

Putting the “H” in Resilience: Integrating Health Services in Climate Resilience Efforts

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HHS Office of Climate Change and Health Equity

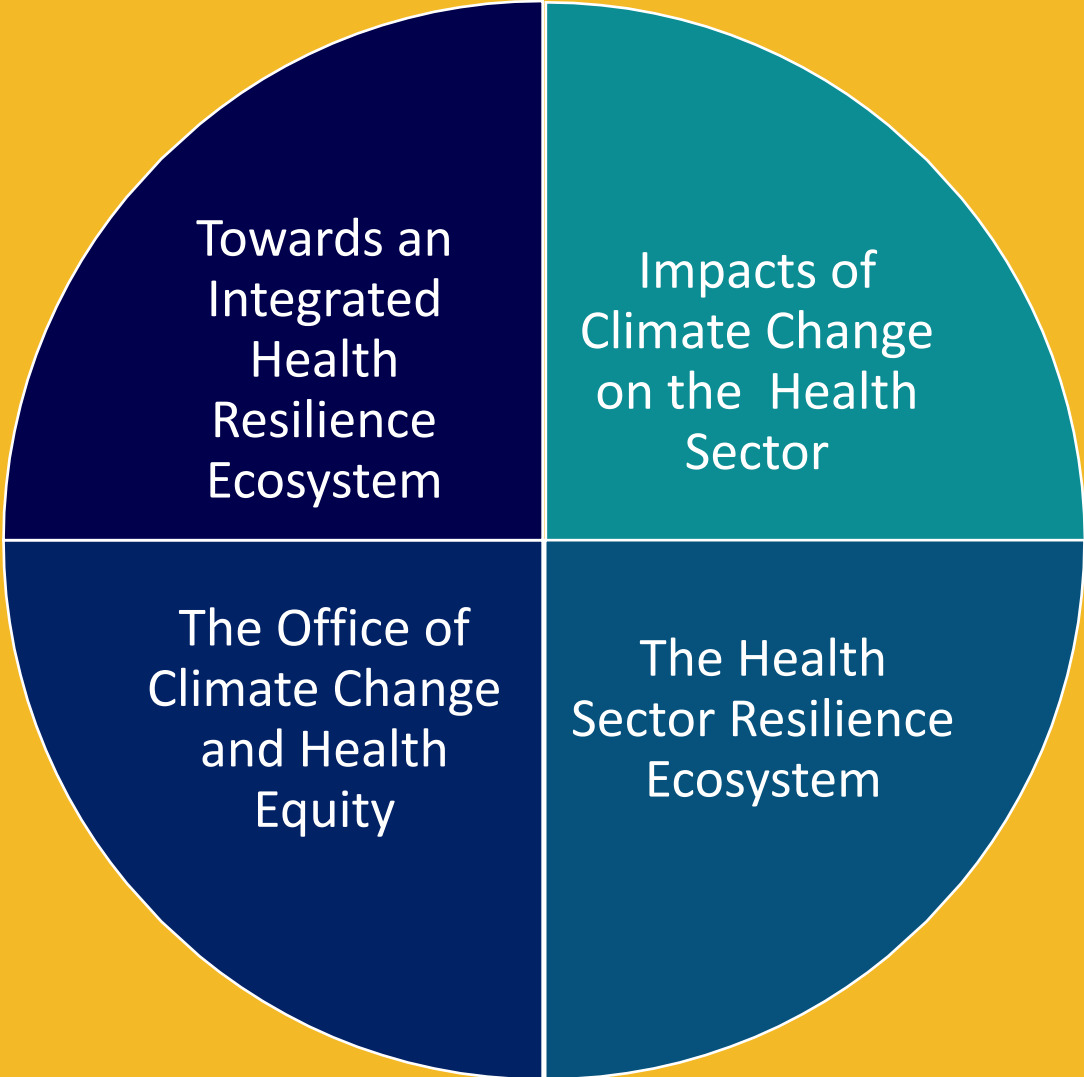
Innovations in Climate Resilience 2023
Columbus, Ohio

March 28, 2023

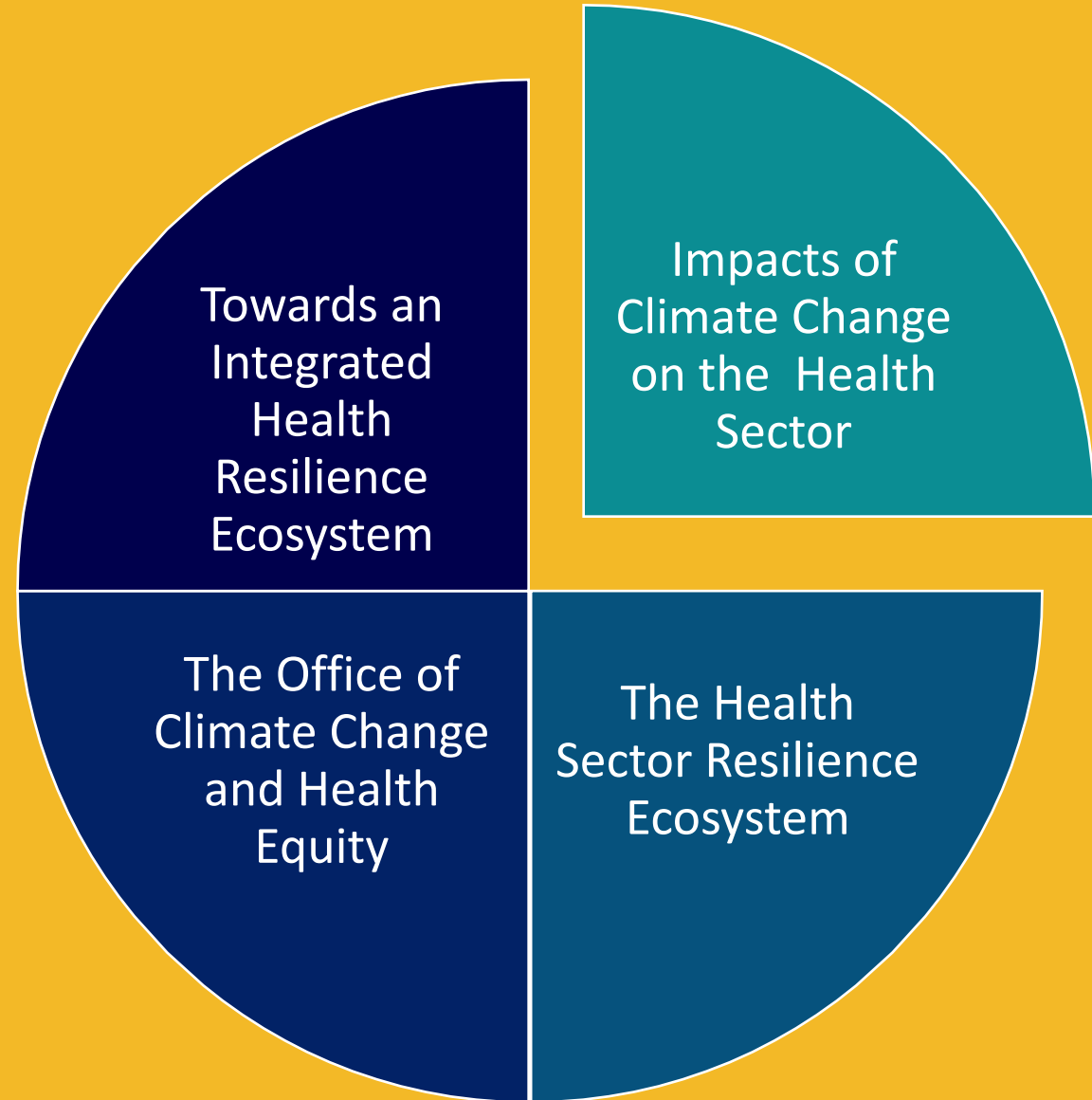


Office of
Climate Change
and Health Equity

Overview for today



Impacts of Climate Change on the Health Sector











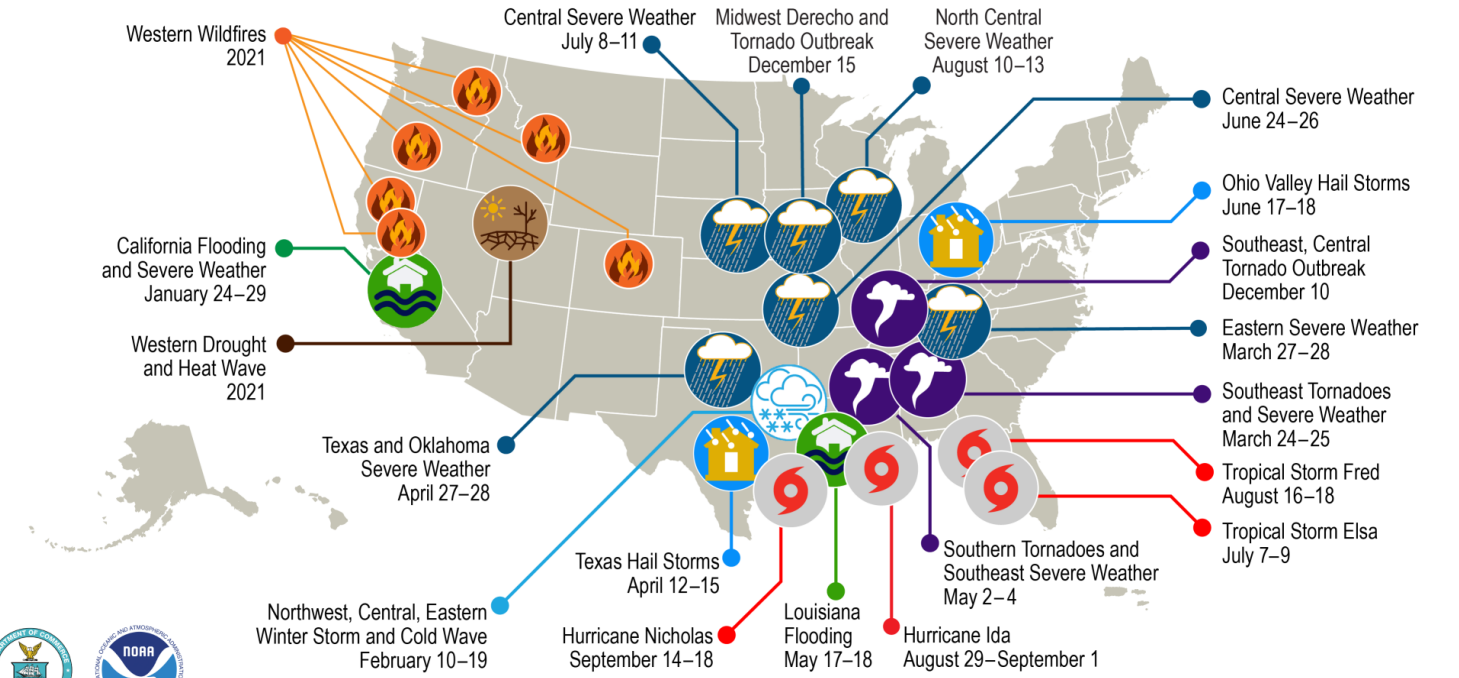
SENIOR CENTER

WEAR A MASK
WASH YOUR HANDS
SOCIAL DISTANCE
STAY SAFE

COME JOIN US

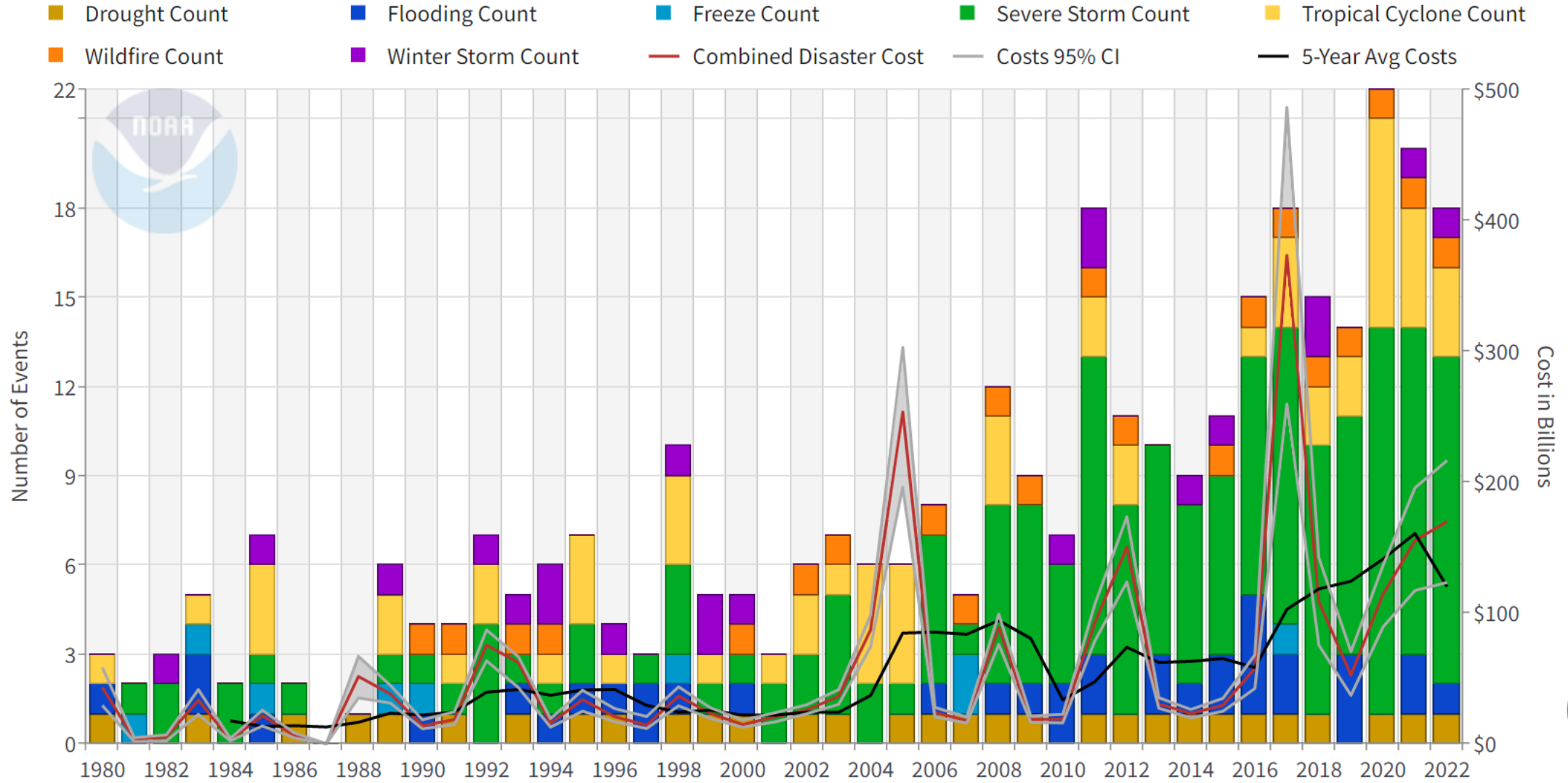
U.S. 2021 Billion-Dollar Weather and Climate Disasters

-  Drought/Heat Wave
-  Flooding
-  Hail
-  Hurricane
-  Tornado Outbreak
-  Severe Weather
-  Wildfire
-  Winter Storm/Cold Wave



This map denotes the approximate location for each of the 20 separate billion-dollar weather and climate disasters that impacted the United States in 2021

United States Billion-Dollar Disaster Events 1980-2022 (CPI-Adjusted)



<https://www.ncei.noaa.gov/access/billions/time-series>

Air Pollution & Increasing Allergens

Asthma, allergies, cardiovascular and respiratory diseases

Extreme Heat

Heat-related illness and death, cardiovascular failure

Drought

Water supply impacts, dust storms, Valley Fever

Environmental Degradation

Forced migration, civil conflict, loss of jobs and income

Wildfires & Wildfire Smoke

Injuries, fatalities, loss of homes, cardiovascular and respiratory diseases

Degraded Living Conditions & Social Inequities

Exacerbation of racial and health inequities and vulnerabilities, loss of employment

Changes In Vector Ecology

Lyme disease, West Nile Virus, hantavirus, malaria, encephalitis

Food System Impacts

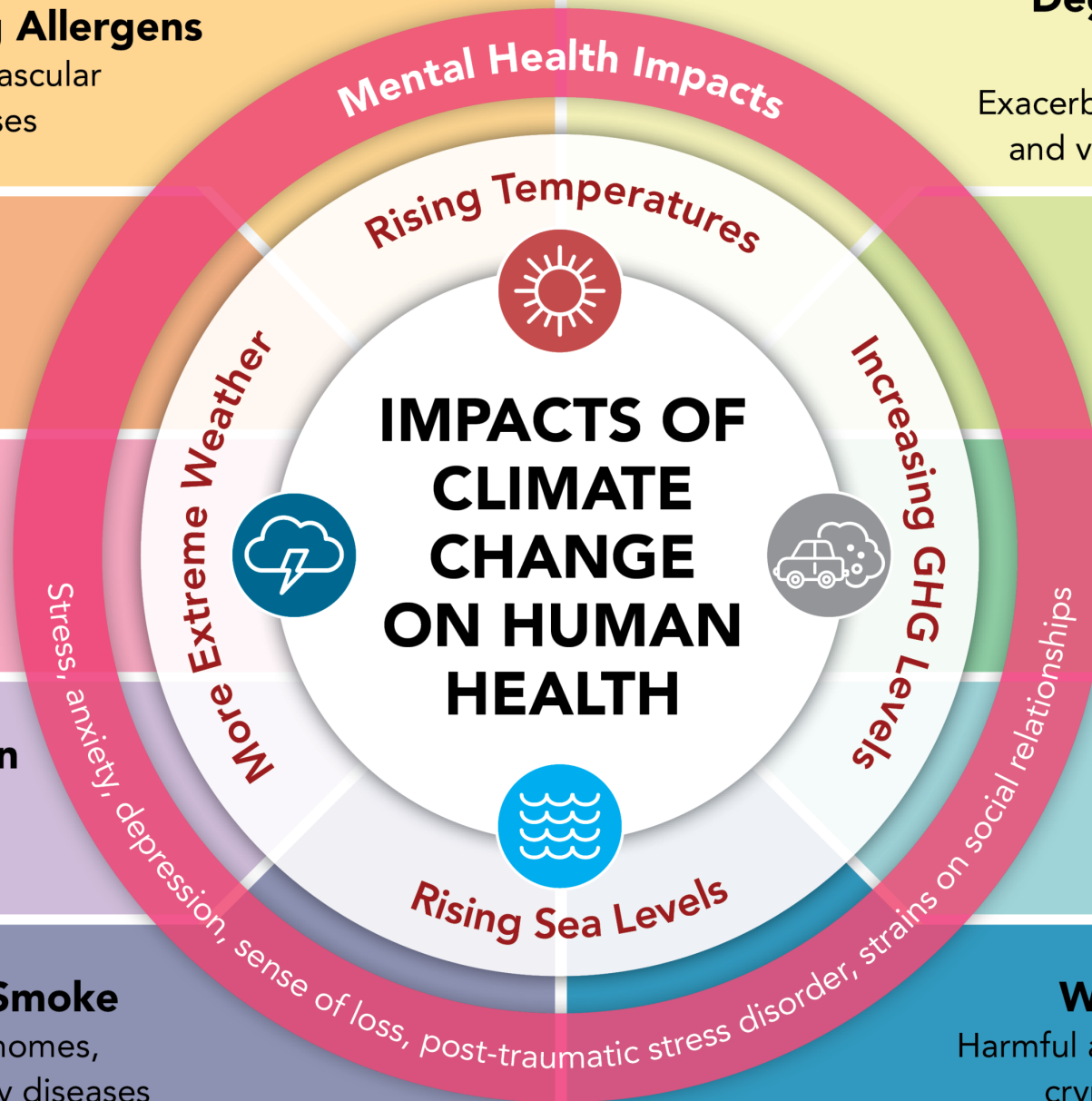
Malnutrition, food insecurity, higher food prices, foodborne illness

Severe Weather & Floods

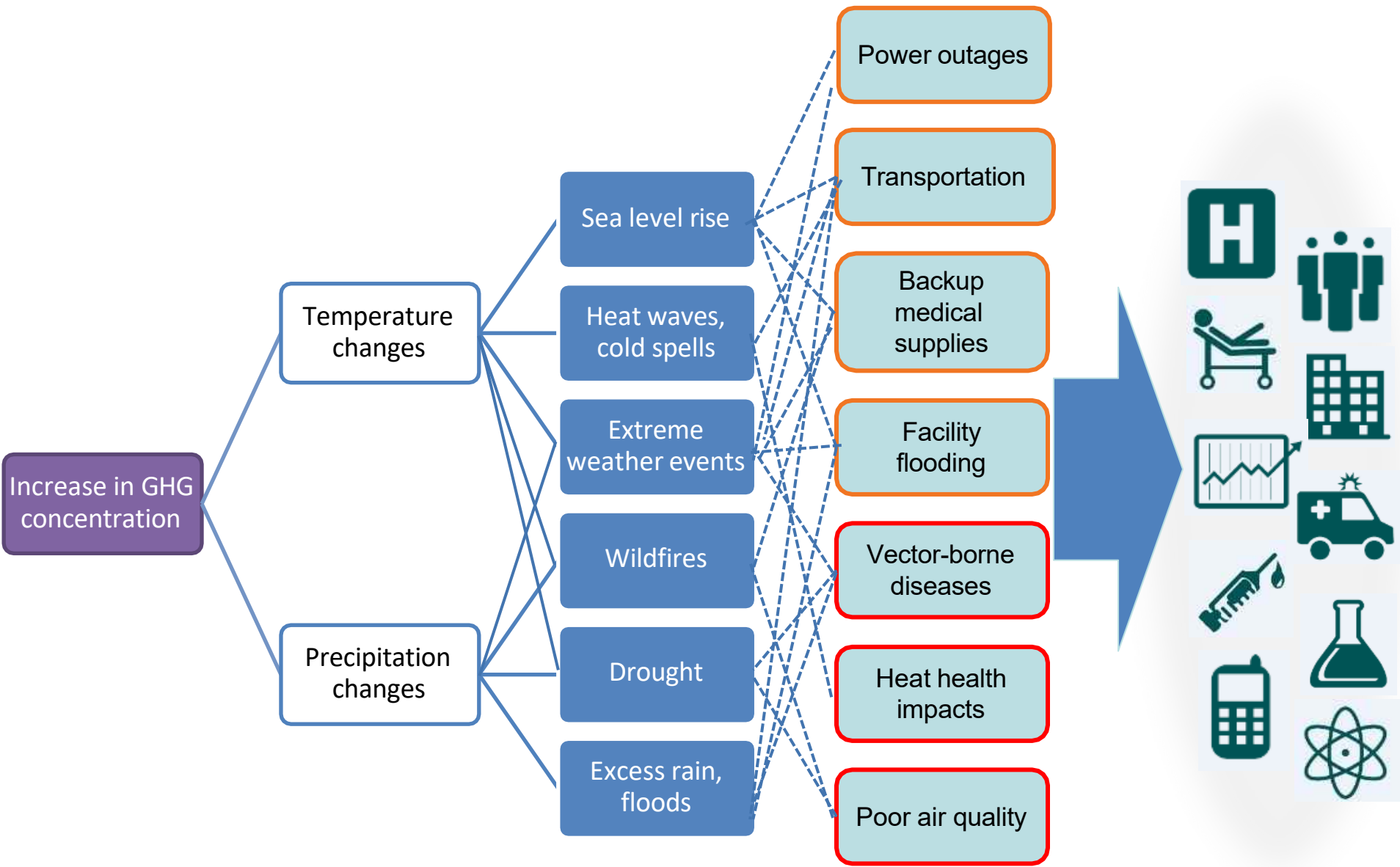
Injuries, fatalities, loss of homes, indoor fungi and mold

Water Quality Impacts

Harmful algal blooms, campylobacteriosis, cryptosporidiosis, leptospirosis



Mapping Climate Impacts on Hospitals & Health



Climate-related disasters lead to health system failures...and resilience



Louisiana hospital staff stayed behind to care for 19 babies as Hurricane Laura hit

By **Christina Zdanowicz, CNN**
 Updated 6:18 AM ET, Fri August 28, 2020

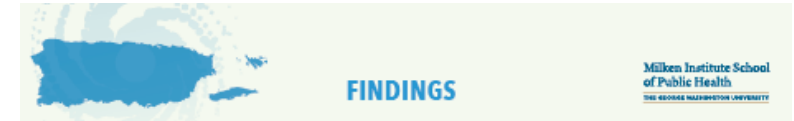


More from CNN

How President Trump's surprise gift to '60 Minutes' completely...

Fact check: Trump falsely claims Pennsylvanians 'can't go to...

STARTUP KNOCKING RETIREMENT INDUSTRY ON ITS HEAD



COMPONENT 1: Estimation of Excess Mortality

2,975

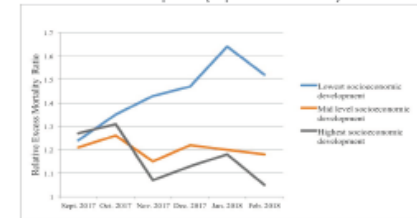
2,658 | Confidence Interval | 3,290

ESTIMATED EXCESS MORTALITY
 due to Hurricane Maria from September 20, 2017 to February 28, 2018

POPULATIONS MOST VULNERABLE TO EXCESS DEATHS

- Residents of municipalities with lower levels of socioeconomic development
- Men 65 years and older

Estimated Excess Mortality Risk in Puerto Rico, by Level of Socioeconomic Development (Sept 2017-Feb 2018)



Deaths were overall **22% HIGHER** for that time period

APPROXIMATELY 8% OF THE POPULATION MIGRATED

Mortality estimates take into consideration dramatic displacement of people from Puerto Rico between September 2017 and February 2018

2 Studies of Hospital and Nursing Home Evacuations

- 114 of 158 Hospital evacuations (2000-2017) due to extreme weather events
 - **65 Hurricanes**
 - **25 Wildfires**
 - **10 Flooding events**
- Most frequent states
 - **Florida**
 - **California**
 - **Texas**
- 59% of Nursing Home evacuations (1995-2017) due to extreme weather events
 - **12 Hurricanes**
 - **10 Floods**
 - **4 Snow/Ice storms**
- Most frequent states
 - **Texas**
 - **Louisiana**
 - **Missouri**
 - **New York**
 - **Pennsylvania**



Images of this past summer...



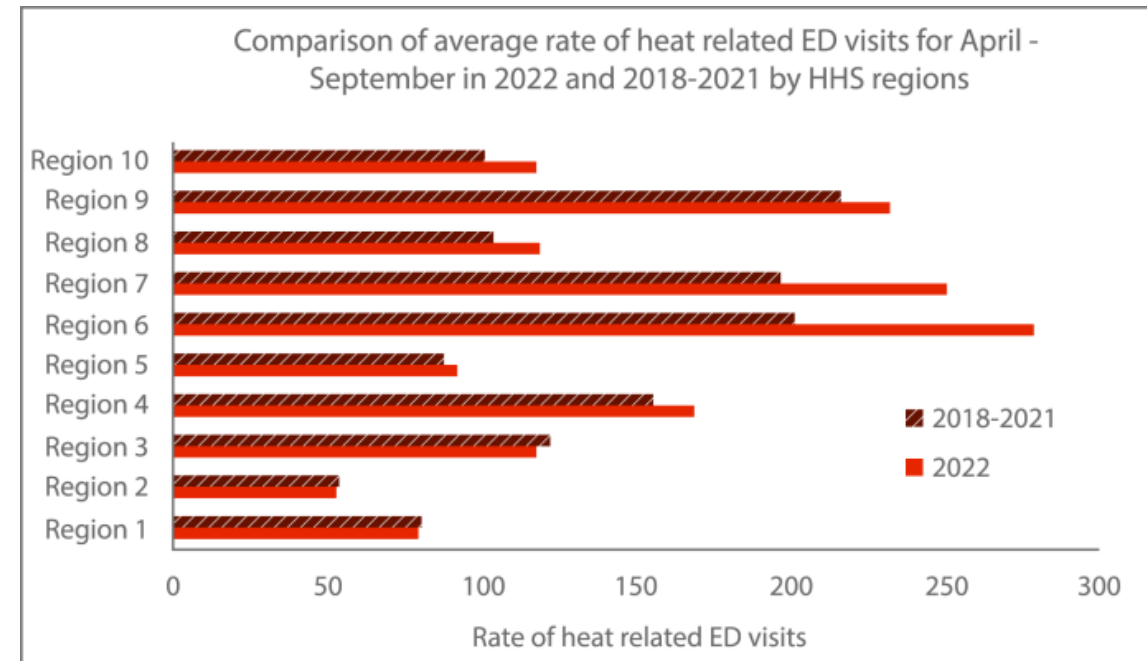
Climate Change and Health By The Numbers: *Summer 2022*

Hurricane Ian took over **120 lives** in Florida

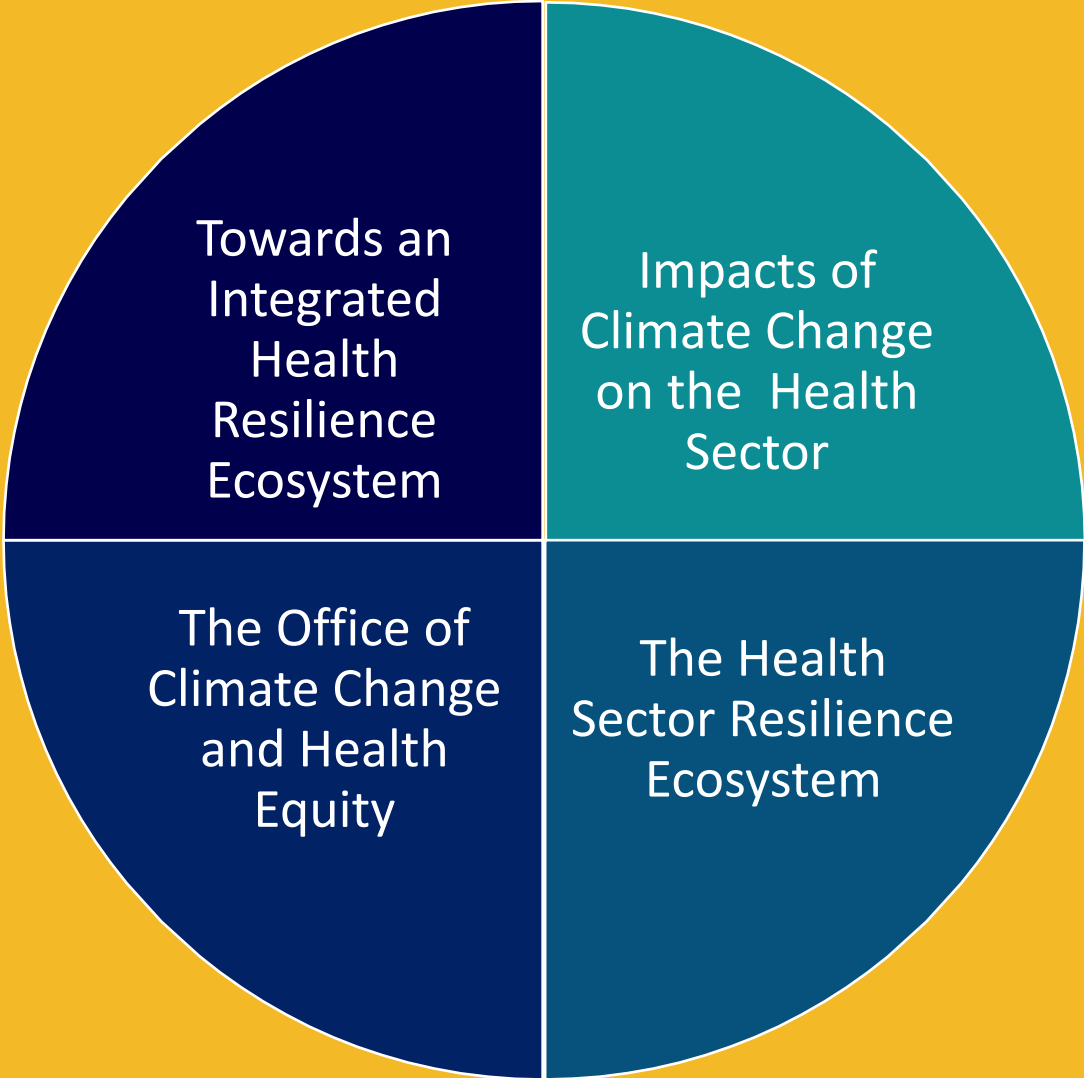
- **More than 2/3 of fatalities** were in those age 60 or older

Flooding in Kentucky took **43 lives** and **school had to be delayed** as **thousands** of students remained displaced

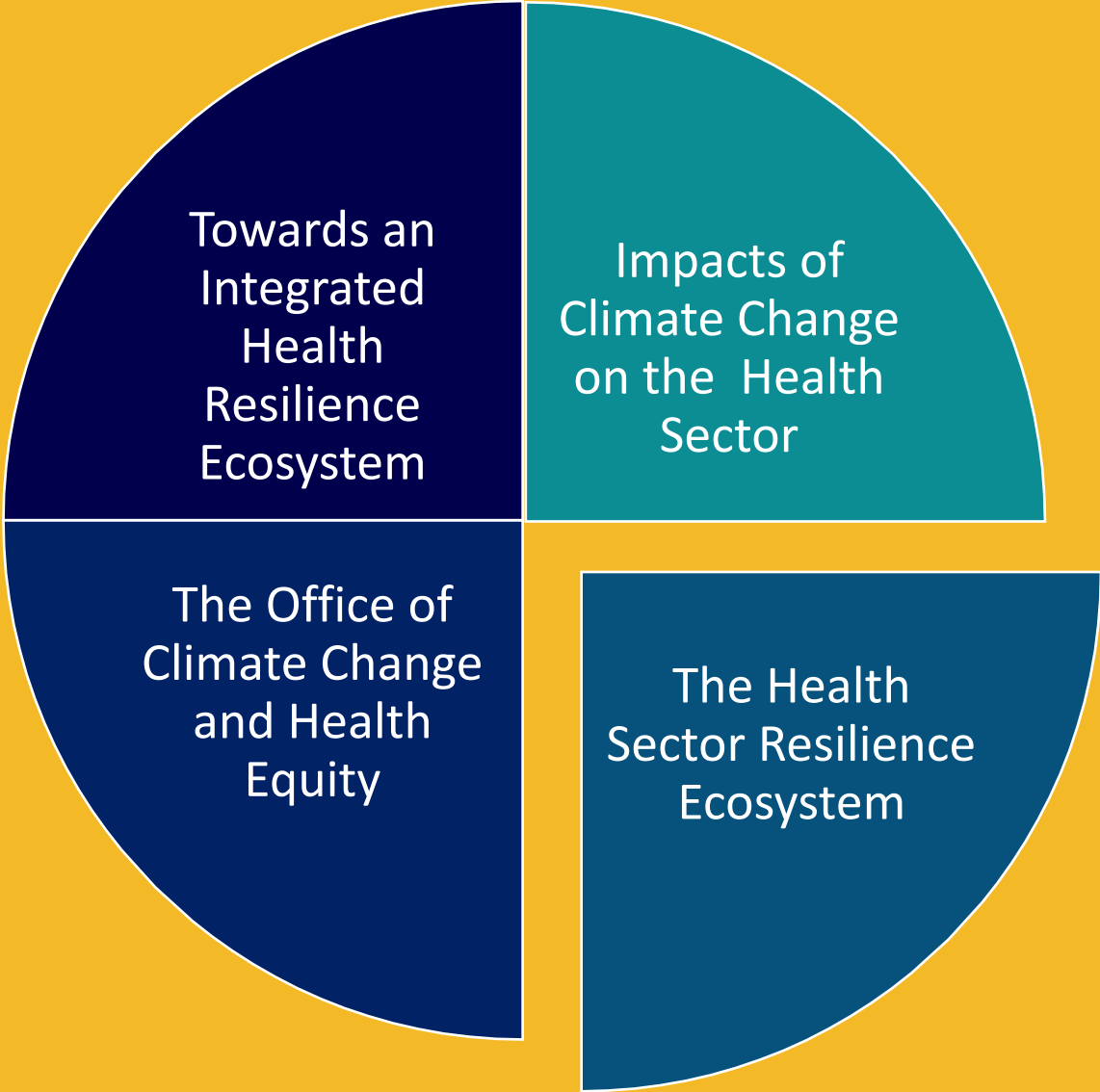
OCCHE's Climate and Health Outlook found that in **7 out of 10 HHS regions**, average heat-related illness rates in 2022 were higher in 2022 compared to the average rates in 2018-2021

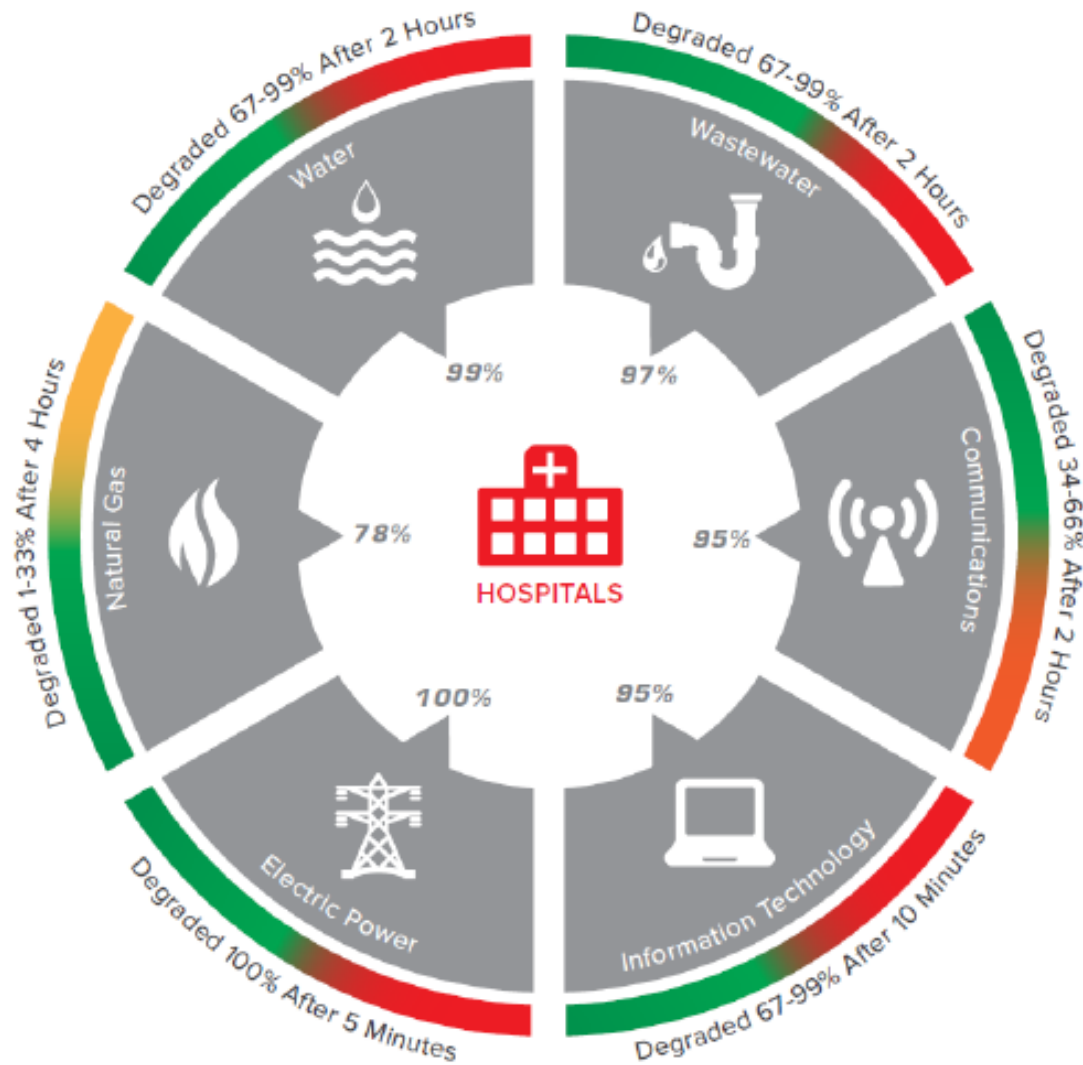


The Health Sector Resilience Ecosystem



The Health Sector Resilience Ecosystem





Note: This data represents a majority of hospitals (60 percent or greater) that are dependent on the external product or service.

FIGURE 1—Percent of assessed hospitals dependent upon external products or services, and percent degradation from their loss (Courtesy of DHS and Argonne National Laboratory)

During Sandy, critical system failures caused evacuations, closures, and reduced services

Providers	Impact	Building	Equipment (elevators, Imaging)	Utilities (power, water)	Heating/cooling	Communications/IT	Staff	Supplies
Hospital	Evacuations/ closures/ reduced services	Flooded	Flooded	Back-up failed	Flooded	Phone/ internet outages	Staff couldn't travel	Limited deliveries
Nursing homes/ adult care facilities	Evacuations	Flooded	No back-up power	Back-up failed (NH) / no back-up (ACF)	No back-up	Phone/ internet outages	Staff couldn't travel	Limited deliveries
Community-based providers	Closures / reduced services	Flooded	No back-up power	No back-up	No back-up	Phone/ internet outages	Staff couldn't travel	Limited deliveries
Home-based providers	Reduced services	Disruptions in patients' homes/residences, e.g. loss of power, elevators not working				Phone/ internet outages	Staff couldn't travel	Delayed deliveries

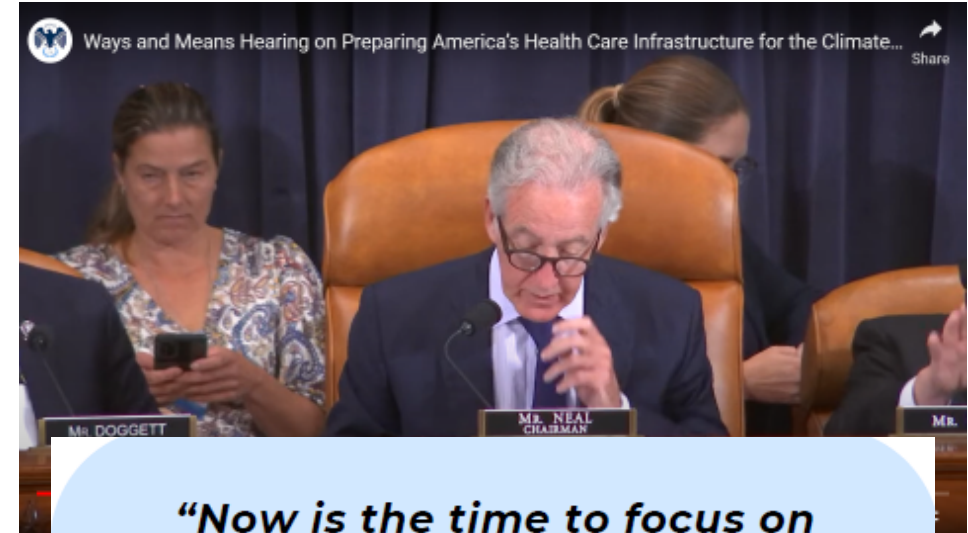
■ Primary reason for disruption
 ■ Secondary reason
 ■ Tertiary reason

What is the risk this could happen again to the same number or even more providers?

Learnings from House Ways and Means Committee Report

- Multi-site health systems more likely to have dedicated staff, plan, resources
 - **Nursing homes, dialysis centers less likely**
- Plans involved tracking forecasts, EOCs, continuity of operations
- Recommendations (federal)
 - **Increase HPP funding**
 - **Support microgrid and renewable energy grids**
 - **Permit fuel energy cell storage**

<https://democrats-waysandmeans.house.gov/health-care-and-climate-crisis-preparing-americas-health-care-infrastructure>



“Now is the time to focus on making our health infrastructure more efficient and resilient...”

—Chair Richard E. Neal, Press Release Applauding the establishment of the Office of Climate Change and Health Equity, August 31, 2021

The Health Sector Resilience Ecosystem



National Health Security Strategy (ESF-8)

Hospital Preparedness Program (HPP)

>85% of nation's acute care hospitals
326 Health Care Coalitions (HCC) across the nation
Secondary facility types optional

MIND THE GAP!

Community Health Centers/FQHC's, ambulatory care, residential facilities lack direct support for preparedness

Public Health Emergency Preparedness Program (PHEP)

62 recipients in 50 states, 4 cities and 8 territories
Funds can be shared with local HD's, tribes and tribe-serving organizations

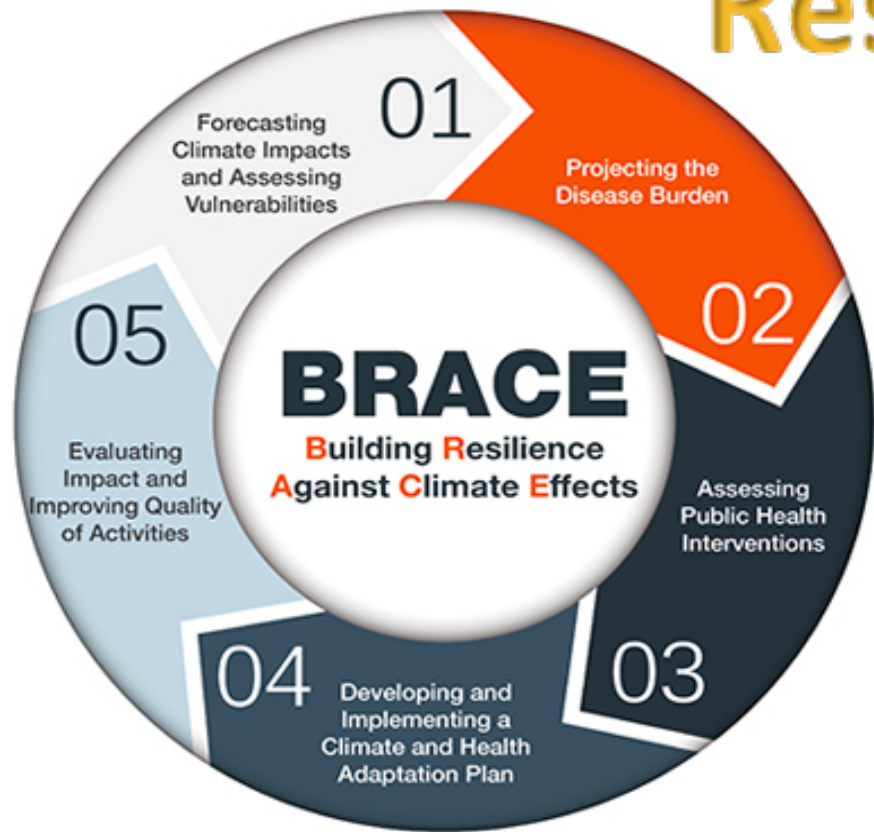
Emergency Management Cycle

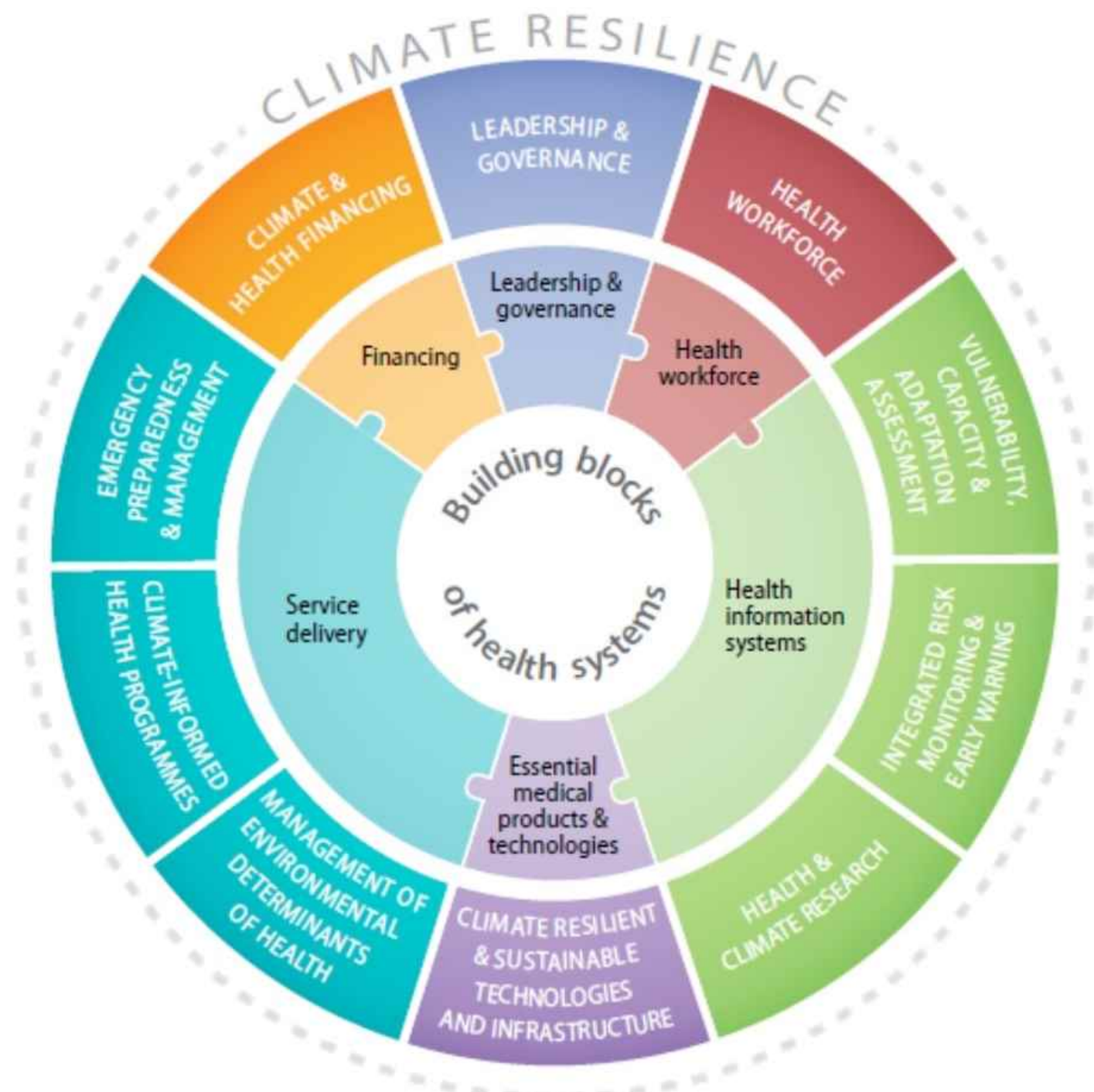


The Two Sides of Health Systems Resilience

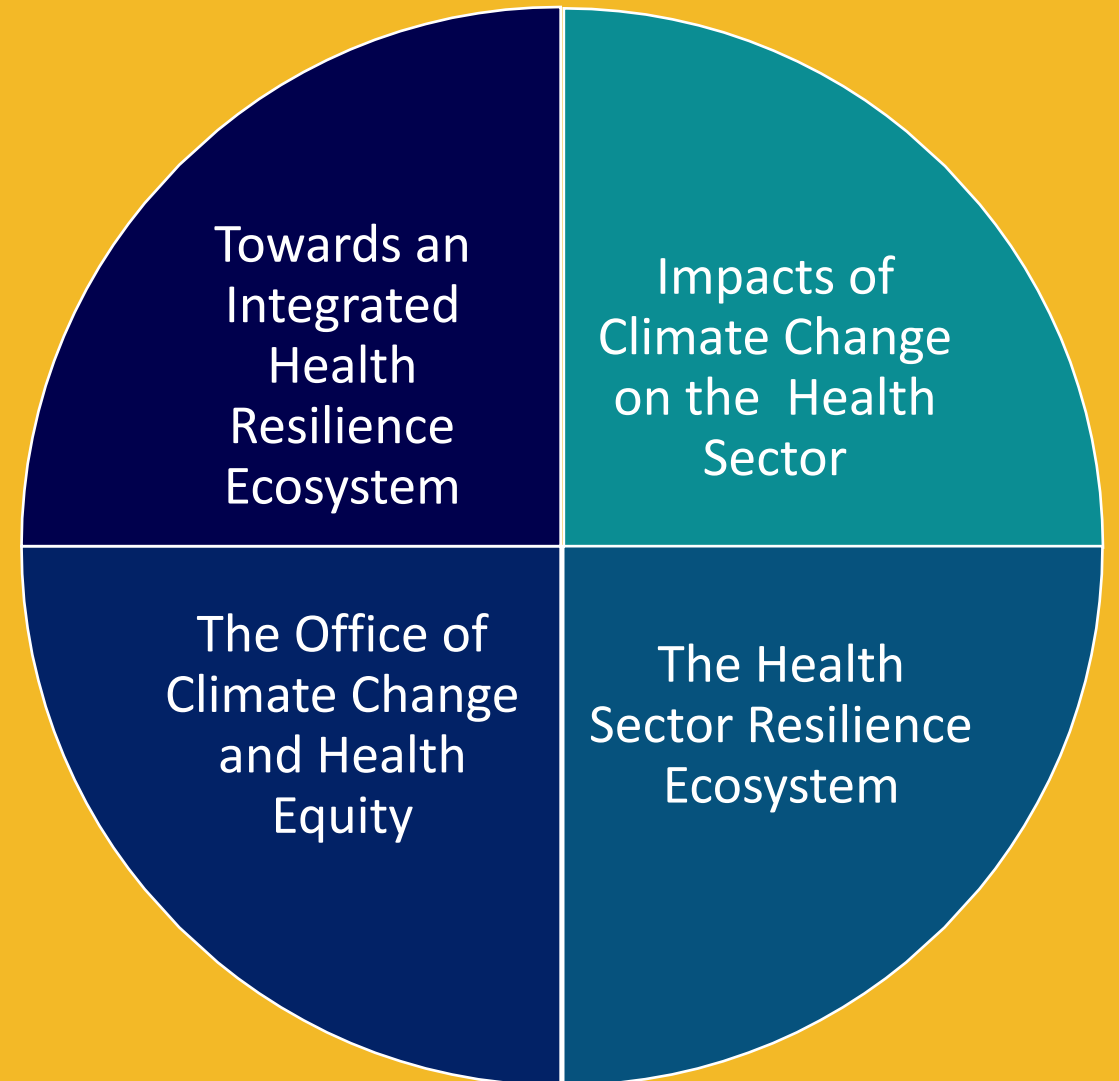
Public Health Approach

Climate Health Approach

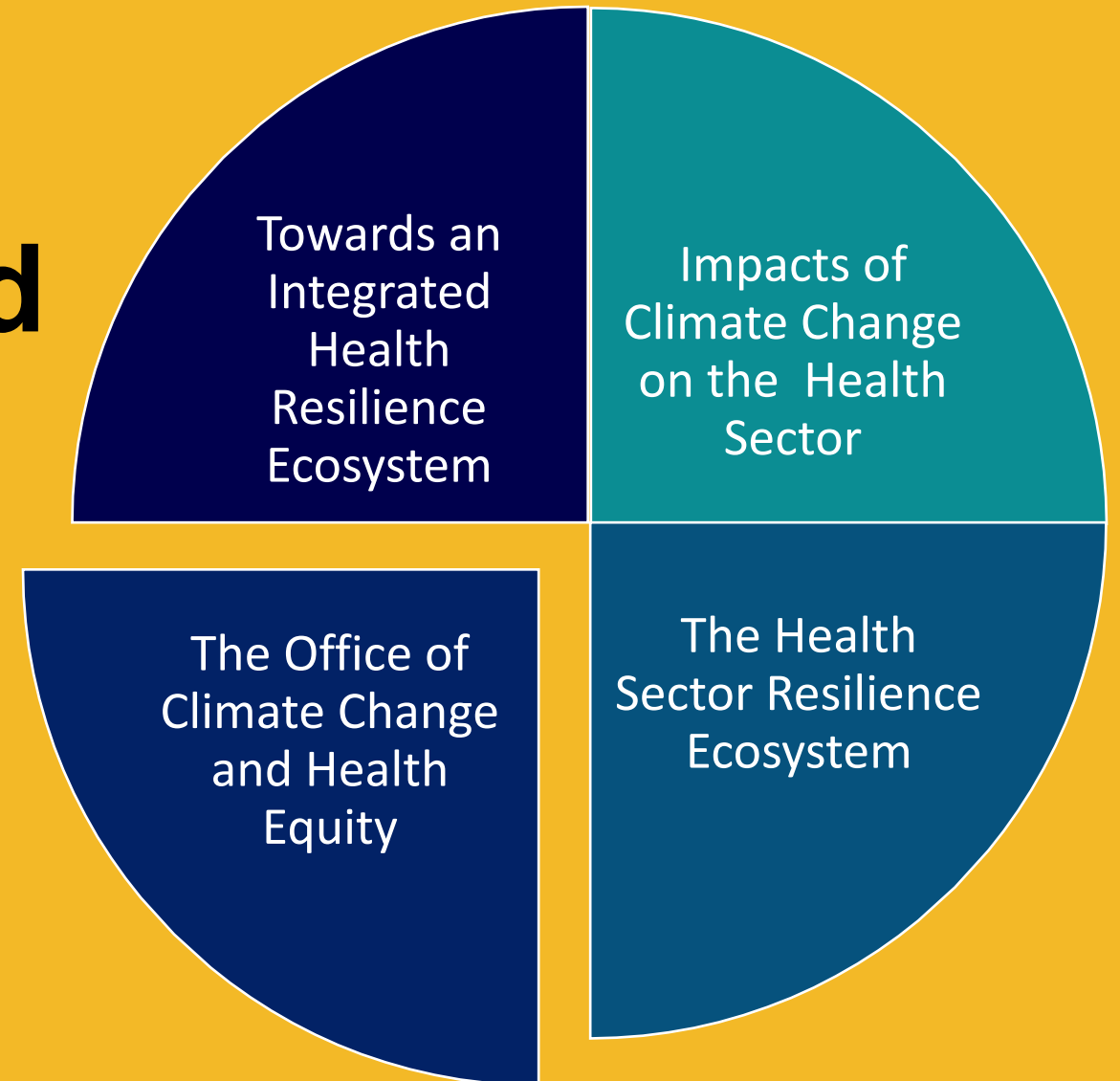




The HHS Office of Climate Change and Health Equity



The HHS Office of Climate Change and Health Equity



Origins of the Office of Climate Change and Health Equity

E.O. 14008 - “Tackling the Climate Crisis”

- HHS mandates (Section 222(d))
 - ✓ Office of Climate Change and Health Equity
 - ✓ Interagency Working Group to Decrease Risk of Climate Change to Children, the Elderly, People with Disabilities, and the Vulnerable
 - ✓ Biennial Health Care System Readiness Advisory Council



Office of Climate Change & Health Equity (OCCHE)

Priority 1: Climate & Health Resilience for Most Vulnerable

Priority 2: Climate Actions to Reduce Health Disparities

Priority 3: Health Sector Resilience & Decarbonization



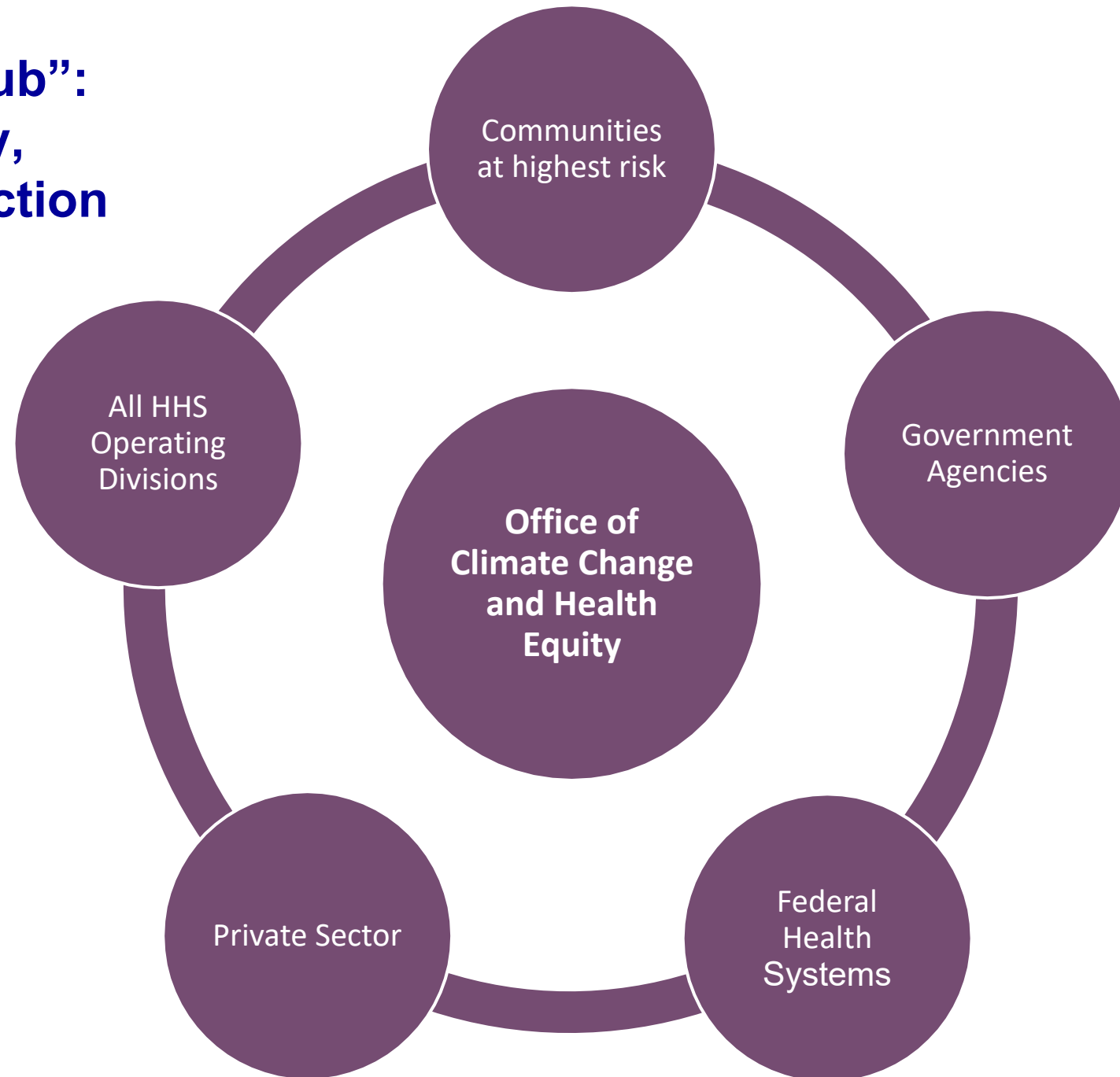
Resilient Health Systems

- Capturing **community and health system vulnerabilities** and logging adaptation gaps
- **Enhancing the resilience of health systems and communities** to climate change effects
- Building on existing networks and plans to **develop a national plan for health adaptation**

Low-Carbon Health Systems

- Coordinating Federal health system **greenhouse gas accounting and reduction** targets
- Partnership with private health sector to develop an **action plan for reductions** via incentives, technical assistance, policy guidance, applied research, toolkits, training, use of regulatory authorities as needed, etc.

The OCCHE “Hub”: Setting Strategy, Coordinating Action



Overview Driver Diagram for OCCHE

Climate
Resilient
People

Resilient
Health
Systems

Enhanced
Health
Equity

Low-
Carbon
Health
Systems

1. Set the *Vision and Agenda*
2. Build the *Evidence Base*
3. Train the *Workforce*
4. Develop *Communities of Practice*
5. Mobilize *Resources*
6. Strengthen *Incentives and Standards*

Federal Health Systems Learning Network

- Convened by OCCHE to accelerate the work of federal health systems to address climate change and health equity
- Identifying best practices in decarbonization and resilience
- Surfacing challenges and addressing them collectively
 - **E.g., workforce issues, procurement standards**



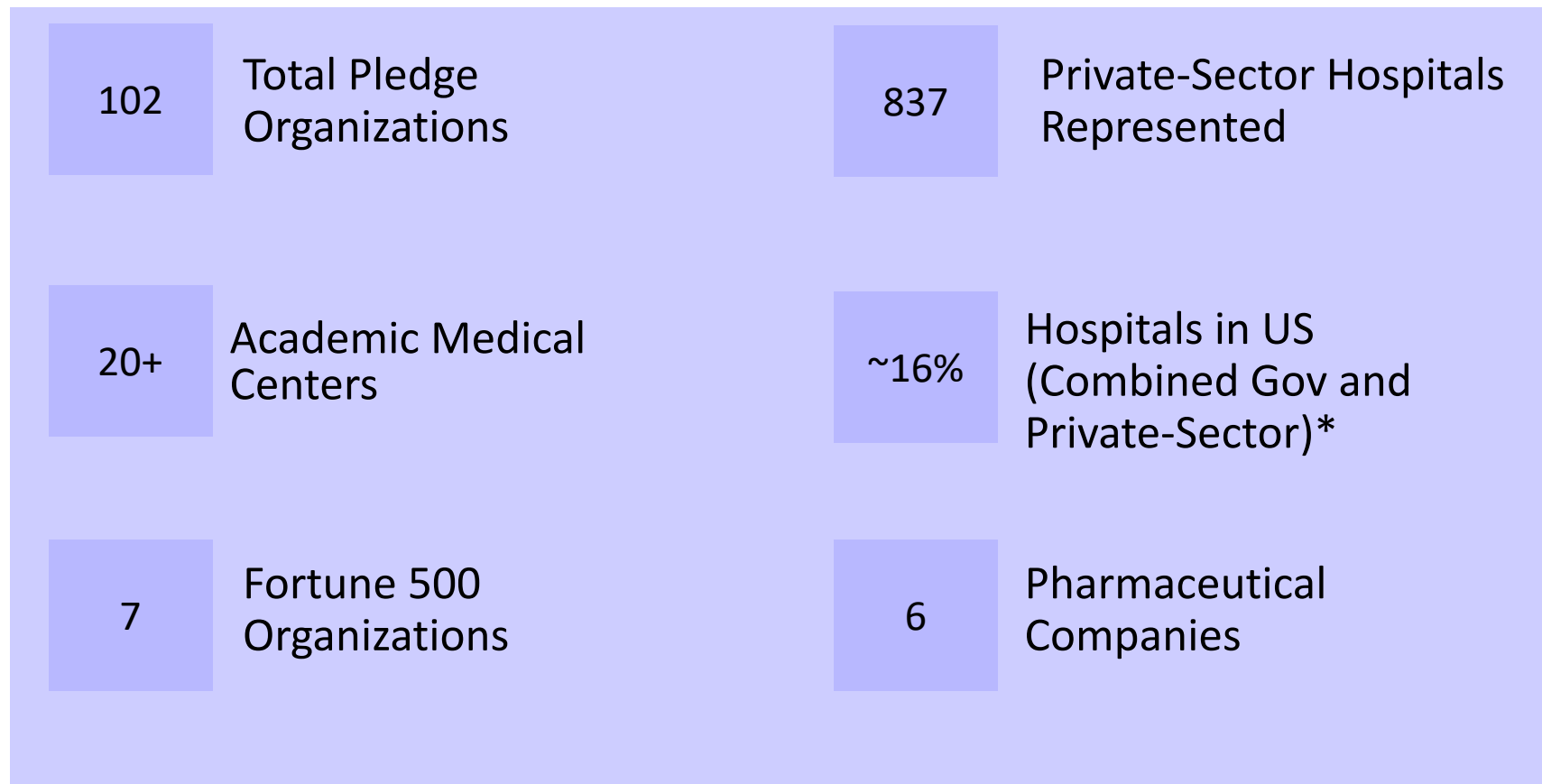
White House/HHS Health Sector Climate Pledge

1. Reduce organizational emissions by 50% by 2030 and achieve net-zero by 2050, publicly accounting for progress on this goal.
2. Designate an executive-level lead for work on reducing emissions and conduct an inventory of Scope 3 (supply chain) emissions by the end of 2024.
3. Develop and release a climate resilience plan for continuous operations by the end of 2023, anticipating the needs of groups at disproportionate risk of climate-related harm.



June 30 White House Event

White House/HHS Health Sector Climate Pledge Signees At-a-Glance



**Including federal health systems, over 1,080 hospitals have made the Pledge commitments*

- Justice at HHS
- Climate Change and Health Equity
 - What's New
 - Climate and Health Outlook
 - Actions
 - Health Care Sector Pledge
 - Resources
- Environmental Justice
 - Actions
 - Justice40 Initiative
 - Environmental Justice Index
 - Resources
- Glossary of terms
- About the Office of Climate Change and Health Equity (OCCHE)
- About the Office of Environmental Justice (OEJ)

Climate and Health Outlook

Welcome to the eighth edition of the Climate and Health Outlook from the Department of Health and Human Services (HHS) Office of Climate Change and Health Equity (OCCHE). The Climate and Health Outlook is an effort to inform health professionals and the public on how our health may be affected in the coming month(s) by climate events and provide resources to take proactive action. This webpage includes additional resources and information excluded from the PDF summary, including regional prospective forecasts.

[Download the Climate and Health Outlook for March 2023 - PDF](#)



Image source: https://scenarios.globalchange.gov/regions_nca4

U.S. Seasonal Forecast for Health: March 2023

Regional health forecasts for wildfire and drought

In the coming months, the Southeast, most of the Southern Great Plains, and parts of the Southwest will experience temperatures 0.9–3.6 °F (0.5–2 °C) warmer than normal. The Northeast, Hawai'i, and parts of the Midwest will experience temperatures 0.45–1.8 °F (0.25–1 °C) warmer than normal. Some of the Northern Great Plains will experience temperatures 0.45–0.9 °F (0.25–0.5 °C) warmer than normal. Other parts of the Northern Great Plains, along with parts of Alaska, the Northwest, and the Southwest will experience temperatures 0.45–0.9 °F (0.25–0.5 °C) colder than normal. Warming winters can cause earlier and longer allergy seasons, aggravating conditions like allergic asthma. Increasing winter temperatures can also contribute to earlier onset of vector-borne diseases like Lyme disease.

Alaska: Drought is absent across Alaska, and no development is expected by the end of March. Normal significant wildland fire* potential is also expected.

Northwest: Drought is favored to persist in much of Oregon and Idaho. Drought improvement and removal is favored in parts of eastern Idaho. Normal significant wildland fire* potential is also expected.

Southwest: Drought is favored to persist in parts of California, Nevada, Utah, Arizona, Colorado, and New Mexico. Drought improvement and removal is favored in much of California, Nevada, and Utah. Above normal wildland fire* potential is forecast for much of southern New Mexico.

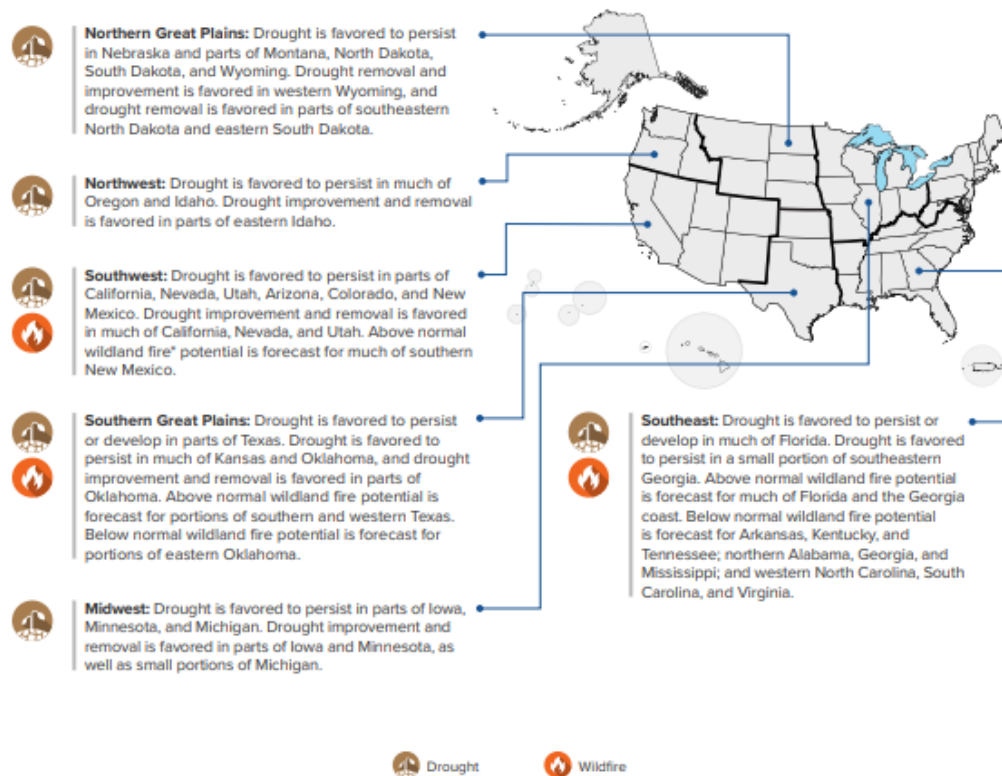
Hawai'i and Pacific Islands: Drought is absent across Hawai'i and the Pacific Islands, and no development is expected by the end of March. Normal significant wildland fire* potential is also

Climate and Health Outlook

ISSUED MARCH 2023

The Climate and Health Outlook is an effort to inform health professionals and the public on how our health may be affected in the coming month(s) by climate events and to provide resources for proactive action. An [associated webpage](#) includes additional resources and information.

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*Smoke from wildfires can impact health hundreds of miles from the site of the fire. Developed with data from the National Oceanic and Atmospheric Administration and the National Interagency Fire Center.

U.S. Monthly Drought Outlook
Drought Tendency During the Valid Period

Valid for February 2022
Released January 31, 2022

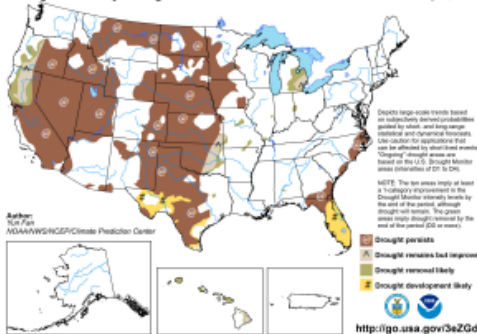


Figure. The National Weather Service Climate Prediction Center's Monthly Drought Outlook is issued at the end of each calendar month and is valid for the upcoming month. The outlook predicts whether drought will persist, develop, improve, or be removed over the next 30 days or so. For more information, please refer to drought.gov.

For February, drought is expected to improve over northern California and west-central Oregon, and to persist over the rest of the West, northern Rockies, and Great Plains, with potential drought development over parts of southern and western Texas. Existing drought is expected to improve in parts of eastern Texas to northern South Carolina, Oklahoma, and Arkansas. Drought improvement is favored across much of the Mississippi, Tennessee, and Ohio Valleys. Existing drought conditions across the Southeast are expected to persist with drought development likely throughout the Florida Peninsula by the end of the month. In Hawai'i, drought improvement or removal is anticipated across the Islands.

Drought can have direct and indirect impacts on health—increasing incidence of illness among people living in the affected area and worsening mental health outcomes as livelihoods are challenged.

Who is at high risk in the counties projected to have drought in February?




As indicated in the map to the left, **1,083 counties** across **26 states** are projected to have persistent/remaining drought or drought development in February. In these counties, the total population at risk is **109,253,219 people** and, of those, **1,325,890 people** work in agriculture. Of these counties:




- 360 (33%)** have a high number* of people aged 65 or over, living alone.
- 364 (34%)** have a high number of people living in rural areas.
- 210 (19%)** have a high number of people living in poverty.
- 129 (12%)** have a high number of people with frequent mental distress.
- 78 (7%)** have a high number of adults with asthma.
- 401 (37%)** have a high number of people without health insurance.
- 513 (47%)** have a high number of uninsured children.
- 137 (13%)** have a high number of Black or African American persons.
- 227 (21%)** have a high number of people with severe housing cost burden.
- 210 (19%)** have a high number of people in mobile homes.
- 176 (16%)** have a high number of people with one or more disabilities.
- 255 (24%)** are identified as highly vulnerable by CDC's Social Vulnerability Index.

*A high number indicates that these counties are in the top quartile for this indicator compared to other counties.

Drought Affects Health in Many Ways

Drought increases the risk for a diverse range of health outcomes. For example:

-  Low crop yields can result in rising food prices and shortages, potentially leading to **malnutrition**.
-  Dry soil can increase the number of particulates such as **dust and pollen** that are suspended in the air, which can irritate the bronchial passages and lungs.
-  Dust storms can spread the fungus that causes coccidioidomycosis (**Valley Fever**).

-  If there isn't enough water to flow, waterways may become stagnant breeding grounds for **disease vectors** such as mosquitos as well as viruses and bacteria.
-  Drought's complex economic consequences can increase **mood disorders, domestic violence, and suicide**.
-  Long-term droughts can cause **poor-quality drinking water** and leave inadequate water for hygiene and sanitation.

The forecast

The health effects

County-level risk factors



Who is at high risk in the counties with above normal wildland fire potential in March?

Wildland fires are occurring more frequently in the United States and present a health hazard for populations living close to a fire. As indicated in the map to the left, **127 counties** across **4 states** are projected to have above normal wildfire potential in March. In these counties, the total population at risk is **26,943,672 people**. Of these counties:

- 28 (22%)** have a high number* of people aged 65 or over, living alone.
- 91 (72%)** have a high number of people without health insurance.
- 75 (59%)** have a high number of uninsured children.
- 38 (30%)** have a high number of people with frequent mental distress.
- 26 (20%)** have a high number of adults with coronary heart disease.
- 52 (41%)** have a high number of people living in poverty.
- 49 (39%)** have a high number of people with electricity-dependent medical equipment and enrolled in the HHS emPOWER program.
- 51 (40%)** have a high number of people with severe housing cost burden.
- 55 (43%)** have a high number of people in mobile homes.
- 36 (28%)** have a high number of people with one or more disabilities.
- 66 (52%)** are identified as highly vulnerable by CDC's Social Vulnerability Index.

A high number indicates that these counties are in the top quartile for this indicator compared to other counties.

Figure. [The National Significant Wildland Fire Potential Outlook](#) identifies areas with above, below, and near normal significant fire potential using the most recent weather, climate, and fuels data available. This outlook is designed to inform decision makers on proactive wildland fire management.

In March, above normal significant fire potential is forecast for the Florida Peninsula and Georgia coast in March. Above normal potential is also forecast for southern New Mexico in March. Portions of south and west Texas are forecast to have above normal potential in March. Below normal significant fire potential is forecast for much of the northern tier of the Southern Area, from eastern Oklahoma into the southern Appalachians.

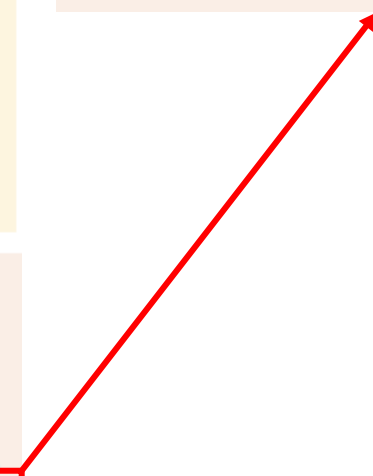
Significant fire activity was minimal across much of the United States during February thanks to timely periods of precipitation. However, a small increase in significant fires occurred over portions of the Southwest and Southern Areas from eastern New Mexico to the Gulf Coast.

2022 National Fire Activity Synopsis

Nationally, **68,988 wildfires** were reported in 2022, compared to 58,985 wildfires reported in 2021. Reported wildfires consumed **7,577,183 acres** nationally, compared to 7,125,643 acres in 2021. In 2022, the reported number of wildfires nationwide was noticeably higher than the 10-year average, while acres burned nationwide varied little from the 10-year average. However, there was considerable variation among the geographic areas. Alaska and the Southern Areas (AL, AZ, AR, FL, GA, KY, LA, MS, NM, NC, OK, SC, TN, TX, and VA) saw an increase in the number of fires when compared to their average fire statistics, and burned significantly more acreage. The Alaska Area burned greater than 170% of its average acres. The Southwest Area (AZ and NM) was 25% below its average number of fires, while burning greater than

90% more acres than average. The Southern California and Northwest Areas (OR and WA) were near their 10-year average for numbers of fires. However, in 2022, California accounted for the **highest number of structures lost to wildfire in one state**, including 492 residences. The other Areas in the country were noticeably lower than their 10-year averages for fire occurrences. For more information, see the [NIFC Wildland Fire Summary and Statistics Annual Report 2022](#).

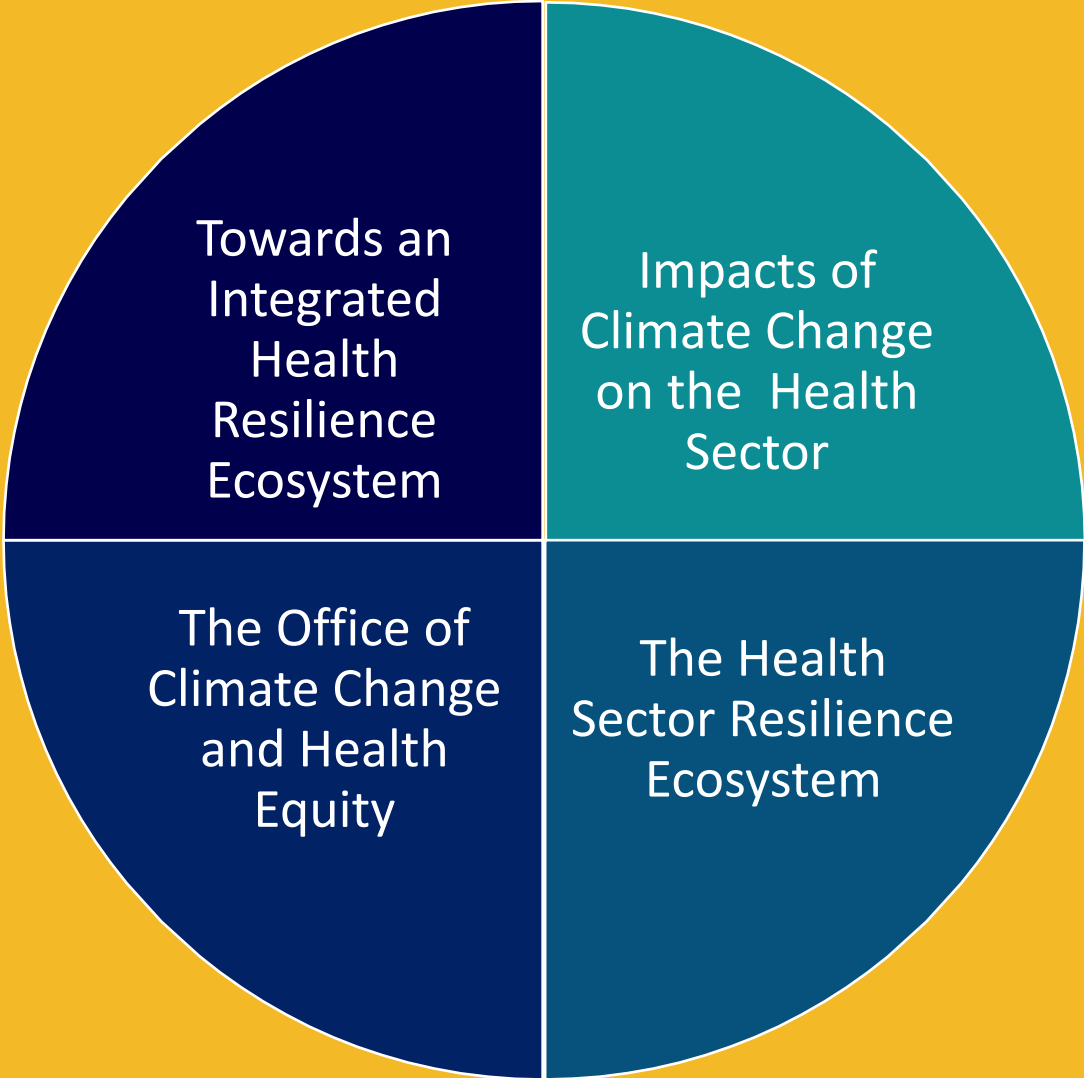
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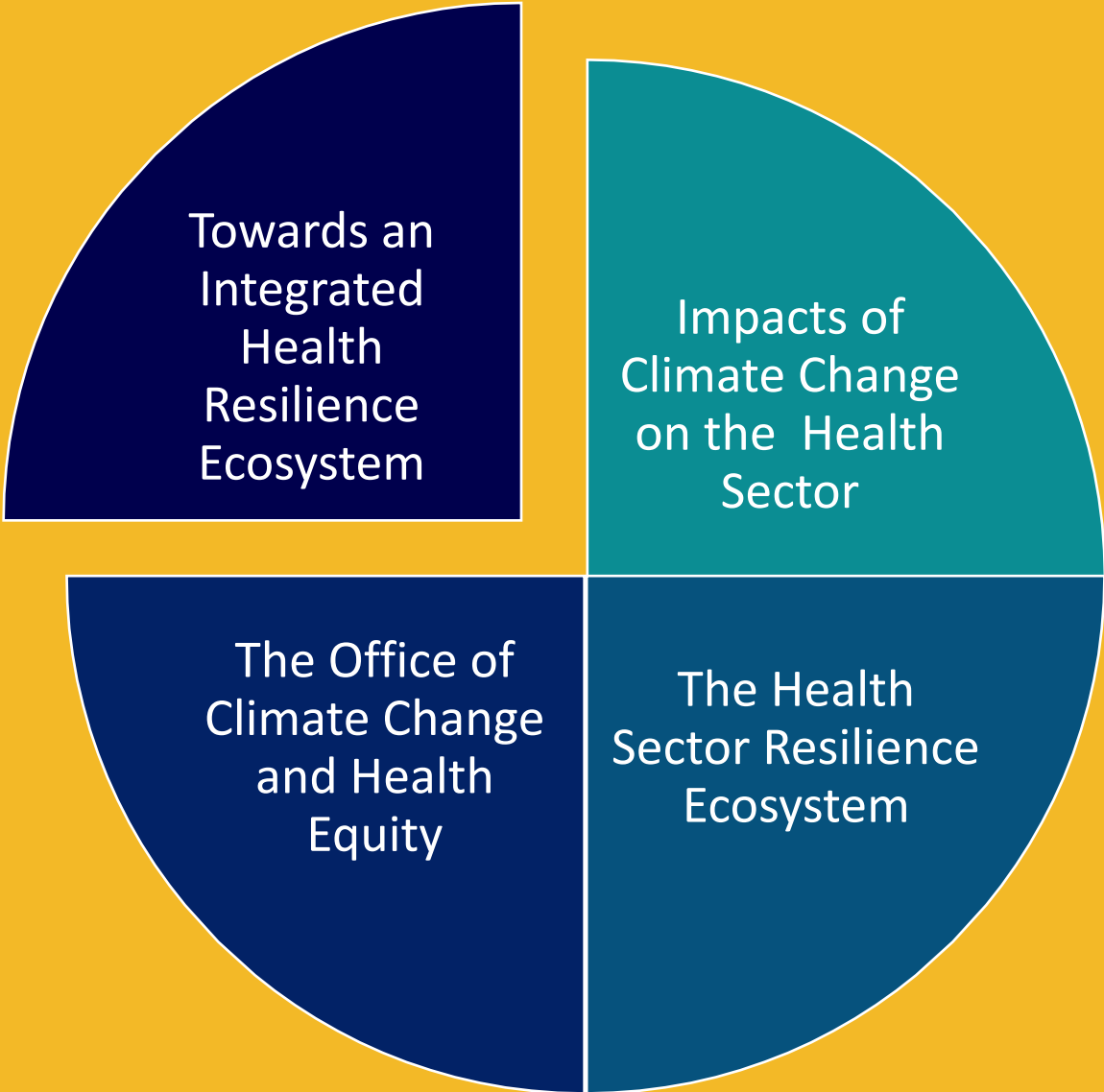
OCCHE Agenda for the coming year....

- HHS Climate Change and Health Equity Strategy Development
- Expanding awareness of resources through White House/HHS Health Sector Climate Pledge, IRA “Quickfinder” for the health sector, and other public private initiatives
- Partnership with federal health systems on decarbonization and resilience
- Creation of geospatial platform for OCCHE Climate and Health Outlook
- Revised Health Care Facilities Resilience Toolkit
- “Summer Suite” of Resources for Bedside Clinical Care Coordination

Towards an Integrated Health Resilience Ecosystem



Towards an Integrated Health Resilience Ecosystem

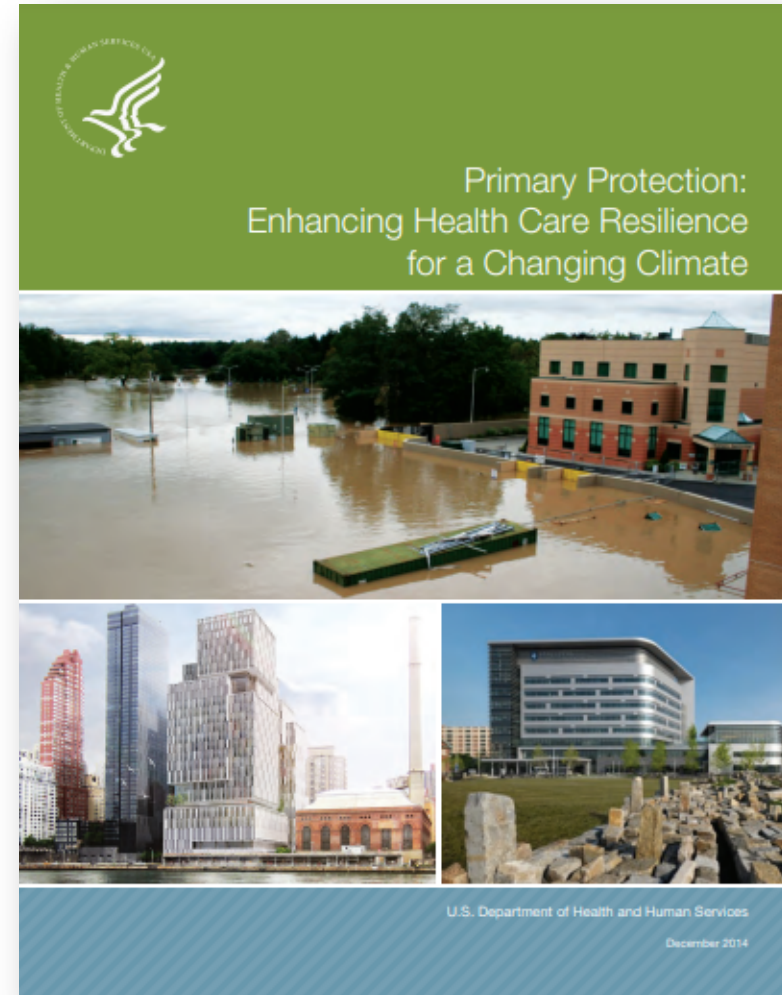


Components of an integrated resilience ecosystem



Support for Community Health Centers' Climate Resilience

- HRSA National Training & Technical Assistance Partnerships
 - **Preparedness for Emergencies and Environmental Impacts on Health**
- Workforce training
- Support for solar backup power & access to community solar
- Integrate protection from climate-related hazards in clinical care coordination to address SDOH
- Incorporate safety net health services in community climate resilience hubs



SCRHCFI Version 2.0

Dimension	Current Version	Planned Updates
<i>Understanding exposure</i>	Background information on climate-related threats	Updated studies, illustrations and links to dynamic mapping tools
<i>Assessment</i>	Static PDFs and Excel Files for self assessment	Updated assessment questions to determine strengths and gaps; customization for facility types, populations served
<i>Investigating options for actions</i>	Potential actions and case studies	Updated case studies and connections to new resources (e.g., funding, IRA incentives and technical assistance)
<i>Prioritizing and planning</i>	Tools and templates to prioritize action	Listing of suggested actions
<i>Taking action</i>	Instruction on improvement and implementation science	Tools to measure improvement and progress; access to peers and experts

Inflation Reduction Act: Potentially Relevant Incentives, Grants and TA

- Mitigation (examples)
 - **Commercial Buildings Energy Efficiency**
 - **Zero-emission Technology Community Grants**
 - **Low Emissions Energy Program (LEEP)**
 - **Incentives to Update Building Codes (State/Local gov.)**
- Adaptation (Examples)
 - **Environment and Climate Justice Block Grants**
 - **Coastal Community Grants**
 - **Funds for drought resilience in 17 Western (Reclamation) States**
 - **Air Quality monitoring in low-income communities**



“Climate-Health Resilience Hub”

Climate information, education, and civic engagement (esp. youth)



Place-based, trusted location(s)



Clinical and/or public health services (or has direct links/referrals)



Local control and locally-identified needs.



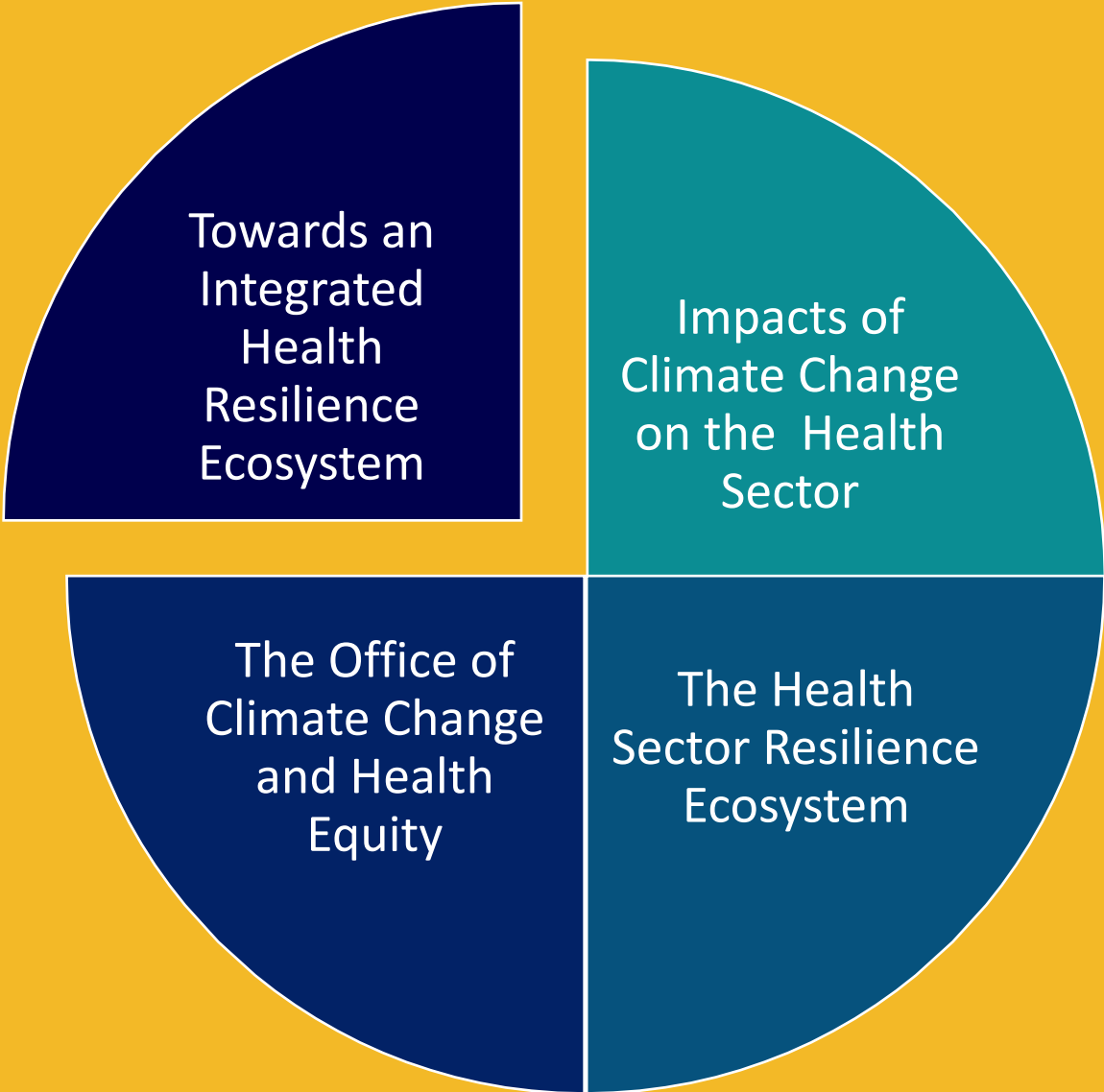
Linked to local hazard mitigation plan. Resources during disruptions, e.g.: power, broadband, heating/cooling, clean air, water



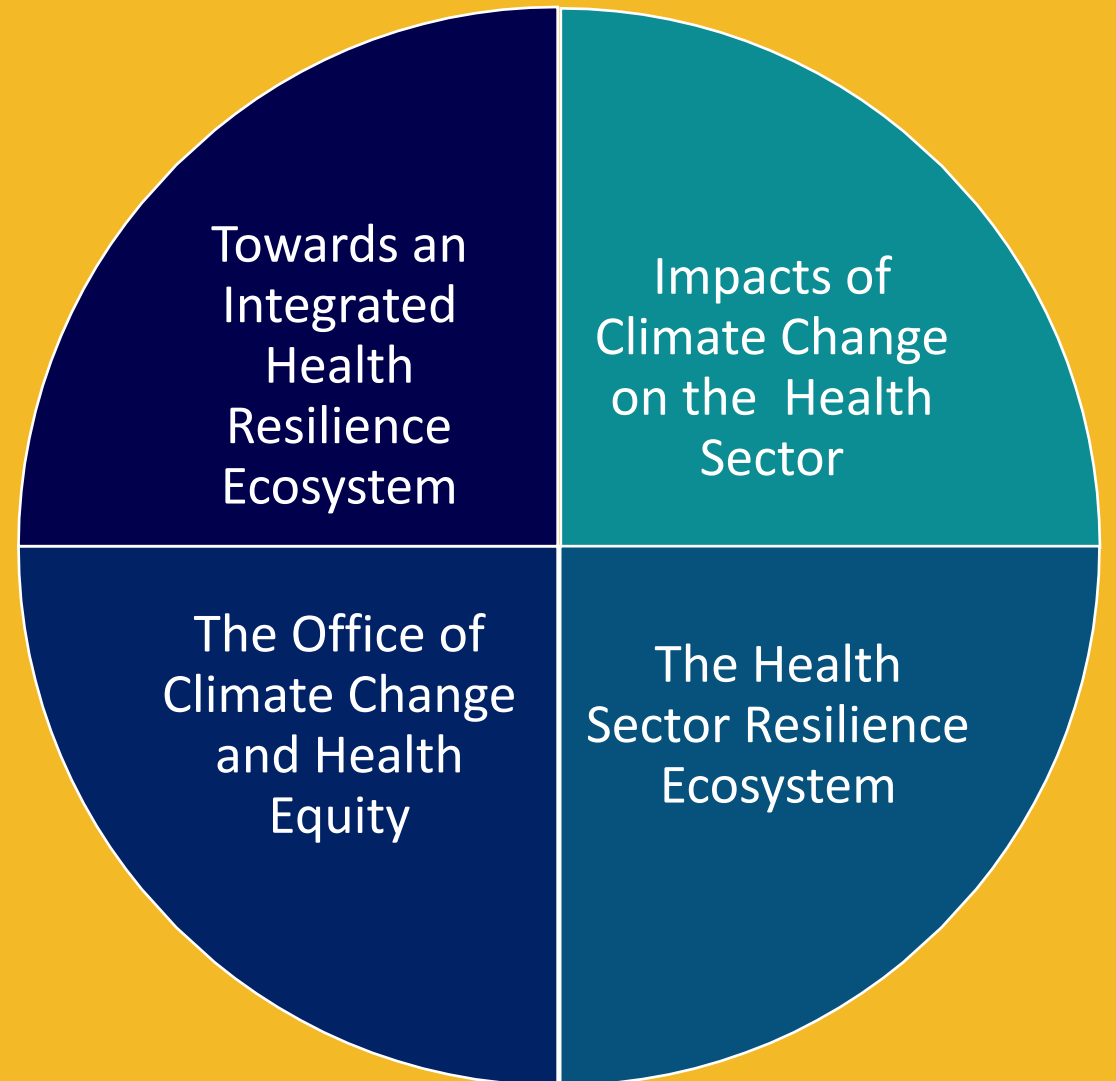
Year-round community benefits



Towards an Integrated Health Resilience Ecosystem



Questions?





OASH

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Climate Change
and Health Equity



Thank you!

Contact us: OCACHE@hhs.gov

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