

**Mapping Environmental Justice
and Uplifting Community Survival
in Southwest Detroit**

by

Anna Bunting, Dinah George, Megan Husted, Skyler Kriese, and John McClure

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Community Advisors: Rhonda Anderson, Theresa Landrum, Dr. Dolores Leonard

Academic Advisor: Ember McCoy

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Abstract

Given the sustained advocacy and large body of research on Environmental Justice (EJ) in Southwest Detroit, The Michigan Department of Environment, Great Lakes, and Energy (EGLE) sought out an Environmental Justice grant from the Environmental Protection Agency to address disparate impacts and environmental burden in the state. The proposal for this grant included the creation of a 48217/Southwest Detroit GIS module for the state's in-development Environmental Justice Screening Tool, MiEJScreen. This Detroit module, housed within the larger grant to generate a community resiliency plan for the Southwest Detroit area, was then developed into a master's project for SEAS students. Our research addresses indicators of environmental justice and the relevance of community resilience to the lived experience and advocacy of community members in the Metro-Detroit area. In this study, we combine existing data to visualize these indicators in Metro Detroit through an EJ Screening Tool, and create recommendations for a community resilience plan. Using a mixed-methods approach, we utilize semi-structured interviews and survey analysis to collect data that a) informs the indicators, methods, and communication materials for the Southwest Detroit EJ Screening Tool and b) guides recommendations made for EGLE on the creation of a community resilience plan for Southwest Detroit.

Keywords: Environmental Justice, Southwest Detroit, 48217 Community, Screening Tools, MiEJScreen, Story Map, Community Resilience, Community Survival

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Abbreviations

ADD - Attention Deficit Disorder

ADHD - Attention Deficit Hyperactivity Disorder

BIPOC - Black, Indigenous, People of Color

CBA - Community Benefits Agreement

CEJST - Climate and Economic Justice Screening Tool

DTE - Detroit Edison Company

EGLE - Department of Environment, Great Lakes, and Energy

EJ - Environmental Justice

EO - Executive Order

EPA - Environmental Protection Agency

EPAEJScreen - Environmental Protection Agency Environmental Justice Screening Tool

GIS - Geographical Information Systems

M-LEEaD - Michigan Center on Lifestage Environmental Exposures and Disease

MiEJScreen - Michigan Environmental Justice Screening Tool

MDHHS - Michigan Department of Health and Human Services

MDOT - Michigan Department of Transportation

OEJPA - Office of the Environmental Justice Public Advocate

PFAS - Per- and polyfluoroalkyl substances

SEAS - School for Environment and Sustainability

SEMCOG - Southeast Michigan Council of Governments

TRI - Toxic Release Inventory

U.S. - United States

Definitions

Environmental Justice has many definitions. The Environmental Protection Agency (EPA) defines environmental justice “as 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” (Environmental Protection Agency, 2021). For our purposes, and in the millenia long tradition of environmental justice, we recognize a singular definition as insufficient for describing the systems which create ecological and societal disaster or the powerful movements which resist and are built in contrast to them. Instead, we uplift a way of life that is unburdened by the destruction of human and more-than-human communities whose well-being is inter-dependent. This includes viewing environmental justice through the Indigenous lens of unthreatened kinship relationships (Whyte, 2020).

Social Vulnerability can be broadly defined as the degree to which a system, whether a social group, community, or population, is susceptible to or unable to cope with adverse effects associated with environmental stressors or changes (Adger and Kelly, 1999). The three primary components include *exposure* (the degree to which communities are at physical and geographic risk to environmental exposure), *sensitivity* (the socioeconomic characteristics that make people susceptible to exposure), and *adaptive capacity* (“social and technical skills and strategies of individuals and groups that are directed towards responding to environmental and socioeconomic changes” (Smit and Wandel, 2006)). Vulnerability allows the intersection of varying cultural, social, historical, and economic factors to occur differently across different groups.

Community Resilience can be used to gauge the perceived social and environmental vulnerability of a physically-located community. In particular, resilience in the context of this paper refers to the ability of an urban system—and all its constituent socio-ecological and socio-technical networks across temporal and spatial scales—to maintain or rapidly return to desired functions in the face of a disturbance, to adapt to change, and to quickly transform systems that limit current or future adaptive capacity (Meerow et al, 2016). This paper will be utilizing an Anti-Resilience Framework approach to resilience. A further discussion of this framework can be found below in the Research Frameworks section.

Disproportionate Burden as defined by Adams & Denton (2010), refers to pollution or cumulative impacts disparately affecting low-income and Black, Indigenous, People Of Color (BIPOC) communities. Adams & Denton also report that numerous studies show “increased sensitivity to pollution for communities with low income levels, low education levels, and other biological and social factors” (2010, p.:ix). Higher sensitivity to the pollution coupled with multiple pollutant sources can result in an increased cumulative pollution impact.

Environmental Justice Screening Tools are online tools that utilize Geographical Information Systems (GIS) to allow users to investigate how environmental hazards impact human populations, helping to quantify the cumulative impacts of distinct communities. Federal, state, and local governments can use these tools to help more equitably allocate resources and prioritize investment into the communities that need them the most, based on demographic and environmental factors (Lee, 2021a).

Chapter 1: Introduction

Project Background

Given the sustained and forceful advocacy by 48217 area residents and the large body of research on environmental justice in Southwest Detroit, Michigan's Department of Environment, Great Lakes, and Energy (EGLE) Office of the Environmental Justice Public Advocate sought out an Environmental Justice (EJ) grant from the Environmental Protection Agency (EPA). The goal of the grant was to create a "Community Resilience Plan" for the area, which is intended to address the state of the environmental health emergency that the Southwest Detroit community lives in. Additionally, this grant included the creation of a Southwest Detroit module for the State's in-development EJ screening tool, MiEJScreen (Lambeth, 2020; EGLE, 2022). The tool was to serve as a map that could inform the community survival planning process by locating and understanding environmental hazards and assets specific to the community.

This portion of the grant developed into a master's project for University of Michigan's School for Environment and Sustainability (SEAS) students. The student team is composed of individuals specializing in environmental justice, sustainability and development, and environmental policy and planning. Overall guidance, ideation, and leadership was provided by community advisors, Theresa Landrum, President of the Original United Citizens of Southwest Detroit, Dr. Dolores Leonard of the 48217 Air Quality Monitoring Group, and Rhonda Anderson of the Sierra Club.

This subproject, as detailed throughout this report, aimed to answer three primary research questions: 1) What indicators of environmental justice and community survival are relevant to the lived experience and advocacy of EJ community members in the Metro-Detroit area? 2) How can we combine existing data to visualize indicators of environmental justice and community resiliency in Metro Detroit, in a way that could be replicated for other communities? 3) What actions can State of Michigan agencies pursue that will uplift environmental justice and community survival in Southwest Detroit?

To answer these questions, the students first grounded understanding of EJ screening tools in the idea that "in many respects, [EJ screening tools] perpetuate the notion that community residents must have their lives and health risks quantifiably justified in order for the state to intervene and regulate pollution" (Blondell et al, 2020, p.104). As such, the research

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team first sought to highlight the lived experience of community members through qualitative methods, and then incorporated them into a quantitative screening tool. In doing so, our goal was to create a community-level module of MiEJScreen that is engaging, understandable to a wide audience, and accurately reflects the extent of environmental injustices in the community so that decision makers will have more concrete data to make policy decisions, such as enforcing pollution regulation.

Project Objectives

This project was intended to meaningfully conduct outreach and engage 48217 residents with guidance from our community advisors to identify EJ and community survival indicators; to create a publicly available map of community survival factors identified through interviews that are accessible and impactful for EJ community advocates in their efforts; to generate recommendations for a community survival plan in the Southwest Detroit area informed by community input, discussed in Chapter 2, and the Metro-Detroit EJ screening tool; to generate recommendations for EGLE staff to integrate the EJ screening tool, discussed in Chapter 3, within departmental decision making and operations regarding the Metro-Detroit area; and to develop a report of our research and recommendations.

48217 Community Biography

This is a brief, abbreviated history of major actors that shaped the environment of 48217. There is much more that can be said about Detroit's history of emergency management, corrupt officials, predatory non-profits, and internal dysfunction (Rector, 2022) but this section reflects the ways in which larger socio-political actors have shaped this environment. We are beginning our discussion of 48217 with the ways that race has shaped this space and how Black residents themselves shaped their community. This was specifically discussed by our community advisory board of veteran EJ advocates in 48217, which sought out a different narrative that explicitly brings forward impacts of race and reflects the ways residents were active in shaping their environment. At the heart of our analysis is the residents of this community and we are offering information that gives residents the space to speak for themselves (Jemez Principles for Democratic Organizing, 1996).

Early History

The area of Southeast Michigan was ceded in the 1807 Treaty of Detroit and led to the land dispossession of Indigenous peoples. This treaty, signed by former Governor William Hull, was one of eight treaties signed between 1807 and 1842 (Stebbins, 2022). These treaties ceded lands from the Ottawa (Odawa), Chippewa (Ojibwe), Potawatomi, and Wyandot peoples. It is reported that five million acres of land was taken for “\$10,000 in money, domestic animals, implements of husbandry, or goods, divided among the four nations, and a yearly annuity of \$2,400 to all tribes after that” (Petch, 2018). The current land area of Southwest Detroit was outlined in the preceding Treaty of Greenville 1795, which ended the war proposed by the United States federal government with the Western Confederacy (Petch, 2018). These treaties led to the systematic dispossession and removal of the Three Fires Peoples across Southeast Michigan in which 48217 now exists.

The Great Migration & Industrialization

The Great Migration, in part, was contingent on the socio-political actions brought forth by the Era of Reconstruction and its subsequent actions placed by white Americans in the South. The Great Migration was the movement of Black Americans across the southeastern United

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States to the urban northern and western portions of the country during the early to mid-twentieth century (Sugrue, 2005). This movement of Black peoples occurred for many reasons, but two of the most prominent were the rise of structuralized white supremacy, e.g., white terrorism and Jim Crow Laws, and the subsequent aspiration for a better life. With the respective Fourteenth through Sixteenth Amendments and the Era of Reconstruction, the parameters of citizenship and racial hierarchies shifted for Black Americans, which was best seen through the political gains made by those at the time of Reconstruction (Smith, 2012). During Reconstruction, Black people were participating actively for the first time in the political process through voting and registration appointments in legislative government branches across the southern United States. This changed completely when Union troops left the South in 1877; White terrorist groups like the Ku Klux Klan and other domestic terrorist organizations such as the “Red Shirts, the Regulators, the White Line, and the Knights of the White Camelia” used their vigilante justice and rampaged the South shifting the socio-political landscape back into the total control of white southerners (Baptiste, 2016). This aided in the structuralizing of white supremacy in the form of “separate but equal” Jim Crow Laws that segregated public places and educational spaces. Black people of the Great Migration saw industrialization as an opportunity; an opportunity for a better life for their families, for a place to put down roots, for a way to sustain the lives of those that stayed in the South, and ultimately for a chance to sustain themselves. This chance at life is what brought the thirteen original families to 48217 (Anonymous, Personal Interview, July 18th 2022).

In our interviews, residents shared the story of the original families that settled in 48217 (referred to by residents as a part of Southwest Detroit and as a part of the Tri-City Area). The thirteen original families were Black Americans that established their community by purchasing the parcels of land that were determined as undesirable. The land was considered undesirable for development because the area was, and can still be considered, wetlands. The residents of 48217 built their community house by house and block by block. An interviewee stated “you can trace everybody to thirteen families” tying the extended migration of Black residents in the surrounding Tri-City of 48217 to the current environment of 48217 (Anonymous, Personal Interview, July 18th 2022).

Like most people who fled the South in the Great Migration, the original residents of 48217 and Southwest Detroit were a part of a mass exodus of Black Americans escaping white

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terrorism in the Southern part of the United States during the mid-twentieth century. The movement of Black peoples within the Great Migration brought on the industrialization of the North. Those who settled in this area sought to secure employment with automotive industries like with the Big Three automotive giants: General Motors, Chrysler, and Ford (Sugrue, 2005). For the families that settled and expanded across 48217 and Southwest Detroit, the largest industry employers included Marathon Petroleum Company and Great Lakes Steel (a part of the larger U.S Steel), although dozens more were employed across the heavy concentration of industries found in the area (Anonymous, Personal Interview, November 21st, 2022).

Southwest Detroit was segregated through the historical process of redlining, the effects of which still linger today. Redlining is the process of mapping and mandating segregation of Black communities through the “local, state and federal housing policies” (Gross, 2017). The Federal Housing Administration created the policy of redlining and enhanced it by “refusing to insure mortgages in and near African-American (Black) neighborhoods” (Gross, 2017). For many of the original residents of this area, they had to find creative ways to purchase and make a place for their homes because of these discriminatory practices. Most notable was the ways in which Black American veterans who had done so much to serve their country were denied the benefits of homeownership with the G.I Bill in the 1940s. Hence the reasons why so many Black residents in 48217 had to purchase the deeds to their land rather than go through much simpler, easier home financing processes (Anonymous, Personal Interview, July 8th, 2022). Historically redlined communities like 48217 are physically marked with the ley lines for railroads tracks, national highways like Interstate-75 (Badger & Cameron, 2015). Environmental justice, and places that are considered environmental justice communities, are historically redlined communities. This community is segregated by these markers and, as a result, are now the neighbors of dozens of the biggest polluters in the State of Michigan. Governmental bodies, like the U.S. EPA and the State of Michigan’s Department of Environment, Great Lakes, and Energy (EGLE) define 48217 as an “environmental justice community” but the reality is that 48217 is an environmental justice community because it is a historically redlined community.

One of the most important characteristics of this community and how people from this community understand themselves to be is through their kinship. Kinships, in this sense, are the tight knit relationships people have across their community grounded in shared responsibility, whether they be blood related or not (Whyte, 2021). These kinship relationships also support a

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mutual investment in the environment. For the Black residents that have witnessed the environmental injustices occur because of governmental and industrial harm, kinship, and the relationships built on kinship, have been the means to sustaining their community. The networks of communication, the collective action with historical groups fighting for EJ, the places for children to grow and play; all of these things are based on this community's shared consciousness around kinship. Most, if not all, of the community members in our interviews stated something directly about the disruption of kinship. The idea of "being a good neighbor" and "everybody looking out for each other" brought forward by residents in their interviews related to this shared understanding of kinship (Anonymous, Personal Interview, July 2022). These ties are so deep that those of 48217 do not define themselves just as their specific zip code, they address themselves as the Tri-City area. Environmental justice for the people of this community is not simply about racism or pollution. For those in communities, "environmental injustice is about the disruption of kinship" (Whyte, 2021, p. 20).

Environmental Justice in Detroit, Michigan

This project focuses on two residential neighborhoods in the 48217 zip code, Boynton and Oakwood Heights. This community is composed primarily of African American and Hispanic residents, with African American residents composing 82 % of the population and Hispanic residents composing 8%. The median household income for 48217 is \$34,762 with an unemployment rate of 15% (MiEJScreen DRAFT Report of 48217, 2022; US Census Bureau, 2022). Of the 25 census tracts utilized in the MiEJScreen report of this area, most tracts ranked at least in the 80th percentile for housing burden and at least 50th percentile for poverty in the community.

This area is also the home of 10 large factories run by Marathon Oil, U.S. Steel, and other companies (Benz, 2019). These factories emit "tons of toxic chemicals into the air each year" that include "manganese, sulfuric acid, nickel, lead, trimethylbenzene, and chromium" (Benz, 2019, p.56). These pollutants are also associated with negative health impacts such as "increased risks of cancer, asthma, neurological disorders, cardiovascular disorders, and developmental disorders" (Benz, 2019, p. 56). Of the 25 tracts used in screening 48217 in MiEJScreen, all scored over 75 for the National Air Toxics Assessment (NATA) in (1) air toxic cancer risks, (2) the respiratory hazard index, (3) diesel particulate matter, and (4) particulate matter (PM) 2.5

(MiEJScreen DRAFT Report of 48217, 2022). Many reporters and journalists, such as Bill Kubota from Michigan Radio, reported that “this area has been deemed the most toxic place in Michigan” (Kubota, 2017). This claim has been backed up by Brian Allnut from Planet Detroit as he pulled information from multiple research articles and community members in this area to explore the often-quoted claim. He found that 48217 has the “highest air pollution burden of any zip code in the state” and that more monitoring is needed to understand how bad the pollution truly is and the cumulative impacts the pollution has on the community (Allnut, 2020).

Given the contemporary reality of the environmental conditions and quality of life in 48217, our study will draw connections amongst historical factors and processes that caused contemporary environmental injustice(s) in 48217.

The community of 48217, known for its zip code within Southwest Detroit, is emblematic of a typical EJ community. For our analysis on 48217, an EJ community is determined by the factor of disproportionate burden. For those in 48217, disproportionate burden occurs due to industry, proximity to pollution, uneven cases of severe health diagnosis, and with the legacy of Black death (Matheny, 2019; Sharpe, 2016). Disproportionate burden is appropriate to characterize an EJ community like 48217 since it explicitly discusses the increased sensitivity to pollution that Black people face based on aspects of their social, political, and biological environment (Adams & Denton, 2010). The realities of EJ communities can explicitly be linked to the race of the people in the community and the structures in which race exist (Mohai, Pellow, & Roberts, 2009). The contemporary issue of disproportionate burden is the legacy of hundreds of years of dispossession, migration, and place making by the Indigenous of Southeast Michigan as well as the original thirteen Black families brought forward by the residents in the present - day 48217 community. Detroit’s contemporary movements in EJ were built by community leaders and organizations that sought to address injustices around (1) poor air quality and water quality, (2) inability to access healthy foods, and (3) sustainable infrastructure and transportation (Kilmer et.al, 2018; Hillman et. al, 2008; City of Detroit, 2019).

Research Frameworks

Using the Term “Resilience”: An Anti-Resilience Framework for Community Survival

Throughout this project we reference the concept of resilience, as defined above. However, we as a research group would like to acknowledge the problematic aspects of the use of the term resilience as it is traditionally defined in academic literature: as a return to a pre-disaster normal. As Ranganathan and Bratman (2021) argue, the meaning of resilience often differs based on the language used to define it. In the natural sciences, the term resilience refers to the “ability of social systems to weather adversity; to bounce back from unforeseen disruptions or shocks” (Holling, 1973). This language suggests that resilience is the capability to return to a previous state before a disruption. Yet, understanding resilience in this way can be problematic when used in an environmental justice framework as it does not address the root problems and structural inequalities that caused EJ communities to have to be resilient, or to have to bounce back, in the first place. Additionally, because federal disaster recovery efforts typically seek to restore communities back to their pre-disaster normal, these efforts often also work to restore the racial inequality and the legacy of American racism ingrained within our contemporary urban landscapes (Ranganathan and Bratman, 2019).

Shalanda Baker (2019) introduces the anti-resilience framework as a framework of resilience which seeks to use an anti-racist and anti-oppression policy approach focused on the greater social and economic inclusion of people of color and low-income communities. Using this framework, our recommendations for the community resiliency plan focus on ways of achieving transformational justice within the society in which we are working and addressing the root causes of why communities need to be resilient rather than just on how to increase resiliency. We heard similar sentiments in discussion with community members of Southwest Detroit, a community often labeled as “resilient” in the face of environmental and economic change. Residents of Southwest Detroit are not resilient, they are survivors. As such, to adhere to this anti-resilience framework and better adopt the language of the community leaders engaged in this process, we use the term “community survival” throughout this paper in reference to this framework.

Examples of work that has been done to increase community resilience and community survival include incorporating social vulnerability analysis into climate action plans as well as

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the creation of local emergency shelters, often referred to as resilience hubs. Resilience hubs are “community-serving facilities augmented to support residents, coordinate communication, distribute resources, and reduce carbon pollution while enhancing quality of life” (Urban Sustainability Directors Network, What are Hubs?). Resilience hubs are also used to support residents and coordinate resource distribution and services before, during, or after a natural hazard event to better provide resources needed to community members. For example, the Eastside Community Network in Detroit, a community based non-profit organization, has recently taken on a project of converting their headquarters into a community resilience hub to support residents dealing with various climate change issues and increase climate resiliency in Detroit’s Lower East Side¹.

Political Ecology

More complicated than just looking at land relations, social vulnerability to environmental hazards is often based on socio-political factors that are already embedded in the existing structure of our landscapes. This project utilizes vulnerability through a political ecological framework (Pulwarty and Riebsame, 1997). This framework addresses the symbiotic reality of social and environmental factors of vulnerability; seeing them as inseparable from one another during the formation of the overall socio-ecological landscape. Vulnerability in a political ecological framework places the intersections between people, values, institutions, and the power relationships that make up the landscape as the foundation for inquiry. Through this political ecology framework, we seek to understand how EJ screening tools are produced and the power that they hold through analyzing Environmental Knowledge and Power, Environmental Indicators, and the History and Power of Mapping.

Environmental Knowledge and Power

The relationship between knowledge and power is well documented and researched throughout the social sciences. Originally theorized by Michel Foucault in the 1900s, the power-knowledge concept emphasizes the inseparable connection between what knowledge is accepted

¹ <https://www.ecn-detroit.org/climate>

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as truth and the power relationships that work to create and spread that knowledge. Foucault fought back against the concept of “absolute truth” by theorizing that the creation of knowledge itself is determined by a network of human relationships that produce knowledge to be accepted as truth by the public (Foucault, 1980). In many ways, the possession of power itself is dependent on knowledge and information, including how one understands what “truth” is and how it is created. People then use power to manipulate knowledge and knowledge reproduction by shaping them to support their desired intentions (Elden and Crampton, 2007). For example, government agencies only fund scientific research that “experts” complete within the context of their government’s organizational priorities, jurisdictions, and power relationships (Mitchell, 2002). This includes the creation of environmental knowledge, where, for example, traditional “expert” knowledge and testimony is often prioritized over Indigenous knowledge and lived experiences. Who has the right to determine what research is worthwhile and essential for human understanding? Who has the right to legitimize and discredit what qualifies as evidence of “truth”? These questions are not only based in scientific understanding, but also heavily reliant on the social power relationships present between the different actors creating knowledge.

Environmental Indicators

The same is true with the production of environmental knowledge through indices and indicators. In recent years, the use of indicators and numeric indices to help guide environmental governance has increased. Environmental indicators are numerical values that help measure and condense multiple variables of data into a more simple measurement, such as exposure to harmful Particulate Matter in the atmosphere. Environmental indicators are useful in the ways in which they “provide synthesized knowledge on environmental issues” and “highlight the extent and seriousness of trends” (Butt, 2018, pg. 84). Although often branded as apolitical and representing “objective” knowledge, these indicators are created within political settings and thus cannot be considered completely separate from human power relationships and politics (Butt, 2018; Merry, 2016). Therefore, environmental indicators and indices are rooted in the governing structures and perceptions of the ruling class who create them. Brockington (2017) states that “indicators cannot just be counted; we must ask for whom counting counts” (p.4). In fact, oftentimes the process of synthesizing quantitative data to create these indicators can risk producing knowledge that is partial, distorted, or misleading (Merry, 2016). Often, the

production of the indicators will hide the complex human interactions with the environment that are present, effectively stripping the indicators and data of their social and political context.

History and Power of Mapping

The connections between the power-knowledge concept and the creation of maps have been commonly understood, as maps can be used to both visualize data and create new knowledge through those representations. McCarthy & Thatcher (2019) suggest that through the use of large sets of quantitative data, maps create new knowledge and can influence the landscapes they are based on. The use of maps is a prime example of visualizing the power-knowledge relationship since maps are often intentionally produced, disseminated, and portrayed as fact. However, by portraying maps as “objective” reality, people obscure the major socio-political decision-making that went into the ultimate selection, analysis, and representation of the data used to make these maps (McCarthy & Thatcher, 2019).

Maps should also be understood by the factors or details that they omit, distort, or ignore. Crampton (2001) argues that maps act as social constructions, situated and contextualized within a complex set of social, cultural, historical, and political interests. These visualizations can be used to blur out the crucial human-environment interactions that happen on smaller scales by reducing those interactions to a pixel value. Because of the power that maps hold, some have historically been used as a form of oppression and control over groups of people, from the creation of ancient empires to colonization into Indigenous lands to the lasting legacy of redlining in the United States (Harley, 1988). In those ways, it is evident how maps have been intentionally manipulated by dominant states in the past to further their interests and control land.

Using these research frameworks of Anti-Resilience and theories from Political Ecology, we conduct our research in 48217 letting these frameworks guide the creation of our project deliverables, informing our questions and our interview methodology to complete our recommendations for EGLE, and our approach to analyzing and creating EJ screening tools, all while paying close attention to the power relationships that shape residents' interactions with their environment. In the next section, we utilize these frameworks for the production of our Community Survival and Engagement Planning process.

Chapter II: Community Survival Engagement and Planning

Research Methods

To develop recommendations for EGLE to inform community survival engagement and planning and to inform the creation of the EJ Screening Tool, we utilized a mixed-methods approach including literature reviews, document analysis, engagement with residents through community meetings, and semi-structured interviews with local residents. Our intention from the beginning was to collect this data in as non-extractive a way as possible, while providing the community with tangible results. There is a long history of academic institutions, including the University of Michigan, using the landscape of Detroit as an “urban lab” to do extractive research without working towards tangible solutions for the residents and communities they are studying. We aimed to counter this through authentic relationship building with residents in Southwest Detroit, centering the lived experiences of residents, and adapting our research methods to better center community needs and priorities.

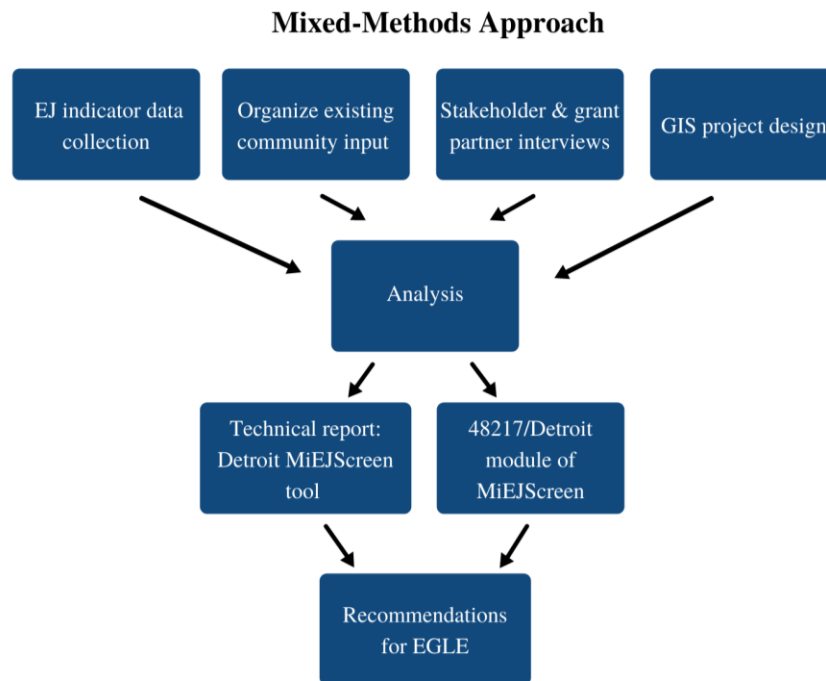


Figure 1: Mixed Methods Approach

This figure depicts the Mixed Methods approach used for our research that includes the processes utilized to produce our two main deliverables.

Engagement of Community Advisors

Upon formation of the research team, former project faculty advisor Dr. Paul Mohai personally contacted and requested Dr. Dolores Leonard, Rhonda Anderson, and Theresa Landrum to act as Community Advisors. Each advisor is a decades-long and well-respected environmental justice organizer in Detroit. Moreover, Dr. Leonard and Ms. Landrum are life-long residents of the 48217 area. The research team was introduced to the Community Advisors and each discussed their goals and vision for this project. The Community Advisors agreed to meet bi-weekly to answer the research team's questions, review project deliverables and plans, and create action items for the team. Advisors played a critical role in developing interview questions and connecting the research team to potential interviewees as detailed below. The Community Advisors also acted as constant primary sources about the historical and current events in the community in our bi-weekly meetings and by leading the team on a 3-hour "Toxic Tour" of the 48217 zip code and surrounding area. Advisors also welcomed the research team to participate in community events including a PFAS teach-in and holiday gathering at the Kemeny Center.

Interviews with 48217 Community Members

The research team generated the interview questions and interview guide by reviewing the overall project's research questions and identifying what information was necessary to answer them. This fell into four major categories: 1) Environmental and Sociopolitical History of 48217 2) Health and Quality of Life of Residents 3) Community Resilience Factors in 48217 and 4) Mapping Environmental Justice Issues in 48217. The research team identified "what we want to know" from questions in each category, followed by designing questions to generate the target information from interviewees. Introductions, transitions, and ending scripts were added into a full guide for the interviewers. These objectives and questions were vetted and reviewed by the Community Advisors in a mock interview format for clarity and effectiveness twice before being finalized. The completed interview guide can be found in Appendix A of this report.

Twenty interviews were conducted with 48217 residents to inform the screening tool creation and community resilience plan recommendations. Following the question generation process, researchers began interviews with one of the Community Advisors and all of the

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research team members to both assess comprehension of the questions and answers for them to be included in the analysis. From this interview forward, the research team utilized a snowball sampling methodology where Community Advisors acted as the connections to other life-long residents of the 48217 area. Interviewees were contacted first by Community Advisors to gauge their interest and capacity for participating in the study. Advisors then shared a contact list of residents that agreed to be interviewed. A member of our research team then used the provided contact information to reach out and schedule interviews. Interviews were conducted and recorded with the consent of the interviewee over the phone or Zoom based on their preference. Research team members generally interviewed in teams of two, with one researcher asking questions while the other took notes on the interviewee's answers. In the case that schedule conflicts only allowed for one interviewer, the research member both asked the questions and took notes. Upon concluding the interview questions, participants were offered a \$75 check for sharing their time and wisdom. To make sure we conducted this qualitative portion of our research to the highest ethical standards to protect our participants, we completed and submitted our process to an Internal Review Board (IRB) at the University of Michigan and each member of the research team completed Human Subjects Training.

For Semi--Structured Interviews with 48217

In order to analyze the contents of the 20 interviews, each recording was uploaded to the Otter.ai software. Otter.ai performed a basic transcription that was then reviewed and edited for accuracy by the research team. This included identifying speakers and adding and rectifying speech unrecognizable to the software. Each team member was responsible for finalizing the transcription of four to five interviews. As researchers transcribed interviews, they took note of specific themes mentioned by each interviewee.

These transcriptions were then coded by hand to identify shared themes across the interviews. Parent codes were identified based on the original research questions and these four categories: 1) Environmental and Sociopolitical History of 48217 2) Health and Quality of Life of Residents 3) Community Resilience Factors in 48217 and 4) Mapping Environmental Justice Issues in 48217. Overall, we ended up with a total of six overarching parent codes and 54 child codes.

Child codes were first generated by the research team after reviewing their notes on the

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transcription of interviews and discussing commonalities under each parent code (theme). Each team member was then assigned different parent codes and finalized child codes in the code book, coded all 20 transcriptions with their assigned code, and documented present codes in individual spreadsheets. This included a method of reading the transcription, highlighting related scripts with a color code corresponding to the parent code, and marking in the spreadsheet whether or not the child code was present in a specific interview script. Team members also generated related keywords to each child code and used the Control + F function to search the transcription document for words related to child codes. New child codes were created by documenting potential shared themes at the bottom of the child code list with a tally for specific interviewees. If the potential code was mentioned by more than two interviewees, it was added to the codebook.

In cases where direct quotes were used in this report or any other deliverables for this project, interviewees were contacted to ask for their consent and preference regarding attribution of the quote but will remain anonymous.

Interview Results

Through our interviews with local 48217 residents, five major themes emerged from the respondents' answers. These themes include Industry, Regulation, Health, Community Survival, and Mapping Tools. Within each theme, several child codes emerged that helped us analyze and understand the information gathered. The following sections include a more detailed description of each theme and their subsequent child codes, which ultimately helped to guide our recommendations for building community resilience and survival in 48217.

Industry Theme

One major theme that was prominent throughout the interviews was that of the role and effects of Industry in the area. There are many industrial facilities and pollution sources in the 48217 area which affect everyday life for the residents living adjacent to them. The Industry theme is meant to include child codes relevant to the Industry in the area and the specific problems experienced by 48217 residents.

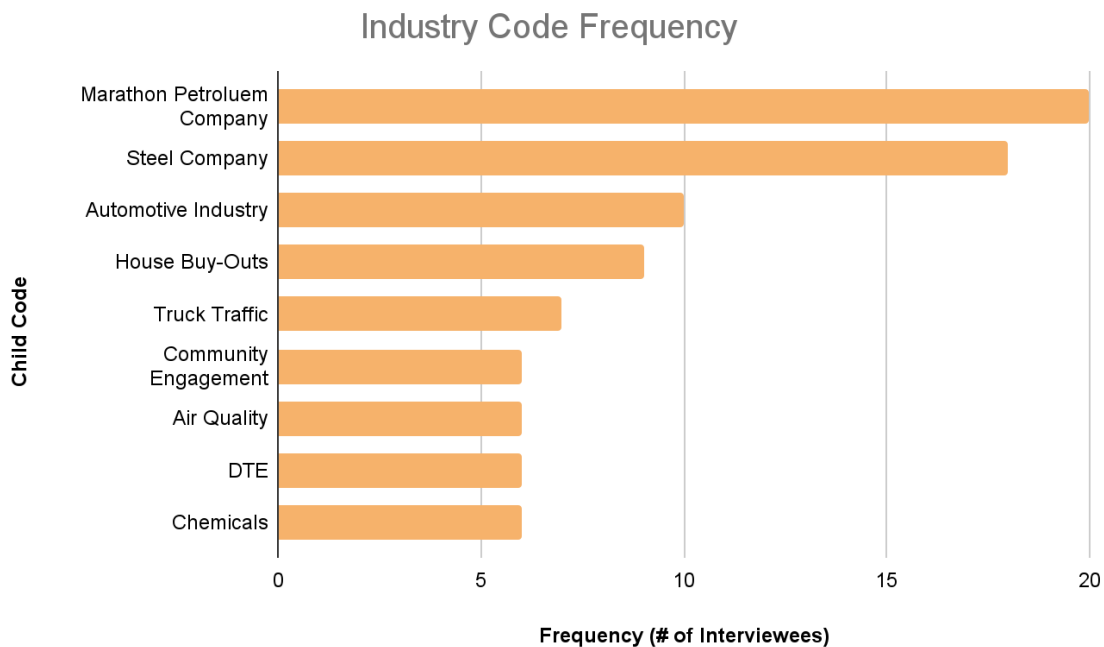


Figure 2. Frequency of Mentions by interviewees of each Industry Theme Child Code

This figure depicts the frequency of the different child codes mentioned during interviews that relate to Industry.

Marathon Petroleum Company. The most frequently mentioned child code within this theme, 20 interviewees (100%) mentioned Marathon Petroleum Company in response to our interview questions. Of primary focus for the residents was the impact that Marathon factories and refineries have on the air quality and community cohesion in 48217 neighborhoods and the accompanying safety concerns around handling and storage of hazardous chemicals.

Steel Company. Eighteen interviewees (90%) mentioned one or more of the steel manufacturing companies in the area, including Great Lakes Steel, US Steel, and AK Steel.

Automotive Industry. Ten interviewees (50%) mentioned the automotive industry and factory presence in the area, including GM, Ford, and Chrysler. These companies were referenced either because someone worked there or because of their role in contributing to the environmental pollution and toxicants in the city.

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DTE. Six interviewees (30%) mentioned the electrical company DTE (Detroit Edison) as a major factor contributing to poor air quality in the area.

House Buy-Outs. Nine (45%) interviewees mentioned house buy-out programs of some kind or another, primarily through Marathon. Marathon Company buys out certain neighborhoods that are in close proximity to their land. In doing this, they make it easier to expand their industry, but they also perpetuate the dismantling of neighborhoods and through that, negatively impact community survival.

Truck Traffic. Seven (35%) interviewees mentioned the heavy presence of truck traffic in their neighborhoods. Due to proximity to both heavy industry and manufacturing and due to the close proximity of the International Bridges to Canada, communities in Southwest Detroit suffer from extreme truck traffic, with truckers often going through residential neighborhoods to get to the highways (Planet Detroit, 2022). This heavy truck traffic impacts the air quality of these neighborhoods as well as degrades the road infrastructure.

Community Engagement. Six interviewees (30%) mentioned efforts by industry employees in the area to engage with and support the local community. Examples of this include funding events and projects, attending community events, and collaborating with community organizations.

Air Quality. Six interviewees (30%) mentioned air quality in relation to industry and the degrading effects that such dense industry has on their health, the local environment, and quality of air for local residents living near these factories.

Chemicals. Six interviewees (30%) mentioned chemicals in relation to industry. Many of the industries in the area use harsh and harmful chemicals in their processes, which often contributes to poor air quality and strong odors.

Regulation Theme

This theme refers to the regulation of environmental pollutants and of major polluting facilities in the area of Southwest Detroit. Many residents expressed concern about current pollutant regulations, or lack thereof, poor regulation enforcement, and zoning laws. In doing so, they discussed how these issues promote increased encroachment of heavy polluting industries into community neighborhoods. This theme is meant to capture references to city and state officials and government departments, government mistrust and neglect, and zoning laws in place.

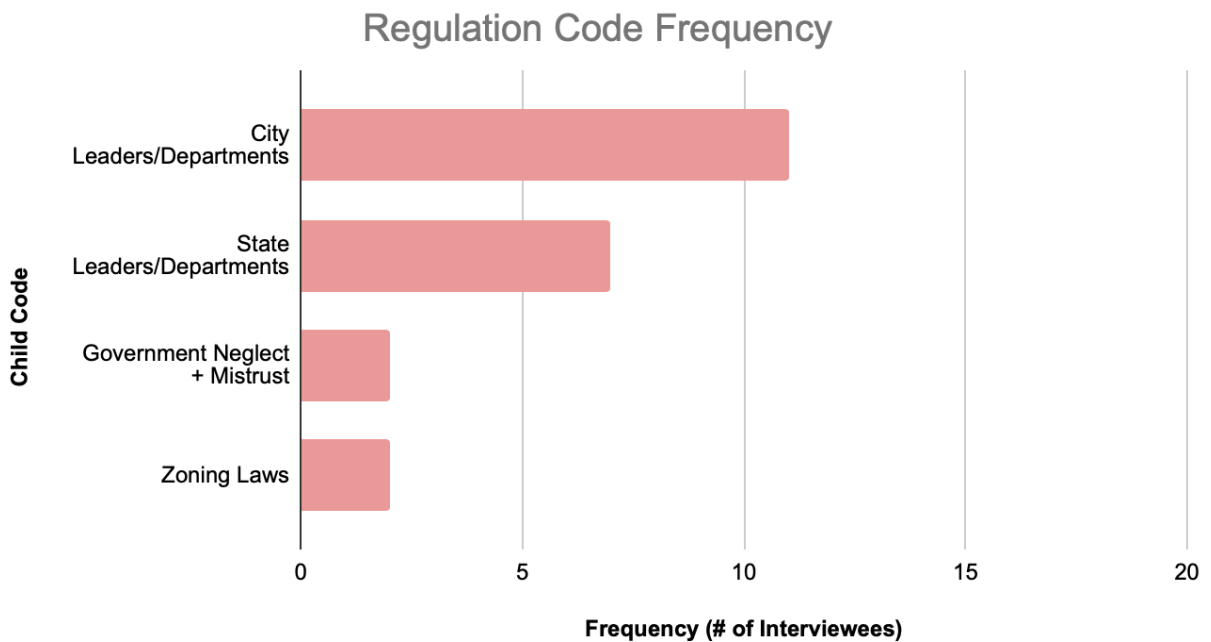


Figure 3. Frequency of Mentions by interviewees of each Regulation Theme Child Code.

This figure depicts the frequency of the different child codes mentioned during interviews that relate to Regulation.

City Leaders/Departments. Eleven interviewees (55%) mentioned current city leaders, officials, and government departments. Of primary focus were concerns over the roles these actors play in addressing environmental contamination and human health concerns for residents. Prominent city leaders mentioned included the mayor and city council members, as well as the Detroit Water and Sewage Department.

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State Leaders/Departments. Seven interviewees (35%) mentioned current state leaders, officials, and government departments. Prominent state leaders mentioned included the governor, state representatives, and US representatives representing Southwest Detroit. State departments included the Department of Environment, Great Lakes, and Energy (EGLE) and the Michigan Department of Health and Human Services (MDHHS). Of primary focus were concerns over the roles these actors play in addressing environmental contamination and human health concerns for residents.

Government Neglect + Mistrust. Two interviewees (10%) specifically mentioned feelings of mistrust and neglect from both city and state government. Residents expressed feelings of continued neglect and disinvestment in communities and infrastructure in Southwest Detroit.

Zoning Laws. Two interviewees (10%) specifically mentioned the need for more zoning laws by the city to stop the encroachment of industry into residential areas of Southwest Detroit. Although no particular zoning laws were referenced, some interviewees made it clear that in order for there to be change in their community, there would need to be different policies and zoning laws in place.

Health Theme

Another common theme that emerged from interviews was both personal health and community health of the residents in the 48217 neighborhoods. Residents in 48217 experience a range of different health problems and have identified causes of those problems. Most prominently mentioned is the feeling that residents themselves are being poisoned by environmental toxins in their area, most often coming from heavy industrial facilities and major polluters. Due to the high rate of health issues in this community and the noticeable lack of equitable healthcare in the 48217 area, health equity is a major concern, as identified by the residents. This Health Theme is meant to include child codes ranging from specific health problems to systemic health related community issues.

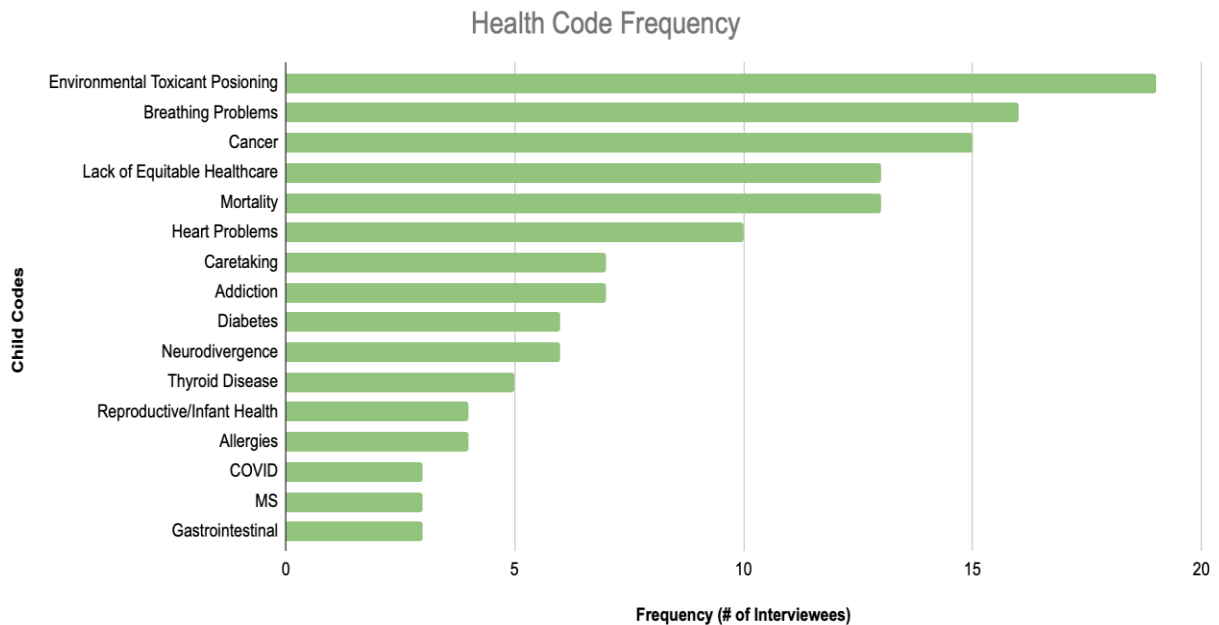


Figure 4. Frequency of Mentions by interviewees of each Health Theme Child Code.

This figure depicts the frequency of the different child codes mentioned during interviews that relate to Health.

Environmental Toxicant Poisoning. Nineteen interviewees (95%) mentioned environmental toxicant poisoning of some kind. More specifically, they mentioned toxicant poisoning from air and water pollution due to their proximity to heavy industrial sites.

Breathing Problems. Sixteen interviewees (80%) mentioned breathing problems that either they or a loved one in their community have been experiencing. Examples of breathing problems mentioned are related to high prevalence of asthma, respiratory diseases and infections, and lung issues. Many residents linked their experience with breathing problems to proximity to environmental pollution and heavy industry.

Cancer. Fifteen interviewees (75%) mentioned cancer that they personally, or someone in their community, has experienced. Many residents expressed concern about the high rates of cancer in this area, especially with multigenerational families in Southwest Detroit and the high prevalence of cancer of long-time community residents.

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Lack of Equitable Healthcare. Thirteen interviewees (65%) mentioned the lack of equitable healthcare in the 48217 area. Lack of equitable and accessible healthcare is a major concern for residents in the area, as they often must travel to other parts of the city in order to have access to basic medical needs and, when they do get healthcare, often are not treated by black doctors or nurses. This can lead to situations in which black patients receive disparate levels of care from white patients simply based on their race.

Mortality. Thirteen interviewees (65%) spoke to mortality rates in their community. This included references to their community and neighbors dying from diseases, accidents, and senescence. Many of these participants expressed concern for the young age at which their neighbors were dying from safety hazards in their community, namely environmental and crime-related causes.

Heart Problems. Ten interviewees (50%) discussed heart problems that they or someone in their family have experienced in their interview. Common heart problems experienced include increased rates of cardiovascular diseases such as heart attacks and high blood pressure.

Caretaking. Seven interviewees (35%) mentioned caretaking that they or a family member were doing for another person in their community. Caretaking of relatives is relatively common in Southwest Detroit because of the multigenerational family homes in the area, and many residents perform wellness checkups on their neighbors to ensure they are taken care of.

Addiction. Seven interviewees (35%) mentioned drug addiction as a major problem in Southwest Detroit that they would like to see addressed in some way.

Diabetes. Six interviewees (30%) mentioned diabetes that either they or someone in their family was experiencing.

Neurodivergence. Six interviewees (30%) mentioned some kind of neurodivergence or learning “disability” like Attention Deficit Disorder (ADHD), Attention Deficit Hyperactivity Disorder (ADHD), and autism that they or someone in their family experiences.

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Thyroid Disease. Five interviewees (25%) mentioned experiencing thyroid disease, another common health issue facing residents of 48217.

Reproductive/Infant Health. Four interviewees (20%) mentioned reproductive or infant health issues that they or a loved one had experienced while living in the area.

Allergies. Four interviewees (20%) mentioned allergies that they or someone in their community suffers from.

Community Survival Theme

Central to the goals of our interviews was to gain a better understanding of how “community survival” manifests itself within the communities of Southwest Detroit, specifically the 48217 zip code, and how the current resources in the community help to further personal and community survival through time. This was one of the broadest themes and captures topics that were mentioned by interviewees related to one's ability to survive, thrive, and live a healthy and productive life in Southwest Detroit.

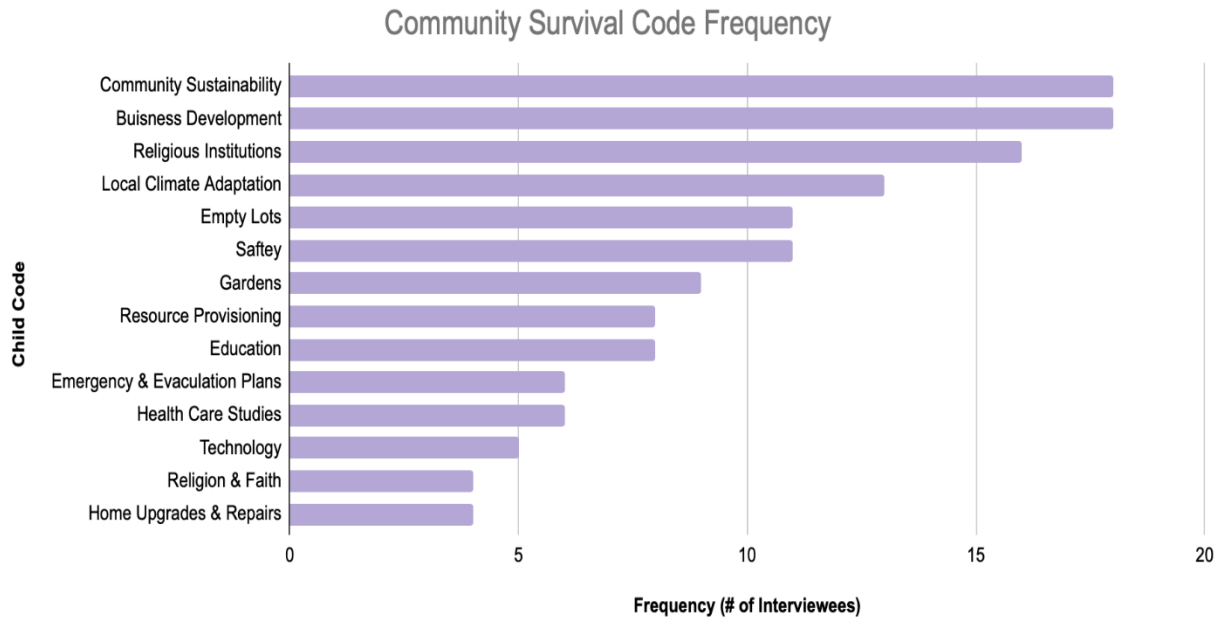


Figure 5. Frequency of Mentions by interviewees of each Community Survival Theme Child Code.

This figure depicts the frequency of the different child codes mentioned during interviews that relate to Community Survival.

Community Sustainability. Eighteen interviewees (90%) mentioned community sustainability and the importance of community connection in achieving resilience. Interviewees mentioned how close knit the neighborhoods in Southwest Detroit are, and have been in the past, and how those relationships help residents survive and thrive. Examples of community sustainability include the fostering of close-knit neighborhoods and neighbor relationships, residents having a neighborly mentality of wanting to help each other, and having large attendance and investment in community events and block clubs.

Business Development. Eighteen interviewees (90%) mentioned the importance of business development in the 48217 area as a key aspect to community survival. The historical disinvestment and legacies of racism in 48217 has allowed for the closing of many, if not most, Black owned small businesses and most other businesses in general. The ability to be able to shop for necessities close to your neighborhood is essential for long-term survival in the City of Detroit, and can bring more job opportunities to the area itself.

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Religious Institutions. Sixteen interviewees (80%) mentioned religious institutions in the area and the importance of religious institutions as community gathering places where residents can interact and engage with one another, with the pastors playing large leadership and facilitation roles in these spaces.

Local Climate Adaptation. Thirteen interviewees (65%) mentioned different types of local climate adaptation efforts that they or other members of their community were interested in seeing implemented in the neighborhood, which would ultimately increase their overall bandwidth to deal with environmental stressors. Examples of local climate adaptation mentioned included wanting an increase in speed bumps, alley gardens, buffer zones between industry and residences, green spaces, beautification of neighborhoods, flooding prevention, senior and disability accessibility, and local health plans.

Empty Lots. Eleven interviewees (55%) mentioned the prevalence of empty lots in Southwest Detroit and the need for clean up. These empty lots and dilapidated buildings can sometimes be locations of illegal dumping and vandalization in the neighborhood, bringing additional pollution and trash into the area.

Safety. Eleven interviewees (55%) mentioned a range of safety concerns they had as residents of Southwest Detroit, from the prevalence of drugs to gun shootings and other forms of violence that affects their day to day lives and activities.

Gardens. Nine interviewees (45%) mentioned urban gardens in their interviews as a source of personal enjoyment, healthy food, and community engagement. Many residents make an effort to grow their own fruits and vegetables, oftentimes in their own backyards. This effort has decreased in recent years due to the unknown effects and presence of pollutants in the soil that may make the foods unsafe to consume.

Resource Provisioning. Eight interviewees (40%) mentioned the need for better resource provisioning in some way to address a multitude of issues including the lack of transportation,

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the constant increases in water and energy rates, and the increased amount of poverty in the area coupled with the overpaying of taxes.

Education. Eight interviewees (40%) mentioned education as an essential resource for the future of the 48217 community but expressed concern about the lack of available schools and the negative health effects of students learning in schools so close to industrial facilities.

Emergency and Evacuation Plans. Six interviewees (30%) mentioned the need for more inclusive and comprehensive emergency and evacuation plans for 48217 residents if there were to be an explosion or emergency at a nearby factory or manufacturing facility. Many interviewees were not aware of any evacuation plan provided by the city or nearby factories like Marathon Petroleum and expressed concern about what they would do in the event of a local emergency or disaster.

Health Care Studies. Six interviewees (30%) mentioned the need for different types of healthcare studies to take place in the area, specifically focusing on the health of black people and medical education that accounts for the effects of nearby pollution.

Technology. Five interviewees (25%) mentioned the need for technology upgrades and training for the residents of the area who often feel a “digital divide” between what they are able to use and what they are given access to online. Lack of affordability and access to internet and quality phone service was also expressed as a concern that leads to weakened computer literacy among residents, not allowing them to access some of the resources they need.

Religion and Faith. Four interviewees (20%) expressed that their personal religion and faith was a strong factor in their personal strength and ability to survive in the area. Faith in the bible and in prayer plays an important role in many lives of those in this area and can serve as a great source of strength for people in the face of hardships.

Home Upgrades and Repairs. Four interviewees (20%) mentioned the need for home repairs and upgrades that were important to their personal sense of safety and comfortability in their home.

Mapping Tool Theme

One aspect of our interviews that we wanted to explore was residents' opinions and thoughts about what a mapping tool for this community might look like and the different things that the community would like to see represented on the EJ Screening Tool Module. Many residents expressed enthusiasm about seeing different community assets represented on this mapping tool, ranging from schools to grocery stores to representing where active businesses are located. It is important that any mapping tool, especially EJ Screening tools, be made in collaboration with the communities they are serving to ensure that these resources and maps are useful and relevant to the communities that live there. This Mapping Tool theme is meant to capture the community assets that residents would like to see represented on a mapping or screening tool.

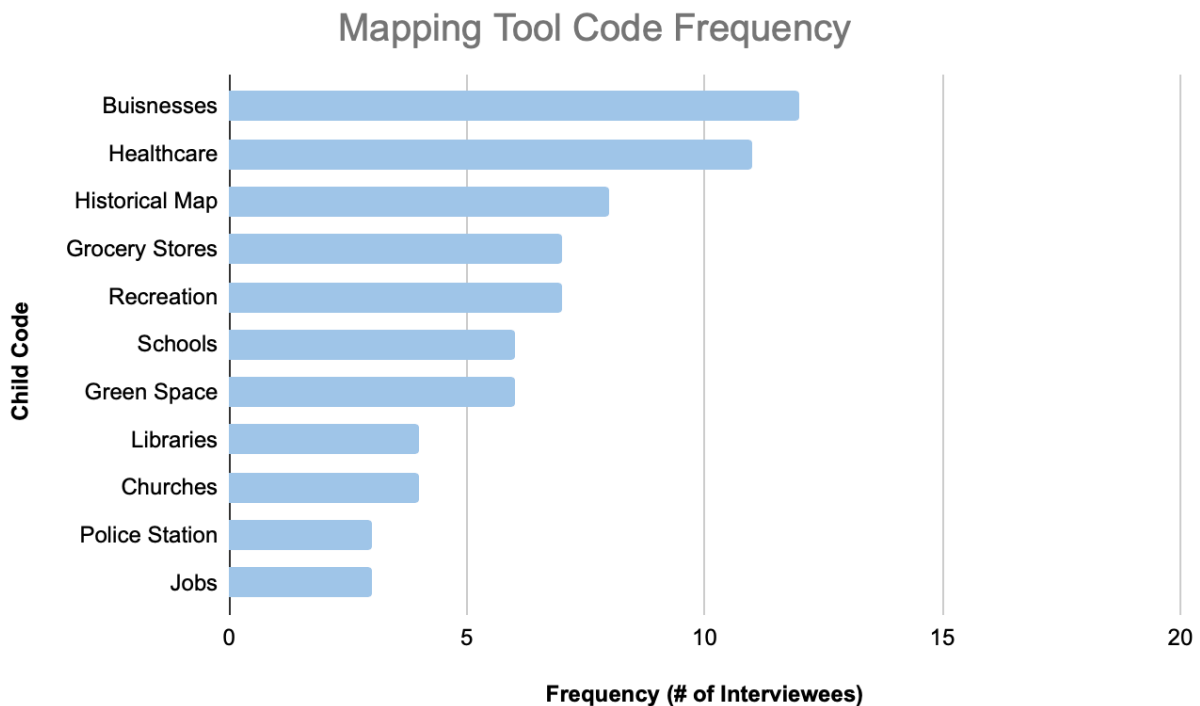


Figure 6. Frequency of Mentions by interviewees of each Mapping Tool Theme Child Code.

This figure depicts the frequency of the different child codes mentioned during interviews that relate to Mapping/Screening Tools.

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Businesses. Twelve interviewees (60%) mentioned the need to include local businesses in a mapping tool of the community to show where current active businesses are located in Southwest Detroit as community assets. The community places a great importance on locally owned businesses and “mom and pop” shops in Southwest Detroit, and views them as an essential resource.

Healthcare. Eleven interviewees (55%) mentioned the need to represent where healthcare is accessible in the 48217 community, especially in comparison to surrounding communities in Detroit. Inclusion of hospitals and medical clinics in a mapping tool will help to highlight the lack of equitable and accessible healthcare in Southwest Detroit, which is a major concern for residents in the area as they often must travel to other parts of the city in order to have access to basic medical needs.

Historical Mapping. Eight interviewees (40%) mentioned the want for historical assets to be included in a mapping tool to represent where community resources used to be located and how, through time, these resources and assets were either moved or removed from the community.

Grocery Stores. Seven interviewees (35%) mentioned including grocery stores in a mapping tool to represent the healthy food resources that are available in 48217, and the lack thereof. Access to healthy food, not just fast food, is essential for community health and survival.

Recreation. Seven interviewees (35%) mentioned the need to include areas of recreation in a mapping tool, including the Kemeny Recreation Center, which serves as an invaluable meeting place, community hub, and recreational facility for the residents and families of Southwest Detroit.

Schools. Six interviewees (30%) mentioned including schools in a mapping tool to represent schools and places of knowledge as a community asset. Schools provide places for youth in the community to learn and grow and can help foster greater community cohesion and social interactions. Schools that were mentioned by interviewees include Elementary Schools (Old) Mark Twain, (New Mark Twain) Boynton Elementary, Miller Elementary School, Jeffreys

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Elementary School, Hunter Middle School, Southwestern High School, and Western High School.

Green Space. Six interviewees (30%) mentioned including green spaces in the mapping tool, like local parks and areas with lots of trees. Green spaces are important not only for greater community enjoyment of the area, but also for green infrastructure to combat flooding and contribute to cooler temperatures.

Libraries. Four interviewees (20%) mentioned the need to include libraries as a community asset and resource in the mapping tool. Libraries provide places for residents to learn and grow, and can provide gathering places for communities to come together and collaborate.

Churches. Four interviewees (20%) mentioned the need for including churches as community assets in the mapping tool, as churches provide critical community infrastructure by providing places for residents to gather, share common faith, and organize together over shared principles. The New Mt. Hermon Baptist Church in Southwest Detroit was mentioned multiple times as an important resource for the community.

Police Station. Three interviewees (15%) mentioned wanting to include where police stations are located throughout the 48217 region. Most respondents who mentioned police stations in their interview were in favor of greater police presence and faster police response to their neighborhoods and communities.

Recommendations

Based on the results we gathered from our interviews, conversations with community members, and physical tours of the area, our team developed a series of recommendations for each theme to bolster community resilience and survival in Southwest Detroit. These recommendations are directed towards, and ultimately will be implemented by, the State of Michigan's Department of Environment, Great Lakes, and Energy (EGLE) Office of Environmental Justice Public Advocate (OEJPA) as they develop a Community Resilience Plan for the Tri-City area of Southwest Detroit.

We recognize that the implementation of these recommendations will not always exclusively fall solely under the purview of EGLE directly and will require partnering with other government agencies within the State of Michigan. As the Public Advocate for Environmental Justice across the state of Michigan, the OEJPA is in a prime position to advocate across agencies in order to achieve solutions that provide real EJ solutions to the communities that need them. To assist in this collaborative process, we included which agencies should be partnered with for some recommendations.

Issues of EJ are never solely ecological or environmental, but are instead intersectional and affect all other aspects of daily life. This includes public health, housing, and business development. Based on our research, these recommendations provide a pathway to begin working towards true environmental justice and community survival in Southwest Detroit. These recommendations were generated from the 5 major themes that emerged from our interviews, health, community survival, industry and regulation, and mapping.

Health

Southwest Detroit residents are currently deprived of everyday healthcare services while dealing with the oppressive health impacts of environmental injustices in the area due to industry and legacy pollution. Particularly concerning is the current dearth of doctor's offices, emergency rooms, urgent cares, and pharmacies in the community. At one point in time, neighbors were able to walk to Outer Drive and receive care from Black healthcare professionals who they knew

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personally. Today, residents note that they not only have to physically leave the community to receive healthcare, but also experience racism from outside healthcare systems and practitioners.

As conceptualized in the technical report for MiEJScreen, environmental injustice has a dual impact on community health; environmental hazards such as air pollution increase a person's likelihood for a host of serious illnesses such as cancer, respiratory disease, and cardiovascular disease (Office of the Environmental Justice Public Advocate, 2022). Moreover, BIPOC and low-income populations are more likely to have both biological and sociological conditions that increase their susceptibility to such pollution (Office of the Environmental Justice Public Advocate, 2022). Life expectancy for 48217 and the surrounding zip code ranges from 68 to 74 life years, while the national average is 76.4 years (Xu et al., 2022). Southwest Detroit residents shared story after story of entire families afflicted with cancers and respiratory diseases.

We understand that the negative health impacts on this community are located within a racist tradition of degrading the assets of thriving Black communities, creating dependence on White settler institutions, and poisoning BIPOC communities with polluting industry (Commission for Racial Justice, 1987; Mohai and Bryant, 2020; Whyte, 2018). Identifying singular bad actors for these intersectional injustices may seem like an impossible first step for restorative justice. Yet, given EGLE's mission to "protect Michigan's environment and public health by managing air, water, land, and energy resources," the clear failure of this mission in 48217 is exemplified by the disparate impacts felt in the community (State of Michigan, 2023).

Health Recommendation 1: Invest in a Black-owned healthcare center run by and for the community to meet the everyday health needs of the community in an accessible and equitable way.

Partner with the Michigan Department of Health and Human Services (MDHHS), Michigan Economic Development Corporation, and other relevant agencies to create environmental health-focused treatment and programming. The clinic should include workforce development and training for residents as healthcare providers with an environmental health focus. The clinic should also address community concerns such as those frequently named in interviews: substance abuse, mental health, and environmental toxicant poisoning (respiratory disease and cancer) with an intersectional approach. Partnerships should be established with local public health departments to provide environmental health communications and interventions to tri-city residents.

Support: Sixty-five percent of interviewees identified a lack of equitable healthcare as a detriment to the 48217 community. Pre-segregation, Southwest Detroit had multiple Black-owned and operated emergency and general practice healthcare centers located in the community. Currently, residents have to either travel to downtown Detroit or to Ann Arbor to receive care. A third of participants mentioned experiencing racism during their care at such institutions. Where neighbors used to walk to Outer Drive to work and receive care at the hospitals, now there is not even a pharmacy in the community. A community member commented, “We need health facilities that understand the health of Black people ... we really don't have medical people invested in learning about environmental impacts of the area.”

Health Recommendation 2: Establish emergency health infrastructure in the community.

Invest in locating emergency health services such as EMS, ambulances, emergency rooms, and urgent cares in the tri-city area. Due to disparate impacts of industry on the health and overall life expectancy in the community, EJ Programs (expanded upon in the Industry and Regulation section) should provide funding towards such development. The Community Resilience plan should overcome the current inaccessibility of emergency care and barriers in the community in the case of an emergency. Routes, meeting places, and emergency shelters should be established

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for each neighborhood of the tri-city area with Anti-Racism frameworks. For example, interviewees raised that nearby predominantly White communities would act as hostile hosts during a crisis. Toxic Release Inventory (TRI) chemicals released by industries in the tri-city area should also be studied and classified into different categories of risk with accompanied community-wide plans developed specifically for those risks.

Support: This community has disparate exposure to environmental and human health hazards, yet according to interviewees they have poor access to emergency services and plans (Office of the Environmental Justice Public Advocate, 2021). Moreover, interviewees and community advisors emphasized that environmental emergencies are commonplace in the community (Allnut, 2020). While better regulation and enforcement are needed for reducing the risks present in the community, real protective health measures as well as emergency services must bridge the gap. Many interviewees referred to the 2003 blackout and subsequent threat of the Marathon refinery exploding as an example of the unique threats the community faces and why an evacuation plan is needed.

Health Recommendation 3: Invest in and expand community health and quality of life institutions that already exist in the community - particularly, the Kemeny Recreation Center.

Support: Many community members referred repeatedly to the Kemeny Recreation Center as a central location for promoting community health. By acting as an organizing, celebration, education, and recreation space, the Center strengthens both physical and mental health. This asset is in direct contrast with the fact that 65 percent of interviewees commented on the reduced life spans and untimely deaths of neighbors from treatable or preventable illnesses. Community members are taking the initiative to invite healthcare professionals to do screenings and tests at the Kemeny Center - this should be supported by EJ funding and the community resilience plan. Asthma and cancer clinics would address the majority of interviewees concerns. Youth engagement at the center was also seen as an important invention in children's development that acts as a preventative health measure.

Health Recommendation 4: Continue and expand environmental monitoring and testing in the community.

This includes increased testing for lead, per- and polyfluorinated substances (PFAS), and other emerging contaminants in local air and water systems. Air monitors presently in the community should be maintained and improved. Community water supplies should be tested more frequently than federal regulatory requirements and private wells should be tested for baseline results.

Support: Ninety-five percent of interviewees responded that environmental toxicant poisoning by industry was a major concern in their community. Community Advisor expertise, the Toxic Tour, PFAS teach-in, and interviews all called for more proactive testing of the air and water quality in environmental justice communities such as this one.

Community Survival

The Community Survival recommendations encompass what the community needs not only to survive, but to thrive and live a happy, healthy, and productive life in 48217. These recommendations are modeled after the anti-resilience framework: a framework of resilience which seeks to use an anti-racist and anti-oppression policy approach focused on the greater social and economic inclusion of people of color and low-income communities (Baker, 2019). Using this framework, our recommendations for EGLE and their partnering agencies for the community resiliency plan focus on ways of achieving transformational justice within 48217.

Community Survival Recommendation 1: Support and fund churches, community centers, and organizations that promote community and strengthen the social fabric of 48217.

Support: Ninety percent of interviewees took pride in the social fabric and sense of community in the area and want to continue to foster the kinship and neighborly mindset with special mention to the Original United Citizens of SW Detroit, Block Clubs, Congress of Communities, 48217 Air Monitoring Group, 48217 Business Association, Citizens with Challenges, Wayne County Association of Black Veterans, SW Detroit Environmental Vision, SWD Community Benefits Coalition, New Mount Herman Church, and the Kemeny Center. Churches and other places of worship have special roles within this community as they are areas of high community

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engagement and involvement, churches can provide many programs and events, and are used to keep in touch with community members. Pastors and church leaders are also seen as leaders within the community.

To provide context of the kinship present in the area, one community member expressed that they were “raised by a village. Your neighbors looked out for you, so your neighbors were your extended family. And you still have that. What's the word for it? You still have a vested interest in seeing this neighborhood thrive, and you got that love and that passion for it because this is the area who made you what you are.”

Community Survival Recommendation 2: Invest in the community through incentivizing anchor stores such as grocery stores, pharmacies, health clinics, hospitals, barber shops, bakeries, banks, and beauty stores that can support the area, provide job opportunities, and increase the quality of life.

Support: Ninety percent of interviews mentioned that there are no new business opportunities or investments coming into the area from the local or state level, and point to historic disinvestment and legacies of racism that have left 48217 without basic necessities. Interviewees also mentioned that they are paying higher taxes than other areas and have nothing to show for it. Outside sources, such as James Tatum from Citizens Research Council of Michigan, have corroborated this claim, reporting that “Detroit’s property taxes, which are among the highest in the nation, create a disproportionate tax burden on its residents” (2021). Promoting business development could look like subsidizing small and family-owned businesses, providing low interest loans and grant opportunities, or other tax incentives.

To speak directly to the disconnect between people and the services present, one interviewee mentioned that:

“people [politicians are] lining their pockets and not really putting their money [taxes] out to the community, you know, where it's supposed to go. Not investing that money

back into the community. Why are you collecting these tax dollars, if you're not putting that money back into the community?"

Community Survival Recommendation 3: Beautify the neighborhood and provide local climate adaptation.

Support: Sixty five percent of interviews mentioned that this could be done in the form of providing upkeep for lots and alleys in the neighborhood, allocating funding for planting more trees, and supporting the creation of more green spaces and buffer zones between the industry and the community. Interviewees also advocated for the tearing down or fixing up of dilapidated housing and providing assistance for the weatherization of homes, increasing walkability in the neighborhood, addressing the problems that come from the interstate dividing the community, and the historic occurrences of flooding. To express these concerns, one interviewee stated that:

“There are no buffer zones, no really green spaces where the vegetation is supposed to capture the pollution, help mitigate the soil and mitigate the air, we don't have enough of that right. We don't have industries using their profits to invest in resiliency as far as businesses, we used to have all kinds of businesses, up and down, that we don't have anymore, they died out.”

Community Survival Recommendation 4: Collaborate with the community to devise a community safety plan to address drug and crime occurrences.

Support: Fifty five percent of interviews mentioned the presence of drugs and crime in the area usually leads to shootings and increased gun violence and felt as though they could not walk outside at night or have their kids playing outside without feeling worried. Many interviewees have been affected by gun violence themselves or have family members that have been affected. Also connected to this recommendation is the lack of police and emergency response due to the lack of hospitals and urgent care facilities in the area. If there is an emergency, it takes police a long time to get to the area and this leads to an increased worry residents could not get to the hospital or to medical care in time. Because of this concern, the safety plan should include the

opportunity for the community to decide on the role and presence of, or lack thereof, police. To speak on their experience, one interviewee mentioned that:

“A police response, I guess that's one of my main issues here. High crime rate, drug infestation, [we are] surrounded by drug infestation in this area. Matter of fact, I was affected by two crimes within the past two weeks.”

Community Survival Recommendation 5: Create, educate, and distribute a community specific emergency evacuation and management plan that includes input from the community at all phases such as the creation, finalizing, and distribution.

Support: Thirty percent of interview participants mentioned they want an emergency plan for when/if Marathon or another industry in the area explodes or has an emergency disaster. This plan should address evacuation routes, communication plans, resource distribution and answer questions such as: If the bridge is shut down or the highway is closed, how will residents flee the area? Many residents explained how they remember when there was a gas leak and police showed up with gas masks and told them to leave the area, but did not tell them where to go or give them gas masks themselves. These plans should be actively updated to keep them up to date and relevant and providing funding for these emergency situations should be dispersed according to community needs. Esri Emergency Management Operations² could aid in statewide Emergency Planning.

An interview participant expressed their concerns and said “when people around here get sick or it's an emergency, they have to get an ambulance to go all the way downtown. What if the freeway is being worked on? What if the bridges are broken? Then what? Where do we go? You know what I'm saying? So there needs to be a hospital here. There needs to be all those resources that all the other neighborhoods have. We need to have them as well, and we don't have them.”

² [Esri | Emergency Management Solution](#)

Community Survival Recommendation 6: Utilize resource provisioning to address poverty, public transportation, and energy burdens.

Support: Forty percent of interviews mentioned concern around affordability and access to resources. The concern is the high rate of poverty in the area exacerbated by high utility rates, fixed incomes, and overpaying for taxes. Around utility bills, community members want lower utility bills and taxes in the area, especially for the high percentage of fixed income community members. Frequent rate increases for both water and energy are a major issue since a lot of the population is on a fixed income and the service is not reliable with frequent black outs and bad cell phone service. There was also mention of the lack of public transportation in the area which is an essential service for the older population that may not be able to drive, as well as because all the resources they need are outside of the community and are too far to walk to.

Community Survival Recommendation 7: Provide resources to care for the growing Hispanic population in 48217.

Support: Eight percent of residents in the area are Hispanic with the population continuing to grow (US Census Bureau, 2022). This means there needs to be special resources deployed to aid this community properly, including publishing all state and city materials in Spanish and providing translators to the community when there is an environmental disaster, air quality issues, or emergency evacuation plan.

Industry and Regulation

Residents of Southwest Detroit have been plagued by the high density of industrial facilities and major polluters for decades. According to the Lifestage Environmental Exposures and Disease Center (M-LEEd) at the University of Michigan, today more 500,000 Michigan residents live within one mile of a facility storing large amounts of extremely hazardous chemicals. Disproportionately skewed towards affecting BIPOC, children of color are more than two times as likely than White children to live in close proximity to facilities housing hazardous substances (2022). Residents of Southwest Detroit are more likely to be closer to industrial

sources of pollution and are confronted daily by risks of spills, explosions, and other environmental disasters at these industrial facilities, as well as from the transport of chemicals to and from them through their communities.

Industry & Regulation Recommendation 1: Implement new zoning laws to prevent the spread of industry, specifically Marathon, into residential areas and encroachment into essential community areas through buyout programs.

Support: Every interviewee mentioned Marathon in some way. Multiple residents expressed fear of the 48217 area turning into “one big Marathon,” with some residents uncertain about the future of 48217 as a residential zip code. As one resident interviewee said:

“...so now the community itself is shrinking. And but they're letting it happen: the city. This is more money for the city. Just more tax dollars generated to the city, but guess who that money is not trickling down to? The actual community. More and more industry will push people out, and now there is going to be one big marathon without the residents. Because they're allowing that to happen. It's going to be industrial instead of residential sooner than later.”

EGLE should work with the City of Detroit Zoning Division to enforce and implement additional zoning laws to prevent this scenario from becoming a reality. Equally as important is ensuring that there are physical gaps between residential housing and industrial areas, even for storage facilities. Creating physical gaps between industry and residential neighborhoods in 48217 is essential for community resilience and survival in the face of encroaching refineries. These physical gaps could also serve as green spaces to increase community resilience as referenced above. One resident noted:

“These houses shouldn’t have even been built if they knew that Marathon was gonna build like they are and DTE and Great Lakes Steel. This is not a community for people. It's a community for refineries”.

Industry & Regulation Recommendation 2: Require Community Benefits Agreements (CBAs) for all new development by industry in and around 48217.

Support: Existing industries should be required to partner with the community by factoring residents' wellbeing and direct benefits to residents into industry decision making and cost risk analysis for the planning of new development in Southwest Detroit. Throughout our interactions with residents of 48217, the vast majority had a shared sense that generally the industries in the area are not considering their needs, and not respecting their neighborhoods. Many of the people we talked to expressed a feeling that they were being taken advantage of by the industrial companies in the area, and that they were being unfairly treated. A Community Benefit Agreement between Marathon Petroleum Company and a coalition of community organizations in 48127, for example, could help to ensure that local residents are considered and consulted for new development.

Community Benefit Agreements are agreements signed by both a developer and community benefit groups that identify a range of community benefits the developer agrees to provide to the residents as a part of the development process, sometimes in return for local support for the project. There is a history of CBA's being used in Southwest Detroit, for example the Southwest Detroit Community Benefits Coalition³, whose mission is to ensure that the Southwest Detroit community receives protections and community benefits with the development of the new nearby Gordie Howe International Bridge.

Industry & Regulation Recommendation 3: Create and require a regulatory framework for cumulative health impacts when evaluating industry permits in the community, and use the funds from permit violations to invest back into the 48217 community through a community grant.

Support: EGLE should partner with the MDHHS to ensure that cumulative health impacts are accounted for and that facilities that are out of compliance with permits are held accountable. This should be done by investing in the health outcomes of residents and EJ initiatives in the area

³ <https://swdetroitcbc.org/>

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through a new EJ funding program similar to the existing Supplemental Environmental Projects⁴ program. Residents of 48217 stressed the need for additional funding to achieve more personal and community resilience. One of the largest barriers to reaching “resilience” and community survival is access to basic needs and services, which a community grant could be used to address. As one resident stated:

“It’s a lot of pollution. And we just try to make do with what we can make do with it. I wish we had a good quality of life where the air was cleaner, where the water was pure, you know, I really do. And I wish there was a grant that could make that happen. That would really help this community out.”

Industry & Regulation Recommendation 4: Prioritize the use of safe chemicals when constructing new facilities and when dealing with an emergency, rather than chemicals that will eventually contribute to the environmental poisoning of residents in the area.

Support: Residents described experiences working inside of or in close proximity to these industrial factories and facilities, many of which mentioned the unsafe or unhealthy environments that they were exposed to and their concerns around the human health impacts. One resident and employee of these industries mentioned the use of asbestos as a fire retardant in smokestacks nearby their residence.

Additionally, the increased awareness of PFAS contamination has also raised concerns around the use of industrial fire retardant, for example those that would be used in an event of an explosion in a nearby facility, and the potential for those to introduce more contaminants into the environment. For example, the PFAS chemicals used in the response to the recent train derailment in East Palestine, Ohio has local residents and experts concerned about potential PFAS contamination into local ecosystems and drinking water (Perkins, 2023). EGLE should partner with the Michigan Department of Licensing and Regulatory Affairs to prioritize the sole

⁴ <https://www.michigan.gov/egle/about/organization/air-quality/air-quality-enforcement/supplemental-environmental-projects>

use of safer chemicals for construction and preparation of disaster and emergency management scenarios.

Industry & Regulation Recommendation 5: Encourage and require City officials to partner with the community in an effort to have them see the reality of life in 48217, and the proximity to industry that they may have allowed to be built here.

Support: Residents expressed concern that people in charge of making decisions that will affect community health should actually be here in 48217 to see the impacts of those decisions. Decision makers for Detroit, especially elected representatives and officials, should have to see and live with the direct and indirect effects that their decisions have on community survival in the area. As one resident said, “If you are making decisions here, you need to be here to see it.”

Community Mapping

These recommendations seek to explore residents' opinions and thoughts about what a mapping or screening tool for this community should look like and the different data layers that the community would like to see represented on EJ Screening Tools in general, but more specifically on our EJ Screening Tool Module developed for EGLE's MiEJScreen, discussed more in Chapter 3. Many residents expressed enthusiasm about seeing different community assets represented on this screening tool, ranging from schools to grocery stores to representing where active businesses are located. It is important that any mapping tool, especially EJ Screening Tools, be made in collaboration with the communities they are serving to ensure that these resources and maps are useful and relevant to the communities that live there.

Community Mapping Recommendation 1: Include community assets in mapping and screening tools, including but not limited to, businesses, healthcare, historical maps, grocery stores, and recreation.

Support: Residents often spoke about these assets being the most important to map. Mentions of once thriving local businesses including a bakery, carwash, and theater, amongst many others,

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are now gone due to the historic disinvestment explored in previous recommendations. This change over time reflects the consequences of industrial expansion and lack of autonomy the community has over what resources stay. A map should illustrate this, including the narrative and policies that allowed this to occur. To contextualize this recommendation, one interviewee mentioned that:

“We don’t even have a grocery store anymore. We have a Dollar Tree now.”

Community Mapping Recommendation 2: Develop and implement community mapping in narrative form, centering lived experiences of the communities represented.

Support: Without centering lived experiences of communities represented, the map or screening tool will be a step removed from the community and therefore will not align with their voice and needs. Documenting the oral history of residents on a community map through a narrative format would help ensure the effort aligns with the principles of EJ.

Community Mapping Recommendation 3: Include the historic and racist disinvestment that has caused a lack of economic activity in these communities.

Support: Residents described witnessing the process of disinvestment over time, seeing resource after resource disappear from their neighborhood—e.g., grocery stores and hospitals. The economic and racist powers at play must be highlighted on the map to show who and what is responsible for degrading the environment and devaluing the people of this vibrant community.

Specific recommendations around the design, indicators, and general use of MiEJScreen can be found in Part III of this paper.

Discussion

Frontline and EJ communities are dealing with not only the health and well-being impacts of pollution, but the societal injustices which can deteriorate the pillars of community survival. As Michigan’s most polluted zip code, the people of 48217 live everyday with environmental hazards and disasters (Allnut, 2020; Kubota, 2017). Residents must also live with

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an acute lack of access to equitable healthcare, racial discrimination, and poverty. Moreover, research has affirmed how social vulnerability worsens the detrimental health impacts related to poor air, water, and soil quality resulting from industrial pollution (Office of the Environmental Justice Public Advocate, 2022). From listening to this community, industrial operations have killed or injured many loved ones, old and young, and provide limited opportunities for a healthy lifestyle in the community.

By engaging with Southwest Detroit residents through Community Advisors and conducting twenty interviews with life-long residents, major recommendations were made to inform and guide EGLE's Community Resilience plan to address the injustices occurring in 48217. Health, industry and regulation, community survival, and mapping related recommendations specifically address the concerns and hopes residents shared during these outreach efforts. The above recommendations are just a start at some of the ways the state and other actors can address community survival and environmental justice for 48217. Although the recommendations were tailored to this community, they could be applicable to other EJ communities across the Midwest or across the country, especially other fenceline communities in close proximity to heavy industry and pollution.

One of the most illuminating aspects of our interviews revealed the way in which EJ Screening Tools, such as MiEJScreen, are not useful or accessible to the community in the way the state thinks they are. In Chapter III, we explore the inception of EJ screening tools, conduct a review of published EJ screening tools, such as the Environmental Protection Agency Environmental Justice Screening Tool (EPAEJScreen) and the Climate and Economic Justice Screening Tool (CEJST), and provide critiques and solutions that address the concerns mentioned during participant interviews.

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As mentioned in our Project Objectives, the second aspect of this project was to create a publicly available map of community survival factors identified through interviews that are accessible and impactful for EJ community advocates in their efforts that can then be incorporated into the Metro-Detroit specific EJ Screening Tool as part of MiEJScreen. Per the EPA Strategic Plan, Objective 2.2, which is the grant our research is attached to, one primary goal of this project was to provide additional context map layers for the Southwest Detroit-specific MiEJScreen module. As noted in Part II, in the Community Mapping section above, residents emphasized the need for a module that included community assets and historic information on racism and disinvestment, and that could drive community mapping in narrative form. These aspects mentioned from participant interviews that are necessary for them to be able to utilize a screening tool such as MiEJScreen are not currently accessible in the existing form of MiEJScreen.

As such, in addition to providing additional context layers to the existing MiEJScreen and any Southwest Detroit or other community-level submodule, our project team recommends the development of a Southwest Detroit StoryMap as a counterpart of the MiEJScreen module. The intention of these screening tools is for communities to be able to use them as resources to continue to advocate for themselves and to have more information about what factors are impacting their health but as we will explore in this section, there are major roadblocks from making screening tools accessible. The StoryMap can be used in a similar way as a Screening Tool that Michigan governmental officials and other stakeholders, such as EGLE, can use to better understand the EJ impacts that affect the 48217 zip code. We recommend that such stakeholders are required to use these deliverables of additional context layers and the StoryMap to inform future decisions and allocate appropriate resources to the community.

In this Chapter, we will explore the inception of EJ screening tools, conduct a review of published EJ screening tools, such as the Environmental Protection Agency Environmental Justice Screening Tool (EPAEJScreen) and the Climate and Economic Justice Screening Tool (CEJST), and provide critiques and solutions that address the concerns mentioned during participant interviews and why an alternative such as a StoryMap is necessary.

History and Review of EJ Screening Tools

Screening tools mapped spatially using Geographic Information Systems (GIS) have gained significant ground in catalyzing change for EJ communities in recent years. EJ Screening tools were originally created for the purpose of informing federal decision making around human health risks, but have morphed to include a variety of other uses and purposes. Charles Lee (2021b) succinctly underscores the importance of environmental justice screening tools for three primary reasons, the first being to identify and prioritize environmentally burdened and vulnerable communities to begin integrating environmental justice in government decision making (p.3). The second is that environmental justice mapping discourse “holds the potential to more precisely characterize and operationalize the concept of disproportionate impacts”; and lastly, that data from the mapping tools are catalyzing the “thirst for such information” across the US, facilitating new environmental justice approaches (Lee, 2021b:4).

The inception of EJ Screening Tools came from Executive Order (EO) 12898, signed by President Clinton in 1994, instructing all federal agencies to "collect, maintain and analyze information assessing and comparing environmental and human health risks borne by populations identified by race, national origin or income" (EPA, 2022, para. 1). This executive order created the Environmental Protection Agency’s (EPA) EJScreen, first developed in 2010 and released to the public in 2015. The goal of EJScreen is to “reflect a balance between simple, screening-level information and high-quality data” and to “assess the potential for disproportionate environmental impacts and other significant environmental justice concerns for populations across the country” (EPA, 2022, para. 2). The EPA has since released other versions of this tool with improvements and now other federal agencies have followed suit. The most recent screening tool created for the purpose of helping agencies identify environmental justice communities is the Climate Economic Justice Screening Tool (CEJST), created by the Biden Administration’s Executive Order 14008, titled *Tackling the Climate Crises at Home and Abroad*. This EO also established the Justice40 initiative in January of 2022 that allocates \$29 billion towards disadvantaged communities. An in-depth discussion of the two federal screening tools, EPA EJ Screen and CEJST, are below.

EPA EJScreen

EPA EJScreen was created out of the presidential Executive Order 12898, Federal Actions To Address Environmental Justice In Minority Populations and Low-Income Populations. This EO instructs all federal agencies to collect, maintain and analyze information assessing and comparing environmental and human health risks borne by populations identified by race, national origin or income" (Environmental Protection Agency, 2022). This tool's main goal is to help users identify people of color and/or low-income populations, potential environmental quality issues and uses a combination of environmental and demographic indicators to do so. The demographic information includes the average of two demographic indicators; low-income and people of color. The EPA EJScreen uses 12 indexes within the tool (shown in Figure 2) which are then calculated into an EJ Index:

$$\begin{aligned} & (The\ Environmental\ Indicator) \times \\ & ((Demographic\ Index\ for\ Block\ Group) - (Demographic\ Index\ for\ US)) \\ & \times (Population\ Count\ for\ Block\ Group) \end{aligned}$$

This specific formula is used because for each environmental factor it finds the block groups that contribute the most toward the national disparity in that environmental factor. It can highlight which locations are driving the overall net disparity. By "disparity" in this case we mean the difference between the environmental indicator's average value among certain demographic groups and the average in the rest of the US population" (Environmental Protection Agency, 2022). However, this tool "should not be used to label an area a EJ community" (Environmental Protection Agency, 2022). Other ways the tool can be used are for educational programs, grant writing, and community awareness efforts. Table 1 depicts the different indicators included in the screening tool score.

EPA EJScreen			
Pollution/Environmental Indicators	Socioeconomic Indicators	Health Disparities/Indicators	Climate Change Data
Particulate matter 2.5	Demographic Index	Low Life Expectancy	Wildfire Hazard Potential
Ozone	People of Color	Heart Disease	Drought
2017 Diesel Particulate Matter	Low Income	Asthma	Coastal Flood Hazard
2017 Air Toxics Cancer Risk	Unemployment Rate		100 Year Flood Plain
2017 Air Toxics Respiratory HI	Linguistically Isolated		Sea Level Rise (NOAA)
Traffic Proximity	Less Than High School Education		
Lead Paint	Under Age 5		
Superfund Proximity	Over Age 64		
RMP Facility Proximity			
Hazardous Waste Proximity			
Underground Storage Tanks			
Wastewater Discharge			

Table 1: EPA EJScreen Indicators

This table compiles all the indicator categories that are present within EPA EJ Screen.

Climate and Economic Justice Screening Tool

The most recent tool created came out of the Biden Administration EO 14008, titled *Tackling the Climate Crises at Home and Abroad*, establishing the Justice40 initiative in January of 2022. The goal of this initiative is for Federal agencies to work with states and local governments to “deliver at least 40% of the overall benefits from Federal investment in climate and clean energy to disadvantaged communities” (Young, 2021, p.1). Besides the allocation of benefits, Justice40 also includes provisions for the creation of a Climate and Economic Justice

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Screening Tool (CEJST) to help agencies identify disadvantaged communities, which is different from the EPA EJScreen. This tool identifies disadvantaged communities as “those that are marginalized, underserved, and overburdened by pollution. These communities are at or above the thresholds in one or more of eight categories of criteria” (Young, 2021, p.1). The criteria and indices used in this tool are included below in Table 2.

In a comparison of EPA EJScreen and CEJST, Bolston et al. (2022) notes the exclusion of race and suggests this was intended to protect against legal challenges. However, they recognize that “[d]espite this, it is well recognized that race is a central determinant of who experiences environmental harm and inevitably leads to questions of the efficacy of CEJST” (Bolston et al, 2022). From the data compiled in this tool, 48217 is identified as a disadvantaged community, but the categorized thresholds for characterizing ‘disadvantaged’ are different depending on the census tract with 48217.

Climate & Economic Justice Screening Tool (CEJST)							
Climate Change Data	Energy	Health	Housing	Legacy Pollution	Transportation	Water and Wastewater	Workforce Development
Expected agriculture loss rate	Energy cost	Asthma	Historic underinvestment	Abandoned mine land	Diesel particulate matter exposure	Underground storage tanks and releases	Linguistic isolation
Expected building loss rate	PM 2.5	Diabetes	Housing cost	Formerly used defense sites	Transportation barriers	Wastewater discharge	Low median income
Expected population loss rate		Heart disease	Lack of green space	Proximity to hazardous waste facilities	Traffic proximity and volume		Poverty

Projected flood risk		Low Life Expectancy	Lack of indoor plumbing	Proximity to Superfund sites (National Priorities List (NPL))			Unemployment
Projected wildfire risk			Lead paint	Proximity to risk management plan (RMP) facilities			High school degree attainment

Table 2: CEJST Indicators

This table compiles all of the indicator categories that are present within the CEJST.

Existing EJ Screening Tool Work in Michigan

A 2019 master’s project by SEAS students Laura Grier, Delia Mayor and Brett Zeuner sought to address the feasibility of a Michigan specific screening tool “that would display environmental, social, and health data relevant to environmental justice” (Grier et al., 2019, p.2). They used information pulled from 30 semi structured interviews with EJ leaders and completed an analysis of three major screening tools, EJ Screen⁵ from the US EPA, CalEnviroScreen⁶ used by the California EPA, and StoryMap⁷ and What’s in My Neighborhood,⁸ both used by the Minnesota Pollution Control Agency. The researchers provided strengths and limitations for each tool and then provided recommendations for the Michigan specific state level tool (Grier et al., 2019).

Another previous master’s project completed by SEAS students Molly Blondell, Wakako Kobayashi, Bryan Redden, and Arianna Zrzavy in 2020 provided critical insight for this project. This project sought to review all statewide EJ screening tools in existence and generate

⁵ <https://ejscreen.epa.gov/mapper/>

⁶ <https://oehha.ca.gov/calenviroscreen>

⁷ <https://mpca.maps.arcgis.com/apps/MapSeries/index.html?appid=f5bf57c8dac24404b7f8ef1717f57d00>

⁸ <https://mpca.maps.arcgis.com/apps/webappviewer/index.html?id=9d45793c75644e05bac197525f633f87>

recommendations for the creation of a Michigan specific screening tool. In doing so, they interviewed scholars, state staff, and advocates involved in the development of EJ screening tools. After the initial round of interviews, researchers conducted subsequent interviews employing the snowball method to find interviewees (Parker et al., 2019). They then examined the data acquired from interviews using NVIVO 12 Plus software, creating deductive codes based on the literature reviews, and inductive codes based on emerging themes from the interviews. This study resulted in specific recommendations to the State of Michigan on how to develop, implement, and advocate for EJ with a Michigan-specific screening tool (Blondell et al., 2020).

Both master's projects were instrumental in the development of MiEJScreen,⁹ Michigan's first state-specific mapping tool which is modeled using CalEnviroScreen (Lambeth, 2020; EGLE, 2022). MiEJScreen is a screening tool used to help identify Michigan communities disproportionately impacted by multiple pollution sources and with population characteristics that make them more susceptible to the effects of pollution. This EJ screening tool utilizes environmental, health, and socioeconomic data from state and federal government sources. The tool also combines data to show a MiEJScreen 'score,' which compares the EJ conditions of all Census tracts in the state. Another feature of MiEJScreen is the ability to view individual categories or indicators for the different Census tracts. Furthermore, a high MiEJScreen score reflects a Census tract with a high level of pollution burden and vulnerable populations compared to other communities in Michigan (State of Michigan, 2023).

Indicators, or measures that specify the level of something, in the MiEJScreen model are a metric of either environmental conditions or population characteristics in Michigan communities. Environmental condition indicators include measures of environmental exposure and effects and symbolize environmental health risk factors present in Michigan communities. Population characteristic indicators include measures of sensitive populations and socioeconomic factors, providing data on biological and societal vulnerabilities found in communities that can increase their susceptibility to environmental conditions. MiEJScreen specifically utilizes the categories, indicators, and scoring calculation detailed in Figure 7 (State of Michigan, 2023).

⁹ <https://egle.maps.arcgis.com/apps/webappviewer/index.html?id=b100011f137945138a52a35ec6d8676f>

Categories	Environmental Exposure	Environmental Effects	Sensitive Populations	Socioeconomic Factor
	NATA Air Toxics Cancer Risk	Proximity to Cleanup Sites	Asthma	Low Income Population
	NATA Respiratory Hazard Index	Proximity to Hazardous Waste Facilities	Cardiovascular Disease	Black, Indigenous, People of Color Population
	NATA Diesel Particulate Matter	Impaired Water Bodies	Low Birth Weight Infants	Educational Attainment
	Particulate Matter (PM _{2.5})	Proximity to Solid waste Sites and Facilities	Blood Lead Level	Linguistic Isolation
	Ozone	Lead Paint Indicator	Life Expectancy	Population Under Age 5
	Traffic Density	Proximity to RMP Sites		Population Over Age 64
		Wastewater Discharge Indicator		Unemployment
				Housing Burden
Indicators	Environmental Conditions (Average percentile of Environmental Exposure indicators + 0.5 x average percentile of Environmental Effects indicators) $\frac{\text{Environmental Exposure} + 0.5 \times \text{Environmental Effects}}{2}$		Population Characteristics (Average percentile of Sensitive Population indicators x average percentile of Socioeconomic Factor indicators) $\frac{\text{Sensitive Population} \times \text{Socioeconomic Factor}}{2}$	
Score	Final Composite Score = Environmental Conditions score x Population Characteristics score MiEJScreen Score			

Figure 7: MiEJScreen scoring matrix and indicators.

This table compiles all of the categories, indicators, and the scoring matrix that is used in MiEJScreen.

Community Level Screening Tools

In contrast to the methods used to create Federal or State level Screening Tools, the work of Bhandari et al. (2020) speaks to EJ screening tools at the community level. The focus of their study is centered around the creation of a community-based EJ screening tool for the Houston-Galveston-Brazoria (HGB) region (2020). The HGB region is home to a large petrochemical industry, similar to the 48217 zip code in Southwest Detroit, which renders this article especially salient to our study. Bhandari et al. (2020) gathered data at the Census tract level including eight counties and compiled public datasets to display indicators of environmental health inequities. The indicators are organized into five categories (domains): “social vulnerability, baseline health, environmental exposure and risks, environmental sources, and flooding” with multiple indicators under each domain (p. 2-3). The data were then combined into a model called “ToxPi” to show the distribution of scores across Census tracts (Bhandari et al., 2020).

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Schulz et al.'s (2016) focus on the consequences of historical processes that have led to the distribution of environmental health risks by “race, ethnicity, and socioeconomic status in the Detroit Metropolitan area” (p. 289). While their scope at the Metro Detroit level is larger than Bhandari's (2020) study and our study, their work provides useful data and measures to inform the EJ screening tool we create. For example, the authors draw on data from the Toxic Release Inventory (EPA, 2015c), the Department of Environmental Quality, the US Department of Commerce, and the Michigan Department of Transportation (Schulz, 2016). They also pulled data from the EPA's National-Scale Air Toxics Assessment for Diesel Particulate Matter (EPA, 2015b), the EPA's Cancer Risk and Respiratory Risk assessments (EPA, 2015a), and demographic data from the 2009-2013 American Community Survey (Schulz, 2016).

To summarize, when developed collaboratively with the community the tool is meant to serve, EJ screening tools can be highly useful for advocates, educators, and decision makers to inform more equitable policies (Arriens et al., 2020). They help “visualize and quantify the cumulative and disproportionate environmental burdens—and therefore environmental injustices—certain communities face” (Arriens et al., 2020, p.1). This community based model of developing screening tools is what we sought to utilize for the creation of our Metro-Detroit Specific Module.

Methods

To conduct research into mapping community survival in Southwest Detroit for our Metro-Detroit Specific Module, the student team utilized a mixed-methods approach including indicator identification, Metro Detroit GIS Data Collection, as well as ArcGIS Pro, and ultimately ArcGIS StoryMap to display findings. As mentioned previously, we wanted this module to be informed by the community, so the 20 interviews conducted with 48217 residents guided the search for which data layers to include on the module.

Indicator Identification

For the quantitative analysis, we used existing data sets on specific indicators of EJ. To identify which indicators would be included in the final tool, we reviewed and compiled indicators that have previously been used to address EJ, social vulnerability, and community

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survival across EPA EJSCREEN, the CEJST tool, and MiEJScreen. To ensure that the indicators compiled were relevant to the community, we asked interviewees specific questions regarding the creation of the tool and then coded our interviews to be able to identify the indicators mentioned that are missing from the current iteration of MiEJScreen. We then collected data where it is available, primarily through EGLE and other EGLE affiliates such as MDOT, and local government agencies in the metro-Detroit area, such as the Southeast Michigan Council of Governments (SEMCOG). We also surveyed institutions and organizations in Metro-Detroit addressing the many facets of EJ and community resilience to attempt to find relevant local data sets, including statewide groups such as the Michigan Advisory Council on Environmental Justice and Michigan Environmental Justice Coalition, as well as local nonprofit and community organizations, including the SEAS Detroit Sustainability Clinic, Detroiters Working for Environmental Justice, and Southwest Detroit Environmental Vision. The scale of this quantitative data collection was on a tri-county level, including Wayne, Macomb, and Oakland counties.

Next, we vetted the collected data using EGLE's Quality Assurance Project Plan for Secondary Data. Each vetted dataset was incorporated into the ArcGIS Platform as a context layer. As mentioned previously, this tool is rooted in community input. One of the data layers, the Community Asset and Incidents layer, came directly from an in-person community mapping session. We brought printed satellite view maps of 48217 and sat down with our community advisor Theresa Landrum, who pointed to locations of community assets as well as environmental injustice incidents such as tank explosions at Marathon Oil Refinery as seen in Figure 8. We marked and later digitized these points using ArcGIS to display this data specific to 48217. These maps are integrated into the StoryMap so that viewers can see data of specific incidents and assets within residents' collective memory visualized—in direct contrast to the attempts to invisibilize 48217 by people in power.

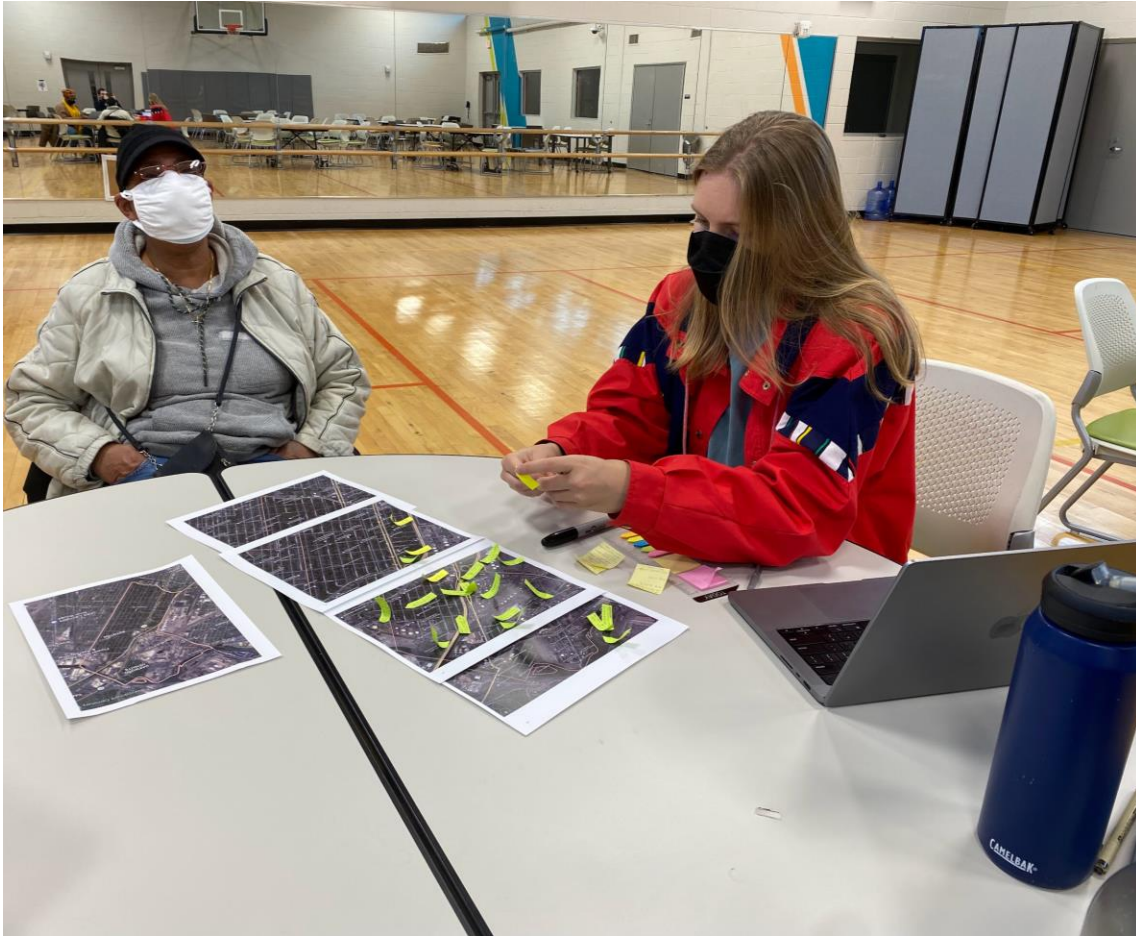


Figure 8: In Person Mapping Session with Community Advisor Theresa Landrum at Kemeny Center in 48217.

This figure depicts research team member Skyler Kriese and Theresa Landrum completing an in person mapping activity to visualize information on environmental incidents and hazards as well as community assets.

Metro-Detroit GIS Data Collection Survey

To get an idea of the data that already existed relevant to the MiEJScreen Module, we distributed a structured quantitative, GIS Data Collection survey among organizations in the metro Detroit tri-counties of Wayne, Oakland, and Macomb that are concerned or related to EJ. First, we identified recipient organizations via a web search of relevant keywords and the networks of our community advisors, clients, and team. The goal of this survey was to identify

institutions and organizations which are aware of or maintain data sets which reflect the EJ conditions of the metro-Detroit area and what indicators would be important to include in the screening tool. An example of the GIS Data Collection survey can be found in Appendix B.

Results

Context Layers for MiEJScreen Module

The additional context layers of the tri-county area (Oakland, Macomb, and Wayne) fill several key gaps in MiEJScreen's data. They include truck routes, parks, automotive facilities, grocery store locations, hospital locations, urgent care facility locations, and traffic volumes. Data inclusion requests from 48217 residents during interviews coupled with data availability guided the decision regarding which layers to include in the module. Hospital locations, automotive facilities, and grocery store locations supplement data already available through MiEJScreen, while truck routes, parks, urgent care facility locations, and traffic volumes offer new categories of data to MiEJScreen. Figure 9 depicts Grocery Store Locations and Truck Routes, which were both mentioned during participant interviews. The additional layers can be found in Appendix C: urgent care facility locations, parks, sidewalks and crosswalks, and automotive facilities.

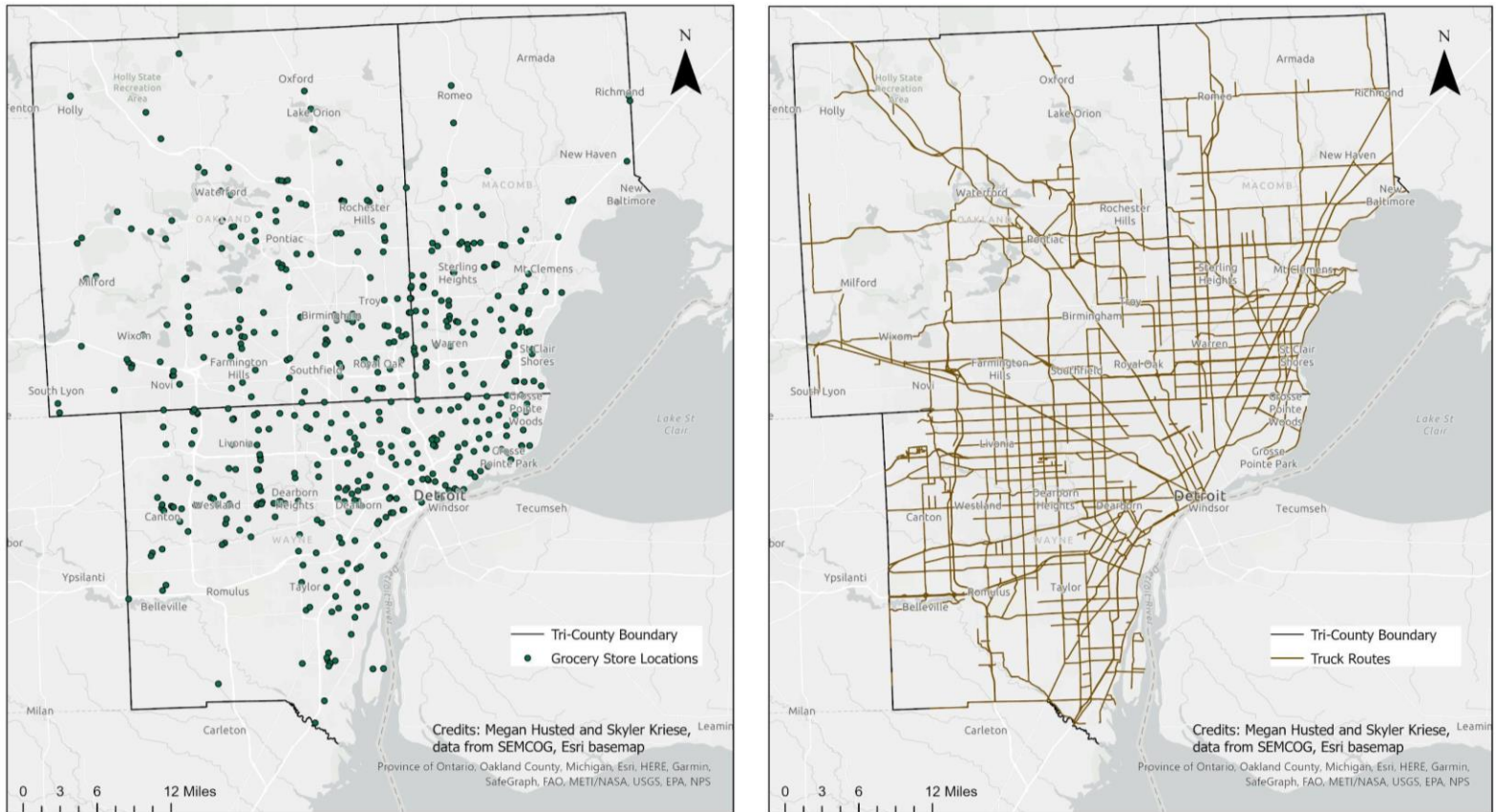


Figure 9: Map depicting Tri-County Boundary of Oakland, Macomb, and Wayne with Grocery Store Locations and Map depicting Tri-County Boundary of Oakland, Macomb, and Wayne with Truck Routes.

These maps depict two context data layers, Grocery Stores and Truck Routes, that are additional data layers sourced for the module of MiEJScreen. Both layers were mentioned by interviewees as information they would want to see included in the module.

MiEJScreen Technical Recommendations

The following recommendations come from our general analysis of MiEJScreen by comparing it with other EJ screening tools, such as the EPA’s EJScreen and the White House’s CEJST, as well as from our own use of MiEJScreen over the duration of this project. Our design, indicator, communications, and use recommendations center around usability and making the tool more accessible to folks without a technical background.

Design-Related:

Design recommendations for EGLE to consider to increase user accessibility include (1) including a note to users about scale dependency. Specifically, when certain layers are checked, they may not all show until the user is zoomed to a particular scale, which should be made clear as soon as a layer with scale dependency is checked. (2) Environmental contamination sites should have descriptions including data known about the source of the contamination, types of chemicals present and their respective health hazards, so that users can use this information to more easily conduct deeper research or make decisions based on the data. (3) Font size of street names and other labels on the map could be enlarged for improved readability when zoomed to the region of a few census tracts or smaller. (4) Label administrative buildings versus factories. For example, Marathon Oil Corporation's factory in 48217 is displayed as an administrative building when the factory under the same ownership engulfs much of the surrounding landing area but is unlabeled. (5) Former industrial sites should be labeled to illustrate a likely risk of encountering pollutants and toxins in the area. For example, Wilbur Ellis Connel is unlabeled, while the Former Wayne Chemical Building is labeled. (6) Finally, including an avenue for residents to self-report data that could then be incorporated into MiEJScreen after undergoing review would assist keeping MiEJScreen up-to-date and specific down to the community-level.

Indicator-Related:

The first indicator related recommendation is to map industries as polygon data as opposed to point data to show the full extent of land use. For example, Marathon Petroleum Company shows up as Figure 10 in the default setting of MiEJScreen, which does not accurately depict what is present in the area, shown on Figure 11.

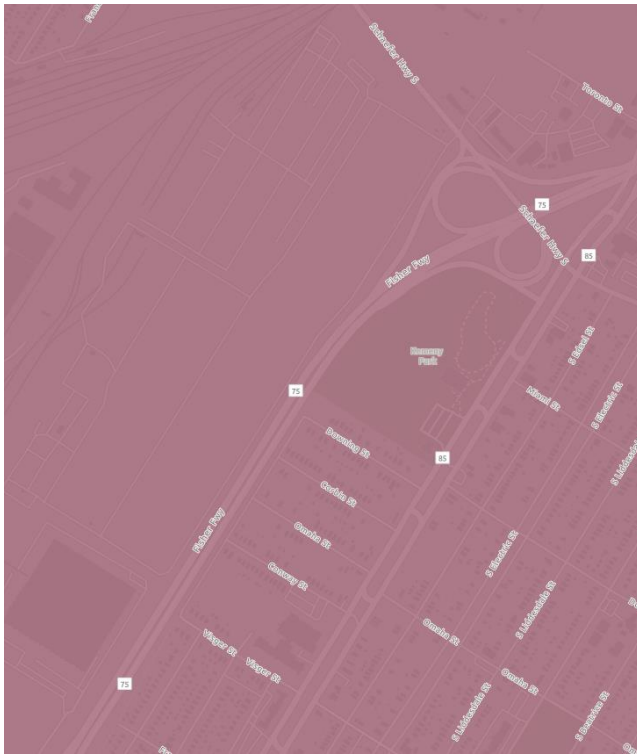


Figure 10: Default Setting in MiEJScreen of Marathon Oil (Left)

Figure 11: Other Setting in MiEJScreen of Marathon Oil (Right)

Figure 10 depicts the default setting in MiEJScreen that does not show the presence of the oil refineries that are present in the area. Figure 11 depicts the satellite view with more detail, but this view in MiEJScreen is not a default view.

The second indicator related issue is the scoring methodology of certain areas on the map that have a MiEJScore of 0. For example, Zug Island shows up in MiEJScreen as blue, having a MiEJScreen Score of 0, because no one lives there, but Zug Island is still a point source and major hub of pollution for surrounding communities. Our recommendation is for areas in MiEJScreen that remove population characteristics like industrial sites such as Zug Island, there should be a note to the MiEJScreen viewer that the industrial site is factored into the environmental conditions score of surrounding populated areas, even though the industrial site itself has a score of 0 for being unpopulated.

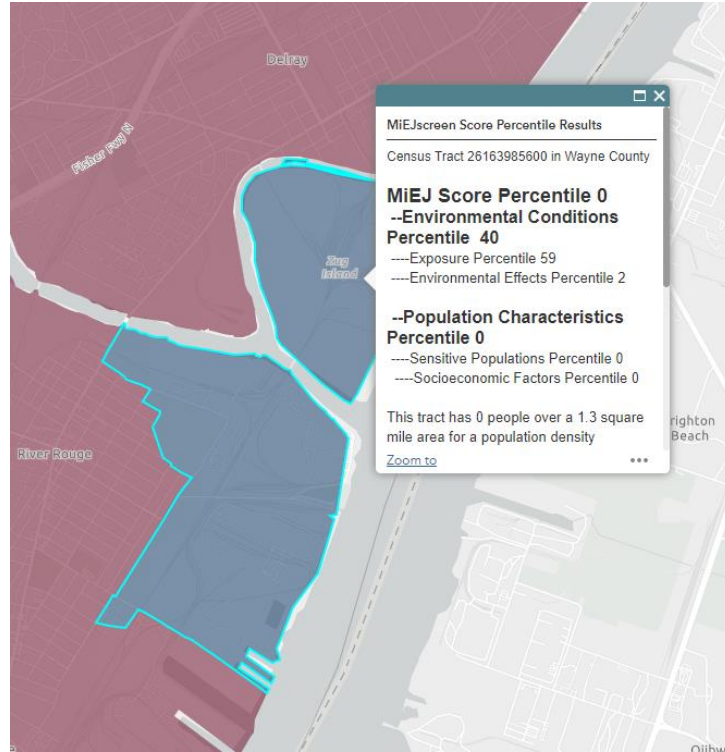


Figure 12: MiEJScreen Output of Zug Island

This figure depicts the MiEJScreen pop up window that presents itself when selecting Zug Island that gives the user information on the MiEJScreen Score of the area with the MiEJ Score Percentile being 0.

Lastly, we would like to see the inclusion of data that could dictate the potential of how many people would be affected by certain environmental hazards for different EJ events. For example, if there are leaking underground storage containers, which is a context layer within MiEJScreen, how many people would be affected by this event?

Communications-Related:

For the general public to be able to utilize MiEJScreen in a way that they can understand the information presented to them, there should be steps taken to explain the concepts and data clearly and make the information user friendly. For example, MiEJScreen has a context layer depicting Michigan PFAS sites, but does not explain to the user what PFAS is or why it is considered hazardous. The second communications related recommendation is for EGLE to create different tailored educational modules, perhaps for the public or for researchers, that can act as a guide on how to use MiEJScreen and the different functions.

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Use-Related:

MiEJScreen should be used by EGLE and other state entities to prioritize obtaining resources and funds for EJ communities with a high MiEJScreen score, specifically for 48217 and surrounding communities. EGLE should also hire someone to do an accessibility report on MiEJScreen to create a plan to address the above design and communications related recommendations.

Discussion

Critiques of Environmental Justice Screening Tools

EJ Screening tools lack input and review from the communities they are built to serve. To engage the community, mapping tools should be presented in small workshops to increase understanding and applications (Bedsworth et al., 2018). This would facilitate community members “‘ground truthing’ geographic information systems (GIS) data by checking maps against existing conditions” (Bacon et al., 2013, p. 4). Bedsworth et al. (2018) noted an ideal resilience mapping tool -- which they could not find -- would be “an interactive mapping tool that incorporates risk [from projected climate change], along with existing and projected environmental health risks and current and projected socioeconomic data, including climate resilience/adaptive capacity” (p.18). Since this publication, the EPA has released EJScreen 2.0, which is an interactive map that incorporates risks from climate change and health data. However, because it was designed at the national level, decisions made on behalf of a community using the tool ought to include the community in the process to ensure accuracy and equity (United States Environmental Protection Agency, 2022).

These mapping tools also lack diverse and adaptable indices capable of identifying a range of EJ communities (Holifield, 2014). In particular if an EJ community is to be identified through such tools in a binary format, those living in nearly the same conditions could be completely overlooked for dedicated funding, outreach, or whatever the purpose. Additionally, in creating a universally applicable index of disproportionate impact, there is potential to lose the “[d]ifference, diversity, and place specificity in experiences of environmental impact” which is critical to the EJ movement (Holifield, 2014, p.78). Therefore, multiple definitions and indices of disparate impact may be required to fully identify and represent the diversity of experiences within EJ populations.

EJ Screening tools misrepresent lived experience and complex data. Scholars argue that indicators are a simplified version of complex social, political, and ecological processes that distill lived experiences into a number that is then used to make important political decisions (Butt, 2018; Collins, 2022). Indicators also risk reproducing misleading, distorted, or inaccurate knowledge, as data sets incorporated into the tools can be cherry picked or incomplete (Merry,

2016, Catolico, 2022). Furthermore, indicators often mask the different political implications embedded in who creates and maintains the database, who decides on the categories within the tool, what data is important to keep or ignore, and who ensures the benefits are actually flowing to the communities. Overall, indicators can miss the nuanced ways in which people interact with their environment, culturally and socially, and instead present an ahistorical and apolitical rendering of reality on which to base decisions (Sultana, 2011, Merry 2016, Butt, 2018).

Making of Environmental Justice Knowledge

Through the creation of these mapping tools, the state is effectively producing new forms of EJ by determining what indicators should be qualified, the weight those indicators should hold, and ultimately what populations should be considered environmental justice communities overall. Using theories from political ecology, we question who becomes more or less powerful with the establishment of these new environmental metrics and facts as “true”? Who is actually creating these metrics? Where is their data coming from and who is it collected by? Who is deciding what indicators should be used and what weight they should hold? Through research and interviews, it becomes clear that, for the most part, local EJ communities are not the ones creating these metrics and algorithms to be used, and instead rarely get meaningful involvement in the creation and development of these kinds of tools. Instead, these indicators, metrics, and tools are created by the governing state and for the governing state. In the case of MiEJScreen, EGLE staff are ultimately the ones making these decisions and creating these new forms of knowledge.

The resulting scores from these matrices inevitably reinforce the dominant hegemonic narrative that the state perpetuates about specific communities and the people that live there, claiming certain populations are in need of more assistance and resources than others. These overriding narratives can eventually lead to disinvestment and emigration from the area through the portrayal of these communities as EJ communities. Ultimately, the goal of these tools is to label a community in a binary as either an EJ community or not. Yet, as these tools are imposed onto EJ communities without their input, the binary nature of these tools reinforces existing power relationships between them.

Because of the lack of community decision making power in the creation of these tools, community members and residents end up being told a story about themselves by the state, rather

than having the agency to tell their own story. Based on these tools, governing states dictate how they varyingly give resources and finances to certain communities based on their own categorizations of what constitutes an EJ community. Through the creation of a single numerical environmental justice index for each community, the state then directly compares communities without community-specific nuances, which can lead to conflict between communities as they dispute who deserves what portion of the same, limited resources.

StoryMap

To better serve the community's wants and needs, we created a StoryMap to accompany the creation of the MiEJScreen Module. The StoryMap idea was created in response to the participant interviews, with the consultation of our community advisors, to act as an alternative to the MiEJScreen Module. ArcGIS StoryMap allows the creators to embed narrative text and multimedia content within the overall map. We thought this would better combat the ahistorical and apolitical nature of the screening tools, as a StoryMap can account for historical and institutional racism, housing and employment discrimination, strategic disinvestment, lack of regulation of industry in the area, and all other issues mentioned in the participant interviews. A StoryMap can also include assets of the community, such as Eden Park or the Kemeny Recreation Center, that the interviewees are proud of (Participant Interviews, 2022). Lastly, a StoryMap can better account for the perpetrators of the pollution in the area, such as Marathon and AK Steel, whereas a traditional screening tool is a less accessible display of pollution sources since it requires knowledge of mapping tools to navigate and display particular information beyond scrolling through a webpage.

When presenting this information to EGLE, we were met with discussion of why a quantitative-based tool more closely resembling MiEJScreen was necessary, and pushback that a StoryMap may not be a strong enough narrative to drive policy decisions. Implied in this response is that the stories of racism, disinvestment, and oppression are not weighed as heavily as data points on a map. This situation led to many questions, such as whose interests are we serving? Are we further perpetuating the harmful systems that are in place by creating this module?

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This discussion also revealed the power dynamics and conflict between EGLE, the state actor, and the community members in the area, as they feel the state does not represent their best interests nor do they feel heard. Other community members in the 48217 area have spoken out about these issues through other avenues, such as the journal *Planet Detroit*. Robert Shobe, long time activist in the area, was quoted as saying that he has “doubts such tools will meaningfully influence policy actions that will help protect [his] neighborhood” (Catolico, 2022, para. 9). He goes on to say that the pollution in the area has been a problem for generations, so the community “remains skeptical that more data will create urgency to solve the problems” and state entities such as EGLE have created a legacy of distrust and a new screening tool could be just another “empty measure with no regulatory teeth” (Catolico, 2022, para. 9).

48217 StoryMap

The StoryMap offers a historical mapping component of community survival in 48217, including environmental injustice incidents and community assets. The significance of historical mapping was highlighted by multiple interviewees, one of which said,

"We had a car place to rent a car or buy a car. We had bakeries. We had growth. We had a corner store. We had a meat market. We had a fruit stand. If you look on a map from back in the 60s, you'd see how this neighborhood was looking."

Maps and articles online that display change over multiple decades in 48217 due to the impacts of pervasive structural racism, redlining, and industry are rare, thus the StoryMap offers a glimpse into what ought to be a thoroughly documented and discussed history. The environmental injustice incident layer below (Figure 13) and community asset layer (Figure 14) offer a preview of what is documented in the StoryMap. The complete and published StoryMap is forthcoming, to be hosted through the University of Michigan School for Environment and Sustainability.



Figure 13: Environmental Injustice Incident Layer

This figure depicts a handful of the numerous environmental justice incidents that have occurred in 48217 in recent decades, identified by community advisor Theresa Landrum and digitized by the project team using ArcGIS Pro.



Figure 14: Community Asset Layer

This figure depicts a number of community assets in 48217, namely churches, Kemeny Recreation Center, and Black-owned businesses, identified by community advisor Theresa Landrum and digitized by the project team using ArcGIS Pro.

Lessons Learned

EJ Screening Tools are becoming more popular and widely used, so it is important to understand the short term and long term implications of their usage, whether political, structural, or other. Beyond everything else, communities must be consulted in the creation of these tools. Tools reflect community needs, values, and the necessary response to environmental emergencies better when the community is directly involved in the creation. By consulting communities, critiques and suggestions for improvement may come to light, as seen through the community interviews in 48217.

Another outcome of grounding the creation of Environmental Justice Screening Tools in community contexts and values could be the rejection of screening tools in its entirety. Placing weight on alternatives such as StoryMaps or other multimedia productions that better contextualize the area and the needs of the community is one alternative recommendation. This alternative can also avoid ahistorical, aspatial, or apolitical interpretations of data and can communicate needs shown by the community and be an example of a merging of quantitative and qualitative data methods. Lastly, these tools should be used to distribute resources such as grants to make reparations in accordance with our community survival recommendations

Chapter IV: Project Conclusion

Our team of master's students at SEAS undertook research to complement the efforts of EGLE's OEJPA to develop a "Community Resilience Plan" for Southwest Detroit and a 48217 specific module for their MiEJScreen tool. The questions this research sought to answer were as follows: 1) What indicators of environmental justice and community survival are relevant to the lived experience and advocacy of EJ community members in the Metro-Detroit area? 2) How can we combine existing data to visualize indicators of environmental justice and community resiliency in Metro Detroit, in a way that could be replicated for other communities? 3) What actions can the State of Michigan agencies pursue that will uplift environmental justice and community survival in Southwest Detroit. In carrying out this project, we convened and collaborated with a set of community advisors, conducted 20 interviews with Southwest Detroit residents, and coded and analyzed interviews to inform 1) an environmental justice screening tool of the Southwest Detroit area and 2) recommendations for the Community Resilience Plan and utilizing the screening tool.

Challenges and Limitations

Navigating State-Community Relationships

One of the most challenging aspects of this project was navigating the relationships and priorities of local resident communities and that of our client, the government of the State of Michigan. From the start of this project, it became clear that there were differences in priorities between what we were hearing from the community about their needs, and what we were hearing from EGLE.

For EGLE, this project was an opportunity to hear from local residents of 48217 what factors and indicators they would like to see represented in the state-wide environmental justice screening tool, MiEJScreen. However, soon after talking to our advisors in the community, we realized that residents were not as enthusiastic about the use of these kinds of tools and instead wanted to see something fundamentally different that the government was doing to address and represent environmental injustice and community resilience in their community. EGLE was resistant to this push back, as they had already invested a great deal of time and resources into

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developing and working within the frameworks of the current MiEJScreen tool. Acting as intermediaries between the community and EGLE, our capstone team worked to balance these differences in priorities, ensuring that our final deliverables would be grounded in lived experiences of residents and useful to both EGLE and to the residents of 48217.

Limited Available Data

One of the limitations to this project was the lack of available and accessible data. We received no responses to our survey sent to local environmental organizations in Oakland, Macomb, and Wayne counties regarding additional data sets for the EJ screening tool, which left us to utilize public data available to us through EGLE and other government agencies. The limitations around our project team gaining access to government data, even if owned by our client organization EGLE, proved to be another aspect that narrowed the final data pool to include in the map. Two data sets that were mentioned during our interviews that we were not able to find usable data on was flooding and shipping traffic.

Next Steps

The research in this paper is focused specifically on the 48217 community of Southwest Detroit, however more research can be done to include the neighboring cities and communities of River Rouge and Ecorse. By increasing the geographic area into the analysis, more interviews would be needed to be done with residents of those communities in order to strengthen and incorporate new comprehensive recommendations for building community survival in Southwest Detroit.

Community storytelling, scientific research, and the current suite of EJ screening tools all point to an environmental and public health disaster in Southwest Detroit that must be addressed. The recommendations in this report extend past the boundaries of the Community Resilience project by EGLE's OEJPA. Just as the environmental injustices in Southwest Detroit were built on intersectional systems of advantage, such as historic disinvestment by redlining communities, solutions for this community must involve historic investments to serve as reparations for white supremacist culture that still lives in our built environment and frontline communities' lived reality. OEJPA and EGLE at large cannot carry out these recommendations alone; a coalition of

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governmental agencies and actors must be committed to improving the environment and quality of life for the residents of Southwest Detroit. The environmental justice map described and developed with this research can be used to supplement decision making, but it cannot replace engagement with local people affected by any decision. This research highlights the importance of engaging with relevant residents and developing community driven tools during the creation of any community-level screening tool, especially when replicating this research in other geographic areas.

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Appendix A

Interview Guide

Introductions of Interviewee (background)

- **Can you tell us your name, age, and a little bit about yourself**
 - Where do you live in Detroit and how long have you lived here?
- **What are some of the things you do in 48217?** Job, community organizations, churches, etc.
- **Where are you/your family originally from?** Why did you/they move to Detroit/ SW Detroit?

Other Follow Up Questions *(if they don't cover this already in their answer)*

- What zip code do you live in?
- Age (range?) (18-25, 25-30, etc)
- What are your favorite things about living in this community?
- What events/history is important for understanding the city of detroit/48217?

What do we want to know from this section:

- The history of the people in the environment
 - Who are they
 - Where are they/their family from
 - What is their relationship with southwest Detroit

Transition: Now we would like to ask some questions around what community health and a good quality of life might look like to you. Again if you feel uncomfortable at any time, you do not have to answer the questions. Thank you for sharing that information about you and your family and now if you feel comfortable, we are going to ask some questions about your health and your families health.

Health and Quality of Life

- What kind of illnesses or health challenges have you or the people around you experienced in 48217?
 - (Any asthma, cancer, diabetes, COVID, etc.)
- What do you think causes these health issues?
 - How do you think the industrial pollution or industry in the area has an impact on your health?
- What does a healthy community look like to you? (air quality, vegetation, ability to grow a garden, - personal conversation to open them up - be straightforward and specific)

What do we want to know from this section:

- What is the environmental quality like
 - How they view the health of the neighborhood as tied to environmental quality (hazards + services + green space)
- How does the environmental quality affect them and the people in the area

Transition: Next we would like to discuss community strengths and weaknesses

Community Resilience Questions:

- What are the existing strengths of your community? (and weaknesses?)
 - What do you love about living in this community?
- What kind of emergencies or crises do you see or experience in Detroit?
 - What is the community already doing well to address these crises? What kind of additional actions need to be taken to address these emergencies/crises?
- What kind of community organizations/groups that you know of are involved in helping people in Detroit?
- What does your community need to make young people/neighbors want to stay/have people choose to move into the neighborhood?
 - How do we get there?
- What do you want your community to look like in 10/20 years?

Follow up:

- (Other people brought up) Food access, incarceration, transportation, etc...

What do we want to know from this section:

- Looking at futurity: what is the community doing now to ensure/improve its future
- What is needed for the just transition in this community
- To inform our anti-resilience resiliency plan

Transition: Now we would like to talk about EJ screening tools and how you think these kinds of tools can and should be used to best represent the stressors you and your community face.

(Context: legislation to use these tools in local/state decision making, allocating resources)

Need a description of the tools

Environmental Justice Screening Tool Questions:

- If there was a map of this community for policy makers to make decisions about your community, what (would you like to see) should be on it? Do you think a map like this would be useful?*
- What should (what do you wish they knew) people inside and outside 48217 know about your community's issues?
- How would you want this map to be used in your community going forward?
 - Follow up: How would you want the government to use this tool?
 - **Do you think it would be useful to have this tool?**
- **Based on our conversation today, is there anything else you would like to see in the map?**

What do we want to know from this section:

- What they want the tool to possibly look like
- What decisions they would want to be made based off the tool

Wrap Up Questions

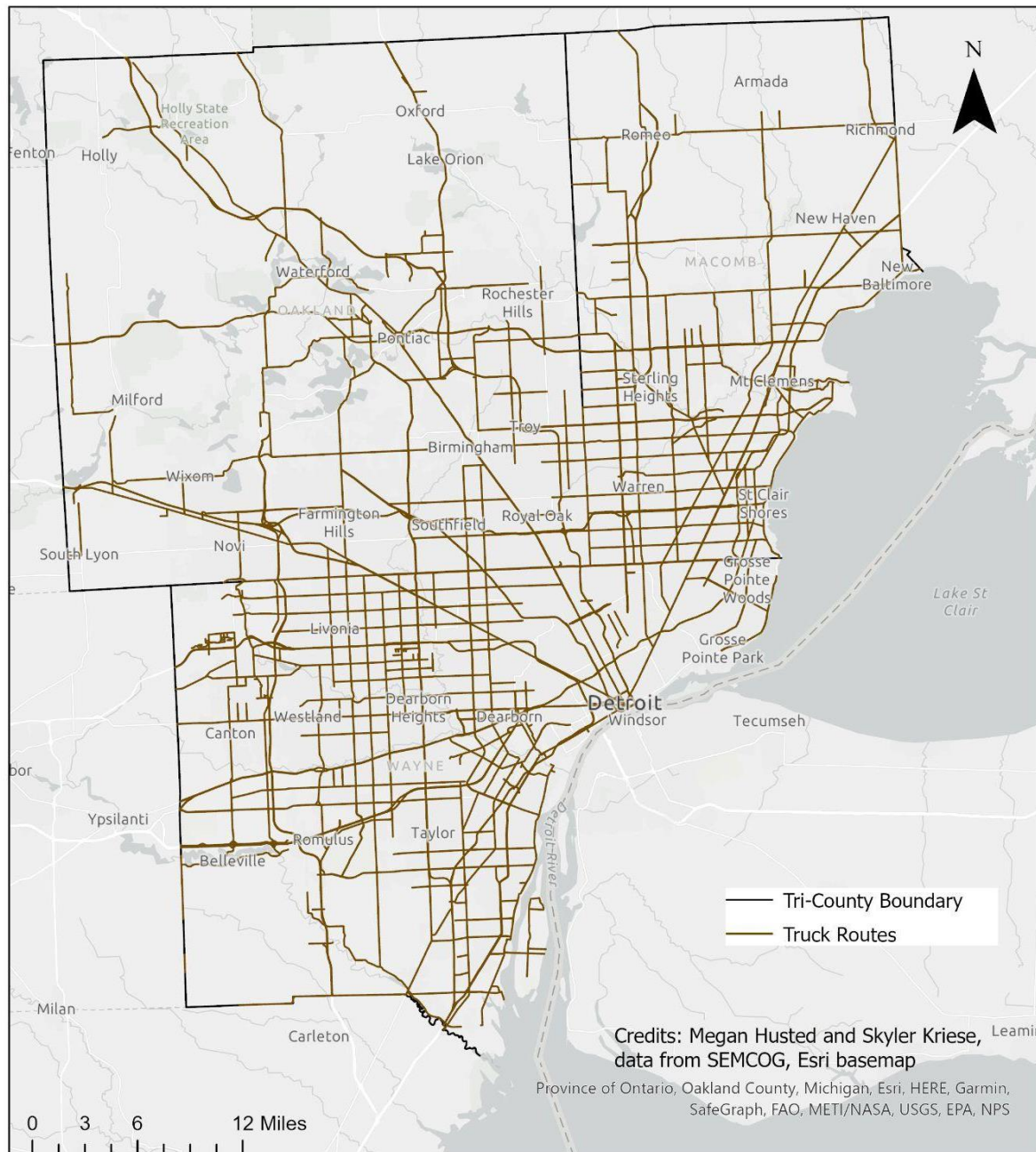
- Are there any issues that you think are important that I have not asked you about?
- **Is there anyone else / any other group you think we should talk to?**
- **Get contact information for gift card if not in person interview**

Appendix B

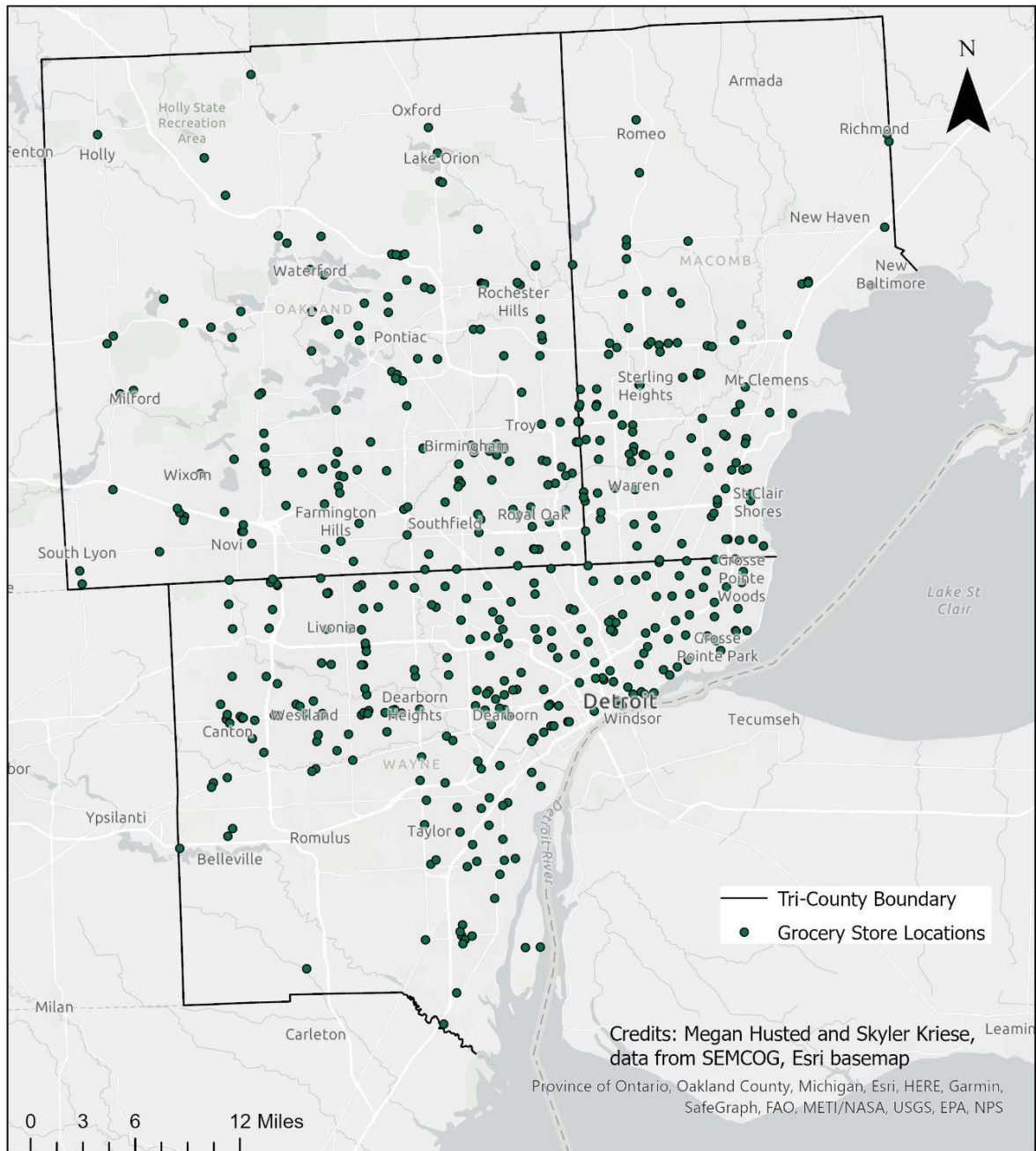
Metro-Detroit GIS Data Collection Survey Questions

- Where is your organization based?
- Does your organization maintain any data related to environmental justice (environmental quality, health, socioeconomic data, etc.)?
 - If so, what are they and are you able to share with the research team?
- Are you or anyone in your organization aware of data sets related to environmental justice specific/relevant to metro-Detroit?
- What does the data set include and how could we access it?
- Are there any special tools required to access the data? What is its format?
- Are there any restrictions with its use?
- Are there any specific data sets you would like us to incorporate into our screening tool even if you do not have access to them?
- If your organization is based in 48217, are there any community members who may be interested in speaking with us?
- Any other thoughts or questions regarding the creation of this tool or the data sets we use?

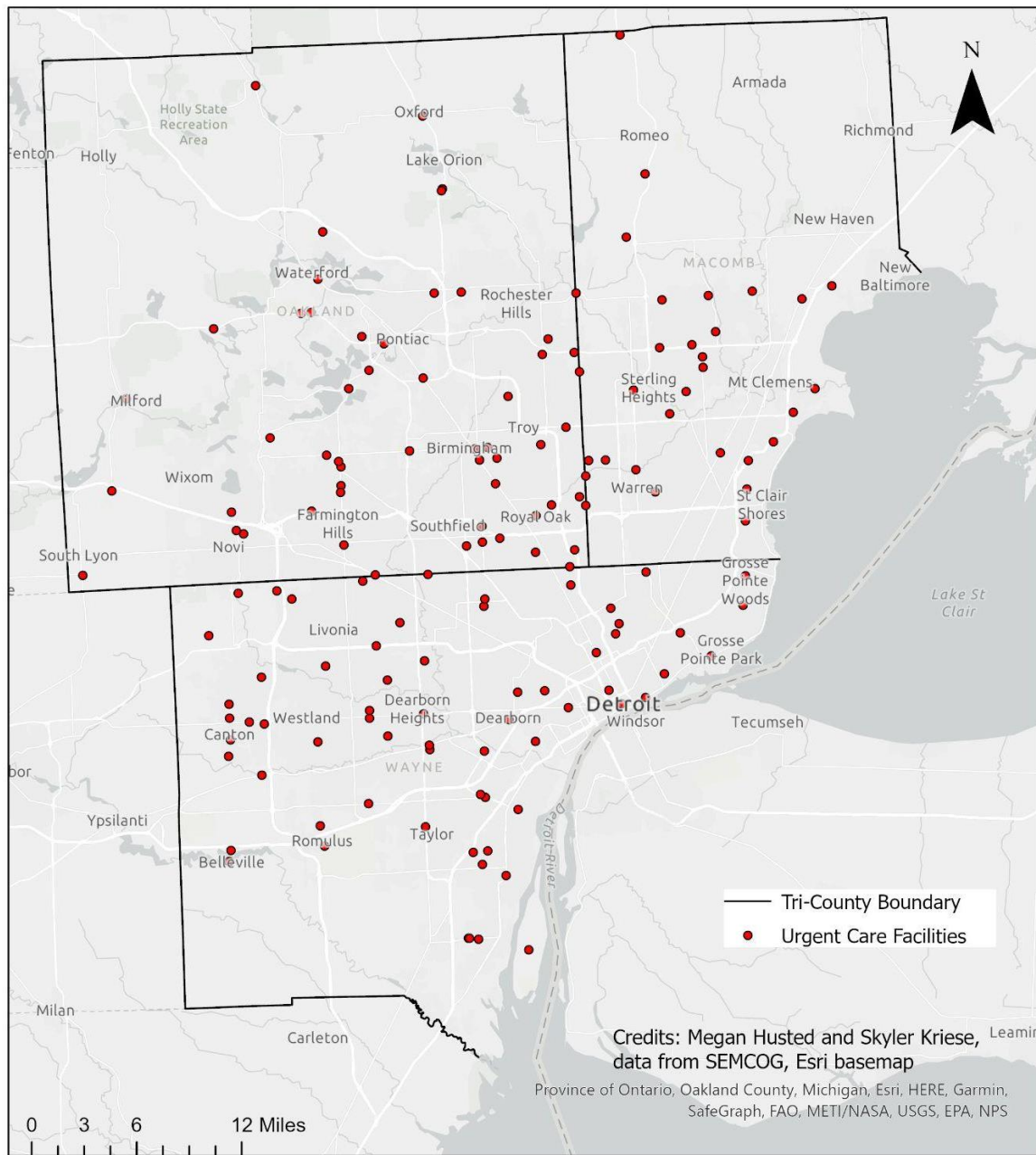
Appendix C: Context Layers



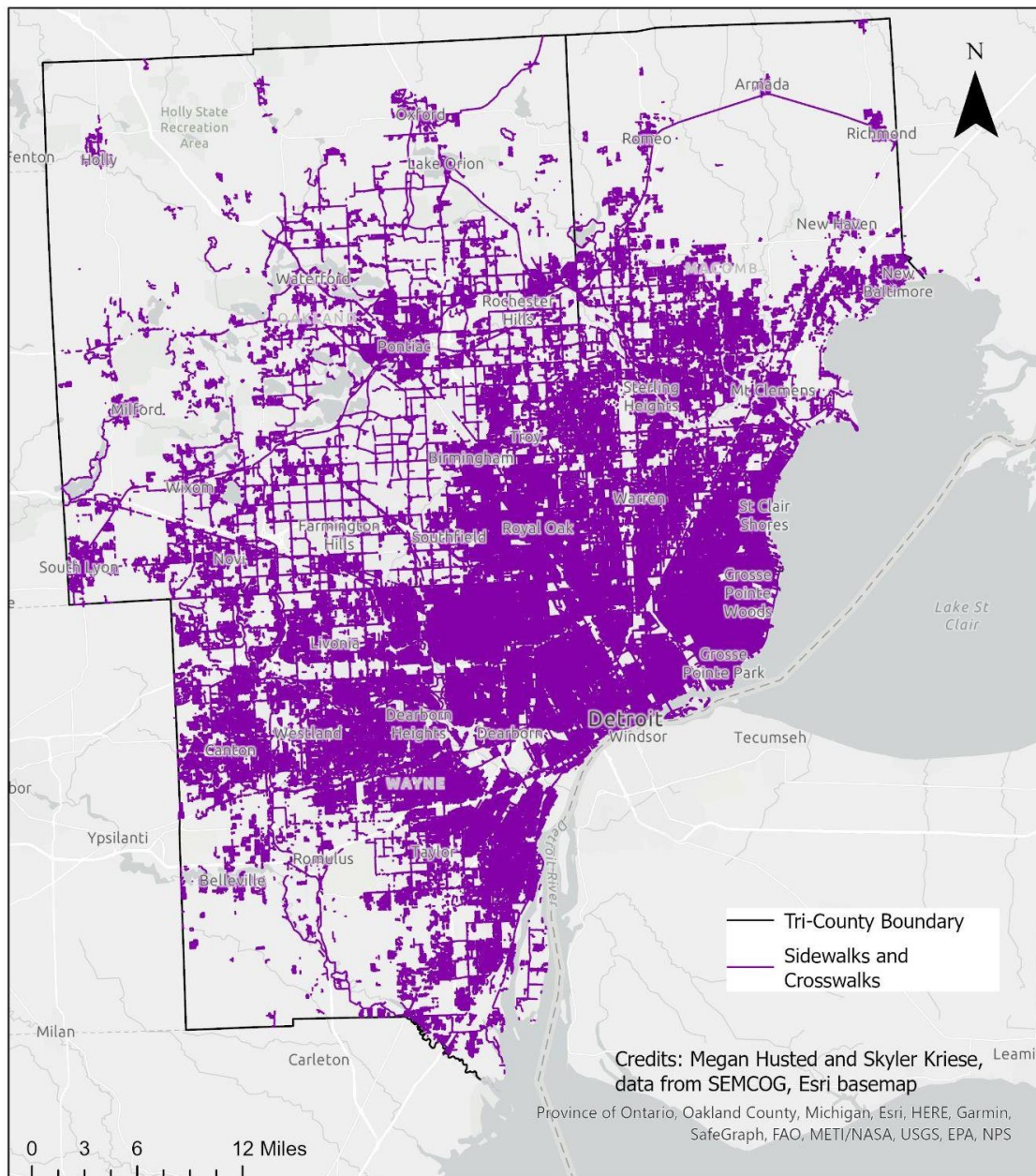
Map of Tri-County Area (Oakland, Macomb, and Wayne) showing the Truck Routes context layer for the MiEJScreen Module.



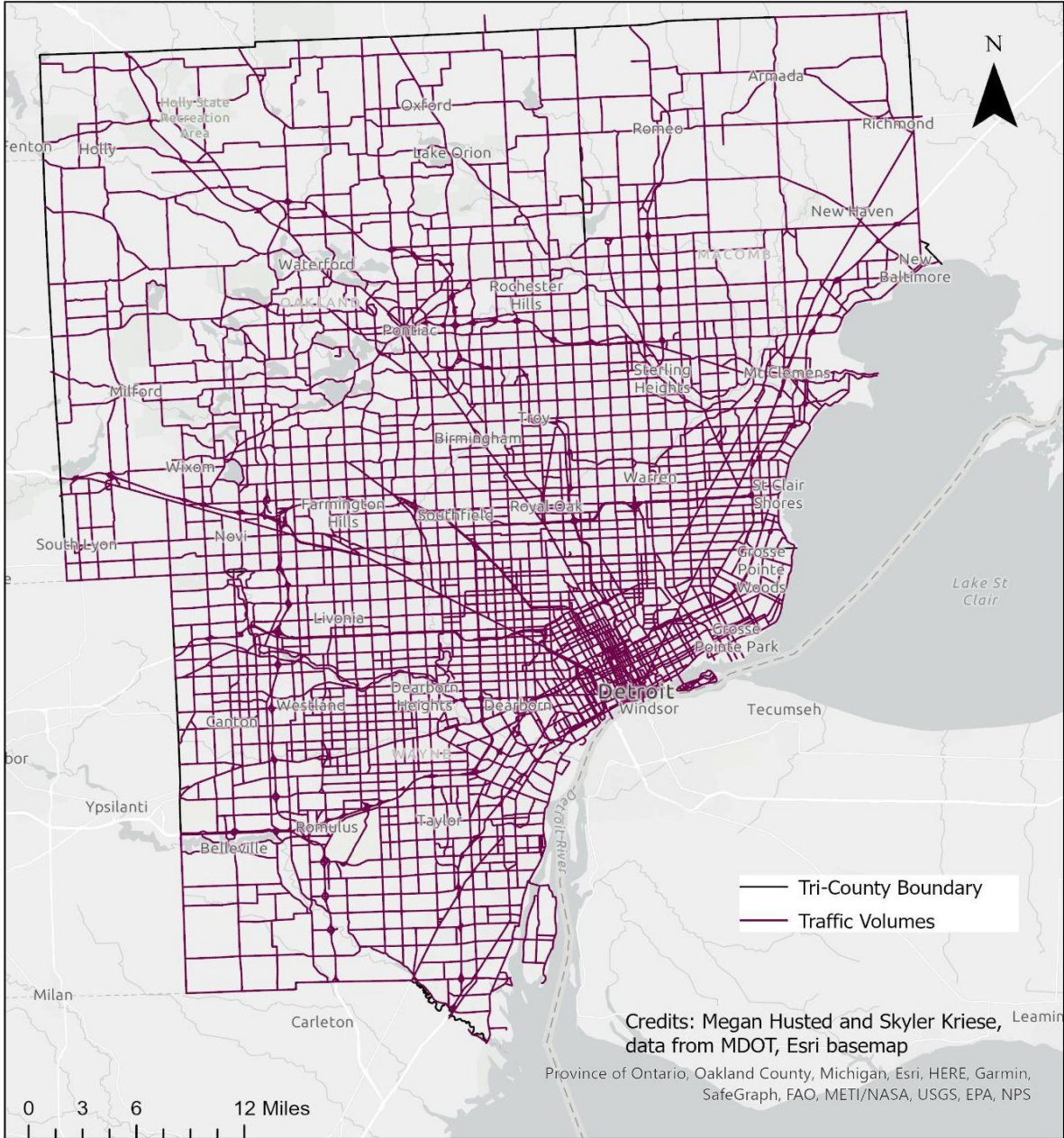
Map of Tri-County Area (Oakland, Macomb, and Wayne) showing the Grocery Store Locations context layer for the MiEJScreen Module.



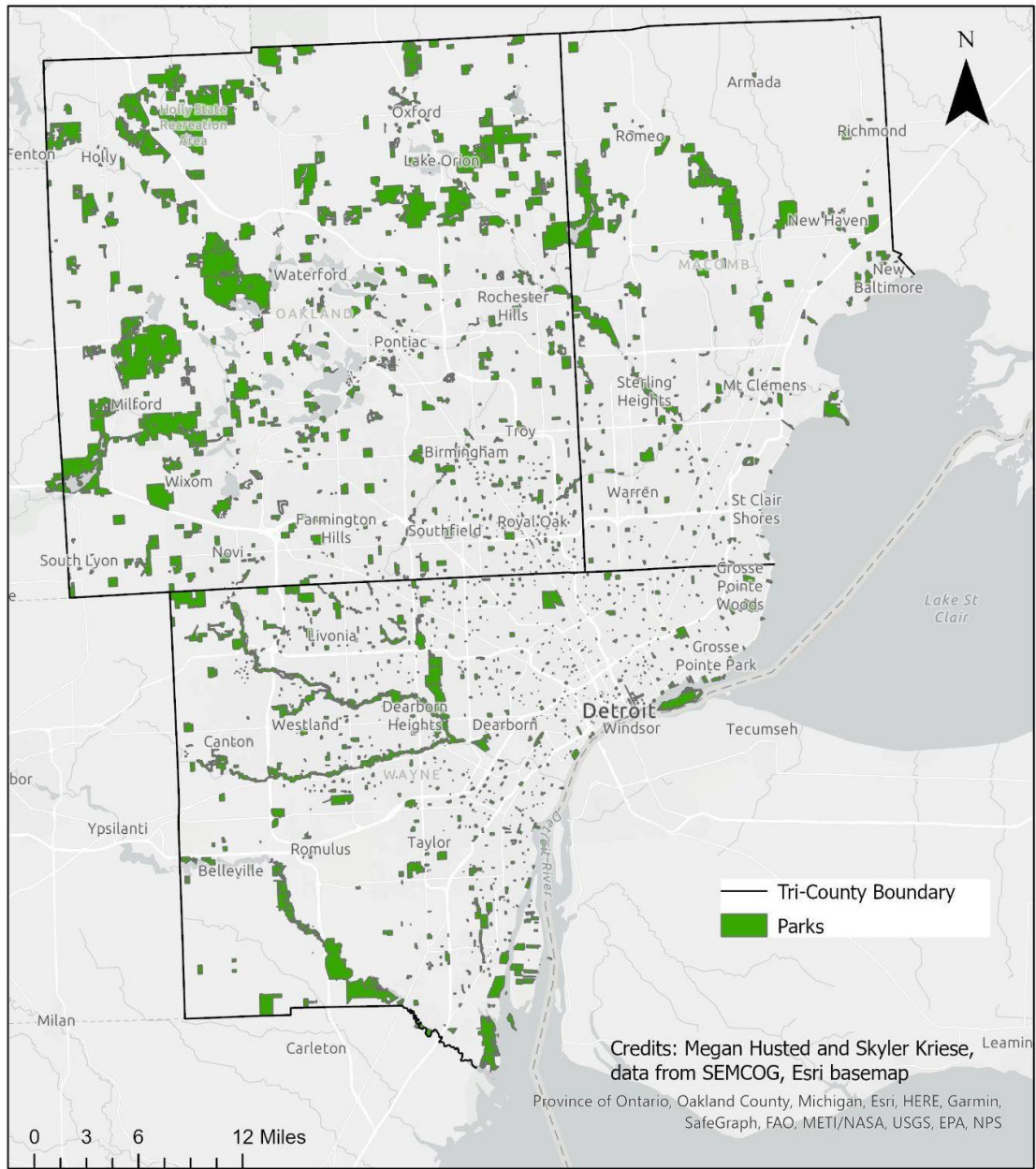
Map of Tri-County Area (Oakland, Macomb, and Wayne) showing the Urgent Care Facilities context layer for the MiEJScreen Module.



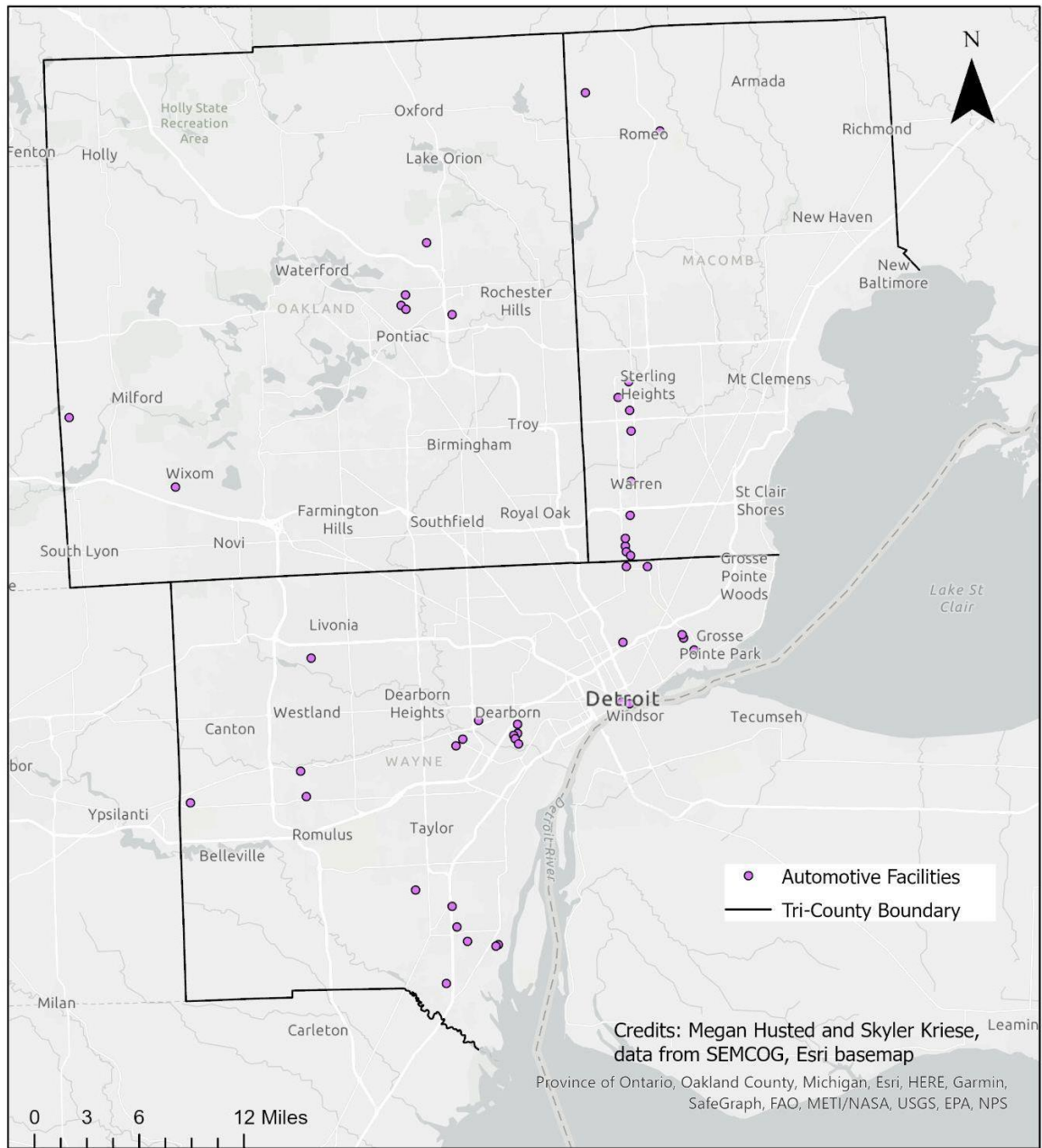
Map of Tri-County Area (Oakland, Macomb, and Wayne) showing the Sidewalks and Crosswalks context layer for the MiEJScreen Module.



Map of Tri-County Area (Oakland, Macomb, and Wayne) showing the Traffic Volumes context layer for the MiEJScreen Module.



Map of Tri-County Area (Oakland, Macomb, and Wayne) showing the Parks context layer for the MiEJScreen Module.



Map of Tri-County Area (Oakland, Macomb, and Wayne) showing the Automotive Facilities context layer for the MiEJScreen Module.

Appendix D

Public Comments on Published Tools

Dear Members of the CEQ,

This letter was developed by master's students at the University of Michigan's School of Environment and Sustainability under the direction and council of Theresa Landrum, Rhonda Anderson, and Dr. Dolores Leonard in response to the recent release of the Climate and Economic Justice Screening Tool (CEJST) for public comment. We are writing to implore the Council of Environmental Quality to pursue further action regarding the development of this screening tool so that it might be transformative for environmental justice communities.

Introduction

Environmental justice screening tools are versatile instruments useful for activists and decision makers to correct unethical policies and conditions. To be useful to the overburdened communities screening tools are meant to serve, they must be routinely incorporated into decision making to effectively direct resources to said communities. Dr. Robert Bullard defines environmental justice communities as those that suffer from the most health impacts from pollution exposure. It embraces that all communities, all people, are entitled to equal protection of our environmental laws, health laws, housing laws, transportation laws, and civil rights laws. It includes equal enforcement of laws and regulations, identifying and eliminating discriminatory practices and policies. The growing body of research, initiated by the United Church of Christ's 1987 "Toxic Wastes and Race" report, reflects that race is undeniably correlated with environmental burdens. Thus, screening tools must address race to drive ethical and equitable outcomes. The importance of accounting for cumulative impacts also must not be overlooked in order for screening tools to move the needle towards achieving environmental justice. In this letter we propose several recommendations for the Council on Environmental Quality's CEJST to make it reflective of and relevant to the concerns of environmental justice communities.

Who are These Tools Meant For?

After reviewing the Climate and Economic Justice Screening Tool for the 48217 zip code, we found the screening tool is not "user friendly "and it doesn't meet people where they are. It severely lacked clarity on how to assess its scoring system and did not offer much usability for those who did not have experience with environmental justice screening tools. As graduate students in environmental justice and life-long environment justice advocates, we ourselves found it difficult to understand and use. The scoring system utilized for the climate and environmental indicators did not state a reasoning behind its assessment with percentiles and how that communicates disadvantaged communities to the general public. The recent technical support document did state the purpose of the scoring and use of percentiles, but it was not released alongside the initial tool. It left us to infer how the scoring process worked based on other environmental justice screening tools, rather than beginning with a clear understanding of scoring for the Climate and Economic Justice Screening Tool.

If this tool is meant to be used by EJ advocates and community members, it is failing. EJ communities are not apt to using something that is hard to navigate and understand - frustration sets in and the tool's use is lost to the target audience. Those that created this tool need to evaluate their audience and provide appropriate and understandable communication materials for those in overburdened communities. Although the technical support document was an important first step, it would be more appropriate to place the information from the methods section in the technical support document onto the methods section of the CEJST webpage. When people access the tool, it would also be appropriate to place a brief description of the percentiles for the tool and explain why these measurements are used to locate overburdened communities.

In addition to the existing scoring system, we recommend a cumulative impact score layer be made available to CEJST list of indicators. Cumulative impact, in this sense, plays an important role by taking into account the combined effects that pollutants have on individuals and communities by incorporating cumulative environmental burden and social vulnerability into the analysis (New Jersey Environmental Justice Advisory Council, 2009). For those using the tool, it would mean an answer that explicitly answers the question “do you live in a community that experiences cumulative environmental impact?”, similar to the portion that identifies a

community as disadvantaged. That would also require a brief description of cumulative impact and how it was determined in CEJST.

Finally, we recommend the tool to create a comprehensive usability guide that includes all of our prior suggestions. A guide that includes plain language shows advocates how to interpret the tool's indicators and measurements for their own communities. This guide should be made available on a separate page for the Climate and Economic Justice Screening Tool website. This guide should be linked at the top of the screening tool webpage as well. This guide, along with our other recommendations, will be important to the success of this tool and Justice40.

Explicitly Including Race in the Screening Tool

We would like to uplift and echo recommendations made earlier this year by Ana Baptista, Robert D. Bullard, Catherine Coleman Flowers, Paul Mohai, Rachel Morello Frosch, Nicky Sheats, Peggy M. Shepard, Kyle Whyte, Sacoby Wilson, and Eberly L. Wright on the proposed CEJST. These recommendations include the necessity of including race, cumulative impacts, and Indigenous Populations and Tribal Areas in this tool.

There are numerous statistical studies that show “race has an independent effect on the distribution of environmental burdens from other socioeconomic factors and is indeed the most potent and consistent predictor of where pollution and other environmental burdens are concentrated” (Ash and Fetter 2004; Bullard et al. 2007; Mohai and Saha 2006; 2015;). CEQ and government in general have shown timidity in addressing systemic racism despite the overwhelming evidence that show race to be the most potent and consistent predictor of many disparities and inequities JUSTICE40 is designed to address. There is also a long racial history in the U.S. that cannot be ignored. The more indicators that capture racist policies and practices, the better off the people that experience these environmental injustices will be.

The proposed CEJST includes an ethnicity variable (linguistic isolation) but no race variable. Will this skew results away from, for example, African Americans? It wasn't clear why race is not being considered since statistical studies (Ash and Fetter 2004; Bullard et al. 2007; Mohai and Saha 2006; 2015; and many others) show that race has an independent effect on the distribution of environmental burdens from other socioeconomic factors and is indeed the most

potent and consistent predictor of where pollution and other environmental burdens are concentrated.

The Importance of Cumulative Impact Analysis

Disproportionate burden, as defined by Adams & Denton (2010), refers to pollution or cumulative impacts disproportionately affecting low-income populations with a high percentage of people of color. Adams & Denton also report that numerous studies show “increased sensitivity to pollution, for communities with low income levels, low education levels, and other biological and social factors” (2010:ix). Higher sensitivity to the pollution coupled with multiple pollutant sources can result in an increased cumulative pollution impact. Cumulative Impacts can play an important role in the effectiveness of environmental justice screening tools as representation of comprehensive environmental burden and, when properly incorporated, can help to dismantle the underlying conditions leading to these environmental injustices. Many mapping tools, (including the EJSCREEN 2.0 and Climate and Economic Justice Screening Tool) currently lack sufficient input and review from the communities they are built to serve and subsequently fail to properly address cumulative impacts in their analysis.

Questions that need clarity for the CEJST: Will investments from the Justice 40 Initiative take into account the level of burden in the community? Or will all communities meeting the minimal environmental and socioeconomic thresholds receive identical investments? In other words, will investments be proportional to impacts, including multiple cumulative burdens? Will communities with the greatest needs be underinvested in?

The Importance of Including Indigenous Populations and Tribal Areas

Tools should have sufficient publicly available data on Tribes for federal agencies to fulfill the trust responsibility and to know when nation-to-nation consultation is required for infrastructure and investment planning that connects multiple agencies: federal, tribal, state, and local. The CEJST ultimately should have a clear strategy for relating to the nation-to-nation consultation policy (executive order 13175), a policy affirmed in January by the Biden Administration. Nation-to-nation consultation can play an effective role in coordinating the analysis from the screening tool with actions that federal agencies and Tribal nations must take. Federal agencies

with datasets relevant to Indigenous peoples should also be engaged as part of the development of the screening tool, including Bureau of Indian Affairs (BIA) and the Indian Health Service, among others.

Environmental Hazards are Not Reflective of EJ Community Concerns

The Reduction and Remediation of Legacy Pollution category is the CEJST's indicator for polluting facilities and sites. However, facilities that violate environmental permits, are in non-compliance, require supplemental environmental projects, or break environmental laws are major environmental hazards that burden EJ communities. We recognize that this data may not be currently or consistently available across the nation, but we implore the Council on Environmental Quality to utilize its authority and capacity to actively collect such data from utilities and other relevant institutions to include in future iterations of the tool.

Legislation and Policy Change is Needed

These tools are significant in their ability to identify disadvantaged/overburdened/environmental justice communities, but they will not be beneficial tools to these same communities unless they can be used to address the ongoing injustices. In other words, understanding disparate and cumulative impacts should allow regulators such as the EPA and EGLE to avoid contributing to these issues. Moreover, Title VI complaints regarding permitted facilities in EJ communities are continuing to challenge the current regulatory framework. Several states have taken the initiative to be proactive on environmental justice with the information provided by their respective screening tools:

- Washington used their screening tool to pass the HEAL Act in 2019, which addresses environmental health disparities at the state level by adopting a cumulative impact analysis tool and establishes an EJ taskforce. The tool was also used for the Clean Energy Transformation Act in 2019.
- *CalEnviroScreen* was used by the CalEPA in 2017 to identify, designate, and create a list of disadvantaged communities for Senate Bill 535 and Assembly Bill 1550; both of which allocated proceeds from their cap-and-trade program to improve public health, quality of life, and economic opportunity for the state's most burdened communities.

- Minnesota’s state agencies have integrated their tools into the permitting process, particularly the Pollution Control Agency (MPCA). Under Statute 116.07 the MPCA is required to analyze and consider “cumulative levels and effects of past and current pollution” before a permit may be issued for industry facilities located in EJ communities.
- New Jersey adopted Environmental Justice & Cumulative Impacts bill (S232) which: defines “overburdened communities” as those with significant Of Color, non- English speaking or low income populations; Requires major polluters seeking or renewing permits in overburdened communities to develop “Environmental Justice Impact Statements” (EJIS) with substantive detail, meaningful public input, and DEP oversight including technical assistance to impacted communities; Requires and empowers DEP to deny or condition certain permits due to disproportionate impacts based on the EJIS.

We suggest that any and all of these legislative actions be considered with the aid of this environmental justice screening tool. Alternatively, similar outcomes could be achieved with the creation of specific guidance regarding the Title VI policies of environmental regulation agencies such as the EPA and EGLE. Under this civil rights law, the federal government and the entities it funds are charged with policing discriminatory practices and outcomes. Policy or legislation change utilizing screening tools such as the CEJST can help these organizations fulfill this mandate.

Signatures



Anna A. Bunting



Dinah George



Megan Husted



Skyler Kriese



John McClure

Theresa Landrum

Theresa Landrum

Appendix D References

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This letter was developed by a group of master's students at the University of Michigan's School of Environment and Sustainability studying environmental justice, sustainability and development, and environmental public policy under the guidance and expertise of 48217 environmental justice advocates Dr. Dolores Leonard, Theresa Landrum, and Rhonda Anderson. Questions or follow up can be directed to abunting@umich.edu

Dear Office of the Environmental Justice Public Advocate,

This letter was developed by master's students at the University of Michigan's School of Environment and Sustainability under the direction and council of Theresa Landrum, Rhonda Anderson, and Dr. Dolores Leonard in response to the recent release of the MiEJScreen for public comment. We are writing to implore EGLE to pursue further action regarding the development of this screening tool so that it might be transformative for environmental justice communities.

Nor Any Drop to Drink: Where is the Water Data?

Michigan, the Great Lakes state, is known for water crises in a growing number of cities, yet MiEJScreen is noticeably missing key indicators regarding water. Without data on water affordability, security, and quality, the MiEJScreen tool is missing the point of generations of advocacy by environmental justice advocates in Michigan. MiEJScreen should be able to recognize the water injustices regarding security, quality, and affordability in Detroit, Flint, and Benton Harbor as well as honor the concerns behind Michigan water advocates' organizing efforts such as the Water Justice Journey and Indigenous water walkers. Currently, MiEJScreen includes "Impaired Water Bodies" and "Wastewater Discharge" indicators in the final environmental justice score. The "Michigan Water Affordability Assessment", which is currently a context layer, and other data regarding water shutoffs, lead in water, lead service lines, and water quality must also be factored into the total EJ score. We recognize that this data may not be currently available at the census tract level across the state, but implore EGLE to utilize its authority and capacity to actively collect such data from utilities and other relevant institutions to include in future iterations of the tool.

The Diversity of EJ Communities Must be Recognized

In creating a universally-applicable index of disproportionate impact, there is potential to lose the "[d]ifference, diversity, and place specificity in experiences of environmental impact" which is critical to the EJ movement (Holifield, 2014:78). Therefore, multiple definitions and indices disparate impact may be required to fully identify and represent the diversity of experiences within EJ populations. For example, MiEJScreen tends to center Black, urban communities as

those suffering from environmental injustices. However, issues of agricultural waste are renowned environmental injustices in the state (See the [CAFO pollution in Lenawee County, Michigan, USA Case Study in the EJAtlas](#)). The struggles of Indigenous people with wolf hunting, Line 5, and mining projects in Michigan are also largely untold by MiEJScreen.

What is an Environmental Justice or Overburdened Community?

While MiEJScreen's final score creates a powerful insight into the EJ challenges of different census tracts across the state, the tool falls short of defining what an environmental justice community is. We believe that Michigan communities should be consulted as to what this definition is and the relationship it has with MiEJScreen. Moreover, as this tool relies on cumulative impacts assessment the term cumulative impacts should also be defined and described to precisely delineate its crucial importance as well as for clarity purposes.

Ground-Truthing MiEJScreen

We also understand, as mentioned in the above sections, that this Michigan-specific tool will need to be refined to truly reflect the full range of EJ issues Michigan communities are facing. One way we would like to see this effort undertaken is through a continually available survey regarding the tool as [North Carolina has done](#). Here, community members and organizations should be able to self-identify as an environmental justice community, name specific EJ challenges they have, and propose new indicators. Another practice that should be adapted from other states is to hold [regional workshops](#) introducing the tool and seeking feedback directly from community members as California undertook to update their CalEnviroScreen.

Legislation and Policy Change is Needed

MiEJScreen is significant in its potential to identify disadvantaged/overburdened/environmental justice communities, but it will not be impactful to these same communities unless it can be used to address the ongoing injustices. In other words, understanding disparate and cumulative impacts should allow regulators such as EGLE to avoid contributing to these issues as well as addressing disparate impacts. Moreover, Title VI complaints regarding permitted facilities in EJ communities are continuing to challenge the current regulatory framework. Several states have

taken the initiative to be proactive on environmental justice with the information provided by their respective screening tools:

- Washington used their screening tool to pass the HEAL Act in 2019, which addresses environmental health disparities at the state level by adopting a cumulative impact analysis tool and establishes an EJ taskforce. The tool was also used for the Clean Energy Transformation Act in 2019.
- *CalEnviroScreen* was used by the CalEPA in 2017 to identify, designate, and create a list of disadvantaged communities for Senate Bill 535 and Assembly Bill 1550; both of which allocated proceeds from their cap-and-trade program to improve public health, quality of life, and economic opportunity for the state’s most burdened communities.
- Minnesota’s state agencies have integrated their tools into the permitting process, particularly the Pollution Control Agency (MPCA). Under Statute 116.07 the MPCA is required to analyze and consider “cumulative levels and effects of past and current pollution” before a permit may be issued for industry facilities located in EJ communities.
- New Jersey adopted Environmental Justice & Cumulative Impacts bill (S232) which: defines “overburdened communities” as those with significant Of Color, non- English speaking or low income populations; Requires major polluters seeking or renewing permits in overburdened communities to develop “Environmental Justice Impact Statements” (EJIS) with substantive detail, meaningful public input, and DEP oversight including technical assistance to impacted communities; Requires and empowers DEP to deny or condition certain permits due to disproportionate impacts based on the EJIS.

We suggest that any and all of these legislative actions be taken with the aid of this environmental justice screening tool. Alternatively, similar outcomes could be achieved with the creation of specific guidance regarding the Title VI policies of EGLE. Additionally, we believe this tool should be used as a basis for prioritizing all grant funding EGLE administers and should be updated into EGLE policy and staff training.

Signed:



Anna A. Bunting



Dinah George



Megan Husted



Skyler Kriese



John McClure

Rhonda Anderson

Dr. Dolores Leonard

Theresa Landrum