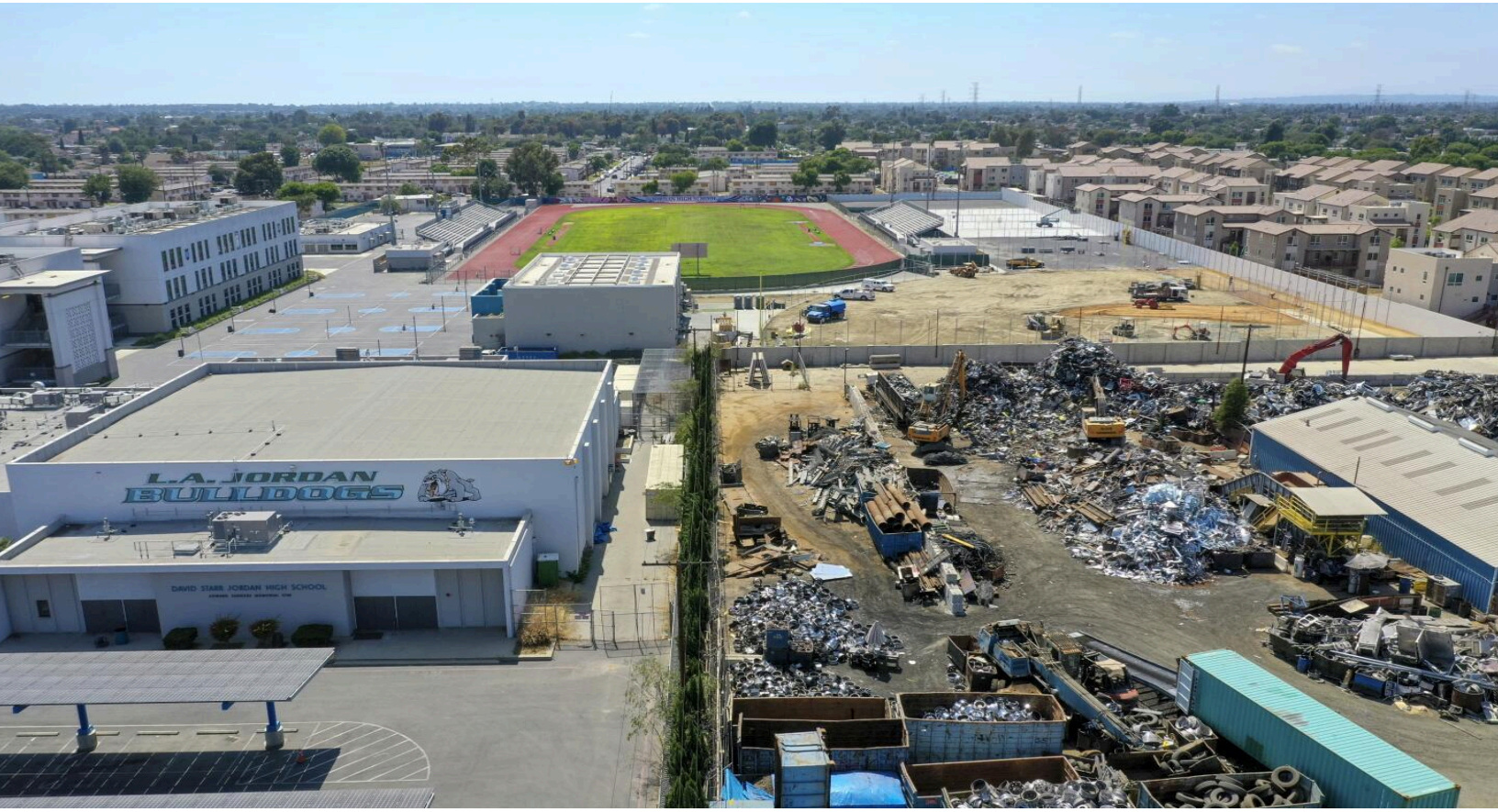
JORDAN HIGH SCHOOL

LOS ANGELES

INTERDISCIPLINARY ENVIRONMENTAL JUSTICE CASE STUDY

An Exploration of Environmental Governance Needs, Challenges and Opportunities

MARCH 2024



GROUP NO. 7

AUTHORS

Anthony Ashkinadze, Brianna Barela, Gabriela Cervantes-Castillo, Liam Henderson, Aleksandra Jakovleva, Tair Kuzhekov, Lindsay Mikuni, Enzo Moore, Liam Rothchild, Liam Senior, Ethan Valencia

CITE AS

Ashkinadze, Anthony; Barela, Brianna; Cervantes-Castillo, Gabriela; Henderson, Liam; Jakovleva, Aleksandra; Kuzhekov, Tair; Mikuni, Lindsay; Moore, Enzo; Rothchild, Liam; Senior, Liam; Valencia, Ethan. 2024. "University of California, Irvine," Orange County, California USA: An Interdisciplinary Environmental Justice Case Study," Environmental Injustice Global Record. *Disaster STS Research Network*. https://disaster-sts-network.org/

ABOUT

This case study report was developed by students at the University of California Irvine for the undergraduate class "Environmental Injustice," taught by Kim Fortun, Margaret Tebbe, Prerna Srigyan, Ina Kim, and Luc McKenzie for the Department of Anthropology, Winter 2024. The University of California Irvine is on the ancestral homelands of the Tongya and Acjachemen nations.

COVER PHOTO

Image description: Photo of aerial view of Jordan High School next to the Atlas Metals and Co. recycling facility in Watts, Los Angeles, California. Image source: Allen J. Schaben, Los Angeles Times.

LAND ACKNOWLEDGEMENT

Which Indigenous nations were/are present in your case study setting?

The portion of Los Angeles County in which Jordan High School and Watts are located occupies the unceded land of the Chumash and Gabrieleno-Tongva tribes.

How and when was their land taken?

The Chumash's land was taken beginning in 1770, when the Spanish settlers began colonizing and establishing missions up and down the California coast. Although originally not colonized by the first interactions with the Spanish expedition of Juan Rodriguez Cabrillo in 1542, the Gabrieleno-Tongva tribe's land was taken in 1771 by Spanish colonizers, enslaving them and forcing them to build the Misión de San Miguel Arcángel, giving the Tongva slaves the name Gabrieleno.

Are tribes in your setting recognized by the federal government?

Only the Santa Ynez Band of the Chumash (not the tribe of our case study location) is federally recognized, while the Gabrieleno-Tongva tribes are not recognized by the federal government.

Do tribes in your setting have reservations? Are there notable activities on their reservations (ecological restoration programs, casinos, etc)?

While the Santa Ynez Band of the Chumash has a reservation in Santa Ynez, California, the Gabrieleno-Tongva do not have a recognized reservation space.

How many tribal members are there currently? How many still live on their reservations?

The Chumash currently has a population of over 5,000 people. The Gabrieleno-Tongva tribe currently has over 2,500 people living in the region.

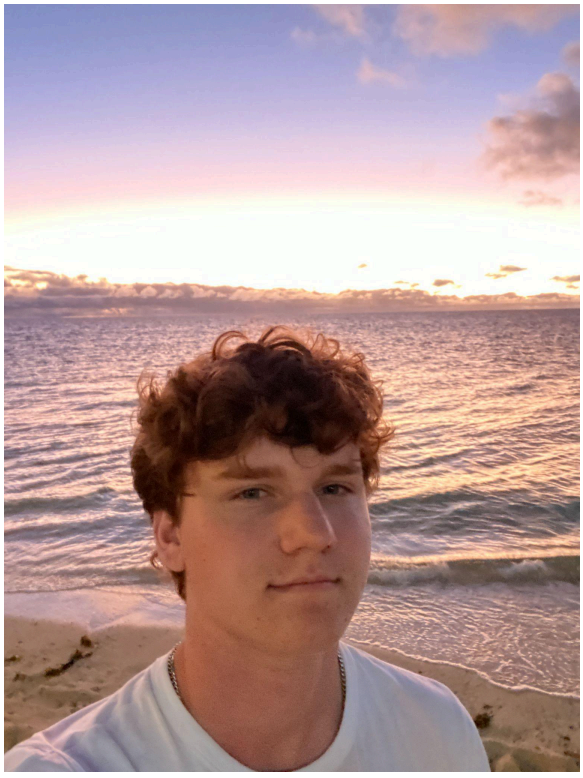
How are Indigenous peoples and organizations in your setting working to preserve their cultural heritage, lands and rights?

The fight for federal recognition is a key continuing struggle for both tribes.

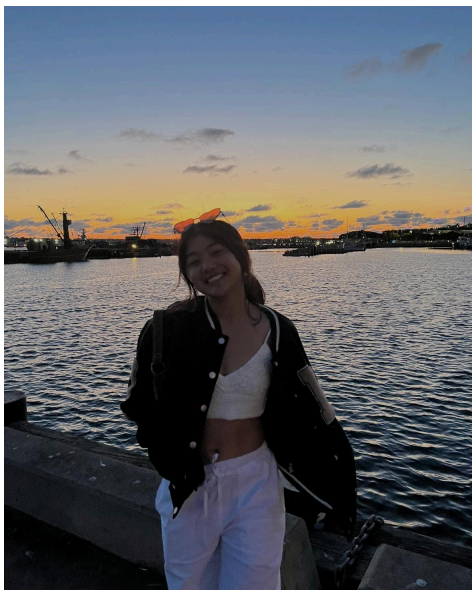
How could you – and UCI – support the work of Indigenous peoples in your setting?

To support the work of the Gabrielino-Tongva tribe, UCI could develop and implement curriculums and educational programs that focus on their history, culture, and contemporary issues. For instance, through hosting events, workshops, and even bringing in Indigenous speakers would help cast a light to their voices and culture.

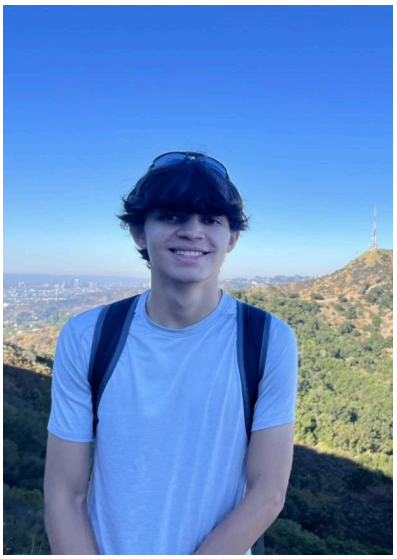
BIOGRAPHICAL STATEMENT	PHOTO
Anthony Ashkinadze is currently a first year Computer Science student at University of California, Irvine. He is from Los Angeles, CA and wants to pursue a computer science career and explore similar fields in the future.	
Brianna Barela is currently a second year Criminology, Law and Society major at the University of California, Irvine. She is currently living in Lake Elsinore, California and commuting, while working full time. After getting her bachelors at UCI, she hopes to go on and get her masters in criminal law, although, unsure where she would like to go to law school.	

Gabriela Cervantes-Castillo is currently a second year math major at the University of California, Irvine. She is originally from Rialto, CA but moved to Huntington Park, CA when she was seven. She is currently unsure what career she wants to pursue but hopes to continue her knowledge of math.	
Liam Henderson is currently a first year Earth System Sciences major at the University of California, Irvine. Originally from Larkspur, California, he attended Redwood High School. With a fascination with the environment since he was a young lad, he plans on pursuing a degree in Environmental Science.	

Aleksandra Jakovleva is currently a third year, pursuing a B.A. in Drama at the University of California, Irvine's Claire Trevor School of Arts. She's originally from Moscow, Russia, and has lived in the Los Angeles area for 15 years, previously attending Beverly Hill High School. Her interest in environmental science grew after taking an oceanography course that raised the issue of climate change. She hopes to integrate issues of sustainability and environmental awareness into her work in the entertainment industry.	
Tair Kuzhekov is currently a third year student, majoring in biomedical engineering. He is originally from Kazakhstan but graduated from high school in Moscow. He is planning to apply for a PhD Degree in BME with genetic engineering specialization. A few facts about Tair is that he is a rock music enjoyer, loves watching detectives, and always down for beach days. Anthro 25A was also the first course when he ever studied anthropology.	

Lindsay Mikuni is currently a first year student, and although she is undeclared at the moment, she plans to pursue a B.S. degree in Public Health. She's originally from Sacramento, California, and has moved to Irvine to attend school at the University of California Irvine. She has intentions on becoming a traveling physical therapist, with big hopes of helping people while traveling the world.	
Enzo Moore is currently a second year student pursuing a B.S. degree in Biological Sciences. He is originally from Sacramento, California, but has moved to Irvine to attend the University of California Irvine. He plans to pursue a career as a physician.	

Liam Rothchild is currently a fourth year student pursuing a bachelors in business economics. He lives in Pasadena and is interested in finding a career that encompasses his appreciation for finance and his interest in policy.	
Liam Senior is currently a third year student at the University of California Irvine, pursuing a B.S. in Earth System Science. Originally from Los Angeles, California but has since moved to Houston, Texas, he plans on becoming an oceanographer.	

Ethan Valencia is currently a first year student, pursuing a B.S. degree in Computer Science and Engineering. He is originally from Chicago, Illinois, but has since moved to Irvine to attend the University of California, Irvine. He plans on becoming a software engineer, furthering his love and appreciation of coding.	

PERMISSION TO PUBLISH @ https://disaster-sts-network.org Do you consent to having your name listed as an author on the published case study?		
Name	**Signature**	**Publish? (Y or N)**
1. Anthony Ashkinadze	**ANTHONY ASHKINADZE**	**Y**
2. Briana Barela	**BRIANNA BARELA**	**Y**
3. Gabriela Cervantes-Castillo	**GABRIELA CERVANTES-CASTILLO**	**Y**
4. Liam Henderson	**LIAM HENDERSON**	**Y**
5. Aleksandra Jakovleva	**ALEKSANDRA JAKOVLEVA**	**Y**
6. Tair Kuzhekov	**TAIR KUZHEKOV**	**Y**
7. Lindsay Mikuni	**LINDSAY MIKUNI**	**Y**
8. Enzo Moore	**ENZO MOORE**	**Y**
9. Liam Rothchild	**Liam Rothchild**	**Y**
10. Liam Senior	**Liam Senior**	**Y**
11. Ethan Valencia	**ETHAN VALENCIA**	**Y**

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ABSTRACT

Problem statement: Toxic pollutants emitted from industrial facilities have caused severe environmental and health problems in several communities across the United States. Jordan High School and the surrounding area of Watts, California, USA, is a prime example of this problem.

Aims: Aim 1 of this case study is to describe the setting, hazards, stakeholders, and health harms in Jordan High School and the surrounding area of Watts, Los Angeles, resulting largely from the presence of Atlas Metals and Co. recycling facility near Jordan High School, but also from additional sources like poor/dated infrastructure, historic redlining, and illegal dumping practices. Aim 2 is to mobilize and illustrate key environmental health concepts. Aim 3 is to translate the research findings of the case into further research and action proposals.

Methods: The case study is organized to address the ten questions in an Interdisciplinary Environmental Health Case Study Framework developed to allow comparison between cases. For example, our case study is focused on the slow ecological disaster in Jordan High School, Los Angeles, and could provide important information regarding lead contamination.

Findings: Our analysis of environmental and health hazards in the area of Jordan High School shows the amount of problems that the citizens of Watts face every day along with the challenges trying to fix these problems comes with. One of our key findings is how historic disadvantages stemming from intersecting injustices–including, but not limited to, racial and economic–worsen the environmental hazards in our case study location.

Intellectual Significance: This case study illustrates how value differences between stakeholders like the companies causing the hazard, and educational/community leaders like the local school district are engaged in a turbulent legal battle, with the defendants refuting that they are causing adverse environmental effects.

Practical Significance: This case points to the need for thoughtful consideration of the placement of industrial plants with regard to what is located around them. In order to safely locate a plant, you must look at the surrounding area and make sure you are not going to harm anyone around the plant location.

INTRODUCTION

This case study report examines environmental health and governance challenges and opportunities near Jordan High School, located in Los Angeles, California, USA.

The report addresses a series of ten questions (Fig. 1) that draw out local details in a manner that encourages comparison with other places. The research has been done in a short time-frame so is limited and points to the need for further research and community engagement. The goal is to help build both a body of research on radiation governance around the world and a network of researchers ready to help conceptualize and implement next-generation radiation protections.

Environmental Injustice Case Study Framework

1. What is the setting of this case? What are its assets? What opportunities and challenges will there be in this setting in coming years?

2. What environmental threats are there in this setting?

3. What intersecting factors -- social, cultural, political, technological, ecological -- contribute to environmental health vulnerability and injustice in this setting?

4. Who are stakeholders, what are their characteristics, and what are their perceptions of the problems?

5. What have different stakeholder groups done (or not done) in response to environmental problems in this setting?

6. How have environmental problems in this setting been reported on by media, environmental groups, companies and government agencies?

7. What local actions would reduce environmental vulnerability and injustice in this setting?

8. What extra-local actions (at state, national or international levels) would reduce environmental vulnerability and injustice in this setting and similar settings?

9. What kinds of data and research would be useful in efforts to characterize and address environmental threats in this setting and similar settings?

10. What intersecting injustices -- data, economic, epistemic, gender, health, infrastructure, intergenerational, media, procedural, racial, reproductive -- contribute to environmental injustice in this setting?

FIGURE 1: This is the analytic framework that guided research for this case study.

We will consider a variety of concepts in our analysis of the environmental injustice at Jordan High School and Watts, including setting, intersectionality, historic disadvantage, vulnerability, and racial injustice.

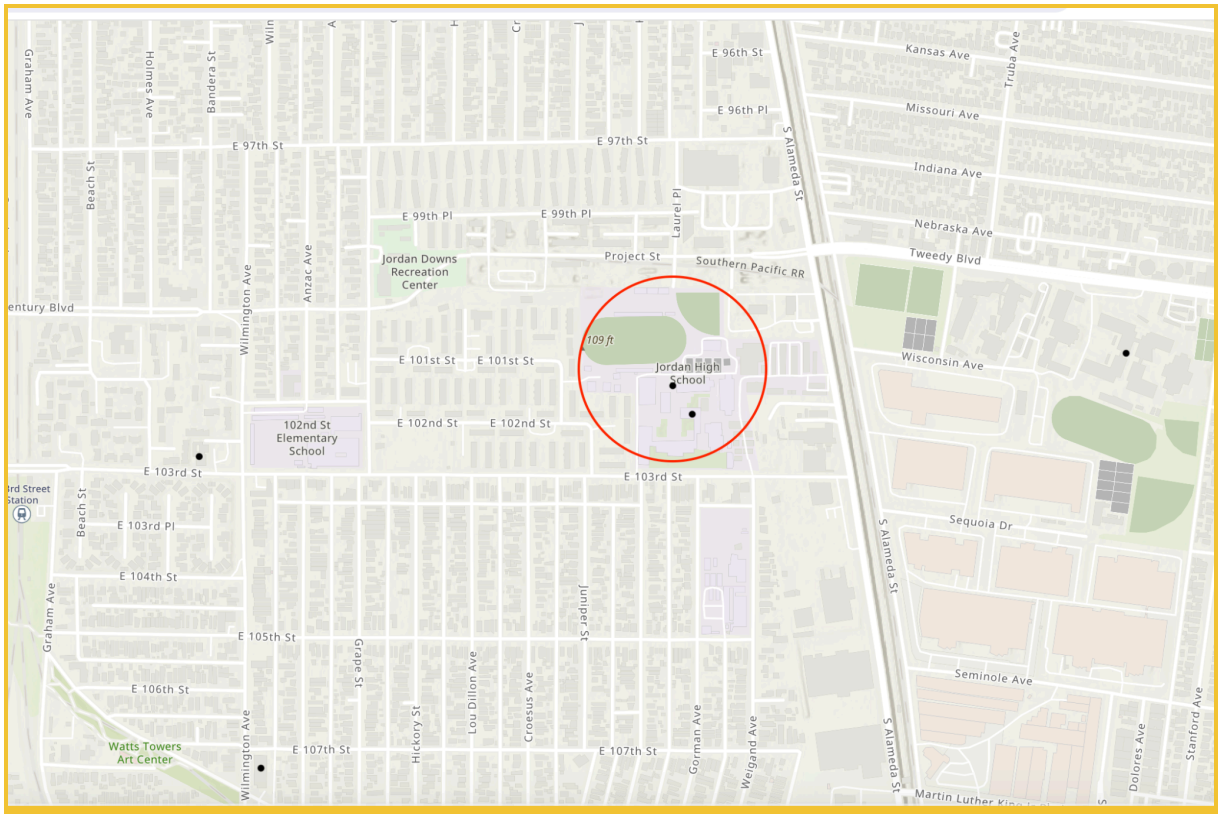


FIGURE 2: Focal School Location

Our case study will focus on Jordan High School and the surrounding area of the Watts neighborhood, in the city of Los Angeles, in LA County. The school serves 780 students, with a 99.1% minority enrollment rate.

Source:

https://experience.arcgis.com/experience/24133d4eb5af4af2abf8e92b3f8fe65f/ (Screenshot by Aleksandra Jakovleva, January 23, 2024).

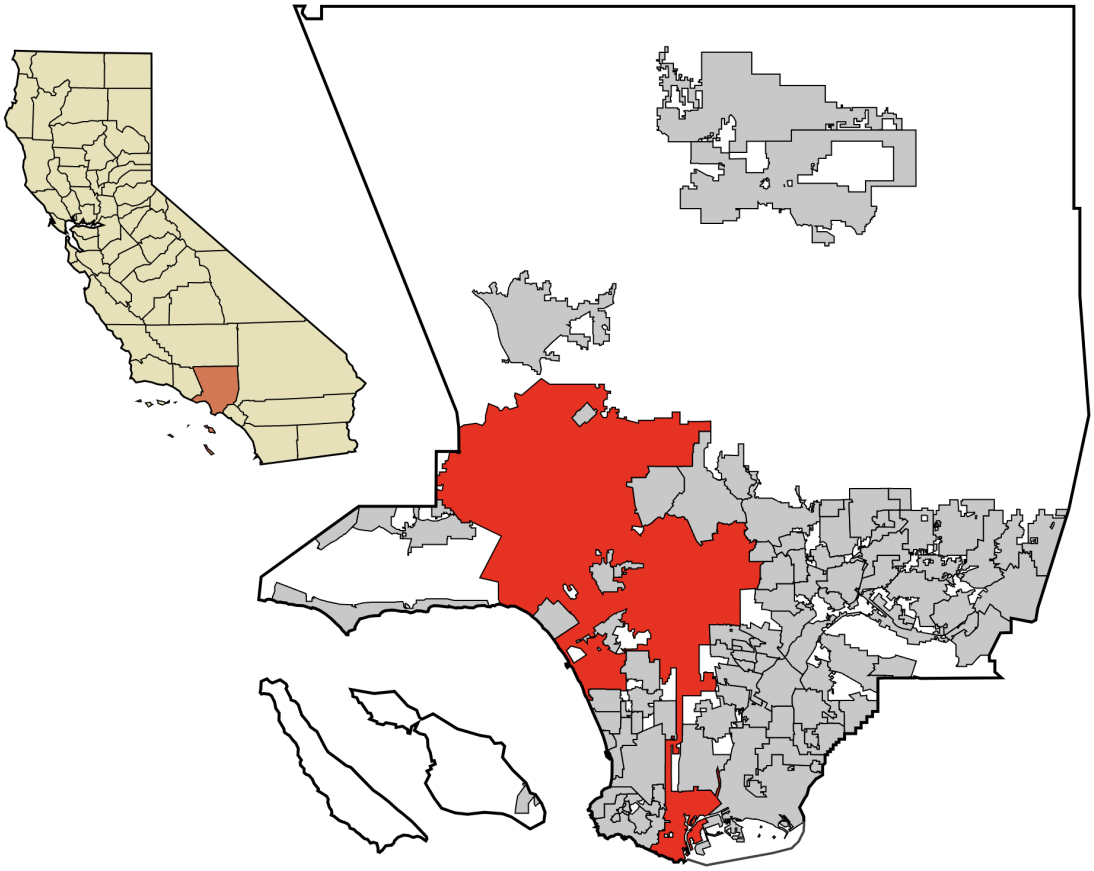


FIGURE 3: Geographic Context

Los Angeles is the county seat of Los Angeles County, the most populous county in the United States. LA itself is the most populous city in California and 2nd most populous city in the US, with an estimated 3.9 million residents as of 2020.

Source: https://en.wikipedia.org/wiki/Los_Angeles

(Screenshot by Aleksandra Jakovleva, January 23, 2024.)

1. COMMUNITY ASSETS & SETTING

Jordan High School and the city of Watts, Los Angeles

Brianna Barela

Jordan High School is in Watts, Los Angeles located in the San Fernando Valley. The groups surrounding Jordan High School and making up a majority of the city of Watts are Hispanic, making up a total of 68% of the population. The other 30% of the population is Black with the remaining 2% being White or other groups (City Data, Moore 2024). City buildings were used for shelter in World War II, mostly for black settlers who were not allowed to be elsewhere. The Watts community became mainly occupied by black people and started to suffer from poverty. The people of Watts started to feel isolated because of economic and racial injustices and carried resentment. This led to the Watts Riots in 1965 which led to looting and vandalizing the area, attacks on the police, and arson. An increase in gang violence increased and those who had the resources left the area. This led to a

change in the Watts demographic and shifted from a predominantly black neighborhood to a predominantly Hispanic/Latino neighborhood. (Meakin, 2023).

The poverty level however has never been able to recover. The population of Watts is about 50,000 people and 77% of them are unemployed. (California Healthy Places Index). Watts accounts for 40% of the poverty in the city with the average amount of income in the surrounding groups of Jordan High School is $25-30,000 while the median value of a home is $315,000 (City Data, 2024). Los Angeles county, as a whole, has a median household income of $71,000. Lastly, the state of California has a median household income of about $80,000. From these stats, we are able to see that Watts is an economically challenged community. When compared to other cities in California, Watts is considered below average in economics and continues to face struggles everyday. People in Watts get money by having jobs that are centered around manual labor, as most of these people do not have degrees that can get them high-income jobs. Major sources of employment include anything that has manual labor as its key component. (California Healthy Places Index, United States Census Bureau).

Since the people living in Watts have barely enough means to support themselves, it is hard for them to advocate for themselves as well. The organizations in the city such as the Coalition of Healthy Families LA plays a crucial role in both preventing and addressing environmental crises through its active involvement with the community, educational efforts on environmental risks, advocacy for fair environmental practices, resource coordination for emergency situations, and strengthening community resilience. By actively creating a sense of community and participation, the Coalition allows for families and individuals to have a say in the environmental decisions impacting them (Coalition for Health Families). The active participation guarantees that the concerns and needs of the community are considered in the development and execution of environmental policies. These efforts to support this community's ability to overcome environmental hazards helps pave the way for a healthier and more sustainable future for everyone.

Leading a healthier sustainable future for Watts starts with health care. Jordan High School and the surrounding neighborhoods in Watts there are 4 healthcare clinics: a

branch of AltaMed Pace, Watts Healthcare Corporation, Jordan Wellness Center, and a branch of the Los Angeles Christian Health Center. All of these clinics aim to provide affordable or even free healthcare services to the Watts area. As organizations, they all appear to particularly emphasize serving economically-disadvantaged groups and communities of color. AltaMed describes its mission as being "to eliminate disparities in health care access and outcomes by providing superior quality health and human services through an integrated delivery system for Latino, multi-ethnic and often-overlooked communities in Southern California." This makes them an asset to Watts because it's a neighborhood made up largely of a low-income, Latinx and Black population; having affordable clinics helps bridge the racial and economic gaps in healthcare, as access to medical help is critical to the well-being of any human being.

Another important aspect for the city of Watts is the air monitoring networks. The Watts Rising Air Quality Monitoring Network is a network of air sensors placed throughout Watts to monitor the air quality. This was a project stated by community members to have localized data on the air quality of the air in their area. This way they will be aware of any toxins in the air such as particulate matter, nitrogen dioxide, and ozone pollution, (Watts Rising). This is most beneficial for Jordan High School because of the close proximity it has to the metal factory and the toxins that can be emitted from it everyday. It is also important on hot days where the emissions from the factory can add to the heat especially in an area where many may not be able to afford good air conditioning.

A future development that could help in the extreme heat conditions would be the California's Water Supply Program as it is of vital importance to Watts' residents. This program includes actions such as creating extra storage of 4 million acre-feet of water, recycling and reusing 800,000 acre feet of water per year by 2030, freeing up to 500,000 acre-feet of water by limiting water use, obtaining water from storms and ocean desalinating (Kuzhekov, 2024).

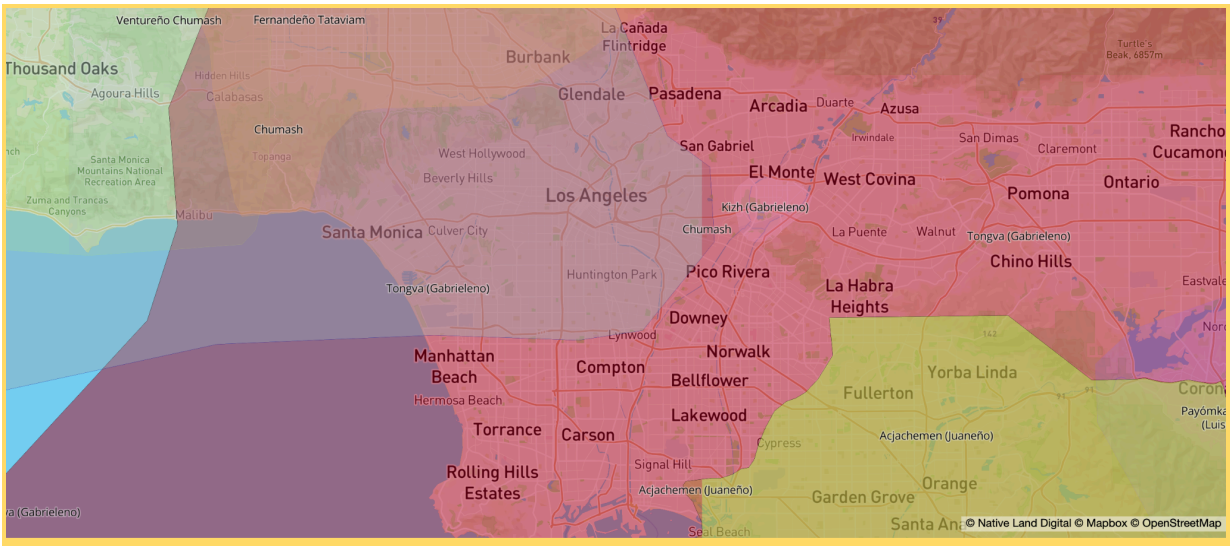
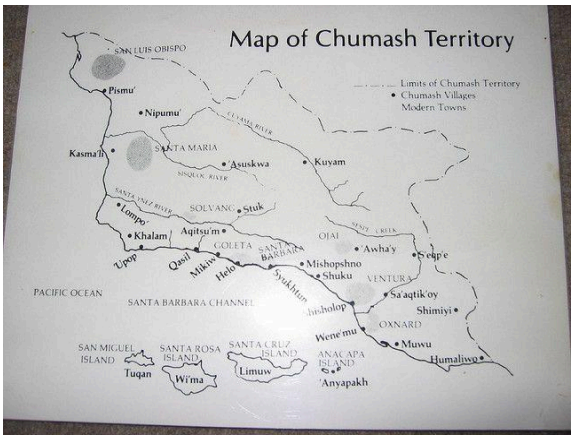


FIGURE 4: Native Land Acknowledgment

LA County occupies the unceded lands of the Chumash and Tongva (Gabrielino) tribes.

Source: https://native-land.ca/ (Screenshot by Aleksandra Jakovleva, January 25, 2024).



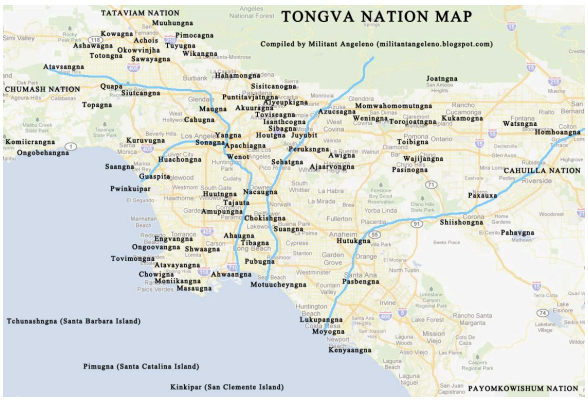


FIGURE 5: Native Representations of Land

This is a map of the locations of the Chumash Villages before colonization

Source: https://native-land.ca/maps/territories/chumash/#related-maps

(Screenshot by Liam Henderson, February 7th, 2024)

This is a map of the locations of the Tongva Villages before colonization

Source:https://militantangeleno.blogspot.com/2011/09/native-week-know-your-na.html

(Screenshot by Liam Henderson, February 7th, 2024)

FIGURE 6: Setting Photograph

Los Angeles is home to Hollywood, a prime symbol of creativity and art in the world. Los Angeles is thus thriving with all forms of artistic expression

Source: https://commons.wikimedia.org/wiki/File:Hollywood_Sign_(Zuschnitt).jpg

(Screenshot by Liam Henderson, January 25th, 2024)

FIGURE 7: Natural Resources and Biodiversity

The Angeles National Forest, located just north of greater Los Angeles, covers a vast 700,000 acres, and is home to approximately 3,000 different species.

Source:

https://www.fs.usda.gov/detail/angeles/landmanagement/planning/?cid=fsbdev7_016573#:~:text=The%20mountains%20and%20foothills%20of,animals%20and%20non%2Dvascular%20plants.

(Screenshot by Liam Henderson, January 25th, 2024)

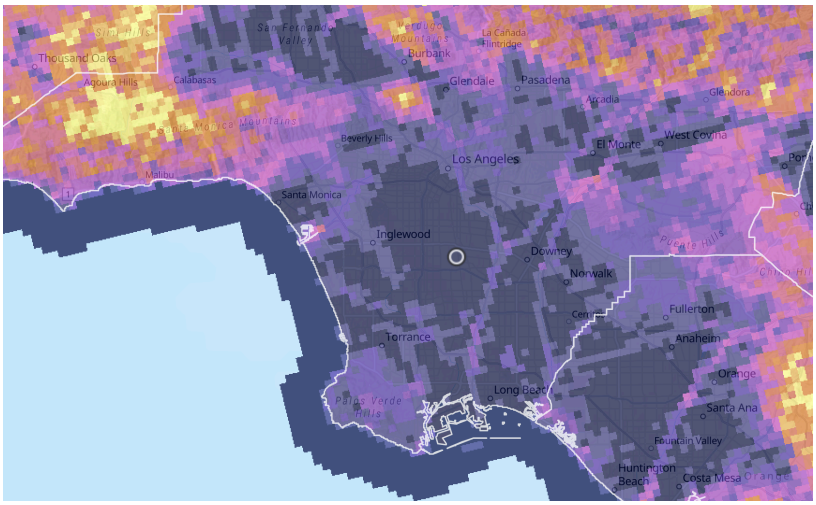


FIGURE 8: Biodiversity Map

Southern Los Angeles County has very low biodiversity. The number of endangered species increases as you travel north

Source:

https://ucirvine.maps.arcgis.com/apps/instant/imageryviewer/index.html?appid=02f8371dd63146b8b390c11757c60b74&primaryLayerId=18a4339b168-layer-2&primaryLayerRenderer=SR_ALL&center=-117.8999;33.8341&level=9

(Screenshot by Liam Henderson, February 1st, 2024)

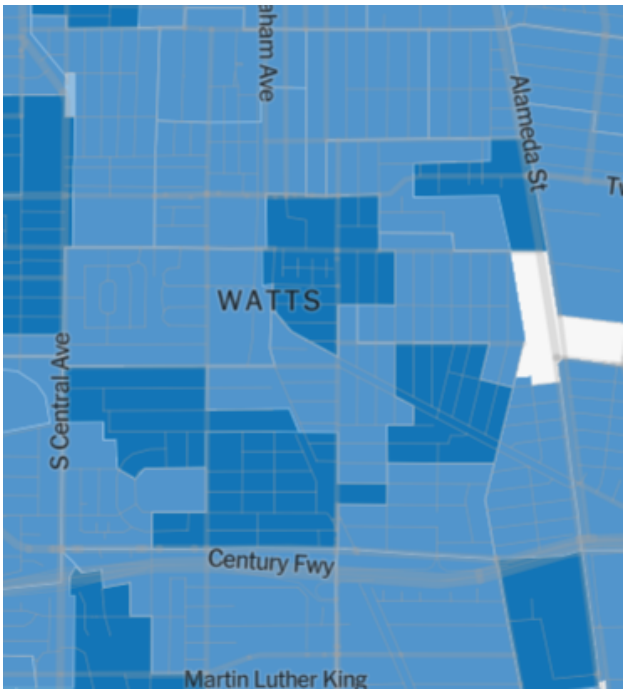


FIGURE 9: Presidential Election 2020

Jordan High School is located in Watts. The Watts neighborhood is part of LA County, a county which highly favored the democratic nominee Joe Biden. Watts itself also heavily favored Joe Biden, the democratic nominee in the 2020 election.

Source: https://www.nytimes.com/interactive/2021/upshot/2020-election-map.html (Screenshot by Anthony Ashkinadze, January 23, 2024).

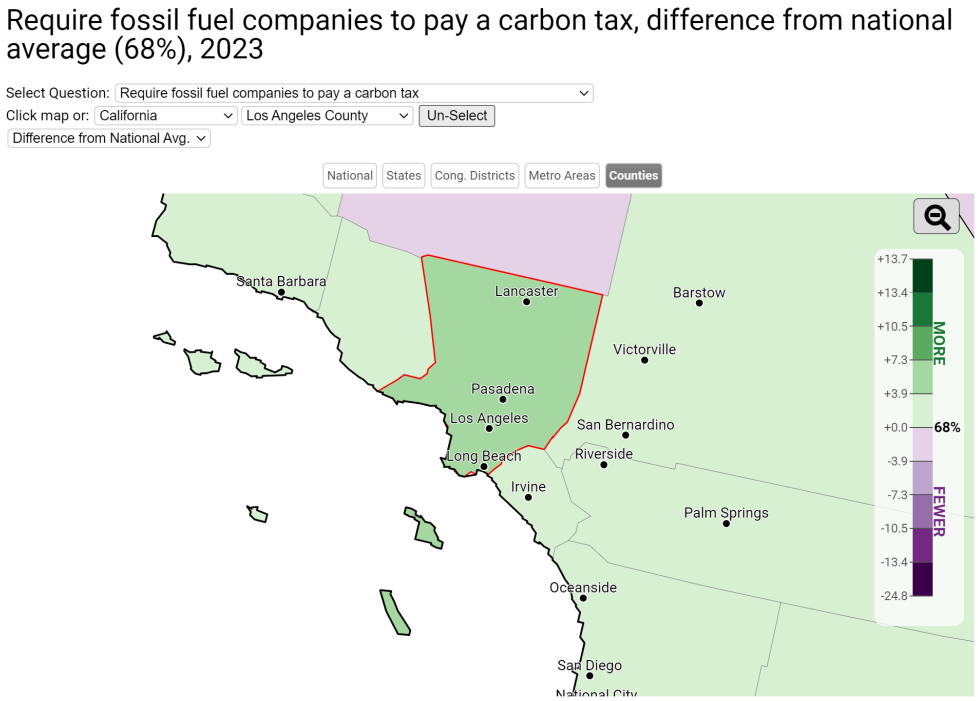


FIGURE 10: Yale Climate Change Opinion Map

This map looks at how the percentage of policies that require fossil fuel companies to pay a carbon tax in LA county differ from the national average. 73% of LA county requires companies to pay a carbon tax which is 5% more than the national average of 63% and 1% less than the average of California which is 72%.

Source: https://climatecommunication.yale.edu/visualizations-data/ycom-us/

(Screenshot by Gabriela Cervantes-Castillo, January 25, 2024)

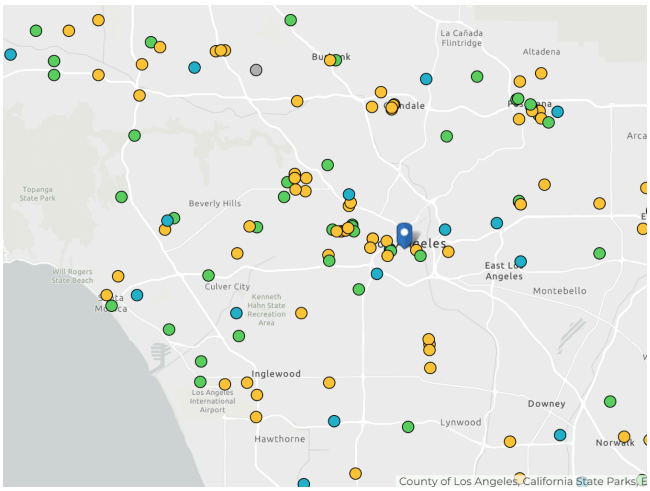


FIGURE 11: Higher Education Map

Most of the higher education institutions in Los Angeles are for for-fit. There are at least one public, for-profit, and non-profit higher education institutions near Jordan High School.

Source: https://nces.ed.gov/ipeds/collegemap/

(Screenshot by Gabriela Cervantes-Castillo, January 25, 2024)

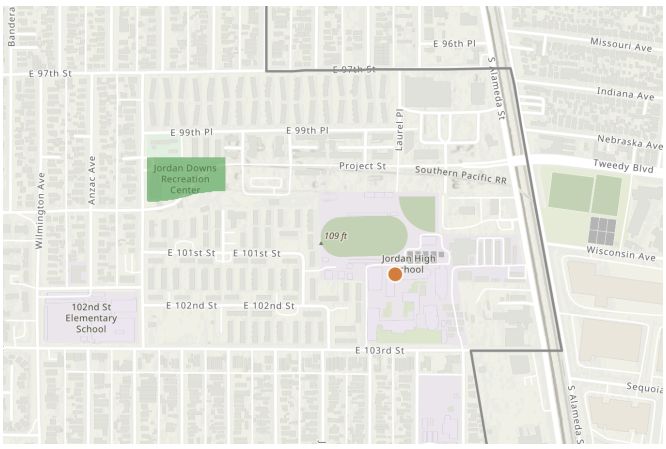


FIGURE 12: Playgrounds Map

Jordan High School is located near the Jordan Downs Recreation Center, one of the few public parks in close proximity to the school. The rec center also has a public playground.
Source: https://parkserve.tpl.org/mapping/index.html#/?CityID=0644000
(Screenshot by Aleksandra Jakovleva, February 12, 2024.)

2. ENVIRONMENTAL HAZARDS

A Cause-and-Effect Look at the Dangers Plaguing Jordan High School and Watts

Anthony Ashkinadze, Aleksandra Jakovleva

Jordan High School and the surrounding Watts community are exposed to various toxic and deadly metals and compounds that have dramatic effects on the community itself, from chronic diseases to cancer, learning disabilities, and more. One physical hazard stems from lead exposure through dust inhalation from nearby industries. Jordan High School Watts is adjacent to Atlas Metal Co Recycling Facility. The operations of the facility cause lead dust to form which is blown onto the campus. Teachers and administrators stated that the dust looks like a "purple shimmer", as the lead is so concentrated. The dust is 75 times higher in micrograms per square foot than the legally allowed quantity (Guardian, 2022). This lead and such high concentration is regularly exposed to the 500 teenagers who attend Jordan High School and its faculty.

Although Atlas Metal Co., is a prime contributor to lead contamination of the environment, local industry is also the source too. The Exide Plant located in Vernon which is close to the Watts community is notorious for its historic high releases of arsenic and lead to local neighborhoods. In addition, battery acid also leaks from the facility being

absorbed by the air and soil. Neighbors around the plant constantly expose themselves and their kids to lead from just breathing the air and being on the soil (Barajas, 2023).

The old history of the residential buildings also adds to the ways the community is exposed to lead exposure. Most housing was created in the 1940s to support workers in WWII and received little upgrades to their core structure(Cervantes, 2024). Until their ban in 1970 lead-based paint was commonly used to furnish homes. As a result, of the age of the buildings stemming pre-1970s, the Watts community has a lead risk in the 86th percentile as approximately 40% of the houses still have lead-based paint. Thus about 40% of the community is continuously exposed to lead from within their homes (CalEnviroScreen 4.0, 2021).

Lead is dangerous because it accumulates in the body and cannot be removed once entered. It builds up in the body, in the bones, organs, and brain. Lead disrupts normal bodily functions and can cause hypertension, anemia, kidney problems, cancer, genetic diseases, and neurological diseases (WHO, 2023). Children are most susceptible to lead's neurological effects which cause learning disabilities by "damaging the brain and nervous system" (CDC, 2024). Thus, the residents of Watts and their children are constantly exposed to lead from different sources that contribute to high concentrations of lead resulting in the community, especially young children, developing chronic conditions that can be transmitted for generations.

Another threat to the Watts community is PM 2.5 (particulate matter that is less than 2.5 micrometers in distance) as it is surrounded by emitters of carbon dioxide and PM 2.5. With prolonged exposure PM 2.5 causes lung and heart disease, with 26,700 Californian deaths being attributed to be caused by it. The elderly, children, and those with chronic conditions like asthma, diabetes, and heart issues are most vulnerable to exposure (California Office of Environmental Health Hazard Assessment, 2021). The substance is primarily composed of "ammonium, sulfate, nitrate, elemental carbon matter, organic carbon matter, sodium, and silicon) (Dominici, et al 2016)". In 2015-2018 the Watts community had about 12.07 micrograms of Particulate matter per meter squared (CalEnviroScreen 4.0, 2021). The high density is attributed to local industries such as,

“recycling plants, lumber yards, auto shops, fabricators, and warehouses that adjoin the [the community] (Guardian, 2022).” Just about a block away is TJ’s Metal Manufacturing INC. Welding is a primary element of their operations and uses heat to melt and combine separate metals. The emissions of this process include Particulate Matter 2.5 among other emissions such as Ozone, Carbon Monoxide, Carbon dioxide, and Nitrogen Dioxide. This is just one of the factories near the Watts community, making it practically impossible for the community to avoid the effects of Particulate Matter 2.5. In addition, these types of operations also release fumes with heavy metals like chromium, nickel, and lead (EPA, 2009).

Furthermore, also adjacent to the community is the Alameda Corridor, which is a freight expressway where rail and freight trucks travel through commonly to connect to the Port of Los Angeles(Guardian, 2022). The close distance coupled with the heavy congestion of the highway results in the emissions of freight trains, trucks, and vehicles easily spread to the local neighborhood. This is worrying since freight trucks are large contributors to PM 2.5 and CO2 releasing an average of “161.8 CO2 grams of CO2 per ton mile” (Mathers, 2015). In addition, fossil fuel combustion done by freight trucks and other heavy transportation releases smog. Smog is composed of particulate matter, nitrogen oxide, and formaldehyde (EPA, 2023). As a result, the location and industrial sectors near Watts community significantly burden the community with health-threatening conditions, whose effects are felt by the residents currently there and will also be felt by their children.

An additional environmental hazard threatening Jordan High School and the surrounding neighborhood of Watts, Los Angeles, is illegal dumping on the streets. The Clean Streets Index, a database established to measure the cleanliness of Los Angeles streets, classifies much of Watts as “not clean” (the worst grade possible), while additional data shows “Watts has gotten dirtier since 2016”—despite the fact that residents have been raising concerns since the 1960s (Dubbins and Cabello Cuahutle 2023). Although the LA Sanitation and Environment department is aware of the problem, as residents are encouraged to call a designated 311 hotline to report illegally dumped items, Watts has

seen little resolution because of the sheer number of factors contributing to illegal dumping. For one, most of the residents in the area are low-income renters and persons of color, particularly Latinx and Black, and “evictions occur more frequently in communities of color such as Watts” leading to “displaced tenants often abandoning household items on the curb” (Dubbins and Cabello Cuahutle 2023). Because Watts is an underprivileged neighborhood, officials also don’t monitor the state of the streets as closely as they might in wealthier communities; residents testify how, “big trucks, often with their license plates removed,” dump loads of trash in the nighttime because “‘they know…nobody will care’” (Dubbins and Cabello Cuahutle 2023). This lack of concern is compounded by the general shortage of proper resources to clean up dumping, including funding, workforce, and management. Data shows how the LA Bureau of Sanitation is “understaffed with a vacancy rate of over 20%,” although “service calls have increased by more than 40% over the last three years”; meanwhile, efforts to transfer revenues from the Sewer and Maintenance Fund have proved insufficient to tackle the necessary fixes, which include “fill[ing] vacancies, replace[ing] outdated capital equipment, and updat[ing] management information systems'' (Humphreville 2023). Finally, the railroad infrastructure in the Watts area also acts as“an irresistible magnet for illegal dumping”; moreover, Union Pacific’s ownership of the tracks have created “a years-long bureaucratic battle” between the company and LA city officials over who’s responsible for the clean up (Dubbins and Cabello Cuahutle 2023). Street sanitation isn’t merely an aesthetic issue or mild inconvenience, with effects including decreased property values, increased fire and flood hazards, an increase in the spread of disease carrying rodents, insects and other vermin, and surface and groundwater pollution; all of these concerns negatively impact every resident living in Watts (Los Angeles County Department of Public Works 2024).

Proximity to hazardous waste, due to the metal recycling/disposal facility Atlas Iron and Metal Company, is another prominent environmental hazard in our case study location. The operations of the facility, which is located directly adjacent to campus, have resulted in the release of “sharp pieces of metal, smoke, fumes and other hazards” onto the grounds of Jordan High School—and therefore, with regards to easily spreadable

pollutants like airborne smoke and fumes, into the adjacent area of the Watts neighborhood (Evans 2023). In fact, the EPA's Environmental Justice Screening and Mapping Tool ranks the area around Jordan High School in the 95th percentile nationally, with regards to hazardous waste proximity (EJScreen 2024). Reports indicate that, at one point, the metal processed by Atlas was "piled so high that students and teachers could see it from the campus," and that there were instances of "dangerous, sharp, metal projectiles, fine metallic dust, and other objects [being] launched or emitted from the property" (Evans 2023). Furthermore, students and faculty testified to having class lectures interrupted by loud "clangs and crash" noises from the facility, as well as smelling what can be described as "sharp…thick oil" when walking by Atlas (Singh 2023). In addition to the immediate physical harm that can result from students and faculty being hit by metal shrapnels, which can injure the skin or eyes, officials have discovered that some of the dust and particles emitted by Atlas to be "laced with dangerous levels of lead – a neurotoxin – and other heavy metals atop sports fields and inside classrooms" (Singh 2023). According to court documents filed by LAUSD, lab testing has confirmed that the dust (which students and faculty attest often appears as an insidious "purple shimmer") coming from the Atlas recycling facility contains "lead concentrations up to 790 micrograms per square foot in dust samples taken from classroom floors – more than 75 times higher than what the Environmental Protection Agency (EPA) defines as a hazardous threshold" (Singh 2023). This is particularly problematic for a location with so many children and young adults, as lead "can affect the development of their brain and nervous system," causing cognitive and behavioral issues (Singh 2023).

Different kinds of water contamination are also significant hazards at Jordan High School and in the Watts area. According to data provided by the CalEnviroScreen 4.0 Index, "Jordan High is located in a census tract [that] has [a] drinking water contamination score higher than 93% of other tracts in California,'' with the specific contaminants being chromium hexavalent at 73.6%, lead at 96.71%, and tetrachloroethylene (PCE) at 83.51% (California Office of Environmental Health Hazard Assessment, Kuzhekov 2024). In 2016, multiple residences and schools in Watts reported seeing tap water of "various shades of

beige, brown or yellow" flowing from their pipes, prompting LAUSD to temporarily shut down drinking fountains and provide bottled water to students at four Watts elementary schools to prevent potential water-borne illness (ABC7 2016). A similar problem then occurred in 2017, at the Jordan Downs housing project, where "the municipal water department had to flush more than 50 miles of pipe to get rid of sediment that got stirred up by a broken fire hydrant"; they claimed "higher levels of iron and manganese in nearby wells" were also to blame for the yellow or brown water color (Aguilar 2017). Although the Los Angeles Department of Water and Power maintains that "the water it provides 'to all of its customers, including the community of Watts meets all state and federal drinking water quality standards'"—indeed, a 2020 water sample test for the entire city of Los Angeles has shown lead levels of around 5 ppb, which is below the federal Action Level of 15 ppb—residents have expressed concerns over water quality due to the older pipes found in the Watts buildings constructed before 1986, when lead pipes were banned by federal law. (Eng 2023). This kind of contamination would only occur once the water flows through the residence pipes, and LADWP admits it "isn't responsible for water quality once it's delivered to a residence" (Eng 2023). Considering the age of infrastructures in Watts—Jordan Downs, for example, is called "a relic of the World War II era"—the threat of pipe-originated lead contamination is pressing. PFAS in water is another concerning hazard. The portion of Los Angeles county surrounding Watts and Jordan High School have 1,136 EPA-identified PFAS source facilities, according to data provided by the USGS Tap Water Interactive Dashboard. A sample test taken in 2021 at a public tap water supply site in Lynwood, nearest to Watts, detected a PFAS total of 29 ng/L (USGS 2024). Meanwhile, a 2023 test of water samples from Golden State Water Company's facility in Willowbrook, just over one mile away from central Watts, showed PFAS at levels of 2.7 ppt; this places the over 10,700 people serviced by the facility in the Willbrook/Watts area at risk of adverse health effects from PFAS (Moore 2024). Continued exposure to PFAS-contaminated water poses a variety of health risks, from short-term water-borne illness to long-term effects like increased risk in cancers; changes in cholesterol and liver enzyme levels; potential birth defects in pregnant people; thyroid disease; and weakened

childhood immunity (Moore 2024, EWG 2024). Since children are once again listed as one of the more vulnerable groups, this hazard is especially critical to consider in areas with nearby schools, including Jordan High.

Other environmental hazards in our case study setting are heatwaves and extreme heat, which stem from a variety of causes. Broadly speaking, the rise in temperatures and the frequency of heatwaves have been largely attributed to greenhouse gas emissions produced by the burning of fossil fuels, affecting climate change across the globe, U.S including (Trotta 2022). However, certain areas like Watts struggle with extreme heat because of additional disadvantages and issues. Thanks to historic redlining practices, “[d]ecades of disinvestment have resulted in communities of color (such as Watts) living in areas with more concrete and less green space than their white neighbors have, which means that these areas are far hotter as well” (Venkat 2022). Moreover, the area surrounding Jordan High School “has a very low tree cover at 3.88%,” putting it in the 39th percentile for the city of Los Angeles, and the 25th percentile for Los Angeles County; lack of tree cover, in turn, results in less shade and a greater (Senior 2024; California Healthy Places Index 2024). At the same time, the prevalence of concrete pavement and old building materials that absorb heat contribute to the high temperatures. Moreover, because the “majority of Watts residents are low-income renters,” they either live in cheap public housing projects, like Jordan Downs, that don’t have AC units installed, or “hesitate to use [air conditioning], fearing the energy bills” (Venkat 2022). Collectively, these factors make residents of Watts more vulnerable to the negative health effects of heatwaves and extreme heat; these effects ranging from causing mild symptoms like "headaches, dizziness, and lethargy” as a result of heatstroke or heat exhaustion, to more severe “damage to the brain and other vital organs, particularly the kidneys, heart, and gut” (CDC 2022; Christogianni et al. 2018). Additionally, extreme heat can cause damage to roads, electrical wires and other infrastructure; stress energy systems as air conditioners draw more electricity; damage or kill crops and livestock; and contribute to natural disasters like droughts and wildfires (Eltahir and Krol 2022).

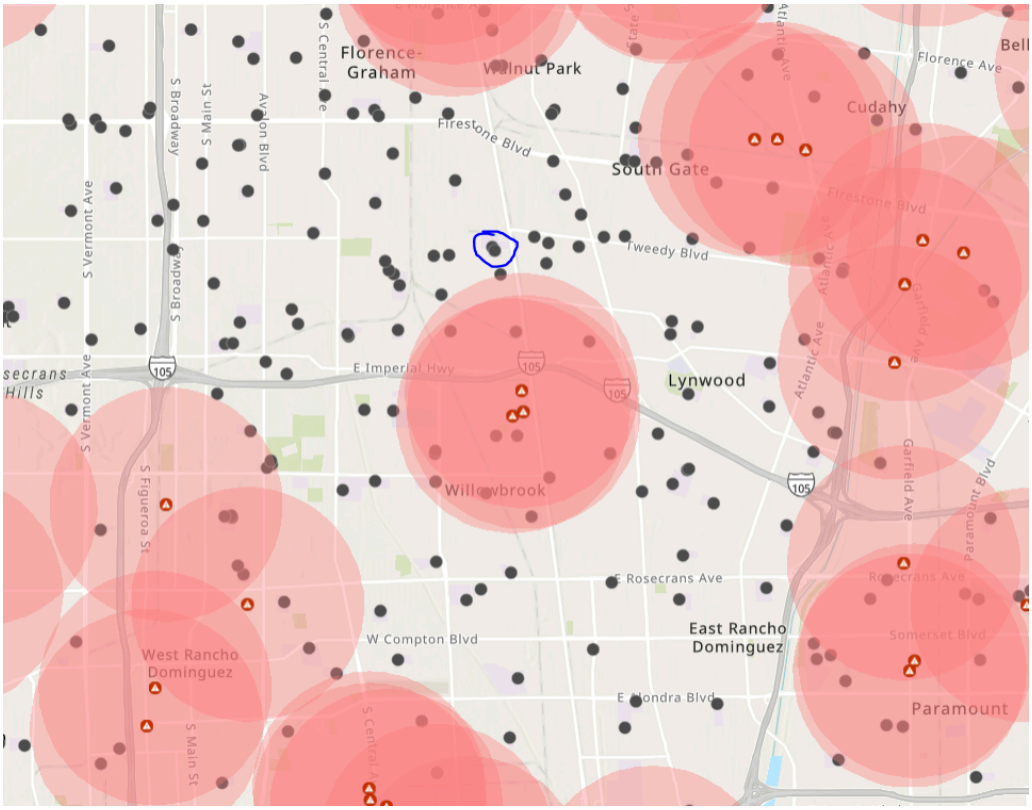


FIGURE 13: Fenceline Zones

Jordan Watts High School is not located within a mile of a CalARP facility although it is closeby to several of them: Triumph Processing and AIRGAS USA.

Source:https://experience.arcgis.com/experience/9f4da24d17434e64a46a1d29b44b6c0b/?data_id=dataSource_5-CalARP_Facility_1_Mile_Buffers_1269%3A1870.

(Screenshot by Anthony Ashkinadze, January 25, 2024.)

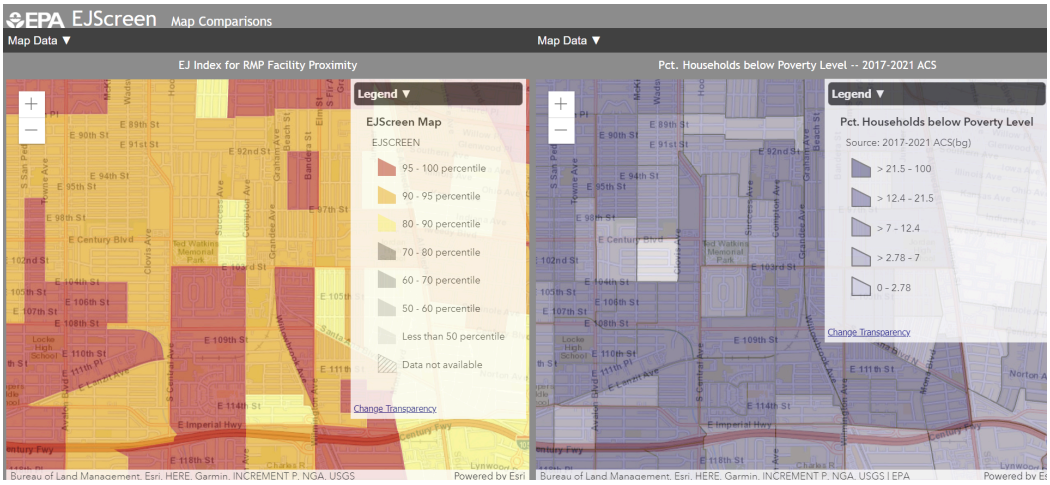
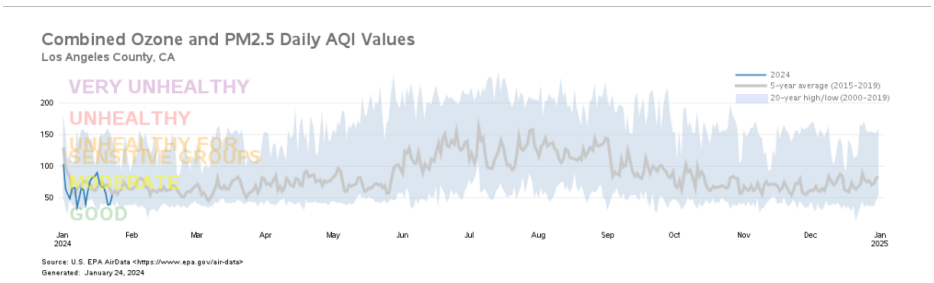


FIGURE 14: RMP Facility Proximity

Jordan High School is 95-100% for RPM Facility Proximity and it correlates to more than 23.63 % of households below poverty level in that region.

Source: https://ejscreen.epa.gov/mapper/comparemapper.html

(Screenshot by Tair Kuzhekov, January 24, 2024).



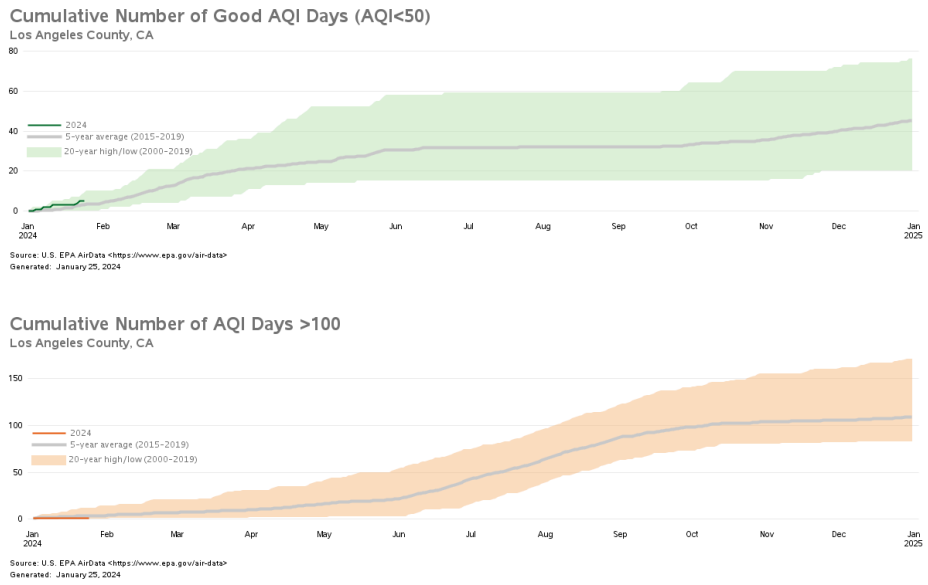


FIGURE 15: DAILY AIR QUALITY IMAGE

Los Angeles County air quality is commonly “Moderate" but over the summer months the air quality often reaches to a state that is unhealthy for certain sensitive groups and at times even becomes unhealthy.

Source:https://www.epa.gov/outdoor-air-quality-data/air-data-daily-air-quality-tracker

(Screenshot by Anthony Ashkinadze, January 25, 2024.)

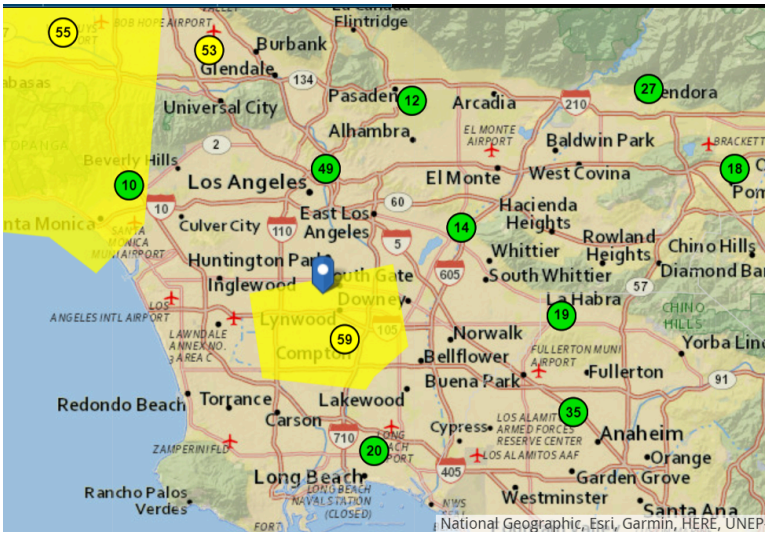


FIGURE 16: Government Air Quality Monitors

On 01/24/2024 there is moderate air quality in the Watts neighborhood. The air quality monitor in Compton shows a yellow area meaning the PM2.5 pollution level near Jordan High School is higher than recommended by EPA. (Screenshot by Tair Kuzhekov, January 24, 2024).

Source:

https://gispub.epa.gov/airnow/?showgreencontours=false&monitors=ozonepm&xmin=-13285167.558189703&xmax=-12991649.369574515&ymin=3960841.061936341&ymax=4086350.662380649&basemap=natgeo

(Screenshot by Tair Kuzhekov, January 24, 2024).

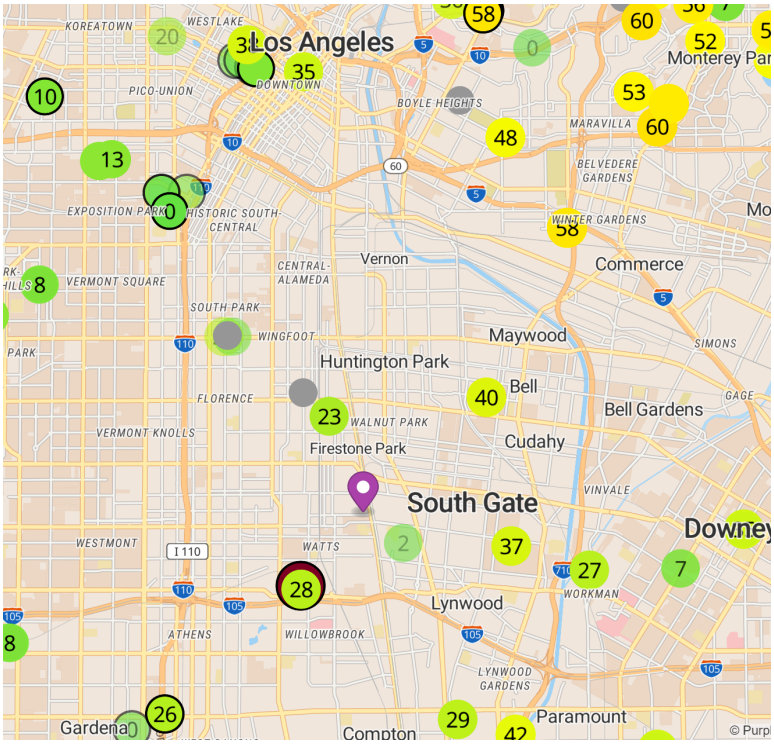


FIGURE 17: Purple Air Quality Monitors

There are various community air monitors in Los Angeles, including about 4 to 5 around

Jordan High School.

Source:

https://map.purpleair.com/1/mAQI/a10/p604800/cC0#11.08/33.9812/-118.2286/0/2

(Screenshot by Gabriela Cervantes-Castillo, January 25, 2024)

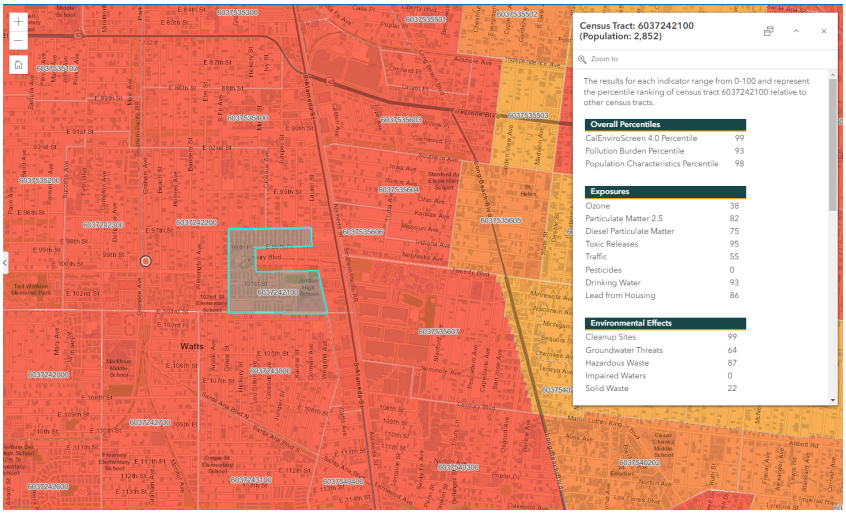


FIGURE 18: CalEnviroScreen Score

Jordan High School is located in the census tract that is in 99% of CalEnviroScreen overall score suggesting that this tract has a higher level of environmental injustice than 99% of other tracts in California. Data also implies that the majority of the population there are Hispanics 75.77% highlighting the issue of environmental injustice.

Source:

https://experience.arcgis.com/experience/11d2f52282a54ceebcac7428e6184203/page/CalEnviroScreen-4_0/

(Screenshot by Tair Kuzhekov, February 15, 2024).

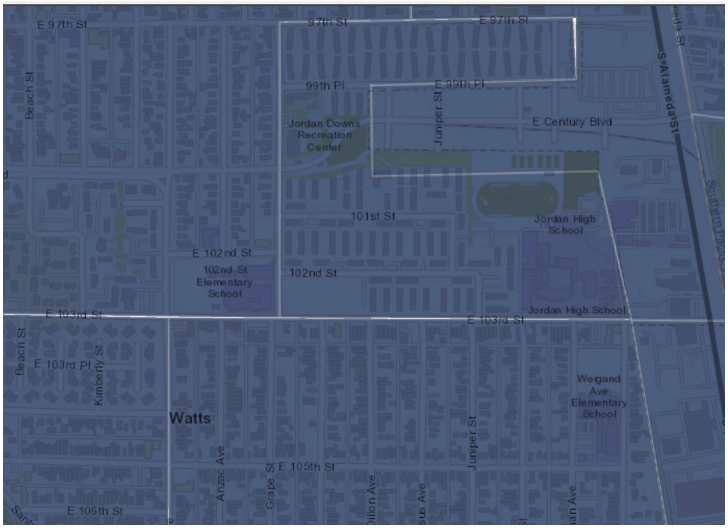


FIGURE 19: Particulate Matter (PM2.5) Exposure

Jordan High School is located in a census tract that is in the 82nd percentile for PM2.5 exposure in California.

Source:

https://experience.arcgis.com/experience/ed5953d89038431dbf4f22ab9abfe40d/page/Indicators/?data_id=widget_308_output_0%3A0&views=PM2.5

(Screenshot by Aleksandra Jakovleva, February 28, 2024.)

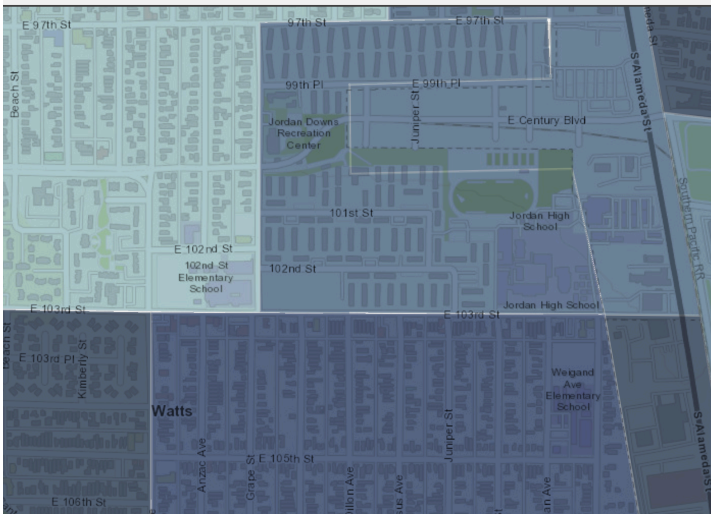


FIGURE 20: Diesel PM Exposure

Jordan High School is located in a census tract that is in the 75th percentile for diesel particulate matter in California.

Source:

https://experience.arcgis.com/experience/ed5953d89038431dbf4f22ab9abfe40d/page/Indicators/?views=Diesel-Particulate-Matter

(Screenshot by Aleksandra Jakovleva, February 28, 2024.)

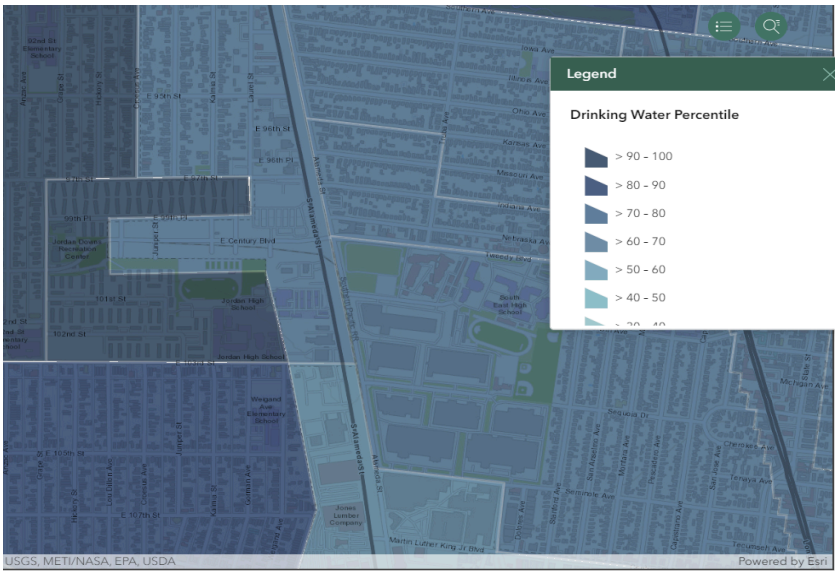


FIGURE 21: Drinking Water Contaminants

Jordan High School is located in a census tract that has a drinking water contamination score higher than 93% of other tracts in California. Examples of contaminants include chromium hexavalent with 73.6%, lead with 96.71%, tetrachloroethylene (PCE) with 83.51%.

Source:

https://experience.arcgis.com/experience/ed5953d89038431dbf4f22ab9abfe40d/page/Indicators/?data_id=dataSource_26-17c3db57838-layer-2%3A7771&views=Drinking-Water-Contaminants

(Screenshot by Tair Kuzhekov, January 24, 2024).

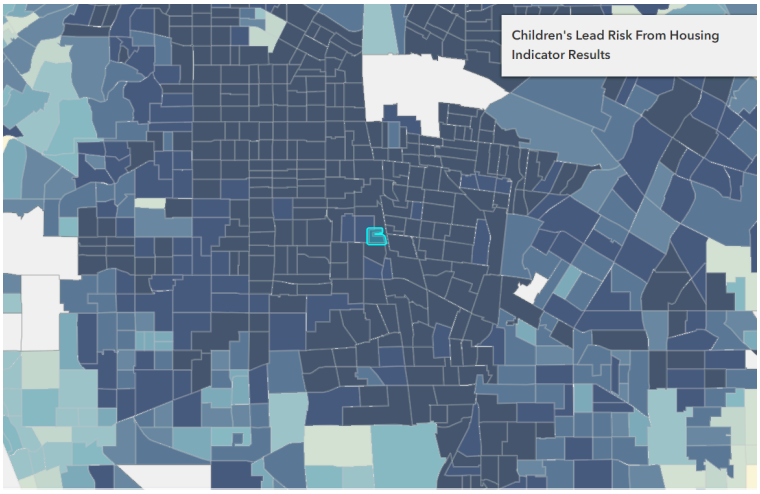


FIGURE 22: Childhood Lead Exposure

Jordan High School is in a census tract that is in the 86th percentile in the State of California for Children's Lead Risk from Housing. All the census tracts around Jordan High School are also in the high 80's or above percentile wise. In Los Angeles County, 1.3% of children 0-5 have more than 4.5 mcg/dL of Lead in their blood.

(Screenshot by Liam Senior, January 25th, 2024)

Sources:

https://experience.arcgis.com/experience/ed5953d89038431dbf4f22ab9abfe40d/page/Indicators/?views=Children%E2%80%99s-Lead-Risk-from-Housing

https://www.kidsdata.org/topic/529/blood-lead-level/map#loct=3&fmt=705&loc=364&tf=108&ch=484,1472&center=-13168568.826021,4004357.5119192&zoom=1

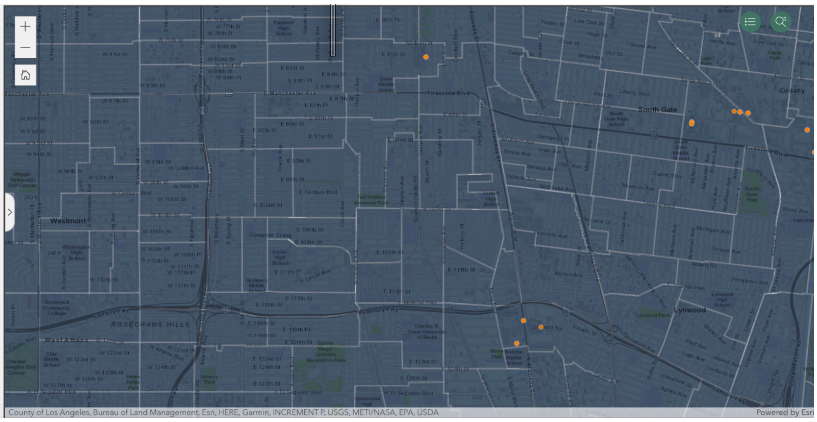


FIGURE 23: Toxic Release Index

The toxic release index shows the emissions of chemicals from large facilities. Jordan High school is in a census tract with less than 3000 people in the 95 percentile of toxic release exposure.

Source:

https://experience.arcgis.com/experience/ed5953d89038431dbf4f22ab9abfe40d/page/Indicators/?data_id=dataSource_41-17c4bf84f3f-layer-2%3A7663&views=Toxic-Releases-from-Facilities

(Screenshot by Brianna Barela, January 25, 2023.)

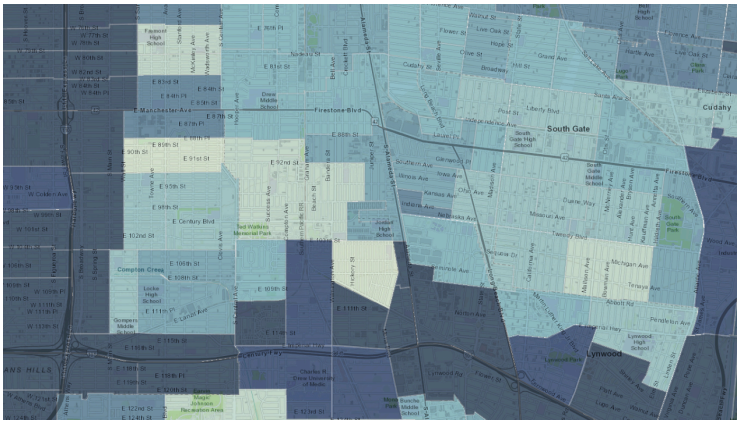


FIGURE 24: CalEnviroScreen Traffic

Jordan High School is located in a census tract area that is within the range of the 50th percentile for traffic impacts in California.

Source:
https://experience.arcgis.com/experience/ed5953d89038431dbf4f22ab9abfe40d/
(Screenshot by Enzo Moore, Jan 25, 2023)

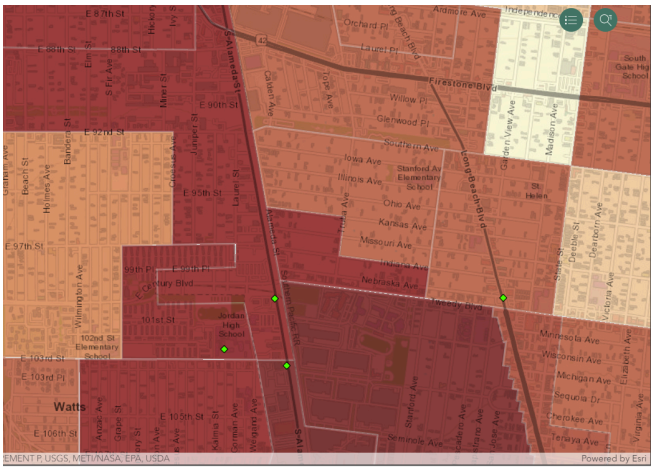


FIGURE 25: Hazardous Waste

Jordan High School is located in the census tract and has a hazardous waste score of 87% meaning that it is in very close proximity to hazardous waste generators - unacceptable score for high school!

Source:

https://experience.arcgis.com/experience/ed5953d89038431dbf4f22ab9abfe40d/page/Indicators/?data_id=dataSource_30-17c38256c16-layer-1%3A7663&views=Hazardous-Waste

(Screenshot by Tair Kuzhekov, January 24, 2024).

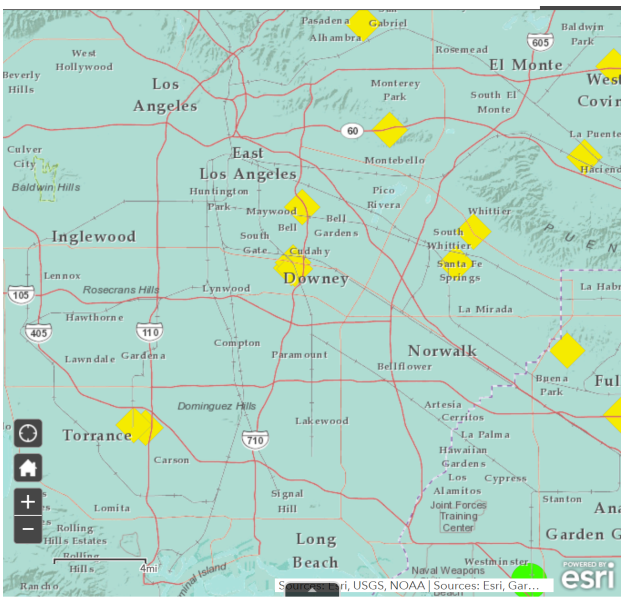


FIGURE 26: Superfund Sites

There are several superfund sites in Los Angeles and none of them have been remedied.

Source: https://www.epa.gov/superfund/search-superfund-sites-where-you-live#map

(Screenshot by Gabriela Cervantes-Castillo, January 26, 2024)

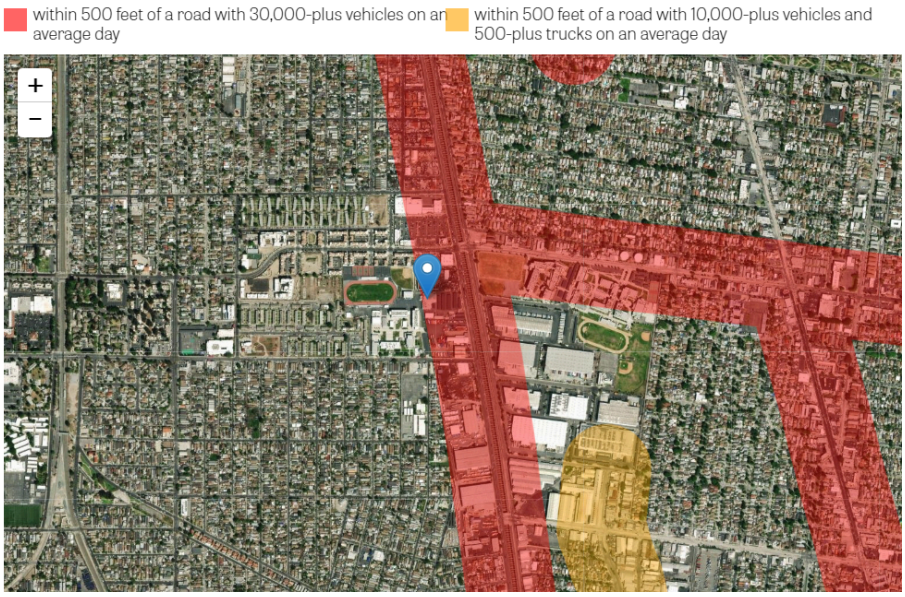


FIGURE 27: Traffic Proximity

Jordan High School has parts of it located within 500 feet of a road that sees more than 30,000 vehicles every-single day. This means that the school experiences and is prone to significant amounts of noise pollution and air pollution.

Source:

https://publicintegrity.org/environment/the-invisible-hazard-afflicting-thousands-of-schools/

(Screenshot by Anthony Ashkinadze, January 25, 2024.)

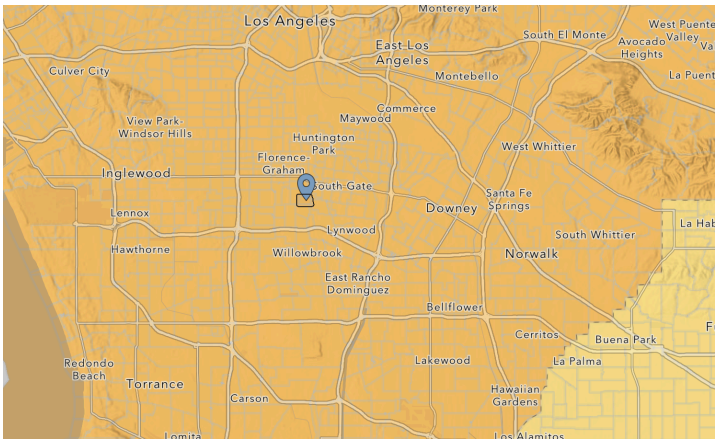


FIGURE 28: Current Climate Disasters

At the time of writing this, Watts was under moderate risk of wildfire with an average of 313 dry days per year without precipitation throughout the county of Los Angeles. **Source:** https://resilience.climate.gov/

(Screenshot by Enzo Moore, Jan 25, 2023)

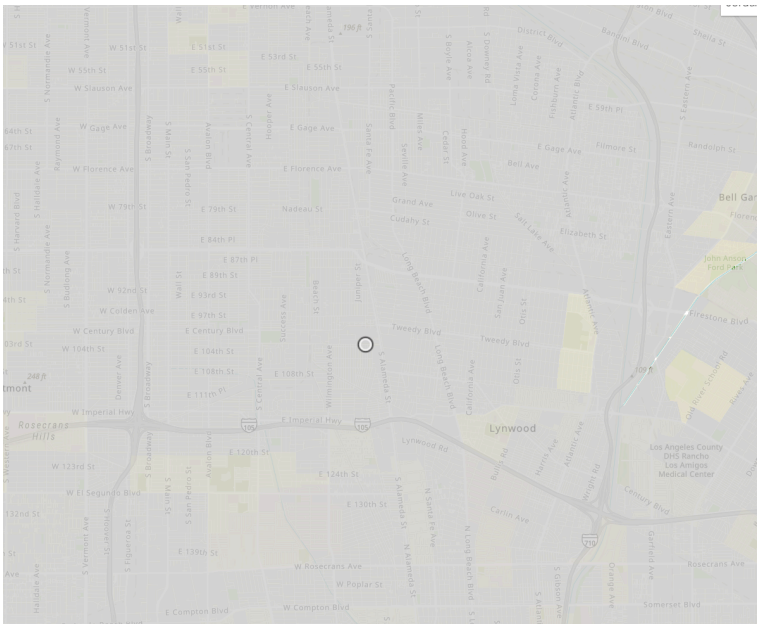


FIGURE 29: Wildfire Risk and Historic Wildfires

In the area surrounding Jordan Senior High School, there are not really any risks of wildfires.

Source:

https://ucirvine.maps.arcgis.com/apps/instant/basic/index.html?appid=64ab0d098c6b4c858e2dd773ae5293f5

(Screenshot by Ethan Valencia, January 25, 2024)

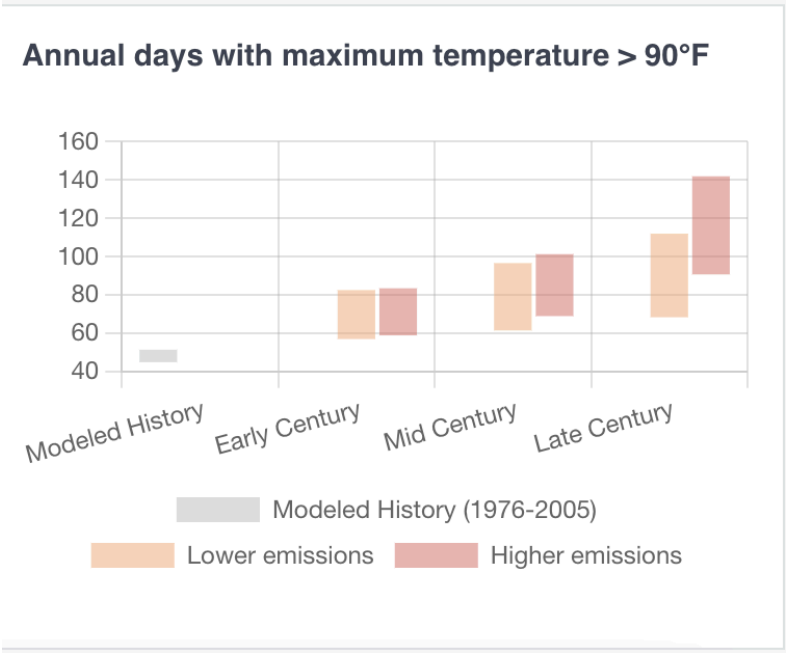


FIGURE 30: Extreme Heat Projections

Historically, Watts has had nearly 50 days annually with temperatures above 90 degrees. Over the next century, this could rise to as many as 105 days if emissions are not reduced.

Source: https://livingatlas.arcgis.com/assessment-tool/explore/details

(Screenshot by Aleksandra Jakovleva, February 28, 2024.)

FIGURE 31: DROUGHT PROJECTIONS

As time progresses, the more and more dry days are becoming the regular weather for this high school.

Source: https://livingatlas.arcgis.com/assessment-tool/explore/map

(Screenshot by Ethan Valencia, January 25th, 2024)

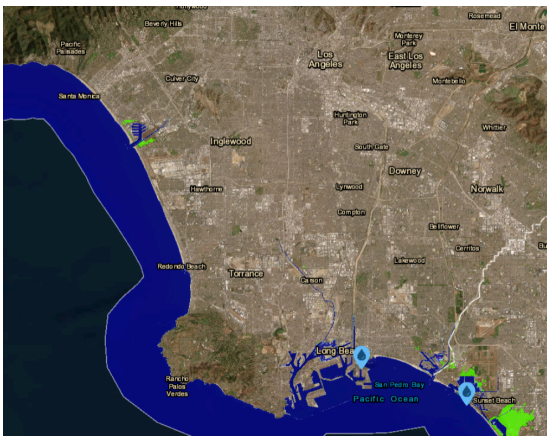


FIGURE 32: Sea Level Rise

In the picture above, the only Sea Level Rise that will affect LA County by 2050 is in the Marina Del Rey and Venice beach. So, Sea Level rise will not affect our school directly.
Source:
https://coast.noaa.gov/slr/#/layer/slr/1/-13181093.797405422/4025106.547920479/13/satellite/none/0.8/2050/interHigh/midAccretion
(Screenshot by Liam Senior, February 1st, 2024)

3. COMPOUND VULNERABILITIES

Intertwined Struggles: Navigating Poverty, Power, Inequity, and Pollution in Watts, Los Angeles

Lindsay Mikuni, Liam Rothchild

There are a variety of intersecting factors that contribute to environmental health vulnerability and injustice in the Watts, Los Angeles area because of poverty; redlining and proximity; educational attainment; political power; incarceration rates.

The first factor contributing to environmental health vulnerability in the Watts community centers on the socioeconomic level of the area. Watts is characterized by economic disadvantages, with a significant portion of its population living below the

poverty line. For instance, according to the data provided in the “Economic” section of the California Healthy Places Index, only about 33.5% of residents in the central area of Watts (in Los Angeles) are “above poverty”; this statistic fluctuates between as low as ~9% (in the sector including Jordan High School) and ~40% in the surrounding tracts as outlined by the index (Aleksandra 2024; “California Healthy Places Index”). This illustrates how economic disadvantage limits access to resources necessary for healthy living, including quality healthcare, nutritious food, and clean living environments. Poverty also restricts the community's ability to respond to and recover from environmental health hazards, making it more difficult to invest in preventive measures or their ability to afford necessary treatments for health issues caused by environmental factors. Economically disadvantaged communities are also often situated in areas with higher exposure to pollutants due to historical zoning practices and industrial placements, leading to increased health risks.

This provides another factor which leads to environmental health vulnerability and injustice within this community, which is the placement of these communities in areas that are more susceptible to environmental hazards due to redlining and discriminatory zoning. These practices have often placed minority communities in close proximity to industrial sites, landfills, and other sources of pollution, leading to higher exposure to environmental toxins. From the annotation created by Liam Henderson, he highlights issues raised by Olawale Amubieya, MD, stating, “Policies of the past cut out low-income, minority and urban communities from suburban communities where the traffic and smog are less dense. These policies relegated them into areas that are close to industrial plants, which produce more air pollution” (Liam 2024; Schlossberg 2021).

Furthermore, to provide another example, according to the article, “How Residents of South LA Are Tackling Environmental Racism,” from Daniel Ross, he discusses how Jordan Downs, a residential area which is situated on a toxic former industrial site, has led to elevated lead levels in children's blood. Nearby, Ujima Village was abandoned due to soil and groundwater contamination from an unremediated oil storage site. Additionally, Watts' location near two major freeways contributes to its ranking among the top 5

percent of California's most environmentally burdened regions, reflecting the cumulative impact of various pollutants on community health (Ross 2018). This demonstrates how the presence of contamination and abandonment of areas like Ujima Village highlight a history of neglect and systemic discrimination. Unfortunately, these issues are not one-time incidents, but instead part of a broader trend where low-income and minority communities bear the brunt of environmental hazards. Living close to such hazardous places leads to higher air and water pollution, which can cause breathing issues, heart diseases, and various other health complications.

Another critical factor exacerbating environmental health vulnerability and injustice in the Watts community is the educational disparities, highlighted by high suspension rates and low educational attainment. For instance, according to Liam Rothchild's discussion post in the "Community Stress Indicators," there has been a notable increase in disciplinary actions within schools, with over five students being suspended in the last month alone.

Moreover, the California School Dashboard indicates a troubling trend, showing a rise in the suspension rate from 3% to 4% of all students within a single year (Rothchild 2024; "California School Dashboard"). Furthermore, data from College Track reveals that today, fewer than half of the adult residents in Watts have completed high school, and a mere 5 percent possess a bachelor's degree ("College Track: Watts"). This low educational attainment is a significant barrier as it restricts the community's access to information about environmental health risks and their rights to a clean and safe environment. Education is crucial for empowering communities to advocate for themselves and participate in decision-making processes that affect their environment. This lack of information extends to understanding how to navigate healthcare systems or advocate for better environmental regulations, leaving residents more vulnerable to the impacts of environmental hazards.

To continue, another factor that contributes to environmental vulnerability in Watts is how this area has significantly lacked sufficient political power, which has hindered its ability to elect local politicians who truly represent and advocate for the

community's interests. To provide evidence, according to Mark Ravis, the M.P.A. President, Attorney in Los Angeles, he discusses how Watts has had a ". . . longstanding monopoly of power … Watts has lacked sufficient political power to elect local politicians, let alone pass legislation that brings resources back to its community of great need. Poorly shared political power has caused city resources to be disproportionately directed to the wealthier parts of the district" (Watkins and Ravis 2020). This illustrates how the systemic issue of a "longstanding monopoly of power," which is the concentration of power often controlled by forces or a small group of individuals, has made it difficult for Watts to elect leaders who prioritize the community's environmental health and justice needs. As a result, there is a disparity in how city resources and services are distributed, with wealthier neighborhoods receiving more attention and investment. The specific environmental issues facing the community, such as pollution control, access to clean water and air and the creation of spaces continue to go unaddressed.

The final factor that contributes to environmental vulnerability in Watts is the alarmingly high incarceration rates of young black men in this community. To provide evidence, according to Tim Watkins, Chief Executive Officer Attorney, he discusses, "An extraordinary percentage of young Black men are incarcerated (40% of inmates are Black, while Blacks are only 13% of the population). Incarceration is often taken for granted by families and is as common as going to college in other parts of Los Angeles. Only about half of residents have a strong feeling of belonging to their community … Approximately, 60% of residents of SPA 6 believe their neighborhood is unsafe" (Watkins and Ravis 2020). This demonstrates how when people, in a community don't feel like they belong they end up feeling more isolated from others. This leads to a significant decrease in involvement in community activities, less support for causes and fewer efforts to make positive changes. When being sent to prison is seen as normal as going to college in some areas, it reflects a cultural acceptance of systemic inequality in society. This acceptance makes it difficult for these communities to change because there is a lack of urgency to create change themselves, and come together as a community to demand justice and improvements. Unfortunately, this community is fighting many battles as resources that could be used for

environmental improvements are instead directed towards the criminal justice system. They are struggling with many aspects of their wellbeing and safety alone that environmental health concerns are not prioritized by policymakers. This takes away important money from building better roads and buildings, cleaning the environment, and health projects for the community that could help reduce health problems caused by environmental issues.

To sum up, the issues of environmental health vulnerability and injustice seen in the Watts neighborhood of Los Angeles stem from a complex mix of social, cultural, political, technological, and ecological factors. These intersecting factors include the high rates of poverty; redlining and proximity; low educational attainment; political power; alarmingly high incarceration rates.

The complex interaction of intersecting elements, including social, cultural, political, technological, and ecological components, has produced the multifaceted issue of environmental health vulnerability and injustice in Watts, California. Systemic discrimination and neglect have exacerbated vulnerabilities to environmental threats by thoroughly entrenching considerable disadvantages within the community throughout its history. The interconnectedness of Watts' environmental injustice is highlighted by this confluence of elements, underscoring the necessity of all-encompassing policies that tackle the underlying causes of inequality and provide inhabitants with the necessary tools to advocate for their rights and well-being.

The socioeconomic divide in Watts, California, is more than just data; it is a reflection of the real-life struggles of individuals and families trying to make ends meet in an unjust system. Enzo Moore using city data draws attention to the striking differences in household incomes in the town, which are far lower than the national average, which range from having a median household income of a low of $13,000 to the highs being around $75,000 (Enzo Moore). This broad range not only highlights Watts's economic diversity but also the degree of financial difficulty that a sizable percentage of its citizens face. With 40% of the population living below the poverty line, the startling poverty rate is at the root of these differences. The manifestations of this economic disadvantage are

manifold, greatly impeding the citizens' access to basic resources and intensifying their susceptibility to environmental hazards. Lack of affordable housing is one of the most urgent issues resulting from socioeconomic inequalities. Due to a lack of affordable housing options, many low-income Watts residents are forced to live in unsatisfactory or congested conditions. Their physical health is jeopardized, and they are also exposed to environmental risks including mold, lead paint, and shoddy sanitary facilities. Furthermore, a lack of solid housing exacerbates poverty and insecurity cycles, making it harder for locals to break free from adversity.

The environmental health of Watts has been significantly impacted by the historical legacy of industrialization and urban expansion, which has left a lasting impression on the community's landscape and general well-being. Watts was formerly a small ranching village that had a significant change into an industrial center in the late 19th and early 20th centuries (Gabriela Cervantes, Meakin, K.). The region saw a sharp increase in the number of industrial facilities as a result of the railroads and factories drawn by the economic opportunities that came with industrialization.This industrial history caused environmental injustice to become ingrained in the community. In Watts, underprivileged people were disproportionately affected by the negative consequences of pollution and contamination, which exacerbated already-existing health inequities and socioeconomic inequality. The chances of cancer, respiratory disorders, and other conditions linked to exposure to harmful substances were higher for locals, especially those who lived close to industrial facilities. Moreover, the harm that industrialization caused to the environment continued the cycles of poverty and marginalization in the neighborhood. Property values crashed as environmental dangers increased, making poverty and unstable incomes worse for locals. The quality of life in Watts was further weakened by the depletion of natural resources, which made it harder for locals to access green spaces, clean air, and safe drinking water—all of which are vital for their health and wellbeing.

The increasing environmental vulnerability faced by Watts, California residents is greatly due to discriminatory housing rules and racial segregation. The concentration of

Black population within Watts is a result of discriminatory actions that systematically prohibited black settlement outside of the town (Gabriela Cervantes, Meakin, K.). In addition to maintaining racial inequality, this enforced segregation made environmental injustices and health inequities among Black inhabitants worse. The historical background of Watts' discriminatory housing regulations and racial segregation dates back to the time of redlining and Jim Crow legislation. These laws essentially kept black people and families in segregated neighborhoods like Watts by routinely preventing them from obtaining houses in mostly white areas. Residents of Watts had restricted access to resources and possibilities for economic progress due to the prevalence of poverty in the area. Residents' susceptibility to environmental hazards increased as a result of the lack of employment prospects, poor infrastructure, and underfunded schools that fueled cycles of poverty and social inequality. Consequently, inhabitants encountered increased difficulties in obtaining healthcare, decent housing, and environmental facilities that are crucial for their overall health and welfare.

Environmental vulnerability in Watts is also made worse by a lack of infrastructure and resources, making it more difficult for locals to navigate environmental dangers. Tair Kuzhekov Moneik drawing from a UCLA produced article draws attention to the fact that a large number of residents cannot afford basic essentials like electricity, which increases health concerns during hot weather. Lack of access to or affordability of power for cooling systems can have disastrous effects on community members, especially the elderly, kids, and people with pre-existing medical conditions, in areas where temperatures can rise. Residents in Watts face more difficulties in reducing environmental threats as a result of the city's insufficient infrastructure. The community's health and well-being are further jeopardized by the spread of pollution and contamination brought about by inadequate waste management systems. Trash accumulation exacerbates health inequalities among locals by damaging the environment and raising the chance of being exposed to dangerous substances. Residents in Watts confront greater obstacles in protecting their health and well-being due to the lack of access to resources and infrastructure, which also increases environmental vulnerability.

Lastly, environmental injustice and vulnerability are made worse in Watts by inadequate government representation and response, which makes it harder for underprivileged groups to manage environmental threats. Enzo Moore drawing from a US news article describes how towns like Watts frequently receive insufficient help and funding from local and state governments despite facing serious environmental hazards. Residents are disproportionately subject to the negative consequences of pollution and contamination as a result of the government's inability to respond appropriately, perpetuating environmental injustices. Residents of Watts are further marginalized by the lack of political representation and activism, which makes it more difficult for them to confront environmental abuses and fight for their rights. Marginalized populations are frequently underrepresented in municipal and state government structures, which restricts their power to shape public policy and the distribution of resources. Inaction in the face of environmental threats exacerbates already-existing inequities in the community and feeds cycles of environmental injustice. Residents are left to suffer the worst effects of pollution and contamination in the absence of sufficient government involvement, which lowers people' quality of life and has a negative impact on their health.

In conclusion Watts, California's environmental health vulnerability and injustice are shaped by historical poverty and a complex interaction of intersecting causes. Environmental injustices and community vulnerabilities have been made worse by the convergence of systemic inequalities, such as racial segregation, discriminatory housing policies, limited access to resources and infrastructure, and insufficient government response and representation.

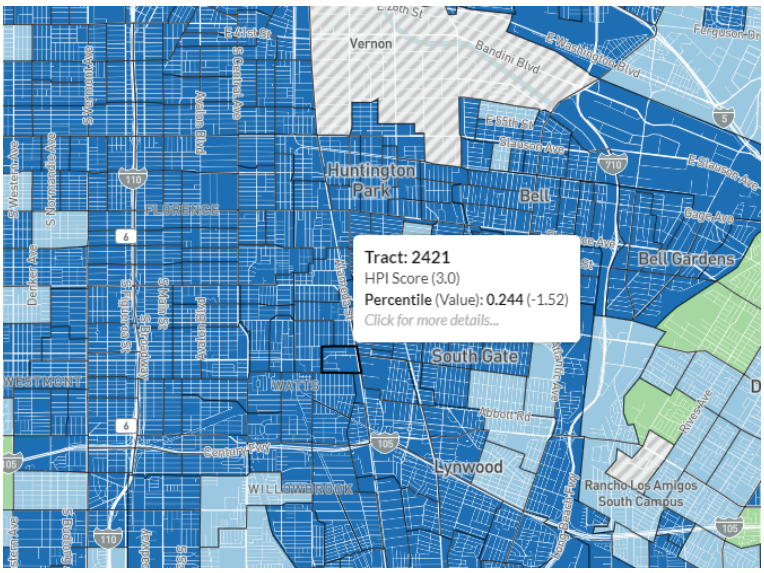


FIGURE 33: California Healthy Places Index

Watts and the neighboring towns have very significantly lower HPI scores than surrounding coastal towns. Jordan High School's census tract is in the 0.2 percentile with a score of 3.0 being significantly lower than the city average of 37.7. They performed quite poorly in all categories measured.

Source: https://map.healthyplacesindex.org/ (Screenshot by Enzo Moore, Jan 25, 2023)

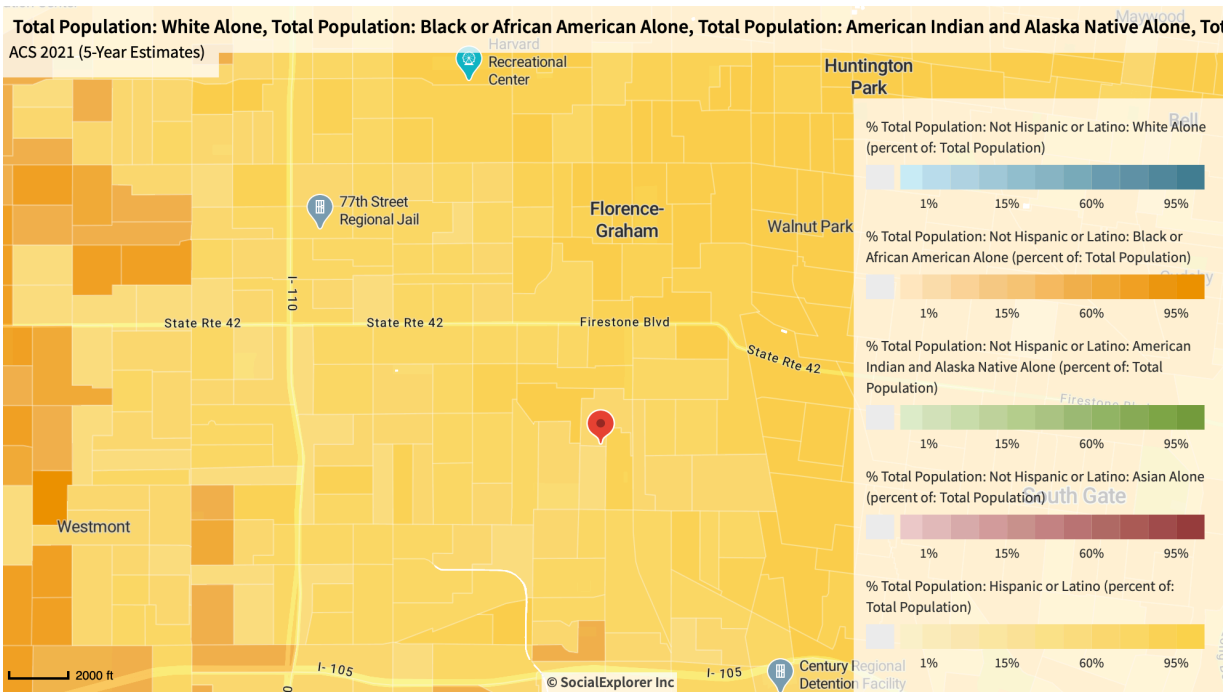


FIGURE 34: Racial Demographics

The map data indicates that the Watts, Los Angeles area predominantly consists of a Hispanic or Latino population. The total range being around 90% being Hispanic and 30% of Black or African American.

Source: https://www.socialexplorer.com/a9676d974c/exploe

(Screenshot by Lindsay Mikuni, January 24, 2024)

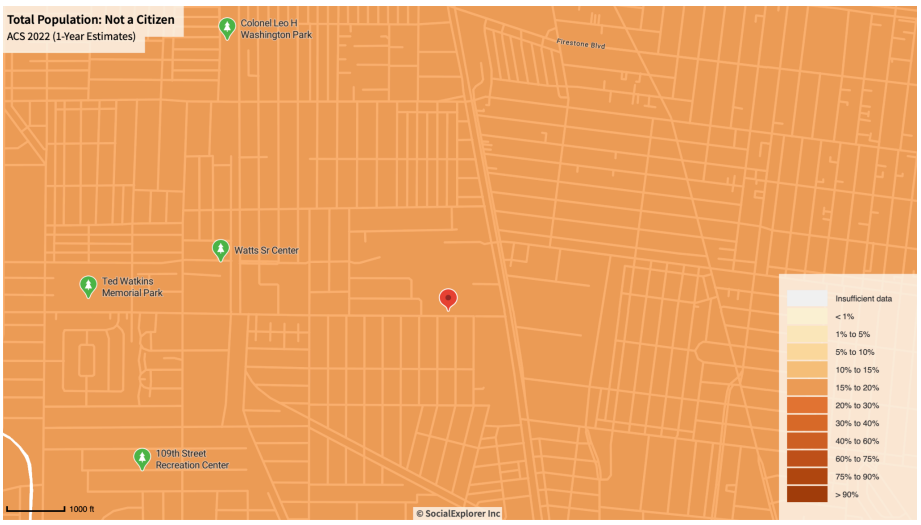


FIGURE 35: Citizenship

The Los Angeles area around the Jordan high school is an area with higher levels of migrants from outside the US. Census tract is 15% migrants who are not US citizens.

Source: https://www.socialexplorer.com/a9676d974c/explore

(Screenshot by Liam Rothchild, January 24, 2024.)

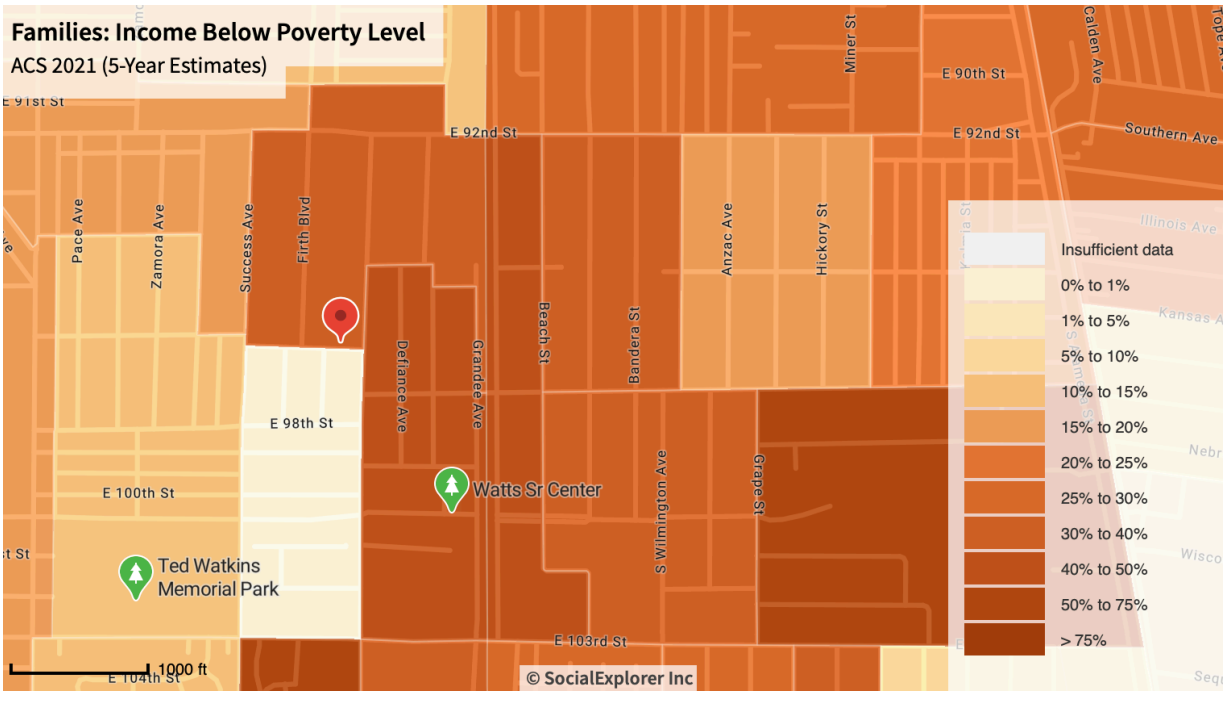


FIGURE 36: Poverty

The map data indicates that levels of poverty in the Watts Los Angeles area are relatively high. It demonstrates that the range of poverty levels is falling within a band of 20%-60% across the area. This suggests a relatively unstable economic situation in the region, where a significant majority of the population appears to be below the poverty threshold.

Source: https://www.socialexplorer.com/a9676d974c/explore

(Screenshot by Lindsay Mikuni, January 24, 2024)

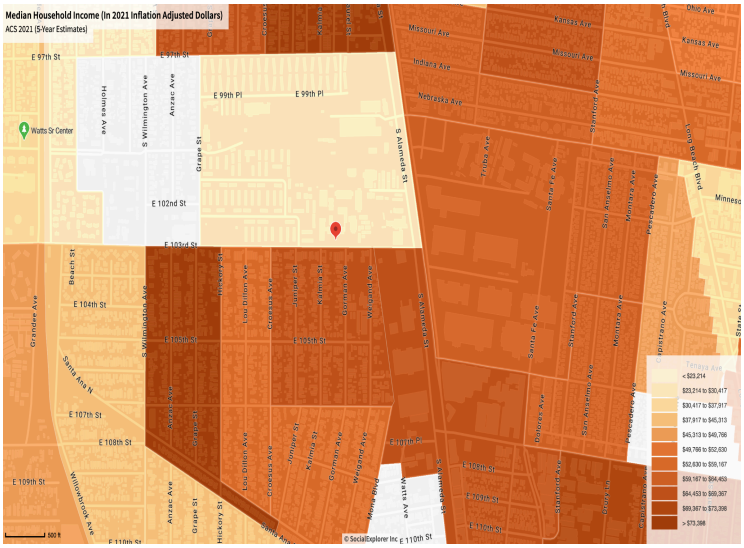


FIGURE 37: Income

In Los Angeles in the zip code, 90002 around the high school, the median household income is usually between 30,000 to 70,000 depending on the area.

Source: https://www.socialexplorer.com/a9676d974c/explore

(Screenshot by Liam Rothchild, January 25, 2024.)

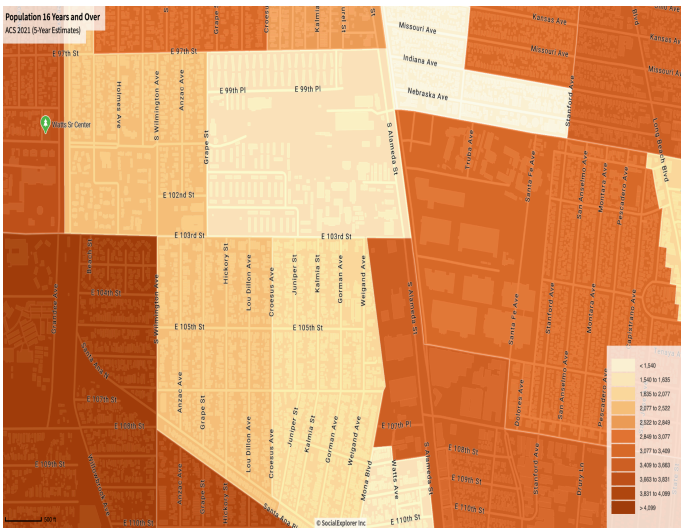


FIGURE 38: Unemployment

In Los Angeles in the zip code 90002, around the number of unemployed people above 16 years old is usually around 1500 to 3000 people.

Source: https://www.socialexplorer.com/a9676d974c/explore

Screenshot by Liam Rothchild, February 2, 2024.)

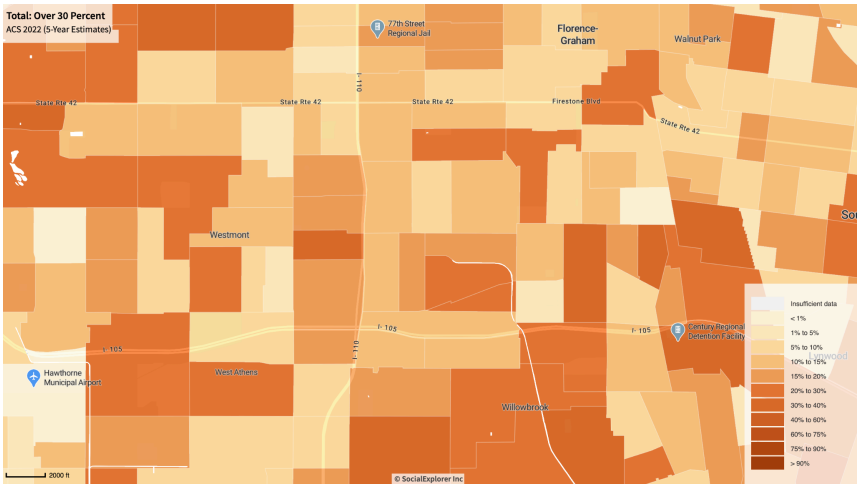


FIGURE 39: Rent Burden

Parts of Watts have high levels of rent burden. The percent of households experiencing rent burden in the Census Tract near Jordan High School is only 3.4% within the school

grounds but around 25% in surrounding neighborhoods.

Source: https://www.socialexplorer.com/a9676d974c/explore

(Screenshot by Enzo Moore, Jan 25, 2023)

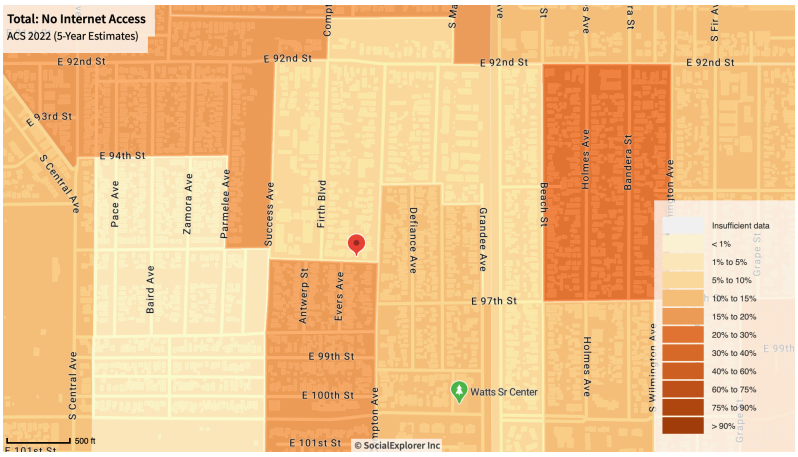


FIGURE 40: Internet Access

According to this data, it indicates that there is a mixture of percentages that ranges from 5% all the way to almost 60% of individuals with no internet access in the Watts area.

Source: https://www.socialexplorer.com/a9676d974c/explore

(Screenshot by Lindsay Mikuni, January 24, 2024)

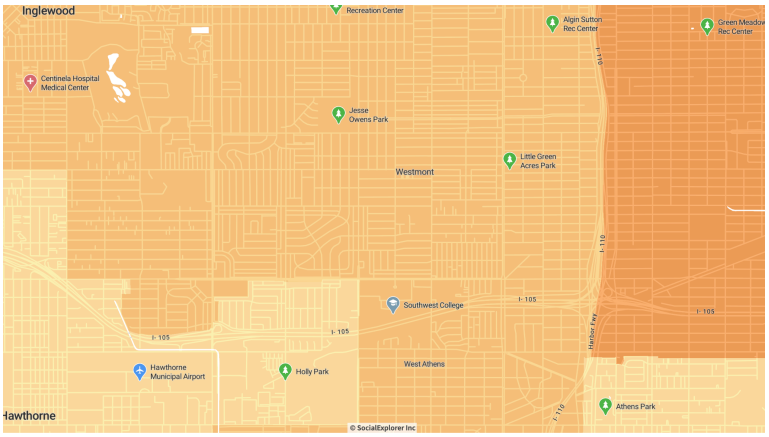


FIGURE 41: Vehicle Access

10- 15% of people living around Jordan High school (Jordan Downs/ Westmont) do not have access to vehicles.

Source: https://www.socialexplorer.com/a9676d974c/explore

(Screenshot by Brianna Barela, January 25, 2024.)

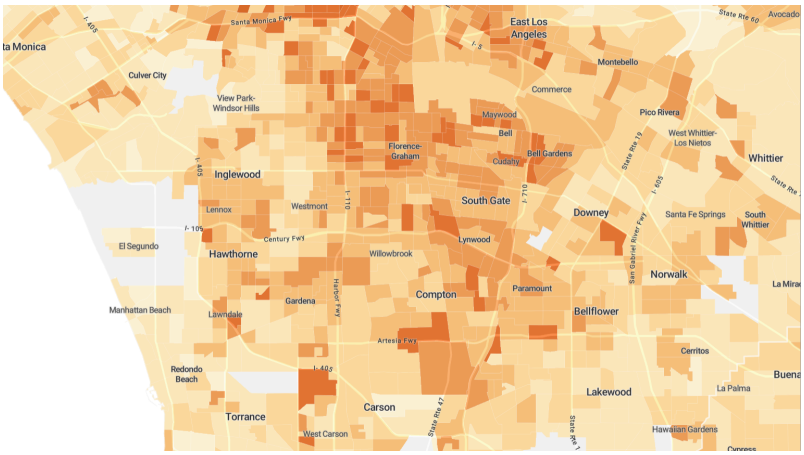


FIGURE 42: Health Insurance

The area surrounding Jordan High School is mixed, as some areas have high rates of having health insurance while other areas do not, having high rates of having no health insurance.

Source: https://www.socialexplorer.com/a9676d974c/explore

(Screenshot by Ethan Valencia, January 25th, 2024)

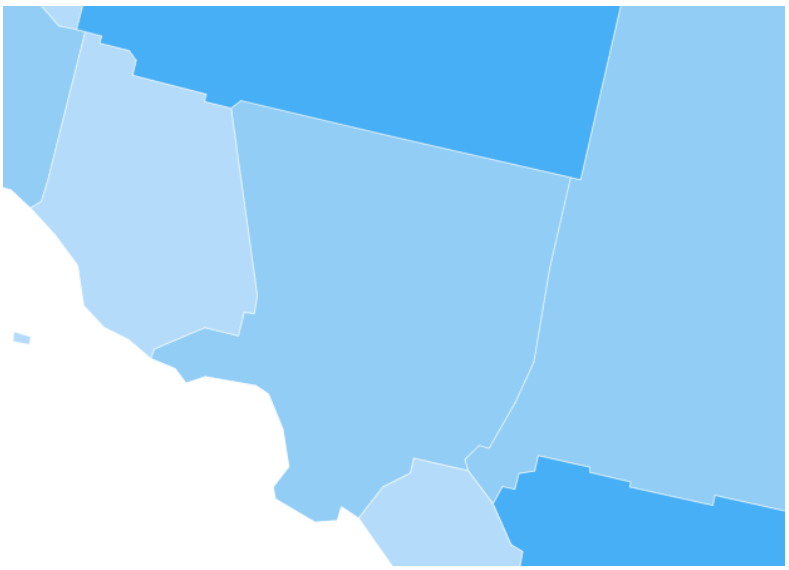


FIGURE 43: Physician to Patient Ratio

Los Angeles County's primary care physician ratio is 1.3K residents per physician. Furthermore, Los Angeles county's rank in California is 22nd.

Source:

https://ce.naco.org/?dset=County%20Health%20Rankings%3A%20Clinical%20Care&ind=Primary%20Care%20Physician%20Ratio

(Screenshot by Ethan Valencia, January 25th, 2024)

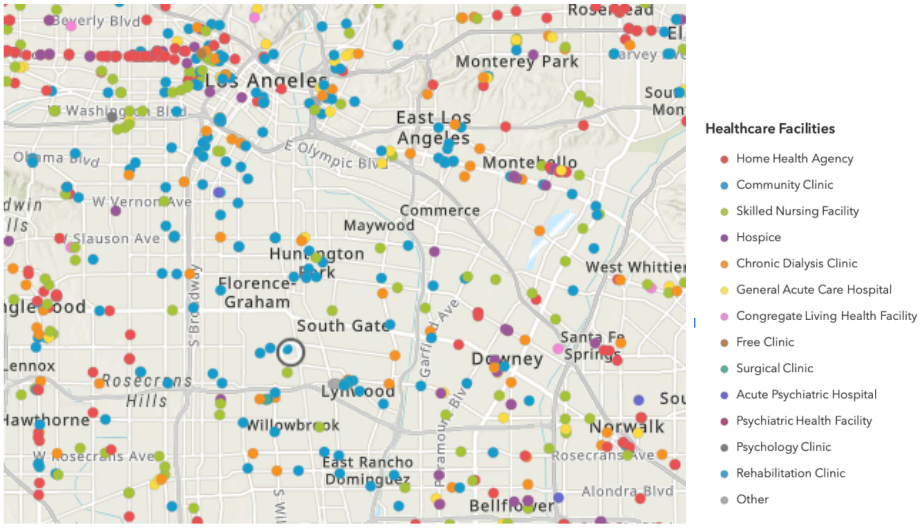


FIGURE 44: Healthcare Facilities

Based on the provided data highlighting healthcare resources in the Los Angeles region surrounding the school, it displays a number of community clinics that are available to this area.

Source:

https://ucirvine.maps.arcgis.com/apps/instant/basic/index.html?appid=95c9abe0acbe438a8b6d7d3cd3c200a9

(Screenshot by Lindsay Mikuni, January 24, 2024)

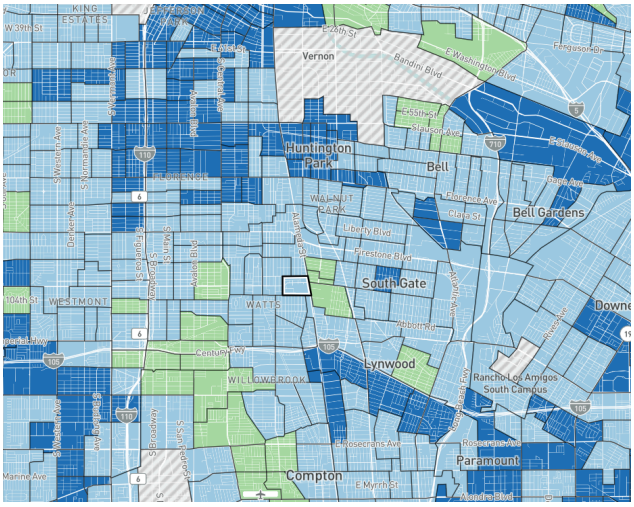


FIGURE 45: Tree Coverage Map

Tree cover map of the area surrounding Jordan High School. The tract that the High School is in (Tract 2421) has a very low tree cover at 3.88%. It is in the 39th percentile for the City of Los Angeles, and it is in the 25th percentile for Los Angeles County.

Source: https://map.healthyplacesindex.org/?redirect=false

(Screenshot by Liam Senior, February 8th, 2024)

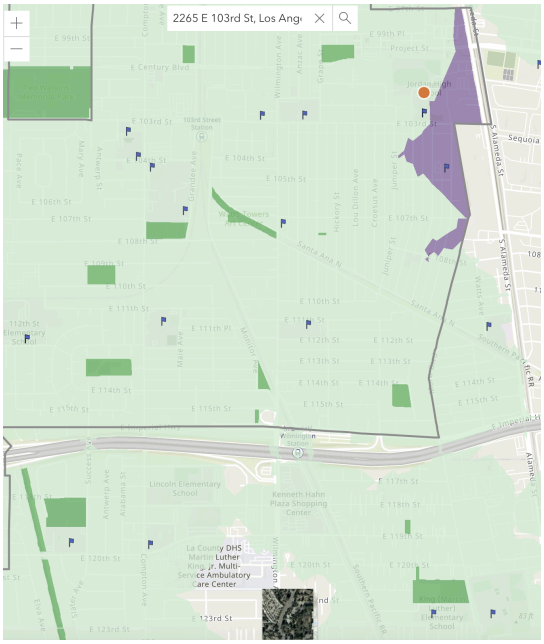


FIGURE 46: ParkScore Map

Jordan High School is located 3 blocks from the nearest park. However there is a high priority to build a park right next to the school. The amount of parks are somewhat few and spread out in this area.

Source: https://parkserve.tpl.org/mapping/#/?CityID=0644000

(Screenshot by Liam Rothchild, January 25, 2024.)

4. STAKEHOLDER ANALYSIS

Stakeholders. Who cares? And what can they do?

Liam Senior

In our case study, there are several stakeholders that have an interest in what is going on around Jordan High School with regard to the hazards they are facing. Each of these stakeholders has different catalysts, which allow them to act in the situation, and corrosives, which are a reason that the stakeholder may be unable to act in a situation.

One of these stakeholders involved is Atlas Metals Company. Atlas Metals is the company that owns the metal recycling plant that is located next door to Jordan High School in Watts, California. While the students at Jordan High blame Atlas Metals for the metal dust and metal shards that the school and surrounding neighborhood is being exposed to, Atlas Metals refuses to take responsibility, and asserts that they are doing enough to prevent contamination. Atlas Metal's catalyst that enables them to take action is the fact that they are the source of the airborne lead and metal contamination that is coming onto the school property. While it may be unreasonable for them to stop their business, they could enact more safety measures in order to prevent the contamination from affecting the nearby neighborhood. A corrosive effect for Atlas Metals is the fact that they are a

business, and they are trying to operate for profit. So while they could enact policies that would prevent contamination, it might not be the most profitable plan for them, so they do not.

A second stakeholder of our study, are the students of Jordan High School. The students are constantly exposed to the lead and metal contamination that is coming from Atlas Metals located next door. These students eventually felt that the contamination "was [their] normal" (ABC7 2023). A catalyst of the Jordan High Students is their intimate knowledge with the problem of contamination. While the students themselves may not know the scientific details about the contamination, they do know what everyone around them in their neighborhood thinks about it. Also, as they are located directly next to the source of contamination, they can actively see where the contamination is coming from and may be in a unique position to help come up with solutions. A corrosion of the students is the very fact that they are students. And as students, they may not be taken seriously by adults or others who are in a position to do anything to fix their difficulties (Jakovleva 2024).

A third stakeholder in this situation is the Los Angeles Unified School District. LAUSD has a direct responsibility to ensure the safety of all students at their schools, and in order to do this in this case, they have vast amounts of "resources such as money and specialized personnel" (Ashkinadze 2024). A catalyst of the LAUSD to act in this case is their vast resources and influence as one of the largest school districts in the United States with regard to student population size. A corrosive effect of the LAUSD is that while they are a large school district with a large student population, they have to spread all of their resources across these schools. They may not have the spare resources to focus on one specific school in their district.

A fourth stakeholder is the Coalition for Healthy Families. The Coalition for Healthy Families is a group of people that is made of different community members from Watts

and leaders from other organizations that want to help the Watts community. The Coalition for Healthy Families is calling for the immediate relocation of Atlas Metals"(CFHF 2024). One catalyst of the CFHF is that they have used their vast differences in who is involved to create a list of reasons why Atlas Metals should be relocated, which includes the danger of flying metal, the dangerous emissions, toxic runoff, and a disruption of the learning environment. However, a corrosion is that while they have been able to make tons of progress on the legal front with Atlas Metals about their interruption on the school, they have been unable to stop Atlas Metals from continuing their day to day operations.

A fifth stakeholder in our case study is the Environmental Protection Agency, or the EPA. The Environmental Protection Agency protects people and the environment from adverse health effects (USA.Gov). In our case study, the EPA's responsibility is to measure the pollution coming from Atlas Metals and determine if the pollution they are emitting is causing any adverse health effects to the student population at Jordan High School or the members of the surrounding community. A catalyst for the EPA is that they are a federal agency who is responsible for keeping track of the pollutants that companies like Atlas Metals produce. With this as their job, they have the money and resources to monitor Atlas Metals and determine easily if they are following the law or not, or if they are causing damage to the environment or students of Watts. A corrosion is the fact that while they may be able to determine if Atlas Metals is polluting above legal limits, there is nothing they can do about it if they are polluting below legal levels and still causing harm to students.

Stakeholder Power Grid		
What empowers this	**Stakeholder**	**What disempowers this**

stakeholder?		stakeholder?
Social media knowledge; personal familiarity with issue; proximity to neighborhood residents (spread the word locally); close contact to school admin who can help organize school-wide campaigns/discussions	Students at Jordan High School	Limited financial resources; youth (inability to vote, are not taken seriously); preoccupied with other, more immediate things (schoolwork, jobs, etc.)
Ability to change the way they handle metal to make it safer for the students or move to a different location where they do not put people at risk.	Atlas Metals Company	Legal liability, as well as the refusal of responsibility
Broad academic knowledge; close communication with students, parents, and school board	Faculty members at Jordan High School	Little to no financial resources; lack of political power; skepticism towards social movement
Proximity to community (which means support from community members and influence over community operations); good reputation; some contacts	Watts Labor Community Action Committee (WLCAC)	Socioeconomic challenges; limited financial resources as a non-profit

with government representatives		
Political power of a state-level federal agency: power to resonate local actions, government funding, providing websites for monitoring air and water pollution	California Environmental Protection Agency (CalEPA)	Indirect involvement through regulations and recommended pollution levels
Have employees who are experiencing the issues directly and can therefore corroborate with LAUSD to understand local issues, and provide evidence; has the resources such as money and specialized personnel who are in charge of ensuring environmental safety at schools; the power to bring about lawsuits against polluters; can fund certain projects like moderate cleanup operations and remodeling of their schools to protect students	Los Angeles Unified School District (LAUSD)	Is the second-largest school district in America– has to focus on hundreds of thousands of students and multiple schools, meaning that resources and focus are diverted, making it hard to centralize on issues that only a specific school could be experiencing; lawsuits and actions done by the school are primarily determined by the officials in charge at the time and thus heavily depend upon their goals and focus; jurisdiction primarily falls only on school-related issues and thus cannot get

		involved in broader community issues
Strong Leadership, large community influence, networking due to the involvement of many different groups, bringing awareness to their situation, and easily gathering community support	Coalition for Healthy Families	Facing socioeconomic challenges as well as the limited resources that come with this problem
Something that enables this stakeholder is their community based living that strengthens them together if they are needed to stand up for something	The Jordan Downs Housing Development	They are undermined by the lower economic status as well as gang affiliation which may lead to them not being taken seriously or even listened to at all.
LAUSD has a large sphere of influence being one of the largest school districts in the United States. They could use this to influence regulations on a county or even possibly state level. This office is placed in a position to effectively spread information to many	Los Angeles Unified School District's Office of Environmental Health and Safety.	Lots of bureaucratic red tape. As a governing body with a board it may be difficult to come to a consensus about what decisions to make and how.

people about different environmental issues. They even have a page dedicated to Jordan High School.		

Figure 47: Native Peoples

Tongva park is reminiscent of Santa Monica and mimics the homes of the Tongva tribe that once lived in the area of Los Angeles. The park created by Fuscoe Engineering is said to be transformed into "the heart of the city."

(Screenshot by Brianna Barela, January 25, 2024.)

Sources: https://www.flickr.com/photos/ozfan22/3615287546/

First photo:

https://archinect.com/firms/release/106481/tongva-park-ken-genser-square-earns-national-achievement-award-from-the-american-planning-association/126275807

Second photo:

https://www.fuscoe.com/portfolio/tongva-park-ken-genser-square/

Figure 48: Social Groups

The city of Jordan Downs is a community in redevelopment. The Jordan Downs housing projects house the Grape Street Watts Crips which is an African American street gang with over 2,000 active members closely aligned with family.

(Screenshot by Brianna Barela, February 2, 2024.)

Source: https://unitedgangs.com/grape-street-watts-crips/

First photo:

https://twitter.com/DrinkSolaPop/status/1260001031292944384/photo/3

Second photo:

https://www.kcrw.com/news/shows/greater-la/housing-broad-museum-worker-safety/jordan-downs-watts

5. STAKEHOLDER ACTIONS

Inactions of Metal Company Safety Regulations Outweighing Environmental Safety Legal Punitive Measures

Enzo Moore

Atlas Iron & Metal Company is a stakeholder responsible for a good portion of waste disposal in Los Angeles county. The company is a beneficial contributor to the local community, but this comes at a cost to the safety of the residents nearby their facilities. Ceasing these operations would have adverse effects on the transportation fuel supply in Southern California. Not addressing the concerns raised about lead contamination and other environmental hazards associated with its operations has led to inactions of agencies that should be properly enforcing and regulating their actions. One incident from Atlas Metal resulted in a 6 inch shard from a military vehicle being launched around 1,500 feet in the air before landing on the school site as well as eight other incidents resulting in waste landing on the school site (“Restraining Order Issued Against Atlas Metal; Mountain

Of Scrap Metal Towering Over Jordan High School Called A ‘Public Nuisance’ - CBS Los Angeles” 2021). Atlas Metal has reportedly refused to adopt similar measures of alternatives and technologies used by other recycling plants to mitigate pollution (Rothchild 2024).

Students of Jordan High School, some of the most important impacted stakeholders in this analysis, held local protests against Atlas Metal and Iron Co. in front of the recycling facility attempting to spread information about the potential toxicity of the recycling plant. They have hopes of increasing awareness of and calling attention to the release of "sharp pieces of metal, smoke, fumes, and other hazards onto school grounds." The Guardian has revealed that the metal facility has been charged with over 21 felony counts of disposing hazardous waste as well as a felony pertaining to waste disposal (Singh 2022). Finally, some students have consented to interviews with local news outlets, like LA Times and the Guardian, to discuss their experience with the situation (citing loud noises during class lectures and unpleasant smells around campus as some of the most noticeable effects). The advocating students admitted that while many of their peers "'did take the information, and they did read about it... [it's unclear] if it really caught their attention 100% to where they wanted to do something about it.'" Therefore, a number of students have refused to support these protests/activism efforts, ignoring or brushing off the problem even when they were directly informed of the hazards (Jakovleva 2024).

Los Angeles Unified School District has actively engaged in legal and public awareness efforts against the Atlas Recycling Center, citing health risks and non-compliance with health protocols, aiming for its relocation or shutdown. This includes financing lawsuits, conducting health investigations, and cleaning up hazardous spills, alongside using media to amplify their cause. One of the main focuses was created through a letter sent from the school board to the South Coast Air Quality Control Board regarding the air quality levels being very bad in the area surrounding the high school and promoting a call for action for the safety of the students (Beutner, Torres, and Flores, n.d.). However, LAUSD's focus on Atlas Metal Co. overlooks the potential risks posed by other

nearby industries, highlighting a gap in their strategy to protect students from environmental hazards in the broader industrial area. LAUSD has also partnered with the Office of Environmental Health and Safety in order to create an accessible place where the complete actions taken and letters sent from the cases surrounding Jordan Watts High School can be accessed. This is a very positive action in helping spread awareness of the case with all of the reported incidents and investigations being reported present in a single place. A short video detailing the causes of the actions being taken against the metal company were reported as well as what the community is doing to try and promote the safety of their children ("Office of Environmental Health & Safety / Justice for Jordan High School," n.d.).

Since the Coalition for Healthy Families started its work last year, they've made significant strides in their mission including: the Los Angeles District Attorney initiating a criminal investigation into Atlas Metals, the California Department of Toxic Substances Control taking legal action against Atlas Metals by filing a lawsuit, and an LA superior court Judge lifting the stay on a lawsuit filed by the LA city attorney's office ("Our Success | Coalition For Healthy Families," n.d.). In addition to those changes, Tim McCosker, the newly elected member of the LA City Council, has committed to engaging with and supporting the coalition's efforts. Despite the united efforts and advocacy by this group to address environmental concerns, Atlas Metal, the scrap metal recycling center located next to Jordan High School, continues to operate. The center's presence and its associated activities have not been halted, indicating ongoing challenges in completely removing or mitigating the impact of this facility on the nearby school and community (Mikuni 2024).

The Environmental Protection Agency (EPA) is the federal agency responsible for overseeing the protection of the environment and those affected by it in the United States. Under their jurisdiction, the Clean Water Act was passed in 1972 that prohibits discharge of any pollutant into navigable waters (US EPA 2013). The EPA did not act on the health hazards posed by the Golden State Water Company in East Willowbrook that serves the city of Watts and the 17 total contaminants that are present in their water. The Environmental Working Groups that analyzes what contaminants detected exceed health

guidelines found this plant to have 9 contaminants that exceed their safety regulations that the EPA has not enforced them on (Group, n.d.). The EPA is also responsible for directing the cleanup program of hazardous wastes including the contaminations present under the Comprehensive Environmental Response, Comprestation and Liability Act (aka Superfund). Atlas Metal Co. violated the regulations they had set in place where the EPA did not charge them for the violation of having lead concentrations 75% higher than the EPA threshold (“Watts Coalition Alleges Environmental Hazards Coming from Recycling Plant,” n.d.).

6. NEWS, SCIENCE, DEBATE

Unseen stories: The Silent Symphony of Neglected Narratives in Media Shadows

Liam Henderson

Since major protests raised awareness of the chemical contamination, several media sources have covered the contamination of Jordan High School by the Atlas Iron & Metal Company. This media coverage has been quite beneficial for the residents of Watts as well as the students of Jordan High School. This increased awareness of the ongoing issue of exposure to toxic chemicals caught the attention of the Los Angeles Unified School District, whose commissioned investigation of the site found that the concentrations of lead in the soil were found to be 75 times higher than the Environmental Protection Agency's hazardous threshold (Eng, 2023). This testing has led to multiple lawsuits filed against the company and bureaucratic investigations, led by the Environmental Protection Agency.

While the media has covered this issue relatively well in regard to general issues affecting the surrounding Watts area, governmental agencies tend to leave out the personal experiences that several stakeholders in the area have gone through. Government agencies tend to forget about specific health issues that are caused by the increased emissions of lead and other toxic chemicals that are emitted by the adjacent Atlas Iron & Metal Company. According to the Center for Disease Control and Prevention, exposure to lead can seriously harm a child's health, including damage to the brain and central nervous system, slowed growth and development, learning and behavior problems, and hearing and speech problems (CDC, 2023).

Residents can clearly see these effects occurring, and have raised their voices pertaining to this issue. On the first day of school, students, parents, staff and residents protested outside the campus, demanding change be enacted to help the people suffering under the toxic cloud surrounding their everyday lives (Villafana, 2022). According to Curbed LA, the life expectancy of residents of Watts is 11.9 years less than that of other cities in Los Angeles. President of the Watts Labor and Community Action Committee, Tim Watkins, says, "We're neglected. This would not happen in a more affluent community that is more white." (Villafana, 2022). It is clear that government action regarding the issues at Jordan High School are quite lackluster, and the residents of Watts are fed up with the lack of effort put in by the government.

The media response regarding the chemical contamination of Jordan High School and the surrounding Watts area has been ample, but there are several discrepancies that are not explained in articles, leaving data divergences. One example of such a divergence is the Los Angeles Department of Water and Power's claims that the water they serve to the community meets "all requirements for health and safety," despite contradictory evidence from the Center for Disease Control and Prevention which shows that 6 percent of all children living in Watts ages 1-2 years old and 11 percent of black children ages 1-5 having blood lead levels in the toxic range (Haywood, 2017). This data divergence can potentially be dangerous for people in the general public. If they simply read the

statement from the Department of Water and Power, they couldn't know about the blatant lie that the department pushes to the public.

Another example of a data divergence comes from a statement made by the Los Angeles Sanitation and Environment Department, claiming that 98% of calls for sanitation services are fulfilled on the weekly trash collection day, which contradicts the actual experience of Watts residents. According to residents of Watts, they have to wait around 2-3 weeks for the Sanitation and Environment Department to respond to calls regarding trash dumping in the neighborhood, which is a massive issue for the residents living there (Dubbins and Cabello Cuahutle, 2023). A 2008 report from the New York Times showed that trash, including dead animals, remained in the streets of Watts for weeks, giving their Los Angeles "Clean Streets Index" their worst grade: 'not clean.'

Atlas Iron & Metal Company issued a statement, saying that the Jordan High School District's claims that their recycling facility is the source of the contamination is "factually groundless." They claim that no sampling of the soil can link the contaminated dust at Jordan High School to their nextdoor plant. They claim that in an industrial community such as Watts, there are several possible sources of particulate pollution, and to blame Atlas Iron & Metal, "ignores the current and past realities of this neighborhood." (Singh, 2022). However, this is an example of a data divergence. The school has countered the company's claims, that even if the laboratories cannot confirm the origin of the toxic dust, testing done by the California Department of Toxic Substances Control has found heightened levels of the same heavy metal contaminants at both the Atlas facility and the school, with no other known sources than the facility (Singh, 2022).

7. RECOMMENDED LOCAL ACTIONS

Local Actions to Attain Environmental Justice in the Watts Neighborhood

Ethan Valencia

The first problem Jordan High School is facing is lead contamination. According to Marc Brown of *ABC 7 Eyewitness News*, "...hundreds of students and teachers who attend Jordan High School in Watts are exposed daily to levels of lead 75 times what's considered toxic." Brown continues with the fact that, "The Los Angeles Unified School District said testing it commissioned found lead concentrations on the campus 75 times higher than what the Environmental Protection Agency defines as a hazardous threshold" (Brown 2022). While there is no information on this problem being addressed elsewhere, that closely relates to the situation of Jordan High School, there is a solution that could help address it.

Anthony Ashkinadze proposed that we need to require, " lead testing for one to two-year-olds to detect and become aware of lead-contaminated areas..." This will alert children who may be vulnerable to lead contamination to know of the infected area and potentially have those areas addressed. Another proposal he had was to close the metal recycling plant (Atlas Iron & Metal Company), which is right next to Jordan High School, or

forcefully move the plant away from the school. He states how “This would reduce the neurodivergent diseases and consequences that stem from high lead exposure” (Ashkinadze 2024). This solution would help those who are most affected by the lead contamination by lessening their daily reaction to it, as there won’t be as much lead as before. It would also help prevent chronic problems from showing up in the future, for those same people.

Another problem Jordan High School is facing is the fact that its pollution levels are fairly high. Lucy Sherriff of *Yes Magazine* explains how pollution caused by diesel trucks, traffic, and other industries are piling onto the environmental burdens the community continues to face (Sherriff 2023). Liam Henderson found a solution from Kern County, CA, where they made a climate adaptation plan that proved to be effective in combating pollution. The plan included three major steps. One was to “Locate and map sources of air pollution, including mobile sources such as freeways and high-traffic volume roads, and stationary sources such as refineries, distribution centers, and gasoline-dispensing facilities.”

Second was to “Identify small-scale stationary sources and the most concentrated areas where air quality is most impacted for pollution reduction strategies.” Third was to “Create an effective, solid waste management plan to reduce source generation and to divert waste from landfills to achieve emission reductions.” In order to solve this issue of pollution, the same methods used in Kern County can be applied to the Watts and greater Los Angeles area (Henderson 2024). Counties can each implement this plan so the effectiveness is seen throughout the city, and not just Watts. In addition, we can organize future events with the Watts Labor Community Action Committee to further push action in the community.

Storm water pollution is another environmental injustice Jordan High School is facing. A mix of litter, waste, and pesticides is adding to public health risks as they are contaminating water in Los Angeles. Clara Harter of the Santa Monica Daily Press says, “When rain water hits L.A.’s largely impervious landscape it drains into run-off channels that criss-cross through the county accumulating a toxic slew of chemicals, oil, fertilizer,

trash, hard metals, and bacteria before entering a storm drain and spewing out into the ocean" (Harter 2021). Brianna Barela found that "Many people in the Bay Area have contributed to stopping this pollution by regulating the industrial facilities that allow runoff of their contaminated chemicals." This solution that is being done in the San Francisco area can be incorporated into the Los Angeles area as a whole because it is the runoff of these chemicals that are becoming more and more harmful for everyone attending Jordan High School (Barela 2024). Holding those who allow runoff to occur in their facilities accountable will lessen the amount of runoff they allow and put more notice on keeping certain regulations in tact, to avoid future violations.

Another problem occurring around Jordan High School is illegal dumping. Andrew Dubbins and Melisa Cabello Cuahutle of the LA Times talk about how, "Illegal dumping has been a blight in Watts for decades, and despite promises from officials, the South L.A. neighborhood has gotten dirtier" (Dubbins and Cabello Cuahutle 2023). Gabriela Cervantes-Castillo points out an article from Save the Bay, which described how in East Palo Alto, "they have implemented a technique of publicly posting images of illegal dumpers and having a $1,000 fine for illegal dumping. They also have the incentive to provide information on illegal dumpers by giving $500 reward to those that give information." Something like what East Palo Alto did can be implemented in Watts. "There can be a public form or community Facebook page in which members of the community can post the information of the illegal dumping." This information can be taken up to law enforcement, who will start cracking down on these people, fining them in the process (Cervantes-Castillo 2024).

One final problem that has been affecting Jordan High School are heat waves. The Guardian's Lois Beckett states, "As Los Angeles struggled under a brutal heatwave, many streets were quiet as residents followed the official warnings to shelter inside their air conditioned homes." Even though this warning was two years ago, Los Angeles just recovered from the drought that heat wave caused, last summer (Beckett 2022). Aleksandra Jakovleva brings to light an article from Prevention Web which explained how "The Spanish city of Seville, which regularly struggles with excessive heat due to the

location implemented what they called a 'policy of shade' where they installed more awnings across the city, in addition to planting 5,000 trees a year, switching construction materials, and installing more public fountains." Taking what Seville did into account, we could "Partner with the Watts Neighborhood Council to petition/fund the installation of more covers and awnings outdoors, especially in public rest spaces like bus stops and benches." Organizing community-wide gatherings to plant trees with a goal each month could also help solve the problem, as this would be promoted among the schools as well (Jakovleva 2024).

Proposed Local Education or Art Project

PROJECT TITLE: Watts With This Air?

PROJECT DESIGN

Our project focuses on raising awareness about air pollution and its health impacts on communities. We would display collages of different drawings that visually capture the causes and effects of this hazard, such as a visual of small-scale people against a gray background with an oversized looming factory; a silhouette drawing of a person with different, bright colors inside the person but a gray, cloudy surrounding; and even images juxtaposing healthy lungs with asthmatic lungs. We'll accompany these images with catchy slogans like "every breath you take puts your lungs at stake" or"go green to breathe clean." These designs will also be for sale. We thus hope to raise awareness and hopefully enact change regarding the problem of air-pollution caused asthma and spend donations from selling pictures on healing children with asthma.

PROJECT DELIVERY

We would display our artwork in public spaces, like streets (mural-style), in Watts

schools (with permission), and at community centers, in addition to sharing them through social media platforms. We'd also encourage news channels to share our art, and work with local organizations (such as WLAC and BetterWatts Initiative) to promote this project, whether digitally on their websites, or in person at their offices and during community meetings.

PROJECT EVALUATION

To evaluate the success of our project, we will use the following methods: a quantitative attendance count/record in the event of specially-organized displays at community centers, etc.; quantitative records of social media traction (how many likes/reposts/shares); quantitative and qualitative records of media coverage–whether or not it was covered by a news station, and if so, by how many different networks and for how long; a quantitative record of how much money we raised from artwork sales; qualitative surveys in schools and other public locations where art is displayed that ask questions to see if public understands the point behind the project.

Proposed Local Action Campaign

PROJECT TITLE: Let's Lose Lead

Environmental Hazard: Lead contamination caused by the operations of Atlas Iron and Metals Company, which produces toxic lead dust and particles from recycling metals that end up on site at Jordan High School.

Goal: Reduce lead Exposure and contamination that Jordan Watts High School students face.

Strategy: Set city/county regulations on the amount of lead contaminants and bans on

refinement of heavy metals near residential areas.

Tactics:

- Advocate for a local (county) law/proposition that bans the presence of heavy metal refinement or industrial sites that are located near a school.

-File a lawsuit alleging that Atlas Metals Co. has released more pollutants than legally allowed and must reduce their pollutant levels of lead.

- Crowdfunding through the presentations around the community, at Jordan High School itself and the surrounding neighborhoods.

Workplan:

- Get in contact with other past or ongoing campaigns that worked on lead contamination and get advice from them on how to proceed.
- Identify existing legal levels of lead contaminants allowed in LA County
- Connect with local (city/county) representatives and propose a law that bans any heavy metal refinement near schools.
    - Set up a media campaign in areas under those representatives to add public pressure for the law.
        - Social Media Awareness
        - Advertisements on local television
        - Radio Advertisements
        - Interview with local news
    - Writing to the representatives also can add pressure and advocate for them to support and set up a bill into motion.
- Measure contaminant levels directly outside Atlas Iron and Metals Co.
- Educate local residents of the lead contamination of the neighbor so that more people can come together to advocate for themselves
    - Get people that are educated on the subject to make free presentations for the residents at parks or community centers. Also make presentations at Jordan High School during classes or make a school wide assembly.
- Give community members information on which officials, especially city and

county reps (but also federal government agencies like the EPA) to get in contact with to propose changes
    - Speaking to school district and city officials about improper conditions for education
- Travel door to door to interview residents of the area and get a general sense of how much the residents know of the lead contamination in their neighborhood.

8. RECOMMENDED EXTRA-LOCAL ACTIONS

State Actions to Achieve Environmental Justice in Watts, Los Angeles and Beyond

Gabriela Cervantes-Castillo

The Watts community has an issue with being in close contact with toxic waste and as a result the soil has been contaminated. In a discussion post by Lindsay Mikuni, she states, “Seek funding from federal and state environmental agencies for improving the soil conditions, health monitoring, and community education programs. This can include applying for grants designed to address environmental hazards” (Mikuni 2024). This is one suggestion for an extra-local action that could greatly benefit the community. On the EPA website it states, “...allows organizations to electronically find and apply for competitive grant opportunities from all federal grant-making agencies” (“Find Current Funding Opportunities | US EPA” 2023). This states that different organizations have the option to submit action plans to gain funding through the EPA. If an organization like the CalEPA or OEHHA got enough funding they could come up with a plan to improve the soil conditions

in the Watts area and possibly other areas that are dealing with similar issues.

An extra-local action that could positively affect the Watts area is the Cleanup in Vulnerable Communities Initiative (CVCI) which is a plan to allocate $500 million to help clean up areas in California that are facing contamination from multiple sources. Within this initiative there is the Equitable Community Revitalization Grant (ECRG) that will set aside $250 million in grants to prioritize clean up in more disadvantaged areas in California. If the city of LA or Watts were to gain access to a grant from this initiative they would be able to clean up some of the lead that has contaminated the area from Atlas Metal or target cleaning up that waste that has been piling up from illegal dumping in the area. With these initiatives in place the Watts area could finally have some sort of solution to the lead contamination that they have been facing for decades since the metal recycling plant opened.

Since our group identified extreme heat hazard as one of the issues that Watts is facing, it is important for there to be some sort of action. In a discussion post by Tair Kuzhekov, he states, “Since people in Watts County have poor housing accommodations, they live with outdated rooftops, lack of air conditioners and most importantly high electricity bills… Federal grant of $500 million to sponsor communities that are vulnerable to extreme heats and high temperatures. The sponsorship should be directly transferred to trustworthy local non-profit organizations like The Solutions Project. This sponsorship should be supported by California democrats especially Gavin Newsom - governor of California, Karen Bass - mayor of Los Angeles, and president Joe Biden.” (Kuzhekov 2024).

This grant would allow for buildings in Watts to get roofs that better block out the heat of the sun and air conditioners. There is an Extreme Heat and Community Resilience Program that gives out grants to help communities combat the effects of extreme heat that could help in providing the funds that a project of this scale would require (“Extreme Heat and Community Resilience Program - Office of Planning and Research”, n.d.). With the assistance of the Solutions Project, which is non-profit organization that helps disadvantaged communities combat an array of injustices, Watts and other low income communities can have the support and guidance they need to combat the effects of

extreme heat.

An additional issue that needs to be addressed is the PFAS, germ, pesticide and other water contaminants that are contaminating drinking water in Watts. In a discussion post Enzo Moore states, “Extra local actions that can be taken are increased regulations on the consequences of having PFAS or other contaminants over the MCL (maximum contamination level)” (Moore 2024). According to the EWG the Golden State Water Company (GSWC) -Willowbrook, which supplies Watts with water, has 17 detected contaminants with 9 exceeding the contaminant level for EWG (“EWG Tap Water Database | Golden State Water Company (GSWC) -Willowbrook”, n.d.). The problem with this is that although these levels exceed the standard for the EWG they are considered fine levels of contaminants according to federal levels. This means that all the residents that consume the water distributed by GSWC are putting themselves at risk without even knowing it since according to federal law the water is “safe.” If the federal government lowers the amount of contaminants they deem to be safe then the GSWC would be forced to provide clean drinking water.

Illegal dumping is another matter that plagues Watts. According to the LA Times, “Illegal dumping has been a blight in Watts for decades, and despite promises from officials, the South L.A. neighborhood has gotten dirtier.” (Cuahutle 2023). This has been an ongoing issue for many years and although there are fines for illegal dumping that has not deterred people from continuing to do so. The New South Wales Environment Protection Authority (NSW EPA) has implemented a program called Regional illegal dumping squads (RID Squads) that uses a regional approach when trying to prevent and combat illegal dumping. These RID squads are up in different regions of New South Wales and they monitor illegal dumping sites and provide education to residents about illegal dumping. If the US EPA or CalEPA implemented a similar program then that would help stop illegal dumping when it has been a long running issue in many areas.

Proposed Extra-Local Action Campaign

CAMPAIGN TITLE: Cal Waste Watch

Environmental Hazard: Illegal waste dumping (sanitation issues leading to ground contamination, pest infestations, etc.)

Goal: END the illegal waste dumping in Watts; keep neighborhood streets clean

Strategy: Enact a state ban of illegal trash/waste dumping outside of designated landfills; encourage maintenance of clean streets in California cities, including Watts

Tactics:

- Create more clean-up crews specifically dedicated for illegal dumping/street sanitation, especially in underprivileged areas
    - Inc. “patrol” that monitors instances of illegal dumping overnight (when it usually happens)
- Create/modify laws that impose STRICTER fines on those who dump illegally
- Use surveillance cameras in areas prone to illegal dumping.
- Potentially modify laws regarding legal dumping (decrease fees, to decrease incentive to avoid them)
- Raise awareness in the community to report illegal dumping (“trash tours” that take people around the dirtiest parts of the streets)
- Offer incentives for proper disposal

Workplan:

- Encourage and promote members of the community to write letters to state officials supporting stricter fines for illegal dumping and decrease fees for legal dumping
    - Outreach campaign to raise awareness, using both local/direct tactics and social media (to expand outreach)
- Identify the sources of where the majority of these dumpings are coming from
- Increase monitoring and law enforcement in known illegal dumping areas.
    - Advocate for state law that requires allocation of additional clean-up crews designated to sanitation cleanup and control, by increasing funding

of the sanitation workforce

- Although our campaign will focus on the above extra-local actions, we also recognize the importance of local outreach to get the message out (since federal/state officials are not easy to reach)
    - Encourage community members to report incidents of illegal dumping promptly.
    - Organize community clean-up events to encourage local involvement.
        - Partner with schools, businesses, and organizations
        - Recognize and reward communities or individuals who maintain clean environments.

9. RECOMMENDATIONS FOR FUTURE RESEARCH

Future Steps in Achieving Environmental Justice

Tair Kuzhekov

To address environmental injustice, it is essential to consider data and epistemic injustice in the Jordan High School or Watts area and ways to resolve this knowledge gap. One of such data gaps is a lack of information about future construction projects near Jordan High School. In the discussion about stakeholders, Enzo Moore pays attention to this: “This data gap could result in more hazardous construction zones set up around the school that can lead to increased traffic risks especially for the pedestrians that include students walking to school” (Moore 2024). Enzo Moore continues: “Information about delivery schedules and large trucks and construction equipment moving in and out of the area that could create additional hazards needs to be monitored to take a more preventative stance on traffic safety instead of making changes after many accidents have occurred” (Moore 2024). In other words, we need to look into any current infrastructural changes happening in Watts county by monitoring where construction trailers and big

trucks are moving in order to prevent traffic jams as well as overcrowding near high school.

While construction projects in Watts County are a necessary field for research, Liam Rothchild highlights another issue: “We lack a comprehensive understanding of the long-term health effects on students and residents living near Atlas Iron & Metal Company due to lead contamination” (Rothchild 2024). Indeed, knowing how much students suffer from asthma, cardiovascular diseases, diabetes, and high concentrations of toxic metals in blood could clearly indicate how much health damage was done by Atlas Metal Company negligence in environmental precautions. To fill this gap, “Researchers could conduct a study involving students and residents living near Atlas Iron & Metal Company. This study would involve regular health assessments, including blood lead level measurements, respiratory health evaluations, and neurological assessments, over several years. Additionally, environmental monitoring could track changes in lead levels in soil, air, and water. Such research would provide valuable insights into the cumulative health impacts of lead contamination and guide the development of intervention strategies to protect the affected communities” (Rothchild 2024).

Another knowledge gap is that “We currently don't know to what extent, if at all, Jordan High School students were informed about environmental hazards and injustice from "official" sources, like the school curriculum or local authorities” (Jakovleva 2024a). In fact, Aleksandra Jakovleva specifies that many students might have different opinions about Atlas Metal Co. functioning based on different “authorities” whether those are peers or teachers or even family members. Therefore, by interviewing school teachers and officials as well as students we might perceive the school curriculum and why students were not so organized for environmental justice in their school (Jakovleva 2024a).

Although we need to understand how informed were students in Jordan High School about lead contamination, there is a critical question about whether air and water pollution does really bother residents of Watts or whether the media is manipulating public opinion. Ethan Valencia in the “Stakeholder Actions and Inactions" post argues that

“We don't know how important the pollution levels in Los Angeles are to its citizens” (Valencia 2024). Indeed, the qualitative research on how Watts County residents assess the pollution level in their area would be a good motivation for the LA Department of Water and Power to design possible ways to reduce air and water pollution in Watts county. For qualitative research, it would be effective to conduct in-person interviews with residents of Watts County, attend local meetings, and record group discussions on issues of air and water pollution.

While there is a need to clarify positions of Watt’s residents on how much they care about environmental pollution now, Lindsay Mikuni identifies the lack of visible correlation between the air as well as water pollution by toxins and academic performance of students as well as faculty at Jordan High School. She also points out that there is “insufficient information on the effectiveness of existing pollution control measures and what more can be done to protect the school and its community” (Mikuni 2024). The author explains that students and teachers might be feeling “numb” or scared about their health and long-term effects of lead exposure which distracts them from the studying and teaching process respectively. Hence, filling this gap would not only “establish a stronger claim against the Atlas Metal Company” but also raise awareness about environmental justice and its importance in education (Mikuni 2024). To achieve that, Linsay Mikuni suggests: “longitudinal health and academic performance studies could be used to assess the impact of exposure to pollutants in the surrounding area and comparing the data from other schools in the vicinity, not just Jordan High School. Surveys from the students and teachers could also help provide the necessary data. Research could also evaluate the effectiveness of current strategies, such as air filtration systems, green infrastructure, and policies to reduce exposure, and explore innovative solutions”.

Besides mental health research, Aleksandra Jakovleva in the post about “Local and Extra-local Actions” describes a prominent gap: “In researching the problem of illegal dumping, I found it difficult to find updated (2023/2024), easy-to-navigate data regarding street cleanliness in Watts (not to be confused with general data on "dirty" cities, which

heavily draws on air pollution and additional statistics for their definition of "clean" versus "dirty"). There are some cited indexes in different articles, like Clean Streets Index, but a lot of the data I found ended at 2021". Indeed, the author emphasizes there is a huge problem of illegal dumping in Watts County because of poor street sanitation due to lower-economic status and intersection of railroad tracks with Watts County (Jakovleva 2024b). Therefore, Aleksandra Jakovleva proposes to introduce a separate index of street cleanliness for Watts neighborhood or South Los Angeles that "compiles reports from research conducted by both government departments (like LA Sanitation) AND citizen reports (which are often ignored, but can include frequency of call records to report dumping, personal testimonies through interviews, etc.)".

Finally, there is a lack of data concerning the "safe" level of lead contamination and what is meant by a safe level. In fact, *OurWeekly* newspaper posted the following: "The U.S. Environmental Protection Agency (U.S. EPA) and many Public Health agencies have published what they consider to be "safe levels" of certain metals in soil based on their own research or that of other organizations. Unfortunately, these organizations do not always agree on what is safe. For example, the San Francisco Department of Public Health asserts there is no safe level of lead retention in our body's digestive and nervous systems" (Haywood 2017). Although it is not an easy question from a moral and economic standpoint, research is still necessary in order to pass the laws prohibiting the lead factory functioning right in front of the school. This could be made by analyzing the long term effects of lead contamination in microscopic concentrations in a cohort study.

Those proposed knowledge gaps should be carefully studied and further research should not only assist in resolving data and epistemic injustice but also provide evidence of Atlas Metal Company negligence and direct influence on various disease rates among Watts County's residents.

Qualitative Research Proposal

PROJECT TITLE:

Research Question: How are school activities, including class time and recess, affected by the operation of a heavy metal facility (specifically Atlas Metals Co) next to Jordan High School?

Social Groups:

1. Teachers at Jordan High School
2. Students at Jordan High School (with parental permission)
3. Parents of Jordan High School students
4. LAUSD board

Access and Privacy: Since privacy/access regulations are strict particularly when it comes to minors, we will be sure to comply with all the necessary steps before conducting student interviews and/or entering school grounds, as follows: Approach LAUSD and do all the background checks to be eligible to ask students research questions. Then approach school administrators of Jordan High School to be allowed to enter campus during normal operations and have the chance to have one on one interviews with staff, students, administrators, and parents. For students we will interview only students who have physical evidence of permission from their parents to do so (permission slips). Privacy protections should include censoring names or identifiable information upon request, but should still maintain information on their role/position although more broadly (eg: Biology teacher = teacher) as to accurately group the thoughts and qualitative answers of each social group. We could also work with admin to organize a way to send anonymous digital surveys to students and faculty, to get feedback without necessitating in-person interviewing.

Participant Observation:

- Attending PTA and other school board meetings to observe the feelings of both the district and the parents.

- Visiting the school and observing the possible disturbances caused by the metal company (sitting in during class time, observing students and faculty during lunch/recess)

Interviewing Strategies and Questions:

We will interview people in each of the groups above. We will note differences in the answers between each of the different groups to find any similarities or differences in their answers. Our questions will include the following:

- When did you first learn of the toxic emissions released by the adjacent Atlas Metal recycling plant?
- What are the safeguards in place at Jordan High School to protect students from excess emissions?
- Students: what is the best way to make you feel comfortable, safe during classes?
- How are classroom activities affected by the operations of Atlas Metals and Co.?

Focus Group Strategies and Questions:

Focus groups might provide insight into agreements and discords among teachers and students as well as children and parents.

Discussion prompts:

- Students: how does the operation of Atlas Metal Co. affect your studying process?
- Students/teachers: From your experience, what would you change in classrooms to feel less worried about hazardous waste and pollution?
- Students/faculty: In what ways can you see an effect on your daily life at school from the hazardous waste produced from Atlas Metal?
- Parents: have you noticed any changes in your child(ren)'s behavior or habits through their time at the school?

Audience:

We believe this research will be useful to a variety of "audiences," including:

- Parents whose children go to Jordan High School
- Students who attend Jordan High School
- District and school administrators, who may become more aware of the personal sentiments/effects of the operations near the school (and how to handle it)
- Researchers studying the effects of heavy metal plants/facilities on communities, particularly vulnerable groups like children
- LAUSD legal specialists who have filed lawsuits already against the company can use this for evidence.
- Activists working to shut down facilities in close proximity to schools

10. INTERSECTING INJUSTICES

The Many Faces of Inequality

Anthony Ashkinadze, Brianna Barela, Gabriela Cervantes, Liam Henderson, Aleksandra Jakovleva, Tair Kuzhekov, Lindsay Mikuni, Enzo Moore, Liam Rothchild, Liam Senior, Ethan Valencia

There are many intersecting injustices in the Watts area that compound together that worsen the environmental injustice that they are facing. One of them is the **data injustice** in the form that the residents of Watts, specifically Jordan High School, are unaware if there are safe levels of lead exposure. Some staff and students even believe that they will not be affected by lead exposure since they have a high immune system. One way to address this issue is to make a cohort study analyzing Watts residents in 5 years and count how many people developed asthma, cardiovascular diseases, diabetes. There could also be a study conducted on mice to see the effects of lead exposure so that the residents can understand the risks they face when exposed to lead and other heavy

metals.

Economic injustice is highly prevalent in the Watt's community. As discussed previously, most members of the community are below the poverty line. The Watts community is forced to attend a school and live nearby a heavy metals recycling plant that constantly exposes them to lead. The residents do not have the funding to campaign, or fund lawsuits to attempt to address issues and rely on other parties to do so like LAUSD and the Los Angeles Attorney General. In addition, the heavy metals recycling plants help to contribute to the local economy and without it, does leave an economic gap in the community. This creates a dilemma as with the plant it has negative environmental and health effects on the community but without it, the economic issue of the community is worsened as well. Furthermore, because of a lack of ability to modernize houses which are still comparable to their 1940s counterparts with old lead-ridden paint, pipes, lack of a/c, and other commodities. Lastly, economic injustice fuels other forms of injustice by reducing the quality of treatment, care, and actions that the community can do.

Reproductive injustice is another injustice affecting Jordan High School and Watts. Among other health issues, PFAS contamination in tap water can lead to birth defects in pregnant women. Meanwhile, exposure to lead (in the soil near Jordan HS and in the dust coming from Atlas) can cause neurological issues in children, resulting in behavioral and cognitive disorders. Lead in the blood is also easily passed from a pregnant mother to the fetus. Possible solutions to this injustice would be to shut down hazardous facilities that are in close proximity to schools (such as Atlas next to Jordan HS), impose higher standards for water quality (as well as increase the frequency of tests to detect PFA levels), and shut down PFAS facilities in the area.

In addition, **infrastructural injustice** is a major struggle for the Watts community. There are old lead pipes in buildings that need to be replaced because there's a higher chance of lead contamination in water (ex. Jordan Downs housing), as well as lead paint used on the buildings. Moreover, dated structures aren't always equipped with cooling technology, like AC, which makes it harder for residents of these buildings to manage extreme heat. To resolve this injustice, it's necessary to invest in replacing old pipes and

renovating buildings–including adding AC units to every newbuild and installing them in existing buildings (especially low income housing projects like Jordan Downs). Another example is the existence of a metal recycling plant–Atlas Metals–next door to a school (Jordan High) and a housing community, which was initially built without any way to catch flying metal shrapnels or dust. Although a barrier was eventually added between the school and the facility, it is not catching all metal or dust particles, suggesting that the best way to redress this injustice is to prohibit the building of such facilities in close proximity to schools and residential neighborhoods.

Media injustice is yet another injustice that affects Watts. The news coverage of the area and Jordan High School in particular is limited, and does not cover the severe health effects in the neighborhood caused by the recycling plant. The media coverage additionally does not include future actions in place to limit the emissions released by the recycling plant. They tend to leave out local action done by community groups, such as the Watts Labor Community Action Committee. Some solutions to this injustice include increasing the coverage of this issue via alternative media sources, such as social media, to increase the outreach of this issue to younger generations. Letters can also be written to news organizations to include more coverage of the health impacts of the Watts residents. This could be in the form of in-person interviews. Residents of Watts can also convince more news organizations to cover actions done by these local community action groups.

Epistemic injustice is especially crucial in Jordan High School. It is possible that as students, adults may not care about their concerns when they try to speak up. This would have happened initially, and this is no longer an issue as people are taking the situation seriously now. Another example is when Watts residents raised concerns about water quality because they noticed their tap water being brown or yellow, their concerns were dismissed by officials who tested water at the source. This would have been fixed by the students getting a teacher or trusted adult to act as a spokesperson for them. Have more tests/research on water quality within residences, not just at source.

Racial injustice greatly affects the residents of Watts. The Watts area is predominantly populated by hispanics/latinos and black people and they are the ones that

are directly affected by the environmental hazards, like lead exposure. It specifically affects the high school students and staff more since the metal facility is located right next to the plant. One way to address this issue would be to limit how close hazardous waste facilities are allowed to be built to schools or even the cities themselves. Another action could be to shutdown metal recycling facility or set up better hazard management to decrease the amount of lead that is released into the community.

CONCLUSION

To recount, the aims of this case study report were: to describe the setting, hazards, stakeholders, and health harms in Jordan High School and the surrounding area of Watts, Los Angeles, resulting largely from the presence of Atlas Metals and Co. recycling facility near Jordan High School, but also from additional sources like poor/dated infrastructure, historic redlining, and illegal dumping practices; to mobilize and illustrate key environmental health concepts; and finally, to translate the research findings of the case into further research and action proposals. Our methods focused on addressing the ten questions in an Interdisciplinary Environmental Health Case Study Framework developed to allow comparison between cases; we believe our research on the slow ecological disaster in Jordan High School, Los Angeles, and the entire Watts area could provide important information regarding the causes and consequences of heavy metal contamination, among the other hazards explored in question two of the study. Our analysis of environmental and health hazards at this location shows the high number of environmental injustices citizens of Watts face every day, and how the various factors, like historic disadvantage and intersecting injustices, compound these issues .

Jordan High School is located in a historically disadvantaged area that is often overlooked by the media and government. This has caused the members of the Watts community to be exposed to toxic contamination for many years. Community organizations, such as the Watts Labor and Action Committee and the BetterWatts Initiative, have mobilized efforts to combat environmental injustice in Jordan High School and Watts. Protests by Jordan High students, lawsuits filed by LAUSD against Atlas Metals and Co, and various community forums/activism projects by WLAC and BetterWatts–such as creating community garden spaces and conducting independent water quality tests–have worked to support a just transition in Watts. In 2023, Atlas Metals and Co. was formally charged with 22 counts of felony for polluting the high school grounds. After the lawsuit initiated by LAUSD, Atlas Metal agreed to change regulations

of their plant and have the piles of metal be lower in height. There has also been talk to transition the metal recycling plant to be a holding plant but no concrete decision has been made as of yet. Meanwhile, Jordan Downs housing has promised that all their newly-built units will be equipped with newer technology, like air conditioning, to help with adaptation to the issues of extreme heat in the area. The case highlights the environmental governance of concepts of environmental and economic injustice as pollution and waste management that are not properly managed by the investors in Atlas Metals and Co leading to high emissions of toxic and dangerous chemicals in the community. It is also an environmental injustice as the community can not get proper media access or afford to renovate the property to accommodate for environmental hazards (in addition to the community housing itself serving as an environmental hazard as it is not upgraded and contains lead).

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