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**[ANTHRO 25A: Environmental Injustice](#)**

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**Fig A:** Location of The Coachella Valley. Wikipedia. Retrieved November 23, 2019, from [https://en.wikipedia.org/wiki/Coachella\\_Valley](https://en.wikipedia.org/wiki/Coachella_Valley).

### 1. What is the setting of this case? [Collective]

The Coachella Valley is a desert valley in Southern California that extends approximately 45 mi (72 km) in Riverside County southeast from the San Bernardino Mountains to the northern shore of the Salton Sea, as seen in figure 1. Coachella Valley has an overall 156,830 population, which includes 51 percent male and 49 percent female. Furthermore, 74.1% of residents are Hispanic, 22.2 % of White residents, 1.3 % of Black residents and 1.1% of Asian residents. (City Data 2019) Coachella Valley is also a relatively young community, the median resident age is around 28 years old, 5 years younger than the median CA resident age. Since the Coachella Valley is a young community, This could also mean that the Coachella Valley is also a low-income community which it is, the median household income is \$50,000 and the CA median household income is \$67,800. In the early 20th century, less than 1,000 full-time residents lived in the "village" of Palm Springs, surrounding farms and ranches, and on the Indian reservation. The 1930 U.S. census found less than half the Coachella Valley's population was "white", the rest were Mexicans especially in the eastern ends when trackers arrived to maintain the area's railroads and Native Americans of local tribes in

what were then impoverished reservations. Pollution is somewhat a problem in this area as seen in Figures 2 and 3.

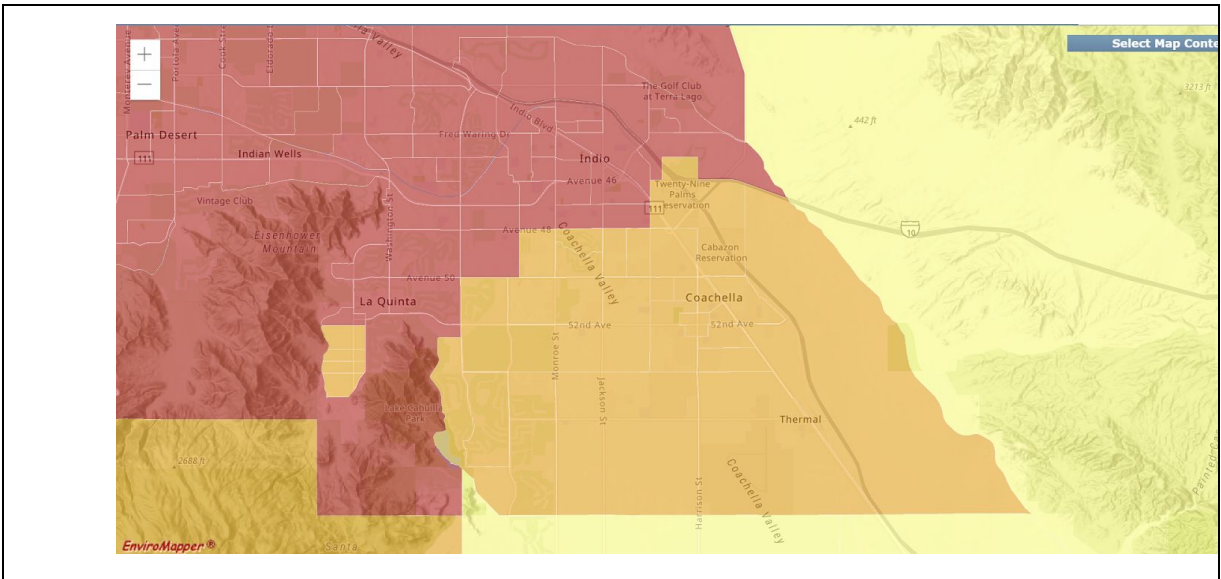


Figure 1. Selected area for the Coachella Valley. EPA EJ Screen Report, City of Coachella Valley, 2018. Retrieved November 23, 2019. Screenshot taken by Yikai Cai

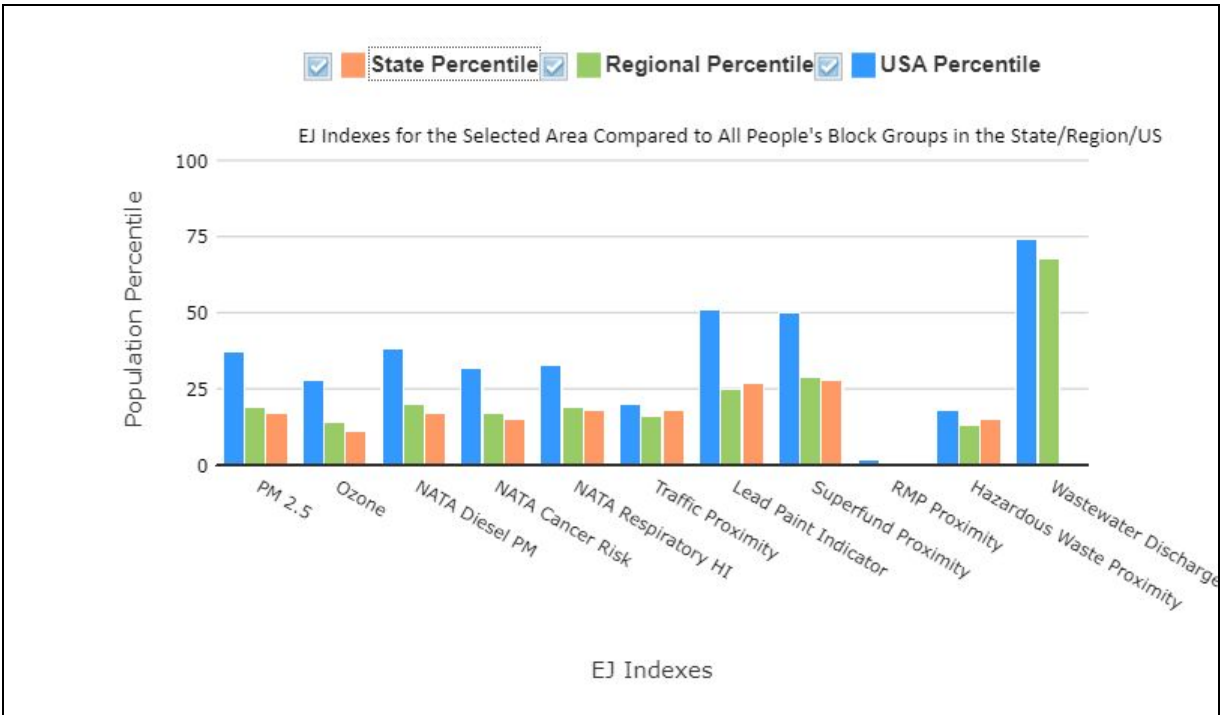


Fig 2: Demographic indicators for Coachella Valley. EPA EJScreen Report,

Coachella Valley, 2019. Retrieved November 23, 2019. Screenshot taken by Jose Corpus.

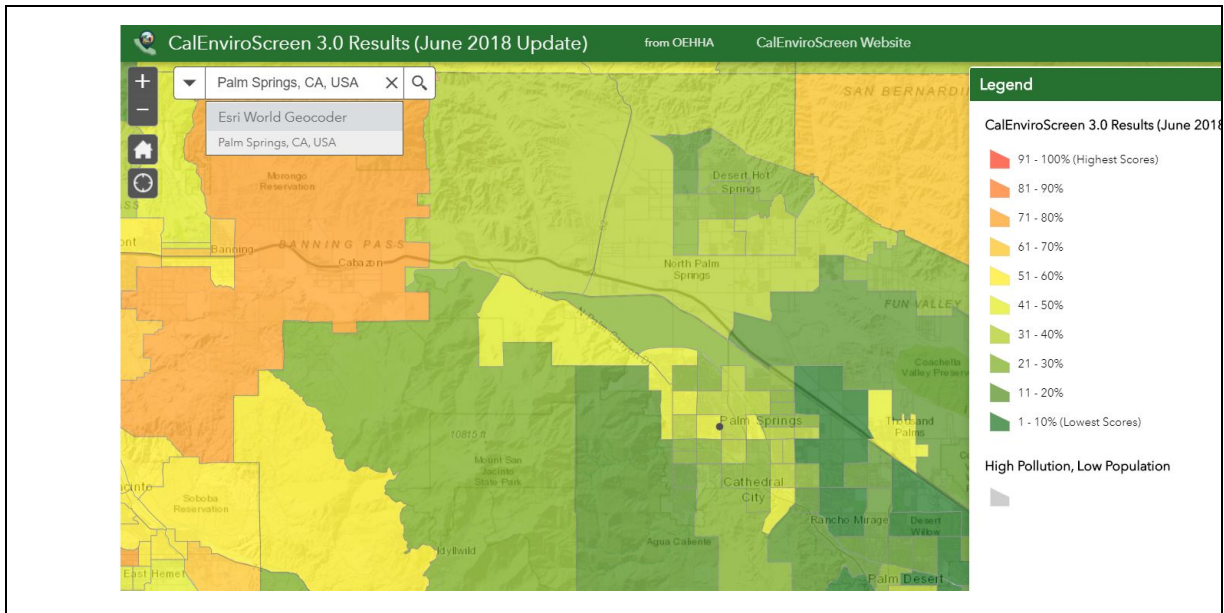


Fig 3: Census Tract of Palm Springs, CA located in Coachella Valley. CalEnviroScreen 3.0, 2018. Retrieved November 23, 2019. Screenshot taken by Jose Corpus.

## 2. How does climate change produce environmental vulnerabilities and harms in this setting? [Collective]

One environmental vulnerability and harms caused by climate change in this setting is extremely hot weather. This year's summer temperature in Palm Spring had reached the highest point in the last 50 years, which amid two heat warnings covering the Inland Empire and the Coachella Valley. Palm Spring area was originally known for its desert environment, an environment that is very dry and hot, but the temperature is still fit for many creatures, such as ants, bobcats, mountain lions, bighorn sheep, and California Fan Palm, those wildlife creatures formed a balanced ecology system. However, due to the extremely hot weather, many animals and plants can no longer survive the heat. "An excessive heat warning was issued for the Coachella Valley and the San Gorgonio Pass near Banning, and a heat advisory for the Riverside metropolitan area. Meteorologist

Tyler Maio said Palm Springs reached a high of 121 Monday afternoon, breaking the 120-degree record for this date set in 1969." (Coleman 2019) The extremely high heat has a huge effect on most of the Palm Spring area and people's lives was greatly influenced. The city government took action by opening cooling centers across the country to help with the situation. Still, this remains a threat as it is estimated these heat waves will continue up to 2100 as seen in Figure 4.

Another environmental vulnerability caused by climate change is the high presence of ozone which also can also be referred to as smog. According to the American Lung Association, Riverside County, in which the Coachella Valley is located in, has a grade of an F in ozone along with average ozone levels of 130 meaning it also has a high amount of ozone days (American Lung Association)(refer to figure 5). One of the main reasons why the ozone level is due to climate change is due to the fact that lately heat waves have involved higher temperatures than normal, when temperatures rise this causes ozone levels on the ground to rise as well. Along with ozone levels rising, also comes particle pollution. Particle pollution is also high with as well in the Riverside County with an annual average of 13.6(American Lung Association) (refer to figure 6). It is also seen in figure 7 that Coachella Valley has historically had bad air quality when compared to the US average.

Other potential impacts that climate change may have on the Coachella Valley are droughts which may lead to the Colorado River and the State Water project to dry out which may be caused to excessive heat due to climate change. the extreme heat can also cause even more seasonal flooding which can cause crops to die and affect a majority of community members jobs as field workers (City of Coachella 2014)

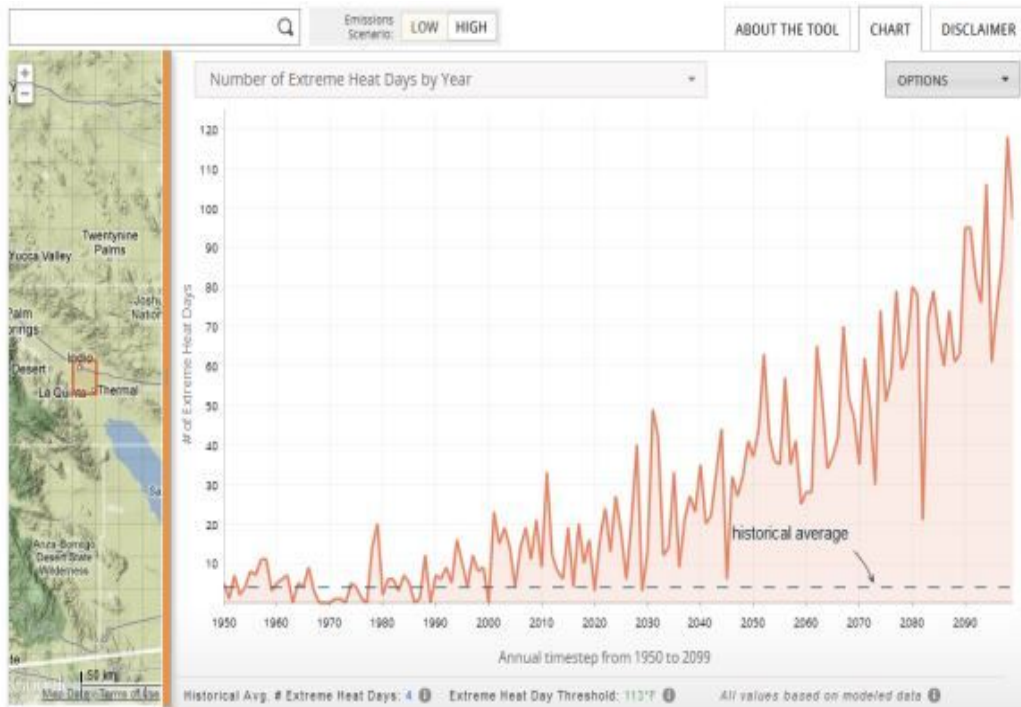


Fig 4: Estimated amount of extreme heat days which will have serious impacts on environment. This graph comes from a public draft of a climate action plan the city of Coachella wrote in 2014. Screenshot Captured by Aida Recinos Retrieved November 22

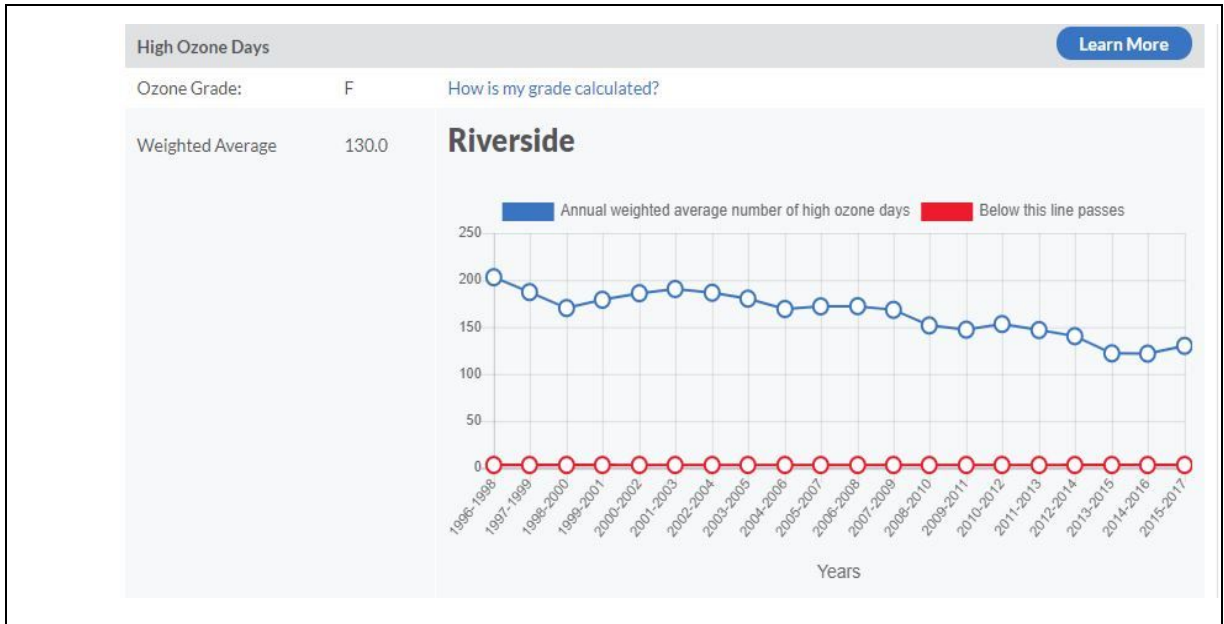


Fig 5: Estimated amount of High Ozone days for Riverside. *American Lung Association*. Screenshot Captured by Aida Recinos. Retrieved November 22

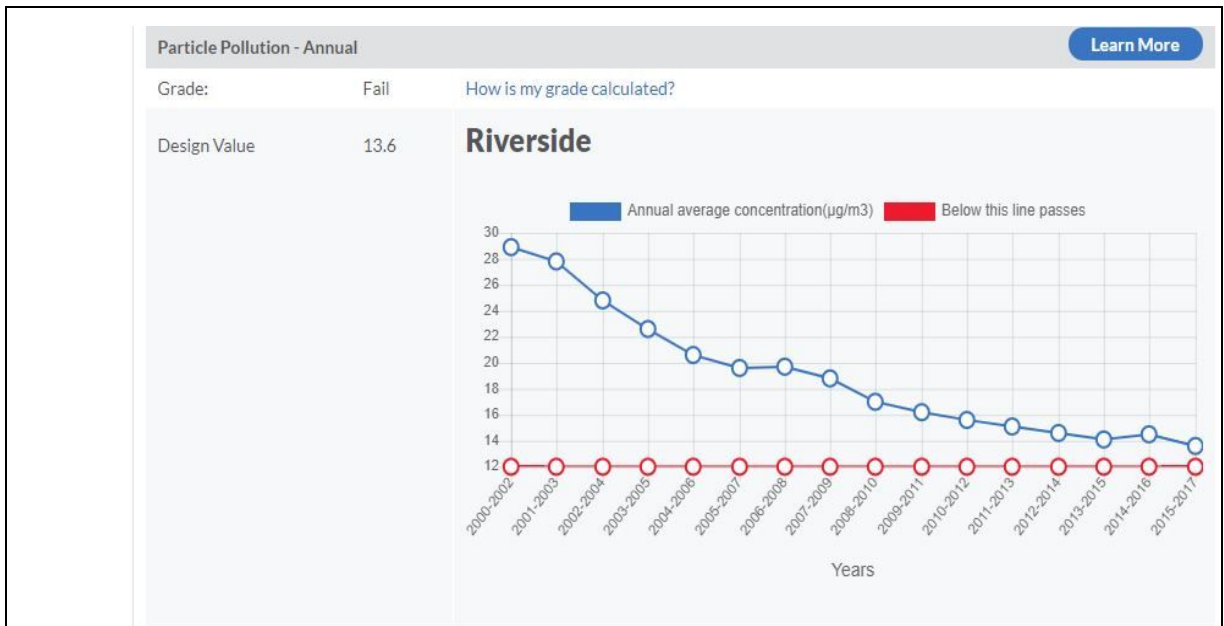


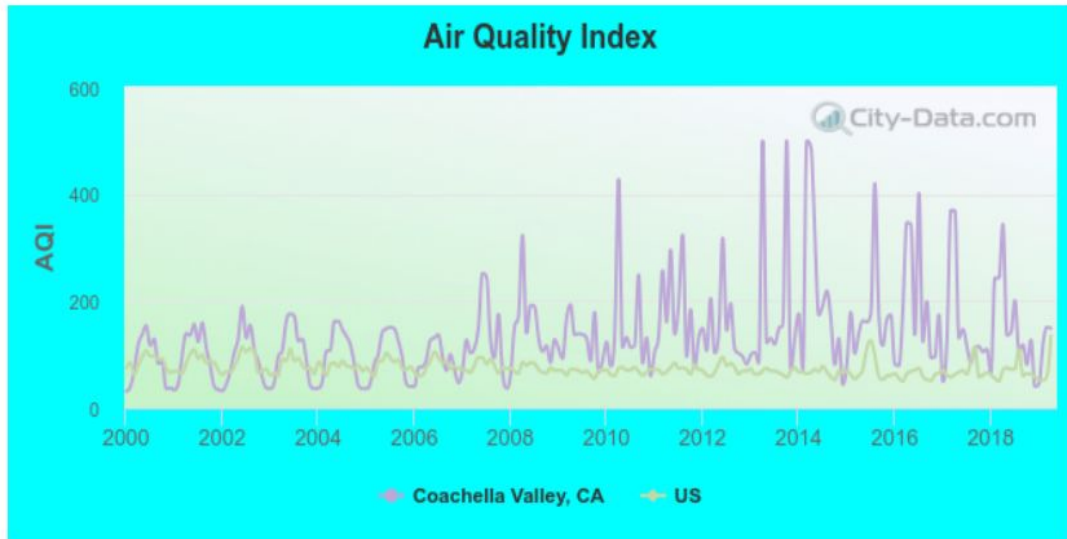
Fig 6: Estimated average annual amount of particle concentration for Riverside. *American Lung Association*. Screenshot Captured by Aida Recinos. Retrieved November 22



### Air pollution and air quality trends

(lower is better)

- AQI**
- Ozone
- PM<sub>10</sub>
- PM<sub>2.5</sub>



Air Quality Index (AQI) level in 2018 was 154. This is significantly worse than average.

City:  154  
U.S.:  74

Fig 7: Air Quality Index in Coachella Valley in the past decade. Courtesy of City-data.com. Screenshot taken by Jose Corpus. Accessed November 23, 2019.

### **3. What factors -- social, cultural, political, technological, ecological -- contribute to environmental health vulnerability and injustice in this setting? [Alexandra Vasquez]**

The Coachella Valley is a desert valley widely known for the Coachella Festival that takes place every year and its agriculture. However, what is rarely talked about is the environmental issues that are taking place in that area specifically in the East Coachella Valley. Air pollution, pesticide pollution, climate change, and water contamination all lead to health vulnerabilities in this area. The Coachella Valley suffers from high asthma rates mostly among people of color. According to CalEnviroScreen, 72% of residents suffer from asthma and 92% are born with a low birth weight (CalEnviroScreen 2018). It is known that high particulate matter pollution, also known as PM2.5, can cause heart and lung disease. Particle pollution and ozone pose the most widespread and significant health threats (CalEnviroScreen 2019). Premature death, nonfatal heart attacks, irregular heartbeat, aggravated asthma, decreased lung function, and increased respiratory symptoms such as irritation of the airways, coughing or difficulty breathing are some of the health threats that are related to particle pollution (Environmental Protection Agency). The Coachella Valley has a PM2.5 score of 20 which is moderately unsafe at long exposures (CalEnviroScreen 2018).

Keeping this information in mind, it is fair to say that the Coachella Valley suffers from racial and economic injustices due to social, political, and technological issues as seen in figure 8 and 9. The East Coachella Valley is comprised of mostly low-income Hispanic farmworkers. According to Data USA, 97.6% of the population in the Coachella Valley is made up of Hispanics or Latinos (Data USA 2018). In addition, the Neighborhood Atlas ranks the Coachella valley a 10 in regards to having the most disadvantaged background which is the highest their scale goes (Neighborhood Atlas). The Neighborhood Atlas website argues, "living in a disadvantaged neighborhood has been linked to a number of healthcare outcomes, including higher rates of diabetes and cardiovascular disease, increased utilization of health services, and early death" (Neighborhood Atlas). This highlights the vulnerabilities the residents suffer due to their socioeconomic status.

The lack of political legislature to help reduce the effects of climate change plays a huge role in the amount of pollution in this area. According to a study done at UC Davis, the Eastern Coachella Valley has elevated levels of air pollution and water contamination due to pesticides (Filmer 2013). "Global warming will make smog harder

to control because higher temperatures speed up the photochemical process by which pollution from factories, power plants, vehicles, and other sources form ozone” (Barboza 2019). If the area was comprised of high-income residents would it take this long to try to create legislature to reverse the effects of climate change? Meaning their income also plays a role in the residents’ vulnerabilities. The East Coachella Valley has a big population of undocumented residents, meaning they lack access to healthcare. Legislature that made healthcare available to everyone would help the residents deal with the pesticide pollution they are exposed to everyday while working at the farms.

Since we now know that global warming can negatively affect air pollution (seen in figure 10) it is important to transform our technological advancements in order to reduce carbon dioxide emissions, especially from cars. The Environmental Protection Agency (EPA) website states, “Greenhouse gases trap heat and make the planet warmer. The largest source of greenhouse gas emissions from human activities in the United States is from burning fossil fuels... ”(EPA 2017). In 2017, 29% of greenhouse gas emissions came from transportation by itself (EPA 2017). Lastly, these higher climates can result in fires as seen in figure 11.

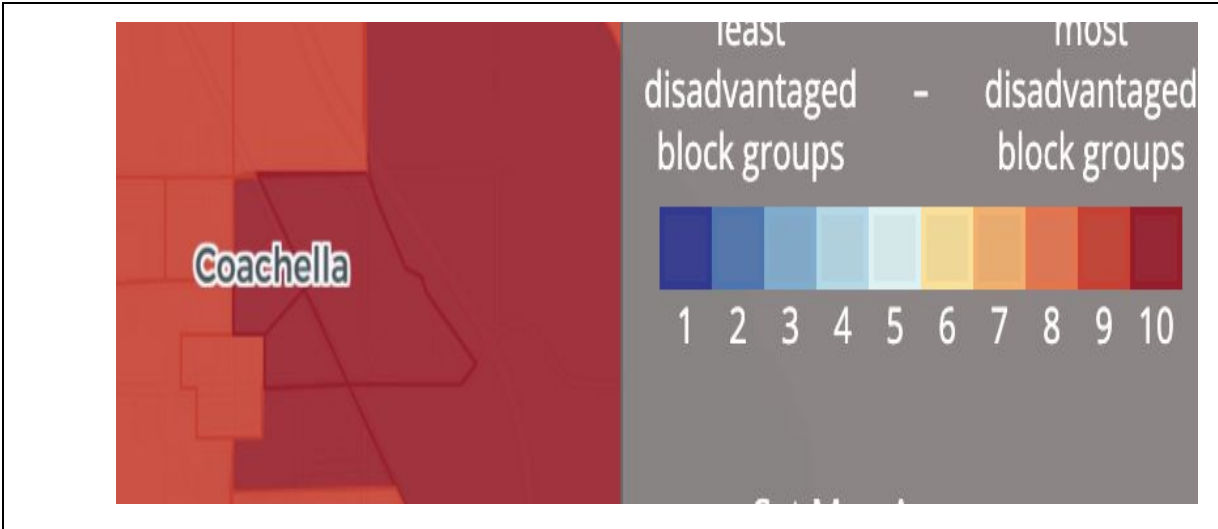


Fig. 8: Coachella has some of the most disadvantaged block groups. Screenshot from Neighborhood Atlas taken by Alexandra Vasquez. Retrieved on Nov. 21, 2019.



Estimated median household income in 2016: \$37,471 (it was \$28,590 in 2000)

Coachella:  \$37,471

CA:  \$67,739

Fig. 9: Comparison of Coachella's median household income to the rest of California. Screenshot of City Data's website taken by Alexandra Vasquez. Retrieved on Nov. 22, 2019.



Fig. 10: Smog levels in the Coachella Valley are increasing. Photo courtesy of the Desert Sun paper. Screenshot taken by Alexandra Vasquez. Retrieved on Nov. 23, 2019.



Fig. 11: Coachella Wildfires that contribute to climate change. Photo courtesy of CNN. Screenshot taken by Alexandra Vasquez. Retrieved on Nov. 23, 2019.

#### 4. Who are the stakeholders, what are their characteristics, and what are their perceptions of the problems? [Collective]

The Coachella Valley suffers from issues such as climate change, droughts due to climate change, and water contamination. Major stakeholders include residents, city officials, field workers, local environmental groups, the tourism industry, and the Environmental Protection Agency. Residents in the East Coachella Valley are exposed to air pollution, water contamination, and pesticide exposure. Because of these environmental problems, residents have made a case in order to get the state to help clean up their air (Zaragoza and Figueroa 2019). Their requests for cleaner air have been ignored and race, income, and lack of status could have a lot to do with the reason behind that. City officials have not their best to help with these issues. Officials are considering to downgrade the area's ozone pollution rating from "severe" to "extreme" – the worst federal classification (Barboza 2019). This is only to benefit them since they would have more time to better the environmental circumstances since they have a deadline coming up soon. A national stakeholder in this situation would be the Environmental Protection Agency (EPA). The EPA holds a lot of federal power and the East Coachella Valley would benefit from an intervention. For example, legislation to help reduce the effects of climate or legislation that would help regulate the use of pesticides. This will help prevent situations such as those seen in figure 12.



Fig 12: Kaylee Pineda, a resident of the East Coachella Valley, suffers from asthma which causes her to change her activities at school (Zaragoza and Figueroa 2019). Photo courtesy of The Desert Sun. Screenshot taken by Alexandra Vasquez.

Retrieved on November 23, 2019.

## **5. What have different stakeholder groups done (or not done) in response to the problems in this case? [Jose Corpus]**

A major problem that lies at the heart of Coachella Valley are the areas lack of clean, drinkable water which plagues this community. For example, climate change has forced many communities (such as the Coachella Valley) into massive droughts as seen in figure 13. Thus, to tackle this problem a variety of stakeholders have begun to take action.

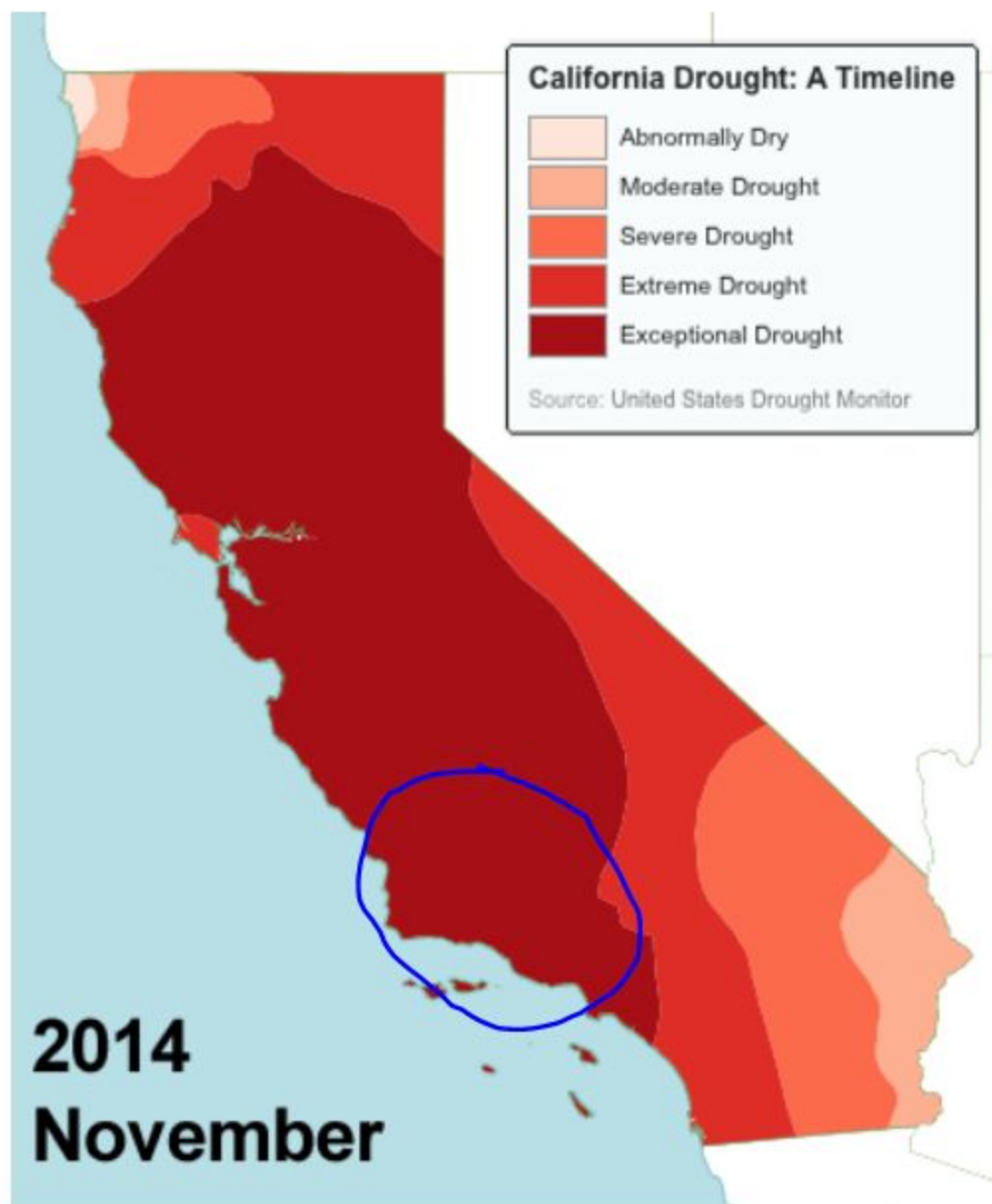
Major stakeholders in this case study are the local environmental groups, “Pueblo Unido” and, “Promotores Comunitarios del Desierto” which reside in Coachella Valley. An example of this is the community group dubbed Pueblo Unido. This group has begun to implement systems to help filter dirty water and make it drinkable by removing, “traces of arsenic and chromium-6 that occur naturally in the well water” (Potter 2017). Another group named Promotores Comunitarios del Desierto have also begun to organize conferences to discuss these growing problems with the environment, as well as, raise awareness of these problems at the local level (Potter 2013). This same group has even created a website in which residents can use to advocate for environmental problems in their various communities in their Coachella Valley (Potter 2017).

Another major stakeholder in these problems is current California governor Gavin Newsom. At around April 2019, Gavin Newsom, “signed Executive Order N-10-10” (Figueroa, Zaragoza 2019). This executive order forces other organizations such as local water districts and the Environmental Protection Agency to implement stronger filtration systems which can withstand the growing effects of climate change on the Coachella Valley community (Figueroa, Zaragoza 2019). In addition to Executive Order N-10-10, governor Gavin Newsom also signed SB 200. This bill, which is also known as the Safe and Affordable Drinking Water Fund, creates a pool of money which the disadvantaged can use to access clean and drinkable water when the necessity raises in prices due to droughts and other similar events (Figueroa, Zaragoza 2019). Similar changes have also been implemented by the Coachella Valley Water District in response to the past

Another major stakeholder is the Coachella Valley Water District. In response to the drought, the Coachella Valley Water District have begun to set limits on the amount of water golf courses can use and even offered, “cash rebates for removing turf” (James 2015). This was done so in order to help conserve clean and drinkable water for residents lacking this necessity in their communities.

Another stakeholder in this problem and based in the Coachella Valley are the privately owned golf courses in the area. Though the Coachella Valley Water District have begun to place limits on the use of water due to the drought, golf courses have historically used privately owned wells in order to water their green pastures. Therefore, these companies do not necessarily have to follow the rules set by the Water District (James 2015). Overall, many stakeholders have done good things to help ease the problem of lack of clean, drinkable water but the problem still persists.





California Drought-Map-2014

Fig 13: Figure showing severity of drought over the state of California. Photo courtesy of coachellavalley.com. Screenshot taken by Jose Corpus. Retrieved November 23, 2019.

## **6. How have big media outlets and environmental organizations covered environmental problems related to worse case scenarios in this setting? [Kenneth Kong]**

A large amount of coverage on the Coachella Valley comes from the local news source: The Desert Sun. The Desert Sun has many articles that covers environmentally related issues in Coachella, including pollution in the area and the effects of climate change and how they affect residents. Some articles also discuss the future of the valley as global warming becomes a more and more present problem. In one particular article the Desert Sun says that drought in the valley combined with the 25% usage cutback set by Governor Brown will heavily impact residents, most of whom use a large amount of water; a large number of golf courses and recreational spaces require lots of watering to maintain a green landscape to attract tourists (James 2015). The article goes on to describe the difficulties in enforcing the water reduction order and how water is already a scarce resource. Because of water's impact on the place's economy and lifestyle it will be increasingly difficult to reduce usage. Another article describes the effects that air pollution has on the nearby region's residents and children. It says that "Neighbors of Seeley Elementary School might have been breathing toxic amounts of dust for weeks during the summer, based on the readings of an air monitor put up at the school by a nonprofit" (Alena et al 2008). The reading also gives details for how the Coachella Valley Unified School District and the non-profit Comitè Civico del Valle plan to install air monitors in the region to protect students in Coachella and surrounding locations. These articles are a great source of news and document many of the problems to get the word out to people.

Other more prominent, national news sources like the L.A. Times also have taken notice of the pollution in the Coachella Valley. However they haven't extensively covered the environmental problems that Coachella Valley faces as well as local news sources like the Desert Sun. One article from the L.A. Times describes how climate change has made the air quality in the valley even worse over time. In the article's own words: "Regulators and scientists say global warming will make smog harder to control because higher temperatures speed up the photochemical process by which pollution from factories, power plants, vehicles and other sources form ozone" (Barboza 2019). This means that as climate change continues to make temperatures rise, the amount of ozone created by air emissions will rise as well and irritate residents' respiratory systems causing long term health problems (Barboza 2019). It would be great to have

more coverage of the Coachella Valley's environmental struggles by a larger, national news source because it would get more recognition and notice from a larger audience.

Organizations that have taken notice of the Coachella Valley include the California Environmental Protection Agency and the California Department of Food and Agriculture. This was prompted after Governor Newsom signed Executive Order N-10-10, which makes the CEPA and CDFA in charge of designing a climate resistant water system with matching infrastructure (Figueroa, Zaragoza 2019). This is an investment in the future and will prevent future climate disturbances from negatively impacting people in the Coachella region. Larger, national organizations have also passed rules for controlling the air quality as well. The EPA recently passed a rule that reclassifies certain areas as air quality planning purposes to decrease ozone levels (EPA 2019). Other local organizations like Promotores Comunitarios del Desierto and Comite Civico del Valle also spread awareness of the situation through actions like these: "Recently several hundred people gathered at a high school in Thermal, California at the inaugural Coachella Valley Environmental Health Leadership Summit. They listened to experts and brainstormed solutions on a variety of topics." (Potter 2013). This helps bring concerns to the attention of local residents and lets them participate in changing their own communities as shown in Fig 14 below.



Fig 14: Community members involving themselves in promoting environmental injustice in the Coachella Valley. Photo courtesy of the California Health Report.

## **7. What local actions would reduce environmental vulnerability and injustice related to fast disaster in this setting? [Jacqueline Salazar Romo]**

Local actions that can be taken to make progress in improving living conditions and environmental issues within the Coachella Valley can begin through community awareness, legislative action, data analysis, and civic enactment through case exposure in the media and beyond.

One of these interventions, community awareness, can be achieved through local organizations. There are various community-based organizations striving to create a better environment for Coachella Valley residents through their efforts in informing and involving individuals, as well as through seeking research and legislative action that may help their cause. Locally based organizations include Alianza Coachella Valley and

the Pueblo Unido CDC: Eastern Coachella Valley division, among others. These organizations work to prioritize the voices of the community and hosting meetings such as the ones pictured in Figures 15 and 17 to discuss environmental policy and social issues affecting the Coachella Valley, as per the mission of the Disadvantaged Communities Infrastructure Committee (DACIC): “The mission of the Disadvantaged Communities Infrastructure Committee (DACIC) is to secure access to safe affordable drinking water, wastewater and flood control services in disadvantaged Coachella Valley regions through strategic planning, funding procurement, needs assessment, and reporting—all in collaboration with community members, stakeholders, and local non-profits” (Pueblo Unido CDC 2019).

Legislation can take the form of local government support. One such legislative progression can be found in Assemblymember Eduardo Garcia's initiatives towards helping the state of the Salton Sea through the support of Governor Jerry Brown's Salton Sea Task Force, which is meant to take action towards combating the toxic effects of the nearby Salton Sea (See Fig. 18 for geographic approximations). Assemblymember Garcia's website describes, in a short article, the objectives of such enactment towards “[directing] agencies to develop a comprehensive management plan for the [Salton] Sea,” and proceeds to denote plans of action: “In 2016 the Legislature secured \$80.5 million in the state budget, established a road map for long-term goals, as well as directed the Natural Resources Agency to produce a list of shovel-ready mitigation projects... California State Legislature has put forward a critical Salton Sea bill package that establishes both a strategy and funding mechanism to mitigate air quality, public health, threats to ecological habitats and communities surrounding the Salton Sea...” (District 56). By giving attention to community concerns over the Salton Sea, the Coachella Valley would be able to correlate the negative effects of this contamination and work towards seeking improvements and preventing health problems in its residents.

As defined by the State of California, a Disadvantaged Community is one with an annual median household income that is less than 80 percent of the Statewide annual median household income. Data presented through indicators of social and environmental issues shows the ties between racial inequality and financial differences as they relate to environmental hazards, as can be seen in Figure 16 through the demographic and environmental comparisons of Eastern and Western Coachella Valley, information collected in producing the report *Revealing the Invisible Coachella Valley*, authored by Jonathan London, Ph.D., Teri Greenfield, M.Ed., and Tara Zagofsky, M.S. and published June 2013. These findings conclude that there are notable differences between the Eastern and Western sides of the Coachella Valley, and the report closes with a call to action and a positive note: “By documenting the cumulative environmental

hazards and social vulnerabilities in the Coachella Valley, this report has revealed an often invisible, but vital part of California. The hard-working residents of the rural communities of the Eastern Coachella Valley are seeking the resources and opportunities necessary to make their own lives, their desert region, and the state as a whole, flourish. Supporting local residents to implement the action framework above will promote a future where health, prosperity, sustainability, and equity are as clearly visible as the magnificent mountains that ring the valley” (London, Greenfield, Zagofsky 2013). Civic enactment is encouraged through community involvement.



Fig 15: Board members of the Disadvantaged Communities Infrastructure Committee (DACIC) gather to communicate their concerns regarding environmental action for the Coachella Valley. Image courtesy of Pueblo Unido CDC: Eastern Coachella Valley.

## DISPARITIES: EAST MEETS WEST

The Cumulative Environmental Vulnerability Assessment (CEVA) map (Figure 2) highlights the concentration of both environmental hazards and social vulnerability in the Eastern Coachella Valley (ECV) relative to the county as a whole, and even more dramatically compared to the Western Coachella Valley (WCV). This integrated analysis is necessary to understand the ways in which the greatest concentration of environmental hazards tend to confront the people and places with the fewest social, economic, and political resources to address to these hazards. Both the cumulative environmental hazards and social vulnerability factors vary greatly from east to west. This is illustrated in Table 2 and Figure 3.

**Table 2: Demographic Comparison**

|                                  | WCV     | ECV    | Riverside County Total |
|----------------------------------|---------|--------|------------------------|
| Percent People of Color          | 49%     | 94%    | 60%                    |
| Percent limited English speakers | 16%     | 45%    | 16%                    |
| Percent Below 200% Poverty Line  | 37%     | 65%    | 36%                    |
| Percent Unemployed               | 6%      | 14%    | 8%                     |
| Total Population                 | 324,381 | 88,193 | 2,189,641              |

**Figure 3: Environmental Indicator Comparison**

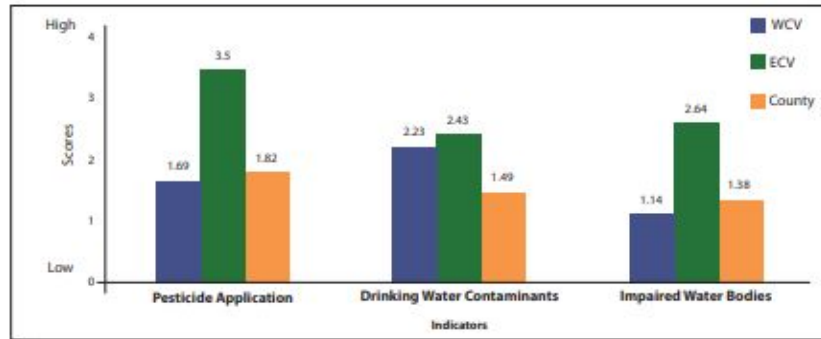


Fig 16: Indicators of disparities between the Eastern and Western Coachella Valley (through Table 2 and Figure 3) as per the June 2013 report entitled *Revealing the Invisible Coachella Valley*, authored by Jonathan London, Ph.D., Teri Greenfield, M.Ed., and Tara Zagofsky, M.S.. The report was commissioned by the California Institute for Rural Studies through funds from The California Endowment and Building Healthy Communities: Eastern Coachella Valley division, and published through the Alianza Coachella Valley website in a publicly available PDF format. Screenshot of Page 8 taken by Jacqueline Salazar Romo from the aforementioned report.



Fig 17: Local youth advocates are gathered, some holding up stylized signs with the silhouettes of the trademark Joshua trees that grow in the area that read “DEFEND DESERTS,” and participate in proposing environmental action as a community. Image courtesy of Alianza Coachella Valley, undated..



## Vicinity Map of the Salton Sea



Fig 18: Vicinity Map of the Salton Sea, where Gov. Jerry Brown's Salton Sea Task Force is to research. The map above elucidates to the Coachella Valley's proximity of the effects of the Salton Sea. Image courtesy of the California Natural Resources Agency.

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

Extra local actions such as state or national bills would greatly help reduce environmental vulnerability and injustice because it holds industries and stakeholders accountable for safety. Bills such as, SB 200 and Executive Order N-10-10 allows agencies to help create climate-resilient water systems and healthy waterways. This is a major step toward sustainable and equitable access to this precious resource during this climate crisis and prevent people having to carry jugs from miles away as seen in figure 19. The East Valley's urgent environmental and water issues needs a solution.

Figueroa said, “We have an opportunity to really tell the state what it should be doing better, by first prioritizing residents around the sea, improving air quality with stronger mitigation measures, and challenging environmental racism and injustice.” (Figueroa 2019). Also, California’s political leaders have made the long-overdue decision to clean up the Central Valley’s contaminated drinking water, and help cash-strapped rural water districts. “The catch: rather than assess a fee on water users or tapping into the state’s budget surplus, Gov. Gavin Newsom and the Legislature relied on cap-and-trade money to pay for a portion of the operation.”(Festa 2019) This decision was cheered by many clean water advocates, especially the roughly 1 million residents who haven’t had access to clean drinking and bathing water for years.

Although California has one of the greatest legislative climate policies many argue that this would affect the economy. Coren said, “DiCaro argues that sweeping, economy-wide legislation targeting climate change and energy in California is one reason the state’s manufacturing sector is currently growing at about half the rate as the rest of the country.” (Coren 2018). However, the White House is preparing to revoke California’s right to set strict pollution rules, President Trump is strongly considering a plan to revoke California’s legal authority to set state tailpipe pollution standards that are stricter than federal regulations. “Since the early months of the administration, the Environmental Protection Agency and the Transportation Department have been pursuing one of Mr. Trump’s most consequential attempts to weaken regulations designed to fight climate change: a sweeping rollback of Obama-era rules designed to cut the emissions of planet-warming greenhouse gases.”(Davenport 2019) The White House seriously believes that California’s strict pollution rules would have a heavy impact on the economy, but ignoring the fact that air pollution is a bigger problem that needs to be solved immediately. State climate policies would be the solution to the reduction of many emissions and better health for the future but the economy is also at stake which would have a great effect on the effectiveness of these bills.



Fig 19: Javier Ramos carries empty water bottles to refill in order to avoid drinking contaminated tap water at his mobile home in Thermal. Photograph by Omar Ornelas/ The Desert Sun.



Fig 20: Water from the Colorado River flows toward a series of groundwater replenishment ponds in the desert near Palm Springs on March 29, 2017. Photograph by Jay Calderon/The Desert Sun.



Fig 21: California's future in flight. Photograph by Jean Revillard.



Fig 22: Xavier Becerra, the California attorney general, right, and Mary Nichols, the state's air quality chief, center. Photograph by Jay Calderon.

**9. What kinds of data and research would be useful in efforts to characterize and address environmental threats (related to fast disaster, pollution and climate change) in this setting and similar settings? [Aida Recinos Ibarra]**

Several different types of data and research would be useful to characterize and address environmental threats such as data about particulate matter and pollution in the air. This would help the state and the city to see how much air pollution there is as well as what type of particles are polluting the air. Currently, a nonprofit local organization, Comite Civico del Valle Inc, in the Coachella Valley has decided to monitor the air themselves. In 2018, CCDVI found that there was particulate matter near a local elementary school which was "more than 40 times what the World Health Organization considers a healthy level...." (Maschke & Hong 2018). Unfortunately, not many people were aware of these levels or that there were groups who were monitoring the air this closely. By having more data such as what kind of particles are in the air as well as the levels that are in the air this can bring to light how much of these pollutants are due to freeways, or even pesticides. Data such as looking at how vulnerable an environment may also be helpful

Another type of research that would be useful would be longitudinal studies such as the Salton AIRE study which "aims to assess impacts of chronic exposure of particulate matter on longitudinal respiratory health..." (Comite Civico del Valle). Although this study seems to focus more on health, this study helps address environmental threats in that it will show how particulate matter such as the one that is being released by the Salton Sea due to its shrinking affects the people in nearby communities. Data such as tracking the number as well as the length of heatwaves could also be helpful in addressing the problem of climate change. since more heat also tends to lead to other environmental problems such as the increase in pollutants as well as droughts, which can contribute to public health problems as the pollutants such as particulate matter and dust particles in the air increases. Another source of research and data collection which could help characterize and address environmental threats would be data surrounding waste dumps in the Coachella Valley as well as summed score of pollution point as well as levels of contaminants in water and air quality zone which can help contribute to indexes which can help the state, as well as researchers such as the ones

in UC Davis, see how these environmental factors can accumulate with social/economic factors to create slow or fast disaster scenarios(London et Al 2018)(Refer to Figure 23).

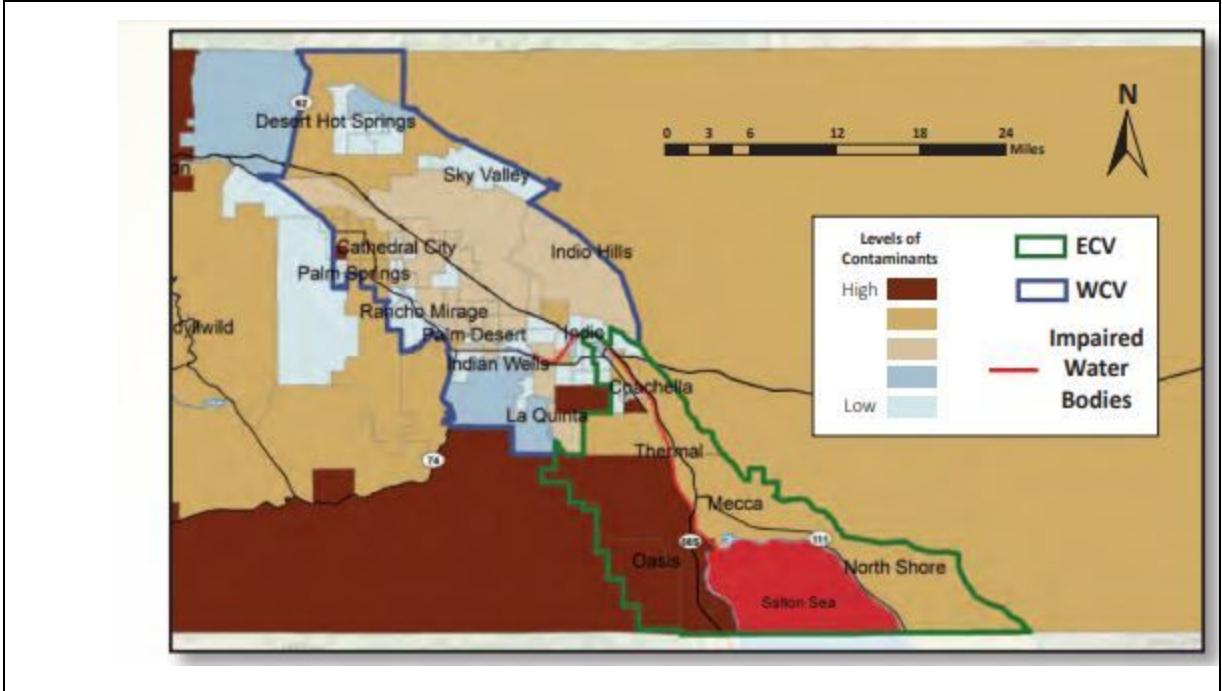


Fig 23: Above is a graphic from a research article by scientists at UC Davis in which they use data such as water contaminants as well as poverty to see which areas of the Coachella Valley are more vulnerable to environmental threats. Graphic Provided by UC Davis center for regional change. Captured by Aida Recinos November 23, 2019.

**10. What, in your view, is ethically wrong or unjust in this case? [Jose Alejandro Velasco]**

The Eastern Coachella Valley is predominantly Hispanic/Latinx with a low income economic background. The environmental injustice this community faces would be considered environmental racism because they are troubled with major impacts. Potter said, “So what is environmental justice? Communities that bear a disproportionate environmental impact by polluting industries, waste dumps, incinerators, polluted air, water, and soil.” (Potter 2013). Environmental racism leads to health disparities. Elevated environmental hazards in their air and water put these residents at risk for many health disparities. Zaragoza said, “Respiratory illnesses,

allergies, the lack of infrastructure and poor air quality continue to aggressively affect the livelihoods of residents in this region.” (Zaragoza 2019). Health injustices target low income and colored people which show how environmental racism has a great impact on health injustice. Community members talk about justice regarding environmental racism (see Fig 24).

Solutions are not being proposed to improve the safety of residents which proves underrepresentation from media and politicians. Lugo said, “Lack of political power in disadvantaged communities can make it difficult to get help at the state level, especially when those communities are far from Sacramento.” (Roth 2018). Political injustice makes it difficult for these communities to get appropriate help from health services, create better safety standards and improve living conditions. Zaragoza said, “In the face of these facts, the ECV is in desperate need of AB 617 investment, which will help monitor the air and focus on reducing emissions. At its core, AB 617 recognizes that while the state has made some improvements in air quality, not all communities have benefited.” (Zaragoza 2019). Underrepresentation could be the reason communities such as Eastern Coachella Valley do not benefit from state bills that are meant to improve the lives of residents. State bills improve neighboring communities of Eastern Coachella Valley but not itself which could relate to racial or social injustice.

Access to healthcare, adequate housing, and viable transportation are three of the Eastern Coachella Valley's most pressing concerns. Researchers said, “Adjacent to the more urban Western Coachella Valley, which includes the tourist and resort towns of Palm Springs, Palm Desert, and La Quinta, most of the eastern valley is impoverished and lacks safe and affordable housing. Many area residents must commute to neighboring Western Coachella Valley and do not have the economic and political resources to address these environmental risks in their hometowns.” (Filmer 2013). Economic injustice alongside political injustice are factors that worsen the conditions for residents in the Eastern Coachella Valley because they don't have the appropriate resources to combat these issues. Residents fight to attain basic services, like access to clean drinking water, paved roads, decent housing, and medical services.

Ultimately, I believe it is unjust that the Eastern Coachella Valley has many injustices such as health, political, economic and racial. These injustices all relate together and affect the lives of residents because it makes living in these communities difficult because they don't have access too many resources compared to other communities. In my view it is ethically wrong to target low income and colored



communities because the racial injustice ultimately affects health, education, jobs, housing, and other needs.



Fig 24: *Speakers asked community members in the audience to get involved in promoting environmental justice in the valley. Screenshot taken by Jose Velasco from Advocates and activists allege environmental racism in the Coachella Valley.*

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## APPENDIX A

| <b>DISASTER CAPITALISM SKETCH</b>   |  |  |
|---|--|--|
| Using this week's concept of " <a href="#">disaster capitalism</a> " sketch situations, examples, and solutions |  |  |
| Situation that could produce a setting for disaster capitalism  | Example of disaster capitalism   | Actions that would hinder disaster capitalism  |
| fire  | Companies such as PGE selling generators, raising prices on rent, or other sorts of places people use as shelter (I.E hotels, Air BnBs, etc) surrounding areas that were not burned in fire, | Guaranteed housing for those affected by fires. Set prices of rent for equivalent or better housing to those whose homes were lost due to natural disaster       |
| flood   | Markets raising prices on food, such as non perishable canned foods  | Local organizations/non profit environmental groups who help people get these foods for free   |
| earthquake  | Army Stores or other corporations selling things such as masks, flashlights or things found in earthquake kits at higher prices  | Programs in elementary schools or such that would provide students with at least 1 emergency kit per student   |
| hurricane   | Cost of items needed to rebuild houses go up, as well as insurance policies editing their policies to not include certain damage caused by certain natural disasters such as these           | Discounts on materials needed to rebuild homes. Implementation of federal policies that guarantee insurance policies cover natural disasters to a certain extent |
| lead poisoning  | Companies selling bottled water at higher prices than usual  | Federal regulation on prices of bottled water when deemed it is a necessity to an area   |
| drought   | Companies selling water bottles at higher prices. Companies who are supplying food to markets/cities raising taxes on items because of imports   | Federal regulation in benefits for supplying this area with necessary goods for residents to survive. Regulating prices of these imports.                        |

## APPENDIX B

| <b>Stakeholder Sketch</b>                                       |                            |   |
|---|----------------------------|---|
| "catalysts"   | stakeholders               | "corrosions"  |
| Collective Power, Right to Protest, Experience, Community Union | Residents                  | Lack of status  |
| Authoritative Power, Legislative Action                         | City Officials             | Complaints from Residents,  |
| First-hand Experience, Economic Asset, Major Laborers           | Field Workers              | Unions do not have that much authority,   |
| Media Coverage, Power to gain attention from local stakeholders | Local Environmental Groups | Lack of political power   |
| Money, Economic Vests,  | Tourism Industry           | Laws, or city councils offering or demanding that the tourism industry use less resources |

## APPENDIX C

| CHOOSING A COMBO DISASTER COMMUNITY SKETCH  |   |
|---|---|
| <p style="text-align: center;">Resources To Consider:</p> <ul style="list-style-type: none"> <li>• Search community name and “climate change” or “pollution” “disparities” or “environmental injustice” or “just transition” or “racism”               <ul style="list-style-type: none"> <li>• <a href="#">US EPA My Environment</a></li> <li>• <a href="#">CalEnviroScreen 3.0</a></li> <li>• <a href="#">World's Air Pollution: Real-time Air Quality Index</a> (Worldwide)</li> </ul> </li> <li>• <a href="#">U.S. Government Accountability Office</a> (USA) – Disposal of High-Level Nuclear Waste</li> </ul> |   |
| Questions to Consider:  | Community: Coachella Valley   |
| <i>Does the community's Wikipedia page give any clues to climate change harms or environmental harms?</i>   | <ul style="list-style-type: none"> <li>- Is on San Andreas Fault (Earthquake)</li> <li>- Dry Arid Climate (Droughts)</li> </ul> |
| <i>Are there local environmental groups in this community?<br/>(Possible search term: environmental justice)</i>  | Yes, Friends of Desert Mountains  |
| <i>What is the RMP potential in EPA E.J. Screen?<br/>(<a href="https://www.epa.gov/rmp/forms/vulnerable-zone-indicator-system">https://www.epa.gov/rmp/forms/vulnerable-zone-indicator-system</a>)</i>  | “Unlikely to be in Vulnerably Zone”   |
| <i>Is the community listed in either of these resources? <a href="#">Who's in Danger?</a> (starting on page 59) /// <a href="#">California Fact Sheet</a></i>   | It is in Who's in Danger, does not appear on the California Fact Sheet link   |
| <i>According to the American Lung Association, is the community's <a href="#">state of air</a> rating?</i>  | Ozone :F<br>Particle Pollution: F   |

## APPENDIX D

| LOCAL ACTIONS SKETCH            |   |   |
|---------------------------------|---|---|
| Combo Disaster Community:       |   |   |
| Identify a Problem              | Identify ways this problem is being addressed elsewhere (if at all) | Tailor these solutions to your Combo Disaster community |
| Air pollution due to pesticides | Using less pesticides   | Using less pesticides                                   |
| Air pollution due to wildfires  | Cutting down trees = less fire hazard, and smaller fires            | Thin out forests  |

|                     |  |  |
|---------------------|--|--|
|                     | <a href="https://www.npr.org/2018/08/07/636423660/what-effects-tree-thinning-has-on-wildfires">https://www.npr.org/2018/08/07/636423660/what-effects-tree-thinning-has-on-wildfires</a>  |  |
| Water Contamination | In Flint Michigan, New water sources, using bottle water<br><a href="https://www.voicesofyouth.org/blog/flint-water-crisis-impact-solutions-and-repercussions">https://www.voicesofyouth.org/blog/flint-water-crisis-impact-solutions-and-repercussions</a>  | Point-of-use reverse osmosis filtration systems<br><a href="https://psmag.com/environment/water-contamination-in-coachella-valley">https://psmag.com/environment/water-contamination-in-coachella-valley</a>   |
| Air quality         | Improvements on Local Transportation<br>Strict Emission Standards<br><a href="https://medium.com/@GyorgyiGalik/exhausted-by-pollution-how-to-improve-air-quality-in-cities-part-1-b67f8280d5a9">https://medium.com/@GyorgyiGalik/exhausted-by-pollution-how-to-improve-air-quality-in-cities-part-1-b67f8280d5a9</a> | Pave dirt roads<br><a href="https://www.calhealthreport.org/2013/07/24/new-report-maps-environmental-issue-in-eastern-coachella-valley/">https://www.calhealthreport.org/2013/07/24/new-report-maps-environmental-issue-in-eastern-coachella-valley/</a> |

**APPENDIX E**

|   |                |
|---|----------------|
| <b>COMMUNITY FAST FACTS SKETCH</b>  |                |
| Combo Disaster Community:   |                |
| <p>Conduct a “quick” Google search for fast facts about your community: What is the landscape? How densely populated? Main industries? Overall wealth of the region? Brief history? Find quick resources/articles about the community: Recent news? What are the environmental groups? Environmental News? Community vulnerabilities?</p> |                |
| Google Search   | News Resources |

|  |   |
|--|---|
| <p>Population: 188,789<br/> Economy: Agriculture, wind farming, dates(fruit), Ernie Ball, Esterline/Armtec défense facilities</p> <p>\$46,573 Median Income</p> <p>Location of Music Festival<br/> “Coachella”</p> | <p><a href="https://censusreporter.org/profiles/06000US0606590520-coachella-valley-cd-riverside-county-ca/">https://censusreporter.org/profiles/06000US0606590520-coachella-valley-cd-riverside-county-ca/</a></p> <p><a href="https://censusreporter.org/profiles/06000US0606590520-coachella-valley-cd-riverside-county-ca/">https://censusreporter.org/profiles/06000US0606590520-coachella-valley-cd-riverside-county-ca/</a></p> <p><a href="https://www.coachella.com/">https://www.coachella.com/</a></p> <p><a href="https://www.desertsun.com/story/news/environment/2018/10/15/climate-change-especially-dangerous-eastern-coachella-valley/1647944002/">https://www.desertsun.com/story/news/environment/2018/10/15/climate-change-especially-dangerous-eastern-coachella-valley/1647944002/</a></p> <p><a href="https://www.kcet.org/redefine/what-climate-change-will-mean-for-the-california-desert">https://www.kcet.org/redefine/what-climate-change-will-mean-for-the-california-desert</a></p> <p><a href="https://www.hcn.org/issues/49.13/amid-californias-toxic-dumps-local-activists-go-it-alone">https://www.hcn.org/issues/49.13/amid-californias-toxic-dumps-local-activists-go-it-alone</a></p> |
| <p>Why climate change is especially dangerous for low-income Coachella Valley residents</p> <p>What Climate Change Will Mean for the California Desert</p>   |   |

**APPENDIX F**

About The Authors



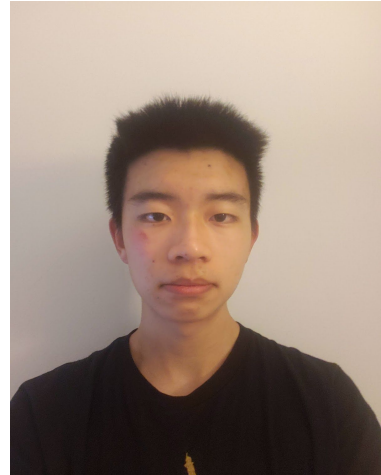
Yikai Cai is a first year Math student under the school of physical science at the University of California, Irvine. Yikai interested in the effects pollution has on the ocean. He hopes to reduce the chances of oil drilling on the ocean, since every oil drill accident could be a heavy disaster to ocean ecology.



Jose Corpus is currently a Second-Year Student at the University of California, Irvine. He is currently studying Biological Science at this institute and interning at his school's sports medicine department. He is interested in the effects of poverty on the health of the people. Jose aspires to be a professional in the healthcare industry as a medical oncologist or Physician's Assistant and wants to help people in any way he can. After going to graduate school for his career, he hopes to stay in the Southern California area and work to better the lives of his patients, family members, and overall those around him.



Kenneth Kong is a first-year undergraduate Physics major attending the University of California, Irvine. He is interested in the consequences of oceanic pollution and climate change. He hopes to be able to reduce the negative impact society has on the environment.



Aida Recinos Ibarra is a fifth-year student majoring in Anthropology and Psychology and Social Behavior at the University of California, Irvine. Aida has a wide variety of interests such as environmental anthropology, child psychology, medical anthropology, as well as cultural psychology. After college, Aida plans on getting her Masters in Clinical Psychology and becoming a Child Psychologist where her fields of study will help her understand her clients better.



Jacqueline Salazar Romo is a first-year undergraduate student at the University of California, Irvine. Originating from an agriculturally centric background and raised in Lagos de Moreno and the Coachella Valley, she is interested in learning about the environment and its effects upon California field workers. As a first-generation Mexican immigrant from a low-income community, Jacqueline has experienced the sociocultural and economic implications of field work firsthand, and she seeks environmental justice through pacifist activism and research.



Alexandra Vasquez is a first-year Psychology student under the School of Social Sciences at the University of California, Irvine. She is interested in mental health disorders and homelessness specifically in low-income communities where the residents mostly consist of people of color. She aspires to become a clinical psychologist and later come back to her hometown, Compton, California, where people with most mental health disorders are abandoned and left with no choice but to live on the streets. She hopes to be able to eliminate the negative stigma associated with mental health disorders in communities where mental health is not seen as important or valid.



Jose Velasco is a second-year Biological Science student at UC Irvine, interested in the effects of toxins on the human body. Jose has an interest in the field of dentistry and hopes to own a practice in an area of low income.



**CHOOSING A COMBO DISASTER COMMUNITY SKETCH**

Resources To Consider:

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    - [CalEnviroScreen 3.0](#)
    - [World's Air Pollution: Real-time Air Quality Index](#) (Worldwide)
  - [U.S. Government Accountability Office](#) (USA) – Disposal of High-Level Nuclear Waste

|  |   |
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| <i>According to the American Lung Association, is the community's <a href="#">state of air</a> rating?</i>   | Ozone :F<br>Particle Pollution: F   |