



Cumulative Risk

The M-LEEd Center's Community Engagement Core (CEC) increases awareness and understanding of environmental health research.

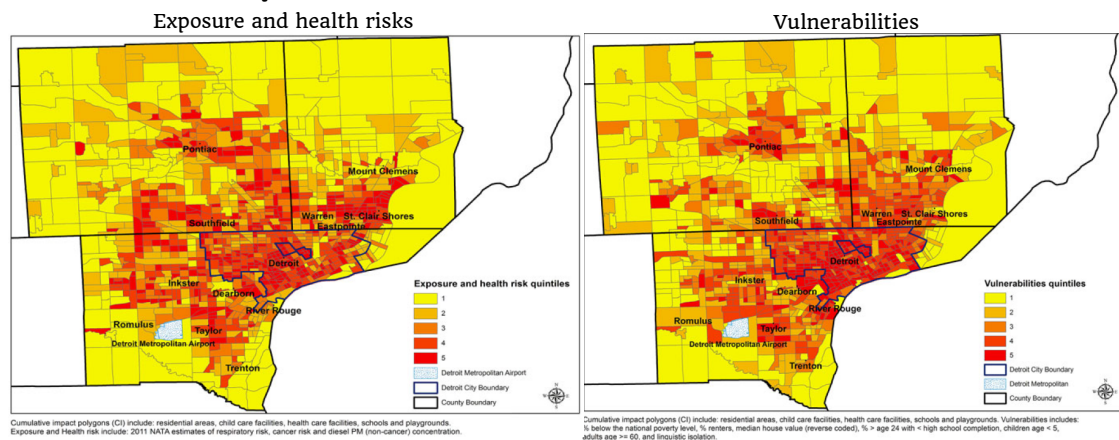
Stakeholder Advocacy Board members include:

- Community Health and Social Services
- Detroit Health Department
- Detroit Hispanic Development Corporation
- Detroiters Working for Environmental Justice
- Eastside Community Network
- Ecology Center
- Henry Ford Health System
- Michigan Environmental Justice Coalition
- We the People of Detroit

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What is Cumulative Risk?

Pollution is widespread and harmful to everyone's health. But does it affect everyone equally? What about people with asthma, or people who live right next to a pollution source versus those who live many miles away? Cumulative risk is the combination of multiple factors that can include exposure to pollutants from many sources, including industry, traffic and toxic waste sites, existing health conditions that can make someone more vulnerable to adverse health effects of pollutants, and the economic or medical resources available to help reduce adverse health effects of pollutant exposures. By looking at these combined risks we can get a clearer picture of the total risk that residents of different communities experience. For example, across the nation, Black, Indigenous and other People of Color (BIPOC) communities experience higher levels of cumulative risk. Understanding cumulative risk may help us understand persistent inequities in health outcomes. Perhaps more importantly, cumulative risk can offer an important tool for addressing health inequities that are linked to environmental exposures.



Cumulative Risk in Detroit

To illustrate the distribution of risk in the Detroit metropolitan area, Schulz and colleagues (2016) mapped hazardous facilities and land uses, exposure to air pollutants and the associated health risks, and social and economic factors such as poverty, language isolation, and age.

The maps above show areas with greater social and economic vulnerabilities, and higher exposure to air pollutants and their health risks. This paper demonstrated that areas with low income and greater proportions of BIPOC residents were more likely to experience high levels of exposure to environmental toxins and associated adverse health outcomes.





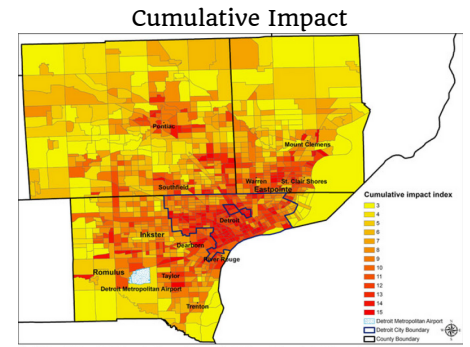
Inequalities in Cumulative Risk

Historically, Detroit has been one of the most racially segregated areas in the U.S. Redlining, covenants and other systematically discriminatory policies segregated Black and Brown Detroit residents in communities that experienced economic disinvestment, reflected today in the unequal distribution of education and employment opportunities as well as environmental exposures. Using the measures mapped on the previous page, the study demonstrated that areas with more people of color experience excess environmental exposures and associated health risks. These areas also contain more residents who are very young and elders who are more vulnerable to the adverse health effects of air pollution, and have fewer economic resources available to them to cope with their adverse health effects.

Why Should We Look at Cumulative Risk?

Including cumulative risk in our decision making is important for promoting environmental justice and health equity. We can use cumulative risk data and maps to:

- Direct resources to communities that experience higher cumulative risk, in order to focus efforts to reduce exposures and harmful health effects;
- Prioritize interventions and investments that reduce pollutant exposures and minimize adverse health effects in areas with high risk;
- Inform policies and planning decisions in order to promote the health of residents experiencing high risk;
- Assess the health impacts associated with new and existing polluting facilities and their emissions for the residents of surrounding communities;
- Understand excess health risks and address excess medical care costs that are associated with planning and policy decisions.



What Does this Mean for Me and My Community?

There are many ways community leaders and decision makers can use cumulative risk measurements to improve our health and the environment:

1. Use data on combined or cumulative risks to inform decisions on new infrastructure: Specifically to limit new pollution sources in communities that already experience high cumulative risk
2. Require that independent, rigorous health impact assessments be completed before issuing new or renewed permits for emission of pollutants
3. Intervene and invest in communities experiencing high cumulative risk: For example, installing better scrubbers on emissions stacks, and fitting air filtration systems in homes or schools close to sources of air pollution
4. Advocate for better monitoring in your community – this will provide a more accurate picture of the risks your community faces.

Reference: Schulz, A. J., Mentz, G. B., Sampson, N., Ward, M., Anderson, R., de Majo, R., Israel, B. A., Lewis, T. C., & Wilkins, D. (2016). RACE AND THE DISTRIBUTION OF SOCIAL AND PHYSICAL ENVIRONMENTAL RISK: A Case Example from the Detroit Metropolitan Area. *Du Bois review : social science research on race*, 13(2), 285–304. <https://doi.org/10.1017/S1742058X16000163>

Please see http://mleead.umich.edu/Coec_Fact_Sheets.php for the citations included in this factsheet.

The University of Michigan Lifestage Environmental Exposures and Disease Center (M-LEED) Community Engagement Core (CEC) promotes collaboration among UM environmental health researchers and communities to advance knowledge of environmental health issues that affect community members in Detroit and Southeast Michigan.

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