MONROE ELEMENTARY

ORANGE COUNTY

INTERDISCIPLINARY ENVIRONMENTAL JUSTICE CASE STUDY

An Exploration of Environmental Governance Needs, Challenges, and Opportunities

MARCH 2024

GROUP NO. 12

AUTHORS

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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: Overlooking photo of Monroe Elementary School in Santa Ana, California. Image source: "Monroe Elementary School" by Homes.com

LAND ACKNOWLEDGEMENT

Which Indigenous nations were/are present in your case study setting?
The lands of Santa Ana, where this case study is set, and UC Irvine, where this research was completed, are built upon the lands of the Acjachemen and Tongva tribes.

How and when was their land taken?
Their land was taken in the 1700's due to Spanish Colonization.

Are tribes in your setting recognized by the federal government?
The Tongva tribe is not federally recognized, despite past bills that sought recognition for the tribe. In 2023, the "Gabrielino/Tongva Nation Recognition Act of 2023" was created to push the federal government to formally recognize the Tongva tribe, but has yet to get passed.

The Acjachemen tribe has also not been federally recognized. In 2011, the Assistant Secretary-Indian Affairs (AS–IA) gave an official notice that the "Acjachemen Nation, is not an Indian tribe within the meaning of Federal law" (Indian Affairs Bureau).

Do tribes in your setting have reservations? Are there notable activities on their reservations (ecological restoration programs, casinos, etc)?
No, from my research there are no reservations for the Tongva or the Ach CA Senate Bill of 2008 asserted the US government 5.8 million acres of land for reservation but it was never ratified.

How many tribal members are there currently? How many still live on their reservations?
There are about 3,000 Acjachemen tribal members and about 2,500 Tongva tribal members. The Tongva aren't federally recognized so they don't currently have a reservation, same with the Acjachemen tribe.

How are Indigenous peoples and organizations in your setting working to preserve their cultural heritage, lands and rights?
The Tongva people are fighting to become a federally recognized tribe through political action and bills. Without this federal recognition, they do not have a reservation.

How could you – and UCI – support the work of Indigenous peoples in your setting?
Understanding the struggles indigenous people face in gaining acknowledgement and recognition, we at UCI will strive to support the work of

such peoples through education on their histories and current movement, advocating for the Land Back movement, and integrating traditional ecological knowledge into our research and mindset.

BIOGRAPHICAL STATEMENT	PHOTO
I am Brandon Bivens, I am a first year aerospace engineer at UCI.	
I am Justin Chin, and a first year student at UC Irvine. I am majoring in Biological Sciences, with a hope to go into research in the future!	

I am Kaylin Quyen Ho, a first year student majoring in Biological Sciences at the University of California, Irvine.	
I am Rashed Eisa, a third year Aerospace Engineering student at the University of California Irvine. My career aspiration is to work on a space project at NASA.	

I am Kevin Wong, a third year Aerospace Engineering student at the University of California Irvine.	
I am Weiheng(Bonnie) Yuan, a second year bio sci student at University of California, Irvine. My career aspiration is dentistry.	
I am Ava Perreault, and I am a first-year Psychology B.S student at UC Irvine. My current career aspirations are to go into Clinical Psychology.	

I am Wren Stuart, I'm a second year Applied Mathematics major at University of California, Irvine.	
I am Justin Lee, a third year Biological Sciences Major at the University of California, Irvine.	

I am Alex Hedger, I am a first year Materials Science and Engineering Major at the University of California, Irvine.	
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Wren Stuart	**Wren Stuart**	**Y**
Kaylin Ho	**Kaylin Ho**	**Y**
Alex Hedger	**Alex Hedger**	**Y**
Justin Lee	**Justin Lee**	**Y**
Kevin Wong	**Kevin Wong**	**Y**
Brandon Bivens	**Brandon Bivens**	**Y**
Justin Chin	**Justin Chin**	**Y**
Bonnie Yuan	**Bonnie Yuan**	**Y**
Ava Perreault	**Ava Perreault**	**Y**
Rashed Eisa	**Rashed Eisa**	**Y**
Sage Sugiyama	**Sage Sugiyama**	**Y**

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ABSTRACT

Problem statement: Lead contamination and air pollution due to industrialization have and are causing adverse health effects in numerous regions globally. The effects of these hazards on standard of living are particularly pressing in our setting of Monroe Elementary in Santa Ana.

Aims: Aim 1 of this case study is to describe and examine the hazards in Santa Ana, and how different stakeholders are acting upon and impacted by these local environmental issues. Aim 2 is to get a fuller picture of cumulative environmental impacts that are contributing to local social factors, such as environmental injustice. Aim 3 is to compile our research thus far and promote novel solutions and research directions for the future.

Methods: The methods that we used in our case study were answering ten questions from the Interdisciplinary Environmental Health Case Study Framework developed to examine the environmental hazards affecting elementary schools in low income areas. This case study is structured in a way that aims to provide both informed and setting-specific answers to these guiding questions.

Findings: Through our research and analysis of Santa Ana we found that the source of air pollution and lead contamination is due to the high use of motorized vehicles in the area. Through research done by UCI, a map was created to highlight lead contamination in soil. This research found that Santa Ana's roads, traffic patterns and houses directly overlap with the highest lead contamination levels in the area. Thus, through our research we found that traffic and soil contamination are directly linked to one another; mainly through leaded gas.

Intellectual Significance: This case study examines the many ways in which lower income communities (of color) are disproportionately affected by climate change and environmental health hazards than wealthier, historically white communities; and how the communities causing the most harm are typically the ones that have the fewest consequences. The case also looks into how stakeholders causing damage in a community are able to continue causing damage with little to no consequences, and how media and data injustice contribute to these inequalities.

Practical Significance: This case study points to the need for more communication and involvement from all stakeholders. With more plans of attack and louder voices at a local level, the city of Santa Ana with aid from the federal and state government can strive to protect Monroe Elementary and other schools from traffic emissions, environmental hazards, economic struggles, and the many more issues hurting the residents.

INTRODUCTION

This case study report examines environmental health and governance challenges and opportunities near Monroe Elementary School, located in Santa Ana, 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.

Case Study Concepts

Endocrine Disruption: The environmental hazards in Santa Ana disrupt endocrine systems, especially in young children, which creates health hazards.

Fossil Fuels: The air pollution in Santa Ana is largely caused by the fossil fuels from facilities and from car exhaust fumes.

Stakeholders: There are many groups in this case that affect and are affected by environmental injustice. Santa Ana residents, especially children, face health hazards from the pollution, healthcare professionals help treat those affected by the environmental hazards, environmental justice groups advocate on behalf of the Santa Ana residents, workers in the polluting facilities have some sort of role in helping these facilities run, and government officials have the power to regulate hazardous waste facilities.

Local Action: There are many advocacy groups that are attempting to remediate the hazards faced by Santa Ana residents.

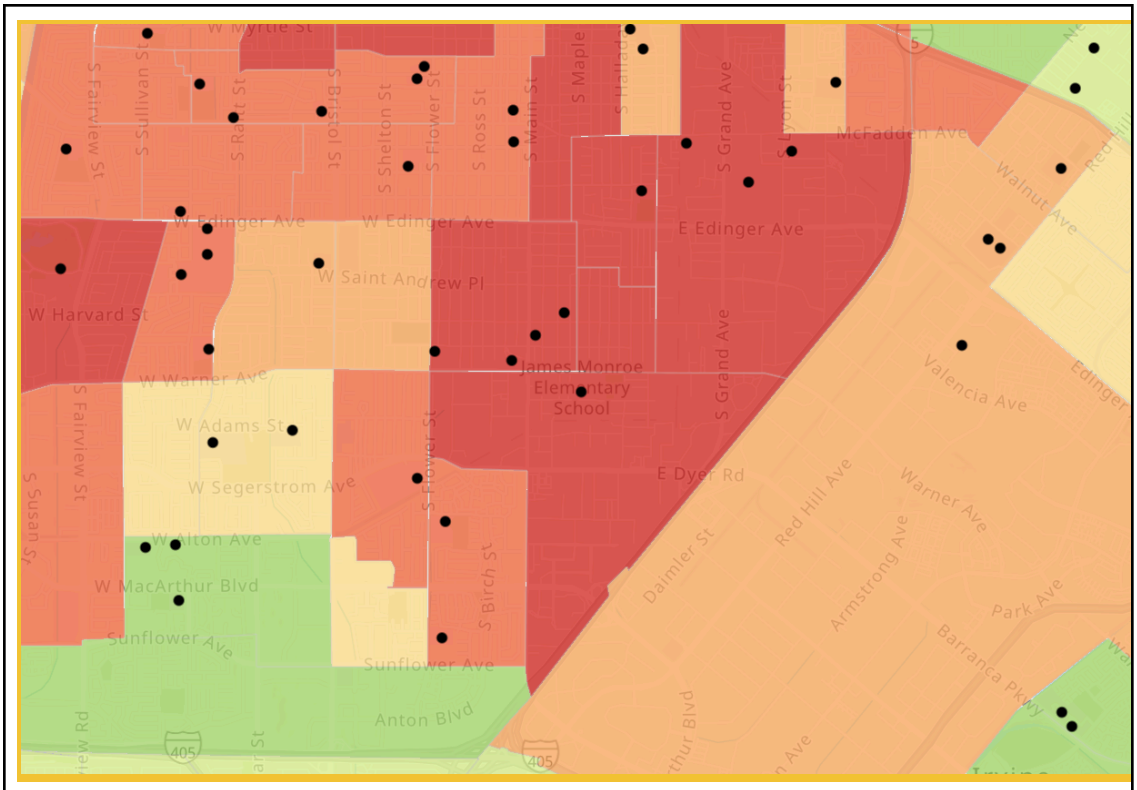

FIGURE 2: Our case study will focus on James Monroe Elementary, which is located in Santa Ana in Orange County. The school is located in area with a CalEnviroScreen Percentile of 86.16. (Screenshot by Rashed Eisa on February 20th)

Source:

https://experience.arcgis.com/experience/24133d4eb5af4af2abf8e92b3f8fe65f/

FIGURE 3: With a population of at least 300,000, Santa Ana is the fourth most densely populated city in the US. It is nested on low-lying, level plains with little variation in land elevation.

(Screenshot by Sage Sugiyama on February 20th)

Source: https://en.wikipedia.org/wiki/Santa_Ana,_California#Geography

1. COMMUNITY ASSETS & SETTING

Who and What Comprise Santa Ana?

Brandon Bivens

The city of Santa Ana, nested in the heart of Orange County is home to 310,000 residents. It is 27 square miles, and the city is labeled as having both urban and suburban areas. It has many different attractions unique to the city alone, housing the Santa Ana Old federal Courthouse, Santa Ana Zoo, John Wayne Airport, and the Discovery Cube. It also is special to Orange County in that it serves as “Orange County's government powerbase” being the meeting place for many of Orange County’s government endeavors (Santa-Ana.org). The city also has its own city government, with a mayor who presides over its city council. The city council has 7 members including the mayor, and they make large scale decisions for Santa Ana. There also is a city manager, responsible for overseeing the city's day-to-day operations (Ballotpedia).

Santa Ana being in Southern California has little deviation from its weather throughout the year. The temperature ranges from 45 to 84 degrees. Though a great climate for human prosperity, unbothered by neither the heat nor cold, the city of Santa Ana remains plagued by dry weather. According to LivingAltas’ census reports, Santa Ana has on average 310 dry days per year. It is projected that this will increase by the mid to late century due to climate change. There also exists a correlation between the dry days and traffic pollution. The dry

days can potentially rise to 330 days per year if we continue to see traffic emissions run rampant (LivingAtlas). In Monroe Elementary's census tract for example, the area is listed in the 95th percentile among the nation for traffic impact(CALENVIROSCREEN). With data like this, the 330 dry days become more and more likely. With Santa Ana being farther away from ocean breezes and facing issues due to Santa Ana Winds across Southern California, the city's residents will face dramatic consequences if both traffic and climate change remain on their destructive war paths. The state of California has faced widespread drought problems throughout the 21st century, and it remains a problem to this day. For example Santa Ana has its own Water Use Efficiency Program, which advises residents to remain conscious of water use, like sprinkler usage and how to save water with laundry (SantaAna.org). Programs like these remain as reminders of the harm a drought can bring onto residents. If Santa Ana's dry days increase, the drought that inhibits the city will only grow in magnitude and Santa Ana's residents may be trapped by an endless drought.

The city carries a demographic consisting of a majority hispanic population hovering 77% according to the US Census Bureau. However, in contrast to this number, Monroe Elementary, according to USNews, has a hispanic population of nearly 95% (USNEWS). With this large Hispanic population, there also is a deficit economically. The city of Santa Ana remains below the average median wage, and in many census tracts, the residents are below the poverty line. According to the US bureau 11.5% of residents are considered "in poverty" (USCensus). To the many rich cities that neighbor Santa Ana, without a largely hispanic population, it begs the question of why Santa Ana seems to suffer more economically. With an already national trend of black and hispanic minorities across the country, Santa Ana does not veer from the data. Santa Ana's unique demographic has seemed to bring more disparity compared to the other cities in Orange County. Santa Ana along with all minorities across the country will have to bear the brunt of this economic disparity, and will require a serious overhaul of the US system if change

can exist. This will need to occur at a federal level, but Santa Ana can still make local changes to help shorten the gap between racial and economic correlation. However as long as Santa Ana has this problem, Santa Ana's residents will remain more exposed to environmental hazards. With a more impoverished region, residents are more likely to be less educated, live in areas with bad pollution, have less access to healthcare, and make poorer decisions about hazards they face in their daily lives.

Though the city of Santa Ana has drawbacks, it still has assets that make it not only a great place to live, but an area that can invoke change. As stated previously, the local government of Santa Ana has begun to take strides in defending its residents. Of course their local officials are elected, and recently the city council has become more representative of its residents, not only electing more hispanics to represent the population, but also electing their first female mayor(ballotpedia). Santa Ana has also seen an increase in funding, high school graduation rates, and median incomes and seen a decrease in crime and unemployment(USCensus). I believe the city is undergoing a transformation that will shape the city to be more friendly to residents. It will be safer from crime, more free to allocate funding to building the city's future, and will focus less on creating the city, but more transforming it. On the Santa Ana website the 5 year plan for the city mentions honoring its rich culture, but also mentions building a "... thriving urban center with welcoming green spaces and world-class amenities, services, and infrastructure"(SantaAna.org). With plans like these, it becomes clear that the government has begun to notice that environmental hazards its population faces are something that must be changed. In the city of Santa Ana whether it be the drought, traffic pollution, hazardous waste, or lead-filled soil, the people as well as the government has taken notice and are creating change.

Another bright spot of the city is Santa Ana School District and the staff in particular at Monroe Elementary. The school district has made clear that they not

only understand its population, but wants to help them grow. Monroe Elementary and the school district have implemented dual language programs to aid the ease of integration for non-English households. They also give language options on their website, and allow parents to express themselves at public school site council meetings every month(SAUSD.us). They have also introduced music programs, introduced chromebooks to all their students, and have built a community school wide garden (SAUSD.us). Steps like these display that the school understands that they need to bridge the gap between cultures, introduce technology to its children, and want to build a sense of community among its staff, parents, and children.

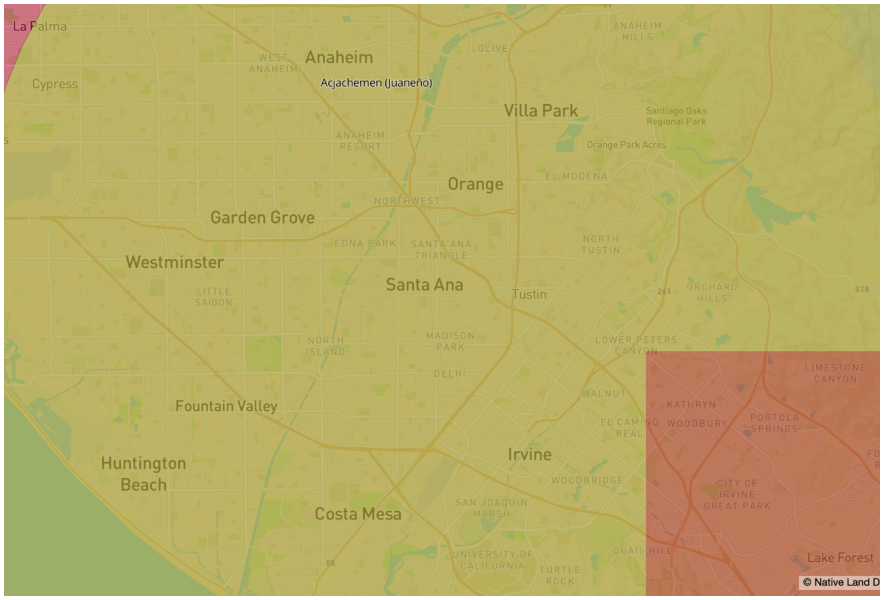

FIGURE 4: What is currently known as Santa Ana, CA, occupies the unceded land of the Tongva and Acjachemen tribes. It is important to recognize the settler-colonial land that we reside on and pay respect to the first nations of this region. Environmental Justice is inextricably bound with Indigenous sovereignty and any and all efforts should be made to pay reparations to these tribes.
(Screenshotted by Wren Stuart, February 20th)
Source: https://native-land.ca/

FIGURE 5: The original inhabitants of Orange County and the surrounding areas are the Gabrieleño Indians and the Juaneño Indians. The Gabrieleño were given this name by the Spanish, because they were named after the San Gabriel Mission, but they call themselves Tongva.
-Rashed Eisa screenshotted February 20, 2024
Source: https://ocde.us/ito/Documents/NativeAmericanBackground.pdf

FIGURE 6: Ever since the 1980s, Santa Ana has been known for its efforts to revitalize the downtown district, which had grown less influential despite becoming an important center for working-class Latinos seeking entertainment and business. In the city's core, gentrification attempts have gradually replaced the Mexican immigrant population with outsiders, despite the presence of substantial Latino political representation.
-Sage Sugiyama screenshotted February 20, 2024
Source: https://en.wikipedia.org/wiki/Santa_Ana,_California#Latino_city

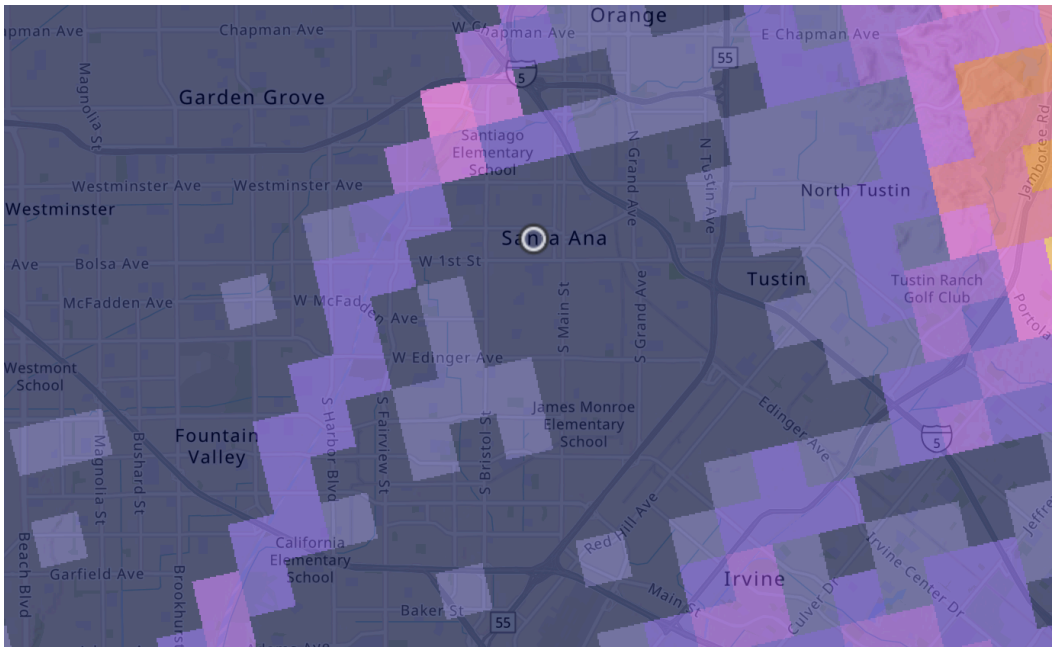

FIGURE 7: Caption: Santa Ana has pretty low biodiversity, with the dark purple representing the few endangered species in the area.
-Sage Sugiyama screenshotted February 20, 2024
Source:
https://ucirvine.maps.arcgis.com/apps/instant/imageryviewer/index.html?appid=02f8371dd63146b8b390c11757c60b74&primaryLayerId=18a4339b168-layer-2&primaryLayerRenderer=SR_ALL&center=-117.8999;33.8341&level=9

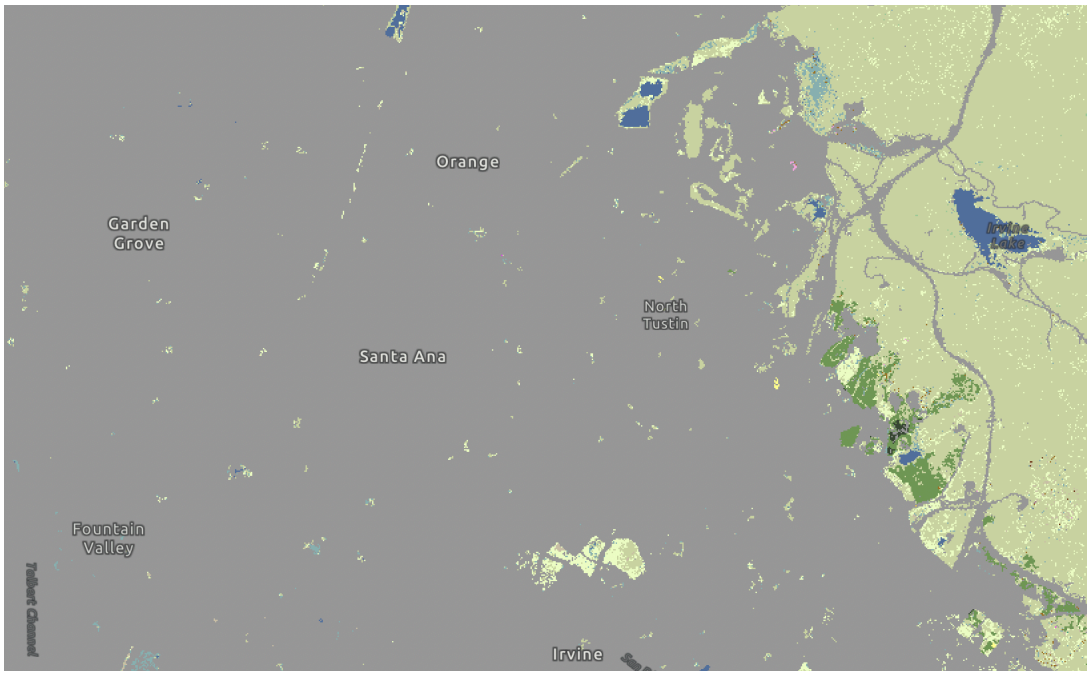

FIGURE 8: Santa Ana is a generally non-agricultural area with a limited variety of crops, most of which are small in size. These crops are mostly herbaceous wetlands and shrubland, however to the East, there is a significant amount of avocado farming.
-Wren Stuart screenshotted February 20, 2024
Source: https://croplandcros.scinet.usda.gov/

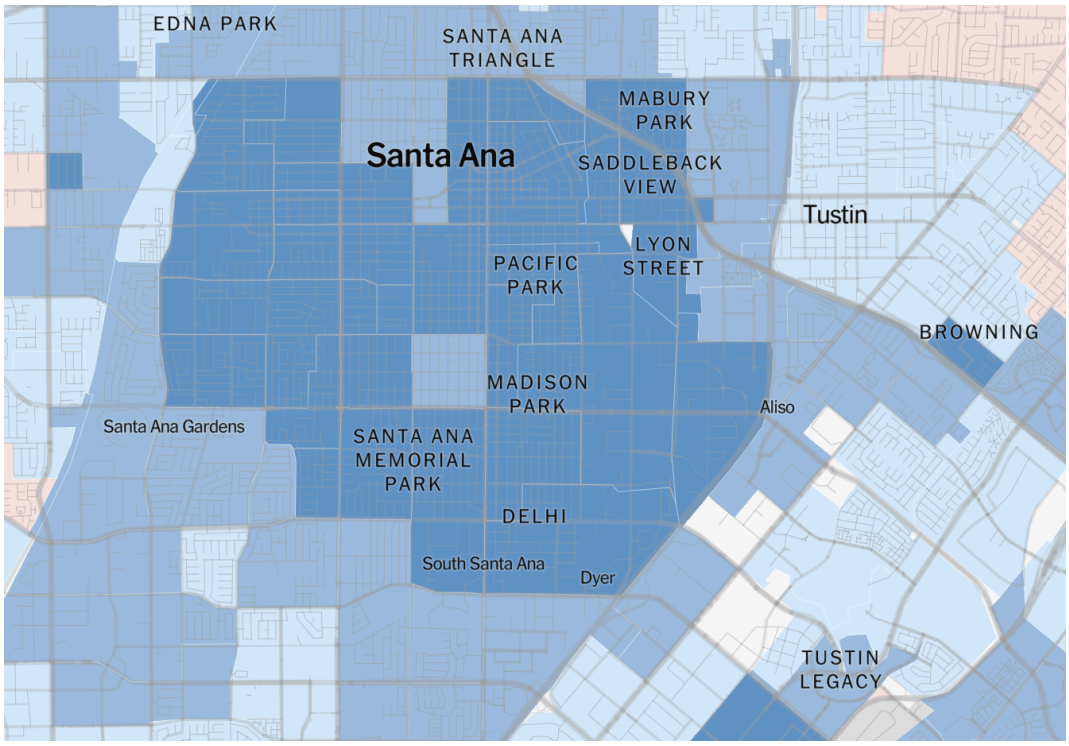

FIGURE 9: Santa Ana is definitely one of the more democratic counties within the LA/OC area. 80% of voters in Monroe Elementary's district voted for Biden in the 2020 election.
-Alex Hedger screenshotted February 20, 2024
Source:
https://www.nytimes.com/interactive/2021/upshot/2020-election-map.html

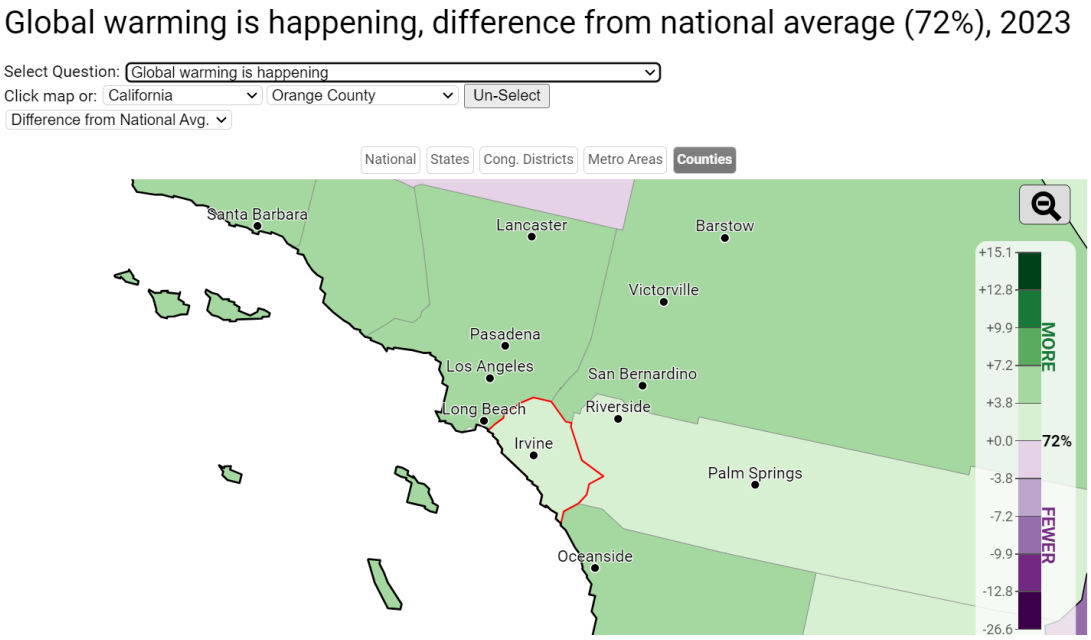

FIGURE 10: This figure shows the climate change opinion map of those in California counties and Orange County is highlighted. This shows that the natural average of those who think climate change is happening is 72%, and Orange County is 2% above the National Average. This is surprising, because if Orange County largely believes in global warming, why is Santa Ana harming the environment so much?
-Ava Perreault screenshotted February 20, 2024
Source: https://climatecommunication.yale.edu/visualizations-data/ycom-us/

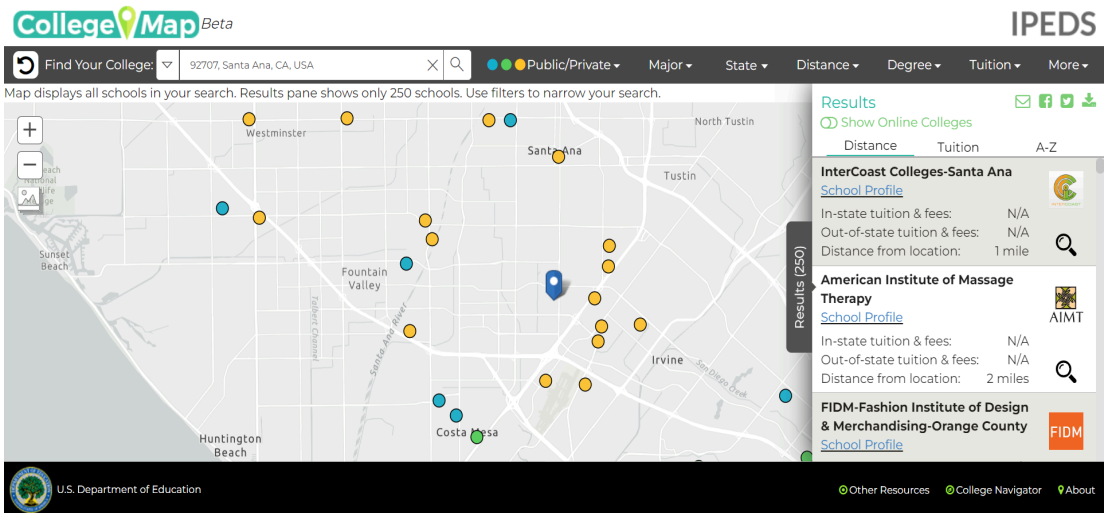

FIGURE 11: This higher education map shows all of the local colleges/universities in our area of Santa Ana 92707. Based on this map, it looks like most of the colleges/universities are for-profit colleges, and a few public colleges. Near our elementary school, Monroe Elementary, it doesn't seem like there's any non-profit public education.
-Ava Perreault screenshotted February 20, 2024
Source: https://nces.ed.gov/ipeds/collegemap/

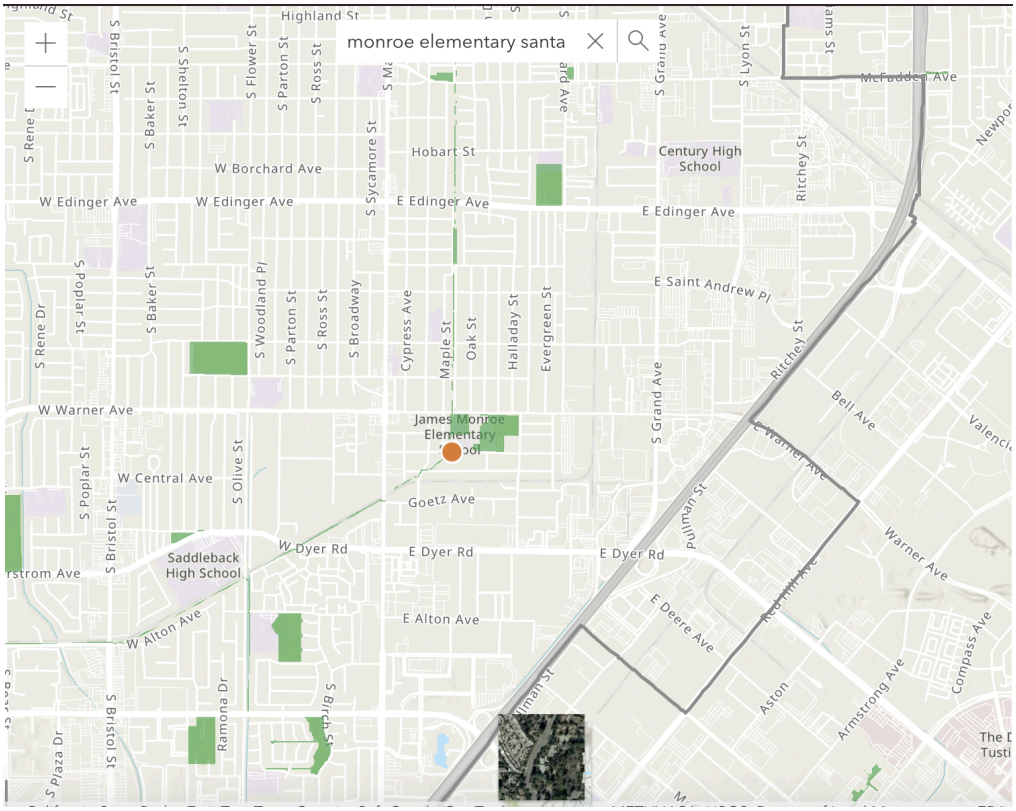

FIGURE 12: There aren't many parks around Monroe elementary which is surprising for an elementary school. There is one on the campus but otherwise there isn't much else. Delhi park is the only park that the kids have to enjoy but it is a fairly large park.
-Alex Hedger screenshotted February 20, 2024
Source: https://parkserve.tpl.org/mapping/index.html#/?CityID=0669000

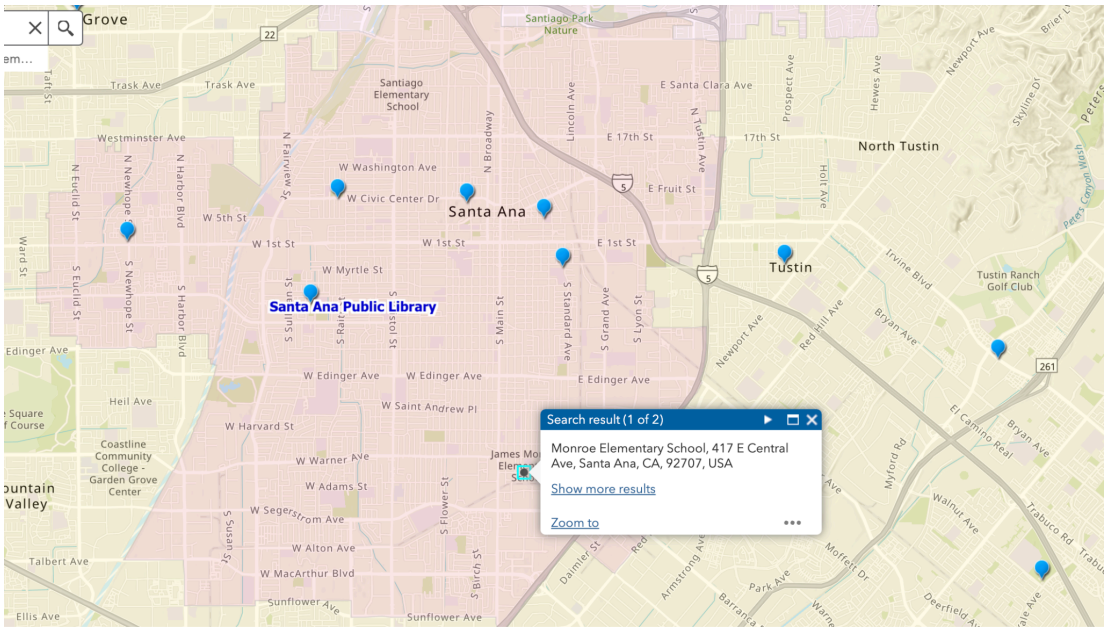

FIGURE 13: The main library, three community centers, a learning center, and a teen area are the six library sites in Santa Ana. The southern part of the city, where Monroe Elementary is located, has no library sites.
-Alex Hedger screenshotted February 20, 2024
Source:
https://castatelibrary.maps.arcgis.com/apps/webappviewer/index.html?id=0cb00b3ff0774122969f3b3b1cbcbef4

FIGURE 14: This picture depicts pinatas in Santa Ana during their Cinco de Mayo celebration, pointing toward the generally large Latinx population in Santa Ana. This large Latinx population is also at risk of the many environmental hazards in this area.
-Kaylin Ho screenshotted February 20, 2024
Source:
https://commons.wikimedia.org/wiki/File:Pi%C3%B1atas_Cinco_de_Mayo_Santa_Ana,_CA.jpg

2. ENVIRONMENTAL HAZARDS

Hazards Posing a Threat to Monroe Elementary

Rashed Eisa & Kevin Wong

Hazard 1: PM2.5 - Air Pollution from Cars

Particulate matter includes both aerosols and solid particles of a wide range of size and composition. PM2.5 is directly emitted in combustion exhaust and is formed in atmospheric reactions between various gaseous pollutants including NOx, sulfur oxides ("SOx"), and VOCs. PM2.5 can remain suspended in the atmosphere for days and/or weeks and can be transported long distances. "People living in Socal are exposed to 60 percent more vehicle pollution than the state average and 250 percent more than the San Francisco Bay Area" (Inequitable Exposure to Air Pollution from Vehicles).

Long-term exposure to high PM2.5 levels is associated with premature mortality and development of chronic respiratory disease. Santa Ana's dense population and traffic congestion exacerbate the exposure of residents to these health risks. PM2.5 pollution from cars can penetrate deep into the lungs and even enter the bloodstream, leading to a range of health problems such as respiratory issues, cardiovascular diseases, aggravated asthma, and even premature death (California Air Resources Board).

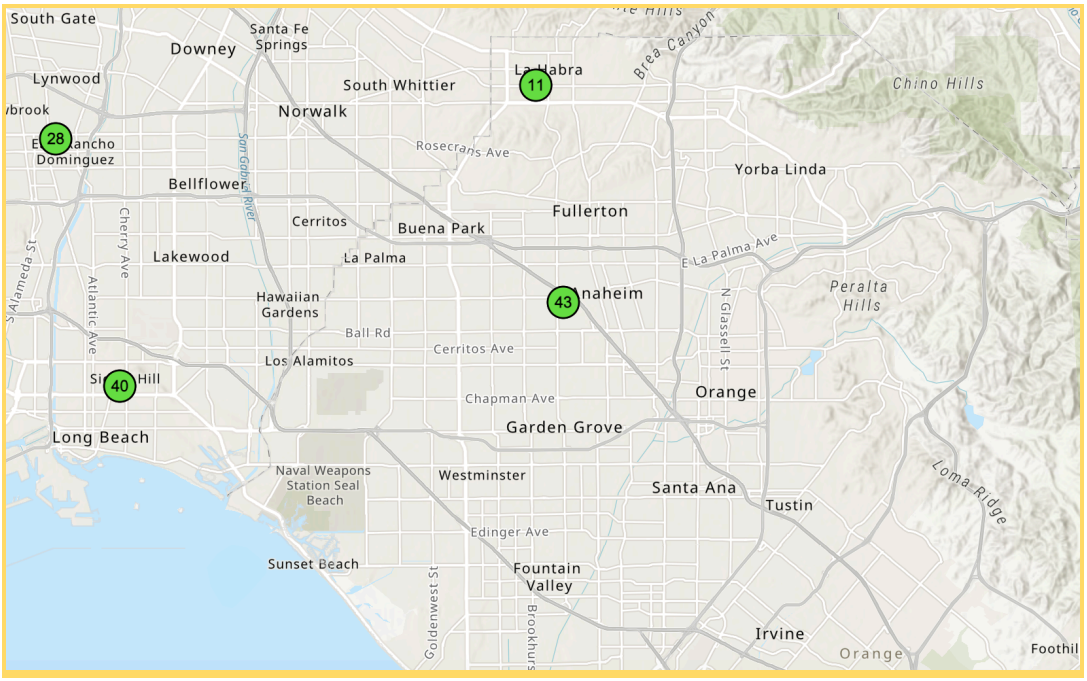

FIGURE 15: At the time of this map being captured, 2/1/24, the overall air quality of the OC county is in good condition. There are two ozone and PM monitors over OC county, one in Anaheim and one in Long Beach, none in the city of Santa Ana. (Screenshot by Weiheng Yuan, February 20th)
Source:
https://gispub.epa.gov/airnow/?contours=ozonepm&tab=current&monitors=ozonepm&xmin=-13181727.931935983&xmax=-13071658.61120548&ymin=3981889.868013596&ymax=4024235.981683527

Hazard 2: Ozone O_3 (Industrial emissions, motor vehicles and consumer products)

Ozone is a secondary pollutant, meaning that it is not directly emitted. It is a gas that is formed when volatile organic compounds and NOx undergo photochemical reactions that occur only in the presence of sunlight. “The primary source of those emissions is unburned hydrocarbons in motor vehicles, industrial, power generation, and transportation emissions” (Ocair). In addition, high temperatures, low humidity, and vapor pressure deficit all contribute to

increased ozone levels. High temperatures speed up the chemical reactions that form ozone, while low humidity can extend the lifetime of ozone, and vapor pressure deficit modulates the uptake of ozone by trees through stomata.

Prolonged exposure to elevated levels of ozone can cause lung inflammation, reduced lung function, and increased susceptibility to respiratory infections. Children, the elderly, and individuals with pre-existing respiratory conditions are particularly vulnerable to the health impacts of ozone pollution.

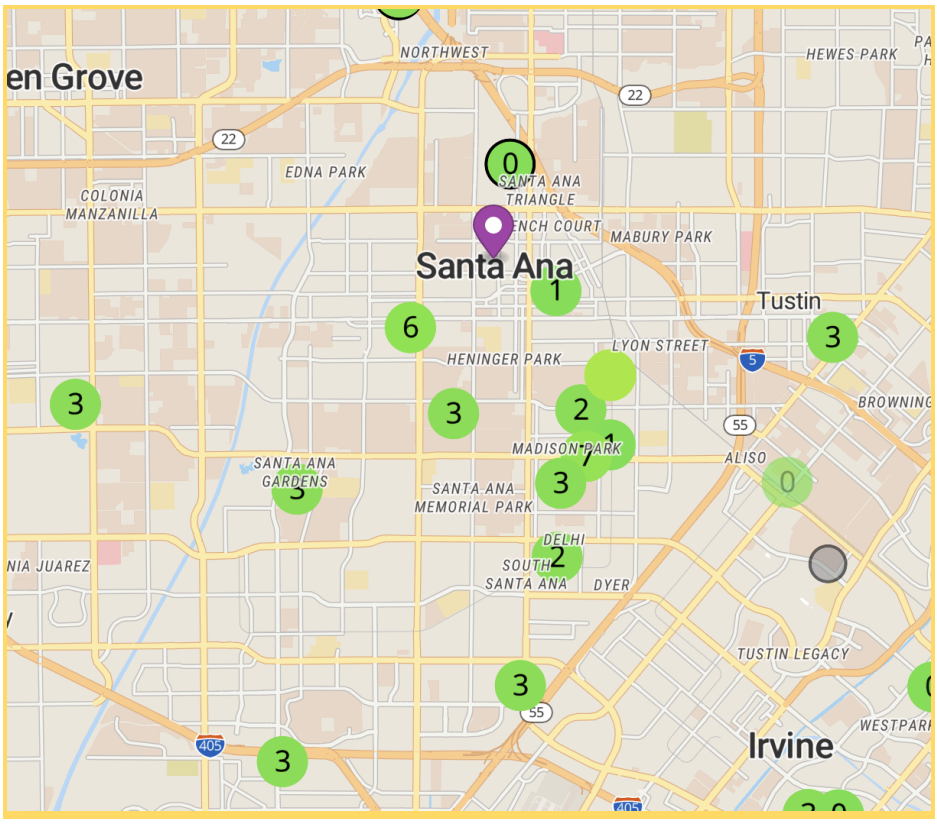

FIGURE 16: There are many air quality monitors in Santa Ana. (February 20th) (Screenshot by Wren Stuart, February 20th)
Source: https://map.purpleair.com/1/mAQI/a10/p604800/cC0#11.49/33.7257/-117.8748

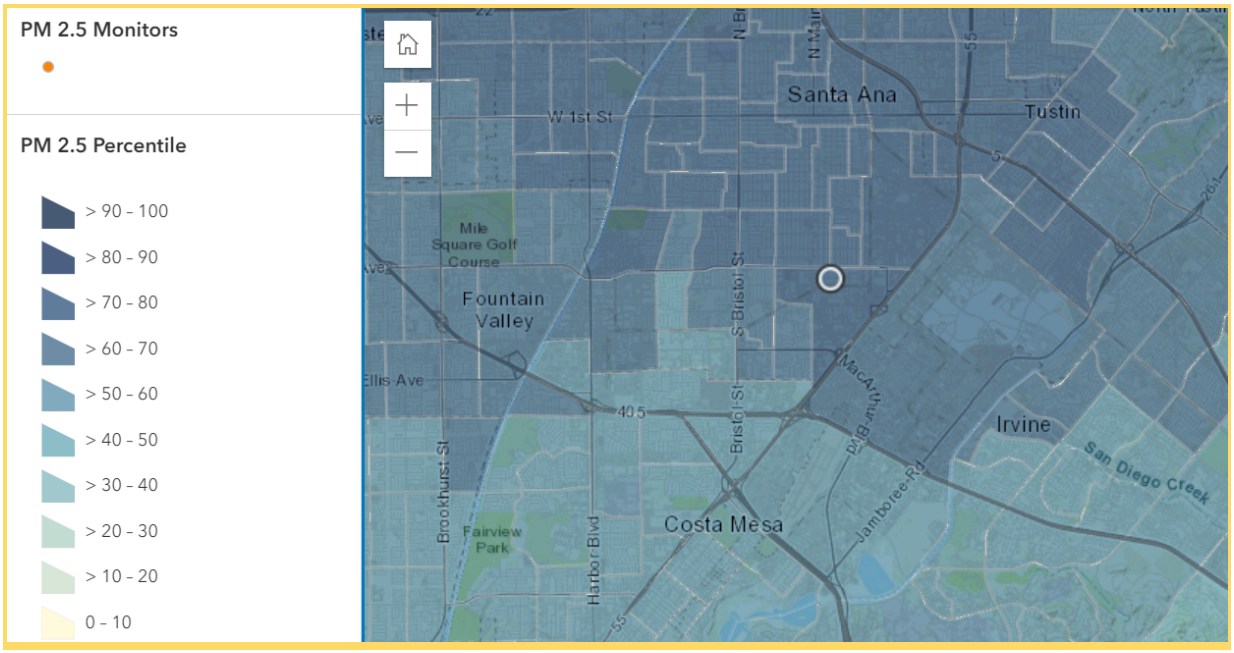

FIGURE 17: Particulate Matter 2.5, or PM2.5, are incredibly small particles which pollute the air. Thinner than air, PM2.5 accounts for a multitude of airborne pollutants such as dust, soot, metals, or chemicals. Their small size allows them to penetrate into the lungs, causing health issues ranging from heart to lung.Within Monroe's census tract, there is a concentration of 11.83 micrograms of PM2.5 per meter cubed. This places Monroe Elementary and its surrounding area higher in PM2.5 pollution than 71% of California, which ranges from 1.9 - 16.4 µg/m3. (Screenshot by Justin Chin, February 20th)

Source: California OEHHA CalEnviroScreen 4.0 PM2.5 Indicator (Data taken from 2015-17) https://experience.arcgis.com/experience/ed5953d89038431dbf4f22ab9abfe40d/page/Indicators/?data_id=dataSource_38-17c3c371181-layer-1%3A546&views=PM2.5

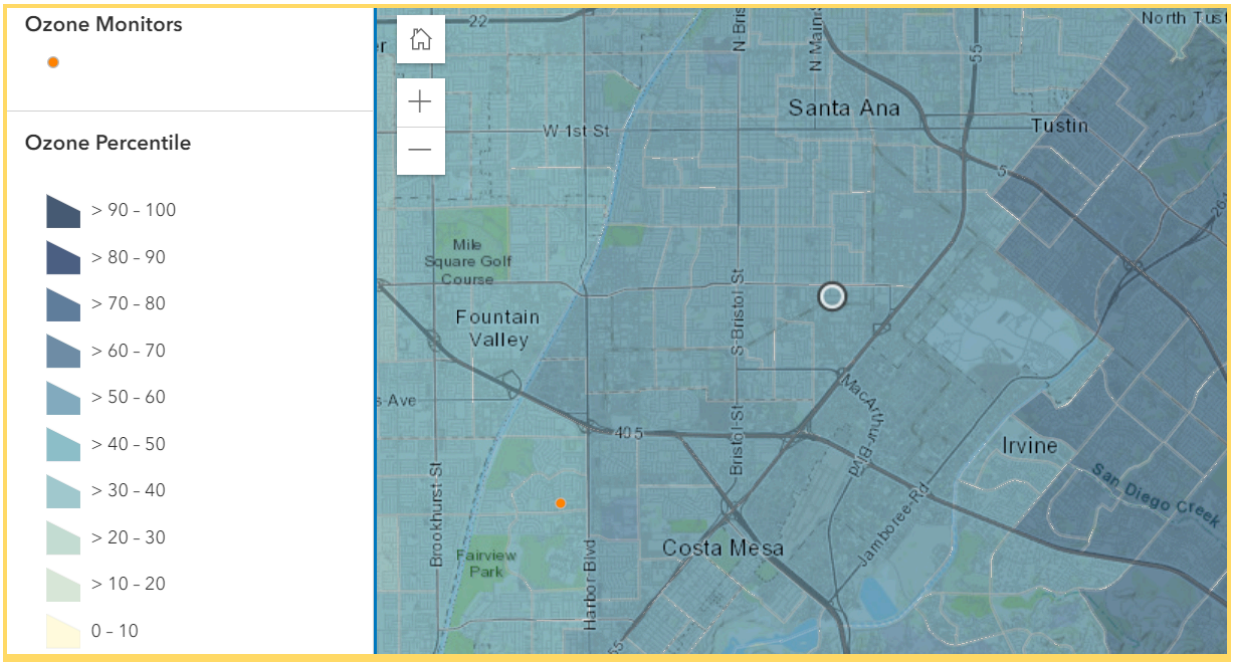

FIGURE 18: O3, or Ozone, is a secondary pollutant made from the reaction between nitrogen oxides (NOX) and volatile organic compounds (VOC) in high temperatures and sunlight. NOX and VOCs come from the combustion of fuels and aerosols, factories and pesticides, respectively. Ground-level ozone can irritate the lungs and worsen chronic illnesses.Within Monroe's census tract, there is a concentration of 0.049 parts per million (ppm). This places Monroe Elementary and its surrounding area in the 57st percentile of Californian ozone pollution, which ranges from 0.03 - 0.07 ppm. (Screenshot by Justin Chin, February 20th)

Source: California OEHHA CalEnviroScreen 4.0 Ozone Indicator (Data taken from 2017-19) https://experience.arcgis.com/experience/ed5953d89038431dbf4f22ab9abfe40d/page/Indicators/?data_id=dataSource_37-17c3c3b4658-layer-1%3A546&views=Ozone

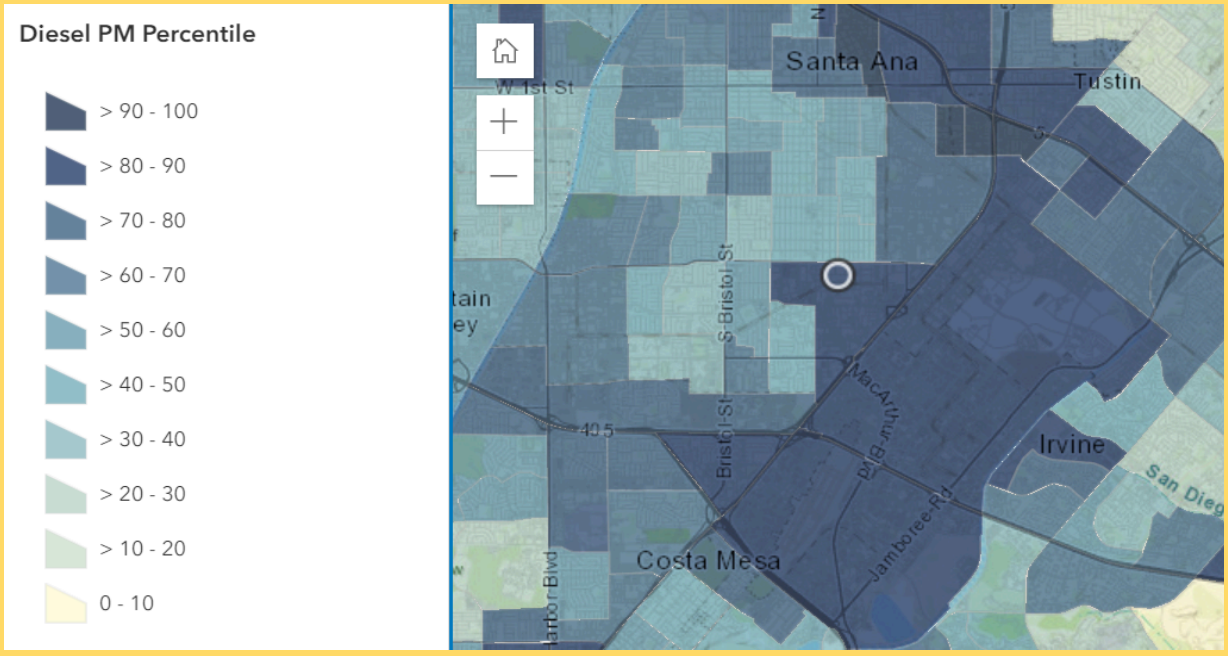

FIGURE 19: Diesel PM, or diesel particulate matter are pollutants from the exhaust of trucks, buses, and other primarily diesel machines. Thus, the most polluted tracts are often those near high traffic roads. These particulates can infiltrate the lungs and cause a variety of problems, from nose irritation to heart disease and lung cancer.Within Monroe's census tract, diesel sources emit 0.426 tons per year. This places Monroe Elementary and its surrounding area in the 86th percentile. Nearby Californian tracts have diesel pollution, ranging from 0.019 - 0.686 tons per year. (Screenshot by Justin Chin, February 20th)

Source: California OEHHA CalEnviroScreen 4.0 Diesel PM Indicator (Data taken from 2016) https://experience.arcgis.com/experience/ed5953d89038431dbf4f22ab9abfe40d/page/Indicators/?data_id=dataSource_7-17c3d6dce45-layer-2%3A546&views=Diesel-Particulate-Matter

Hazard 3: Santa Ana Wind and Wildfires

Due to Santa Ana's densely packed population, lots of wildfires can be caused due to human activities and other natural causes. One major source of these wildfires is the Santa Ana winds. "Santa Ana winds, common to Southern California from the fall through early spring, are a type of downslope windstorm at 100 degrees and are usually accompanied by very low humidity" (Rolinski). Since fuel conditions tend to be driest from late September through the middle of

November, Santa Ana winds occurring during this time have the greatest potential to produce large, devastating fires upon ignition. Wildfires release large amounts of carbon dioxide (CO2) and other greenhouse gasses into the atmosphere, contributing to climate change. Climate change, in turn, can exacerbate wildfire conditions by increasing temperatures, prolonging droughts, and altering weather patterns, creating a feedback loop that further fuels wildfire activity (Borunda).

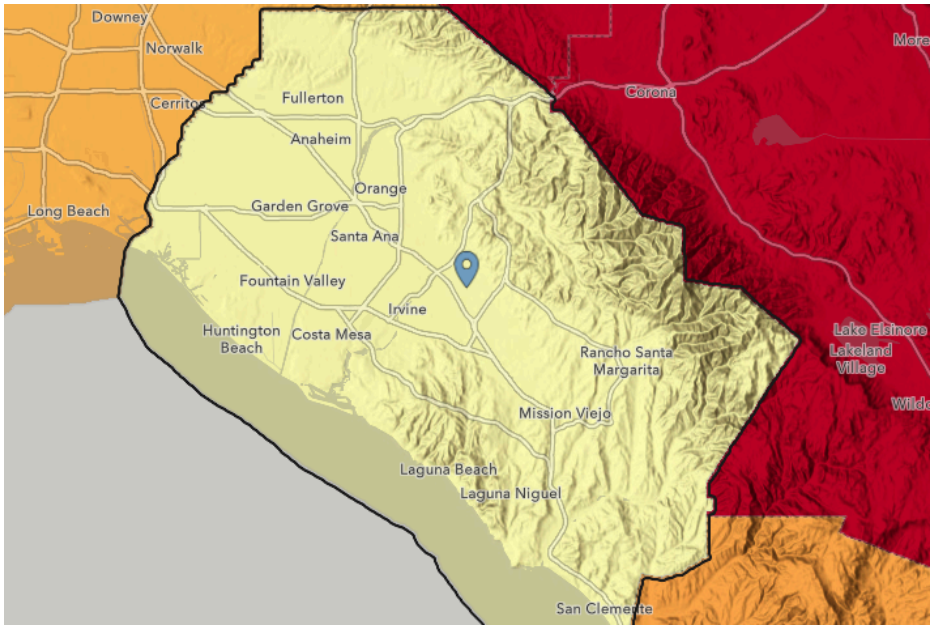

FIGURE 20: This map shows the extreme heat hazards in Orange County. Our school is located in the Santa Ana area of this map. The area is considered to be light yellow, meaning it reaches temperatures of above 90 degrees fahrenheit about 22.5 days a year. This is considered very good, as nearby areas receive up to 60+ days.There is zero coastal induction, about 13.9 inches of flooding, about 1 wildfire a year, and the area isn't in a drought. (Kevin Wong, February 20th) Source: https://resilience.climate.gov/

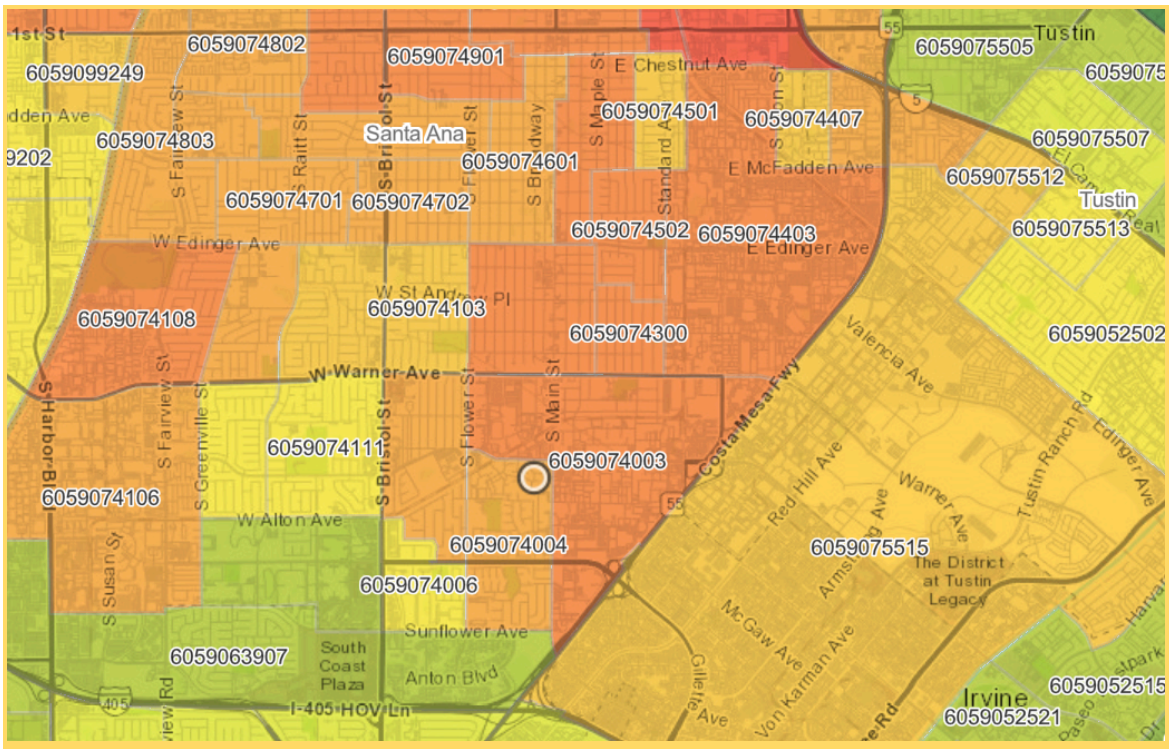

FIGURE 21: Monroe Elementary is located in a census tract that is in the 73th percentile of CalEnviroScreen scores, which means that it has more cumulative impacts of environmental injustice than 73% of other tracts in California. (Screenshot by Sage Sugiyama, February 20th)
Source:
https://experience.arcgis.com/experience/11d2f52282a54ceebcac7428e6184203/page/CalEnviroScreen-4_0/

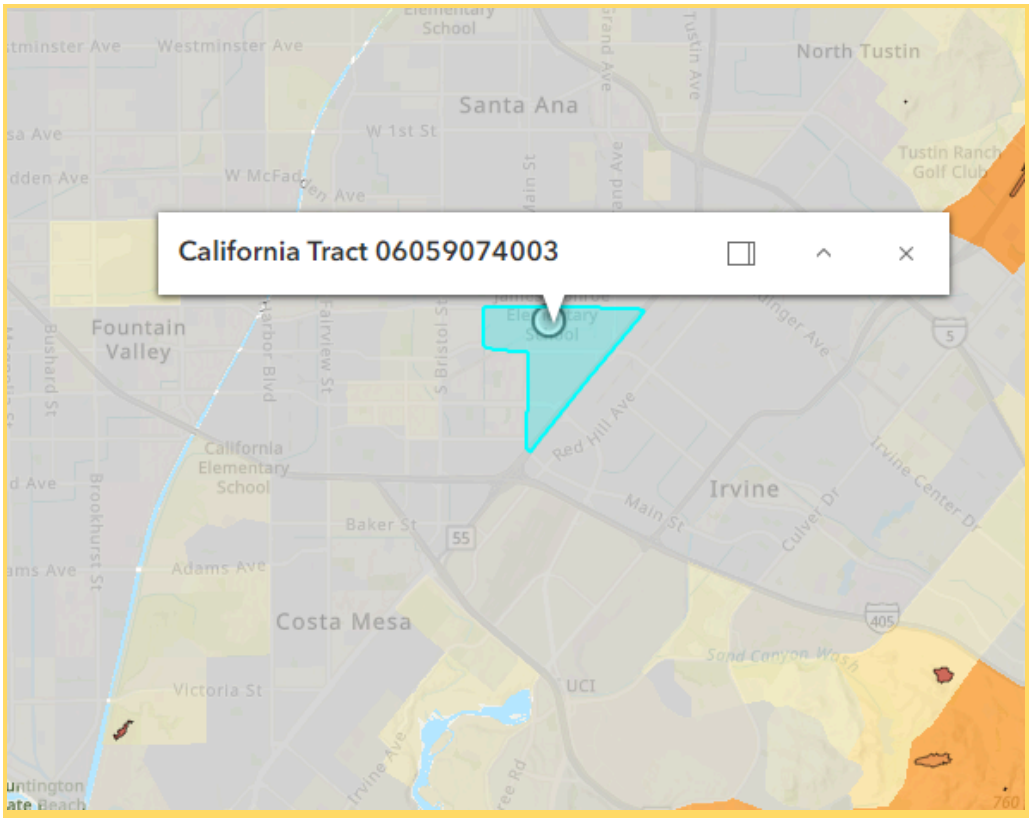

FIGURE 22: Our School is located in Santa Ana, which is a highly urbanized area. Due to the lack of nature it has a low wildfire risk. Due to the area being so urban, there is minimal risk for a wildfire to occur. However we must consider neighboring areas, which are much more urban and have an occasional wildfire each year. (Screenshot by Kevin Wong, February 20th)
Source: [Wildfire Risks (arcgis.com)]

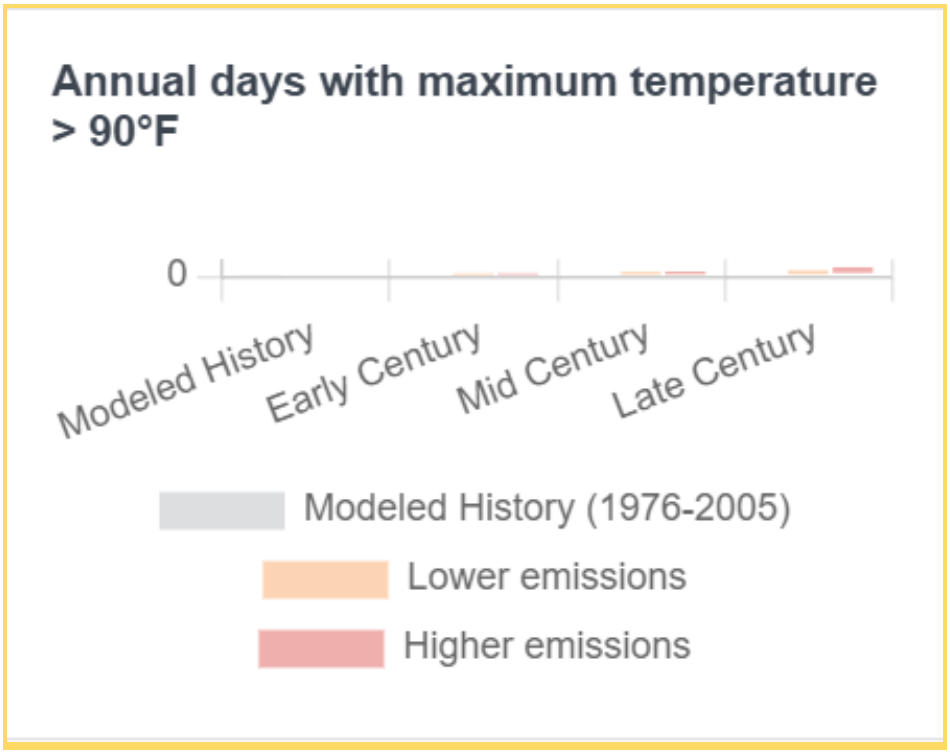

FIGURE 23: Although hard to see the chart does show a slow incline of annual days with maximum temperatures increasing. As you can see, the modeled history has hardly any annual days with maximum temperatures over 90 degrees Fahrenheit, but as the century progresses it shows how the lower and higher emissions will rise. (Screenshot by Ava Perreault, February 20th)
Source: https://livingatlas.arcgis.com/assessment-tool/explore/details

Hazard 4: John Wayne Airport

The operation of aircraft at John Wayne Airport contributes to air pollution in the surrounding area. Aircraft engines emit various pollutants, including nitrogen oxides (NOx), volatile organic compounds (VOCs), particulate matter (PM), and carbon monoxide (CO). These pollutants can degrade local air quality, leading to respiratory issues and other health problems for nearby residents. During the duration of the plane's flight, it releases chemical contrails into the atmosphere, which ultimately poses a threat to the region around the airport and to the overall earth in general. "Scientists say they contribute to climate change by trapping heat that radiates upward from Earth's surface" (Hsu).

Aviation is a significant contributor to greenhouse gas emissions, including carbon dioxide (CO2) and other pollutants that contribute to climate change.

While John Wayne Airport itself may not be a major source of greenhouse gas emissions compared to larger airports, Santa Ana's residents are impacted greatly due to their proximity to the airport, which makes them vulnerable to this hazard. In addition, "Eco-friendly changes are coming to John Wayne Airport's ground vehicles and transportation methods in compliance with an August 2014 agreement between the facility and the county of Orange to regulate greenhouse gas emissions sources at the airport" (Staley).

Hazard 5: Toxins and Hazardous Waste being Released by Facilities and Chemical Plants

Hazardous waste can ignite, be corrosive, explode, or prove toxic to living organisms. In addition, Hazardous waste can be generated in many ways. Hazardous waste includes: used oil, spent solvents, cleaning compounds, discarded paints, silver fix, byproducts of chemical processes, and discarded chemical formulations. "Heavyweight businesses like Standard Oil Company, General Petroleum Corporation of California, and Shell Oil Company shared the neighborhood with a foundry, a lead smelter and battery recycling facility, and a liquid fertilizer company." Today, leaded oil, lead soil, and all sorts of pollution exist throughout the city, and although there are still many environmental threats that the city is facing; the effects of the old industrial facilities that originally polluted the city linger. (Aldern and Cabrera).

In addition, a study was conducted in Santa Ana by considering the concentrations, distributions, and cumulative health risks related to eight heavy metals that are of particular relevance to public health, including Pb, As, Mn, Cr, Ni, Cu, Cd, and Zn. It was concluded that "harmful health effects includes asthma, adverse neurological and cognitive outcomes in children, pregnancy

complications, asthma and inflammation, high blood pressure, hypertension and osteoporosis" (Environ Sci Process Impacts).

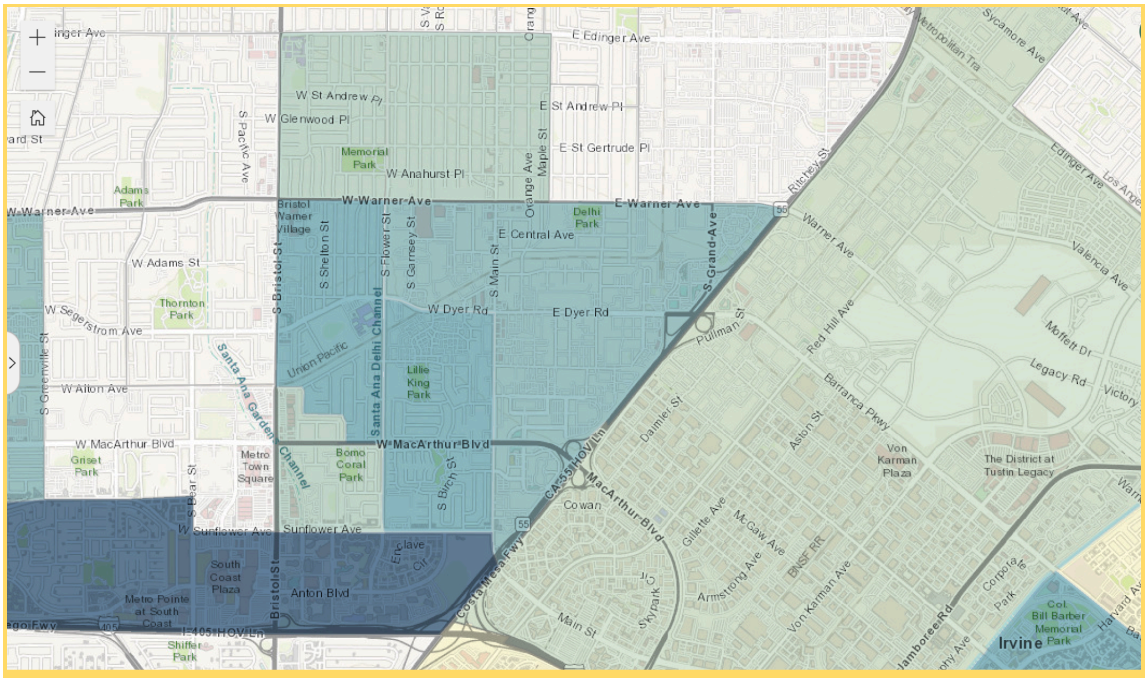

FIGURE 24: This area of Santa Ana has relatively high pesticide exposure, placing this census tract in the 40th percentile in relation to other census tracts in CA. (Screenshot by Wren Stuart, February 8th)
Source: https://experience.arcgis.com/experience/ed5953d89038431dbf4f22ab9abfe40d/

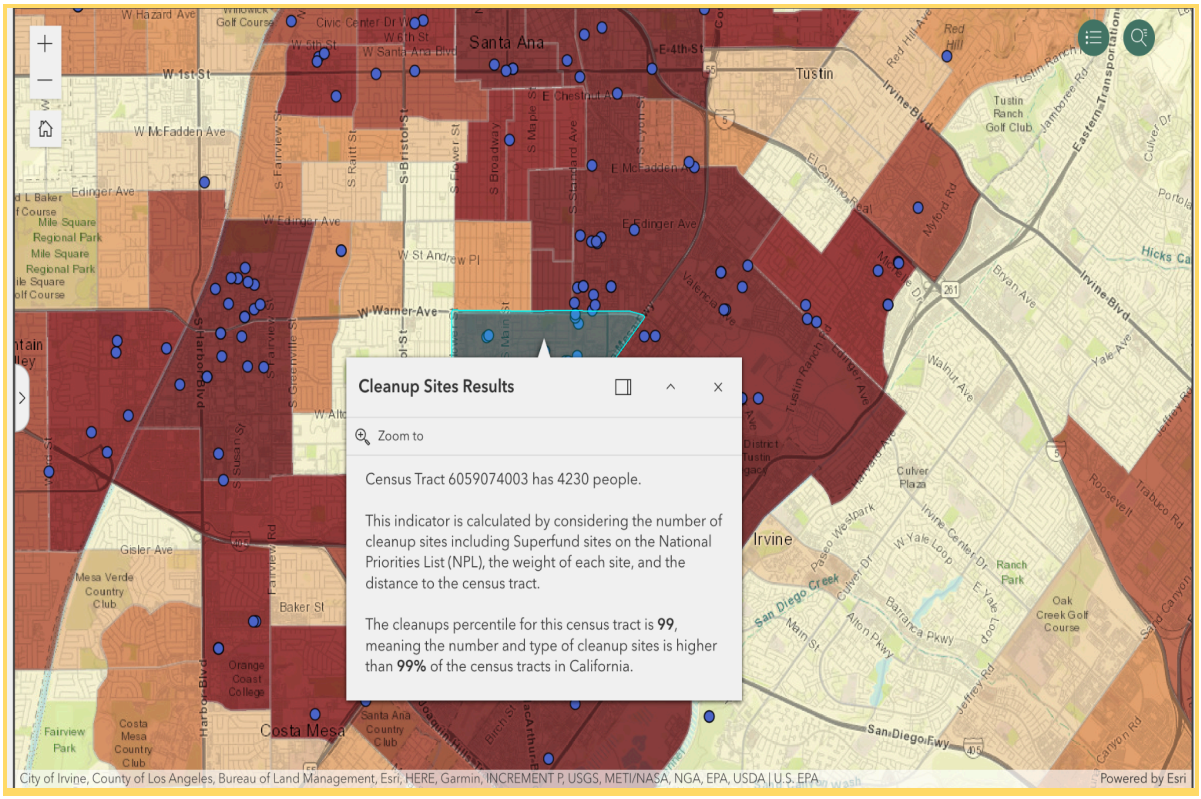

FIGURE 25: Monroe Elementary School is located in a census tract that is in the 94th percentile for proximity to cleanup sites in California. (February 20th)
Source: https://experience.arcgis.com/experience/ed5953d89038431dbf4f22ab9abfe40d/

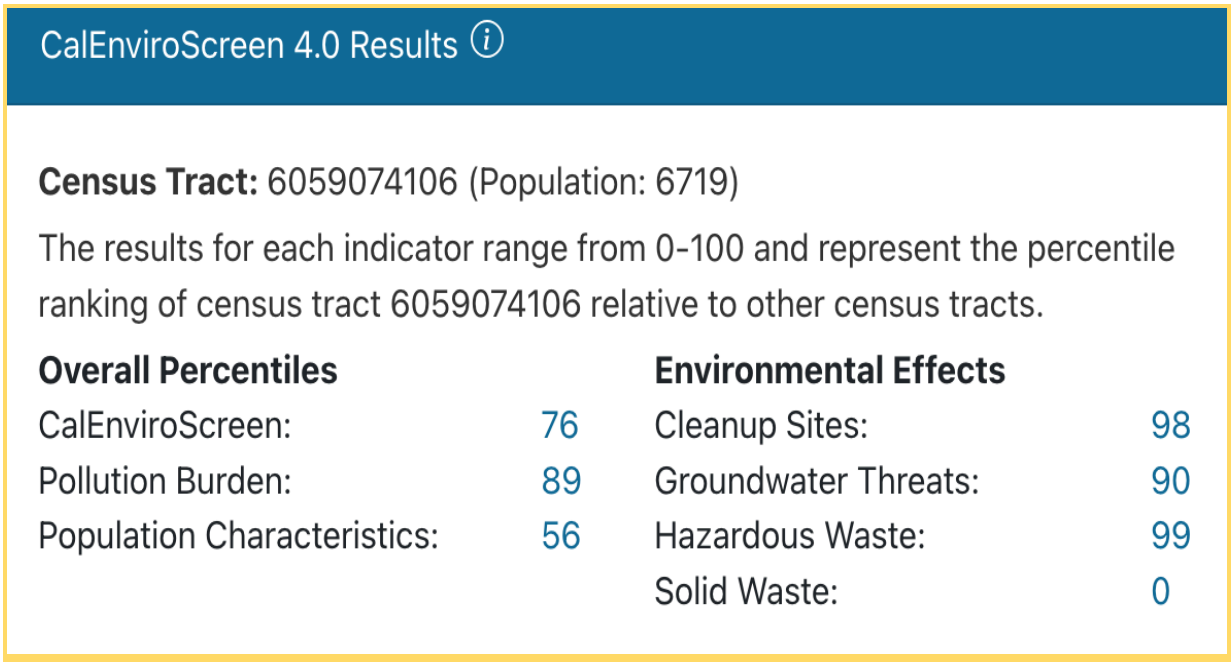

FIGURE 26: This source is a tracking system of all the hazardous waste disposals that care being done by various companies in the region. It also highlights the toxic chemicals that are released and the overall threat it brings to the environment. (Rashed Eisa, February 20th)
Source: https://hwts.dtsc.ca.gov/facility/CAD094719598

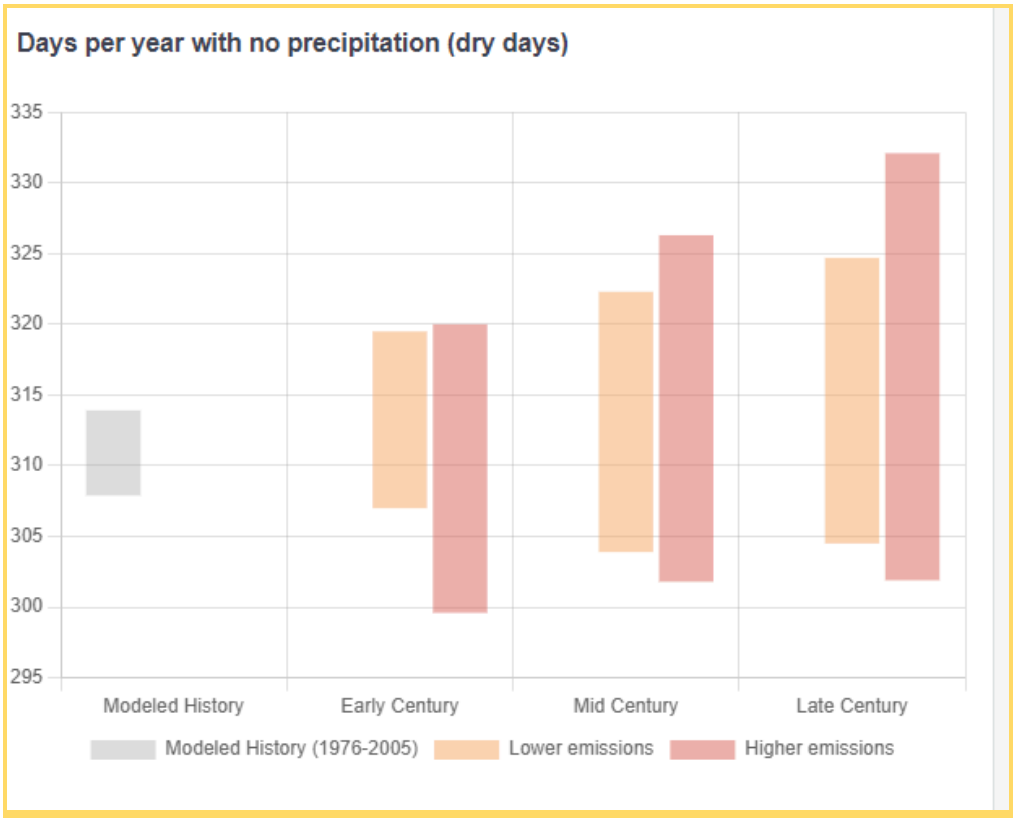

FIGURE 27: Santa Ana is a dryer place, having only about 310 dry days per year. It is projected if emissions remain high that this can increase to up to 330 days a year. (Screenshot by Brandon Bivens, February 8th)
Source: https://livingatlas.arcgis.com/assessment-tool/explore/details

Hazard 6: Industrial Emissions and Air Quality

Through our research in Santa Ana, we found that industrial zones are the cause of major health concerns in the area. This is due to their location near residential areas, such as schools like Monroe Elementary. These industrial areas are a concern because they emit harmful pollutants in the air that pose health risks to the local community. We found that these air pollutants are particularly high in regions where industrial and residential areas overlap. Another interesting correlation we found in the area was the asthma rates. Asthma rates in this area are surprisingly higher, especially among children and elderly. This correlation between industrial emissions and health risks highlights the need for change towards industrial areas. By enforcing regulations that reduce the

emission of industrial zones. We aim to reduce the exposure to harmful pollutants, resulting in the well-being of the community's health; especially children and the elderly, who are more prone to pollutants (Wu 2022).

Our group plans to focus on mitigating and reducing the impacts of air pollution through proactive urban planning and policy reform. By pushing for the implementation of stricter zoning laws, we strive to create a healthier living environment. Which minimizes the proximity of industrial pollutants to areas where people live, learn, and play. This approach not only aims to decrease the cause of asthma, but also enhance public health in Santa Ana. Through these methods, we are committed to fostering a community where environmental health hazards are significantly reduced, enabling all residents to thrive in a safer, cleaner environment.

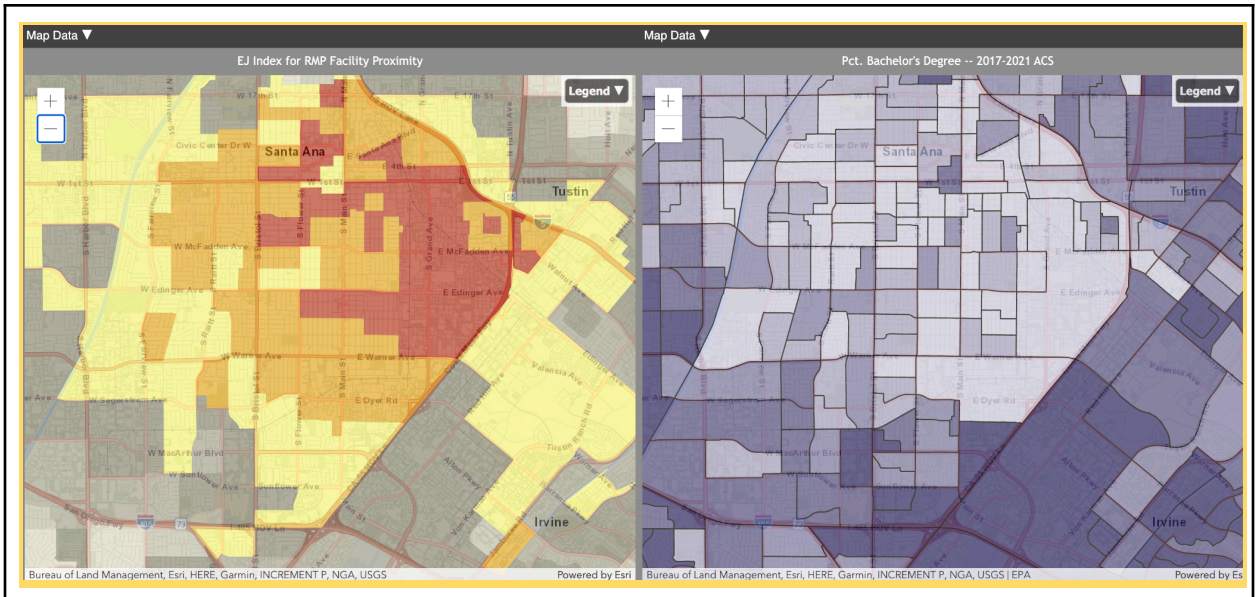

FIGURE 28: This visualization compares a map of RMP proximity in Santa Ana (OC County)(left) and college attainment (right). The comparison shows that the areas that are closer to the RMP facilities tend to have lower college attainment, which indicates economic disadvantage may cause them unable to relocate.

(Screenshot by Weiheng Yuan, February 20th, 2024)

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

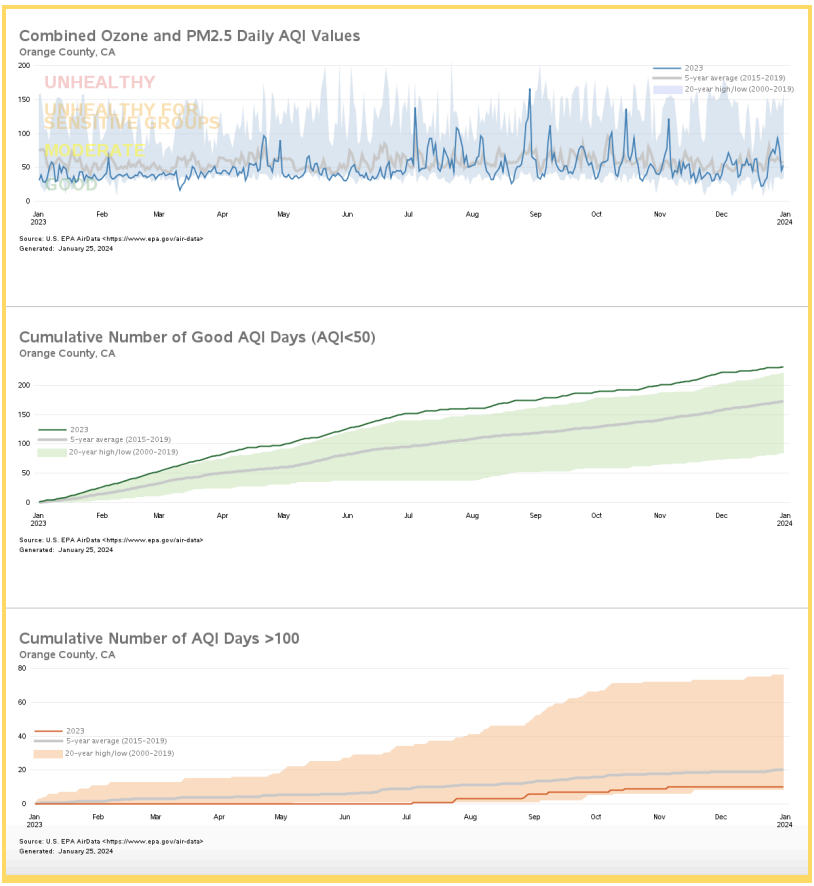

FIGURE 29: Orange County has improved air quality over the past years,

(Screenshot by Weiheng Yuan, February 20th)

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

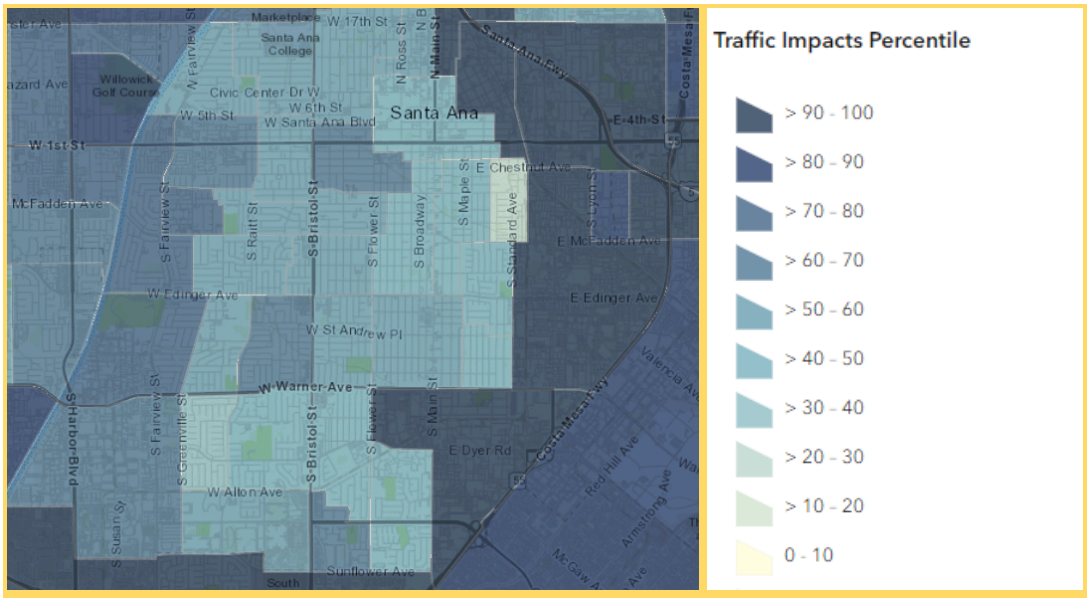

FIGURE 30: Monroe Elementary is located in the census tract with an extremely high 94th percentile for traffic impact in California.

(Screenshot by Brandon Bivens, February 20th)

Source: https://experience.arcgis.com/experience/ed5953d89038431dbf4f22ab9abfe40d/page/Indicators/?views=Traffic-Impacts

Hazard 7: Lead Contamination and Soil Pollution

In our research on Santa Ana, we discovered that historic vehicle emissions are one of leading causes with lead contamination in soil. This issue redirects attention away from other causes such as lead paint, as gasoline has a much higher impact on the environment. Because of this, we came to the conclusion to focus our efforts towards reducing the impact of leaded gasoline usage (Schallhorn 2022). One solution that caught our attention was the role of community action in confronting this challenge, which has led to commitments at the city level to address lead hazards (Cabrera 2023). We learned that remediation strategies, like the use of native plants in bioremediation processes,

are vital in mitigating lead exposure. This is crucially important for protecting children in the area, who are the most vulnerable to the developmental dangers posed by lead poisoning. Our group plans to solve this issue, by making the community more aware of these opportunities and the effects their actions have. This will be done by either educating the community, posting information on common websites, and/or guide the community towards community service events that help the environment.

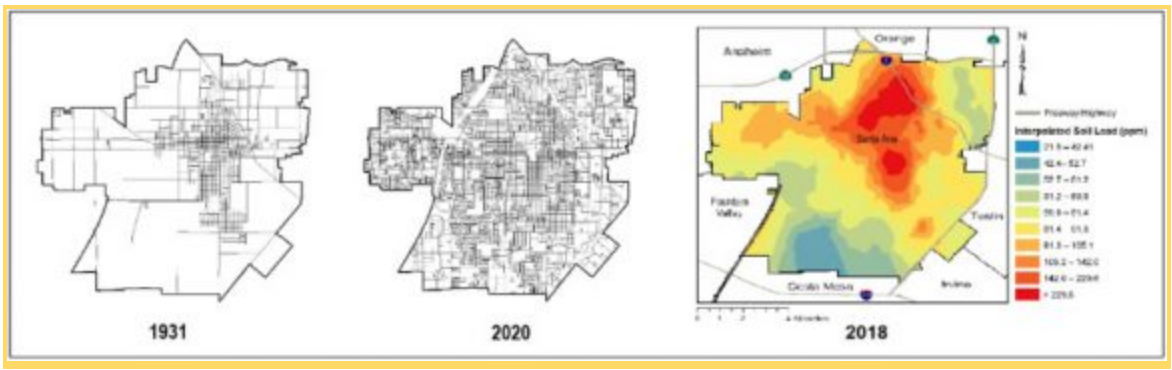

FIGURE 31: This map displays that 811 out of 1555 samples tested unsafe for children, which was over 50% of the samples. The highest levels of lead were found in downtown and central Santa Ana. (Screenshot by Kevin Wong, February 20th)

Source: https://blogs.chapman.edu/sustainability/2022/12/09/environmental-injustice-in-a-community-near-chapman/

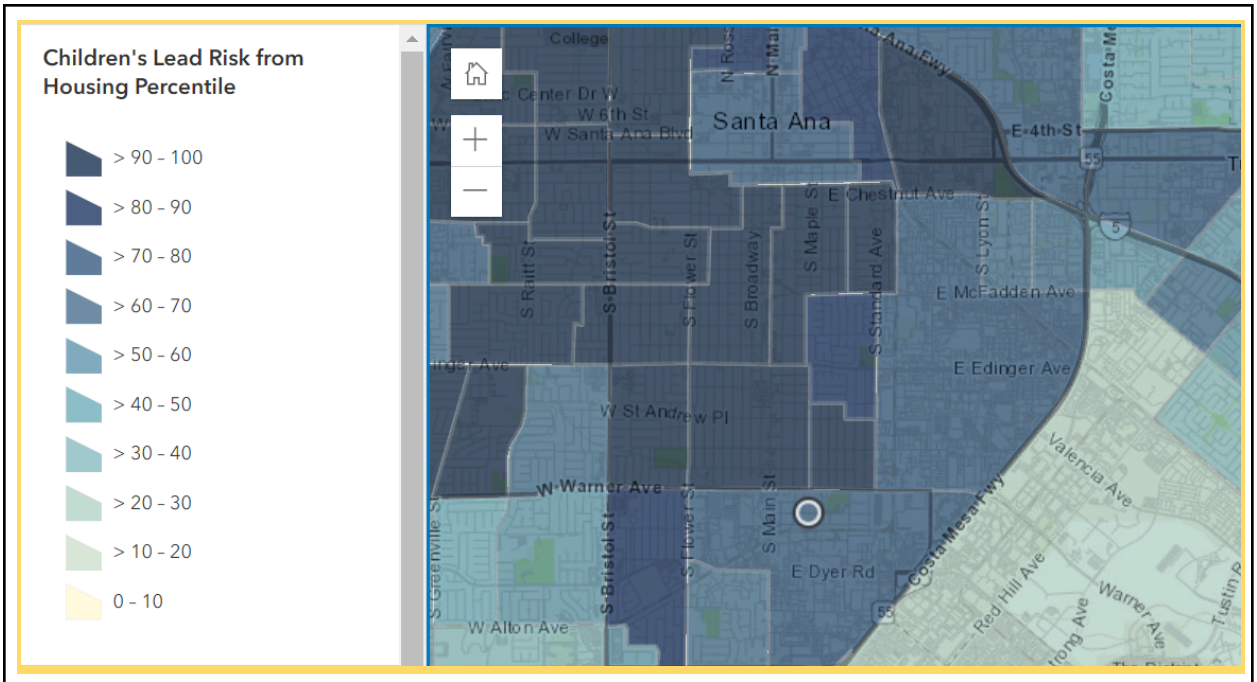

FIGURE 32: Lead, or Pb, is a toxic metal most often found in paint, plumbing and gasoline. Despite being banned, leaded gasoline has left large parts of Santa Ana's soil with high levels of lead. Lead is highly dangerous, affecting the brain and nervous system. It is especially harmful for children by impairing their development and lowering their ability to learn.Within Monroe's census tract, there is a lead risk score of 70.57. This places Monroe Elementary and its surrounding area in the 80th percentile of California. Many nearby tracts in Santa Ana have a Children's Lead Risk score of 70 or higher. (Screenshot by Justin Chin, February 20th)

Source: California OEHHA CalEnviroScreen 4.0 Children's Lead Risk from Housing Indicator (Parcel data taken from 2017)

Source: https://experience.arcgis.com/experience/ed5953d89038431dbf4f22ab9abfe40d/page/Indicators/?data_id=widget_311_output_0%3A0%2CdataSource_39-17c3c368683-layer-1%3A546&views=Children%E2%80%99s-Lead-Risk-from-Housing

Hazard 8: Water Pollution and Community Health

Another major concern with pollution in Santa Ana is the water source. This especially includes the Santa Ana River, which is contaminated with pollutants from urban runoff, acid rain, and industrial waste. This pollution not only affects aquatic ecosystems but also poses risks to human health through the potential for contaminated drinking water (Culligan of Orange County 2021).

Addressing the sources of pollution and enhancing water treatment facilities are critical steps toward ensuring safe water for the community. To solve this issue, our group plans to reinforce policies related to disposing of waste in Santa Ana. Our main goal is to ensure that waste is properly disposed. By reinforcing these policies, we're controlling the cause of pollution in water.

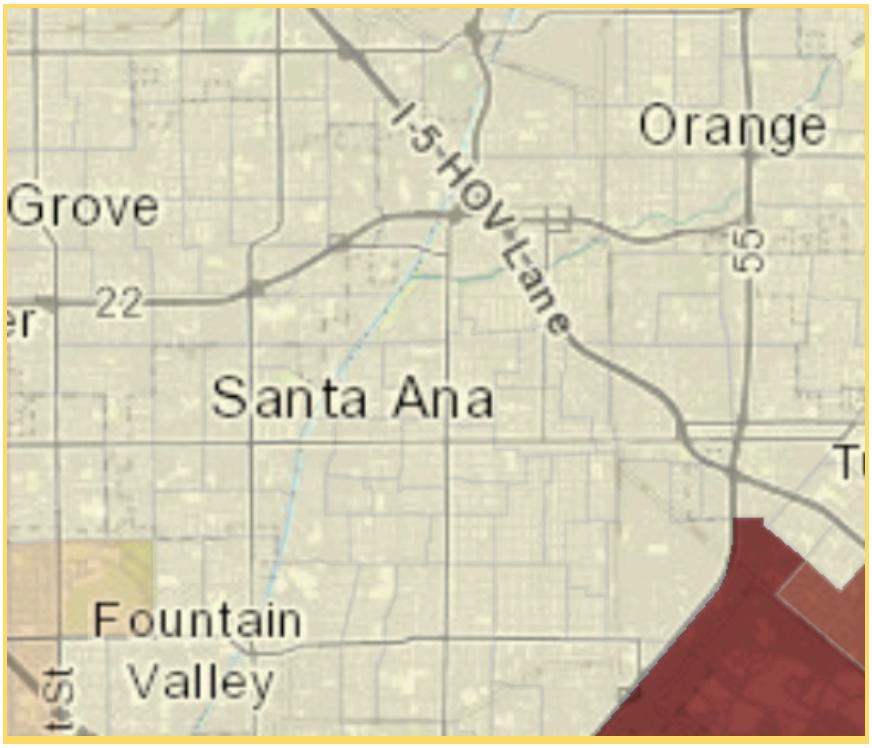

FIGURE 33: There are no impaired bodies of water in Monroe Elementary, Santa Ana's census tract. (Weiheng Yuan, February 20th)

Source: https://experience.arcgis.com/experience/ed5953d89038431dbf4f22ab9abfe40d/page/Indicators/?views=Impaired-Waters

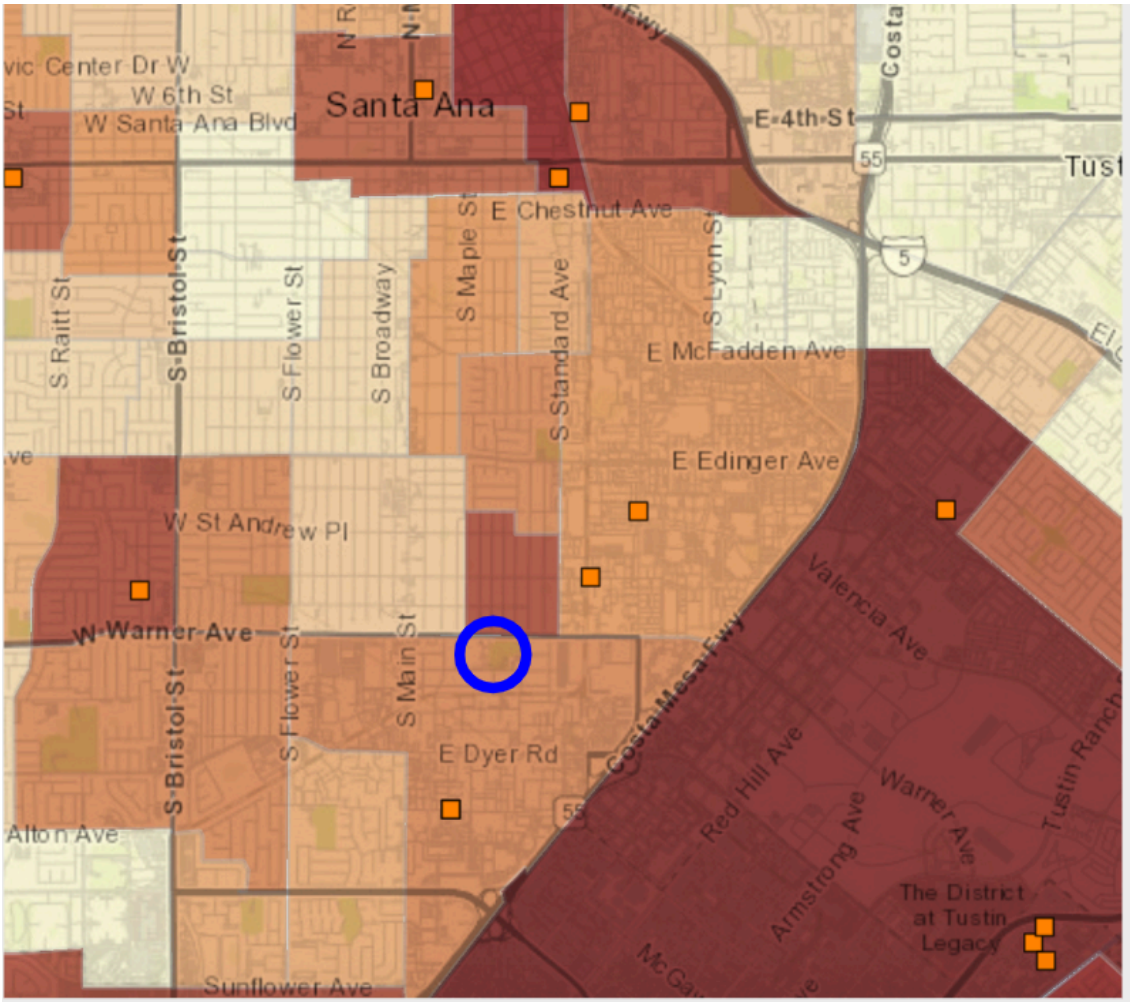

FIGURE 34: Monroe Elementary is located in a census tract that is in the 59th percentile for proximity to solid waste sites in California. There are also three solid waste sites located within 4 miles of the elementary.

(Weiheng Yuan, February 20th)

Source: https://experience.arcgis.com/experience/ed5953d89038431dbf4f22ab9abfe40d/page/Indicators/?views=Solid-Waste-Sites

Hazard 9: Noise Pollution and Quality of Life

The continuous noise from industrial activities and traffic, especially near North Hathaway Street, affects the well-being of Santa Ana residents. Long-term

exposure to high noise levels can lead to stress, sleep disturbances, and other health issues; such as hearing loss (Fausto 2013). Implementing noise barriers and regulating industrial noise can improve the living conditions in affected neighborhoods.

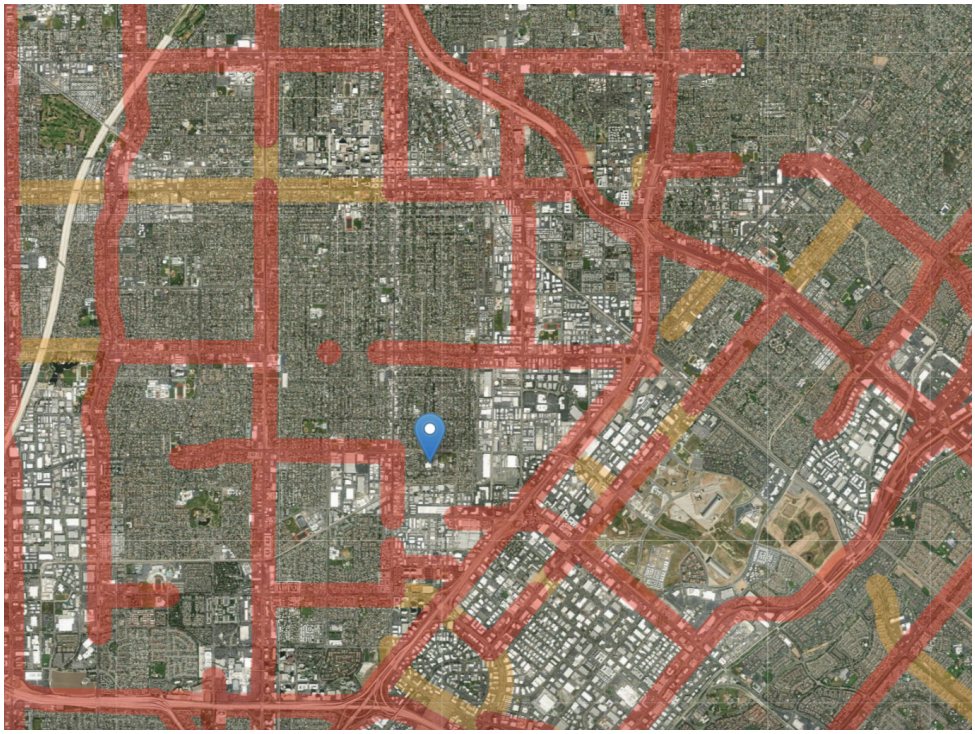

FIGURE 35: Monroe Elementary is located next to a major road with 30,000plus vehicles pass through on average each day, South Main St. The major freeway of Orange County also located next to it, I-55. (Weiheng Yuan, February 20th)

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

Hazard 10: Waste Management and Public Health

Inconsistencies in waste collection services, as experienced with the transition to Republic Services, have led to sanitation concerns in Santa Ana. Accumulating garbage poses health risks, attracting pests and contributing to the spread of disease (González

2022). Our group aims to reinforce waste management policies and reliable service provision. As they're essential to maintaining public health and community cleanliness.

3. COMPOUND VULNERABILITIES

Intersecting Social, Ecological, Cultural, Political, and Technological Factors

Kaylin Ho & Sage Sugiyama

The residents living in Santa Ana and living near Monroe Elementary face environmental hazards from toxic soil lead levels, hazardous waste facilities, air pollution, and many more. There are various social, cultural, political, technological, and ecological factors that contribute to the environmental injustices that these residents face.

Social Factors

Some of the greatest social factors that contribute to the environmental injustice and hazards faced by Santa Ana residents are low incomes, housing

burdens, and low healthcare access. Santa Ana has a low median income in comparison to the rest of the country. In 2019, the median income in Santa Ana was 24,929 USD, which is lower than the national median as the national median income is 31,133 USD (Santa Ana Data Commons, 2024). A low median income in Santa Ana means that the people living in this area have less resources than people from other cities to face increasing costs and the high expenses of healthcare or any other resources necessary to help face environmental justice.

An individual with more money has more flexibility in terms of seeking medical treatment plans for respiratory issues from air pollution or symptoms deriving from lead poisoning than someone who has little money to use for healthcare. This is compounded by the fact that residents in low income areas tend to be heavier impacted by air pollution (Thompson 2022). Furthermore, many of the Santa Ana residents also face housing burden, meaning that they do not have enough money to buy or rent affordable housing. This is related to the low median income as people with low incomes would not have less affordable housing opportunities.

A lack of affordable housing means that Santa Ana residents will choose to live in housing areas with cheaper costs, generally areas that have higher levels of pollution (Hedger 2024). This also means that they will be driving a longer commute to work, which only contributes to the air pollution caused by fossil fuels and exhaust fumes released from cars. There are many regions within Santa Ana that have 90-100% of people dealing with housing burdens. Not only do Santa Ana residents face housing burdens and low incomes, but they also have little healthcare access, even when they are able to afford it.

Santa Ana is only in the 8.9th percentile in California when it comes to healthcare access, and only 77.6% of people are insured (Stuart 2024). Without healthcare or the high income to support medical treatment, people in Santa Ana have very little medical professionals, facilities, and resources to allow them to deal with the health impacts from all of the environmental hazards. In the city of

Santa Ana, the populations at risk for various health hazards, such as air pollution, soil lead poisoning, and hazardous waste, are mostly characterized by the categories of low-income and people of color.

It is shown by statistics that the median household income was less than $50,000 on average and had lead concentrations that were 440% higher and 70% higher, respectively, than samples obtained from Census tracts where the median household income was greater than $100,000 and between $50,000 and $100,000 (Thompson 2022). This shows the disparity of economic conditions and their correlation with exposure to more severe soil lead concentrations. Health impacts from increased soil lead concentration include reduced IQ and attention span, hyperactivity, and impaired growth (City News Writers 2024). And to put this effect into the real-world, the result of the increased risk of soil lead poisoning in children is an overall drop in good educational and economic outcomes as a result of the students at those schools frequently receiving low grades, which prevented them from being admitted to reputable universities.

This feeds into a never ending cycle of economic injustice. If underprivileged populations are not getting opportunities to change their local area because of the cumulative environmental impacts, the danger level of that area cannot be remediated in any way. This also contributes to how low-income and colored communities are experiencing the deepening of economic inequality gaps because of these environmental hazards that impact the young on a daily basis.

Ecological Factors

Santa Ana residents also face ecological factors, such as a lack of park access and climate change, that contribute to the environmental injustice that they feel. Parks are instrumental to fighting air pollution. The air and atmosphere are polluted by fossil fuels and carbon dioxide. Trees help reduce the air pollution by using carbon dioxide to produce sugars and sustain themselves, and then

release oxygen. Without the presence of parks, there are no trees to reduce the amount of carbon dioxide in the atmosphere (San Román 2021).

Trees also help lessen the amount of heat that people feel during hot temperatures. Trees provide shade and as a buffer between the sun and the people, so without the trees, more people will stay in and use air conditioning, which will increase the air pollution and electricity usage. Lack of parks and walkable areas decreases the ability and motivation of residents to exercise, which only exacerbates the health conditions they will face in response to the environmental hazards, and could make them potentially vulnerable to diseases such as obesity. Climate change is another ecological factor that contributes to the environmental injustice in Santa Ana (Chin 2024).

The increasing temperatures and warmer climates will increase air conditioning usage, as mentioned earlier, which will only further contribute to climate change. Hotter temperatures will also put stress on the water supply since people will require more water to maintain homeostasis inside the body to deal with climate change. This also poses a problem when hazardous waste from the many hazardous waste facilities in Santa Ana enter the water supply. More health effects will be added onto the load that the Santa Ana residents already face from soil lead levels and air pollution.

Cultural Factors

A large population of Santa Ana is Latinx and Spanish speaking and another fraction of Santa Ana is Vietnamese speaking. About 10% of Santa Ana faces linguistic isolation as they are unable to communicate in English (Chin 2024). This will exacerbate the environmental hazards that Santa Ana residents face as they may be discouraged by their inability to speak English to consult a medical professional for help. They also will be unable to comprehend any environmental hazard warnings in English as a result of their inability to communicate in English.

There also is a tendency for lower income communities of color to be vulnerable to air pollution, which is similar to the situation in Santa Ana where the majority of residents are Hispanic and also facing worse environmental issues than their white counterparts in wealthier neighborhoods (Thompson 2022). Since a large fraction of Santa Ana's population is Latinx, Hispanic culture is a great part of Santa Ana's cultural identity. Taken in context with Santa Ana's historical context of transitioning from a predominantly white area to a city demographic largely composed of Hispanics, this disparity is deepening the gaps in economic and environmental justice in Latinx at-risk communities.

Comparing 1960s Santa Ana to 2020s Santa Ana, 80% of the population is Hispanic/Latinos. During the 2020-21 school year, 96% of enrolled students identified as Hispanic/Latino; all other races only made up 1% of the total enrollment. 45% of students are English language learners (Tebbe 2022). The city is going from wealthy groups to immigrant groups, who often do not get opportunities as privileged. Corresponding to the point made in the last paragraph, underserved communities cannot turn themselves around if they are not given opportunities for higher education and local improvement through investment feedback.

Political Factors

There are a variety of political factors that influence how Santa Ana residents are impacted by environmental hazards, including reliance on government agencies to classify chemicals as toxic, reliance on government for emergency response to hazards, and environmental justice groups to advocate on the behalf of Santa Ana residents and other people facing environmental injustice. People who are affected by toxic chemicals released from hazardous waste facilities rely on government agencies to classify these chemicals as toxic (Orange County Health Care Agency Environmental Health Division).

This classification is necessary so that there is some sort of regulation or

policy placed on facilities that release these chemicals that will change the way they handle these chemicals. If the chemicals are not classified as toxic, the government will view it as there being no reason to help the residents who are suffering from the effects of this toxic waste. In response to some sort of environmental emergency, the general public relies on government aid agencies and protection to deal with the aftermath (Gilbert 2023). Environmental justice groups also have the resources necessary to advocate to the government to pass policies that will reduce the environmental injustice people face (Pho 2023).

Technological Factors

Santa Ana residents face a lack of access to private vehicles, which reduces their ability to find work and increase their income. It also increases the pressure on public transportation, which might increase the will of people to find a private vehicle and further contribute to air pollution, increasing the environmental issues in Santa Ana (Lee 2024). Well developed and advanced technology is also necessary to face environmental disasters, such as wildfires (Gilbert 2023), but this means that the fire stations and aid agencies in Santa Ana need to be well funded enough to afford this technology to fight the environmental hazards.

The weak power line infrastructure in this area makes Santa Ana susceptible to wildfires, and even more environmental disasters. All of the other factors (social, political, cultural, and ecological) may tie into access to technology. Technology is expensive, and the local emergency agencies, such as fire departments, are funded through local taxes, property taxes, etc., mainly taxes that rely on the income of the region. Because Santa Ana has a median income lower than the median income of California and the United States, it is likely that their fire departments and emergency response agencies do not have the funds to afford advanced technology.

Urban sprawl also plays a big role in contributing to the pollution in the air

as well. The air quality around impacted areas that are located close to highways is logically worse than in wealthy, cleaner areas. In the South Coast Air Basin, Orange County is home to around 20 million people and over 12 million vehicles (Mitchell 2022). The huge number of vehicles and population density make it difficult to manage pollutants, suggesting that society has an impact on air quality. Orange County is mostly composed of suburban areas. The usage of vehicles because of an underdeveloped public transportation system is contributing to the general reliance on personal vehicles. Because residents in low-income areas are disproportionately affected by air pollution, there is a social component to the difference in wealth between high- and low-income locations. Historically, redlining in Santa Ana in the 1920s has also marked the deepening impacts for underserved and underfunded communities. This historical context gives an insight into the root cause of the environmental issues that have arisen and evokes awareness and novel solutions to how this root cause can be remediated in any sense.

All things considered, the Santa Ana region's growing challenges require gradual but steady attention. The interconnectedness of the issues is making them worse; there is a correlation between the effects of economic and environmental justice. Although these circumstances may have made it challenging for activists and groups to collaborate on these issues, creating awareness and gathering research data that can be utilized to support policy changes locally is a start in the right direction for those who are impacted.

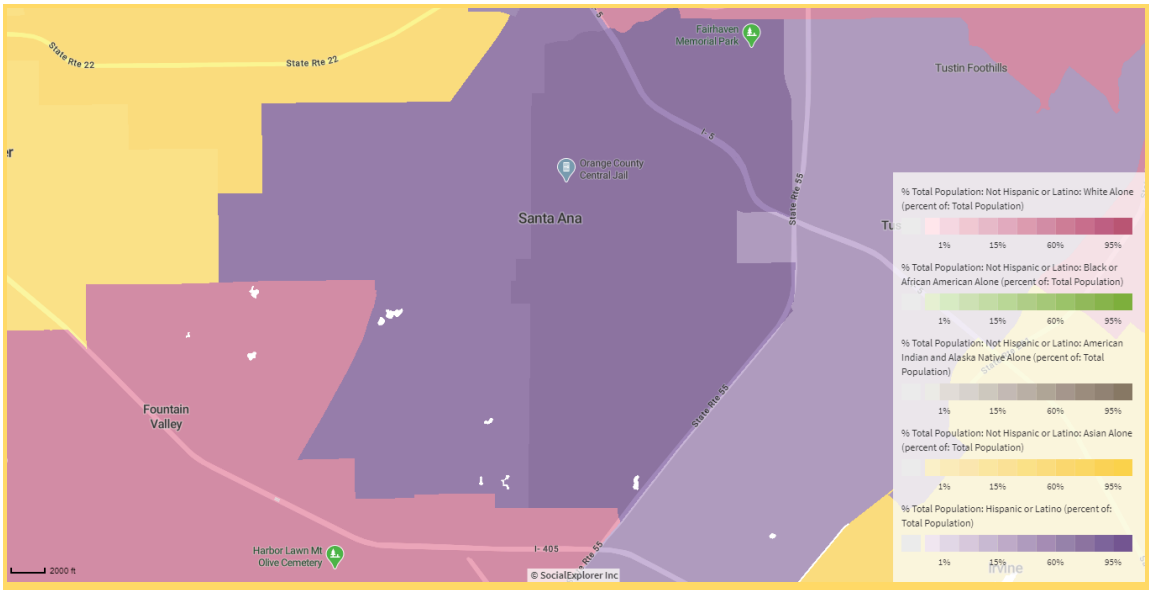

FIGURE 36: Monroe Elementary's census tract is about a 76% hispanic or latino population, which correlates to the majority hispanic/latino population of Santa Ana

Screenshot by Brandon Bivens, February 20, 2024
Source: https://www.socialexplorer.com/a9676d974c/explore

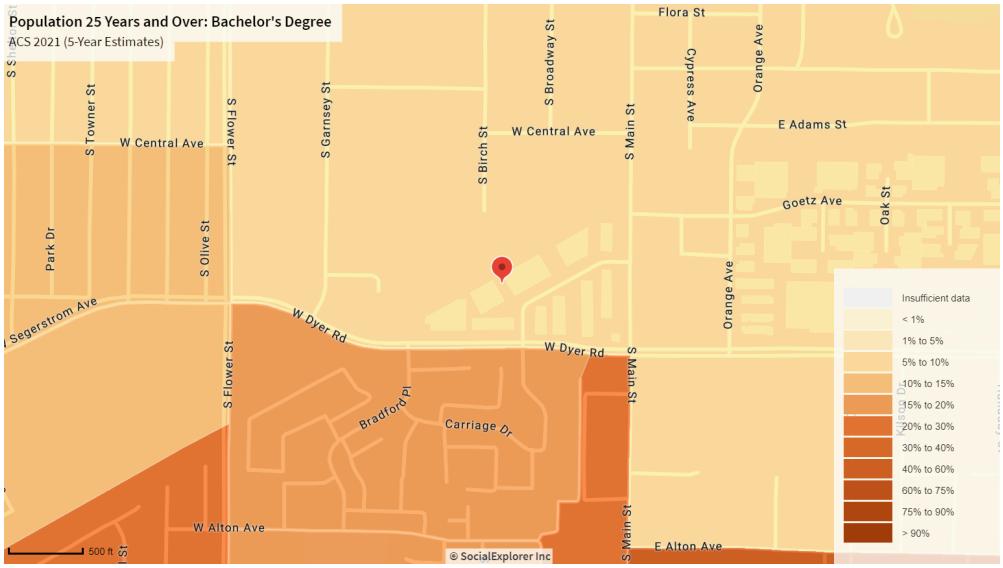

FIGURE 37: Educational Attainment in Santa Ana, California (In Monroe Elementary School's Census Tract) is quite low. Specifically in this one area, The percentage of adults 25 years or older who have a Bachelor's degree is only 7.53%

This translates to around 100 individuals or less

Screenshot by Ava Perreault, February 20, 2024
Source: https://www.socialexplorer.com/a9676d974c/explore

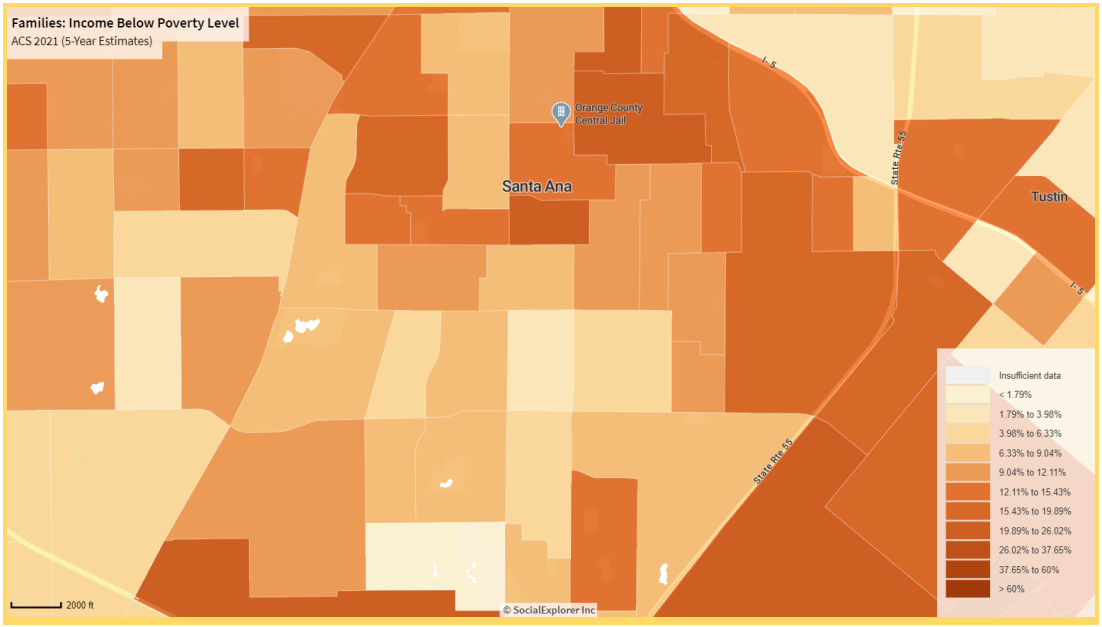

FIGURE 38: Many areas of Santa Ana have very high levels of families below the poverty line. In the census tract that Monroe Elementary is located at, residents are relatively lower, with 7.09% of families below the poverty line.

Screenshot by Brandon Bivens, February 20, 2024
Source: https://www.socialexplorer.com/912c1dae1b/view

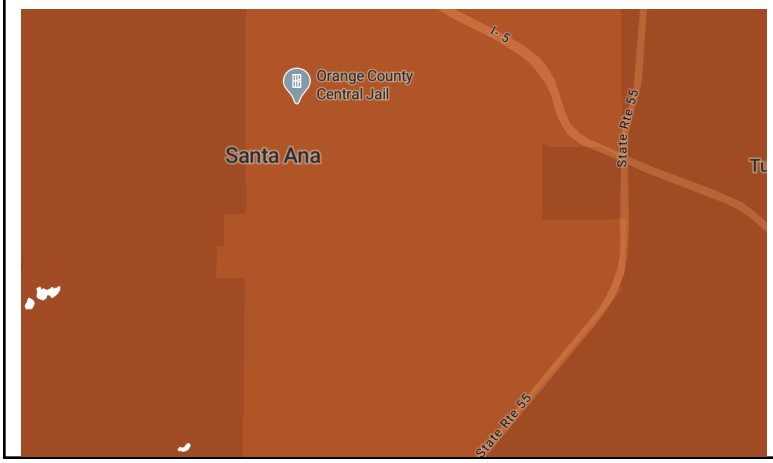

FIGURE 39: The median household income is around 60-90k.

Screenshot by Justin Lee, February 20, 2024
Source: https://www.socialexplorer.com/912c1dae1b/view

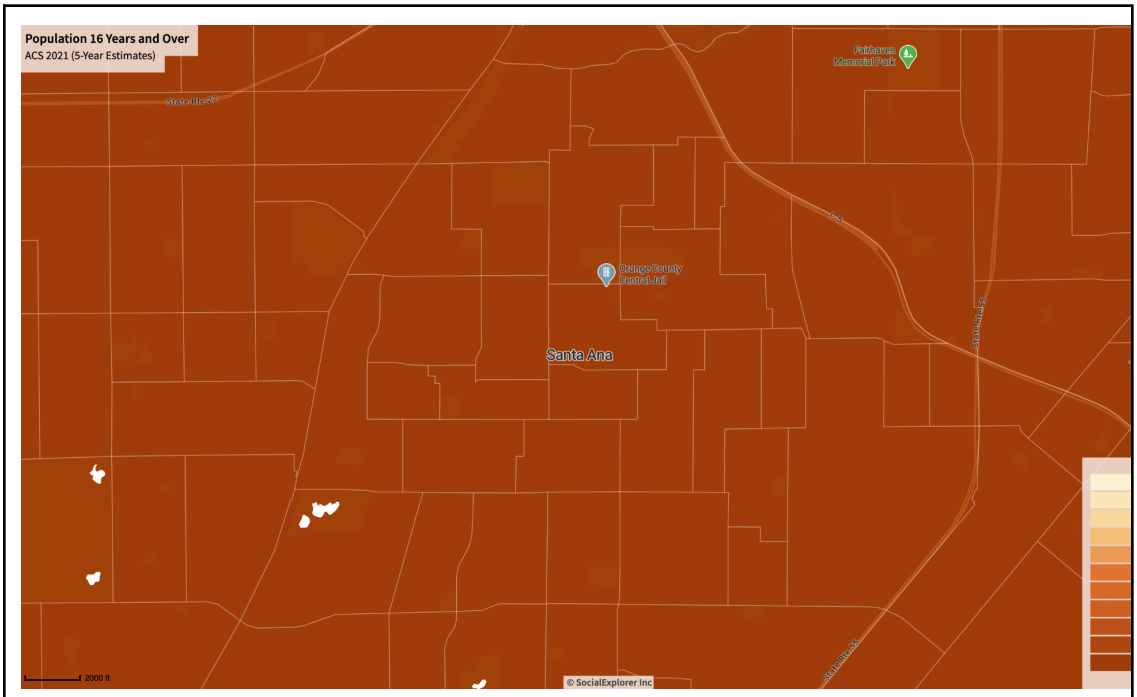

FIGURE 40: About 75% to 90% of people above the age of 16 in Santa Ana are unemployed.

Screenshot by Kaylin Ho, February 20, 2024
Source: https://www.socialexplorer.com/a9676d974c/explore

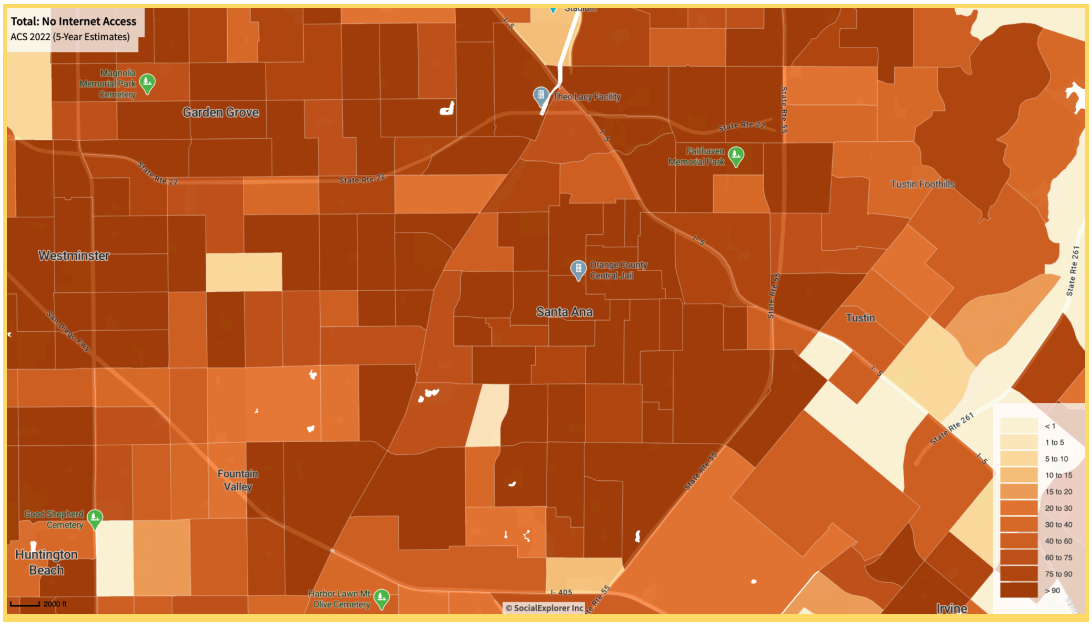

FIGURE 41: Most of Santa Ana has no internet access at home, with a vast majority of the regions having 75-90% of no access.

Screenshot by Kaylin Ho, February 20, 2024
Source: https://www.socialexplorer.com/a9676d974c/explore

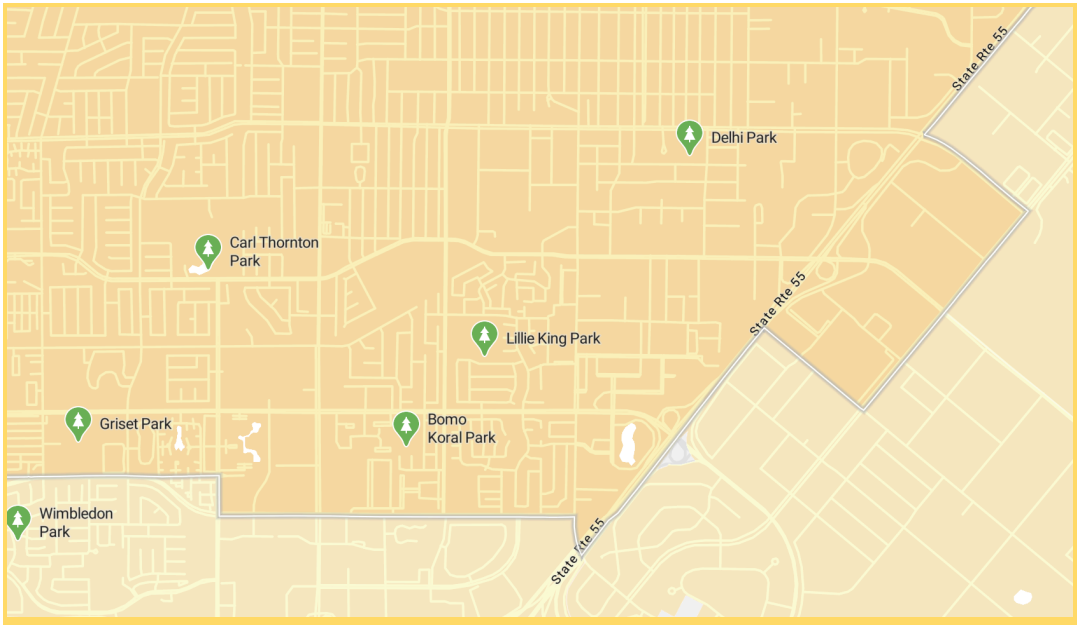

FIGURE 42: Most of Santa Ana has access to a vehicle

Screenshot by Justin Lee, February 20, 2024
Source: https://www.socialexplorer.com/a9676d974c/explore

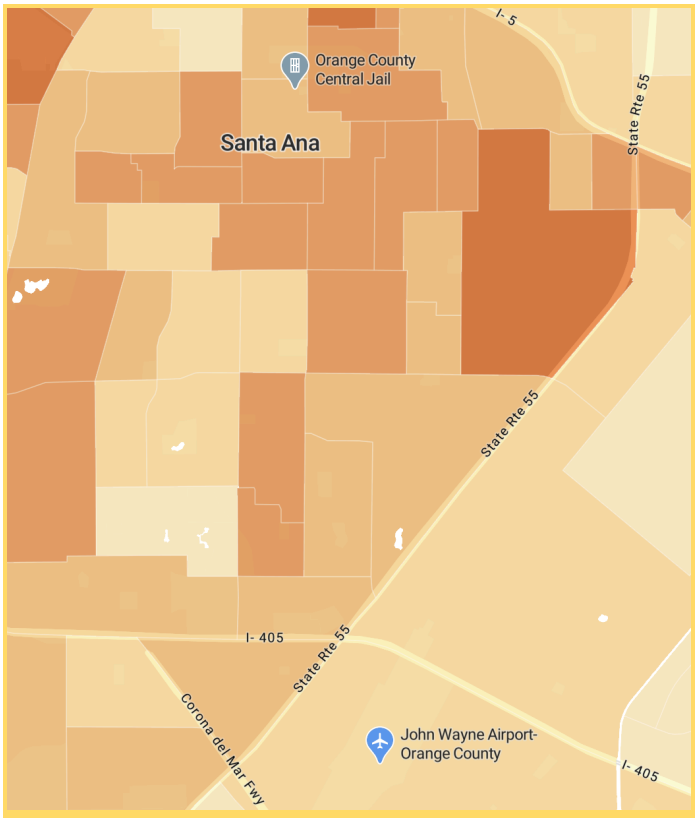

FIGURE 43: A very good amount of households do not have health insurance.

Screenshot by Justin Lee, February 20, 2024
Source:
https://www.socialexplorer.com/a9676d974c/explore

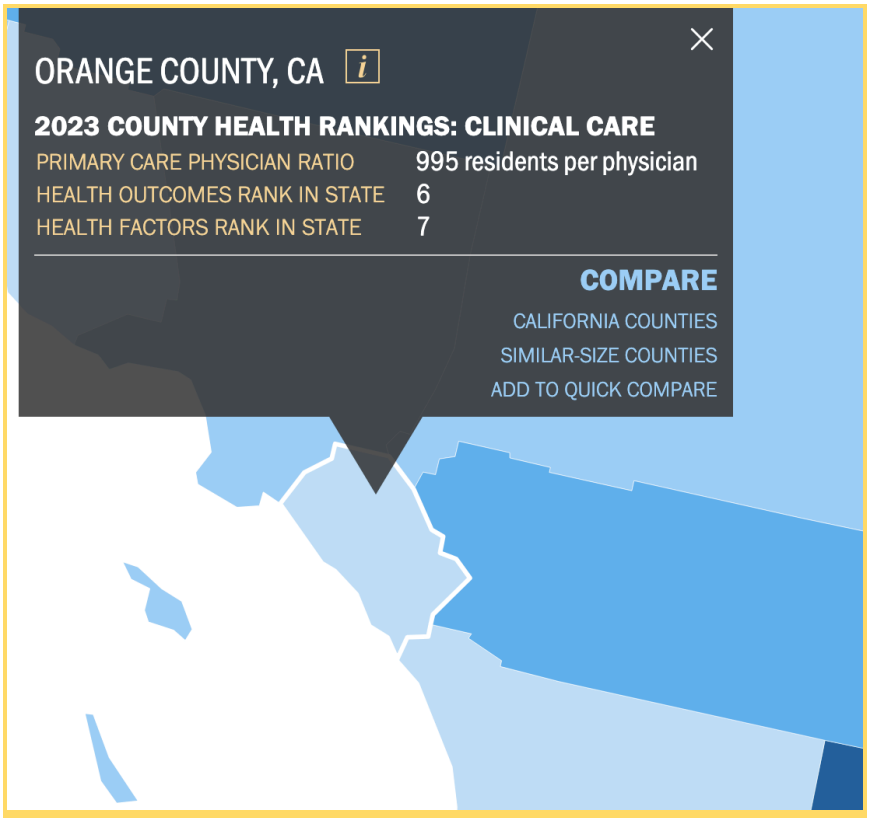

FIGURE 44: 995 residents per physician. Ranked 6th in health outcomes in state. Ranked 7th in health factors.

Screenshot by Justin Lee, February 20, 2024
Source:
https://ce.naco.org/?dset=County%20Health%20Rankings%3A%20Clinical%20Care&ind=Primary%20Care%20Physician%20Ratio

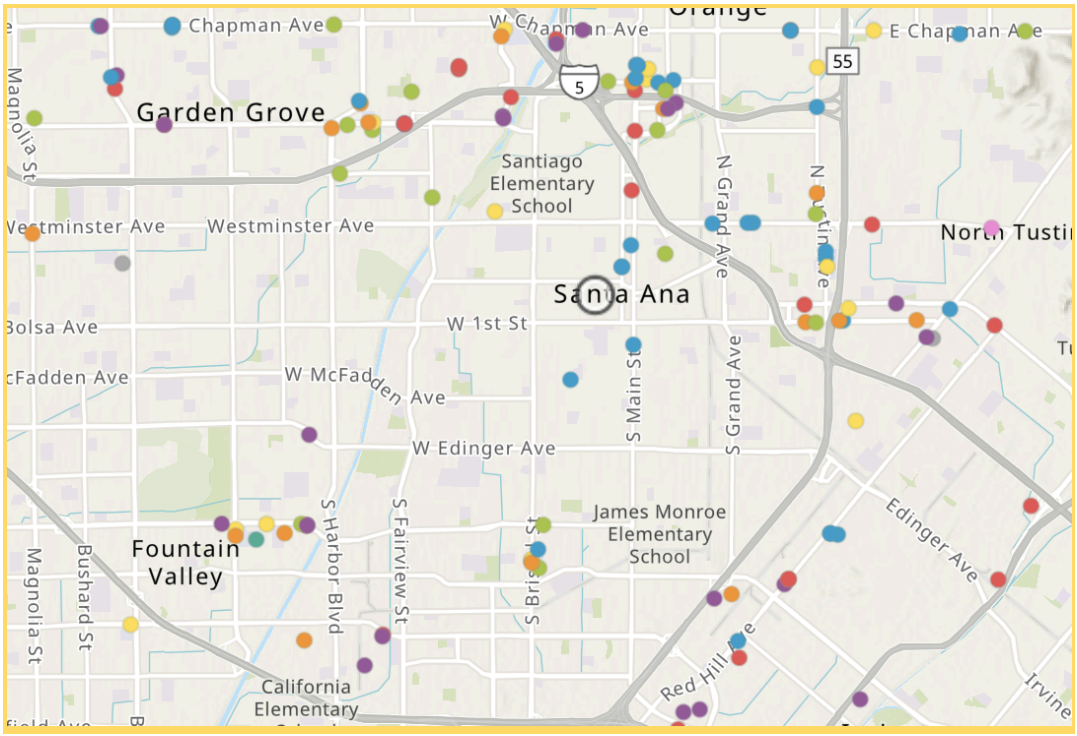

FIGURE 45: Santa Ana has many rehabilitation facilities, hospices, and skilled nursing facilities, but not many surgical centers.

Screenshot by Kaylin Ho, February 20, 2024
Source:
https://ucirvine.maps.arcgis.com/apps/instant/basic/index.html?appid=95c9abe0acbe438a8b6d7d3cd3c200a9

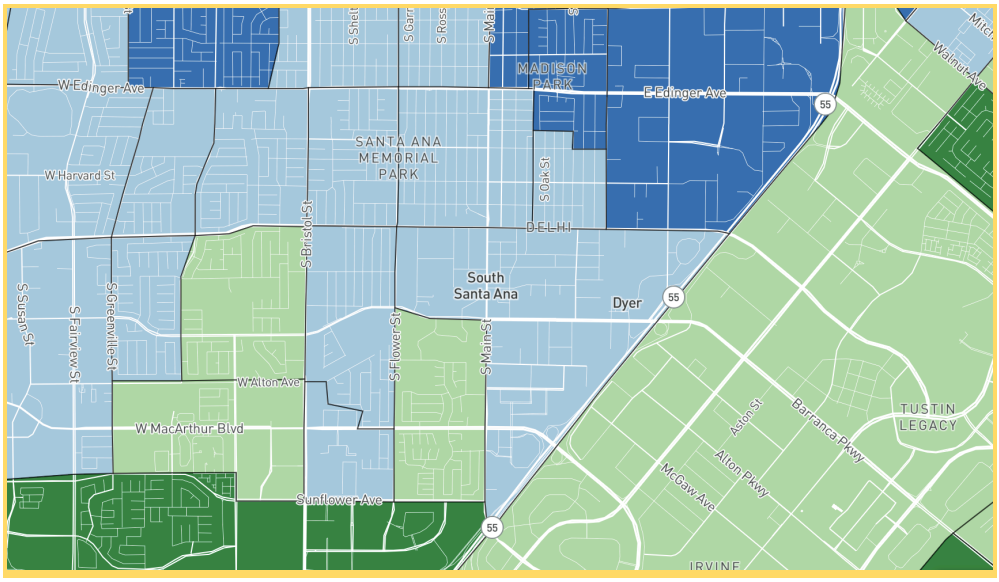

FIGURE 46: The region of Santa Ana where Monroe Elementary is located has relatively low tree coverage compared to the areas that surround it, placing it in the 39.5th percentile. This is lower than the county average, which is in the 80th percentile, but a little bit higher than the city's average, which is in the 33rd percentile.

Screenshot by Wren Stuart, February 1, 2024
Source: https://map.healthyplacesindex.org/

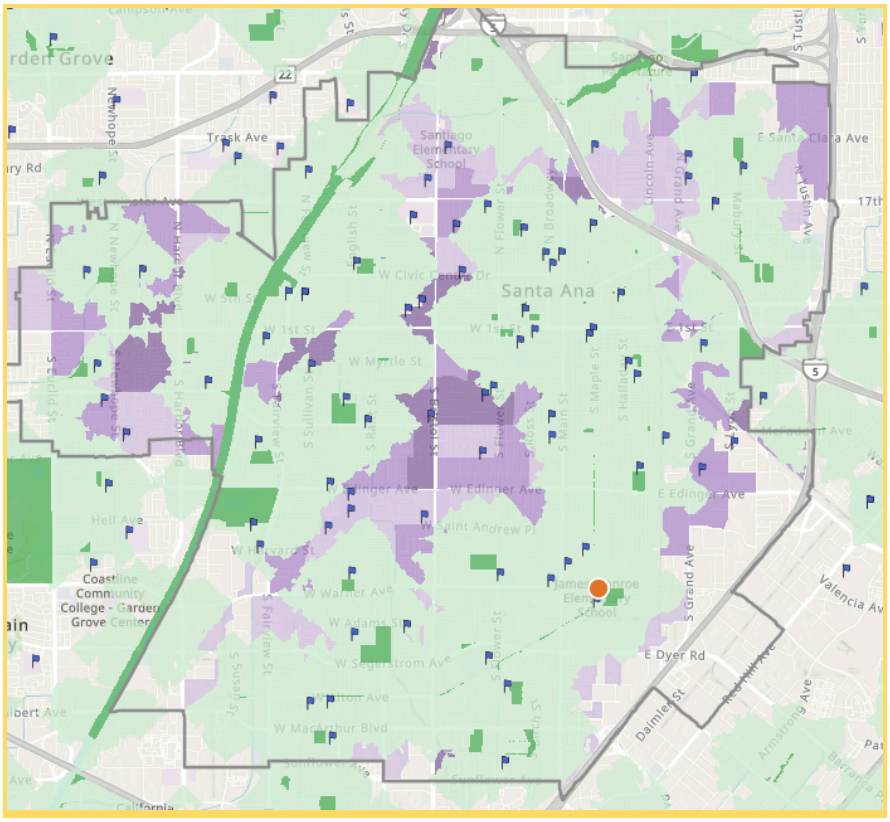

FIGURE 47: The orange dot on the map represents Monroe Elementary School, 75% of residents live within a 10-minute walk of a park. This is higher than the county average, which is in the 70th percentile, but a little bit higher than the city's average, which is in the 74th percentile.

Screenshot by Kevin Wong, February 20, 2024
Source: https://parkserve.tpl.org/

4. STAKEHOLDER ANALYSIS

Which Stakeholders Have Power And Which Stakeholders Do Not

Alex Hedger

Orange County Environmental Justice (OCEJ)

Orange County Environmental Justice (OCEJ) views itself as a leading voice in the community when it comes to environmental issues. Functioning at a semi-large scale, OCEJ understands that in order to effect change, it is critical to carry out studies on lead concentrations in the soil and work in unison with the Santa Ana city government. Kaylin Ho says that, "their view is that environmental concerns must be addressed immediately, and strategies to reduce risks and enhance community well-being must be promoted." Regardless, OCEJ encounters noteworthy corruptions, such as inadequate financial resources and a deficiency of administrative authority. Despite these obstacles, their dedication to community involvement, education, and persuasion acts as a catalyst for advancing environmental justice and social transformation in the area.

Monroe Elementary Emergency Services

Monroe Elementary Emergency Services is a community-based group that responds to emergencies and considers itself to be a vital lifeline for locals in times of need. They are aware of the needs and vulnerabilities in the community and understand how important it is for them to play a part in offering support and

aid right away. Though they have budgetary limitations that impede the execution of all-encompassing disaster response plans, their dedication to community cooperation continues to be the fundamental driver of their efficacy. Justin Lee believes that through active engagement with local citizens, schools, and community organizations, they may more efficiently mobilize resources and better address emergency needs. However, their operations—including hiring, training, and purchasing equipment—are severely impacted by the corrosive effects of low money. Nevertheless, Monroe Elementary Emergency Services remains steadfast in their dedication to providing the greatest possible service and protection for the community, striving to overcome financial challenges to fulfill their mission.

Low Income Communities in Santa Ana

Low-income communities in Santa Ana, operating on a social scale, perceive themselves as especially affected by injustices pertaining to the environment, particularly concerning pollution and lead exposure prevalent in older, less expensive housing. Their personal knowledge of the damaging consequences that these environmental risks have on their health offers valuable qualitative information that emphasizes how urgent it is to address these problems. Their viewpoints act as catalysts for promoting laws and programs that attempt to improve community health outcomes and correct environmental injustices, even in the face of structural obstacles. Wren Stuart pointed out that one noticeable corrosive factor in many communities is the dearth of funding and backing required to bring about federal reform. Restrictions on their access to institutional support, political power, and financial resources make it more difficult for them to effectively fight environmental injustices at the highest levels of government.

Parents of Santa Ana Students

Parents of Santa Ana students see themselves as proactive guardians who are genuinely concerned about the welfare and education of their kids. They place a high priority on health and safety issues because they understand how critical it is to act proactively to reduce the dangers associated with environmental hazards. The community's lobbying activities and actions are motivated by their belief that their families will have a safe and healthy future. Santa Ana student parents' dedication to their kids' welfare serves as their main motivator. In order to protect their children's health and safety, they actively explore choices like moving or changing schools, which acts as a catalyst for change. Their capacity to mobilize other parents for coordinated action and to use community support to address environmental issues and push for constructive change is what makes them strong as a group. Weiheng Yuan noticed a number of corruptions that Santa Ana student parents face impede their advocacy work and activities. Some parents are unable to carry out plans for school changes or relocation due to limited funds, which limits their ability to protect their kids from environmental risks. To make it more difficult for themselves and to navigate and successfully handle environmental concerns, recently arriving parents may also have trouble finding up-to-date information on environmental threats and resources. In spite of these impediments, Santa Ana student parents continue to be strong proponents, working hard to get over difficulties and guarantee a secure and healthy future for their kids.

Monroe Elementary Staff

The staff at Monroe Elementary believes that they are powerful members of the school community who have a big say in many areas of students' lives and education. They understand how important it is to address relevant concerns, such as how lead-filled soil affects pupils' health and academic performance. Their understanding revolves around their responsibilities as the students' primary caregivers and teachers, who must develop empathy, deal with

difficulties, and speak up for the needs of the children. The Monroe Elementary Staff's commitment to standing up for their students and creating a nurturing learning environment is what drives them most. By bringing attention to relevant topics, they play a critical role in shaping students' perceptions and building empathy. Brandon Bivens explains how the ability to establish sincere relationships with students allows them to effectively advocate for them and address challenges related to poverty, environmental issues, or unfair treatment. The Monroe Elementary Staff is committed, however there are constraints and corruptions in their position. Their limited financial autonomy and need to follow official objectives may limit their capacity to effectively solve problems. Their ability to carry out essential initiatives or reforms may be hampered by these constraints, which could have an effect on the academic performance and general well-being of students. In spite of these limitations, the faculty and staff are dedicated to doing everything within their power to help their students and provide a positive learning environment.

Stakeholder Power Grid		
What empowers this stakeholder?	**Stakeholder**	**What disempowers this stakeholder?**
The SAUSD has educational programs and partnerships.	Santa Ana Unified School District	Due to limited budget/funding and resource allocation. Staffing, facilities, and educational resources are impacted negatively.
Move away from the community or change school for the student, closely observe student's health condition. Strength in gathering all parents to take action.	Santa Ana School Parents	Limited budget for partial parents unable to relocate, new to the community, lack of updated information.

Community Collaboration: Active collaboration with local residents, schools, and community organizations can be a catalyst for strengthening emergency services.	Monroe Elementary Emergency Services	Limited Funding: A corrosion for Monroe Elementary Emergency Services could be the constraint of limited funding. Inadequate financial resources may hinder the implementation of comprehensive emergency response plans, training programs, and the acquisition of necessary equipment.
They are the most at-risk population to pollution and lead exposure (older less expensive housing that still has lead paint) and the negative health effects that it causes, so their perspective is one of the most important in gathering qualitative data. They have first-hand experience with this environmental issue.	Low Income Communities in Santa Ana	Don't have many resources or much support to enact change on a federal level.
The Orange County Environmental Justice is able to conduct research, collaborates with city governments	Orange County Environmental Justice	They lack money, funding, and other resources to make a difference alone.

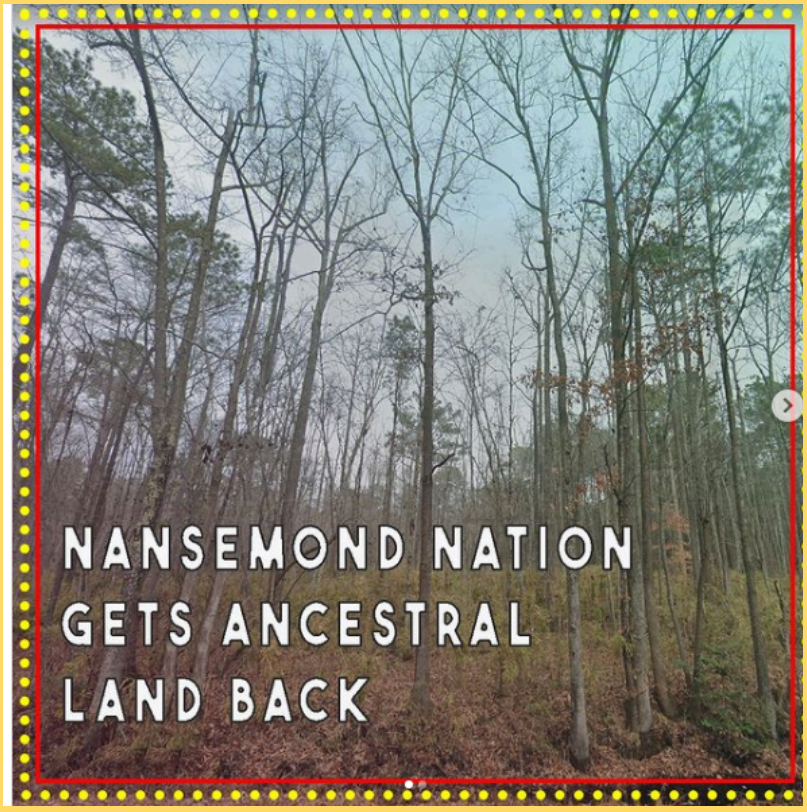

FIGURE 48: This image was found in Instagram and Facebook as part of a campaign to reclaim 504 acres of ancestral land. The Nansemond nation originally settled on the land, but was forcibly pushed out by colonists. This image was posted on instagram in 2018 to celebrate the reclamation of this land.
Screenshot by Alex Hedger, February 20, 2024.
Source: Home | Native Land Information System - Native Land Information System

FIGURE 49: This picture depicts pinatas in Santa Ana during their Cinco de Mayo celebration, pointing toward the generally large Latinx population in Santa Ana. This large Latinx population is also at risk of the many environmental hazards in this area.

Screenshot by Kaylin Ho, February 20, 2024
Source:
https://commons.wikimedia.org/wiki/File:Pi%C3%B1atas_Cinco_de_Mayo_Santa_Ana,_CA.jpg

5. STAKEHOLDER ACTIONS

Are Stakeholders Doing Enough?

Wren Stuart

Stakeholders that we analyzed in our case study setting of Monroe Elementary, Santa Ana are composed primarily by community-led organizations that are working towards making their community a more environmentally safe place. On a local scale, from 2006 to 2012 the City of Santa Ana was "awarded over $50 million in outside funding for sustainability-related projects" (The City of Santa Ana). The sectors from which the organizations leading these projects were initiated span from transportation, energy efficiency, solid waste, land use, and various others. In addition, the City of Santa Ana has formally endorsed the Fossil Fuel Non-Proliferation Treaty; a global environmental justice organization which has the goal of "equitably [phasing] out existing production in keeping with what science shows is needed to address the climate crisis". Their website also outlines a multitude of ways in which they are aiming to address environmental issues in Santa Ana communities, such as implementing more green spaces like parks and educational programs about climate change.

Another stakeholder in this environmental issue is the South Coast Air Quality Management District. Since 1947, this agency has been serving the general Los Angeles and Orange County area through their "practical and innovative strategies" to address the pressing low air quality levels and health of residents

(South Coast AQMD). They conduct routine inspections of the leading sources of pollution, such as industrial businesses, and record whether or not they are in compliance with the regulations described in their Air Quality Management Plan so that residents are aware of their proximity to said pollution sources. One non-action or ineffective approach regarding the South Coast AQMD is that when they become aware of a noncompliance, they just issue a compliance notice, and in many cases this is only after someone has called in a complaint. This doesn't hold much power, as we've seen from the lack of data provided by CalEnviro screen on the compliances and violations of California industrial plants.

An organization fighting for climate justice that is also at the local scale is Orange County Environmental Justice (OCEJ). This stakeholder has supported and created many programs that target each pressing environmental hazard that our setting is facing. One of the organizations that is in partnership with OCEJ is Communities Organizing for Better Water (COBW). The COBW "conducted door-to-door surveys in the Orange County areas that faced the highest pollution burden, known as DACs (Disadvantaged Communities) in 2016-17" in order to combat the intersecting issue of housing and economic injustice in our case study (OCEJ).

Once we progress further up the stakeholder scales, it becomes more difficult to gain the support and funds from larger corporations like the ones that are located mere blocks away from Monroe Elementary. This is where the majority of our case study stakeholder inactions lies. Due to the lack of transparency and resistance to questions that these industries have about their environmental impacts and working conditions, it has been hard for organizations to gather both qualitative and quantitative data about the degree of environmental harm that they are causing. Furthermore, these industrial plants receive a considerable amount of funding from the government and endorsement from local

manufacturers, which automatically gives them an upper hand compared to other stakeholders in this setting. Proprietors of the industrial plants that are located near Monroe Elementary are hardly, if at all, concerned with the health impacts that their emissions have on residents, specifically youth, living in close proximity to their facilities. Cherry Aerospace, a company owned by one of the industrial plants next to Monroe Elementary that manufactures aircraft parts, has a significant amount of missing data regarding their emissions in 2023 and years prior. In 2008 the Orange County Water District filed a lawsuit against Textron; which was owned by Cherry Aerospace at the time, though the contribution of the lawsuit to combatting sources of pollution is negligible.

Returning to more local, and even individual, stakeholder actions in our setting; there have been various non-profit organizations/programs created by environmental justice leaders to form a voice for their community on actions they want local government to take. Unfortunately, the issue of funding is the primary element that holds these organizations back from fully carrying out their climate action initiatives. For example, The Santa Ana Unified school district does not have the funding to provide educational programs or any other projects that aim to raise awareness around environmental justice, nor do the parents of students that attend Monroe Elementary. Even so, students at Monroe have organized "various campaigns, [participated] in local clean-up drives, and even [divided] into educational initiatives to better understand the impact of pollution in their area" (Wong 2024).

6. NEWS, SCIENCE, DEBATE

Media Reports on Santa Ana Pollution

Bonnie(Weiheng) Yuan

There are a few major issues being published on news and articles regarding the Santa Ana environment, they are lead in oil(lead contamination), traffic to air pollution, and wildfire pollution. There is also a limited amount of news being published, and very little data about each environmental issue. Most news articles are published and discussed in *Voice of OC*, however, they've focused on air quality and air pollution in their articles on various categories, health and wellness, community opinion, and outdoors. There are no governmental officials making announcements on air pollution problems caused by motor vehicle emissions in Santa Ana; the only causation they've mentioned was wildfire smoke. Also most monitor trackers always show 'good' air quality for Santa Ana.

Lead Contamination

Throughout our group research in Santa Ana and Orange County, we noticed the major freeways of transportation are located all around Santa Ana, this city is surrounded by I-22, I-5. I-55, and I-405. There's over ten thousands of cars driven by Santa Ana on the freeway everyday since most Orange County governmental offices and industry warehouses are located in Santa Ana. Hundreds of heavy trucks operate and stops in warehouses, thousands cars stops at the traffic light near the neighborhood and corporate parks, these are all sources of leaded

gasoline, and the other source is lead-based paint used on older houses and buildings that builds before 1978.(City of Santa Ana) This issue comes to attention to the City of Santa Ana, they moderated a plan to offers quay contractors to perform lead testing on residents of Santa Ana.

Shockingly, may children were found with high level of lead in their bloodstream, the results of all the residents concluded that they have much higher blood lead level compares to other city residents, residents in Santa Ana zip code is 3.5ug/dL or greater, standard for human body is less than ug/dL. However, there is no platform or system which shows the true average data of resident blood lead level, no resolutions or follow ups were mentioned. Mothers of young kids are afraid to bring their kids to the backyard because there's a toxic amount of lead in the soil, this indicates insecurity at home.

Regarding this issue, scientists claim the lead exposure is not at risk level, it's safe. Local news (*KnockLA*) articles provided examples and causation of lead contamination, oftenly, the city council will take action to protect their residents but in this case, no resolutions or help were ever offered to Santa Ana Residents. Comparing to how the government official reported this pollution to local news reported, the government official avoid talking about the causation and how it greatly affects people's health, they simply hyperlinked other articles from UCI that discussed this issue, its looks like they have no intention to solve this issue and seems unconcerned.

Air Pollution

As mentioned, Santa Ana is a heavy industry city, it has an airport, shopping centers, and over a hundred warehouses. This means thousands of cars with employees and travelers coming in and out of this city which causes air pollution from overwhelmed traffic and emission from fossil fueled vehicles, and emissions from over 100 flights. Whereas, our research school Monroe Elementary located next to an amazon warehouse that has massive emission from delivery trucks, it's

also located in between I-55 and I-5, also sits in Delhi neighborhood that's within a mile radius of 438 sites of chemical storage and hazardous waste.(Pho 2023) Greens like plants and trees can lower the pollutants but yet the city lack resources and space for green areas.(Thompson 2022) Nolan Thompson published on *Voice of OC* regarding bad air quality urging for actions from residents and government officials, he clearly stated this issue, its sources, alongside with racial injustice in his article.

Thompson mentioned Santa Ana community resides mostly people of color and lower income families, they have 73% less park space per person than Santa Ana residents in white neighborhoods, this is racial injustice. Monroe Elementary has over 80% hispanic students. During the process of research, I've noticed googling 'air quality in Santa Ana' often comes up the answer moderate and good, but when click into the air quality index or census tract you'll notice Santa Ana has much lower healthy level on PM and O2, they are often fair and poor, good is not common.

Bad air quality also leads to higher rates of sickness such as asthma (Wu 2022), children residents of Santa Ana have higher chances of getting asthma than other cities, and many low income communities lack access to adequate food and access to hospitals to treat the effects caused by pollution. However, no government officials were mentioned and took actions. OCEJ implemented systemic changes and exceeded state/federal guidelines.(Cheap 2022) Most air quality related articles usually show only the cause and consequences of the issues but resolutions are rarely mentioned because the government official has not offered a resolution. These articles often express the anger and sympathy of the reporters, sympathy to residents in such conditions angers to inaction. Pho in his article mentioned that some organizations tried to reduce pollution by setting up political/governmental meetings, also to city councils, follow ups unknown.(Pho 2023)

Most *Voice of OC* reports discussed air quality issues, usually in a format of causation of the issues, some interview answers from residents and an air quality map. NO reports from governmental officials.

No air quality monitor in Santa Ana, no local environmental issue representative, no air emission and transportation data.(Question 9) Thus, most media news/articles has no qualitative data to present

Wildfire Pollution

California is known to have many wildfires in the US, Santa Ana has wildfire problems too which leads to air pollution and potentially water pollution. Borunda said in her article, early detection and response to wildfire from emergency responders can minimize the pollution but this will be difficult since wildfire grows fast and unnoticeable while it's small, awareness education needs to be promoted.

Qualitative aspects of wildfire pollutant, PM2.5 particles increase in concentration lowering the air quality, which contributes to cardiovascular and respiratory illness. PM2.5 particles can also be circulated greatly in local winds. This pollution is based on natural coincidences, can be limited if response rapid.(Borunda 2020) Wildfires are sometimes wrongly reported which leads to major fires and expand rapidly, this indicates population awareness needs to increase.(Gilbert 2023) A pollution reported by Social BAM is water pollution, from urban runoffs, acid rains, and wildfire runoffs, and wastewater issue (Social 2021) According to question 9, no water quality data was published, therefore we have no recent condition of the water in Monroe Elementary.

Most Santa Ana Schools are located next to chemical storage and hazardous waste sites, there's no actions we've observed from the school district or government officials. There's no reports or news about their inaction. This is Environmental Injustice.

7. RECOMMENDED LOCAL ACTIONS

What Local Actions Can Be Done?

Justin Lee

In Santa Ana, a city grappling with a myriad of environmental challenges, there is an urgent need for targeted local actions to address vulnerabilities and injustices. Community members, including Justin Chin, Bonnie Yuan, Ava Perreault, Alex Hedger, and Quyen Ho, have brought forth specific concerns, ranging from water contamination to air pollution, and proposed potential solutions. This response will delve deeper into each proposed local action, elucidating their significance, potential benefits, and anticipated challenges to meet the minimum word count requirement.

Justin Chin's emphasis on the inadequacy of protection from lead contamination in water sources, especially in areas with lead residue in the soil, underscores a critical health concern for Santa Ana residents. The proposed local action involves advocating for the distribution of individual water filters to affected homes (Chin, 2024). This initiative is not merely about mitigating lead exposure; it is a proactive step toward ensuring the well-being of the community. By providing tangible benefits through access to safer water, this action addresses an immediate and pressing environmental justice issue.

The health implications of lead exposure are well-documented, particularly for children who are more susceptible to its adverse effects. By distributing water filters to affected homes, this proposed action not only addresses the symptom but tackles the root cause of the issue – the presence of lead in the water supply. It is a preventative measure that holds long-term benefits, safeguarding the health of current and future generations. However, challenges may arise in the

form of opposition due to the potential costs associated with the distribution of water filters on a large scale. Overcoming these challenges would require effective communication about the health benefits and long-term cost savings associated with preventing lead exposure.

Bonnie Yuan's concern about unknown tap and ground water quality in residential areas and schools highlights the pervasive nature of the water quality issue in Santa Ana. The proposed action to increase the frequency of water quality testing is not just a reactive measure; it is a strategic move to establish a comprehensive understanding of the extent of the problem (Yuan, 2024). Regular testing is foundational for informed decision-making and can serve as a catalyst for broader policies aimed at ensuring clean and safe water for all residents.

Water quality testing is a fundamental step in the direction of proactive environmental management. By increasing the frequency of testing, Santa Ana can gather real-time data on water quality, enabling prompt responses to emerging issues. This local action is not only about identifying contaminants but is also a tool for building resilience against future water quality challenges. Challenges may arise in securing the necessary funding and volunteer support for regular testing. However, the long-term benefits in terms of public health and environmental sustainability make it a worthwhile investment.

Quyen Ho's focus on air pollution resulting from vehicle emissions raises awareness about a less visible but equally significant environmental justice issue. Advocating for improved public transportation is not solely about reducing emissions; it is a holistic approach that addresses accessibility and affordability concerns for residents (Ho, 2024). This proposed local action has the potential to create a cascading effect, positively impacting not just air quality but also the overall livability of the city.

Air pollution is a pervasive issue, impacting not only the environment but also the health of Santa Ana residents. By advocating for improved public transportation, Quyen Ho's proposed action addresses the root cause of air pollution – vehicular emissions. This isn't just about reducing carbon footprints; it's about creating a more sustainable and equitable transportation system. Challenges may arise in the form of opposition due to potential funding redirection and resistance to change. However, the long-term benefits, such as improved air quality and

enhanced quality of life, are compelling arguments for prioritizing and overcoming these challenges.

Ava Perreault's spotlight on individuals struggling with toxic soil, dust, or pollution in their homes, particularly in the 92707 zip code, brings attention to localized environmental injustices. The proposed local actions, including research initiatives and education programs, exemplify a community-driven approach (Perreault, 2024). It is not just about mitigating immediate risks but empowering residents with knowledge and resources to safeguard their homes against environmental hazards.

The localized nature of environmental injustices requires tailored solutions, and Ava Perreault's proposed local actions are geared towards precisely that. Research initiatives can provide valuable insights into the specific sources and types of pollution affecting the 92707 zip code, enabling more targeted mitigation strategies. Education programs empower residents to take proactive measures to protect their homes, fostering a sense of community resilience. Challenges may arise in terms of resource allocation for research initiatives and community engagement. However, the long-term benefits of a healthier and more informed community justify the investment.

Alex Hedger's emphasis on zoning policies and incentives for affordable housing development is a recognition of the intertwined nature of environmental and social justice. By partnering with local organizations to provide supportive services and increasing investment in affordable housing initiatives, this proposed local action seeks to address homelessness, a critical aspect of environmental injustice (Hedger, 2024). It is a holistic approach that acknowledges the interconnected challenges faced by vulnerable populations in Santa Ana.

The link between housing, socio-economic status, and environmental justice is profound. Alex Hedger's proposed actions recognize that homelessness is not just a social issue but an environmental one, with individuals lacking secure housing often facing increased exposure to environmental hazards. By incentivizing affordable housing development and providing supportive services, this local action tackles both the symptoms and root causes of homelessness. Challenges may arise in terms of policy implementation and funding allocation.

However, the long-term benefits of creating a more equitable and resilient community outweigh these challenges.

The overarching theme across these proposed local actions is the emphasis on community engagement and collaboration. Environmental justice issues are complex and interconnected, requiring comprehensive strategies that involve the active participation of residents, local organizations, and government entities.

In Santa Ana, an equitable distribution of resources is imperative to tackle these environmental injustices effectively. The call for water filters and increased testing underscores the necessity of prioritizing vulnerable communities. Adequate funding and volunteer support are crucial to the success of these initiatives, highlighting the need for community-wide awareness and involvement.

Quyen Ho's proposal to improve public transportation aligns with the broader goal of reducing air pollution. However, the potential opposition due to funding redirection emphasizes the importance of strategic planning and clear communication. Demonstrating the long-term benefits, both in terms of environmental sustainability and public health, can serve as a persuasive argument in overcoming challenges.

Ava Perreault's focus on educating households in the 92707 zip code reflects the acknowledgment of localized issues. The proposal to research and implement protective measures demonstrates a commitment to addressing environmental injustices at the grassroots level. Community education and empowerment are essential components of sustainable solutions.

Alex Hedger's emphasis on affordable housing as a means to address homelessness brings attention to the social dimensions of environmental justice. By providing supportive services and increasing investment, this local action seeks to create a more inclusive and resilient community.

In conclusion, the proposed local actions put forth by community members in Santa Ana represent a collective effort to address environmental vulnerabilities and injustices. The multifaceted approach, encompassing water quality improvements, sustainable housing initiatives, and public transportation enhancements, reflects a holistic understanding of the interconnected challenges faced by the community. To ensure the success of these local actions, ongoing

collaboration, community engagement, and strategic planning are paramount. Through these concerted efforts, Santa Ana has the potential to emerge as a model for sustainable and equitable urban development, where environmental justice is prioritized for the well-being of all residents.

Proposed Local Education or Art Project

PROJECT TITLE: Fostering Environmental Harmony through Art: A Community Engagement Initiative

PROJECT DESIGN:

The project's overarching goals are to promote environmental awareness, encourage community engagement in environmental issues, and utilize art as a powerful medium to instill a sense of responsibility towards the environment. Through various artistic elements such as murals, interactive recycled art workshops, sculptures made from repurposed materials, and thought-provoking installation art, the initiative aims to create a visually impactful and emotionally resonant experience for participants. Additionally, educational components will be seamlessly integrated into the project, including workshops on sustainable living, guest lectures from local environmentalists, and informational panels accompanying the art installations. The synergy of art and education is designed to deepen the community's understanding of environmental issues and empower individuals to adopt eco-friendly practices in their daily lives. Collaboration forms a crucial aspect of the project, with local artists, schools, and environmental organizations coming together to contribute their expertise and passion. The initiative also seeks partnerships with local businesses to secure material support, ensuring the sustainability and success of the project.

PROJECT DELIVERY:

The project will be implemented in various locations, including community centers, parks, schools, and public spaces with high foot traffic to maximize visibility and engagement. The timeline will encompass a launch event featuring the unveiling of the art installations and workshops, followed by ongoing workshops conducted over weekends to facilitate broader participation. Additionally, the installations will remain in place for an extended period to continue influencing and inspiring the community. Engagement strategies will include social media campaigns, collaboration with local schools to involve students, and participation in community events and festivals to reach a diverse audience. By strategically choosing materials that are eco-friendly and recycled, the project aims to align its execution with its environmental message.

PROJECT EVALUATION:

Quantitative metrics will include attendance numbers at workshops and events, social media engagement metrics, and the amount of recycled materials utilized in art projects. Qualitative feedback will be gathered through surveys and feedback forms during and after events, as well as testimonials from participants and community members. The project's long-term impact will be assessed by monitoring continued community engagement in environmental activities, tracking changes in local attitudes towards sustainable practices, and evaluating the longevity and maintenance of the art installations. The project is designed to be adaptable, with mechanisms in place to collect suggestions for improvements and adaptations. This ensures that the initiative can evolve based on community feedback and remains scalable for future iterations. Overall, "Fostering Environmental Harmony through Art" aspires to create a lasting impact on the community's awareness and commitment to environmental sustainability, inspiring positive change for generations to come.

Proposed Local Action Campaign

PROJECT TITLE: TransitConnect Santa Ana: Bridging Commutes, Empowering Voices

Environmental Hazard: the large amounts of vehicles release fossil fuel emissions and exhaust, contributing to air pollution

Goal: The primary goal is to reduce air pollution in Santa Ana by improving public transportation infrastructure and services.

Strategy: The overarching strategy is to influence the Santa Ana city government to allocate resources and funding towards enhancing public transportation. This will be achieved through a combination of advocacy efforts and community engagement.

Tactics: To address the challenge of air pollution in Santa Ana, an Advocacy Campaign will be launched, forming alliances with local environmental groups and community leaders. Data on air pollution will be compiled into persuasive materials to present to city officials. Simultaneously, a Community Surveys initiative will gather resident feedback, identifying specific shortcomings in public transportation. Following data collection, Stakeholder Meetings will be organized with city council members and transportation authorities. Findings from community surveys will be presented to advocate for increased funding for public transportation improvements. A targeted Public Awareness Campaign will complement these efforts, utilizing various communication channels to inform and mobilize residents in support of reducing air pollution.

Workplan: The twelve-month plan begins with two months focused on Coalition Building and Planning, engaging with local groups and developing advocacy materials. Months three to four involve the Community Surveys and Data Collection phase, pinpointing areas for public transportation improvement. Months five and six shift to Stakeholder Meetings, leveraging survey data to advocate for increased funding. The subsequent two months center on a comprehensive Public Awareness Campaign, using diverse media channels and community events to inform and mobilize residents. The final phase, spanning months nine to twelve, entails Follow-Up and Evaluation, including engagements with city officials and assessing the campaign's success based on observable changes in public transportation and air quality. This systematic approach ensures strategic implementation to achieve the goal.

8. RECOMMENDED EXTRA-LOCAL ACTIONS

An Extra-Local Campaign for a Brighter Future

Ava Perreault

Extra-local actions are actions that can be taken by organizations with power outside of the community. In this case, extra-local actions are actions that can be taken by state and federal governments, as well as international organizations. There are several ways in which the government can assist with environmental injustice that would impact affected communities all over the United States. For example, cleaning “Legacy Pollution” is a way in which the United States federal government can help reduce environmental injustice and vulnerability in settings similar to Santa Ana.

According to the US DOI, "Legacy pollution caused by environmental hazards like abandoned mines and orphaned oil and gas wells has impacted Black, Brown, Indigenous, and rural communities for generations. President Biden’s Bipartisan Infrastructure Law makes a historic $16 billion investment to plug orphan wells and reclaim abandoned mine lands, which will help communities eliminate dangerous environmental conditions and pollution while creating good-paying union jobs (US DOI).” This is a good example of ways the federal government can assist in tackling environmental injustice.

Another action that has been taken by the federal government in order to

help reduce environmental vulnerability and injustice is an Executive Order that President Biden has signed and pledged that environmental injustice would be at the center of everything that they do as a committee. Some of the features involved in the plan include organizing groups into 2 new committees focused on strengthening Executive Order 12989 (signed by President Clinton) and focusing on environmental justice (Columbia.edu).

More actions that the federal government has planned to enact include creating a National Climate Task Force. President Biden has said that this new National Climate Task Force will be focused on engaging with different sectors of the economy, and different groups. He also told the Justice Department to crack down on enforcement against big polluters (Columbia.edu). Another action that the Biden-Harris Administration has claimed to make in advancing the Justice40 initiative: "The Biden-Harris administration's Justice40 Initiative aims to deliver 40 percent of the overall benefits of climate, clean energy, and related investments to disadvantaged communities that are marginalized, overburdened, and underserved. The Department of the Interior has 65 programs and 10 bureaus working directly with local communities to advance our commitment to environmental justice (US DOI)."

While these are good ways in which the Government has already taken measures to reduce environmental vulnerability and injustice, the efforts they can take to reduce environmental injustice do not stop there. "Governments can choose from a wide range of policy interventions and financing measures to support the transformation of energy and industrial systems, improve energy efficiency, tackle environmental pollution, and protect and replenish natural capital (EY.com)." EY also states that there are different ways that the Government can reduce pollution and climate issues, such as pushing green taxes on harmful environmental practices, creating tighter regulations on harmful pollution, creating and reevaluating new clean energy standards, and more

(EY.com). Additional resources that could be used by the state and federal governments to create incentives to reduce environmental vulnerability are offering grants and subsidies to organizations that would help with more innovative technologies to reduce carbon emissions. Also, tax rebates and subsidies to boost demand for eco-friendly products (EY.com). According to the LA Times, Santa Ana just became one of many OC cities that pledged clean energy by 2045. If California could somehow pass legislation that would require all cities in California to pledge to clean, renewable energy by a certain time, maybe incentivizing with tax subsidies or local funding to historically disadvantaged neighborhoods, then that could make a huge difference. The article also says, “Because we are a low-income community that has a high need, by approving this resolution, we’re telling other governments, ‘Hey, we have a game plan here, and we just need your help to do it.’” (LA Times). This could be a good way for Government organizations at the state and federal levels could take action on pushing for clean energy and climate justice.

According to the NCSL, "Several states have established task forces, commissions, and offices to address disproportionate human health and environmental impacts of their programs and policies." However, given the environmental state of the US, especially about the cases we studied in class, many states could do a lot more to enforce Environmental issues in their respective states. The NCSL also mentioned some of the ways that the Federal Government is taking action, such as the American Rescue Plan of 2021, the Infrastructure Investment in Jobs Acts, and the Inflation Reduction Act. These acts make large claims, such as the claim to "clean up Superfund and brownfield sites" and "reclaim abandoned mine and cap orphaned gas wells." They also cite other claims, such as the Inflation Reduction Act's claim to the $3 billion Environmental and Climate Justice Block Grants to address Environmental Justice. According to the AIDA, there are many ways that American Governments

can combat Environmental Injustice and Vulnerability, such as attacking climate pollutants such as soot, etc. and promoting Green Energy. So while the federal and state governments are making these claims to support environmental justice, they need to be enforced and supported, or else nothing will be done to reduce environmental injustice and vulnerability.

Proposed Extra-Local Action Campaign

CAMPAIGN TITLE: Reducing Traffic in Santa Ana

Environmental Hazard: Traffic pollution in Santa Ana is a major issue causing lots of problems. Traffic pollution from vehicles creates air pollution and many health issues for the people in the area.

Goal: The goal of this campaign is to discover potential extra-local actions that could reduce traffic related pollution in Santa Ana and similar related areas.

Strategy: A potential strategy to meet this goal would be engaging state and federal governments to provide tax cuts or stimulus packages for people who change their cars to electric or hybrid.

Tactics: Some tactics could be reaching out to the state government, such as senators or representatives, and lobbying for them to bring it to Congress, or at least lobbying to the State Congress, and providing them with the benefits.

Workplan: The work plan would be to 1) Create a powerpoint about the problem, and why the tax cuts/stimulus would be beneficial for air pollution in disadvantaged areas such as Santa Ana. 2) Bringing it to the attention to a state representative or senator, and then lobbying why it's needed.

9.RECOMMENDATIONS FOR FUTURE RESEARCH

What Actions Can Be Taken and Data can be Researched to Aid the Effort?

Justin Chin

Missing Trust in Healthcare Data

Knowing if an area experiences health disparities is critical to understanding if a health injustice is occuring. Health disparities happen when there is a greater or lesser health outcome between populations, meaning one population experiences a better outcome on average from a health issue. These health disparities can be found in a number of different aspects, such as access to health insurance or exposure to pollution, two factors which are extremely disparate in Santa Ana.

An area of missing data relevant to our case study is if individuals in Santa Ana trust their healthcare providers, so researching this data will be important in addressing health disparities. Santa Ana is largely Latino, 77% of Santa Ana's population per the US census. Such a large Latino population can cause a lack of information due to fear that "disclosing personal information could result in detention and/or deportation" (Garcini et al. 2022). In addition, a survey from the Pew Research Center on Hispanic American trust in the healthcare system says

"Three-in-ten say they have a close friend or family member who worries about their legal status in the U.S. when thinking about going to see a health care provider" (Funk and Hugo Lopez 2022). Not going to a healthcare provider will clearly create a lesser health outcome, thus contributing to health disparities.

However, these observations have been done on the general Hispanic American population, so we may not know if the issue arises locally in Santa Ana and families who have students at Monroe Elementary. To fix this issue, it will be important to conduct qualitative research and interviews in order to know if Santa Ana's population trust in healthcare is significantly similar or different to the studied populations.

Missing Local Representative Data

One of my peers, Wren Stuart, stated the difficulty of gathering data on a representative's stances on particular environmental issues. Understanding local representatives' views on environmental issues would help us focus our efforts in an advocacy campaign by knowing how opposed or in favor the local government is of bringing about environmental justice. She suggests creating a center of information on legislator's opinions by searching ".gov websites for specific representatives and what their voting patterns are" (Stuart 2024). To truly understand local government opinion, it may also come down to personal interviews with officials, and interviews may reveal behind-the-scenes actions and efforts the local government is currently pursuing in combating environmental injustice.

Missing Air Emissions Data

A major data gap comes down to the South Coast Air Quality Management District's (SCAQMD) F.I.N.D. tool. F.I.N.D., an acronym for Facility INformation Detail, is a search tool created by the SCAQMD for public information on

facilities which require a SCAQMD permit to operate equipment that releases air contaminants. But there exists a flaw in the reporting system used by the SCAQMD: many facilities only have to report their air emissions as long as they remain below a certain threshold (Biesiada and Pho 2023).

This is where we propose greater research in the area of polluting facilities, much like the research being done by UCI's own researchers (Pho 2023). Filling this gap would allow for community and activist groups to properly understand where emissions are coming from. It would force facilities to have greater accountability for their emissions and make it easier to take actions against them. Hiring more inspectors to record such emissions data would help fill the gap and piece together the bigger picture, but the most efficient way would be to lower the minimum emissions that a facility must report, forcing more facilities to report more data.

Missing Climate Data

Climate change is real. The impacts of climate change are also real. Unfortunately, there is little information on the degree to which climate change affects Santa Ana, especially how its effects are compounded from other factors in Santa Ana, like economic and geographical factors. Experts say that climate change can worsen drought, heat waves, and wildfires (De Nova 2022). An increase in those environmental problems can also worsen the effects of secondary air pollution, like photochemical smog. "The implication is that comprehensive studies on climate change, wind behavior, and ecological impacts are essential for developing strategies to address environmental threats in California and other settings facing similar hazards" says Kevin Wong on National Geographic's "Santa Ana and Diablo winds propel raging wildfires in California" (Wong 2024). Especially in a marginalized setting like that of Santa Ana, quantitative climate data must be collected. Not only that, climate change can

also have mental and emotional impacts on individuals most impacted, so ethnographic research on the Monroe population will be important in gaining a holistic understanding of climate change in the urban environment.

Missing Transportation Data

On the topic of air pollution, pollution can be partially attributed to traffic. Research done on the amount of air pollution from transportation in the area would be valuable knowledge in proposing more public transportation in the area.

During the Atlanta Olympic Games in 1996, auto use reduced by 22.5%, and as a result, "asthma admissions to ERs and hospitals also decreased by 41.6%" (Jackson and Kochtitzky 2012). Private vehicle use is a clear amplifier of traffic pollution, and reducing use will have trickling effects on health. Researching the numerical benefits of public transportation and reducing private vehicle use in the Santa Ana region can be a proponent in advocating to government officials on reducing air emissions and, in turn, air pollution.

There may be more personal reasons for the high use of private vehicles in Santa Ana however. A qualitative study on the use of private vehicles of the people in Santa Ana and around Monroe Elementary would be helpful in understanding how the people would feel about the transition into a more public transit centered lifestyle. "We don't know the specifics on current issues with Santa Ana public transportation, or why residents may feel more inclined to use a private vehicle," suggests Kaylin Ho, "It would be useful in order to determine what part of the public transportation needs to be fixed to encourage Santa Ana residents to use public transportation more often. A random survey of Santa Ana residents could be conducted, including both residents who regularly use public transportation and residents who do not, to evaluate what aspects of public

transportation need to be improved" (Ho 2024).

Missing Local Lead Soil Research

Local research into the lead levels in the areas around Monroe Elementary are important in maintaining the health of the children by knowing if they need to prevent lead soil poisoning. Oftentimes, institutions will measure lead levels in blood, but only collecting information on the individual level still leaves populations at risk if no research is done on the lead levels in the environment. Children will continue to be exposed on a daily basis with some even going undiagnosed (Cabrera 2023). Studies in local parks, walkways, and even the backyards of families will be crucial to gather comprehensive data on areas residents near Monroe Elementary need to be aware of. Furthermore, qualitative research should be conducted on if parents and children know of the dangers of lead soil through interviews and focus groups. Understanding the local perception and knowledge of lead soil will be useful in adapting our advocacy campaign to best educate and help families and children avoid lead soil contamination.

Qualitative Research Proposal

RESIDENT KNOWLEDGE ON THE DANGERS OF LEAD SOIL

Research Question:
How well do residents near Monroe Elementary understand the hazards of lead soil near their areas and how it directly affects their health and livelihoods?

Social Groups:
The main social groups we are interested in are the residents. Residents are important for this question, because they are the group of people being affected by the hazards. We also must understand how their past, present, and future lives are being affected by these hazards.

Another group drastically affected by these hazards are blue collar workers. Depending on how dangerous the soil is and where they work, this social group may have a tough time dealing with this problem. Likewise, they may be more affected by the soil because they're in direct contact with it.

Additionally, the medical department will also be affected by these hazards because they must treat these hazards, instead of using their time elsewhere. Not only that, but they also must develop a solution to combat these hazards.

Finally, teachers are also affected by this problem as they must educate the community on how to stay safe around these hazards (Wong 2024).

Access and Privacy:
The focus of the research will be on the residents in Santa Ana near known areas of lead soil, and since the point of this study is to highlight the adversity they face, we hope they will likely cooperate in order to have their voices heard. We would interview and survey the residents, needing their permission to record notes from interviews and observations (Ho 2024). If at any point any person feels uncomfortable with their identity being recorded, we will agree to keep their information anonymous.

Participant Observation:
To have in-depth participant observation, field researchers will be immersed in the day-to-day activities and interactions of the nearby residents. At this local level, the researchers can talk to residents personally and understand the extent to which they recognize the hazards of lead soil near their areas and their health impacts (Sugiyama 2024).

Interviewing Strategies and Questions:
The best way to find out what is truly going on in the area is by asking the people who are experiencing it firsthand. In-depth interviewing can be used to answer our research question by asking residents in the area their thoughts about the lead soil and how it has afflicted them.

We will propose questions like, "What details were you given about the hazards of lead soil? Were you given any types of warnings when you moved into the area? Have you and your family been personally affected by the lead soil? What environmental issues in the area have you faced while living here? What would you like to be done about the lead soil? How do you think the government can compensate people like you who have been affected? If you haven't been affected, how many people do you know who have?" I think questions like these can show their true understanding of what is going on in their neighborhood and how it has affected their lives (Perreault 2024).

Focus Group Strategies and Questions:
Creating focus groups of representatives of different stakeholders and social groups involved can allow for a preview of negotiations and dynamics of each group in the case. The social groups mentioned above such as residents, school teachers, government officials, and even first responders can be observed in the focus group to better understand the dynamics between groups; who is voicing their concerns; who is downplaying the concerns of others; where are there the most tensions; who is allying with who?

Isolated focus groups of single social circles and stakeholders can allow the observation of dynamics within each group; how do peers interact and share information; how are concerns collected within a group and then planned to be shared out?

Audience:
We hope that activist organizations and residents would find this research useful because they would get a sense of the local perspective and the epistemic injustice at stake. If they find that some areas are receiving less information, they may want to reach out more to those less informed areas, ensuring that everyone is getting equal access to the data regarding lead soil in the region and can understand the threats to their health and livelihoods.

10. INTERSECTING INJUSTICES

Environmental Injustice Is Not the Only Injustice

Brandon Bivens, Justin Chin, Alex Hedger, Justin Lee, Ava Perreault, Wren Stuart, Kevin Wong, Bonnie(Weiheng) Yuan

Data Injustice

An example of data injustice in this setting is missing data in the SCAQMD F.I.N.D. search-tool. Many facilities which require permits to pollute have little to no data on their pollution statistics. Places that do have data on their violations and compliances, show that many continue to violate emission standards, yet receive no repercussions (Pho 2023). Thus, residents and researchers have a lack of information to fully grasp the pollution in their area. Partnership with community members to help document local pollution, demanding air monitoring systems, and research on the types of contaminants facilities are releasing will be necessary to combat this injustice.

Epistemic Injustice

Health and data injustice are strongly intertwined with epistemic injustice. If there is a lack of data on the health of citizens or their children, it exponentially

worsens not only researcher understanding of the situation, but resident knowledge as well. This misunderstanding of environmental issues and harms is a prime example of epistemic injustice. Many air pollution articles claim pollution is the result of fossil fuel emission from transportation, but not much on factory or warehouse waste is mentioned, other major contributors to air pollution. Furthermore, underwhelming media coverage of these lesser known air polluters makes it even harder for residents to learn about these issues, deepening the knowledge gap residents are already suffering from. Basic qualitative research like interviews and surveys will be useful for us to understand this knowledge gap, and educating the residents will be useful for us in filling it.

Economic Injustice

An example of economic injustice are the low income communities. The cheaper housing in Santa Ana has higher risks of environmental hazards, such as air pollution and lead exposure. People that live in the low income communities aren't given the same opportunities as other people. To address this injustice, locations of low income housing should be moved to places where people want to live. From there people will be given more opportunities to close the gap in the economic difference. There is also the route of going out to the low income communities and asking them specifically what they need to do a little bit better than their current status. Moreover, community engagement is essential. By actively involving residents in decision-making processes, we can gain valuable insights into their specific needs and aspirations. This includes conducting surveys, hosting meetings, and establishing community-led initiatives. By empowering residents to voice their concerns and contribute to solutions, we gain a sense of ownership and agency within the community, ultimately leading to more effective and sustainable outcomes.

Gender Injustice

Gender Injustice is defined as injustice examining how gender hierarchies shape both exposure to environmental hazards and the capacity to address them (EcoEd Intersecting Injustices Framework). In communities such as Santa Ana, there are many examples of gender injustice, and many of those injustices intersect with others, such as economic, reproductive, etc. An example of gender injustice in our case study location that I examined is the example of a mother and her son struggling with Soil Lead (From the source provided by Knock LA). This source talks about a mother and her son struggling with lead pollution in Santa Ana. She was concerned with the amount of lead in the soil that her son was exposed to, and how she could properly clean so he wouldn't be harmed. Based on this article, this woman and her family were able to afford to get healthcare and move to a place where they wouldn't be affected by the lead poisoning, however many people in the community- many of them being mothers are unable to take care of their children and move them out of harm's way, because of it being the low income community. Women also face certain reproductive damages due to a lack of access to proper medical care, as well as the climate hazards in the community. This harms women much more than it harms men, and damage to their reproductive systems could impact them and their children long term. Passing legislation that would protect women from reproductive harm, as well as providing safe, paid for childcare and healthcare so that women and families don't have to worry about protecting their children from the different kinds of hazards in the community.

Intergenerational Injustice

The environmental issue of lead soil is an issue that is, and will continue to, affect the lives of many generations of Santa Ana residents, an example of intergenerational injustice. In the case of lead soil, children are one of the most vulnerable social groups; their health effects ranging from seizures and high blood pressure to learning and behavioral issues. Students in Santa Ana may have

trouble focusing in class, leading to worse grades and making it more difficult to get into college. This can consequently lead to difficulty obtaining a job, increasing their and their families' chances of falling into, or remaining in, poverty. But there is good news. Earlier this year, OCEJ successfully worked to include policies in the General Plan Update regarding lead in the soil, including ones on providing soil lead-related jobs, access to blood lead testing, and considering alternatives to traditional remediation (Cheav 2022).

Media Injustice

In an interview done by EMF & RF Solutions, one article author stated that not many people are aware of EMFs. This may be due to their small impact, and companies focus on “larger” issues. In addition, waste management issues only come to light when the workers go on strike, or it accumulates so much in a specific area. News stations usually don’t cover how these companies are disposing of the garbage properly. Another example of media injustice is media coverage on soil contamination. It is an issue that affects most people in the northern section of Santa Ana. Media usually covers this, but often fails to cover the *cause* of it; which is vehicle emission. Media needs to cover the problem, cause, and possible solutions. rather than just focusing on the story, or else victims of such problems may not even know they are victims.

Racial Injustice

Racial injustice is a form of injustice that describes the systemic disadvantages that people experience because of their race. This is a component of environmental injustice because research has shown that People of Color are more likely to experience the negative effects of climate change because of the lack of support they receive when expressing environmental concerns compared to white people. Residents in our case study setting are the most vulnerable to environmental hazards in that region of Santa Ana because of racial injustice.

Racial demographics of the Monroe Elementary area show that Hispanic/Latinx people comprise upwards of 90 percent of the population. Our location also happens to be located blocks away from two industrial plants that produce hazardous amounts of air pollutants, which have adverse health effects on those who are consistently exposed to them. It is no coincidence that this region of the county, one that is predominantly populated by low-income Hispanic/Latinx communities, is located dangerously close to various sources of pollution.

Procedural Injustice

Procedural injustice occurs when people don't have an opportunity to participate in decisions and the design of law and policy impacts them. In an educational setting, teachers and students often do not get listened to since there are various sources of environmental injustice that puts them at risk of certain health impacts. Many regions have no regulation of proximity of schools to RMP facilities at all, which is something only the government can control and change. An action that needs to be taken is to make sure that everyone is given a chance to express their concerns and participate in decision-making processes and that everyone is treated with dignity and respect. In addition, decision-makers must convey trustworthy motives and concern about the well-being of those impacted by their decisions.

Reproductive Injustice

Reproductive Injustice is a kind of medical injustice that impacts women in terms of their reproductive health. The EcoEd Intersecting Injustices Framework evaluates Reproductive Injustice as whether or not environmental hazards in this setting undermine possibilities for safely parenting children. I believe that this does affect Santa Ana, This affects Santa Ana, because Reproductive Injustice disproportionately affects women in low income communities, especially communities of color. In Santa Ana, kids are often born with birth defects, or

women end up with health issues as well. Many women also don't have access to proper healthcare as well to take care of their reproductive health. Legislation, and education can be a prime resource. Giving women the correct reproductive resources that they need to take care of themselves and their reproductive systems can be crucial, especially paid sexual health care. Educating women on safer sex practices and how to take care of themselves can make a difference too.

Health Injustice

Health injustice is one of the most important issues that can plague a population, as it can be what separates life and death. The census tract Monroe Elementary is located scored in the low 17th percentile for healthcare access (HealthIndex). Access to healthcare can be hindered by a variety of factors including transportation, economic success, racial discrimination, gender discrimination, educational discrimination and so much more. With low numbers like these a story is painted displaying the injustices residents of Santa Ana and students of Monroe Elementary face. Santa Ana's large Hispanic population, its lower poverty rates compared to its cities' neighbors, and its problems due to traffic emissions and lead soil can all be factors that feed into this discrepancy of data. Funny enough, Santa Ana has a large amount of healthcare facilities in its area, with over 15 in just a 5 mile radius of the city. Most likely, residents avoid using these facilities for economic reasons, as they can't afford to pay for affordable healthcare.

CONCLUSION

Empirical & Conceptual Findings

Restrictors on Environmental Protection and Justice

Regarding hazardous waste, a lack of government regulation (at the city, state, and federal level) blocks environmental protection and justice in Santa Ana. Residents rely on government agencies to classify chemicals as toxic — if these chemicals that are released from hazardous waste facilities are not classified as toxic, then the government does not consider these chemicals as a threat to the people.

A lack of education is another thing that causes injustice in this area. Many of the residents in Santa Ana may not be aware of the ongoing problem. This is due to many factors, however the one we would like to highlight is the education system. Because schools don't focus on teaching about the environment, students will often not have a reason to care. As a result of people not being educated on this fact, they won't be aware of the ongoing problems or possible solutions.

Supporters on Environmental Protection and Justice

Locally speaking, there are city committees and forums held with different powerful stakeholders in Santa Ana discussing ongoing directions in environmental problems such as water safety. Furthermore, the most known organization locally, OCEJ, has made significant efforts towards campaigning for community awareness about soil lead concentration and air pollution. Organizations like this support environmental protection and promote justice in Santa Ana.

Because some areas, such as Santa Ana, suffer from such harsh environmental injustice they're often the target for research and support. A great

example would be UCI's involvement. Not only are they researching the area to understand the cause of the problem, they're also devising methods to solve and prevent the problem in the future.

Actions for "Just Transition" in the Past Decade

Environmental justice advocacy groups have tried to collaborate with the government to prompt policy changes, and they have attempted to educate students about environmental justice. Santa Ana has elected new government officials in the city council (elected first woman mayor) to ensure equal and fair representation in decisions made on behalf of the city's residents.

Future Visions for Just Transition

Since the main issues within our setting revolve around air pollution from cars and factories, hazardous waste, and soil and water contamination, there needs to be a certain vision and plan in order for a just transition to occur. One plan would be to demand a transition from particulate matter producing cars to electric, which would lower air emissions significantly. Another plan is to demand companies and the government to be more aware and considerate of where they dispose of the hazardous waste that they produce, ensuring that officials utilize their power to confirm that disposed waste is not near residential areas nor near usable water.

Concepts of Environmental Governance

Endocrine Disruption: The environmental hazards in Santa Ana disrupt endocrine systems, especially in young children, which creates health hazards.

Fossil Fuels: The air pollution in Santa Ana is largely caused by the fossil fuels from facilities and from car exhaust fumes.

Stakeholders: There are many groups in this case that affect and are affected by environmental injustice. Santa Ana residents, especially children, face

health hazards from the pollution, healthcare professionals help treat those affected by the environmental hazards, environmental justice groups advocate on behalf of the Santa Ana residents, workers in the polluting facilities have some sort of role in helping these facilities run, and government officials have the power to regulate hazardous waste facilities.

Local Action: There are many advocacy groups that are attempting to remediate the hazards faced by Santa Ana residents.

Implications & Prescriptions

Near-Term Priorities of Environmental Justice

Santa Ana is a socially and economically disadvantaged area, especially in the areas by Monroe Elementary, due to linguistic isolation, ignorance, and a lack of the ability to take action. UCI has done many community events to aid environmental justice efforts in Santa Ana, but more can be done. In the near future, we hope to see greater access to healthcare to address the symptoms of environmental injustice residents face. The various pollution issues the area faces no doubt compound into health problems, and the marginalized status of residents amplify health disparities further. Expanding access to healthcare will ensure that the residents near Monroe can stay healthy and limit the effects of the local environmental issues.

Long-Term Priorities of Environmental Justice

Changing the future will be no easy feat, but taking small steps into transitioning Santa Ana as a whole to be more adapted to climate change and mitigate pollution will be of great priority. Public transportation should be promoted, such as electric buses. The city can limit the amount of gas car purchase/usage by funding such public transportation in designated areas and funding on electric car purchase. More tax credit! Restrictions on the distances between warehouses and residential neighborhoods should be placed. More

accessible blood lead level tests should be provided in the area to keep track of soil lead pollution and poisoning. Water and air quality should be monitored through a monitoring system. Overall, many actions will need to be taken, but for the good of the community and its future, *all* will be necessary.

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FIGURES