Right-Sizing Wastewater Monitoring in Michigan

MDHHS Communicable Disease Conference

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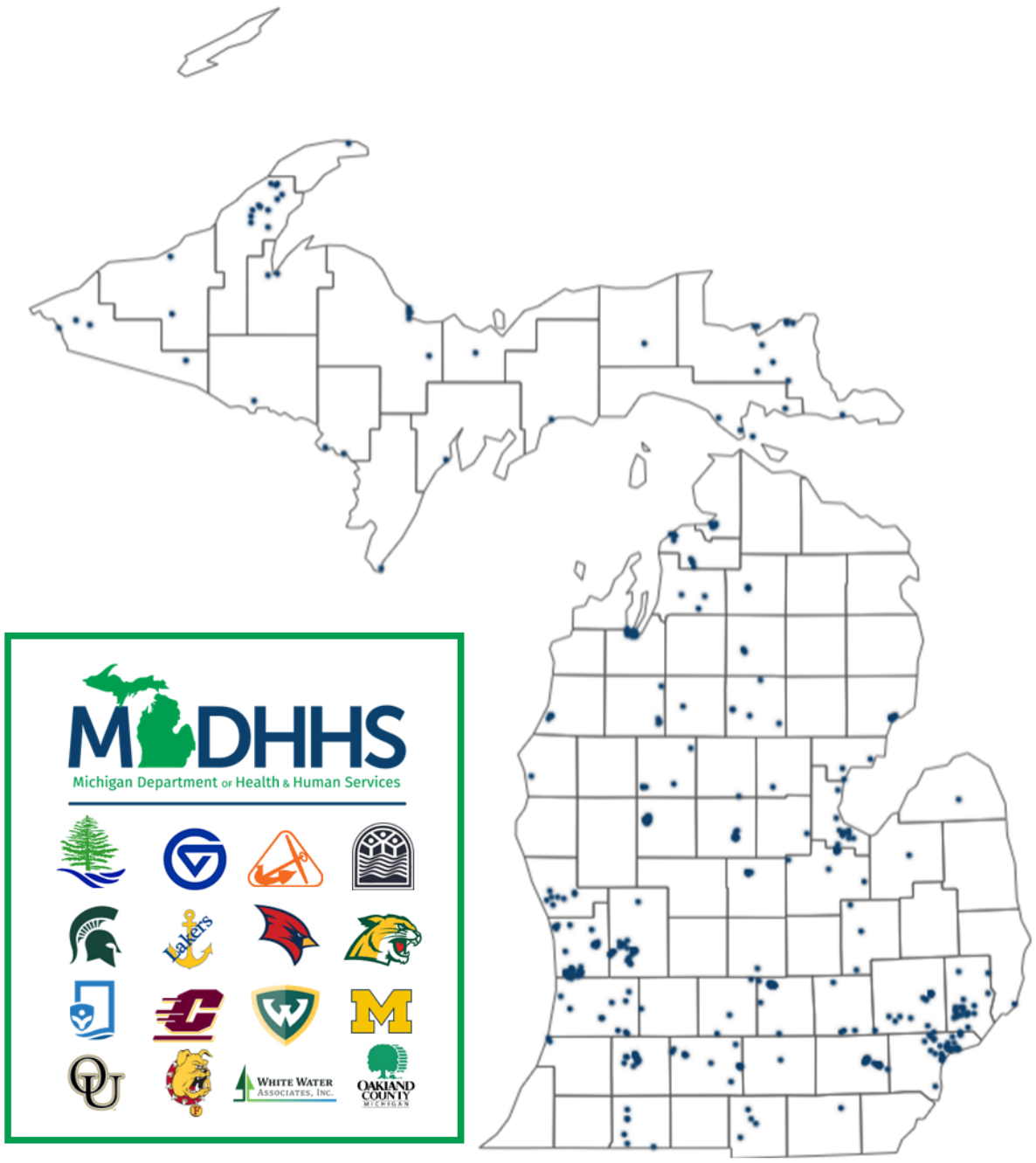
Michigan Department of Health & Human Services

Michigan Wastewater Network at a Glance

Distributed Monitoring Network

- 19 local projects
- 18 labs
- 340+ sampling sites
- Coordinated by MDHHS with CDC support



Right Sizing Background

In June 2024, CDC directed states to right-size their wastewater networks.

Supplemental Guidance:

ELC recipients who have received NWSS funding under CK19-1904 and/or CK24-0002 must abide by the original published guidance, the Terms & Conditions under the Notice of Award (NOA), and the following supplemental guidance. Recipients should keep in mind that the funds issued under CK19-1904 are to complete activities in the approved Work Plan. Additionally, funds awarded under CK24-0002 are to be used only for those new activities under the Work Plans associated with *Project E: NWSS*. Failure to incorporate the supplemental guidance into existing Work Plan Activities may impact either the eligibility for future awards and/or award amount.

1. Recipients must right-size a sustainable network of **community-based** wastewater testing sites to include approximately one site per 200,000 to 400,000 population (e.g., a jurisdiction with 5 million residents should have 13 – 25 wastewater testing sites) geographically distributed to include population representativeness (consider coverage of rural and urban areas, communities with limited access to testing and clinical care, and other priority populations) across the jurisdiction.

   Please note: This guidance is flexible and can be adjusted by recipients to account for the large variation in the size and composition of population included in a single wastewater testing site.

2. Recipients must ensure all sites include testing for SARS-CoV-2 as well as infectious diseases of urgent concern. This includes testing for influenza A in all sites and the influenza H5 subtype as well as potentially additional influenza subtypes to maintain alignment with CDC's influenza surveillance guidance.

3. Recipients should ensure sites develop capacity to rapidly expand to additional pathogens of concern in response to emerging infectious diseases.

4. All data should be reported to CDC on a weekly basis by the specified date and time to ensure inclusion in weekly public reporting.

5. Recipients using other ELC funding to support wastewater surveillance should do so in a manner that is consistent with the NWSS guidance.

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Surveillance System Evaluation Framework

Surveillance System Core Attributes

- Usefulness
- Simplicity
- Data Quality
- Acceptability
- Representativeness
- Timeliness
- Stability
- Flexibility
- Sensitivity
- Positive Predictive Value

https://www.cdc.gov/mmwr/preview/mmwrhtml/rr5013a1.htm

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Sampling sites
Local projects

https://www.cdc.gov/mmwr/preview/mmwrhtml/rr5013a1.htm

Evaluation Roadmap

- Evaluation Part 1 – Network Sampling Sites
  1. Describe Michigan wastewater monitoring goals.
  2. Determine indicators of site representativeness and data quality.
  3. Evaluate sampling sites on determined indicators.
- Evaluation Part 2 – Local Wastewater Projects
  1. Determine top indicators of acceptability, flexibility, and data timeliness for local wastewater projects.
  2. Evaluate projects on the determined quality indicators.
- Evaluation Part 3 – Recommend changes to the wastewater network based on evaluation findings.

Part 1: Network Sampling Sites

Evaluation Part 1

We Are Here

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Wastewater Monitoring Goals

Core Monitoring

- Regular monitoring for endemic or common diseases.
- Routine, sustainable data monitoring to support public health decision-making.

Preparedness & Response

- Flexible capacity for rapid response to outbreaks and emergencies.
- Scalable monitoring of emerging pathogens of concern.

*Adapted from CDC's Wastewater Monitoring Goals

Collaborative Evaluation

Rightsizing Evaluation Taskforce

- 21 members
  - 17 network partners
  - 4 MDHHS staff
- Representing 12 organizations.
  - Labs, LHDs, and universities.

Part 1: Determining Indicators

- Representativeness
  - Population demographics
  - Social Vulnerability Index (SVI)
  - Healthcare access
- Data Quality
  - Reporting consistency
  - Data completeness
- Usefulness
  - Data correlation with COVID hospitalizations
  - Representation of areas with high transient populations (i.e., universities, tourism)

Sampling Sites: Representativeness

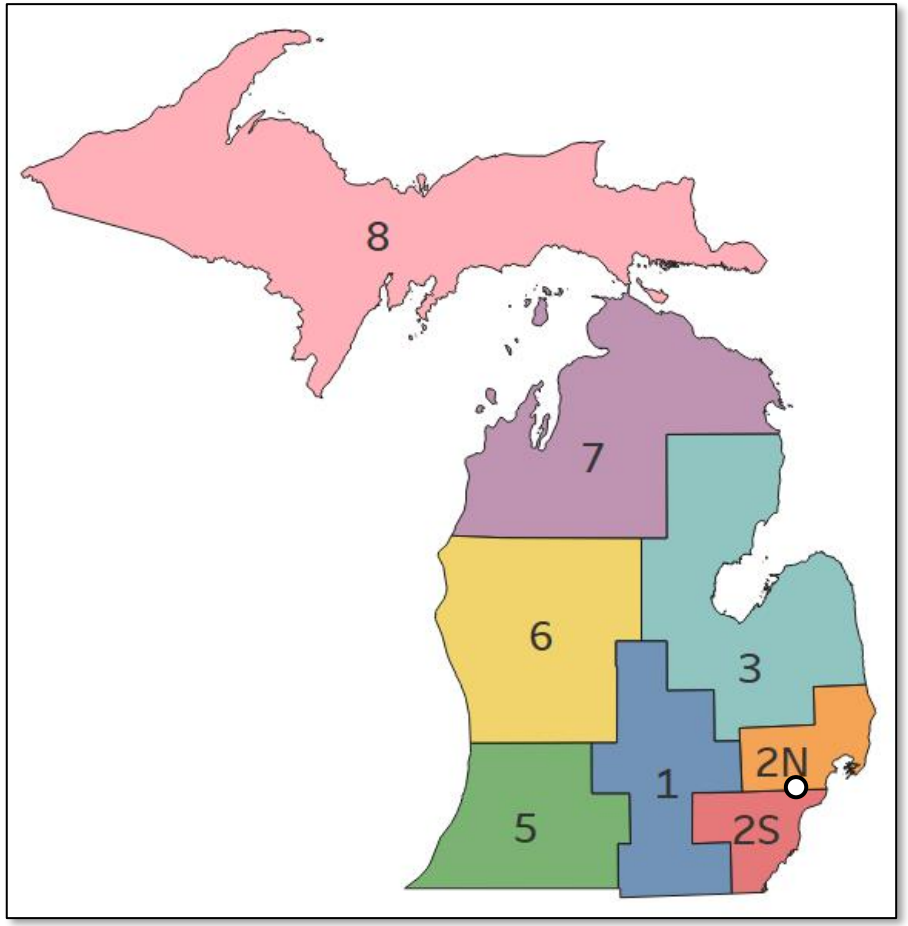
Representativeness Methods

Representativeness Variables

- Population demographics
- Healthcare access
- Social Vulnerability Index (SVI)

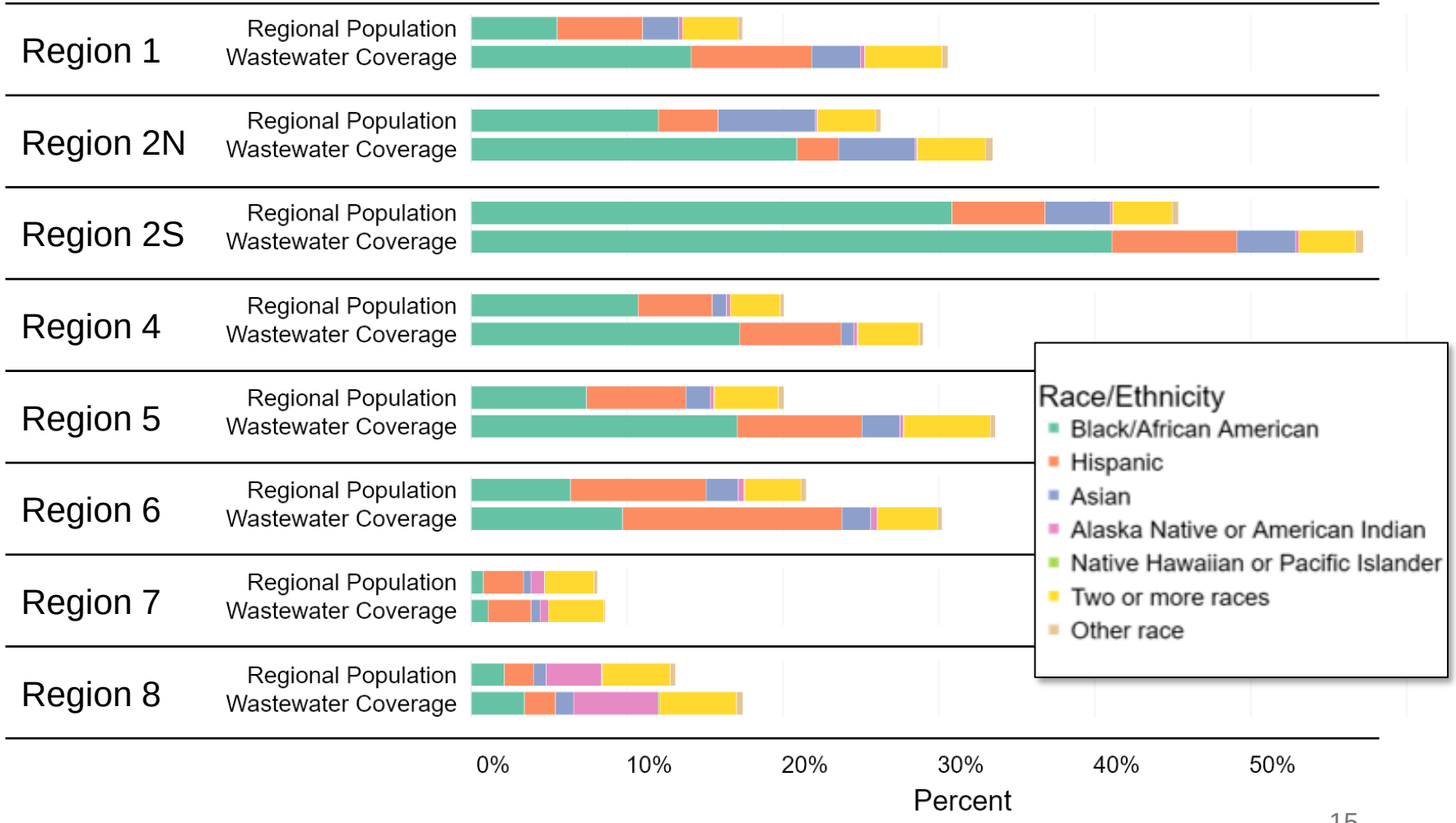
Method

- For each region
  - For each representativeness variable
    - Compare wastewater sampling coverage to population



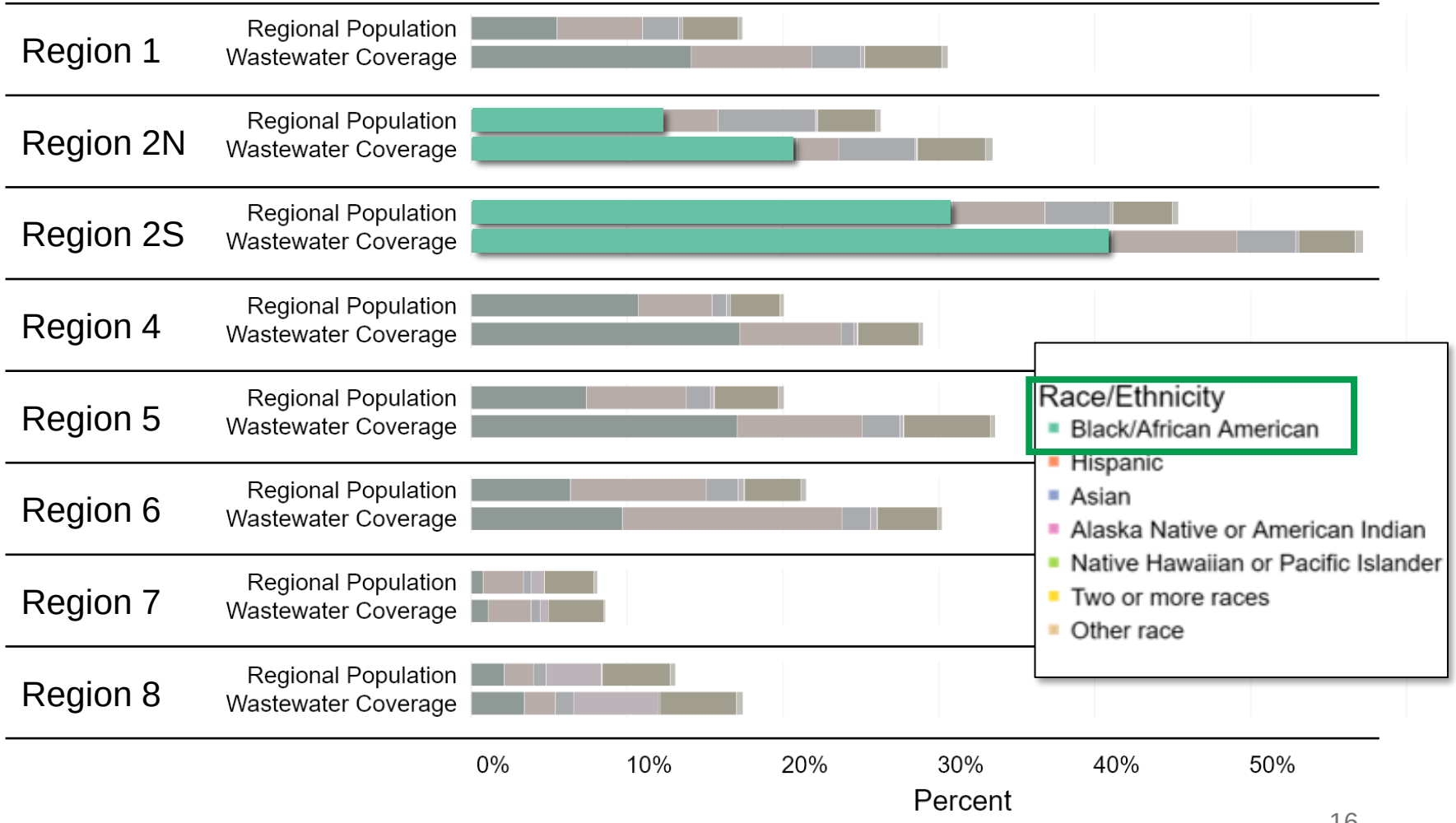
Michigan Emergency Preparedness Regions

Race/Ethnicity Results

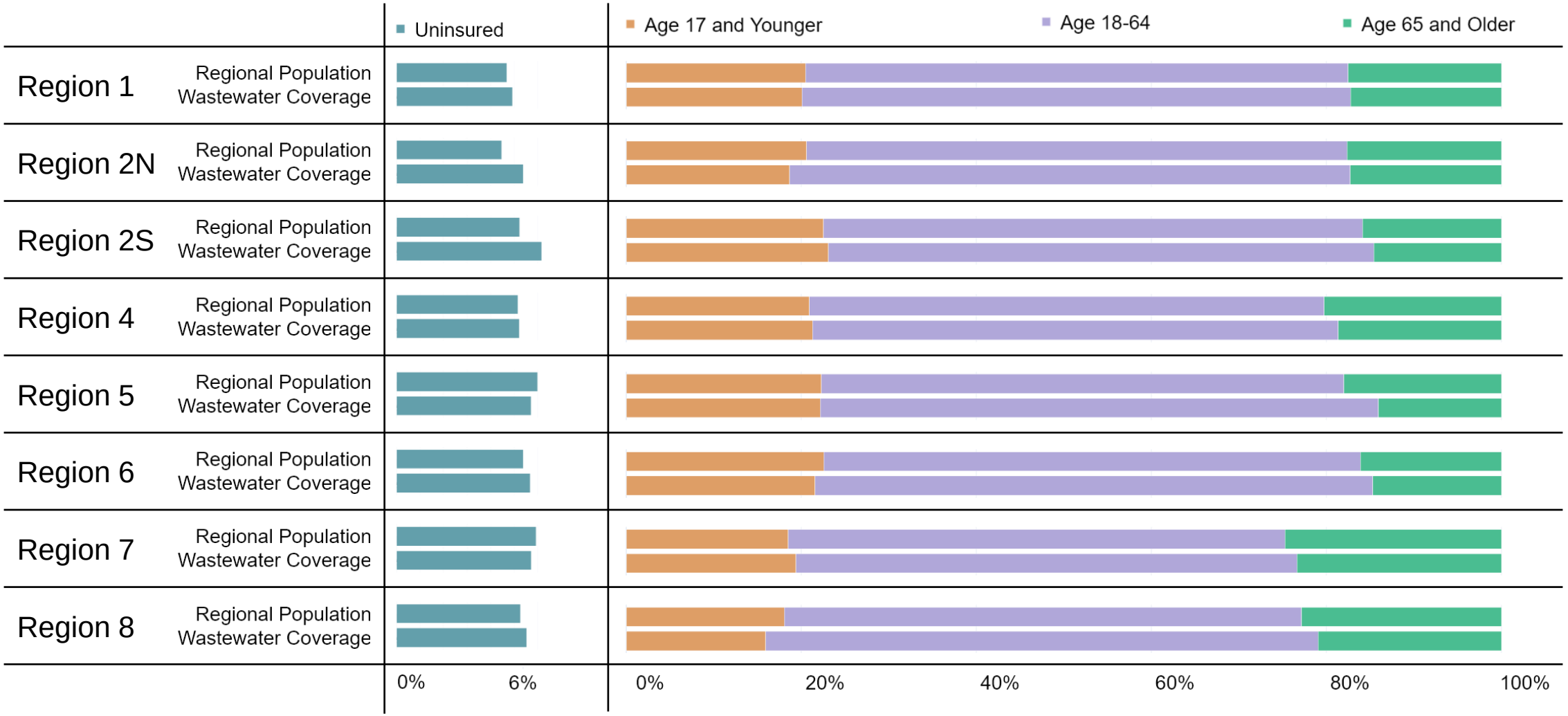


Race/Ethnicity Results

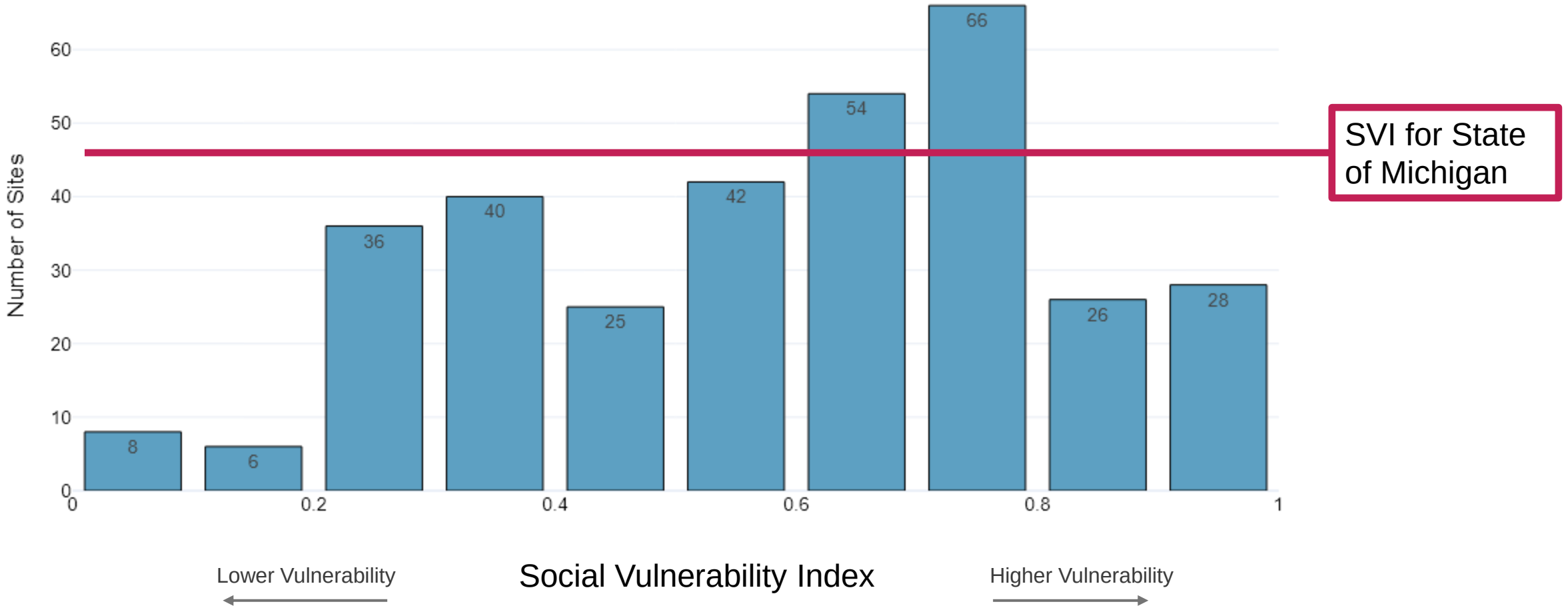
Expanded representation of Black/African American in regions near Detroit



Healthcare Access & Age Results



Social Vulnerability Results

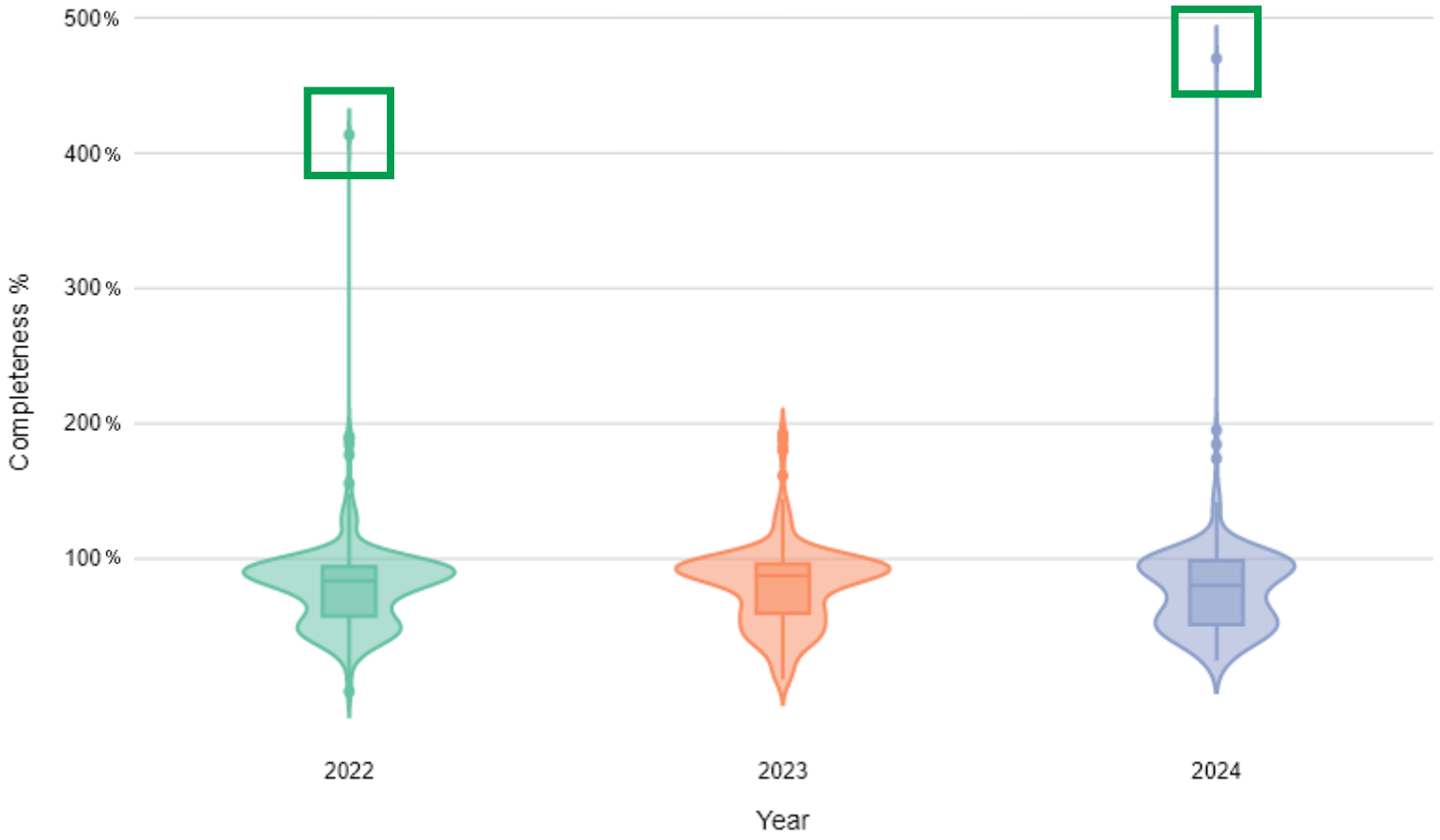


What is SVI?

Sampling Sites: Data Quality

Completeness Results

Average Completeness (2022-2024): **86%**



Some sites sampled more than planned based on their workplans

Consistency Results

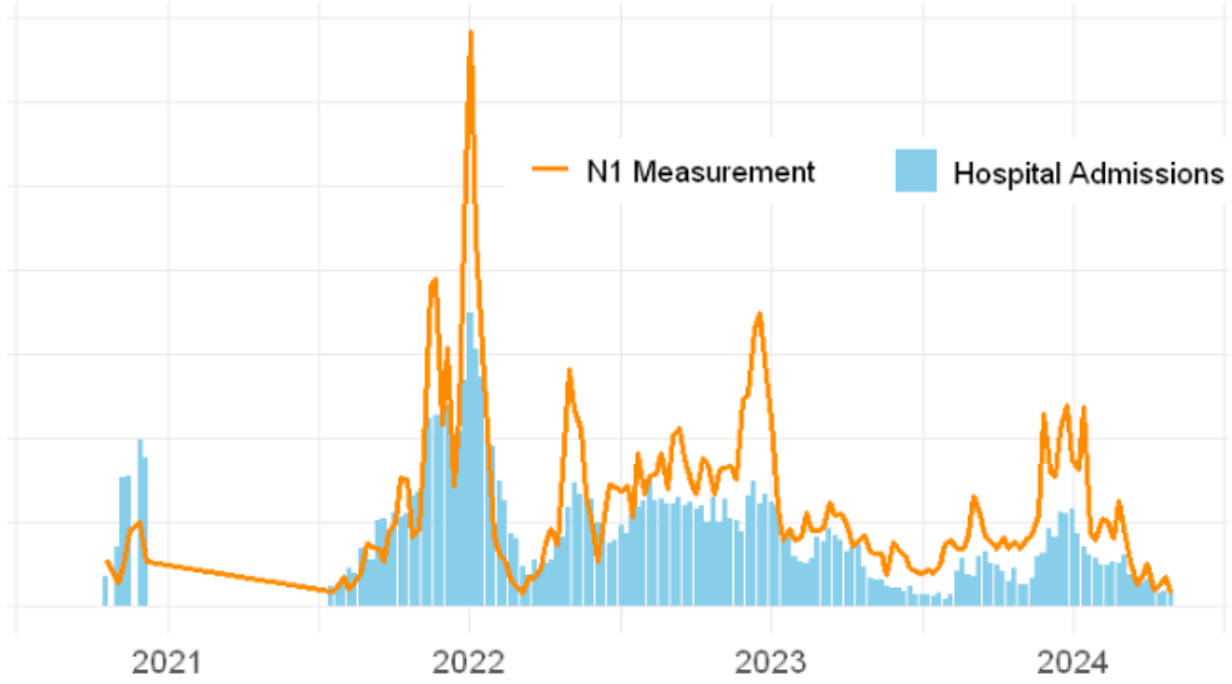
Local Project Surveys

- Identified a total of 13 sites with persistent barriers.
- These sites were flagged for further review if chosen to continue to participate in the network.

Sampling Sites: Usefulness

Usefulness Results

COVID Hospitalizations Correlations



13 sites had correlations above 0.5 and 3 had correlations above 0.7

Usefulness Results

Areas with High Transient Populations

University Impacts

- 53 community sites were in the same city as a large academic institution.
- 11 sites were located near universities with enrollment over 100% of the base city population.

Tourism Impacts

- Most (60%) community sites were in counties with less than 10% tourism-related employment.
- 4 sites were in counties with over 50% tourism-related employment.

Part 2: Local Projects

Evaluation Part 2

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Part 2:
Indicators & Results

Indicators

- Acceptability
  - Reliability
  - Communication
- Timeliness
- Flexibility
  - Adaptability
- Data quality

Results

Three local projects received *Good* or *Very Good* ratings across all indicators.

Part 3: Recommendations

Evaluation Part 3

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We Are Here

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Findings

Strengths

- Sites covered a very large proportion of MI sewered population.
- Excellent demographic coverage and representativeness.
- Data is reasonably complete and of high quality.

Improvement Opportunities

- The number of college/university sites could be scaled back to reduce redundancy.
- Some sites encounter consistent barriers and/or do not produce high quality data.

Recommendations

Right Sizing Step-Down

2025

- Trim 15% of sampling sites and reduce number of projects down to 15
- Prioritize geographic representativeness and flexibility
- Reduce sampling redundancies (universities, etc.)

2026

- Re-evaluate and make additional cuts

Sudden Loss of Federal Funding

CENTERS FOR DISEASE CONTROL AND PREVENTION

NBC

CDC is pulling back $11B in Covid funding sent to health departments across the US

"Now that the pandemic is over, the grants and cooperative agreements are no longer necessary," federal health authorities wrote to funding recipients this week.

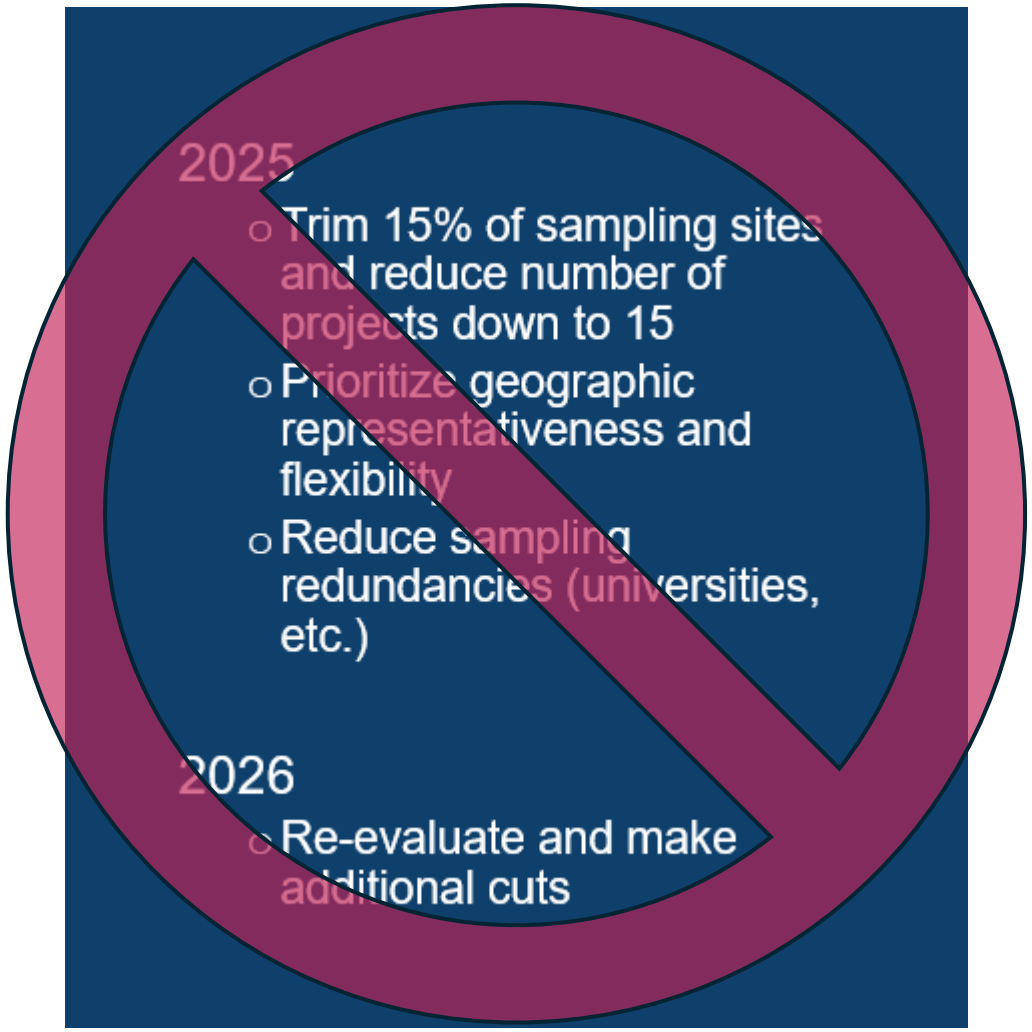
Health

Michigan Public npr

What a federal judge's order means for Michigan's $380m health cuts

"The loss of these funds will reduce that [wastewater monitoring] system by 75%, closing collection sites and laboratories, and reducing the areas of the state where disease can be detected through this mechanism."

New Recommendations



April 2025 Onward

- Trimmed 85% of sampling sites
- 50 sites prioritizing:
  - Geographic representativeness
  - Population coverage
  - Data quality
- 3 local projects managing sampling and testing

Your Impact, Our Thanks

Thank you to our local, academic, and public health partners for your vital role in building the most comprehensive wastewater monitoring network in the country. Your innovation, flexibility, and commitment to public health made this work possible. As we shift to a leaner model, we remain deeply grateful for your support and continued partnership during this transition.

Samples Tested	Over 87,000
COVID Detections	Over 54,000
Maximum Participating Sampling Sites	435
Monitored Diseases	9
Academic Publications	Over 82

MDHHS
Michigan Department of Health & Human Services

Acknowledgements

MDHHS Wastewater Network Team

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Matthew Flood, PhD, MS – Wastewater Data Analyst

Anum Zia, MPhil, MPH – Wastewater Epidemiologist

Lillian Jensen, MPH – CSTE Applied Epidemiology Fellow

Wastewater Rightsizing Taskforce

- Ferris State University
- University of Michigan
- Michigan State University
- Oakland University
- Northern Michigan University
- Hope College
- Lake Superior State University
- Grand Valley State University
- Oakland County Health Department
- Great Lakes Environmental Law Center
- Michigan Department of Health and Human Services

Thank you!

Questions?

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