



# Health, Equity, and Nature

A Changing Climate in  
Lake County, Illinois



BRUSHWOOD CENTER  
AT RYERSON WOODS

“There are birds that come here from South America...and there's no barriers. There are no borders, if they need to migrate. And their children remember the journey. They know how to go back to the place they came from, and we had a deep relationship with that. We learn about nature and we remember our journeys, we remember the bond that we have with our ancestors, and that's how nature operates and how nature heals itself: and I think that was a beautiful thing ”

– Maria Colunga, Round Lake



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A Changing Climate in Lake County, Illinois

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**BRUSHWOOD CENTER**  
AT RYERSON WOODS

PUBLISHED 2023

COVER ARTWORK: *DESPLAINES RIVER TRAIL*, ELIZABETH WILSON

# About Brushwood Center

PHOTO:

*SEVEN SPRINGS ALL NATION*

*DRUM CIRCLE*

MICHAEL KARDAS

**VISION:** We work toward a future of resilient and connected communities, both human and ecological, where all lead healthy and thriving lives.

**MISSION:** Brushwood Center at Ryerson Woods works collaboratively with community partners, artists, health care providers, and scientists to improve health equity and access to nature in Lake County, Illinois, and the Chicago region. We engage people with the outdoors through the arts, environmental education, and community action. Brushwood Center's programs focus on youth, families, Military Veterans, and those facing racial and economic injustices.

## Land Acknowledgment

Land acknowledgement statements are designed to bring more awareness and understanding of the history of Indigenous Peoples and their territories. They are also more than that; they are a call for us to rethink our relationship with the environment and the histories of all peoples, and to challenge the legacies of settler colonialism in our society.

Today, Lake County continues to be a place where many people from diverse backgrounds find healing, vitality, and relationship with nature. We honor the multi-cultural traditions of the land, the history of native peoples, and those who continue to maintain and shape these traditions today.

Brushwood Center honors this land as the traditional home of Algonquian-speaking peoples, including the Ojibwa, Ottawa, Potawatomi, Ho-Chunk, Miami, Menominee, Sauk, and Meskwaki and others. We celebrate their traditions and culture and their immemorial ties to this land.



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## Special Thanks

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The Health, Equity, and Nature Report Advisory Board, Artists, and Brushwood Center Staff and Contributors provided valuable guidance throughout the development of this project, especially Celeste Flores, Ted Haffner, and Terry Horton. We are grateful to each of our partners and interviewees who assisted with data collection and communication. Additionally, we appreciate the attendees of our 2021 and 2022 Community Leadership Roundtables who provided valuable insight at the beginning of this work. Special thanks also to each of our partners and the organizations who shared vital data informing this report, including the Lake County Health Department, the Lake County Planning, Building, and Development Department, the Lake County Park Districts, and the Council on Environmental Quality's Climate and Economic Justice Screening Tool.

We are very grateful to the Walder Foundation for providing instrumental seed funding to support this report and the launch of Brushwood Center's Health, Equity, and Nature Accelerator. Thanks also to The Chicago Community Trust; Harold M. and Adeline S. Morrison Family Foundation; and the Gorter Family Foundation for their support as well.

Finally, to each of you reading this report, thank you for your time, attention, and action to help move our planet closer to the equitable, just, and sustainable future that all communities have the right to attain.

### Supporters:

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# Report Background

This report is a project of Brushwood Center's Health, Equity, and Nature Accelerator which was born in response to growing community demand and momentum for systemic changes to address racial and ethnic inequities at the intersection of health, climate, and nature.

The COVID-19 pandemic brought longstanding disparities in accessing healthcare and a healthy environment to light. These disparities disproportionately impact Black and Brown communities. Brushwood Center serves the Lake County community through programs, and the pandemic led us to explore the root causes of inequities through this report showing the current landscape of health inequities, nature access, and environmental justice in Lake County.

Launched in 2022, the Accelerator is an expansion of Brushwood Center at Ryerson Woods' ongoing community engagement, advocacy, and research initiatives. The Accelerator amplifies this impact through cross-project alignment, prioritization of community-driven practices, and communication of key results for scalability and collaboration. The Accelerator activates equitable nature-based solutions through healthcare partnerships. While these benefits directly impact Lake County and the broader Chicago region, they also have the potential for scaling to other communities. Learn more about the Accelerator at [www.brushwoodcenter.org](http://www.brushwoodcenter.org)

ARTWORK:

*CELLULAR HEALING BLANKET FOREST*

KENDRA KETT





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ARTWORK:

CELLULAR LANDING

KENDRA KETT

## Executive Summary

# Everyone deserves a healthy environment and access to the outdoors.

**Clean air, water, and access to the outdoors are vital to human health. This report outlines key findings and recommendations for improving wellbeing in Lake County, Illinois, by addressing systemic inequities at the intersection of environment and health.**

## Key Findings

### **History has set the stage.**

Like many communities in the United States, Lake County's history of housing discrimination and industrial development continue to drive systemic inequities at the root of environmental and health injustices. Analysis of demographic information, including race, population, average age of death, median household income, and housing cost, revealed that Black and Brown communities in Lake County experience the lowest life expectancy, the highest housing cost burden, and lowest median household income.

### **Northeastern Lake County is most overburdened by environmental and health inequities.**

Environment and human health do not exist in isolation; they are deeply interconnected. We combined 38 data sets from health, environmental quality, climate, transportation, green space, and

demographic data to create the Systemic Inequities Assessment Map (Figure 1). The map identifies geographies most overburdened with these inequities, including North Chicago, Park City, and Waukegan.

### **Community is leading the fight for environmental justice.**

Community members and organizations in Lake County fighting for environmental justice are in a position of strength with recent successes, including the 2022 closure of the coal-fired power plant in Waukegan. Yet, many toxic challenges remain, particularly in northeastern Lake County, including superfund sites, ethylene oxide pollution, coal ash ponds remaining at the recently closed coal-fired power plant, and additional water, ground, and air pollutants from industry and diesel. These environmental injustices have impacts on health that can cause respiratory diseases, skin rashes, and cancer.

### **Nature abounds, yet access does not.**

Lake County is home to beautiful green and blue spaces including Lake Michigan, park districts, county forest preserves, state parks, rivers, and spaces created by grassroots groups. Yet, despite this natural abundance, there are barriers to accessing the outdoors. Nearly half of Black/African American

respondents and 31% of Hispanic respondents express access, safety, or maintenance concerns to visiting parks or open spaces versus 21% of White respondents (Figures 12-14). Interviewees identified numerous barriers to accessing nature, including limited transportation options, lack of materials in Spanish, cold weather, and a need for more culturally relevant nature-based programs, providers, and partnerships.

### **A warmer, wetter climate is here, and it is impacting health.**

The already changing climate compounds existing community health risks. Rising temperatures impact human health through heat-related illness, sleep quality, increased allergens, and food availability. Mosquito-borne illnesses, tick-borne illnesses, decreased water quality, and flooding are on the rise due to increased precipitation.

### **Nature is a source of healing.**

Interviews with community members revealed a dominant theme of “transformative experiences pertaining to nature.” In the wake of the pandemic, many people recognize the mental and physical health benefits of spending time outside, particularly for individuals coping with trauma. A common thread across responses highlighted the importance of connection, and how nature can facilitate a deeper and more meaningful connection with one’s self, community, and environment.

## Recommendations

Creating a healthier environment and communities in Lake County will mean uplifting, supporting, and investing in community-driven, equitable solutions. Our recommendations focus on the local level, but opportunity abounds at state and national policy levels as well.

The report outlines six themes of recommendations and more than 60 actions that can be taken to address these issues. The themes and an example action from each category include:

### **1. Center community voices and assets**

Example: Create an accessible, digital community asset map to document, share, and maintain health equity resources, including nature-based programs and spaces.

### **2. Prioritize communities overburdened by systemic inequities**

Example: Invest in recreational infrastructure and programs as well as increased transportation options connecting people to these spaces.

### **3. Advance climate justice through clean air and water**

Example: Support grassroots groups and community organizers pushing for environmental justice in Lake County and particularly ethylene oxide regulations and removal of the coal ash ponds in Waukegan.

### **4. Increase awareness and access to outdoor green and blue spaces**

Example: Ensure that all marketing and promotion of outdoor resources, including program descriptions, trail maps, and signage, is translated into Spanish.

### **5. Integrate nature solutions with healthcare systems**

Example: Provide professional development to local healthcare providers and community health workers on green and blue space assets in Lake County, as well as the associated health benefits.

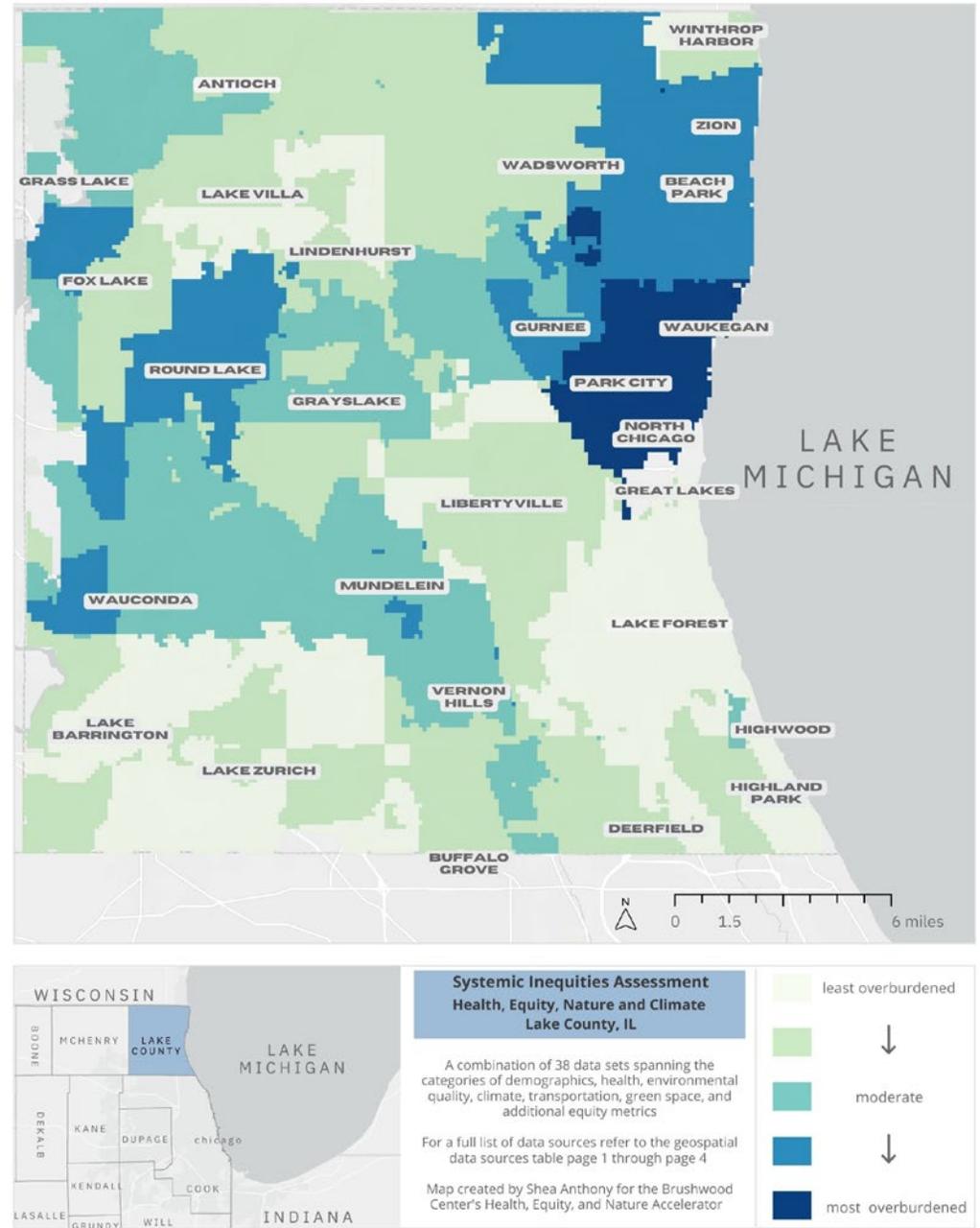
### **6. Invest in culturally relevant social infrastructure for outdoor engagement**

Example: Increase culturally relevant, nature-based programs by investing in more multilingual facilitators, community-designed programs, and partnerships.

## Report Background

The goal of this report is to serve as a tool for community members, organizations, and decision-makers to improve health and wellbeing in Lake County, Illinois. The report’s mixed methods approach is rooted in community assets and combines existing data, mapping, qualitative data, and art. Brushwood Center began this project in response to growing community demand and momentum for systemic changes to address racial and ethnic inequities at the intersection of health, climate, and the environment.

Figure 1.  
**Systemic Inequities  
 Assessment of Health,  
 Equity, Nature, and Climate  
 in Lake County, IL**



# Glossary of Terms

**Climate Change:** Long-term shifts in temperatures and weather patterns.

**Environmental Justice:** The idea that everyone deserves to live with clean air, water, and soil, and should be included in making decisions about things that could cause changes in their community's environment.

**Health Equity:** Everyone has a fair and just opportunity to access their full health potential.

**National Priorities List:** List of sites of national priority among the known releases of threatened releases of hazardous substances, pollutants, or contaminants throughout the United States and its territories.

**Nature / Outdoors / Green Space / Blue Space:** An area where one can recreate or enjoy green (e.g., parks, gardens, backyards, preserves, etc.) and blue (e.g., lakes, ponds, oceans, rivers, etc.) spaces in whatever way is accessible to the individual.

**Nature-Based Solutions:** Employing nature at a meaningful scale for multiple benefits.

**Nature Gap:** A combination of racial and economic disparities that directly affect the wellbeing of communities of color.

**Superfund Sites:** Locations polluted with hazardous materials. The Environmental Protection Agency (EPA) has the responsibility to conduct removal actions to protect public health and environment, ensure community involvement, and enforce against responsible parties.

\*A note on race and ethnicity descriptors: Throughout the report we interchange between People of Color, Communities of Color, Black/African American, Hispanic/Latino, and Black and Brown communities based on the data source.



# Introduction About This Report

PHOTO:

LIBERATION, 2020

DAWAUNE LAMONT HAYES

The goal of this report is to serve as a tool for community members, organizations, and decision-makers to improve health and wellbeing in Lake County.

The report methods were created with the aim to:

- Collect and synthesize community driven data on the status of access to nature, environmental quality, and public health amidst the changing climate in Lake County;
- Identify priority geographies for investment through a climate justice lens; and
- Recommend actions and policy opportunities for nature-based solutions that advance equitable access to nature, a clean environment, and healthy communities.

This report was created in collaboration with community organizations, Lake County land agencies, community members, researchers, and environmental justice groups. We employed an asset-based community development approach, informed by national and regional data sets. Additionally, we worked with artists and creators to elevate the voices and experiences of community members. Recognizing the importance of storytelling as a tool for showcasing community assets, stories are embedded throughout the report in the form of quotes and cited community experiences.

This report is intended to be a living document. We invite and welcome community feedback. As data evolves, we intend to update the report with current issues and information. We will share updates on the implementation and evolution of recommendations offered in this report.

## Why Health, Equity, and Nature?

The vital connections between health, equity, and nature are increasingly visible across the United States. This report illuminates how environmental racism influences both health equity and access to green spaces here in Lake County, recognizing that each of these factors are interconnected. For example, water and air pollution are often concentrated near communities of color, resulting in inequitable distribution of outdoor spaces for public recreation.

While nature is a necessity for everyone's health and well-being, there is an unequal distribution of access throughout the nation that we can no longer ignore.<sup>1</sup> A 2020 national research study by Trust for Public Land shows that parks and green spaces in communities of Black and Brown people are half the size and five times more crowded than spaces in White communities.<sup>2</sup>

Access to outdoor spaces is important because studies have shown that being in nature can significantly improve human health. This includes reduction in stress, cortisol levels, and heart rate, which reduce risk for cardiovascular disease. Additionally, studies have shown that those who spend time in green spaces are at a lower risk of depression and have a faster response to stress recovery. Green spaces have also been shown to create a sense of community contributing to emotional and physical wellbeing.<sup>3</sup>

Because of these benefits, people's environments are considered **social drivers of health**. Social drivers of health (SDOH) are the conditions in which people are born, live, work, and play that affect

quality of life outcomes and risks.<sup>4</sup> Social drivers of health are also called social determinants of health; however, we use the term social drivers to reflect that health is something that people and communities can overcome or change, as opposed to something that is fixed.<sup>5</sup> SDOH are grouped into five domains: economic stability, education access and quality, healthcare access and quality, neighborhood and built environment, and social and community context. SDOH often contribute to health disparities and inequities, requiring collaboration across sectors to improve the conditions in people's environments versus direct medical intervention. All of these domains feed off of one another impacting quality of life.

While this report focused on neighborhood and built environment as a SDOH, it is important to recognize the interconnected nature of each of these domains in improving health and safety for all people in Lake County. Figure 2 shows the social drivers of health and how they connect to support a healthier and more equitable community, and the importance of community-driven solutions in creating this vision.

## An Economic Case

In the Great Lakes Region and across the United States, financial resources and political support for the environment and climate solutions are limited because their economic benefits remain mostly externalized. However, we know that the environment is critical to human health. A 2019 research project conducted by ecologists, psychologists, and economists valued the mental health benefits of protected natural areas alone at \$6 trillion across the globe.<sup>8</sup>

In contrast, healthcare costs in the United States comprise \$4.3 trillion and 18% of our GDP.<sup>9</sup> Increased collaboration between healthcare and environmental sectors can improve people's health, decrease hospitalization and healthcare costs, and strengthen our human and ecological communities.

## Structural Inequalities and Biases, Socioeconomic and Political Drivers



FIGURE 2. CONCEPTUAL MODEL FOR COMMUNITY-DRIVEN SOLUTIONS FROM THE ROOT CAUSES OF HEALTH INEQUITY<sup>7</sup>

## Methodology

Given the novel subject of this report, the ideation stage was an instrumental component of our methodology. Initial ideas and suggestions for data sources were collected over a period of two years from Lake County leaders, organizations, and community members. A 16-member Advisory Board was convened in 2022 to oversee the development of the report. This Advisory Board consisted of health care professionals, researchers, activists, and community members.

To the extent possible, we integrated Asset-Based Community Development (ABCD) strategy<sup>10</sup> with our methodology. Derived from community psychology, a community asset-based approach allows for greater recognition of resources that are already in the community. The model emphasizes the importance of local community members, self-determination, and empowerment. It can, in turn, foster connectedness and community resilience, which has been associated with better health outcomes.<sup>11</sup>

The report team identified a mixed methods approach which included four different strategies:

- **Existing Data:** Identifying and synthesizing existing data sources and literature (both local and national) with project relevance.
- **Mapping:** Compiling existing geospatial data as well as developing a novel aggregate map.
- **Qualitative:** Collecting personal narratives (written and photos) and individual interviews.

- **Art:** Soliciting art inspired by the above data results (featured in this report) to interpret and explore data themes.

Our results are presented in a mixed format. Quantitative data in the form of maps have been interspersed within longer qualitative narratives and artistic representation. The qualitative data represents primary data, or information we gathered as a part of our interviews, while the maps represent secondary data, or information that we compiled from pre-existing sources and tables.

Each of these four approaches are outlined in Appendix A.



# 3 CHAPTER

## Health Equity Factors in Lake County

ARTWORK:  
PUBLIC SAFETY  
MATTHEW COOPER

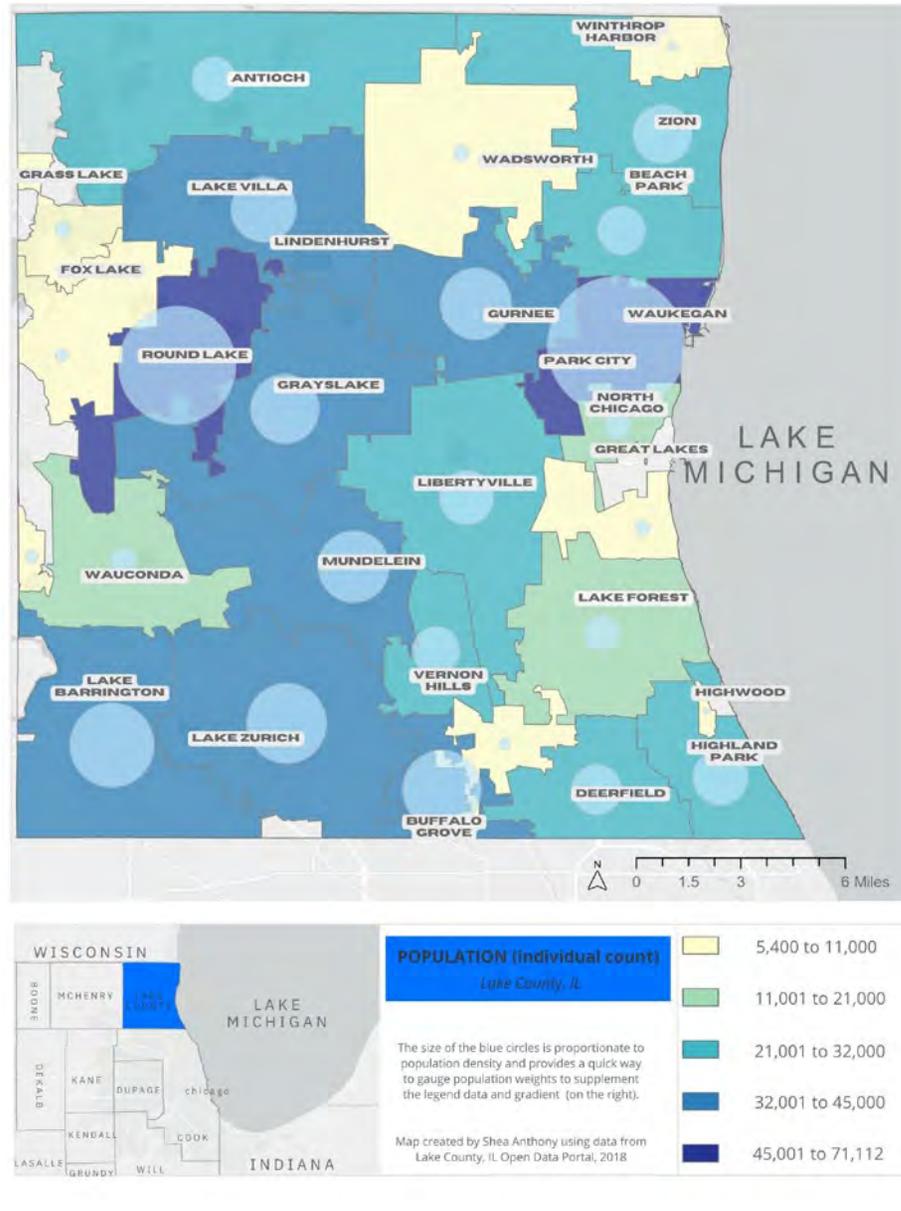


FIGURE 3. POPULATION MAP OF LAKE COUNTY, IL

## Population

Lake County, IL is situated in the northeastern corner of IL, north of Chicago, IL and south of Milwaukee, WI, with an estimated population of 709,150 as of 2022 (Figure 3).

Because of the presence of Naval Station Great Lakes in North Chicago, the percentage of Lake County residents currently serving in the armed forces is more than three times that of the national average. Additionally, 5.7% of civilian Lake County residents are Veterans.<sup>12</sup>

## Race and Ethnicity

The largest Lake County racial/ethnic groups are White (60.8%) followed by Hispanic (21.9%), Asian (7.97%) and Black/African American (6.51%), as illustrated in Figures 4-7.<sup>13</sup>

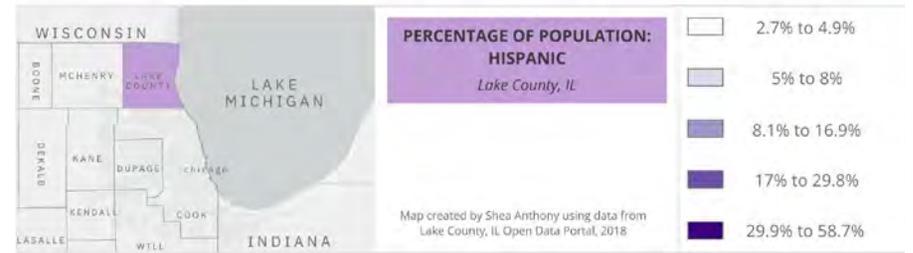
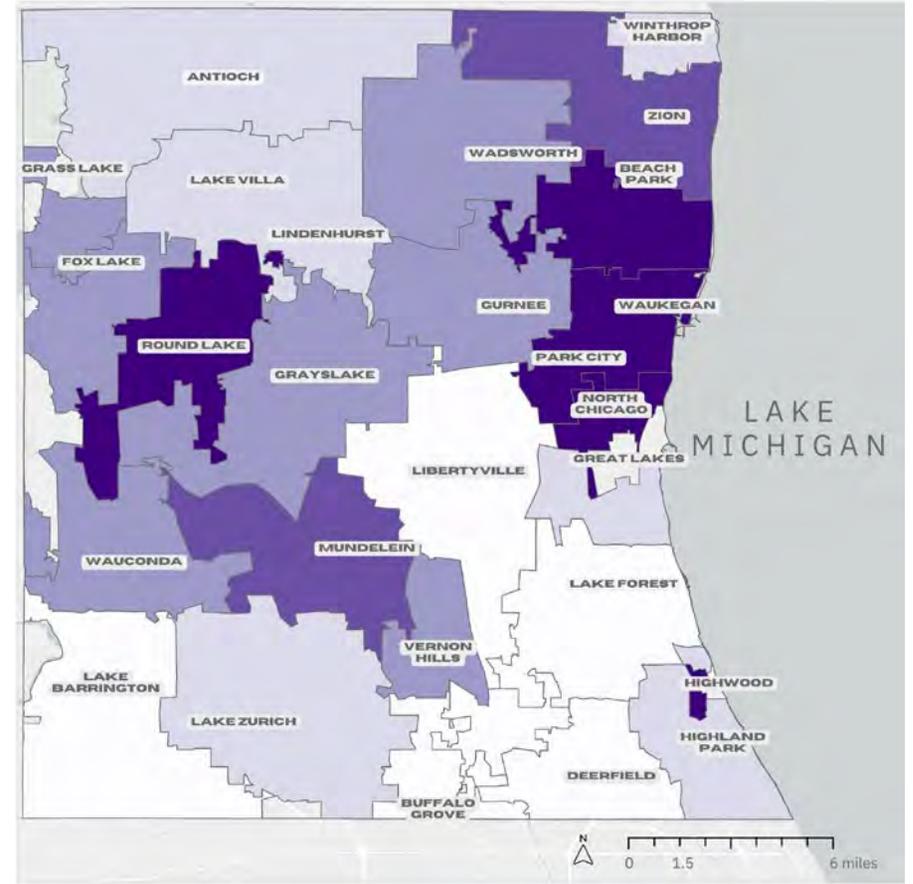
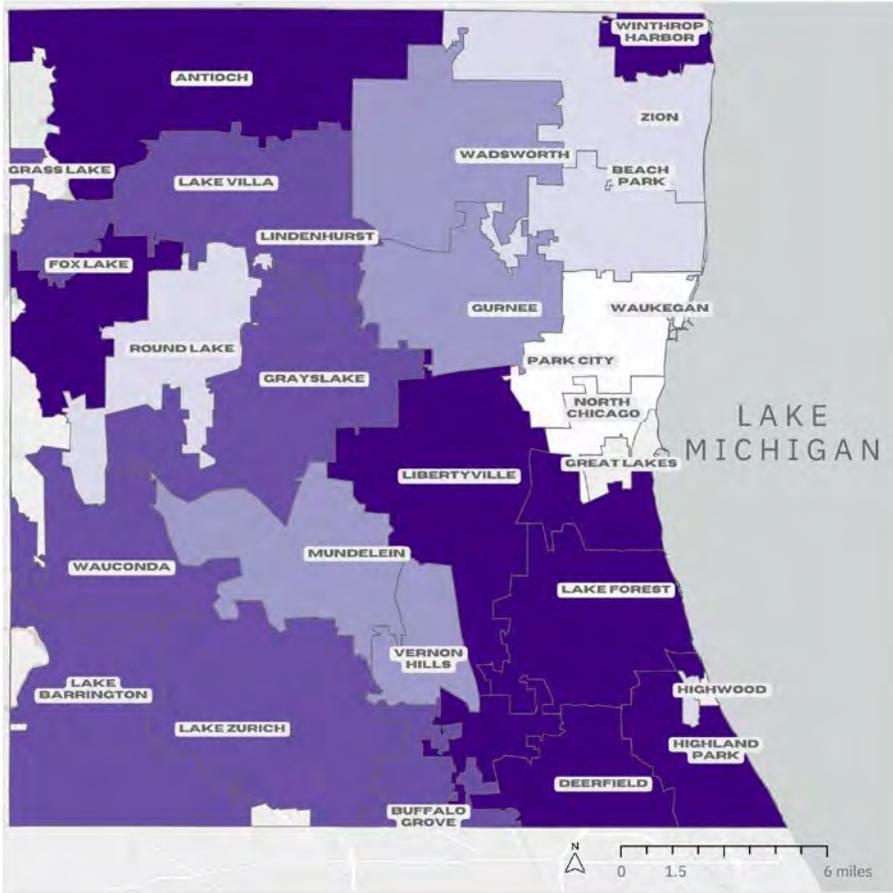


FIGURE 4. PERCENT OF WHITE POPULATION IN LAKE COUNTY, IL

FIGURE 5. PERCENT OF HISPANIC POPULATION IN LAKE COUNTY, IL

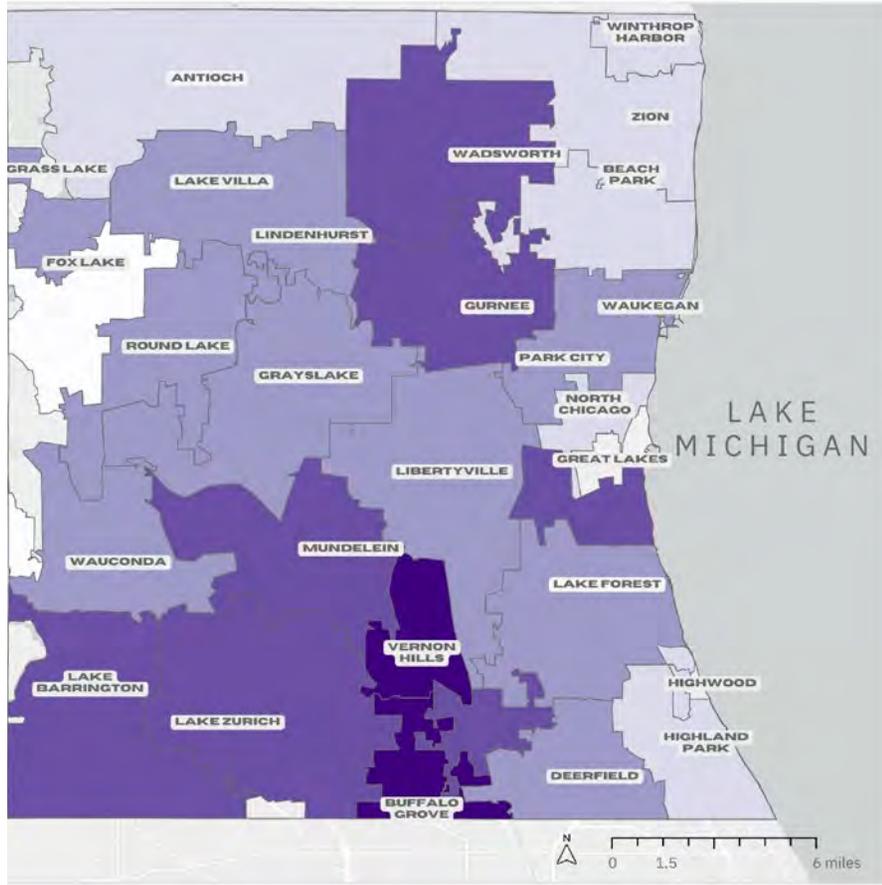


FIGURE 6. PERCENT OF ASIAN POPULATION IN LAKE COUNTY, IL

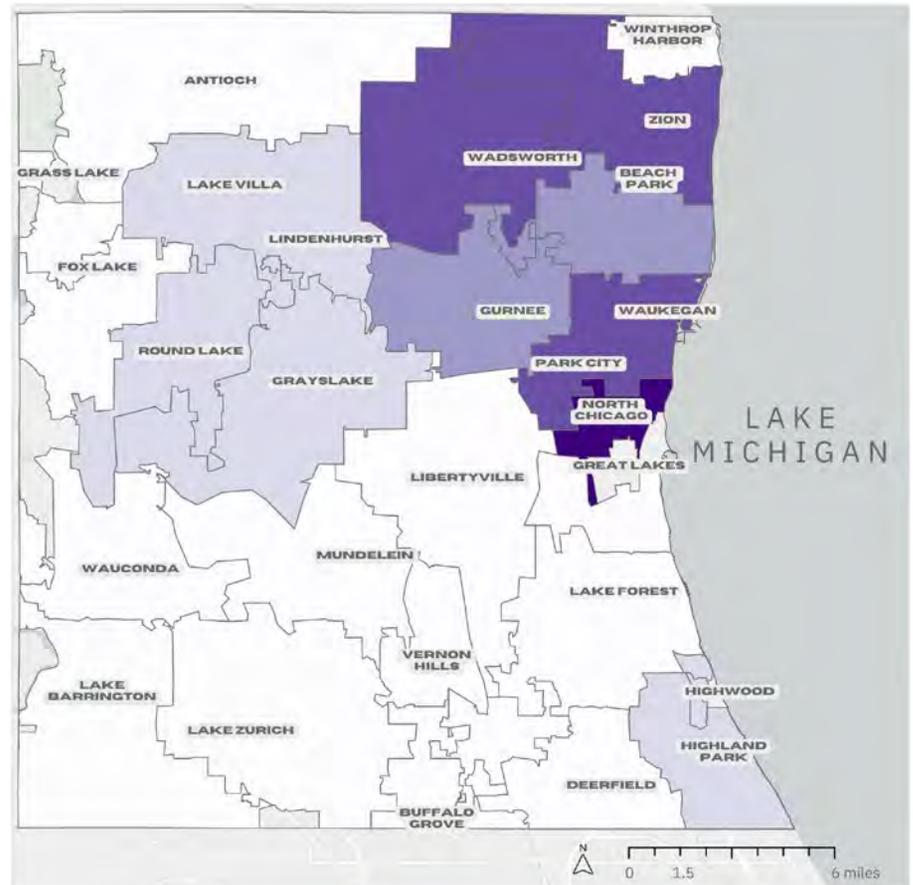


FIGURE 7. PERCENT OF BLACK/AFRICAN AMERICAN POPULATION IN LAKE COUNTY, IL

## Life Expectancy and Household Income

Figure 8 shows the life expectancy differences across Lake County. The lowest life expectancy is concentrated in the northeastern areas of Lake County, along with Round Lake and Mundelein. The highest life expectancy is concentrated along the shore of Lake Michigan from Lake Forest to Highland Park, as well as Lake Barrington. There is a 15-year life expectancy difference between Lake Forest, one of the most affluent communities, and North Chicago, a lower-income community just five miles north. This pattern is reflected in national research, where disparities in life expectancy gains have increased alongside the rise in income inequality.<sup>14</sup>

Figure 9 shows the median household income in Lake County. A study conducted by Evans and Kims identifies “multiple risk exposure” as a potential mechanism for the socioeconomic status and health gradient. This is the convergence of multiple risk factors among populations with low socioeconomic status, such as poor housing, neighborhood quality, pollutants and toxins, noise exposure, and adverse interpersonal relationships.<sup>15</sup>

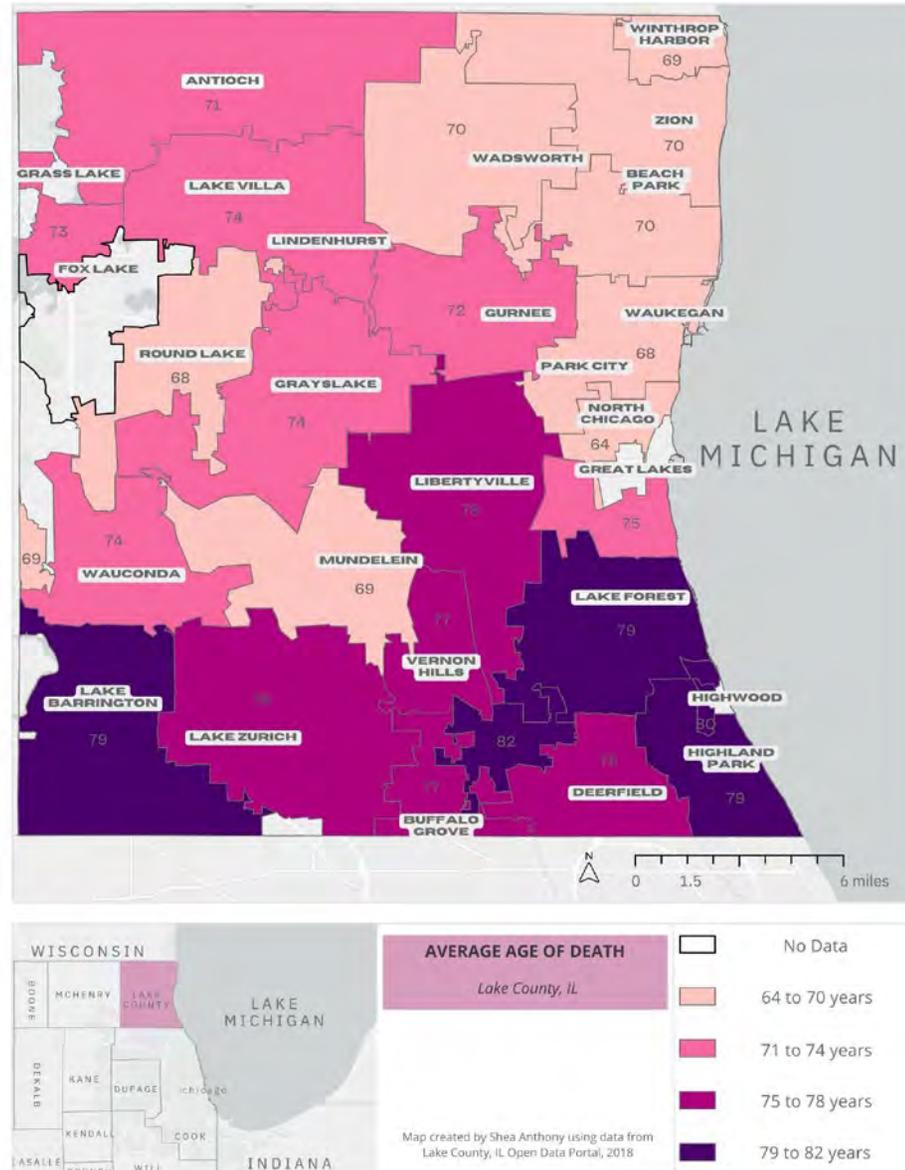


FIGURE 8. AVERAGE AGE OF DEATH IN LAKE COUNTY, IL

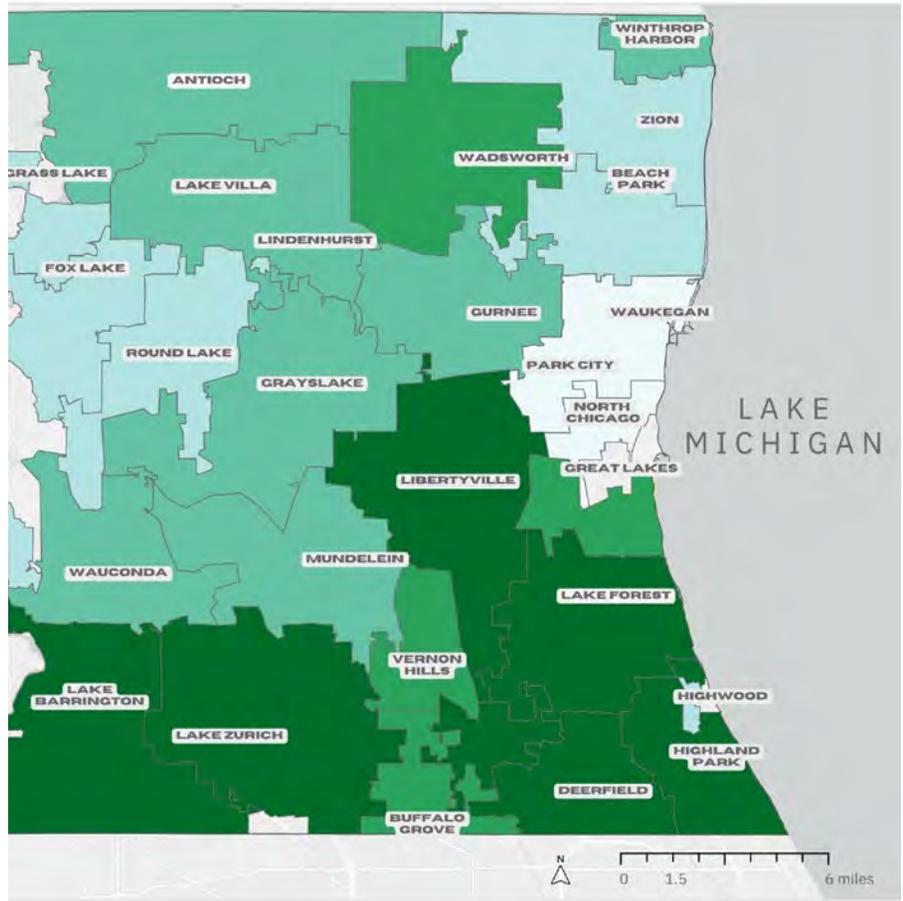


FIGURE 9. MEDIAN HOUSEHOLD INCOME IN LAKE COUNTY, IL  
\*BASED ON 2018 HOUSEHOLD INCOME DATA

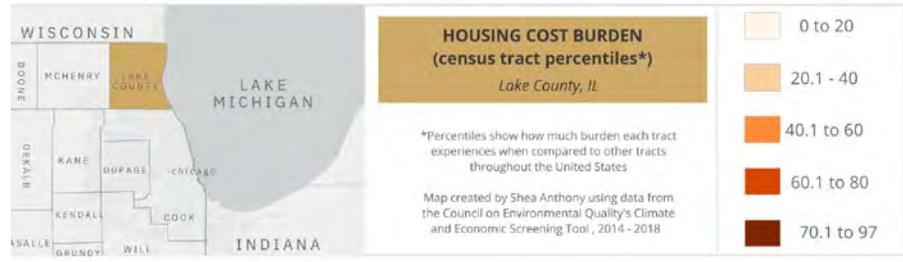
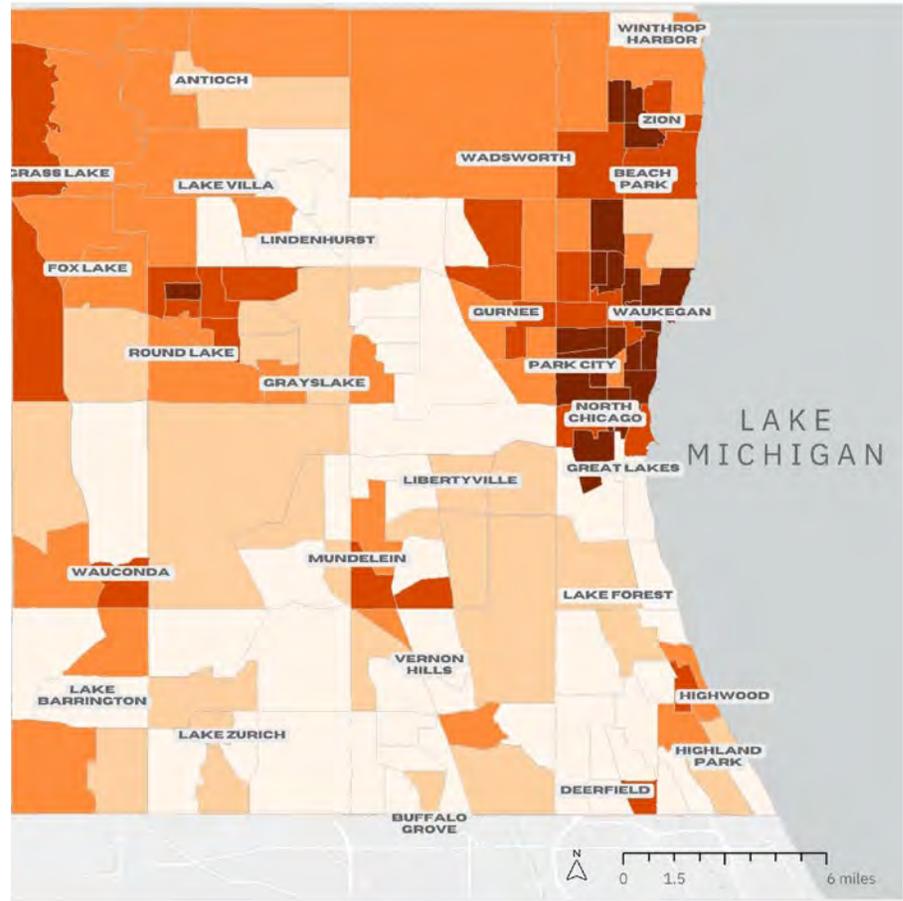


FIGURE 10. HOUSING COST BURDEN IN LAKE COUNTY, IL



## Live Well Lake County and Addressing Health Equity

Live Well Lake County (LWLC) is Lake County's largest collective working to address health equity. Formed in 2011, LWLC consists of more than 50 organizations working to improve the health and wellbeing of Lake County. This coalition has conducted the Community Health Assessment and developed the 2022-2026 Community Health Improvement Plan (CHIP). The top three priority areas are: physical and mental health, education, and housing. View the CHIP: <https://www.lakecountyiil.gov/2655/Community-Health-Improvement-Plan-Assess>

## Housing

Until the passage of the Civil Rights Act in the late 1960s, multiple mechanisms prevented non-White individuals from buying land and property. Redlining, the discriminatory denial of loans, mortgages, or other financial services, excluded many People of Color from home ownership. Restrictive clauses and racial covenants inserted into property deeds explicitly kept non-White people out of communities.

The legacies of these policies continue to disproportionately impact Communities of Color today, subjecting community members to violence both in and outside of nature, while excluding those same community members from the U.S. conservation movement.<sup>16</sup> The concentration of toxic pollution in Communities of Color is the result of these policies. Recently, a host of studies have found that people in redlined neighborhoods suffer more from higher temperatures, more flooding, and exposure to higher levels of pollution than those that live in other neighborhoods.<sup>17 18 19</sup>

Because housing impacts the land that people have access to on an individual level (backyards, gardens, etc.) as well as in their community (parks, preserves, beaches, etc.), it is important to acknowledge its inherent connection to access to green spaces. Additionally, physical conditions of homes and housing affordability affect the overall ability of families to make healthy choices.<sup>20</sup> Figure 10 shows that the housing cost burden is concentrated in communities with the lowest median household income. Housing cost burden is defined as the percentage of households that are earning less than 80% of the area's median family income (established per county) and are paying greater than 30% of their income to the housing cost.





# Green and Blue Space in Lake County

ARTWORK:

DES PLAINES RIVER TRAIL

ELIZABETH WILSON

Lake County hosts abundant natural resources, green spaces, and water resources.

## Lake Michigan

The entire eastern border of Lake County touches Lake Michigan, the fifth largest lake in the world by surface area and a vital part of the Great Lakes system. This access is an enormous asset. The Great Lakes hold “one-fifth of the world’s fresh surface water supply and nine-tenths of the U.S. supply. The system is invaluable as the source of drinking water for more than 40 million people in the U.S. and Canada. The lakes directly generate more than 1.5 million jobs and \$60 billion in wages annually. They are also home for more than 3,500 plant and animal species, some of which are found nowhere else on Earth.”<sup>21</sup>

## Park Districts

Local parks, green spaces, and recreational assets are managed by 23 municipal park districts across Lake County. They provide important outdoor spaces for community gatherings, recreation, and opportunities to connect to nature. Located in municipalities, they are also closer in proximity to public transportation or walkable communities than other outdoor resources.

## Lake County Forest Preserves

More than 31,000 acres of preserves in Lake County are characterized by forests, prairies, wetlands, ravines, savannas, flood plains, lakes and streams. The preserves provide trails for nature appreciation, physical fitness, equestrians, snowmobiles, cross-country skiing and bicycling; winter sports areas, picnic shelters and open areas; fishing, dog exercise areas, a model airplane field, youth group camping,



## Nature in Lake County

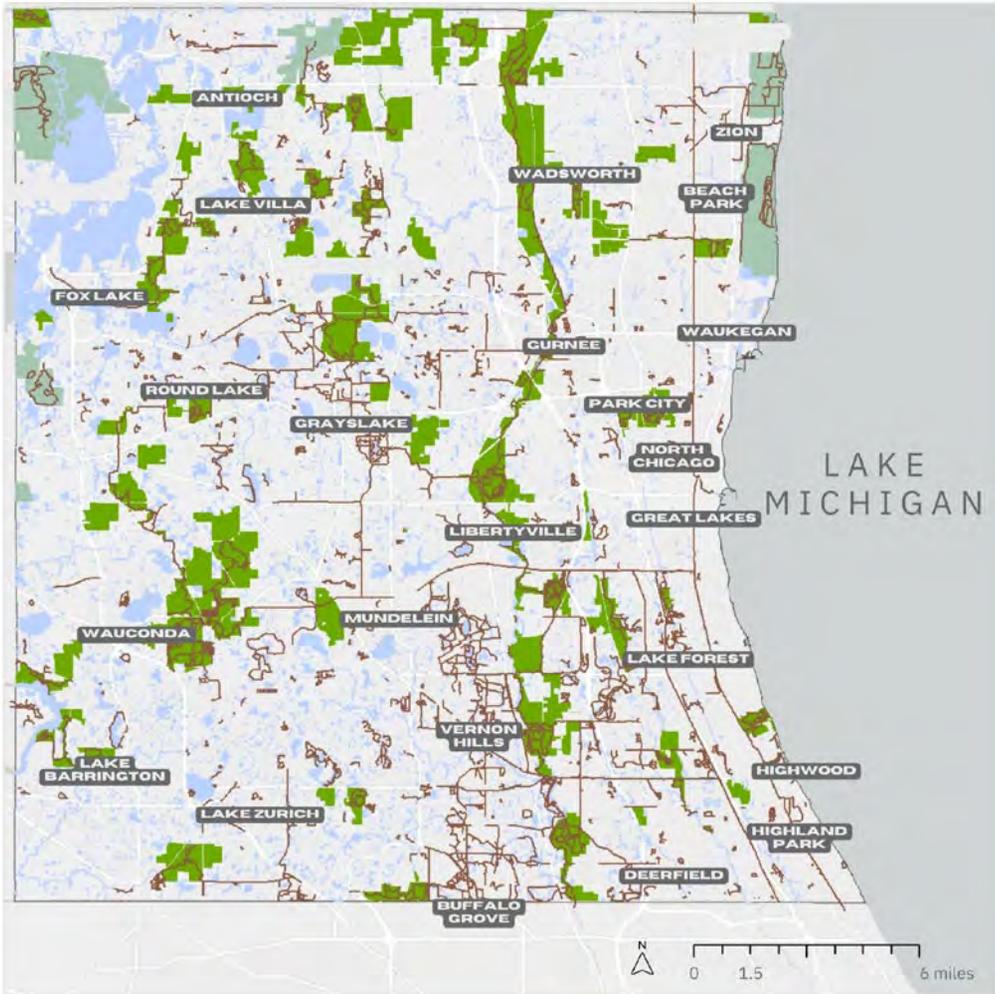
50,000 beautiful acres of forest preserves and open space

550 miles of trail and bikeway connections

40 miles of Lake Michigan beaches

More than 200 lakes and rivers

Source: Lake County Partners,  
<https://www.lakecountypartners.com/culture/>



swimming, canoeing, kayaking, and golfing. The Forest Preserves' "Road Map to 2025" identifies two tactics under its "Strengthen Connections" objective for healthy communities: "1) Expand communications that promote our forest preserves as a fitness and recreation destination for physical and mental wellness. 2) Broaden conversations with diverse audiences to increase awareness and motivate them to actively use forest preserves, participate in programs, and become a volunteer or donor."<sup>22</sup>

## State Parks

Lake County is home to two state parks: Illinois Beach State Park (Northeastern Lake County) and Chain O'Lakes State Park (Northwestern Lake County).

- Illinois Beach State Park is more than 4,000 acres and extends 6.5 miles along Lake Michigan in Zion, IL. Illinois Beach is the only remaining beach ridge shoreline left in the state, and more than 650 species of plants have been recorded in the dunes area alone. The park offers swimming, boating, picnicking, hiking, fishing, and camping.<sup>23</sup> The north and south units of the park are separated by the former Zion Nuclear Generating Station.<sup>24</sup> Closed in 1998, the site is still home to nuclear waste yet to be remediated, although recent state investment in energy transition community grants is intended to support a just economic transition in Zion.<sup>25</sup>
- Chain O'Lakes State Park is nestled in Illinois' largest concentration of natural lakes, featuring nearly 6,500 acres of water and 488 miles of shoreline. Chain O' Lakes State Park is located in both McHenry and Lake counties. It became a state park in 1945 when the State of Illinois made an initial purchase of 840 acres. In the 1930s, a Civilian Conservation Corps (CCC) camp became the Chain O' Lakes Conservation Area, and was incorporated into the state park in 1957.<sup>26</sup>

FIGURE 11. GREEN SPACE IN LAKE COUNTY, IL



“So that absolutely yeah, I mean, I think in terms of available green space. We have a lot in Lake County. There's been a lot of work done about the open lands and the Forest Preserves, which was acquired over the last 30 years. Quite a bit of land set aside and developed for public use. So we have lots of places in Lake County.”

– Respondent

## Lakes, Rivers, Ponds, and Streams

Lake County, IL contains 7,243 documented bodies of inland water as of May 2023.<sup>27</sup> These bodies of water can be categorized as lakes, ponds, rivers, streams, and creeks. The majority of these inland bodies of water are ponds.

- Lakes: 260
- Ponds: 6,814
- Rivers/Streams/Creeks: 169

Notable bodies of water include the Des Plaines River, Fox River, Grassy Lake, Independence Grove Lake, Lake Carina, Sun Lake, and the North Branch of the Chicago River.<sup>28</sup>

## Grassroots Groups

Community gardens, nonprofits, conservation organizations, and informal groups of volunteers are working to create accessible nature spaces in multiple ways.

## Barriers to Accessing Open Space

Despite these abundant green spaces, 48% of Lake County residents have concerns about visiting parks and open spaces (Figure 12). These are particularly pronounced across race and ethnicity, with nearly half of Black/African American and 31% of Hispanic respondents expressing access, safety, or maintenance concerns versus 21% of White respondents (Figures 14 and 13). The Community Insights Chapter explores these barriers in more detail, which - among other things - include limited materials and assets available in Spanish, despite Lake County's high Latine population concentration. We conducted a phone poll and found that only three of the twenty-three park districts in Lake County provide assets in languages other than English (Figure 15). Figure 16 shows the percentage of the population whose first language is not English, showing the need for signage and programming in other languages. Many of these barriers to access are the result of a long history of intentional systemic policy and practice, both nationally and in Lake County, overburdening People of Color.

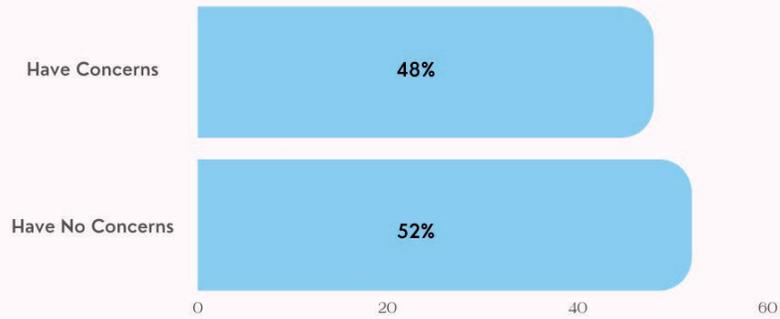


## Foss Park Beach: North Chicago's First Beach in Three Generations Opens

For nearly a century, residents of North Chicago had been unable to swim safely in Lake Michigan due to unsafe undertow, while most communities in Lake County had access to the beach or a swimming pool. This issue persisted after the closure of the Foss Park Swimming Pool in the 1990s, depriving many residents of the opportunity to learn how to swim without leaving the community.

In 2023, the Foss Park Beach officially opened. Made possible with taxpayer funds issued by the Foss Park District Board of Commissioners, this \$4 million investment will support generations of future beachgoers in North Chicago.

## What concerns, if any, do you have with visiting parks or open spaces?



Data comes from Question 41 of the Lake County Community Health Status Assessment Survey Published in June 2022

## What concerns, if any, do you have with visiting parks or open spaces?

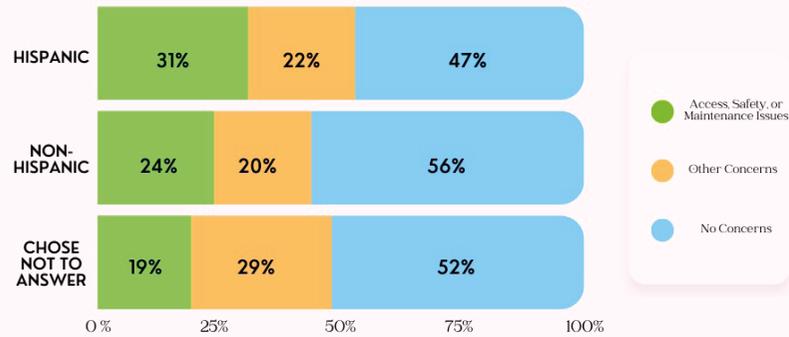


Data comes from Question 41 of the Lake County Community Health Status Assessment Survey Published in June 2022

FIGURE 12. CONCERNS VISITING PARKS OR OPEN SPACES

FIGURE 13. CONCERNS VISITING PARKS OR OPEN SPACES: BY RACE

## What concerns, if any, do you have with visiting parks or open spaces?

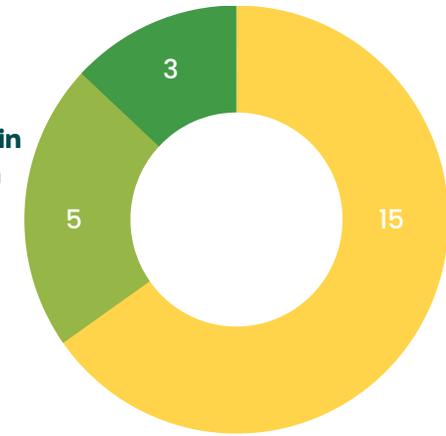


Data comes from Question 41 of the Lake County Community Health Status Assessment Survey Published in June 2022

## Park District Assets

Out of the **twenty-three** Park Districts in Lake County, IL **three** explicitly offer assets (e.g. programming, signage) in languages other than English

- Yes
- No
- No Answer



Data collected by contacting each Park District by phone and asking if they offer assets in languages other than English. Phrasing was kept consistent across calls to minimize bias.

FIGURE 14. CONCERNS VISITING PARKS OR OPEN SPACES: HISPANIC AND NON-HISPANIC

FIGURE 15. PARK ASSETS IN LANGUAGES OTHER THAN ENGLISH

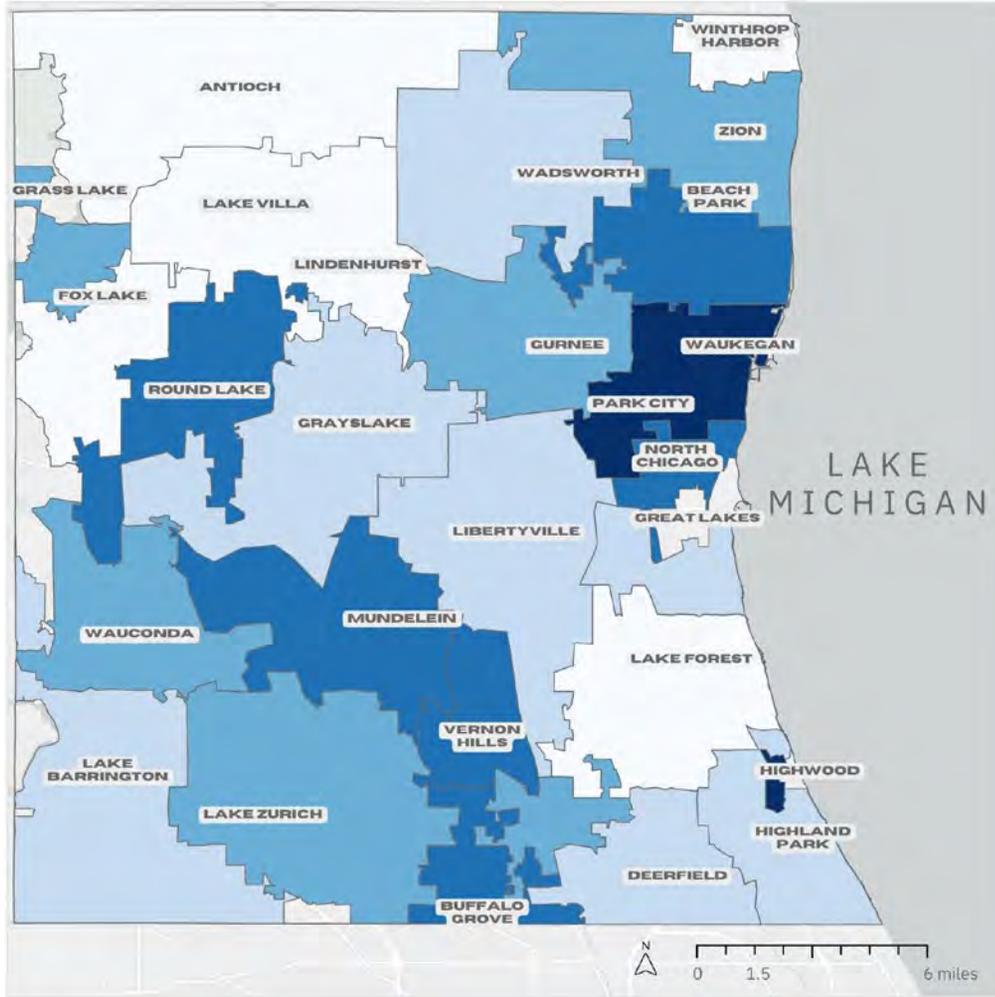
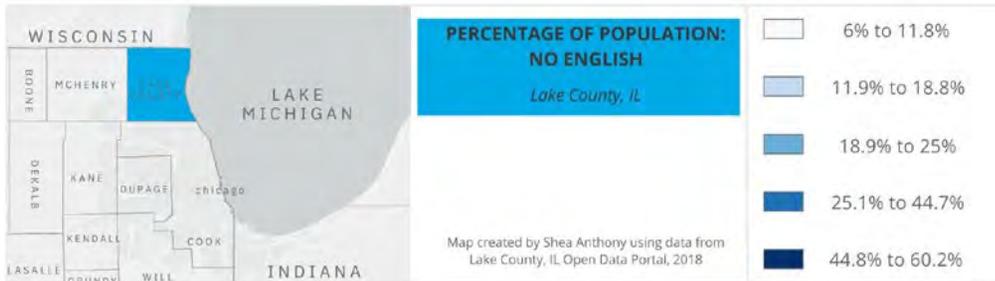


FIGURE 16.  
PERCENTAGE OF POPULATION WHOSE  
FIRST LANGUAGE IS NOT ENGLISH IN  
LAKE COUNTY, IL







ARTWORK:

SUNFLOWERS AT THE COAL PLANT

CAROL NIEC



# 5

CHAPTER

## A Toxic History: Environmental Injustice

Across the United States, Communities of Color experience elevated risks of exposure to environmental hazards.<sup>29</sup> The field of environmental justice seeks to respond to these inequities. Exposure to a harmful environment is a threat to community health, including proximity to toxic sites, water contamination, air pollution, and lead. All of these threats are known to increase the incidence of various types of cancer, negative birth outcomes, and respiratory diseases.<sup>30</sup>

No single report could possibly capture the reality of living in an environmental justice community, or the fullness of lived experience in relation to these toxic legacy sites. We know that there is anecdotal evidence and experiences that do not always align with EPA-reported numbers, and that federal testing authorities are not constantly testing for every possible chemical every single day. The numbers and statistics that follow, while helpful, represent pieces of a much larger picture, and confirm the importance of continued community engagement, data collection, advocacy and leadership in implementing justice-centered solutions.

Additionally, we celebrate the beauty and strength these communities have cultivated and built, despite the challenges of systemic inequities. Communities can simultaneously face tremendous injustices while also thriving through culture, building small businesses, grassroots activism, and creating networks of community, as we see in Lake County.

## Superfund Sites in Waukegan

In Waukegan, a Black and Brown majority city, Superfund sites impact community health.

Waukegan's industrial pollution traces back to its development as a port city. In 1855, the economic future of the town seemed assured with the first train running through Waukegan connecting Chicago to Milwaukee. Waukegan Harbor was one of the busiest on the Great Lakes, and throughout the 1900s Waukegan continued to grow, spurring middle-class residential development along with the development of educational institutions.<sup>31</sup> Throughout the twentieth century, the city grew as an industrial center with companies such as Abbott Laboratories, Outboard Marine Corporation, and Medline.

Today, five out of the eight Superfund sites present in Lake County are located in and around Waukegan. The EPA is addressing these sites through the Superfund and Superfund Alternative Sites program.<sup>32</sup>

As seen in Figure 17, Johns-Manville, Outboard Marine Corporation, and Yeoman Creek Landfill are listed on the National Priority List, while the other two sites, North Shore Gas North and South Plants, are addressed under the Superfund Alternative Sites program and not reflected in Figure 17. Additionally, H.O.D Landfill in Antioch, Petersen Sand and Gravel in Libertyville, and Wauconda Sand and Gravel in Wauconda are on the National Priorities List.<sup>33</sup>

## Activism in Action: Clean Power Lake County

**“A world where everyone, regardless of who they are, can live in a healthy environment.”**



This is the vision that Clean Power Lake County (CPLC) has fought for in Waukegan, Lake County, and beyond since its founding in 2013. As an environmental justice community, Waukegan faces a multitude of environmental threats, including five Superfund sites from the city’s industrial past, the coal-fired power plant, and increased cancer risk from ethylene-oxide emissions from nearby industrial facilities.

Despite these obstacles, CPLC has secured several victories for Lake County’s health and environment. The coal-fired NRG power plant in Waukegan closed in 2022, marking a pivotal success for CPLC’s fight against pollution.

Furthermore, CPLC contributed to the passing of the Coal Ash Pollution Prevention Act (SB9), thus enforcing strict regulations for coal ash disposal at the state level and making Illinois one of three states to implement coal ash legislation at the state level. CPLC led and helped write the Future Energy Jobs Act (FEJA) and the Climate and Equitable Jobs Act (CEJA) passed in 2016 and 2021, respectively. Both bills are crucial climate, equity-oriented bills that advance CPLC’s environmental justice mission, securing a just transition for the coal plant in Waukegan. Learn more at [cleanpowerlakecounty.org](http://cleanpowerlakecounty.org).

PHOTO:

**WAUKEGAN GENERATING STATION**

**ALEX CLARK**

## Outboard Marine and PCBs

In the 1970s, pollution closed beaches and the harbor was found to be full of toxic polychlorinated biphenyl (PCB) from Outboard Marine dumpings.<sup>34</sup> This site is located on the northern section of the Waukegan Harbor, occupying a 100-acre area along Lake Michigan. Exposure to high levels of PCBs can cause increased levels of liver enzymes with possible liver damage, dermal lesions, and respiratory problems.<sup>35</sup>

## Johns-Manville Corp. and Asbestos

Johns-Manville Corp is a former manufacturing facility property with adjacent contaminated areas. A 150-acre asbestos disposal site ceased operations in 1998, with asbestos as the primary contaminant of concern.<sup>36</sup> Asbestos is the leading cause of mesothelioma, a deadly lung cancer. At the time the corporation was developed, its workers were not unionized, preventing workers from fighting for their rights and safety. These workers were mostly European immigrants from Lithuania, Slovenia, and Armenia.<sup>37</sup> Additionally, an article from the Waukegan Daily Sun states that factories employed migrant Black workers from the Southern United States. In 1982, the EPA first intervened, reporting that “lead, chrome, thiram, and xylene were also disposed of in the landfill area, but the primary contaminant of concern was asbestos.”<sup>38</sup>

## Yeoman Creek Landfill

Yeoman Creek Landfill, a 70-acre site located in Waukegan’s northwest side, operated from 1959-1969, containing elevated concentrations of metals and ammonia. The landfill operated onsite from 1958

to 1969, largely within the wetlands and flood plain of Yeoman Creek. Leachate, a liquid pollutant that seeps through a landfill's waste pill when it rains or snows, was observed to be discharging as early as 1969.<sup>39</sup> Consuming leachate-filled water can lead to health complications from stomach disorders, blood disorders, congenital disabilities, and even cancer.<sup>40</sup>

## North Shore Gas North and South Plants

North Shore Gas North Plant, a 16-acre site, has been contaminated with MGP residuals from historical plant operations. MGP is an acronym for Manufacturing Gas Plant, where gas was produced from coal, oil, and other feedstocks.<sup>41</sup> The South plant includes a former MGP 1.9-acre site facility along with adjacent sites. The EPA and NSG are currently in the process of cleaning up dense, nonaqueous phase liquids that have contaminated ground water.<sup>42</sup> The EPA is currently reviewing a remedial investigation and feasibility study for the North Plant to address unacceptable risks posed by remaining site contaminants.<sup>43</sup>

## Superfund Site Community Impact and Action

These five Superfund sites are all in Waukegan, IL where 17% percent of the population are Black and 59% percent are Hispanic. The median household income of the City of Waukegan is \$53,778, compared to the household county average of \$92,654. Similarly, we can see in Figure 18 and 19 that communities like Waukegan with higher poverty rates also have higher rates of unemployment.

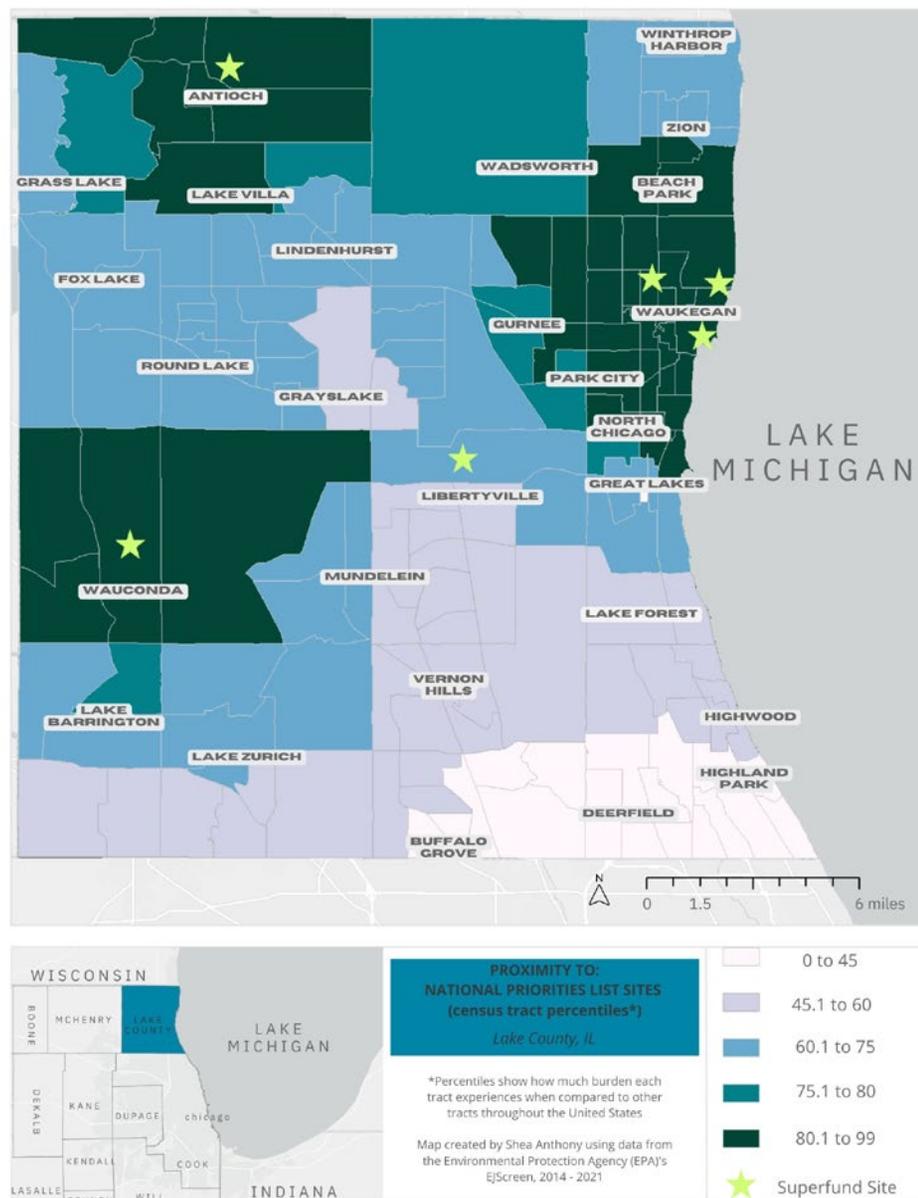


FIGURE 17. PROXIMITY TO NATIONAL PRIORITIES LIST SITES

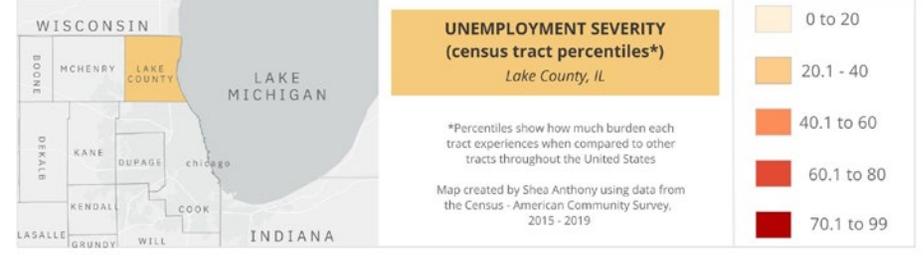
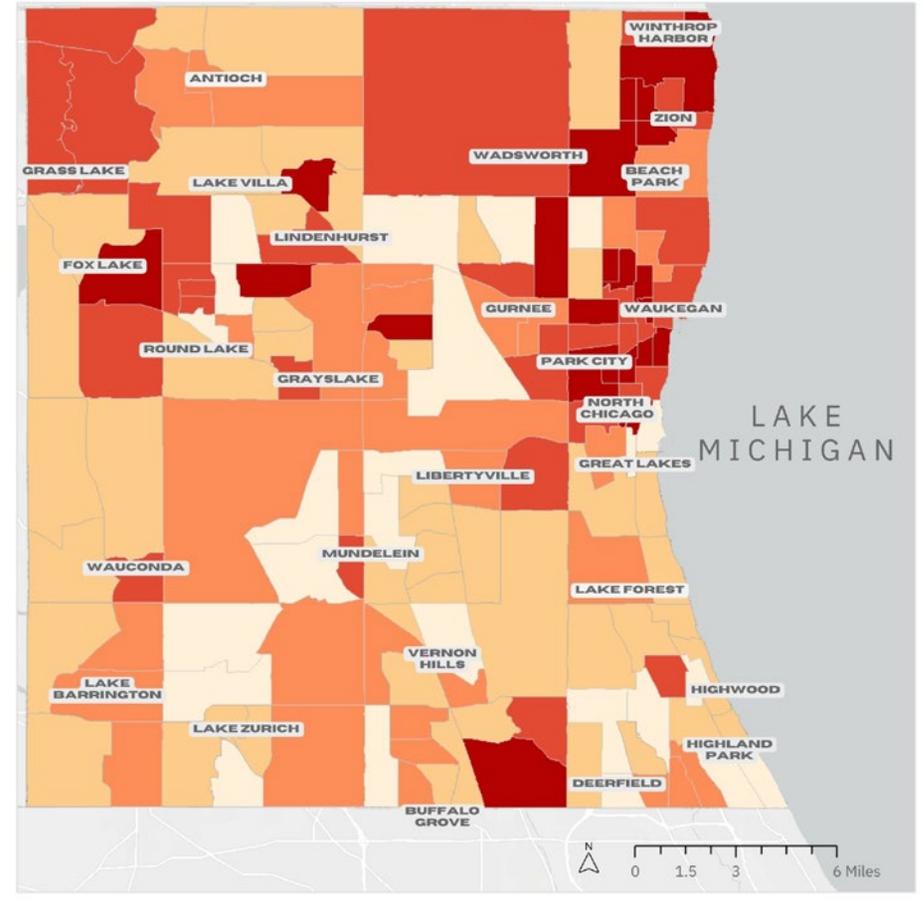
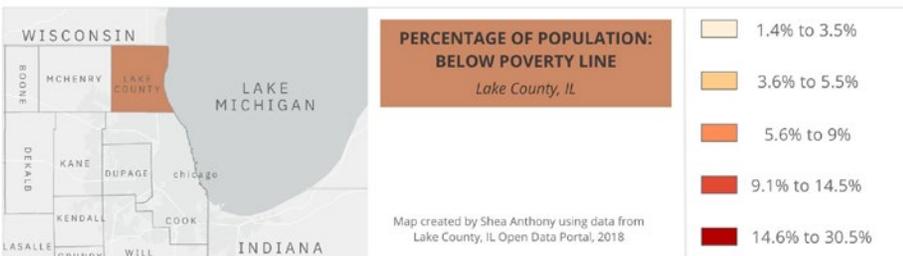
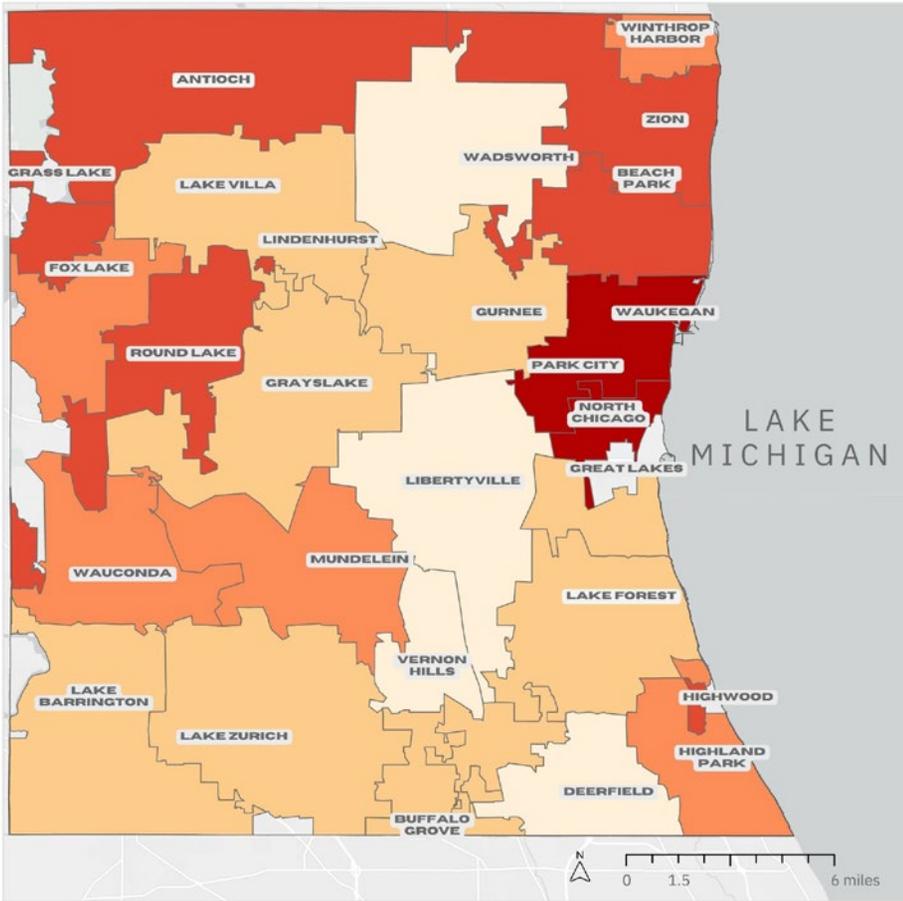


FIGURE 18. PERCENTAGE OF POPULATION BELOW POVERTY LINE IN LAKE COUNTY, IL

FIGURE 19. UNEMPLOYMENT SEVERITY IN LAKE COUNTY, IL

In the last three decades of the 20th century, many industries in Waukegan closed due to environmental and health concerns impacting employment rates. Waukegan lost close to 35,000 jobs in three decades (1970s-2000s).<sup>44</sup> Figures 18 and 19 show the continued economic implications today in poverty and unemployment.

Fortunately, community action and advocacy has led to the continued remediation of these sites, and particularly in Waukegan Harbor. In 1990, the Waukegan Harbor Citizens Advisory Group (CAG) was formed by the Illinois Environmental Protection Agency (IEPA) to lead the development of a remedial action plan (RAP) for the Waukegan Harbor Area of Concern.

In 2013, the final environmental dredge of Waukegan Harbor was completed. As of August 2020, the Waukegan Area of Concern (AOC) has only one Beneficial Use Impairment (BUI) remaining: Restrictions on Fish and Wildlife Consumption. The Illinois Department of Natural Resources monitors PCB levels in harbor fish. The CAG continues “to work with local, state and federal agencies to assure that the remaining contaminated sites located along the Waukegan lakefront are remediated and the remaining BUI is delisted and the AOC be declared an Area of Recovery.”<sup>45</sup>

The CAG has helped to ensure that remediation included increased community access to the harbor. For example, in 2019, the Army Corps completed a major renovation of the half-mile pier in Waukegan, opening it to recreational use. In 2021, the EPA announced the allocation of \$1 billion from the bipartisan Infrastructure Investment and Jobs Act

to clean up Great Lakes AOCs, prioritizing the completion of clean-up in Waukegan Harbor.

Harmful physical environments are a well-documented threat to community health, as seen from the Superfund sites above. Low-income communities and Communities of Color have an elevated risk to environmental hazards like proximity to toxic sites.<sup>46</sup> Additional threats we will explore include air and ground water pollution.

## Ethylene Oxide

Section 112 of the Clean Air Act Amendments requires the EPA to publish regulations and guidance for chemical action prevention in the Risk Management Program (RMP). Lake County’s RMP facilities are shown in Figure 20. The RMP requires facilities to develop a Risk Management Plan to identify potential effects of a chemical accident, prevention, and emergency response.<sup>47</sup>

Ethylene oxide, one of the pollutants that requires a facility to have an RMP, is a flammable, colorless gas used to sterilize equipment and plastic devices and has been used in Medline Industries in Waukegan and Vantage Specialties Chemicals in Gurnee.<sup>48</sup> Ethylene oxide was reclassified as a human carcinogen by the EPA in 2016, and in November 2018 the Lake County Health Department learned about ethylene oxide emissions and started conducting air monitoring.<sup>49</sup> In 2019, the EPA coordinated efforts to respond to these emissions in Lake County. People exposed to ethylene oxide may experience headaches, vomiting, diarrhea, trouble breathing, and weakness. Chronic exposure can cause irritation of the skin, nose, throat, and lungs,

and damage to the brain and nervous system. There is also evidence linking ethylene oxide exposure to negative reproductive effects.

## Coal Plant Pollution

The NRG Waukegan Generating Station was a coal-fired electric power plant adjacent to a state nature preserve, a municipal beach, and the city of Waukegan’s water treatment plant. The plant closed in June 2022, after various violations of the Clean Air Act.<sup>50</sup> There is evidence that contaminants from the coal ash are in the groundwater, presenting various health impacts from minor irritation and gastrointestinal problems, to disease or cancer.<sup>51</sup> Through the work of Clean Power Lake County, Waukegan residents continue to push for a transition plan to address remediation and revitalization of the plant, including removal of the coal ash ponds, and opportunities for local economic development.<sup>52</sup>

## Particulate Matter

Particulate matter (Figure 21) is made up of solids or liquids in the air like dust, dirt, soot, smoke, and drops of liquid.<sup>53</sup> This type of pollution can be harmful to one’s health, exacerbating asthma, or causing eye, lung, and throat irritation.<sup>54</sup>

## Traffic and Motor Vehicle Emissions

Air pollutants from motor vehicles are found in higher concentrations near major roads, leading to higher rates of asthma onset, cardiovascular disease, premature death, and childhood leukemia.<sup>55</sup> Examples

of these pollutants include particulate matter, carbon monoxide, and oxides of nitrogen.<sup>56</sup> More traffic and higher emissions influence air quality near major roadways. Heavy diesel trucks can emit more pollutants (particulate matter and nitrogen dioxide) and contribute disproportionately to the emissions of all motor vehicles.<sup>57</sup>

Figure 22 shows high-density road clusters primarily in southeastern and eastern Lake County, as well as the highest concentrations of traffic. Similarly, Figure 23 shows the highest concentrations of diesel particulate matter exposure in the eastern half of Lake County. These are likely attributed to the highway running north to Wisconsin and south to Chicago.

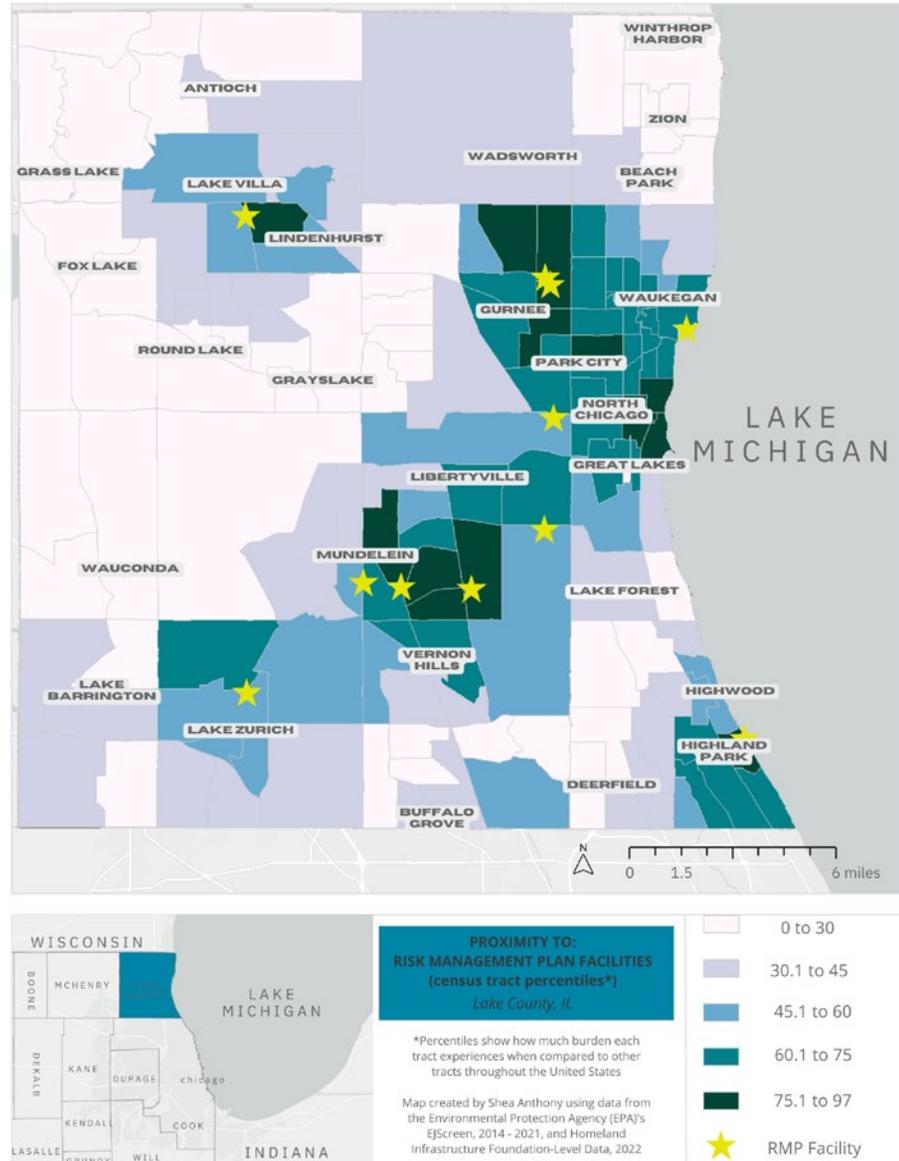


FIGURE 20. PROXIMITY TO RISK MANAGEMENT PLAN FACILITIES IN LAKE COUNTY, IL

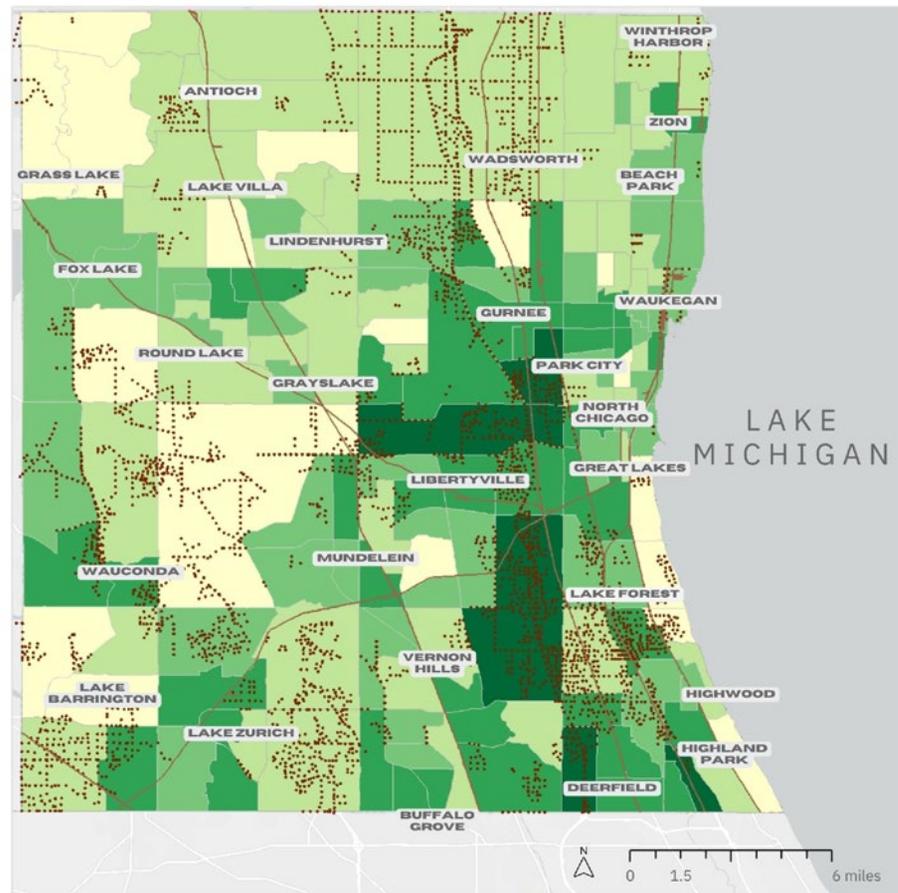
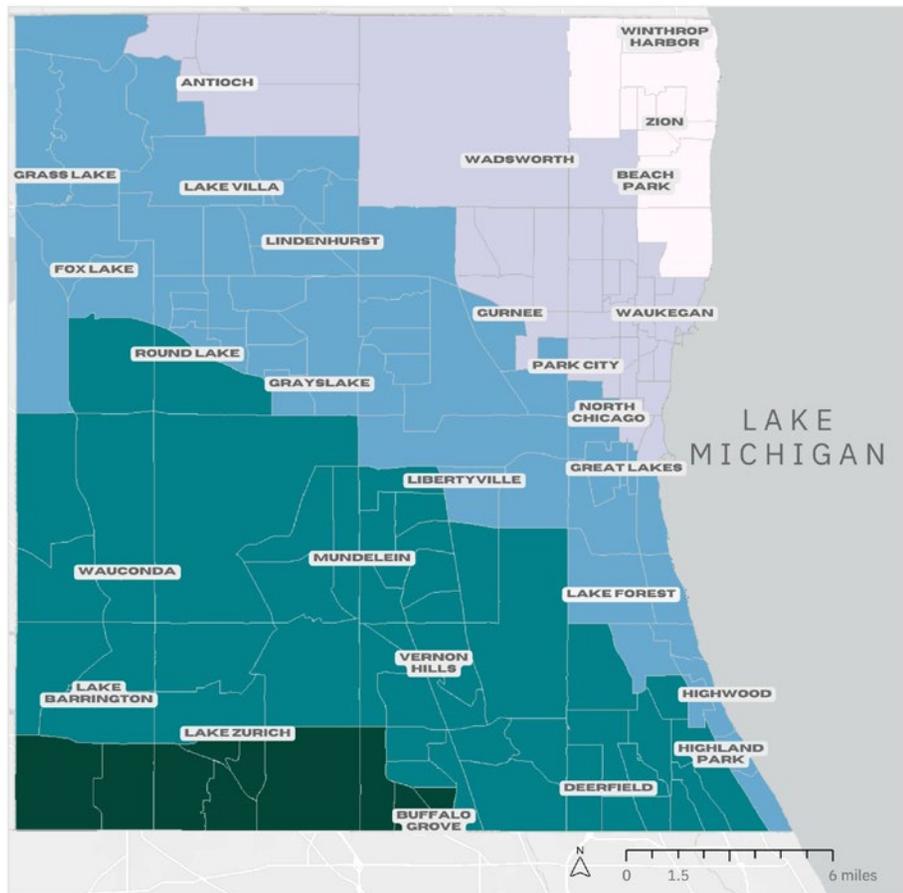


FIGURE 21. PRESENCE OF PARTICULATE MATTER IN LAKE COUNTY, IL

FIGURE 22. TRAFFIC PROXIMITY AND VOLUME IN LAKE COUNTY, IL

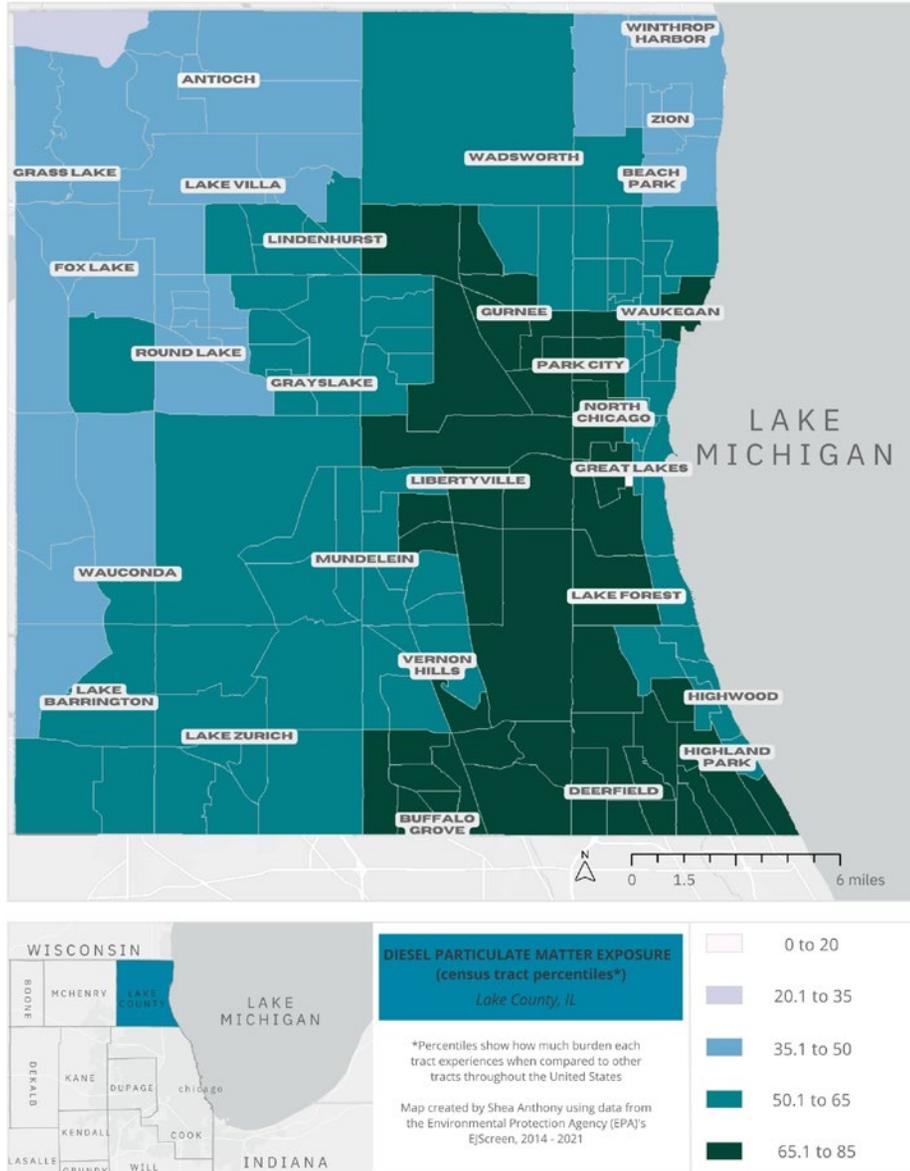


FIGURE 23. DIESEL PARTICULATE MATTER EXPOSURE IN LAKE COUNTY, IL





# Pollution and Health

ARTWORK:

CELLULAR HEALING BLANKET: TREES ARE MEDICINE

KENDRA KETT

Research shows that social and environmental factors contribute to the risk of premature death twice as much as health care access. Polluting emissions not only make the air quality worse but exacerbate previous health conditions like asthma and chronic obstructive pulmonary disease (COPD).<sup>58</sup>

## Asthma

Disproportionate exposures to ambient air pollutants are associated with elevated rates of asthma. An asthma needs-based assessment conducted by Mobile CARE Foundation in 2012 shows that 32.8%, 32%, and 27.4% of respondents in Waukegan, North Chicago, and Zion, respectively, had a diagnosis of asthma or presented symptoms of asthma through an assessment tool.<sup>59</sup> Figure 24 shows that the highest levels of asthma prevalence are centered in North Chicago, Waukegan, Zion, Beach Park, and Roundlake.

## Diabetes

We also see a similar pattern of higher diabetes prevalence in these communities along with Grass Lake, Wauconda, and Lake Barrington (Figure 25).

## Chronic Obstructive Pulmonary Disease and Heart Disease

Figures 26 and 27 show the highest prevalence of chronic obstructive pulmonary disease (COPD) in the northeastern part of the county, and the highest prevalence of heart disease-related deaths is in Zion and Fox Lake.

## Wildlife Health

Pollutants also significantly impact wildlife in the area.<sup>60</sup> There have been changes in fish populations, such as high levels of toxins in coho salmon and lake trout. Aquatic organisms suffer contamination through exposure to or ingestion of sediments. Humans, fish-eating fish, and fish-eating birds and mammals are all at risk by consuming fish contaminated with PCBs and other pollutants.<sup>61</sup>

Impact on wildlife is exacerbated by the increasing impact of our changing climate. An alarming report released by the Audubon Society indicates that “two-thirds of North American bird species are at increasing risk of extinction by global temperature rise.”<sup>62</sup> Reports on insect species and populations are mixed. Many researchers believe that insect populations are crashing, impacting the food chain in unknown ways. We have seen this in our region with the Karner Blue Butterfly,<sup>63</sup> which became locally extinct during the warm spring of 2015 due to a mismatch between the early timing of its blooming food source and its migratory journey.

Other researchers see an increase in invasive insects as our globally connected world and climate change redistribute native and invasive populations.<sup>64</sup> Global patterns of land use destroy native habitats that all types of natural communities depend upon. Scientists are urging policymakers to protect at least 30 percent of U.S. lands and oceans by 2030 to address the climate crisis and protect our natural communities.<sup>65</sup>

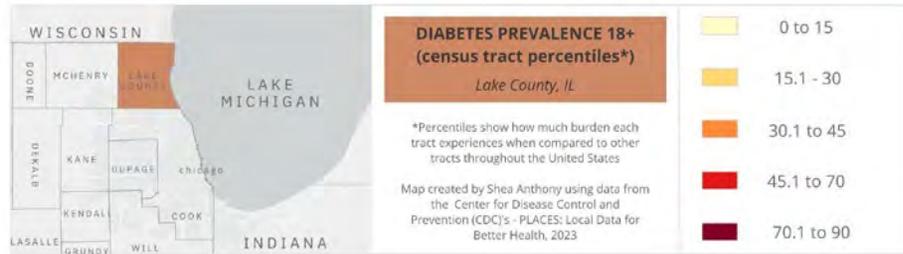
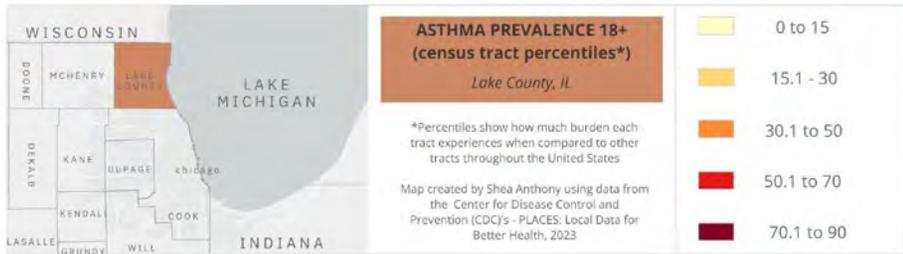
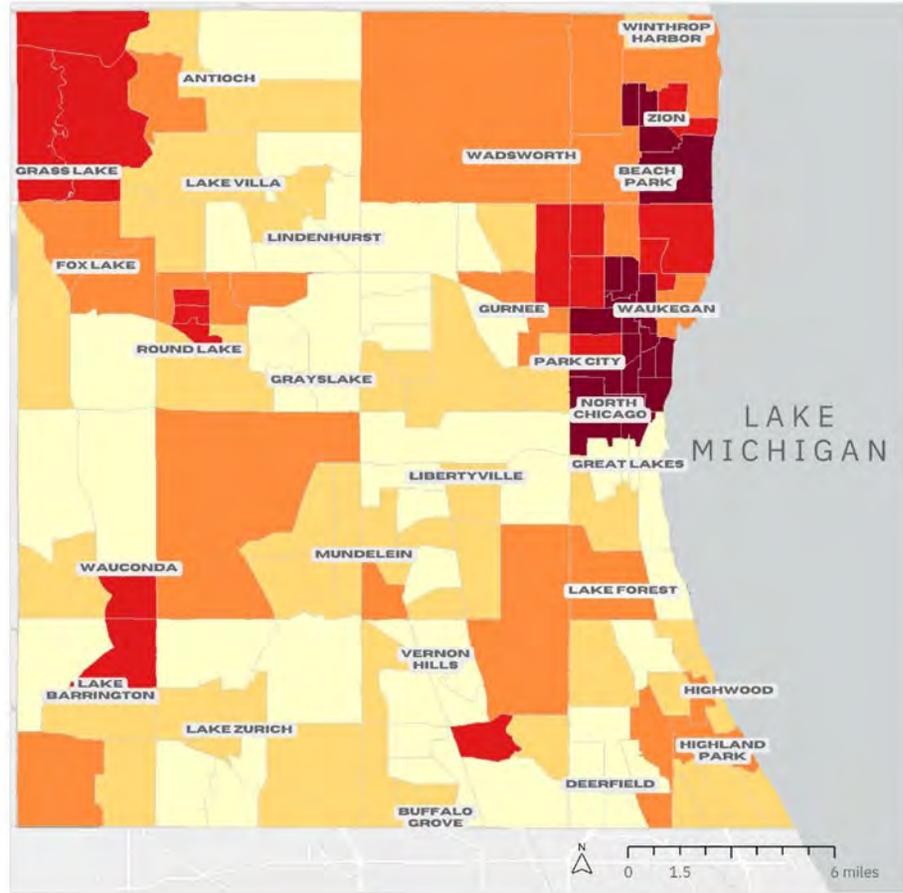
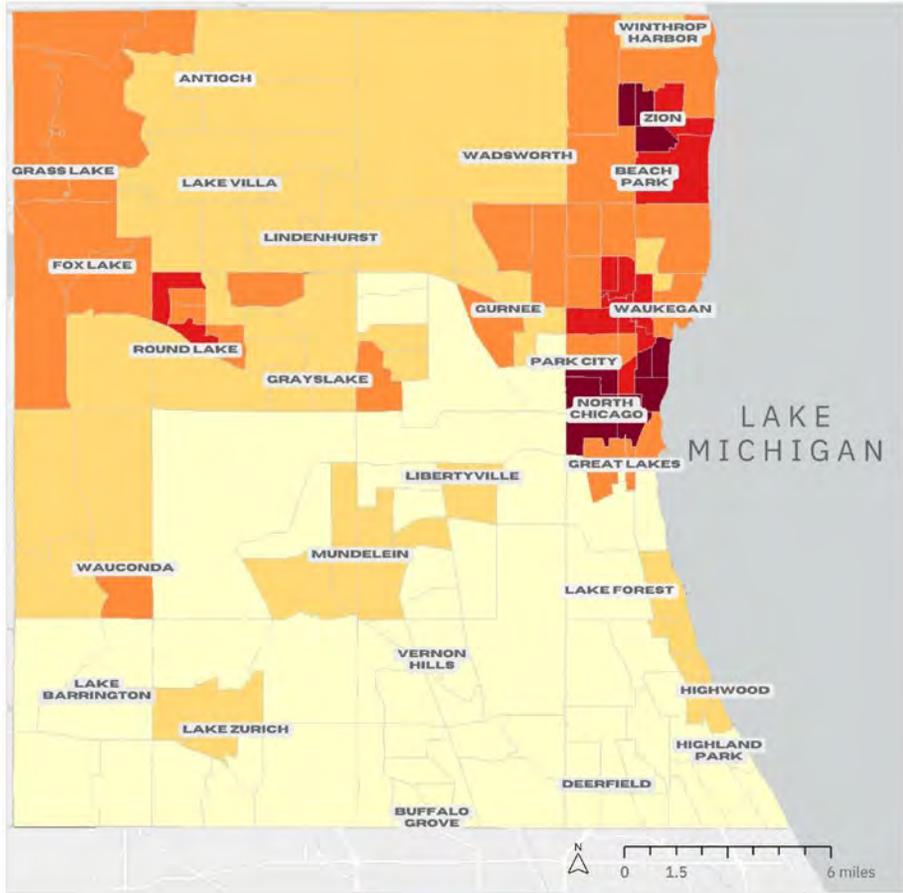


FIGURE 24. ASTHMA PREVALENCE IN LAKE COUNTY, IL

FIGURE 25. DIABETES PREVALENCE IN LAKE COUNTY, IL

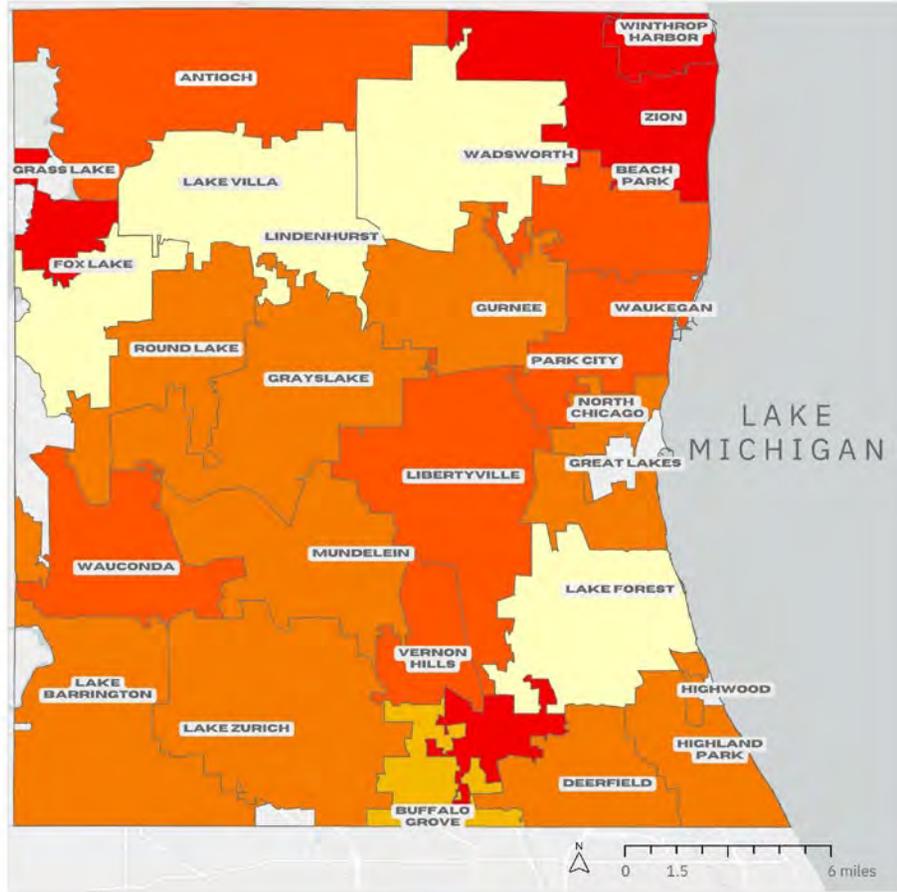


FIGURE 26. CHRONIC OBSTRUCTIVE PULMONARY DISEASE IN LAKE COUNTY, IL

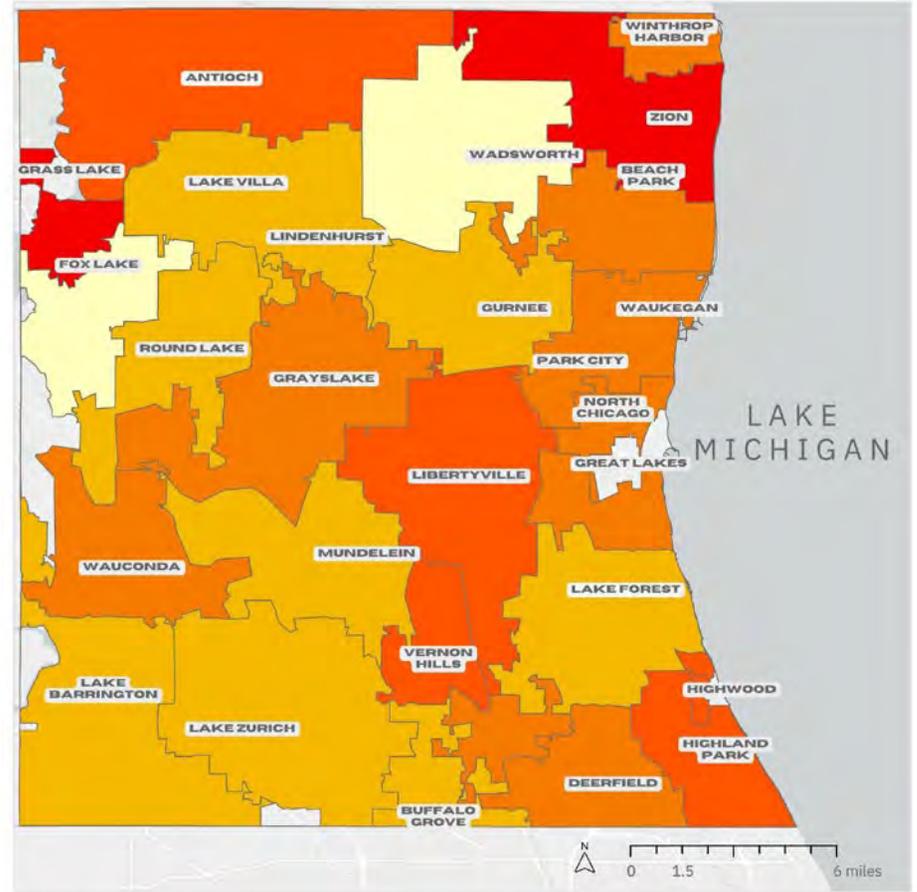


FIGURE 27. HEART DISEASE-RELATED DEATHS IN LAKE COUNTY, IL



# 7

CHAPTER

## A Changing Climate

ARTWORK:  
NATURE'S SUSTAINABLE PLAN  
CAROL LUC

Climate change compounds the impact of existing environmental challenges on human health. The number and costs of “Billion Dollar” natural disasters has risen and are seen across the world through sea-level rise, deadly hurricanes and tornadoes, increased drought, and fires.<sup>67</sup>

In Lake County, data from the Illinois Geological Survey has found that temperatures have increased by more than one degree Fahrenheit since the 1800's.<sup>68</sup> Lake County has also seen an increase of over an inch of rainfall for large storms since the 1970's.<sup>69,70</sup> These issues are so prevalent that Lake County has held public hearings about the impacts of increased rains.<sup>71</sup>

### Rising Temperatures and Human Health

**Heat Wave-Related Illness:** According to the Prairie Research Institute, rising temperatures in Illinois are leading to more severe and frequent heat waves. “People with chronic medical conditions and mental illness, those who live alone, people without access to air conditioning or who cannot afford to use it, and the elderly are at greatest risk of serious illness or death in heat waves.”<sup>72</sup>

**Sleep Quality and Mental Health:** Increased overnight temperatures have a direct impact on sleep. Higher temperatures often result in lower-quality sleep patterns that can impact overall health as described below:

*At a physiological level, sleep loss can undercut the neural consolidation of new knowledge, the repair of skeletal muscles, and the efficient removal of*



Responding to increasing threats of carbon emissions on our planet, the Lake County Board approved a resolution in 2020 that commits Lake County to achieving net zero greenhouse gas emissions by the year 2040. Lake County is also actively leading several solar energy initiatives designed to increase the availability and use of solar power in the region.<sup>66</sup>



waste from the brain. Insufficient sleep may also compromise immune system functioning, dysregulate metabolism, and increase systemic inflammation in the body. The subsequent health impacts of too little sleep are numerous, including increased risk for cardiovascular disease, diabetes, and obesity. From a neuropsychiatric standpoint, acute sleep deprivation is linked to worse mood, and sleep problems may contribute to the development of depression and suicidality. Moreover, restricted sleep harms cognitive performance via reductions in memory, attention, and processing speed. Human wellbeing suffers without adequate rest.<sup>73</sup>

**Exercise Limitations:** Higher temperatures, humidity, and increases in poor air quality can impact and limit outdoor exercise options. Furthermore, health impacts may increase health issues identified above if public alerts, warnings, and outdoor conditions are ignored due to work or other mandated reasons.<sup>74</sup>

**Increased Allergens:** Increased overnight temperatures and high humidity levels increase the likelihood of associated microbial, fungal, mold spores, and airborne pollen outbreaks. In our natural areas we see this impact in the form of Oak Wilt<sup>75</sup> and super blooms of mushrooms, but in the public health realm, we may see this as a trigger for “respiratory illnesses such as asthma, allergic rhinitis, conjunctivitis, and dermatitis. High pollen counts have been linked in several studies to increases in asthma emergency-department visits. Children are particularly susceptible to most allergic diseases.”<sup>76</sup>

**Food Availability:** Increases in temperatures may impact Lake County residents' availability to garden or access fresh food. Higher emissions scenarios indicate it may simply be too hot for plants to produce seeds or fruits.<sup>77</sup> Particularly, accessing food grown in areas of the country or world that are even more climate-vulnerable will likely become more difficult.

## The Power of Humidity

**There is a direct relationship between temperatures and humidity:** warmer air can hold more moisture. This relationship powers increasingly common natural disasters such as hurricanes, tornadoes, and violent thunderstorms.<sup>78</sup> High humidity levels combined with high temperatures have the most severe impacts on health, speeding the onset of heat-related health symptoms and issues.<sup>79</sup>

The impact of increased temperatures, humidity levels, and poor air impacts is complex. According to a paper published by the National Institute of Health, “Dust, allergens, soot, water vapor, and other particles and gases in the atmosphere are constantly interacting and forming new mixtures, often with the influence of heat and ultraviolet radiation.” Increased temperatures make these combinations more common, and more impactful, resulting in a host of issues including increases in asthma and bronchial-related illnesses, abnormal heart rhythms (ventricular arrhythmia), and heart attacks (myocardial infarction).<sup>80</sup>

# Increased Precipitation and Human Health

Just as increased temperatures and associated factors impact human health, so too does increased precipitation levels. As described above, temperatures and humidity levels increase the likelihood of fungal, spore-based molds, and particulate matter impacts. The same is true with precipitation. More water means more potential impacts, which have both direct and indirect consequences on human health.<sup>81</sup>

**Mosquito-borne Illnesses:** Primary direct impacts from increased precipitation include the risk and likelihood of mosquito-borne illnesses and other vector-borne diseases<sup>82</sup>, since mosquitos reproduce using standing water. Globally, this is a larger problem than in Illinois, though Illinois and Lake County can expect higher incidents of localized outbreaks. In 2022, West Nile Virus was confirmed in Lake County<sup>83</sup> and this is a trend that can be expected to both continue and increase. Furthermore, other mosquito-transmitted diseases such as Zika, Dengue, and Chikungunya have been confirmed in Florida and Texas.<sup>84</sup> As our climate warms, the spread of these diseases may migrate further north.<sup>85</sup>

**Tick-borne Illnesses:** Tick-borne illnesses should also be expected to increase.<sup>86</sup> Lake County appears to be prepared for this increase with multiple resources to identify types of ticks and tick-borne diseases such as Lyme Disease, a bacterial illness which causes a host of symptoms if infected, including fever, fatigue, joint pain, and skin rash, as well as more serious joint and nervous system complications.<sup>87 88</sup>

**Water Quality:** Other direct impacts of increased precipitation include decreased levels of water quality. Larger storms flush trash, residues, and pollutants collected on pavements into the stormwater systems, whether they are traditionally piped and released into local streams and waterways for release directly to downstream communities, or to a sanitation plant to deliver cleaned and treated water to municipal residents. As we are learning, however, these treatment processes are less than ideal as multiple climate stressors place a large burden on our infrastructure. Chemicals, microplastics and traces of certain drugs can all be found in drinking water supplies.<sup>89</sup>

Furthermore, increased water temperatures also allow harmful algal blooms to occur and proliferate, including in Lake Michigan. According to the Chicago Tribune, exposure to these algal blooms can harm pets and people, causing skin rashes, diarrhea, and coughing, while extended exposure can lead to liver damage.<sup>90</sup>

**Flooding:** Increased rains also result in flooding. According to a 2015 report, urban flooding caused by increased precipitation and undersized drainage systems have had an outsized impact on northeastern Illinois. This report clearly indicates a direct connection between the prevalence of flooding, missed work, stress brought about by financial loss, sewer backups or flooded basements, and other mental health impacts from flooding on primary dwellings.<sup>91</sup>



# 8

CHAPTER

## Community Insight: Connecting to Nature

PHOTO:

CURIOSITY, 2020

DAWAUNE LAMONT HAYES

The following sections represent key themes and sub-themes of interview data about community members' experiences with nature and the outdoors, along with supporting quotes.

### Transformative Experiences Pertaining to Nature

This theme encompasses both positive and negative experiences that respondents have had when engaging with the outdoors or nature. Specifically, many respondents expressed how their experiences with nature have either changed or shaped their lives in a meaningful way. This theme has the largest number of subthemes:

#### Personally experienced physical health benefits

Respondents were likely to go on walks or hikes, engage in activities such as yoga, or play with their children as a means of spending time outdoors and in nature. As with exercise or physical activity more generally, respondents noticed physical benefits such as improved management of weight, fatigue, blood pressure, and diabetes. One respondent noted that walking outside had become an important component of managing his medical health conditions:

*"I'm a Type One diabetic, so for me being outside and being able to walk and enjoy open and green spaces is a really big deal. That's why I think it's important."*  
- Respondent

### Personally experienced mental health benefits and insight on how nature facilitates improved mental wellbeing

Respondents found many mental health-related benefits associated with spending time in nature. Respondents also reflected on why or how their experiences improved their mental wellbeing. A common thread across responses highlighted the importance of connection, and how nature can facilitate a deeper and more meaningful connection with the self, community, and with one's environment. This sub-theme has been further divided into the following:

#### Recognition that nature is universal and common to respondents and ecology

Respondents recognized that nature belongs to everyone, and has the ability to unite individuals of different backgrounds.

*"Studies just have shown how different communities do enjoy open and green spaces, whether it's, you know, to take your children out there or to even take your animal out there as well."*

- Respondent

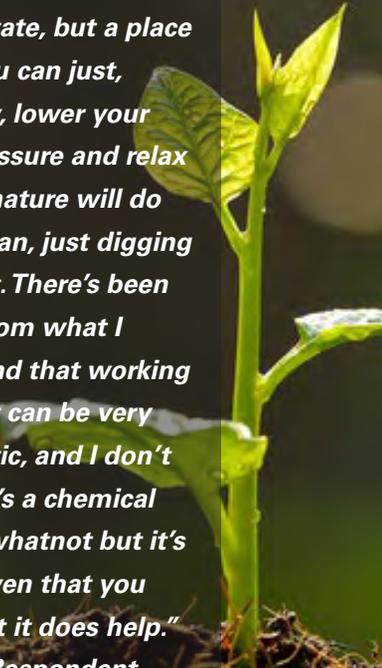
#### Stories and life lessons about healing from trauma, derived by observing nature

By spending time in and observing nature, respondents drew parallels between their lives and those seen out in nature. For example, respondents observed the hierarchy of predators, and better understood universal themes such as safety and vulnerability.

People also noted practicing different forms of mindfulness and grounding techniques when outdoors, and connected such experiences to a reduction in stress levels. According to another respondent,

***“There’s a place to, you know. I don’t want to say meditate, but a place where you can just, you know, lower your blood pressure and relax because nature will do that, I mean, just digging in the dirt. There’s been studies from what I understand that working in the dirt can be very therapeutic, and I don’t know if it’s a chemical thing or whatnot but it’s been proven that you know that it does help.”***

***–Respondent***



***“Following her gaze, I spotted the reason for her sudden unease. At the top of a snag directly next to the trail sat a Great Horned Owl. As the hierarchy dictates, our hawk was right to feel fear. In a test of will, the Great Horned Owl would win. We quickly kept hiking and her feathers softened once again.”***  
– Respondent

Respondents also found courage to utilize their observations and learnings to heal their own suffering or trauma.

***“The birds come from South America. We didn’t know what type of birds were coming all the way from South America. The families were very, very excited to learn, and there’s no barriers. There are no borders, if they need to migrate. That’s how we connected with nature, because we learned that some of them die, but their children remember the journey. They know how to go back to the place, and that’s how that deep relationship is. We learn about nature but we still remember the journey to remember the bond that we have with our ancestors, and that’s how Nature operates and how nature heals itself: and that I think is a beautiful thing that we came to understand.”***  
– Respondent

**Time in nature is more meaningful when it’s spent alongside trusted community members**

Respondents viewed time spent in nature as imperative for connection. Nature facilitated an ability to connect with oneself to a greater extent. Nature also deepened one’s connection to others:

***“I think that when you access nature, you have the ability to connect with yourself and with others”***  
– Respondent

Specifically, respondents found that time spent in nature with others who make us feel safe, valued, or loved was even more meaningful and impactful.

***“It’s not just being out in nature and kind of seeing through the lens what’s actually around you, but it’s also doing it with other veterans. I think any successful veteran program it’s always going to be about being around other people and that’s the key.”***  
– Respondent

**Gardening as a form of restorative healing for those who took lives during wars/deployment**

Veterans often stated that gardening became an act of giving after spending time at war, where they experienced death at close proximity.

***“It was basically about veterans that turn to farming for therapy. Basically a lot of veterans have found a lot of comfort and solace, and being able to kinda tune into that kind of nature of growing and nurturing that has helped them a lot. We’re on various medications and the like, and they were able to eventually come off of those medications and they just found another way to deal with some very, very big problems.”***  
– Respondent

**Nature is viewed as a non-judgmental, safe space**

People who used time in nature as a way to connect with themselves and others found it provided a

safe space, where people could engage with their environment and each other, free of judgment.

*“It’s a purposeful community service for them, and some of the stories and things that we talk about during this. I mean, why you’re working in a field, or building a hoop house or whatnot. We found that they were able to open up and not feel guilty, or bad, or not too daunted by the conversation that they can just open up and talk about what they want. And even if it’s just anywhere from one brief sentence, or mentioning of something that happened in the past to full of day long conversations. It’s always been very helpful.”*  
– Respondent

Even the act of just looking at natural spaces decreased anxiety and panic.

*“I love the water. I love to see the water around the land because I was in the Navy. Whenever we go to the sea, like if we have still have like an underway or a deployment and I can’t like I get panic attacks when we’re like, I’m in the middle of nowhere, you don’t see any of that. But whenever I will see, like the water and the land it’s electrical. So I love the water as well to see the waves fluctuating like you do on the concrete. I have to see that.”*  
– Respondent

Irrespective of the reason behind people choosing or needing to spend time in nature, they reported enjoying the experience. Respondents also reported feeling comfortable, for the most part, when they spent time in nature.

*“I love spending time outside no matter the season - having a dog that must be walked 4-5x a day forces me to be, so it is a mutually beneficial experience. I like feeling safe walking alone in a forested or natural area...it is a place to listen, learn, grow, appreciate, and protect.”*  
– Respondent

**Lack of noise in nature allows for more mental clarity, perspective, and healing**

*“Nature is probably the best place for in my opinion, I mean there’s not a lot of noises. It’s quiet. You can really think you can really think and let yourself, or let your mind, go where it needs to go to help or to help heal.”*  
– Respondent

*“Ryerson Woods is our sanctuary of peace and wellbeing!”*  
– Respondent

*“Whenever you’re in nature and you access nature individually, just personally by yourself, it just feels like you can connect with yourself and kind of hear your thoughts a little bit more clearly.”*  
– Respondent

## Acceptance of nature for its good and bad

Respondents mostly reported positive experiences with nature. However, some of the concerns mentioned centered on the reality of nature, and how it can, on one hand be harsh or unpredictable, and beautiful and calming on the other. Some respondents reported experiencing sudden changes

in weather while being out on a hike. Sometimes losing cell phone signal, or not having adequate lighting led to respondents feeling scared, isolated, or lost. However, even when participants described these concerns, they did so while acknowledging that the beauty of nature lies in its good and bad - further reinforcing the idea that we must live by integrating nature more holistically into our lives.

*One time in Door County with my husband and three year-old daughter, we decided to take a winter walk in the Peninsula State Park along the trails. We encountered a winter wonderland and were mesmerized by the sparkly scenery. Dazzled, we suddenly realized it was no longer sunny and it was nearing 3:00 pm and we had lost our trail! As the sun was slowly setting, we worried we would be lost in the forest at night! My husband just panicked, so worried about our daughter, who was skeptical of her parents’ abilities. Staying calm myself out of necessity, I recalled that the sun sets in the west so I had a direction because even in a gloomy sky there was a brighter spot. Then I recalled that moss tends to grow on the north side of trees. By these observations, we made our way as fast as we could to the parking lot. From that day on, I came to respect the forces of nature and love it even more. I also learned the importance of sensible nature survival preparations even for the most casual walk in the woods.”*  
– Respondent

## Nature, faith, and beauty

### Faith, religion, or spiritual doctrines

Many respondents reported finding peace, calm, and energy when they spent time in nature. They connected these experiences to the sense of awe they attribute to spirituality and religion.

*“You know as someone of faith, someone that was studying history in theology, I had never considered: Where does my energy come from? Where does my water come from? And it kind of took me onto this journey of, you know, environmental work, even though I still didn’t know it.”*

– Respondent

### Beauty

Respondents were likely to pay attention to the beauty of natural surroundings, be it through walks, hikes, camping, or other activities in nature.

*“I have fallen in love with morning runs, simply due to the mystical beauty of scenery such as this.”*

– Respondent

## Nature and creativity

Time in nature was found to inspire and encourage creativity. Respondents who used drawing, photography, or other creative outlets to focus on elements of nature found that the combination of art and nature led not only to beautiful works of art, but also aided in healing from difficult times.

*“I’ve figured she [a bird] would disappear before I got my camera set up... she stayed, I think posing for the shoot, perfectly still on top of my feeder.”*

– Respondent

## Local Lake County experiences

Respondents noted specific benefits related to living in Lake County. Respondents who grew up in Lake County reported that they were likely to take their exposure to nature for granted, and often did not realize that other respondents did not have nature that was as easily accessible to them. Others expressed their gratitude at being exposed to more nature once they moved to Lake County.

*“I was always into camping and stuff like that, outdoorsy stuff. But you know, I’m a Jewish kid [from Skokie]. I don’t know much about farming and gardening where I grew up. But this has definitely allowed me to be introduced to nature more than anywhere else I’ve ever been.”*

– Respondent

## Connection between nature and health equity

Within this theme, sub-themes were divided into i) noticeable benefits of spending time in nature, ii) the benefits of increased programming that is centered on nature and the outdoors, and iii) the role of environmental justice advocacy in creating health equity.

## Noticeable benefits of spending time in nature

Due to the COVID-19 pandemic, many respondents reported experiencing difficulty concentrating on tasks. Time in nature helped in decreasing distractions and improving focus. Respondents also reported a decreased stress level if they spent time outdoors, particularly during the pandemic, given that other avenues to decrease stress such as community gyms and pools were deemed less safe and accessible at that time.

*“So people were used to that, and maybe now, with the pandemic, knowing that it was not as contagious (outdoors).”*

– Respondent

*“You know, walking really is good for our health, and I kind of I put on some pounds since the pandemic, and so getting out there and getting to explore a new forest reserve or a new park that I haven’t been to is good, both, you know, physical like health-wise, and then also like mentally health-wise.”*

– Respondent

Engagement with the outdoors also encouraged a more healthy lifestyle and promoted vitality. Overall, people who spent time in nature regularly reported a higher subjective wellbeing:

*“I seem happier in nature than I do in the city most of the time.”*

– Respondent

## Benefits of increased programming centered on nature and environmental justice

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Community members benefited in multiple ways from programming specifically centered on topics associated with the outdoors or nature. With an increase in programming that was specifically centered on topics associated with the outdoors or nature, the community benefited in different ways. Respondents noted that program instructors served as role models, who brought greater awareness and education about the type of jobs that were available within the field of environmental science, and the type of jobs that were associated with nature and the outdoors. Increased programming also inspired and encouraged younger children to better understand environmental justice and the need for it at the present moment, given that parents may not have the time to teach these concepts to children because of work obligations.

*“I remember we had a programming for middle school students during the pandemic, and so that was pretty cool...we really wanted to spread the message of environmental justice, because a lot of it isn’t known. And so the best way to do that was through a coloring book...it’s super cool, because through it the kids start talking about environmental justice, and you know a lot of these parents, just don’t have time to learn about environmental justice issues or they’re always in work mode.”*

– Respondent

## Barriers to accessing nature and the outdoors

This category consists of all of the different factors that make it difficult to access nature and the outdoors.

### Distance and lack of transportation

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Respondents identified that the distance between forest preserves, parks or other outdoor spaces and their homes played an important role in determining whether an individual spends time outdoors. The greater the distance, the less likely people were to spend time outside. Subsequently, greater distances required modes of transportation. Given that many residents do not own cars, and rely on public transportation, the lack of reliable public transportation was cited as a significant barrier.

*“In order to get to the lakefront, a person either has to drive or walks a significant distance.”*

– Respondent

*“It could be a transportation issue, depending on where you live at here in the city. You know that there’s not always a bus route.”*

– Respondent

*“I was able to explore nature and my love for it and develop it. But that’s not the same case for everyone. You know, not everyone has workout habits or not everyone has time for it. You know, the bus system is kind of unreliable at times, and so a lot of people don’t want to use it. You know, our society in America is just so car focused. A lot of things are so widespread. Really, it is a huge accessibility issue.”*

– Respondent

The following maps help visualize where public transportation is most accessible as well as which communities in Lake County, IL are most walkable. As seen in Figure 28, communities like Waukegan, North Chicago, Zion, and Beach Park are closer to transit stops, and are more walkable (Figure 29). However, to get from community to community, walkability and transit becomes more challenging

## Low awareness of local outdoor-focused assets

Another identified barrier centered around the awareness gap of local outdoor-focused assets. Having different resources and organizations that work to provide outdoor resources is most useful when people are aware of them.

*“Yeah, education, I mean a lot of veterans don’t know that these programs exist. One of the barriers is in lack of knowledge.”*

– Respondent

*“There’s a lot of room for service providers to work with people, which is where Brushwood actually comes in really, really well in expanding the services that they offer. So the people who may never have. I have had access to nature, to creative outlets, to all of these things that people in more affluent communities take for granted. It can be exposed and find what works for them.”*

– Respondent

## Work commitments

Respondents also cited interference due to long working hours as a frequent barrier to accessing outdoor spaces. Longer working hours sometimes lead to low awareness of the presence of outdoor spaces and low awareness about the importance of outdoor spaces for wellbeing. Even if individuals were knowledgeable about the outdoors, long and intense working hours were associated with increased fatigue, which in turn prevented them from using outdoor spaces.

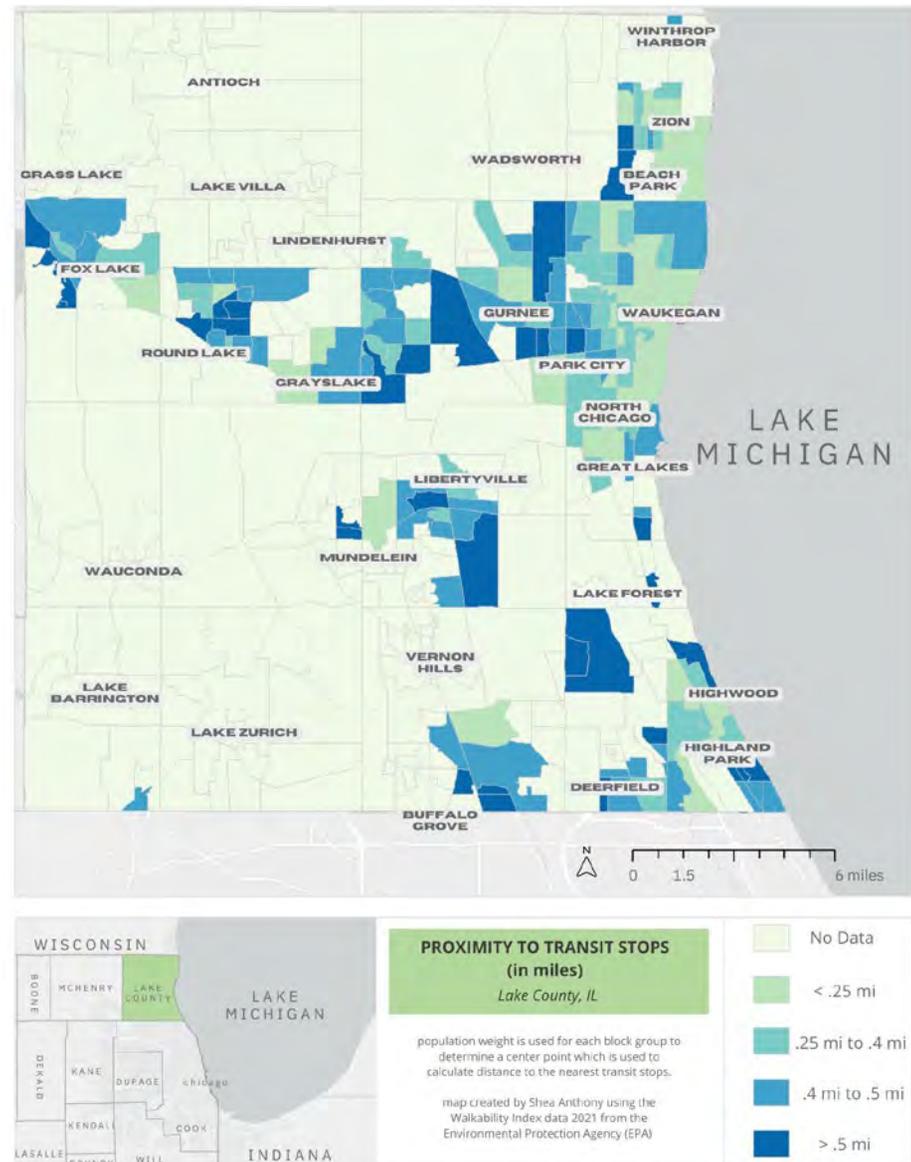


FIGURE 28. PROXIMITY TO TRANSIT STOPS IN LAKE COUNTY, IL

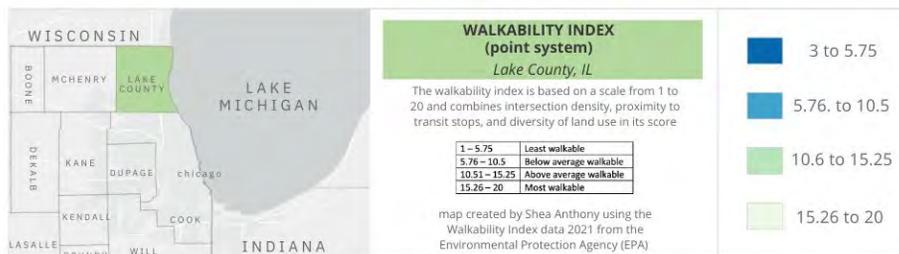
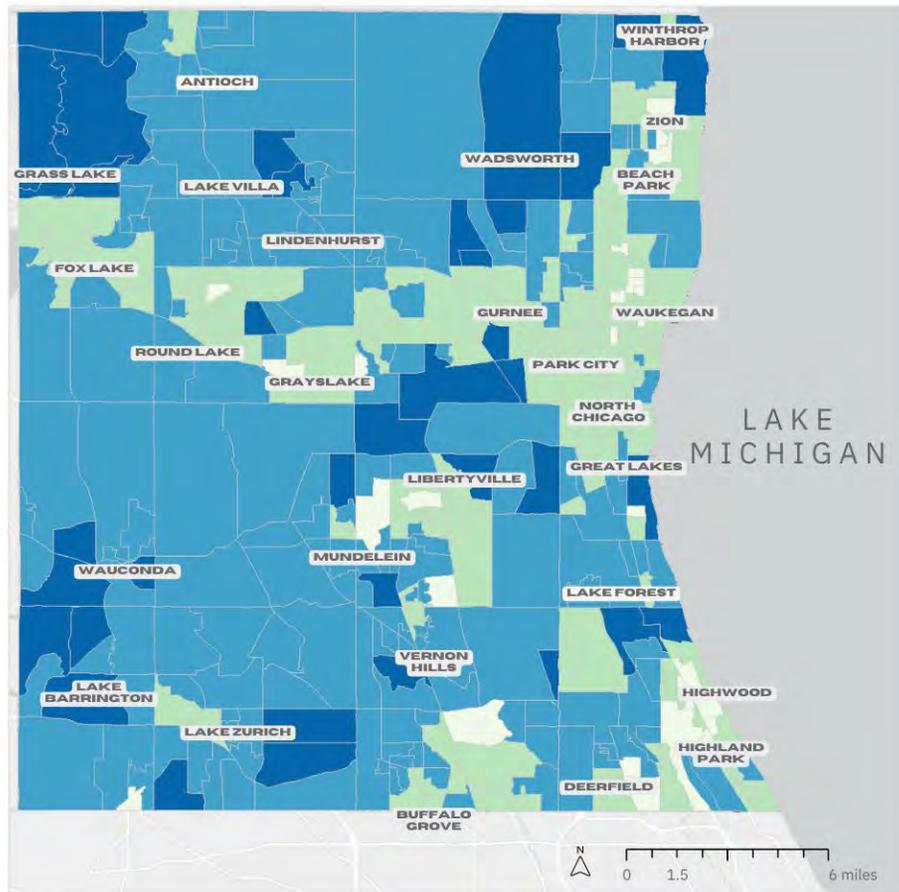


FIGURE 29. WALKABILITY INDEX IN LAKE COUNTY, IL

*“Some parents are barely staying afloat and managing. You know the little time that they do have they’re more so spent to kind of relax and catch up to themselves, spend some time with their kids and unfortunately it makes things like accessibility to nature harder because these parents aren’t really going to. They’d much rather kind of want to watch something to escape you know, go for a movie, rather than kind of go for a walk in nature.”*

– Respondent

## Language barriers

Respondents frequently identified language barriers as a hindrance towards utilizing outdoor spaces. Conversely increased bilingual programming, as mentioned below, acted as a facilitator for increased access to outdoor spaces.

## Weather changes

Particularly during colder months, weather significantly limited utilization of the outdoors. Respondents stated that some may not have the knowledge or awareness about the appropriate clothing required to go outside in the cold, while others noted that some individuals may not have access to winter clothes, which dissuades them from going outside:

*“Getting people to go out in the cold, which is a lot harder, because I know a lot of people are out there maybe not having like a hiking boot, and like warm coat, or, like you know, kind of warm pants.”*

– Respondent

## Stigma and trauma

Experience of trauma, and the stigma associated with seeking help, was also identified as a barrier. Respondents, particularly veterans noted that trauma could result in people isolating themselves from others, as well as from their community and environment.

*“Getting the word out ... that is a hard thing to do, one because a lot of other ones that they don’t. You know [I have] found that a lot of veterans are more in their own [issues]. They’re so wrapped in their own issues that they don’t want help. There is some kind of a stigma attached to it. You know it’s hard to get over those roadblocks. That’s one of the biggest barriers I’ve found.”*

– Respondent

## Shortage of staff for nature-based programming

Respondents noted that there were fewer staff members involved in nature-based programming, which could lead to cancellations and lower engagement.

*“Thirty cars at Green Belt, ready to do a nature walk, and it being canceled because the volunteer had something come up in life, I never actually tried setting something up with a volunteer, but just that I want to risk bringing people, and then them not having the full experience.”*

– Respondent

## Lack of inclusive programming for individuals from diverse communities

With growingly intersectional identities, the lack of inclusive programming was identified as a key barrier to making the space feel open and welcoming.

## Community Assets

This theme includes local organizations, programs, and resources that help foster connectivity and more utilization of green and blue spaces.

## Programs contributing to increased use of the outdoors

Several factors contributed to respondents’ increased use of nature and the outdoors, including multilingual programming, providing transportation to natural areas, and outdoor education programs. In Figure 16, you can see that over half the Waukegan population’s first language is not English.

*“I think for us, we really saw the need of getting the Spanish-speaking community to feel comfortable when it comes to their health and speaking with medical providers. So we had what we called Rx walks with a doctor, but in Spanish right where we would go out in nature and walk any one of these like nature preserves or a local park, and have a doctor with us that would be talking to them about different things. So that was one of the ways we were trying to break that barrier.”*

– Respondent

Respondents who were exposed to nature at an earlier age were also more likely to return to nature in times of distress.

*“Yes, I as a teenager. I was able to go to an outdoor wilderness program. And so that was my first exposure really to not just being in nature with hiking, and you know fruit trees. But being an actual wilderness where you had to carry your food. And it was up in Canada canoeing for a month and so then I became interested in backpacking and, I’ve gone on a number of backpacking trips which I love because when you get into wilderness, especially mountains... I find it particularly inspirational it opens your horizon, both metaphorically and literally to the grandeur of the world, and something beyond yourself which is powerful and profoundly meaningful. So yeah, camping and especially in wilderness areas has had a big effect on myself. My wife exposed our children to that over time. And so that corroborates those feelings. So it’s almost a spirit, really a spiritual experience to be in to feel at home there and a part of something bigger than yourself.”*

– Respondent

## Growing Food and Gardens

Another identified factor was access to nutritious food. Engaging in the practice of growing one’s own food was found to be an important way to connect with nature. The practice increased consumption of nutritious food, and in turn affected wellbeing positively.

***“So I think that the more that people are engaged with growing their food, and or at the very least knowing where their food comes from, the more people have a connection to nature and ecosystems, and understanding of how important they are to human health and wellbeing in lots of different ways.”***

– Respondent

Some of the assets mentioned include community gardens and urban farms. For example, knowing where and how many community gardens are available to respondents in and around Lake County was identified as a potential asset.

Furthermore, food is common to everyone, and the process of food production is imperative for the functioning of all communities, including immigrants. Growing one’s own food can empower immigrant communities to feel more integrated in a community.

***“To individuals who have been separated from the workforce. Whether that’s because they’re they have refugee status immigrant status, or has been incarcerated. Those individuals, some of those individuals like refugees and immigrants have had a long history of being involved in the production and distribution of food in wherever it was that they came from before coming to the United States, so being reconnected with communities who are also engaged with that is very powerful and empowering, and for health, because they can grow their own food, that is culturally appropriate.”***

– Respondent

Time and time again, local community members stated that they would like to see more community walks and more information on access to healthy food. So far, most community members have reported enjoying time outdoors and in nature, and have asked for more programming that facilitates these connections.





# A Path Forward: Recommendations and Actions

ARTWORK:

CELLULAR HEALING BLANKET: FOREST

KENDRA KETT

The following recommendations outline actionable strategies for community members, organizations and decision-makers to implement equitable, nature-based policy decisions to improve people’s health and wellbeing.

## Recommendation 1. Center Community Voices and Assets

### 1 Prioritize authentic community engagement and leadership

- Listen to the needs of the community without assumptions.
- Acknowledge that each community, however defined, is unique and requires time, accountability, and relationship-building to cultivate trust
- View community members as experts on their own lives and culture
- Build trust by spending quality time and building authentic relationships with community members and groups

### 2 Invest in inclusive decision-making processes

- Meet people where they are; intentionally structure public decision-making meetings and processes to maximize community input from those most impacted by decisions (e.g., public meetings or comment periods outside of 9am-5pm workday hours or on weekends)
- Engage community members and leaders on the boards and advisory groups of philanthropic organizations who invest in Lake County
- Increase utilization of “word of mouth” and trusted community leaders to spread knowledge about programs and input opportunities for minority communities that may not always easily trust

### 3 Create a digital community asset map for Lake County

- Create an accessible, digital community asset map through existing collaborations like Live Well Lake County to document, share, and maintain health equity resources, including nature-based programs and spaces

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#### 4 Value community strength as climate resilience

- Recognize social cohesion as a vital component of climate resilience; stronger are more resilient to the health threats of climate change and natural disasters: “Fostering community cohesion in low-income, climate-vulnerable areas is an overlooked strategy for climate resilience before, during, and after extreme weather events.”<sup>92</sup>
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### Recommendation 2.

## Prioritize Communities Overburdened by Systemic Inequities

*Note that the following recommendations apply to the key geographies identities in the Systemic Inequities Map (Figure 1)*

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#### 1 Address health, equity, and nature as a deeply connected system of social drivers of health

- Advance solutions across Social Drivers of Health (SDOH), in addition to the environment, recognizing that they are interconnected and thereby result in mutual benefit
  - Invest in expanded data collection and visualization to ensure environment-related data is included in assessments and decision making about health equity. For example, the Lake County, IL Open Data and Records Hub has a trail data set that includes an empty column intended to rank trail conditions. Collecting this data could increase vital understanding of green space equity by going beyond proximity and into usage potential
- 

#### 2 Invest in recreational infrastructure and programs

- Increase investment in trails, bike paths, gardens, urban farming, and other community-identified assets that make access to green space easier at the municipal and county level
- 

#### 3 Expand public transportation

- Increase connectivity of public transportation to and from outdoor spaces, including increased busing during daytime hours
- Provide complimentary busing or alternative transportation modes (e.g., carpooling, rideshare services, biking) and programs (Cook County’s Nature Express Bus) for community groups, schools, and other entities
- Increase investment in bike-sharing services

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## Recommendation 3.

## Advance Climate Justice: Clean Air and Water

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<b>1 Advocate for and invest in clean-up of Superfund sites</b>	<ul style="list-style-type: none"><li>• Advance solutions across Social Drivers of Health (SDOH), in addition to the environment, recognizing that they are interconnected and result in mutual benefit</li></ul>
<b>2 Compensate communities disproportionately impacted by pollution</b>	<ul style="list-style-type: none"><li>• Continue to increase funds to support a just transition for communities impacted by climate justice issues, such as the state grants recently allocated for Zion and Waukegan</li><li>• Advocate for financial reparations from corporate and industrial polluters</li></ul>
<b>3 Increase monitoring and regulation of ethylene oxide</b>	<ul style="list-style-type: none"><li>• Expand regulation at the federal level of ethylene oxide to include warehouses and to include fence-line monitoring</li></ul>
<b>4 Remove the Waukegan coal ash ponds</b>	<ul style="list-style-type: none"><li>• Remove the Waukegan coal ash ponds, which were found to be a significant threat to Lake Michigan's water quality given their proximity to the lakeshore</li></ul>
<b>5 Support grassroots organizations and community organizers pushing for environmental justice</b>	<ul style="list-style-type: none"><li>• Build capacity of organizations and community groups advocating for Lake County environmental justice solutions through increased investment and donations</li><li>• Volunteer or advocate with these organizations and those pushing for state and federal policy changes</li><li>• Broaden the coalitions coordinating efforts in this work</li><li>• Expand opportunities for youth engagement through partnerships with schools, community organizations, and youth-led groups</li></ul>

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**Recommendation 4.****Increase Awareness of and Access to Outdoor Green and Blue Spaces**

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**1 Use bilingual or multilingual materials and marketing**

- Adopt a language policy by public land agencies and entities requiring Spanish translation and interpretation, similar to Cook County Language Access Policy which requires translation when at least 5% of the county speaks a language
- Engage parents and trusted community leaders (teachers, faith leaders, day care providers) to increase awareness of existing outdoor spaces and the importance of the outdoors for children’s development
- Employ culturally relevant marketing to promote outdoor green and blue spaces
- Connect individuals to affinity-led outdoor groups

**2 Reduce economic barriers**

- Address economic barriers to accessing green and blue spaces by eliminating or subsidizing beach fees, permitting fees, and access fees for income-qualified individuals and/or communities

**3 Center accessibility**

- Employ universal design principles in designing new outdoor infrastructure
- Invest in adapted recreational equipment to increase accessibility to outdoor recreation opportunities
- Collaborate with organizations serving the disability community to facilitate outdoor programs

**4 Personalize engagement**

- Support the development of home gardens or indoor plants when it is difficult to spend time outdoors due to barriers

**5 Embrace winter**

- Increase wintertime community-based events focused on building social connections to address increased issues of isolation during winter months
- Connect individuals and communities to gear, clothing, and equipment for winter outdoor recreation

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 Recommendation 5.

## Integrate Nature-Based Solutions with Health Care Systems

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### 1 Support health care providers with nature-based tools and professional development

- Provide professional development and materials to local health practitioners and community health workers on green and blue space assets in Lake County, as well as the associated health benefits
  - Use nature-based programming to support the health and wellbeing of health care professionals
- 

### 2 Integrate nature-based tools with behavioral health and trauma recovery programs

- Increase nature-based partnerships between land agencies, nonprofits, community organizations, outdoor programs, mental health organizations, clinics, and outpatient facilities
  - Leverage nature-based programs as a connector to other mental health resources, and as an opportunity to reduce mental health stigma
  - Encourage sliding scale fees or no fees for nature-based mental health programming for low-income populations
  - Embrace gardening as a healing tool. Veteran respondents who were interviewed for this report stated that they found peace and calm in being able to give life after acting in a role that demanded taking lives
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### 3 Physical health benefits

- Support culturally relevant, group-based programming that encourages movement outdoors (walking groups, biking events, etc.)
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### 4 Food and nutrition

- Uplift and invest in the many grassroots community gardening, urban farming, and food education efforts across Lake County
  - Support community members and groups in creating growing spaces in their own yards or through shared community spaces
- 

### 5 Climate and health

- Incorporate climate change risks and adaptation strategies for Lake County in the community health assessments
- Support investment in biodiversity, recognizing that biodiverse habitats provide a multitude of benefits to mitigate the public health risks of climate change (e.g., cooling effects, flood mitigation, etc.)

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### 6 Integration with health insurance programs

- Create opportunities for health insurance plans to incentivize plan members' participation in outdoor spaces
- 

### 7 Research on economic benefits and return on investment for Medicaid and Medicare patients

- Research the localized economic value of green and blue space on mental and physical health (both infrastructure and programs)
  - Use this valuation model to support public and private investment in the creation and maintenance of nature-based spaces and programs
- 

## Recommendation 6.

## Invest in Culturally Relevant Social Infrastructure for all Ages

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### 1 Increase nature-based programs and affinity spaces

- Expand identity-based affinity spaces in the outdoors by investing in existing programs in Lake County and supporting new ones (e.g, Latino Outdoors, Queer Nature Hikes, Outdoor Afro, Veterans-focused groups, etc.)
  - Increase culturally relevant, nature-based programs by investing in more multilingual facilitators, community-designed programs, and partnerships
- 

### 2 Culturally relevant staffing and leadership

- Collaborate across sectors to build capacity for leaders whose communities are under-represented in current governmental and decision making systems
  - Develop the pipeline of Lake County leaders by investing in young professionals and youth, recognizing the need for culturally relevant staff in both public health and environmental sectors
  - Invest in DEIJ (Diversity, Equity, Inclusion, Justice) training and planning for land management and outdoor recreation agencies, nonprofits, and community groups
  - Employ or contract program designers and facilitators who are representative of and culturally aligned with the Lake County communities
- 

### 3 Integration of Indigenous history, culture, and rights

- Celebrate Indigenous history and presence on land in Lake County through public land agencies as well as educational institutions
- Work with Tribal leaders and members to identify opportunities for returning public land to Tribal ownership or management and repatriating culturally significant artifacts and collections

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#### 4 Leverage arts and culture

- Employ the arts and cultural programs to create culturally relevant opportunities for engagement in the outdoors and ways to create a cleaner, healthier environment in Lake County
- 

#### 5 Support youth

- Educate parents on the health benefits of nature for children through pediatric centers, schools, and community health workers in Lake County
- Support the ecosystem of care in which children exist (schools, libraries, direct service organizations, park districts, etc.) with nature-based programs and spaces, including gardens, nature-play areas, and outdoor recreation activities
- Support youth organizing and civic engagement around environmental and health issues that they care about



# 10

CHAPTER

## Discussion and Conclusion

MIXED MEDIA:

LAYERED

JENNA DOWNING

### Nature, health, and equity are interconnected.

As a part of Brushwood's commitment to increasing community-driven initiatives, this report aimed to deepen our understanding of the relationship between nature, health, and equity. Specifically, our hope in collecting this information was to equip Lake County community members and policy makers with information pertaining to nature, environmental quality, and health, with the hope of utilizing a climate justice lens to address health inequity.

Extensive research has demonstrated the positive impact that spending time outdoors can have on our physical and mental wellbeing; however, access to natural spaces, clean air and clean water are often limited by systemic barriers that exist in our communities. A history of environmental injustices and present day policies, particularly in northeastern Lake County, continues to disproportionately overburden low-income and Communities of Color.

To conceptualize our findings, we employed the use of two key models: i) the Asset Based Community Development Model, which emphasizes the strengths and assets of local communities, and ii) the Social Drivers of Health Model, which highlights the role of systemic barriers in facilitating access to healthcare and achieving health equity. The data we collected from our qualitative interviews, community narratives, and GIS mapping provides support for the interconnectedness of nature, health, and equity. It can be best understood with the help of the model in Figure 30.

As seen in the model, we chose to focus on the **physical environment** as the primary social driver

of health. Prior to delving into gaps between community needs, lack of resources, and structural barriers, we first made note of the different resources that were already available at the intersection of health and nature in Lake County. We defined these resources as **community assets**. In turn, a deeper understanding of these assets provided insight into the **barriers** that restrict access to a healthy physical environment (six categories):

- a) Employment and job security: Having a job and steady income not only provides financial stability but also the freedom to focus away from necessities to wants.
- b) Food security: Having access to healthy, fresh, and local food decreases the risk of chronic diseases.
- c) Public transportation: Having reliable and cost-effective transportation increases the ability to engage with natural spaces.
- d) Education: Having access to readily available information on resources can increase utilization.
- e) Cultural humility of provider: As Lake County becomes increasingly diverse, we need providers to be aware of different cultural needs and identities and support community members in ways most beneficial to them.
- f) Immigration status: Documentation status has the ability to limit potential job opportunities and restrict social and community life, contributing to feelings of isolation.

Each of these barriers are interconnected, and in order to achieve **health equity**, it is imperative that we focus on **culturally informed, community-driven solutions**, which, in turn, need to be considered when **formulating policy recommendations**.

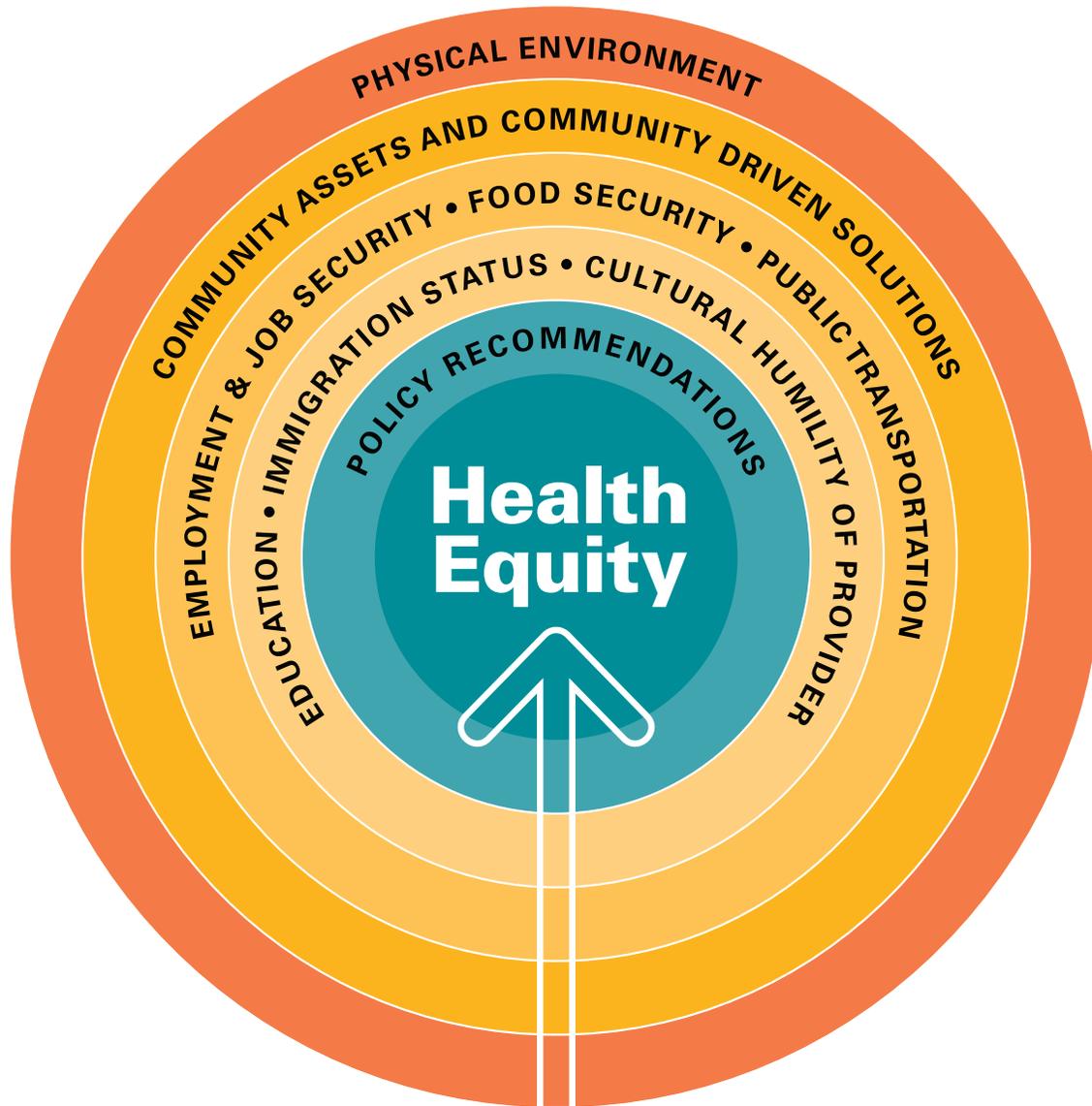


FIGURE 30. DISCUSSION HEALTH EQUITY MODEL

Our recommendations for achieving **health equity** also emphasize the need for centering community voices and **community assets**, prioritizing communities overburdened by systemic inequity by recognizing **barriers**, improving our **physical environment** by advancing climate justice and increasing awareness, as well as access, to both green and blue spaces, recognizing the need for nature-based solutions in health care, and investing in **culturally relevant, community-driven solutions** at an individual, community, and policy level.



# Appendix A

## Methodology

### Details

## Existing Data

To determine what data sources existed at this intersection, we investigated suggestions from the 2022 Leadership Roundtable, and reached out to our partners. Our participation in the Community Health Assessment through the Lake County Health Department helped guide our investigation of the most pressing barriers to ensuring health equity in Lake County. We then analyzed how current the data was and if it was feasible to work with in ArcGIS. Additionally, in conducting the literature review we relied heavily on the research studies and papers suggested by our Advisory Board to ensure there were no gaps in information.

## Mapping

Geospatial analysis has a long history of being used to unpack environmental topics, dating back to 1988.<sup>93</sup> ArcGIS is a computer application that is built to enable geospatial analysis and allows for unique data sets to be analyzed together using location as a rooting denominator. A key component of this report is exploring the intersection of topics that aren't commonly looked at as a cohesive whole within Lake County and delivering the findings in an impactful way. Geospatial data visualization shines in this realm because it takes data sets that aren't easily contextualized in number form and allows individuals to understand this data in a faster and more intuitive way.

Initially, categories of data were established to frame the search for data sets based on report objectives. The categories of demographic data, outdoor locations, environmental quality variables, land use parcels, and existing transportation guided

the subsequent search for relevant and usable data. Within these categories, data was further broken down by confirmed data sets, potential data sets that were missing some component of usability, and suggested data sets with no confirmed existence. Documenting the search for data in this way allowed Advisory Board members to assist with filling in gaps where confirmed data was missing.

The process of searching for data revealed how important open access data and records are to assisting in equity efforts by providing a low barrier to access for a range of analyses. Certain data such as bike lane locations and canopy cover in Lake County existed for public visual consumption through websites and PDFs, but did not exist in raw data form which rendered them unusable through ArcGIS. Other data sets such as land use parcel data in Lake County required specific credentials to access. In some cases, Brushwood Center's status as a nonprofit made it possible to access data that was not public.

The assorted age of the found data was another notable factor during the data search. Even the most powerful data sets lose relevance as time passes and the fabric of existence changes. Continued efforts to maintain up-to-date data sets go a long way in allowing for impactful analysis.

The final list of data that is used in the aggregate systemic inequities map including the source of the data, when the data was collected, and what the data captures can be found in Appendix A. The final set of variables was vetted by the Advisory Board and internal Accelerator team before the analysis was completed. For the aggregate systemic inequities map, all 38 variables were given equal weight in the

output. Further iterations of this work can leverage research to weigh variables differently.

## Qualitative

Our objectives behind integrating qualitative information into the report were as follows:

- To capture the real and valid experiences of individuals that together make up a community;
- To give us a richer understanding of the meaning behind how people view nature and health equity;
- To gain insight into barriers that limit access to the outdoors;
- To understand the relationship between the outdoors and wellbeing (both physical and mental); and
- To learn about the innovative strategies that communities are using to make green spaces more accessible.

### *Photovoice and Forms*

Our first qualitative data approach was to use a community psychology based method known as Photovoice. According to this method, pictures and narratives about the pictures taken are collected from community members and used to provide insight on a matter that involves inequity, or differences in status or power. Photovoice is a community-driven, participatory method that enables the collection of information from diverse people. Photos are used to enable people to document their own experience. It's been used to inform policy in the past because it is difficult to deny photographic evidence, as well as enabling people with differing literacy levels to document their experience.

To maximize participation, we broadened our prompt to include either i) a photo and an accompanying

narrative, ii) a written narrative only, and iii) a recorded audio narrative.

Our first prompt was, "Tell us about an outdoor experience that stands out to you." A number of outreach efforts were employed, including a business card that was translated into English and Spanish and distributed digitally through listservs and newsletters (Appendix B), as well as a raffle incentivized with a \$100 Visa card. The project research team also tabled at various events throughout Lake County. While community members were excited about the possibility of sharing their experiences outside, we learned that this prompt was too vague to generate a robust response. We then pivoted to using a Google form shared through listservs and newsletters, with more detailed prompts (Appendix B).

We collected 6 stories in our English-speaking form and 0 in our Spanish-speaking form. Following this attempt, we attempted to hold virtual office hours in the evening as a way to engage participants. We ultimately had no participation in these office hours. We believe there were several reasons why we were unable to successfully engage with the community.

- 1 Our original prompt was too vague and broad and may have left participants feeling like they could not answer the question.
- 2 The researchers collecting data were not based in Lake County and had less direct relationships with community members.
- 3 While tabling at events, participants were excited to share their experiences, but because they were not offered the opportunity to complete the form then and there, participants potentially forgot or were not motivated to participate.

## *Individual Interviews*

Ultimately, we garnered significantly more qualitative data from individual interviews with local Lake County community members in order to obtain a richer understanding of the community's relationship with the outdoors, as well as individual and systemic barriers to accessing the outdoors.

To better understand how community members relate to nature and the outdoors, potential barriers, and various community assets, qualitative interviews were conducted with 21 respondents, most of whom resided in Lake County. Respondents who did not reside in Lake County had a deep understanding of the local community because of either working or engaging in research related to Lake County. Respondents were selected through word of mouth. Each interview lasted between 20 to 30 minutes, and was semi-structured so that respondents could share their unique experiences. A list of prompts have been included in the Appendix. Each interview was conducted over Zoom. We sought verbal consent to record the interviews, which were then transcribed and cleaned. The interviews were then analyzed qualitatively by searching for themes, and synthesized with geospatial and existing data in the discussion section (Chapter 10).

## *Art*

A call for art to support this report as well as an accompanying exhibition was issued through Brushwood Center's public arts program. The call asked for responses reflecting the initial qualitative themes identified. Submissions were collected over a period of two months, and ultimately 26 artists were selected for the exhibition and report. Preference was given to Lake County artists.



## Appendix B

# Data Sources for Aggregate Systemic Inequities Map

## Geospatial Data Sources

NAME	YEAR	UNIT	SOURCE	DESCRIPTION
Race + Ethnicity	2018	Percentage of total population	Lake Cty, IL Open Data + Records Hub	<ul style="list-style-type: none"> <li>• White</li> <li>• African American</li> <li>• Asian</li> <li>• Hispanic</li> </ul>
No English	2018	Percentage of total population	Lake Cty, IL Open Data + Records Hub	Individuals who speak a language other than English in their household
Age	2018	Percentage of total population	Lake Cty, IL Open Data + Records Hub	<ul style="list-style-type: none"> <li>• 18 years old</li> <li>• 19-64 years old</li> <li>• 65 years and older</li> </ul>
Food Stamps	2018	Percentage of total population	Lake Cty, IL Open Data + Records Hub	Households receiving food stamps/part of SNAP
Poverty Line	2018	Percentage of total population	Lake Cty, IL Open Data + Records Hub	Families and people whose income in the last 12 months is below the poverty line
Level of Education	2018	Percentage of total population	Lake Cty, IL Open Data + Records Hub	<ul style="list-style-type: none"> <li>• No high school</li> <li>• Has high school degree</li> <li>• Has Bachelor's degree or higher</li> </ul>
Birth Statistics	2018	Percentage of total births in Lake County	Lake Cty, IL Open Data + Records Hub	<ul style="list-style-type: none"> <li>• Preterm</li> <li>• Teen birth</li> <li>• First trimester of care</li> </ul>
Median Income	2018	Dollar Amount	Lake Cty, IL Open Data + Records Hub	The total mid point of income levels for households within each zip code
Mortality	2018	Years * Rate per 100,000 people ^	Lake Cty, IL Open Data + Records Hub	<ul style="list-style-type: none"> <li>• Average age of death *</li> <li>• Cancer deaths ^</li> <li>• COPD deaths ^</li> <li>• Heart Disease related deaths ^</li> </ul>
Population	2018	Number - Individuals per zip code	Lake Cty, IL Open Data + Records Hub	Total Population

NAME	YEAR	UNIT	SOURCE	DESCRIPTION
Green Spaces	1.2023 2.201	Boundaries * Centerlines ^ Polygons ~	Lake Cty, IL Open Data + Records Hub	<ul style="list-style-type: none"> <li>• Forest Preserve Boundaries (1*)</li> <li>• State Parks Boundaries (1*)</li> <li>• Trails (2^)</li> <li>• In-land hydrology - lakes, ponds, rivers, streams, creeks, islands, detention basins (2~)</li> </ul>
Modes of Transportation	2021	Lines * Density Clusters	<ol style="list-style-type: none"> <li>1. Illinois Dept of Transportation (IDOT) - Illinois Railroads</li> <li>2. IDOT - Illinois Roadway Analysis Database (IROAD)</li> </ol>	<ul style="list-style-type: none"> <li>• Railroads (1*)</li> <li>• Cluster Analysis of High Density Roads</li> </ul>
Climate Change	1.2014 - 2021 2.2022	Census Tract Percentiles	<ol style="list-style-type: none"> <li>1. Federal Emergency Management Agency (FEMA), National Risk Index</li> <li>2. First Street Foundation, Climate Risk Data Access</li> </ol>	<ul style="list-style-type: none"> <li>• Expected agriculture loss (1)</li> <li>• Expected building loss ((1)</li> <li>• Expected population Loss (1)</li> <li>• Projected flood risk (2)</li> <li>• Projected wildfire risk (2)</li> </ul>
Legacy Pollution Reduction	1.2019 2.2017 3.2014 - 2021	Census Tract Percentiles	<ol style="list-style-type: none"> <li>1. Department of Interior (DOI) - Abandoned Mine Land Inventory System</li> <li>2. United States Army Corp of Engineers (USACE) - Formerly Used Defense Sites</li> <li>3. Environmental Protection Agency (EPA) - EJScreen</li> </ol>	<ul style="list-style-type: none"> <li>• Abandoned mine land (1)</li> <li>• Formerly used defense sites (2)</li> <li>• Proximity to hazardous waste facilities (3)</li> <li>• Proximity to Superfund sites (3)</li> <li>• Proximity to National Priorities List sites (3)</li> <li>• Risk Management Plan facilities (3)</li> </ul>
Clean Water and Waste Water Infrastructure	2014 - 2021	Census Tract Percentiles	EPA - EJScreen	<ul style="list-style-type: none"> <li>• Proximity to wastewater discharge</li> <li>• Proximity to leaky underground storage tanks</li> </ul>
Health	2023	Census Tract Percentiles	Center for Disease Control and Prevention (CDC) - PLACES: Local Data for Better Health	<ul style="list-style-type: none"> <li>• Asthma</li> <li>• Diabetes</li> </ul>
Workforce Development	2015 - 2019	Census Tract Percentiles	<ol style="list-style-type: none"> <li>1. Council on Environmental Quality - Climate and Economic Justice Screening Tool (CEJST)</li> <li>2. Census - American Community Survey (ACS)</li> </ol>	<ul style="list-style-type: none"> <li>• Linguistic Isolation (1)</li> <li>• Unemployment (2)</li> </ul>

NAME	YEAR	UNIT	SOURCE	DESCRIPTION
Housing Cost Burden	2014 - 2018	Census Tract Percentiles	Council on Environmental Quality - Climate and Economic Justice Screening Tool (CEJST)	Percentage of households in census tract that are earning less than 80% of Area Median Family Income by county and are paying greater than 30% of their income to the housing cost
Clean Water and Wastewater Infrastructure	2014-2021	Census Tract Percentiles	EPA - EJScreen	<ul style="list-style-type: none"> <li>• Proximity to wastewater discharge</li> <li>• Proximity to leaky underground storage tanks</li> </ul>
Energy	1.2018 2.2014 - 2021	Census Tract Percentiles	1. Department of Energy (DOE) - Low-income Energy Affordability Data Tool 2. EPA - EJScreen	<ul style="list-style-type: none"> <li>• Energy Cost (1)</li> <li>• Particulate Matter (PM) 2.5 in the Air (2)</li> </ul>
Transportation Impact	2014 - 2021	Census Tract Percentiles	EPA - EJScreen	<ul style="list-style-type: none"> <li>• Diesel Particulate Matter (DPM) Exposure</li> <li>• Traffic Presence and Volume</li> </ul>
Proximity	2021	1. Meters 2. Points	EPA - National Walkability Index	<ul style="list-style-type: none"> <li>• Proximity to Transit Stops measured from population density center (1)</li> <li>• Total Walkability Score - aggregate of intersection density, transportation proximity, and land use type (2)</li> </ul>

# Appendix C

## Qualitative Prompts

### Interview Prompts:

Can you tell us a little about yourself, and your connection to nature/outdoors and health equity?

How did your journey with nature begin?

What aspects of spending time in nature do you like/dislike?

What has contributed to you being passionate about the connection between nature and health equity?

What do you see as the main barriers to accessing nature and the outdoors?

What factors do you think contribute to utilizing more outdoor and green spaces?

What solutions do you see as helpful for decreasing inaccessibility?

Do you have innovative ideas for improving accessibility?

### Outdoor Experiences Business Cards



**BRUSHWOOD CENTER AT RYERSON WOODS** outdoor experiences raffle

Using a voice recording, photo, or other media please respond to the following prompt:

**Tell us about an outdoor experience of yours that stands out to you**

To leave a voice recording:  
(847) 579-9129

To send a photo or other media:  
nospina@brushwoodcenter.org

multiple chances to win \$100 visa card (one entry per person)




**BRUSHWOOD CENTER AT RYERSON WOODS** experiencias de naturaleza: rifa

Usando un mensaje de voz, fotografía, o cualquiera otra técnica de arte por favor cuéntenos:

**Una experiencia significativa que ha tenido afuera**

Para dejar un mensaje de voz llame al:  
(847) 579-9129

Para mandar una foto u otra técnica de arte:  
nospina@brushwoodcenter.org

tiene varias oportunidades para ganar una tarjeta de visa de \$100 (una entrada por persona)

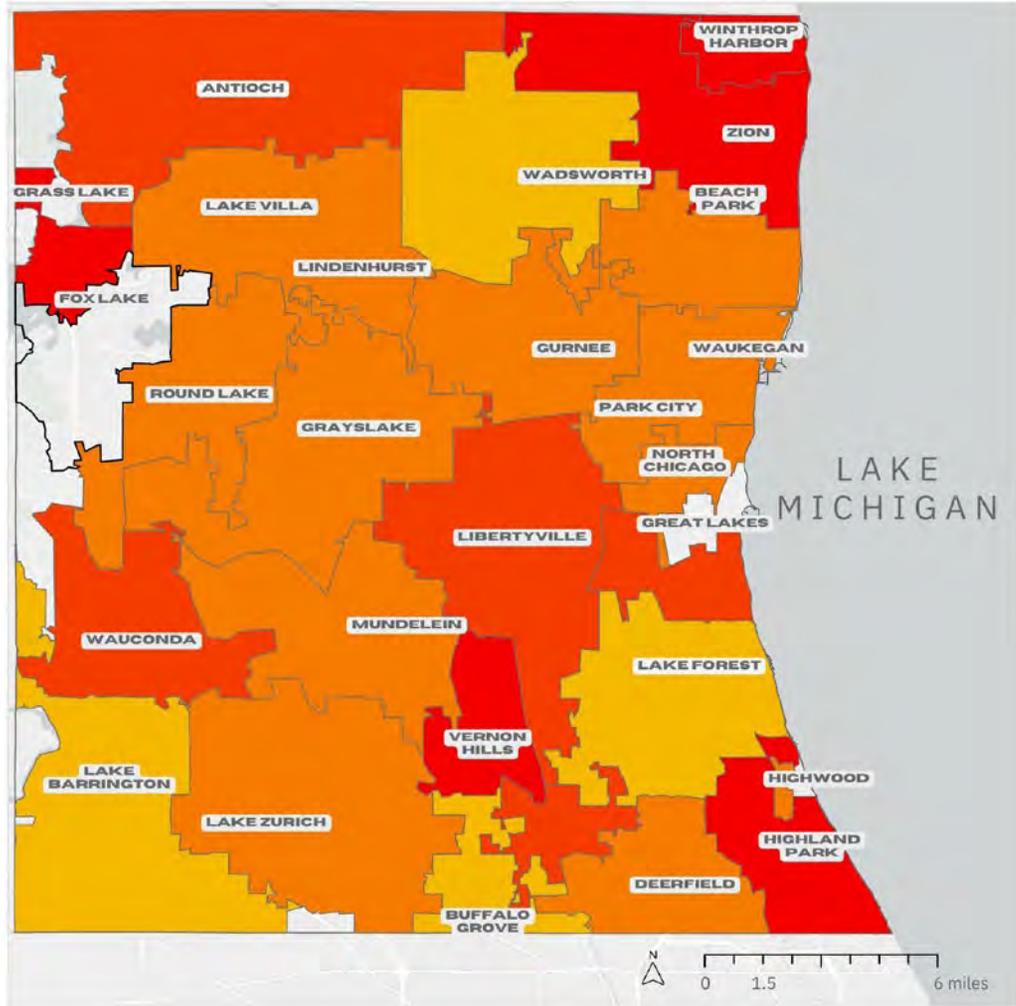


**Tell us about a time you spent outdoors that stands out to you.** (Choose one or more of the prompts below to help you get started!)

- Tell us about a time you felt uncomfortable in nature.
- Tell us about a time you felt you had a positive experience in nature.
- What was your first experience outside?
- Do you like spending time outside? Why or why not?



# Appendix D Cancer Deaths in Lake County, IL







# End Notes

ARTWORK:

RAVI OF THE RAVINES

MARY SEYFARTH

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ARTWORK:

**BUTTERFLY EFFECT**

**SANDY BACON**

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