



# Air Pollution in Palo Alto vs East Palo Alto

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## Air Pollution

There are lots of different types of air pollution

Focus on: Particulate Matter (PM) 2.5

### Short term effects

- Increased risk of heart attacks
- Respiratory and cardiovascular disease
- Increased mortality in infants and young children

### Long term effects

- Development of asthma in children up to 14
- Slowed lung function in kids
- Reduced birth weight in babies

American Lung Association (2019)

## Disproportionate effects of air pollution

Communities of lower socioeconomic status experience worse air pollution

56% Black and Hispanic communities experience an average of 56% and 63% (respectively) more air pollution than generated by their economic consumption (Thompson, 2019)

A Canadian study found that the combined effects of air pollution caused more health visits in communities of lower economic status (Cakmak, 2006).

This project aims to answer the question

? Does East Palo Alto experience worse air pollution than Palo Alto, and if so, what can be done to mitigate it?

## Data and Findings

### August: PM pollution in Palo Alto and East Palo Alto

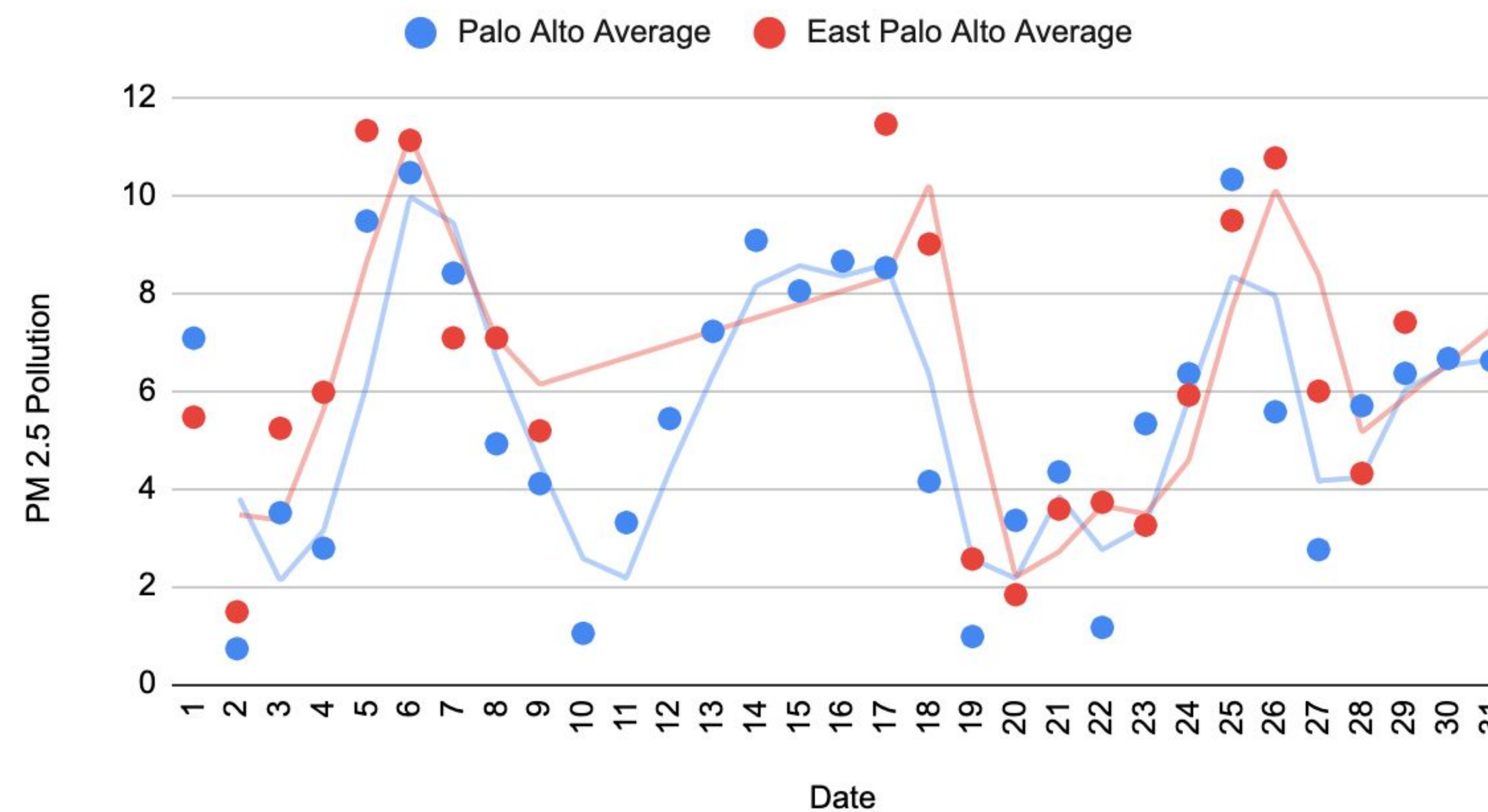


Figure 1: Graph of average air pollution in Palo Alto and East Palo Alto for August

## Conclusions and Analysis

Percent Difference

11.4% 11.4% increase in average daily air pollution between Palo Alto and East Palo Alto in August

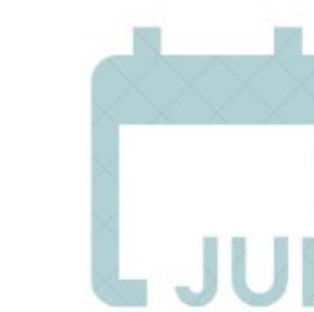
4.6% 4.6% increase in average daily air pollution between Palo Alto and East Palo Alto in July

Statistical significance



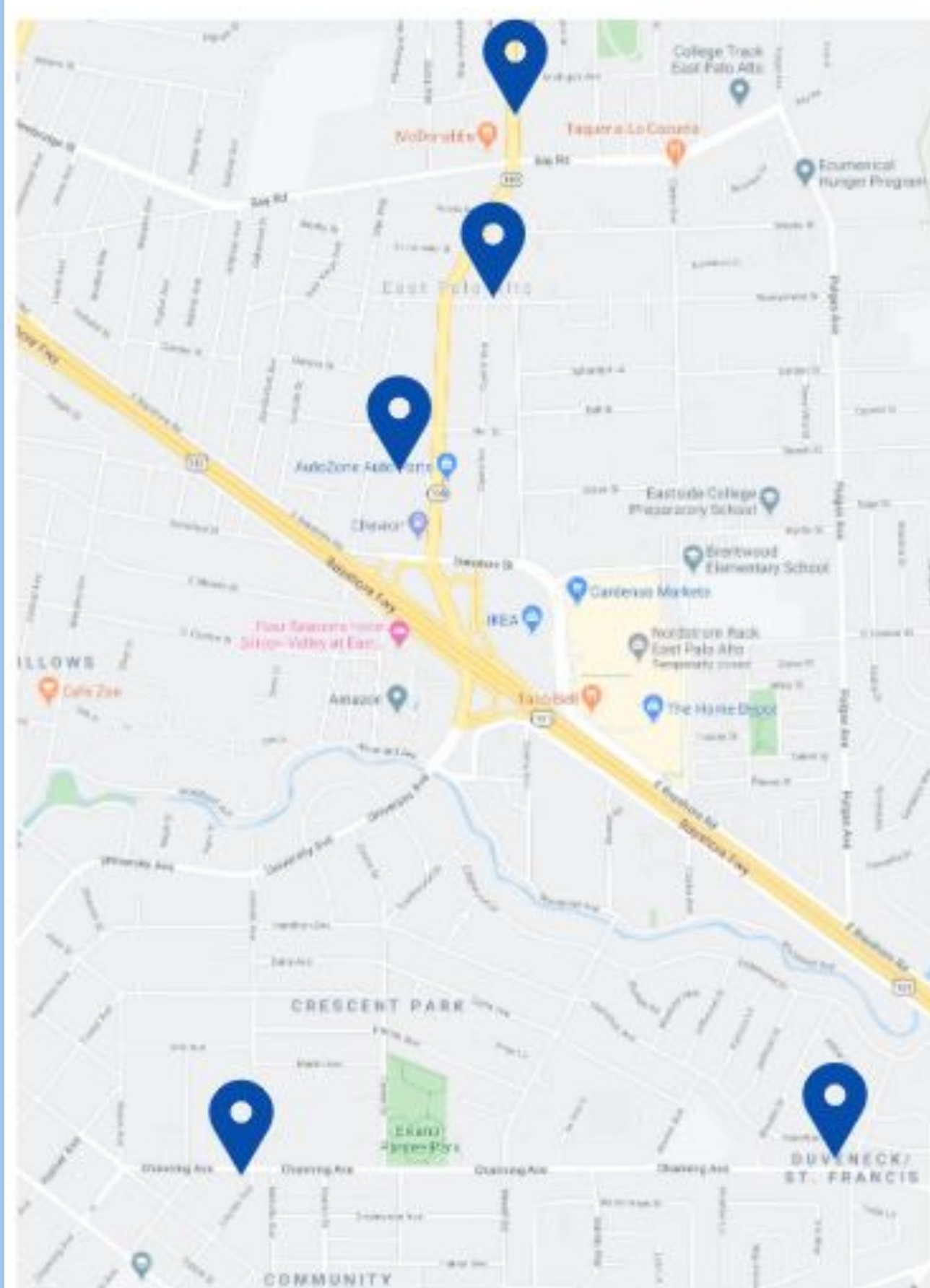
This data does not statistically prove an increase in particulate matter air pollution between Palo Alto and East Palo Alto

u1 = Palo Alto daily averages  
u2 = East Palo Alto daily averages  
u1 < u2  
p-value: .128 = cannot definitively say the increase is due to chance



u1 = Palo Alto daily averages  
u2 = East Palo Alto daily averages  
u1 < u2  
p-value: .375 = cannot definitively say the increase is due to chance

## Methodologies



General locations of sensors used

- Inquiry approach:**  
Action research and descriptive statistics
- Identify sensors:**  
Locate sensors in East Palo Alto and Palo Alto to collect PM data from
- Gather data:**  
Gather and average the data from the months of July and August
- Analyze data:**  
Determine if the problem exists between East Palo Alto and Palo Alto using statistics
- Action Research:**  
Create an education campaign to try to raise awareness and reduce air pollution

## Implications and Next Steps

Is this due to chance?

First of all, it cannot be determined if the increase in air pollution is due to chance or not. Looking at more data to see if there is an increase in statistical significance would be an important next step

Does the time of year affect the air pollution?

There was a greater increase in air pollution during August than in July. Does this have something to do with the fact that more people are commuting in August because they are back from summer vacation?

What does this mean for East Palo Alto residents?

East Palo Alto experiences three times the county asthma rate. A possible explanation for this was an increase in air pollution in East Palo Alto compared to surrounding cities. So what does it mean if it can't be statistically said that air pollution is worse in East Palo Alto?

Are there differences in the data?

The East Palo Alto sensors were carefully maintained by a third party, while the Palo Alto sensors are generally community based. Could this have made a difference in the data?

## Acknowledgments

Special thanks to:  
Eric Bloom, my mentor  
Doug Stotland, my former mentor  
Anthony Strawa and Drew Clark at Sustainable Silicon Valley  
Ms. Angell, my teacher

### Works Cited

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