Learning Objectives

• Identify the priority climate change-related human health impacts in Michigan.
• Understand the intersection of climate change and health equity.
• Know why local public health is a key player in climate change adaptation.
• Connect climate change to your work.
Climate Change in the Great Lakes Region

- Average Temperature: 2.5°F (1951-2021)
- Frost-free Season: 16 Days (1951-2021)
- Total Precipitation: 16% (1951-2021)

Michigan 1951-2021
- Average Temperature: 2.6°F
- Frost-free Season: 15%

Michigan 1951-2021
Houghton, 2018

“Father’s Day Flood” – up to 7” of rain in 9 hours, 1,000-year flood event
Midland, 2020
4-7" of rain in 48 hours, 500-year flood event
Southeast MI, 2021
7” of rain in 4 hours, 100-year flood event

2023
3-5” of rain in 6 hours
Detroit, 2023
Wildfire smoke from Canada impacts air quality
<table>
<thead>
<tr>
<th>Heat Harm</th>
<th>Spread of Disease</th>
<th>Threats to Water Quality</th>
<th>Disruptions to Well-Being</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Strains the heart and lungs</td>
<td>• Insects, ticks and rodents to survive longer and expand range</td>
<td>• Increased flooding stresses infrastructure</td>
<td>• Natural disasters can cause short and long-term impacts on mental health</td>
</tr>
<tr>
<td>• Worsens air quality</td>
<td></td>
<td>• Harmful algal blooms from warm water, runoff</td>
<td></td>
</tr>
<tr>
<td>• Can cause death</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

How is Climate Change Affecting Health?
MICHAP Priority Climate-Related Health Impacts

- Respiratory conditions (e.g., asthma)
- Heat illness
- Waterborne diseases
- Vector-borne diseases
- Physical and mental health impacts
Midland, 2020

4-7” of rain in 48 hours, 500-year flood event

What health impacts do you see?
Health Equity & Climate Change

• **Root causes** of climate change and health inequities are often the same.

• Climate change impacts are **not equally or fairly distributed** across people or communities.

• **Risk multiplier**: climate change exacerbates existing health and social inequities.

• Climate change actions also address and improve health inequities.
Climate Vulnerability

**Exposure** a person has to climate hazards, such as heat and floods

**Sensitivity** is the degree to which someone could be negatively impacted

**Adaptative capacity/resiliency** is one’s ability to adapt and respond to a climate hazard
1. Turn to your neighbor and discuss the question.

2. Share your thoughts back with the group.

- Have you noticed any differences in your community as a result of climate change?
- How has it affected your everyday life and work that you do?
What Does Michigan Climate & Health Adaptation Program (MICHAP) Do?

Our Work:
• Create health education materials
• Conduct emergency preparedness & response
• Research climate impacts to health
• Subject matter experts


MDHHS Division of Environmental Health
Communication Materials

- Fact sheets
  - Cold Health and Safety (Spanish)
  - Heat Health and Safety (Spanish, Arabic, Bengali)
  - Flood Health and Safety series

Visit Michigan.gov/climateandhealth
Seasonal Resource Packets

Fall and Winter Climate Health Education Resource Packet

How does the changing climate affect fall and winter health and safety?

Ticks can stay active longer into the fall because of warmer temperatures. In Michigan, the blacklegged tick that transmits Lyme disease is active when outdoor temperatures are above 40°F. (MDHHS Emerging, Zoonotic, and Infectious Disease)

Carbon monoxide (CO) poisoning can occur from exposure to unvented space heaters, malfunctioning furnaces, gas or fuel-burning appliances, or generators when improperly used to heat a home during cold weather or power outages.

How to prepare:

- Know how to prevent tick bites when outdoors.
- Install carbon monoxide alarms in your home and check the batteries regularly.
- Prepare an emergency kit for your home and car.
- Sign up to receive local emergency alerts or alerts through the FEMA app.
- Weatherize your home to increase indoor thermal comfort.
- Know where warming centers are located in the event of extreme weather; usually county or city emergency management websites have information on warming center locations.

Extreme cold temperatures can cause frostbite and hypothermia.

Winter storms create slick conditions, leading to slips and falls and dangerous roads. (Michigan Prepares)
Climate & Health Adaptation Planning

- Health in All Policies
- Outlines process for creating a municipal plan to reduce/prevent health impacts of climate change
- Local health as stakeholder in effort led by local government

Monitor syndromic surveillance and National Weather Service alerts

Based on alert:
1. Message through Michigan Health Alert Network (MI-HAN)
2. Post social media
3. Issue press releases

Seasonal reports and data analysis
Wildfire Smoke Events

- Local health on the “front line” of local impacts from climate change
- Wildfire smoke response involved EGLE, MDHHS and LHDs
- Division of Environmental Health created response process and communication materials
  - Coordinated with EGLE for smoke forecasts
  - Convened Agile Workgroup with LHD staff
  - Developed communication materials to help alert public to health impacts of smoke
- Demonstrates the agility of public health workforce and urgent need for our work
Climate Health Perceptions & Priorities

- U of Michigan study, “Assessing perceptions and priorities for health impacts of climate change within local Michigan health departments”, Carter 2021

- **Opportunities** for education and partnership to bolster preparedness

- **Challenge** to address climate impacts to health through LHD traditional roles

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**Table 2** Michigan LHD responses about the impact and prioritization of climate change ($n = 34$)

<table>
<thead>
<tr>
<th>Statement</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>My jurisdiction has experienced climate change in the past 20 years. (Median: 3, Agree)$^a$</td>
<td></td>
</tr>
<tr>
<td>Strongly Agree</td>
<td>15</td>
</tr>
<tr>
<td>Agree</td>
<td>47</td>
</tr>
<tr>
<td>Disagree or Strongly Disagree$^b$</td>
<td>12</td>
</tr>
<tr>
<td>Don’t Know</td>
<td>26</td>
</tr>
</tbody>
</table>

| Preparing to deal with the public health effects of climate change is a priority of my health department. (Median: 2, Disagree)$^a$ |         |
| Strongly Agree                                             | 0       |
| Agree                                                      | 35      |
| Disagree or Strongly Disagree$^b$                          | 56      |
| Don’t Know                                                  | 9       |

https://link.springer.com/article/10.1007/s13412-021-00679-0
Local Health & Climate Change

- Local health on the front lines of climate impacts in communities
- Addressing climate impacts to health aligns with 10 Essential PH Services
- Trusted source of information and education
- Already work on health equity and community resilience, add climate health lens

https://www.apha.org/topics-and-issues/climate-change/guide
Incorporating Climate Change Into Your Work

• Assessment and surveillance for climate change and health
• Intersectoral collaboration – health in all policies and local government partnerships
• Community engagement and education
• Vector-borne disease: warmer seasons contributing to geographic spread of mosquitoes and ticks
• Foodborne disease: foodborne pathogens can increase with warmer temperatures and drought
• Waterborne disease: flooding impacts drinking water and septic systems; harmful algal blooms
Maternal, Child, Adolescent & Family Health & Climate Change

- Extreme heat increases risk of preterm birth, low birth weight, and infant mortality
- Poor air quality (ozone or PM 2.5) is associated with increased risk of low birth weight and infant mortality
  - Smoke from wildfires associated with increased risks of premature death, ED visits, hospitalizations
- Children and teens are vulnerable to heat stress
  - Heat illness leading cause of death and disability of teen athletes
Environmental Health & Climate Change

- Food safety: extreme weather can disrupt food chains, increase spoilage (impacts to inspections)
- Vector control
- Water access and quality (HABs, wells)
- Solid waste (CSOs, private septic)
- Emergency response & hazard mitigation: heat and cold action plans, hazardous waste and floods/disaster
- Air Quality
Chronic Disease & Injury Prevention & Climate Change

• People with chronic disease are often most at risk of climate impacts to health
  • Cardiovascular and respiratory diseases put people at higher risk of health impacts from extreme heat and wildfire smoke

• Climate-driven disasters (extreme storms and floods) disrupt people’s ability to access healthcare, food, ability to exercise, etc.

• Climate action to reduce greenhouse gas emissions will help reduce some types of chronic disease (e.g., asthma)
• Climate change is increasing frequency and severity of extreme weather events
• Climate change exacerbates existing health, social, and economic inequities (impacting ability to recover from weather events)
• Emergency preparedness staff are positioned to incorporate climate change impacts into emergency preparedness, response, recovery efforts
Talking About Climate Change

- 70% of Michigan adults believe global warming is happening
  - No county has less than 60% that believe global warming is happening
- However, few talk about climate change because they may believe friends and neighbors do not believe in it, think it is too political

Yale Center for Climate Change Communications, 2021
For more climate health information:

- [Michigan.gov/climateandhealth](http://Michigan.gov/climateandhealth) (MICHAP)
- CDC Climate and Health
- Climate Change and Health Equity from APHA

Funding:

- National Association of County and City Health Officials (NACCHO) – Climate Change

Climate data:

- Great Lakes Climatology Interactive Map (GLISA)
- MiTracking (MDHHS)
Four-part, virtual “Climate and Health” trainings for LHD staff:
• Tuesday, January 23, 10 AM
• Tuesday, January 30, 10 AM
• Tuesday, February 6, 10 AM
• Tuesday, February 13, 10 AM

Look for emails from MALPH and MALEHA for registration in November!
1. Turn to your neighbor and discuss the question.

2. Share your thoughts back with the group.

• How can your LHD start to address the health effects of climate change with your given resources?
1. Turn to your neighbor and discuss the question.

2. Share your thoughts back with the group.

- How can the Climate and Health Adaptation Program and MDHHS Division of Environmental Health support you in addressing the health effects of climate change?
Questions?

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Visit www.Michigan.gov/climateandhealth for more information or to sign up for our newsletter!