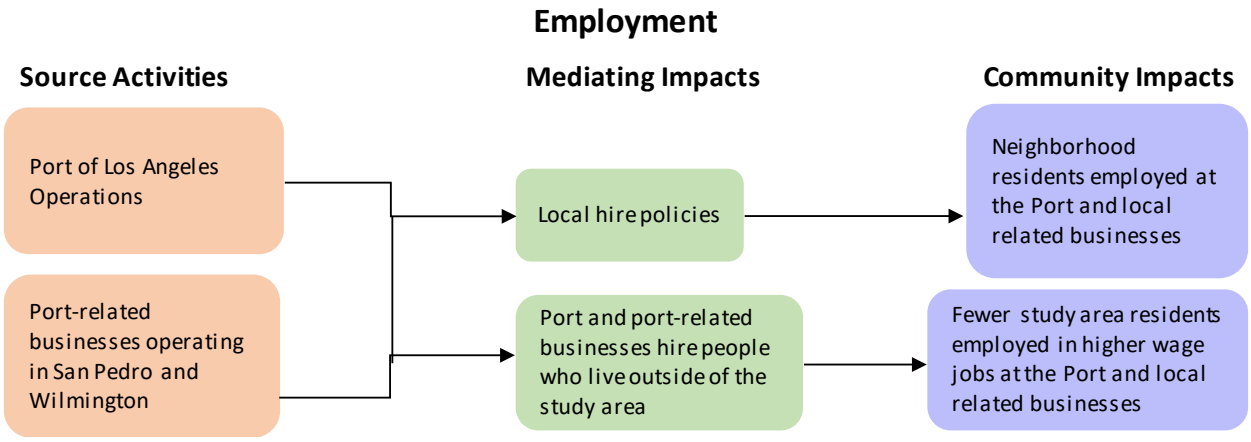


Table 71: Nexus Criteria for Employment

Employment		
Criteria	Yes, No, Possibly, Unsure, N/A	Notes
1. Is the source an established Port or port-serving land use or activity?	Yes	The Port directly employs almost 1,000 people in addition to the employees of many Port-related businesses
2. Is the impact a direct result of the Port or port-serving land use or activity?	Maybe	Yes, if a significant number of residents hold these jobs
3. Is the impact an indirect result of the port or port-serving land use or activity?	Maybe	Yes, if a significant number of residents hold these jobs
4. Is the causal pathway logical and plausible?	Yes	
5. Is there generalizable empirical evidence to support the causal pathway?	Yes	Port of Los Angeles economic studies
6. Is there a distance-based relationship to port or port-serving use or activity?	Yes	
7. Is there a temporal-based relationship to port development in the study area?	Unsure	Did not examine.
8. Is there a disproportionate burden/ impact relative to the city/region?	Unsure	We did not study indirect employment
9. Is there local qualitative evidence to support the pathway?	Yes	

RESEARCH QUESTIONS AND METHODOLOGY

We conducted two paths of analysis to explore employment:

- Examination of job density in the study area; and
- Assessment of the characteristics of people who work in the study area.

To assess job density, we compiled 2010 employment data from the U.S. Census Longitudinal Employment Household Dynamics (LEHD) website. The employment density maps show jobs per square mile overall and for various sectors. Each map utilizes different classifications that we created using a combination of quartiles and manual breaks; 640 jobs per square mile equates to one job per acre. In 2010, the median number of jobs per square mile for Census blocks in the City of Los Angeles was 1,185. The data only includes jobs within the City of Los Angeles and therefore does not include jobs in the unincorporated San Pedro Area.

In the second part of this analysis, we used LEHD data from 2014 to document the industry sector of jobs in the study area (calling out the Port of Los Angeles neighborhood subarea) and the characteristics of the employees who held those jobs by income, sex, educational attainment, age, and race/ethnicity. We also documented where study area workers live and how many study area residents work in the study area and the Port of Los Angeles neighborhood subarea.

The research questions for this section included:

- What types and how many jobs are in the study area?
- Who are the people that work in the study area and in the LA Port subarea?
- Do these jobs employ study area working residents?

FINDINGS

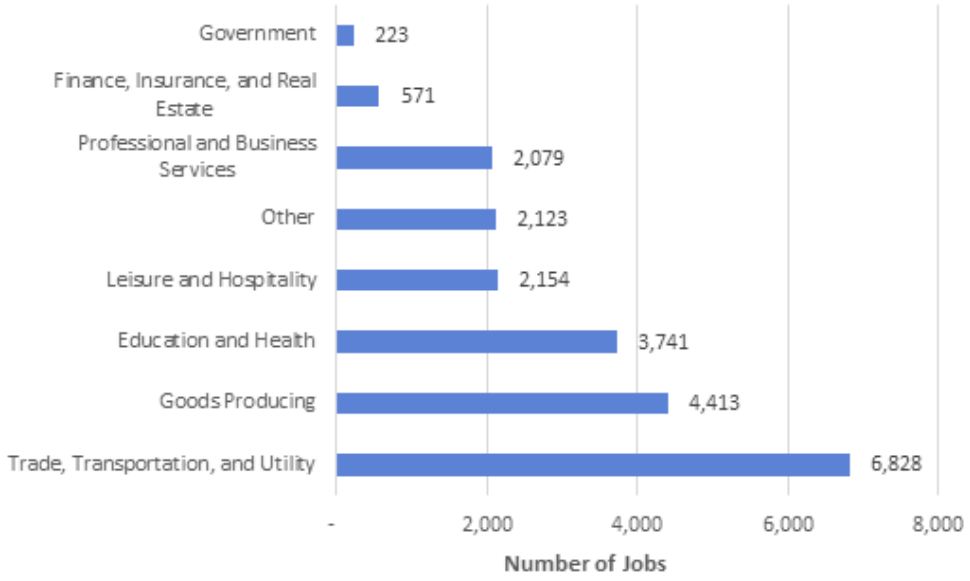
EMPLOYMENT DENSITY BY SECTOR

Excluding the Unincorporated San Pedro neighborhood, the study area has approximately 22,132 jobs within the trade, transportation, and utility sector accounting for 31% of all jobs, which is the sector most aligned with the goods movement industry and related operations. The goods producing sector (19.9%) and the education and health sector (16.9%) account for the other two most common sectors.

The trade, transportation, and utility sector includes utility, retail trade, wholesale trade, and transportation and warehousing jobs, while the goods-producing sector includes agriculture, mining, construction, and manufacturing. Out of all 6,828 trade, transportation, and utility sector jobs, almost half are in South and East Wilmington, and about 18% are in Central San Pedro. Of the 4,413 jobs in the goods producing sector, almost two-thirds are in South and East Wilmington and almost 12% are in Northwest San Pedro.

Although excluded from the analysis, it is important to note that the Unincorporated San Pedro neighborhood is home to numerous large health care and social services employers, which would alter the proportion of jobs per sector. Some of the facilities of note include Providence Little Company of Mary Medical Center San Pedro; San Pedro Medical Center; Seacrest Convalescent Hospital; YMCA; Salvation Army; pharmacies; and numerous small businesses.

Figure 24: Number of Jobs by Sector in the Study Area



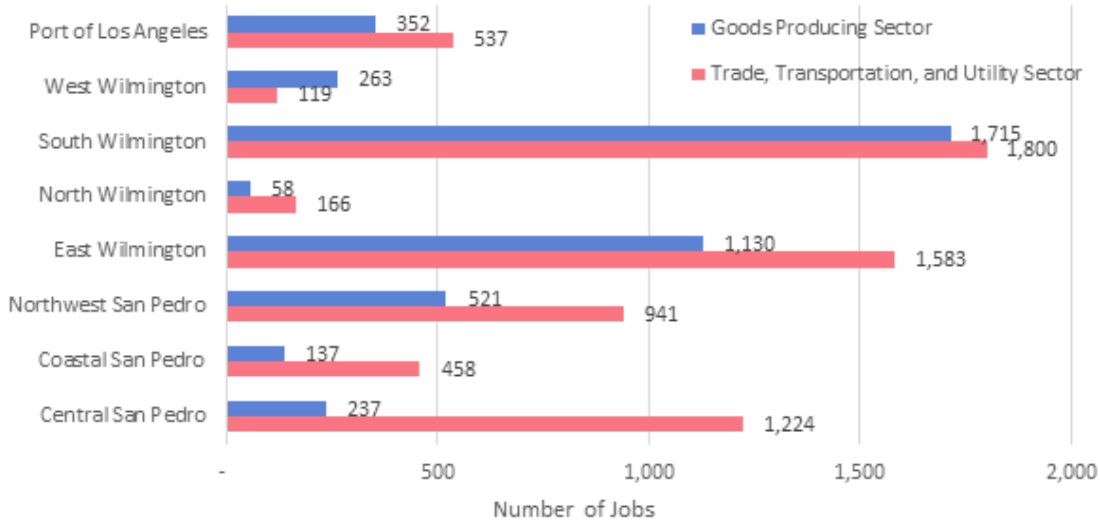
Source: U.S. Census. 2010. Longitudinal Employer-Household Dynamics Survey. http://onthemap.ces.census.gov/

Table 72: Port-Related Jobs by Neighborhood

	Jobs in the Trade, Transportation, and Utility Sector	Jobs in the Goods Producing Sector
Study Area (100%)	6,828	4,413
San Pedro		
Central San Pedro	17.9%	5.4%
Coastal San Pedro	6.7%	3.1%
Northwest San Pedro	13.8%	11.8%
Port of Los Angeles	7.9%	8.0%
Wilmington		
East Wilmington	23.2%	25.6%
North Wilmington	2.4%	1.3%
South Wilmington	26.4%	38.9%
West Wilmington	1.7%	6.0%

Source: U.S. Census. 2010. Longitudinal Employer-Household Dynamics Survey. http://onthemap.ces.census.gov/

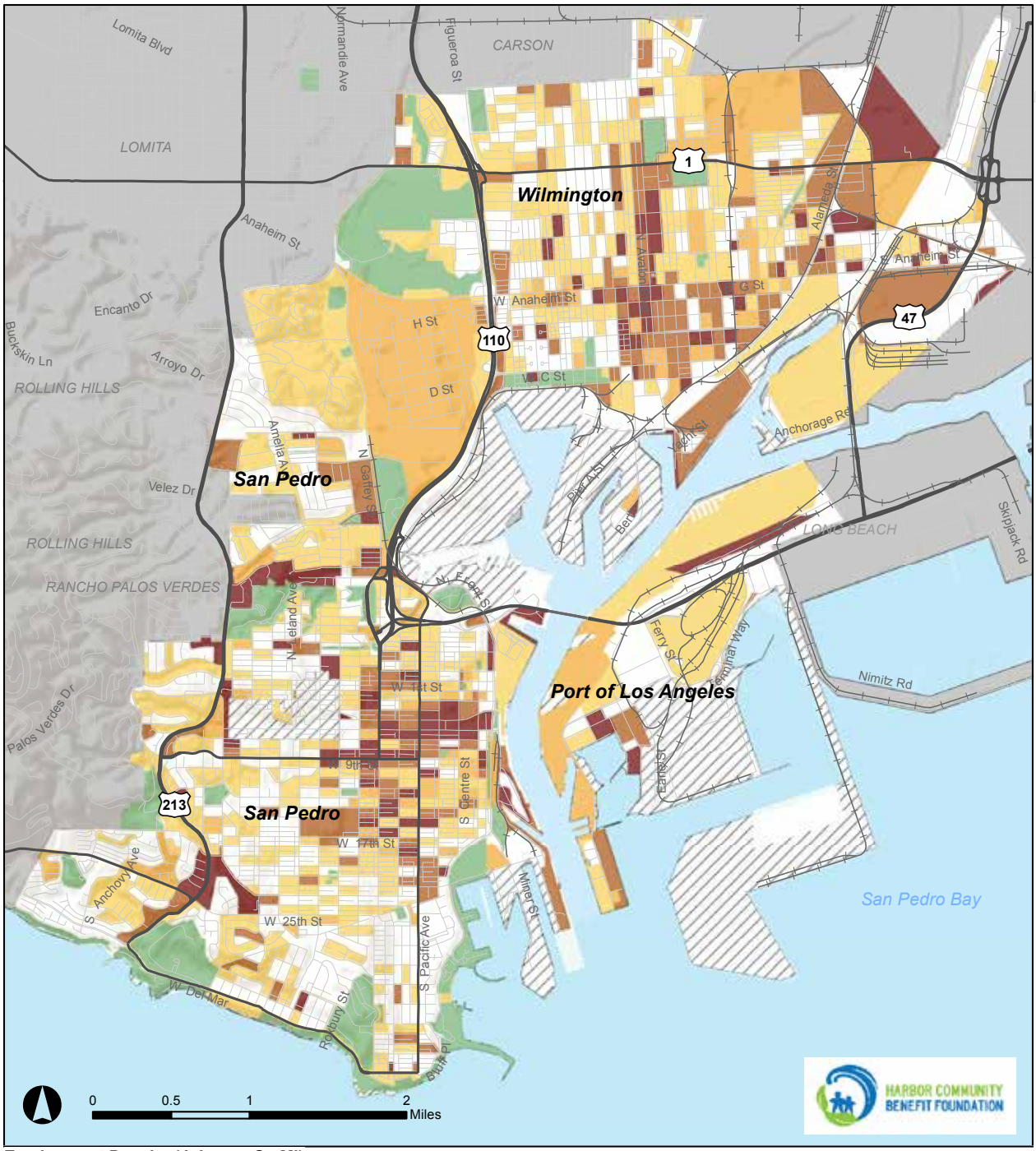
Figure 25: Number of Port-Related Jobs by Neighborhood



Source: U.S. Census. 2010. Longitudinal Employer-Household Dynamics Survey. http://onthemap.ces.census.gov/

The three maps below show All Sector Employment Density; Trade, Transportation, and Utility Sector Employment Density; and Goods Producing Sector Employment Density. The pattern of job density matches the concentration of poverty pattern in the study area. This is likely because the industrial nature of these businesses and operations create less desirable land use, which generally correlates with less expensive residential real estate environment. While it is advantageous to have jobs near residential areas, the negative economic and health impact of having these types of industrial uses adjacent to homes may outweigh the economic benefits that study area residents gain from working at these businesses.

Map 51: Employment Density (All Sectors)



Employment Density (Jobs per Sq Mi)

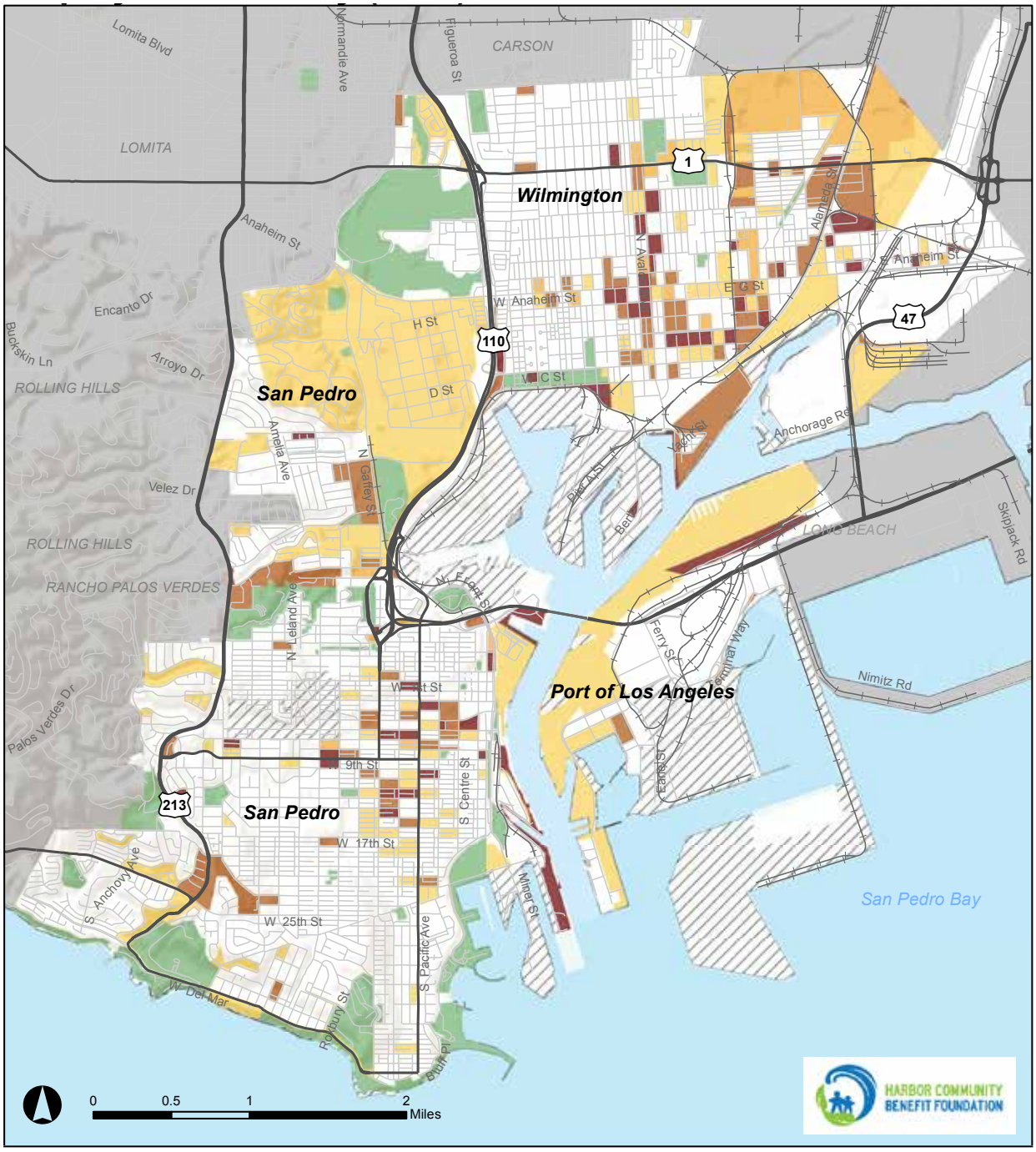
- Zero
- 1 to 640
- 640 to 1,185
- 1,185 to 4,888
- Greater than 4,888
- No Jobs Data
- Parks and Recreational Areas
- Interstates and Highways
- Streets
- Railroads

2010 employment data compiled from the U.S. Census LEHD website. Jobs per square mile were classified using a combination of quartiles and manual breaks. 640 jobs per square mile equates to one job per acre. In 2010, 1,185 was the median value for Census blocks in the City of LA.

Produced by Raimi + Associates, September 2016.

Data Sources: City of Los Angeles, 2015; Interstates and Highways, 2008 Tele Atlas North America, Inc.; World Terrain Base, 2009 ESRI, Employment Data, 2010 U.S. Census LEHD.

Map 52: Trade, Transportation, and Utility Sector Employment Density



Trade, Transportation, and Utility Jobs per Sq Mi

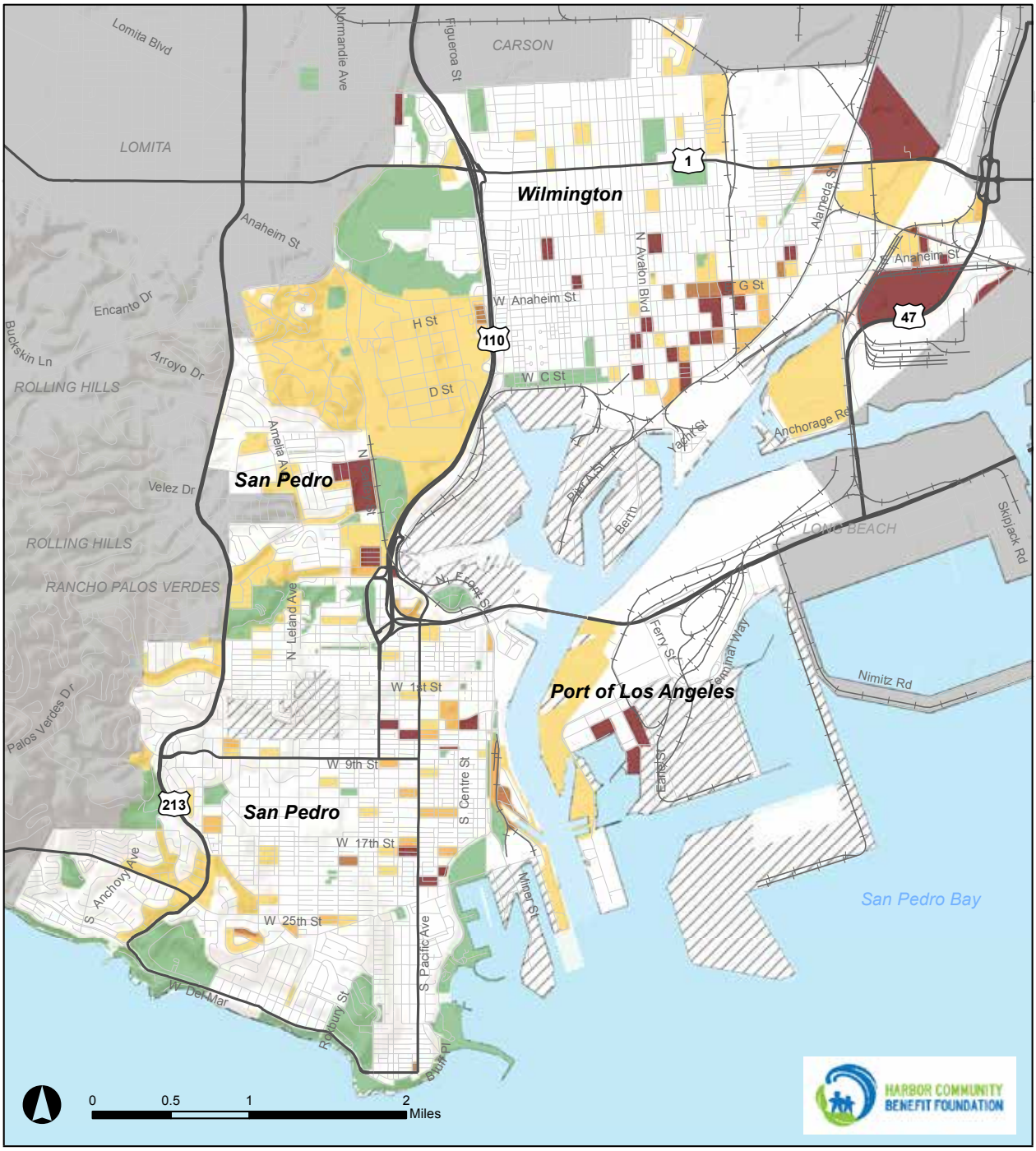
- Zero
- 1 to 640
- 640 to 850
- 850 to 2,750
- Greater than 2,750
- No Jobs Data
- Parks and Recreational Areas
- Interstates and Highways
- Streets
- Railroads

2010 employment data compiled from the U.S. Census LEHD website. The trade, transportation, and utility sector includes utility, retail trade, wholesale trade, and transportation and warehousing jobs. Jobs per square mile were classified using a combination of quartiles and manual breaks. 640 jobs per square mile equates to one job per acre.

Produced by Raimi + Associates, September 2016.

Data Sources: City of Los Angeles, 2015; Interstates and Highways, 2008 Tele Atlas North America, Inc.; World Terrain Base, 2009 ESRI, Employment Data, 2010 U.S. Census LEHD.

Map 53: Goods Producing Sector Employment Density



Goods Producing Jobs per Sq Mi

- Zero
- 1 to 640
- 640 to 1,185
- 1,185 to 1,800
- Greater than 1,800
- No Jobs Data
- Parks and Recreational Areas
- Interstates and Highways
- Streets
- Railroads

2010 employment data compiled from the US Census LEHD website. The goods-producing sector includes agriculture, mining, construction, & manufacturing. Jobs per sq mile were classified using a combination of quartiles & manual breaks. 640 jobs per sq mile equates to one job/acre. In 2010, 1,185 was the median value for Census blocks in the City of LA & 1,800 was the upper quartile threshhold.

Produced by Raimi + Associates, September 2016.

Data Sources: City of Los Angeles, 2015; Interstates and Highways, 2008 Tele Atlas North America, Inc.; World Terrain Base, 2009 ESRI, Employment Data, 2010 U.S. Census LEHD.

PROFILE OF WORKERS IN THE STUDY AREA

The second piece of this analysis looks at the people who work in the study area (San Pedro, Wilmington, and the Port of Los Angeles/Terminal Island). According to LEHD Census data, 32,708 people were employed in the study area in 2014. Almost one in five jobs were in the "health care and social assistance" sector, as shown in Table 73.

Table 73: Jobs in the Study Area by NAICS Industry Sector (2014)

Industry Sector (TOTAL=32,708)	Count	Share
Health Care and Social Assistance	6,375	19.5%
Transportation and Warehousing	3,222	9.9%
Retail Trade	3,102	9.5%
Accommodation and Food Services	2,913	8.9%
Manufacturing	2,847	8.7%
Educational Services	2,498	7.6%
Construction	2,317	7.1%
Administration & Support, Waste Management, and Remediation	2,079	6.4%
Other Services (excluding Public Administration)	1,893	5.8%
Wholesale Trade	1,885	5.8%
Public Administration	1,108	3.4%
Professional, Scientific, and Technical Services	1,084	3.3%
Finance and Insurance	427	1.3%
Real Estate and Rental and Leasing	279	0.9%
Information	208	0.6%
Arts, Entertainment, and Recreation	190	0.6%
Management of Companies and Enterprises	131	0.4%
Agriculture, Forestry, Fishing, and Hunting	77	0.2%
Utilities	51	0.2%
Mining, Quarrying, and Oil and Gas Extraction	22	0.1%

Source: U.S. Census. 2014. Longitudinal Employer-Household Dynamics Survey. Work Area Profile. http://onthemap.ces.census.gov/

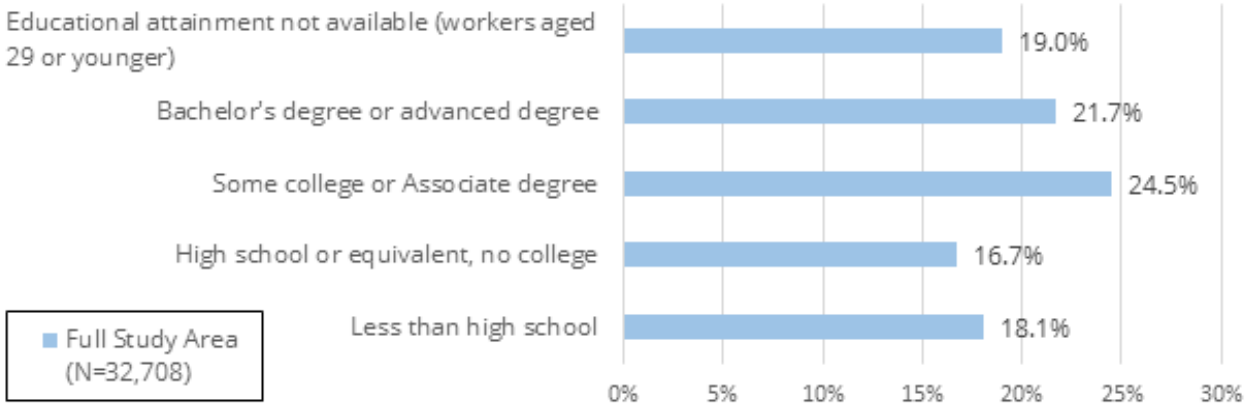
Sectors that are likely related to the Port and Port-related activities (highlighted in Table 73) include transportation and warehousing (9.9%), manufacturing (8.7%), construction (7.1%), administration & support, waste management, and remediation (6.4%), wholesale trade (5.8%), and mining, quarrying, and oil and gas extraction (0.1%). Combined, these six sectors account for 12,372 or 38% of jobs in the study area. While some of these jobs may not be directly or indirectly related to the Port of Los Angeles operations, it provides a ballpark estimate. For example, we can assume that some construction jobs are for residential clients and should not be included in this estimate. Conversely, we can also assume that the "retail trade" sector contains some jobs that are Port related such as gas stations and motor vehicles and parts dealers.[4]

4 United States Department of Labor. Bureau of Labor Statistics. 2016. "Industries at a Glance: Retail Trade: NAICS 44-45." http://www.bls.gov/iag/tgs/iag44-45.htm

Of the 32,708 workers in the study area, 55% are male and 45% are female. Nineteen percent of workers in the full study area are aged 29 or younger. Slightly over one-third of study area workers have a high school education or less, however, educational data for workers aged 29 or younger is not included, which could change the proportions (Figure 26).

As Table 74 shows, people who work within the full study area are most likely to be Hispanic or Latino (43.6%) or White alone (30.6%).

Figure 26: Worker Educational Attainment



Source: U.S. Census. 2014. Longitudinal Employer-Household Dynamics Survey. Work Area Profile. http://onthemap.ces.census.gov/

Table 74: Race and Ethnicity of Workers

Jobs by Worker Race/Ethnicity (2014)	Full Study Area	
	Count	Share
Hispanic or Latino	14,261	43.6%
White Alone	10,010	30.6%
Black or African American Alone	3,257	10.0%
American Indian or Alaska Native Alone	410	1.3%
Asian Alone	3,884	11.9%
Native Hawaiian or Other Pacific Islander Alone	187	0.6%
Two or More Race Groups	699	2.1%

Source: U.S. Census. 2014. Longitudinal Employer-Household Dynamics Survey. Work Area Profile. http://onthemap.ces.census.gov/

We conducted an analysis to explore the wage difference between the workers in the LA Port sub are and the full study area. Note that the data used in this analysis provides the number and type of jobs per Census tract. The location of jobs is determined by the address of the firm or agency; therefore, it may not capture all of the workers who pass through or spend time at the Port of Los Angeles or the full study area. The results of this analysis are presented to examine differences between the LA Port sub area and the full study area.

In general, Port of Los Angeles neighborhood subarea workers are paid more than workers in the full study area. Over two-thirds (67.6%) of the Port of Los Angeles neighborhood subarea workers earn more than $3,333 per month ($39,996 per year) compared to only 43% of workers in the full study area. Almost one in four (24.0%) of workers in the full study area earn $1,250 per month or less ($15,000 per year) compared to only 15% of the Port of Los Angeles neighborhood subarea workers. This data includes part time workers, but we do not know how many workers or which workers are working part time versus full time or whether the part time workers would like to work full time if given the opportunity.

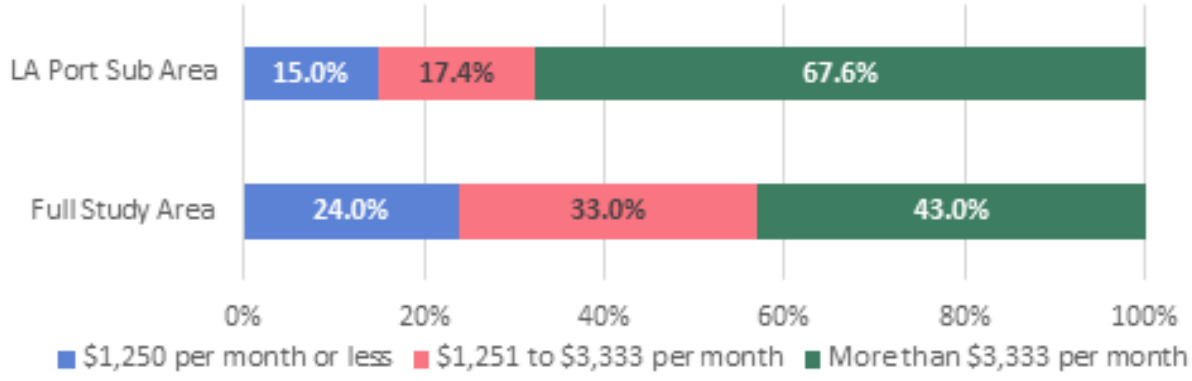
In a large California metro area like Los Angeles, it is very difficult for a family to survive on an income of only $15,000 per year. As discussed earlier, the annual income needed for self-sufficiency in Los Angeles County is over $72,000 for a family of four.[5]

One stakeholder we interviewed said, "The Port and the ILWU[6] claim that the Port is providing great jobs for local residents, but most ILWU members live well outside the communities of San Pedro and Wilmington." While we do not have data specifically on the ILWU workers, we can assess place of residence for workers in the full study area, as well as the Port of Los Angeles neighborhood subarea.

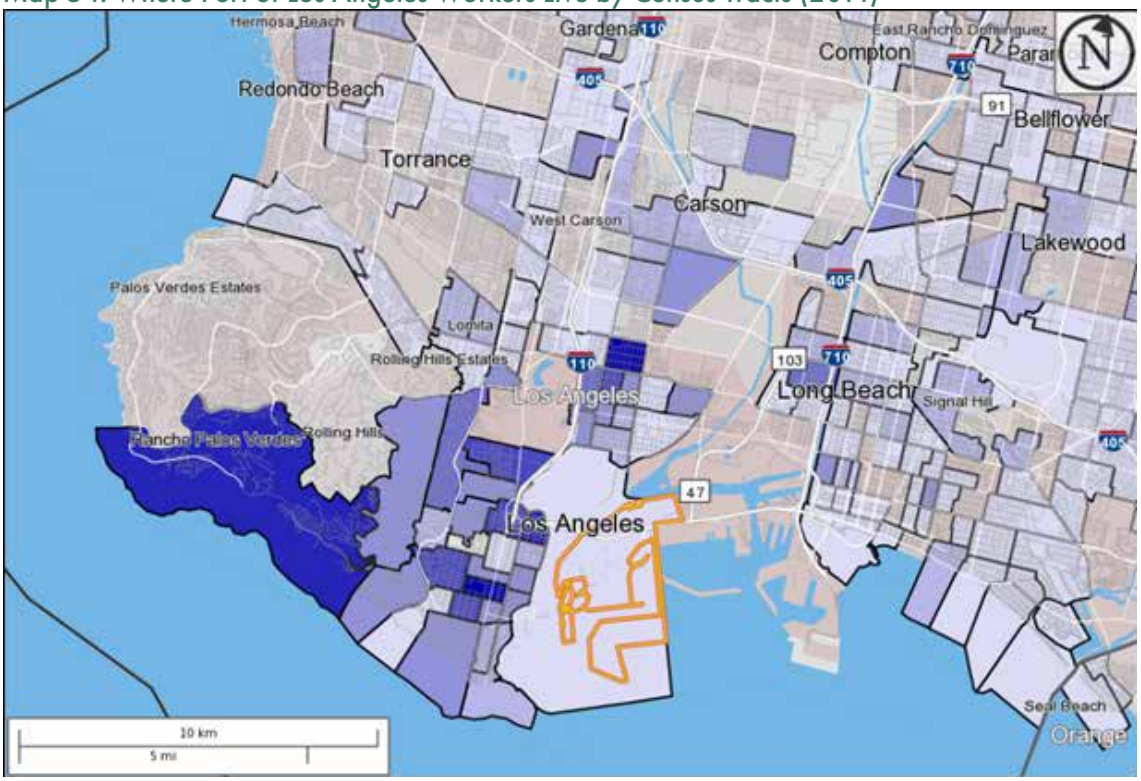
5 Los Angeles Department of Public Health. 2015. Community Health Assessment 2015. Available from http://www.publichealth.lacounty.gov/plan/docs/CHA_CHIP/LACDPH-CommunityHealthAssessment2015.pdf.

6 ILWU stands for the International Longshore and Warehouse Union which represents several Port employees.

Figure 27: Worker Earnings



Map 54: Where Port of Los Angeles Workers Live by Census Tracts (2014)



Source: U.S. Census. 2014. Longitudinal Employer-Household Dynamics Survey. Work Area Profile. http://onthemap.ces.census.gov/

Map 54 highlights Census tracts where Port of Los Angeles neighborhood subarea workers live. While it visually appears that many Port subarea workers live in Wilmington, San Pedro, and Rancho Palos Verdes, the actual number of workers who live in each Census tract is low.

Table 75: Top Ten ZIP Codes Where Full Study Area Workers Reside

Total All Jobs in the Full Study Area		32,708	100.0%
ZIP Code	City/Neighborhood	Count	Share
90731	Eastern San Pedro and the Port of Los Angeles Area	2,649	8.1%
90744	Wilmington	2,144	6.6%
90732	Western San Pedro	898	2.7%
90745	Carson	824	2.5%
90275	Rancho Palos Verdes	614	1.9%
90710	Harbor City	562	1.7%
90805	Western Long Beach	556	1.7%
90810	Western Long Beach	417	1.3%
90813	Western Long Beach	415	1.3%
90501	Torrance	342	1.0%
FULL STUDY AREA JOBS held by study area residents		5,691	17.4%

Source: U.S. Census. 2014. Longitudinal Employer-Household Dynamics Survey. Home Destination Report by ZIP Code. http://onthemap.ces.census.gov/

Table 75 presents the top ten ZIP codes where full study area workers. The three most common residential ZIP codes for these workers are zip codes in Wilmington and San Pedro (90731, 90744, and 90732). Of all workers in the full study area, 17.4% of them also live in the full study area. The overwhelming majority of people who work in the study area live outside of the study area.

Approximately 61,315 or 45.3% of the full study area's 135,327 residents are employed. Of the 32,708 jobs in the study area, residents hold 5,691 of them which means that only 9.3% of employed study area residents also work in the study area.

Residents hold 17.4% of all jobs in the study area. Of all the study area jobs, we estimate that approximately 12,372 of them are Port or Port-related (see Table 76). If we assume that resident workers are evenly distributed across all industry sectors, we can make a rough estimate that 2,153 Port and Port-related jobs in the study area are held by residents. This means that 3.5% of all employed study area residents work in Port or Port-related jobs in the full study area. This biggest takeaway of this analysis is that while almost all study area households bear the direct and indirect negative impacts from living near the Port and Port-related operations, very few households reap the economic benefits of Port or Port-related employment.

Table 76: Study Area Residents Who Benefit from Port- and Port-Related Jobs

Study Area Residents Who Are Employed in Port- and Port-Related Jobs	
All study area residents	135,327
Employed study area residents	61,315
People who live and work in the study area	5,691
9.3% of employed study area residents work in the study area (in any sector/job type) (=5,691/61,315)	
All Jobs in the study area	32,708
17.4% of all jobs in the study area held by study area residents (=5,691/32,708)	
Jobs in the study area that are "port or port-related"	12,372
"Port or port-related" jobs in the study area held by residents (estimate) (=12,372*17.4%)	2,153
3.5% of employed study area residents work in "port- or port-related" jobs in the full study area (=2,153/61,315)	

Source: U.S. Census. 2014. Longitudinal Employer-Household Dynamics Survey. Work Area Profile and Home Destination Report by ZIP Code. http://onthemap.ces.census.gov/

DATA SOURCES

Table 77 shows data sources used in the employment analysis.

Table 77: Data Sources for Analysis of Study Area Employment

Data	Year	Description	Source
Employment Density (overall and by sector)	2010	Employment density (jobs per square mile) overall and by sector	U.S. Census Bureau. Longitudinal Employment Household Dynamics Survey
Study Area and Port of Los Angeles Subarea Worker Characteristics	2014	Work Area Profiles Home Destination Reports	U.S. Census Bureau. Longitudinal Employment Household Dynamics Survey www.OnTheMap.Census.gov

RESIDENTIAL PROPERTY VALUES

CONTEXT

In addition to quality of life, health, and safety impacts of the on- and off-port impacts discussed throughout this report, there are also significant economic impacts. In our interviews with San Pedro and Wilmington stakeholders, many people lamented that the Port of Los Angeles' expansion hampered the ability of San Pedro's real estate market to thrive as a coastal beach community. One resident and physician shared that, "the impact of the [Port] expansions are much larger than benefits of the mitigations." Various studies have documented a negative economic impact of proximity to contaminated land, while other studies have documented the property value benefits of cleaning up contaminated brownfield sites.[7] A 2014 study documented that proximity to hazardous sites had varied effects depending on the hazard type.[8] For example, house price decreased for uses like agriculture, auto/truck repair, transportation corridors, and large warehouses, but increased with uses like auto dealers and dry cleaners (which could be seen as neighborhood assets). In an interview, a local real estate agent shared that, "industrial proximity has a detrimental effect on sale price, however, when people purchase in San Pedro or Wilmington, port and related businesses externalities disclosures are not required." Because of the lack of disclosures and easily accessible public information, buyers can only take into consideration hazardous facilities that are visually obvious.

NEXUS BETWEEN THE PORT OF LOS ANGELES AND OFF-PORT IMPACTS ON REAL ESTATE VALUES

The figure below poses a possible pathway between the on- and off-port's impacts on real estate values.

RESEARCH QUESTIONS AND METHODOLOGY

The goal of this analysis was to investigate associations between proximity to the port and off-port land uses and residential real estate values and explore the following research questions:

- How do residential property values differ in relationship to the Port and off-Port uses?
- What Port and off-Port uses are associated with residential property values?

7 Jackson TO. 2001. The Effects of Environmental Contamination on Real Estate: A Literature Review. Journal of Real Estate Literature. Volume 9. Number 2. http://www.real-analytics.com/literature_review_2.pdf

8 Wisinger P. 2014. Chemical Hazardous Sites and Residential Prices: Determinants of Impact. The Journal of Sustainable Real Estate Property Values and Environmental Factors Special Edition. Volume 6. Number 1. Available from http://www.rasimons.com/documents/articles/JOSRE_Volume6%20hog%20farm%20and%20focus%20group%20office%20bldg%20papers.pdf.

Figure 28: Pathway Diagram of Nexus Port and Off-Port Activity Impacts on Real Estate Values

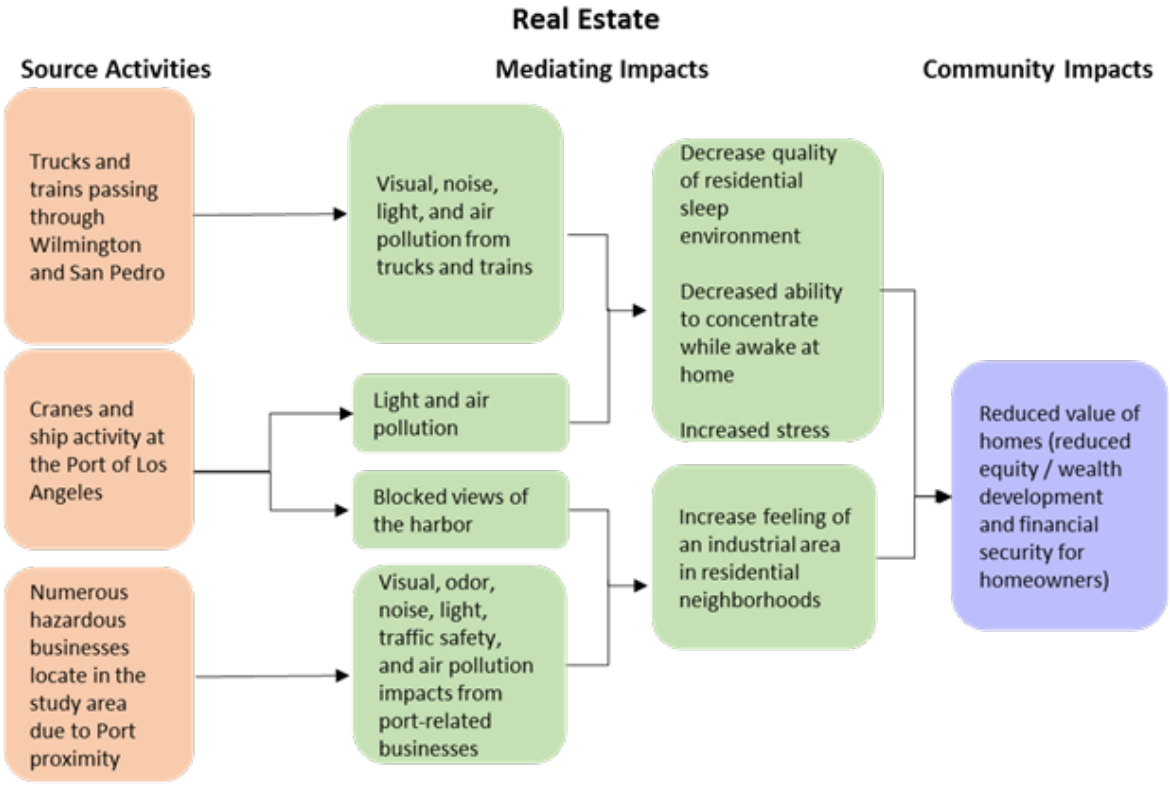


Table 78: Nexus Criteria for On- and Off-Port Impacts on Residential Property Values

Nexus Criteria for On- and Off-Port Impacts on Residential Property Values		
Criteria	Yes, No, Possibly, Unsure, N/A	Notes
1. Is the source an established Port or port-serving land use or activity?	Yes	The activity of the port and port-related businesses is not disputed
2. Is the impact a direct result of the Port or port-serving land use or activity?	Maybe	There are many other factors that also impact property values
3. Is the impact an indirect result of the port or port-serving land use or activity?	Yes	
4. Is the causal pathway logical and plausible?	Yes	
5. Is there generalizable empirical evidence to support the causal pathway?	Yes	
6. Is there a distance-based relationship to port or port-serving use or activity?	Yes	
7. Is there a temporal-based relationship to port development in the study area?	Unsure	Did not examine.
8. Is there a disproportionate burden/impact relative to the city/region?	Yes	
9. Is there local qualitative evidence to support the pathway?	Yes	Interviewees and HCBF board and staff

SPATIAL ANALYSIS

This analysis utilized Los Angeles County Assessor local tax roll data by parcel. While this does not have sale price,9 it does list the assessed date and value for almost every single parcel. To standardize data, we limited the analysis to the following criteria:

- Non-vacant parcels
- Residential single family homes in the study area
- Assessed record year of 2000 or more recent
- Not a condominium or condominium conversion
- Entry included a value for building square footage
- Entry included the number of bedrooms and bathrooms

To standardize home values, we identified the most common bedroom/bathroom combinations in the study area, which included three-bedroom, two-bathroom homes and two-bedroom, one-bathroom homes. We then applied the Federal Reserve inflation rates to each year to bring all the recorded values into 2014 U.S. dollars. Finally, we divided the value by square foot to obtain the cost per square foot in 2014 dollars. This process produced values for 3,367 three-bedroom, two-bathroom homes and 2,438 two-bedroom, one-bathroom homes. We then mapped the data at the parcel level. To improve readability, we assigned an average cost per square foot value to each Census block (where data was available). When summarizing data by neighborhood, we used the original parcel data to avoid taking an average of averages from the Census blocks.

9 We initially purchased the Los Angeles County Assessors Sales List, which is supposed to provide the three most recent sales dates and prices for all parcels. Unfortunately, the Sales List dataset only contains sales data for 0.61% of the parcels in the County. http://assessor.lacounty.gov/sales-list/

GEOGRAPHIC COMPARISON

We used the online heat map on www.Trulia.com to conduct a geographic comparison to assess the association between the sale cost per square foot and proximity to the beach. We compared the community of San Pedro to Hermosa and Redondo Beach.

REGRESSION ANALYSIS

To explore the effect of specific on- and off-port related activities and uses on property values, we conducted exploratory linear regression analysis using the cost per square foot measure from the Los Angeles County Assessor's data as the outcome/dependent variable. We included structural and neighborhood explanatory variables from the Assessor's data, such as year built; parcel size; three-bedroom, two-bathroom vs. two-bedroom, one-bathroom; and other variables created using ArcGIS, such as Wilmington vs. San Pedro; distance to nearest park; and distance to nearest beach.

We used ArcGIS to create 11 port-related explanatory variables. For each parcel, we used the ArcGIS "near tool" to define the unique "as the crow flies" distance in linear feet to: hazardous, polluting, or regulated businesses; port-related businesses; land zoned industrial or manufacturing; container, chassis, or truck storage yard; Port of Los Angeles boundary; refinery or the Rancho LPG facility; CA designated truck routes; and railroad lines. We used the ArcGIS spatial join tool to calculate the number of hazardous, polluting, or regulated businesses; port-related businesses; and storage yards. Using Stata 11 IC statistical software, we ran numerous regression models to find best fit. We removed variables that were not significant to a $p<0.5$ level to create our final model presented in the findings section.

FINDINGS

ASSESSOR VALUE/COST PER SQUARE FOOT SPATIAL ANALYSIS

The table below shows some summary statistics by neighborhood, such as average year built, average square feet, and average cost per square foot. Central San Pedro two-bedroom, one-bathroom has an average year built of 1927 compared to the three-bedroom, two-bathroom homes in East Wilmington, which have an average year built of 1965. While 1927 is very old for Los Angeles standards, it is important to remember that San Pedro and Wilmington area are some of the oldest developments in the County of Los Angeles.[10]

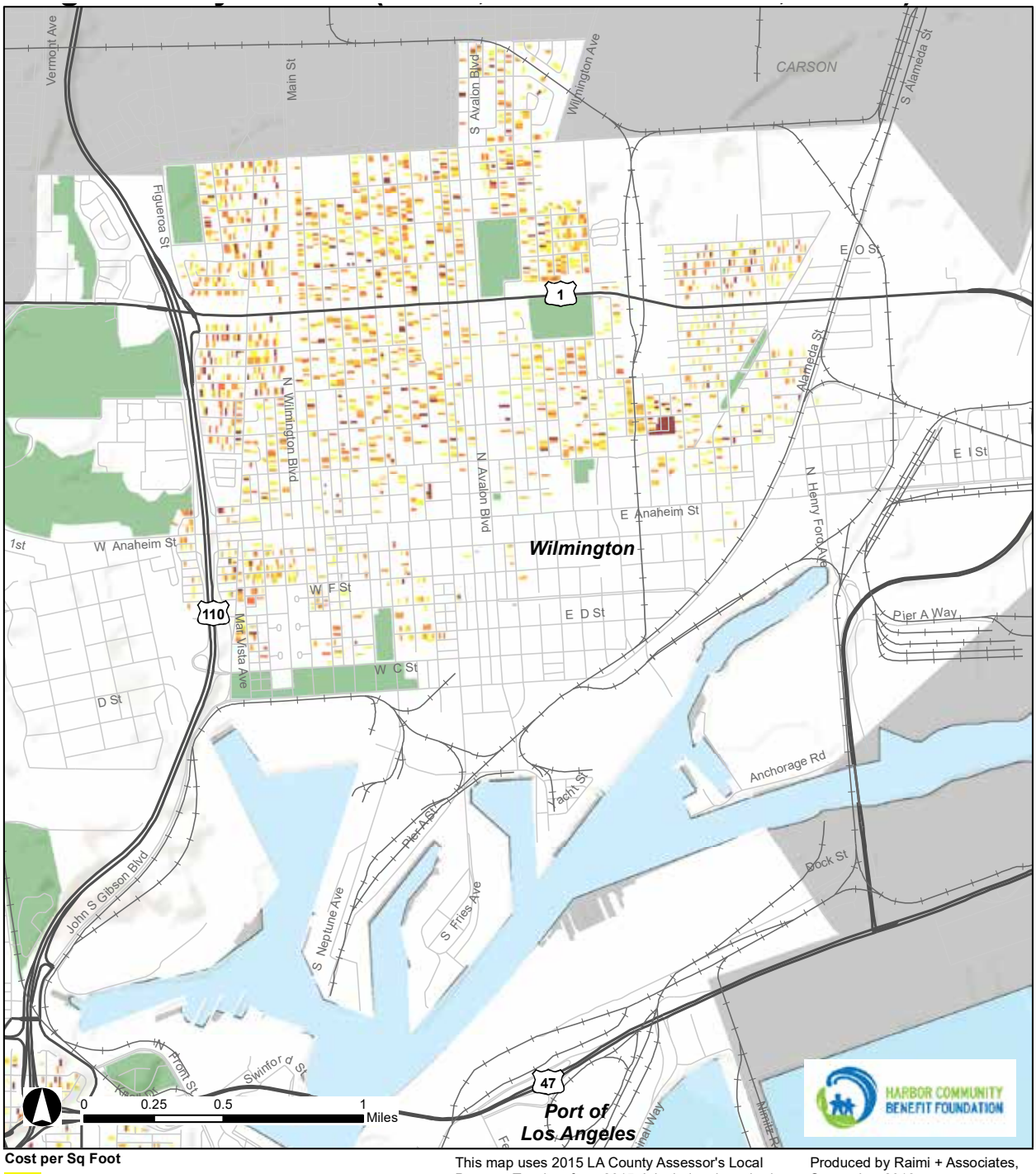
10 Port of Los Angeles. 2016. History. https://www.portoflosangeles.org/idx_history.asp

Table 79: Cost per Square Foot by Neighborhood

	2 bedroom 1 bathroom homes			3 bedroom 2 bathroom homes		
	Average Year Built	Average Square Feet	Ave. Cost Per Square Feet	Average Year Built	Average Square Feet	Ave. Cost Per Square Feet
Central San Pedro	1927	995	$259.64	1941	1,400	$216.33
Coastal San Pedro	1934	1,032	$338.01	1953	1,654	$281.19
Northwest San Pedro	1936	1,065	$319.83	1952	1,568	$268.97
Unincorporated San Pedro	1934	1,060	$292.56	1949	1,455	$218.98
East Wilmington	1932	923	$ 215.68	1965	1,450	$188.72
North Wilmington	1934	949	$241.03	1956	1,413	$194.21
South Wilmington	1936	946	$210.61	1957	1,376	$198.50
West Wilmington	1934	951	$246.22	1960	1,393	$200.53

Data source: County of Los Angeles Assessor's land use parcel data 2015

Map 55: Wilmington: Average Cost per Square Foot (in 2014 dollars)



Cost per Sq Foot

- Under $175
- $175 to $230
- $230 to $300
- $300 to $350
- Greater than $350

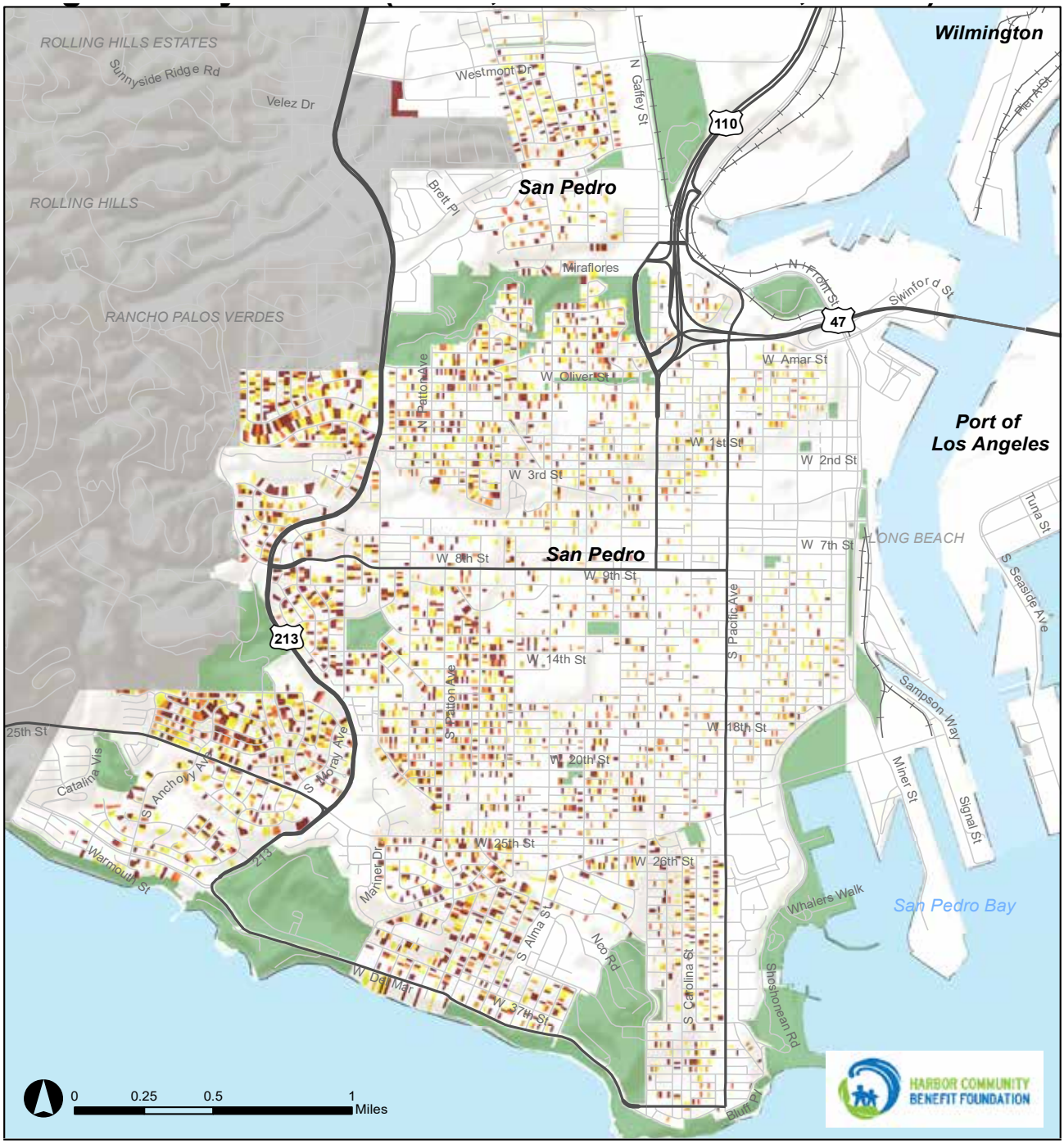
- Parks and Recreational Areas
- Interstates and Highways
- Streets
- Railroads

This map uses 2015 LA County Assessor's Local Property Tax data from 2015. It includes detatched single family 2 bed, 1 bath and 3 bed, 2 beth homes with record dates of 2000 or more recent. Assessed values were converted into 2014 dollars and divided by the building's square footage.

Produced by Raimi + Associates, September 2016.

Data Sources: City of Los Angeles, 2015; Interstates and Highways, 2008 Tele Atlas North America, Inc.; World Terrain Base, 2009 ESRI, 2010 U.S. Census, LA County Assessor 2015.

Map 56: San Pedro: Average Cost per Square Foot (in 2014 dollars)



Cost per Sq Foot

- Under $175
- $175 to $230
- $230 to $300
- $300 to $350
- Greater than $350

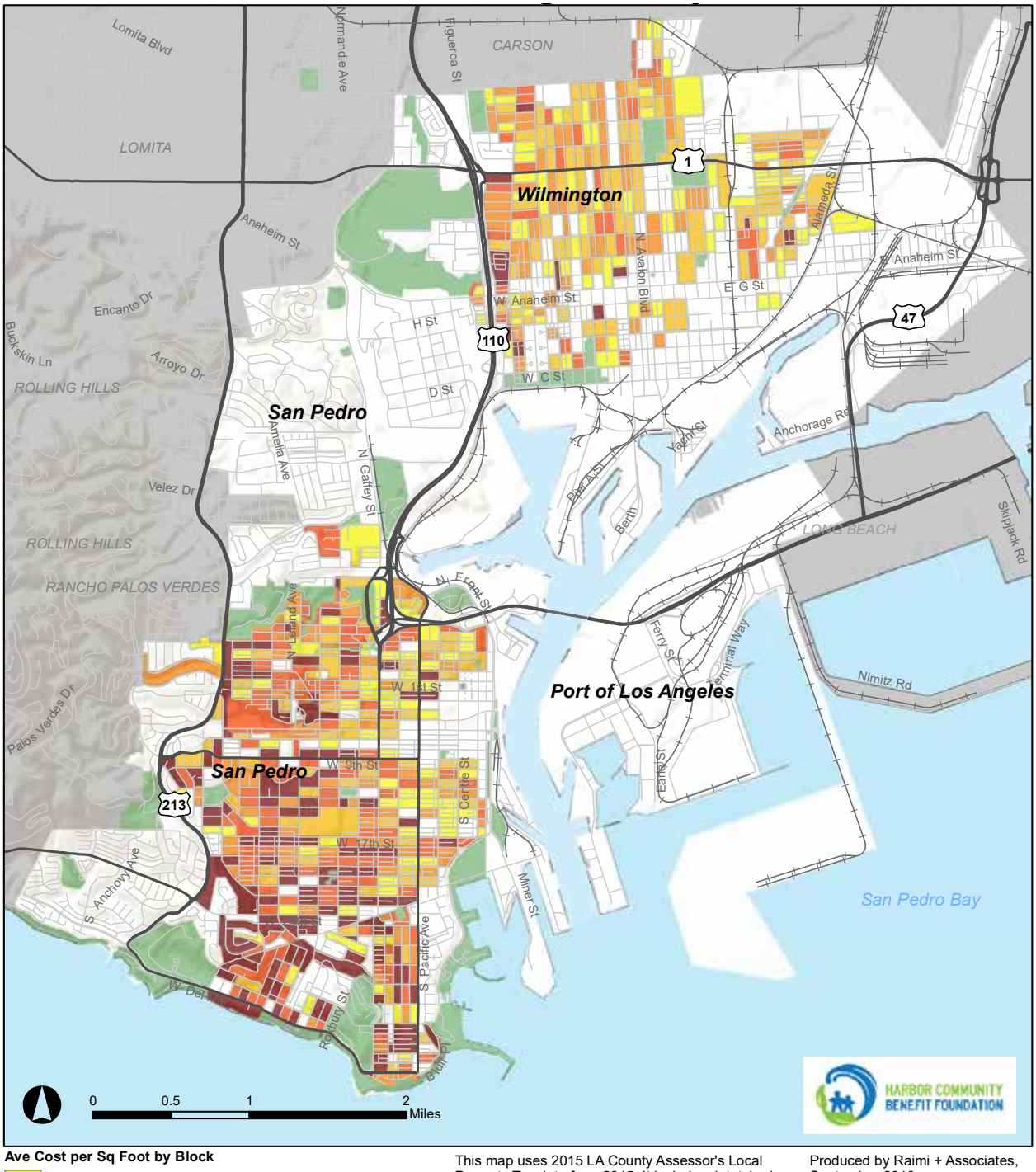
- Parks and Recreational Areas
- Interstates and Highways
- Streets
- Railroads

This map uses 2015 LA County Assessor's Local Property Tax data from 2015. It includes detatched single family 2 bed, 1 bath and 3 bed, 2 beth homes with record dates of 2000 or more recent. Assessed values were converted into 2014 dollars and divided by the building's square footage.

Produced by Raimi + Associates, September 2016.

Data Sources: City of Los Angeles, 2015; Interstates and Highways, 2008 Tele Atlas North America, Inc.; World Terrain Base, 2009 ESRI, 2010 U.S. Census, LA County Assessor 2015.

Map 57: Average Cost per Square Foot by Block (in 2014 dollars) 2 Bedroom and 1 Bathroom Single Family Homes



Ave Cost per Sq Foot by Block

- Less than $192
- $192 to $250
- $250 to $296
- $296 to $361
- Greater than $361

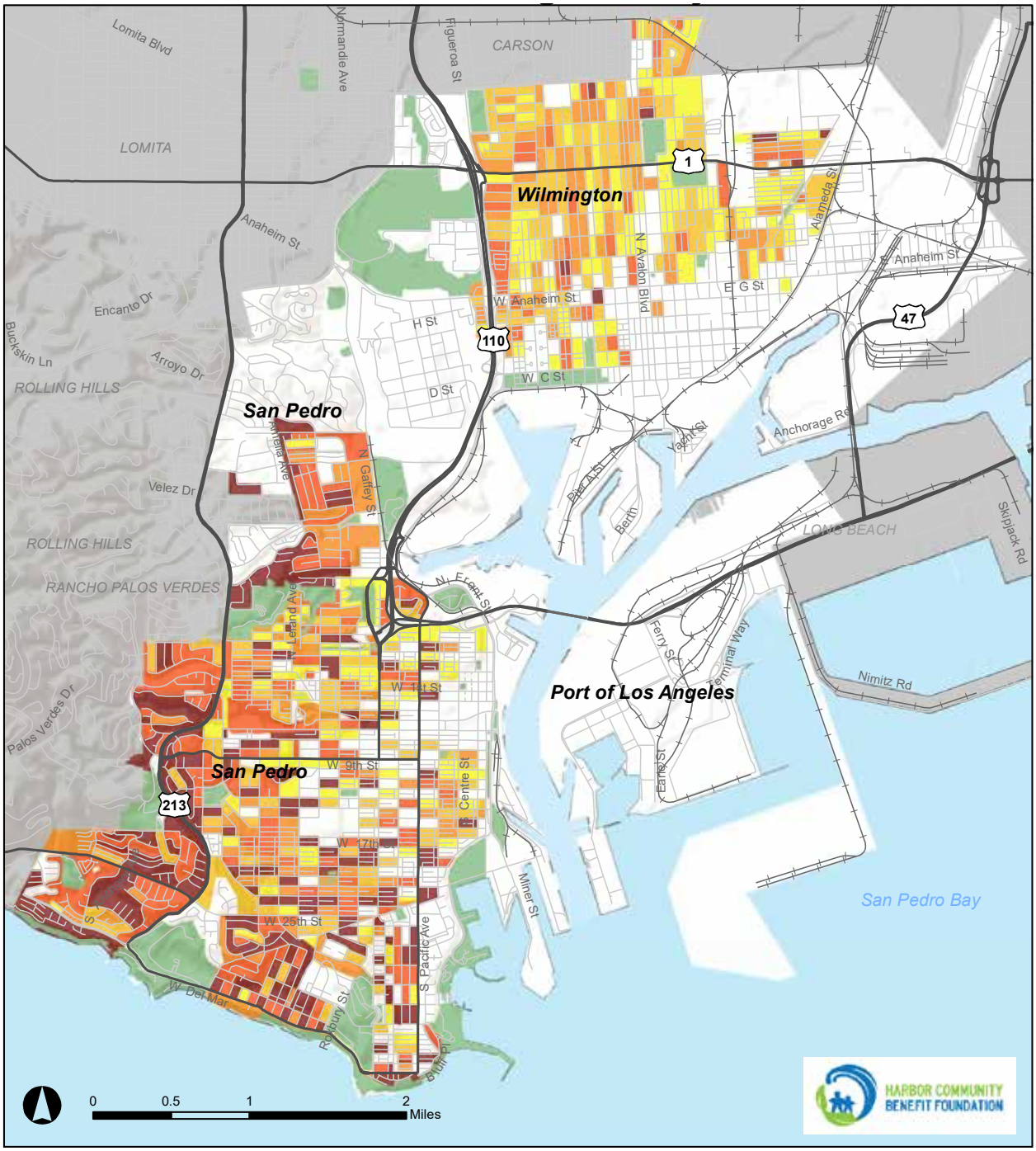
- Parks and Recreational Areas
- Interstates and Highways
- Streets
- Railroads

This map uses 2015 LA County Assessor's Local Property Tax data from 2015. It includes detatched single family 2 bed, 1 bath homes with record dates of 2000 or more recent. Assessed values were converted into 2014 dollars and divided by the building's square footage. Data cut points are based on quantiles.

Produced by Raimi + Associates, September 2016.

Data Sources: City of Los Angeles, 2015; Interstates and Highways, 2008 Tele Atlas North America, Inc.; World Terrain Base, 2009 ESRI, 2010 U.S. Census, LA County Assessor 2015.

Map 58: Average Cost per Square Foot by Block (in 2014 dollars) 3 Bedroom and 2 Bathroom Single Family Homes



Ave Cost per Sq Foot by Block

- Under $168
- $168 to $212
- $212 to $253
- $253 to $300
- Greater than $300

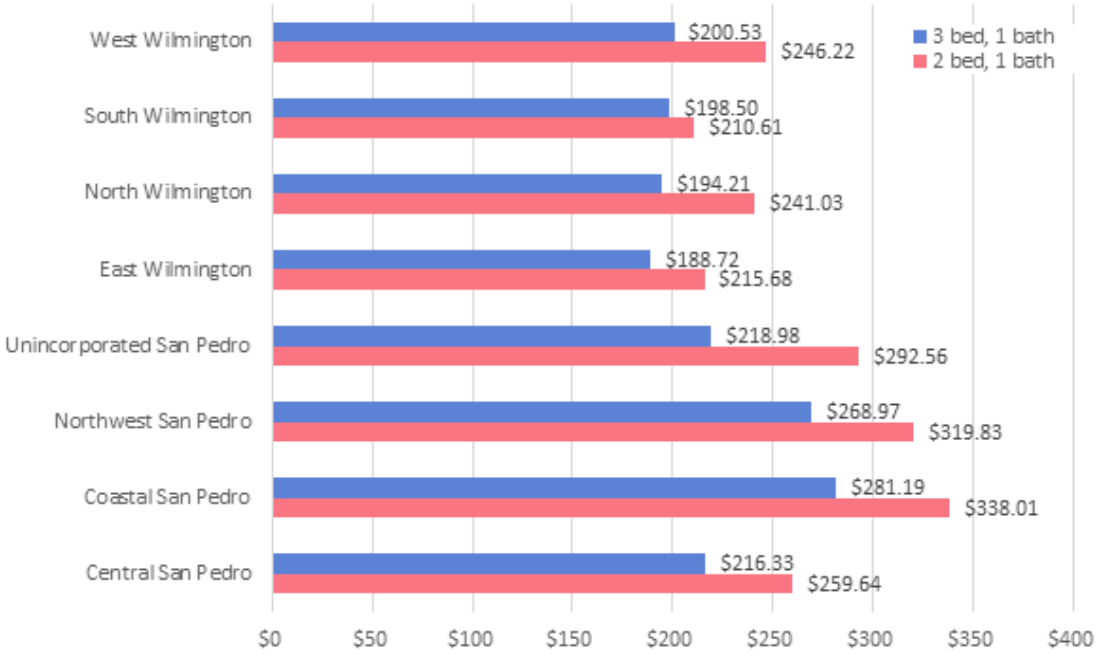
- Parks and Recreational Areas
- Interstates and Highways
- Streets
- Railroads

This map uses 2015 LA County Assessor's Local Property Tax data from 2015. It includes detatched single family 3 bed, 2 bath homes with record dates of 2000 or more recent. Assessed values were converted into 2014 dollars and divided by the building's square footage. Data cut points are based on quantiles.

Produced by Raimi + Associates, September 2016.

Data Sources: City of Los Angeles, 2015; Interstates and Highways, 2008 Tele Atlas North America, Inc.; World Terrain Base, 2009 ESRI, 2010 U.S. Census, LA County Assessor 2015.

Figure 29: Average Cost per Square Foot by Homes Type and Neighborhood



Data source: County of Los Angeles Assessor's land use parcel data 2015

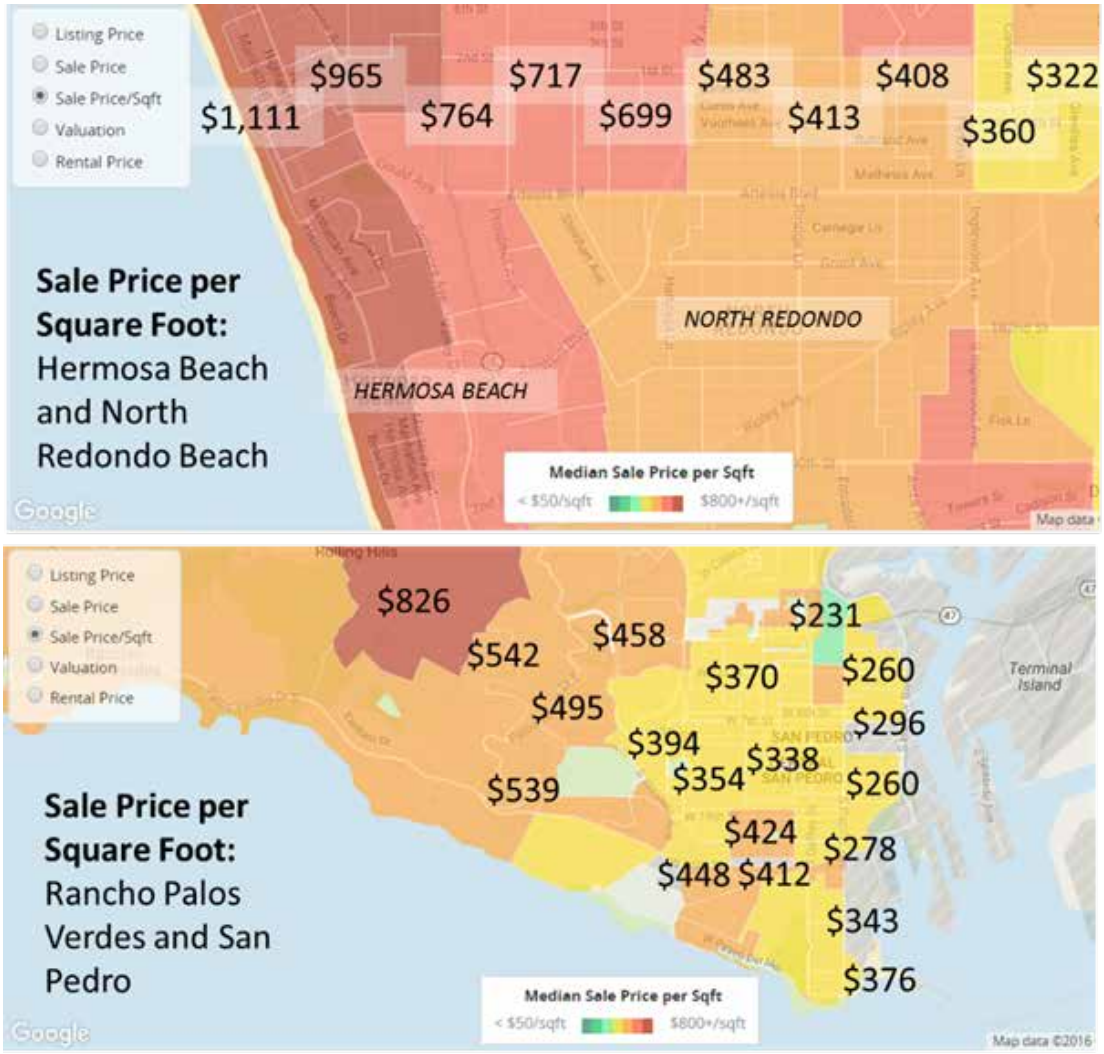
The maps of Average Cost per Square Foot by parcel and Census Block show a clear difference in values between the western and eastern sides of San Pedro. While real estate values in most beach communities increase as the distance between the beach and the property decreases, real estate values in San Pedro exhibit the opposite pattern near Cabrillo Beach, which faces the port. The real estate values near Wilder Annez and Royal Palms State Beach are similar to home values in the hills.

Coastal and Northwest San Pedro have the highest average costs per square foot of both two bedroom homes ($338.01 and $319.83 respectively). South Wilmington and East Wilmington have the lowest and second to lowest cost per square for two bedroom homes ($210.61 and $215.68 respectively). The cost by neighborhood ranking is the same for the three-bedroom sample. While many other factors about a neighborhood factor into value, there is a clear association between proximity to the port and off-port industrial uses and average cost per square foot.

SALE COST PER SQUARE FOOT GEOGRAPHIC COMPARISON

Through this analysis, we found that San Pedro's cost per square foot increases as distance to the shoreline increases. This relationship is the inverse to other coastal communities where proximity to the beach yields more expensive real estate values. While we were not able to replicate the above analysis for other regions, we were able to look up sale cost per square foot data for each subarea on Trulia.com's online heat map. The top of Map 59 shows the average sale cost per square foot for part of Hermosa Beach and North Redondo Beach, two coastal communities in Los Angeles County. The sale cost per square foot decreases as properties move further away from the coast. Conversely, the bottom map shows the average sales cost per square foot for San Pedro and Rancho Palos Verdes, where the cost increases as properties move further away from the coast. While views and potentially nicer homes play a part in this pattern, the beach neighborhoods outside of the study area are still much more valuable than San Pedro's hillside neighborhoods. This pattern may be partially explained by the proximity to the Port of Los Angeles' industrial activities and resulting aesthetic, water quality, and beach access.

Map 59: Comparative Sales Price per Square Foot by Community Map



Source: https://www.trulia.com/home_prices/California/Los_Angeles-heat_map/

EXPLORATORY REGRESSION ANALYSIS

As mentioned in the methodology section, we used spatial data created for other chapters of this study to assess their impact on residential property values (cost per square foot). The model has many limitations, but provides some initial insights in understanding how port- and port-related activities may impact property values. Table 80 shows the summary statistics for these variables overall, for San Pedro, and for Wilmington.

Table 80: Variable Summary Statistics

Variable Name	Variable Description	San Pedro Mean	Wilmington Mean	Overall Mean	Overall Std. Dev.	Overall Min	Overall Max
Dependent Variable							
costpersqf	Home cost per square foot (in 2014 dollars)	$285.19	$212.22	$260.36	$149.86	$8.76	$1,163.76
Structural and Neighborhood Explanatory Variables							
effectivey	Effective year built	1948	1954	1950	18.81	1900	2014
parcelsqft	Parcel size (square feet)	6,053	5,675	5,924	3,240	1,475	167,040
threebedtw	1 = three-bed, two-bath & 0 = two-bed, one-bath *(58% are three-bedroom, two-bathrooms)*	0.6	0.55	0.58	0.49	0	1
wilmington	Wilmington or San Pedro (34% of study parcels are in Wilmington)	N/A	N/A	0.34	0.47	0	1
parks	Distance to nearest park excluding beaches (feet)	1,043	1,233	1,108	687	0	3,252
beach	Distance to nearest recreational beach (feet)	5,721	24,482	12,106	9,502	0	30,102
Port-Related Explanatory Variables							
hazpolln	Distance to nearest polluting, hazardous, or regulated business (feet)	1,329	695	1,113	731	0	3,989
business	Distance to port-related business (feet)	735	451	638	448	0	3,078
industryzone	Distance to industrial or manufacturing zoned land (feet)	4,899	2,060	3,933	2,833	0	12,950
storageyrd	Distance to container, chassis, or truck storage yard (feet)	17,957	2,012	12,531	8,285	0	26,120
portdist	Distance to the Port of Los Angeles (feet)	7,695	5,819	7,057	3,273	264	16,591
refinerydi	Distance to a refinary or the Rancho facility (feet)	11,002	3,445	8,430	5,104	45	19,421
truck	Distance to CA state designated truck route (feet)	2,846	1,540	2,401	1,862	38	9,787
rail	Distance to railroad line (feet)	6,617	2,781	5,311	3,347	19	15,480
cnt_hazfac	# of polluting, hazardous, or regulated business within a 1/4 mile	2.1	8.6	4.3	6.9	0	46
cnt_portbz	# of port-related businesses within a 1/4 mile	3.4	11.5	6.2	7.1	0	43
cnt_stryrd	# of container, chasis, or truck storage yards within a 1/4 mile	0	2.6	0.9	4.2	0	95

While the final model only has an adjusted R-squared[11] of 0.0972 (meaning it only explains about 10% of the variation in the cost per square foot), it is still instructional to look at the results to inform future analysis. Table 81 presents the final model, where the main port-related explanatory variables include distance to land zoned industrial or manufacturing, distance to rail line, distance to storage yard, and number of port-related businesses within a quarter-mile.

This model supports the notion that proximity to the beach results in lower property values in the study area. All the port-related variables show a logical/expected positive or negative association with the outcome variable of cost per square foot, except for distance to land zoned industrial or manufacturing, which shows a negative association (increase in distance = decrease in cost per square foot). We created and tested a few interactive variables, but the negative association remained. We are unsure what is contributing to this outcome. Before this study, data did not exist on container, chassis, and truck storage yards in the study area. Thanks to the hard work of local community members' groundtruthing efforts, we can show that the presence of these storage yards has a real economic impact on homeowners in the study area.

11 "R^2 shows how well terms (data points) fit a curve or line. Adjusted R2 also indicates how well terms fit a curve or line, but adjusts for the number of terms in a model. If you add increasingly useless variables to a model, adjusted r-squared will decrease. If you add more useful variables, adjusted r-squared will increase." http://www.statisticshowto.com/adjusted-r2/

Table 81: Cost per Square Foot Explanatory Linear Regression

# of Observations	5,780			R-squared		0.0986
				Adj R-squared		0.0972
	Coefficient Estimates	**Std. Err.**	**t**	**P>t**	**[95% Conf. Interval]**	
Effective Year Built	0.5767433	0.12811	4.5	0	0.3256	0.827887
Parcel Size (Square Feet)	0.0016086	0.00060	2.67	0.008	0.000427	0.002791
3-bed, 2-bath (dummy variable)	-61.71704	4.91997	-12.54	0	-71.362	-52.0721
Wilmington (dummy variable)	-31.24144	15.05386	-2.08	0.038	-60.7527	-1.73022
Distance to Beach (feet)	0.0047815	0.00115	4.15	0	0.002525	0.007038
Distance to Land Zoned Industrial or Manufacturing (ft)	-0.0091253	0.00292	-3.13	0.002	-0.01485	-0.0034
Distance to Rail Line (feet)	0.0088669	0.00321	2.76	0.006	0.002572	0.015162
Distance to Container, Chassis, or Truck Storage Yard (ft)	0.0075859	0.00171	4.44	0	0.004235	0.010937
Number of Port Related Businesses within a 1/4 Mile	-0.961301	0.36195	-2.66	0.008	-1.67086	-0.25174
Intercept	-985.7424	248.38510	-3.97	0	-1472.67	-498.814

Table 82 presents adjusted coefficients and their associated effects in plain language. Because this model has a low adjusted R-squared (low explanatory power), these numbers are not proven fact, but rather, instructive in understanding strength of association and directionality.

Table 82: Explanation of Variable Effects

Explanation of Port-Related Variable Effects				
	Coefficient Estimates	Multiplier	Adjusted Coefficient	Variable Effect
Effective Year Built	0.5767433	10	$5.77	For every 10 years newer a house is, the cost per square foot increases by $5.77
Parcel Size (Square Feet)	0.0016086	1,000	$1.61	For every 1,000 feet larger a parcel is, the cost per square foot increases by $1.61
3-bed, 2-bath (dummy variable)	-61.71704	1	-$61.72	3-bedroom, 2-bathrooms have an average cost per square foot that is $61.72 lower than 2-bedroom, 1-bathroom
Wilmington (dummy variable)	-31.24144	1	-$31.24	The cost per square foot of homes in Wilmington are $31.24 lower than homes in San Pedro
Distance to Beach (feet)	0.0047815	1,000	$4.78	For every 1,000 feet further from the beach, the cost per square foot increases by $4.78
Distance to Land Zoned Industrial or Manufacturing (ft)	-0.0091253	1,000	-$9.13	For every 1,000 feet further from land zoned industrial or manufacturing, the cost per square foot decreases by $9.13
Distance to Rail Line (feet)	0.0088669	1,000	$8.87	For every 1,000 feet a house is further from a rail road line, the cost per square foot increases by $8.87
Distance to Container, Chassis, or Truck Storage Yard (ft)	0.0075859	1,000	$7.59	For every 1,000 feet further from a storage yard, the cost per square foot increases by $7.59
Number of Port Related Businesses within a 1/4 Mile	-0.961301	1	-$0.96	For every additional port-related businesses within a 1/4 mile, the cost per square foot decreases by $0.96

One of the biggest limitations of this model is that it uses County of Los Angeles Assessor cost per square foot data instead of the sale cost per square foot, which was not available. Future modeling may be more accurate with the sale price as the outcome variable. Future models should also include additional variables related to house structure quality, interior quality, block demographics and poverty, school quality, views/direction, traffic speed and volumes on street, as well as testing non-linear models. Additionally, R-squared would likely increase if communities far beyond the Port were included. Since Port and Port-related uses affect all homes in the study area, the strength of our statistical effects is diluted due to the reduced variation range.

DATA SOURCES

We explain Port-related explanatory variables in detail in previous chapters.

Table 83: Data Sources

Data	Year	Description	Source
Assessor's land use parcel data	2015	Assessment records of real and personal property in the County of Los Angeles, as well as a GIS Tax Parcel Base Map	Los Angeles County Office of the Assessor
Trulia	2016	Average sale cost per square foot by subarea	Trulia

7. RECOMMENDATIONS

RECOMMENDATIONS

OVERVIEW

While we based the study methodology and analysis on objective data, the Harbor Community Benefit Foundation is interested in using the study's findings to guide investments and action to improve the health, environment, and overall quality of life for the Wilmington and San Pedro community members. To create this recommendations list, we solicited the help of the HCBF board and external technical expert reviewers. We asked people to use the following questions to guide their review:

- Based on the study results of this study, how should the report/findings be used for positive change?
- Do the findings provide any basis to advocate for changes to specific state, regional, or local policies, practices, or programs?
- Do the findings provide any basis for community groups/the foundation to take actions into their own hands? What types of investments of time or resources would be most beneficial?
- Who would be interested in the findings of this study? What would be the best way to share this information with various stakeholders (public agencies, elected officials, businesses, residents, advocates, etc.)?

We received comments back from four external expert reviewers and three board members in addition to the previous recommendations from the Ad Hoc Advisory Committee members. We also included recommendations from stakeholder interviewees and logical conclusions from the analysis. We anticipate that the table of recommendations will be a living document that HCBF can update after this study's publication date.

We present recommendations in a table with the following column headings:

- #: Sequential numbering for easy discussion and referencing.
- Recommendation: Description of the proposed recommendation.
- Study Chapter: Overall (multi-topic) or name of Chapter 2 to 6.
- Type of Action: Enforcement of Existing Laws/Policies; Program/Practice; Legislation/Policy; Data/Research; Communications/Engagement/Education; Physical Environment/Infrastructure; and Investment/Funding (can select more than one).
- Additional Notes/Information: Websites, plans, programs, or agencies to support implementation.

The table groups recommendations by chapter, but within each chapter, there is no ordering or prioritization scheme. HCBF intentionally did not include a "lead" or "responsible party" since all sectors (public, private, non-profit, philanthropy, academic, etc.) can collaborate to implement these recommendations for a brighter future in the harbor communities. Future Recommendations Table iterations could include "responsible party," "partners," "decision-maker," timeline, and resources.

RECOMMENDATIONS TABLE

#	Recommendation	Study Chapter	Type of Action							Additional Notes/Information
			Enforcement of Existing Laws/ Policies	Program/ Practice	Legislation/ Policy	Data/ Research	Communications/ Engagement/ Edu.	Physical Environment/ Infrastructure	Investment/ Funding	
1	Shift local foundation/grant funding priorities to address impacts and needs identified in this report.	Overall		X					X	
2	Train grantees and community stakeholders to discuss the study findings with residents and other community institutions to prioritize neighborhood improvements.	Overall					X			
3	Use the report findings to educate local, state, and federal agency staff and elected officials about neighborhood disparities that cause health inequities.	Overall					X			
4	Prioritize strategies and measures that can address multiple impacts.	Overall	X	X	X				X	• For example, enforcing truck routes and parking restrictions in the study area would address multiple concerns around increased collisions and perceptions of public safety.

#	Recommendation	Study Chapter	Type of Action							Additional Notes/Information
			Enforcement of Existing Laws/ Policies	Program/ Practice	Legislation/ Policy	Data/ Research	Communications/ Engagement/ Edu.	Physical Environment/ Infrastructure	Investment/ Funding	
5	Make data from this study publicly available. • Publish GIS shapefiles online for easy download • Create stand-alone education map applications that would allow users to download information about particular neighborhoods • Partner with academic partners to manage and house data for public use	Overall				X	X			• https://data.lacity.org/ • https://www.communitycommons.org/ • http://www.healthycity.org • http://geohub.lacity.org • http://opendata.arcgis.com
6	Partner with local colleges or universities (public health, public policy, business, environmental studies, business, urban design/city planning, engineering, etc.) to expand the study's research and identify innovative solutions for impacts raised in the report. The report data and findings can be used as the basis for experiential learning/ studio classes.	Overall				X	X			• UCLA, USC, Occidental, Cal Poly Pomona, Cal Tech, Cal State Long Beach, Cal State LA, Cal State Dominguez Hills, Pepperdine, Claremont Colleges, etc.
7	Leverage funding from the Transformative Climate Communities program to increase neighborhood resources and benefits in San Pedro and Wilmington.	Overall		X						• The state is proposing to invest $35 million in Los Angeles in the next year. • http://sgc.ca.gov/Grant-Programs/Transformative-Climate-Communities-Program.html
8	When the Port, the City, or Port-related businesses propose large infrastructure improvement projects, use the study's findings to incorporate mitigation measures and community benefits into the planned infrastructure improvements.	Overall						X	X	

#	Recommendation	Study Chapter	Type of Action							Additional Notes/Information
			Enforcement of Existing Laws/ Policies	Program/ Practice	Legislation/ Policy	Data/ Research	Communications/ Engagement/ Edu.	Physical Environment/ Infrastructure	Investment/ Funding	
9	Create fact sheets and/or infographics that communicate report findings in a community-friendly format (including bi-lingual materials). These products can target different audiences such as elected officials, residents, and study area workers.	Overall					X			
10	Reinstate the Port Community Advisory Committee as a standing committee of the Port of Los Angeles Board of Harbor Commissioners to assess impacts of Port developments on the surrounding communities, make recommendations to ensure that impacts are sufficiently addressed, and to serve as community advisors to the Port of Los Angeles.	Overall		X	X		X			• http://sanpedrocity.org/2013/05/dismantling-the-pcac
11	With the assistance from community residents and organizations, identify and implement sufficient mitigation strategies that could start to address some of the identified impacts from Port and Port-related activities, especially in the highest impacted areas. Home, school, and community center mitigation strategies could include retrofitting buildings with HEPA filtration systems and installing double pane windows and blackout curtains.	Overall		X			X		X	
12	Submit applications to add selected San Pedro and Wilmington streets to the City of Los Angeles' Great Streets Initiative. Ensure that Gaffey Street's existing participation in the program considers this study's findings.	2. Road & Rail Mobility, Safety, & Infrastructure	X	X				X	X	• http://lagreatstreets.org/gaffey

#	Recommendation	Study Chapter	Type of Action							Additional Notes/Information
			Enforcement of Existing Laws/ Policies	Program/ Practice	Legislation/ Policy	Data/ Research	Communications/ Engagement/ Edu.	Physical Environment/ Infrastructure	Investment/ Funding	
13	Share the study's walkability, collision, and access to schools and parks data with Safe Routes to School programs, Vision Zero, and Mobility 2035 staff to help implement policies, programs, and infrastructure investments for safer and better walking and bicycling collisions.	2. Road & Rail Mobility, Safety, & Infrastructure	X	X	X			X	X	• http://visionzero.lacity.org • https://planning.lacity.org/documents/policy/mobility-plnmemo.pdf • http://saferoutes.lacity.org
14	Work with law enforcement, transportation agencies, and the Port of Los Angeles to review and assess Wilmington and San Pedro's truck routes to limit or ban truck access on certain streets.	2. Road & Rail Mobility, Safety, & Infrastructure	X		X					• California Department of Transportation, Los Angeles Department of Transportation
15	Improve the enforcement of and existing policies and regulations related to environmental pollution and public safety, such as truck idling, truck routes, truck parking, and enforcement of health and environmental regulations.	2. Road & Rail Mobility, Safety, & Infrastructure	X		X					• CARB, South Coast Air Quality Management District, Los Angeles Department of Health, Los Angeles Police Department
16	Invest in barriers, warning lights, and public safety signage for all at-grade rail crossings in San Pedro and Wilmington. A smaller number of sites should be prioritized for an overpass or underpass to avoid the most problematic intersections in high traffic areas near residential populations. Data on vehicle collisions and noise impacts could be used to inform prioritization process.	2. Road & Rail Mobility, Safety, & Infrastructure						X	X	• Federal Railroad Administration, California Department of Transportation, Los Angeles Department of Transportation

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			Enforcement of Existing Laws/ Policies	Program/ Practice	Legislation/ Policy	Data/ Research	Communications/ Engagement/ Edu.	Physical Environment/ Infrastructure	Investment/ Funding	
17	Collaborate with local CBOs to conduct a more thorough analysis of commercial trucks (truck counts, parking, idling, etc.) on neighborhood streets (streets not designated as truck routes) using community residents and groundtruthing techniques. Share photos, resident narratives, and impact maps with local elected officials, Harbor Commissions, Neighborhood Councils, and transportation agencies for education/ engagement and enforcement purposes.	2. Road & Rail Mobility, Safety, & Infrastructure				X	X			
18	Designate at-grade railroad crossings in Wilmington and San Pedro as "Quiet Zones" to minimize noise impacts of surrounding nearby residential areas. In quiet zones, railroads have been directed to cease the routine sounding their horns when approaching public highway-rail grade crossings, except during emergency situations. Local jurisdictions desiring to establish a quiet zone are first required to mitigate increased risk caused by the absence of a train horn.	2. Road & Rail Mobility, Safety, & Infrastructure			X					• More information on Quiet Zones from the Federal Railroad Administration: https://www.fra.dot.gov/Page/P0889 and https://www.fra.dot.gov/eLib/details/L04309
19	Prioritize areas for land use changes and other actions through the City's Green Zone Initiative using the report's data on mismatched land uses and hazardous and polluting sources and population density data and sensitive receptors.	3. Land Use		X	X					
20	Leverage funding from the Goods Movement Emissions Reduction program to reduce air pollution emissions and health risks from freight movement.	2. Road & Rail Mobility, Safety, & Infrastructure		X						• https://www.arb.ca.gov/bonds/gmbond/gmbond.htm

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21	Institute positive change in current zoning code to better service the community by increasing health-supporting land uses and limiting unhealthy ones. For example, zoning code could be updated to limit the density and location of alcohol and tobacco outlets.	3. Land Use			X					
22	Update San Pedro and Wilmington-Harbor City Community Plans to address mismatches in land use and drive localized development patterns in the study area towards increasing access to neighborhood goods and resources.	3. Land Use			X			X		
23	Conduct further quantitative analysis of and engage the residents living in the "residential islands" that are mostly surrounded by heavy industrial uses. Assess risks of living there and identify and implement mitigations.	3. Land Use				X	X			
24	Share this analysis and these data files with the Los Angeles County Assessor and the City of Los Angeles' Planning Department so they can reconcile mismatches.	3. Land Use				X				
25	Work with the Port and City to confirm the location and status of abandoned buildings and vacant property and ensure they are all registered.	3. Land Use	X			X				
26	Identify (safe/not-contaminated) vacant buildings or properties that can be used for community pop-up events or temporary public spaces (pop-up parks, container community garden, etc.)	3. Land Use		X			X	X		

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27	Work with County Public Health, LA Dept. of City Planning, and local businesses to reduce the impact of storage yards on residents (i.e., shut down illegal operations, implement safer and more respectful operations practices.	3. Land Use	X	X			X	X		
28	Work with the Port to identify ways to improve the water quality at Cabrillo Beach for the safety of humans and sea/beach animals.	4. Hazardous and Polluting Land Uses	X			X	X		X	
29	Encourage decision makers to use the combined data showing hazardous and polluting land uses to inform future development/land use/permitting decisions.	4. Hazardous and Polluting Land Uses	X			X				
30	Work with sensitive land uses (Senior Services, Recreation Programs & Facilities, Schools, Child Care Facilities, and Health Care Facilities to identify and implement creative exposure mitigations.	4. Hazardous and Polluting Land Uses					X	X		
31	Prevent future sensitive land uses from locating near hazardous and polluting sites.	4. Hazardous and Polluting Land Uses	X	X		X				
32	Share this study/data with the Los Angeles Food Policy Council.	4. Hazardous and Polluting Land Uses				X	X			
33	Increase the number of recreation programs and facilities in Wilmington.	4. Hazardous and Polluting Land Uses								

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34	Increase access to healthy foods (including community gardens and farmers' markets) through multiple policy and programmatic fronts, such as Healthy Corner Store Initiative or changes to the City's zoning code.	5. Access to Neighborhood Goods & Services		X	X					
35	Increase the number of and access too medical facilities and health care clinics.	5. Access to Neighborhood Goods & Services		X				X	X	
36	Support the creation of additional licensed child care facilities in the study area.	5. Access to Neighborhood Goods & Services		X				X	X	
37	Conduct a more detailed and robust analysis of real estate and property value impacts in the study area due to proximity to the Port and/or hazards polluting land uses. Separate analysis will need to be conducted for San Pedro and Wilmington as these most likely experience different types and degrees of impacts from Port and Port-related activities.	6. Employment & Real Estate				X				• Obtain updated/accurate sales data from the County Assessor for this analysis.

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38	Classify truck drivers as employees of the Port of Los Angeles or of port-related businesses. In addition to greater worker protections and increased wages and benefits to the drivers, the trucks will become the responsibility of the Port to maintain. These will ultimately improve compliance with environmental regulations, truck routes, and street parking, which will hopefully result in decreased impacts from trucks in San Pedro and Wilmington.	6. Employment & Real Estate		X					X	• www.JusticeForPortDrivers.org • http://www.cluejustice.org/campaigns_ports • https://changetowinn.app.box.com/s/2kgbbx5e4f9wok50gl5z
39	Ensure implementation and enforcement of local hire minimums. The Port of Los Angeles Project Labor Agreement outlines the hiring minimums of local resident workers and disadvantaged workers.	6. Employment & Real Estate	X	X						• https://www.portoflosangeles.org/business/pla.asp