Analysis of Air Quality in Pacoima

URBS 440: Community Based Urban Design

Fall 2024

CALIFORNIA STATE UNIVERSITY NORTHRIDGE

Department of Urban Studies and Planning

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Analysis of Air Quality in Pacoima

URBS 440: Community Based Urban Design
Fall 2024

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Acknowledgments

This report would not have been possible without the invaluable support and collaboration from several individuals and organizations. First and foremost, we would like to thank Pacoima Beautiful, whose commitment to environmental justice and community well-being has been integral to the success of this project and a continuous inspiration to all of us. Their leadership and vision have provided a clear direction for our research and we are sure their work will continue having positive impacts on the Pacoima community.

We also appreciate the Department of Urban Studies and Planning at California State University, Northridge (CSUN), for facilitating this collaboration and always supporting our efforts to apply academic knowledge to real-world community challenges.

We extend a special recognition to the South Coast Air Quality Management District (SCAQMD) for their guidance at different stages of the project, which was critical for understanding the air quality conditions in Pacoima, its potential consequences, and the different ways we could address them.

Finally, we extend our gratitude to the residents of Pacoima for sharing their experiences, concerns, and insights, which have shaped the findings and recommendations in this report.

Executive Summary

This report is the first part of a year-long collaboration between Pacoima Beautiful and CSUN students. Here, we present the results of the first phase of this project, which comprises an analysis of the current air quality conditions in Pacoima, with the aim of identifying pollution sources and understanding their impact on public health. The project, a partnership between Pacoima Beautiful and the CSUN Department of Urban Studies and Planning, addresses the community's longstanding concerns about air pollution, particularly from industrial emissions, traffic, and nearby airport. Our research highlights that Pacoima experiences some of the highest pollution levels in the region, leading to health issues such as asthma, respiratory diseases, and cardiovascular conditions, among other concerns.

The report presents an in-depth analysis of local air quality conditions, with a focus on the source and distribution of pollutants and the communities most affected by them. It also includes a discussion on the environmental justice challenges faced by Pacoima residents, as well as the role land use, industrial and transportation infrastructure in exacerbating these problems. The students conducted research using secondary data to map demographic data as well as sources of pollution in Pacoima. The overarching goal of this analysis is to facilitate this information to Pacoima residents, so they can be informed and make decisions for the future of their community. Eventually, Pacoima beautiful and community members will work together to draft a Climate Action Plan depicting the community decisions on different ways to address this problem and mitigate the negative effects of air pollution.

Through this collaboration, we aim to empower Pacoima residents with the knowledge and tools needed to advocate for better air quality and overall health, while also providing actionable solutions to create a more sustainable and resilient community.

Introduction & Background

Introduction

This project is a collaborative endeavor betweenthe organization Pacoima Beautiful and students of the department of urban studies and planning at California State University, Northridge. The overarching goal of this project is to provide the residents of Pacoima with reliable and practical information about the current air quality conditions in Pacoima, to understand where the sources of air pollution are located, to explore how the community perceives these conditions and their health effects, and to provide recommendations to mitigate air pollution and health challenges. This document represents a first step of a comprehensive project that aims to monitor and evaluate air quality in Pacoima over a longer period of time.

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Pacoima Beautiful

Pacoima Beautiful, a non-governmental organization that aims to raise awareness and drive impactful actions to enhance air quality in Pacoima, has invited our classroom to participate in the development of an analysis of current conditions of air quality in the neighborhood of Pacoima. To do this, our class conducted extensive research on the most crucial pollutants in the neighborhood of Pacoima as well as an overall analysis of the San Fernando Valley, and implemented surveys to understand the perception and awareness of the community toward these pollutants.

This exercise is part of a larger project currently being conducted by Pacoima Beautiful. They are currently collaborating with the South Coast Air Quality Management District (SCAQMD), a regulatory agency responsible for improving air quality in parts of Los Angeles and surrounding areas. With the support of the SCAQMD, Pacoima Beautiful will deploy high-quality, low-cost air quality sensors in the community collect data, and then conduct community meetings to investigate different ways in which this problem may be addressed. The information collected in this document is aimed at informing the community about current conditions, and to empower and support the community in the creation of a comprehensive Community Action Plan to change the trajectory of development in their community.

The neighborhood of Pacoima is composed of a high percentage of Spanish speaking households. The students are aware that the choice of language will be an important component in the delivery and presentation of this project to the community. Because of this, all the presentations at community meetings were conducted in Spanish, or in English and Spanish. The students understand the importance of making the project accessible, and while we will be giving some recommendations, we are conscious about the need to prioritize the livelihood of Pacoima residents over any other goal. The project and the team also embrace Pacoima Beautiful's values of equity, collaboration, diversity, power-with, and integrity. The

students' work is guided by these principles, including action items such as treating everyone fairly, valuing different perspectives, working together with community members and organizations, involving the community in decision-making, and acting transparently. Additionally, we must ensure our communication is clear and inclusive, so that everyone can understand and participate in the project. Embracing these values will help us create a meaningful and effective project that truly benefits the Pacoima community.

The long-term objective of this project is to develop a Community Action Plan informed by collected data and community input. This initiative provides a valuable opportunity to address real-world challenges by engaging directly with the neighborhood and broader community of Pacoima, fostering collaborative problem-solving and solution-oriented thinking, and promoting critical analysis and the development of sustainable, community-driven solutions.

Background

The neighborhood of Pacoima

Pacoima is a vibrant and culturally rich neighborhood located in the northeastern San Fernando Valley of Los Angeles, California. Known for its strong sense of community, Pacoima is home to a predominantly Latino population, with a high percentage of Spanish-speaking households. The neighborhood has a mix of residential, commercial, and industrial zones, which contribute to various environmental challenges, including air pollution and limited access to green spaces. Pacoima is bordered by the neighborhoods of Arleta, San Fernando, and Lake View Terrace, with major transportation routes like the 5 and 118 freeways nearby. While industrial areas and high traffic volumes contribute to air quality concerns, the neighborhood also features community parks and schools that serve as vital community hubs. Despite these issues, Pacoima boasts a rich cultural heritage, reflected in local murals, community events, and longstanding family-owned businesses. The community's resilience is evident in its active civic engagement and efforts to address social and environmental injustices. Understanding the demographic and environmental context of Pacoima and its surrounding neighborhoods is essential to grasp the significance of initiatives like those led by Pacoima Beautiful.

Pacoima Beautiful

Pacoima Beautiful is a grassroots environmental justice organization that provides education, impacts local policy, and supports local arts and culture to promote a healthy and sustainable San Fernando Valley. Their values include equity, collaboration, diversity, power-with, and integrity. Pacoima Beautiful focuses on five departments: youth organizing, community organizing, planning, policy, and Casa Esperanza. Casa Esperanza, one of Pacoima Beautiful's key initiatives, serves as a community resource center providing residents with access to educational programs, environmental workshops, and social services aimed at fostering resilience and improving quality of life.

Pacoima Beautiful is comprised of a team of leaders, planners, organizers, health promoters, and advocates for a healthier and safer region. It was founded in 1996 by five relentless mothers who became distraught by the unpleasant sight of trash and the toxic smells they endured while walking their children to school. After 25 years, Pacoima Beautiful is still the only environmental justice organization in the Northeast San Fernando Valley striving for community improvement.

South Coast Air Quality Management District (SCAQD)

The South Coast Air Quality Management District (SCAQMD) works to improve air quality by setting standards, monitoring pollution levels, developing and implementing improvement plans, and promoting public awareness. The SCAQMD is responsible for regulating air pollution in the South Coast Air Basin, which includes Los Angeles, Orange, Riverside, and San Bernardino counties.

Analysis of Current Conditions in Pacoima

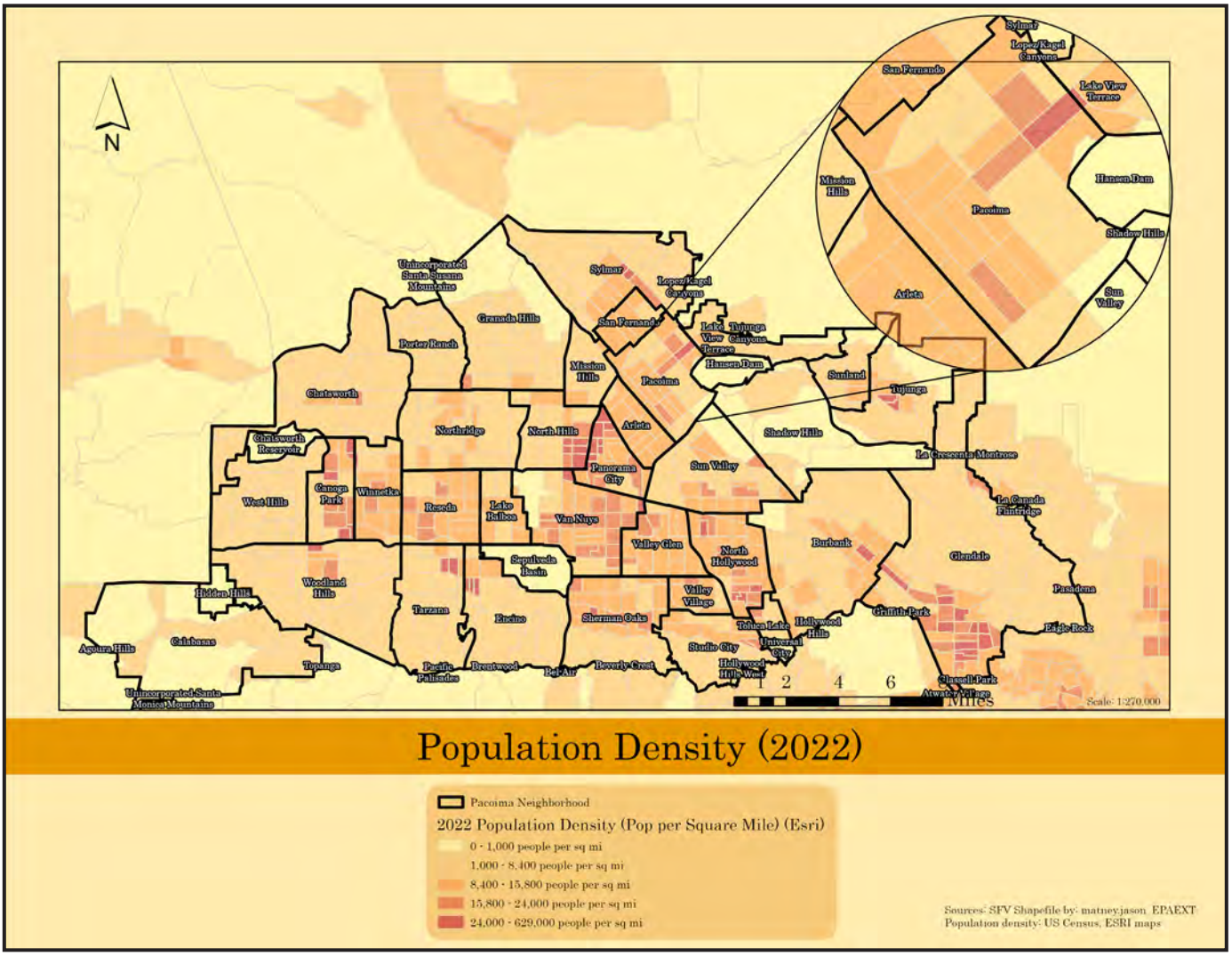
Demographic Data - Population Density

Pacoima has an estimated population of 77,492 inhabitants, or about two percent of the population in the City of Los Angeles (US Census, 2023). The median age in Pacoima is 33.4 years, with about 25% of the population under 18 years of age, and 75% being 18 years and older. The population in Pacoima has a 97.4 male-to-female ratio.

Pacoima can be considered as a moderate to highly dense area, reflecting the community's residential clustering in each of its neighborhoods. Overall, twhe population is evenly distributed across the neighborhood, with a few higher density tracts of more than 20,000 people per square mile, represented by darker red in figure 1. The distribution is similar to that of the rest of the San Fernando Valley.

Figure 1

Population density in Pacoima and the San Fernando Valley

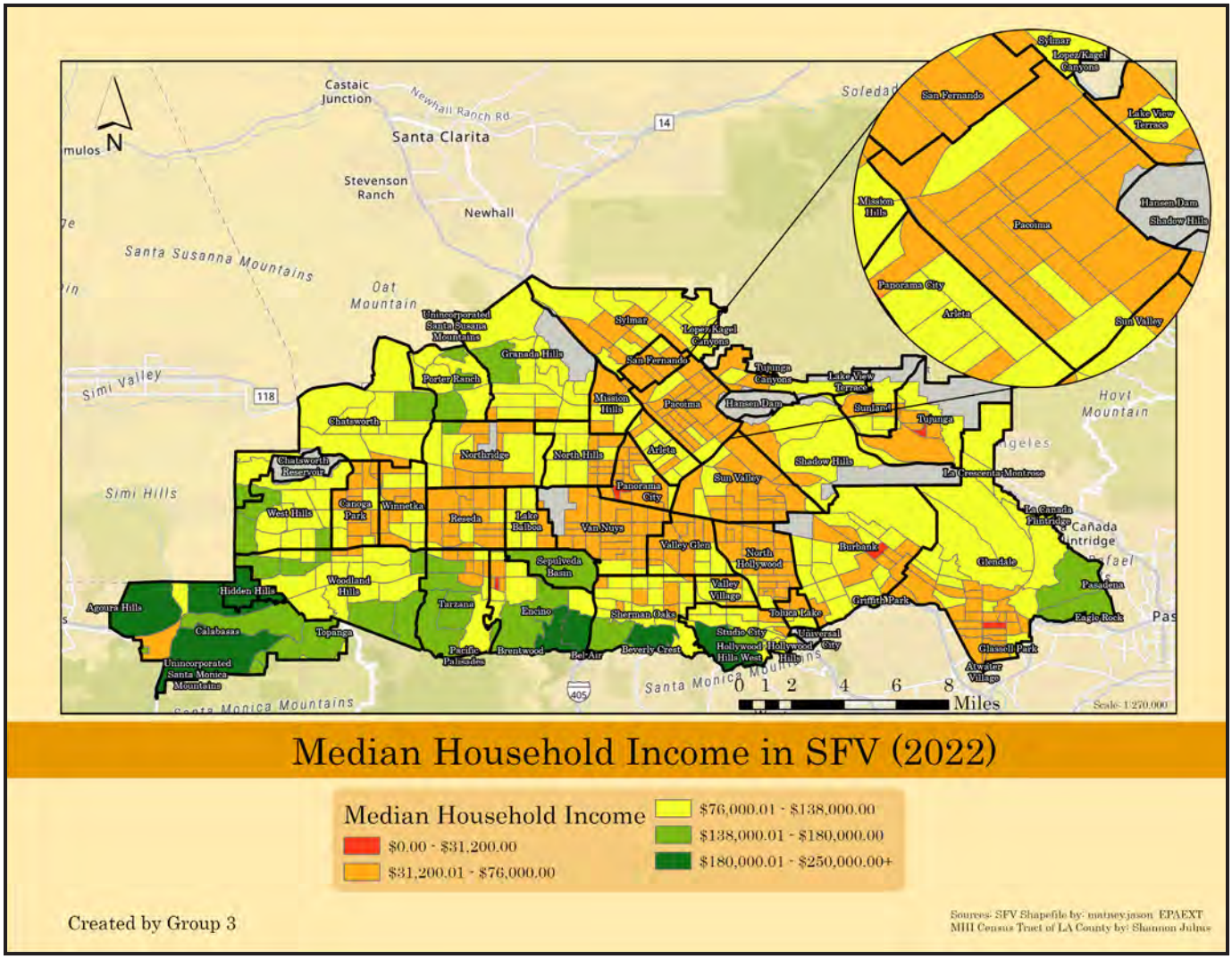


Median Household Income

The median household income in Pacoima is $58,326 in 2022, lower than the LA city median income of about $70,000 but within the range of the SFV. Theis map below displays the Median Household Income of the entire San Fernando Valley with the data coming from 2022 US Census (see Figure 2).

Figure 2

Median Household Income in Pacoima and the San Fernando Valley



Race and Ethnicity

The vast majority of Pacoima residents are Hispanic (78% to 98%) with smaller concentrations of white and American Indian and Pacific Islanders.

The following maps show the percentages and distribution of the Hispanic, White, Black, Asian, American Indian & Alaska Native, and Native Hawaiian & other Pacific Islander populations, and the percentages for individuals identifying with two or more races or other unspecified racial categories in the San Fernando Valley. These maps are based on data from the U.S. Census American Community Survey 5-year estimates (2022).

Figure 3

Hispanic Population in Pacoima and San Fernando Valley

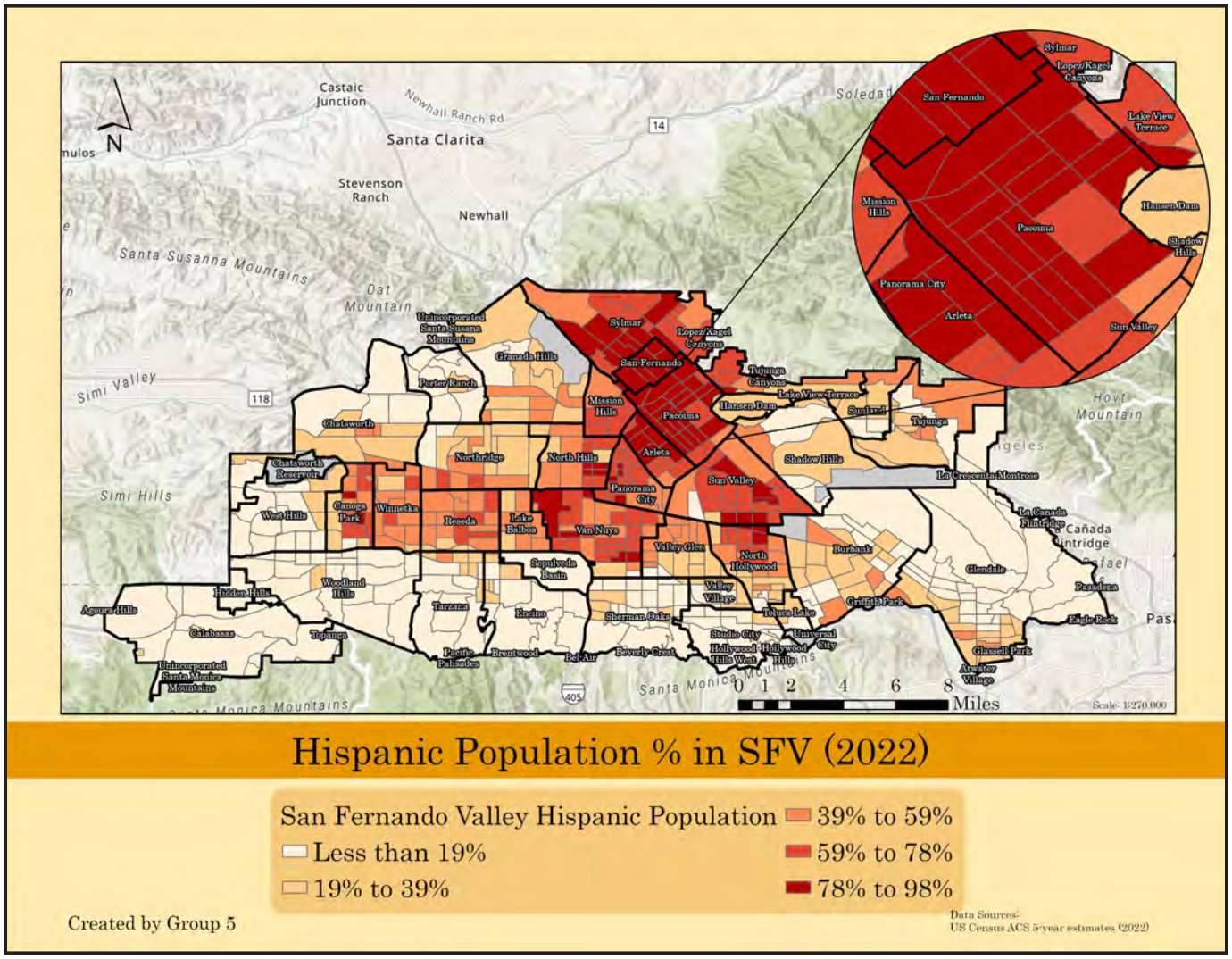


Figure 4

White Population in Pacoima and San Fernando Valley

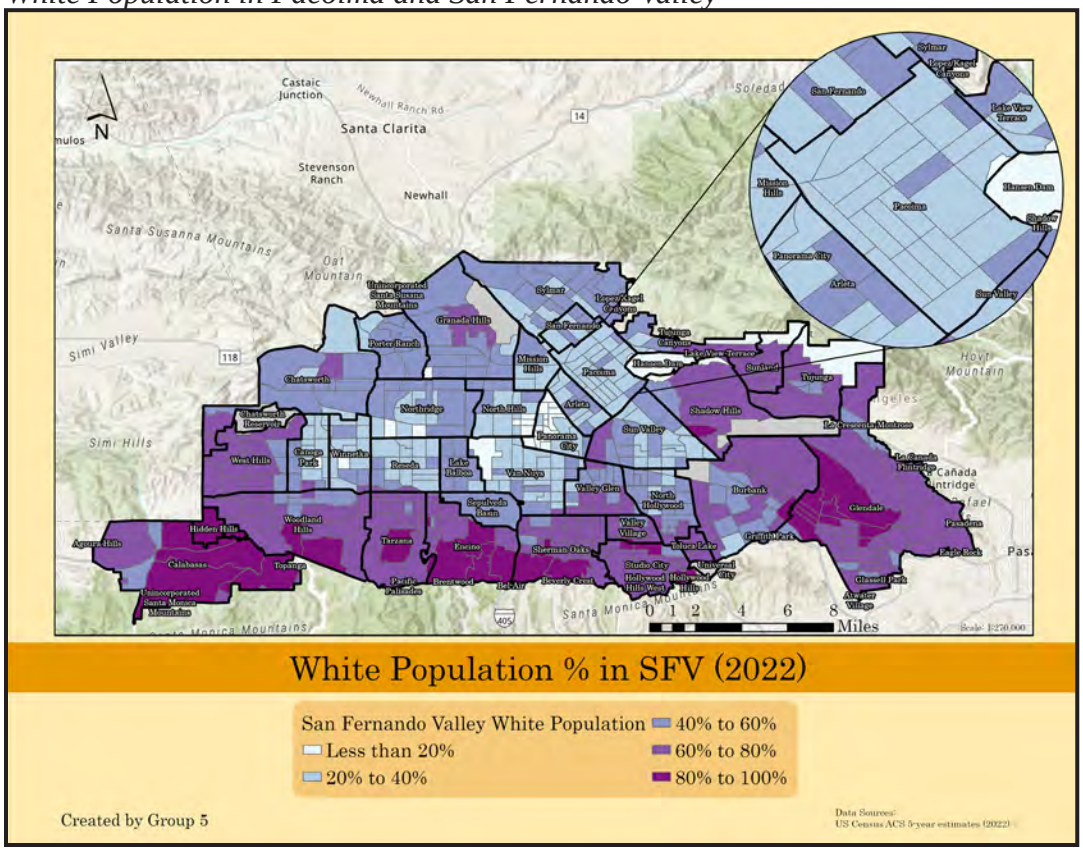


Figure 4 illustrates the distribution of the White population. Lighter areas indicate lower percentages, while darker shades represent higher concentrations. Notably, certain northern and western tracts of the SFV exhibit higher white population percentages compared to Pacoima.

Figure 5

Black Population in Pacoima and San Fernando Valley

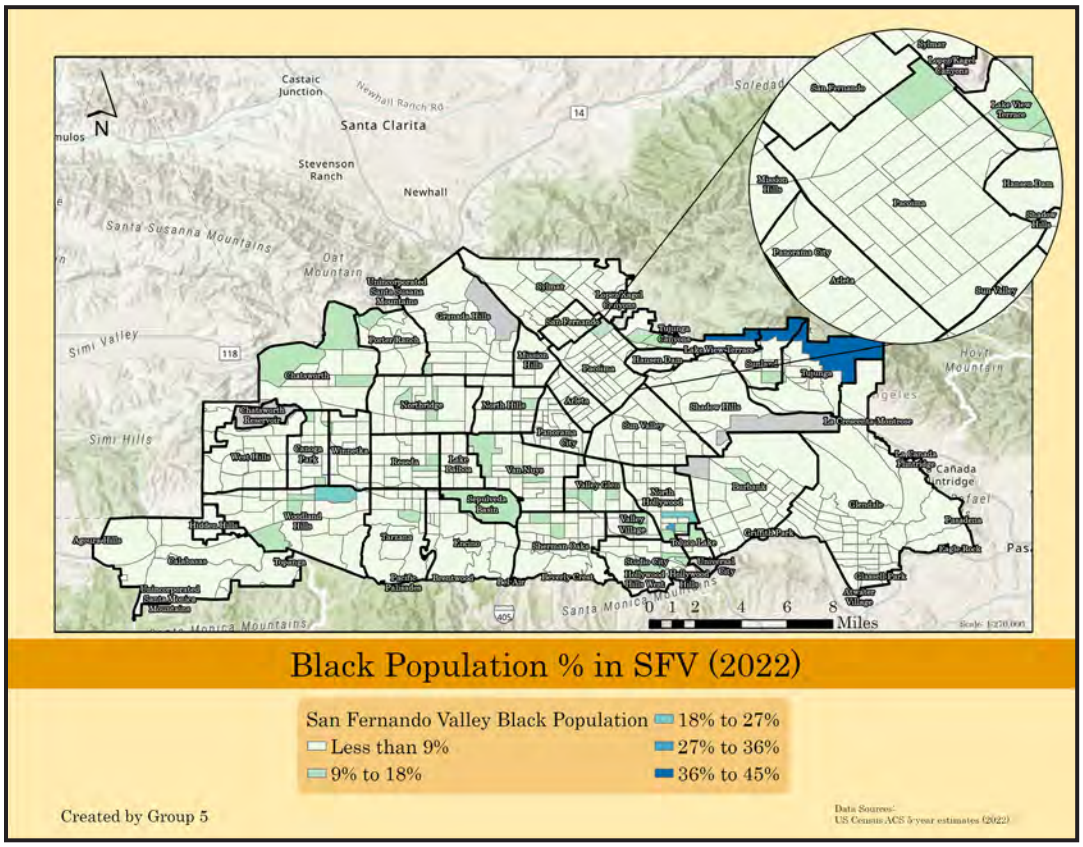
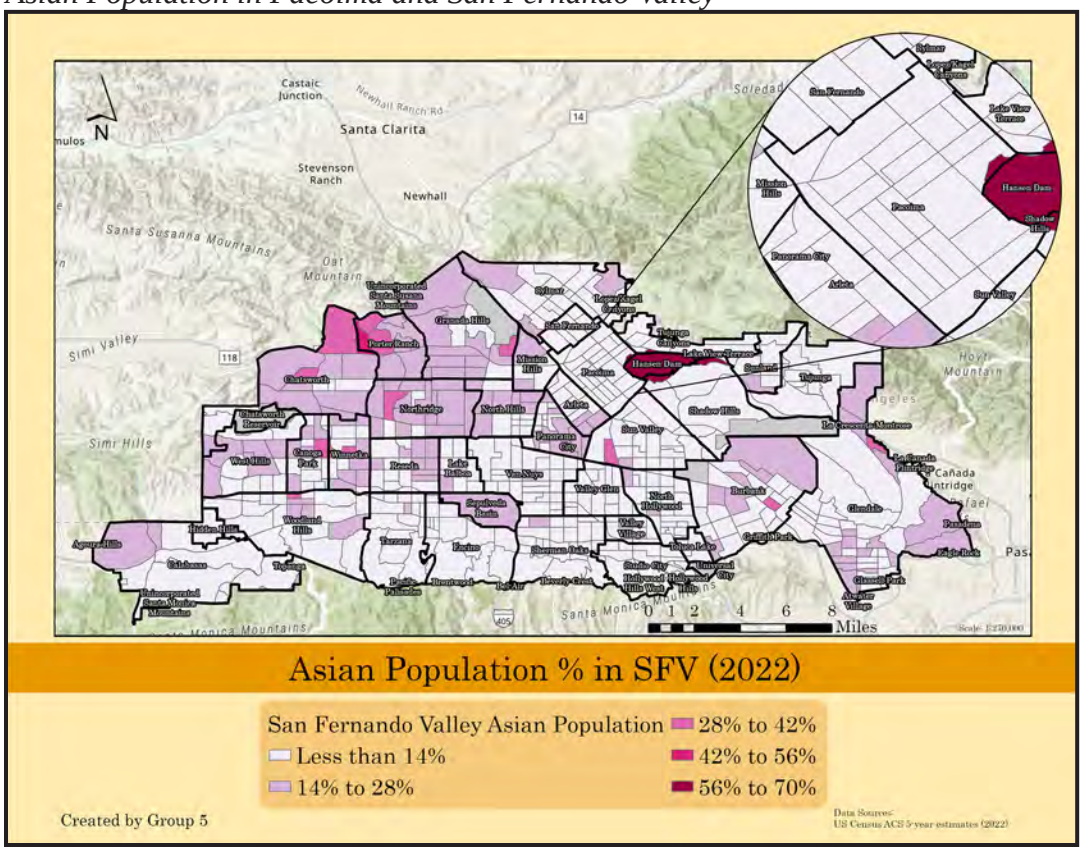


Figure 5 depicts the percentage of Black residents throughout the region. Concentrations are generally lower but highlight key neighborhoods with higher representation. Pacoima's Black population is moderate relative to other areas.

Figure 6

Asian Population in Pacoima and San Fernando Valley



Asian population distribution is presented in Figure 6 with varying shades, where darker hues indicate higher percentages. Certain tracts near central and western areas of the SFV show significant Asian populations, with lower representation in Pacoima.

Figure 7

America Indian and Alsaka native Population in Pacoima and San Fernando Valley

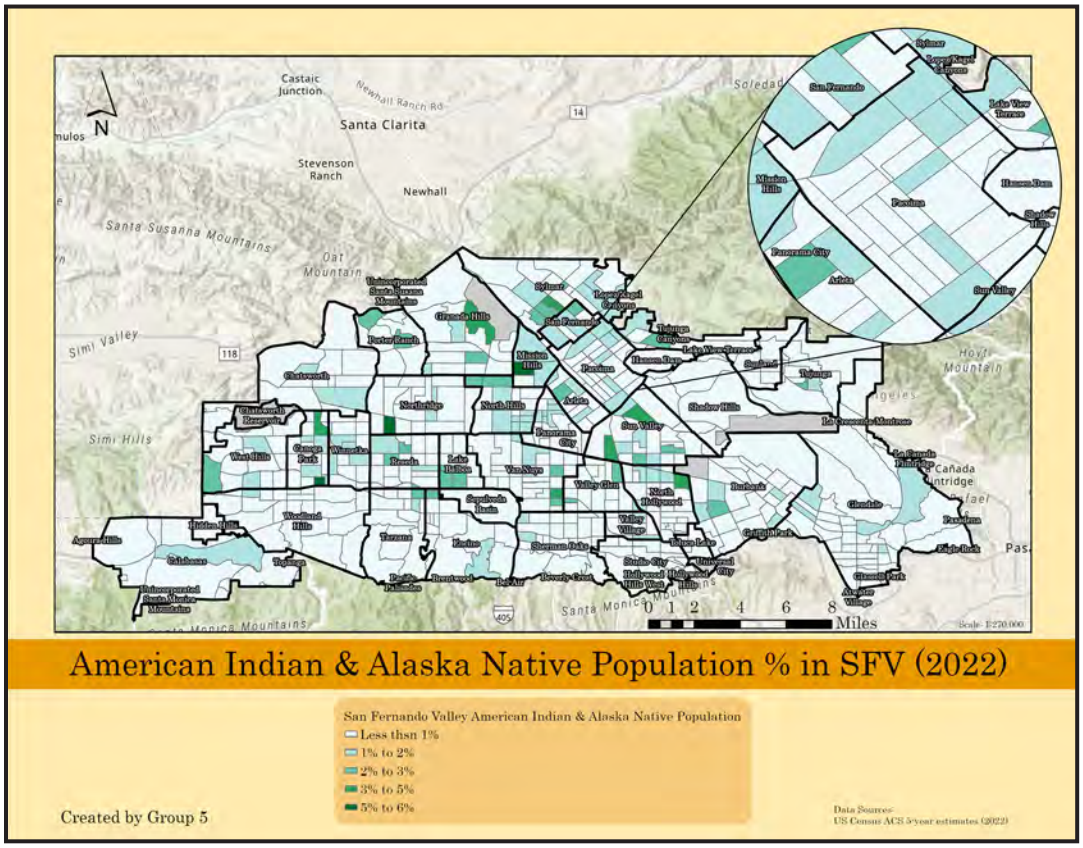


Figure 7 presents the percentage of American Indian and Alaska Native residents. The population is generally dispersed with small pockets of higher concentrations across the valley.

Figure 8

Native Hawaiian & Other pacific Islander Population in Pacoima and San Fernando Valley

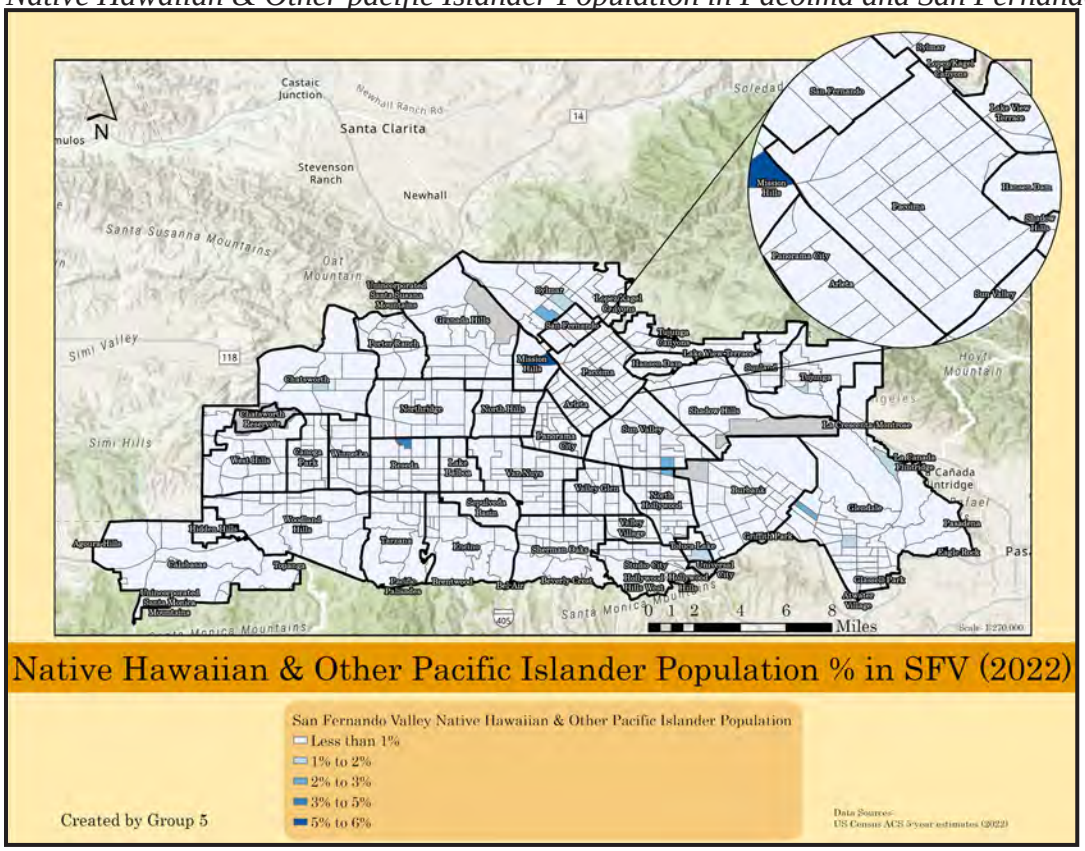


Figure 8 shows relatively low concentrations of Native Hawaiian and Pacific Islander population throughout most of the SFV census tracts, with slight increases in select neighborhoods

Figure 9

Two or more Races Population in Pacoima and San Fernando Valley

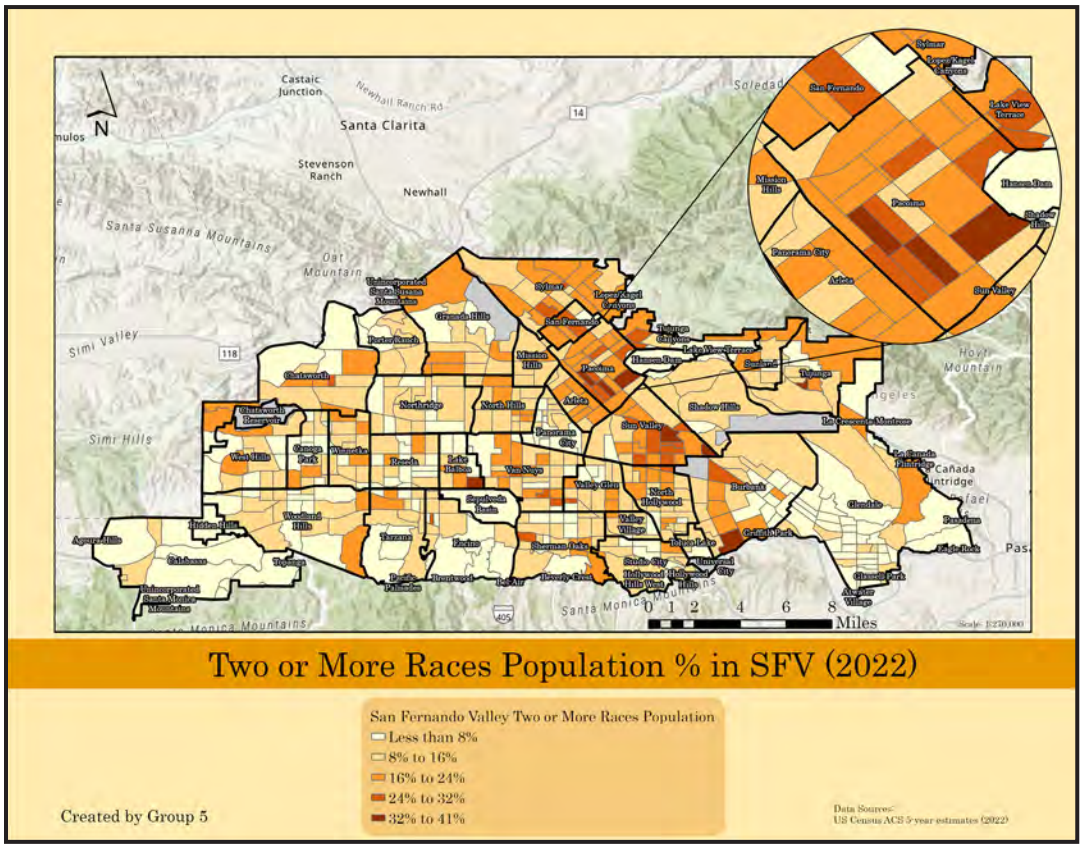


Figure 9 highlights areas where residents identify with two or more races. The distribution is relatively uniform, with some census tracts showing higher diversity levels, particularly in the northeastern region of the SFV.

Figure 10

Other Races in Pacoima and San Fernando Valley

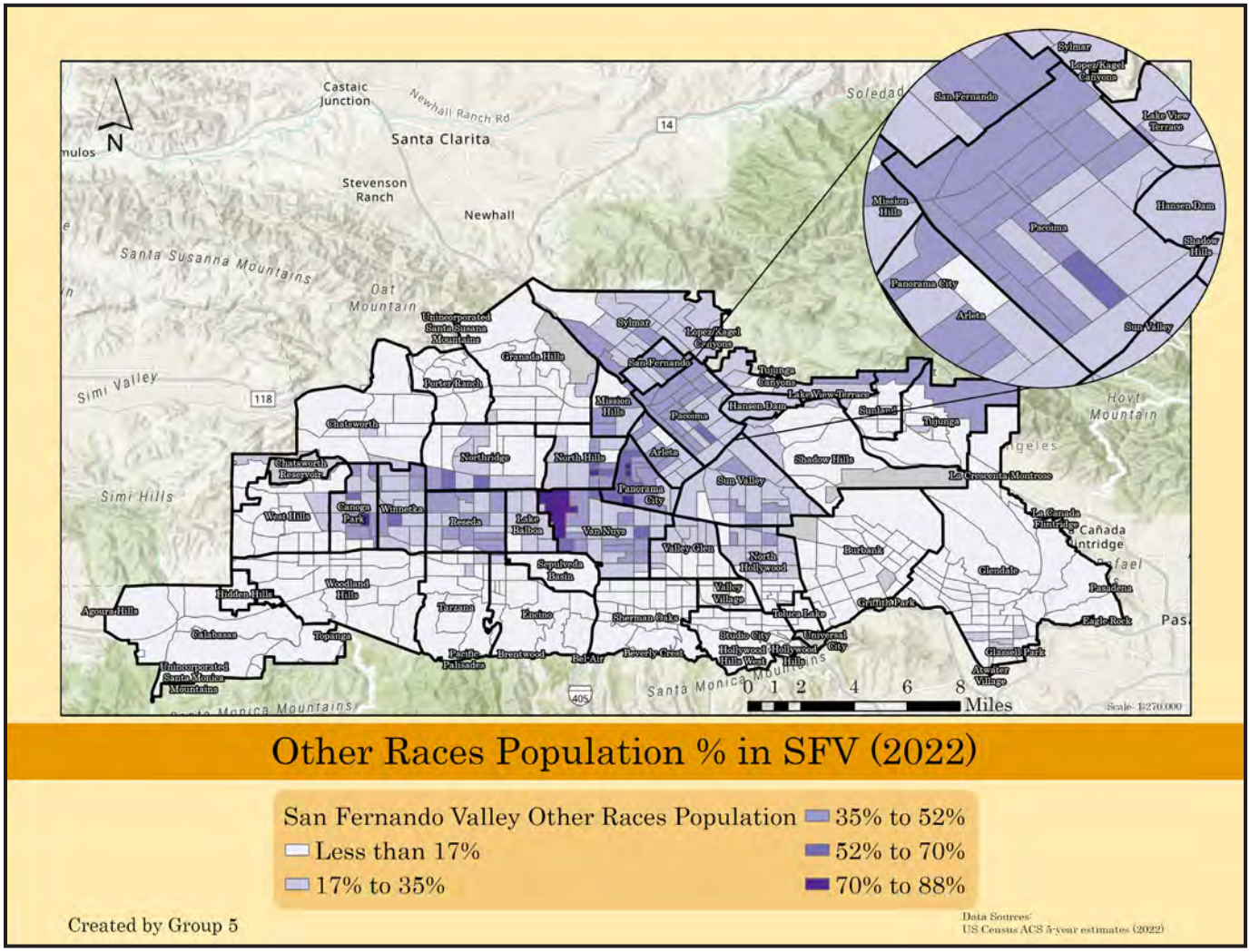


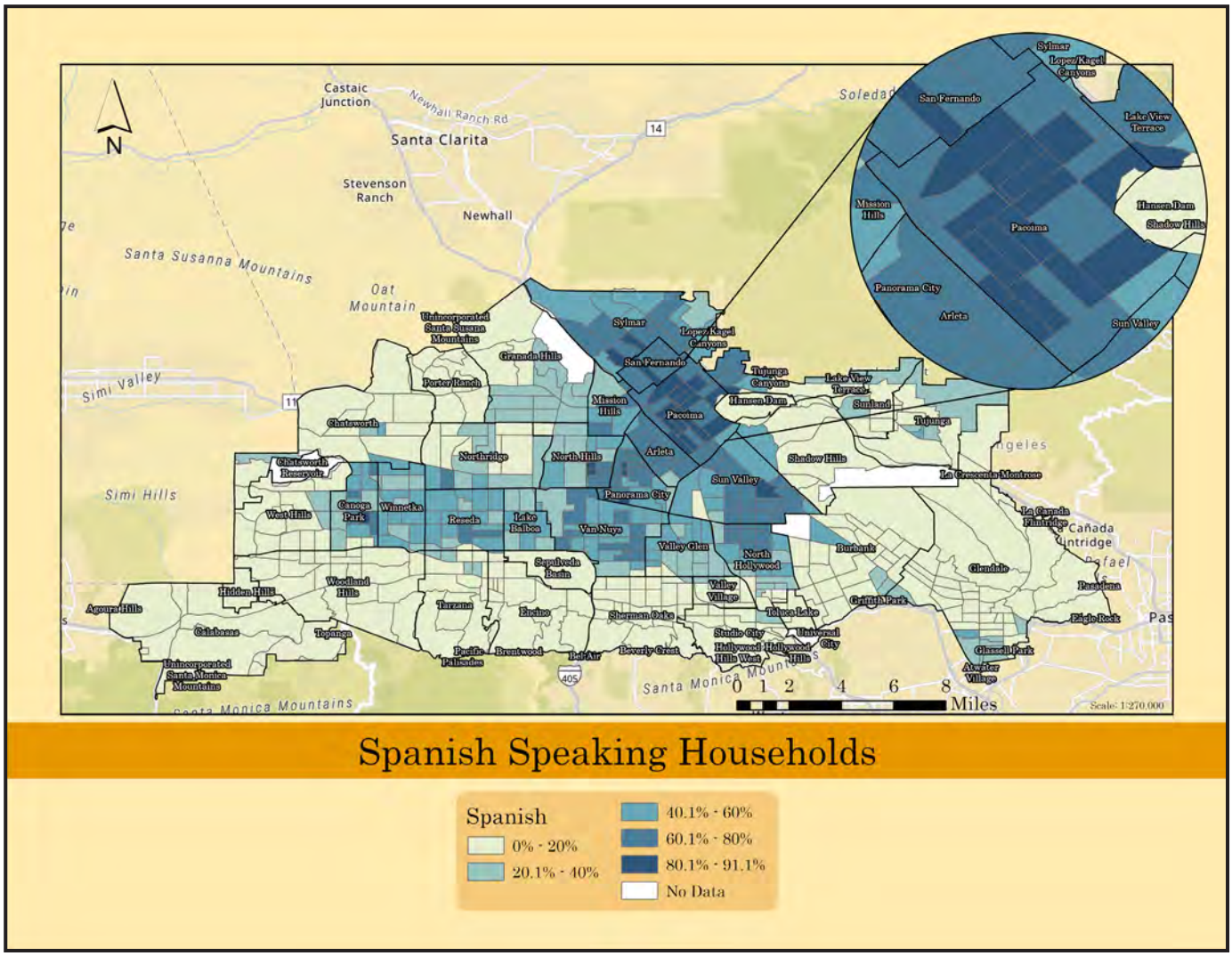
Figure 10, representing individuals identifying with races not categorized elsewhere, this map reveals small but significant pockets of diverse populations throughout the valley.

Language spoken at home

Spanish is the most spoken language in Pacoima, with more than 60% of households speaking this Language. This is clearly a higher concentration of Spanish speaking individuals as compared to the San Fernando Valley, where in general, about 33% of households speak only Spanish, and about 44% speak only English. Other languages are less represented both in Pacoima and the Valley, with a 14% for IndoEuropean languages, 7% for Asian and Pacific Islander languages, and less than 2% for any other languages.

Figure 11

Spanish Speaking Households in Pacoima and San Fernando Valley



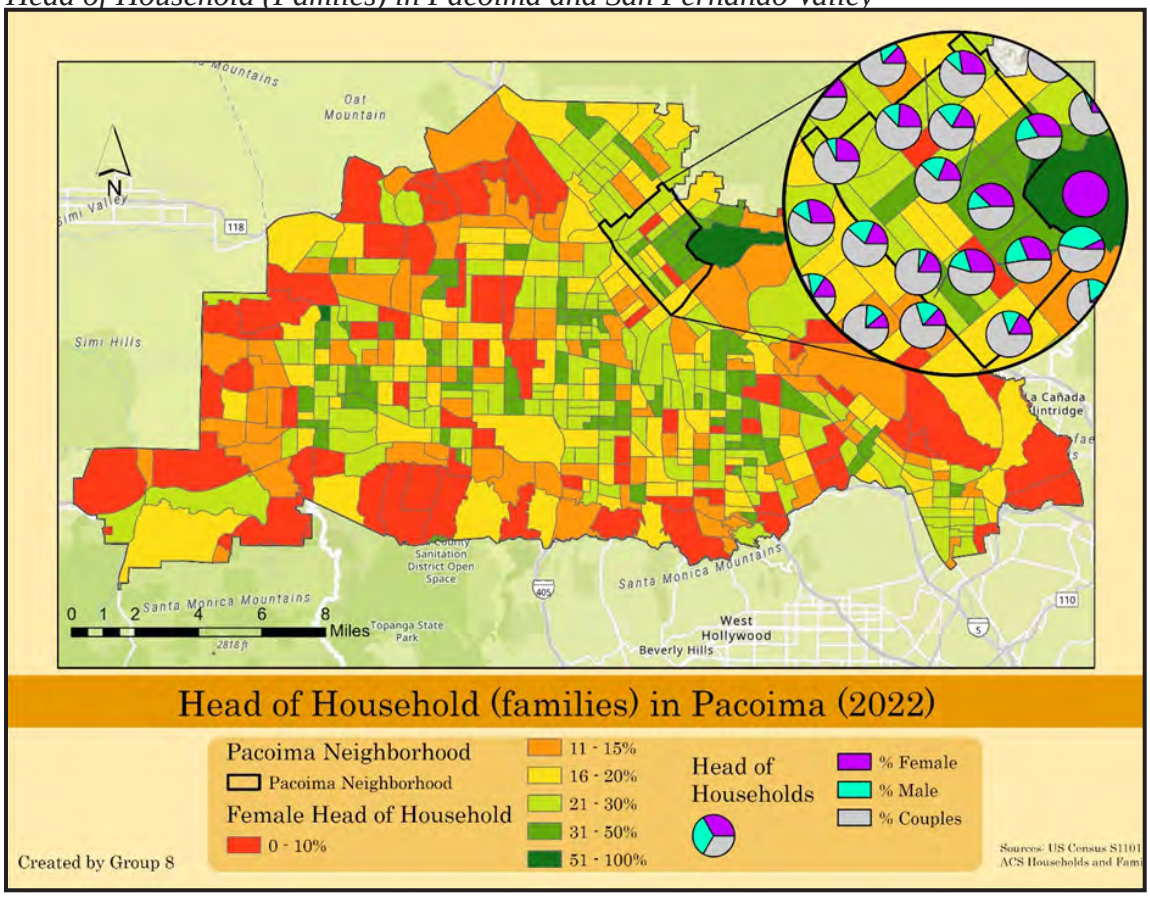
Household configuration

Pacoima is comprised of 17,986 households, out of which, about 85% are family households. The majority of households have four or more members (55%), with smaller proportions for smaller households (see Table 1),a proportion that is slightly higher than the rest of the SF Valley. The majority are also family households (85%) and almost half of them (49%) are headed by married couples. Pacoima has a significant number of households headed by women (23.1%).

Table 1
Household Configuration in Pacoima

Household Configuration in Pacoima	
Total Households	17,986
Household Size	
Household size 1 person	13.10%
Household size 2 person	16.90%
Household size 3 person	15.00%
Household size 4 person or more	54.90%
Family Household	84.40%
Non-family Household	15.60%
Head of Household (Family Household)	
Married-Couple	49.00%
Male householder, no spouse present	12.30%
Female householder, no spouse present	23.10%
Householder living alone	13.10%

Figure 12
Head of Household (Familes) in Pacoima and San Fernando Valley



Employment

The following map contains three different factors that help in understanding the employment population of Pacoima. One of the variables analyzed to better understand employment in Pacoima is the labor force.

Figure 13

Labor Force (%) and Industrial plants in Pacoima and San Fernando Valley

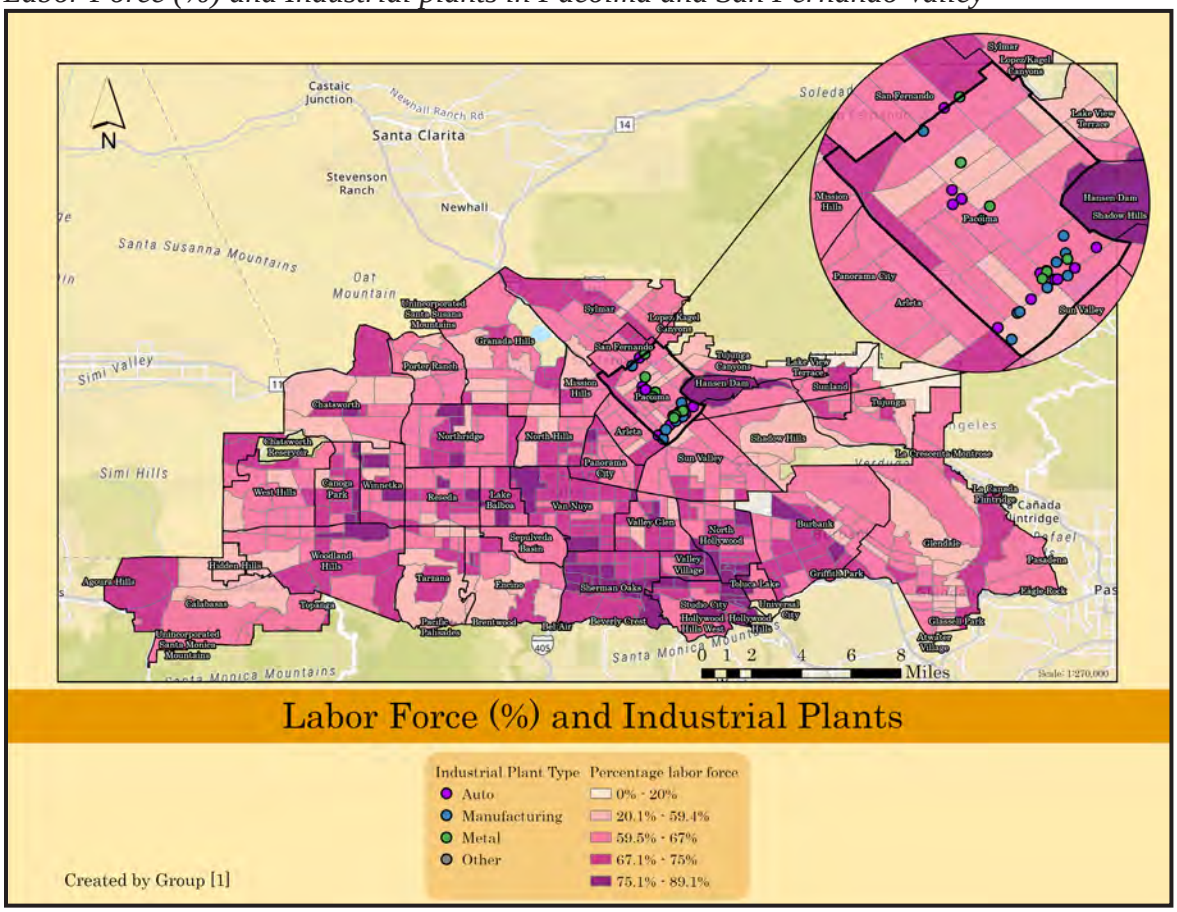
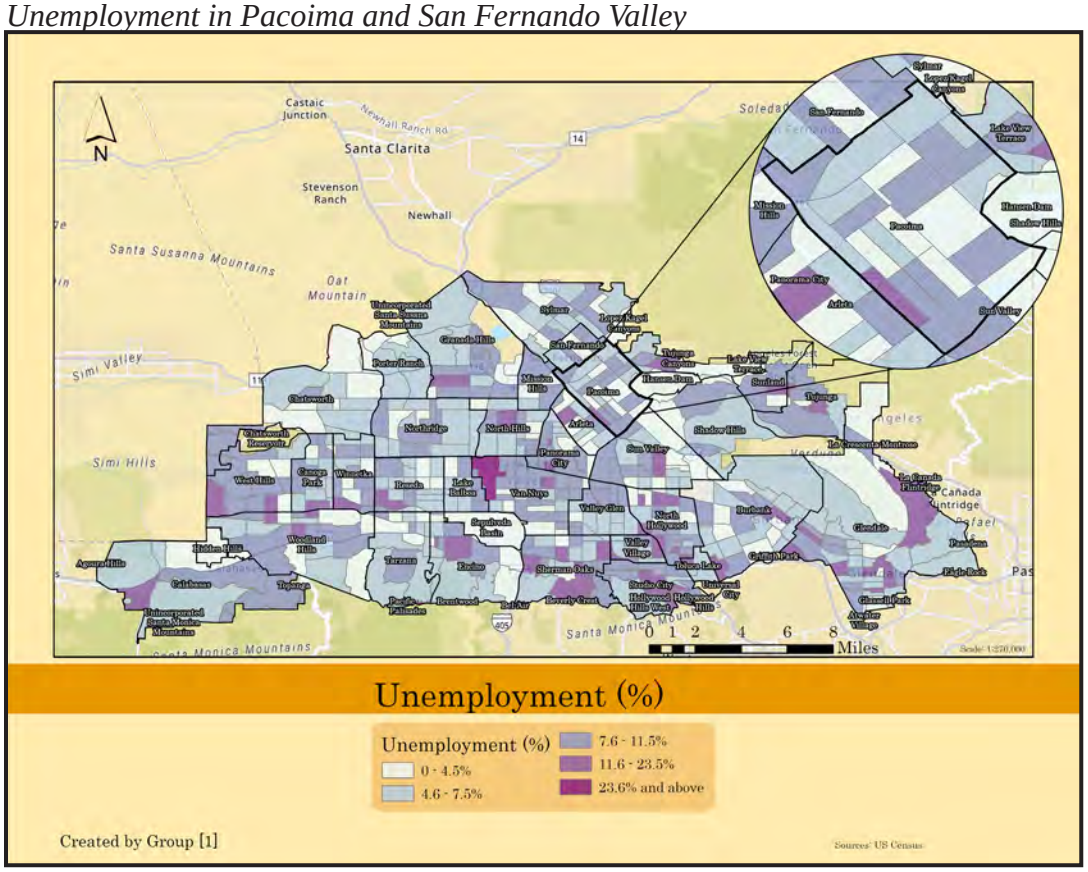


Figure 13 displays a map of the greater San Fernando Valley, highlighting the labor force population of the year 2022. The labor force data includes established residents of the San Fernando Valley, both men and women, ages 18 and older. The data used for this map was extracted from USC Neighborhood Data for Social Change (2022), a project within the USC Lusk Center for Real Estate.

Figure 14

Unemployment in Pacoima and San Fernando Valley



Fiure 14 shows unemployment rates across the region, with lighter areas indicating lower rates and darker wshades showing higher rates. Pacoima and some eastern areas have notably higher unemployment levels.

Figure 15

Population Employed in Manufacturing

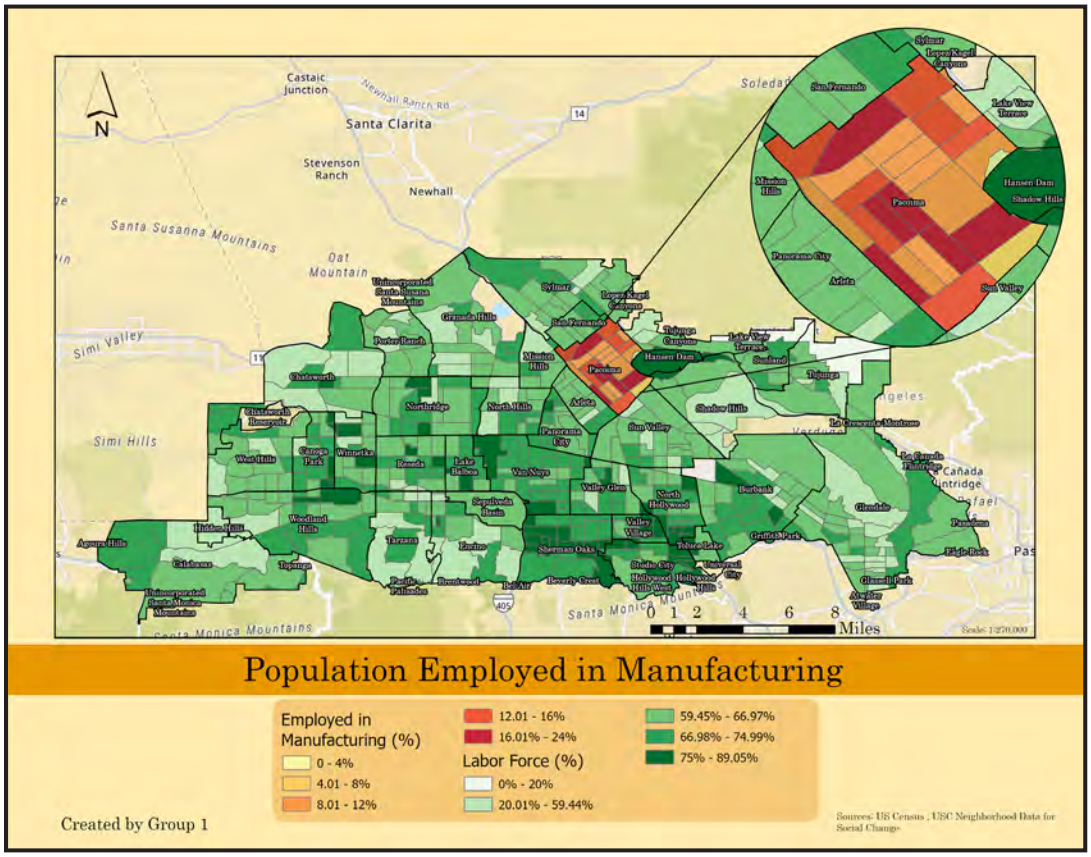


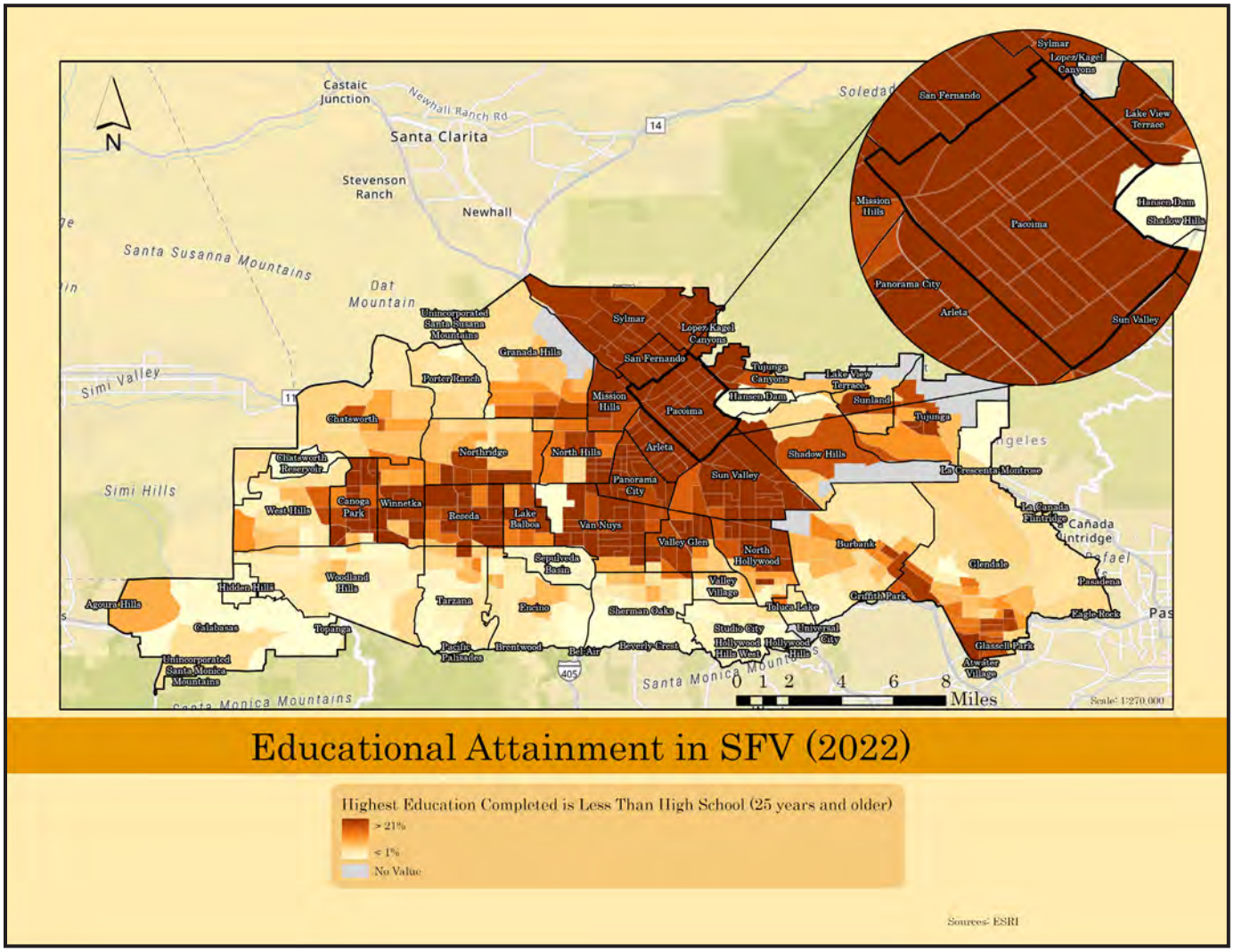
Figure 15 shows the percentage of the population employed in manufacturing, with darker shades indicating higher employment. Pacoima and nearby areas have notably higher manufacturing employment.

Educational Attainment

The following This map displays the percentage of residents without a high school diploma in the San Fernando Valley, using a gradient from light yellow (lowest rates) to dark red (highest rates). Pacoima is predominantly shaded in red, indicating that 21% of adults do not have a high school diploma, a rate almost twice of the national average of 11%. This figure indicate significant educational challenges that may correlate with socioeconomic and health disparities in the community.

Figure 16

Educational Attainment in Pacoima and San Fernando Valley



Health

The following maps illustrate current health conditions across the San Fernando Valley, using data collected by the California Office of Environmental Health Hazard Assessment (OEHHA) and released in 2021. These maps highlight disparities in health outcomes, particularly in Pacoima, compared to areas like Woodland Hills. The freeway network surrounding Pacoima has significantly influenced the health conditions of its residents. Since the construction of the 118 and 210 highways in the 1960s - 1970s, there has been constant flow of vehicles traveling through Pacoima. As a result, generations of Pacoima residents have been exposed to high levels of vehicle emissions, which are known contributors to various health conditions.

Figure 17

Asthma Percentile in Pacoima and San Fernando Valley

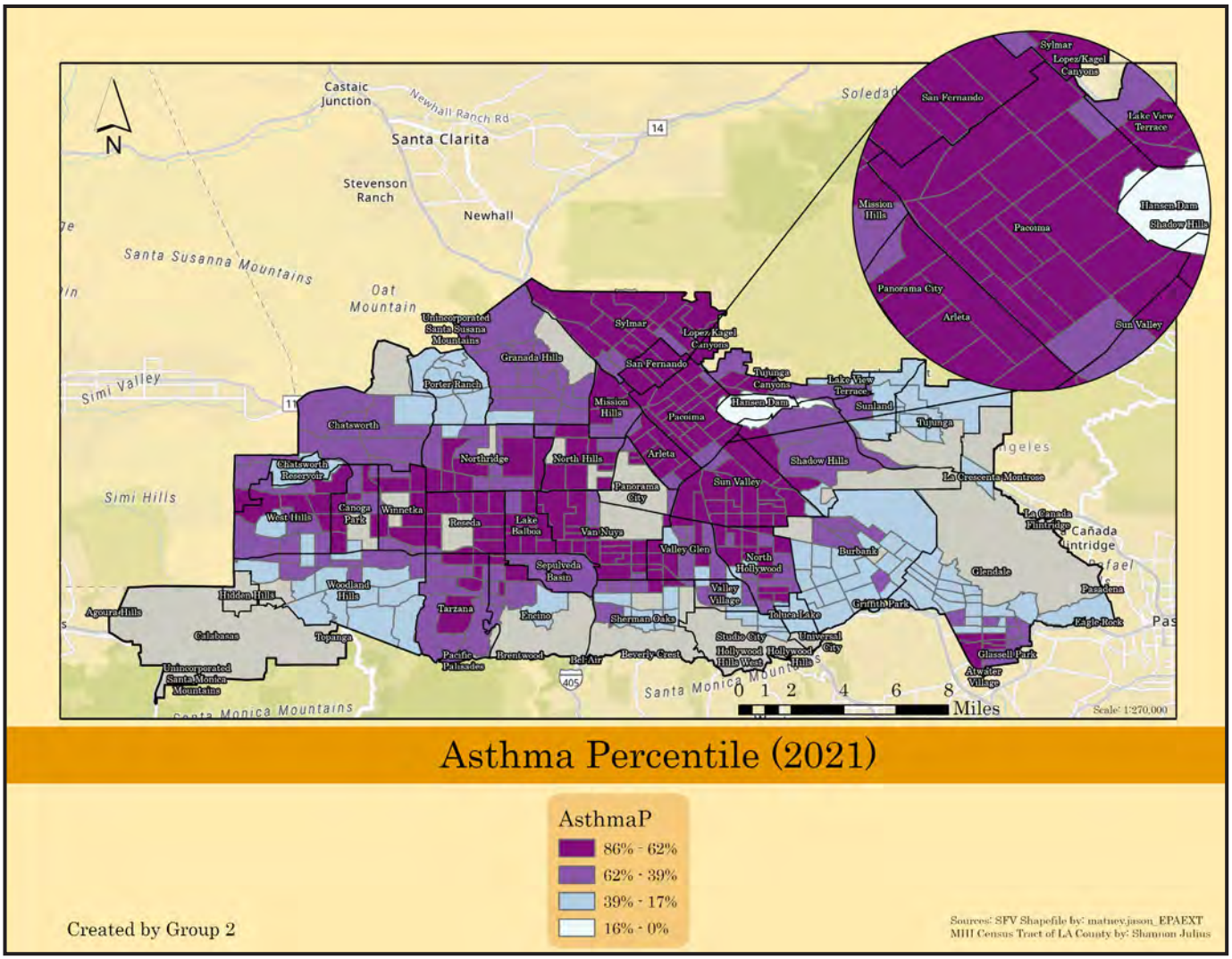


Figure 18

Low Birth Weight in Pacoima and San Fernando Valley

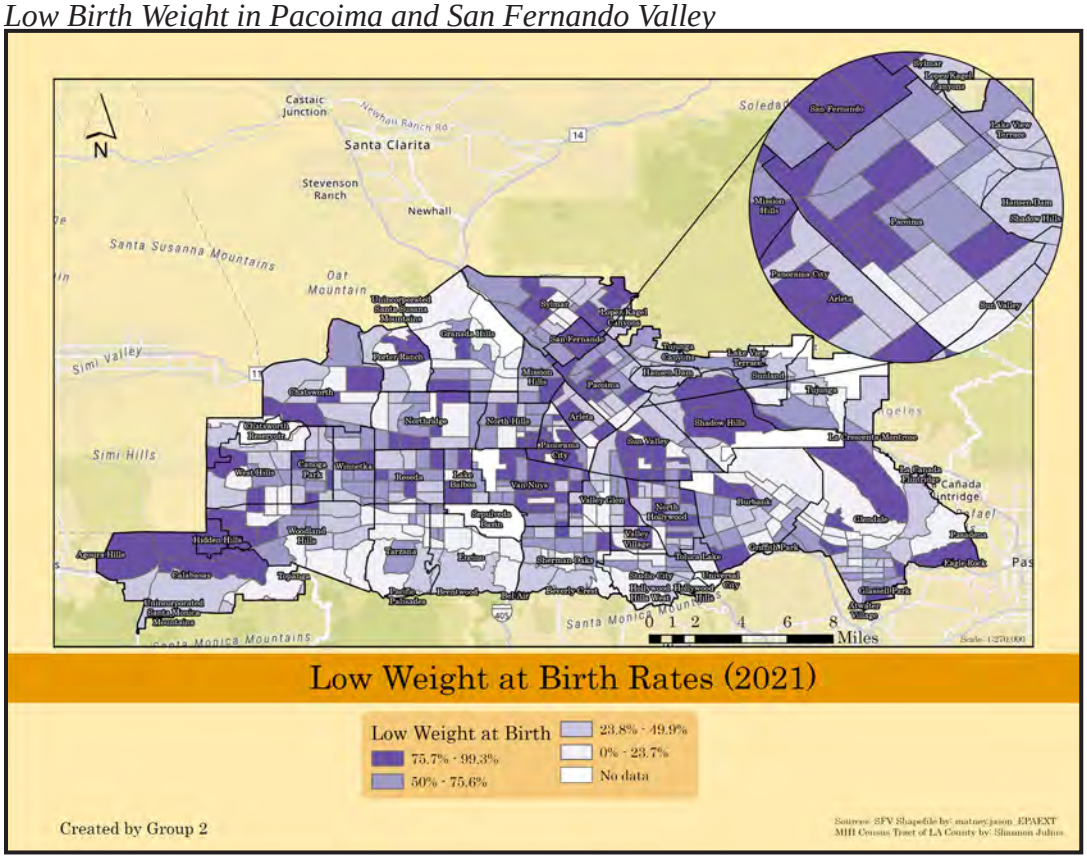


Figure 18 illustrates the distribution of low birth weight in the SFV. Lighter blue shades represent lower rates of low birth weight, while darker blue indicates higher rates. Areas like Pacoima show higher levels of low birth weight, with significant portions of the valley in the 50th-75th percentile.

Figure 19

Cardiovascular Disease in Pacoima and San Fernando Valley

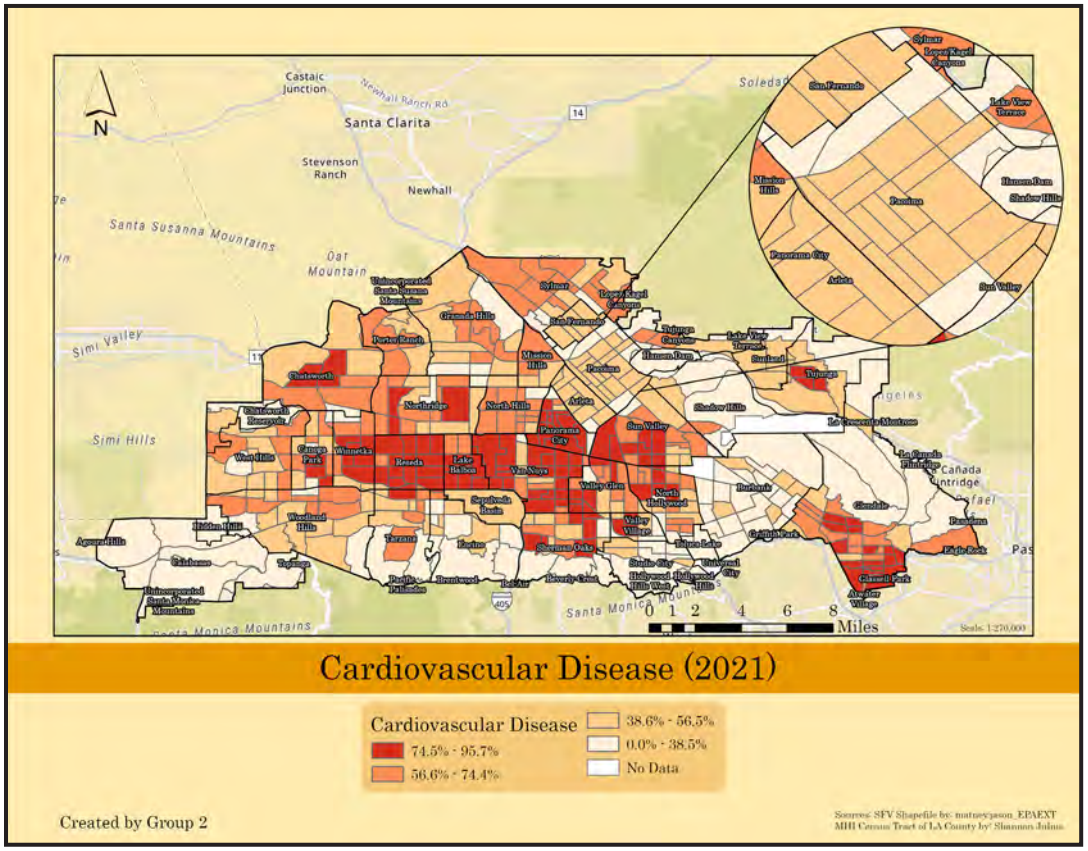


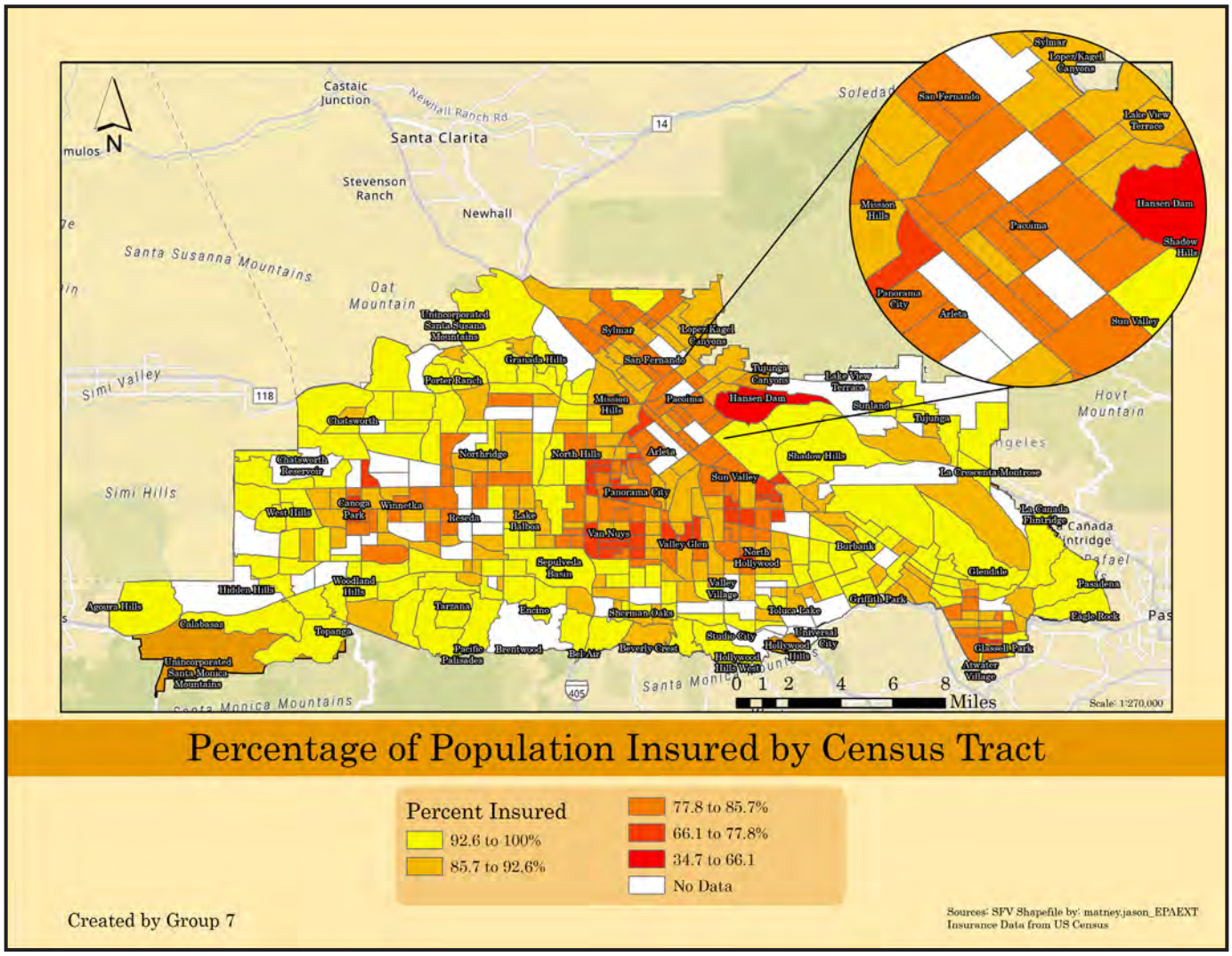
Figure 19 shows the distribution of cardiovascular disease across the SFV. Darker red shades indicate higher rates of cardiovascular disease, with the darkest areas in the 75th-95th percentile. Pacoima, located in the lower section, is among the neighborhoods with higher disease rates.

Health Insurance

Health insurance can affect the population's resilience in the face of health challenges. As seen in Figure X, the neighborhood population is fairly covered by health insurance with about 77 to 92% of residents with health coverage, but still some major gaps exist, particularly in the central region of the neighborhood.

Figure 20

Percentage of Population Insured by Census Tract



Air Quality Analysis

This section presents an analysis of current air quality challenges faced by the Pacoima community. Pacoima has historically struggled with high pollution levels due to the close proximity of industrial zones and waste management facilities, and by being surrounded by major freeways. The goal of this analysis is to identify the key sources of pollution in the neighborhood so we can provide residents with reliable, data-driven insights on air quality. This analysis also explores the environmental justice implications for Pacoima residents, particularly focusing on how these pollution sources contribute to respiratory problems, cardiovascular disease, and many other negative health outcomes. Additionally, recommendations for mitigating these issues are presented, alongside strategies for improving the overall health and quality of life for Pacoima residents.

Land Use and Zoning

Land use and zoning dictates the types of buildings and activities permitted in an area. These designations can significantly impact residents' health and well-being depending on what is allowed in nearby land uses. Pacoima is predominantly zoned exclusively for single-family residences and also enjoys a high rate of homeownership (see Figure 21). The second most common land use is industrial zoning, which permits heavy and light manufacturing that are often major sources of air and soil pollution. The center of Pacoima is zoned for public facilities, which includes the Whiteman Airport—a significant source of air and noise pollution for residents. Both types of high polluting land uses are located throughout Pacoima and adjacent to residential zones. Most commercial zoning is concentrated along Van Nuys Boulevard and San Fernando Road, providing essential services but also contributing to traffic congestion and related emissions. North of Glenoaks Boulevard features a higher concentration of apartments and mixed-density residential units, reflecting varied housing needs.

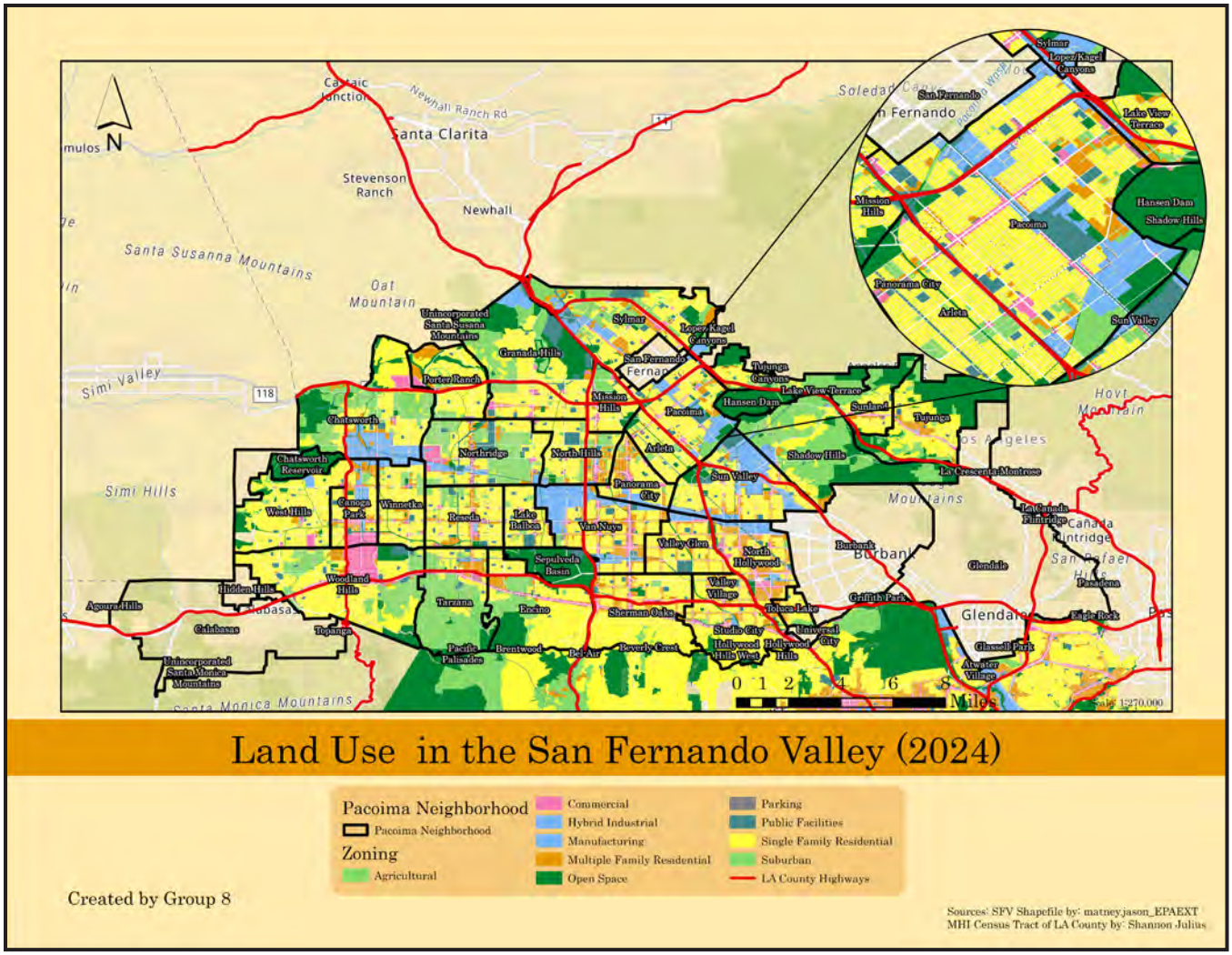
Pacoima notably lacks sufficient dedicated green space within its boundaries. Although it borders the Hansen Dam Recreation Area, the absence of accessible parks within the

community limits recreational opportunities. Additionally, the large parcel of land on Pacoima's southern edge, zoned for agricultural use, is part of the LA County's Pacoima Reservoir Restoration Project and is not available as open green space for residents.

Understanding Pacoima's land use is essential for addressing environmental justice issues, as the placement of industrial and transportation infrastructure disproportionately affects low-income and minority communities. Strategic urban planning and zoning reforms can mitigate these challenges and promote a healthier living environment for all residents.

Figure 21

Land Use in Pacoima and San Fernando Valley



Sources of Pollution

Manufacturing

The manufacturing sector is one of the largest sources of air pollution in Pacoima. Los Angeles's rapid shift from agriculture to manufacturing in the twentieth century, specifically during the post-World War II housing boom, gave rise to a large concentration of factories in Pacoima. The proximity of residents to these sites has caused generations of health issues, such as asthma, respiratory issues, and heart disease (Binns, 2019). The manufacturing sector should be a major concern to the neighborhood of Pacoima because there are long- and short-term consequences that can be crucial to the environment and residential health of the community members.

The community of Pacoima has long struggled with social and environmental challenges, particularly poor air quality that affects its residents. This issue stems from the proximity of light and heavy industries to residential areas. These industries, including metal fabrication, pet food production, motor vehicle parts manufacturing, and homeware manufacturing, rely heavily on oil and gas, contributing significantly to air pollution. While these industries provide essential jobs and contribute to the local economy, they also pose serious health risks to the community. However, through strategic urban and policy planning, it is possible to implement strategies to reduce these pollutants and protect public health.

Background and History

In the twentieth century, the city of Los Angeles made a rapid shift from agriculture to manufacturing and industry. While the initial focus was on aerospace, Los Angeles's industrial sector quickly diversified. Due to the housing boom following World War II, industrial development in Los Angeles peaked in the 1960s.

In Pacoima, two types of historical industrial properties can be found. First are factories, which include everything from individual workshops to large plants. Factories became prominent in the first half of the twentieth century, during Los Angeles's transition from agriculture. Second, manufacturing districts are groups of industrial buildings with pre-planned infrastructure and zones. Manufacturing districts became

prevalent as Los Angeles established itself as a manufacturing giant in the middle of the twentieth century.

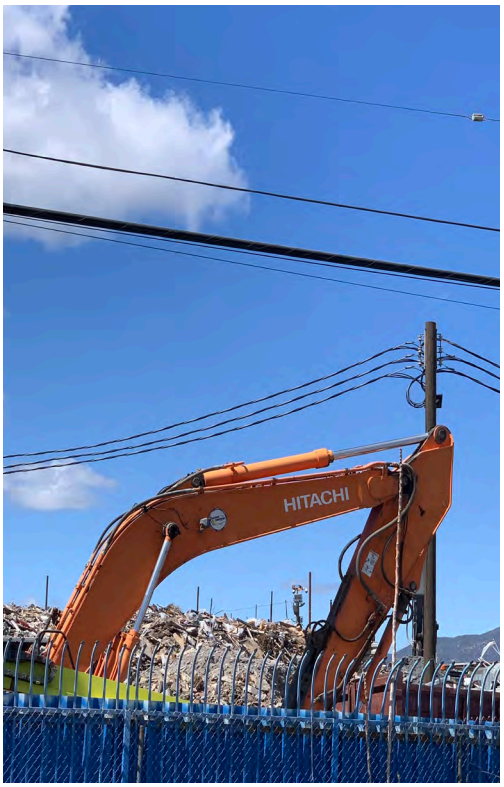
Pacoima also has industrial parks, which are manufacturing districts with campus-like structures. Industrial parks are mixed-use spaces, that include offices, factories, storage, and more. This concept developed as a post-World War II industrial design reform, to help the United States step away from disorganized and hastily developed “briefcase factories” (SurveyLA, 2011).

In this context, industry is defined as the processing of raw materials and manufacturing of goods in factories. Pacoima residents are forced to live near these factories, which has caused generations of health issues. The Los Angeles government has historically neglected the well-being of this working-class, Hispanic community; residents have had to file several complaints before the city took action on pressing issues (Binns, 2019).

Main sources of pollution from manufacturing

Today, Pacoima’s five largest manufacturing companies by revenue are: M&V Auto Electric ($0.73M) (motor vehicle parts, NAICS 336320), Primus Marble ($0.68M) (mineral products and table tops, NAICS 337110), A&A Custom Shutters ($0.68M) (fabricated metal products, NAICS 332312), HRK Pet Food Products ($0.63M) (animal food, NAICS 311111), and H&R Rubber and Tool ($0.61M) (plastic, rubber, and metal products, NAICS 326291). Pacoima also contains a high concentration of junk-car processing plants, many of which have been found to be unlicensed by the California Department of Motor Vehicles (2018).

More recently, an industrial business that has been hurting the community is quartz and marble countertop cutting. Countertop cutting has minimal environmental impact, but can be deadly for those who work in this field. The lack of appropriate personal protective equipment and ventilation, combined with the silica in fine dust particles, has created a silicosis epidemic. Silicosis primarily affects young Latino men in Pacoima. One in five workers diagnosed with silicosis has died, with a median age of 47 (Reyes & Carcamo, 2023).



T

Main sources of pollution from automobile industries

Auto Body Shops

Many auto body shops in Pacoima ar unlicensed, and ththerefore us do not follow DMV guidelines. These facilities release harmful amounts of Volatile Organic Compounds (VOC) emissions, which cause ground-level ozone to develop. Weld smoke and fumes, fine oil mists, and carbon fiber can cause asthma, bronchitis, lung fibrosis, and increase the risk of slip-and-fall injuries (Dallos, 2019).

The automobile industry releases volatile organic compounds (VOCs), which cause the formation of ground-level ozone. As a form of metal recycling, junk-car plants can release 20 to 200 pounds of VOCs per hour (EPA, 2021). The metal industry releases PM2.5, sulfur dioxide, nitrogen dioxide, carbon monoxide, VOCs, and toxic heavy metals, such as lead and mercury (IQAir, 2024). The WHO has set the following annual thresholds as unhealthy levels of pollutants: over 35 micrograms/cubic meter (µg/m3) of PM2.5, over 0.079 µg/m3 of sulfur dioxide, and over 10 µg/m3 of nitrogen dioxide. Indoors, VOC levels should not exceed 7,104 µg/m3.

Emissions from the automobile and metal industry are harmful to the environment and and to the community. Weld smoke and fumes, fine oil mists from fluids/lubricants, and carbon fiber/composite dust from cutting and grinding metals can cause unsafe indoor air quality. This is linked to a variety of lung diseases, respiratory illnesses, skin conditions, and cancers. Employees are also at risk of physical injury due to slip-and-fall hazards (Dallos, 2019).

The oil extraction and refining industry releases many of the same pollutants as the metal and automobile industries, as well as a carcinogen known as benzene. Environmental conditions such as smog and acid rain result from this pollution, leading to asthma, cardiovascular disease, loss of vision, and vomiting among community members.

Even though there are no oil wells located near Pacoima, it is important to point out that heavy and light manufacturing industries depend on oil resources to keep their businesses going, thereby exposing both their surrounding environment and their workforce, some of whom are local residents of Pacoima.

The USA Environmental Protection Agency (EPA) recommends that, within the industry, emissions must be captured before they can be controlled. Hiring industrial safety experts to assess sites, using pulsed power supplies to reduce weld fumes, and using air filtration devices are ways to protect industrial employees (Dallos, 2019). Proper fume ventilation, via pick-up fans and overhead hoods, would allow factories to maintain negative pressure and stop emissions from seeping outside. Furthermore, enforcing decontamination processes, or the safe disposal of metal shreds and chemicals, would mitigate harmful environmental effects (EPA, 2021). Another possible solution to this problem is to change the regulation of these facilities, or a program to facilitate the transition to other type of businesses.

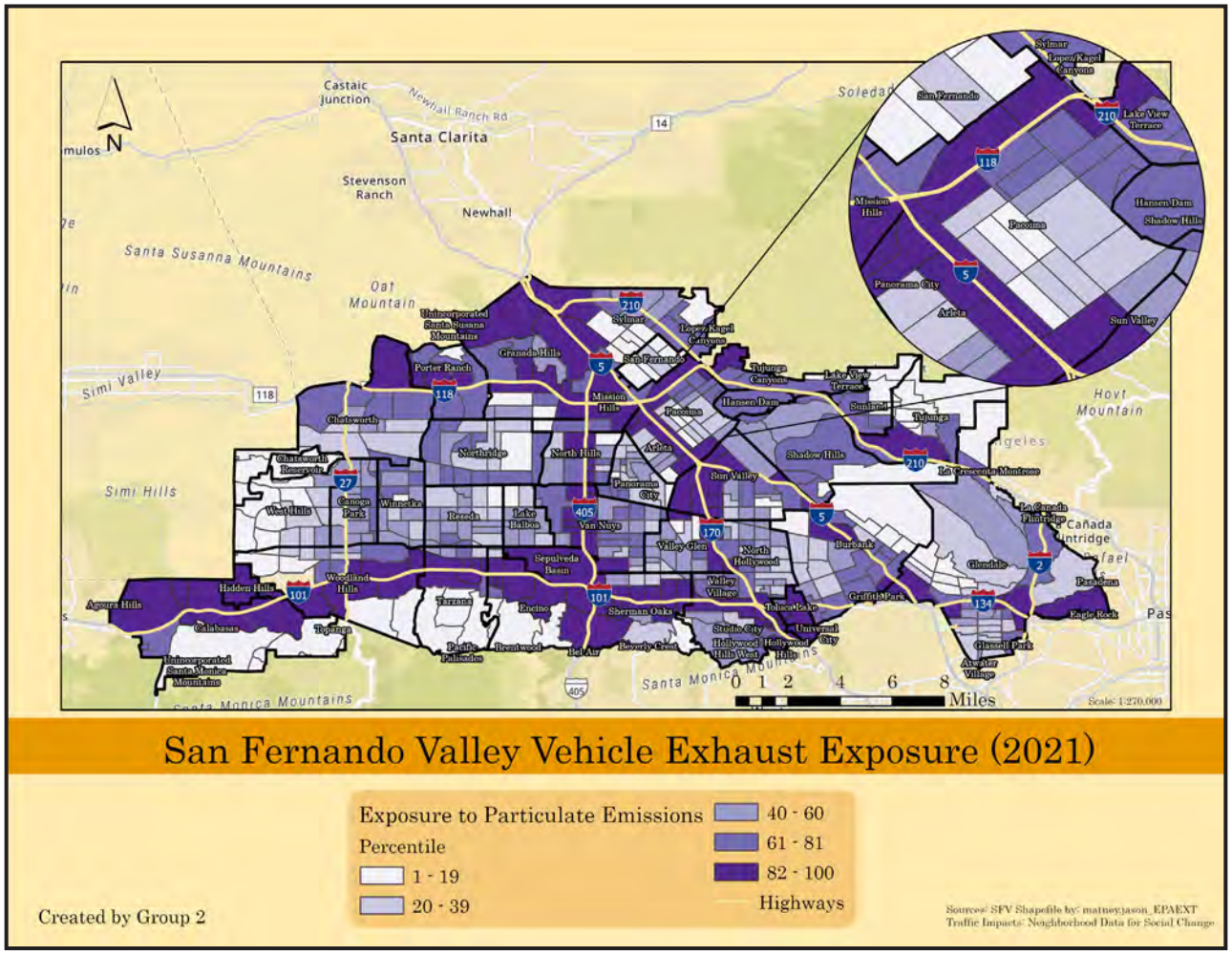
Vehicular Traffic Pollution

Many Pacoima residents live in close proximity to transportation infrastructure, which increases their exposure to air and noise pollution, as well as other environmental hazards. The community's residential areas are often situated adjacent to these high-traffic zones, which can exacerbate their negative effects. According to the California Environmental Protection Agency (Cal/EPA), Pacoima is among California's most environmentally burdened communities, facing air pollution from vehicle emissions and the effects of nearby freeways, auto dismanlers, landfills, and factories.

Figure 22 illustrates the exhaust exposure due to vehicle traffic throughout the San Fernando Valley. The data emphasizes the areas that are heavily burdened with particulate emissions, with Pacoima being a moderately burdened neighborhood specifically near the freeways that surround it. As the placement of freeways has historically been a racialized issue, the three major freeways that run alongside Pacoima were placed there in order to mitigate the issue away from the more affluent neighborhoods in the west valley. Since then, the residents of Pacoima have had to carry the burden of high vehicle emissions. Areas that experience high levels of air pollution can lead to greater stress and poorer health outcomes, such as asthma, low birth weight/premature births, and cardiovascular disease.

Figure 22

San Fernando Valley Vehicle Exhaust Exposure



The areas with highest vehicular pollution depicted in Figure 22 have an obvious correlation with high vehicular traffic areas. Traffic flow throughout Pacoima is heavily influenced by the three major freeways that surround the neighborhood, I-5, 118, and 210. These freeways not only cause traffic congestion but have caused irreversible environmental damage to the community. For instance, before the construction of the 118, which required 31 acres of land, the neighborhood had already lost over 40 acres of parkland due to constructing the Interstate 5 freeway (Ramirez, et al., 2024). Not much consideration was given to the community when these projects were proposed, as stated by Ramirez et al (2024) “they avoided environmental review, where initiatives like the Pacoima Community Plan treated them as a given and not subject to mitigation.”

In today’s day and age, these freeways contribute to significantly higher amounts of congestion and bottlenecks, resulting in higher amounts of vehicle pollutants. On average, Pacoima sees over 500 trucks throughout the day, with over 100,000 cars passing on each freeway (Pacoima Story Map, 2023). The highest amount of traffic congestion occurs along freeways throughout the San Fernando Valley.

Cargo Truck Pollution

Cargo truck pollution affects many areas of the San Fernando Valley, particularly those near major highways. Some intersections in Pacoima have a daily truck count ranging from 50 to 100, while other intersections have much higher daily counts, ranging from 100 to 250 or more trucks. The risk to the negative effects of cargo truck pollution increases the closest people live to the freeways, highest risks occur at a proximity of 500 feet, medium risk at 2,750 feet, and low risk at 5,000 feet and beyond. These data underscores the high levels of truck-related pollution in Pacoima, affecting local air quality and posing health risks to residents near major traffic corridors.

Airport Pollution

The San Fernando Valley has three airports in the region. The communities around these airports face significant health risks due to air pollution and noise pollution. The Whiteman airport in Pacoima, with seldom limits on ridership, continues to represent a major source of pollution for the community.

Railroad Pollution

Pacoima is bisected by a railroad line, which further impacts on the local environment and the daily lives of its residents. The presence of the railroad brings several significant threats to neighborhoods close to the tracks. One of the major threats is the constant noise and vibrations from passing trains. These can cause chronic stress and contribute to mental health issues over time. Another serious threat comes from diesel trains emit fine particulate matter (PM2.5) that is harmful to respiratory health. These particles can cause respiratory issues for people living nearby, as they are too small to be seen but still harmful when breathed in. Additionally, there is the threat of long cargo trains creating traffic delays. Drivers frequently face delays at railroad crossings, causing stress and inconvenience, particularly during peak hours. Train accidents add another layer of threat, particularly when the cargo is hazardous. These accidents can be

extremely dangerous, sometimes resulting in explosions and posing severe risks to the community. Such incidents require complex and hazardous cleanup efforts, disrupt public services, and exacerbate traffic congestion due to road closures and detours. Neighborhoods along San Fernando Road and in Pacoima face these threats head-on due to their proximity to the railroad tracks. The combination of noise, air pollution, traffic issues, and the risk of accidents makes living near the tracks particularly challenging.

Transitioning to electric or alternative-energy trains, such as hydrogen-powered models, would significantly reduce air pollution by eliminating diesel emissions. Electric trains don not give off harmful fumes, so the air would be cleaner, reducing the risk of respiratory problems for people living near the tracks. Cleaner energy trains, like hydrogen-powered ones, could also be used since they only emit water vapor, which is harmless. Government incentives, such as subsidies or tax credits, could accelerate the adoption of cleaner train technologies. Stricter regulations on train schedules could limit nighttime operations in residential areas, reducing noise disturbances during sleeping hours. Designating residential areas as ‘quiet zones’ would restrict train horn use at specific times or locations, mitigating noise pollution. Implementing speed reductions in residential zones could decrease noise levels and vibrations from passing trains. These steps would make living near the tracks much less stressful and help protect people’s mental health.

Solid Waste Facilities

Living near a solid waste management facility, particularly a landfill, can negatively impact nearby residents' quality of life, the physical environment, and air quality (Phan et al., 2021). According to recent studies, only 22.6% of residents living near a solid waste facility reported having a good quality of life. This low percentage was primarily due to poor psychological health and environmental conditions. Psychological health issues linked to air pollutants include memory disturbances, sleep disorders, fatigue, anger, head tremors, blurred vision, slurred speech, and disruptions to the dopamine and glutamate systems, as well as N-methyl-D-aspartate (Phan et al., 2021).

Soil and water degradation from waste disposal can also contribute to residents' concerns about environmental quality. Poor water quality near solid waste management facilities has been associated with an increased frequency of dermatological diseases and digestive disorders due to the presence of bacteria and heavy metals in water samples (Phan et al., 2021).

Solid waste facilities impact air quality in two major ways. First, they release bioaerosols—pathogens known to cause diseases like cholera and diarrhea—into the air, affecting people in surrounding areas. Second, dust and odors from waste collection and transfer operations degrade air quality. Waste transport trucks also contribute to air pollution by releasing particulate matter and unpleasant odors into the neighborhoods they pass through.

In summary, solid waste facilities have considerable negative effects on nearby residents' wellbeing. These facilities contribute to both psychological and physical health issues due to air pollution, water and soil contamination, and exposure to harmful bacteria. There is an urgent need for improved waste management practices to mitigate these health risks and enhance environmental conditions for affected communities.

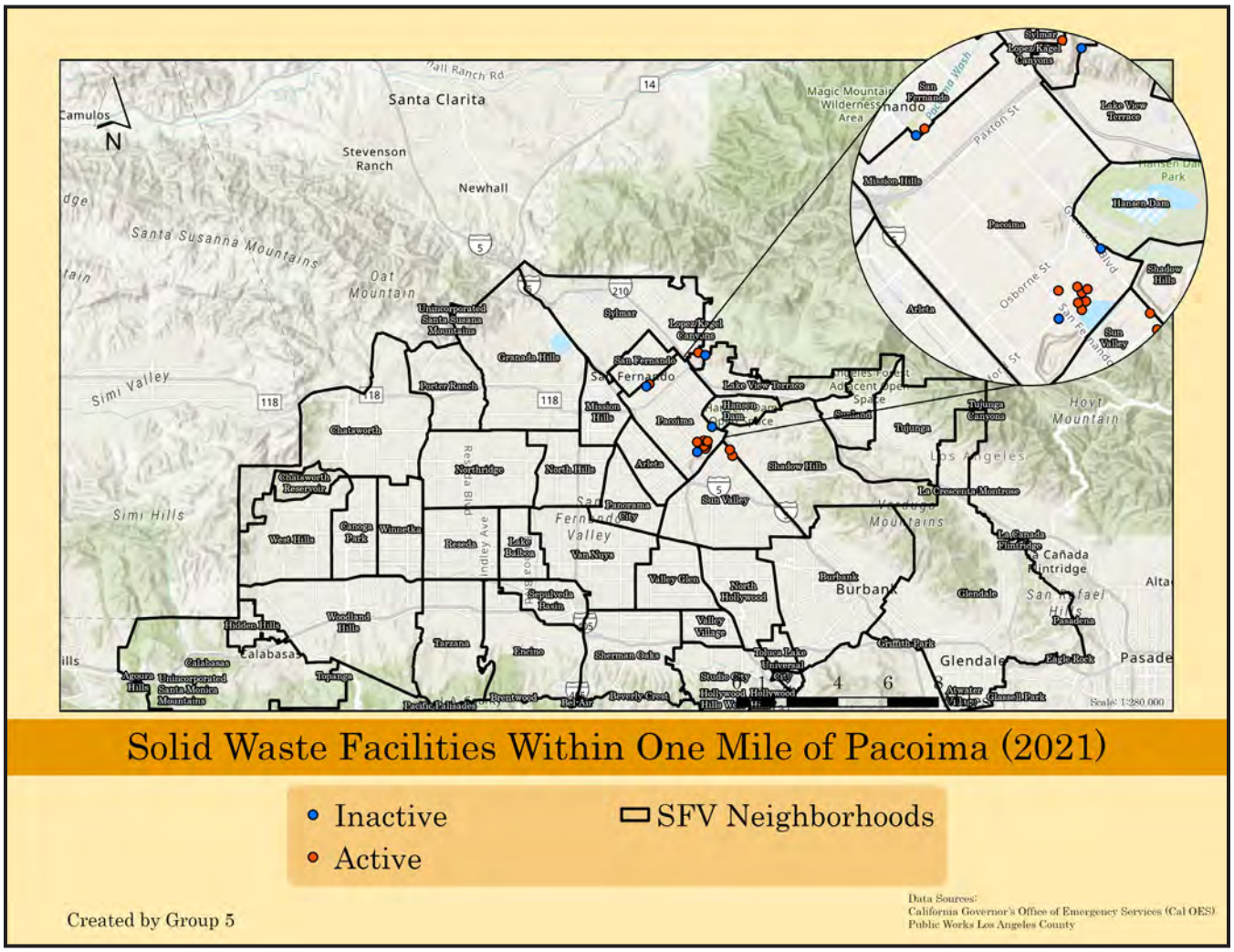
Figure 23 illustrates the active and inactive solid waste facilities within and around Pacoima. These facilities include recycling centers, green material/composting centers, transfer stations, landfills, chipping/grinding facilities, and debris processing sites. Each facility manages different types of waste, such as hazardous materials, electronics, household trash, construction debris, plastics, cardboard, oils, car parts, and metals.

Solutions

Conversion technologies (CTs) is one of the commonly proposed solutions to address this issue, and CTs are already being implemented in some cities to mitigate pollution relating to landfills. According to Public Works Los Angeles County, Ct's essentially turn pre-processed waste into fuel, like biodiesel and electricity. These CTs would help to reduce pollution and help the city be less reliant on landfills. Some of the ways CT's helps the environment are: renewable energy, increasing recycling and, and dependence on landfills, only considered as a last resort.

Figure 23

Solid Waste Facilities in Pacoima



One of the main issues is that the current way of waste management, landfills, is not effective, Reduction of waste is the smallest component of this process, and then the rest is trickled down to the landfill. The new way of waste management focuses from the start on the reduction of waste as a crucial first step. Then the rest of the process still includes reuse and recycling. But then there is the conversion/ compost and then Transformation/Waste-to-Energy. Eventually, the last step is the landfills, which is again a last resort and the smallest part of it, so there is less waste in the landfills compared to the old ones.

However, the issue in Pacoima is more related to the presence of trash in the streets, and the proper disposal of trash is not being practiced, leading to polluted neighborhoods.

Community Perceptions

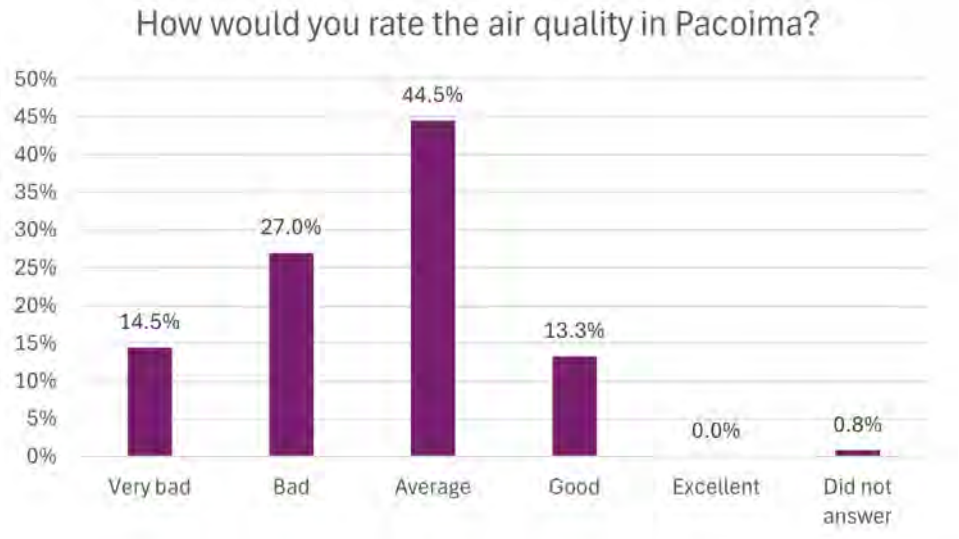
To better understand how air quality is perceived by Pacoima residents, the students designed a survey with 20 questions, out of which, 12 were multiple choice and eight open questions. The surveys were presented in English and Spanish, and implemented in Pacoima between October 11th and November 18th.

The surveys were implemented at different events, including community meetings, weekend events, farmer's market. The students collected 288 surveys in Pacoima, Out of those, 32 surveys were incomplete and thus removed. We have a final count of 256 surveys completed.

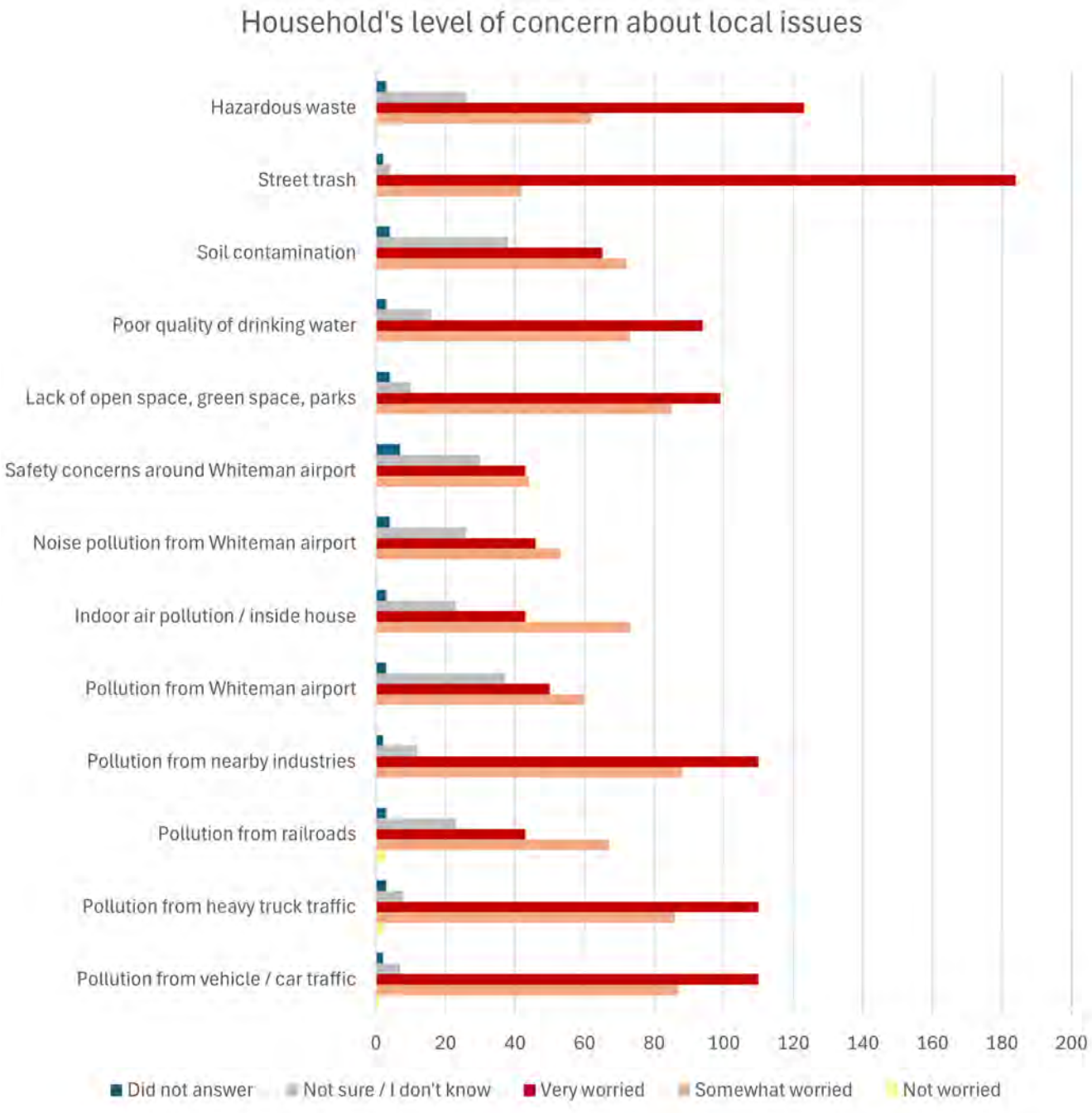
Survey Results

The survey was only applied to adults (18 years and older) who reside in Pacoima. About half of the respondents have lived in Pacoima between six and ten years, and 23% have lived in Pacoima for more than ten years. Out of these, 31% own their homes while 42% are renters and 27% live with family members. The most common languages spoken at home among the respondents is Spanish (65%), and English (33%).

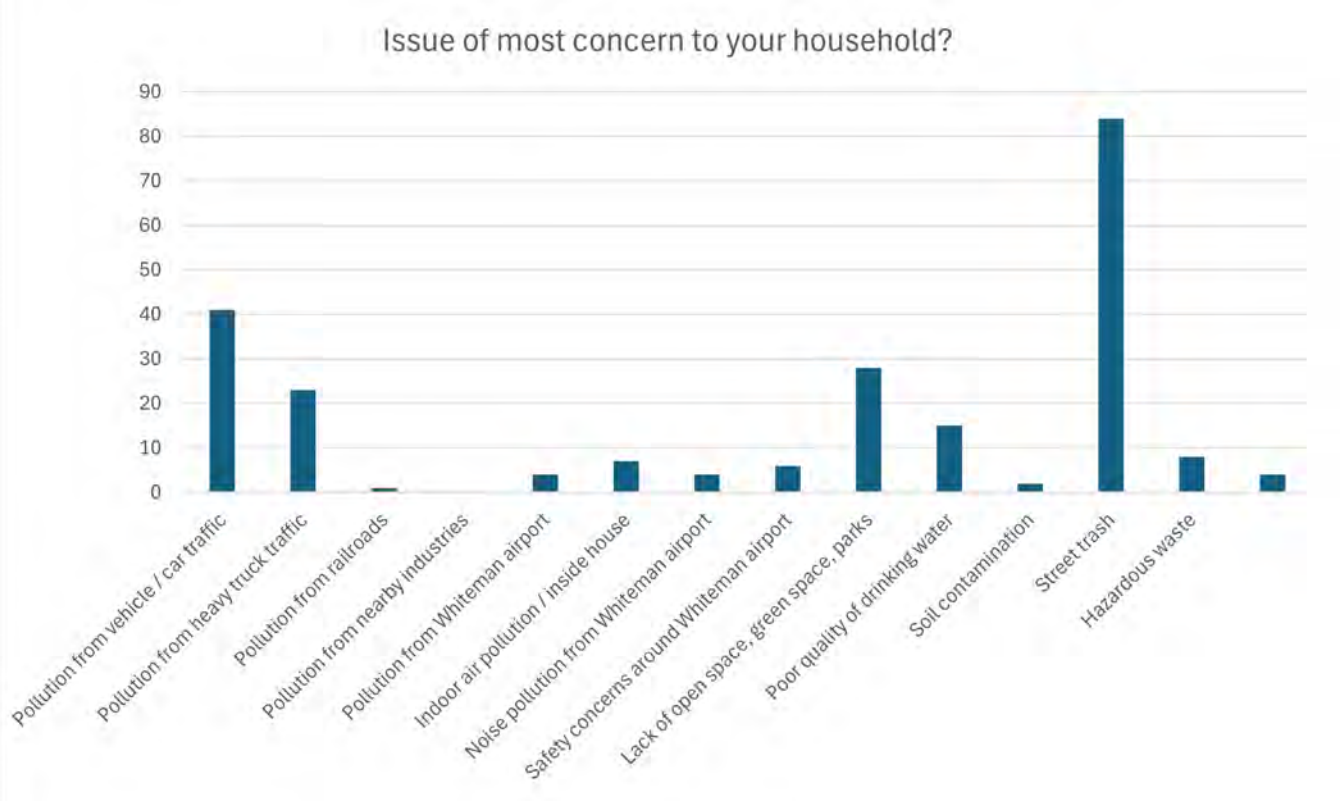
For the majority of the respondents the air quality in Pacoima is average, but 41% perceive it as bad or very bad. It is important to highlight that nobody responded "Excellent" to this question.



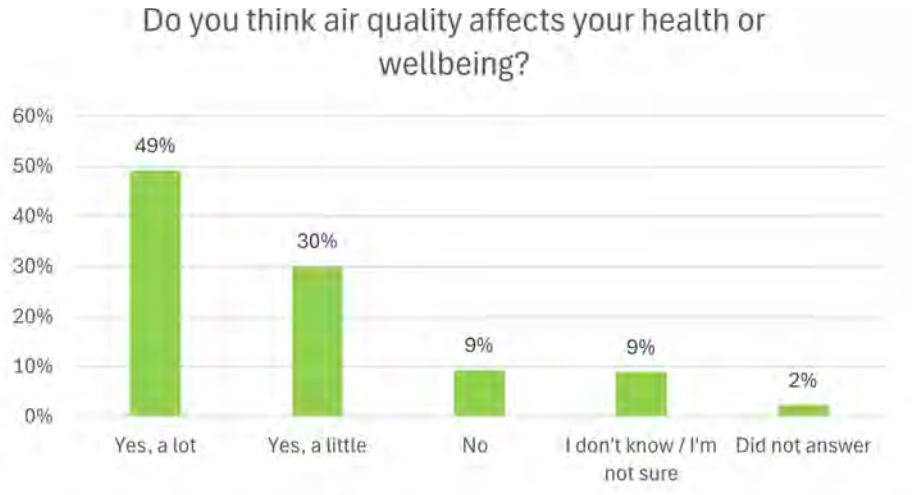
We then asked their household's level of concern over a list of common issues in the community. The majority identified trash on the streets as the most concerning, followed by hazardous waste, and in third place we found similar concern over air pollution by traffic, heavy traffic, or nearby industries. IN foruth place they mentioned the lack of open space, green space, and parks, and in fifth place are worries about the quality of drinking water.



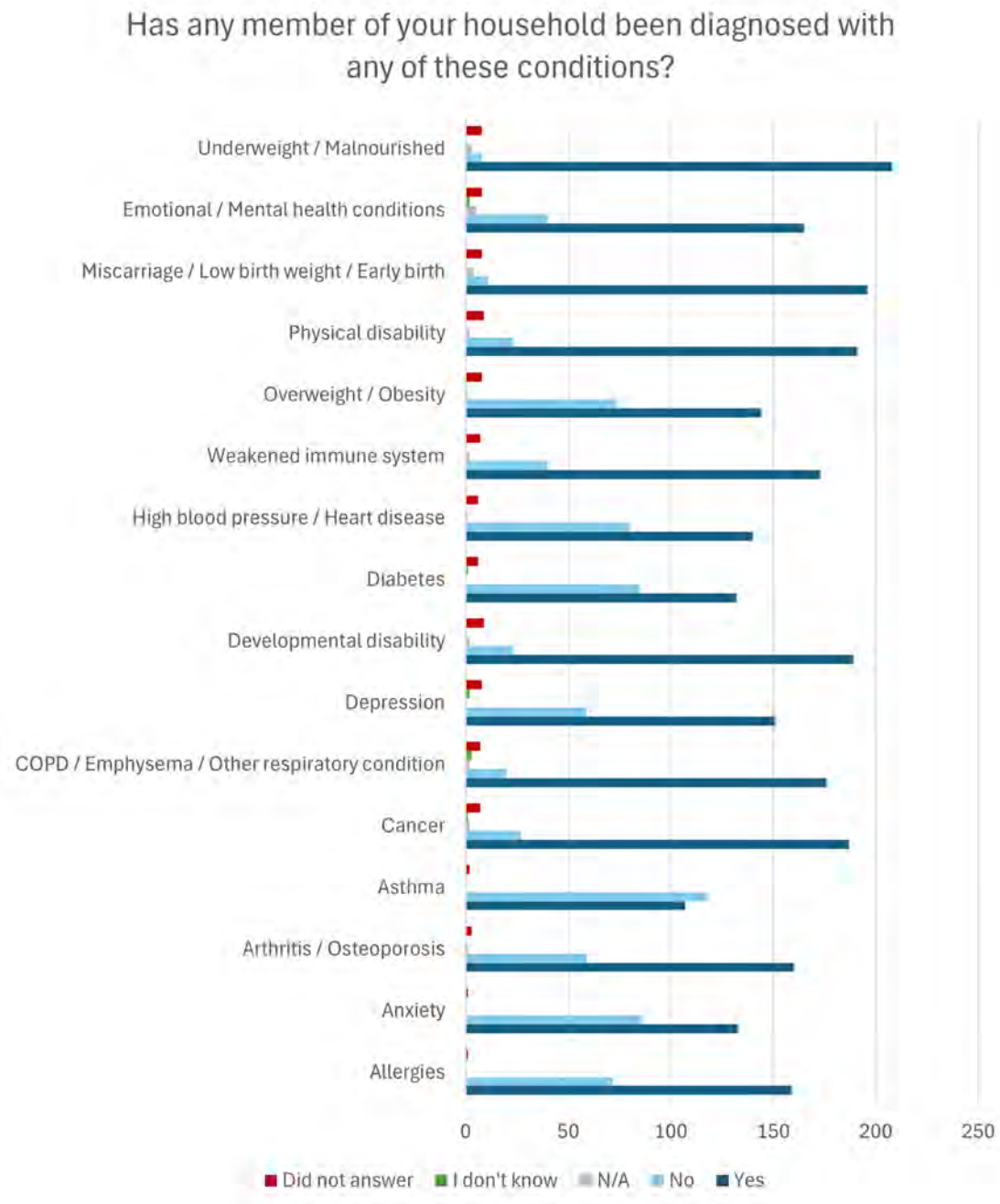
The subsequent question asked respondents to identify the single issue that represents the greatest concern within their household. Once again, the majority cited “street trash” as the most pressing issue, followed by concerns related to sources of air pollution and the lack of open space and parks.



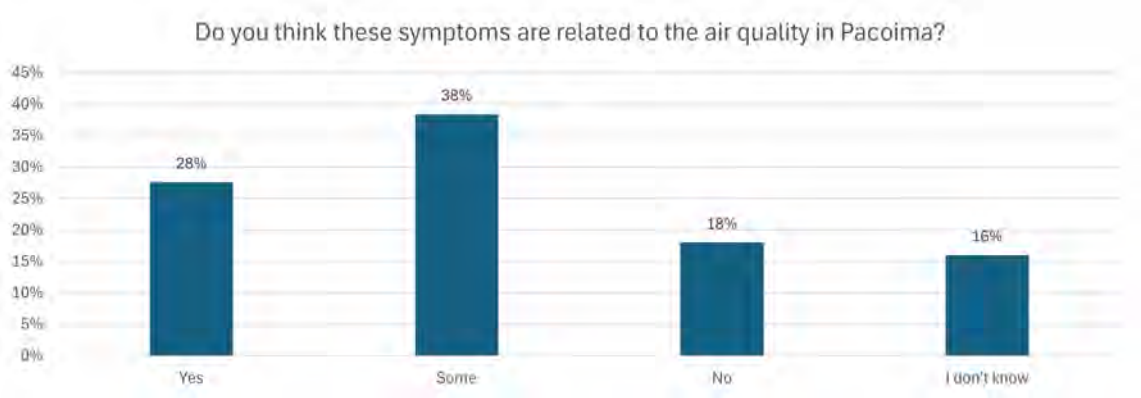
We noticed a high level of awareness on their perceived relationship between air quality and health. Responses to the question ‘Do you think air quality affects your health or wellbeing’ about 80% of respondents answered yes, a little or a lot.



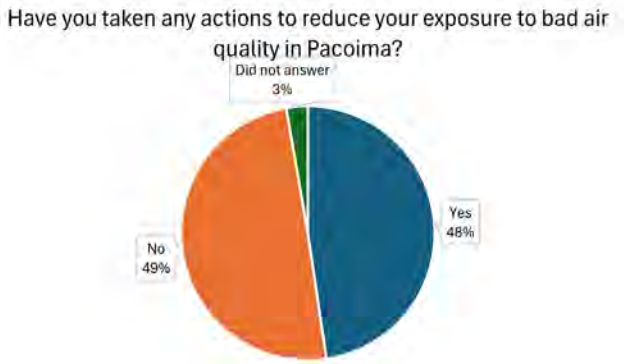
We subsequently inquired whether any member of the respondent's household had been diagnosed with any of the health conditions listed (refer to the figure below). Unfortunately, the majority of respondents indicated that at least one member of their household had been diagnosed with one or more of the listed health conditions. Notably, each of these conditions is either caused or exacerbated by exposure to poor air quality.



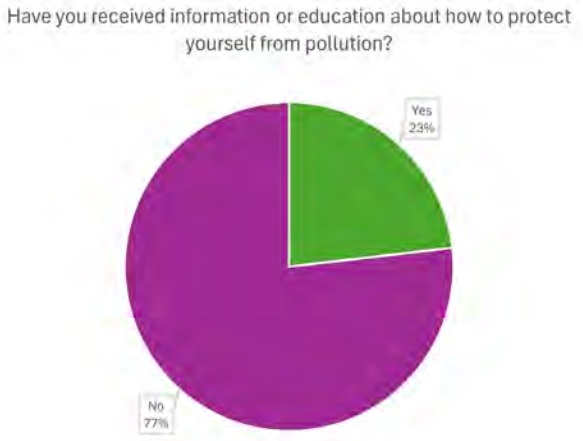
We followed up by asking respondents whether they believed these symptoms were related to the air quality in Pacoima. Sixty-six percent of respondents indicated that they either consider or are aware that some or all of these symptoms are associated with the air quality in their community.



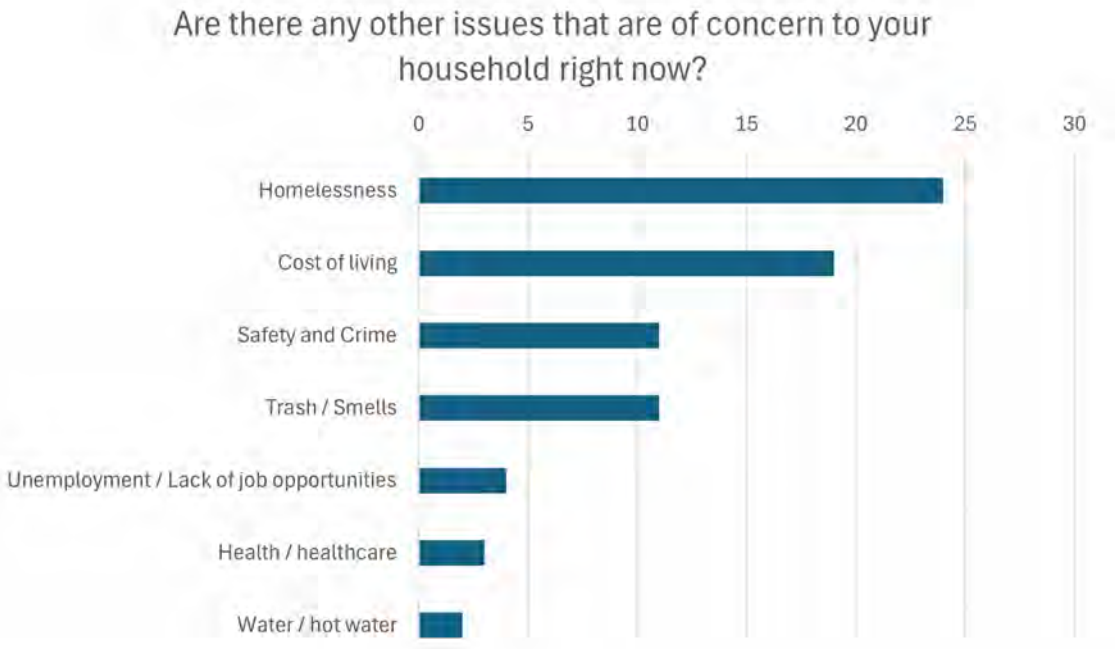
Subsequent questions examined the various strategies employed by Pacoima residents to reduce their exposure to poor air quality and mitigate its adverse effects on their health. Surprisingly, fewer than half of the respondents (48%) reported having taken any measures to reduce their exposure to poor air quality.



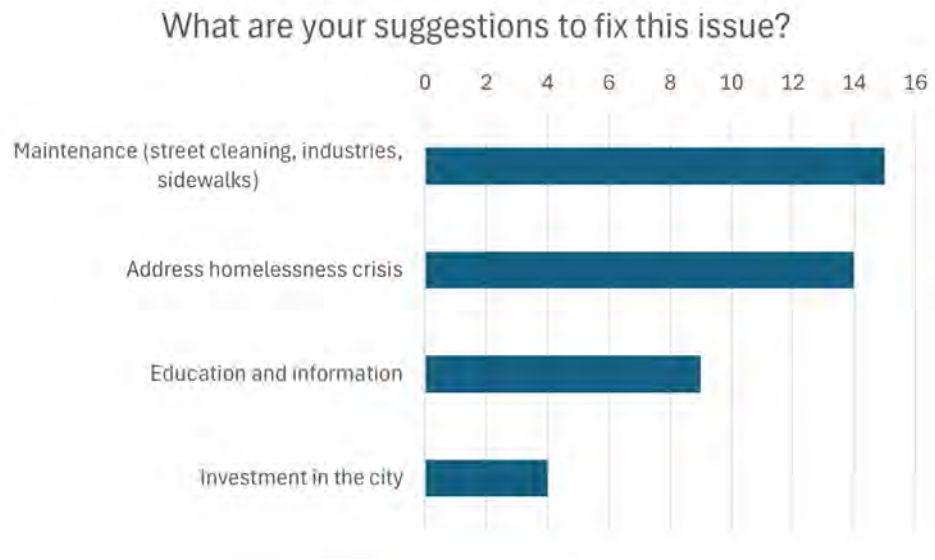
We also found that the vast majority of respondents have not received information or education about different ways to protect themselves from the negative consequences of air pollution, which is an issue of concern but also an opportunity to create more informational programs to help protect the community.



The final section of the survey asked respondents whether there are additional issues of concern within their household beyond air quality. There are various issues that currently represent pressing issues for the community, including homelessness, cost of living, safety and crime, job opportunities and job security, health and water. Also mentioned but with less frequency are other issues such as transit, noise, overpolicing, lack of programs for children, and a lack of sense of community.



The following question asked for suggestions to find feasible solutions to these issues. The majority of these responses assign some level of commitment to the government, such as maintenance (cleaning of the streets, sidewalks, or removal and regulation to polluting industries), to address the homelessness crisis, the provision of more information and implementation of educational programs, as well as more general investment in the city. A few respondents also suggested the closure of the Whitman airport and the removal of the LADWP facility, as well as more regulations, more social services, and the creation of more job opportunities in the region.



The final question of the survey asked respondents to identify programs or resources they would like to see implemented in their community—initiatives they believe would be both attractive and effective in improving their quality of life. This open-ended question was designed to capture the full range of ideas and priorities envisioned by community members.

The vast majority of responses emphasized the importance of education in various forms, with a particular focus on education about air pollution and workshops aimed at addressing environmental health issues. The second most frequently mentioned priority was increased access to fresh and healthy food. Third was the need for job training and employment opportunities, including job fairs. Additional responses highlighted the need for improved waste management and street cleaning services, as well as expanded programming for child development—covering areas such as physical and mental health, sports, recreation, daycare, and afterschool activities. The homelessness crisis also emerged as a concern, with respondents calling for increased support for unhoused individuals. A smaller number of participants suggested the creation of more parks and the planting of additional trees.

Based on these findings, it is evident that Pacoima residents demonstrate a strong awareness of the air quality challenges affecting their community. Concurrently, they have expressed a clear demand for increased access to educational resources and practical information to more effectively address these concerns. This presents a valuable opportunity for Pacoima Beautiful to design and implement targeted programs that are responsive to the community's expressed needs. Furthermore, it is encouraging to note that initiatives such as the air quality tracking program being introduced through the AQMD Sensor Library are likely to receive substantial community support, reinforcing the importance and relevance of such efforts. These results underscore key areas where additional support could substantially improve residents' overall quality of life. Moreover, the initiatives currently being undertaken by Pacoima Beautiful are well-positioned to address these gaps in a meaningful and impactful manner.

The Team

The Team

Samantha Abarca is an undergraduate senior majoring in Urban Studies and Planning. Samantha wishes to be involved in land-use, community development, practice sustainability, and to create maps in order to help communities enhance their quality of life within their built environment. She is currently an intern at the Shift Our Ways Collective, where they harvest produce at the non-profit's urban farm for nearby residents, and host a series of community events. Upon graduation, Samantha intends to work in community development, transportation, or zoning. In her spare time, she likes to play Minecraft, Stardew Valley, and watch movies.

Daniel Andalon is a dedicated government and community affairs professional with deep roots in Los Angeles, where he resides in the community of Highland Park with his wife and three sons. With extensive experience in government relations, Daniel has worked alongside prominent leaders in City Hall and the State Capitol, focusing on issues that impact residents, including healthcare, education, labor, and the environment. A first-generation college student, he returned to CSUN after 22 years, inspired by his wife's Master's in Education, his eldest son's Master's in History, and his middle son's UCSD acceptance. Daniel's career includes key campaign roles, such as leading efforts for the former Secretary of Labor, Supervisor Hilda Solis and the Presidential bid of Senator Bernie Sanders. He also actively supports and advocates for non-profits and community groups and is passionate about equitable urban development. With his Masters his goals are to contribute to municipal government in municipal management as well as inspire future civic leaders by teaching social studies at the college level.

Samere Bhatt is a senior student at CSUN. Born and raised in the Bay Area, he is passionate about urban health, as well as environmental and social justice. Samere volunteers as a support mentor for transgender South Asians and their families and is certified in Naloxone administration. In the future, he would like to further his research on how the built environment affects public health crises.

Mixtli Cabrera is a senior student in Urban Studies and Planning. As a first-generation Mexican American from Santa Clarita, CA, she is passionate about creating equitable, sustainable communities through thoughtful urban design and has a dedicated focus in addressing environmental challenges, particularly those affecting marginalized communities. She hopes to bridge the gap between environmental policy and community. In her professional career she hopes to advocate for sustainable development practices that prioritize social equity, climate resilience, and community well-being.

Violet Dawi, an undergraduate student at CSUN and a Los Angeles native, enjoys exploring the city's arts and cultural events, and attending social gatherings to network and connect with professionals focused on social impact and economic development. For the past 12 years, Violet has worked in the construction industry, where she has gained experience drafting plans and understanding how different cities handle plan submissions. After graduation, she plans to travel as much as possible and continuing her preparation for the ARE exam. She is excited about consulting and looks forward to building a career in architecture and urban design in the private sector.

Kaelan Clipper is passionate about the application of visual arts and social sciences as tools to better comprehend, communicate, and confront challenges in communities. Kaelan is convinced that these tools allow teams to develop inspired contributions. Currently, he does social media outreach for the Department of Urban Studies and Planning, serves as the event coordinator for the club Urban Planning Students of Northridge, and regularly contributes as a pixel artist and illustrator for the Game Development Club. Going forward, Kaelan is interested in further refining his art and design skills to expand his professional foundation and help make an impact in his community.

Marce Dean is an Urban Studies and Planning major and a lifelong resident of Los Angeles County. Marce's personal interests are in technology systems and applying them to research projects using GIS. Marce is interested in housing and transportation projects that support disadvantaged communities.

Daniel Felix has lived in the Sylmar region of Los Angeles all his life. With the knowledge he gained from his degree he hopes to help the community and the city he lives in. His future plans are to work for the Department of Water and Power in Los Angeles in a section where his degree can take part in future ideas. He would also like to work at Metro improving and mapping out current and future roads and railways systems for better public transportation in the Los Angeles region.

Reese Hammons is an Angeleno native who grew up around the San Fernando Valley, and he has a strong passion for photography and painting. He is currently interning at Culver City's Planning Department. In the future, Reese hopes to use his education and experience to focus on community development.

Owen Hernandez recently relocated to Santa Clarita, after living in Los Angeles most of his life, with the goal of building a career in urban planning that positively impacts communities. Through academic experiences and hand-on projects within the San Fernando Valley, Owen has developed a deep understanding of land use, urban design, and planning processes, an experience that he understands is essential for shaping communities. With aspirations to contribute to urban planning practices that promote economic vitality, environmental sustainability, and social equity, he is eager to create opportunities and build a successful planning career. In the future, Owen hopes to move into leadership roles, where he can contribute to shape cities that meet the needs of all residents.

Anya Kargodorian is a senior student majoring in Urban Studies and Planning with a minor in Sustainability. Passionate about a greener future, Anya hopes to have a career in Environmental Planning, focusing on the impact of building projects and promoting sustainable development.

Eleanor Leatham is an undergraduate student in the Urban Studies and Planning program, which she joined after working in audio production and agriculture. She previously obtained an AA in Social Science with a focus on political science. Originally from the Bay Area, she brings a commitment to sustainable community planning and environmental justice. Her current academic focus is on air quality, climate change curriculum within PreK-12 education, and historical preservation. Eleanor hopes to pursue a career in regional planning and community development, blending cultural and sustainable practices to mitigate environmental and economic challenges.

Armando Lopez is a senior at CSUN. His background is El Salvador, but he was born in Panorama City, Los Angeles. Some of his current interests include focusing on environmental justice. He would love to help low-income communities really flourish in their respective areas. GIS catches his eye as he really loves to make maps! His plan for the future is to get a job in urban planning and gain more professional experience.

Mateo Mateo is pursuing a Bachelor of Arts in Urban Studies and Planning, with a focus on urban forestry. Currently interning with the City of San Fernando's Department of Community Development, he is involved in assessing land uses. Passionate about integrating urban life with the natural environment, Mateo is committed to creating resilient, sustainable cities for future generations.

Evan Mathieu is a third year Junior majoring in Urban Planning & Studies. He was born in Van Nuys and attended Agoura High School, so he is a lifelong Los Angeles area resident. However, he did live near Washington D.C. for his freshman year of high school, which was an interesting experience. Evan has always found transportation, architecture, infrastructure, demographics, geography, and how each city is different due to its needs and history very interesting. He has always loved traveling to various cities and seeing how different they all are and how that impacts the people who live in those areas in unique ways. In the future, he would love to work in the public or private sectors, and then ideally provide a service or product useful to others in the urban planning field by starting a business. His other interests include baseball, the stock market, sports cars, traveling, hanging out with friends, video games, and using computers.

Maylayka McConnell is a student who uses her critical thinking skills to develop solutions that best serve underrepresented individuals. Maylayka recognizes the numerous issues negatively affecting daily life and strives to advocate and gain experience in justice studies. After graduating, she plans to work as an urban planner with a focus in housing, transportation, environmental or community development. Over the summer, she had the opportunity to work at a nonprofit that offers several services for the Washington DC community at two central locations in that city. She believes having a community resource center such as Bread For the City could aid in both changing the negative stigma associated with low-income people in California and provide necessary resources different community members advocate for. In the future, she plans to have a community resource center in California.

Kimberly Ngesa currently juggles school, work, and planning and is preparing for a career as a transportation planner once she finishes her degree. She considers herself a big advocate for mobility, open spaces, good quality sidewalks, a good metro system, and safe bike lanes. All these factors can affect quality of life either in a good or bad way. Right now, her interests are in urban policy issues, especially around housing, because, as someone who pays rent, its hard out here, and she considers that affordable housing should be available for everyone, especially for families in need. She hopes to make tangible impacts to the community, independently of where she works.

Sergio Quintana is a first-generation college student and the son of two immigrant parents. Growing up in a household shaped by resilience and determination, Sergio developed a strong commitment to creating equitable and inclusive urban spaces. Inspired by his family's journey, he aims to address systemic challenges such as housing insecurity, environmental justice, and access to resources for underserved communities. Sergio is interested in addressing housing affordability, homelessness, and environmental justice. His career aspirations include working in city planning or public policy, focusing on initiatives that foster social equity and environmental resilience.

Hakob Shishikyan is an ambitious and eager-to-learn student going on his fourth year of Urban Studies and Planning with a minor in Political Science. His focus on understanding how cities and communities function has led him to pursue his career in urban planning and design, where he hopes to positively impact society by designing sustainable and livable environments. Interning with Council Member Paul Krekorian's Office, The Sherman Oaks Business Improvement District, and with work experience at Lilit Bakery and Cafe, Hakob can confidently say that he has developed new skills and knowledge he hopes to apply to his future career paths.

Jherwin Torres is a lifelong resident of the San Fernando Valley, a region to which he feels a deep connection and a strong desire to see flourish. Only recently has he had the opportunity to explore the Valley in greater depth, gaining a broader understanding of its diverse communities and the areas in need of thoughtful revitalization. As an urban planner, his primary focus lies in the design aspects of urban development. He is particularly interested in creating aesthetically pleasing and functional urban spaces that enhance community lifestyles while fostering inclusiveness. In the future, he hopes to get into a design firm where he can express his creativity while helping communities grow little by little.

Alan Trujillo-Bañuelos grew up in the San Fernando Valley, where he learned the value of hard work and a resilient mindset. He is passionate about redevelopment, improving living standards for communities, and green infrastructure. Alan has worked for the Educational Opportunity Program (EOP) at CSUN since freshman year, serving as a student assistant and mentor helping first time freshmen transition to college. He has also interned for CHC Bold Pac in Washington D.C., working for the Strathdee Group, a political consulting group that fundraises for Democratic Congress members. During his time there he was responsible for delivery/pick up of checks, data entry, staffing of events, and networked with many

professionals. After DC, he volunteered in Young Life's Lost Canyon, Christian youth summer camp, in Arizona. There he worked in the retail stores, such as the coffee and snack shop and participated in activities/events for campers. Alan has also been the fundraising coordinator for the Urban Studies and Planning Club, where he helped to plan and find funding for the APA Conference in 2023, in Philadelphia.

Logan Villalobos is a senior student and expects to graduate with his Bachelor of Arts in the Spring of 2025. Driven by his passion for affordable housing and transportation, Logan's goal is to promote access to high quality transit in Southern California. He has been able to foster his interest in housing during an internship in his hometown at the County of Ventura, County Executive Office's Community Development Division. There he has gained insight in the process of affordable housing from the drafting of annual action plans, communication with community partners, and seeing the completion of new developments.

Victor Zepeda is a first-generation undergraduate student and expects to graduate in the Spring semester of 2025. Victor loves all the elements that overlap with planning such as environmental justice, transportation, housing, and community building. In pursuing his degree he hopes to gain as much knowledge as possible to uplift neighborhoods that have been underserved and marginalized from previous planning systematic oppression. He is currently working for Pacoima Beautiful as a Planning Intern, acquiring and developing the necessary skills to support community-driven urban initiatives and contribute to sustainable and equitable city planning. Victor enjoys the multiple life experiences that city life provides to help broaden his understanding of Urban Planning at its current state and where the profession will be in the future.

Yuliia Zhytelna is pursuing a Bachelor of Arts in Journalism (Broadcast) alongside a Bachelor's in Urban Studies and Planning. Originally from Kyiv, Ukraine, she has lived in Los Angeles for five years and is dedicated to storytelling, sustainable urban development, and community activism. She is interested in how media can elevate underrepresented voices and is involved in urban projects focused on walkability and sustainability, including transit-oriented development and mixed-use neighborhoods. Yuliia seeks practical experience in urban planning and media production to tackle global challenges, enhance community connectivity, and promote equitable urban design. Through her efforts, she aims to merge her journalism and planning skills to develop impactful and sustainable solutions for diverse communities.