Considering Cumulative Impacts in the Permitting Process

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Agenda

- Why Consider Cumulative Impacts in Environmental Policy?
- Methods for this Study
- Our Findings
  - Definitions and Common Criteria
  - Tools and Indicators
  - Framework for Assessing Cumulative Impacts
  - State Policy Examples
- Limitations and Barriers
- Implications for NC

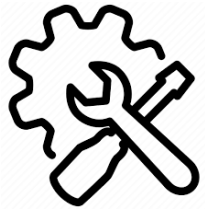
Why Consider Cumulative Impacts (CI) in Environmental Policy?

- Many communities face **disproportionate burdens** due to **environmental racism** that result in negative health outcomes
  - Multiple sources of pollution, climate change, discrimination, etc.
  - These stressors can act in combination to cause new or exacerbate existing health issues
- To prevent additional harm to overburdened communities, measures should be taken to **consider multiple stressors** when **reviewing permits**

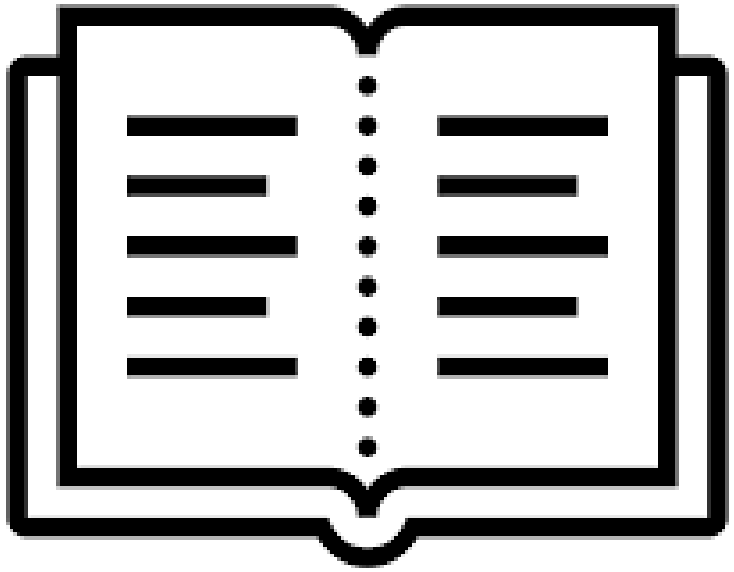
Methods

Examined peer-reviewed published literature (25 articles) and grey literature like government reports and NGO documents (56 reports)

- primary search string used: cumulative impact/risk/assessment AND (state name) AND environmental (in)justice/racism OR environmental policy
- Identified frameworks for conducting CI assessments and incorporating into policy
- Identified examples of CI in various state envr. policies



Reviewed hazards mapping tools (shared by Dr. Sacoby Wilson)



Findings From Literature: on definitions and common criteria

Defining Cumulative Impacts

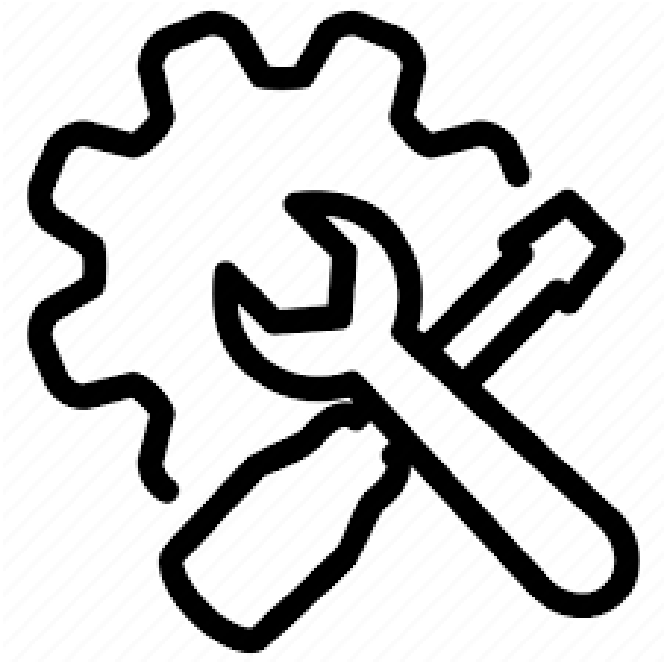
We reviewed approximately 37 definitions across different gov. agencies, NGO, laws, and community organizations and the following definition seemed to be the most comprehensive:

"The exposures, public health or environmental effects from the combined emissions and discharges in a geographic area, including environmental pollution from all sources, whether single or multi-media, routinely, accidentally, or otherwise released. Impacts will take into account sensitive populations and socio-economic factors, where applicable and to the extent data are available."

-California Environmental Protection Agency

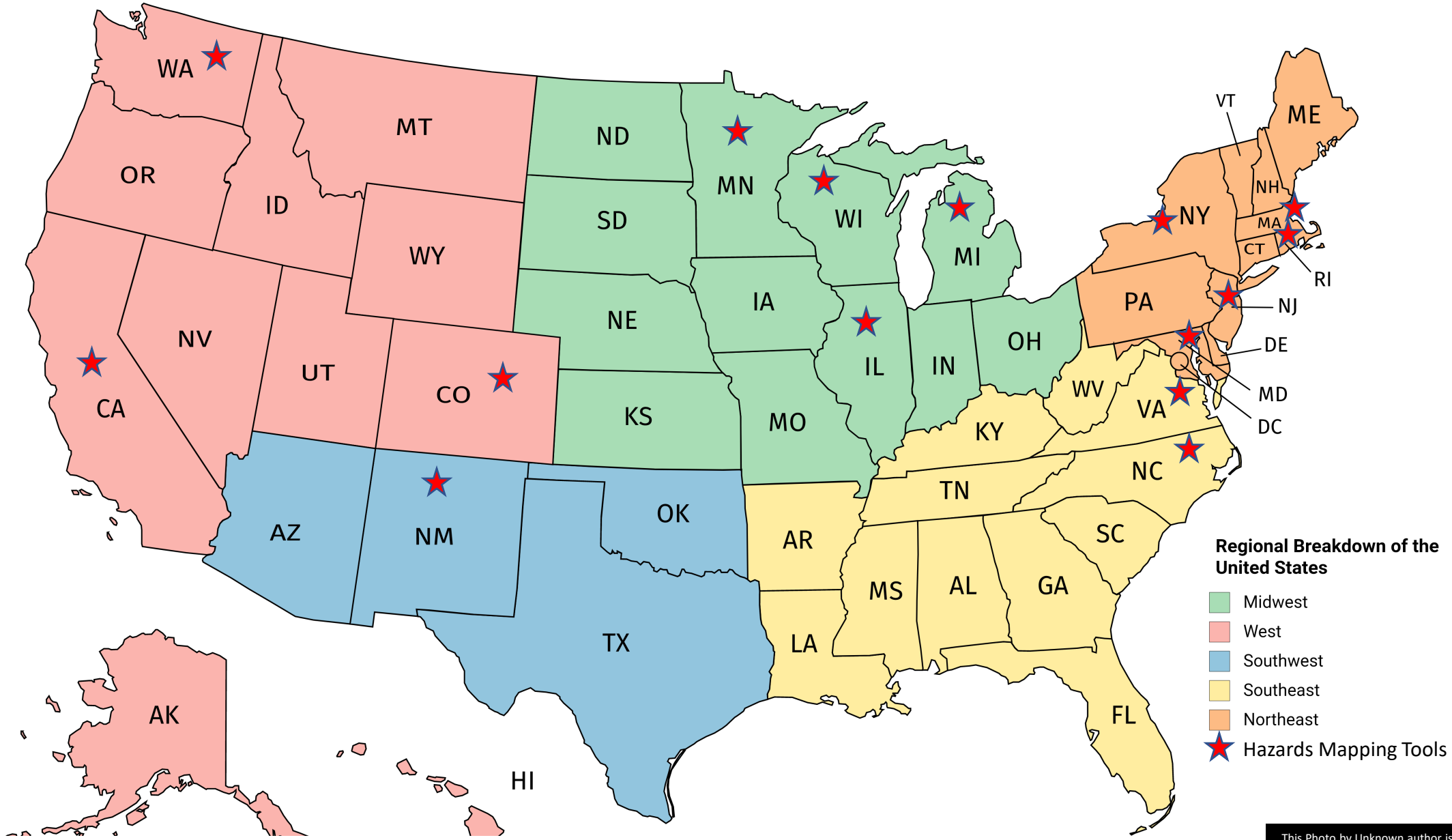
Criteria in CI Definitions (as described in the literature)

COMMON FACTORS	NOVEL FACTORS
Chemical Stressors	Psychosocial
# of projects / developments	Violence
Time (short or long-term; past, present, or future)	Poverty, SES, Race
Compounding effects	Stress – allostatic load
Consideration of different exposure pathways	Impacts related to climate change



Review of Hazards Mapping Tools

Hazards Mapping Tools Across the US



Tool	Source	Total Count	Air (ex. PM 2.5, ozone, diesel, toxins related to respiratory health and cancer; NATA cancer risk; RSEI risk-related scores; NATA neurological and respiratory hazard index; NO 2 , nitrogen dioxide and PM 2.5 , particles less than or equal to 2.5 µm in aerodynamic diameter; CO; SO2)	Traffic (proximity, volume; NO2)	Dust/Lead paint	Water (Wastewater Discharge; private well water - pollutants including arsenic, cadmium, lead, and manganese; impaired water bodies; watershed failure)	Waste/Air/Discharge (RMP, proximitiy to superfund, hazardous waste, leaking UST; clean-up sites; brownfields; high-risk chemical facilities, sewer overflows)	Chrome-platers	Facilities in California Community Health Air Pollution Information System (CHAPIS)	Pesticide Use	Race/ % POC	Low-income (% below poverty line, SES, 200% FPL)	Unemployment rate	Linguistic Isolation	Less than HS education (ex. over 25 without HS education)	Under age 5	Over age 64
Washington Environmental Health Disparities Map Project	https://c	36	X	X	X	X	X				X	X	X	X	X		X
Wisconsin Environmental Equity Tool (WEET) - still in early stages of development	https://v	21	X	X		X	X				X	X	X	X	X		
Environmental Justice Screening Method (EJSM)	https://v	20	X				X	X	X		X	X		X	X	X	X
CO Climate Equity Data Viewer	https://c	19	X	X	X		X				X	X		X	X	X	X
MiEJScreen	https://v	18	X	X	X	X	X				X	X	X	X	X	X	X
NY Climate Change Science Clearinghouse	https://r	18	X	X			X										
EJ Atlas	https://e	17				X	X										
MD EJSCREEN	https://r	15	X	X	X	X	X				X	X	X	X	X	X	X
CalEnviroScreen	https://c	15	X	X	X	X	X			X		X	X	X	X		
EJSEAT	https://v	13	X								X	X		X	X	X	X
Cumulative Impact Map (VA)	https://r	13	X	X	X		X				X	X	X	X	X		
EJ Screen (EPA)	https://v	12	X	X	X	X	X				X	X	X	X	X	X	X
NC DEQ Environmental Justice Tool	https://r	12									X						
NC ENVIROSCAN	https://e	11	X	X	X	X	X				X			X			
Twin Cities Environmental Justice Mapping Tool	http://ce	8	X								X	X				X	
MA DPH EJ Tool	https://c	7									X	X		X			
NM OpenEnviroMap	https://g	7					X				X	X	X				
DECinfo Locator (NY)	https://g	6					X										
CEHII	https://g	4	X	X							X	X					
NC DEQ Community Mapping Tool	https://c	4															
Colorado EnviroScreen	https://c	3									X	X					
NJ Environmental Justice Mapping Tool	https://r	3									X	X		X			
NY Potential EJ Area Map	https://v	3									X	X					
RIDEM Environmental Resource Map	https://r	2									X	X					
IL EJ Start	https://i	2									X	X					
		11.56															

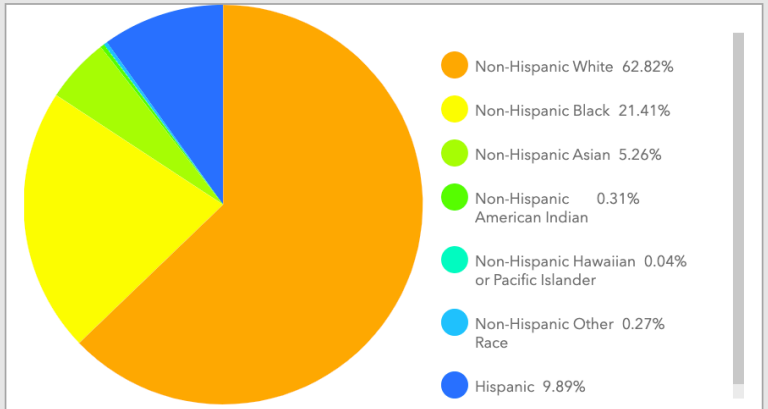
NCDEQ Environmental Justice Mapping Tool

Community Map | Facility Map | Sensitive Receptors

Environmental Justice Tool Maps
The three maps above can be toggled for additional information on demographics, facilities, and sensitive receptors (these are areas where the occupants are more susceptible to the adverse effects of exposure to toxic chemicals, pesticides, and other pollutants). Pop-ups on the map display the information. Click on a block group, or facility, sensitive receptor for more information.

Demographic and Health Data
The Demographic Dashboard displays information on the census block group level from the 2017 5-year estimate American Community Survey (ACS). The North Carolina Department of Health and Human Services (NCDHHS) provides health data at the county level, so data shown on the dashboard for health rates tell the overall county average, not the census block group average. The data shown in the graphics are an average of all the block groups (or counties for health data) included on the above map extent. Zoom in and out for information on a smaller or larger scale. More

Selected Area Demographics



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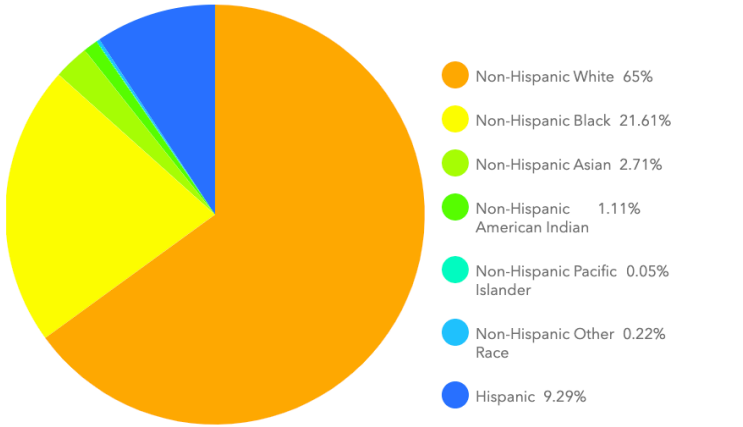
Race/Ethnicity

Statewide Demographics



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Race/Ethnicity

Health Dashboard

Average of Heart Disease Deaths

157.844

State Average 163.7

Last update: a few seconds ago

Heart Disease | Cancer | Diabetes

Average of PreTerm Birth Rate

9.794

State Average = 10

Last update: a few seconds ago

PreTerm Birth Rate | Infant Death Rate | Child Mortality Rate

Average Deaths caused by Stroke

40.706

State Average 43.1

Last update: a few seconds ago

Stroke | Cardiovascular Disease

Hospitalizations due to Asthma

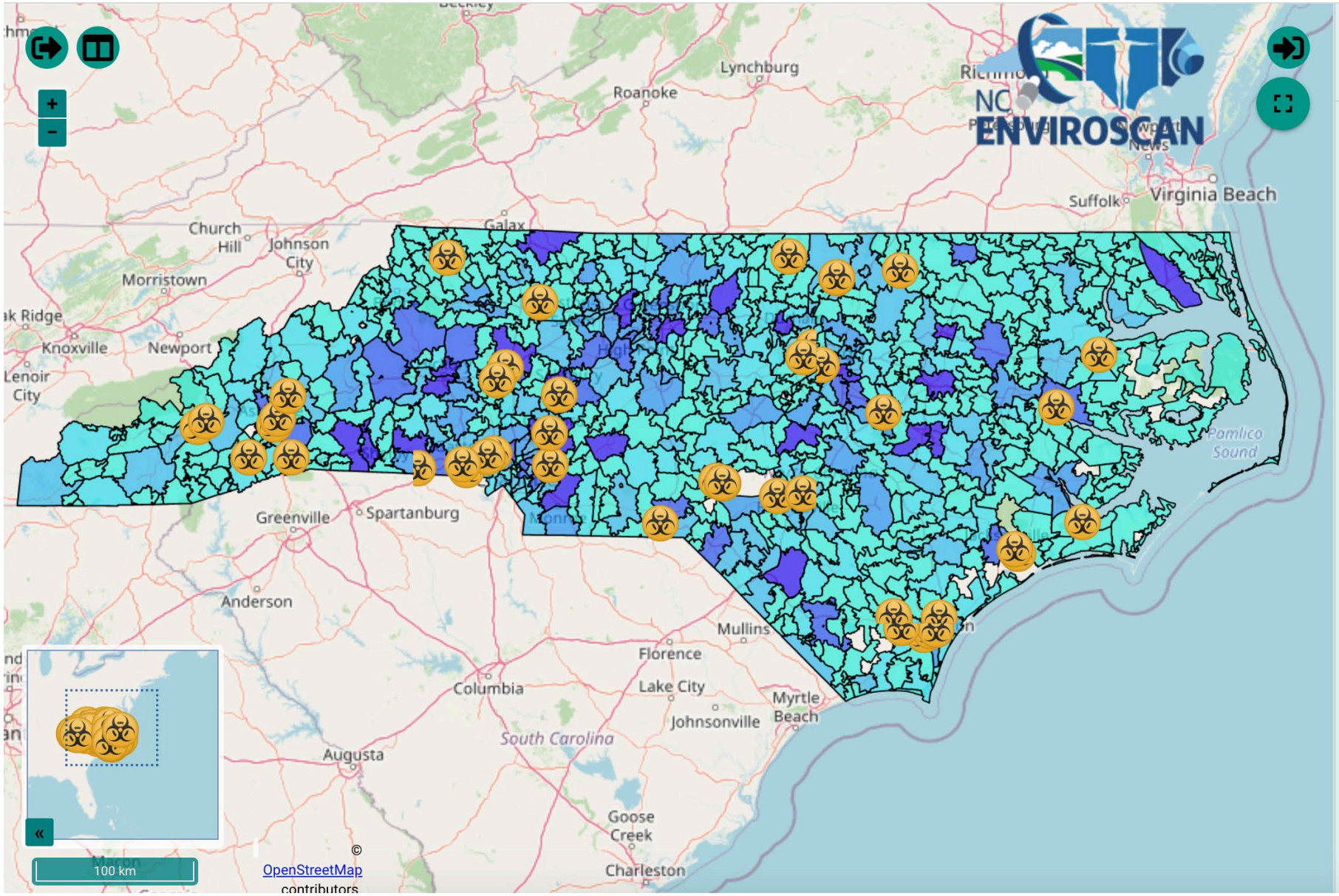
50 (Ages 0-14) - State Average 28

151 (Total) - State Average 90

Last update: a few seconds ago

Asthma Hospitalizations | Number of Physicians

NC ENVIROSCAN



EJ Index for Ozone level in air

EJ Index for PM2.5 level in air

Health Outcomes, by Zip Code and Census Tract

Covid-19 Legend

- ○ Covid-19 Total Cases
- ○ Covid-19 Cases Per 10,000 Residents
- ○ Covid-19 Cases Per 100,000 Residents-
- ◉ Covid-19 Deaths

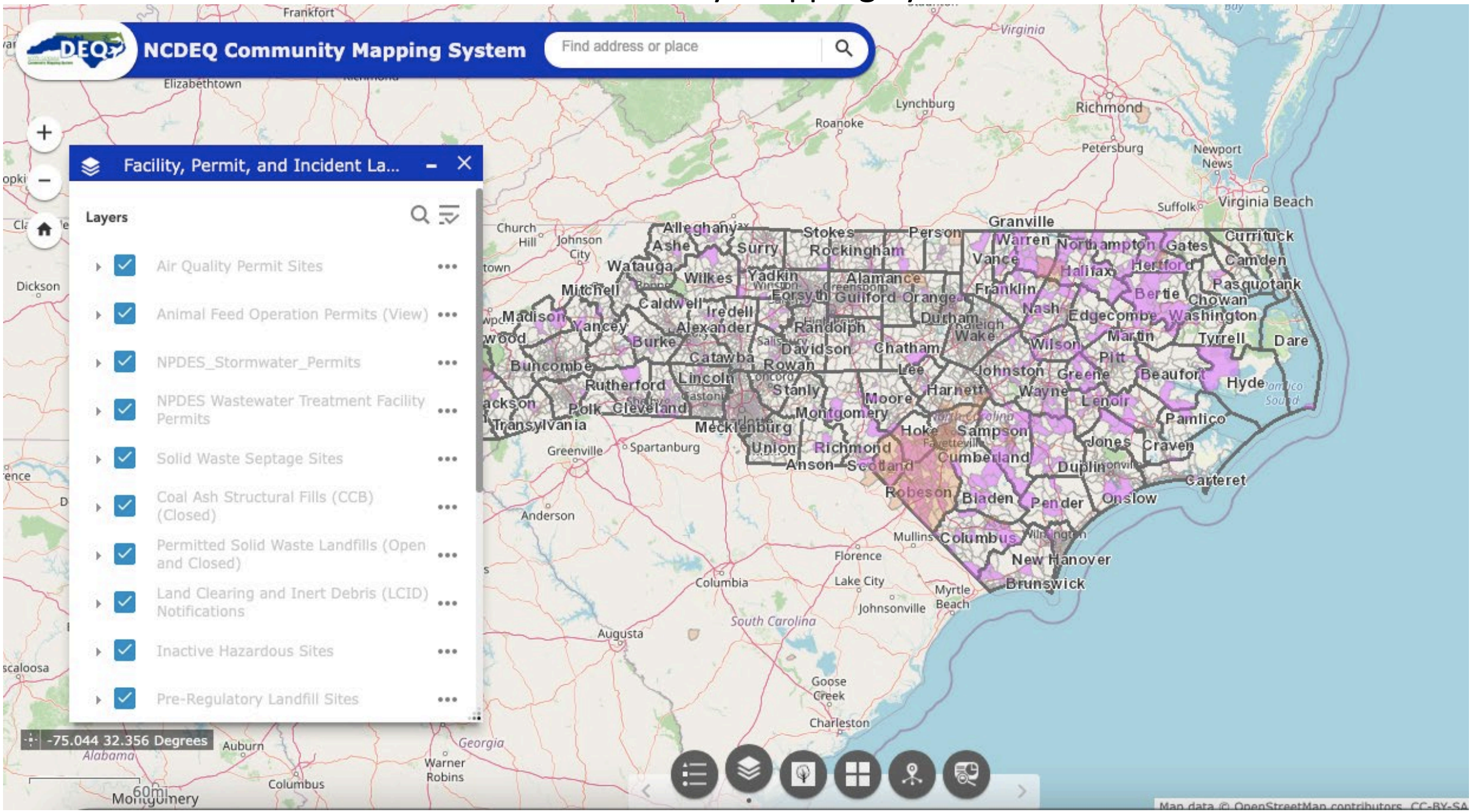
Gestational age at delivery Legend

- ○ mean of gestational age calculated from last menstrual period (LMP) full cohort
- ○ mean of gestational age based on clinical estimate full cohorts
- ○ mean of gestational age calculated from last menstrual period (LMP) singleton cohort -
- ○ mean of gestational age based on clinical estimate singleton cohorts

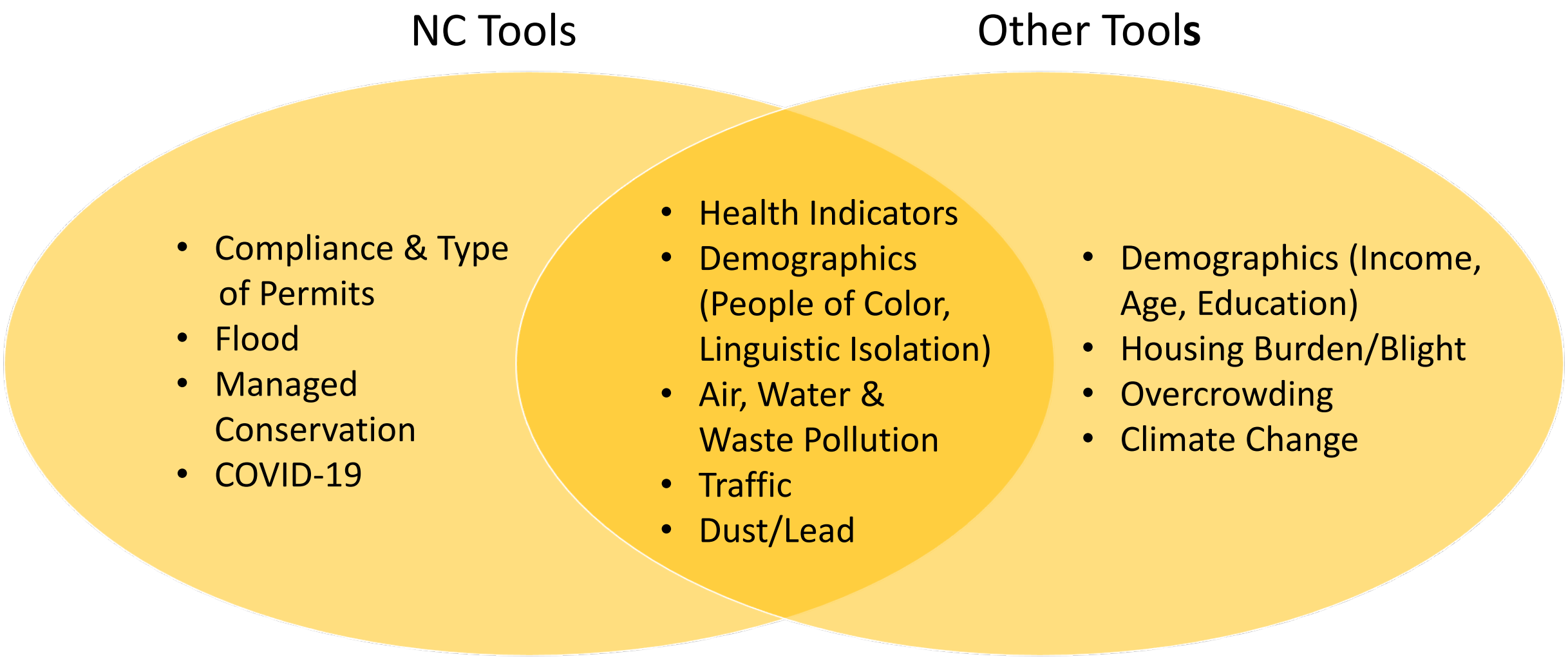
Preterm births Legend

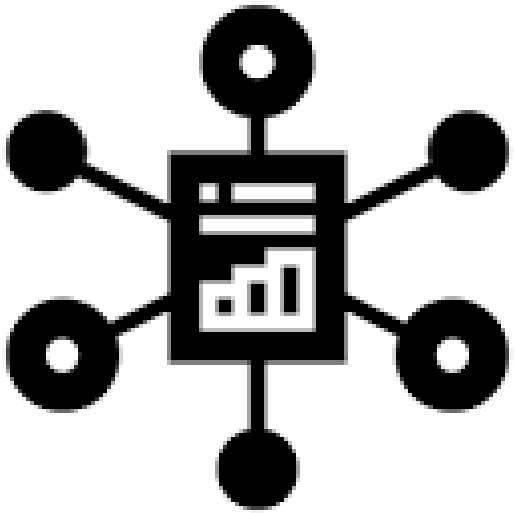
- ○ percent preterm births, calculated from last menstrual period (LMP) for full cohort
- ○ percent preterm births, based on

NCDEQ Community Mapping System



Comparison of Indicators in NC vs. Other State Tools





Example of Cumulative Impacts/Risk Assessment frameworks described in the literature

EPA Framework at Community, State & Federal Level – Barzyk et al.

Planning, Scoping, Problem Formulation Elements	Community	State	Federal
Planning and Scoping			
Purpose	Improve community health	Allocate/distribute resources to protect residents from environmental harm	Maximal protection of population as a whole; improve conditions at local levels
Scope	Neighborhood area(s); current conditions; historical exposures; future projections; population-based; precautionary	Geo-political boundaries; community scales; urban, suburban, and rural scales; pollution regulation; land maintenance; infrastructure; transportation; social, environmental, and economic considerations (*i.e.*, sustainability) for planning	Sector and chemical-driven protection; cost-effective solutions (e.g., CAA); principally reactive in origin (e.g., CERCLA); predictive as well (e.g., MOA grouping in FIFRA); agencies adopting local-scale principals (e.g., Superfund RAGS)
Participants	Local residents (e.g., Chester, PA); agencies (e.g., South Baltimore); academics and health departments (e.g., Spartanburg, SC)	Representative councils (e.g., EJAC); stakeholder input (e.g., EJSM) Locally-driven initiatives (e.g., BAAQMD)	Expert solicitation (e.g., SDWA); local considerations (e.g., NEPA) Multi-stakeholder involvement (e.g., SARA)
Approach	Participatory	Interactive	Reflective
Resources	Human; financial; technical; political	Policy-driven allocation	Distributed across agencies
Past Experiences	Anecdotal; perceived risk; historical perspectives on exposure; local knowledge of health and environment	Multi-faceted (social, environmental, economic) perspective on impacts and decision-making	Historical records and lessons learned domestically and abroad
Problem Formulation			
Conceptual Model Sources Stressors Pathways/Routes Receptors Endpoints	Network of partners and collaborators; linkages between stressors and solutions	Environmental and health predictions with sustainability considerations	Establish baseline and modifications to exposure/response due to multiple stressors
Analysis Plan Methods Models Data Gaps Uncertainties	Data informs decision-making and defense of risk analysis, characterization, and management options	Data identifies populations of interest and informs allocation of resources	Quantitative approaches with modes of action (MOAs) and maximum contaminant level goals (MCLGs) inform standards
Discussion of Possible Outcomes	Develop and adopt local initiatives/policies implemented by residents or government; work with intentionality	Achieve sustainable use of available social, environmental, and economic resources	Protect human health and environment across country, while maintaining global perspective

Barzyk TM, Wilson S, Wilson A. Community, state, and federal approaches to cumulative risk assessment: challenges and opportunities for integration. Int J Environ Res Public Health. 2015 Apr 24;12(5):4546-71. doi: 10.3390/ijerph120504546. PMID: 25918910; PMCID: PMC4454925.

EPA Framework at Community, State & Federal Level – Barzyk et al.

Risk Analysis Elements	Community	State	Federal
Integration of Exposure, Hazard, and Dose-Response Information Considering:			
Time Related Aspects Vulnerability Subpopulations with Special Features	Analytic-deliberative methods linking decision analysis and risk assessment	Indexes of cumulate risk (e.g., EJSM); indicators and surrogates as proxies for exposure and risk	Providing protective standards for human health based on best available toxicity and exposure relationships
Single Stressor Information			
Toxicological Independence Toxicological Similarity	Chemical mixtures from multiple sources; non-chemical stressors and other exposure/response modifiers	Implement regulations with permitting, oversight, management, and public initiatives or programs	Regulations and mixtures limited to chemically similar stressors (e.g., pesticides); also site- or source-specific (e.g., Superfund, CAA)
Multiple Stressor Information			
Stressor Interactions Joint Chemical Toxicity	Relative risk of stressors for prioritization of actions; determination of environmental impacts on health	Consideration of social determinants of health	Determination of environmental impacts on health
Measures and Metrics			
Decision Indices Probabilistic Approaches Qualitative Approaches Common Metric Biomarkers	Data collection and consolidation informs decision making and supports local initiatives	Consolidation of multiple aspects of sustainability addresses state-level decisions about resources and priorities	Impact-driven assessments of environmental stressors on human health and ecosystems

Barzyk TM, Wilson S, Wilson A. Community, state, and federal approaches to cumulative risk assessment: challenges and opportunities for integration. Int J Environ Res Public Health. 2015 Apr 24;12(5):4546-71. doi: 10.3390/ijerph120504546. PMID: 25918910; PMCID: PMC4454925.

EPA Framework at Community, State & Federal Level – Barzyk et al.

Risk Characterization and Interpretation Elements	Community	State	Federal
Risk Description			
Central Tendency and High-End Individual Risk Population Risk Risk to Important Subpopulations	Multiroute chemical risk assessments; poverty and race/ethnicity considerations; children and elderly; mortality/morbidity clusters	Sensitive/vulnerable population groups; socioeconomic factors; multiple emissions and discharges; current and future conditions	Standards to protect most sensitive populations (e.g., SDWA); aggregate exposure regulations (e.g. FQPA); reasonably anticipated adverse effects (e.g., CWA Sn. 405); primary standards to protect children, elderly, asthmatics
Uncertainty Analysis			
Being Explicit about Uncertainty Uncertainty and Variability Uncertainty and Risk Addition Sensitivity Analysis	GIS-based analyses; local health and emissions records; deviations from baseline or more ideal conditions; proxies for exposure; measurements and sensors increase certainty	Indicators or surrogates of exposure, such as hazard proximity and air pollution exposure estimates; resolution suitable for targeting and implementation of policy	Economic, social, and environmental conditions are interrelated, producing direct, indirect and cumulative effects
Information Provided by CRA	Stressor, asset, and resource identification; absolute or relative ranking; remediation options	Identification of at-risk individuals or populations; weighting of risk based socio-economic, health, and environmental conditions	Systematic, interdisciplinary approaches; integration of natural, social, and environmental sciences and designs
Using the Results of CRA	Solution-oriented, data-supported, value-driven decision-making	Implementation of exposure and risk reduction actions; source attribution; protective standards for land use or other policies	Dose addition with relative potency and toxic equivalency factors or to develop a hazard index; stakeholder feedback and participation to inform research and development that supports local efforts

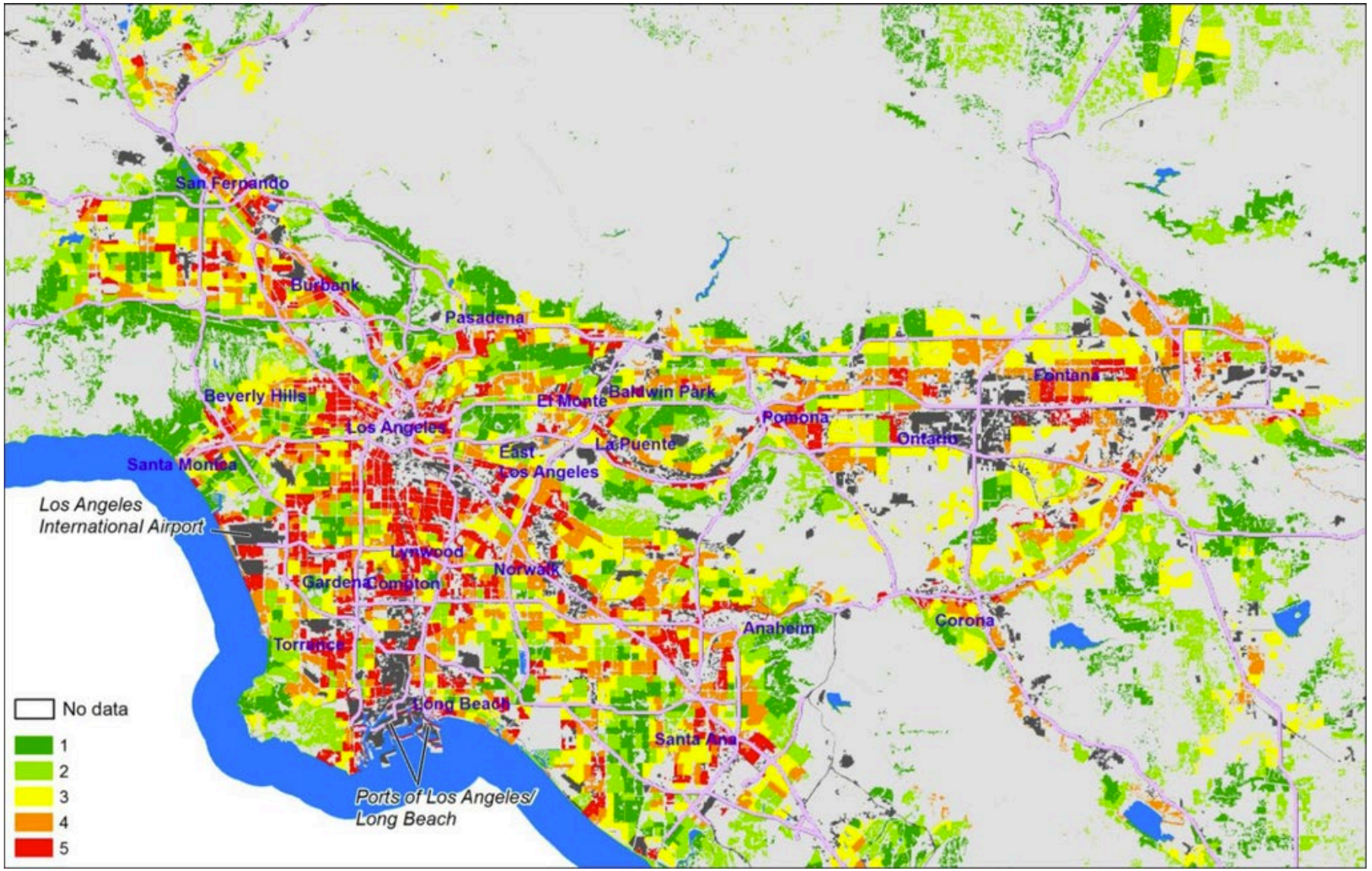
Barzyk TM, Wilson S, Wilson A. Community, state, and federal approaches to cumulative risk assessment: challenges and opportunities for integration. Int J Environ Res Public Health. 2015 Apr 24;12(5):4546-71. doi: 10.3390/ijerph120504546. PMID: 25918910; PMCID: PMC4454925.

EJ Screening Method (EJSM) - California

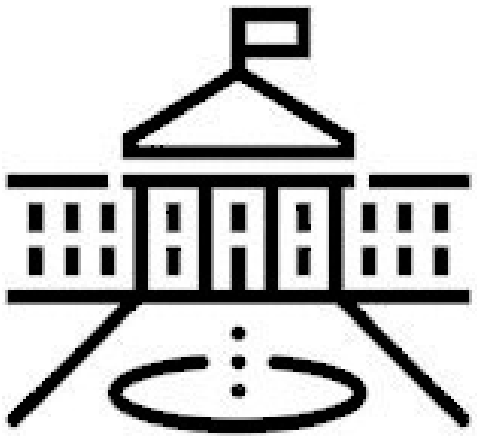
- 23 measures/indicators organized within three categories:
  - "(1) Hazard proximity and land use; (2) estimated air pollution exposure and health risk; (3) social and health vulnerability"
- Four-step process:
  1. Estimate proximity to hazards by mapping regions using GIS
  2. Summarize identified hazard indicators by census tract using GIS – this generates a hazard indicator score
  3. Combine the hazard indicator score with data on air pollution exposure, health risks, and/or social and health vulnerabilities for each census tract to generate a cumulative indicator score
  4. Rank cumulative indicator scores and present visually by census tract

Sadd et al. (2011). Playing It Safe: Assessing Cumulative Impact and Social Vulnerability through an Environmental Justice Screening Method in the South Coast Air Basin, California. Int J Environ Res Public Health. 2011 May; 8(5): 1441–1459.

Total Cumulative Impact Score (Tract Level)



Sadd et al. (2011). Playing It Safe: Assessing Cumulative Impact and Social Vulnerability through an Environmental Justice Screening Method in the South Coast Air Basin, California. Int J Environ Res Public Health. 2011 May; 8(5): 1441–1459.



Examples of State Policy

State Policy Examples

- **NJ (S.232)** – Considerations for cumulative impacts on overburdened communities (census blocks)
  - Permits for projects/facilities that will adversely impact overburdened communities are mandatorily denied
- **CO (HB21-2166)** - Defines and protects disproportionately impacted communities (DICs) with specific focus on air quality
  - Lays framework to enhance community input and transparency
  - Creation of EJ task force
  - Treats greenhouse gas emissions as a pollutant
  - Additional permit requirements for DICs

State Policy Examples (Cont'd)

- **CA – California Environmental Quality Act (CEQA) Guidelines**
  - Environmental Impact Reports (EIRs) should be completed when there are "cumulatively considerable" impacts
    - "Cumulatively considerable" -> "'... incremental effects of an individual project are significant when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects.' (14 C.C.R. 15065.)"
  - Report should include strategies to mitigate or avoid impacts, but only for the individual project's contribution

State Policy Examples (Cont'd)

- **NY (S.8830 and A.2103C)** - Considers cumulative impacts on overburdened communities in the permitting process
  - Both S.8830 and A.2103C have passed the State Senate and Assembly, but have not been signed into law by the governor
  - If signed into law, NY would be second state to consider CI (after NJ)
- **NC Solid Waste Management Act of 2007**
  - Provides protections for natural resources
  - If future landfill would impact communities of color / low SES communities, permit would be denied
  - Loophole – existing landfills were expanded instead

Case Example: Newark EJ and CI Ordinance

- Considers the combination of multiple projects/sources of pollution and social vulnerabilities
  - Targets local level zoning policies to mitigate pollution linked to new projects
  - Prevents Newark from hosting additional polluting industries, given disproportionate burden placed on the community, which is predominantly low-income and residents of color
- Policy first proposed in 2001; passed in 2016
  - Followed by years of meetings, committees, report writing, hearings, and workshops to refine policy
- Requires that proposed projects complete an EJ Checklist
  - Public input and transparency
  - Right to Say No was not included in the final ordinance

Limitations & Barriers to Incorporating CI into Environmental Policy

- Lack of data, frameworks, population-specific and place-based variables, common definitions, tools, classification guidelines, community engagement/partnerships
- Limitations of current regulations
- Oversimplification – consider one stressor at a time, how/who to prioritize, how different stressors interact
- Lack of consideration of psychosocial factors
- Conflicting policy agendas and priorities

Policy Implementation & NC Implications

- EJ-relevant policies are often *implemented* via general assemblies, zoning ordinances, executive order and *enforced* through a dept. of environmental quality
- Implications for NC:
  - NC envr. policy should incorporate stronger considerations for cumulative impacts in the permitting process
  - NC hazards mapping tools should be enhanced to include additional indicators like socioeconomic status, climate change, and housing burden/blight
  - Tools need to establish an index or score to identify most at-risk regions/populations
  - Current policies define cumulative impacts and have considerations for Title VI but do not explicitly offer protections for communities that experience multiple stressors

Other Considerations for Cumulative Impacts

- Indigenous treaties, rights, and interests in project proposals
  - NC has 8 state recognized tribes; 2 tribes have at least partial federal recognition
- Burden of proof is currently placed on communities
- Cumulative impact assessments should involve the local community and incorporate qualitative data from community residents

References

- Alexeeff, G. V., Faust, J. B., August, L. M., Milanes, C., Randles, K., Zeise, L., & Denton, J. (2012). A Screening Method for Assessing Cumulative Impacts. *International Journal of Environmental Research and Public Health*, *9*(2), 648–659. https://doi.org/10.3390/ijerph9020648
- Barzyk, T. M., Conlon, K. C., Chahine, T., Hammond, D. M., Zartarian, V. G., & Schultz, B. D. (2010). Tools available to communities for conducting cumulative exposure and risk assessments. *Journal of exposure science & environmental epidemiology*, *20*(4), 371–384. https://doi.org/10.1038/jes.2009.25
- Barzyk, T. M., Wilson, S., & Wilson, A. (2015). Community, state, and federal approaches to cumulative risk assessment: challenges and opportunities for integration. *International journal of environmental research and public health*, *12*(5), 4546–4571. https://doi.org/10.3390/ijerph120504546
- Blakely, J., Misfeldt, C., & Yashim, A. (n.d.). *Cumulative Effects - What Makes An Environmental Effect Cumulative?* University of Saskatchewan - Blakley Research Group - Department of Geography. https://research-groups.usask.ca/blakley/current-projects/cumulative-effects.php
- Blondell, M., Kobayashi, W., Redden, B., & Zrzavy, A. (2020, May). Environmental Justice Tools for the 21st Century. *University of Michigan*, 1-132. https://deepblue.lib.umich.edu/bitstream/handle/2027.42/154874/362_EJ_Tools_for%2021st_Century.pdf?sequence=1&isAllowed=y
- *CEQA Portal Topic Paper - Cumulative Impacts*. (2020, December 18). Association of Environmental Professionals. https://ceqaportal.org/tp/AEP%20CEQA%20Portal_Cumulative%20Impacts.pdf
- Coleman, L. W. (2021, June 3). *Cumulative Impact Ordinances Address Environmental Justice*. EHS Daily Advisor. https://ehsdailyadvisor.blr.com/2021/06/cumulative-impact-ordinances-address-environmental-justice/
- *Cumulative effects*. (n.d.). National Institute of Water and Atmospheric Research. https://niwa.co.nz/coasts-and-oceans/tools-and-resources/cumulative-effects
- *Cumulative Impacts Research*. (n.d.). US Environmental Protection Agency. https://www.epa.gov/healthresearch/cumulative-impacts-research
- Hislip, P. (n.d.). *The backdrop of Newark's Environmental Justice and Cumulative Impacts ordinance – Edward J*. Rutgers - Edward J. Bloustein School of Planning and Public Policy. https://bloustein.rutgers.edu/the-backdrop-of-newarks-environmental-justice-and-cumulative-impacts-ordinance/
- International Programme on Chemical Safety & Inter-Organization Programme for the Sound Management of Chemicals. (2009). *Assessment of combined exposures to multiple chemicals: report of a WHO/IPCS international workshop on aggregate/cumulative risk assessment*. World Health Organization. https://apps.who.int/iris/handle/10665/44113
- Kuonen, J; Miles, M. 2020. *Environmental Justice Mapping Tools for New York State Communities*. New York Sea Grant – Cornell Cooperative Extension. https://seagrant.sunysb.edu/images/uploads/pdfs/EnvironmentalJustice-MappingToolsGuide.pdf
- Maryland.gov. (n.d.). *What is Environmental Justice? The History of Environmental Justice in the United States and Maryland*. Maryland.gov - Enterprise Agency Template. https://mde.maryland.gov/programs/crossmedia/EnvironmentalJustice/Pages/WhatisEJ.aspx
- Menzie, C. A., MacDonell, M. M., & Mumtaz, M. (2007). A phased approach for assessing combined effects from multiple stressors. *Environmental health perspectives*, *115*(5), 807–816. https://doi.org/10.1289/ehp.9331
- Michigan Department of Environment, Great Lakes, & Energy. (2022). *Environmental Justice - Michigan's EJ History*. Office of the Environmental Justice Public Advocate. https://www.michigan.gov/environmentaljustice/0,9615,7-400-98505_98621-522447--,00.html
- Minnesota Pollution Control Agency. (2020, November 10). *Administrative Policy - Administrative Policy No. i-admin8-29*. https://www.pca.state.mn.us/sites/default/files/i-admin8-29.pdf
- Morello-Frosch, R., Zuk, M., Jerrett, M., Shamasunder, B., & Kyle, A. D. (2011). Understanding the cumulative impacts of inequalities in environmental health: implications for policy. *Health affairs (Project Hope)*, *30*(5), 879–887. https://doi.org/10.1377/hlthaff.2011.0153
- Namin, S. (2016, August). Landscapes of Environmental Justice: A Post-Structural Analysis of Ecological Structures and Environmental Discourses. *The University of Texas at Arlington*, 1-209. https://rc.library.uta.edu/uta-ir/bitstream/handle/10106/27872/NAMIN-DISSERTATION-2016.pdf?sequence=1&isAllowed=y

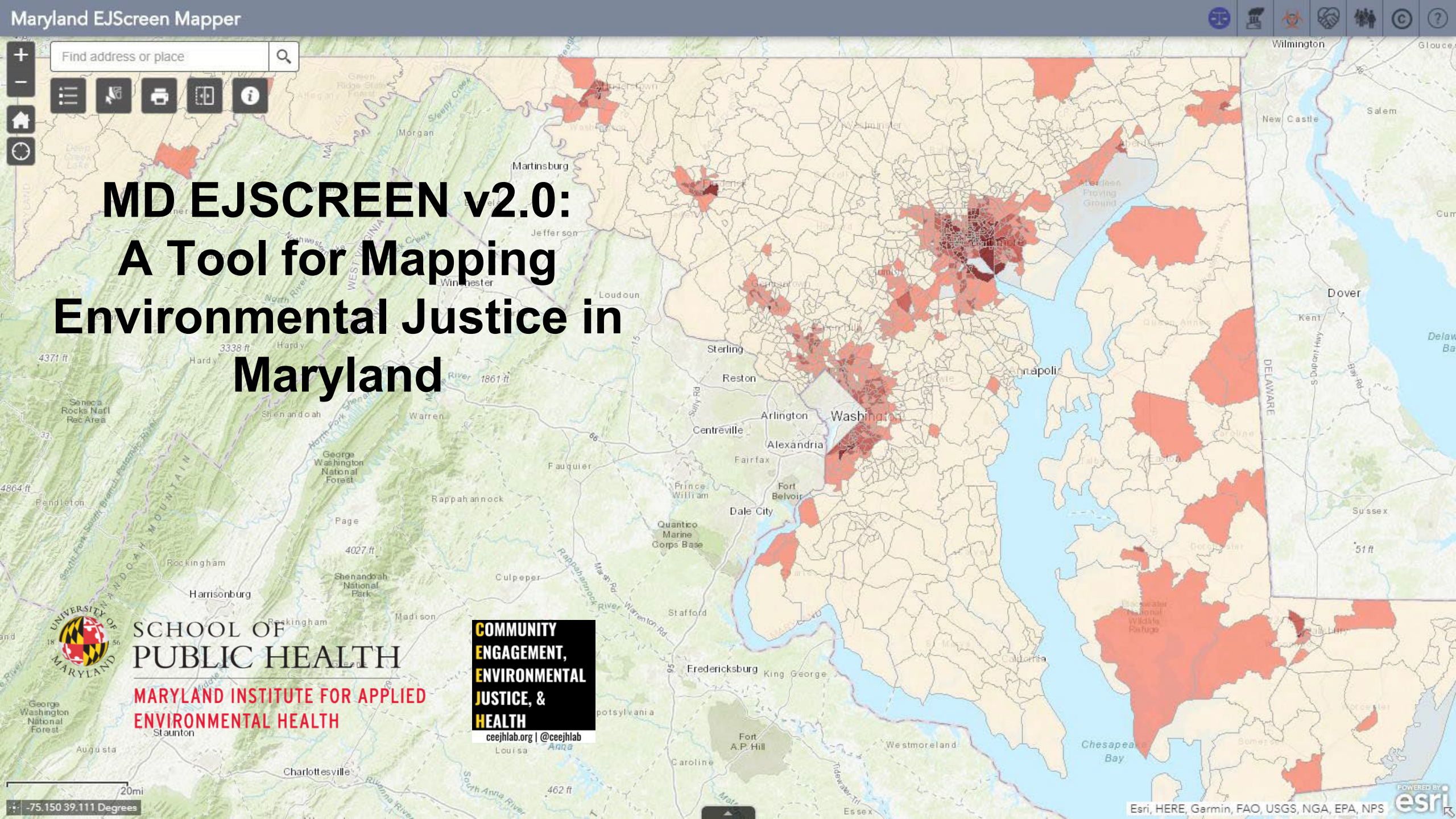
References

- National Caucus of Environmental Legislators. (2021). *NCEL Legislation Examples - Environmental Justice and Cumulative Impacts - Legislation*. Washington, D.C. https://www.ncelenviro.org/app/uploads/2021/08/Environmental-Justice-and-Cumulative-Impacts-Legislative-Examples.pdf
- National Environmental Justice Advisory Council Cumulative Risks/Impacts Work Group. (2004, December). *Ensuring Risk Reduction in Communities with Multiple Stressors: Environmental Justice and Cumulative Risks/Impacts National Environmental Justice Advisory Council*. NEJAC - National Environmental Justice Advisory Council. https://www.epa.gov/sites/default/files/2015-02/documents/nejac-cum-risk-rpt-122104.pdf
- NC Department of Environmental Quality. (n.d.). *Subchapter 01C - Conformity with North Carolina Environmental Policy Act*. https://deq.nc.gov/media/1842/download
- NC DEQ Secretary's EJ & Equity Advisory Board Cumulative Impacts Committee. (2019, October). *Cumulative Impacts: Robeson County*. https://deq.nc.gov/ej/1-cumulative-impacts-robeson-northampton-visit-2020/download
- North Carolina Environmental Justice Network. (n.d.). *Issues*. NCEJN. https://ncejn.org/issues
- North Carolina Environmental Policy Act of 1971, § 113A-1 *et seq.* (1971). https://www.ncleg.net/EnactedLegislation/Statutes/HTML/ByChapter/Chapter_113A.html
- Nweke O. C. (2011). A framework for integrating environmental justice in regulatory analysis. *International journal of environmental research and public health*, *8*(6), 2366–2385. https://doi.org/10.3390/ijerph8062366
- Payne-Sturges, D. C., Sangaramoorthy, T., & Mittmann, H. (2021). Framing Environmental Health Decision-Making: The Struggle over Cumulative Impacts Policy. *International journal of environmental research and public health*, *18*(8), 3947. https://doi.org/10.3390/ijerph18083947
- *Report on Cumulative Impacts in Robeson County, NC*. (n.d.). North Carolina Environmental Justice Network. https://ncejn.org/wp-content/uploads/2020/04/Cumulative-Impact-Summary-August-21-2019-corrected.pdf
- Sadd et al. (2011). Playing It Safe: Assessing Cumulative Impact and Social Vulnerability through an Environmental Justice Screening Method in the South Coast Air Basin, California. Int J Environ Res Public Health. 2011 May; 8(5): 1441–1459.
- Sexton K. (2012). Cumulative risk assessment: an overview of methodological approaches for evaluating combined health effects from exposure to multiple environmental stressors. *International journal of environmental research and public health*, *9*(2), 370–390. https://doi.org/10.3390/ijerph9020370
- Sexton, K., & Linder, S. H. (2011). Cumulative risk assessment for combined health effects from chemical and nonchemical stressors. *American journal of public health*, *101 Suppl 1*(Suppl 1), S81–S88. https://doi.org/10.2105/AJPH.2011.300118
- Sheats, N., Baptista, A., & Mellon, C. (2017, March 28). *Addressing Cumulative Impacts of Pollution Through Local Land Use Policy Tools* [A case study of the Newark Environmental Justice and Cumulative Impacts Ordinance]. Edward J. Bloustein School of Planning and Public Policy, Office of the Chancellor, Rutgers University–Newark and the Joseph C. Cornwall Center for Metropolitan Studies. https://njeja.org/wp-content/uploads/2021/08/Addressing-Cumulative-Impacts-Through-Local-Land-Use-and-Policy-Tools.pdf
- Smith, A., & Laribi, O. (2022). Environmental Justice in the American Public Health Context: Trends in the Scientific Literature at the Intersection Between Health, Environment, and Social Status. *Journal of Racial and Ethnic Health Disparities, 9*(1), 247-256. doi:10.1007/s40615-020-00949-7
- Solomon, G. M., Morello-Frosch, R., Zeise, L., & Faust, J. B. (2016). Cumulative Environmental Impacts: Science and Policy to Protect Communities. *Annual review of public health*, *37*, 83–96. https://doi.org/10.1146/annurev-publhealth-032315-021807
- The Cumulative Effects Assessment Working Group & AXYS Environmental Consulting Ltd. (1999, February). Cumulative Effects Assessment Practitioners Guide. 1-134. https://www.canada.ca/content/dam/iaac-acei/documents/policy-guidance/cumulative-effects-assessment-practitioners-guide/cumulative_effects_assessment_practitioners_guide.pdf
- UNC American Indian Center. (2022). *American Indian Center FAQs About American Indians - American Indian Center*. UNC American Indian Center. https://americanindiancenter.unc.edu/resources/faqs-about-american-indians/
- Zeeg, T., & Kwon, K. (2019, November). Methods, Results, and Future Direction of a First Nation-led CEM Program. *Metlakatla Cumulative Effects Management*, 1-34. https://metlakatlacem.ca/wp-content/uploads/2020/02/Metlakatla_CEM-Synopsis_FIN.pdf

References - Tools

- CalEnviroScreen https://oehha.ca.gov/calenviroscreen/report/calenviroscreen-40
- CEHII https://pubs.acs.org/doi/pdf/10.1021/es901041p
- CO Climate Equity Data Viewer https://drive.google.com/file/d/1iytdPG5iK2VBNpIy8k6oT6lU6-QKMLOa/view
- Colorado EnviroScreen https://cdphe.colorado.gov/enviroscreen
- Cumulative Impact Map (VA) https://mappingforej.berkeley.edu/virginia/
- DECinfo Locator (NY) https://gisservices.dec.ny.gov/gis/dil/
- EJ Atlas https://ejatlas.org/
- EJ Screen https://www.epa.gov/ejscreen/understanding-ejscreen-results
- EJSEAT https://www.epa.gov/sites/default/files/2015-02/documents/ej-screening-approaches-rpt-2010.pdf
- EJSM doi: 10.3390/ijerph120504546.
- IL EJ Start https://illinois-epa.maps.arcgis.com/apps/webappviewer/index.html?id=f154845da68a4a3f837cd3b880b0233c
- MA DPH EJ Tool https://matracking.ehs.state.ma.us/Environmental-Data/ej-vulnerable-health/environmental-justice.html
- MD EJSCREEN https://mde.maryland.gov/programs/Crossmedia/EnvironmentalJustice/Documents/mdejscreen-cejsc-2-25-2021v1.pdf
- MiEJScreen https://www.michigan.gov/documents/egle/Presentation-AAC-MiEJScreen-2021-09-22_736899_7.pdf
- NC DEQ Community Mapping Tool https://deq.nc.gov/outreach-education/environmental-justice/deq-north-carolina-community-mapping-system#state-and-nationwide-mapping-tools
- NC DEQ Environmental Justice Tool https://ncdenr.maps.arcgis.com/apps/opsdashboard/index.html#/5b65176a2d494271a871563846c974d7?ObjectID=144122I
- NC ENVIROSCAN https://enviroscan.org/
- NJ Environmental Justice Mapping Tool https://njdep.maps.arcgis.com/apps/webappviewer/index.html?id=34e507ead25b4aa5a5051dbb85e55055
- NM OpenEnviroMap https://gis.web.env.nm.gov/oem/?map=egis
- NY Climate Change Science Clearinghouse https://nyclimatescience.org/highlights/maps
- NY Potential EJ Area Map https://www.dec.ny.gov/public/911.html
- RIDEM Environmental Resource Map https://ridemgis.maps.arcgis.com/apps/webappviewer/index.html?id=87e104c8adb449eb9f905e5f18020de5
- Twin Cities Environmental Justice Mapping Tool http://ceed.org/twin-cities-environmental-justice-mapping-tool-released/
- Washington Environmental Health Disparities Map Project https://deohs.washington.edu/washington-environmental-health-disparities-map-project
- Wisconsin Environmental Equity Tool (WEET) https://www.dhs.wisconsin.gov/climate/env-equity-tool.htm

Questions?


Maryland EJScreen Mapper
Find address or place
MD EJSCREEN v2.0:
A Tool for Mapping
Environmental Justice in
Maryland
SCHOOL OF
PUBLIC HEALTH
MARYLAND INSTITUTE FOR APPLIED
ENVIRONMENTAL HEALTH
COMMUNITY
ENGAGEMENT,
ENVIRONMENTAL
JUSTICE, &
HEALTH
ceejhlab.org | @ceejhlab
Esri, HERE, Garmin, FAO, USGS, NGA, EPA, NPS

Maryland EJScreen Mapper

EPA EJSCREEN exists-- Why not just use that?

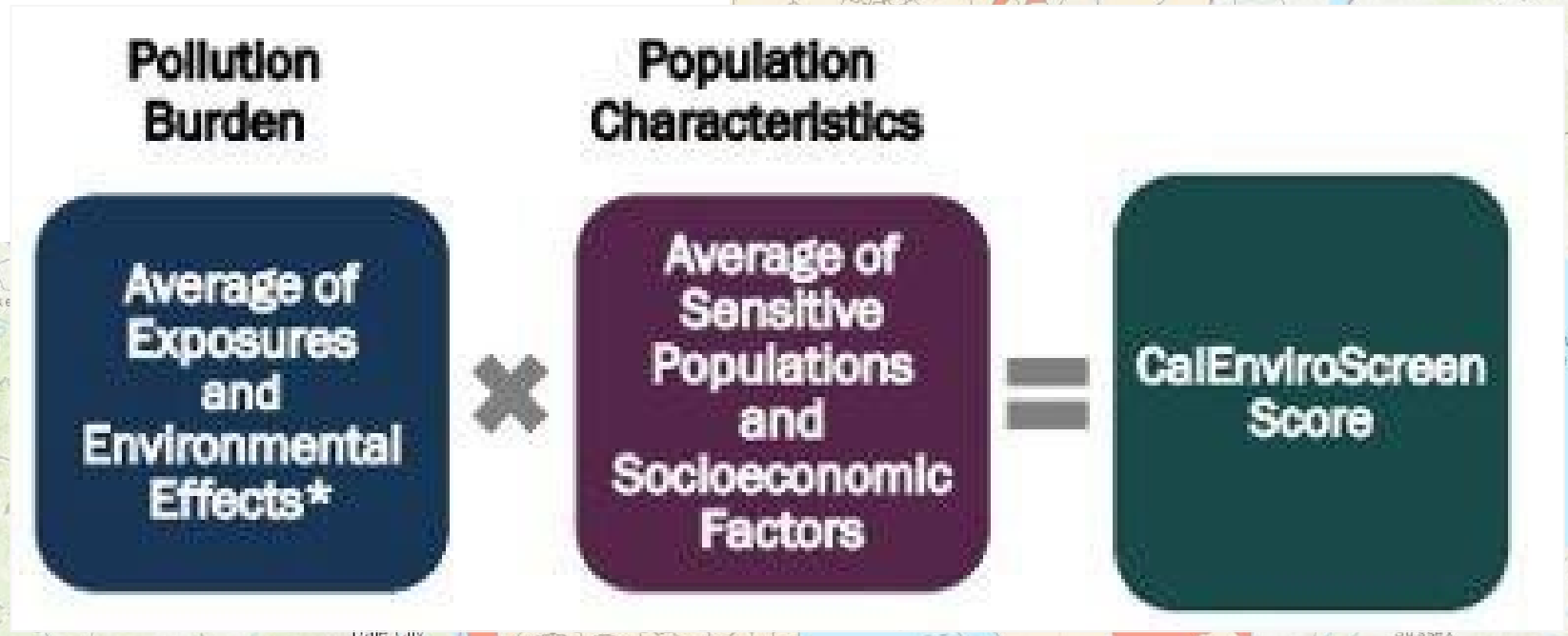
Utilize local data

Customize to local community concerns

(E.g. California highlights pesticide use)

Make a tool potentially adoptable for STATE policymaking

Scoring Methodology Borrowed from CalEnviroScreen

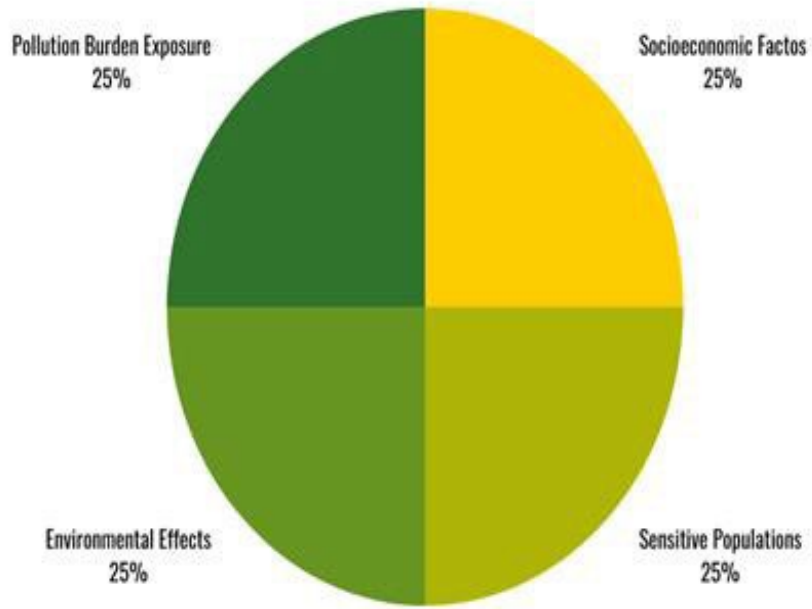


MARYLAND'S EJ SCREEN

HTTPS://DNR.MARYLAND.GOV/PAGES/PARKEQUITY.ASPX

EJ SCREEN DATA LAYERS

LAYERS & WEIGHTING OF MODEL



POLLUTION BURDEN EXPOSURE

GEOGRAPHIC PROXIMITY
EX. AIR TOXINS HAZARDS

POLLUTION BURDEN ENVIRONMENTAL EFFECTS

EFFECTS THAT COULD BE MITIGATED
EX. PROXIMITY TO WATER DISCHARGE, LEAD PAINT

SENSITIVE POPULATIONS

POPULATION CHARACTERISTICS WITH HEALTH DISPARITIES

SOCIOECONOMIC FACTORS

POPULATION CHARACTERISTICS

MARYLAND DEPARTMENT OF NATURAL RESOURCES

UNIVERSITY OF MARYLAND | SCHOOL OF PUBLIC HEALTH

Pollution Burden: Exposure

Indicators	Description
Pollution Burden: Exposure	
National Scale Air Toxics Air (NATA) Toxics Cancer Risk	Lifetime risk of developing cancer from inhalation of air toxins. Reported as risk per lifetime per million people.
NATA Respiratory Hazard Index	Air toxics respiratory hazard index. This is the sum of hazard indices for those air toxics with reference concentrations based on respiratory endpoints, where each hazard index is the ratio of exposure concentration in the air to the health-based reference.
NATA Diesel Particulate Matter (DPM)	Levels of diesel particulate matter in air. Reported as micrograms per cubic meter (µg/m3).
Particulate Matter (PM2.5)	Levels of particulate matter with a diameter of 2.5 micrometers or smaller in air. Reported as micrograms per cubic meter (µg/m3).
Ozone	Summer seasonal average of the maximum daily 8-hour concentration of ozone in air in parts per billion.
Traffic Proximity and Volume	Count of vehicles (average annual daily traffic) at major roads within 500 meters or close to 500 meters, divided by distance in meters.

Pollution Burden: Environmental Effects

Pollution Burden: Environmental Effects	
Lead Paint Indicator	Percent of houses built before 1960, which likely contain lead paint.
Proximity to Risk Management Plan (RMP) Sites	Count of RMP (potential chemical accident management plans) facilities within 5 kilometers or close to 5 kilometers, divided by distance in kilometers.
Proximity to Treatment Storage and Disposal Facilities (TSDF)	Count of TSDF (hazardous waste management facilities) within 5 kilometers or closest to 5 kilometers, divided by distance in kilometers.
Proximity to National Priorities List (NPL) Sites	Count of NPL/Superfund sites (polluted sites that pose a risk to human health and/or the environment) within 5 kilometers or close to 5 kilometers, divided by distance in kilometers.
Proximity to Major Direct Water Discharges	Toxic concentrations in stream segments within 500 meters, divided by distance in kilometers (km). Standards modeled after Risk-Screening Environmental Indicators (RSEI).
Watershed Failure	Percent of each census tract's watershed that exceeds levels of phosphorus

Population Characteristics: Sensitive Populations

Population Characteristics: Sensitive Populations	
Asthma Emergency Discharges	Count of patients released from the hospital after being admitted for asthma or asthma-related distress.
Myocardial Infarction Discharges	Patients released from the hospital after being admitted for a heart attack or heart attack symptoms.
Low Birth Weight Infants	Babies born weighing less than 5.5 pounds.
Asthma Emergency Visits	Patients admitted to the emergency room for asthma or asthma-related distress.

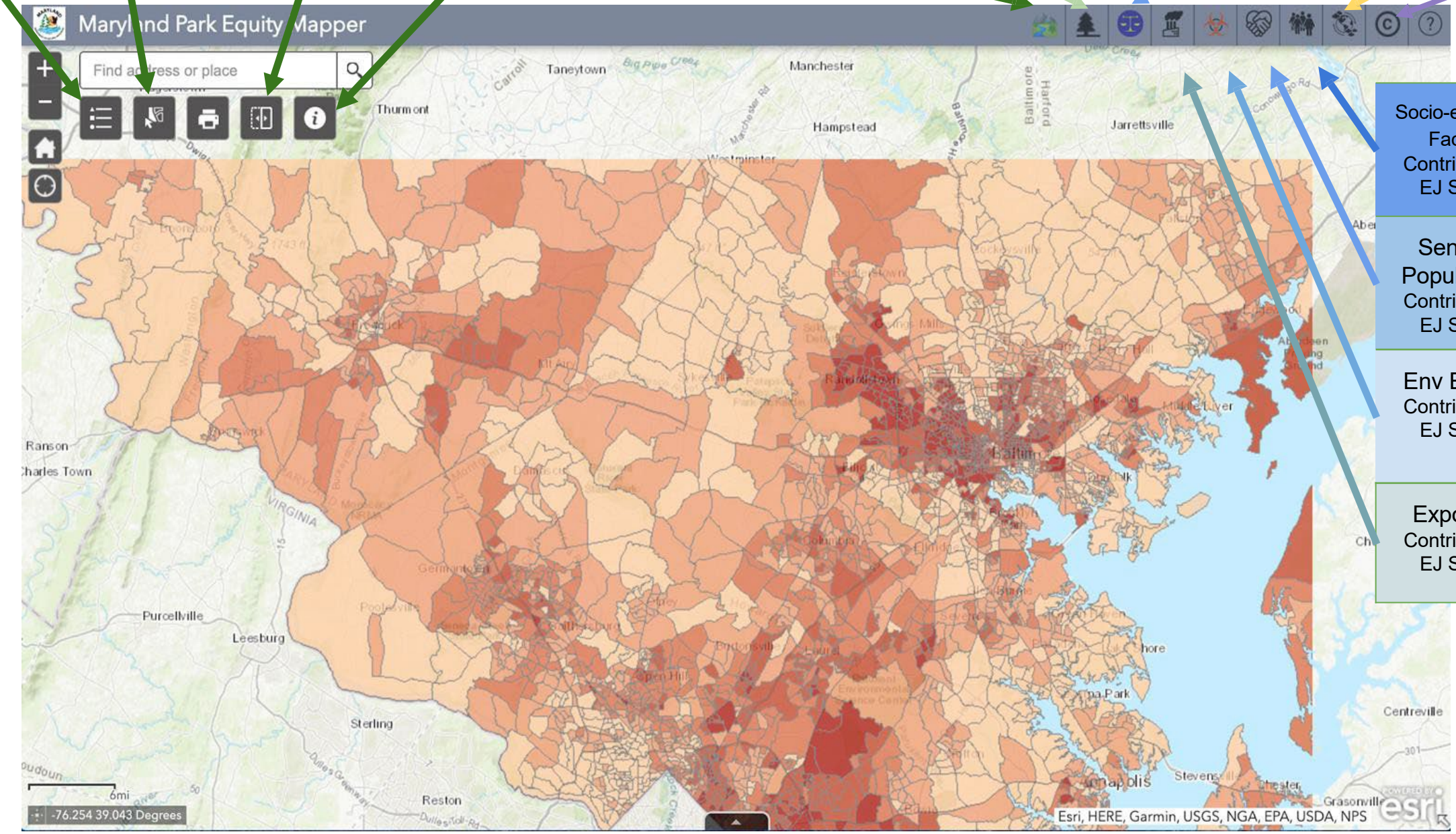
- Health effects data at the zip code level was scaled down to the census tract level using geographically weighted scaling.

Population Characteristics: Socio-Economic Factors

Population Characteristics: Socioeconomic Factors	
Percent Non-White	Percentage of individuals who define themselves as any race/ethnicity besides non-Hispanic White.
Percent Low-Income	Percentage of individuals whose household income in the past 12 months is less than two times below the federal poverty level.
Less than high school education	Percentage of individuals 25 and older who lack a high school diploma.
Linguistic Isolation	Percentage of households in which no one 14 years old and older speaks English "very well", or households which speak only English.
Individuals under age 5	Percentage of people under the age of 5.
Individuals over age 64	Percentage of people over the age of 64.
Unemployment	Percentage of the population over the age of 16 that is unemployed and eligible for the labor force. Excludes retirees, students, homemakers, institutionalized

Legend | Generate Reports | Side by Side Comparisons | More Information

Park Equity Scores | Park Equity Context Layers | EJ Scores | Climate & Health | EJ Context Layers

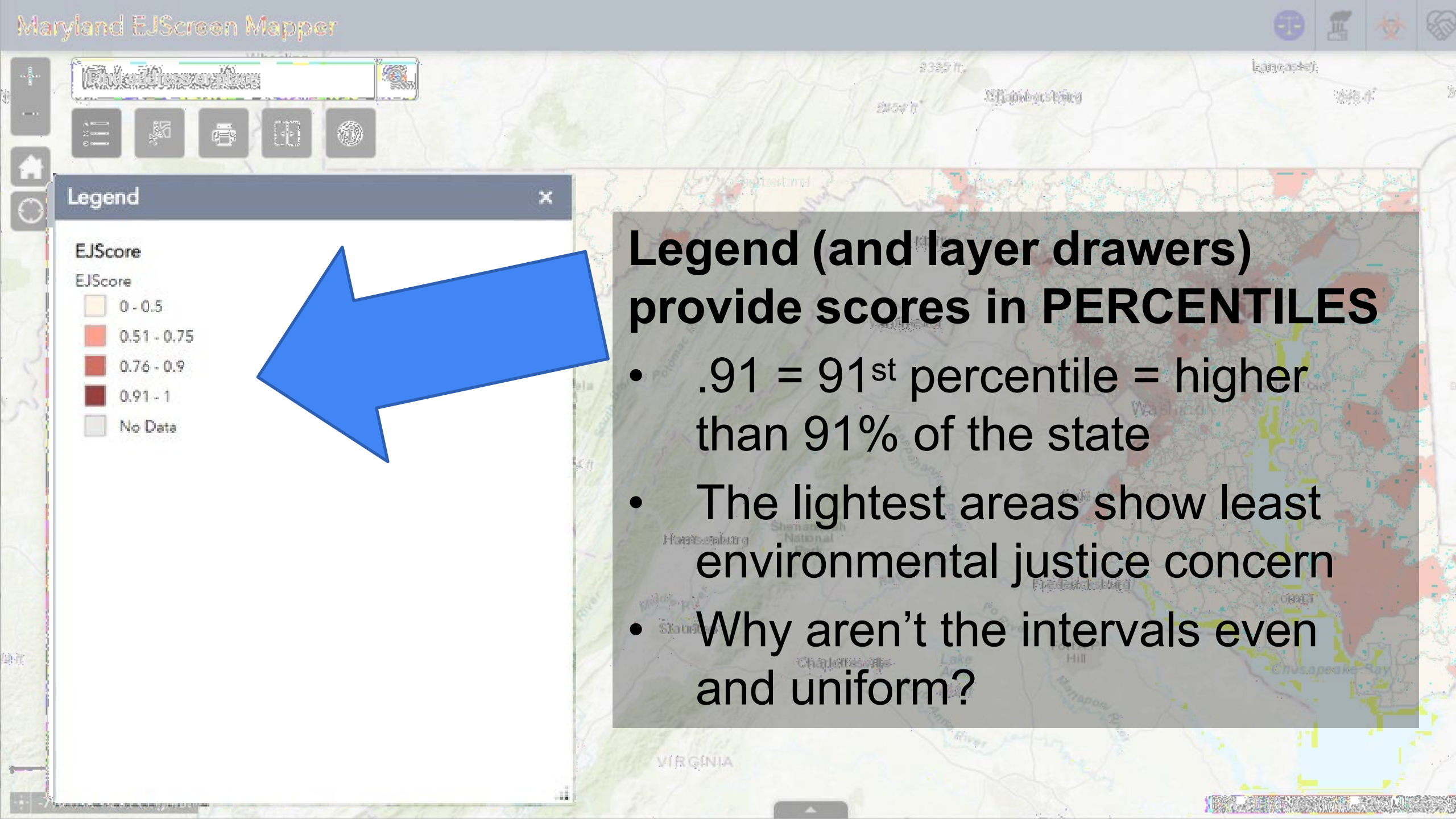


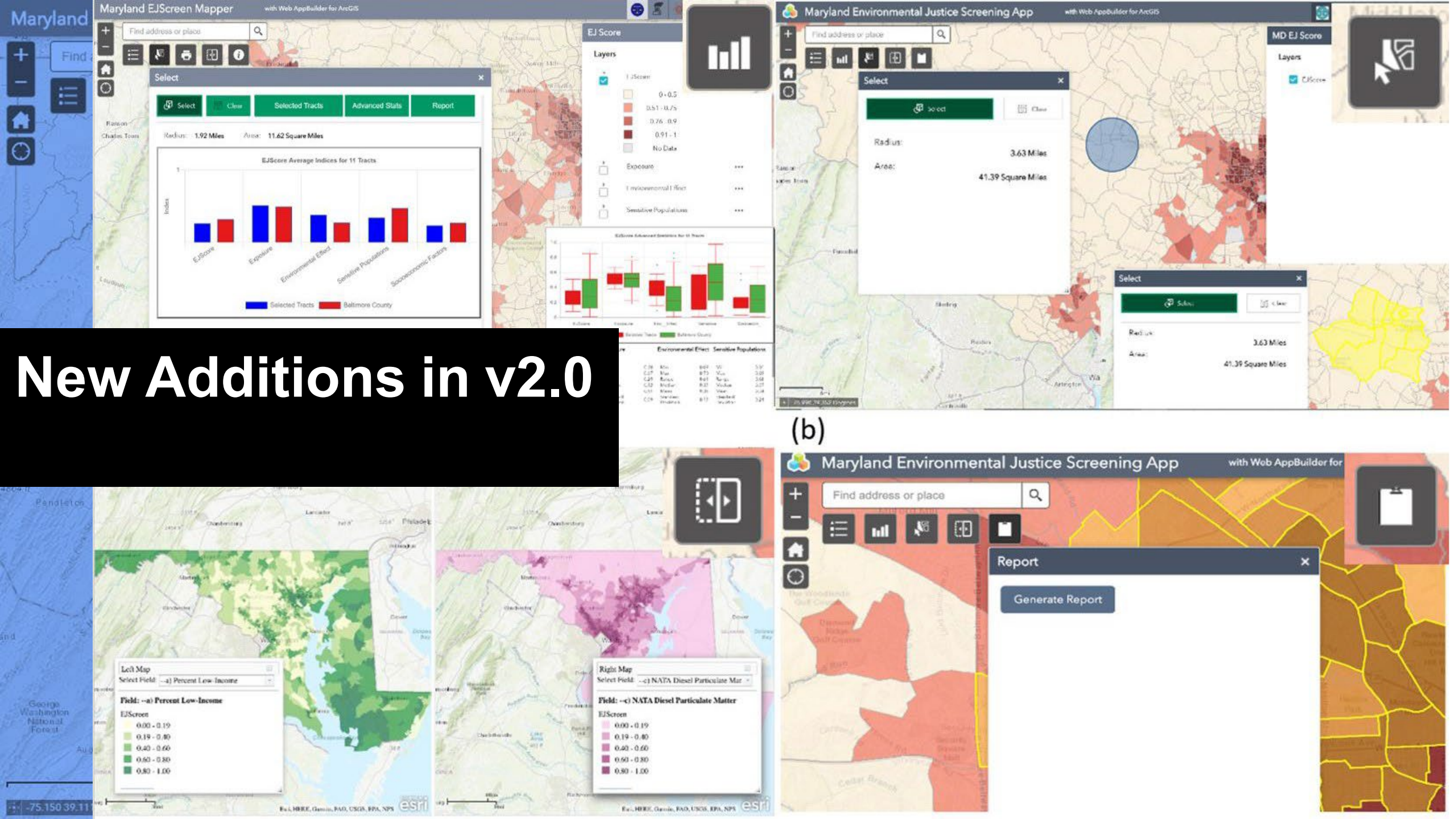
Socio-economic Factors: Contributes to EJ Scores

Sensitive Populations: Contributes to EJ Scores

Env Effects: Contributes to EJ Scores

Exposure: Contributes to EJ Scores


Maryland EJScreen Mapper
Legend
EJScore
EJScore
0 - 0.5
0.51 - 0.75
0.76 - 0.9
0.91 - 1
No Data
Legend (and layer drawers) provide scores in PERCENTILES
• .91 = 91st percentile = higher than 91% of the state
• The lightest areas show least environmental justice concern
• Why aren't the intervals even and uniform?



New Additions in v2.0

PARK EQUITY MAPPER

Maryland GIS tool for mapping Greenspace

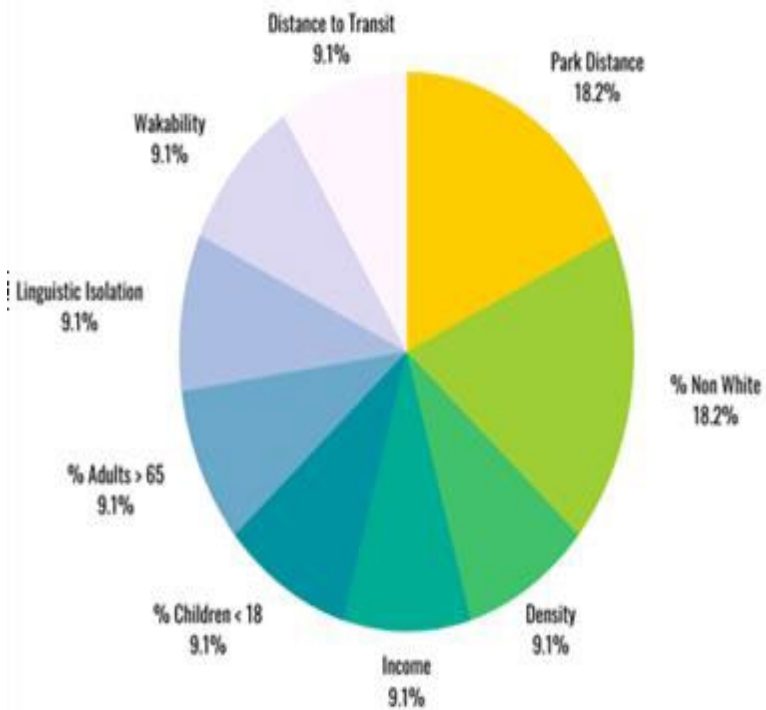
- **Park Equity**: Creating equal access to opportunities in parks and other green spaces for all Marylanders
- **Greenspace benefits:**
  - **Instoration**: Encouraging physical activity
  - **Restoration**: Direct and restore attention and focus
  - **Mitigation**: Environmental exposure reduction
  - **Economic**: Increased housing and business value
  - **Ecological**: Increased stormwater and climate (e.g. heat) mitigation
  - **Sociologic**: Decreased crime (when well maintained)

MARYLAND'S PARK EQUITY TOOL

HTTPS://DNR.MARYLAND.GOV/PAGES/PARKEQUITY.ASPX

PARK EQUITY DATA LAYERS

LAYERS & WEIGHTING OF MODEL



PARK DISTANCE
LOCAL AND STATE DATA

POPULATION DENSITY
US CENSUS

INCOME
US CENSUS

% NON-WHITE
US CENSUS

LINGUISTIC ISOLATION
US CENSUS

% CHILDREN < 18
US CENSUS

% ADULTS > 65
US CENSUS

WALKABILTIY
EPA EJ SCREEN

ACCESS TO TRANSIT
MARYLAND DOT

MARYLAND DEPARTMENT OF NATURAL RESOURCES

UNIVERSITY OF MARYLAND | SCHOOL OF PUBLIC HEALTH

Justice40

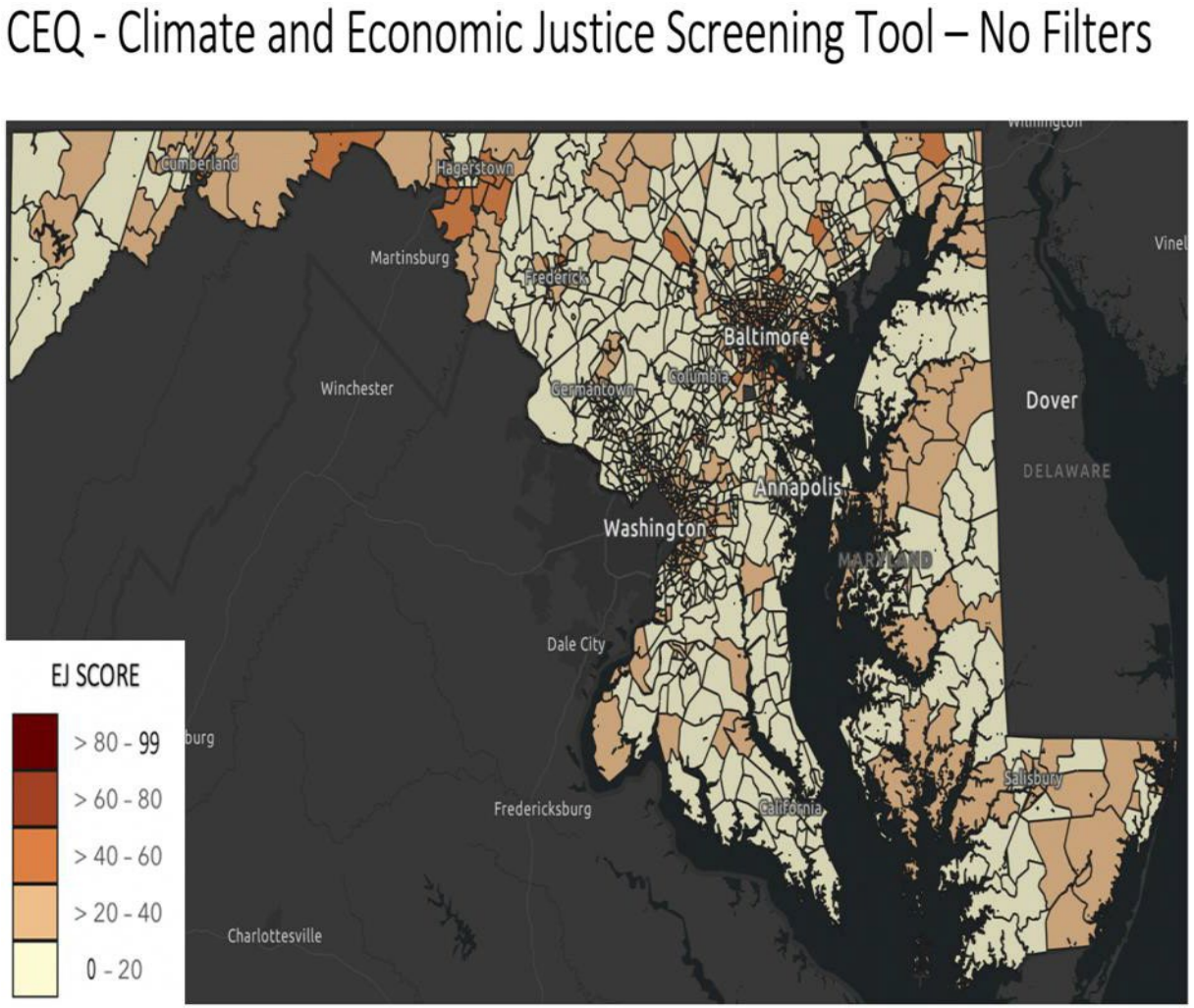
- **Justice40 Initiative:** "Certain Federal investments might be made toward a goal that **40 percent of the overall benefits flow to disadvantaged communities**. The recommendations shall focus on investments in the areas of **clean energy** and **energy efficiency**; **clean transit; affordable and sustainable housing; training and workforce development; the remediation and reduction of legacy pollution**; and the **development of critical clean water infrastructure**. The recommendations shall reflect existing authorities the agencies may possess for achieving the 40-percent goal as well as **recommendations on any legislation needed** to achieve the 40-percent goal."
- Modeled after New York's Climate Leadership and Community Protection Act
- "The interim guidance introduces measures to guide agencies on their path to implementing Justice40, launches the **Justice40 Pilot Program**, and includes accountability and transparency tools to ensure agencies are working to reach the Justice40 goal."

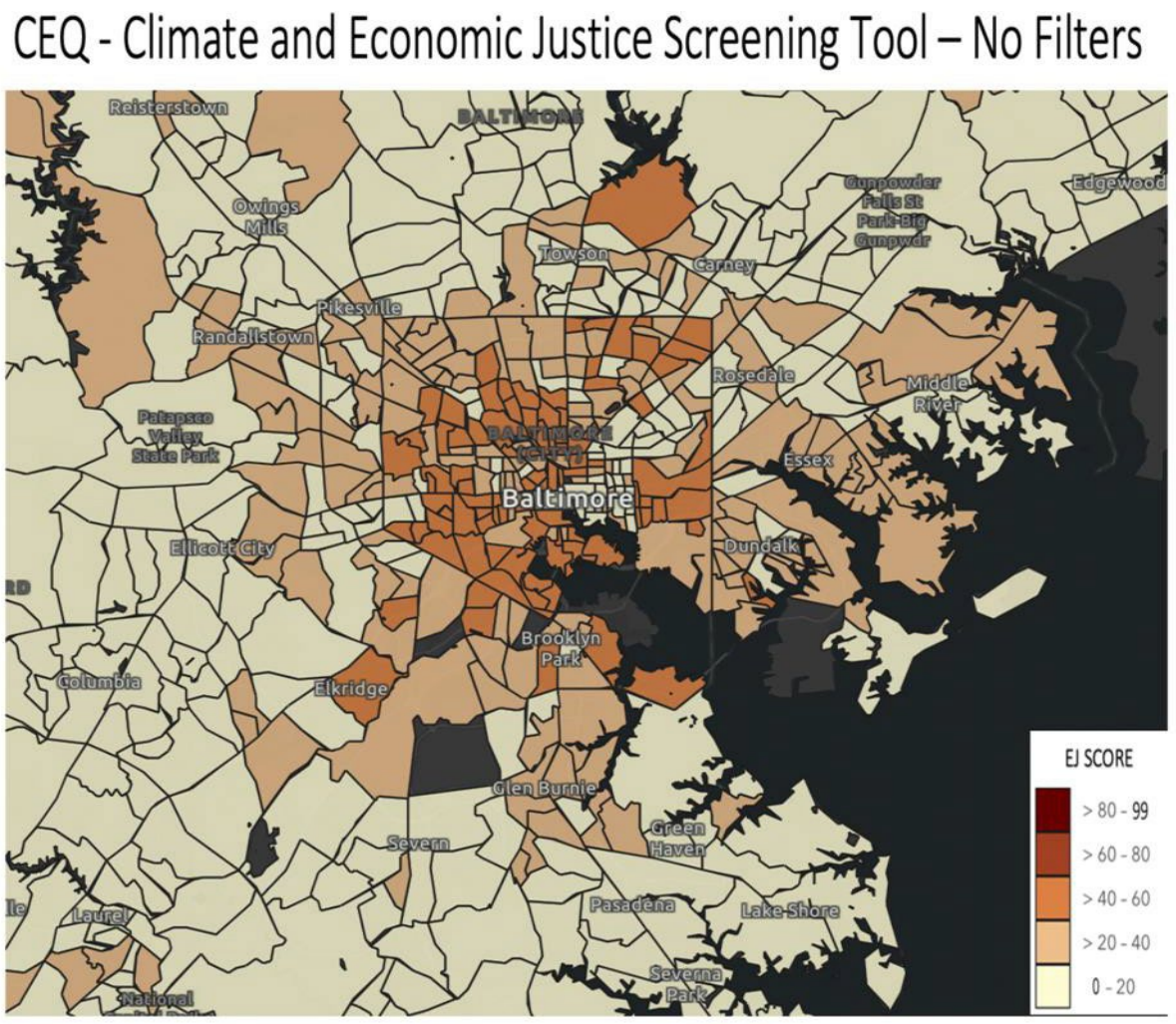
[1] https://www.whitehouse.gov/omb/briefing-room/2021/07/20/the-path-to-achieving-justice40/

EJ Scoring Methodology

MD EJSCREEN	CEQ	Justice40
Incorporated indicators from high-priority domains such as pollution burden, environmental effects, health indicators associated with sensitive populations, socioeconomic factors (including race and demographic indicators), and more recently rural indicators (e.g., CAFOs) that include overlooked areas in unincorporated communities. In summary, scores for the average effects of pollution burden and population characteristics are multiplied to form the EJ score used in this analysis.	Incorporated indicators from high-priority domains such as climate change, clean and efficient energy, clean transit, affordable and sustainable housing, pollution and remediation of legacy pollution, critical clean water and waste infrastructure, health burdens, and training and workforce development.	Uses the double matrix approach with indicators that span pollution burden, environmental effects, health indicators associated with sensitive populations, and socioeconomic factors.

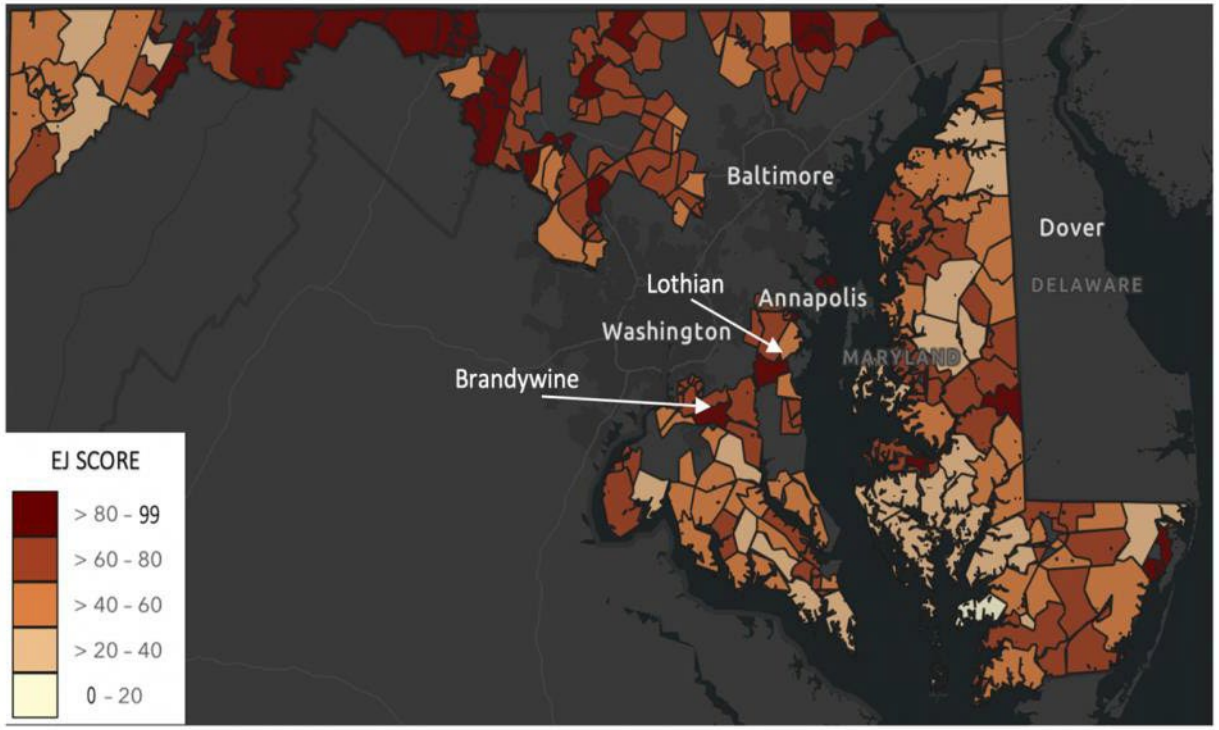
Application of the CEQ Justice 40 Tool in the State of Maryland



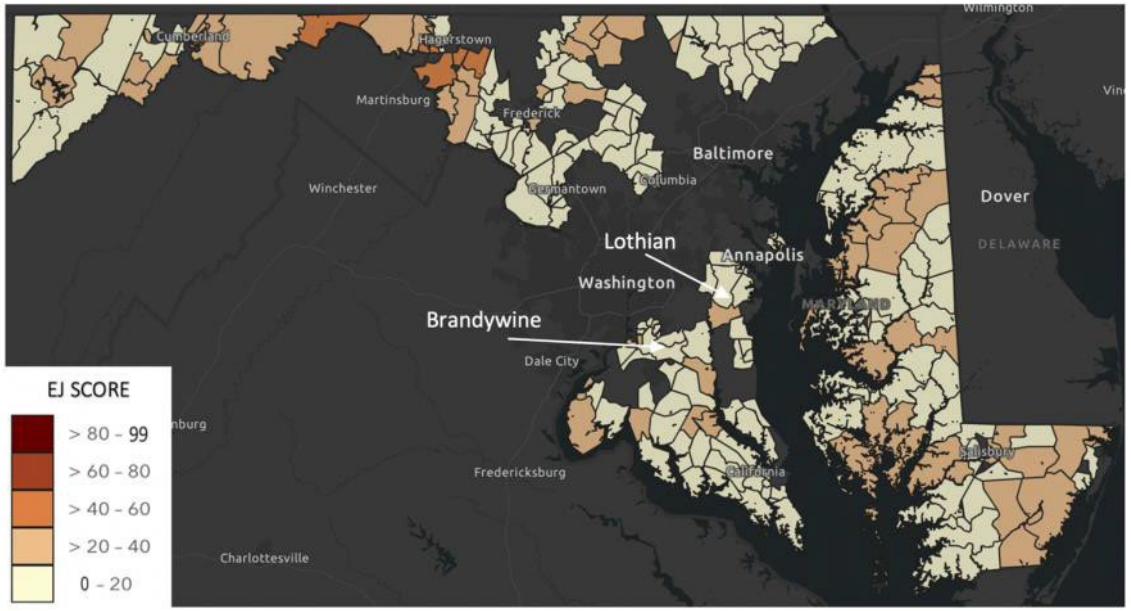


Unincorporated Areas Captured

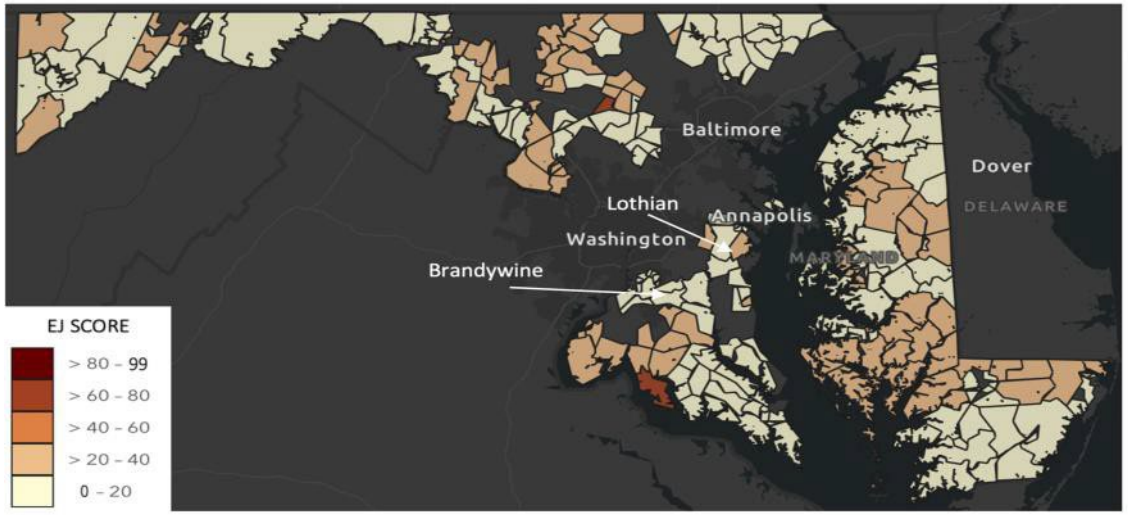
Unincorporated areas in MD - **MD EJSCREEN – UMD**



Unincorporated areas in MD - CEQ - Climate and Economic Justice Screening Tool



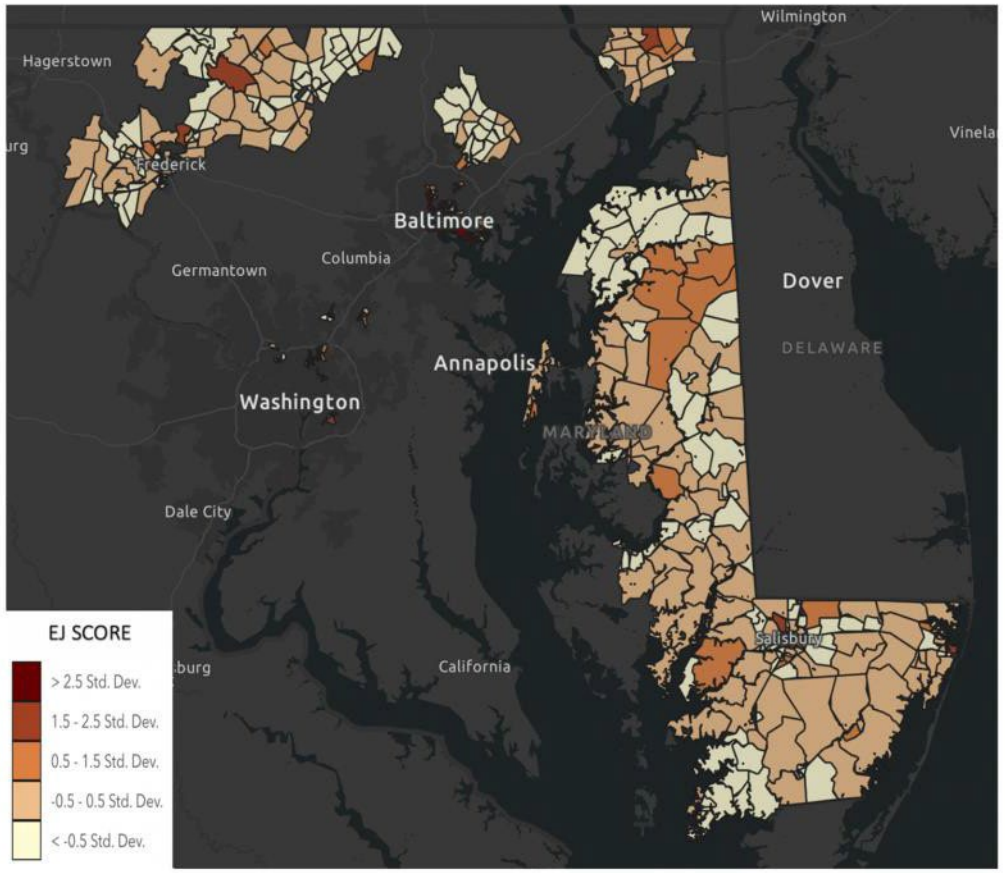
Unincorporated areas in MD – Justice40 Bill Indicators



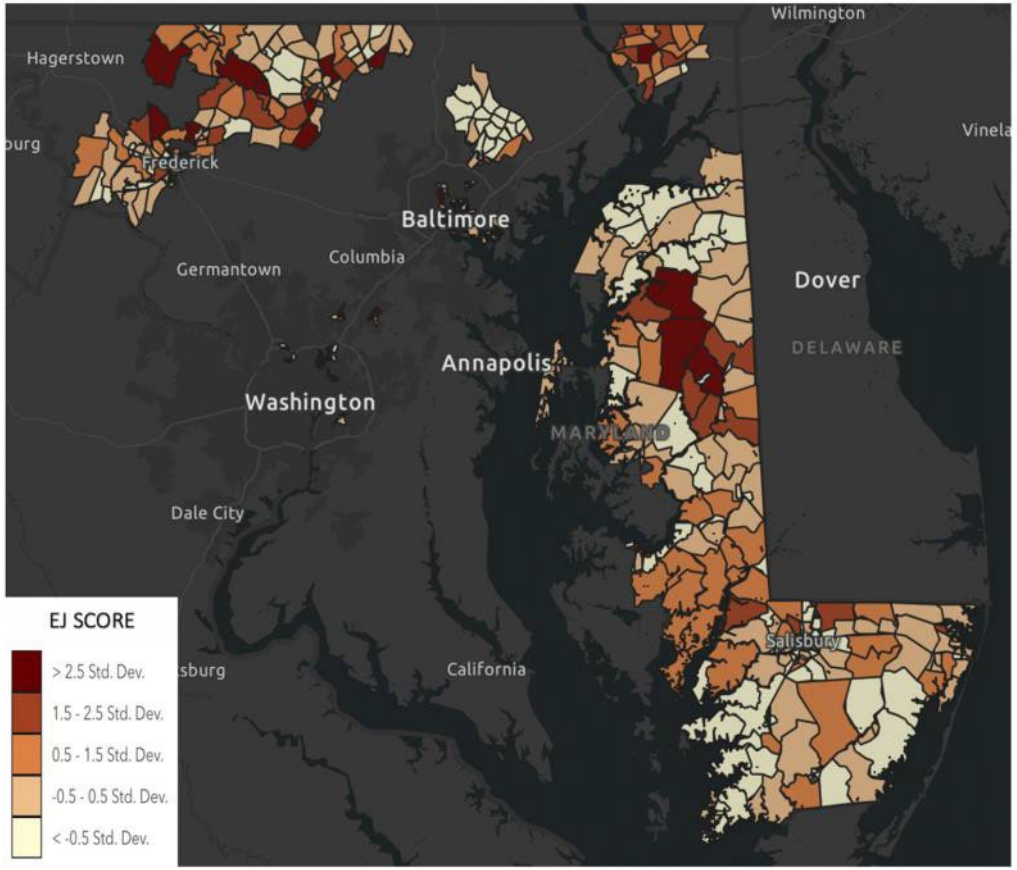
Unincorporated areas in Maryland such as Lothian and Brandywine are clearly identified as high-risk areas in comparison to CEQ and Justice40.

Interoperability Between CEQ and Maryland EJSCREEN

CAFO Rural Areas in MD – CEQ - Climate and Economic Justice Screening Tool



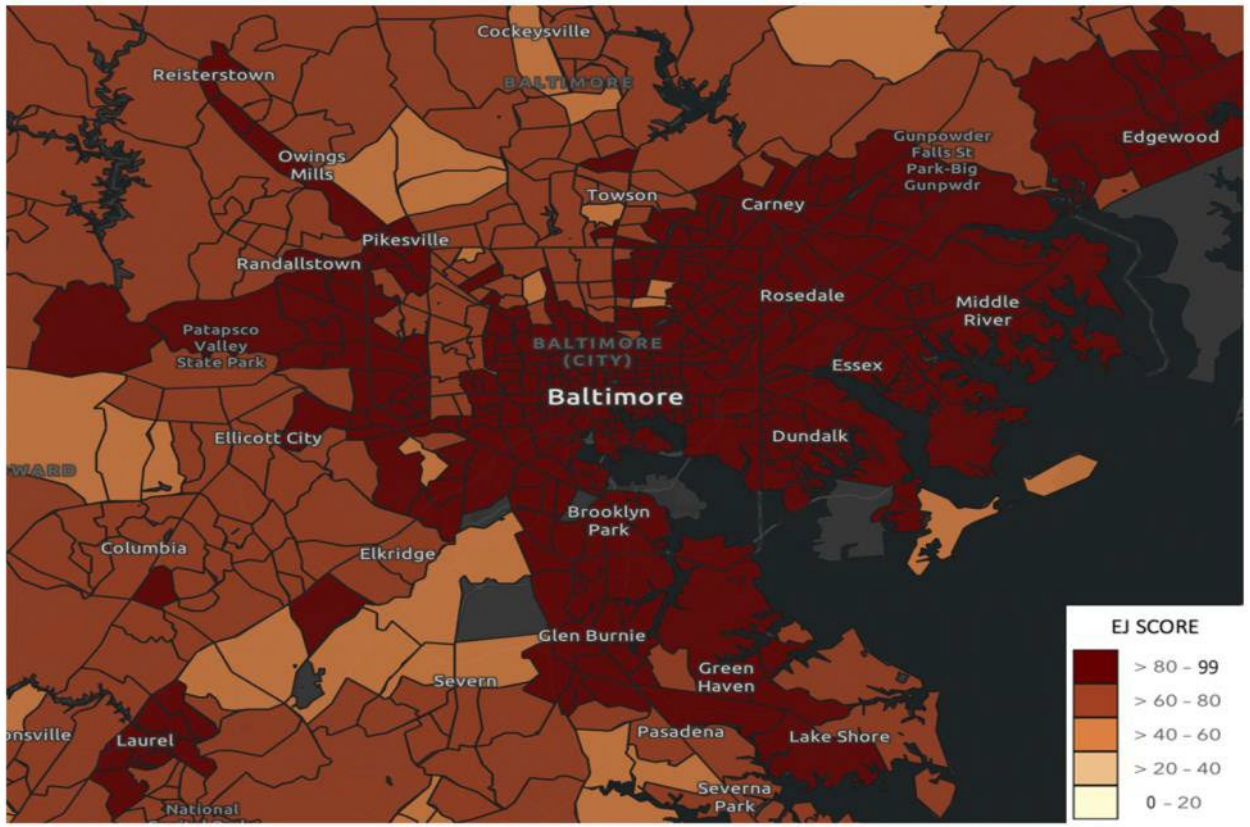
CAFO Rural Areas in MD – Maryland EJ SCREEN



Zooming on CAFO regions at the census block level reveals patterns and differences that are highlighted in greater detail with Maryland EJSCREEN when compared with the output from CEQ. In this example, CAFO rural areas that are more heavily impacted and identified more clearly with Maryland EJSCREEN at the census block level.

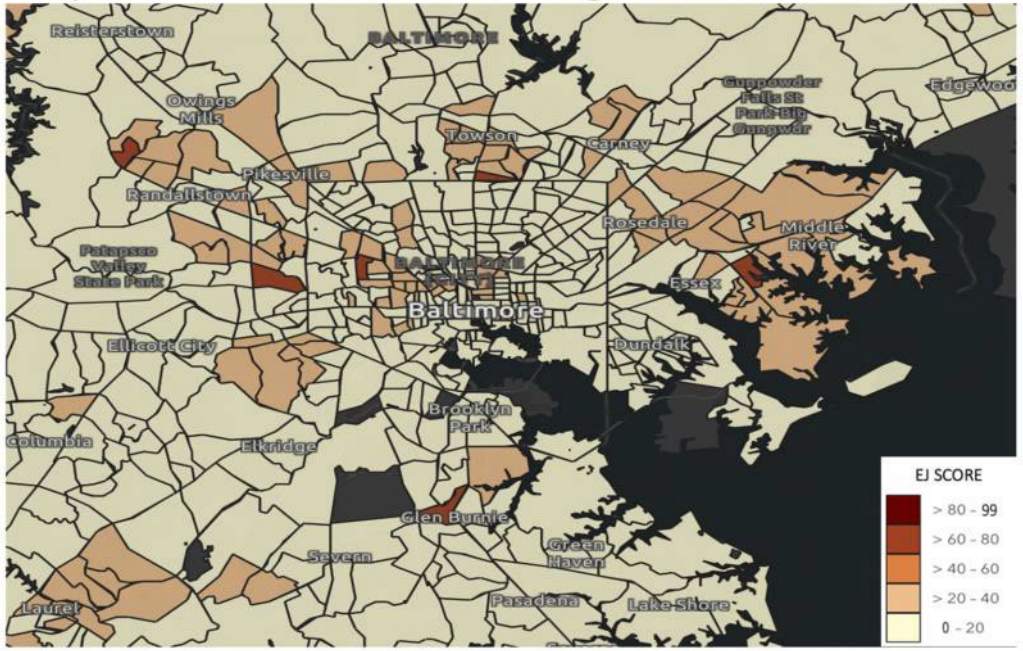
Synergy (or Lack of Synergy) Between Multiple Tools

Map of EJ Scores in Baltimore using MD EJSCREEN



Map of EJ Scores in Baltimore using CEQ

Map of EJ Scores in Baltimore using Justice40 Bill Indicators



Between the three approaches MD EJSCREEN includes race and specific demographic indicators that greatly enhance the capability of previous tools (e.g., CEQ or Justice40 MD) to identify high-risk areas within Baltimore communities. Not including race or other demographic indicators greatly diminishes the underlying impact seen in Baltimore communities.

Contact Information

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www.ceejhlab.center

swilson2@umd.edu

Why Health Data Matters?

NC DEQ

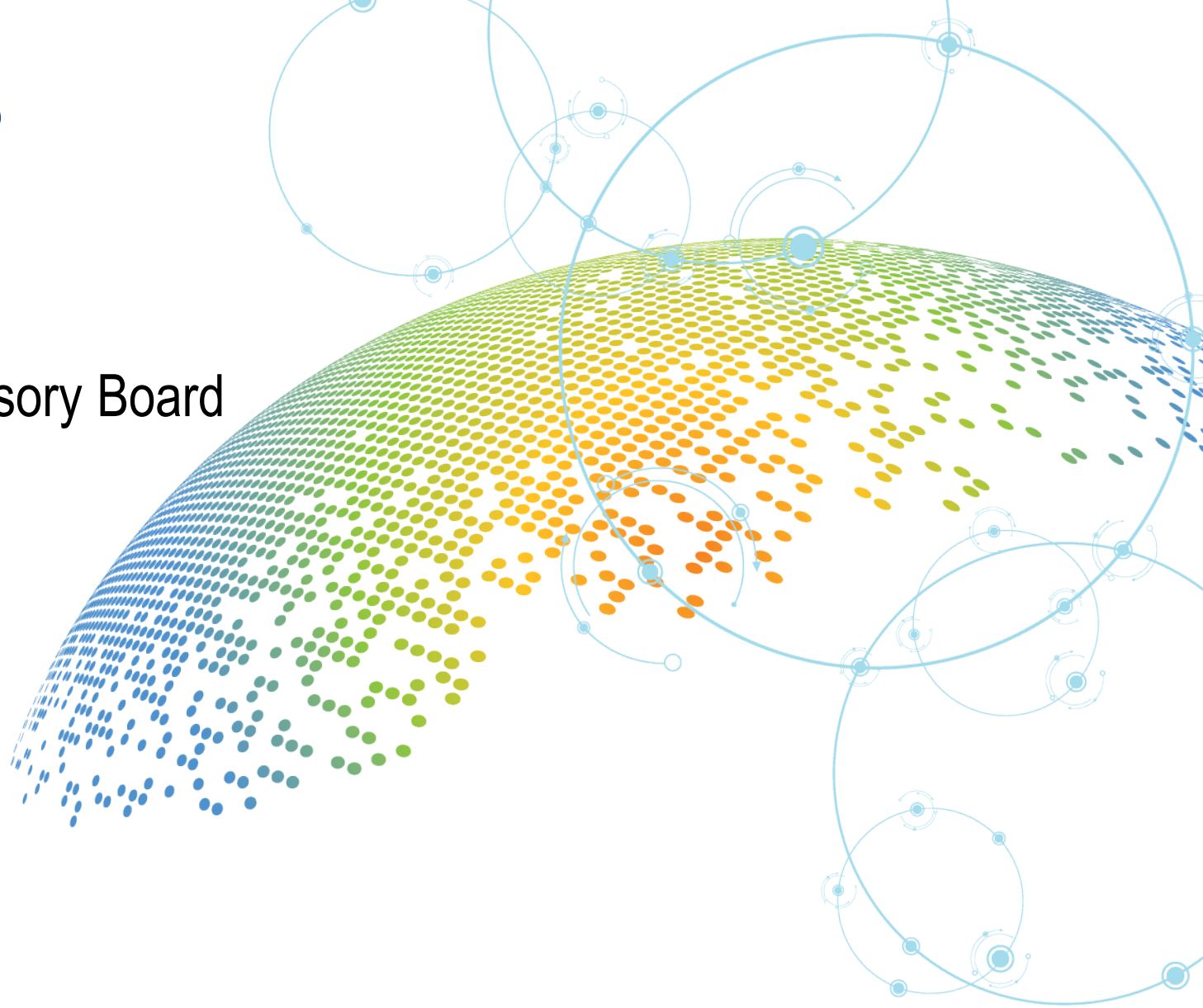
Environmental Justice and Equity Advisory Board

Cumulative Impacts Special Meeting

May 10, 2022

Crystal Lee Pow Jackson, PhD

Research Environmental Scientist



HOW THE ENVIRONMENT IMPACTS OUR HEALTH

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

AIR POLLUTION
including indoors and outdoors

INADEQUATE WATER, SANITATION
and hygiene

CHEMICALS
and biological agents

RADIATION
ultraviolet and ionizing

COMMUNITY NOISE

OCCUPATIONAL RISKS

AGRICULTURAL PRACTICES
including pesticide-use, waste-water reuse

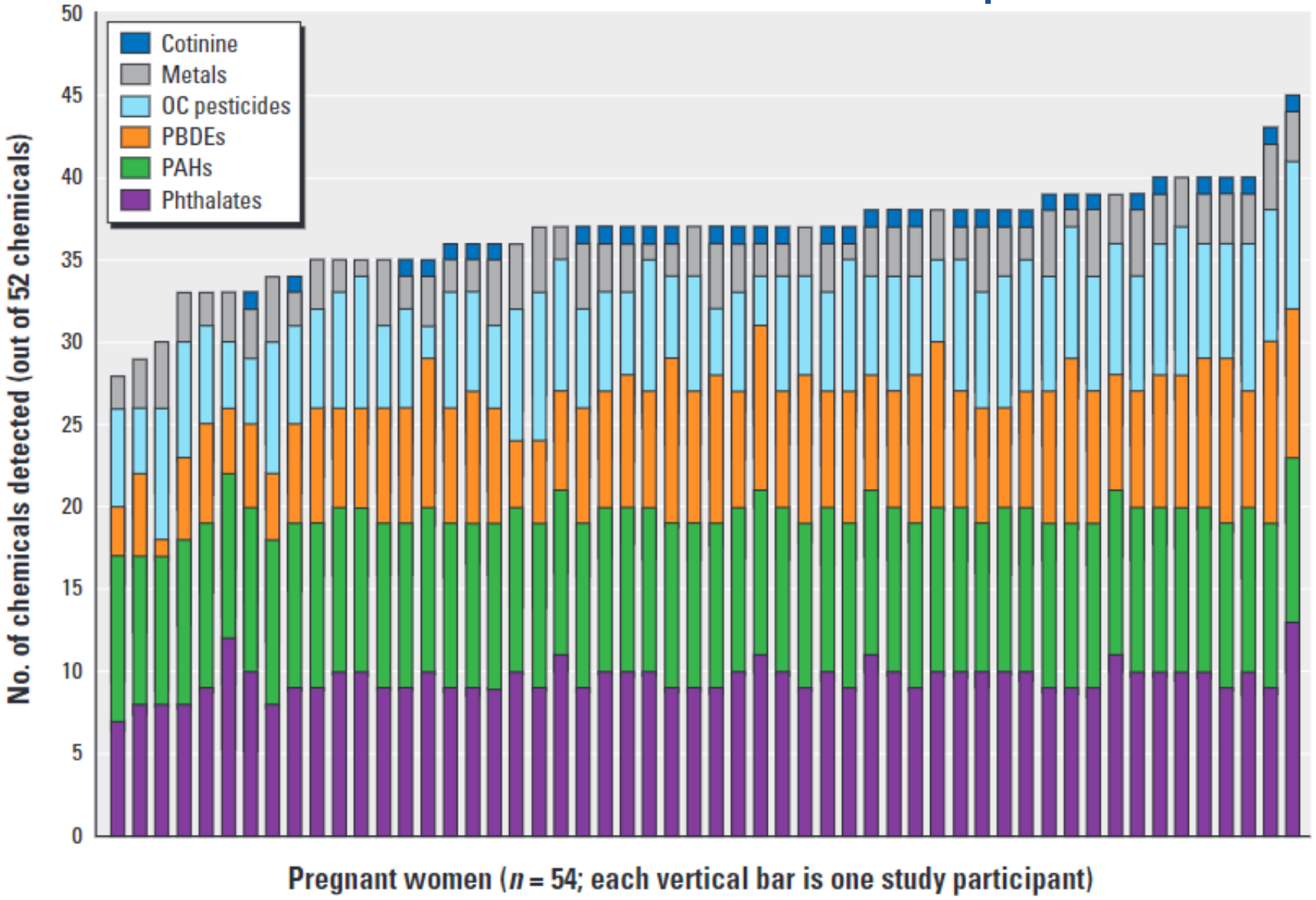
BUILT ENVIRONMENTS
including housing and roads

CLIMATE CHANGE

World Health Organization

#EnvironmentalHealth

Mixtures of Exposures



Woodruff, Tracey J., Ami R. Zota, and Jackie M. Schwartz. "Environmental chemicals in pregnant women in the United States: NHANES 2003–2004." *Environmental health perspectives* 119.6 (2011): 878-885.

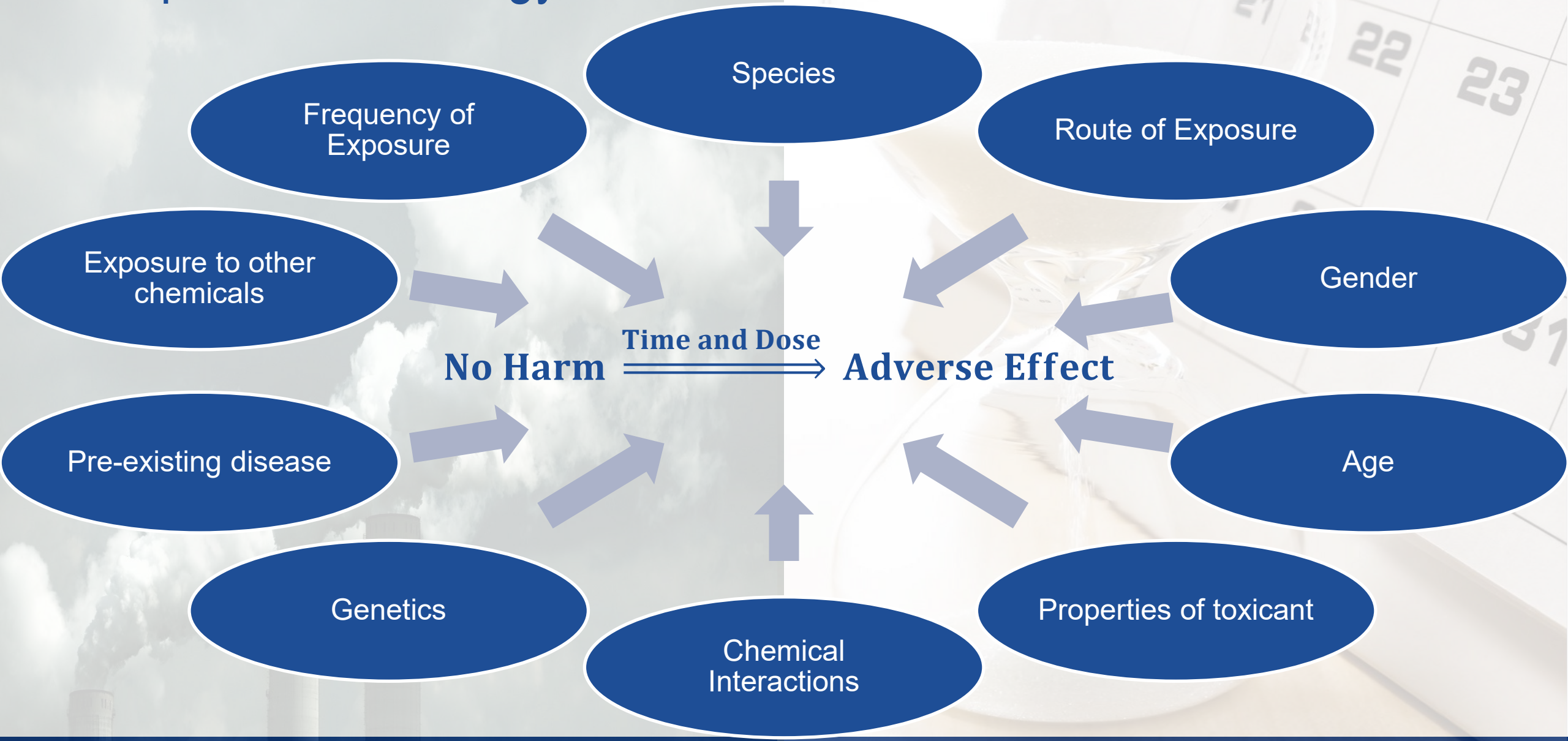
Disproportionate burden

- **Air pollution:** Communities living below the poverty line and non-white communities have a higher burden from particulate matter emissions than the overall population.
- **Chemical waste:** People living below the poverty line and people of color are more likely to live in fence line zones.
- **Chemical facilities:** Higher rate of incidents in communities of color compared to those in predominately white neighborhoods.
- **Lead exposure:** African Americans and low-income households are disproportionately affected by lead poisoning.
- **Climate change**: Extreme weather conditions can have devastating impacts on low-income communities. Minorities are more likely to live in areas impacted by increased temperatures and sea level rise.

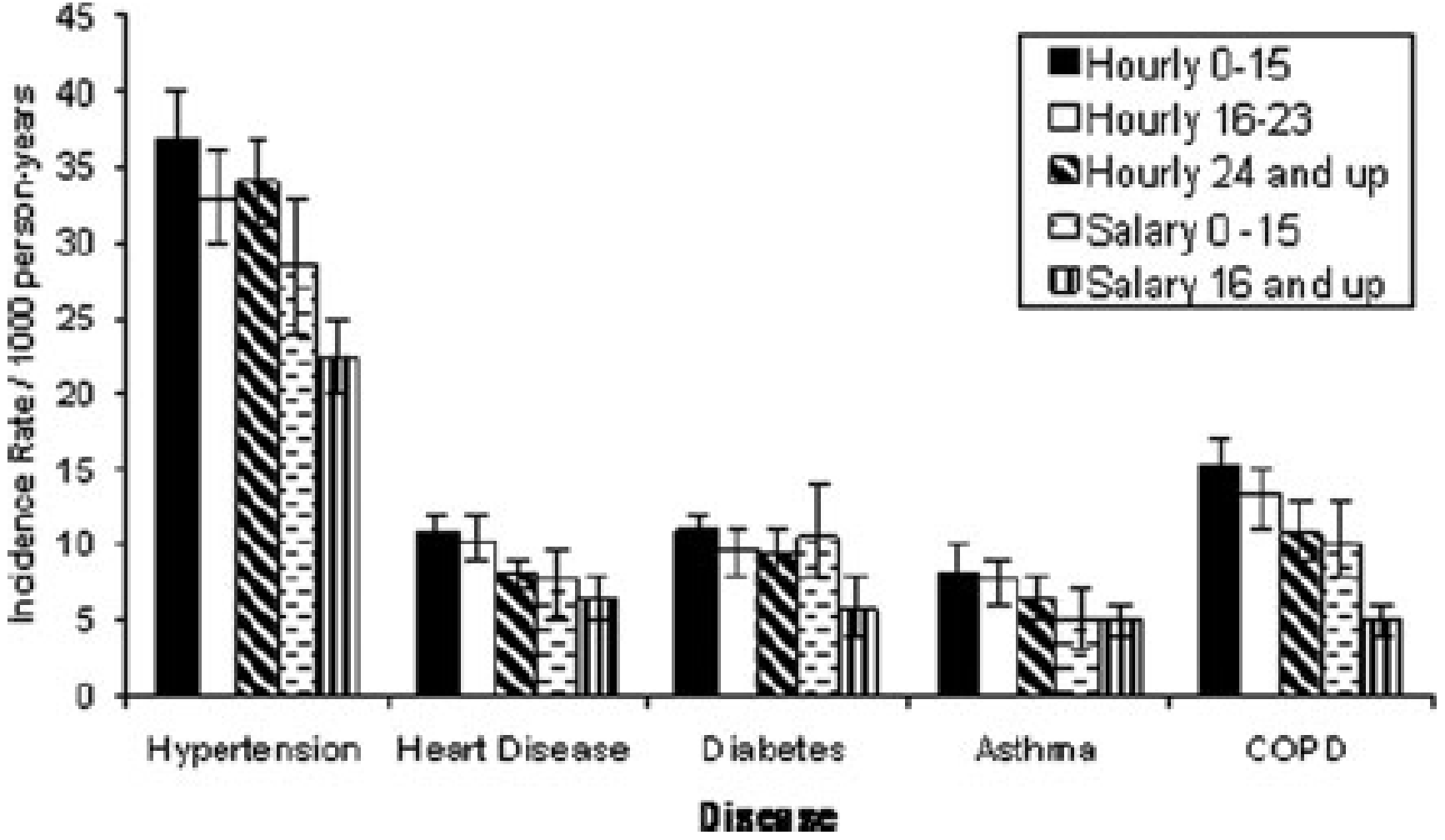
Principles of Toxicology

No Harm $\xrightarrow{\text{Time and Dose}}$ **Adverse Effect**

Principles of Toxicology



Occupational Impacts on Health



Clougherty, Jane E., Kerry Souza, and Mark R. Cullen. "Work and its role in shaping the social gradient in health." *Annals of the New York Academy of Sciences* 1186.1 (2010): 102-124.

Important to Build in Health Data

- Further characterize the impact of environmental contaminants on health

- Understand how pre-existing conditions increase susceptibility to environmental contaminants

Health Data is out there

PLACES
LOCAL DATA FOR BETTER HEALTH

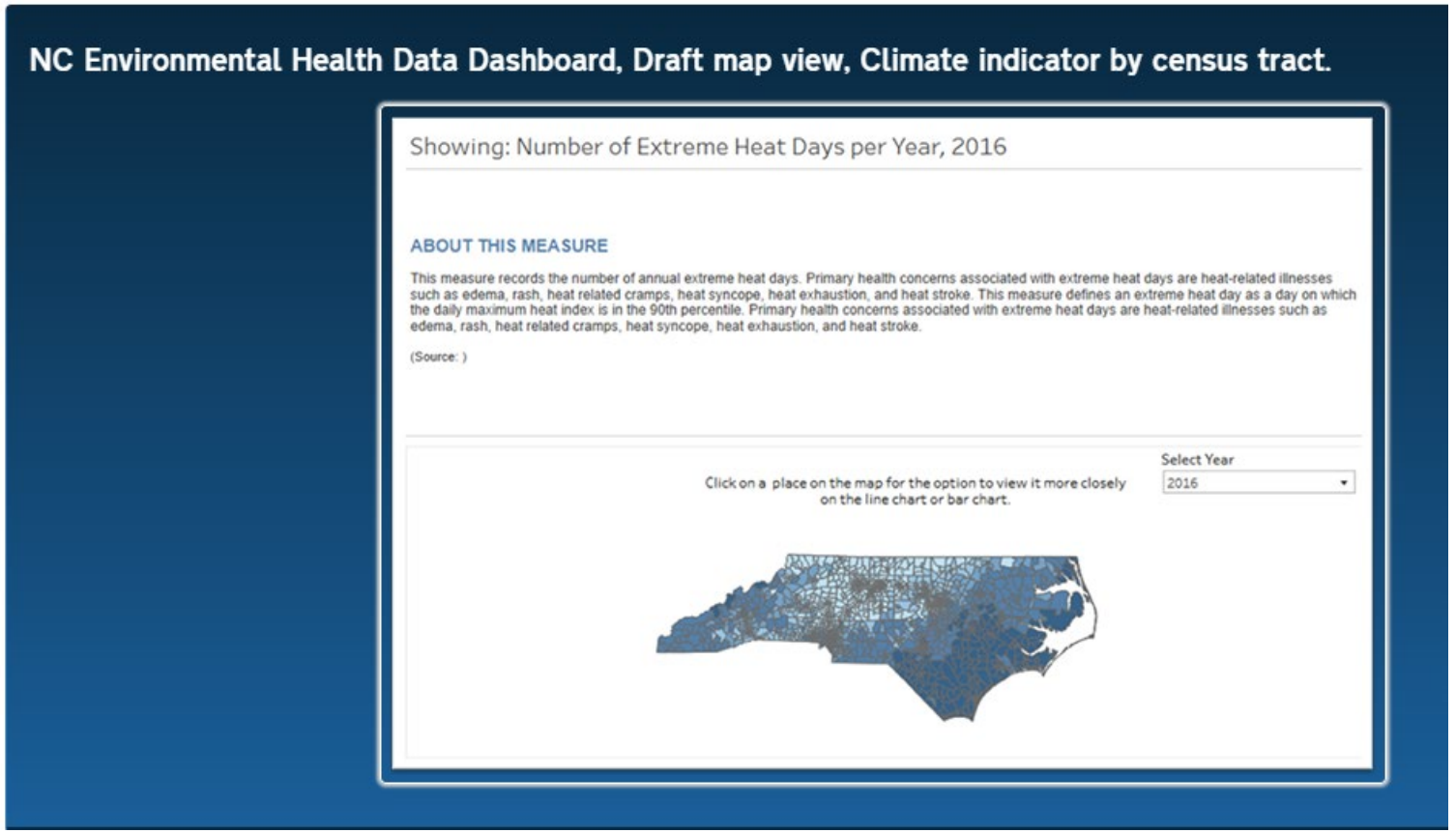
https://www.cdc.gov/places/about/index.html

ENVIRONMENTAL PUBLIC HEALTH
TRACKING

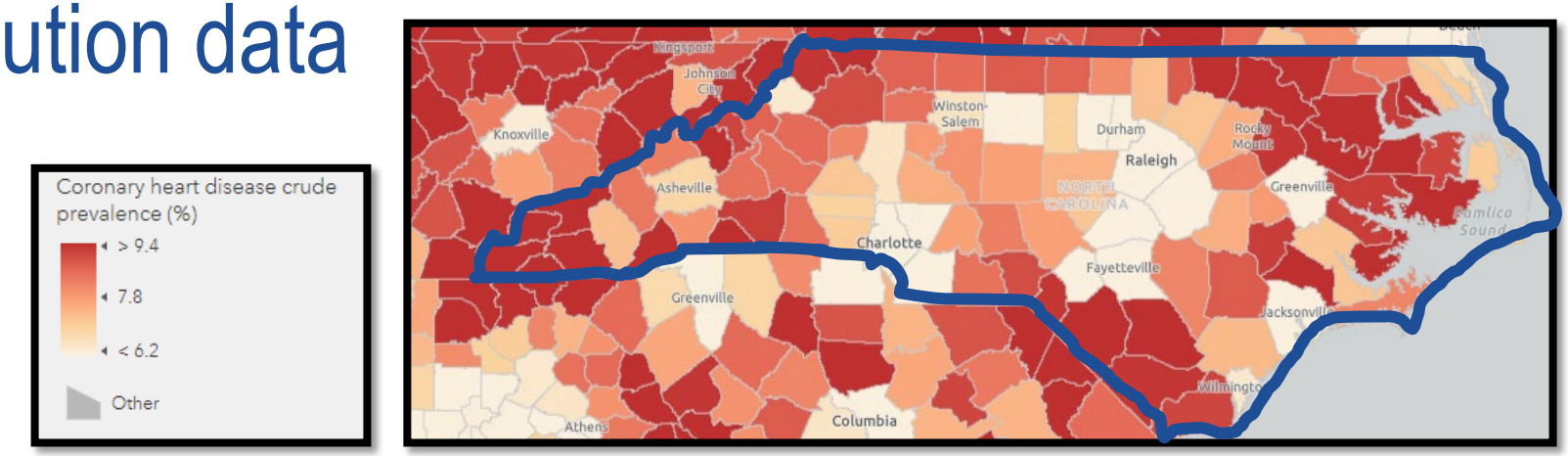
https://ephtracking.cdc.gov/

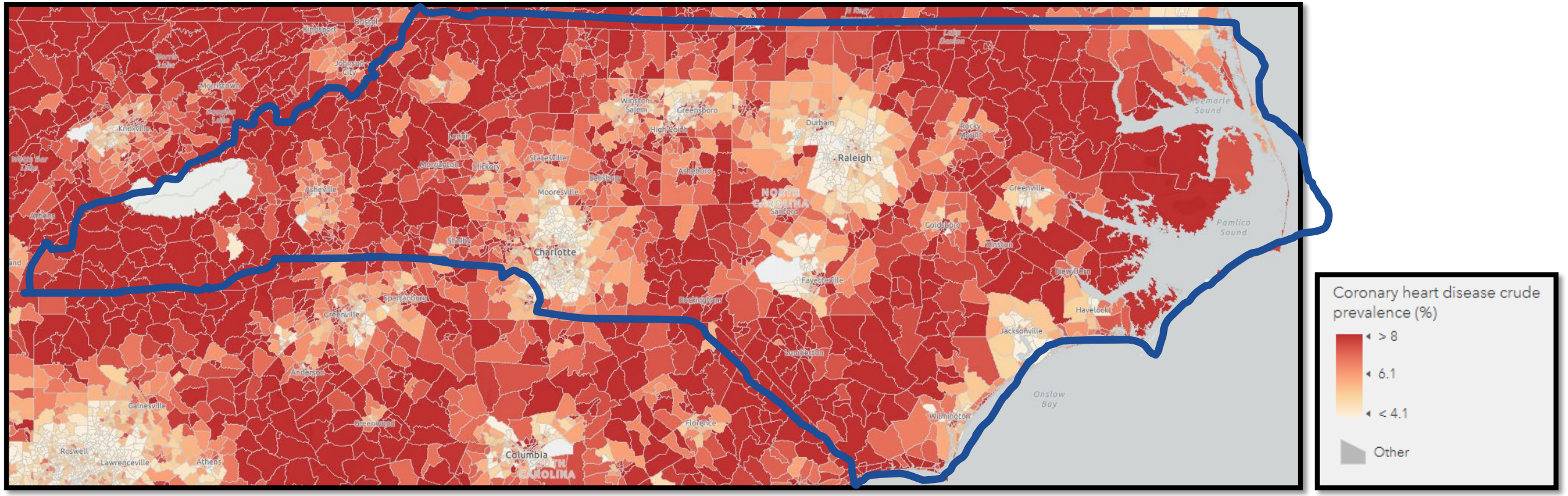
NC DEPARTMENT OF
HEALTH AND
HUMAN SERVICES

https://epi.dph.ncdhhs.gov/oee/programs/epht.html



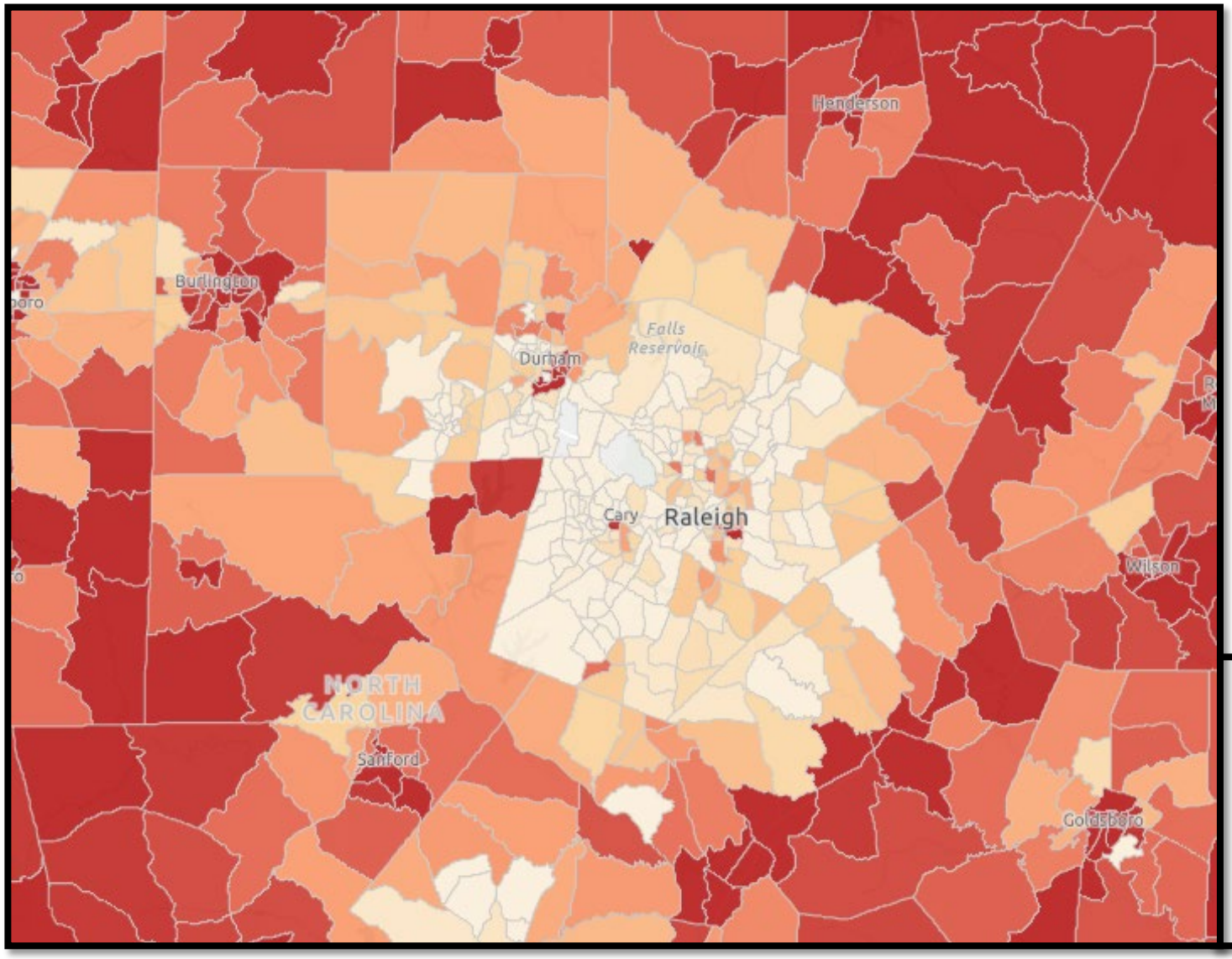
Importance of high-resolution data





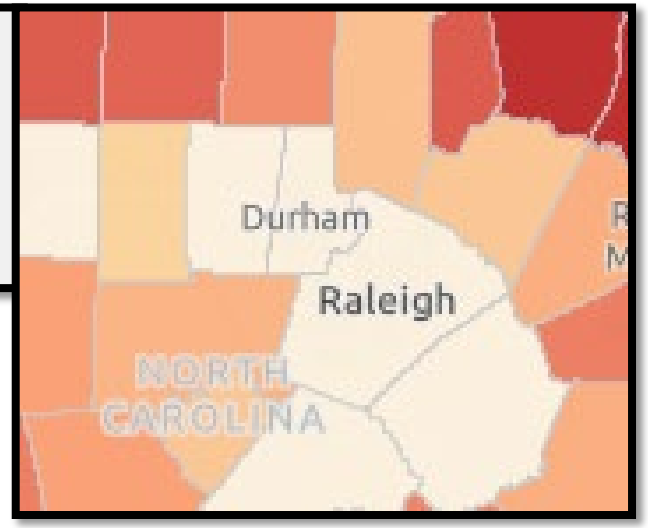
https://www.cdc.gov/places/about/index.html

Importance of high-resolution data



Coronary heart disease crude prevalence (%)

> 8
6.1
< 4.1
Other



Coronary heart disease crude prevalence (%)

> 9.4
7.8
< 6.2
Other

https://www.cdc.gov/places/about/index.html

Thank you

Contact: Crystal Lee Pow Jackson | email: cleepowjackson@rti.org

References

- WHO. Environmental Health Impacts, https://www.who.int/activities/environmental-health-impacts
- Prüss-Üstün, Annette, et al. *Preventing disease through healthy environments: a global assessment of the burden of disease from environmental risks*. World Health Organization, 2016.
- Woodruff, Tracey J., Ami R. Zota, and Jackie M. Schwartz. "Environmental chemicals in pregnant women in the United States: NHANES 2003–2004." *Environmental health perspectives* 119.6 (2011): 878-885.
- Feron, Victor J., Flemming R. Cassee, and John P. Groten. "Toxicology of chemical mixtures: international perspective." *Environmental Health Perspectives* 106.suppl 6 (1998): 1281-1289.
- Weng, Xueqiong, et al. "Association between mixed exposure of phthalates and cognitive function among the US elderly from NHANES 2011–2014: Three statistical models." *Science of The Total Environment* 828 (2022): 154362.
- Rider, C.V. and Simmons, J.E. eds., 2018. *Chemical Mixtures and Combined Chemical and Nonchemical Stressors: Exposure, Toxicity, Analysis, and Risk*. Springer.
- Clougherty, Jane E., et al. (a) "Synergistic effects of traffic-related air pollution and exposure to violence on urban asthma etiology." *Environmental health perspectives* 115.8 (2007): 1140-1146.
- Clougherty, Jane E., et al. (b) "Chronic social stress and susceptibility to concentrated ambient fine particles in rats." *Environmental health perspectives* 118.6 (2010): 769-775.
- Clougherty, Jane E., et al (c). "Work and its role in shaping the social gradient in health." *Annals of the New York Academy of Sciences* 1186.1 (2010): 102-124.
- Peters, Junenette L., M. Patricia Fabian, and Jonathan I. Levy. "Combined impact of lead, cadmium, polychlorinated biphenyls and non-chemical risk factors on blood pressure in NHANES." *Environmental research* 132 (2014): 93-99.
- Ranninger, G. “Environmental Injustice; Today, zip code is still the most potent predictor of an individual's health and well-being“. Environmental Health News, 1 June 2020, www.ehn.org/environmental-justice-2646185608/the-father-of-environmental-justice.
- Mikati, Ihab, et al. "Disparities in distribution of particulate matter emission sources by race and poverty status." *American journal of public health* 108.4 (2018): 480-485.
- Tessum, C.W., Paolella, D.A., Chambliss, S.E., Apte, J.S., Hill, J.D. and Marshall, J.D., 2021. PM2. 5 polluters disproportionately and systemically affect people of color in the United States. *Science Advances*, *7*(18), p.eabf4491.
- Starbuck, Amanda. *Living in the shadow of danger: Poverty, race, and unequal chemical facility hazards*. Center for Effective Government, 2016.
- CDC Population at Highest Risk https://www.cdc.gov/nceh/lead/prevention/populations.htm
- EPA. 2021. Climate Change and Social Vulnerability in the United States: A Focus on Six Impacts. U.S. Environmental Protection Agency, EPA 430-R-21-003. https://www.epa.gov/system/files/documents/2021-09/climate-vulnerability_september-2021_508.pdf

clean AIRE nc

Connecting Communities and Science to Address Cumulative Impacts

May 10, 2022

Programs & Initiatives

We advocate for the health of North Carolinians by pursuing equitable and collaborative solutions that address climate change and air pollution.

- Environmental Justice Program
- Medical Advocates for Healthy Air
- Policy and Legal Advocacy
- Citizen Science Program

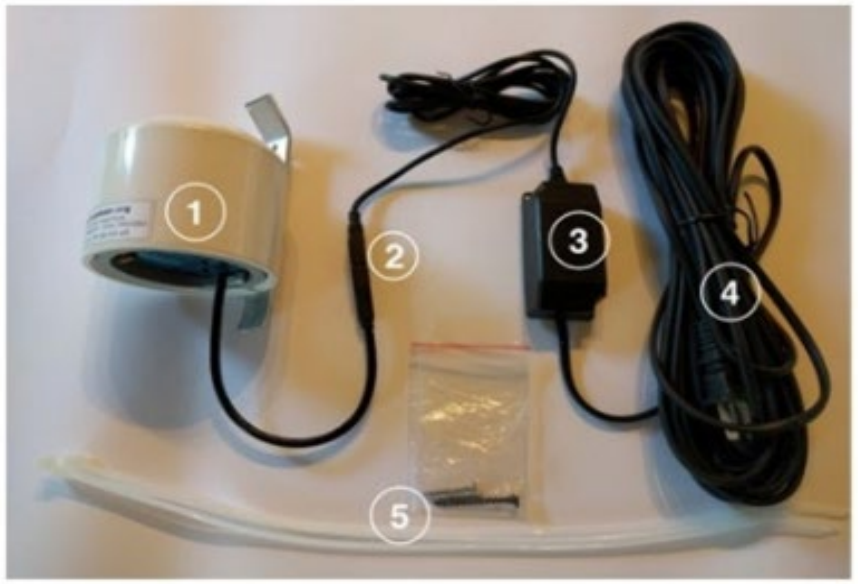
Air Pollution is a Leading Cause of Death

Leading Causes of Death in *North Carolina*		
Rank	Cause	Deaths, 2020
1	**Heart Disease**	**20,373**
2	**Cancer**	**19,996**
3	**Covid-19**	**161.7** (crude death rate per 100,000)
4	Accidents	7,379
5	**Stroke**	**5,720**

Source: Centers for Disease Control & Prevention, 2020, 2021

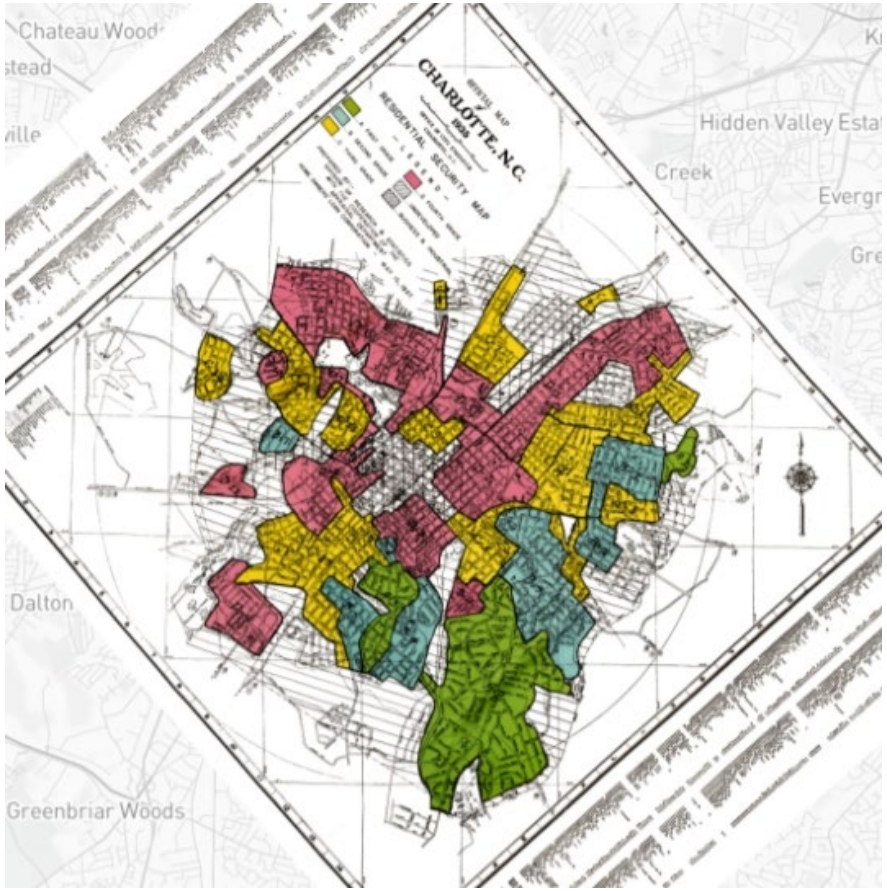
Understanding & Addressing Air Pollution Through Community Monitoring

- 2017: Community monitoring efforts begin
- Measured levels of PM 2.5: found spikes and outliers
- Connections between social determinants of health and exposure to air pollution

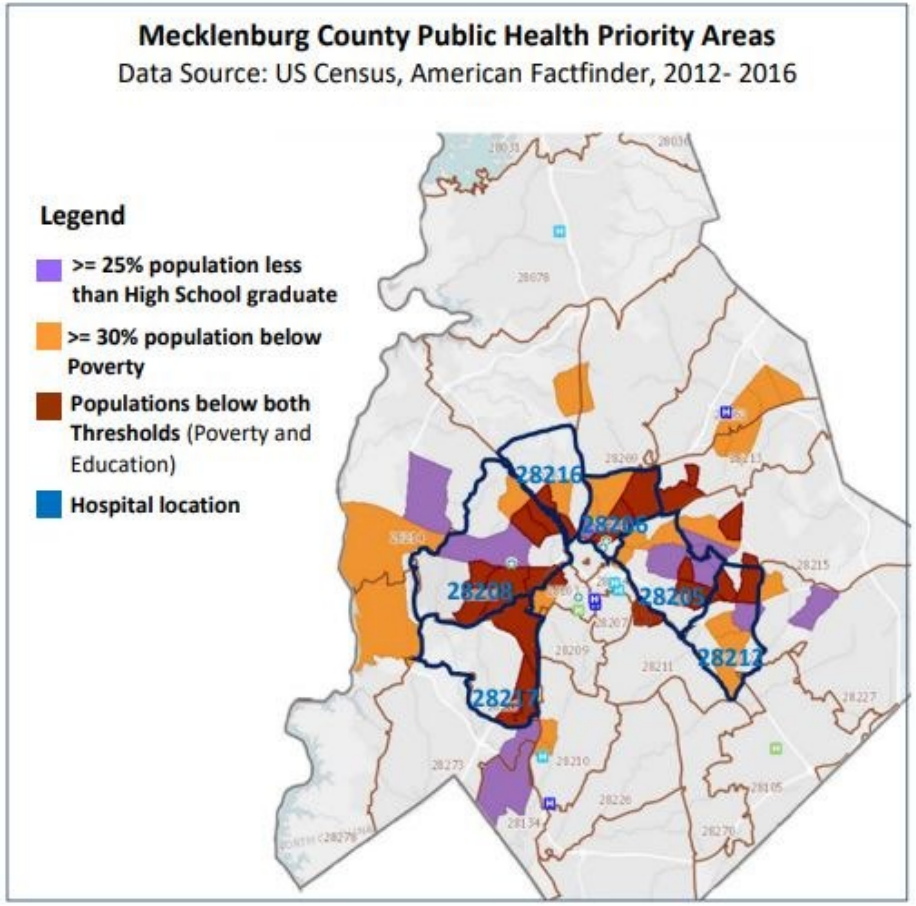


Historic West End Challenges

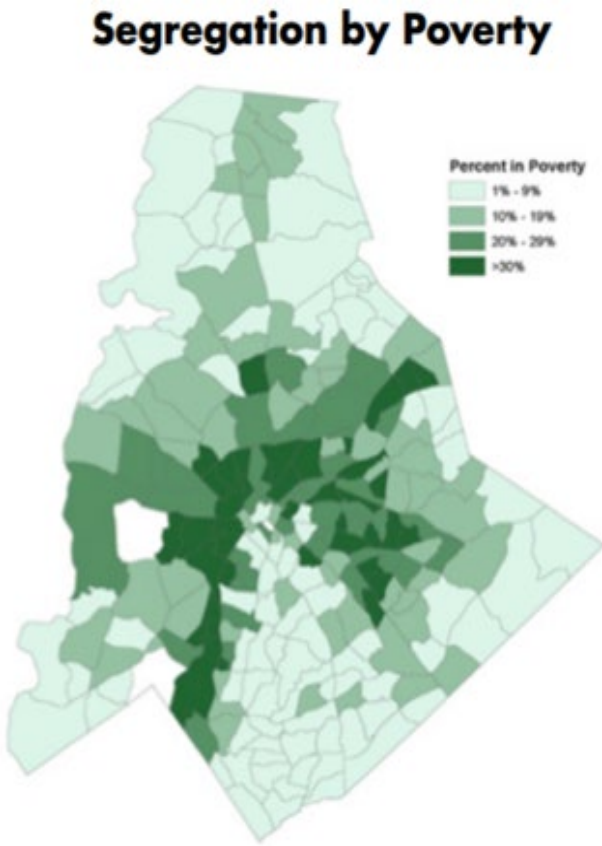
Historical Place Based Social Exclusion
1935 Redlining Disinvestment Map Crescent



Social Determinants of Health
2012-2016 Public Health Priority Areas

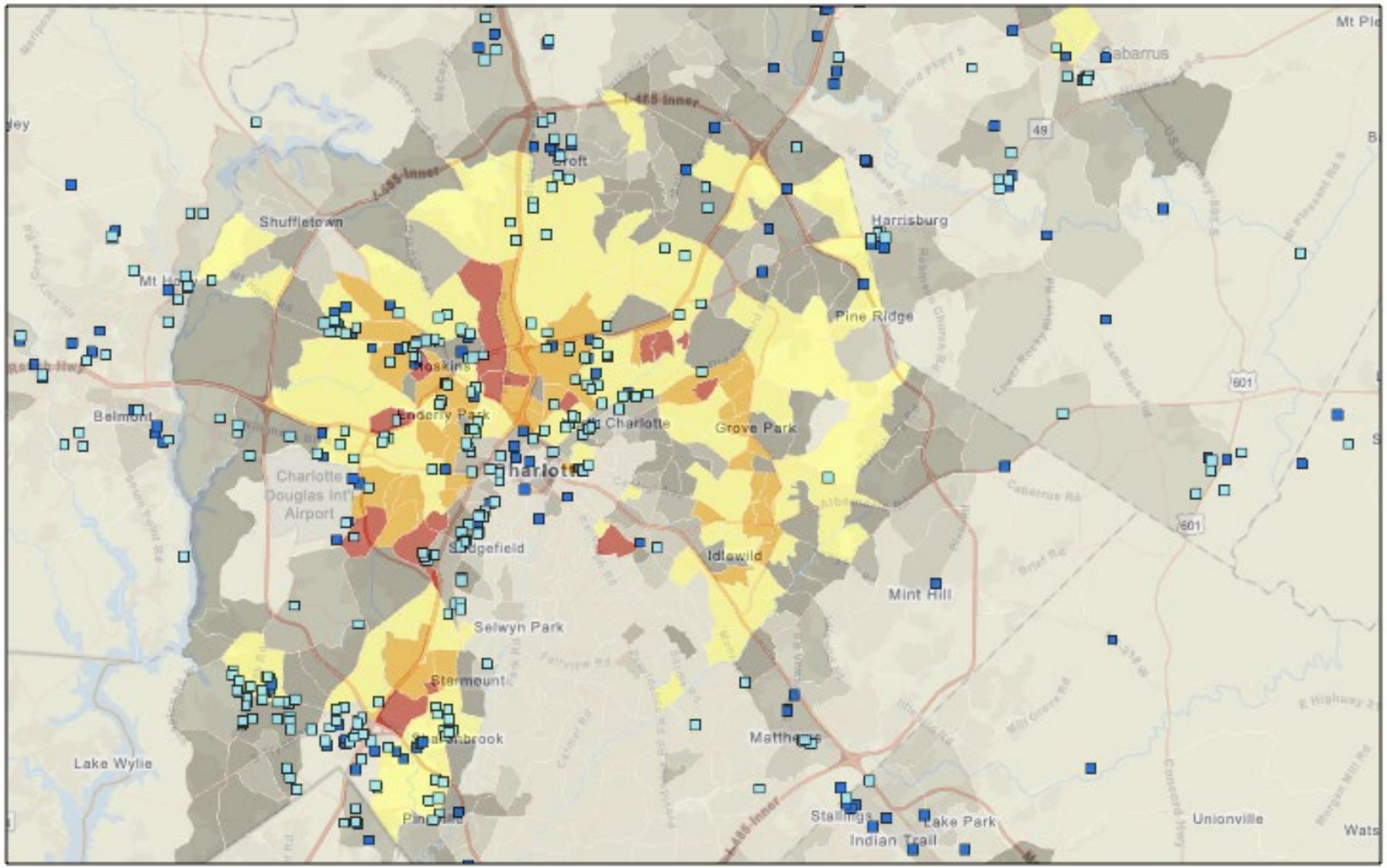


Continued Economic Segregation
2020 Poverty



Sources: 2017-18 Mecklenburg County Health Assessment, 2018 Mecklenburg State of the County Health Report (SCOTCH)

Meck Co EPA Polluting Sites



3/28/2022

Toxic releases

Air pollution

EJSCREEN_Indexes

Data not available

Less than 50 percentile

50 -60 percentile

60 -70 percentile

70 -80 percentile

80 - 90 percentile

90 - 95 percentile

95 - 100 percentile

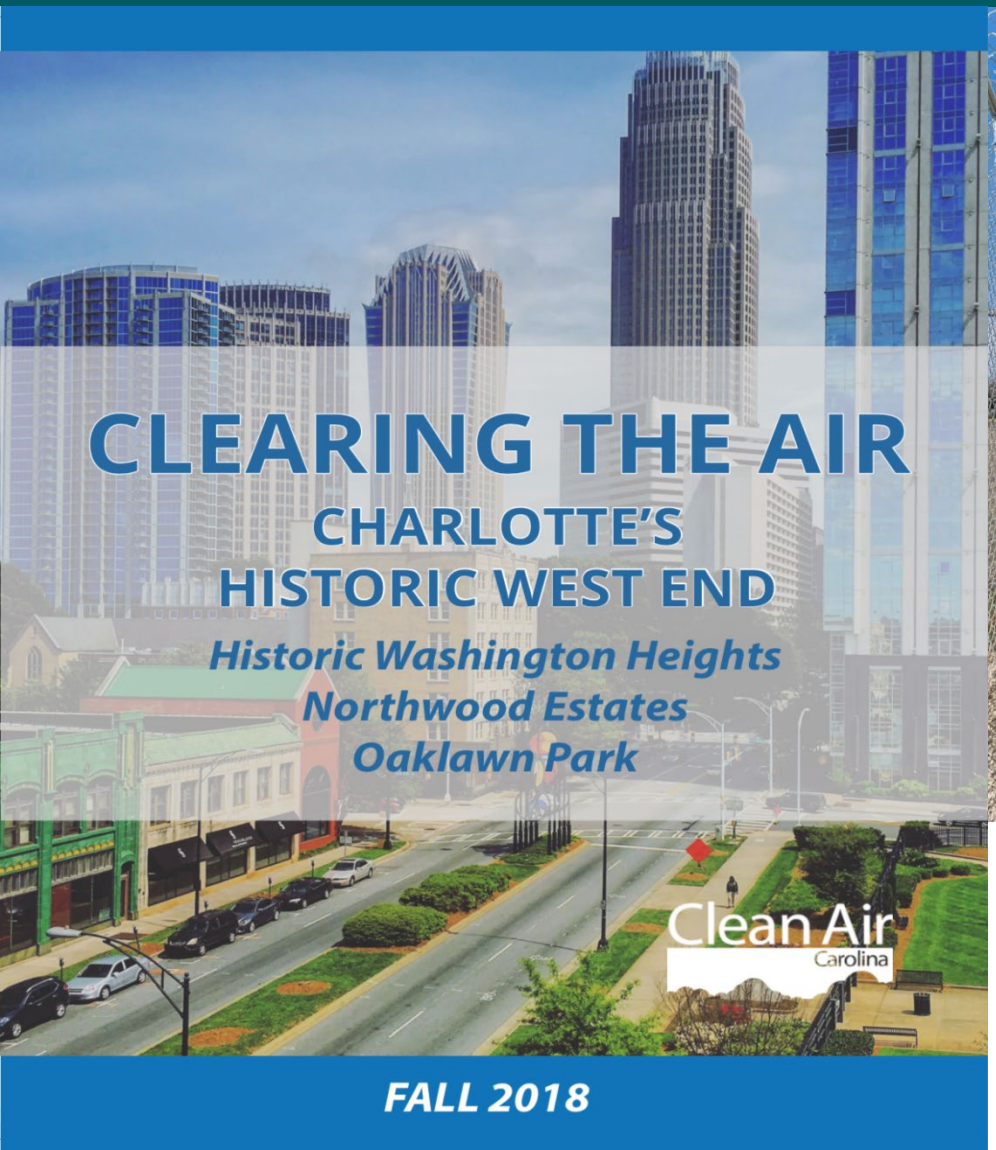
1:288,895

0 2 4 8 mi

0 3.25 6.5 13 km

EPA OMS, City of Charlotte, NC, Cabarrus County Government, Esri, HERE, Garmin, SafeGraph, METI/NASA, USGS, EPA, NPS, USDA

Mecklenburg County Commission Approves EPA Monitor in Historic West End as a result of Citizen Science Monitoring



EPA Federal Air Monitor

Ron Ross (L), Calvin Cuprini (R)

Historic West End Green District Initiatives

- Increasing **strategic tree planting** along I-77 and in sensitive areas
- Advocating for **electric vehicle charging stations and more walking, biking, and clean transit** throughout the Historic West End
- **Education** around sustainable strategies to protect health from air pollution

Historic West End Leaders Ron Ross and Mattie Marshall with Governor Roy Cooper and Charlotte Mayor Vi Lyles

Considerations for Cumulative Impacts

- CitSci nexus for progressing and advancing EJ at the state level: increased engagement, community awareness, access to localized environmental data
- Imperative to address systemic environmental, economic, and health intersectionality requiring interagency collaboration
- Burden of proof for communities
- Increasing monitoring, participation, and understanding of regulatory data
- Respecting and considering the significance of community place, history, and collective lived experiences

Thank you!

(704) 307-9528, Ext. 113 | daisha@cleanairenc.org |
www.cleanairenc.org/what-we-do/environmental-justice/

Legal Authority for DEQ to Consider Cumulative Impacts

May 10, 2022

Jasmine B. Washington
Associate Attorney
Southern Environmental Law Center

Title VI of the Civil Rights Act of 1964

"No person in the United States shall, on the ground of race, color, or national origin, be excluded from participation in, be denied the benefits of, or be subjected to discrimination under any program or activity receiving Federal financial assistance."
42 U.S.C. § 2000d.

"A recipient shall not use criteria or methods of administering its program or activity which have the effect of subjecting individuals to discrimination because of their race, color, national origin, or sex, or have the effect of defeating or substantially impairing accomplishment of the objectives of the program or activity with respect to individuals of a particular race, color, national origin, or sex." 40 C.F.R. § 7.35(b).

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EPA's External Civil Rights Compliance Office
Compliance Toolkit

"[P]ermitting decisions[] taken by state agencies funded by EPA are subject to federal civil rights laws."

Title VI of the Civil Rights Act of 1964

"No person in the United States shall, on the ground of race, color, or national origin, be excluded from participation in, be denied the benefits of, or be **subjected to discrimination** under any program or activity receiving Federal financial assistance."
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"A recipient shall not use criteria or methods of administering its program or activity which have **the effect of subjecting individuals to discrimination** because of their race, color, national origin, or sex, or have the effect of defeating or substantially impairing accomplishment of the objectives of the program or activity with respect to individuals of a particular race, color, national origin, or sex." 40 C.F.R. § 7.35(b).

Types of Discrimination

Intentional Discrimination

Occurs when a recipient of federal financial assistance acts, at least in part, ***because of*** the actual or perceived race, color, or national origin of the alleged victim.

Disparate Impact

Occurs when a recipient of federal financial assistance uses a **facial neutral policy** or practice that has a **harmful and disproportionate effect** based on race, color, or national origin.

Harms Considered in Disparate Impact*

- Environmental harms
  - Local air quality
- Adverse health effects
  - Asthma & other respiratory illness
  - Cardiac disease
  - Cancer
- Non-health harms
  - Economic harms
  - Nuisance odors and noise
  - Traffic congestion
  - Social & recreational harms

*** Intent does not matter**

EPA's External Civil Rights Compliance Office
Compliance Toolkit

"It is also important to note that civil rights laws and environmental laws function separately.

Thus if, in a given circumstance, you are complying with appliable environmental laws that fact alone does not necessarily mean that you are complying with federal civil rights laws."

2001 Environmental Equity Policy

To Meet The Goals, DENR Will:

- Inform potentially affected and protected communities about the Environmental Equity Initiative which seeks first to fully understand environmental issues as raised by the community, staff, industry, or other interested parties, and then attempts to address them in an environmentally sensitive manner that is consistent with sustainable economic development.
- Address environmental equity issues in permitting decisions for projects potentially having a disparate impact on communities protected by Title VI of the Civil Rights Act of 1964,
- Promote greater use and analysis of demographic information to identify communities that may be disproportionately impacted by sources of pollution,
- Use demographic information to determine whether there is: 1) a need for greater outreach to community in order to encourage more meaningful participation, or 2) special health risks based on the nature of the population,
- Develop guidelines for assessing the cumulative effects of permitted facilities.
- Provide opportunities for interested parties to raise concerns on Environmental Equity in DENR's decisions,
- Develop a process for intervention or mediation specific for each instance with a focus on mutually acceptable solutions,
- Resolve environmental equity complaints, consistent with the protection afforded by Title VI of the Civil Rights Act of 1964,
- Develop a full record of environmental equity issues.

DEQ's Obligation to Act

- 40 C.F.R. § 7.35 (b), (c)
- EPA, U.S. EPA's External Civil Rights Compliance Office Toolkit (2017)
- U.S. Dep't of Justice, Title VI Legal Manual: Section VII: Proving Discrimination – Disparate Impact
- 78 Fed. Reg. 24,739, 24,739 (Apr. 26, 2013)
- 65 Fed. Reg. 39,650 (June 27, 2000)
- Letter from Lilian Dorka, EPA, to Father Phil Schmitter (Jan. 19, 2017) (making final finding of discrimination in Genesee Power Plant complaint).
- EPA Office of Inspector General, Improved EPA Oversight of Funding Recipients' Title VI Programs Could Prevent Discrimination (Sept. 28, 2020)
- *S. Camden Citizens in Action v. N.C. Dep't of Env't Prot.*, 145 F. Supp. 2d 446, (D.N.J. 2001)

Takeaways for DEQ

1. DEQ is bound by Title VI in their permitting programs.

2. Title VI has its own legal obligations, separate and distinct from obligations under federal and state environmental law.

3. Title VI requires DEQ to consider and mitigate cumulative impacts.

We request that the EJEAB advise DEQ that they are required to consider the cumulative impacts of permitting decisions on communities of color in order to comply with Title VI of the Civil Rights Act of 1964.

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