

FRESNO COUNTY

**SLOW DISASTER
CASE STUDY**



**ENVIRONMENTAL
INJUSTICE**

FALL 2020

GROUP NO. 3

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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, Tim Schütz, Kaitlyn Rabach, Prerna Srigrayan and Maggie Woodruff for the Department of Anthropology, Fall 2020. The University of California Irvine is on the ancestral homelands of the Tongva and Acjachemen nations.

COVER PHOTO

Smoke from wildfires and agricultural burning get trapped by the high air pressure in Fresno County. <https://www.fresnobee.com/news/local/article238277323.html> (Screenshot by Alexis D'Alessandro November 4.2020).

¹ Partial list of contributing researchers; one or more researchers asked not to be listed as authors in the published case study

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10. Timothy Yung	Y

BIOGRAPHICAL STATEMENT PHOTO

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I am a 2nd year BME major, originally from San Diego. From growing up in southern California, I am familiar with most of the regions we discuss in this class and the environmental challenges they face are interesting to me.



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INTRODUCTION

This case study report focuses on routine, everyday air, and water pollution in Fresno.

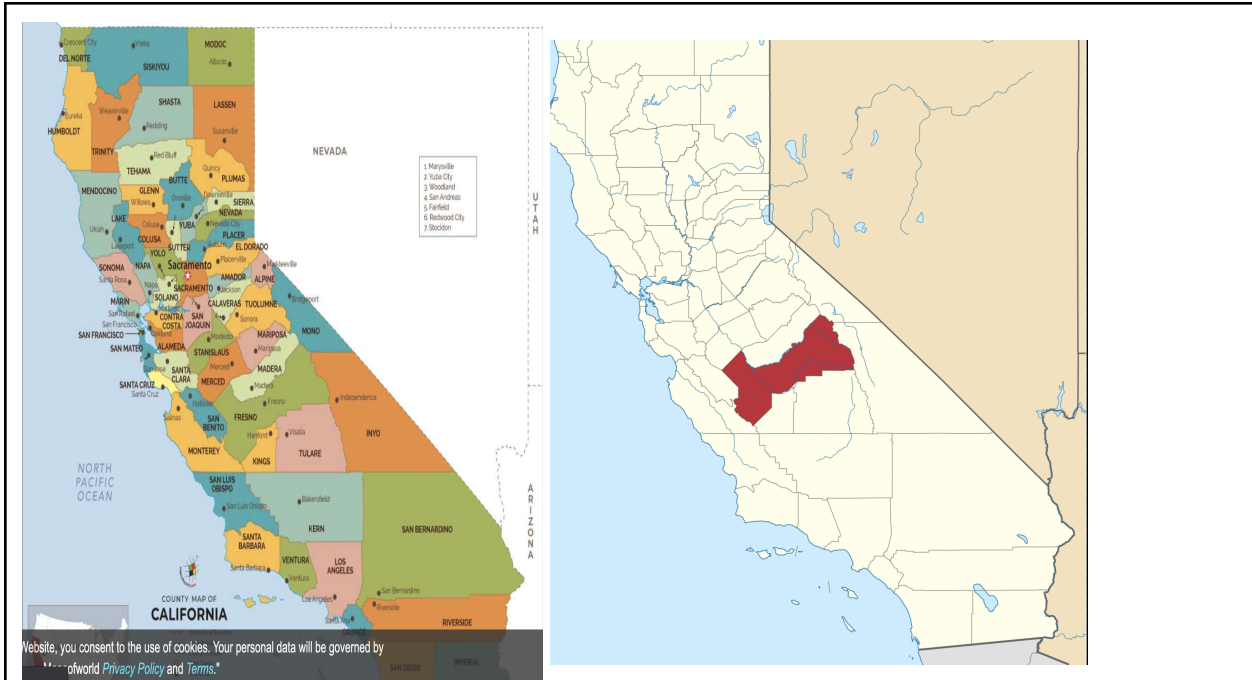
We describe routine pollution as “slow disaster” because the impacts are drawn out and cumulative, causing harm slowly, increasing rates of asthma, cancer, and heart disease. In many ways, slow pollution disasters are more difficult to deal with than fast, explosive disasters because people don’t pay attention to them or even think they are normal – especially in communities of color. Often, communities have to organize and fight to get their concerns about pollution heard and addressed by government officials. Often, particular people play important leadership roles. Sometimes, these people are residents impacted by a polluting facility. Sometimes, leading figures in fights for environmental justice are professionals – physicians who work in the community or engineers who work inside the polluting facilities. This case study describes many different stakeholders in routine pollution and the actions they have taken -- and not taken -- to improve environmental conditions.

The report addresses a series of ten questions (Fig. 2) that draw out local details in a manner that encourages comparison with other places. The research has been done quickly (within the constraints of a quarter-long undergraduate class) so is limited to and points to the need for further research and community engagement. The goal is to help build both a body of research on environmental injustice and a network of researchers ready to help conceptualize and implement next-generation environmental protections.

ENVIRONMENTAL INJUSTICE CASE STUDY FRAMEWORK

1. What is the setting of this case? What are its assets?
2. What environmental health threats (from explosions, everyday pollution, climate change, etc) 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 the problems in this case?
6. How have environmental problems in this setting been reported 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, in your view, is ethically wrong or unjust in this case?

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



https://en.wikipedia.org/wiki/Fresno,_California

<https://www.mapsofworld.com/usa/states/california/california-county-map.html>

FIGURE 2: Fresno County is an inland county located in the Central Valley of California known for its large and extensive agriculture businesses. This city is the 5th largest in California and has a very diverse population that allows it to be one of the most populated counties. This county is also known for its very bad air quality which affects the majority of the area due to its immense agriculture business and the factories in the area.

(Screenshots by Ashley Sanchez, November 4, 2020)

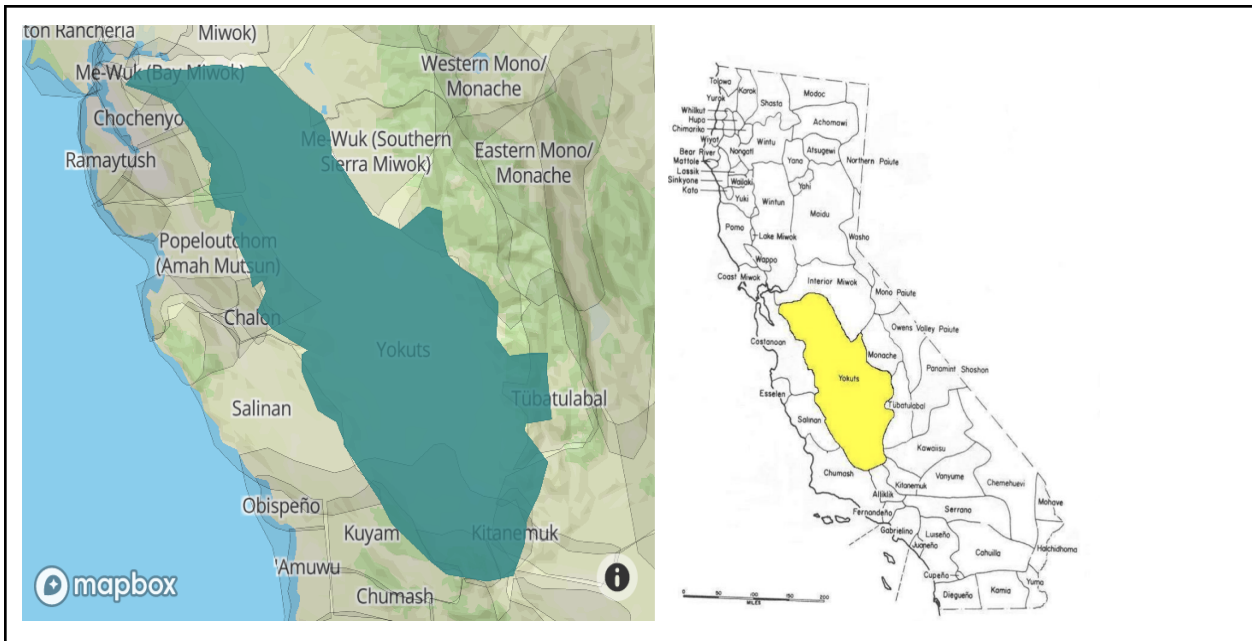


FIGURE 3: Fresno County in California is located on the Yokuts and the Western Moon Monache native lands. The Yokuts people have lived on the Central Valley the entire time they have a 250-mile radius of land (SSFCCI, 2006). They have 40 to 50 different houses where they split in between themselves where they each have their own traditions but are part of the same tribe. The western Moon Monache lives in a very small area near the King river and are very similar to the Yokuts where they separate their people into groups.

<https://native-land.ca/maps/territories/yokuts/>

<https://factcards.califa.org/cai/yokuts.html#top>

<https://factcards.califa.org/cai/monache.html>

(Screenshots were taken by Ashley Sanchez on October 4, 2020)

1. COMMUNITY ASSETS & SETTING

Agriculture and Air Quality in Fresno County

Samantha Turner

Fresno County has a population of over one million people with a very diverse region (Data USA). Fresno ended up being Democrat in the recent election, which enables more environmental reform and restrictions to come into place in the future. It is a densely populated agricultural region, and the 5th largest county in California, which allows for this agricultural success. It is located within the Central Valley of California, and the home of Sun-Maid raisins. Some other vital produce that Fresno is known for are tomatoes, peaches, almonds, grapes, and cotton (California Agriculture Production Statistics). This agriculture and produce is what boosts Fresno County's economy and provides jobs for its citizens year-round. Fresno struggles with asthmatic citizens as a result of the awful air conditions. The San Joaquin valley is an extremely polluted area, with an F ranking of air quality (Report: Fresno, Valley Rank No. 1 in the U.S. for Polluted Air – Receives Failing 'F' Grades 2019), which is furthered by its geographic location. In the case of fires, the smoke has nowhere to go when it gets trapped in the valley, adding on to the bad air conditions. Its geographical location does not help in the ranking of its air quality and breathability.

An environmental asset in Fresno County is the San Joaquin River Parkway & Conservation Trust. This organization is a water or wetland protection organization based in Fresno, CA that was founded in 1988. As of 2019 they had \$2.8 million in revenue and \$11 million in assets. The resources are used to preserve and restore the river lands of ecological, scenic, historic, recreational and agricultural significance; educate the public on the need for stewardship; research issues affecting the river; promote appropriate public uses of the river bottom consistent with the protection of the environment. The trust has implemented community outreach programs to heighten the public's awareness of the cultural and economic resources the San Joaquin River provides the citizens of California ("San Joaquin River Parkway & Conservation Trust: Fresno, CA: Cause IQ Profile.").

Another asset in Fresno County is Fresno community college, which provides education for students who can not afford University or choose not to go. They offer many different careers and majors for students to choose from like health, business, education and many more just like a regular community college. A third are churches that support inclusive property, which is the People's Church. This church promotes a lot of participation for the community, they make a lot of food donations and drives to protect everyone. They have everything online because of covid and are trying to ensure that the people participating take care of themselves and others on their website. They have a section for everyone from children to teens and elders. They are trying to ensure that their Christian belief is protected and spread, they have made a few posts about racism and their stance on the subject. A health promoting asset is the Green Zone Initiative, which uses place-based strategies and community-led solutions to transform areas overburdened by pollution into healthy and thriving neighborhoods. Green Zones are areas that have experienced historic disinvestment and neglect - most often low-income communities and communities of color - where residents have been organizing for decades to reduce industrial pollution and implement solutions that address the unhealthy (and often discriminatory) land use patterns that have shaped how our communities look today ("About the Green Zones Initiative"). Overall, Fresno County is a very diverse region and has many helpful assets as a society.



<https://www.loopnet.com/Listing/7084-Barstow-Ave-Kingsburg-CA/20847342/>
(Screenshot taken by Samantha Turner October 20th, 2020.)

FIGURE 4: This picture of a plot of land for sale in Fresno County depicts how agriculture is a large part of everyday life in Fresno. Fresno is known for being an agriculturally inclined area, as it is a city that leads the country in agriculture.




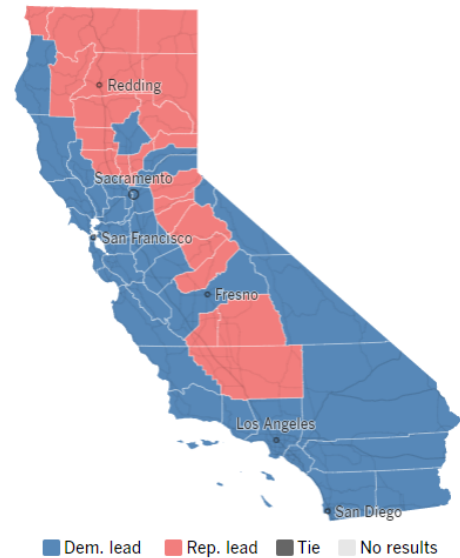
<https://i.pinimg.com/originals/cc/7a/b8/cc7ab8be5daf3e1ba8e7b7a4884d84da.jpg>
(Screenshot taken by Samantha Turner November 4th, 2020.)

FIGURE 5: This picture captures the look of the sky in Fresno county, displaying the smog and pollution. Citizens breathe this tainted air every day and they have gray skies in their neighborhood.

2020 California election results

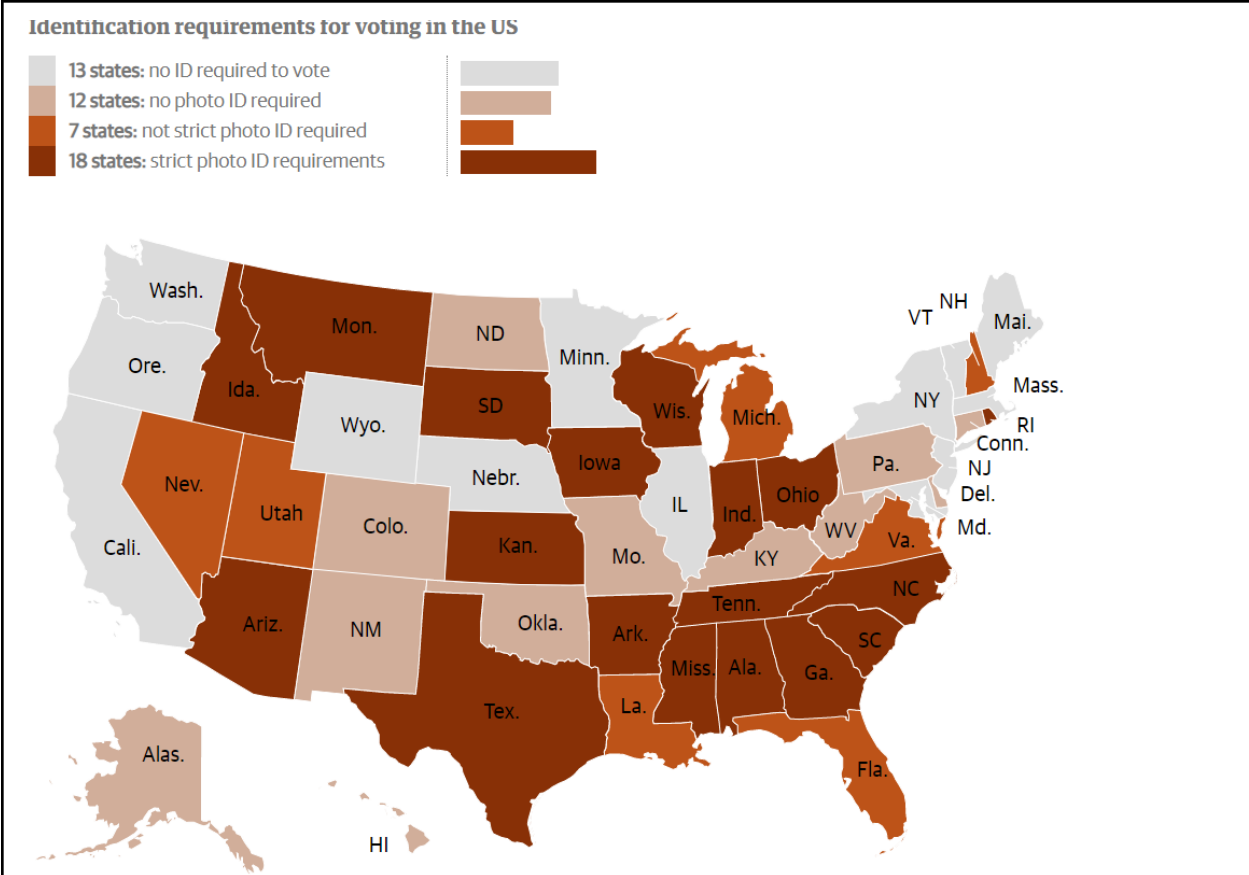
President

CANDIDATE	PARTY	VOTES	PCT.
✓ WINNER Joe Biden	Democrat	8,281,504	65.1 %
Donald Trump 	Republican	4,204,244	33.0
Jo Jorgensen	Libertarian	117,379	0.9
Howie Hawkins	Green	52,606	0.4
View all candidates ▾			
12,724,913 total votes		66% of expected vote in	



<https://www.latimes.com/projects/2020-california-election-live-results/>
(Screenshot was taken by Vincent Tran on November 6, 2020).

FIGURE 6: This map shows that Fresno county is mostly democratic so it will be easier to implement and enforce environmental policies there. However, it should be noted that the areas surrounding Fresno (north and south) are largely Republican.



<https://www.theguardian.com/us-news/ng-interactive/2019/nov/07/which-us-states-hardest-vote-suppression-election>
 (Screenshot was taken by Vincent Tran on November 4, 2020).

FIGURE 7: The state of California has laws that make it easier to vote than in many other US states. This strengthens democratic capacity across the state of California. This year Fresno has made more ballot drop-off locations to help curb covid rates and to keep residents safe. There are many drop boxes spread throughout the county. Fresno also has the Voter’s Choice Act which allows: Mailing every voter a ballot, expanding in-person early voting, allowing voters to cast a ballot at any vote center within their county.

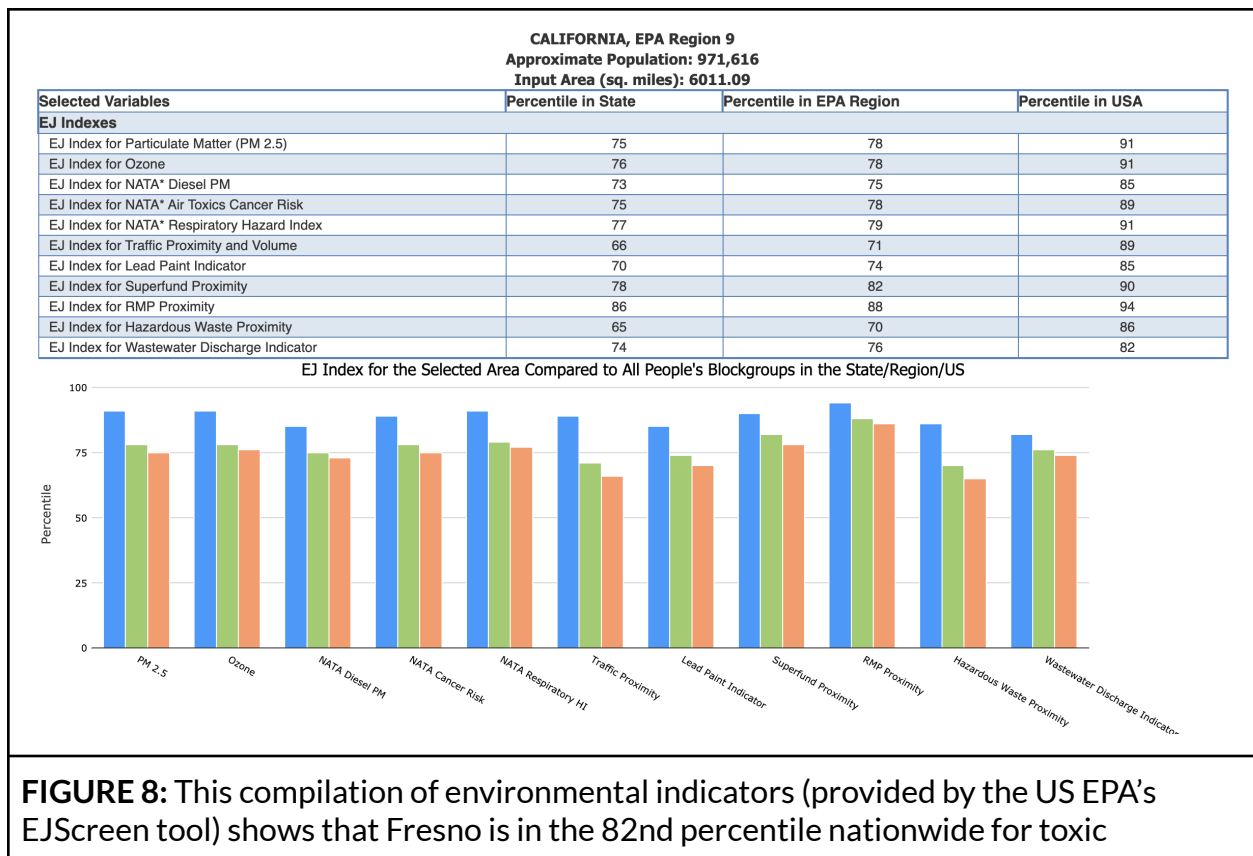
2. **FAST DISASTER & OTHER ENVIRONMENTAL THREATS**

Fresno County's Everyday Disasters

Vanessa Zuniga

Fresno County encounters multiple environmental health threats. This mainly includes everyday pollution and even some climate change. Their everyday pollution strives from air pollution caused by ozone. When looking at their air quality forecast, most of the county is labeled as unhealthy for sensitive groups due to the ozone pollutant, making this a very unsafe environment. The pollution that Fresno experiences is constant and is derived from everyday factors. An article focused on the air quality of Fresno describes this well, "Particulate pollution, such as PM2.5, from vehicle emissions from commuter vehicles, logistics and transportation vehicles like semi-trucks, and farming equipment combined with consistent levels of dust and vapors from farming and pesticide use along with a geography that traps pollutants in the low elevations of the Central Valley. Ozone is also often an issue due to the high heat and high levels of particle and gas pollutants that react with sunlight to create ozone, especially during its hot California summers." (Air Quality in Fresno, 2020). This quote describes how this everyday pollution occurs in this county and what worsens the pollution. Their description of ozone and heat also adds to

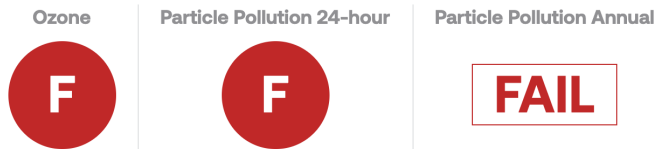
how climate change is a health threat here as well. Fresno county is specifically known as well for its extremely high temperatures. Not only does this thrive from the summer heat, but it is also a result of their pollution and the area in general. Some argue that climate change in Fresno is man-made or a result of their urbanization. A special report done on Fresno's climate change addresses this, "We spoke to climatologist Brian Och who said, "You have more urbanization going on in the larger cities, such as Fresno, so that drives up the temperatures there. Urbanization you have more asphalt, more concrete and that tends to absorb more radiation and then re-admit it, the infrared radiation that tends to get trapped." (Ramer, 2020). They describe how this specific area suffers more from climate change. This is something that can pose a threat since their temperatures only continue to constantly rise. Even though this county does not suffer from disasters such as explosions, it does encounter health threats such as everyday pollution and climate change which can greatly impact this setting.



wastewater discharge to streams, in the 91st percentile for respiratory hazard index, and in the 94th percentile for proximity to RMP facilities.

https://ejsscreen.epa.gov/mapper/ejsscreen_SOE.aspx (Screenshot by Alexis D'Alessandro, November 7.2020).

If you live in Fresno County, the air you breathe may put your health at risk.



The air you breathe needs your support.

You can make a difference in the air that you breathe.

[SIGN OUR PETITION](#)

[SHARE YOUR STORY](#)

High Ozone Days

[Learn More](#)

Ozone Grade: F [How is my grade calculated?](#)

Weighted Average: 85.8 **Fresno**

Annual weighted average number of high ozone days Below this line passes

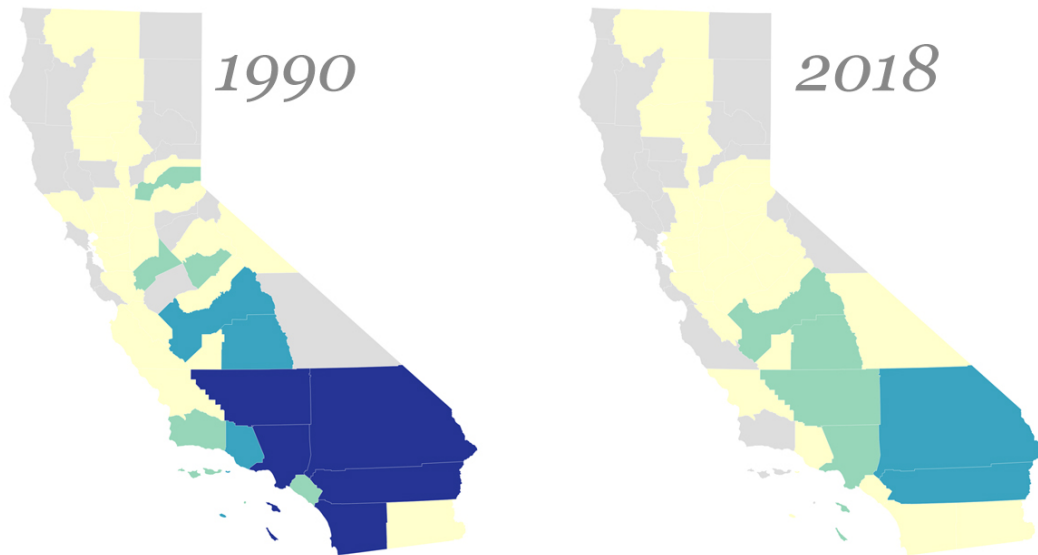
FIGURE 9: The American Lung Association (ALA) gave Fresno (California) an “F” for ozone levels. This may be explained by extremely high levels of vehicle pollution, the reduced air movement, and the number of highways nearby.

<https://www.stateoftheair.org/city-rankings/states/california/fresno.html> (Screenshot by Alexis D'Alessandro, November 7.2020).

Mapping California Air Quality

California counties are experiencing fewer days when ozone measurements exceed national standards compared to the 1990s, but progress has stalled in recent years.

Ozone Exceedance Days: 1 - 49 50 - 99 100 - 149 150 - 199



Source: California Air Resources Board
Credit: Harriet Blair Rowan and Lydia Zuraw/California Healthline

FIGURE 10: This figure above shows how many days in a year each county in California has exceeded the national standard. As of 2018, Fresno county has only exceeded the national standard 50-99 times as opposed to 100-149 times in 1990. It has improved within the last 3 decades but still has a long way to go before it does not exceed the national standard at all.

(Screenshot by Timothy Yung on November 7, 2020
<https://khn.org/news/california-air-quality-mapping-the-progress/>)

Trends Summary: PM2.5 Statistics

in Fresno County



Year	Est. Days > Natl '06 Std	Annual Average		Natl Ann Std D.V. ¹	State Ann Std D.V. ²	Natl '06 Std 98th Pctile	Natl '06 24-Hr Std D.V. ¹	High 24-Hr Average		Year Coverage Range
		Natl	State					Natl	State	
2019	10.0	11.2	11.2	14.5	17	37.1	59	51.3	51.3	87 - 100
2018	36.0	17.1	16.6	15.0	17	65.5	60	95.7	96.9	96 - 100
2017	31.1	15.0	15.0	14.0	15	73.2	54	88.3	88.3	94 - 100
2016	16.0	13.0	13.6	14.7	16	42.7	54	52.7	53.8	88 - 100
2015	20.0	15.0	14.5	15.8	17	52.0	61	80.7	80.7	87 - 100
2014	40.4	16.6	16.4	15.9	17	66.7	61	94.6	97.7	86 - 100
2013	42.0	16.8	17.1	16.4	18	71.6	58	103.4	103.4	86 - 100
2012	29.4	15.4	15.2	16.0	18	93.4	71	93.4	93.4	29 - 100
2011	39.0	17.9	17.9	16.9	18	69.5	58	77.8	78.5	80 - 100
2010	21.7	14.6	16.5	16.4	21	48.8	54	75.2	75.2	84 - 98
2009	36.0	18.3	15.1	17.1	22	55.8	60	82.3	82.3	16 - 100
2008	50.9	17.4	21.2	17.7	22	57.4	58	79.5	95.3	93 - 99
2007	65.6	18.8	22.3	17.4	22	67.0	63	103.8	103.8	96 - 98
2006	38.7	17.6	21.2	17.2	21	55.0	59	87.0	88.1	95 - 100
2005	38.9	16.9	19.7	17.2	20	71.2	60	86.0	86.0	90 - 100
2004	34.5	17.0	17.0	18.7	21	52.4	61	71.0	77.0	93 - 100
2003	45.5	18.5	17.8	19.7	21	56.0	69	63.0	79.9	92 - 100
2002	71.8	21.5	21.3	19.4	21	75.0	80	84.0	99.7	88 - 99
2001	55.3	19.8	*	18.0	23	75.0	95	110.0	110.0	85 - 94
2000	51.0	18.4	*	*	23	90.0	*	160.0	160.0	58 - 85
1999	53.5	27.6	23.4	*	23	120.0	*	136.0	136.0	76 - 93
Graph	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

FIGURE 11: This figure above shows the trend of PM2.5 statistics annually. The yellow color indicates when Fresno county is over the state's ambient air quality standard and the orange color indicates when Fresno county is over the national ambient air quality standard. As can be seen Fresno county is more often than not over both the state and national air quality standards.

(Screenshot taken by Timothy Yung on November 7, 2020
<https://www.arb.ca.gov/adam/trends/trends2.php>)

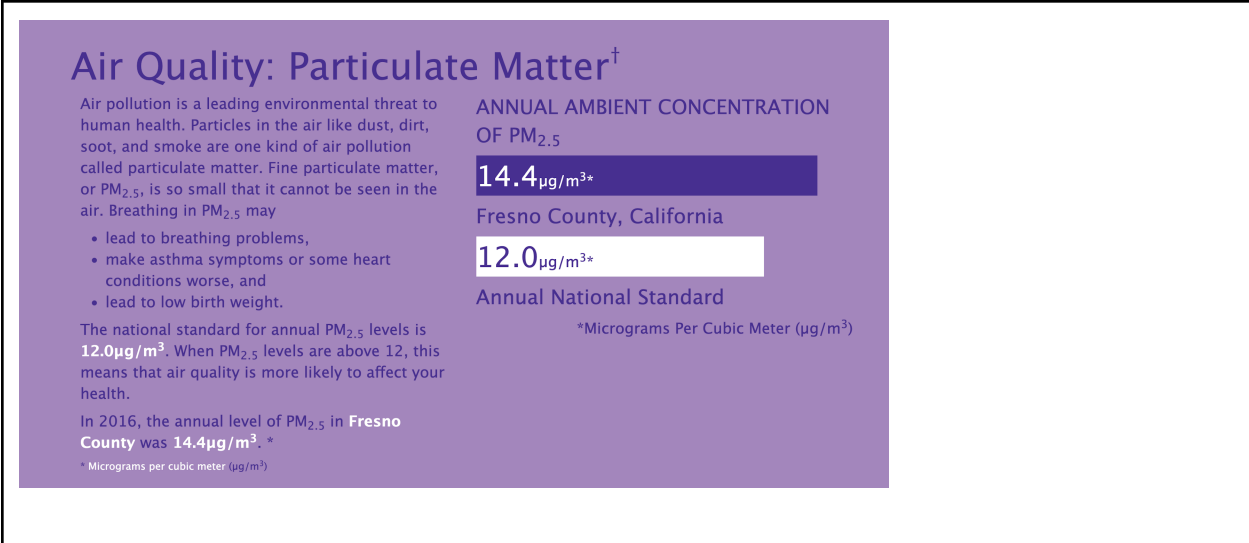


FIGURE 12: This figure above is showing the amount of particulate matter, PM2.5, is in the air of Fresno County. As of 2016, the annual level of PM2.5 in Fresno County was 14.4µg/m3 which is a risk considering that levels above 12 affects the air quality and leads to health issues.

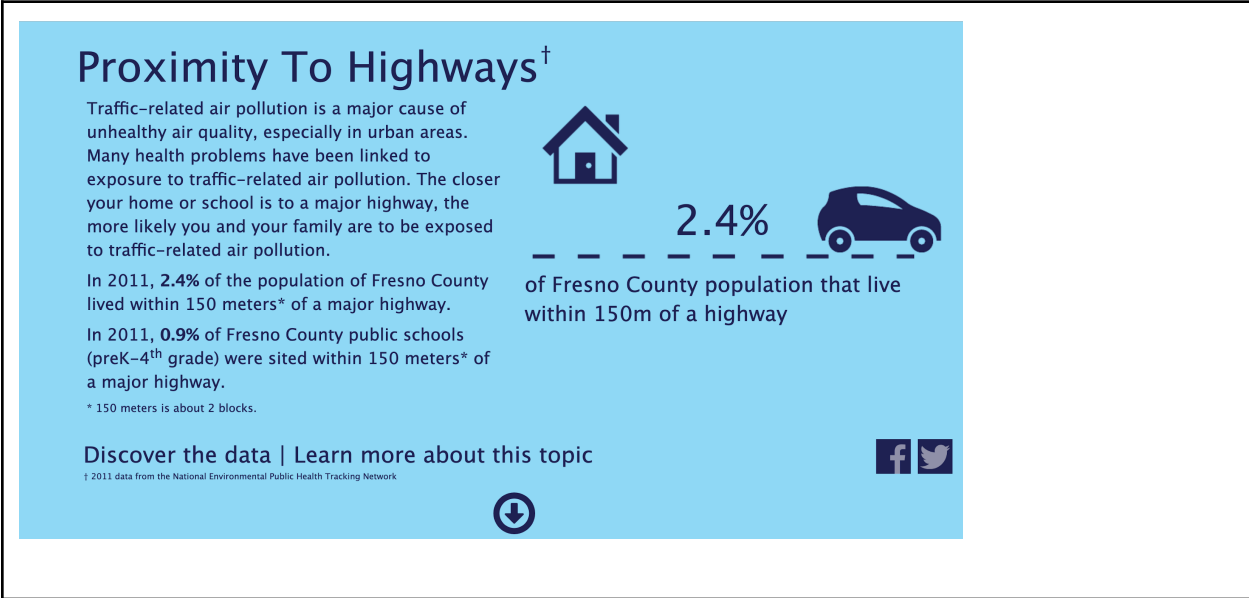


FIGURE 13: This figure shows how many Fresno residents and schools are next to a highway. They state that about 2.4% of the Fresno County population live within 150m of a highway. This is potentially dangerous since traffic is the major cause of air pollution, causing many health problems to those who are exposed.

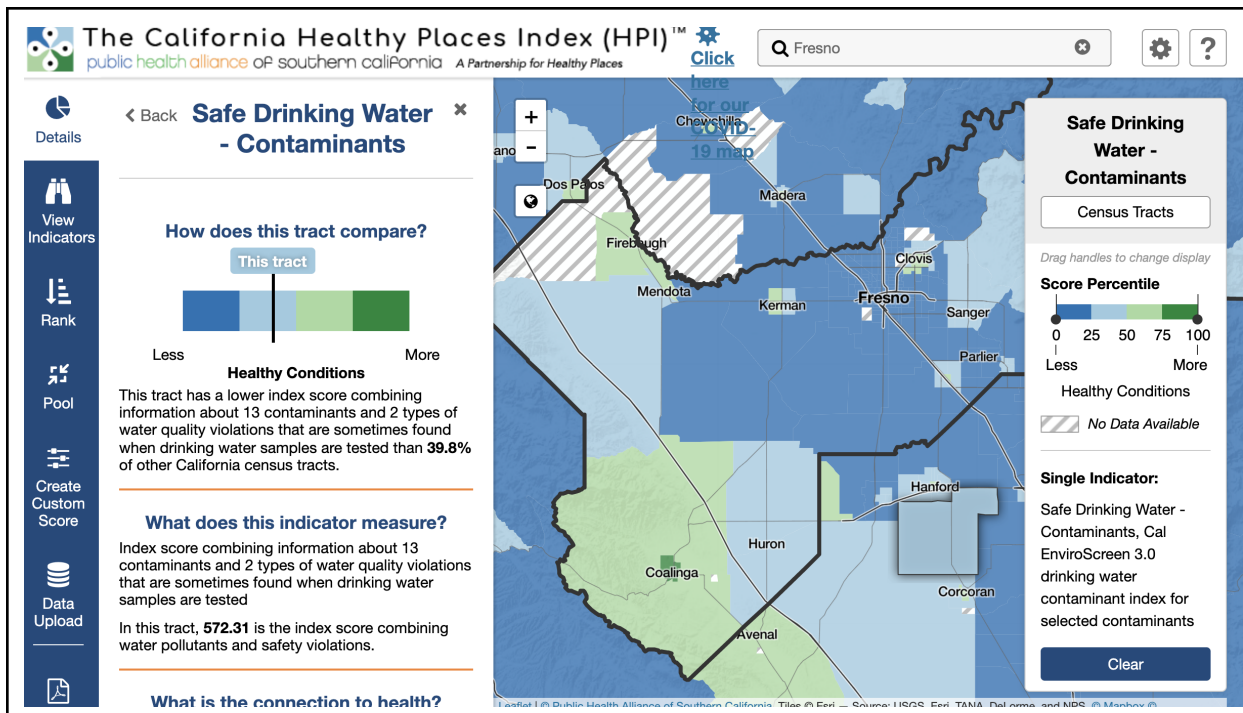


FIGURE 14: In maps provided by the California Health Places Index, Fresno County appears to be in the lower percentile of the state for healthy drinking water. <https://map.healthyplacesindex.org/> (Screenshot by Alexis D'Alessandro November 7, 2020).

3. COMPOUND VULNERABILITIES

Cultural, ecological, and social factors influencing the environmental health of Fresno County and increasing the communities' vulnerability and injustices

Alexis D'Alessandro

There are many intersecting factors that contribute to environmental health vulnerability in Fresno. Fresno was originally founded in 1872 and is located at the epicenter of the San Joaquin Valley. The county of Fresno has become home to wealthy corporations of agriculture, well-off white citizens, and low-income farmworkers who are often migrants and people of color. Fresno's central location in California and its low cost of living has made it a top choice for industrial development which affects low-income neighborhoods disproportionately.

Fresno's residents are divided geographically, the north side is where the predominantly White and wealthy residents live, while South and West Fresno are home to a majority of Black and Latinx communities. Racial segregation in Fresno has dated back to 1873, and today there is still a huge divide between the North and South. Life expectancy is a surprising 20 years less for those who live in the city's west side, near the refineries and

meat-packing plants. Fresno's white residents redlined the southern area which made it almost impossible for minorities to leave (Thebault, 2018). Various studies have shown that minorities and low-income communities will be disproportionately impacted by environmental decisions which ultimately leads to more pollution and health risks in those locations (Ali, 2017). According to a study, "Fresno ranks No.2 in the nation for cities with the highest rates of extreme poverty" (Calix, 2018). Only a very small percentage of the population is black overall, but on the westside of Fresno, Latinos make up two-thirds of the area and black people around one-fifth (Tobias 2020). It is extremely unjust that on the other side of a county, there is a dramatic difference between life expectancy. This racial segregation contributes greatly to the environmental health vulnerabilities these citizens face.

Many corporations and companies chose to target these low-income minority communities because they show the least amount of resistance. These areas don't have as many resources or political power to oppose the companies (Erickson, 2016). There's a huge amount of neglect that can be seen in West Fresno. Some people don't even have access to a bank or fresh groceries. Without leaders to advocate for the residents, stores were torn down to make room for highways, which will only increase the pollution. A big injustice that can be seen in Fresno is when the Trump Administration moved to remove the state's ability to set its own stricter vehicle emission policies in 2019. One of the largest sources of pollution is from transportation and without the stricter rules, Fresno could get sanctions from the EPA. According to environmentalist Kieshuan White, "Politicians aren't seeing the problem...In their eyes, they live in a perfect world with no problems or stress" (Bloomberg CityLab 2019). Since Fresno county suffers from a lack of representation, they aren't able to do much about the health vulnerabilities and injustices they are facing.

Another factor that contributes to the environmental vulnerabilities the citizens of Fresno face is poverty. Fresno is ranked 15th in the nation for people living in poverty, with one out of four people being in poverty. Fresno is also home to the highest concentration of

school districts whose poverty levels reach more than 40%. According to the Fresno Bee, Fresno has the 5th highest rate in the state for students living in poverty. Not only does this affect children, but adults are shown to have a lower average of reaching a higher education level. This means that most residents earn a lower average wage and income which contributes to the amount of poverty.

The location of Fresno also contributes greatly to environmental health risks. Fresno is surrounded by mountains which reduces air movement, creating a concentration of air pollutants and emissions. According to IQAir, 1 in 6 children suffer from asthma and Fresno received an F for all three pollutant measurements. The F grade means that not only does the air quality affect the vulnerable population, but the entire population as well. Many illnesses are seen from air pollution such as respiratory irritation, bronchitis, cardiovascular problems, and premature deaths.

These various factors together, create a disastrous effect on the health of residents who live here. The environmental health vulnerabilities result in extreme injustices that not only affect the vulnerable but healthy citizens as well. Communities are forced to take action if they want to change however, constrained by poverty and the lack of representation, residents don't usually have the time or energy to create a change and push city officials to consider their health.

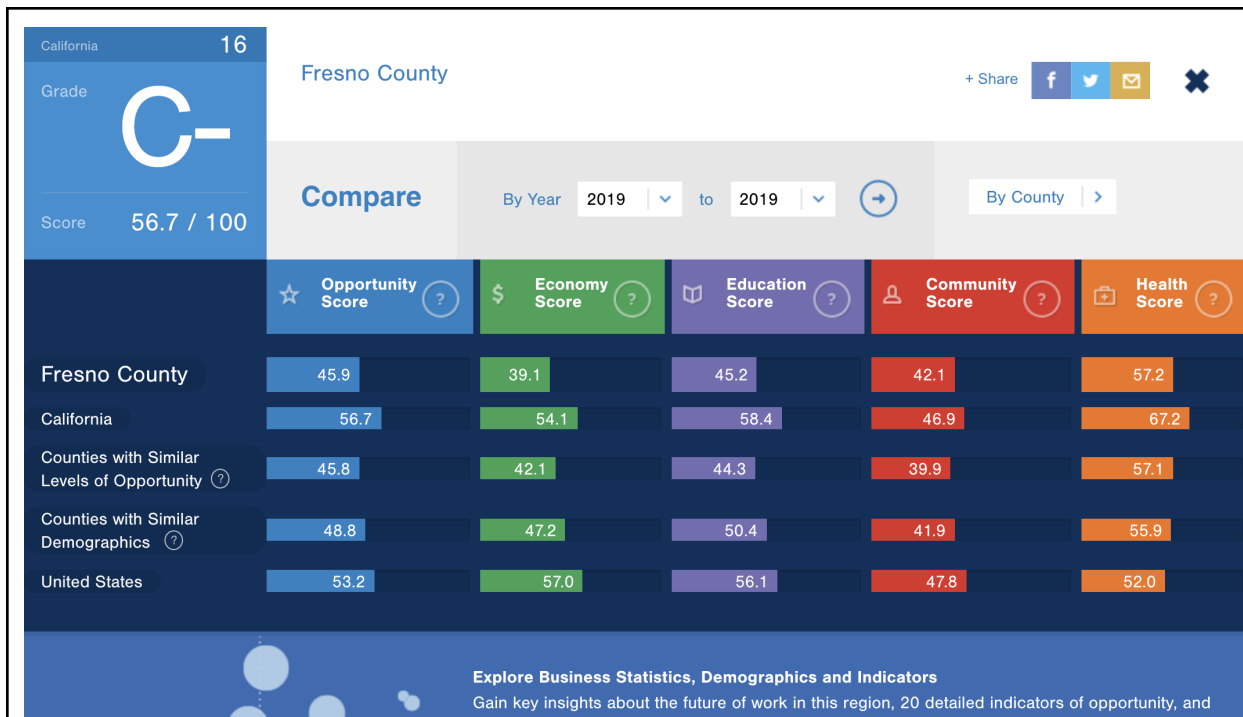


FIGURE 15: Fresno has a 45.9 opportunity index score. The state of California ranks 16 out of 51 among US states for opportunity. The opportunity index provides a multidimensional view of opportunity by combining data on economics, education, community, and health. The Opportunity Index is by [Opportunity Nation: The Forum for Youth Investment](#).

Location: Fresno County

Ring (buffer): 0-mile radius

Description:

	2013 - 2017 ACS Estimates	Percent	MOE (±)
Population 25+ by Educational Attainment			
Total	588,491	100%	51
Less than 9th Grade	84,857	14%	1,954
9th - 12th Grade, No Diploma	64,219	11%	1,986
High School Graduate	134,373	23%	2,394
Some College, No Degree	186,653	32%	2,822
Associate Degree	49,278	8%	1,420
Bachelor's Degree or more	118,389	20%	2,208
Population Age 5+ Years by Ability to Speak English			
Total	892,606	100%	0
Speak only English	497,018	56%	3,672
Non-English at Home ¹⁺²⁺³⁺⁴	395,588	44%	4,108
¹ Speak English "very well"	226,587	25%	3,622
² Speak English "well"	61,524	7%	2,107
³ Speak English "not well"	57,452	6%	1,959
⁴ Speak English "not at all"	50,025	6%	1,757
³⁺⁴ Speak English "less than well"	107,477	12%	2,631
²⁺³⁺⁴ Speak English "less than very well"	169,001	19%	3,371
Linguistically Isolated Households*			
Total	30,049	100%	1,093
Speak Spanish	23,870	79%	971
Speak Other Indo-European Languages	1,718	6%	287
Speak Asian-Pacific Island Languages	3,962	13%	359
Speak Other Languages	499	2%	204
Households by Household Income			
Household Income Base	301,824	100%	1,180
< \$15,000	43,992	15%	1,479
\$15,000 - \$25,000	36,273	12%	1,421
\$25,000 - \$50,000	73,607	24%	1,959
\$50,000 - \$75,000	51,838	17%	1,548
\$75,000 +	96,114	32%	1,989
Occupied Housing Units by Tenure			
Total	301,824	100%	1,180
Owner Occupied	160,001	53%	1,962

FIGURE 16: Fresno Counties educational attainment levels are lower than the rest of California by at least 30%. People who have a higher level of education typically have a greater potential for earning a higher income.
<https://ejscreen.epa.gov/mapper/demogreportpdf.aspx?report=acs2017> (Screenshot by Alexis D'Alessandro, November 4.2020).

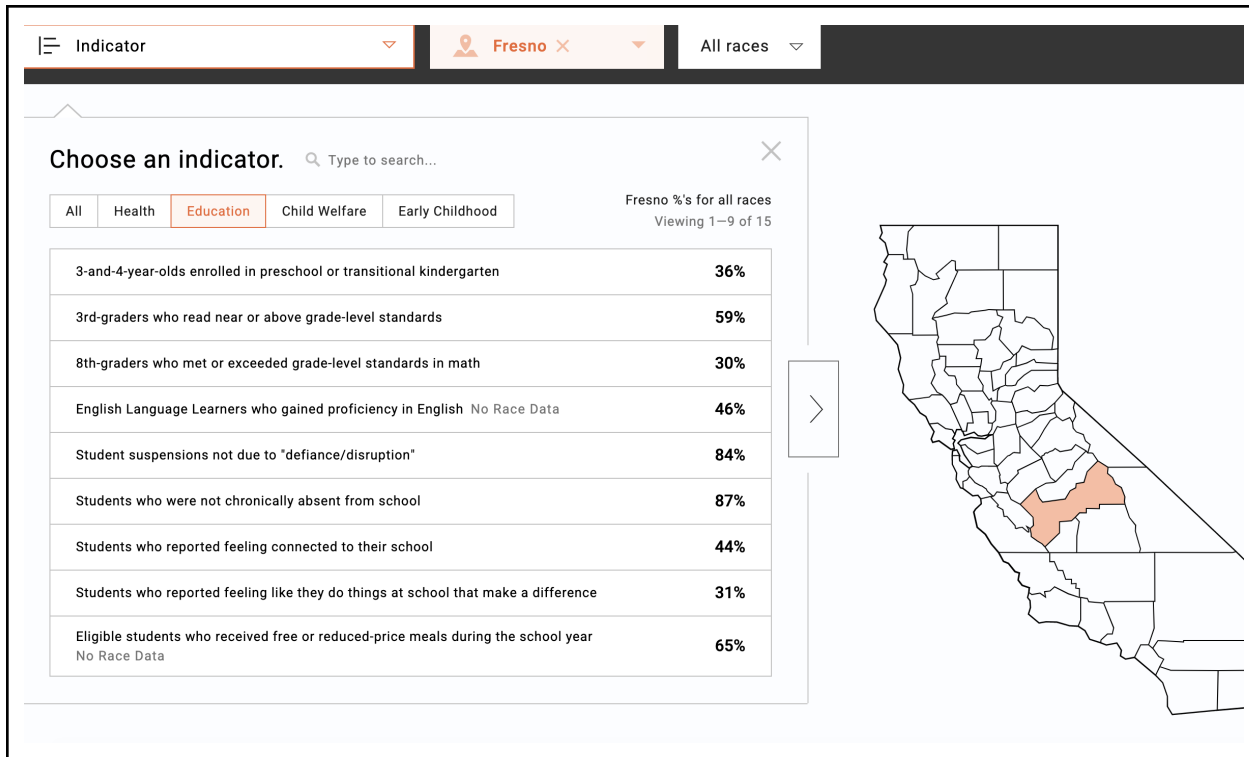


FIGURE 17: Education indicators point to low math capacity and a relatively low reading capacity, which suggests that information about environmental hazards made available in this county may be difficult for some people to understand. Education indicators also point to low levels of student connection to their schools, and a very low sense that what they do at school makes a difference. This suggests that schools are not operating optimally as community assets. Education indicators also show that 65% of students received free or reduced-price meals which suggest that many students may be affected by poverty.

<https://scorecard.childrenow.org/?cty=fresno&yr=1> (Screenshot by Alexis D’Alessandro, November 4, 2020).

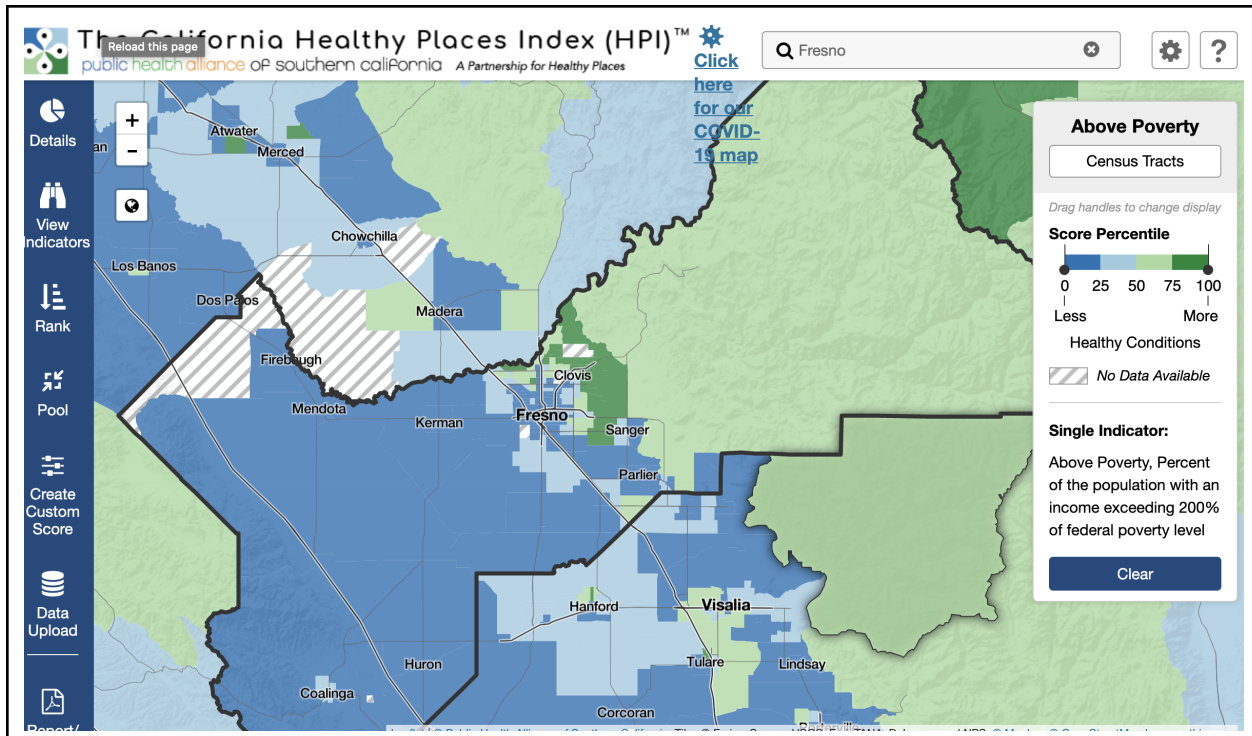


FIGURE 18: This California Health Places Index (HPI) map compares poverty levels in California counties, with dark blue indicating the highest poverty level, and dark green showing the lowest poverty level. Fresno county is clearly divided between the West and the Northeast side which suggests residential segregation.

<https://map.healthyplacesindex.org/>

(Screenshot by Alexis D’Alessandro November 4.2020).

4. STAKEHOLDER ANALYSIS

Through the Fire and Flames, Some Carry On: A Stakeholder Analysis in Regards to the Creek Fire

Sean Manilay

Fresno County's air pollution significantly detracts the ecosystem of Fresno County. In terms of causes, currently significant air pollution is being supplied by the Creek Fire, which is the largest recorded wildfire in US history. Stakeholders directly impacted by the wildfire include not only the homeowners that live in the affected areas, but the animals and livestock that inhabit the area as well.

Most people in the area that are affected by the wildfire really just want their lives to return to normalcy, and to be able to return to salvage what the fire hasn't destroyed. However, according to a recent news article, most residents of Fresno are not insured by the California FAIR Plan in order to rebuild, despite their homes being believed to be high-risk homes (Rose 2020). In addition, these homeowners are also subject to the smoke and air pollution that resulted from the fire, and thus are unable to live in their normal locations yet, due to the current toxicity of their environment. Homeowners and people that live in areas affected by the Creek Fire are unable to take the actions that they need, as they are restricted by the money that they receive from their insurance, and thus cannot achieve their goals at the moment.

In addition, financial institutions, like banks, insurance companies, and the FAIR Plan Association, are stakeholders as well. As businesses that are in control of the distribution and saving of money, they are the ones controlling and distributing the wealth and resources to allow people affected by the fires to rebuild their lives and homes. As stated

by the website of the Federal Reserve of San Francisco, “banks borrow from individuals, businesses, financial institutions, and governments with surplus funds,” and later reallocate those funds through loans (Function 2001). Thus, banks are a stakeholder that essentially control which people are prioritized to rebuild their lives, as they mostly control the flow of currency.

Animals under the care of homeowners affected by the wildfire are stakeholders as well. These stakeholders want healthy food, and a comfortable and clean place to live. However, animals and livestock affected by the Creek Fire suffer from the toxic environment as well; they, however, can't leave as effectively as humans have, and thus are dependent on people to come to their aid. This can be seen in the fact that numerous volunteer groups in Fresno County have been working to help animals and livestock trapped in areas afflicted by the fire, and transporting them to safe shelter (Girardin). In addition, due to their reliance on humans for food, most animals and livestock require feed, which volunteer groups have also been providing to homeowners who own livestock (Venegas 2020). Thus, by being dependent on homeowners, most animals and livestock that lived in the areas affected by the Creek Fire are stakeholders with needs that require significant intervention from humans.

5. STAKEHOLDER ACTIONS

The Fight for Justice

Vincent Tran

Overall not much has been done to help curb the air pollution from one of the main stakeholders which are the facilities. However, it seems that the people/residents have started to take action and there are some groups who are spreading information about the situation.

These facilities produce harmful pollutants that are spread into the air and into the people. From research, most facilities are not doing much to improve air pollution as they do not address anything about the situation at all. However, notable California Dairies Inc. has done something to improve the air quality but not in Fresno County. They built an “Intelligent Mirror Array (IMA™) system” in Visalia, near Fresno county, which will “reduce local air pollution and greenhouse gas emissions by 436 metric tons of CO2 annually” (Skyven Technologies). However, it seems that they built the IMA in Visalia because their facility there is much larger and thus produces more pollution. Unfortunately, the many other facilities that produce pollutants have not done much or anything to help the situation and environment. This could be due to the fact that there is not enough focus and information about what the facilities are doing.

As for the people and communities of Fresno, there are some groups that are spreading

information about environmental injustice. One group is the Fresno Metro Ministry which “focuses on promoting social and economic justice in Fresno” (Kaye, 2013). Similarly, there are representatives from the Latino Environmental Health Project who listen to the people’s “concerns about water quality, asthma, chemical use in pesticides and, of course, air pollution.” Then they communicate with public agencies to give the people a role in the “development, passage, and implementation of environment-related legislation.”

Furthermore, another group is the Lideres Campesinas who are a part of the national Environmental Justice Health Alliance for Chemical Policy Reform and they are “advocates for just, sustainable solutions to the health and environmental hazards faced by communities disproportionately impacted by toxic chemicals” (Lighthall and Capitman, 6). Thus there are some groups out there trying to “improve air quality and raise consciousness about climate and environmental justice in neighborhoods long overlooked by local politicians and bureaucrats” (Kaye, 2013).

Additionally, the government has also taken part in the ordeal. The Environmental Protection Agency (EPA) has stated: “that the City of Fresno has been selected to receive \$600,000.... [to] aid economically disadvantaged communities in Opportunity Zones, and other communities throughout the country, to assess and clean-up abandoned industrial and commercial properties” (Calvino 2019).

6. ROLE OF MEDIA AND BIG ENVIRONMENTAL ORGANIZATIONS

Fresno's Environmental Problems Portrayed by the Media

Ashley Sanchez

The environmental problems in the County of Fresno, including Kingsburg, have been reported in various ways; the citizens of this county are angry that they have to live in these harsh conditions and are very open about it. There is a website that was created to let the people in the Central Valley know what is going on and what is happening in their area. This website is called The Central California Environmental Injustice Network and was created in 1999, they were first going to just be a news source where people could trust them. However, they reinvented themselves in 2002 to help let the cities of the county understand what was happening to the environment and made it their mission for everyone to understand what was happening to their health and their environment (TCCEIIN). They were able to inform people that the new Friant ranch was going to harm the environment, by hosting a press conference. Many speakers mentioned how they have the worst air quality in the nation and if they continued to let harmful factories grow their

health would be affected even more. This website is very much like a social platform used to inform people, they use this to allow everyone to understand the dangers. They even started a new youth organization called Yes: Jovenes con Conciencia Ambiental that promotes middle school and any youth that is interested in the environment. They are using this Environmental Program for the youth to help advocate and appeal to people of all ages in their community, not just the adults, and hopefully gain a bigger audience to help them combat this disaster.

Another way where environmental injustices are shown in the media is this website called California Environmental Justice Alliance that was formed in 2001. So far they have done a lot for the people and for the environment they have rallied to try and convince people not to vote Yes for Prop 23 which gives way for factories to do more. They have hosted four Community Congresses and done so much more for the people and for the community Statewide. They are an organization that works throughout all of the State of California to try and achieve environmental justice for all of the different counties affected. It is a community-led organization that allows people to make choices to help themselves with the information given to them. They represent 35,000 minorities throughout the counties to ensure that they get the help they need to have their voice heard (CEJA). Their vision is to ensure that everyone lives in a healthy environment, that the factories affecting people are long gone, there is no more discrimination, and much more. They have focused on Fresno as well for some time because of the terrible air quality which comes from the companies and from the fieldwork. They are trying to help Fresno with new Clean Air Acts that may help them get better.

The Fresno Bee is another way where environmental justice is portrayed in the Media. They are a Fresno based news reporting website where they ensure that everyone in and around the Fresno, San Joaquin, and Kingsburg area knows what is happening (FresnoBee). They make reports on anything they think is important that may be happening in the area. For example, they made a report on "Farmers getting exposed to

dangerous chemicals while working” which is an article giving examples of the working conditions that these field workers have to go through. Their mission is that everyone is informed whether it be minorities or not they want the people to have a voice and try to make a change in the environment.

In Fresno there also have been protests in 2019 to try and resolve their problems, the residents tried to get their voices heard by making a protest asking the government to try and help them ensure that climate change does not worsen and that their air becomes less polluted(Yurong). Protests are sometimes seen as like a rebellion or a bad thing against the government or whomever they are addressed towards, but this is the only way people are heard. Protests make the people’s voices heard and can make a change no matter how small, the goal is to ensure that we all know what they are fighting for and make the necessary changes.

7. RECOMMENDED LOCAL ACTIONS

Local Unity Against Environmental Injustice and Vulnerability

Yahir Leal

Along with government transparency and better enforcement of environmental regulations, some other local actions that can really reduce environmental vulnerability and injustice in the communities of Fresno could be the development of green zones and an extensive focus on environmental education for the minorities that are unaware. Green zones are locations that have been changed by a driven community into healthy thriving neighborhoods, from a once toxic and polluted area. Green zones develop in areas where low-income individuals live- as well as people of color- because the likeliness of polluting sites and chemical plants functioning are higher here than in other places where more affluent and white people reside. According to California Environmental Justice Alliance the people from the Green Zone Initiative, "emerged from community efforts to reconfigure the unhealthy – and often discriminatory – land use patterns that shape how [their] communities look today;" (CEJA, 2018). Green zones aren't just a great local action to help the physical landscape of a ruined community, green zones also teach a community that they do have the power to cause change and turn their local neighborhoods into places that are desirable and proud to be a part of. These kinds of actions should be more recognized nationwide, as the benefits that come with them are productive and great for any environment and community that has been subject to slow disaster chemicals for

decades. There has been a steady rise of green zones in California, with Leadership Counsel being one operating from the San Joaquin Valley in which Fresno residents are located. Organizations like these are key in mobilizing citizens, in places like Fresno, to not stay quiet about problems that directly affect them because they “work alongside the most impacted communities to advocate for sound policy and eradicate injustice to secure equal access to opportunity regardless of wealth, race, income, and place.”

(LeadershipCounsel, n.d). Even though more adults begin to mobilize it is important to not discredit the power of the youth and what they can contribute in the future, in regards to the state of their communities and direct environments. This starts by educating and familiarizing them with the topics of slow, fast, and combo disasters. There needs to be curricula in Fresno county schools that addresses the effects of slow and fast pollution and more importantly what local actions work against it. Only after these special classes are incorporated into the schools- giving younger generations the opportunity to see the problems that directly impact them- can this message from the Superintendent of Fresno County, Jim Yovino, be upheld: “as educators and community members, we have the unique opportunity to directly impact the life of a child...And no matter our role, however large or perceptively small... We make a difference. We open doors. We create opportunity. We make dreams come true” (“Fresno County Superintendent of Schools” n.d.).

Not only must the community members of Fresno endure the pollutants left from past irresponsible facilities, but they must also live with the pollution that comes from wildfire season and water contamination. The county of Fresno does have instructions for the residents on how to manage damage from a wildfire and when to expect wildfires in the central valley on their website, however, they should implement information on what the underlying reason for the wildfires is (climate change) and how the residents can do their part to combat this climate crisis. Since many of the people in Fresno are minorities and may have a language barrier it is important to have translators or flyers in multiple languages so more of the population can stay in the know and the effort to combat climate

change can only increase. County officials should also provide households with resources that can be effective against the slow pollution of the area, for example, they could provide all households with operative water filters as a response to the contamination in the groundwater. Fresno has one of the highest concentrations of Chromium 6 in the U.S, and this can be alarming since this toxic chemical can disrupt human health and is still unregulated by the EPA. There are also endocrine disruptors in the water of Fresno, with the main culprit being Dibromochloropropane (DBCP) a replacement for DDT. Furthermore, heavy metals like Arsenic have also been recently reported in the groundwater. So much so, “that the city was required to make a statement in their report, notifying residents of the contamination,” (“Fresno Drinking Water Quality Report | Hydroviva” n.d.). This is government transparency, but the government only acted after the reports increased and there are still many unregulated chemicals that are present in Fresno; so officials need to do more than simply report one toxic heavy metal in the area. The government should supplement its residents with clear and honest information that alerts them of all the potential health dangers in the area, if they fail to do so the people should try to unite and with proper resources take on these city officials as a community. Through all of these local actions, the possibility of environmental justice in Fresno is closer to becoming a reality.



FIGURE 19: This green zone map shows the different places across California with a green zone community. Leadership Council is the group that is helping and guiding the residents in Fresno with their local environmental injustices. (Screenshot by Yahir Leal from California Environmental Justice Alliance, n.d, “About the Green Zones Initiative, Accessed November 7th, 2020. <https://calgreenzones.org/about-the-green-zones-initiative/>)

8. RECOMMENDED EXTRA-LOCAL ACTIONS

Awareness inspires action

Everett Cheng

In order to reduce slow disasters and other environmental vulnerabilities and injustices within Fresno county, there are many extra-local actions that must be implemented. As our nation continues to turn to renewable energy rather than fossil fuels, federal and local governments should also give benefits to truck manufacturers that use electric vehicles instead of those that use gasoline. A new regulation that has been popping up in California legislations, the Advanced Clean Trucks Rule, “mandates that truck manufacturers sell an increasing percentage of zero-emission, as opposed to diesel-powered, trucks, starting with 2024 models”(Kane 2020). If this regulation is implemented, pollution throughout both Fresno County as well as the state would go down. Currently, vehicles contribute to almost a third of the U.S’s pollution to the air, making it the biggest source. This is extremely dangerous to citizens, as the toxins emitted by these vehicles “leave tailpipes at street level, where humans breathe the polluted air directly into their lungs” (The Environmental Impacts of Cars 2019). Therefore, if electric vehicles are further encouraged by the state government, we can expect counties such as Fresno, who have

large populations, to lower their pollution levels.

Furthermore, this can be implemented in the agricultural industry. Fresno County, which brought in over \$7.8 billion dollars from just agriculture in 2018, is known as one of our nation's greatest agricultural counties (German 2019). Because of this, it makes sense that the vehicles used for agriculture contribute to a large portion of the county's pollution. As California is huge for the agriculture industry, our state government should try to encourage those in the agriculture industry to begin using farming vehicles that are better for our environment. Moreover, agriculture in general can add to pollution, as the "industrial model of farming crops in the US also contributes to air emissions. To be specific, plowing or tilling solid can release carbon into the atmosphere. With farming being done to such a large extent in Fresno, it is clear that agriculture impacts pollution greatly. One way to combat this is to "keep animals on pasture where the manure does not concentrate and can break down aerobically, thus reducing emissions" (How Industrial Agriculture Affects Our Air 2019). California should implement bills requiring more sustainable farming practices so that we do not continue to destroy our planet.

Another extra-local action that can be implemented is one that was introduced by the New Jersey state assembly. This environmental justice bill fought to protect communities that were being burdened by high pollution levels, by "essentially blocking any industrial facility or expansion in pollution-burdened communities"(Ramirez 2020). This bill, which is expected to pass in New Jersey, would be beneficial to other states that have counties such as Fresno. As Fresno is one of California's most polluted cities, it would be extremely beneficial to prohibit factories that emit dangerous toxins from being built. By doing this, communities would no longer have to worry about RMP facilities continuously being built, and could instead focus on spreading awareness as well as focus on smaller aspects of other environmental vulnerabilities.

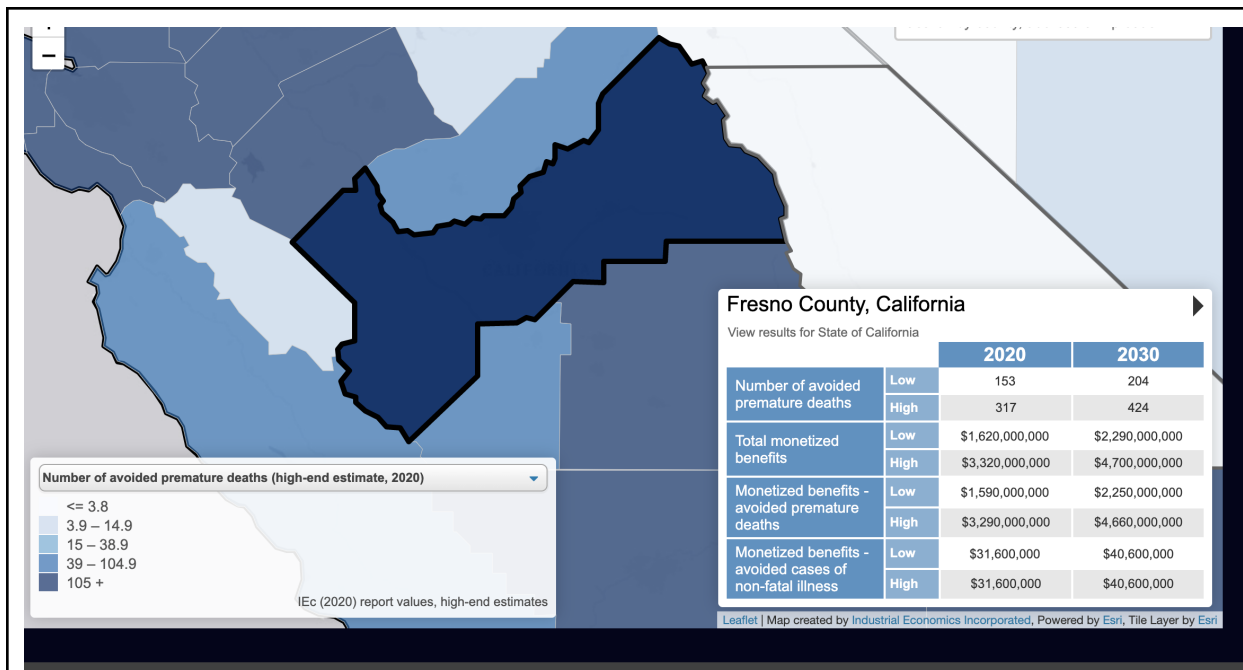


FIGURE 20: The Clean Air Act, allows the EPA to set limits on certain air pollutants, including setting limits on how much can be in the air anywhere in the United States. This helps to ensure basic health and environmental protection from air pollution for all Americans. The Clean Air Act also gives the EPA the authority to limit emissions of air pollutants coming from sources like chemical plants, utilities, and steel mills. This Act has allowed Fresno CA to have stricter laws regarding vehicle admission which has greatly reduced the amount of air pollution.

<https://www.nrdc.org/resources/clean-air-acts-benefits-map>
(Screenshot by Alexis D'Alessandro, November 7.2020).

9. RECOMMENDATIONS FOR FUTURE RESEARCH

Qualitative data needed to ensure that future generations stay healthy

Timothy Yung

In any scenario, having qualitative data that is able to clearly identify environmental threats and provide avenues to mitigate those threats are extremely important. In this scenario, data from Fresno county that would show a list of chemicals that local facilities are producing would be one type of qualitative data that would help address environmental threats in this county. Unfortunately, data from independent organizations that list all the chemicals that facilities in Fresno produce alongside their negative health effects are not easily accessible to the public, if available at all (Madia et al, 2019). Many facilities list the chemicals that they release into the air, but oftentimes these large corporations will bankroll government researchers and will result in the researchers stating that the quantities of chemicals are “safe” (Altman et al 2008, 1). However, there is little independent research that can be trusted to verify these claims, and even if the chemicals released are within safe guidelines the local population will suffer from higher rates of asthma, birth defects, and cancer (*Homo Toxicus* 2008).

It is also important to survey the local population and to understand how much they understand about the chemicals that are being produced by local facilities. Some residents do understand that the smelly air they breathe in from time to time, and their neighbors’

health complications arise from the chemicals that are released from nearby facilities, however they often are unaware of the specific harms that can be attributed to their local chemical plant (George 2019). Having qualitative data that shows a list of chemicals that are released by chemical facilities in their area alongside their negative health effects and the rates of those health effects compared to the rest of the state or country would be extremely helpful for local residents. Local residents would more easily be able to understand what the chemicals do, rather than just knowing that they cause some negative health effects. Using this type of data local residents would be able to know exactly which chemicals cause harm to them, and can easily rally together to remove the primary source of their health problems.

Surveys of the local community could help researchers understand how well local residents understand the negative health effects that chemical pollution presents and could help to create ways to educate the local population about how chemicals pollution affects them directly. Overall, the most important data that is needed is independent research that shows the links between chemicals being released into the air and negative health effects would be useful to address the environmental threats that local residents face.

10. INJUSTICE ANALYSIS

30 Years of Negligence

Rohan Sharma

There are numerous things morally off-base and unreasonable in this case. The first alarming issue is that "the city of Kingsberg, Fresno is ranked number one in pollution of its air" (George 2019). To be the worst city in terms of air pollution is horrendous, but the consistency of poor standards is what should be the focus. "For 30 years, the region has fallen far short of federal air quality standards, both in terms of ozone and fine particulate matter" (Bliss 2019). It is immoral that for 30 years, Fresno has not been able to meet the air quality measures and that there have been no changes made to alleviate the circumstances. What makes the situation even more concerning is that the current administration has expelled the state's right to put forth tougher vehicle outflow policies that have been in effect since the Clean Air Act started (Delight 2019). Outflows of cars are a major contributor to the bad air quality in Fresno, which neglects the well-being of the residents. People have a high chance of asthma and respiratory illness in combination with the elevated risk of heart disease and stroke. With no plans or policies in place, things are just getting worse for the future of Fresno. If the existing or new administration does not place environmental protection at the forefront of their plans, community leaders of Fresno need to take matters into their own hands.

Economic inequality is another aspect that has an unjust impact on the people of Fresno County. In a 2008 Indybay News report by Mike Rhodes titled "Environmental Racism in West Fresno," Rhodes indicates that one of the most impoverished communities in the City of Fresno, CA–West Fresno–is a magnet for environmentally dangerous facilities.

This community is adjacent to a processing plant, an animal rendering plant, and a former dump that has been converted into a playground for neighborhood kids” (PATimes). Impoverished areas are struggling with the pain and suffering created by several companies and politicians who cannot stand up to those corporations and pass and execute regulations. It seems that these regions are permitted to exist in these desperate circumstances regardless of the income levels of their people. The epistemological and economic injustices combined enable one another to make a community of people subject to each other. By targeting poverty-stricken areas with environmental harm, you will, in turn, continue a cycle of hurting the citizens living there.

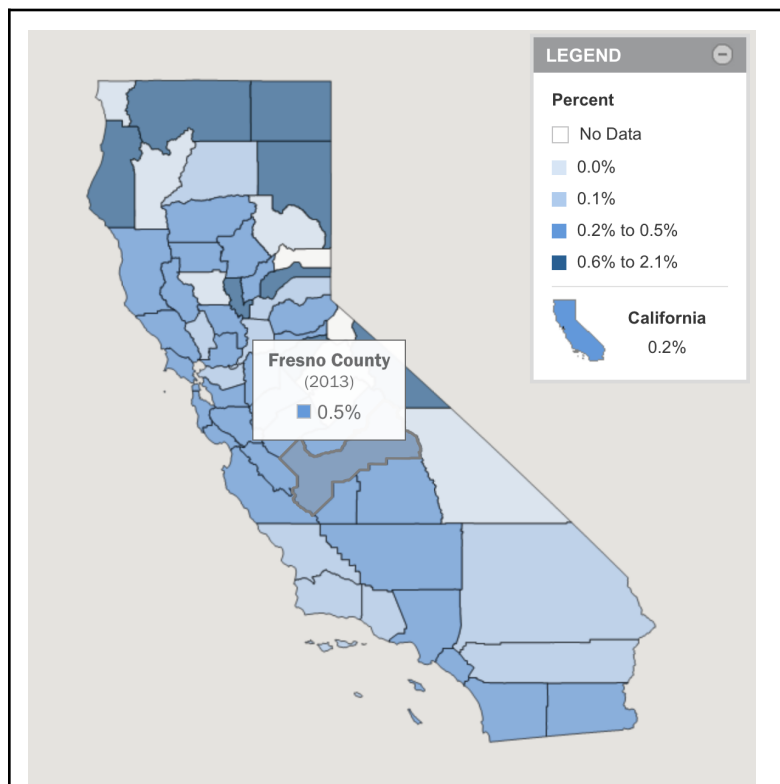


FIGURE 21: According to 2013 data, 0.5% of children ages 0-5 in Fresno County have elevated blood lead levels. Lead exposure could be occurring at home (through the air, soil, or ingestion of old paint) or in daycare facilities. <https://m.kidsdata.org/table/364/los-angeles-county/529/environment-lead> (Screenshot by Rohan Sharma, November 4, 2020).

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