Give a Care, Clean Up the Air!
A Study of Air Pollution and Cardiovascular Disease

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University of California, San Diego: Public Health Capstone II

Objective

To examine the spatial correlation between air pollution and cardiovascular disease in California

Methods

❖Calculate CalEnviroScreen Score for air pollution with metrics: Particulate Matter (PM) 2.5, Diesel PM, and Ozone for 7929 Census Tracts in California

❖Find correlation between CalEnviroScreen Score and Cardiovascular Disease Percentiles

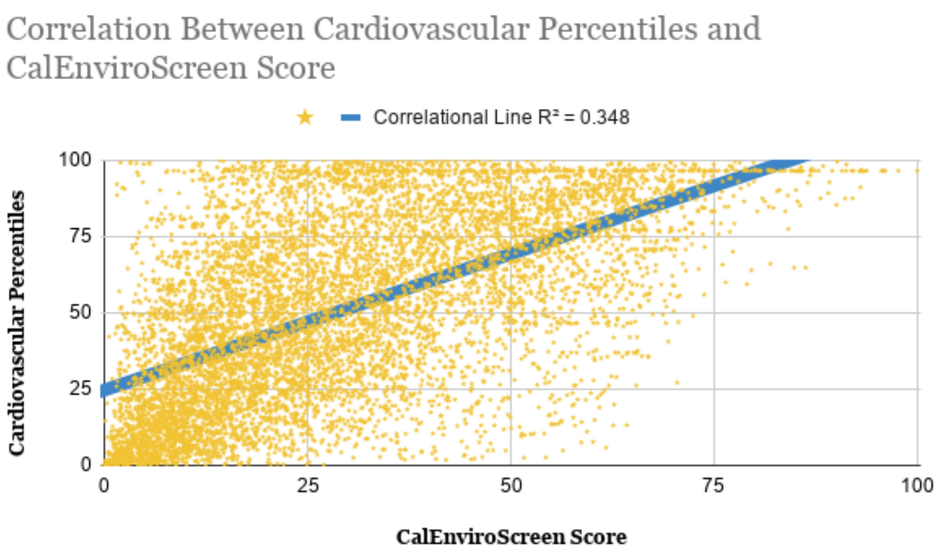
Results

❖Average CES Score amongst all Counties is 29.49 with Standard Deviation of 19.39

❖Average CVD percentile amongst all counties is 51.02 with Standard Deviation 29.33

❖Correlation Coefficient (r) is 0.589 between air pollution and cardiovascular disease

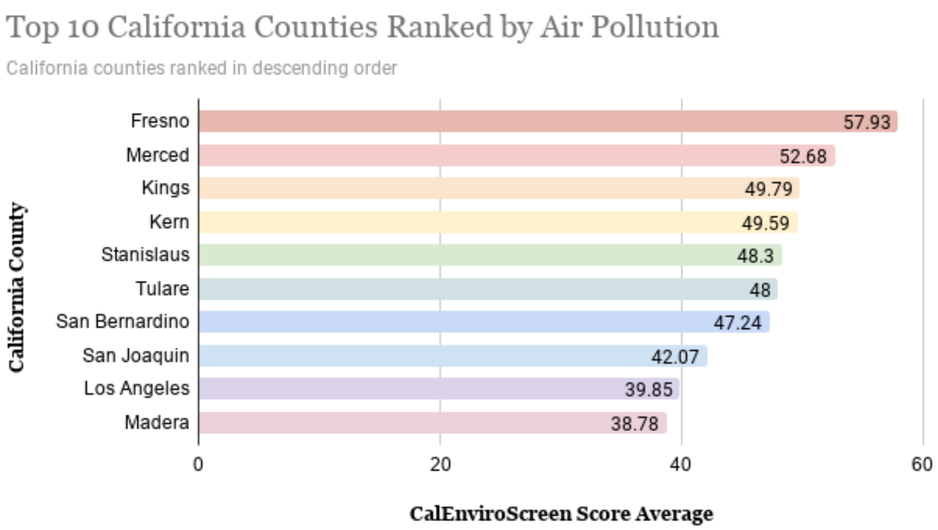
❖Top ten census tracts are disadvantaged based on socioeconomic factors (education, linguistic isolation, poverty, unemployment, and housing burden)

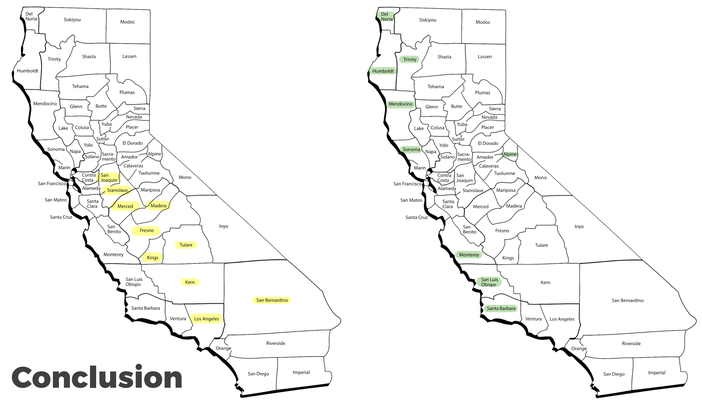


	1	2	3	4	5	6	7	8	9	10
Education	98.85	95.76	98.23	89.06	95.76	97.34	92.3	86.79	95.09	74.43
Lingustic Isolation	93.05	77.51	94.04	78.39	77.51	88.8	64.63	74.47	89.71	75.67
Poverty	99.64	97.12	96.48	99.56	97.12	98.43	99.8	94.57	98.58	97.88
Unemployment	97.99	91.72	86.88	87.98	91.72	96.9	97.07	96.04	77.88	66.75
Housing Burden	96.23	79.4	75.01	97.85	79.4	89.19	97.96	95.35	65.55	91.06

Socioeconomic Factors of the Lowest 10 Census Tracts

	1	2	3	4	5	6	7	8	9	10
Education	1.26	4.28	5.54	11.73	1.56	3.42	7.42	5.12	11.2	8.73
Lingustic Isolation	2.6	0	0	1.63	17.53	0	0	0	1.63	0
Poverty	1.63	3.57	19.66	34.58	0.24	13.54	3.05	15.06	15.64	18.21
Unemployment	1.55	2.84	15.01	12.69	1.55	0.01	1.13	0.77	9.37	9.37
Housing Burden	10.35	3.88	63.94	17.58	0.44	36.08	5.12	35.16	7.79	10.35





Conclusion

❖Positive correlation indicates that high air pollution are associated with high levels cardiovascular disease

❖Socioeconomic status may play a role in both air pollution and cardiovascular disease rates.

❖Correlation is found yet cannot be causative as other factors may have influence.

❖Main difference between highest and lowest census tract may be cumulation of farming business, growing population center, and mobile emission

Policy Implications

❖Our results inform policies (e.g. carbon taxes) could be effective that target high pollution areas like Fresno county.

❖Policies found in counties with low air pollution levels like Humboldt can serve as models for higher air polluted counties.