NEXT 100 YEARS CHALLENGE

An initiative of the
GREATER NEW ORLEANS FOUNDATION
Andy Kopplin
President & CEO
Greater New Orleans Foundation
WHAT IS THE MILLION-DOLLAR NEXT 100 YEARS CHALLENGE?

• Our way of celebrating our centennial year by challenging ourselves to identify the things we could do in the next few years that will help shape the trajectory of our region for the next 100 years.

• A regional competition designed to inspire nonprofit and government partners to develop great ideas for infrastructure improvements in all 13 parishes of Southeast Louisiana.
We know the funding is out there and we want to help our partners in our region secure it.

Last year, the federal government made $2 billion available for one such program—Building Resilient Infrastructure and Communities—otherwise known as BRIC.

Let’s bring the money home to Louisiana!
Up to ten applicants will win $100,000 to be used by the winners to refine plans and to ensure that their great ideas can be turned into comprehensive and actionable proposals that can win the big money to help them implement their project.

THAT’S A TOTAL OF $1 MILLION WE ARE INVESTING IN OUR REGION!
We know applying for a competition like this is no easy feat.

That’s why we’re here today, presenting the fourth of a series of five webinars to help you throughout the process.

Webinar 5: Developing Creative Funding and Financing for Projects
Wednesday, May 3rd, 2023 - 9:30 am-11:00 am
Matt Carney, Associate Director, Quantified Ventures
Jason Lee, Director, Quantified Ventures

In-Person Design Session Save Dates: May 9, 10, or 11th 9am-4pm

Visit Next100YearsChallenge.org to sign up for webinars
Questions? Email: questions@Next100YearsChallenge.org
MODERATOR

Dr. Janice Barnes
Climate Adaptation Partners
Janice@climateadaptationpartners.com
HOUSEKEEPING

- All participants are muted.

- Please use the Chat to submit questions.

- If you experience any technology or internet issues, please dial 1-305-224-1968, the webinar ID is 879 6158 35252. This will allow you to listen in to the presentation.

- The webinar is being recorded and will be posted to Next100YearsChallenge.org.

- To access closed caption, click the closed caption/live transcript in the meeting contact panel at the bottom of your screen.
04: Connecting Climate Risk and Public Health Impacts
Vijay Limaye/NRDC
04: Connecting Climate Risk and Public Health Impacts

Presenter

Dr. Vijay Limaye
NRDC
vlimaye@nrdc.org
Next 100 Years Challenge Webinar Series

AGENDA

1. Overview of health risks of climate change

2. Deeper look into health costs of climate hazards
   • Case study analysis
   • Inequitable health and cost burdens

3. Health costs in context
   • Opportunities and obstacles for future work
   • Communication opportunities
   • Benefits of climate change adaptation
   • Policy recommendations

4. Regional Examples and Resources
THE CLIMATE CRISIS: EXTREME HEAT & HEALTH

https://www.youtube.com/watch?v=yuDOIU7jOOg
Costly Climate Impacts

U.S. 2022 Billion-Dollar Weather and Climate Disasters

- North Central Severe Weather May 11–12
- Central Severe Weather June 7–8
- Western/Central Drought and Heat Wave 2022
- Western Wildfires Spring–Fall
- Southern and Central Severe Weather May 1–3
- Texas Hail Storms February 21–22
- Southern Severe Weather April 11–13
- Southern Tornado Outbreak March 30
- North Central Hail Storms May 9
- North Central Hail Storms May 19
- North Central and Eastern Severe Weather July 22–24
- Central and Eastern Winter Storm and Cold Wave December 21–26
- Central Derecho June 13
- Kentucky and Missouri Flooding July 26–28
- Southeastern Tornado Outbreak April 4–6
- Hurricane Nicole November 10–11
- Hurricane Ian September 28–30
- Hurricane Fiona September 17–18

This map denotes the approximate location for each of the 18 separate billion-dollar weather and climate disasters that impacted the United States in 2022.
Climate Change Is Here

The impacts and **costs** of climate change are already being felt in the United States"

- 4th National Climate Assessment, Volume II (November 2018)

We’re Already Paying for Climate Damages
The totality of the health-related societal costs of fossil fuels...is not fully known and largely unmeasured.
Climate Change

**Temperature rise**
3-4°C by 2100

**Sea level rise**

**Hydrologic and weather extremes**

© 1998, Jonathan A Patz Johns Hopkins University
Climate change impacts human health and exacerbates existing inequities

SOURCE: Climate Change Action as a Catalyst for Healthy and Equitable Communities
The U.S. Natural Hazard Statistics provide statistical information on fatalities, injuries, and damages caused by weather related hazards.

The fatalities, injuries, and damage estimates found under “Hurricane/Tropical Cyclone” events are attributed only to the wind.

Other fatalities, injuries, and damage associated with other tropical cyclone hazards such as storm surge inundation, rainfall-induced flooding, and tornadoes are listed within their separate event types (e.g., Flood, Tornado).

*Due to an inherent delay in the reporting of official heat fatalities in some jurisdictions, this number will likely rise in subsequent updates. *The fatalities, injuries, and damage estimates found under Hurricane/Tropical Cyclone events are attributed only to the wind.

SOURCE: https://www.weather.gov/hazstat/
How much does *Climate Change* cost our *Health*?
Hidden Health Costs of Climate Change

• Climate change cost estimates primarily confined to property, infrastructure, and crop damage

• Health costs have seldom been included in estimates of climate risks, despite evidence of harms
  • Required data sources are limited and disparate
  • One method: Valuing recent climate-sensitive events via case studies, as basis for predicting the scale of potential future costs
  • NRDC published a first-of-its-kind study in 2011
NRDC Study

Case Study approach:
• Select events spanning the range of climate-health harms
• Events from a single year (2012), health outcomes quantified at the state level in scientific journals or other public data sources

Estimated health costs using combined valuation method:
• Health costs derived from federal statistics
• Incidence-based cost of illness (including lost wages)
• Value of a Statistical Life (as applied by federal agencies)

Methods: Estimating Health Costs

Deaths

Medical Care (Emergency Room Visits & Hospitalizations)

Lost Wages

Outpatient Care

Home Health Care

Prescribed Medications
Methods: Integrating Data Sources

<table>
<thead>
<tr>
<th>Case study</th>
<th>Peer-reviewed literature (number of studies)</th>
<th>State-collected health data</th>
<th>U.S. Centers for Disease Control and Prevention (CDC)</th>
<th>U.S. Environmental Protection Agency (EPA)</th>
<th>U.S. National Atmospheric and Oceanic Administration (NOAA)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lyme disease</td>
<td>✓ (1)</td>
<td>✓</td>
<td>✓</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Extreme weather</td>
<td>✓ (2)</td>
<td>✓</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Extreme heat</td>
<td>✓ (1)</td>
<td>✓</td>
<td></td>
<td></td>
<td>✓</td>
</tr>
<tr>
<td>Allergenic oak pollen</td>
<td>✓ (2)</td>
<td>✓</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ozone air pollution</td>
<td>✓ (2)</td>
<td>✓</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>West Nile virus</td>
<td>✓ (1)</td>
<td>✓</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wildfires</td>
<td>✓ (2)</td>
<td>✓</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wildfires</td>
<td>✓ (2)</td>
<td>✓</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Harmful algal blooms</td>
<td>✓ (1)</td>
<td>✓</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hurricane Sandy</td>
<td>✓ (9)</td>
<td>✓</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>✓ (12)</td>
<td>✓</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Methods: Estimating Health Costs

Climate-Sensitive Case Studies

Mortality

Emergency Department Visits (EDs)
- Fraction of ED visits who died
- Direct ED Costs
- ED Length of Stay (LOS)
- Fraction of EDs admitted to Hospital

Expected Payer
- Daily Wages

Value of a Statistical Life (VSL)

Morbidity (categorized by ICD code)

Hospital Admissions (HAs)
- Direct HA Costs
- HA Length of Stay (LOS)
- Number of Outpatient and Home Health Visits
- Number of Prescribed Medications
- Average Outpatient and Home Health Costs
- Average Medication Costs

DATA SOURCES:
- Health Data (various sources, see Table 1)
- U.S. Environmental Protection Agency (U.S. EPA)
- Healthcare Cost and Utilization Project (HCUP)
- Medical Expenditure Panel Survey (MEPS)
- U.S. Bureau of Labor Statistics (BLS)

Total Health-Related Costs

Results: Wide Array of Health Problems

Table 2
Health Impacts Included in 2012 Climate-Sensitive Health Cost Valuation

<table>
<thead>
<tr>
<th>State</th>
<th>Case study</th>
<th>Health effects included in valuation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Michigan</td>
<td>Lyme disease</td>
<td>Arthritis, carditis, erythema migrans rash, facial palsy, meningitis, radiculoneuropathy</td>
</tr>
<tr>
<td>North Carolina</td>
<td>Allergenic oak pollen</td>
<td>Mortality, asthma</td>
</tr>
<tr>
<td>Ohio</td>
<td>Extreme weather</td>
<td>Mortality, acute respiratory infection, asthma, gastrointestinal illness, skin and soft tissue infection</td>
</tr>
<tr>
<td>Wisconsin</td>
<td>Extreme heat</td>
<td>Mortality, exposure to excessive heat, heat cramps, heat edema, heat exhaustion, heat fatigue, stroke, heat syncope, sun stroke</td>
</tr>
<tr>
<td>Florida</td>
<td>Harmful algal blooms</td>
<td>Digestive system disease, respiratory disease</td>
</tr>
<tr>
<td>Nevada</td>
<td>Ozone air pollution</td>
<td>Mortality, asthma, chronic lung disease, respiratory problems</td>
</tr>
<tr>
<td>Texas</td>
<td>West Nile virus</td>
<td>Mortality, acute flaccid paralysis, cranial nerve palsy, encephalitis, fever, meningitis</td>
</tr>
<tr>
<td>Colorado</td>
<td>Wildfires</td>
<td>Mortality, acute myocardial infarction, asthma, bronchitis, chronic obstructive pulmonary disease, pneumonia, respiratory disease, upper respiratory infection</td>
</tr>
<tr>
<td>Washington</td>
<td>Wildfires</td>
<td>Mortality, acute myocardial infarction, asthma, bronchitis, cerebrovascular disease, chronic obstructive pulmonary disease, pneumonia, respiratory disease, upper respiratory infection</td>
</tr>
<tr>
<td>New Jersey</td>
<td>Hurricane Sandy</td>
<td>Mortality, acute upper respiratory illness, bronchitis, calculus of kidney and ureter, carbon monoxide exposure, contusion, cut/pierce injury, dehydration, dialysis, end-stage renal disease, falls, fracture, fluid imbalance, functional digestive issue, myocardial infarction, open wound, osteoarthritis, other injury, overexertion, mental illness, sprain, stroke, struck by/against object (unintentional contact) injury, tree-related injury, type II diabetes</td>
</tr>
<tr>
<td>New York</td>
<td>Hurricane Sandy</td>
<td>Mortality, anxiety, carbon monoxide exposure, dialysis, electrolyte abnormality, end-stage renal disease, external exposure, homelessness, hypertensive kidney disease, hypothermia, legionellosis, mental or mood disorder, myeloproliferative/neoplasm, nonfatal injury, psychosis, pulmonary fibrosis, respiratory problem, substance abuse, suicide counseling, threatened or spontaneous abortion, type II diabetes, ventilator needed</td>
</tr>
</tbody>
</table>

Results showed a wide array of health problems

Tracking Heat-Related Health Burdens

Heat-related Fatalities in Wisconsin During the Summer of 2012

Megan L. Christenson, MD, MPH; Sarah Dee Geiger, PhD, MS; Henry A. Anderson, MD

ABSTRACT

Background: The hottest year on record for the contiguous United States was 2012. July 2012 ranked as Wisconsin’s fourth warmest July, which has profound implications for heat-related mortality.

Methods: We conducted a case series of 27 heat-related fatalities in Wisconsin during summer 2012. Data from death certificates supplemented by coroner reports were analyzed to characterize factors that increase vulnerability to heat-related fatality.

Results: The 2012 heat-related fatalities occurred in both urban and rural counties. All cases had 1 or more known risk factors: 100% lacked functioning residential air conditioning; 70% were over age 65; 75% had a cardiovascular disease; and 52% had a mental health condition. Of the 14 cases with a mental health condition, half were known to be taking psychotropic medication. None of the decedents had been in air conditioning immediately prior to death, and 8 (36%) had been using fans.

Conclusions: Air conditioning is known to be a strong protective factor in preventing heat-related deaths whereas fans have not been shown to be significantly protective across all exposure situations. Prevention efforts should stress reducing social isolation by encouraging checks by friends, neighbors, or police. Prevention messages should also warn patients on psychotropic medications that the medication could increase their risk of heat-related illness or fatality.

Results: Wide Array of Health Problems

Shedding new light on climate-linked harms, including:

**Hurricane Sandy**: mental health (anxiety, depression, substance abuse), homelessness, pregnancy complications, deaths from end-stage renal (kidney) disease

**Wildfires**: new science quantifying harms of deadly wildfire smoke-generated fine particles (PM$_{2.5}$), which travel hundreds of miles downwind

Our understanding of climate-health impacts grows by the day—we’re capturing just a subset of impacts within a confined time period
## Results: Health Impacts

<table>
<thead>
<tr>
<th>State</th>
<th>Case Study</th>
<th>Deaths</th>
<th>Hospital Admissions</th>
<th>Emergency Department Visits</th>
</tr>
</thead>
<tbody>
<tr>
<td>MI</td>
<td>Lyme Disease</td>
<td>0</td>
<td>157</td>
<td>11</td>
</tr>
<tr>
<td>NC</td>
<td>Allergenic Oak Pollen</td>
<td>4</td>
<td>183</td>
<td>1,149</td>
</tr>
<tr>
<td>OH</td>
<td>Extreme Weather</td>
<td>8</td>
<td>37</td>
<td>343</td>
</tr>
<tr>
<td>WI</td>
<td>Extreme Heat</td>
<td>27</td>
<td>155</td>
<td>1,620</td>
</tr>
<tr>
<td>NV</td>
<td>Ozone Air Pollution</td>
<td>97</td>
<td>114</td>
<td>194</td>
</tr>
<tr>
<td>TX</td>
<td>West Nile Virus</td>
<td>89</td>
<td>1,628</td>
<td>2,680</td>
</tr>
<tr>
<td>CO</td>
<td>Wildfires</td>
<td>174</td>
<td>256</td>
<td>1,432</td>
</tr>
<tr>
<td>FL</td>
<td>Harmful Algal Blooms</td>
<td>0</td>
<td>11,066</td>
<td>3,857</td>
</tr>
<tr>
<td>WA</td>
<td>Wildfires</td>
<td>245</td>
<td>371</td>
<td>1,897</td>
</tr>
<tr>
<td>NJ</td>
<td>Hurricane Sandy</td>
<td>273*</td>
<td>5,795</td>
<td>2,247</td>
</tr>
<tr>
<td>NY</td>
<td>Hurricane Sandy</td>
<td></td>
<td>807</td>
<td>2,426</td>
</tr>
</tbody>
</table>

**TOTAL**: 917 Deaths, 20,568 Hospital Admissions, 17,857 Emergency Department Visits

## Results: Health Costs

<table>
<thead>
<tr>
<th>State</th>
<th>Case Study</th>
<th>Cost of Premature Deaths</th>
<th>Cost Of Illness</th>
<th>Total Health Costs (including lost wages)</th>
</tr>
</thead>
<tbody>
<tr>
<td>MI</td>
<td>Lyme Disease</td>
<td>-</td>
<td>$8 million</td>
<td>$8 million</td>
</tr>
<tr>
<td>NC</td>
<td>Allergenic Oak Pollen</td>
<td>$37 million</td>
<td>$6 million</td>
<td>$43 million</td>
</tr>
<tr>
<td>OH</td>
<td>Extreme Weather</td>
<td>$73 million</td>
<td>$10 million</td>
<td>$83 million</td>
</tr>
<tr>
<td>WI</td>
<td>Extreme Heat</td>
<td>$246 million</td>
<td>$5 million</td>
<td>$252 million</td>
</tr>
<tr>
<td>NV</td>
<td>Ozone Air Pollution</td>
<td>$887 million</td>
<td>$11 million</td>
<td>$898 million</td>
</tr>
<tr>
<td>TX</td>
<td>West Nile Virus</td>
<td>$812 million</td>
<td>$274 million</td>
<td>$1.1 billion</td>
</tr>
<tr>
<td>CO</td>
<td>Wildfires</td>
<td>$1.6 billion</td>
<td>$23 million</td>
<td>$1.6 billion</td>
</tr>
<tr>
<td>FL</td>
<td>Harmful Algal Blooms</td>
<td>-</td>
<td>$546 million</td>
<td>$557 million</td>
</tr>
<tr>
<td>WA</td>
<td>Wildfires</td>
<td>$2.2 billion</td>
<td>$55 million</td>
<td>$2.3 billion</td>
</tr>
<tr>
<td>NJ</td>
<td>Hurricane Sandy</td>
<td>$2.5 billion</td>
<td>$647 million</td>
<td>$3.1 billion</td>
</tr>
<tr>
<td>NY</td>
<td>Hurricane Sandy</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**TOTAL** | **$8.4 billion** | **$1.6 billion** | **$10.0 billion**

Results: An Inequitable Cost Burden

Who pays for these costs?

- A disproportionate share of the illness-related costs of the events (about 64%) were shouldered by Medicare and Medicaid patients.

- Older adults and the economically disadvantaged are among those most vulnerable to the health effects of climate-sensitive events.

- Health systems are not equipped to handle the climate crisis, but targeted interventions can benefit vulnerable communities.
Larger Fabric of Climate-Health Harms

![Graph showing the proportion of national health impact burden for various environmental factors.]

- Lyme Disease
- Allergenic Oak Pollen
- Extreme Weather
- Extreme Heat
- Ozone Air Pollution
- West Nile Virus
- Wildfires
- Hurricanes

- State-Level Case Study Health Impacts (2012)
- National Estimate of Health Impacts (2012)
$14 billion in health-related costs from just six US climate change-related events, 2002-2009
(Knowlton et al., Health Affairs 2011)
Over 760,000 encounters with the US health care system from 6 events

<table>
<thead>
<tr>
<th>Climate Change-Related Case Study</th>
<th>Premature Death</th>
<th>Illness</th>
<th>Total Health Cost by Case Study</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ozone smog pollution</td>
<td>$6.3 Billion</td>
<td>$254 Million</td>
<td>$6.5 Billion</td>
</tr>
<tr>
<td>Heat wave</td>
<td>$5.2 Billion</td>
<td>$179 Million</td>
<td>$5.3 Billion</td>
</tr>
<tr>
<td>Hurricane</td>
<td>$1.1 Billion</td>
<td>$255 Million</td>
<td>$1.4 Billion</td>
</tr>
<tr>
<td>Wildfire</td>
<td>$545 Million</td>
<td>$34 Million</td>
<td>$578 Million</td>
</tr>
<tr>
<td>Mosquito-borne infectious disease</td>
<td>$190 Million</td>
<td>$18 Million</td>
<td>$207 Million</td>
</tr>
<tr>
<td>River flooding</td>
<td>$16 Million</td>
<td>$5 Million</td>
<td>$20 Million</td>
</tr>
<tr>
<td>Total costs (in U.S. dollars, 2008)</td>
<td>$13.3 Billion</td>
<td>$744 Million</td>
<td>$14.1 Billion</td>
</tr>
</tbody>
</table>
Bridging The Gap on Climate & Health Costs

Adaptation in Action: Ahmedabad, India

The city’s Heat Adaptation Plan deploys 4 strategies to reduce heat-related health impacts:

1. **Early Warning System & Inter Agency Emergency Response Plan**
   - Alert residents of predicted high and extreme temperatures & formally communicate channels to alert governmental agencies

2. **Public Awareness & Community Outreach**
   - Communicate the risks of heat waves and implement practices to prevent heat-related deaths and illnesses

3. **Capacity Building of Medical Professionals**
   - Training focus on primary medical officers and other paramedical staff, and community health staff

   - Access to potable drinking water and cooling spaces during extreme heat days & promote adaptive measures
Scaling Up Heat Action Plans

Heat Alert
Dos & Don’ts During Heat Waves
- Drink water, milk, and other liquids (no soft drinks)
- Stay out of the sun
- Find a place to cool down
- Wear light clothing
- Check in with friends & family

Symptoms to Watch for:
- Heat rash or hives
- Heavy sweating and weakness
- Headache and nausea
- Loss of energy despite the heat
- Red, hot, and dry skin
- Muscle weakness or cramps
- Nausea and vomiting

Drink More Water

Source: Ahmedabad Municipal Corporation/NRDC/Indian Institute of Public Health-Gandhinagar
Ahmedabad, a major Indian city, has avoided more than 1,100 heat-related deaths annually since it implemented the region’s first-ever Heat Action Plan in 2013.

Future Work: Opportunities and Obstacles

• Better understanding of climate-sensitive cost burden on individuals, families, employers, insurers, governments

• Demonstrating the health and financial benefits of a robust response to the climate crisis

• Investing in staff and partnerships to further local understanding of climate-worsened health harms

• Improving public health surveillance data systems and deployment of adequate technology to track this growing threat

SOURCE: www.ephtracking.cdc.gov/applications/heattracker/
Localizing the Climate Story

Climate change threatens health in Northwest

Wednesday, October 2, 2019 | 5:28am

By Ryan Bichten
The Seattle Times

SEATTLE — Around this time last year, news outlets blared alarming headlines, breathing the air exercised was as bad as smoking several cigarettes. Wildfires have blistered the sun and turned the moon orange.

Wisconsin Public Radio

What Is Ozone Pollution Costing Nevada?

In this July 8, 2017 file photo, joggers cool down in a Minneapolis park during a heatwave. (AP Photo/Jim Mone)

Study Links Climate Change To At Least $10B In Health Costs In 2012

2012 Heat Wave Caused Around $250M In Health Costs In Wisconsin

By Danielle Kardaing
Published: Thursday, September 19, 2019, 6:30am

New research is showing what we’ve known all along: that climate-fueled events are causing significant health problems and associated costs. Wildfire smoke caused an estimated hundreds of premature deaths and $2+ billion in health costs in Oregon in 2012.

Up In Smoke: Oregon Wildfires Cost Billions In Health Harms

New research sheds light on the health costs of climate change.

5:13 PM - Oct 2, 2019 - Twitter Web App
Combatting “Climate Silence”

Opinion: We must consider the profound toll of climate change on public health


SOURCE: www.who.int/publications/i/item/cop26-special-report
Making the Case for Climate Action

WI Governor’s Task Force on Climate Change Report (December 2020) available at: www.climatechange.wi.gov

HOW CLIMATE CHANGE IS IMPACTING WISCONSIN

THE HUMAN AND ECONOMIC COSTS
Whether it be the loss of life during an extreme weather event, long-term illness due to air pollution, or the costly economic toll climate change is having on farmers and rural communities, the changing climate is impacting everyone.

Climate action is projected to have tremendous health and economic costs, and recent studies have indicated that these costs are already weighing on Americans. A 2019 study found that ten climate-sensitive events that occurred throughout the country—including extreme heat in Wisconsin, harmful algal blooms in Florida, and Western wildfires—resulted in an estimated $10 billion in health costs.13 In Wisconsin, this extreme heat event caused elevated levels of heat stress, heat stroke, and heat exhaustion. Since then, Wisconsin has experienced additional extreme weather events, including tornadoes, flooding, and polar vortexes. In 2019, a polar vortex brought Wisconsin one of its longest stretches of sub-zero temperatures with some parts of the state experiencing wind chill down to minus 60°F.14

Global climate change impacts regions, communities, and populations unequally. The Wisconsin Initiative on Climate Change Impacts (WICCI), a state-wide collaboration of scientists and stakeholders, has evaluated these impacts on Wisconsin since 2007. In a recent report, WICCI identified how climate change is impacting Wisconsin broadly and specifically, and which communities will bear disproportionate consequences.15 Many of these projections and findings are consistent with the 2011 WICCI Assessment and add...
Today’s Choices Determine Future Risks

More attention is needed to the vast needs of the health sector to prepare for worsening climate risks

Proactive planning today can help to ensure continuity of care and protection of the most vulnerable:

| Table 2: Selected characteristics of health systems under the shared socioeconomic pathways. |
|----------------------------------------|--------|--------|
| Basic characteristics                   | SSP3   | SSP2   | SSP1   |
|                                        | Reactive; failure to adapt; siloed information channels and national governance; limited partnerships | Incomplete planning; new information incorporated as convenient; occasional partnerships | Proactive; adaptively managed; frequent partnerships; interdisciplinary |

Health Risks of Climate Change

Figure 2. Burning embers for health under three adaptation scenarios. The dots show the confidence in the transitions, with four dots very high confidence, three dots high confidence, two dots medium confidence, and one dot low confidence.

Policy Recommendations

1. **Mitigation:** Reducing climate-health harms saves lives and money

2. **Adaptation:** Investments in health preparedness are cost-effective, and health implications of adaptation actions should be evaluated

3. **Improved Surveillance & Tracking:** We need to better monitor climate-sensitive health outcomes & environmental indicators related to climate change, release data in timely and transparent matter

4. **Better Cost Estimates:** Economic assessments of climate impacts should consider health damages.
   - Illuminate wide range of climate-sensitive risks
   - Greater focus on morbidity data and analyses
   - Social Cost of Carbon does not adequately capture health risks
“Coding For Climate”

- Economic valuation of climate-sensitive health harms requires careful consideration of health data.

- The International Classification of Disease (ICD) system is a way to systematically track health problems using a consistent set of codes.

- Our team has recently published an analysis of key ICD codes to target in climate and health impacts work.

- For more on specific illness codes to track, see:

National Heat Health Information System (NIHHIS)

Heat.gov

Future Heat Events and Social Vulnerability 2018


US Population Estimates 2018

- Population: 151,339,330
- Daytime Population: 137,207,596
- Housing Units: 62,300,934
- Households: 54,713,443

Total days with temperatures over 95°F
- 14 - Two Weeks

Year
- 2020

Display Type
- Total Days
- Days Increase

Contributions to Overall Index

- Socioeconomic Status
- Household Composition & Disability
- Minority Status & Language
- Housing & Transportation

Days with Temperatures over 95°F
- 47 days

Brooks County, Texas
- Population: 7,180
- Daytime Population: 7,062
- Housing Units: 3,087
- Households: 2,052

Overall Vulnerability Index
- Score: 1.000

NEXT 100 YEARS CHALLENGE
An initiative of the
GREATER NEW ORLEANS FOUNDATION
National Heat Health Information System (NIHHIS)
HeatWatch Campaigns (Applications in January)

• Outputs
  • Relative comparison
  • Surface temperature
  • Accuracy of +/- 5%
  • Range -20C to +120C

• Limitations
  • Single Surface only
  • Battery Life / Circuit Impact
  • Image Registration
FLIR Examples: Surface Heat Mapping
New Orleans Heat Watch

Airport vs. neighborhood maximum temperatures
New Orleans neighborhoods are often much hotter than the city’s official temperature gauge at the New Orleans airport in Kenner.

New Orleans Heat Islands / Temperature Disparities

Urban Systems and Community Asset Profiles

The CDC uses 16 demographic variables organized into four thematic areas to create an index of overall social vulnerability:

- **Socioeconomic Status**: Below 150% Poverty, Unemployed, Housing Cost Burden, No High School Diploma, No Health Insurance
- **Household Characteristics**: Aged 65 & Older, Aged 17 & Younger, Civilian with a Disability, Single-Parent Households, English Language Proficiency
- **Racial & Ethnic Minority Status**: Hispanic or Latino (of any race), Black or African American, Not Hispanic or Latino, Asian, Not Hispanic or Latino, American Indian or Alaska Native, Not Hispanic or Latino, Native Hawaiian or Pacific Islander, Not Hispanic or Latino, Two or More Races, Not Hispanic or Latino, Other Races, Not Hispanic or Latino
- **Housing Type & Transportation**: Multi-Unit Structures, Mobile Homes, Crowding, No Vehicle, Group Quarters

Social Vulnerability Scores can be found by county and census tract at https://www.atsdr.cdc.gov/placeandhealth/svi/index.html
Health Data Explorer

Health Outcomes > Heat-Stress Illness

Measure: Cumulative Age-Adjusted Rate For Hospitalizations For Heat-Stress Illness Per 100,000 Population By Climate Division (2010-2019),
Age Range: All Ages, Gender: All Genders, Areas: multipler(9), Time Periods: 2010-2019

<table>
<thead>
<tr>
<th>Criteria</th>
<th>2010-2019</th>
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<tbody>
<tr>
<td>Central</td>
<td>5.32</td>
</tr>
<tr>
<td>East Central</td>
<td>3.73</td>
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<tr>
<td>North Central</td>
<td>6.66</td>
</tr>
<tr>
<td>Northeast</td>
<td>5.43</td>
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<tr>
<td>Northwest</td>
<td>7.5</td>
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<tr>
<td>South Central</td>
<td>3.62</td>
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<tr>
<td>Southeast</td>
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<tr>
<td>Southwest</td>
<td>4.66</td>
</tr>
<tr>
<td>West Central</td>
<td>7.2</td>
</tr>
</tbody>
</table>

SOURCE: https://healthdata.ldh.la.gov/
Louisiana Climate Change + Health Data

• Health
  • Emergency Department visits, hospitalizations and deaths with a primary diagnosis of Heat Stress, also known as heat-related illness

• Drought and Excessive Rainfall
  • Monthly Palmer Drought Severity Index (PDSI) by climate division

• Heat | Temperature
  • Number of days with Min Temp 80°F degrees or higher
  • Number of days with Max Temp 95°F degrees or higher

• Wildfire
  • Total acres and total number of suppressed wildfires by parish and state, by year
  • State-level data, by year

SOURCE: https://ldh.la.gov/page/4351
**Heat Advisory** when temperature is greater than or equal to 103°F or when the Heat Index is greater than or equal to 108°F

**Excessive Heat Warning** when temperature is greater than or equal to 105°F or when the Heat Index is greater than or equal to 113°F

### WHAT IS EXTREME HEAT AND HOW CAN IT AFFECT YOU?

**Heat Advisory** is defined as a maximum heat index or temperature greater than or equal to 95°F.

The National Weather Service issues a **Heat Advisory** when the temperature is greater than or equal to 103°F or when the Heat Index is greater than or equal to 108°F.

An **Excessive Heat Warning** is issued when the temperature is greater than or equal to 105°F or the heat index is greater than or equal to 113°F.

Exposure to extreme heat for any amount of time can lead to **heat stress** resulting in heat-related illness. Heat stress and heat-related illness occur when our body is unable to cool itself enough to maintain a healthy temperature. This condition can manifest in a variety of ways ranging from mild to severe.

### WHAT TO LOOK FOR:

**HEAT RASH**
- Red clusters of pimples or small blisters on the neck, upper chest, groin, under the breasts and in elbow creases

**HEAT CRAMPS**
- Heavy sweating during intense exercise
- Muscle pain or spasms

**HEAT EXHAUSTION**
- Muscle pain or spasms
- Cold, pale, clammy skin
- Nausea or vomiting
- Muscle cramps
- Tiredness or weakness
- Dizziness, headache, fainting

**HEAT STROKE**
- High body temperature (+103°F)
- Hot, red, dry or damp skin
- Fast, strong pulse
- Headache, dizziness
- Nausea, confusion,
- Loss of consciousness

### WHAT TO DO:

**WHAT TO DO:**
- Stay in a cool, dry place
- Keep the rash dry
- Use powder to soothe the rash
- Stop physical activity and move to a cool place
- Drink water or a sports drink
- Wait for cramps to go away before any more physical activity
- Move to a cool place and loosen your clothes
- Put cool wet cloth on your body or take a cool bath
- Sip water
- Call 911 right away — Heat Stroke is a Medical Emergency
- Move the person to a cooler place
- Help lower the person’s body temperature with cool cloths or a cool bath
- Do not give the person anything to drink

**SEEK MEDICAL ATTENTION IF:**
- Cramps last longer than 1 hour
- You’re on a low sodium diet
- You have heart problems
- You’re throwing up
- Your symptoms get worse
- Your symptoms last longer than 1 hour

**SOURCE:** https://ldh.la.gov/assets/oph/Center-EH/envepi/LDH_Tracking_Heat.pdf
Understanding Extreme Heat in the Region

Heat Wave Days Projected to Increase

More than 160,000 people living in Louisiana are especially vulnerable to extreme heat

*Especially vulnerable people are under 5 years old or 65 and older, living in poverty

https://reportcard.statesatrisk.org/report-card/louisiana/extreme_heat_grade
LOUISIANA EXTREME HEAT

Louisiana is projected to see one of the nation’s largest increases in heat wave days by 2050. In the face of that large heat threat, the state has only taken an average amount of action to prepare for its risks. The state needs to take a lot more action to improve its resilience to future extreme heat.
NOLA Hazard Mitigation Planning + Extreme Heat

New Orleans Hazard Mitigation Plan

**Action 2015.6.1**
Set up cooling shelters or other heat relief measures during extreme heat events.

Include cooling shelters along with other active cooling strategies such as misters and splash pads in public spaces.

### Cases

- **Number of Cases**
- **Age**

### Hospitalizations

- **Number of Hospitalizations**
- **Age Group**

### Hazard:
Extreme Heat

### Goal:
Goal 6: To protect Orleans Parish and the surrounding region from the effects of natural and manmade hazards, ensuring community continuity in the event of such hazards.

### Status:
- **Timeframe:** 1-5 years
- **Priority:** High
- **2015 Priority:** Medium

### Lead Agencies:
CHD (Health Department)

### Support Agencies:

### Cost:
$5,000 - $50,000

### Funding Source:
City Budget

### Emergency Support Function:
ESF 8

Source: [https://ready.nola.gov/hazard-mitigation/hazards/extreme-heat/#heading5](https://ready.nola.gov/hazard-mitigation/hazards/extreme-heat/#heading5)
Climate and Economic Justice Screening Tool


Identifies census tracks that are overburdened and disadvantaged

Ranks health burdens in percentiles as compared to other tracts

Asthma
Share of people who have been told they have asthma

Diabetes
Share of people ages 18 years and older who have diabetes other than diabetes during pregnancy

Heart disease
Share of people ages 18 years and older who have been told they have heart disease

Low life expectancy
Average number of years a person can expect to live

AND

Low income
People in households where income is less than or equal to twice the federal poverty level, not including students enrolled in higher ed
CDC National Environmental Public Health Tracking Network

SOURCE: https://ephtracking.cdc.gov/DataExplorer/

Heat & Heat-Related Illness (HR) | Vulnerability & Preparedness: Heat | Annual Number of People Living in Poverty | Louisiana

Asthma | Emergency Department Visits for Asthma | (Smoothed) Age-Adjusted Rate of Emergency Department Visits for Asthma Per 100,000 Population

2020

Legend:
- 805 - 3,342
- >3,342 - 4,946
- >4,946 - 8,774
- >8,774 - 16,755
- >16,755 - 122,062

Legend:
- 9.0 - 38.6
- >38.6 - 46.6
- >46.6 - 52.0
- >52.0 - 58.9
- >58.9 - 122.1

Link to Additional Details: Please click the link for important details about the ICD-9-CM to ICD-10-CM conversion in 2015 and how to interpret these data.
CDC Training helps to identify costs to consider in cost-benefit analysis.
CDC Training helps to identify costs to consider in cost-benefit analysis.
Climate Health Resilience Hubs leverage the resilience hub model and couple health services.
When the power fails, **Community Lighthouses:**

1. Conduct **needs assessments** to determine what neighbors need
2. **Provide for those needs** with flexibility to offer:

   - Charging stations / small battery distribution
   - Food preparation / distribution
   - Cooling / heating stations
   - Oxygen exchange and light medical equipment
Integrating Public Health in Resilience Planning

Elysian Fields Avenue Neutral Ground

Project Goals

**Urban Water**
1. Address flooding
2. Promote infiltration and groundwater recharge

**Ecology**
1. Increase biodiversity
2. Plant more trees, shrubs & flowers

**Infrastructure**
1. Create complete street corridors

**Economics**
1. Drive economic growth through reinvestment
2. Reduce flood management risk

**Recreation**
1. Provide access to parks
2. Provide active and passive recreation

**Public Health**
1. Encourage people to exercise more

**Urban Heat Mitigation**
1. Create shade
2. Reduce and monitor heat island effect

**Community**
1. Create community destinations for neighborhood gatherings
2. Provide interactive educational opportunities
Integrating Public Health in Resilience Planning

Climate change and increasing weather and natural disasters combine with existing environmental problems to worsen health outcomes.

Understanding these connections, and their costs, introduces further leverage in funding and financing approaches.

SOURCE: Global climate change and human health: pathways and possible solutions
Contact Information

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Climate & Health Scientist

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Twitter: @vlimaye
QUESTIONS?
Please add your questions to the chat.
GREATER NEW ORLEANS FOUNDATION
CHALLENGE OUTREACH TEAM

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UPCOMING WEBINAR and IN-PERSON DESIGN SESSIONS

Developing Creative Funding and Financing for Projects
Wednesday, May 3rd, 2023 - 9:30 am-11:00 am
Matt Carney, Associate Director, Quantified Ventures
Jason Lee, Director, Quantified Ventures

UPCOMING IN-PERSON DESIGN SESSIONS
Bring your team!

Bayou Region
Tuesday, May 9
Fletcher Technical Community College in Schriever, La

River Parishes
Wednesday, May 10
321 Events in LaPlace, La

Metro New Orleans
Thursday, May 11
WYES in New Orleans, La

Visit Next100YearsChallenge.org to Sign Up
NEXT 100 YEARS CHALLENGE

An initiative of the
GREATER NEW ORLEANS FOUNDATION