MiTracking: An Enhanced Tool for Data Driven Decision Making

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Quick Overview

- What is Tracking?
- National Tracking Program
- MiTracking data portal
- Demonstration
National Tracking Program
MiTracking Data Portal

Contracted with Kunz, Leigh, and Associates
Data on the Portal

- Age of Housing
- Air Quality
- Asthma
- Birth Defects
- Cancer
- Carbon Monoxide Poisoning
- COPD
- Demographics
- Drinking Water
- Heat Illness
- Heart Attack
- Lead Exposure
- Reproductive and Birth Outcomes
- Ticks
- Work-Related Deaths & Worker’s Compensation

Up Next:

- Drug Poisoning (Overdose) Deaths
- Climate Change
- Socioeconomics
- Lyme Disease
Portal Demonstration

For many years, public health systems across the U.S. faced a knowledge gap about environmental hazards and public health. The Michigan Environmental Health Tracking Program, MiTracking, can help bridge this gap. The MiTracking Program gathers existing Michigan-specific environmental and health data and provides them in one online location.

These data can be easily queried on the MiTracking data portal. Results are provided in tables, charts, and maps that can be downloaded, saved, and printed. The data provided by the MiTracking program can create greater awareness of environmental health concerns, and inform public health actions and programs.

The MiTracking Program is part of the Centers for Disease Control and Prevention’s National Tracking Network.

Asthma

Asthma is a serious life-long disease that is caused by swelling (inflammation) in the airways that carry oxygen in and out of the lungs. It afflicts many Michigan residents.

People of all ages can get asthma. There is no cure, but symptoms can be prevented and controlled with proper care. You can’t outgrow asthma, though some people will have fewer symptoms as they grow older. People with asthma can live normal, active lives.

Asthma Triggers

People who have asthma have airways that are very sensitive. The things that make symptoms start are called “triggers.” Triggers make airways swell, thicken up, and make too much mucus making it hard to breathe. Each person can have different triggers. It’s important to find out what your asthma triggers are and figure out some common triggers are:

- Upper respiratory infections (colds)
- Cigarette smoke, wood smoke
- Outdoor air pollution, especially on days when there is fine particle pollution (PM2.5)
- Scented products such as air fresheners, tar products
- Dogs, cats, birds, small rodents
- House dust mites and cockroaches
- Some foods and food additives
- Changes in weather and/or temperature
- Emotional states that can lead to hyperventilation
- Chemical fumes, gases, dust, animal dander, or other substances while at work.
Collaborations

Climate and Health
• Heat & Precipitation

Drug Poisoning Surveillance
• Mortality
Climate and Health

Gill Capper
Quick Overview

• Climate change basics
• Climate change in Michigan
• Overview of climate effects on human health
• CDC’s Climate and Health Program and MICHAP
• Climate data on the MiTracking portal
Weather, climate, or climate change?

• **Weather** - Short-term conditions at a location (temperature, wind, rain, etc.)

• **Climate** - Long-term average of weather for an extended period of time at a certain location

• **Climate change** - Long-term continuous increase or decrease to average weather conditions or range of weather.

Michigan has warmed faster than the global and national rates.

Source: Third National Climate Assessment, GLISA Analysis of nClimDiv climate divisional data.
Precipitation is variable. Northwestern UP has seen declines while Michigan has seen an overall increase.

Source: Third National Climate Assessment, Weighted averages of nClimDiv divisional data from 8 U.S. Great Lakes States.
Impact of Climate Change on Human Health

- Injuries, fatalities, mental health impacts
- Asthma, cardiovascular disease
- Heat-related illness and death, cardiovascular failure
- Malaria, dengue, encephalitis, hantavirus, Rift Valley fever, Lyme disease, chikungunya, West Nile virus

- Severe Weather
- Air Pollution
- Changes in Vector Ecology
- Increasing Allergens

- Extreme Heat
- Environmental Degradation
- Water and Food Supply Impacts
- Water Quality Impacts

- Malnutrition, diarrheal disease
- Cholera, cryptosporidiosis, campylobacter, leptospirosis, harmful algal blooms

- Forced migration, civil conflict, mental health impacts
- Respiratory allergies, asthma

AFFECTING HEALTH DIRECTLY

EXTREME HEAT

Higher heat, increased humidity, longer and more frequent heat waves can lead to:

heatstroke and heat exhaustion

More Vulnerable: Outdoor workers, student athletes, people in cities, people without air conditioning, people with chronic diseases, pregnant women, older adults, and young children.

EXTREME WEATHER

Increased frequency and severity of heavy downpours, floods, droughts, and major storms can lead to:

injury, illness, displacement, and death

More Vulnerable: People who lack access to evacuation routes, people with disabilities such as those who can’t use stairs when elevators are out of service, older adults, young children, and those living in poverty.

Source: CDC, NCEH. Communicating the health effects of climate change: A toolkit for public health outreach
Statewide heat-related ED visits and National Oceanic and Atmospheric Administration (NOAA) maximum daily temperature averages for 6 select cities (April 1- July 7)

Data analysis by Fatema Mamou, Region 6 Epidemiologist
• Dec 22, 2013 storm caused 400,000 to lose power

• 81 visits from 44 households to EDs for CO-related complaint

• 360% increase over expected

• Most likely exposed via gas generators

Note: Visits represent those presenting with a chief complaint of carbon monoxide poisoning. Due to the nature of categorizing ED complaint data, these visits do not represent all potential cases of carbon monoxide illness. These data may also represent non-carbon monoxide illnesses. However, the data can be used to describe trends in illness presentations over time.
Climate-Ready States & Cities Initiative Grantees

What climate data will be available on the MiTracking portal?

• **Extreme heat**
  - Number of Extreme Heat Days (daily heat index above 90°F).
  - Number of Extreme Heat Events (2 or more extreme heat days in a row).
  - Monthly average temperatures in degrees Fahrenheit.

• **Extreme precipitation**
  - Number of extreme precipitation days with an absolute threshold of 1 inch or above.
Drug Poisoning Surveillance

Rita Seith
Substance use disorder is a medical condition in which a person’s use of alcohol or another substance (drug) leads to issues with one's health, or issues at work, school, or home.
Overdose deaths in Michigan
2000 - 2017
Symptoms of recent use: Opioids
According to Mayo Clinic

- Reduced sense of pain
- Agitation, drowsiness or sedation
- Slurred speech
- Problems with attention and memory
- Constricted pupils
- Lack of awareness or inattention to surrounding people and things
- Problems with coordination
- Depression
- Confusion
- Constipation
- Runny nose or nose sores (if snorting drugs)
- Needle marks (if injecting drugs)

https://www.mayoclinic.org/diseases-conditions/drug-addiction/symptoms-causes/syc-20365112
Symptoms: substance use disorder
According to Mayo Clinic

• A feeling one needs to use the drug regularly
• Needing more of a drug to get the same effect
• Having intense urges for the drug that block out other thoughts
• Not meeting obligations or responsibilities
• Doing things to get the drug that one normally wouldn’t do

https://www.mayoclinic.org/diseases-conditions/drug-addiction/symptoms-causes/syc-20365112
What will be added?

Death certificate data
- Age-adjusted death rates
- Crude rates
- Death counts
What makes for an effective program?

Where?
Information on burden

Who?
Information about age and gender
>> Tailored program

Did it work?
Compare to other areas with similar rates.
Thank You! Questions?

Please visit:
www.michigan.gov/mitracking
www.cdc.gov/ephtracking
www.michigan.gov/climateandhealth
www.mi-suddr.com/data

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Appendix: Portal Screenshots
Climate Change
Extreme Heat
Number of Extreme Heat Days (Daily Heat Index above 90°F) - Selected year(s)

<table>
<thead>
<tr>
<th>County</th>
<th>Year(s)</th>
<th>Number of Extreme Heat Days</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wayne</td>
<td>2016</td>
<td>13</td>
</tr>
<tr>
<td>Washtenaw</td>
<td>2016</td>
<td>37</td>
</tr>
<tr>
<td>Van Buren</td>
<td>2016</td>
<td>56</td>
</tr>
<tr>
<td>Washtenaw</td>
<td>2016</td>
<td>22</td>
</tr>
<tr>
<td>St. Joseph</td>
<td>2016</td>
<td>44</td>
</tr>
<tr>
<td>St. Clair</td>
<td>2016</td>
<td>32</td>
</tr>
<tr>
<td>Saginaw</td>
<td>2016</td>
<td>11</td>
</tr>
<tr>
<td>Osceola</td>
<td>2016</td>
<td>18</td>
</tr>
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</tr>
<tr>
<td>Oceana</td>
<td>2016</td>
<td>26</td>
</tr>
<tr>
<td>Lake</td>
<td>2016</td>
<td>17</td>
</tr>
</tbody>
</table>

What is Extreme Heat?

Extreme heat refers to the sustained high temperatures that are much hotter than the average temperature for a particular location and time of year. The combination of heat and humidity makes it feel hotter than it is. Therefore, the Heat Index measures the actual temperature and relative humidity to capture how hot it really feels. An extreme heat event or heat wave is considered several days or more of unusually high temperatures that can potentially affect human health.

During extreme heat, the human body struggles to cool itself via sweating, which can lead to heat-related illnesses, such as heat exhaustion or heat stroke. If an individual’s body temperature rises faster than it can cool itself down, it can lead to damages in the brain and other vital organs. For more information, please visit the Michigan Climate Change webpage and the Michigan Climate and Health Assessment Program (MICHAP) website.

Why was this dataset created?

The dataset was created to better understand spatial and temporal trends of extreme heat in Michigan. Climate change is defined as any long-term change in the temperature, precipitation, wind, and other weather patterns we can measure that has been occurring for at least 10 years. Temperature changes across the planet, and in Michigan heat waves have significantly increased in Southeastern Michigan, and the number of extreme heat days is on the rise. The extreme heat events have significantly decreased, making it a challenge to determine the temperature and relative humidity data and report extreme health effects associated with extreme heat.

How was this dataset created?

The National Center for Environmental Information (NCEI) contains modeled, quality-controlled, spatially and temporally consistent meteorological data for Michigan and the United States. The Centers for Disease Control and Prevention (CDC) evaluated and processed daily grid model output from National Centers for Environmental Information (NCEI) to create county-level measures of extreme heat. The CDC produced a new rarified extreme heat index data to the Michigan Department of Health and Human Services (MDHS). This dataset includes the years 1980 to the most current year available.

How was this measure calculated?

There are three external heat measures on the following data portal:

1. Number of Extreme Heat Days (daily heat index above 90°F)
2. Number of Extreme Heat Events (1 or more extreme heat days in a month)
3. Monthly average temperature in degrees Fahrenheit

These measures were calculated using the following steps:

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Map of Michigan with a legend indicating the number of extreme heat days.
Extreme Precipitation

Number of Extreme Precipitation Days (Greater than 1 Inch) - Selected year(s)

Counties:

Map: Number of Extreme Precipitation Days (Greater than 1 Inch) - Selected year(s)

Legend:
- 0 - 2
- 3 - 4
- 5 - 6
- 7 - 7
- 9 - 10
- 12 - 13

Units: Number of Days
Drug Poisoning/Overdose
Mortality
Mortality

Age-Adjusted Rate of Drug Poisoning/Overdose Deaths per 100,000 Population - Selected year(s)

Sex:

Age Group:

Counties + City of Detroit:

Sex:

Age Group:

Legend:

Units: Age-Adjusted Rate of Deaths per 100,000

Year(s)