

Air Quality and Environmental Justice:

Uniqueness in the Canadian Context

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Margaret Bean v. Southwestern Waste Management, Inc.



1979, *Bean v. Southwestern Waste Management Corporation* was in response to a decision placing a garbage dump in Northwood Manor in East Houston.

Linda McKeever Bullard and Dr. Robert Bullard compiled data from 1970 to 1979, mapping the locations of city-owned landfills, city-owned incinerators, and private landfills.

All five city-owned landfills, 6 of 8 incinerators and 3 of 4 private landfills were located in mostly Black neighbourhoods.

Black communities made up only 25% of the population.

Warren County PCB Protests



1978 – Transformer company dumped industrial, including PCBs, along rural roads in fifteen North Carolina counties.

1978 – State selected Warren County of Afton to store the PCB-contaminated soils.

1978 to 1982 – Concerned residents mount legal and scientific challenges to block the dump, but were unsuccessful

1982 - Marches and non-violent street protests lasted for six weeks.

ENVIRONMENTAL JUSTICE AS RESISTANCE

COMMUNITIES FIGHTING CHEMICAL POLLUTERS
FOR HEALTH, LAND, AND A LIVABLE FUTURE



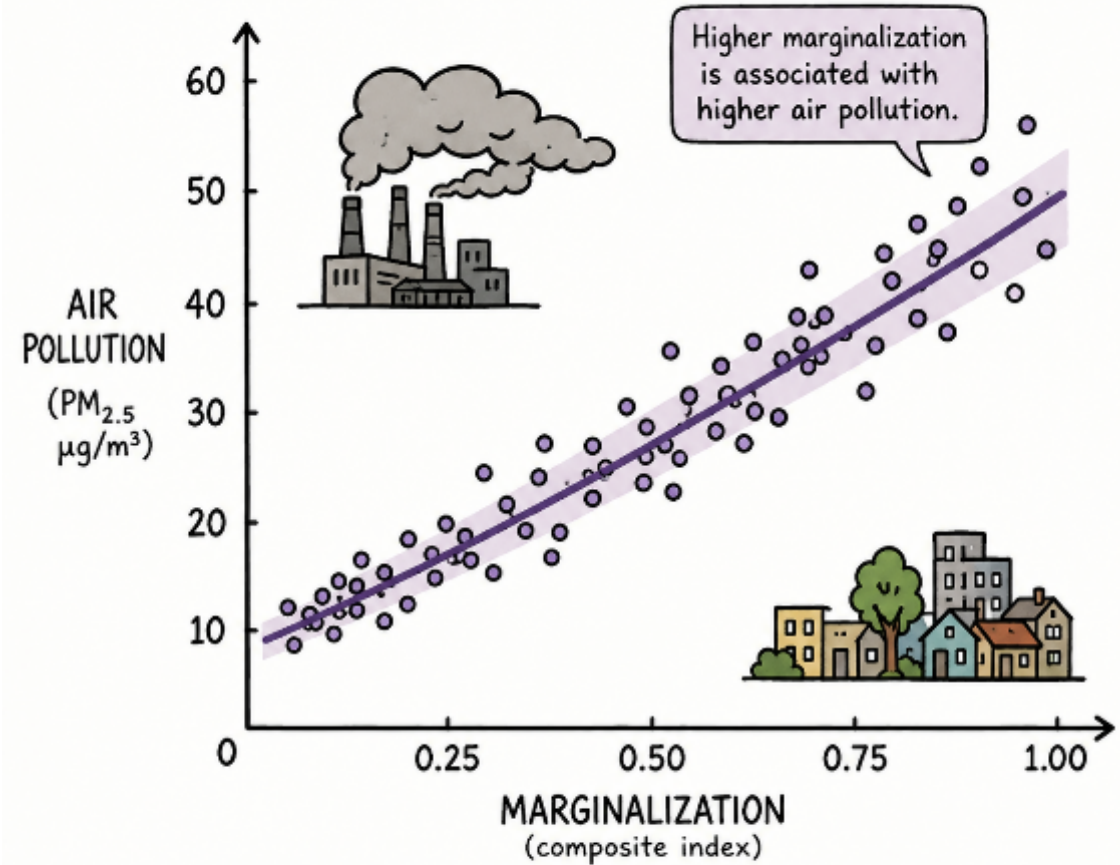
ENVIRONMENTAL JUSTICE AS AN ACADEMIC FIELD

RESEARCH, TEACHING, AND SCHOLARSHIP
TO UNDERSTAND AND TRANSFORM INJUSTICE



Academic Study

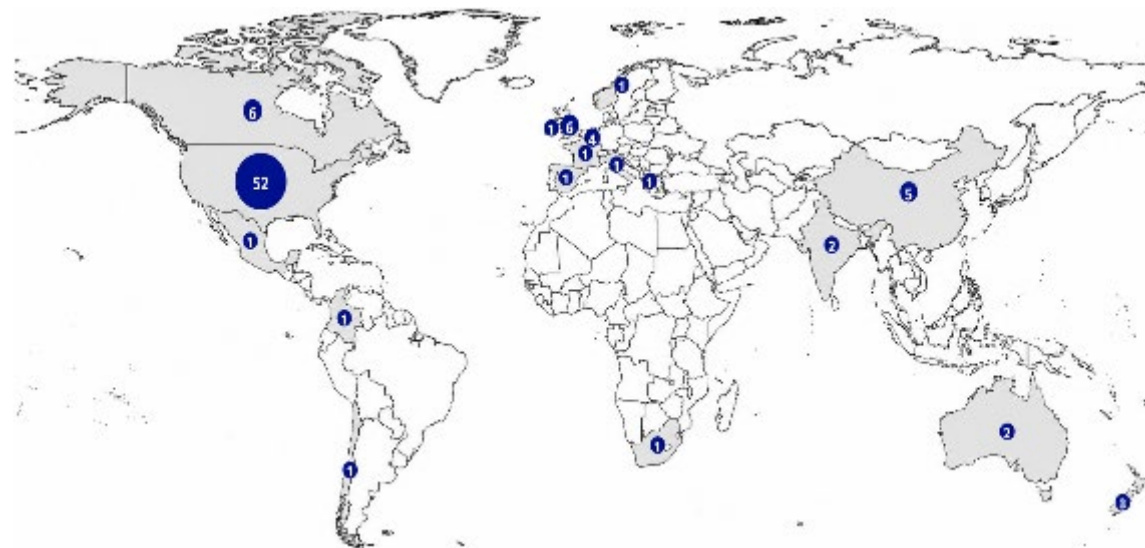
Figure 1. Air Pollution Increases with Marginalization



Note. Each point represents a census tract. The marginalization index combines measures of socioeconomic disadvantage, racial/ethnic minority status, and housing instability. The shaded area shows the 95% confidence interval.

Air pollution and environmental justice: a systematic literature review on methodological approaches

- 21 different countries - USA (53 %).
- Most studies focused on PM_{2.5} and a very limited number include health data.
- Few studies deal with social perceptions & citizen engagement.



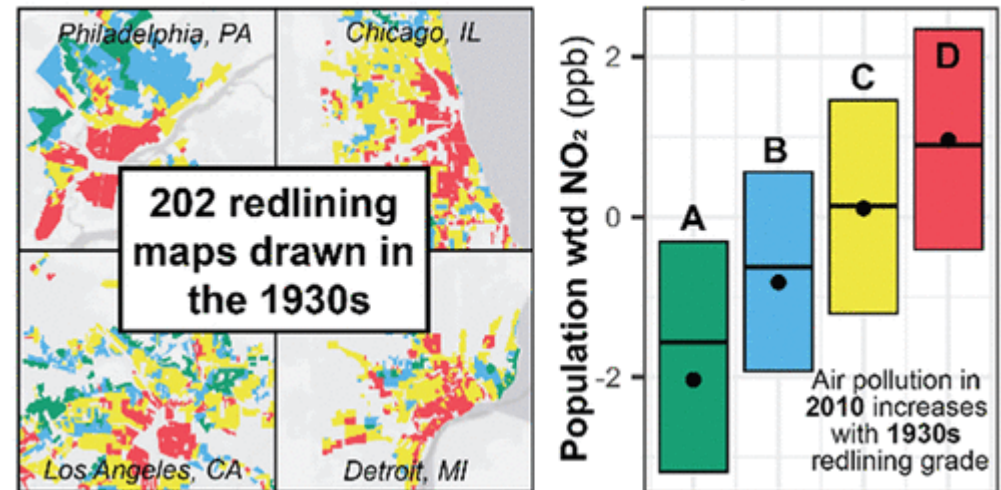
What the US Literature Suggests

- **Structural and Historical Drivers**

- Redlining, white flight, racial covenants, and land-takings led to concentrated polluting land uses and led non-White groups to live in larger, more polluted cities.

Currently in the USA, these historical drivers still reflect inequities in exposure; redlined neighbourhoods have higher exposures, slower improvements, and greater health impacts per unit of pollution.

Modern air pollution disparities in historically redlined areas



Lane, H. M., Morello-Frosch, R., Marshall, J. D., & Apte, J. S. (2022). Historical redlining is associated with present-day air pollution disparities in US cities. *Environmental science & technology letters*, 9(4), 345-350.

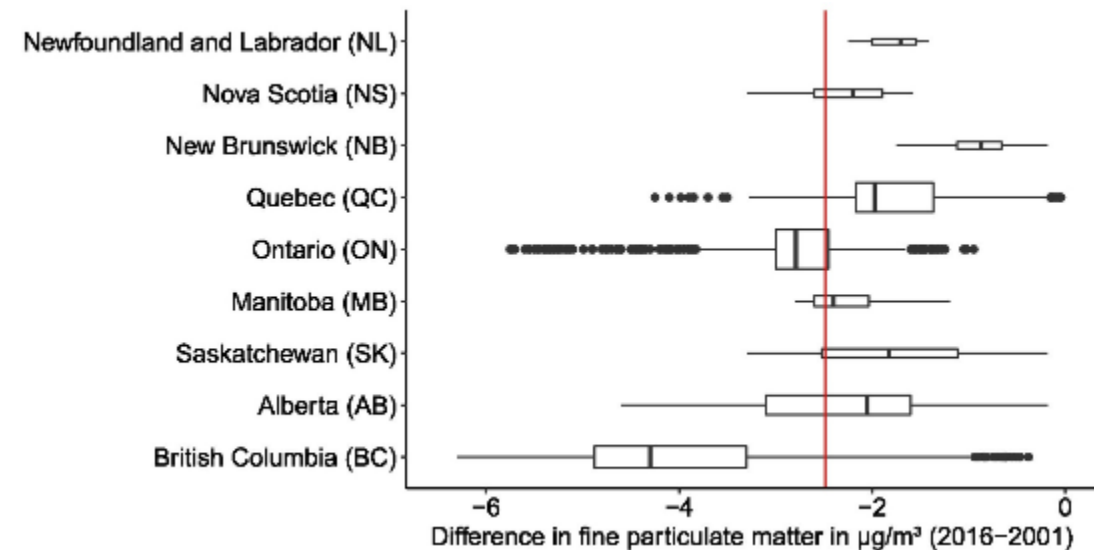
Canada – Mixed Findings

- In Toronto, Montreal, and Vancouver, cumulative air pollution indices ($PM_{2.5}$, NO_2 , SO_2 , and O_3) show distinct injustices:
 - Higher burdens for:
 - Indigenous residents in Vancouver
 - Immigrants in Montreal
 - Low-income residents in Toronto
- Results were sensitive to how cumulative risk is measured.



Canada – Trends in Air Quality

- Ambient PM_{2.5} levels declined across Canada between 2001 and 2016.
- Census tracts that were most polluted in 2001 remained among the highest in 2016.
- Neighbourhoods with larger Indigenous populations, lower educational attainment, higher housing cost burden, greater unemployment, and lower incomes experienced smaller improvements in PM_{2.5} exposure.
- The extent of inequity in air pollution reductions varied substantially across Canadian provinces.



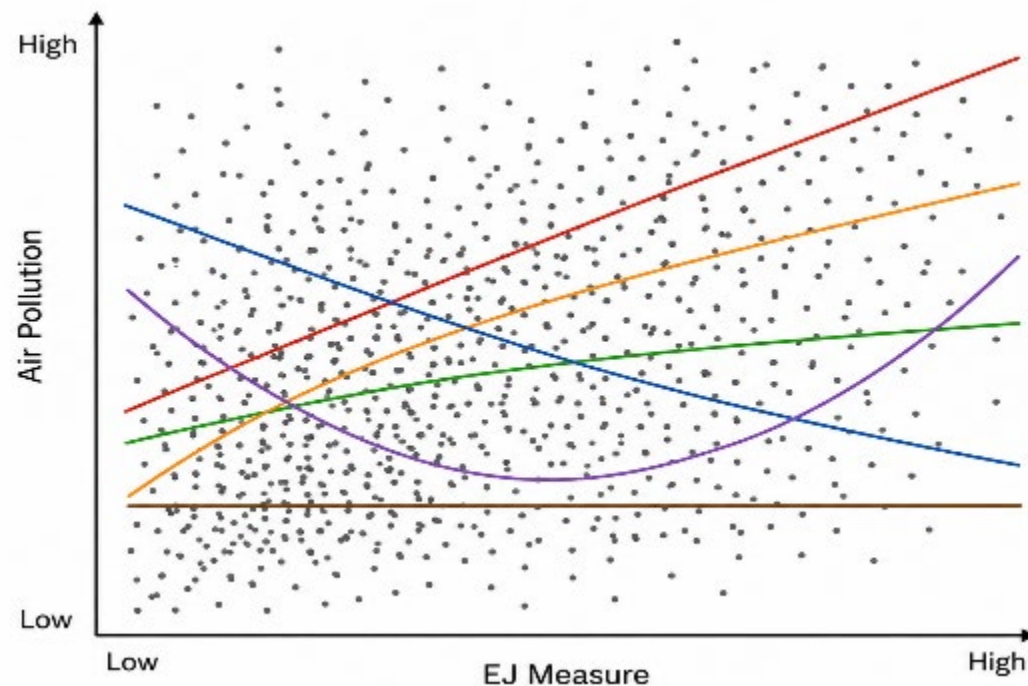
Air Pollution Attributable Mortality Within Canadian Cities

- Neighbourhoods with higher proportions of low-income residents and Indigenous populations experienced higher rates of air pollution–attributable mortality.
- Degree of inequality in air pollution–related mortality varied across cities.
- Disparities were driven more by pre-existing differences in baseline mortality than by unequal pollution exposure itself.



Canadian Summary

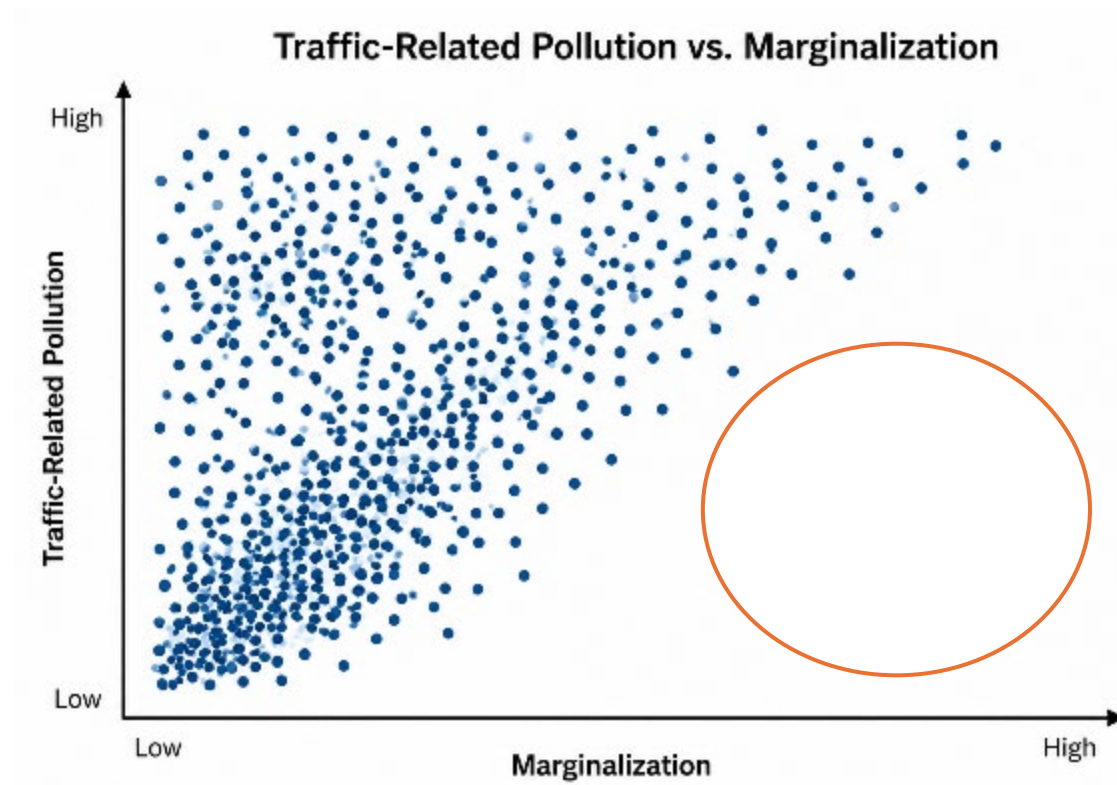
- Varying relationships have been identified between exposure and socio-economic measures.
- Within Air Quality Work, a large emphasis on Distributional Justice (The "Where" & "Who")
 - Procedural Justice (The "How")
 - Recognitional Justice (The "Who is Counted")



A TRADE-OFF: People may choose to live in more polluted areas because of easier highway access

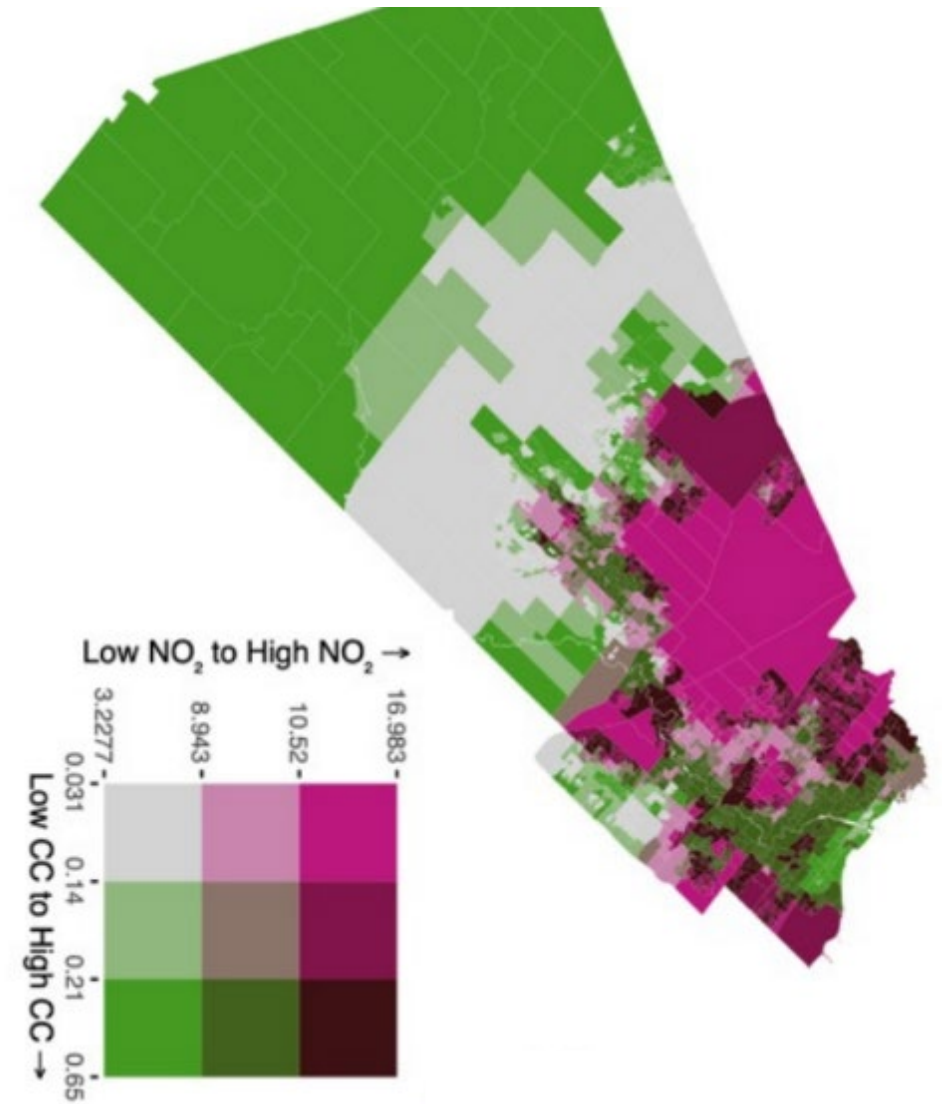


Everyone lives in polluted areas – Not everyone lives in clean areas



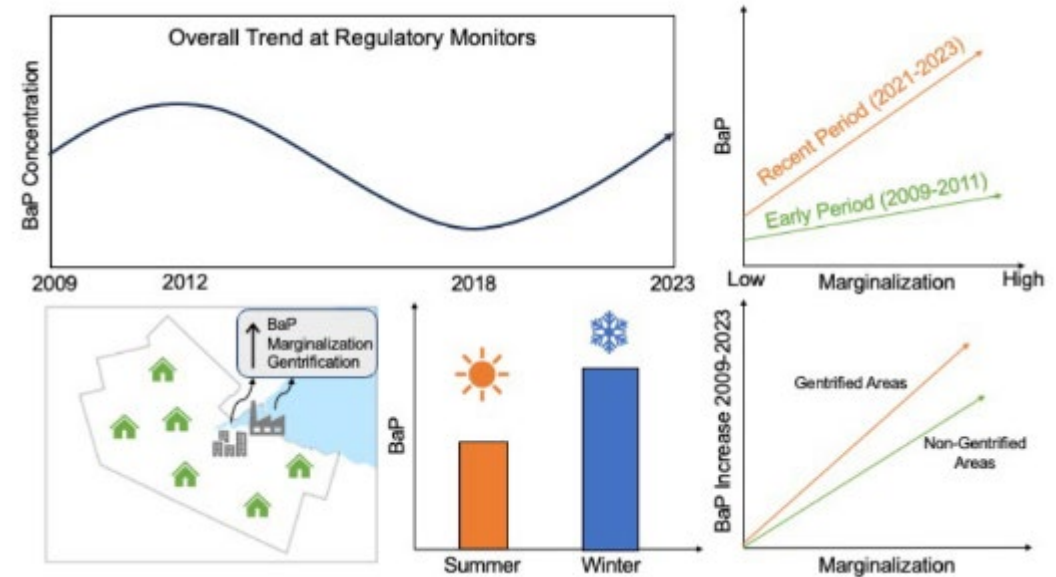
Underlying Mechanisms

- Should we continue to quantify distributional measures, or should we think about the underlying mechanisms that differ?
 - Work led by Amanda Norton, Ph.D.
 - Forest Filtration: Exploring the Relationships Between Measures of Air Pollution and Vegetation Over Time (1991-2016) in the Peel Region



How do shifting population dynamics impact the relationships?

- Benzo[a]pyrene (BaP) increased more in marginalized areas, showing worsening environmental injustice.
- Gentrification strengthens the BaP-SES relationship over time.



Spatiotemporal Analysis of Benzo[a]pyrene in a Deindustrializing City:
Environmental Justice and Gentrification

Jack J. Cheng^{1,3}, Angelos T. Anastopoulos^{2,3}, Elysia G. Fuller-Thomson¹, Jacob Mastin⁴, Tom Harner⁴,
Scarlett Rakowska¹, Kerstyn Lutz¹, Amanda Nocton¹, Ryan Kulka³, Matthew D. Adams²

The Future of Environmental Justice Studies in Canada

Equitable. Inclusive. Action-Oriented. Sustainable.



Community-Centered
and Equity-Driven



Policy Impact and
Systems Change



Stronger Data and
Methodologies



Capacity Building
and Education



Collaboration
Across Sectors



Climate Justice
and Sustainability

