



At the Intersection of Environmental Racism, Sustainability, and Well-being.

Presented By

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Why Do This Work?

- Public health
- Systemic racism
- Civil rights
- Planet Earth and future generations

Environmental racism, sustainability, climate change,
and public health are inextricably linked to wellness.

Learning Objectives

- Explain how environmental factors impact the six dimensions of health and well-being.
- Describe how environmental racism and unsustainable practices contribute to health disparities.
- Identify inclusive climate mitigation strategies to improve well-being and achieve health equity.

Terminology

Health Equity: the state in which everyone has a fair and just opportunity to attain their highest level of health.

Health Disparities: preventable differences in the burden of disease, injury, violence, or opportunities to achieve optimal health that are experienced by populations that have been disadvantaged by their social or economic status, geographic location, and environment.

Social Determinants of Health: the conditions in the places where people live, learn, work, play, and worship that affect a wide range of health risks and outcomes.

Disclaimer:

“Focusing on black lives does not devalue any other race/ethnicity group’s oppressive experience in this country, rather it unifies us together to amplify the truth of a racial experience unique to black people in this country.”

-Crystal T. Dixon, *Then and Now:
Dismantling Systemic Racism for Equity*, Climate for Health



Wake Forest University
Winston-Salem, NC

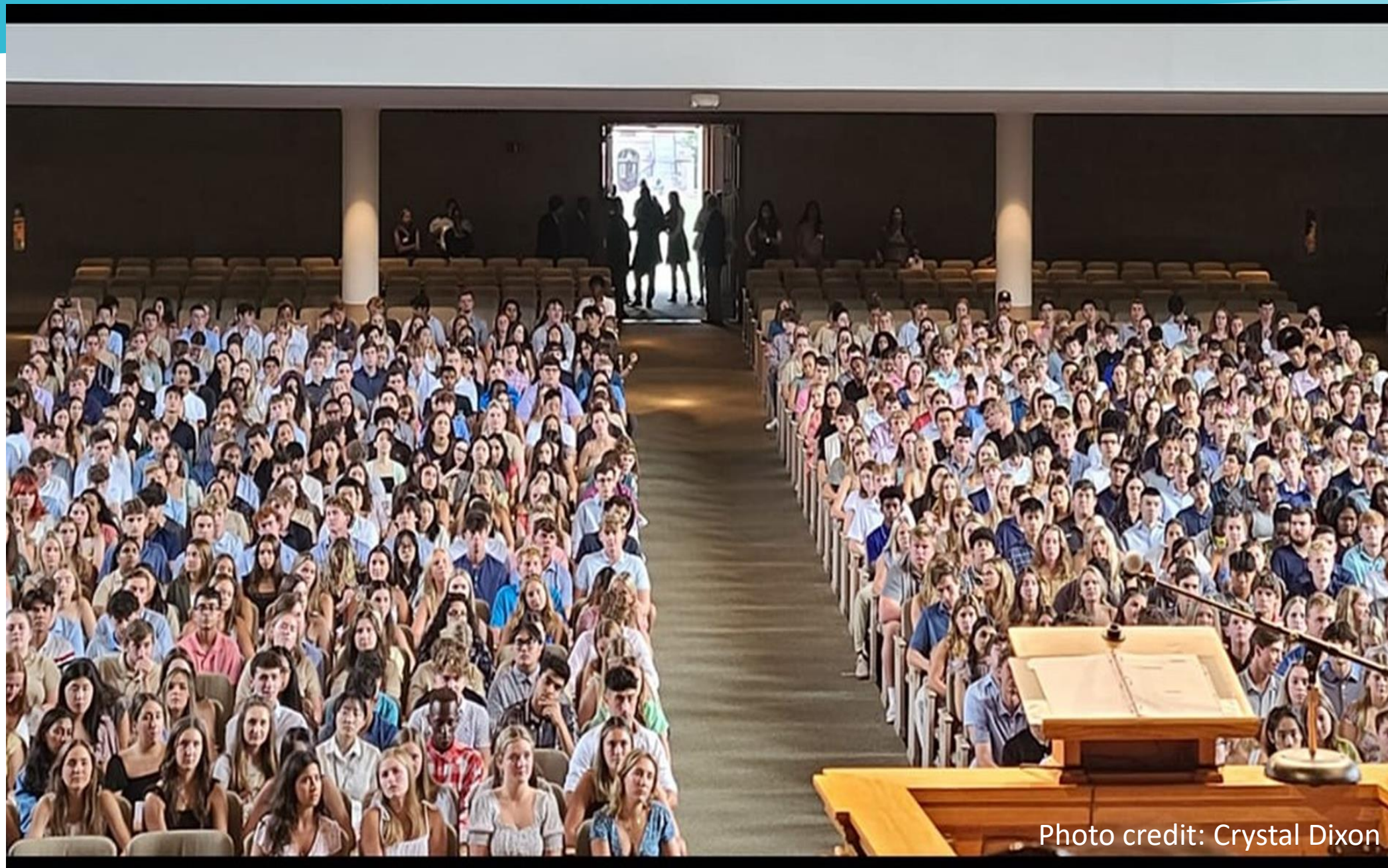


Photo credit: Crystal Dixon



The Weaver Plant Fire
Winston-Salem, NC
February 2022

Bloomberg

North Carolina Fertilizer Plant Engulfed by Fire Risks Explosion

The New York Times

Thousands Told to Evacuate as North Carolina Fertilizer Plant Burns

The fire broke out at the plant in Winston-Salem, where more than 6,000 people within a mile of the plant were told to leave over worries of a possible explosion.



THE HILL

The Philadelphia Inquirer

Daily Mail

Scores of North Carolina residents are evacuated after massive blaze at fertilizer plant sparks fear of possible explosion of ammonium nitrate



6,000 urged to evacuate as North Carolina fertilizer plant fire threatens an ammonium nitrate explosion



By [Chris Boyette](#) and Amy Simonson, CNN

Updated 8:27 AM EST, Wed February 2, 2022



What is Environmental Racism?

a form of systemic racism whereby communities of color are disproportionately burdened with health hazards through policies and practices that force them to live in proximity to sources of toxic waste such as sewage works, mines, landfills, power stations, major roads and emitters of airborne particulate matter.



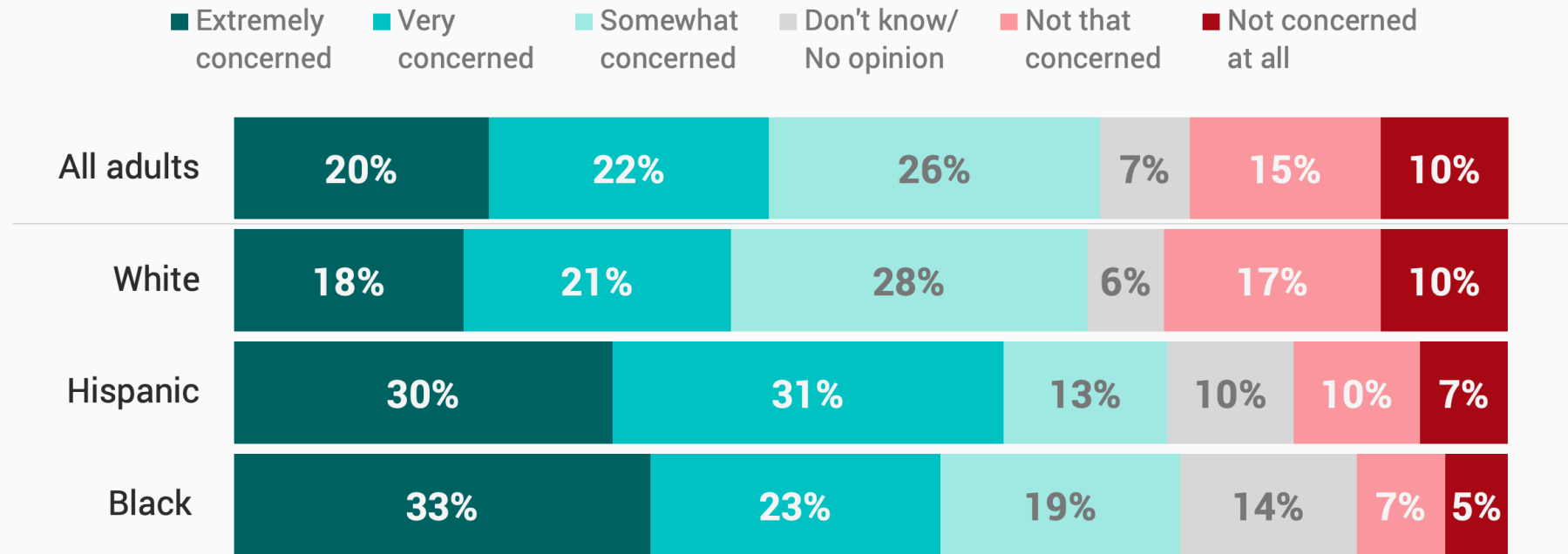
8 Environmental Factors That Impact Health:

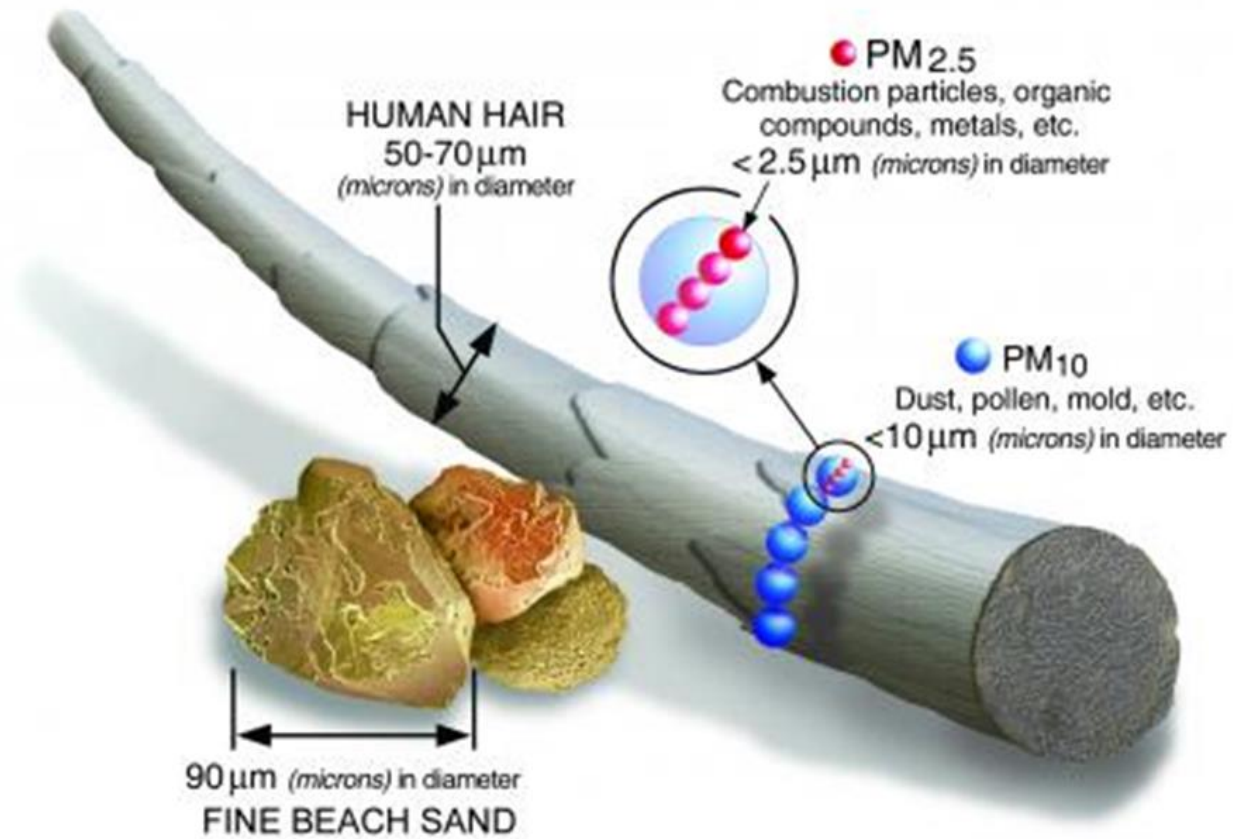
- Air pollution
- Poor water quality
- Climate change and natural disasters
- Diseases caused by microbes
- Lack of access to health care
- Poor infrastructure (e.g., Flint, MI, Jackson, MS)
- Chemicals
- Global environmental issues



1 in 3 Black Adults 'Extremely' Concerned About the Impact of Local Pollution on Health

How concerned are you about the impact of local pollution on the health of yourself, your family, your friends and community members?

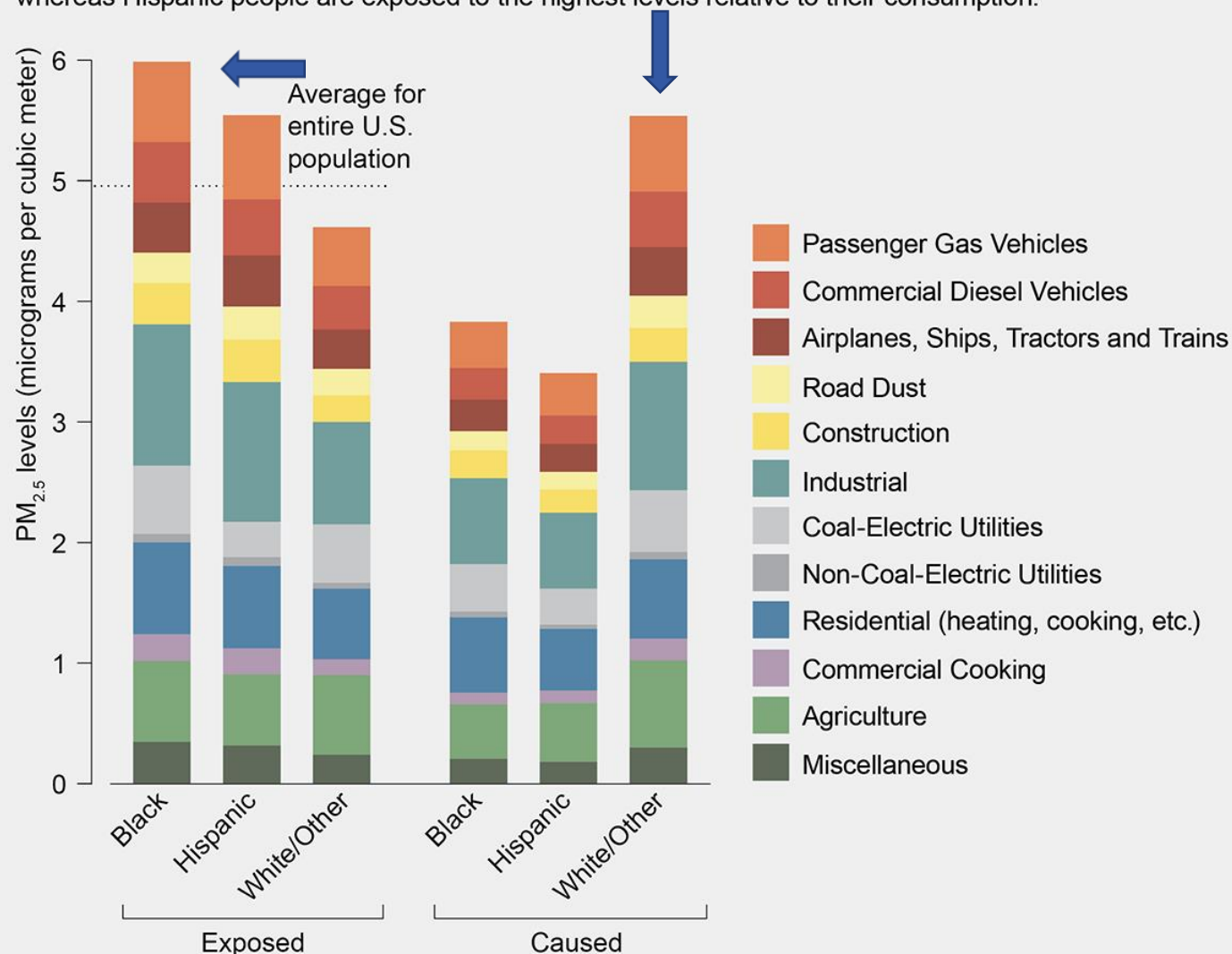




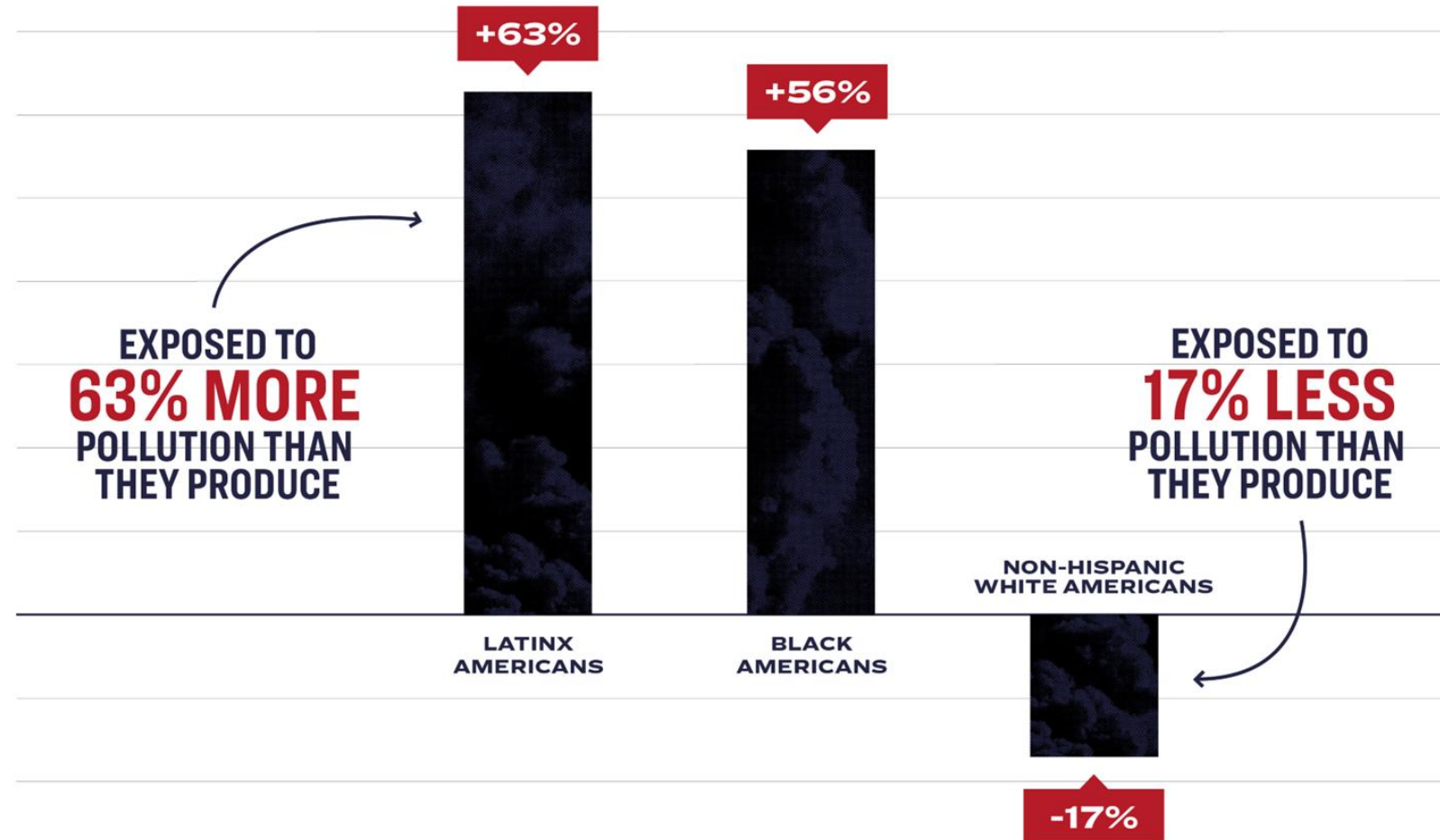
Black and Hispanics in the U.S. are exposed to higher levels of pollution on average, yet they consume less of the goods and services that cause the pollution.

Racial Groups' Exposure vs. Contribution to Air Pollution

Black and Hispanic individuals in the U.S. are exposed to higher levels of fine particulate matter ($PM_{2.5}$), on average, than white individuals yet consume less of the goods and services that cause such pollution. Black people, on average, experience the highest absolute pollution levels of the groups studied, whereas Hispanic people are exposed to the highest levels relative to their consumption.



POLLUTION EXPOSURE BY POPULATION (2003–2015)



Source: Christopher W. Tessum et al., "Inequity in consumption of goods and services adds to racial-ethnic disparities in air pollution exposure," *Proceedings of the National Academy of Sciences* (March 2019).

Particulate Matter & Public Health

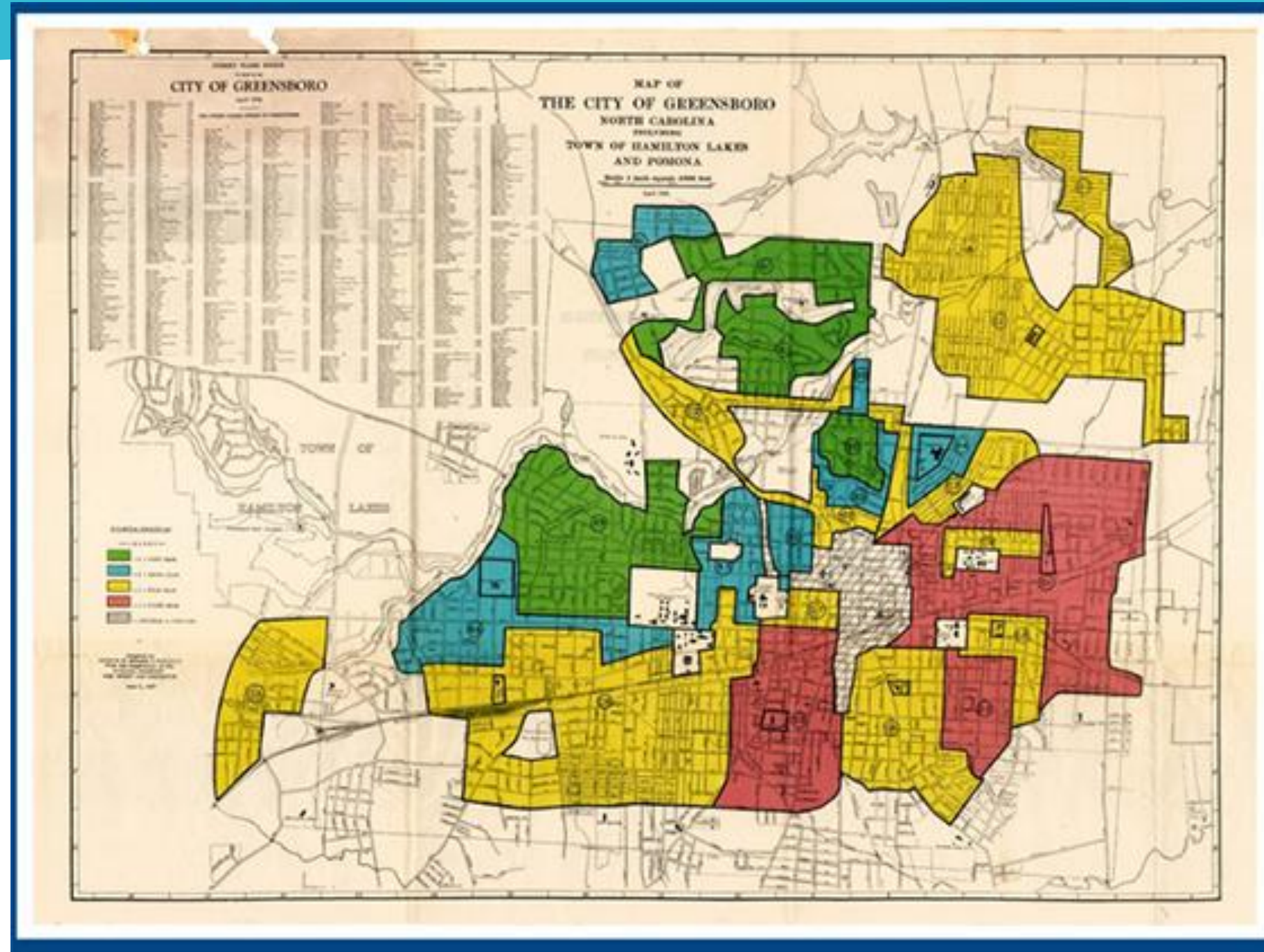
...higher historical PM_{2.5} exposures are positively associated with higher county-level COVID-19 mortality rates after accounting for many area-level confounders.



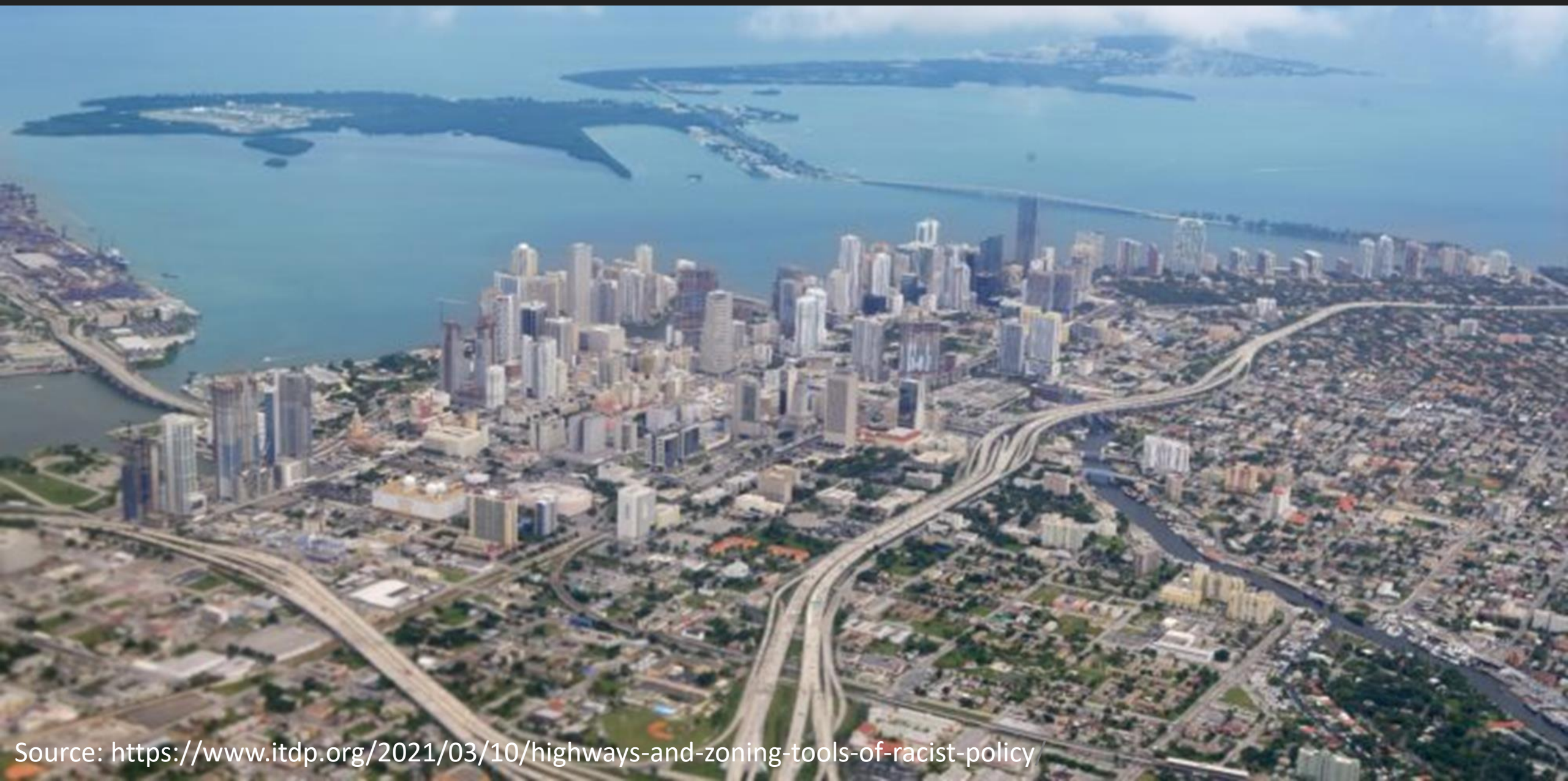
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Redlining



Highways dissect Miami, creating segregation and destroying historical neighborhoods.



Source: <https://www.itdp.org/2021/03/10/highways-and-zoning-tools-of-racist-policy/>

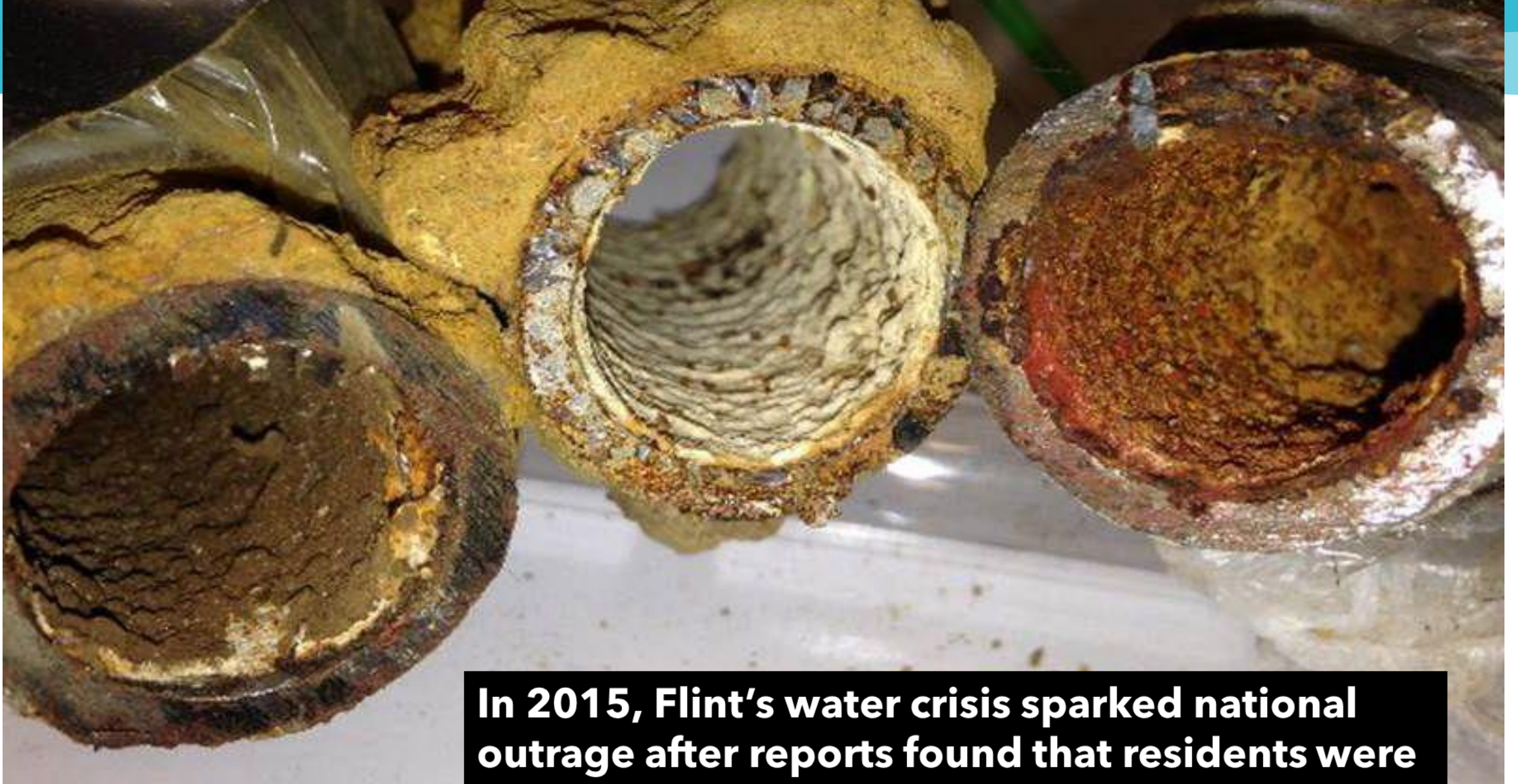
**African Americans are three times as likely to
die from particulate air pollution
than the overall population.**

-New England Journal of Medicine
June 29, 2017



“Since the nation’s founding, African Americans repeatedly have been controlled through institutions such as slavery and Jim Crow, which appear to die, but then are reborn in new form tailored to the needs and constraints of the time.”

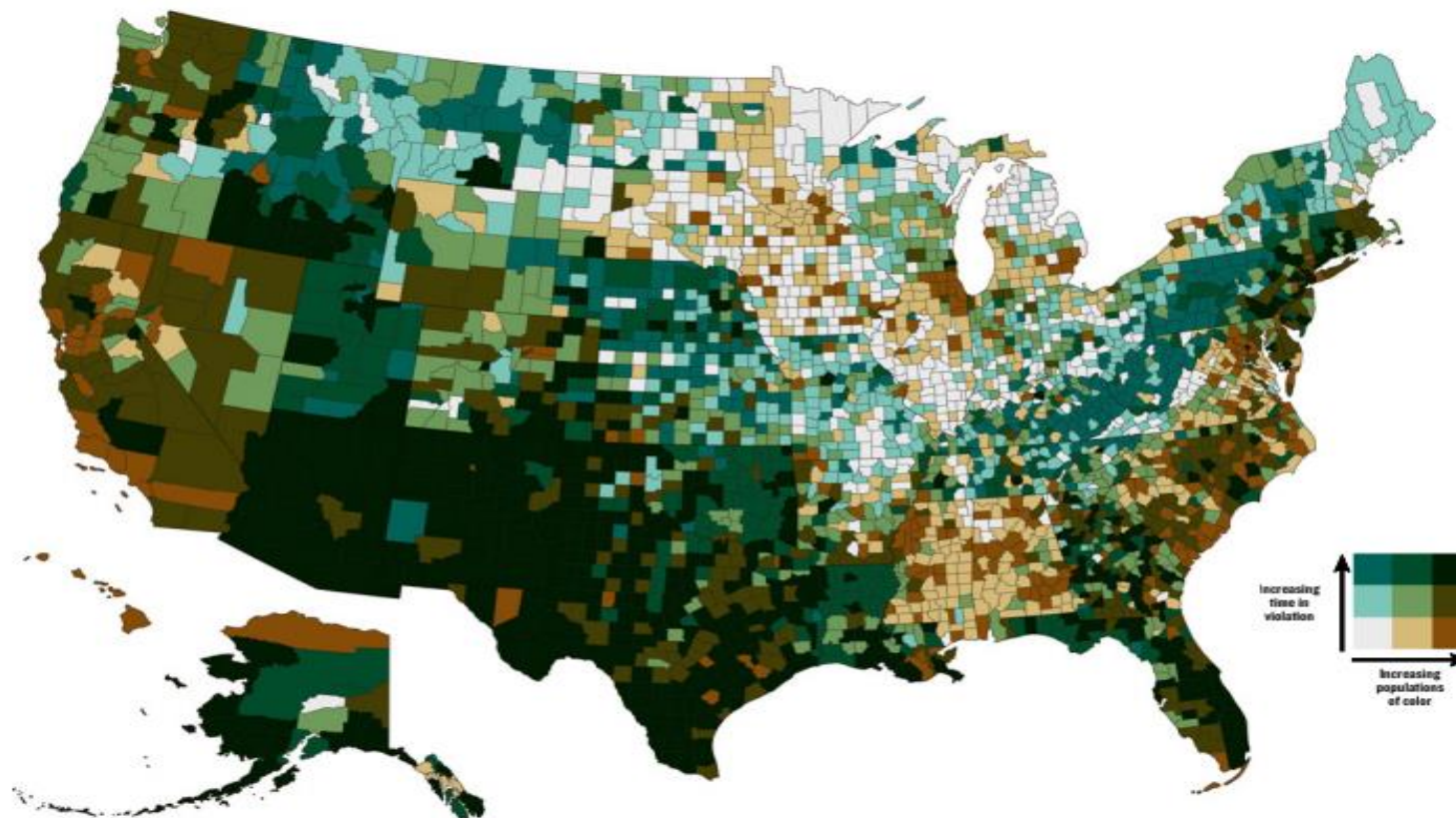
—Michelle Alexander, *The New Jim Crow*



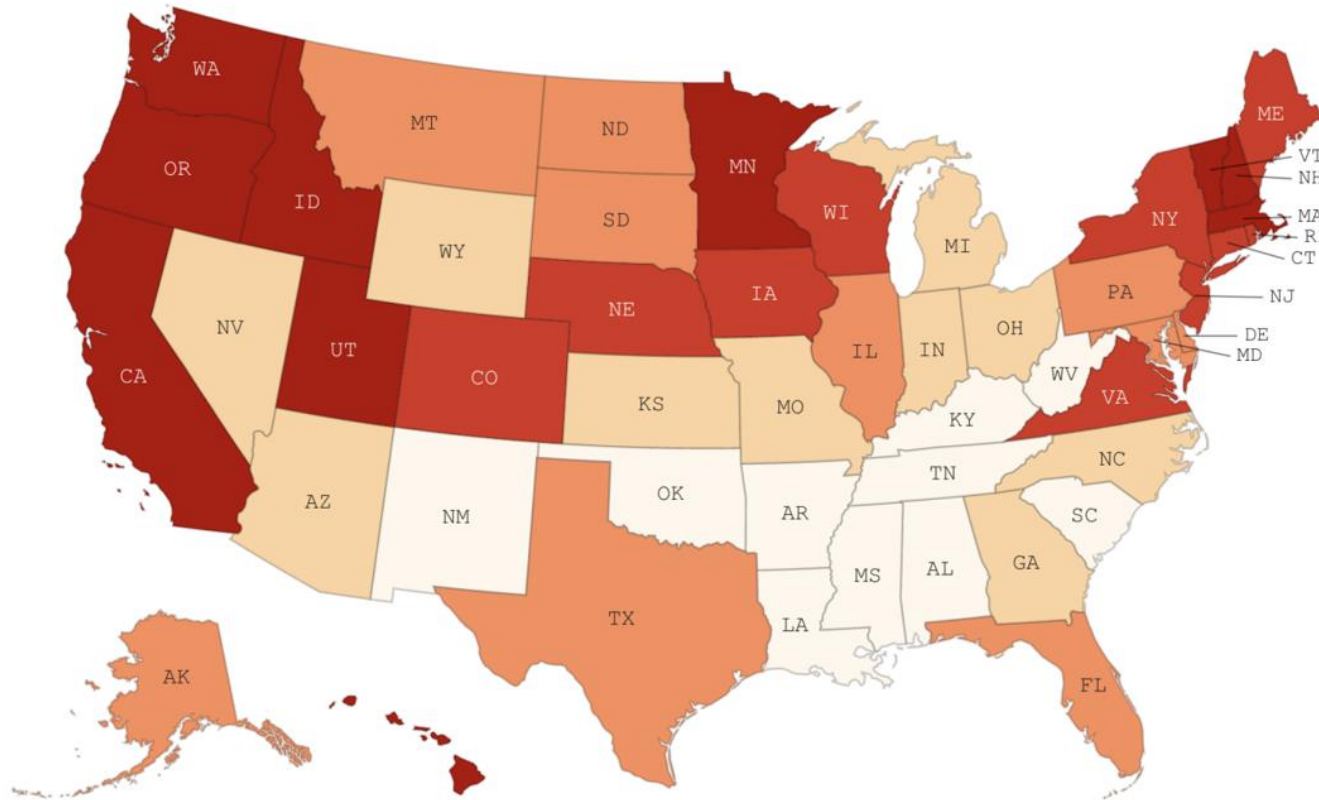
In 2015, Flint's water crisis sparked national outrage after reports found that residents were exposed to lead at levels sometimes 100 times above EPA action level standards.

FIGURE 3: INTERSECTION OF LENGTH OF TIME OUT OF COMPLIANCE AND RACIAL, ETHNIC, AND LANGUAGE VULNERABILITY BY COUNTY, JUNE 1, 2016 TO MAY 31, 2019.

The most darkly shaded counties are those with the highest average number of quarters out of compliance per drinking water system (counties in the top third, nationally) and the highest racial, ethnic, and language vulnerability (counties in the top third, nationally). Racial, ethnic, and language vulnerability data from the 2016 Centers for Disease Control and Prevention Social Vulnerability Index.



Life Expectancy at Birth by State



Life Expectancy at Birth

○ 71.9 - 74.8

● 76.5 - 77.5

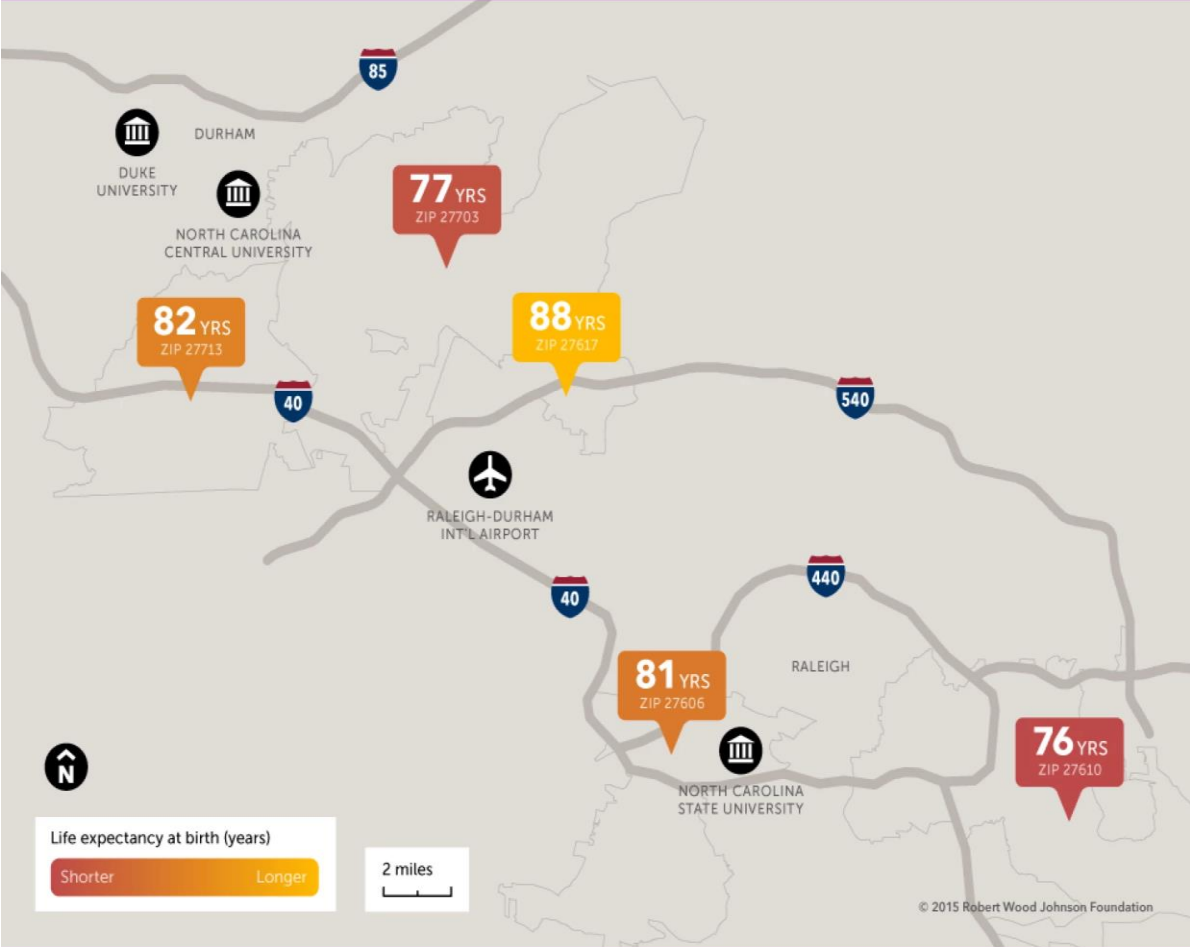
● 78.4 - 80.7

75 - 76.4

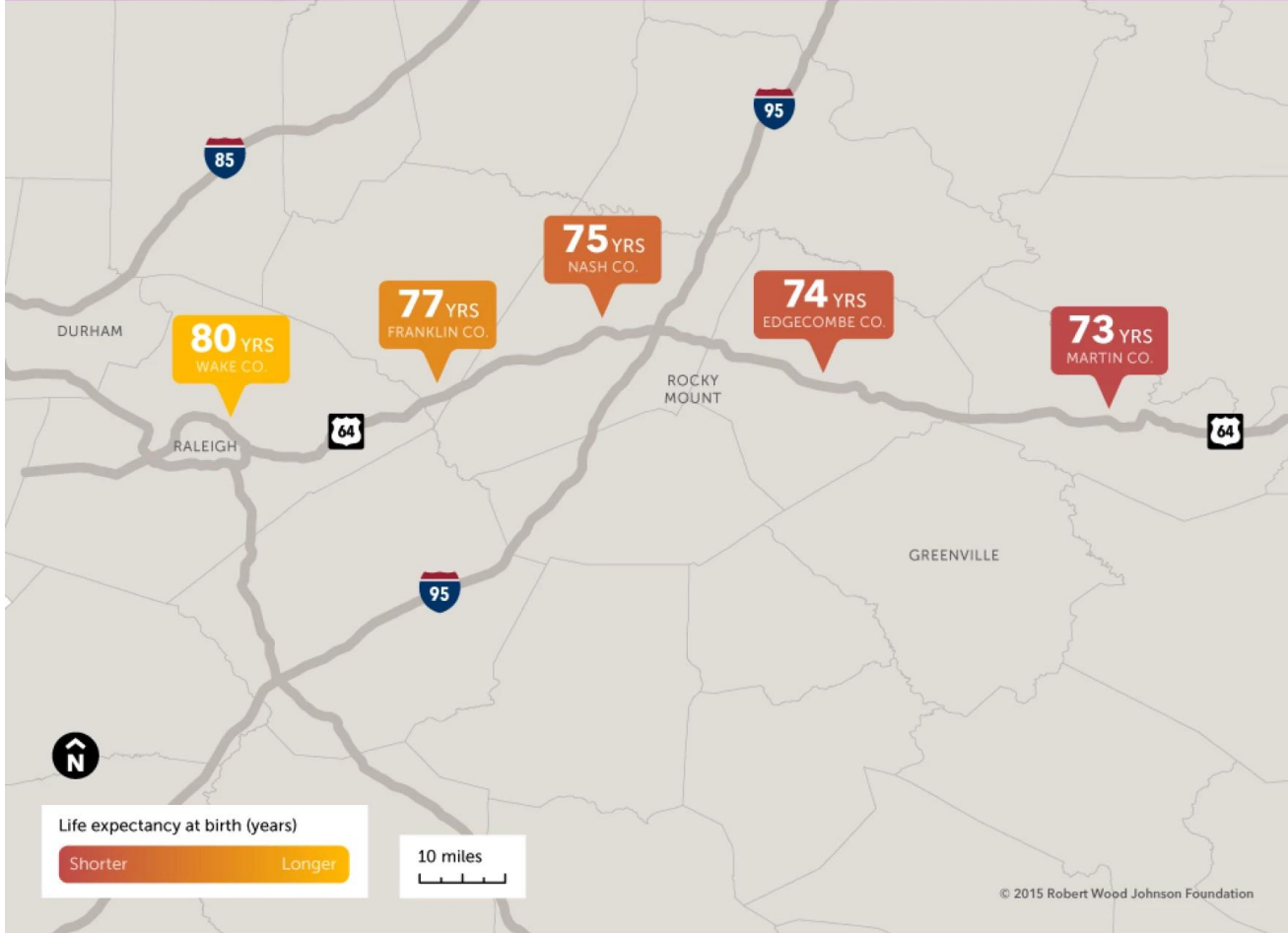
● 77.5 - 78.4

Source: Institute for Health Metrics and Evaluation/JAMA

Short Distances to Large Gaps in Health

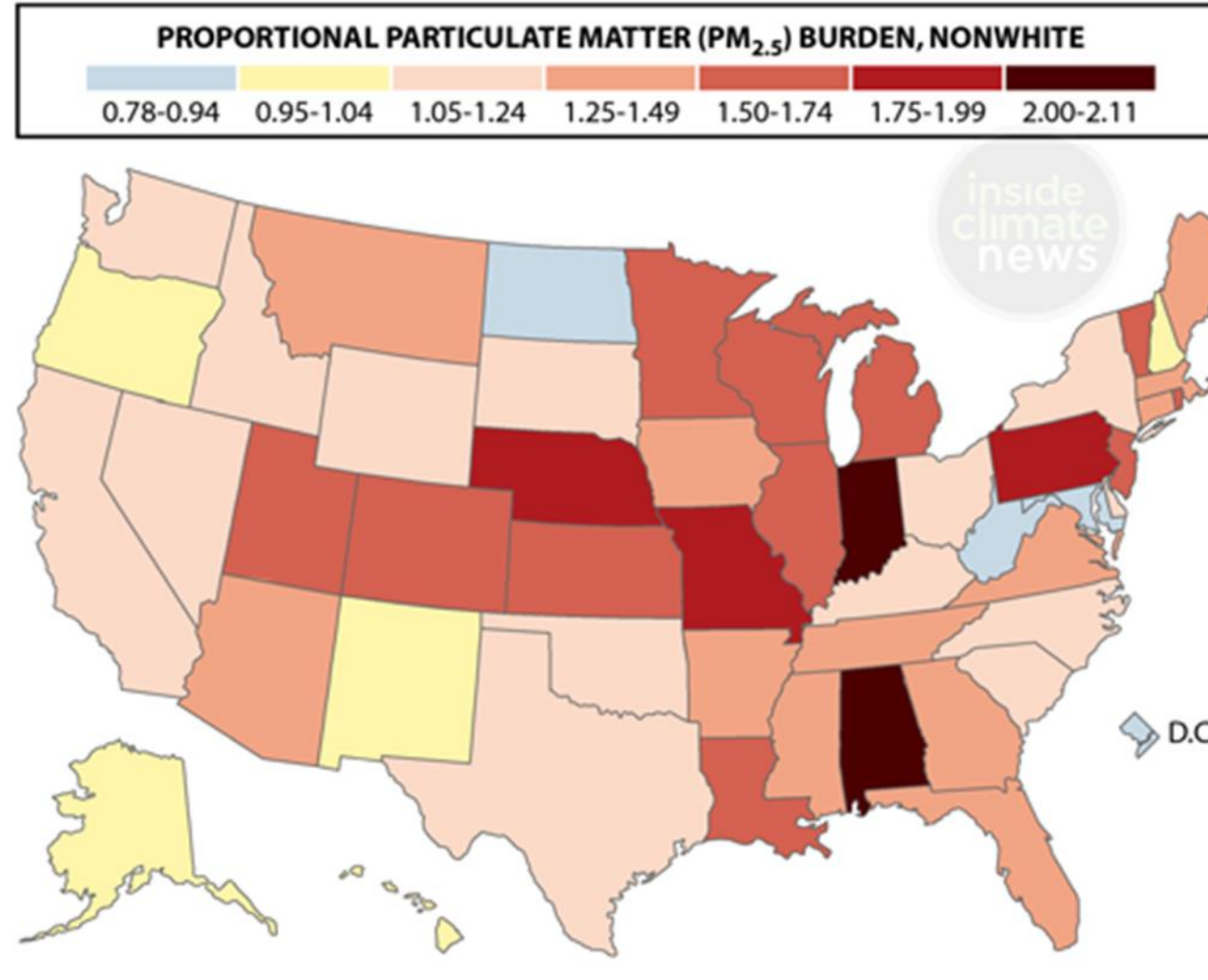


1 Highway, 5 Counties, 7 Years of Life



People of Color Bear Greater Air Pollution Burden

Non-white people face higher exposure to particulate matter air pollution than white people do in all but four states (Maryland, New Mexico, North Dakota and West Virginia) and Washington, D.C. People of color living in Indiana and Alabama are exposed to roughly twice as much particulate pollution than white people.



Your **zip code** is a bigger predictor of your health outcome than your genetic code.



HARVARD
T.H. CHAN
SCHOOL OF PUBLIC HEALTH

Forbes

TIME



Figure 1

Social Determinants of Health

Economic Stability	Neighborhood and Physical Environment	Education	Food	Community and Social Context	Health Care System
Employment	Housing	Literacy	Hunger	Social integration	Health coverage
Income	Transportation	Language	Access to healthy options	Support systems	Provider availability
Expenses	Safety	Early childhood education		Community engagement	Provider linguistic and cultural competency
Debt	Parks	Vocational training		Discrimination	Quality of care
Medical bills	Playgrounds	Higher education		Stress	
Support	Walkability				
	Zip code / geography				



Health Outcomes

Mortality, Morbidity, Life Expectancy, Health Care Expenditures, Health Status, Functional Limitations

HOW THE ENVIRONMENT IMPACTS OUR HEALTH

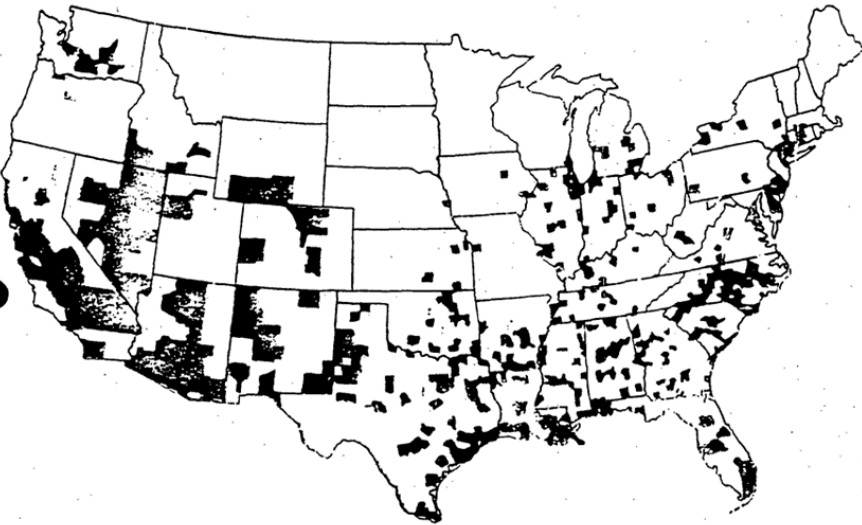
People are exposed to risk factors in their homes, work places and communities through:



TOXIC WASTES AND RACE

In The United States

A National Report on the Racial and Socio-Economic
Characteristics of Communities
with Hazardous Waste Sites



COMMISSION FOR RACIAL JUSTICE
United Church of Christ
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Exhibit 13

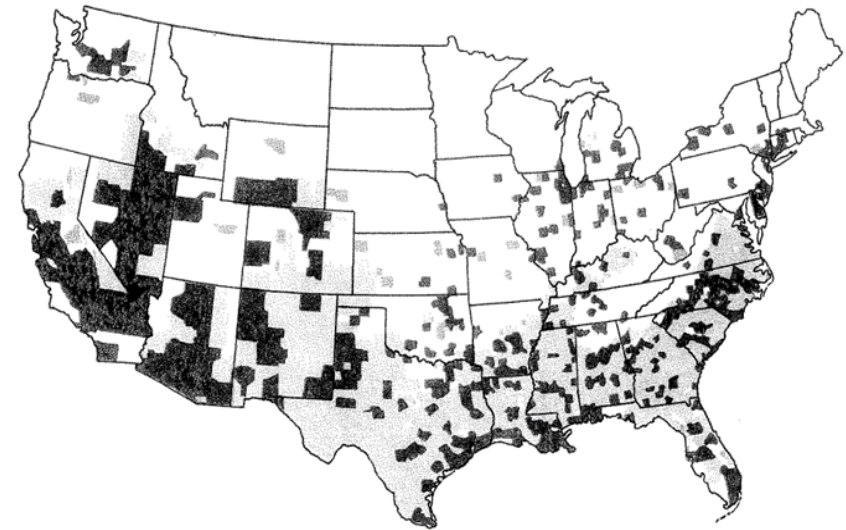
- ✓ Three out of every five Black and Hispanic Americans lived in communities with uncontrolled toxic waste sites
- ✓ More than 15 million Blacks lived in communities with one or more uncontrolled toxic waste sites
- ✓ More than 8 million Hispanics lived in communities with one or more uncontrolled toxic waste sites
- ✓ Blacks were heavily over-represented in the populations of metropolitan areas with the largest number of uncontrolled toxic waste sites

Waste Incinerators in the U.S.

Race is the single greatest predictor of the location of locally undesirable land uses such as landfills.

TOXIC WASTES AND RACE In The United States

A National Report on the Racial and Socio-Economic
Characteristics of Communities
with Hazardous Waste Sites



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Racism is a **public health crisis.**



Medical Waste in the U.S.

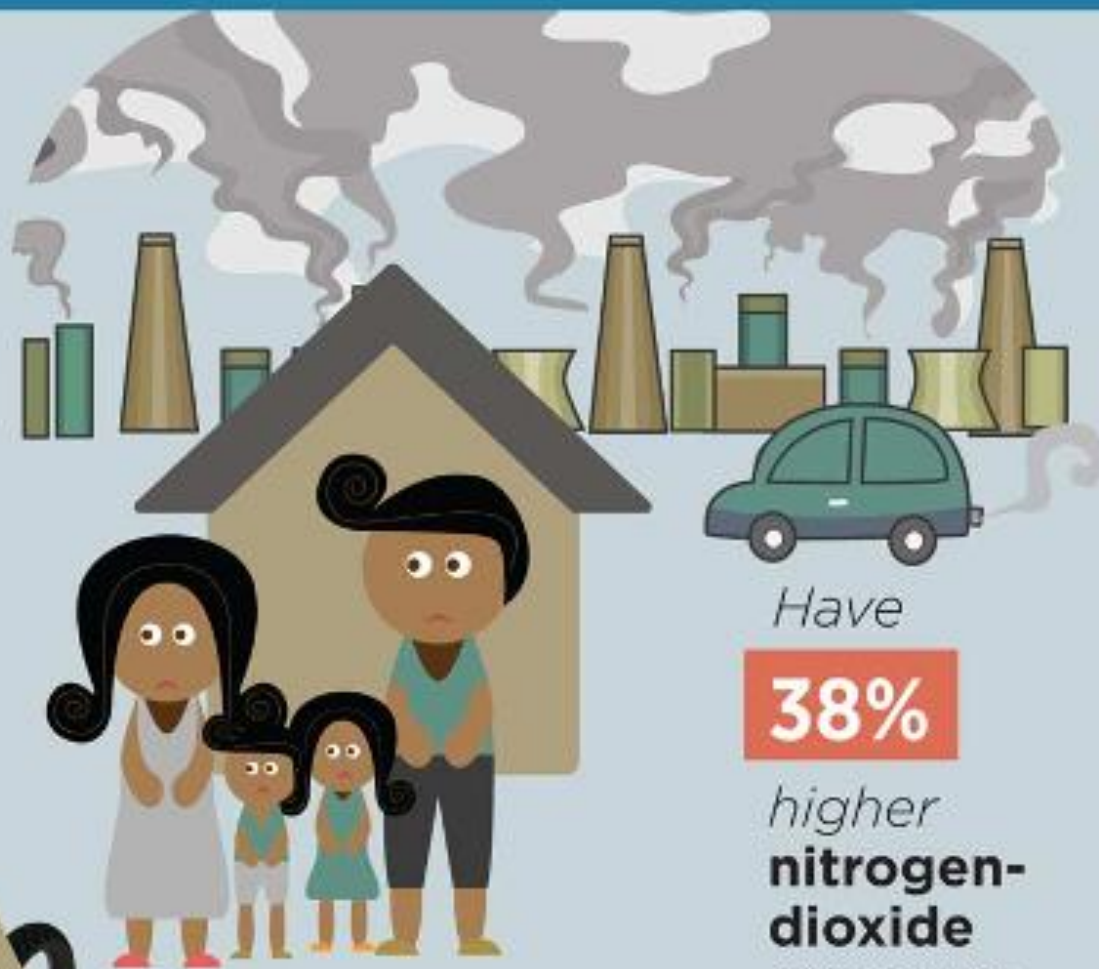
- According to the Environmental Protection Agency, medical waste incinerators are the second-largest source of dioxin emissions in the country.
- Medical waste incinerators emit some of the most dangerous pollutants known to humankind (e.g., ethylene oxide)
- 79% of municipal solid waste incinerators and burn facilities are placed in black and brown communities.

Environmental Racism Is Nothing New

Race is the most significant predictor of a person living near contaminated air, water, or soil.

56%

*of the population near **toxic waste** sites are people of color.*



People of color:

Have

38%

*higher **nitrogen-dioxide** exposure.*

Have seen

95%

*of their claims against polluters **denied by the EPA.***

Are

2x

*more likely to live without **potable water** and **modern sanitation.***



Reflect

Think about your clients/patients.

How might environmental factors impact their performance and/or outcomes in your respective field?

What is Environmental Justice?

The fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income with respect to the development, implementation and enforcement of environmental laws, regulations and policies.



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Advancing Environmental Health and Justice: A Call for Assessment and Oversight of Health Care Waste

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Date: Nov 08 2022 | **Policy Number:** 20224

Key Words: Health Care Waste

[Download a PDF version.](#)

Green Infrastructural Solutions

- Rain Gardens
- Green roofs
- Urban tree canopy
- Permeable pavements
- Bioswales
- Green streets and alleys



Statewide

Trained over 100 climate advocates to push for more clean energy in the state and stronger clean air protections in their communities.

Asheville

Rallied supporters to attend a public hearing on the proposed NC Carbon Plan.

Charlotte

Worked with community partners to establish a Green District that will improve air quality, expand clean transportation, and improve health in the Historic West End neighborhoods.

Spoke at a public hearing on the NC Carbon Plan and why the plan proposed by Duke Energy was inadequate.

Hosted a screening of The Smell of Money to raise awareness of the ways the industrial pork industry is impacting community health in eastern North Carolina.

Supplied air monitors to community partners to deepen our understanding of local air quality.

Source: 2022 Clean AIRENC Annual Report

Mebane

Participated in a “Toxic Tour” of significant emission sources to learn about environmental justice challenges and priorities in Alamance County.

Caswell County

Installed air monitors to help residents measure their local air quality.

Durham

Joined with local advocates and community groups to support an NC Carbon Plan centered around clean energy and equity.

Expanded community air monitoring in the Triangle.

Ahoskie

Rallied local residents to attend public hearings and voice their opposition to Enviva’s wood pellet plant in Hertford County.

Salisbury

Hosted the 2022 NC BREATHE conference to explore solutions to climate, health, and equity with stakeholders from across North Carolina.

Worked with partners at Catawba College to expand community air monitoring in Rowan County.

Harnett County

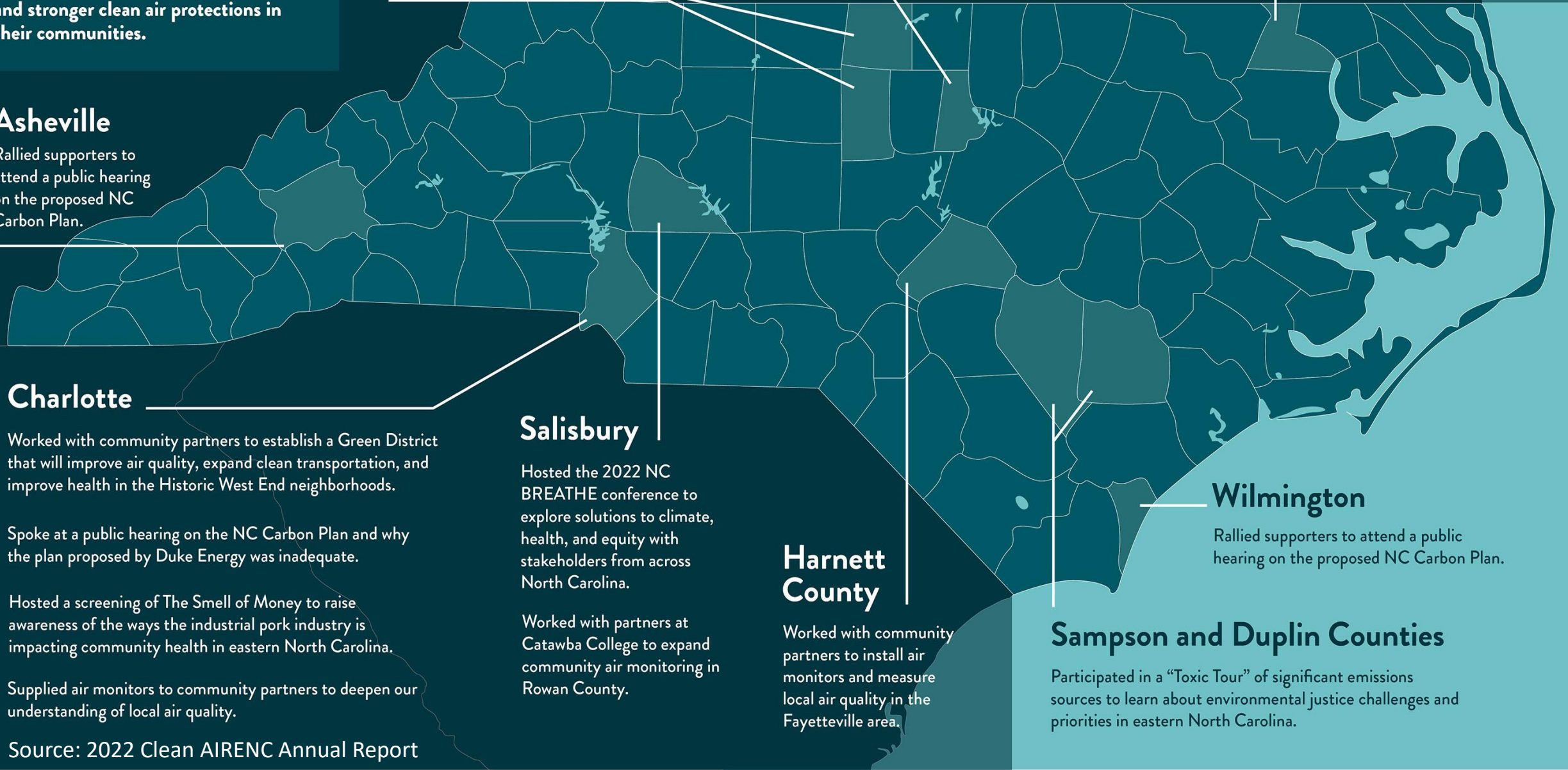
Worked with community partners to install air monitors and measure local air quality in the Fayetteville area.

Wilmington

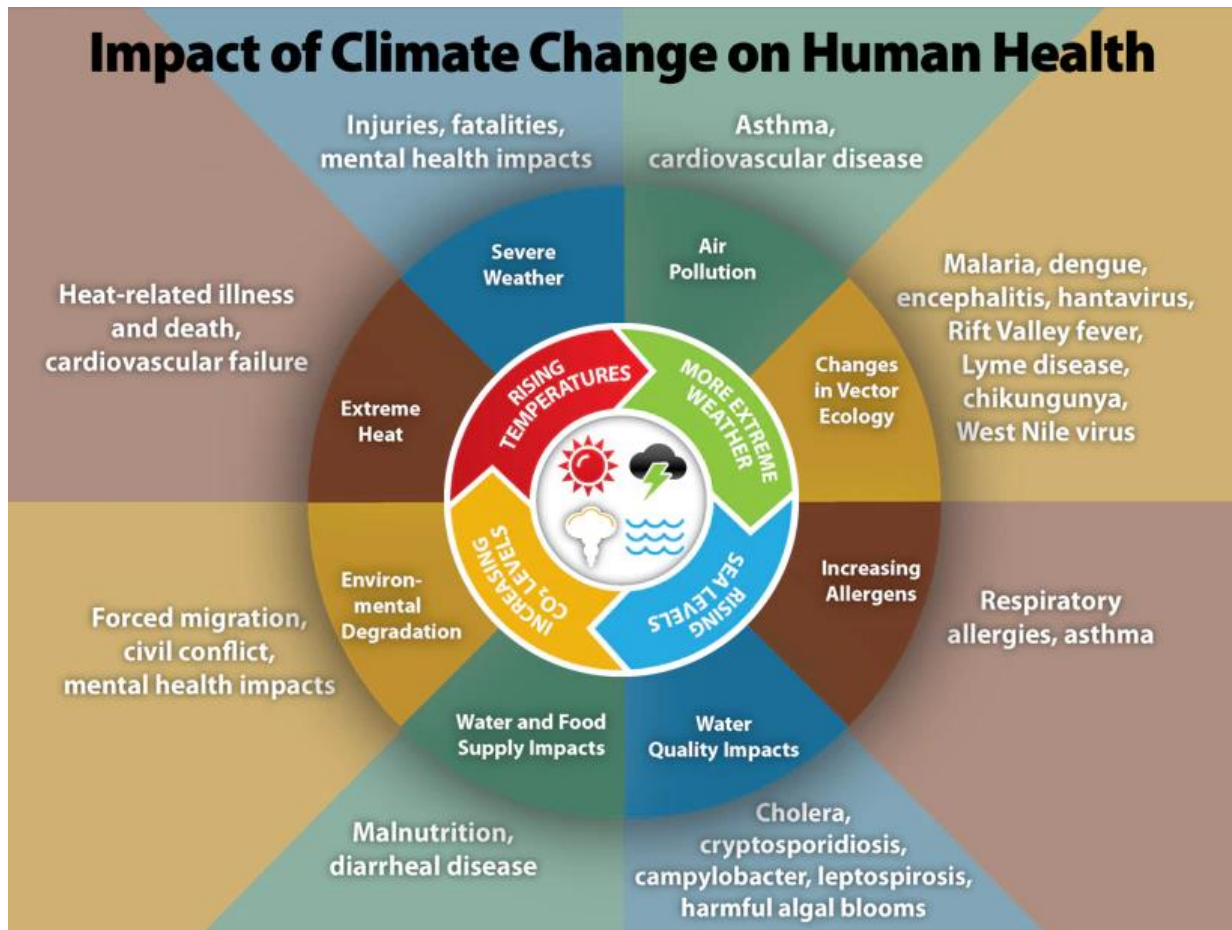
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Sampson and Duplin Counties

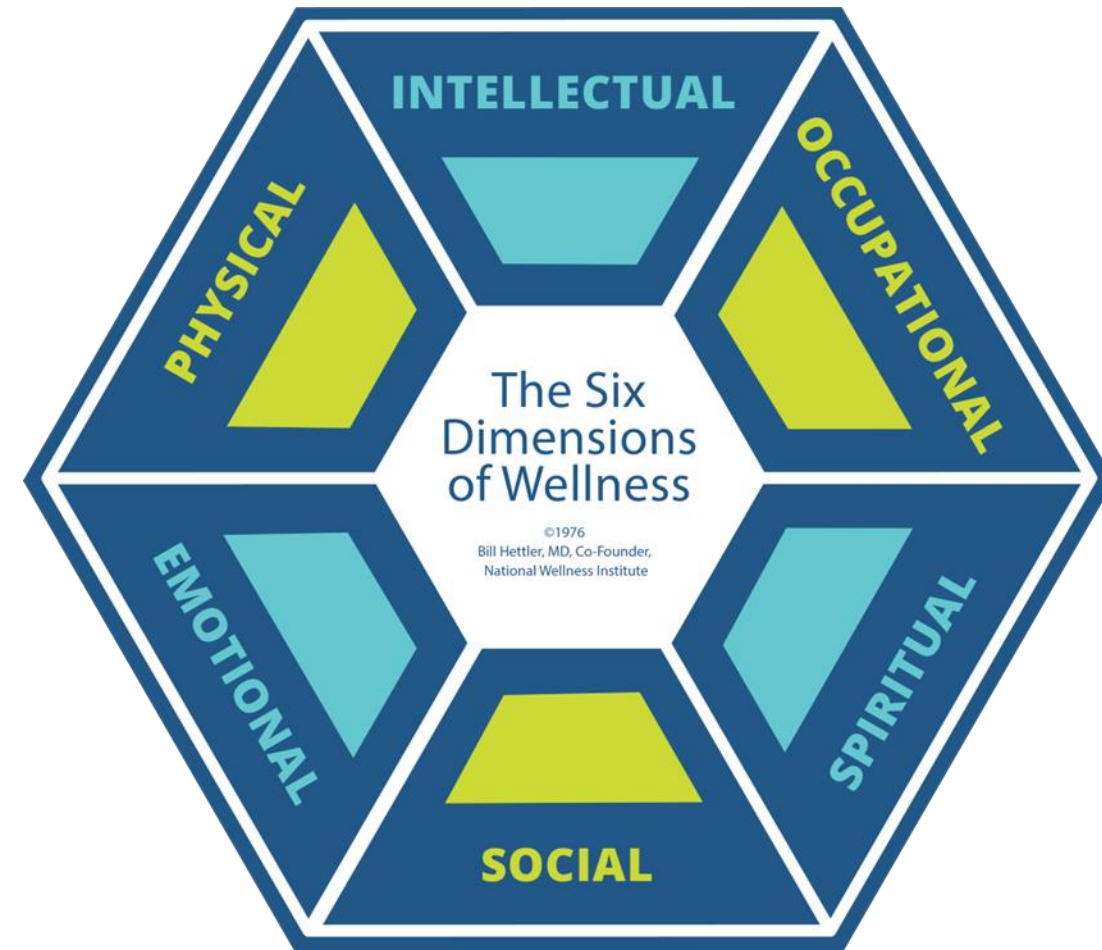
Participated in a “Toxic Tour” of significant emissions sources to learn about environmental justice challenges and priorities in eastern North Carolina.



Climate Change and Health Outcomes



Source: CDC



Source: National Wellness Institute

Connecting Environment & Wellness:

As health and wellness professionals it is critical to consider how the environment is impacting your clients/patients intellectually, physically, occupationally, spiritually, socially, and emotionally.

Considering environmental factors in your practice may create more precise and customized solutions that help your clients/patients achieve wellness.

The environment impacts ALL six dimensions of wellness.

Key Takeaways:

- Environmental racism is a public health crisis with several leading risk factors contributing to health disparities.
- Environmental factors impact the six dimensions of wellness and should be considered when assessing overall wellness.
- There are inclusive climate mitigation strategies that can be implemented today to improve well-being of those disproportionately impacted by health disparities.

References:

- 2022 Annual Report. CleanAIRE NC. Accessed May 16, 2023. <https://cleanairenc.org/about-us/support-our-work/2022-annual-report/>
- Advancing Environmental Health and Justice: A Call for Assessment and Oversight of Health Care Waste. Accessed May 16, 2023. <https://www.apha.org/Policies-and-Advocacy/Public-Health-Policy-Statements/Policy-Database/2023/01/18/Health-Care-Waste>
- Arizona life expectancy fell in 2020, CDC reports | City News | scottsdale.org. Accessed May 16, 2023. https://www.scottsdale.org/city_news/arizona-life-expectancy-fell-in-2020-cdc-reports/article_095ab35e-27c9-11ed-b286-4beb42ead8d0.html
- May 10 EHP, 2018. Beyond Health Care: The Role of Social Determinants in Promoting Health and Health Equity. KFF. Published May 10, 2018. Accessed May 16, 2023. <https://www.kff.org/racial-equity-and-health-policy/issue-brief/beyond-health-care-the-role-of-social-determinants-in-promoting-health-and-health-equity/>
- Health (ASH) AS for. Climate Change and Health Equity. HHS.gov. Published March 30, 2022. Accessed May 16, 2023. <https://www.hhs.gov/climate-change-health-equity-environmental-justice/climate-change-health-equity/index.html>
- Environmental Justice | Office of Sustainability. Published August 16, 2020. Accessed May 17, 2023. <https://sustainability.uconn.edu/environmental-justice/>
- McKenna P. EPA Finds Black Americans Face More Health-Threatening Air Pollution. Inside Climate News. Published March 2, 2018. Accessed May 16, 2023. <https://insideclimatenews.org/news/02032018/air-pollution-data-african-american-race-health-epa-research/>
- IPEDS Data Center. Accessed May 16, 2023. <https://nces.ed.gov/ipeds/datacenter/institutionprofile.aspx?unitId=199847&goToReportId=6>

References

- US EPA O. Learn About Environmental Justice. Published February 13, 2015. Accessed May 16, 2023. <https://www.epa.gov/environmentaljustice/learn-about-environmental-justice>
- Six Dimensions of Wellness - National Wellness Institute. Published April 29, 2020. Accessed May 16, 2023. <https://nationalwellness.org/resources/six-dimensions-of-wellness/>
- The Particulars of PM 2.5. Published May 20, 2022. Accessed May 16, 2023. <https://www.nrdc.org/stories/particulars-pm-25>
- They Can't Breathe: A Proposal to Increase the Amount of Mental Health Care Workers in Low Income, Minority Communities Affected By Environmental Injustice. UNICEF Global Development Commons. Accessed May 17, 2023. <https://gdc.unicef.org/resource/they-cant-breathe-proposal-increase-amount-mental-health-care-workers-low-income-minority>
- Unsafe water more prevalent in communities of color, study finds. Accessed May 16, 2023. <https://www.nbcnews.com/news/nbcblk/unsafe-water-more-prevalent-communities-color-study-finds-n1060366>
- What is Environmental Racism And How Can We Fight It? | World Economic Forum. Accessed May 16, 2023. <https://www.weforum.org/agenda/2020/07/what-is-environmental-racism-pollution-covid-systemic/>
- US EPA O. What is Green Infrastructure? Published September 30, 2015. Accessed May 16, 2023. <https://www.epa.gov/green-infrastructure/what-green-infrastructure>
- What is Health Equity? | Health Equity | CDC. Published March 21, 2023. Accessed May 17, 2023. <https://www.cdc.gov/healthequity/whatis/index.html>



Thank You

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