



Evaluating Associations between Air Pollution Burden and Rates of ED Visits and Hospitalization in Stockton's Disadvantaged Communities

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Background

Downtown and South Stockton ranked highest on the CalEnviroScreen 3.0 for PM_{2.5} impacts and second highest in diesel PM exposure out of all other disadvantaged communities in the northern district counties of California. These high emissions stem from the location of the community - it is situated in the cross sections of interstate 5 and highways 4 and 99 and is also home to the Port of Stockton. This pollution directly impacts a largely Latinx, immigrant, and low-income population facing the daily impacts of racism, poverty, and the broader effects of toxic stress. As such a high risk community, it has been identified by California as a candidate for the community air protection program designated under Assembly Bill (AB) 617.

Specific Aims

- Document and demonstrate associations between asthma and hospitalization rates with type and level of pollution in the Stockton community
- Communicate approaches to work effectively with community partners and support existing community efforts fight environmental injustices
- Centralize data outcomes and educational resources on climate justice for Stockton community members

Community Partners

- Catholic Charities of the Diocese of Stockton: <https://www.ccestockton.org/>
- Little Manila Rising: <https://www.littlemanila.org/>
- Fathers and Families of San Joaquin: <https://www.fffj.org/>

Methods

- For Literature Review:**
- Searched Google Scholars and Stanford Library for themes surrounding hospitalization and air pollution.
- For Hospitalization Data:**
- Hospitalization numbers and length in Stockton, taken from Centers for Medicare and Medicaid Services.

For Analysis of Housing Burden And Poverty in Relation to Emergency Department Asthma Visits :

- Gathered data from CalEnviroScreen 3.0
- Utilized linear regressions to identify correlation coefficients between housing burden and poverty with ED asthma visits

For Gathering Chemical, Releases, and Waste Management Data for Industrial Polluters and Comparing to Compliance Data

- Used industrial pollutant and health data outlined by the EPA's Toxic Release Inventory Program to outline the extent of tracking of chemical waste in Stockton as well as pinpoint certain high-risk industrial polluters of concern to community's health
- EPA's Enforcement Compliance History Online Database was used to access Compliance History data and compare with TRI data to find the extent of TRI's inclusivity for industrial sources
- Communication with EPA employees to verify and get broader grasp on data reporting procedures

Results and Outcomes

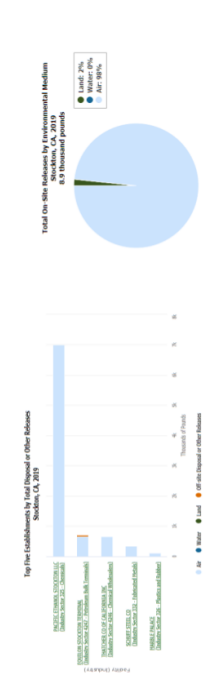


Figure 1: TRI graphic of Top 5 Release Facilities in Stockton, CA, graphed against thousands of pounds of pollutant, 2019

In 2019, the TRIP tracked 18 industrial facilities in Stockton. Pollutant Data from Industrial Facilities from the EPA's TRIP illustrate that the vast majority of industrial pollution is released through the air.

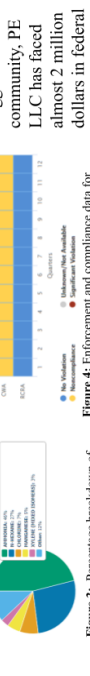


Figure 2: TRI Figure illustrating the percentage of industrial pollution that falls into each environmental medium, 2019

Located in the Boggs Tract community, PE LLC has faced almost 2 million dollars in federal fines in the last 5 years



Figure 3: Percentage breakdown of top pollutants released through air, 2019

Comparison of Stockton vs. San Joaquin County Average Life Expectancy Rates by Ethnic Group

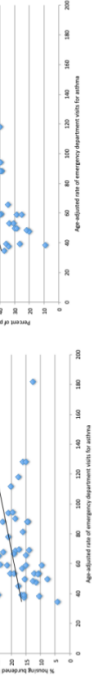


Figure 4: Bar graph comparing Average Stockton Life Expectancy Rates to San Joaquin County Life Expectancy Rates with a breakdown of ethnicity

Life Expectancy Rates of Black and Latino residents are consistently lower than those of other ethnic groups. Overall Life Expectancy of Stockton is significantly lower than that of San Joaquin County (SIC).



Figure 5: Mild association between poverty and rates of ED visits for asthma

Lessons Learned

- We observe mild associations between poverty and rates of emergency department visits for asthma. This was expected given the well-established ties between socioeconomic status and access to preventative healthcare measures
- We also observe mild associations between housing burden and ED visits for asthma
- We enumerate the number of hospitalizations for the city of Stockton.
- We define our role and approaches for working effectively with community partners and building on their expertise to deliver findings that are useful and respectful of community culture.
- There is a large discrepancy of information between resources, specifically differences between resources presented by the county, state, and national level.
- Residents of Stockton are exposed to a wide range of pollutant sources, including businesses, trains, ships, trucks, waste disposal, etc.
- There is a dire need to make information on pollution emissions and health risks as accessible as possible for residents and community members.
- Addressing these issues will entail collaboration from multiple sectors and community organizations.

Further Directions

- This analysis revealed 3 zip codes in the AB 617 boundary with higher numbers of hospitalizations and lengths of stay
- Zip code areas with lower incidences were notably closer to hospitals or were relatively smaller in size
- While these numbers have not been normalized to population number, it is worth noting that the factors of length of stay and number of hospitalizations show correlation with each other
- We plan to perform a deep-dive analysis by identifying point-source polluters, learning about health symptoms and vulnerabilities from community members, and consider sustainable interventions for the community
- The work from this research project will also integrate well with student efforts from Santa Clara University and University of California, Berkeley to educate community members and stakeholders on urgent public health challenges and equip them with the knowledge to take preventative health measures, advocate for each other, and recognize opportunities to take action
- To this end, we hope to publish our most prominent findings in the quarterly magazine of Fathers & Families of San Joaquin.

References

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