

Air Pollution Hot Spots in Michigan

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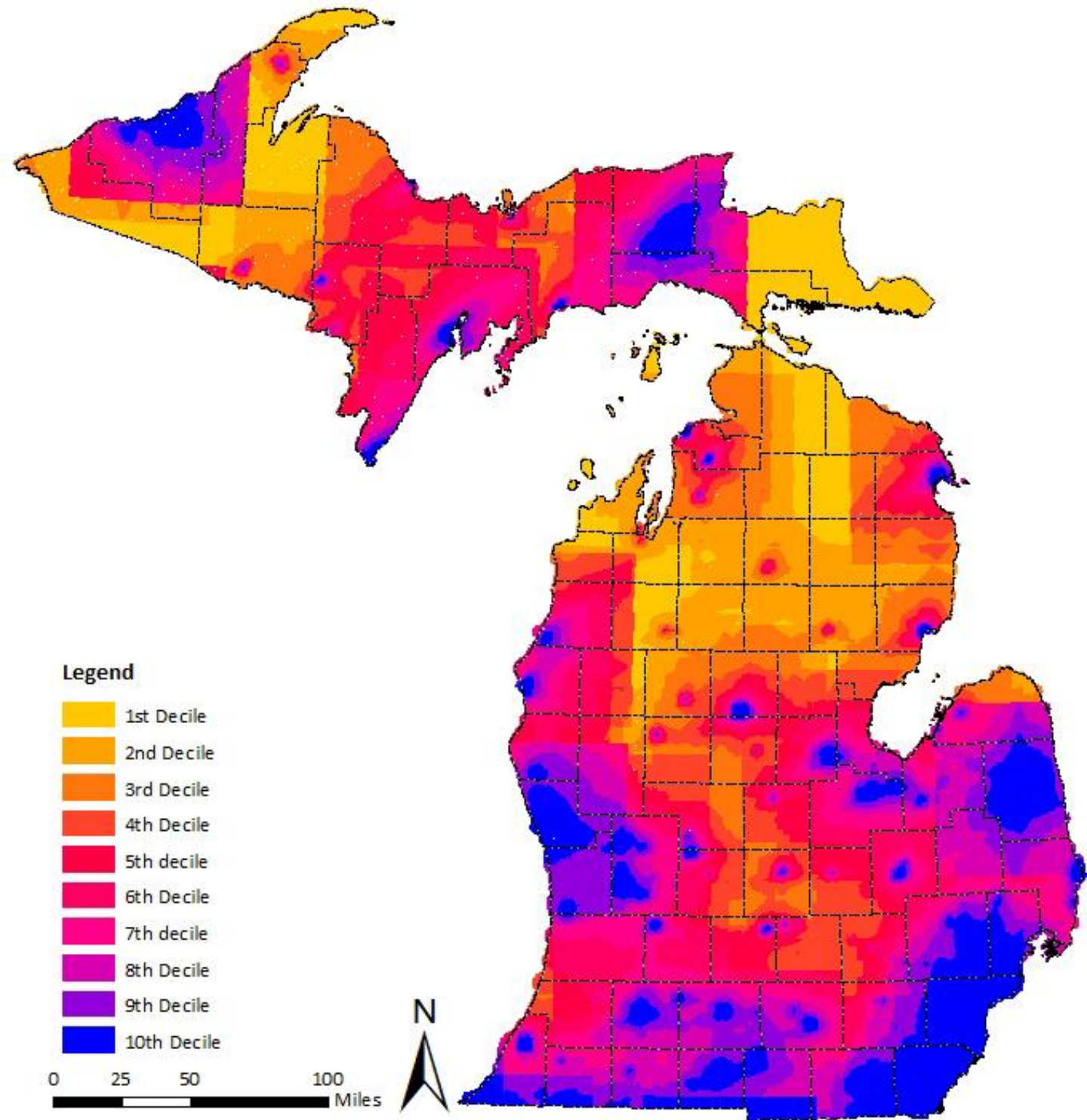
Dept. of Plant Science & Landscape Architecture

University of Maryland

Data compiled from public sources by
Dr. Mohai and Dr. Kweon through a grant from

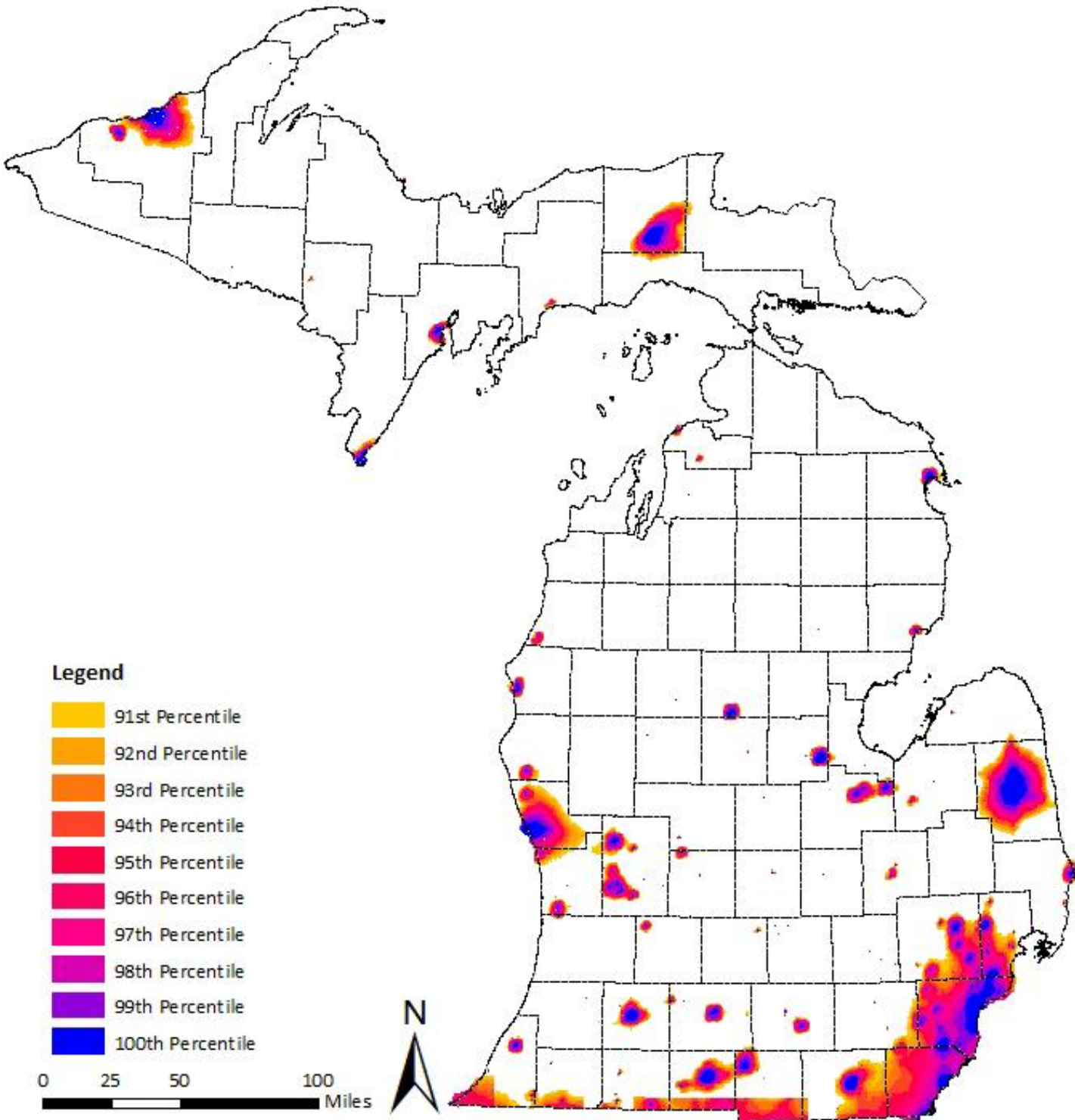
The Kresge Foundation

Total Air Toxic Concentration Contours from Industrial Sources In Michigan (2006 RSEI-GM)



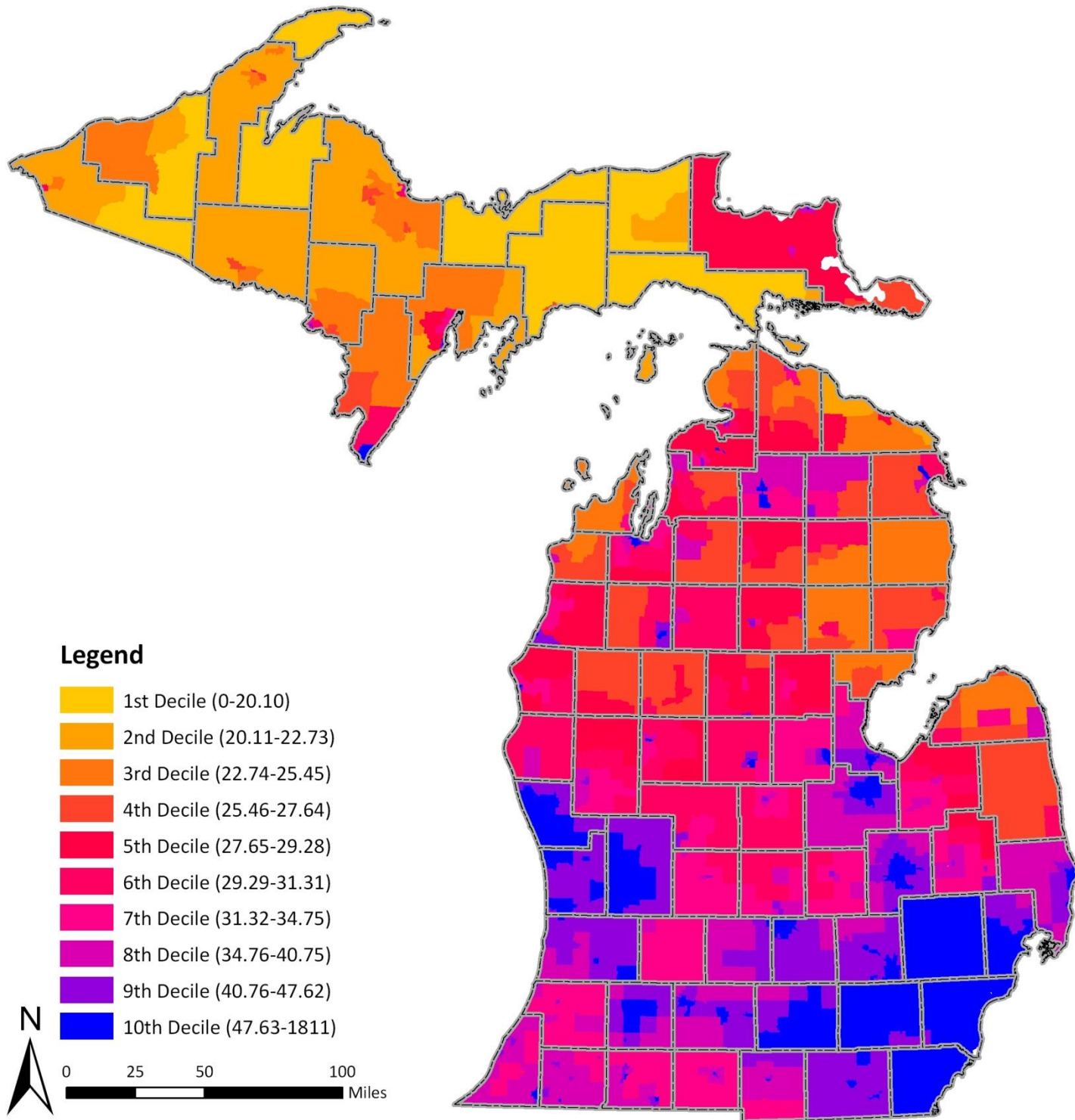
Contours based on accumulated area of 1 km by 1 km grid cells in ascending order of total toxic concentration from US EPA 2006 Risk Screening Environmental Indicators Geographic Microdata (RSEI-GM)

Total Air Toxic Concentration Contours from Industrial Sources In Michigan (2006 RSEI-GM and Top 10 Percentile)



Contours based on accumulated area of 1 km by 1 km grid cells in ascending order of total toxic concentration from 2006 Risk Screening Environmental Indicator

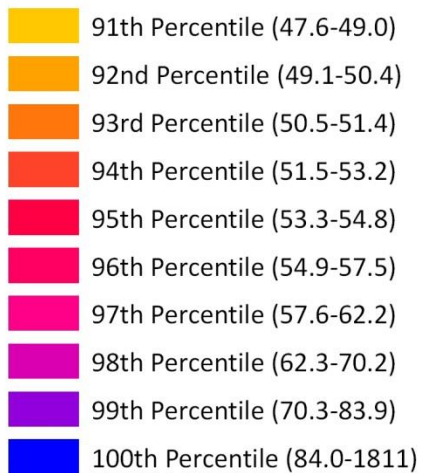
Cancer Risk Contours from All Air Pollution Sources In Michigan (2005 National Air Toxics Assessment)



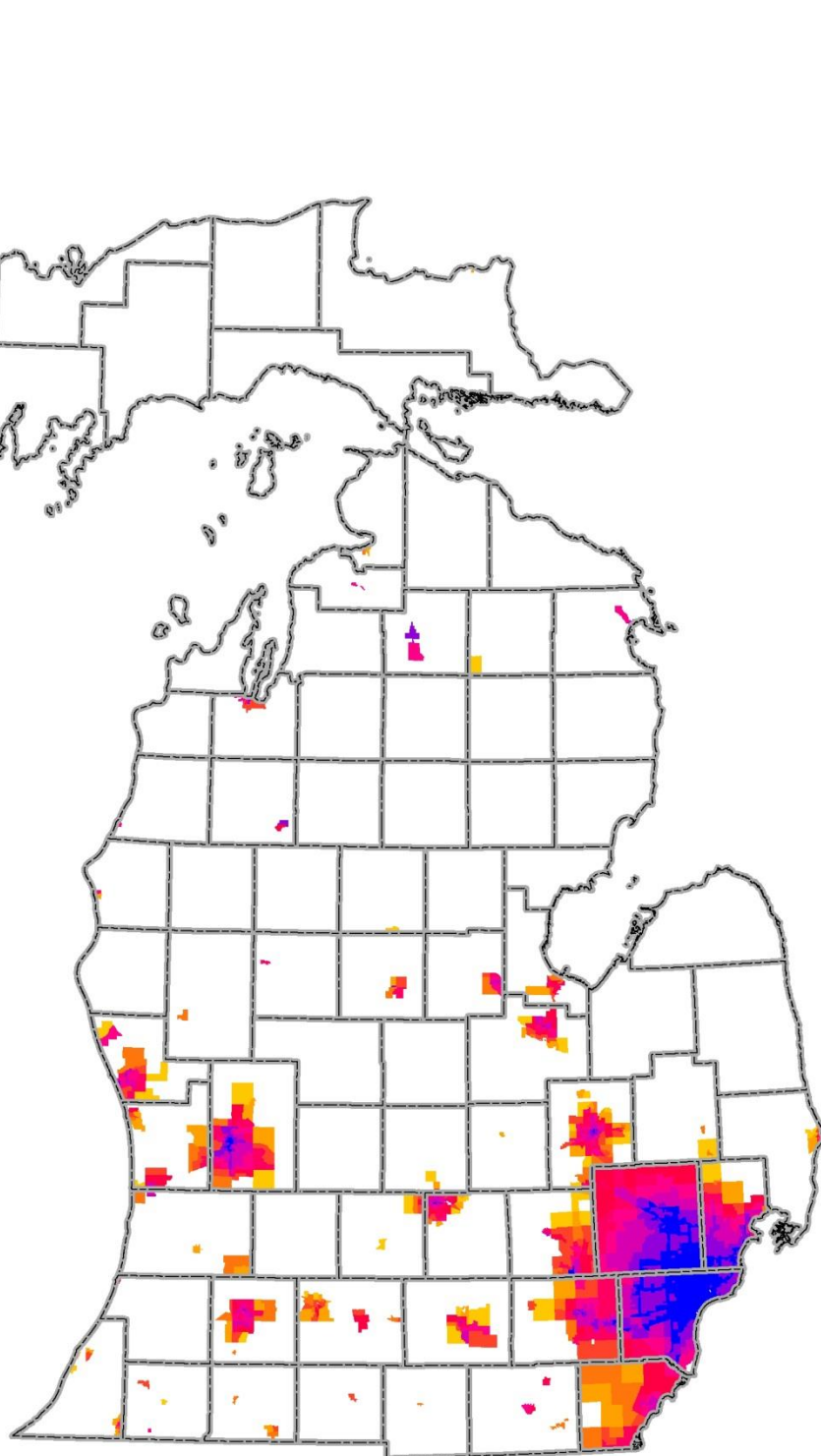
Contours based on accumulated area (in square kilometers) of census tracts in ascending order of cancer risk estimates from US EPA 2005 NATA

Cancer Risk Contours from All Air Pollution Sources In Michigan (2005 NATA and Top 10 Percentile)

Legend

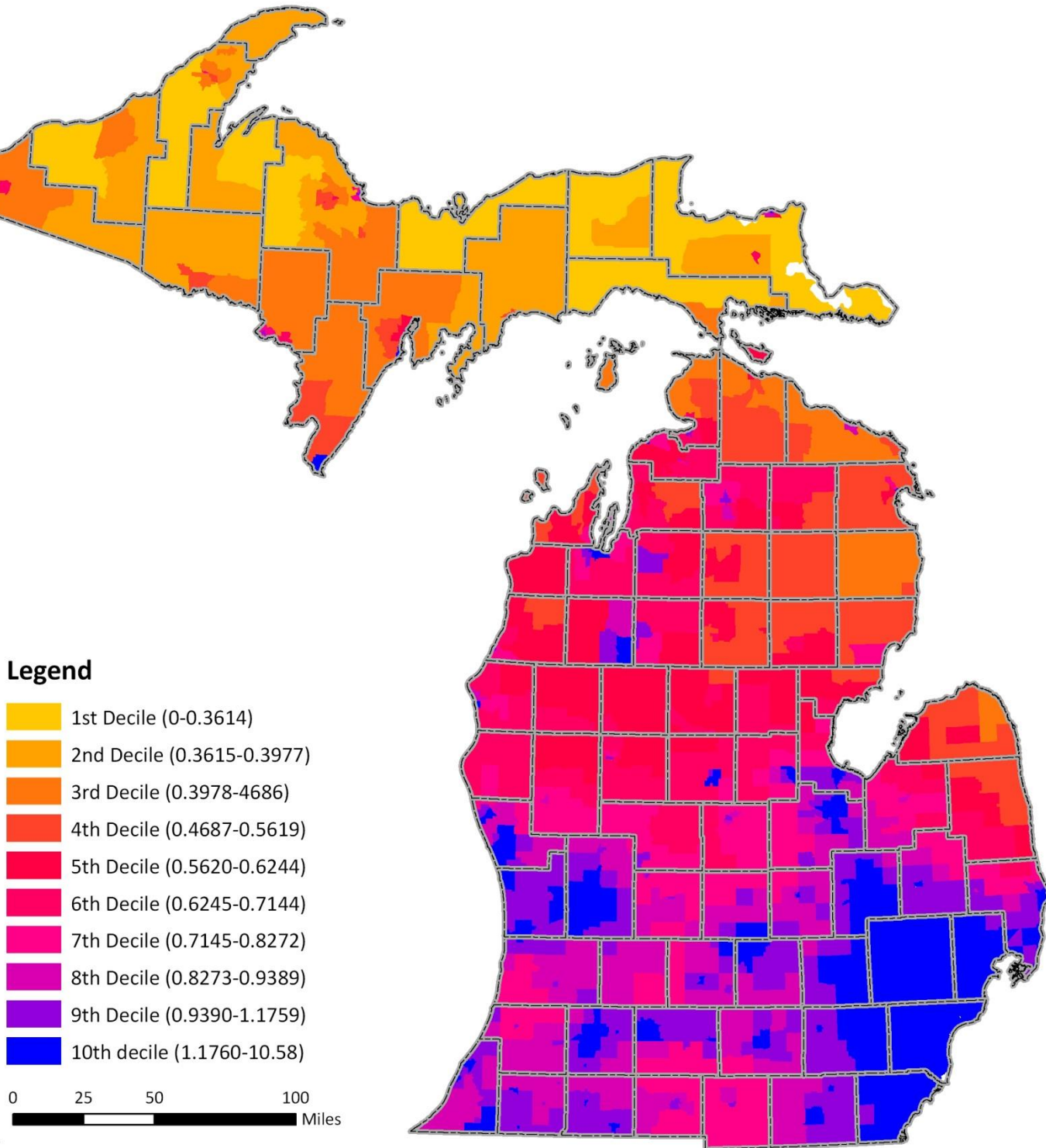


0 25 50 100 Miles



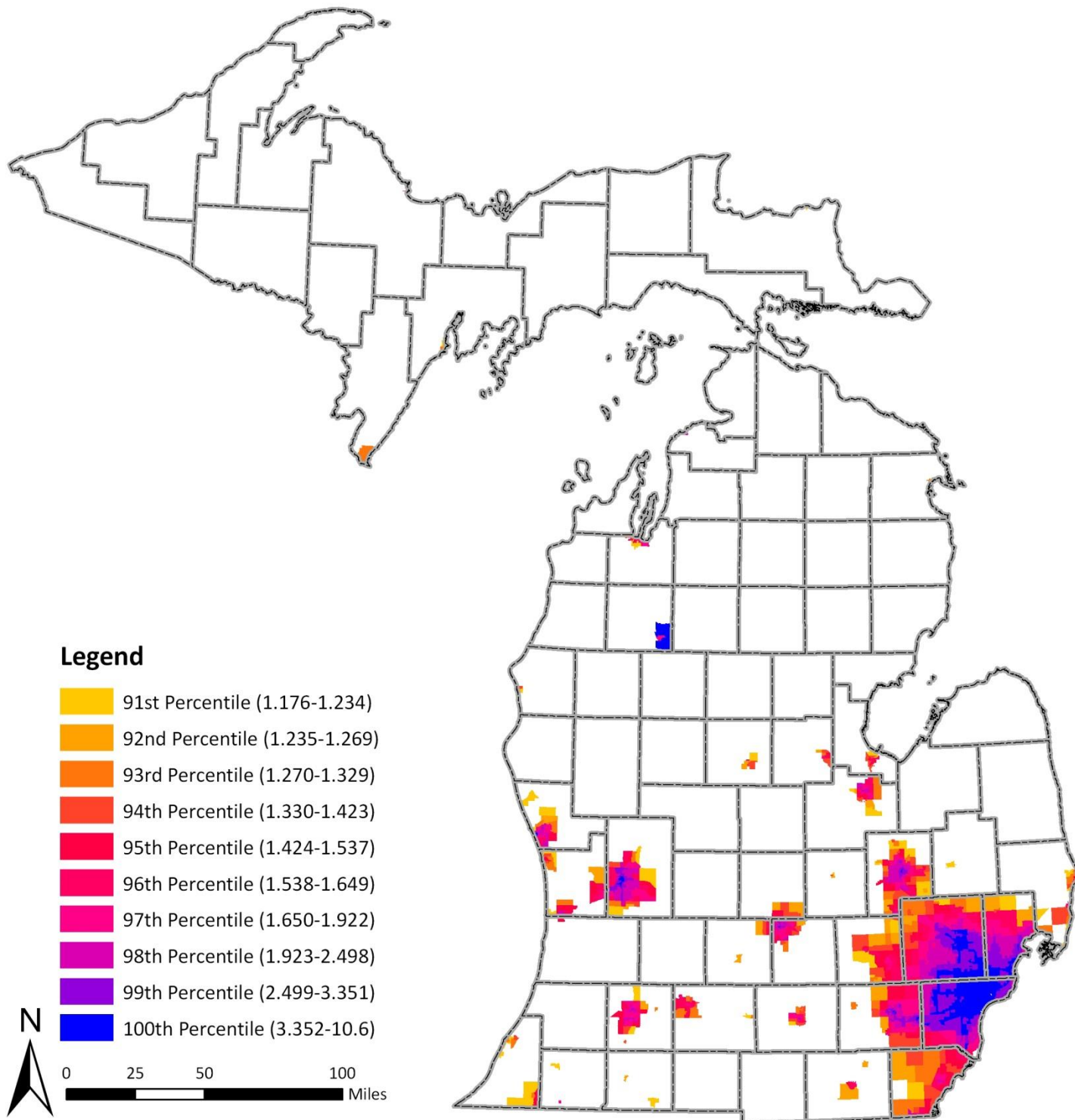
Contours based on accumulated area (in square kilometers) of census tracts in ascending order of cancer risk estimates from 2005 NATA

Respiratory Risk Contours from All Air Pollution Sources In Michigan (2005 National Air Toxics Assessment)



Contours based on accumulated area (in square kilometers) of census tracts in ascending order of respiratory risk estimates from 2005 NATA

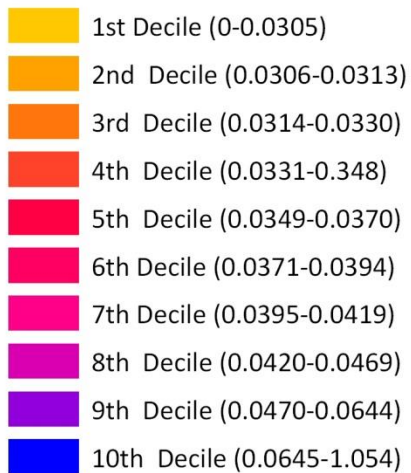
Respiratory Risk Contours from All Air Pollution Sources In Michigan (2005 NATA and Top 10 Percentile)



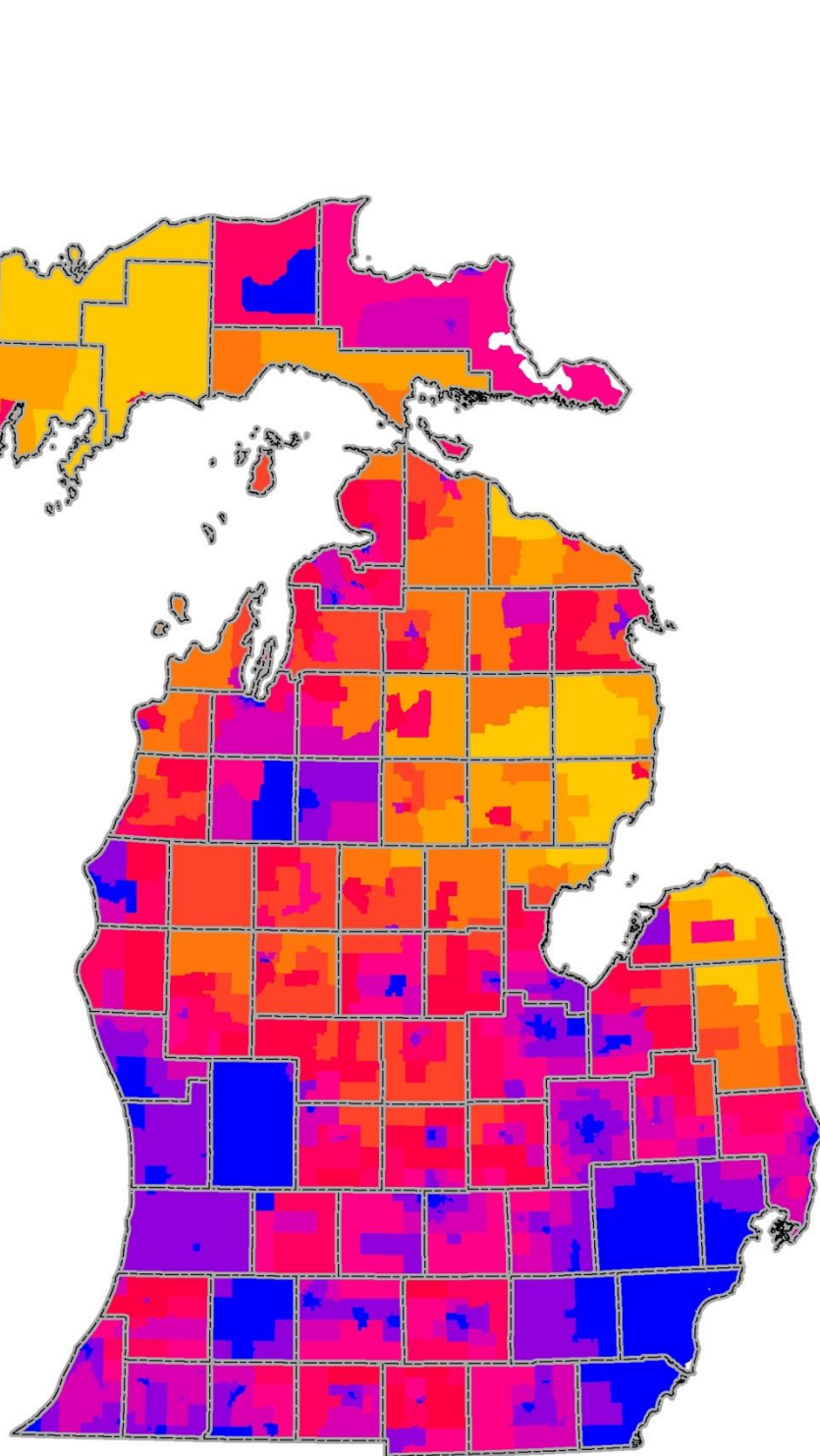
Contours based on accumulated area (in square kilometers) of census tracts in ascending order of respiratory risk estimates from 2005 NATA

Neurological Risk Contours from All Air Pollution Sources In Michigan (2005 National Air Toxics Assessment)

Legend



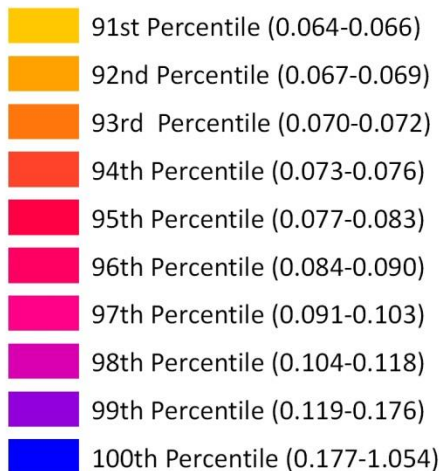
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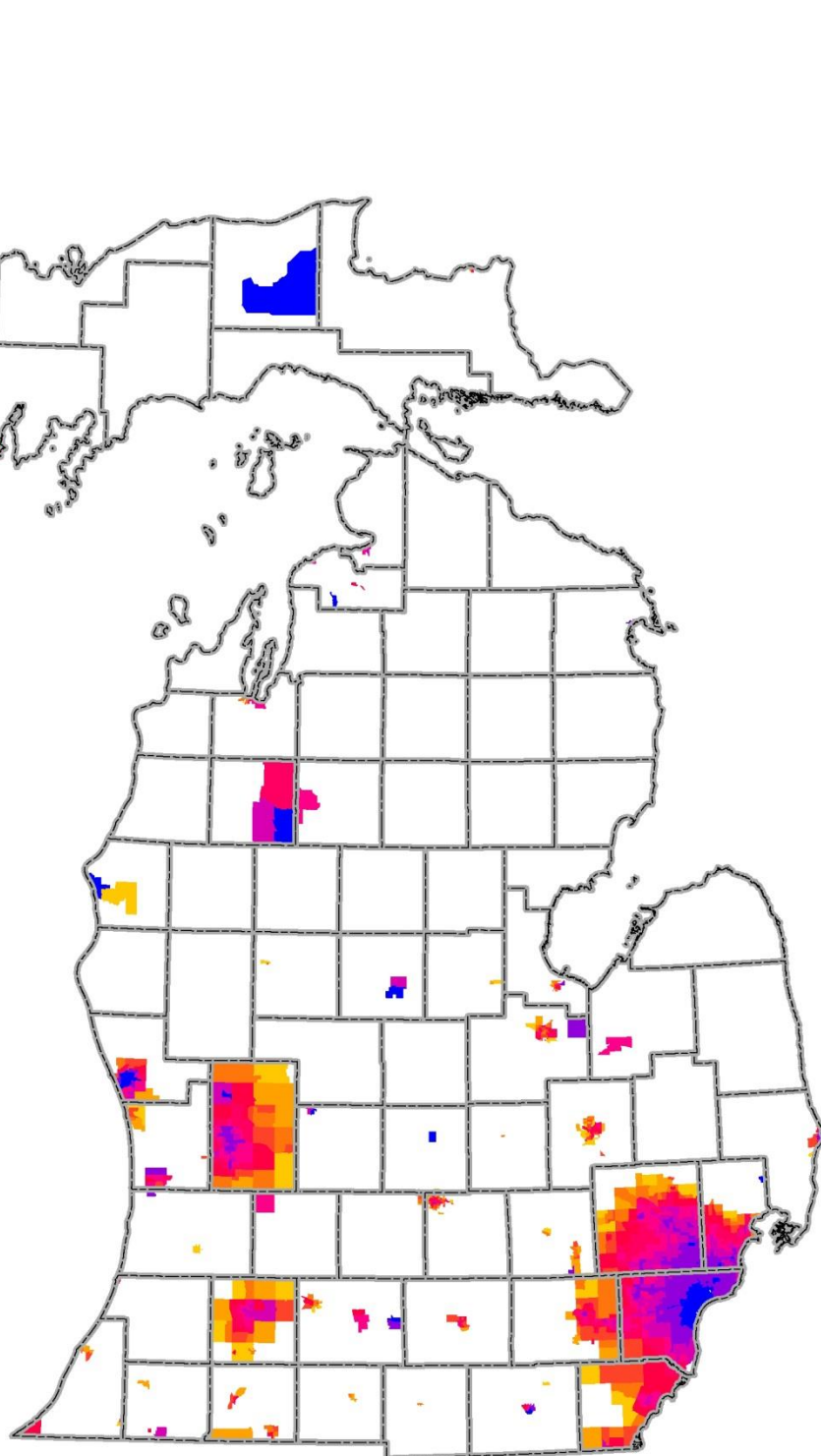
Contours based on accumulated area (in square kilometers) of census tracts in ascending order of neurological risk estimates from 2005 NATA

Neurological Risk Contours from All Air Pollution Sources In Michigan (2005 NATA and Top 10 Percentile)

Legend

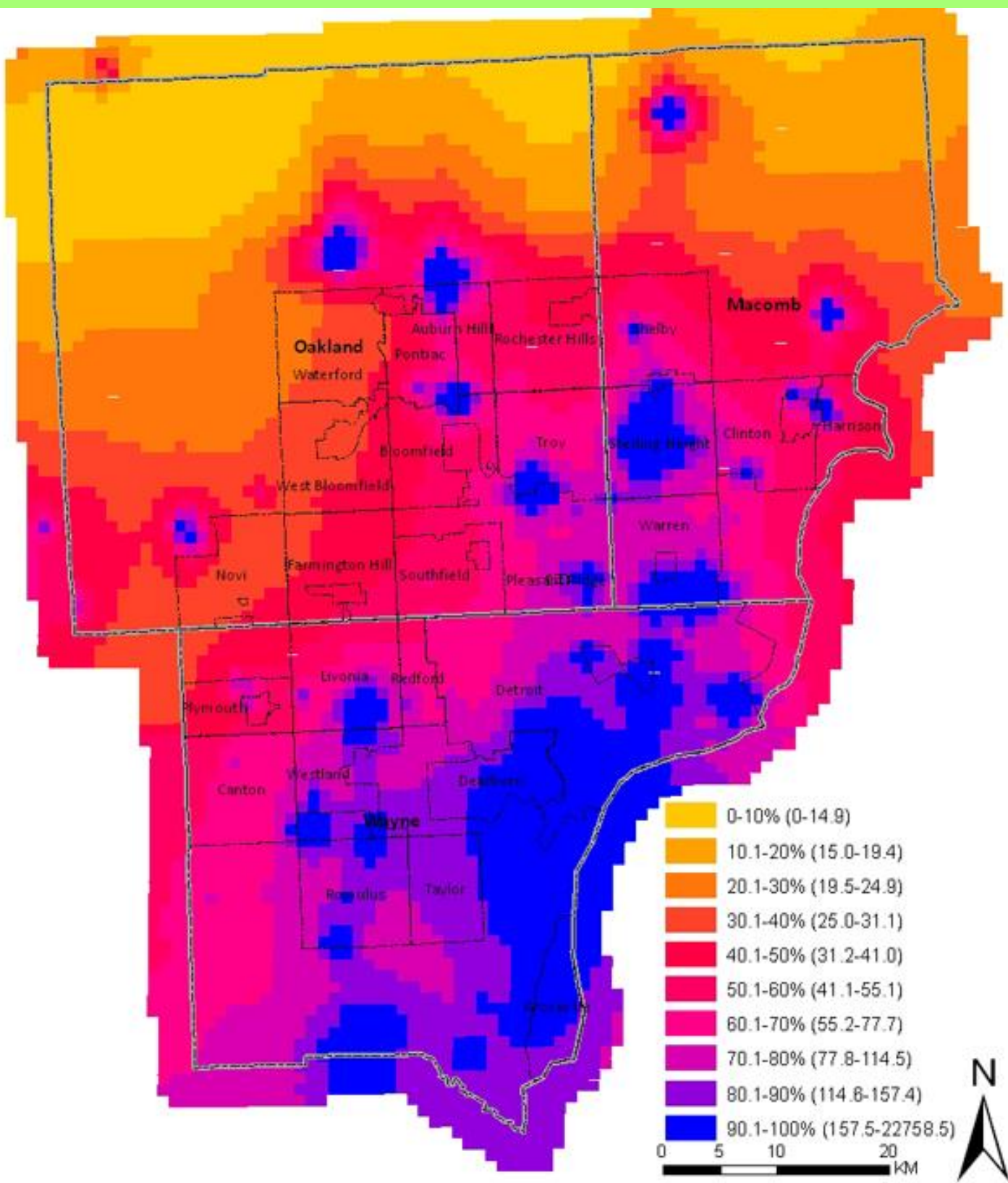


0 25 50 100 Miles

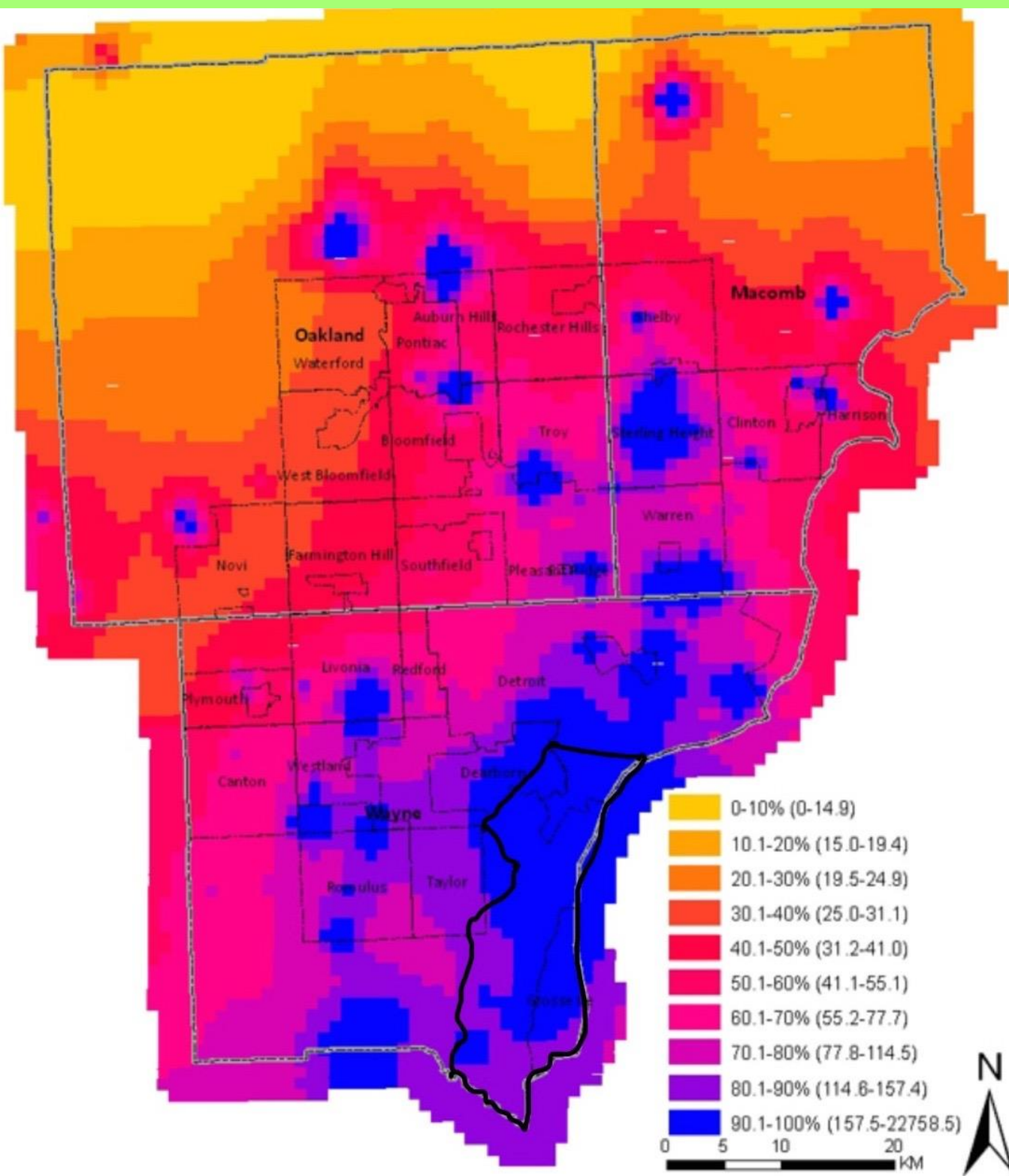


Contours based on accumulated area (in square kilometers) of census tracts in ascending order of neurological risk estimates from 2005 NATA

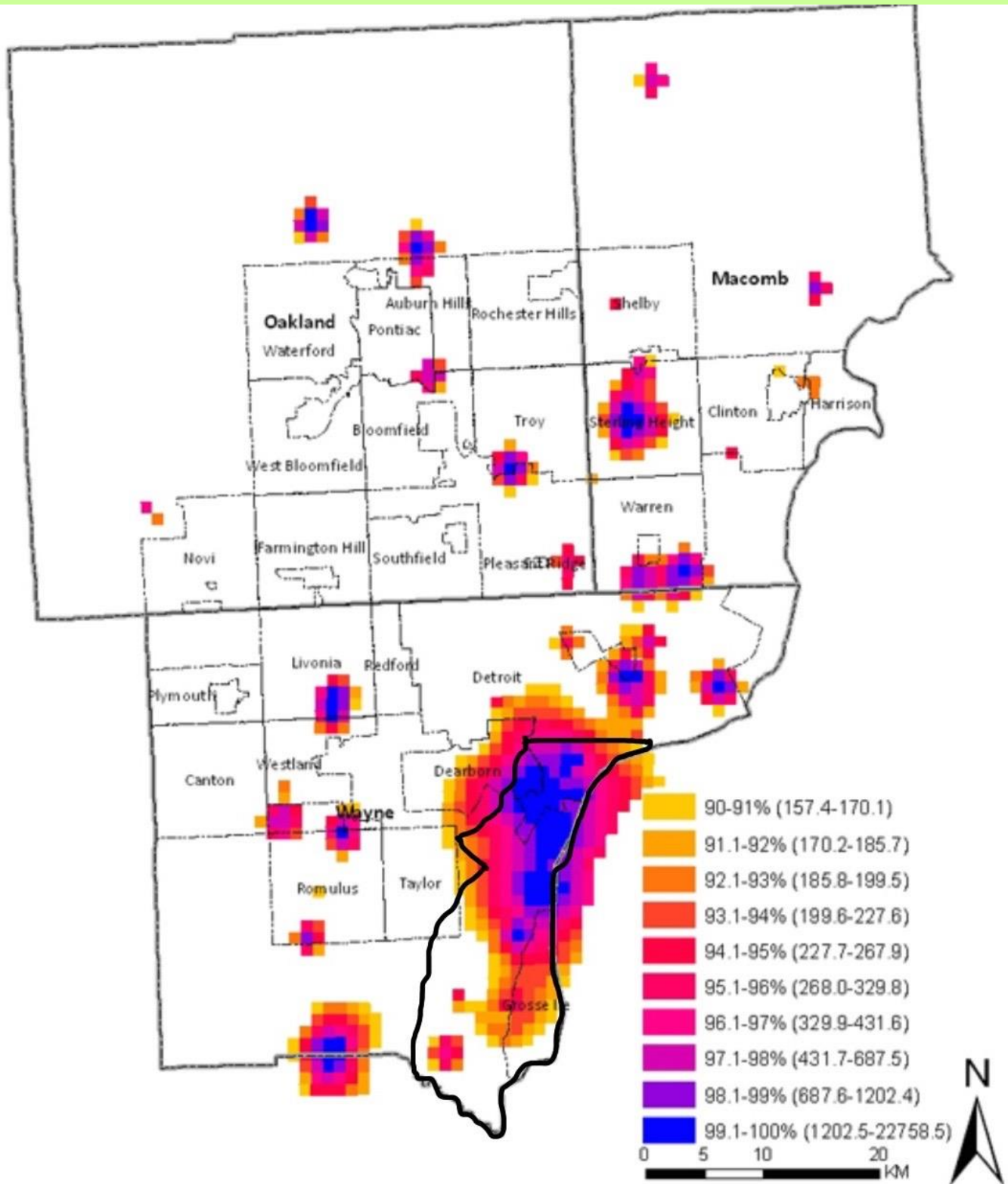
Total Air Toxic Concentrations from Industrial Sources in Detroit Metro Area (2006 RSEI-GM)



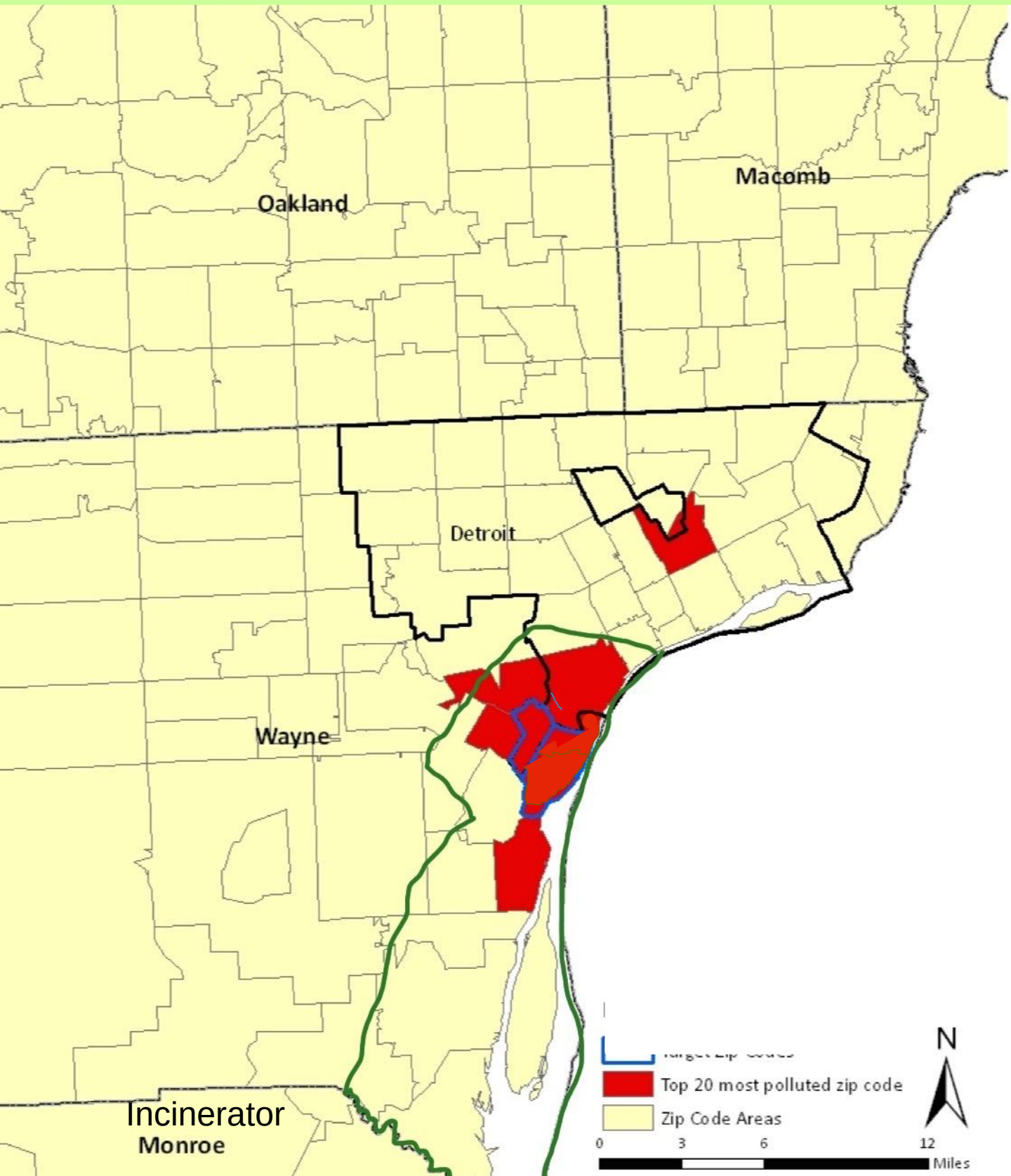
SO₂ Non-Attainment Area and Total Air Toxic Concentrations from Industrial Sources in Detroit Metro Area (2006 RSEI-GM)



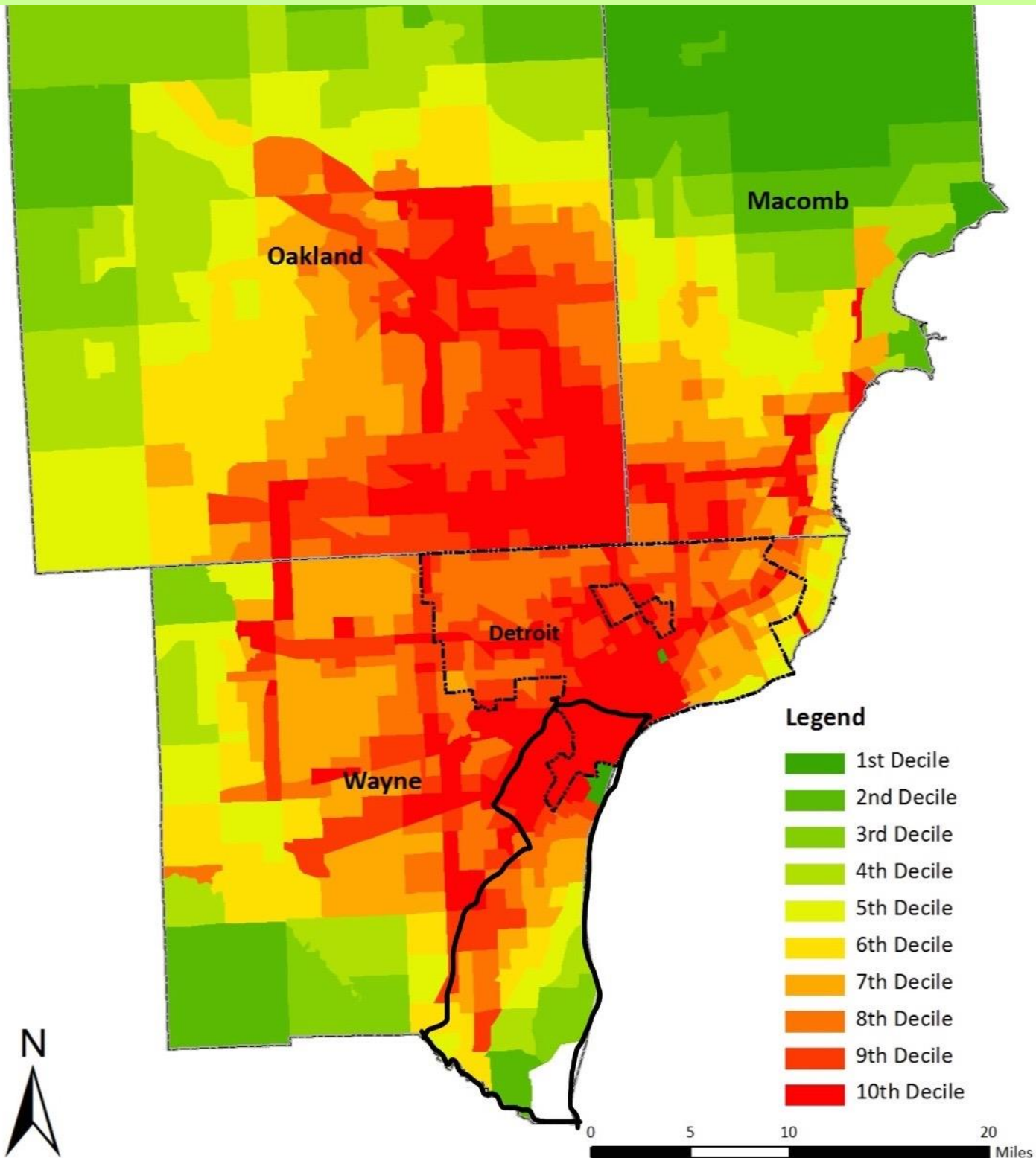
SO₂ Non-Attainment Area and Total Air Toxic Concentrations from Industrial Sources in Detroit Metro Area (2006 RSEI-GM and Top 10 Percentile)



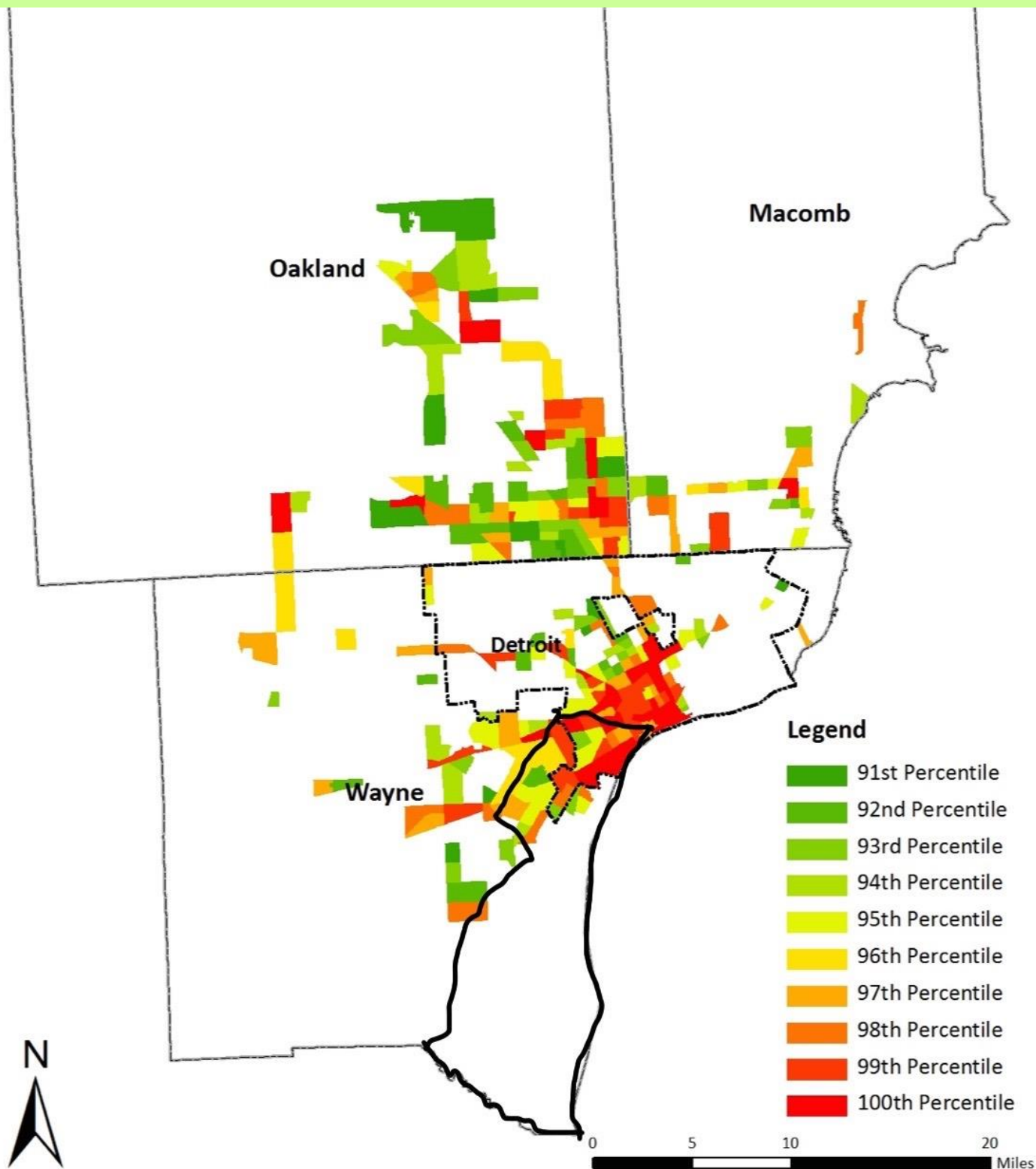
SO₂ Non-Attainment Area and Location of 48217 and 8 Most Polluted Zip Codes in Detroit Metro Area from Industrial Sources



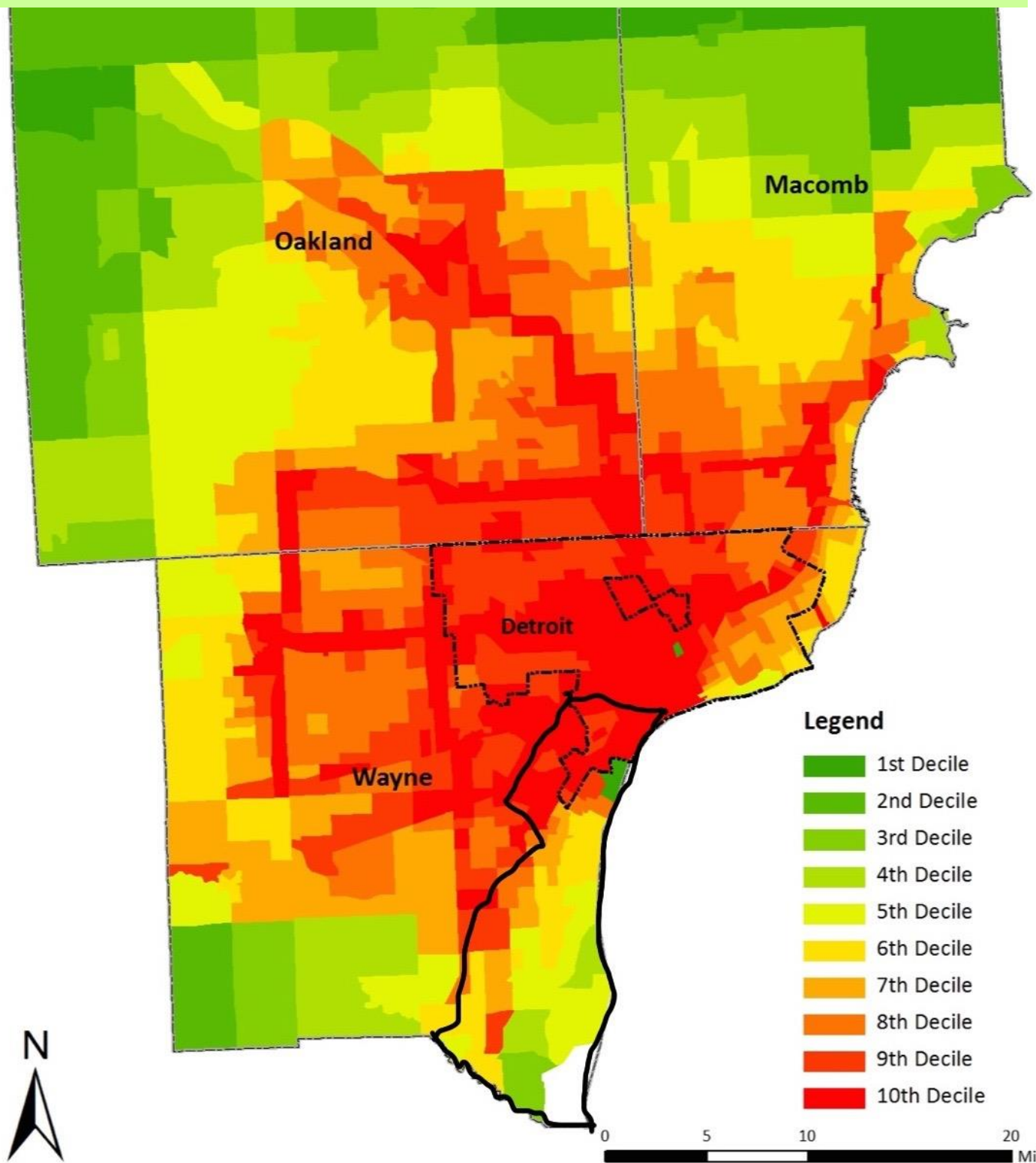
SO₂ Non-attainment Area And Cancer Risk Contours From All Air Pollution Sources In Detroit Metro Area (2005 National Air Toxics Assessment)



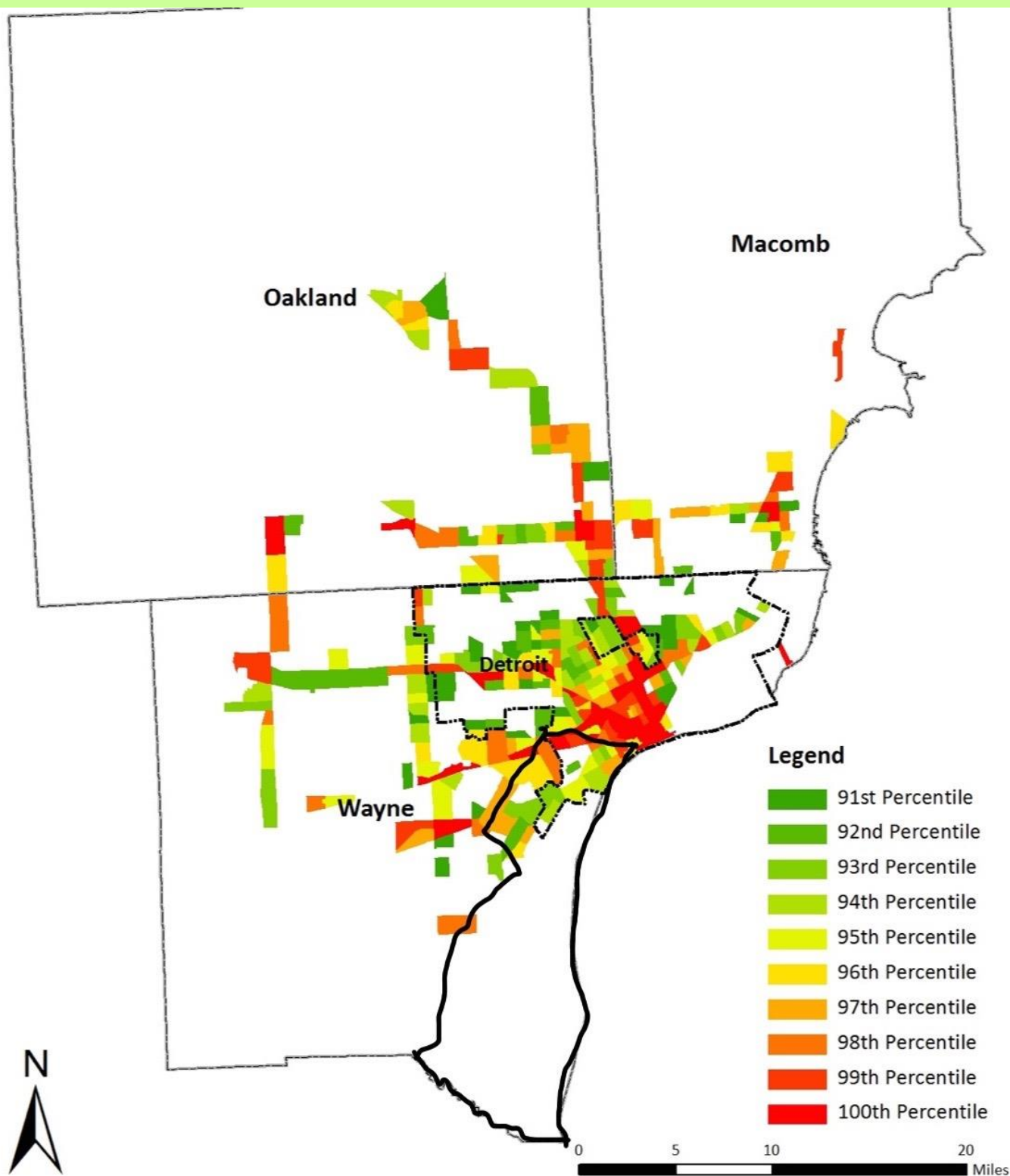
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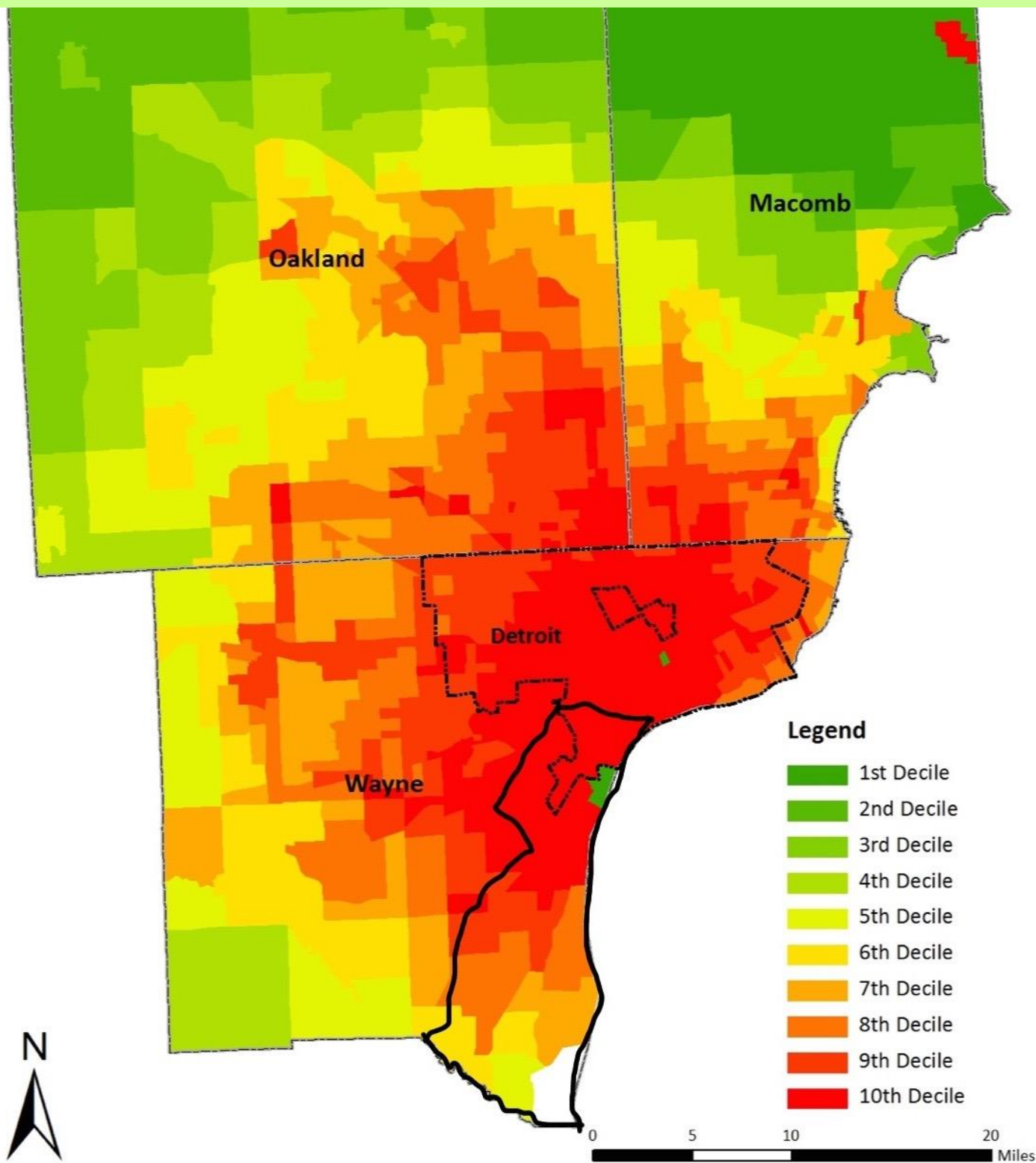
SO₂ Non-Attainment Area and Respiratory Risk Contours from All Air Pollution Sources In Detroit Metro Area (2005 National Air Toxics Assessment)



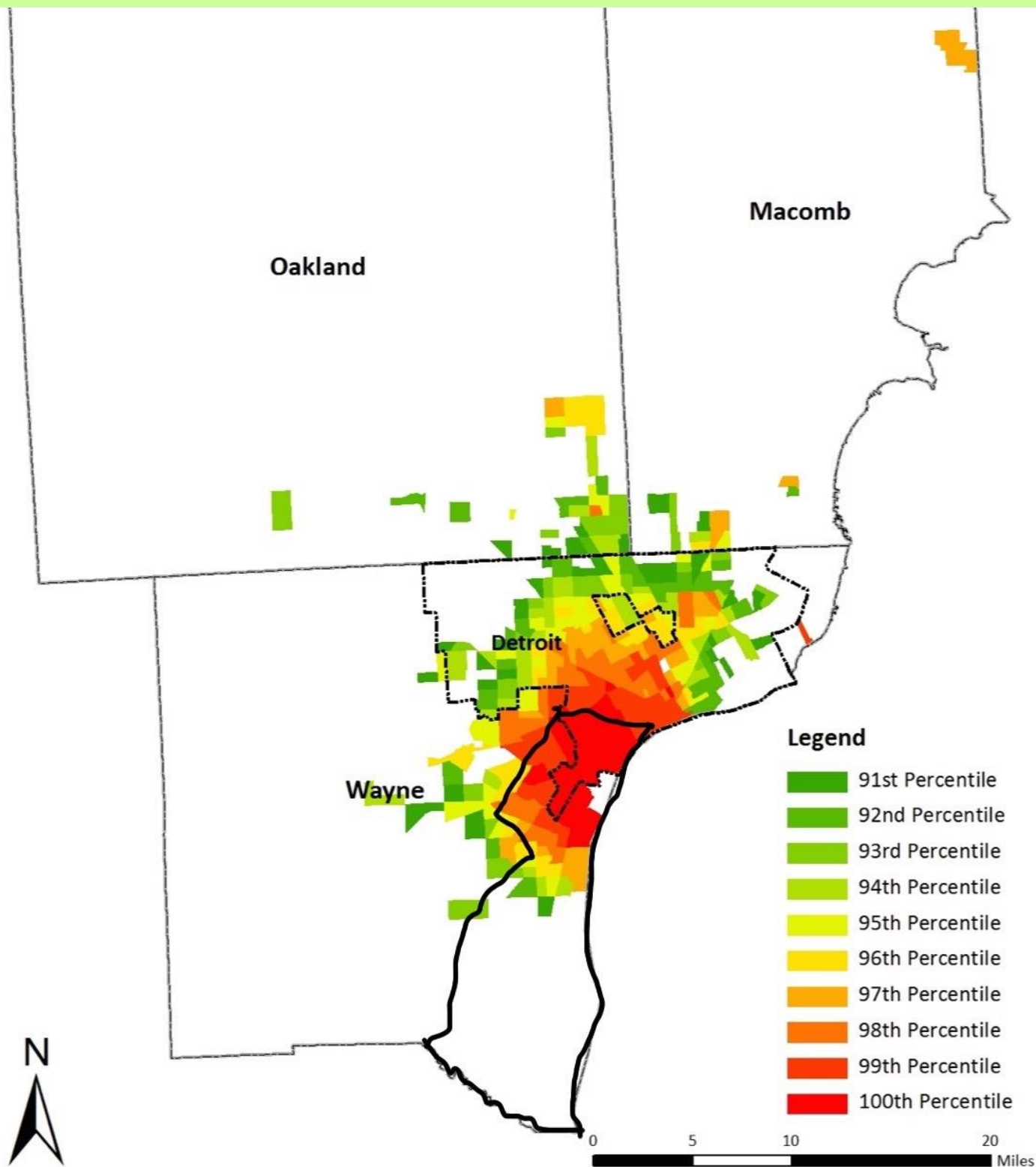
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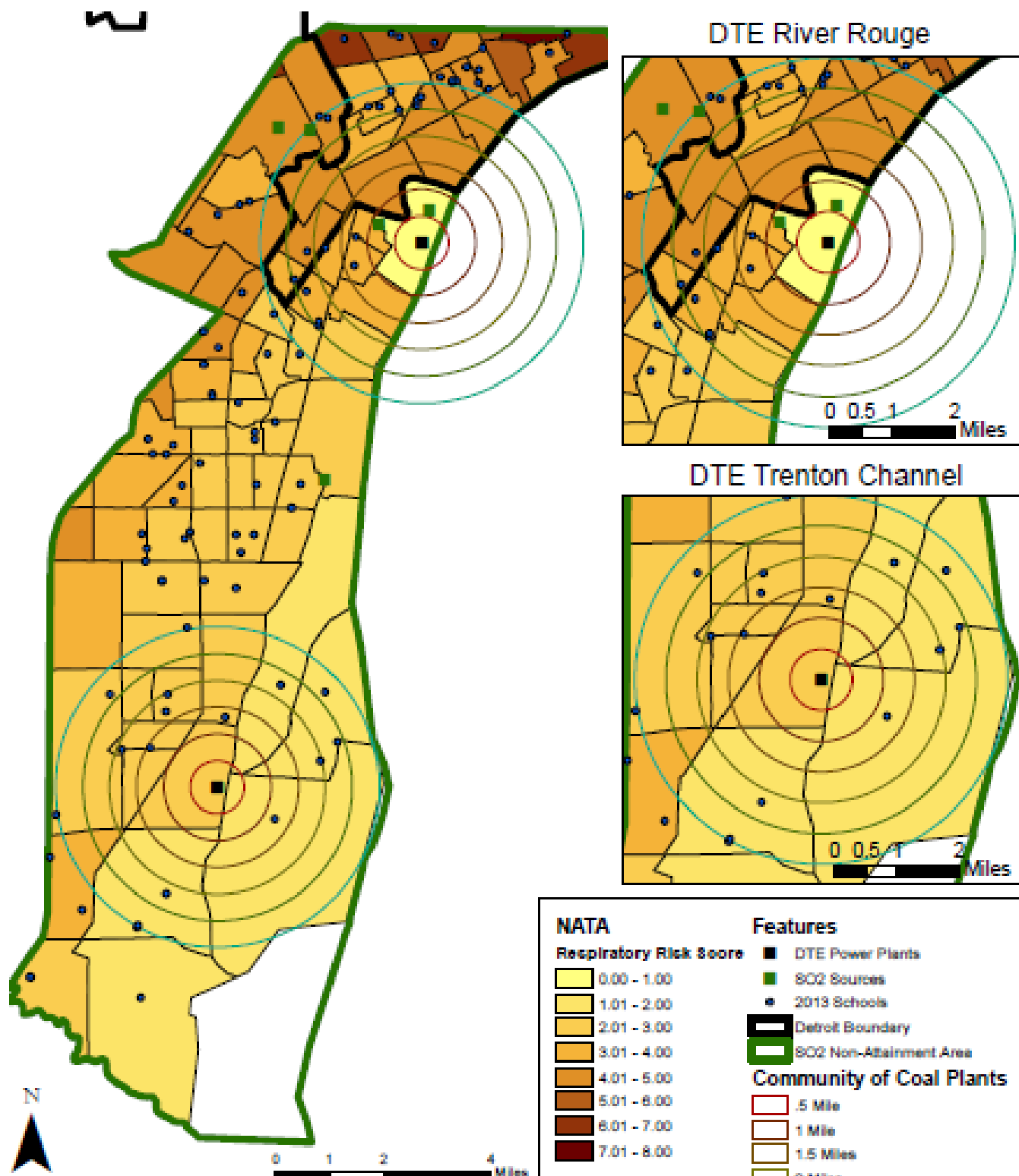
SO₂ Non-Attainment Area and Neurological Risk Contours from All Air Pollution Sources In Detroit Metro Area (2005 National Air Toxic Assessment)



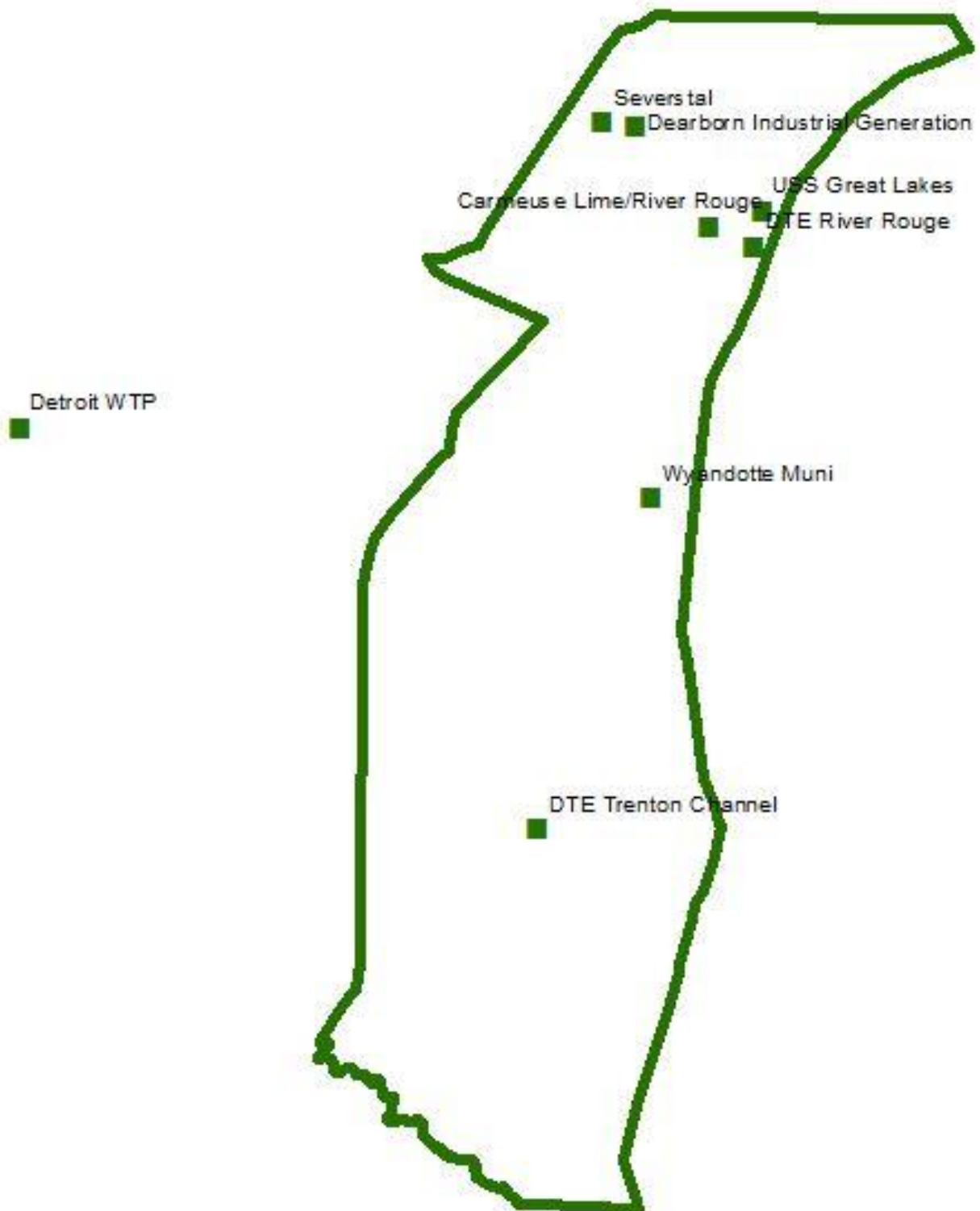
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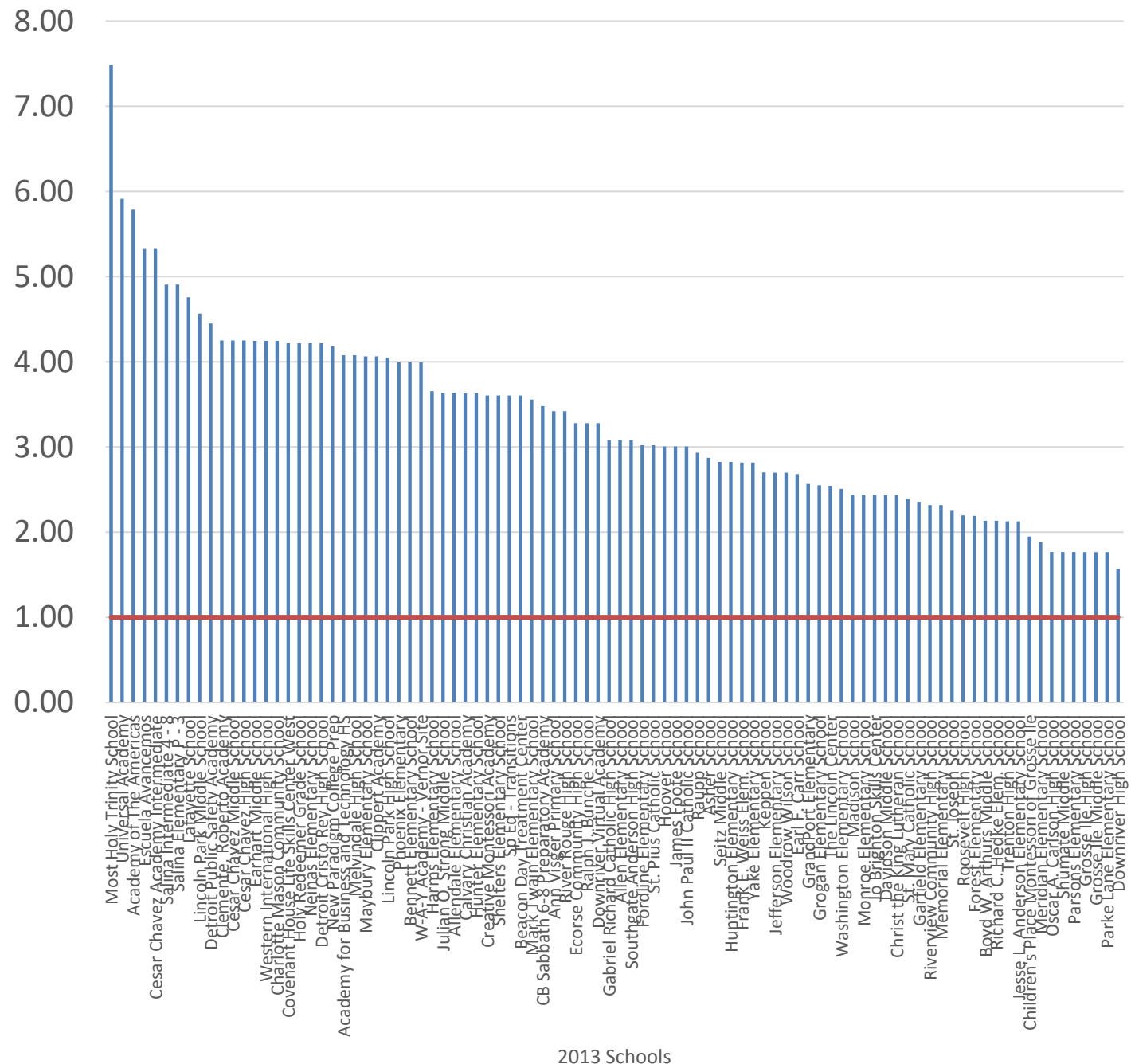
Respiratory Risk and 92 Schools in SO₂ Non-Attainment Area



SO2 Sources



NATA 2005 Respiratory Risk Ratios at Location of 92 Schools in SO2 Non-Attainment Area

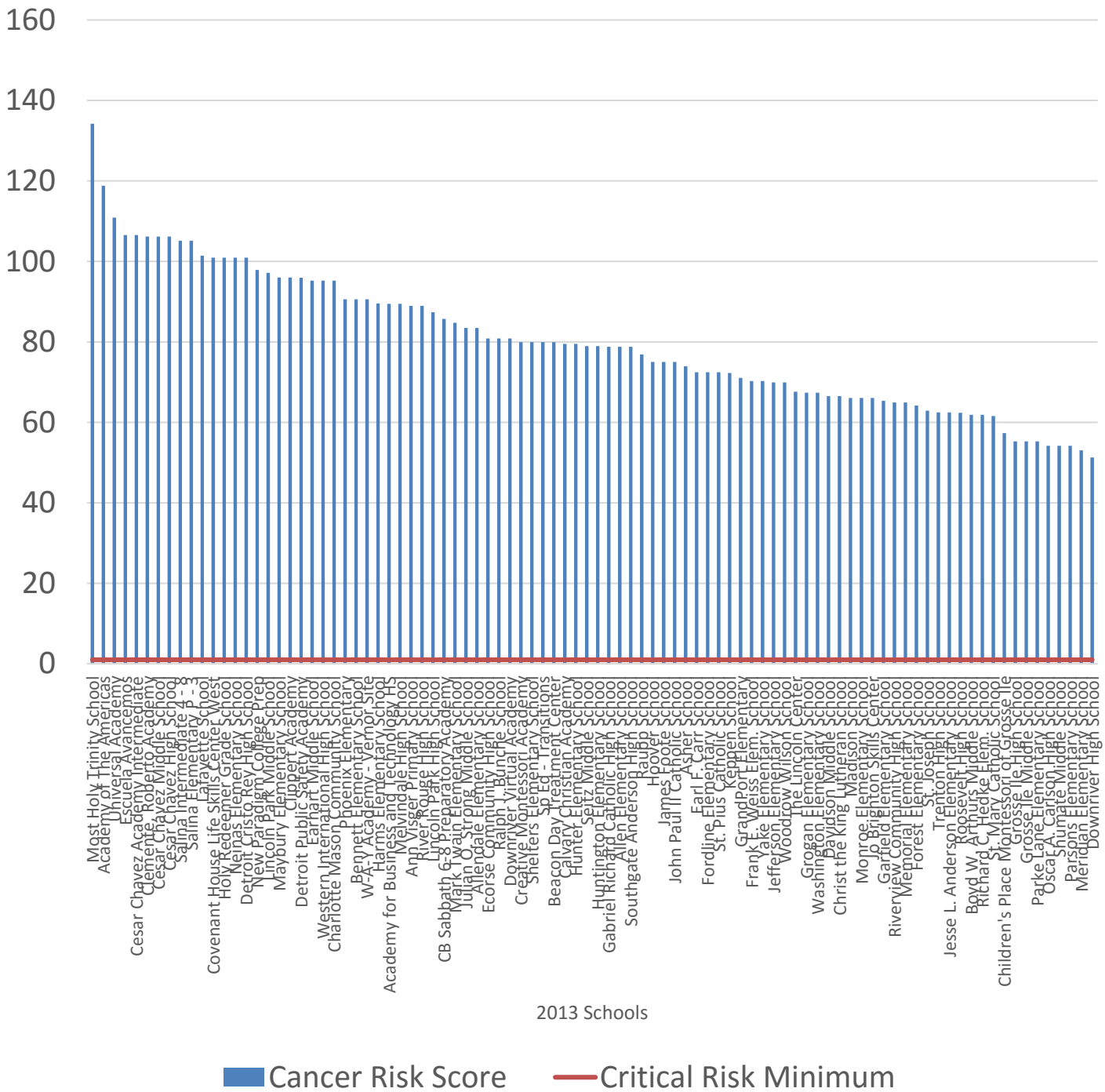


2013 Schools

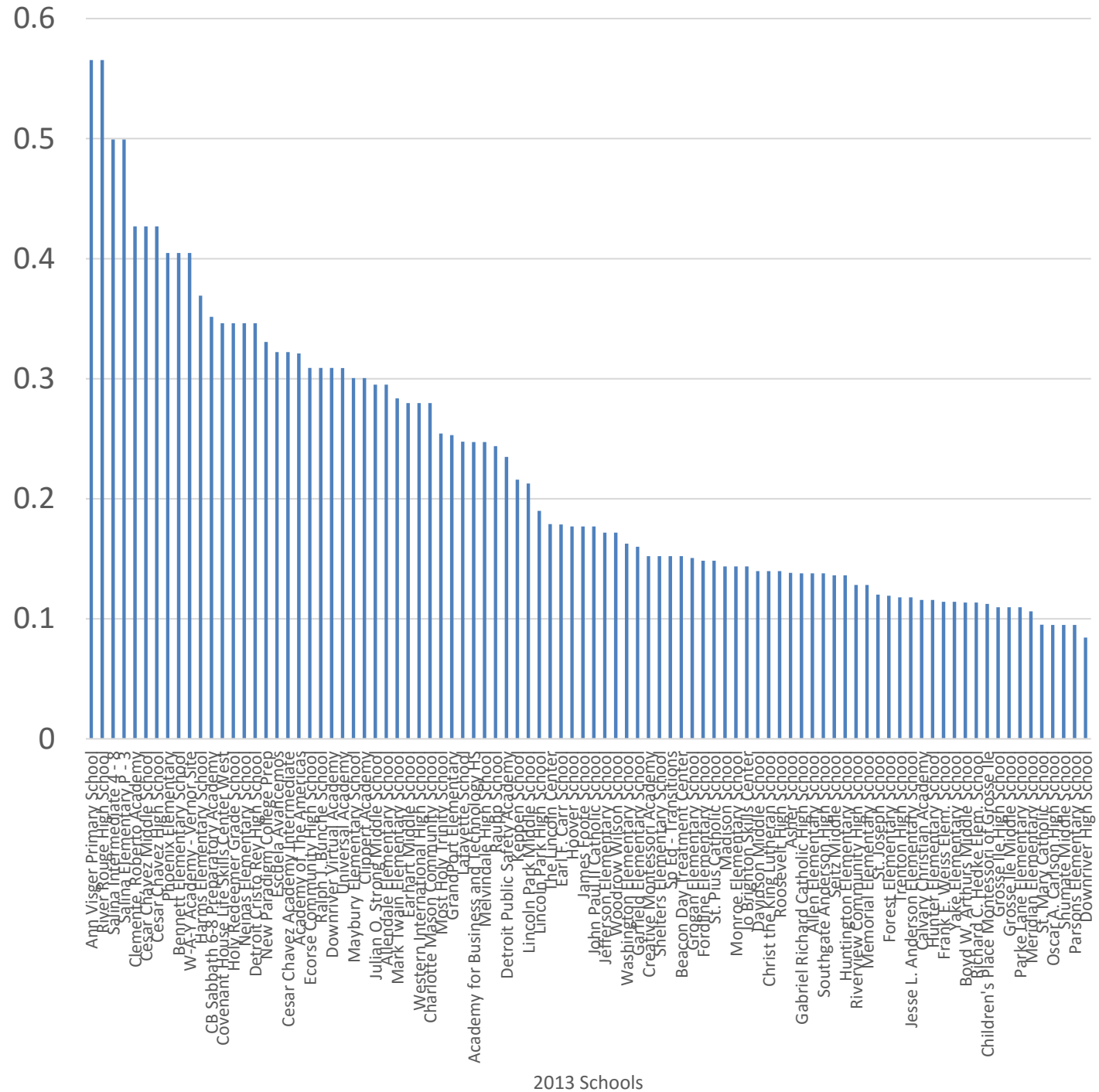
■ Respiratory Risk Score

— Critical Risk Minimum

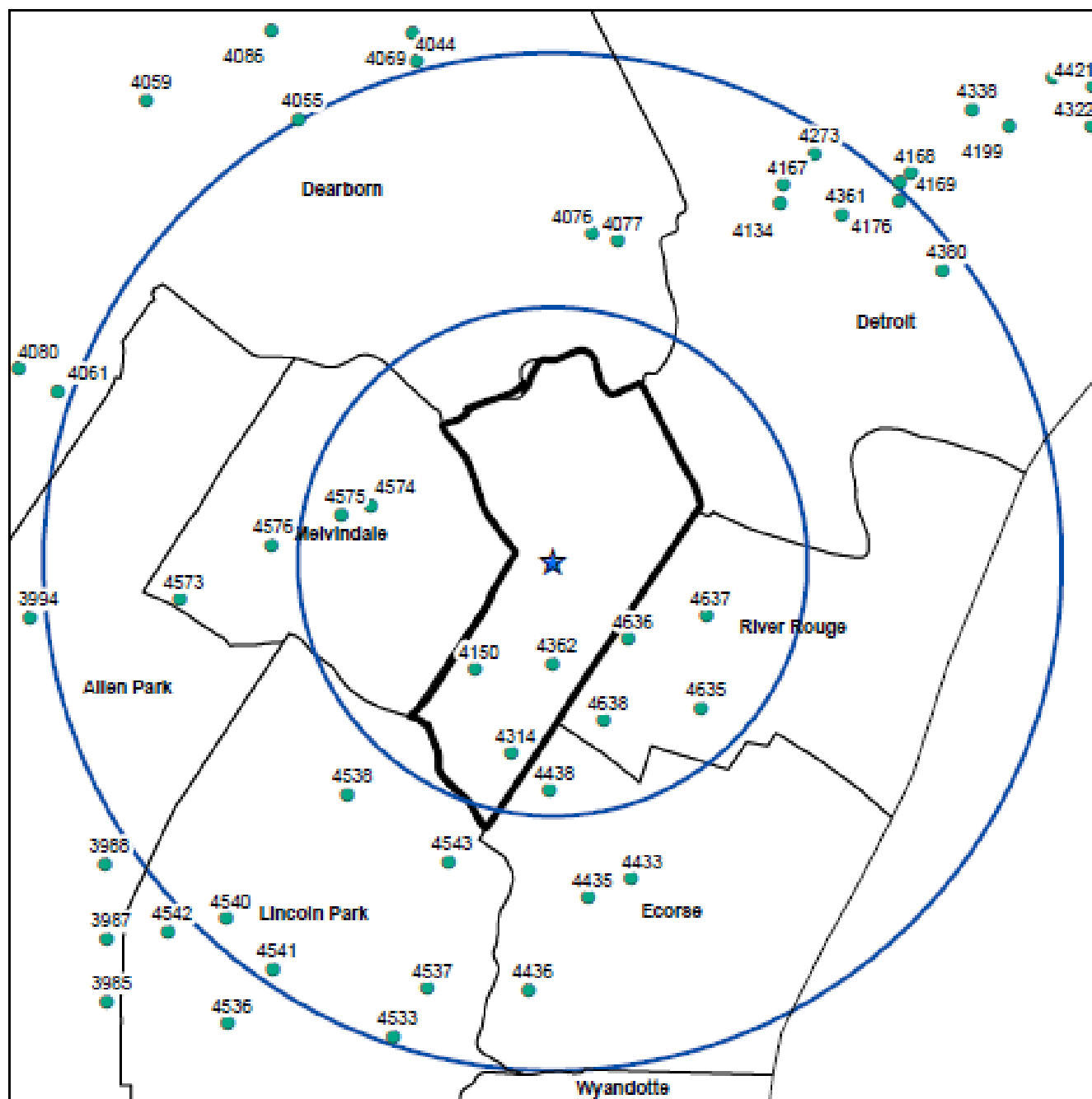
NATA 2005 Cancer Risk Scores at Location of 92 Schools in S02 Non-Attainment Area



NATA 2005 Neurological Risk Scores at Location of 92 Schools in S02 Non-Attainment Area



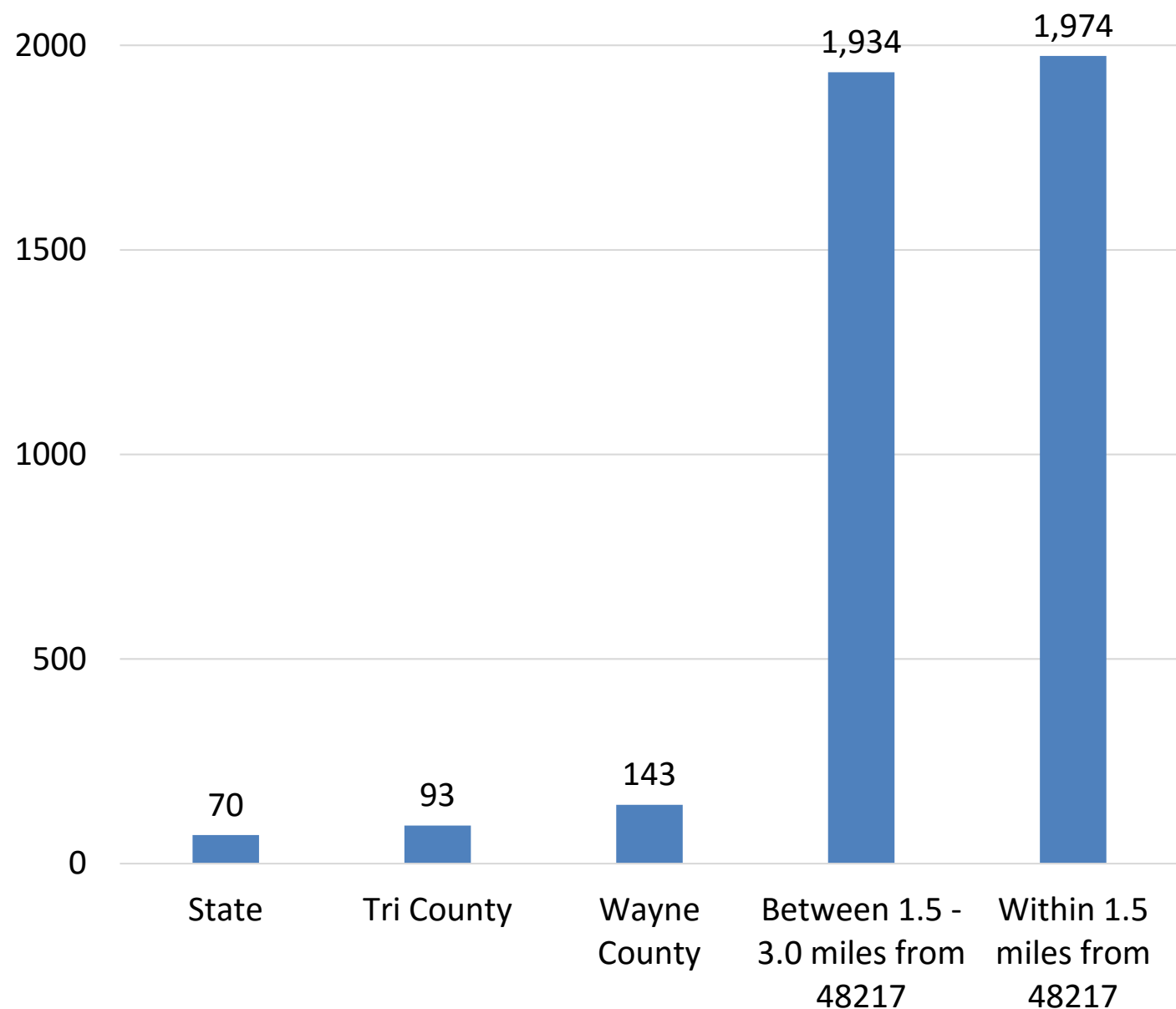
Schools within 1.5 miles and 3.0 miles of Center of 48217 Zip Code



Rings represent distance from 48217 centroid
at 1.5 miles and 3 miles

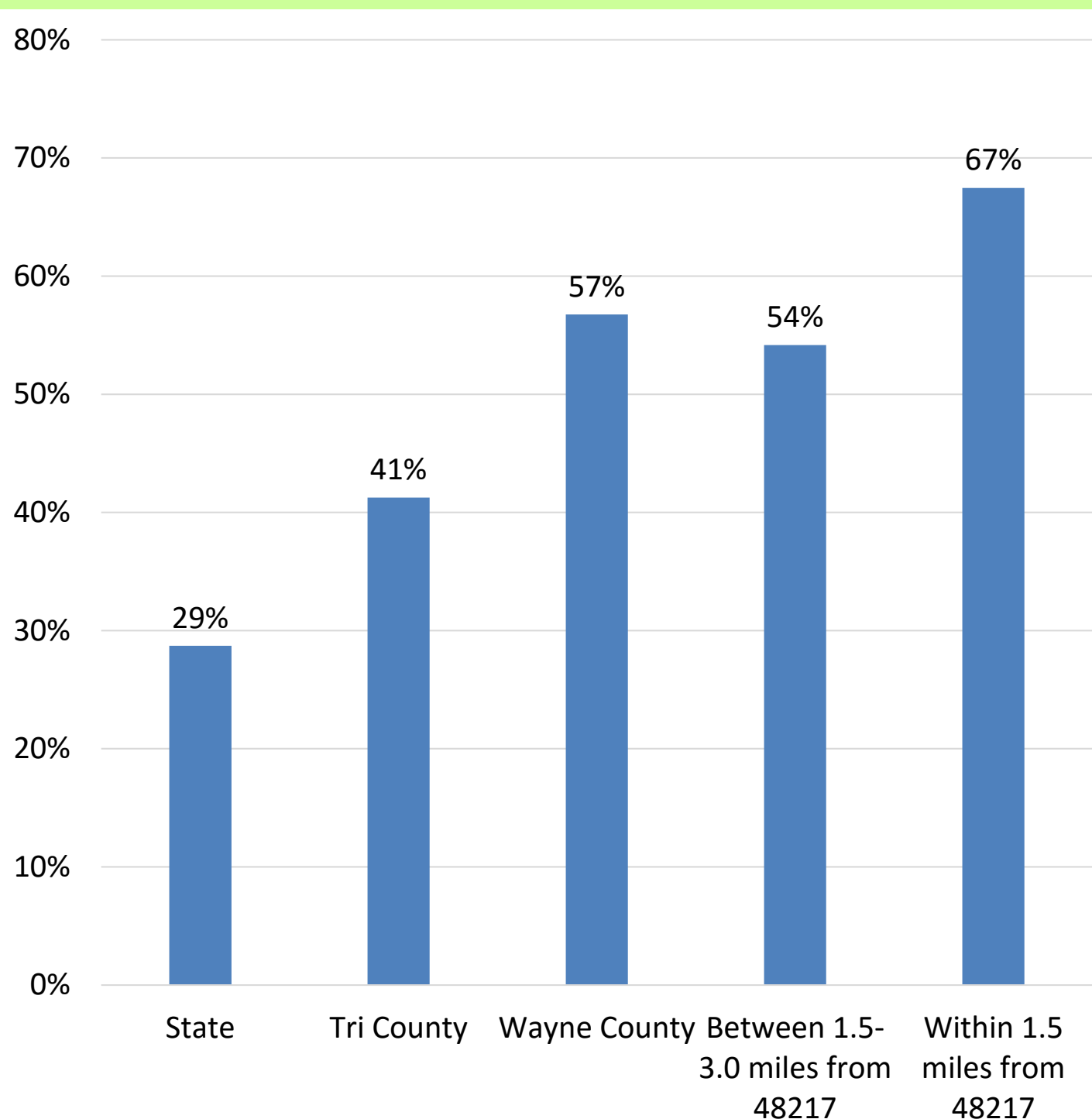
Ten schools within 1.5 miles and
20 schools between 1.5 and 3.0 miles

Median Total Air Toxic Concentrations within Two Kilometers of Schools in Michigan and Vicinity of 48217 Zip Code



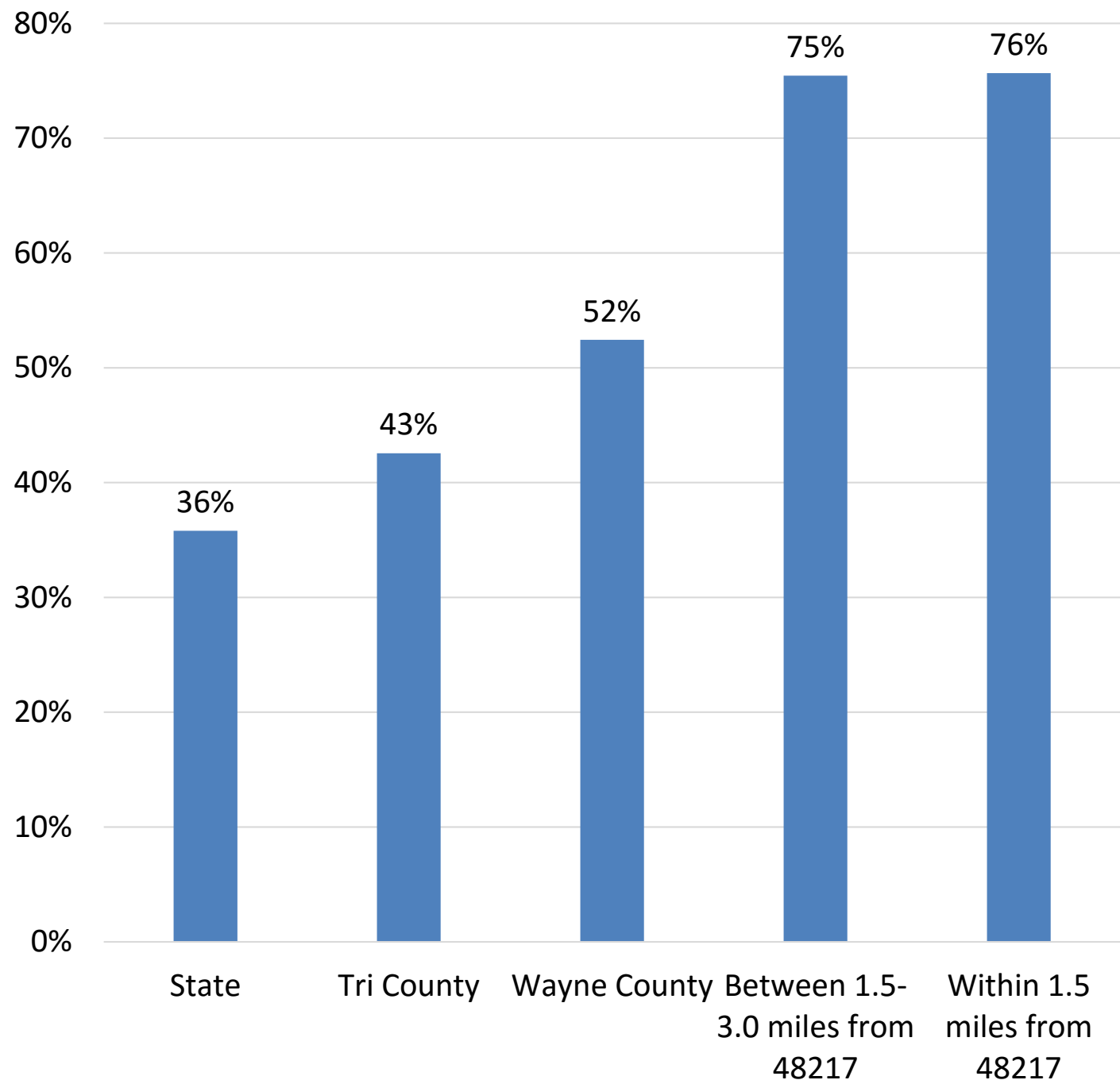
*Based on 2006 RSEI-GM and 2007 school data reported in Mohai, Kweon, Lee, and Ard (*Health Affairs* 2011)

Percent of Student Body Who Are Racial or Ethnic Minority



*Based on 2007 school data reported in Mohai, Kweon, Lee, and Ard
(*Health Affairs*, 2011)

Percent of Student Body Who Are Eligible for Free & Reduced Lunch



*Based on 2007 school data reported in Mohai, Kweon, Lee, and Ard
(*Health Affairs*, 2011)

EPA EJScreen: Environmental Justice Indexes

- The EJ index is a combination of environmental and demographic information. There are twelve EJ Indexes in EJSCREEN reflecting the 11 environmental indicators. The 11 EJ Index names are:
 - National Scale Air Toxics Assessment Air Toxics Cancer Risk
 - National Scale Air Toxics Assessment Respiratory Hazard Index
 - National Scale Air Toxics Assessment Diesel PM (DPM)
 - Particulate Matter (PM2.5)
 - Ozone
 - Lead Paint Indicator
 - Traffic Proximity and Volume
 - Proximity to Risk Management Plan Sites
 - Proximity to Treatment Storage and Disposal Facilities
 - Proximity to National Priorities List Sites
 - Proximity to Major Direct Water Dischargers
- EJ Index =
 - $$\frac{(\text{The Environmental Indicator}) \times (\text{Demographic Index for Block Group} - \text{Demographic Index for US})}{\text{Population count for Block Group}}$$

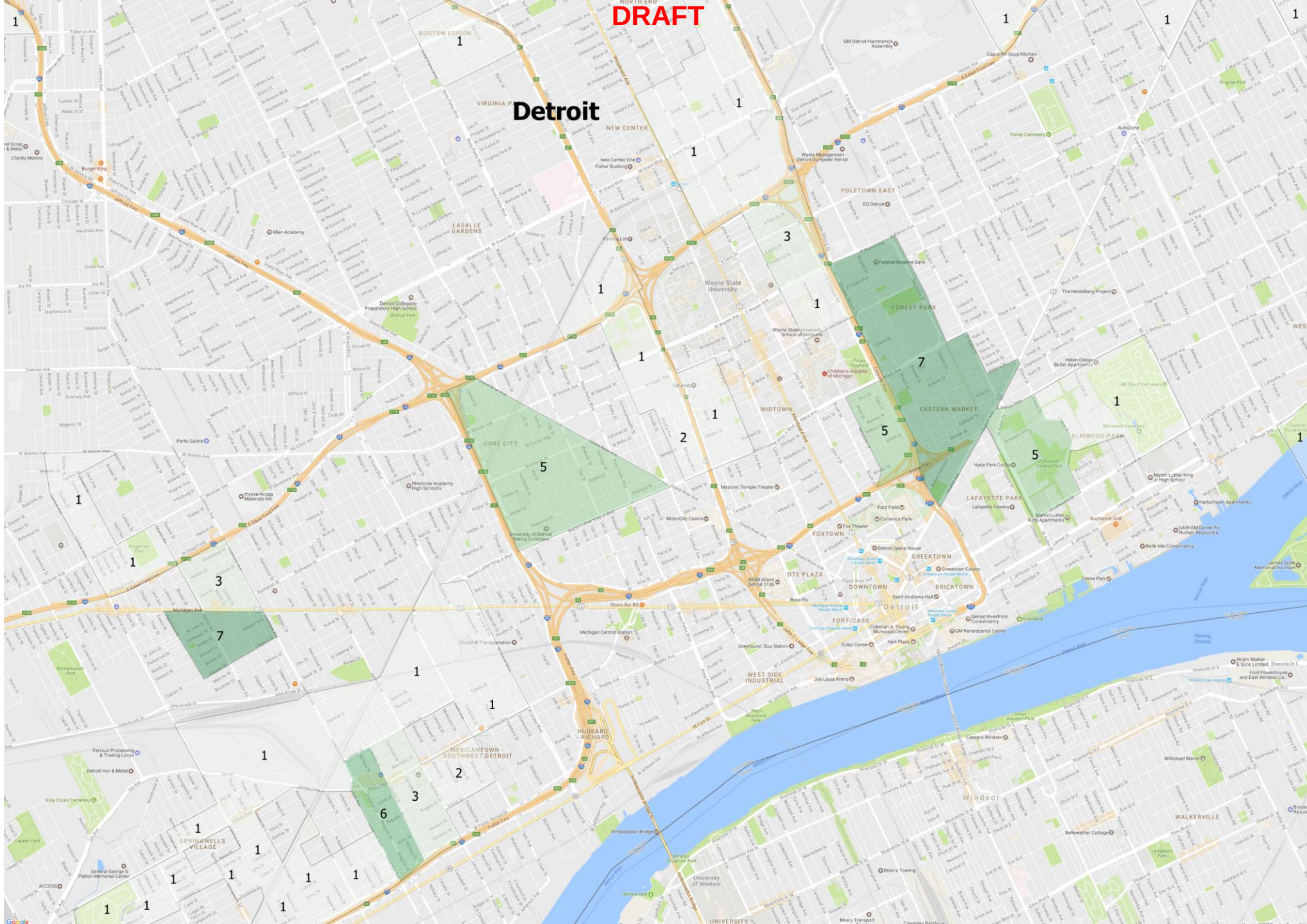
DRAFT

	Block Group	Count of EJ Index	Location
1	260810037001	8	Grand Rapids
2	260810039001	8	Grand Rapids
3	261635189001	7	Detroit
4	261635105004	7	Detroit/Hamtramck
5	260810040001	7	Grand Rapids
6	261635257003	7	Detroit
7	261251603002	6	Southfield
8	261251715003	6	Oak Park/Southfield
9	261635232001	6	Detroit
10	260810026003	6	Grand Rapids
11	261635220001	5	Detroit
12	261635173002	5	Detroit
13	261635534002	5	Highland Park
14	261635169001	5	Detroit
15	261635793002	5	River Rouge
16	261450009003	5	Saginaw
17	261614101001	5	Ypsilanti
18	260810039002	4	Grand Rapids
19	260730007001	4	Mt. Pleasant
20	261635014003	4	Detroit
21	260810038001	4	Grand Rapids
22	260570004001	4	St. Louis
23	260810038002	4	Grand Rapids
24	260810133003	3	Wyoming
25	261635258002	3	Romulus

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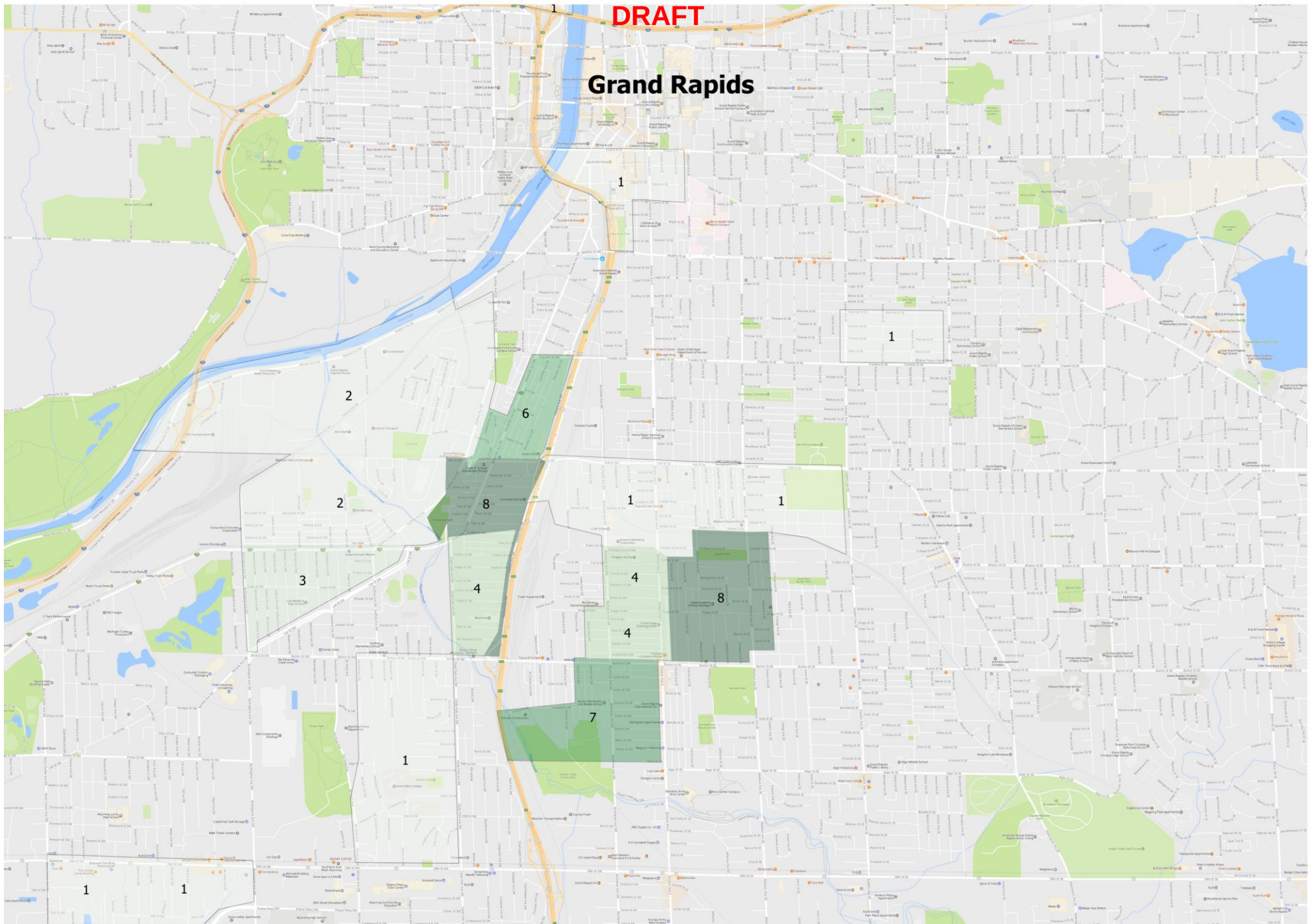


DRAFT



DRAFT

Grand Rapids



ENVIRONMENTAL JUSTICE

Michigan
Department of
Environmental
Quality



ENVIRONMENTAL JUSTICE

- How can DEQ prevent Environmental Injustice?
- EJ is often a gap issue.
- Pillars of EJ
 - Disparate Impacts
 - Meaningful Public Involvement
 - Collaboration
 - Problem Solving
 - Relationship Building

GOVERNOR ENGLER'S ENVIRONMENTAL JUSTICE EFFORTS

- Workgroup with subgroups established 1998.
- Some EJ community groups withdrew from the process March 1999 because they felt the process itself was not practicing fair treatment.
- Belief that environmental regulations protect everyone equally may have limited the effectiveness of the group.
- Controversial cases may have limited the effectiveness of the group.
- Recommended improvements to public outreach.

GOVERNOR GRANHOLM ENVIRONMENTAL JUSTICE EFFORTS

- November 21, 2007 - Executive Directive 2007-23.
- Directed DEQ to develop and implement a state environmental justice plan - **FLAWED**.
 - Missed complexity of EJ issues.
- Workgroup crafted 2009 plan.
- Director Humphries directed DEQ staff to draft consensus plan
 - Petition process was removed.
- Signed by Director Humphries on December 17, 2010 – Not actively implemented, viewed as previous administration's plan.

GOVERNOR SNYDER ENVIRONMENTAL JUSTICE EFFORTS

- Director Wyant directed DEQ staff to engage with EJ community to identify objectives and metrics.
- Process identified Meaningful Public Participation as an area DEQ could have an impact on.
- DEQ worked with EPA to improve DEQ EJ Program.
 - Compliance with 40 CFR Part 7 (Title VI):
 - DEQ Policy and Procedure 09-024, October 2015.

GOVERNOR SNYDER ENVIRONMENTAL JUSTICE EFFORTS

- **DEQ Policy and Procedure 09-024:**
 - Collect, maintain, and provide information showing compliance with 40 CFR Part 7 to EPA.
 - Nondiscrimination Compliance Coordinator
 - Grievance Procedures - track , investigate and respond.
 - Notice of Nondiscrimination

GOVERNOR SNYDER ENVIRONMENTAL JUSTICE EFFORTS

- **DRAFT revisions to Public Participation Policy #09-007:**
 - Improve Community Relations
 - Limited English Proficiency
 - Accessibility
 - Continuous Improvement
 - Identify and Use Best Practices

PUBLIC PARTICIPATION

Michigan
Department of
Environmental
Quality



PUBLIC PARTICIPATION

- AQD History
- Evolution of the Process Based on Public Feedback
- Key Enhancements



PUBLIC PARTICIPATION

- What are the rules and statutory requirements?
 - Federal Regulations
 - State Regulations
 - State Rules
- What actions by the Air Quality Division require public comment?
 - New Source Review Permit to Install (PTI) Applications
 - Renewable Operating Permits (ROP)
 - Consent Orders
 - State Implementation Plans
 - Rules Packages, etc.

CASE STUDIES

■ Detroit Renewable Power

- Background
- Hearing
- Informational Session



■ Detroit Salt

- Background
- Decision and Final Permit Conditions

OUTREACH ACTIVITY EXAMPLES

- Staff participation in environmental focus groups.
- Addition of 48217 air monitor in 2016 and 3 new Detroit (Delray) community monitors in 2018.
- Regularly interacting with and soliciting ideas from concerned residents.
- EJ representatives serve on Air Advisory Council.

NEXT STEPS

- Continue to improve our process
 - Start Early
 - Access Information
 - Collaborate
 - Plain language documents.
 - Advisory capacity.
 - Facilitate
- Other ideas?



MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY

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MDOT Environmental Justice Overview

Heidi Phaneuf, Transportation Planner & Environmental Justice Coordinator

Michigan Department of Transportation

June 12, 2017 – Environmental Justice Work Group Meeting

Presentation Outline



- Federal compliance requirements
- What is Environmental Justice?
- US DOT 2012 Environmental Justice Principles
- MDOT definitions of low-income and minority populations
- Legislative requirements
- MDOT Environmental Justice Plans

Federal Compliance Requirements



As a recipient of federal financial assistance, MDOT and Metropolitan Planning Organizations (MPOs) must demonstrate compliance to

1. Title VI of the Civil Rights Act of 1964
2. National Environmental Policy Act of 1969
3. Federal-Aid Highway Act of 1970
4. Civil Rights Restoration Act of 1987
5. Environmental Justice (EJ) Executive Order 12898 of 1994
6. Limited English Proficiency (LEP) Executive Order 13166 of 2000

What is Environmental Justice?



Executive Order 12898 of 1994 signed by President Clinton

"To the greatest extent practicable and permitted by law...each Federal agency shall make achieving environmental justice part of its mission by identifying and addressing disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority populations and low-income population in the United States..." (EO 12898, Section 1-101)

US DOT 2012 Environmental Justice Principles



1. To avoid, minimize, or mitigate disproportionately high and adverse human health and environmental effects, including social and economic effects, on minority populations and low-income populations.
2. To ensure the full and fair participation by all potentially affected communities in the transportation decision-making process.
3. To prevent the denial of, reduction in, or significant delay in the receipt of benefits by minority and low-income populations.

MDOT definitions of low-income and minority populations



Low-Income: a person whose median household income $\leq$ U.S. Dept. of Health and Human Services poverty guidelines (\$12,060 in 2017)

Minority: a person who is

- Black
- Hispanic
- Asian
- American Indian and Alaskan Native
- Native Hawaiian and Other Pacific Islanders

MDOT also includes:

- Elderly persons (Age 65+)
- Disabled persons
- Occupied Housing Units with No Vehicles Available

Legislative Requirements



- Requires a process of project selection
- Process ensures and prevents any form of discrimination against race, color, national origin, age, sex, income, handicap/disability, or means of transportation
- Process establishes procedures for identifying disproportionate impacts

MDOT Environmental Justice in Plans and Projects

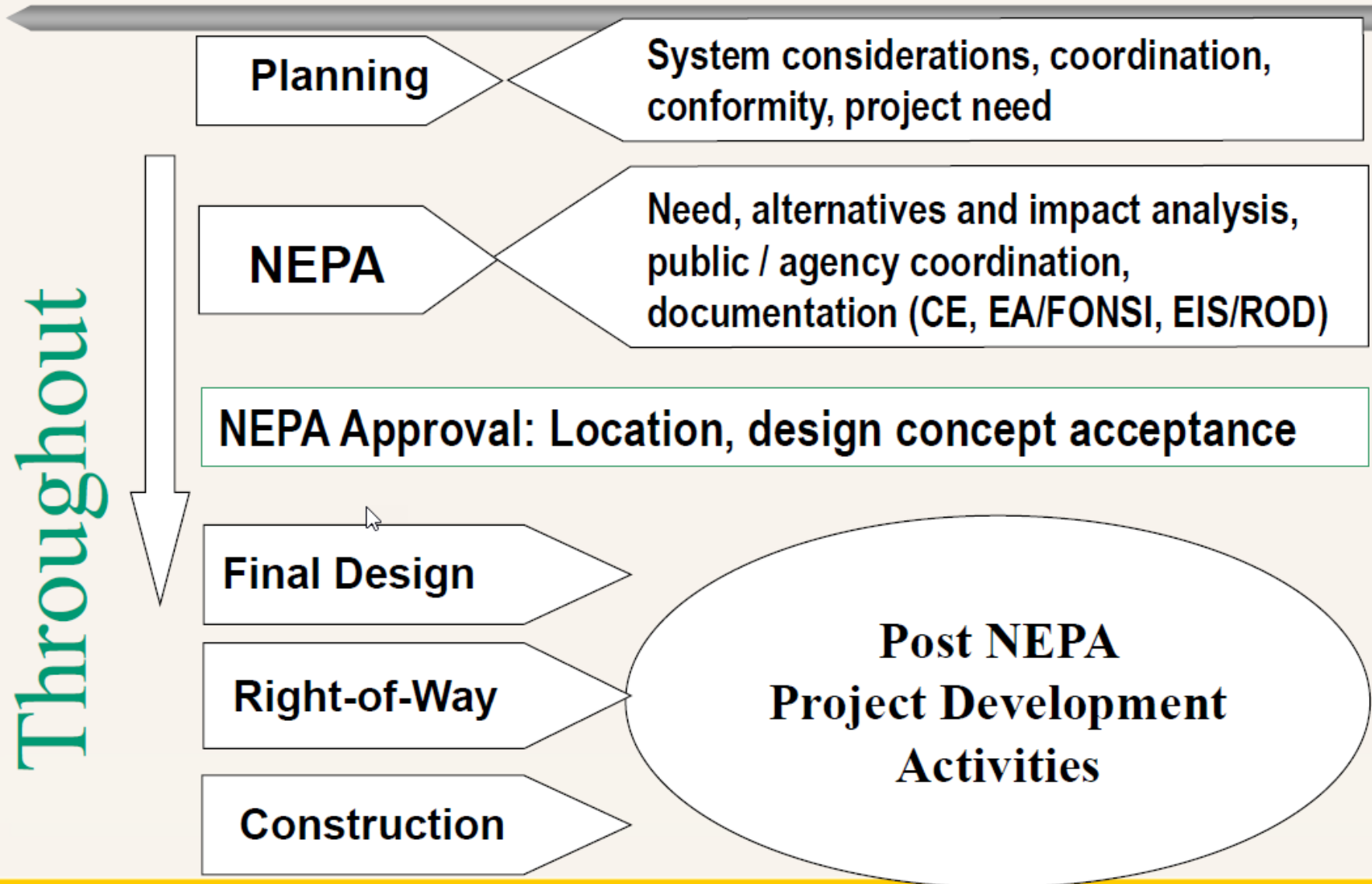


MDOT completes an Environmental Justice Analysis for Transportation Plans:

- **The State Long-Range Plan (SLRP)** — a 20-year Federally required horizon plan specifying broad goals and objectives for all modes of transportation
- **The Five-Year Transportation Program (5YTP)** — a state legislature required multi-modal document outlining highway improvement projects for a five-year period
- **Federal Transit Administration funded transit projects**

And Project Level analysis through
National Environmental Policy Act (NEPA)

Environmental Justice in the Transportation Project Development Process



MDOT Environmental Justice Analysis Methodology



1. Most recent census data (census tract level) and DHHS Poverty Standards
2. Compute statewide averages and establish statewide baseline ratios
3. Synthesize census data with the Location Quotient statistical method
4. Map the list of proposed projects (ex. MDOT 5-year plan FY 2018-2022)

MDOT Environmental Justice Analysis Methodology (Cont.)



5. Develop statewide thematic maps showing spatial location of EJ population groups
6. Develop project-level maps showing list of candidate projects at statewide and MDOT designated region levels
7. Evaluate cost relationships or disproportionate impact level of proposed projects for implementation at MDOT region level
8. Collect Disadvantaged Business Enterprise (DBE) contract information from MDOT Contract Service Division

Location Quotient Method

$$LQ_i = \frac{\frac{x_i}{n_i}}{\frac{x}{n}} \text{ or } \frac{x_i}{x} \times \frac{n}{n_i}$$

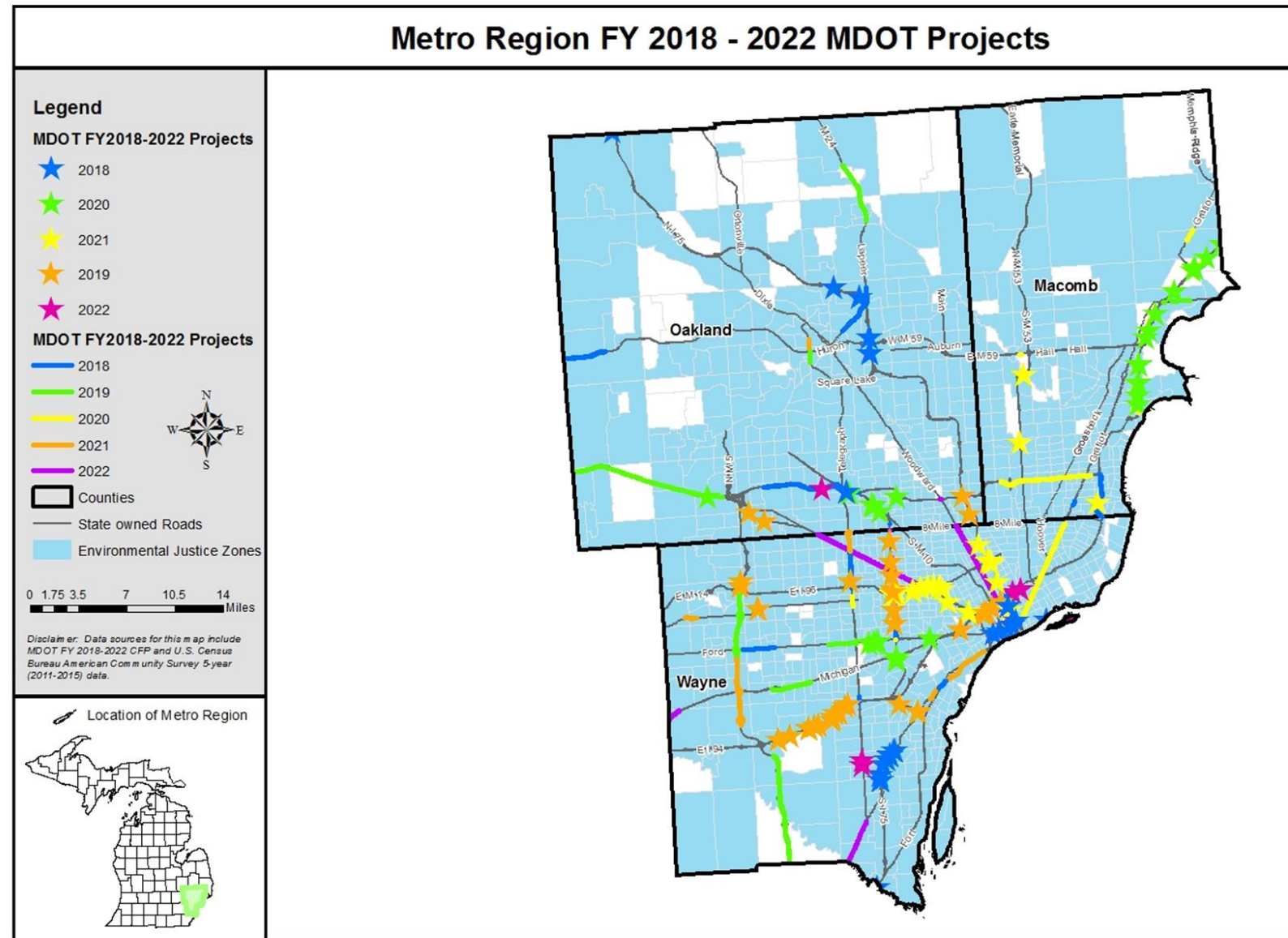
- Location Quotient (LQ) = statistical technique used to calculate the shared distribution of a smaller, local economy to a larger, reference economy
- For our EJ analysis:
 1. Local Economy = 2010 Census Tract
 2. Reference Economy = State of Michigan

Significant Projects

- **Significant projects:** a project that may individually or cumulatively have significant impact(s) on the natural, human, or social environment
- Examples:
 - New roads or highways
 - New structures or facilities
 - Major and minor widening



Example: Metro Region Environmental Justice Analysis Map



Environmental Justice Observations

- New route/structure projects, and major and minor widening projects as identified in the project listings may/may not have significant impact(s) on EJ population groups based on definition of “regionally significant project”...however
- It is still *strongly* encouraged that MDOT project managers use **due diligence** in involving identified EJ populations as early as possible



- MDOT project managers should also encourage the public to participate in the data collection process during all MDOT public involvement meetings

MDOT Public Involvement Process (PIP) Toolkit



- **Stakeholder interviews**
 - Key stakeholders identified by MDOT
- **Household participation studies**
 - Household studies conducted by random telephone interviews
- **Economic Advisory Group**
 - Industry leaders from State's eight economic sectors
- **Stakeholder workshops**
 - Utilize breakout groups to maximize interaction
- **Open houses**
 - Formal presentation/handouts to engage public and gather info
- **Library partnership online questionnaires**
 - Online questionnaires located at participating libraries around State
- **Outreach meetings**
 - Reach out to involve traditionally underserved communities
- **MDOT website, social media, email list groups**

MDOT Disadvantaged Business Enterprise (DBE) Program



- 49 CFR § 26 (1999) "Participation by Disadvantaged Business Enterprises in Department of Transportation Programs"
- All MDOT-assisted construction projects, consulting services, procurement services, contract administration services, and/or subcontracting administration services continue to be consistent with Federal requirements
- Encourages MDOT to continue the participation of DBEs in all federal-aid contracting activities

Thank You!

For more information, contact:

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