

Climate Change & Health Implications

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Alliance of Nurses for
Healthy Environments

Mission: Promoting healthy people and healthy environments by educating and leading the nursing profession, advancing research, incorporating evidence-based practice, and influencing policy.

Impact of Climate Change on Human Health

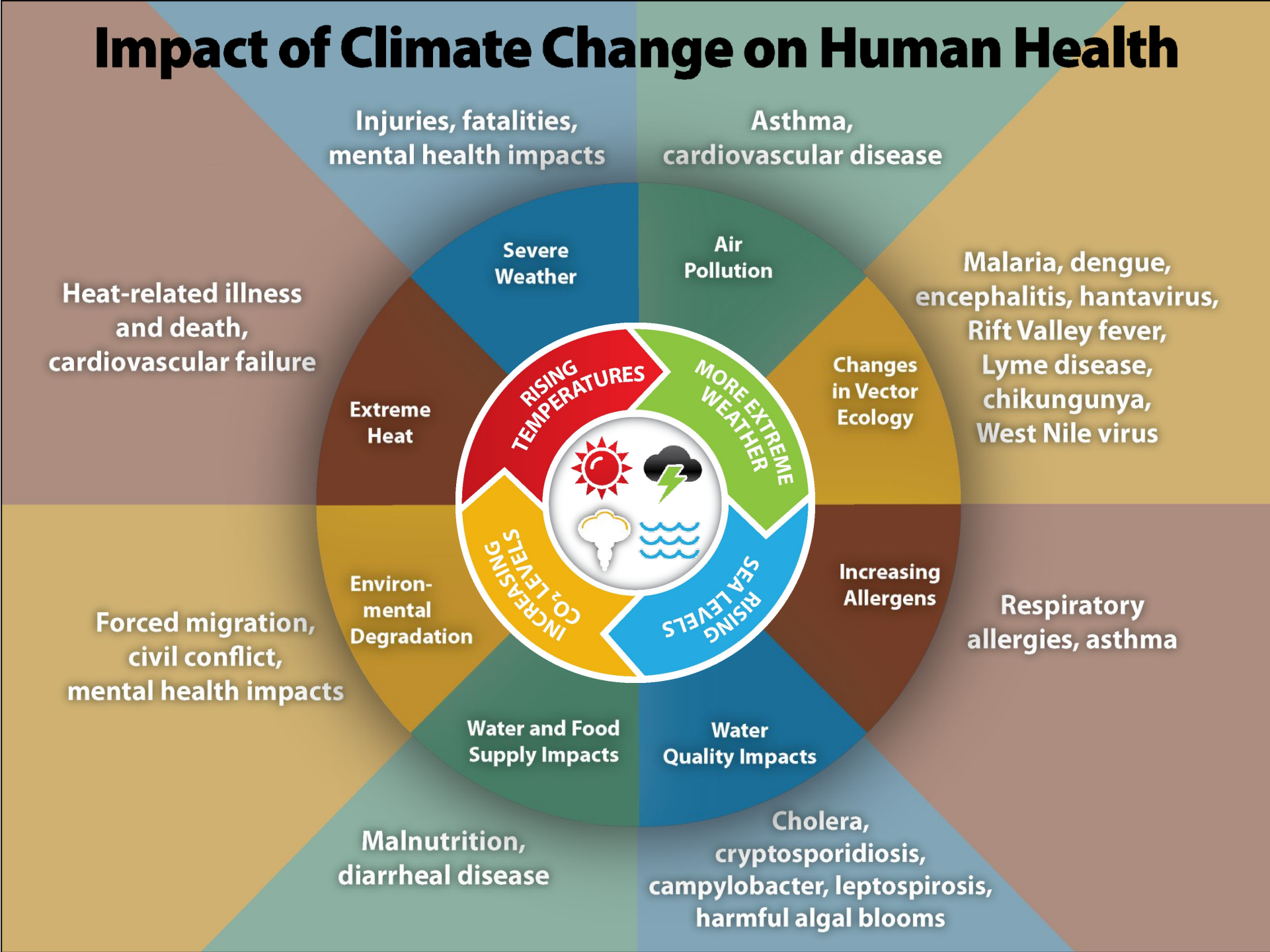






Image: au_tiger01, 2005



Image: au_tiger01, 2005



Image: Kelly Michals, 2006



Drought & Agriculture Impacts

Vulnerability to the Health Impacts of Climate Change at Different Life Stages



Mothers and babies

Adverse pregnancy outcomes such as low birth weight and preterm birth have been linked to extreme heat events, airborne particulate matter, and floods.



Infants and toddlers

Young children's biological sensitivity places them at greater risk from asthma, diarrheal illness, and heat-related illness.



School age and older children

The behaviors and activities of older children increase their risk of exposure to heat-related illness, vector-borne and waterborne disease, and respiratory effects from air pollution and allergens.

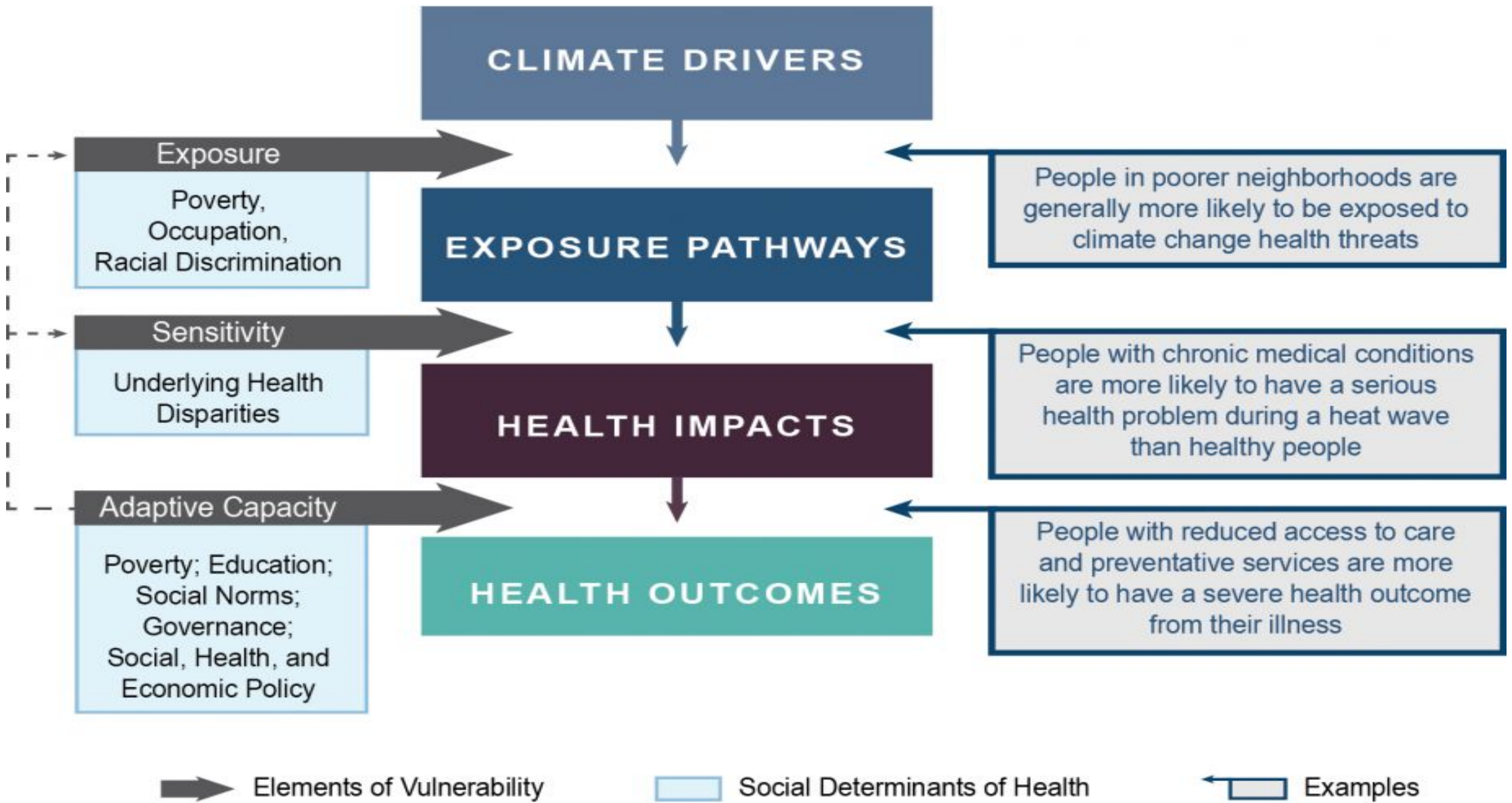
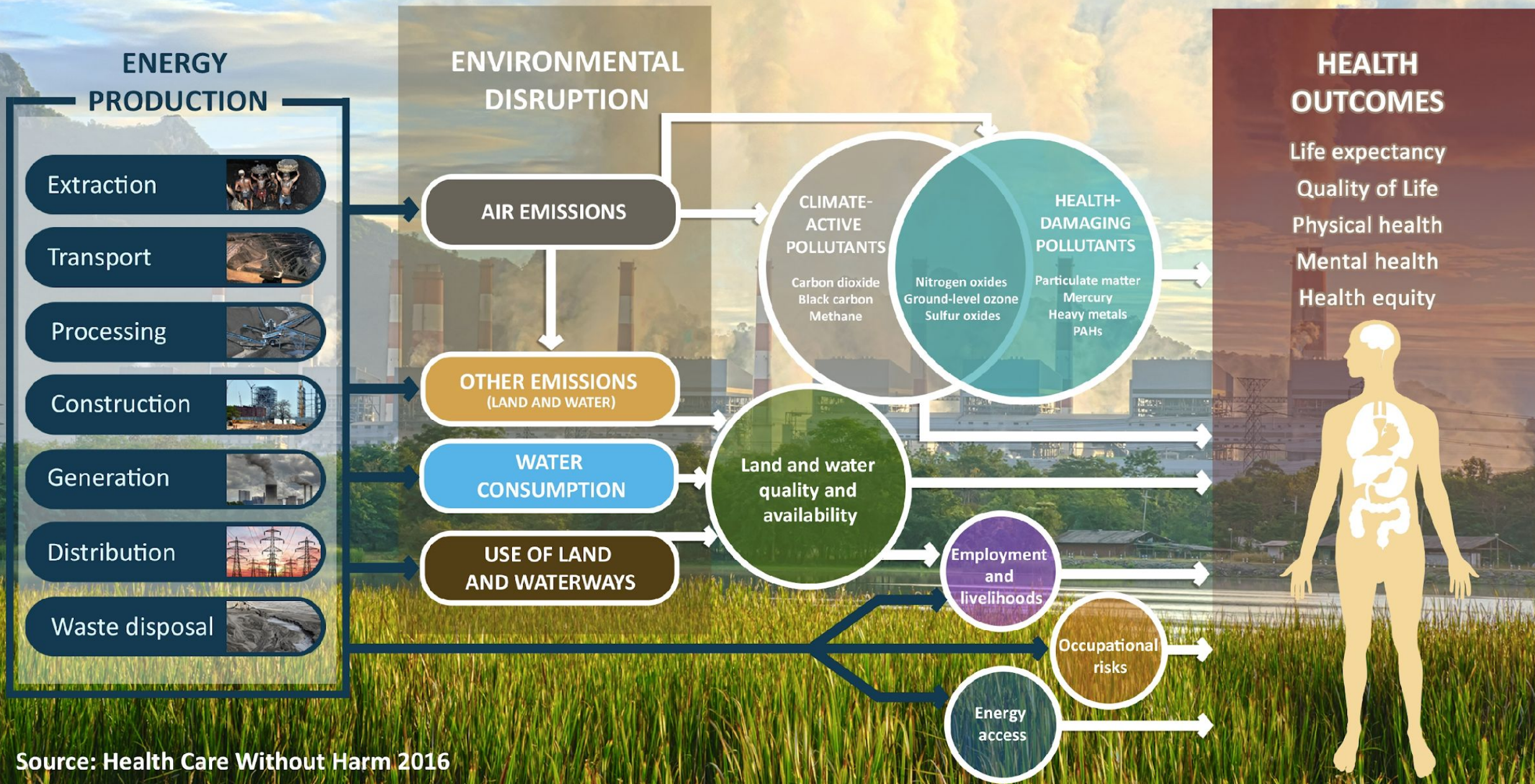


Figure: USGCRP, 2016

The Health Impacts of Energy Choices



A photograph of an oil field with several pumpjacks (oil pumps) in the foreground and middle ground. The sky is a clear, pale blue. The pumpjacks are dark metal structures with long, curved arms. The ground is dry and dusty. The text "Health Impacts of Oil & Gas" is overlaid in white, centered across the image.

Health Impacts of Oil & Gas

Health Risks in Texas

FIGURE 1
Cancer Risk from Oil and Gas Toxic Air Pollution in Texas Counties

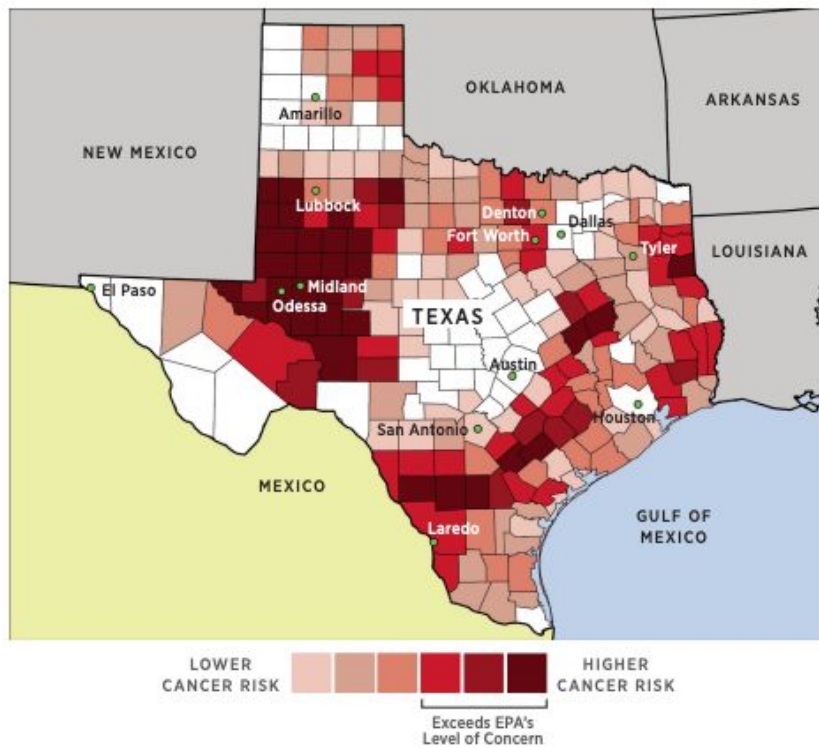
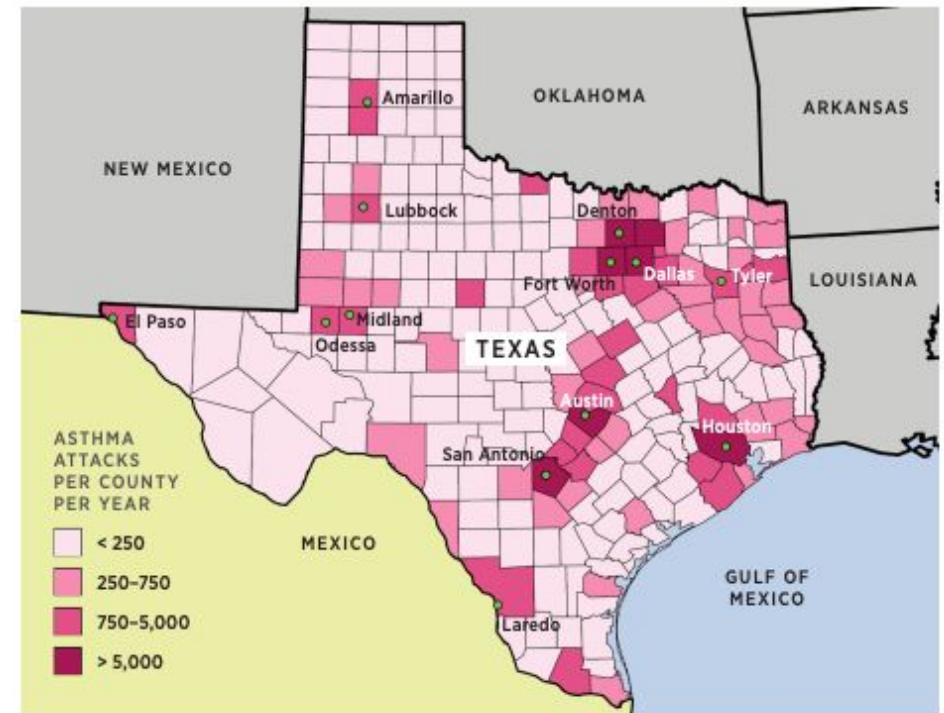


FIGURE 2
Texas Asthma Attacks in Kids Attributed to Oil and Gas Air Pollution



Source: [Clean Air Task Force & Earthworks, 2017](#)

Fracking & Health Impacts

Air & water pollution

Noise & light pollution

Occupational health and safety risks for workers

Social & economic impacts

Earthquakes & seismic activity

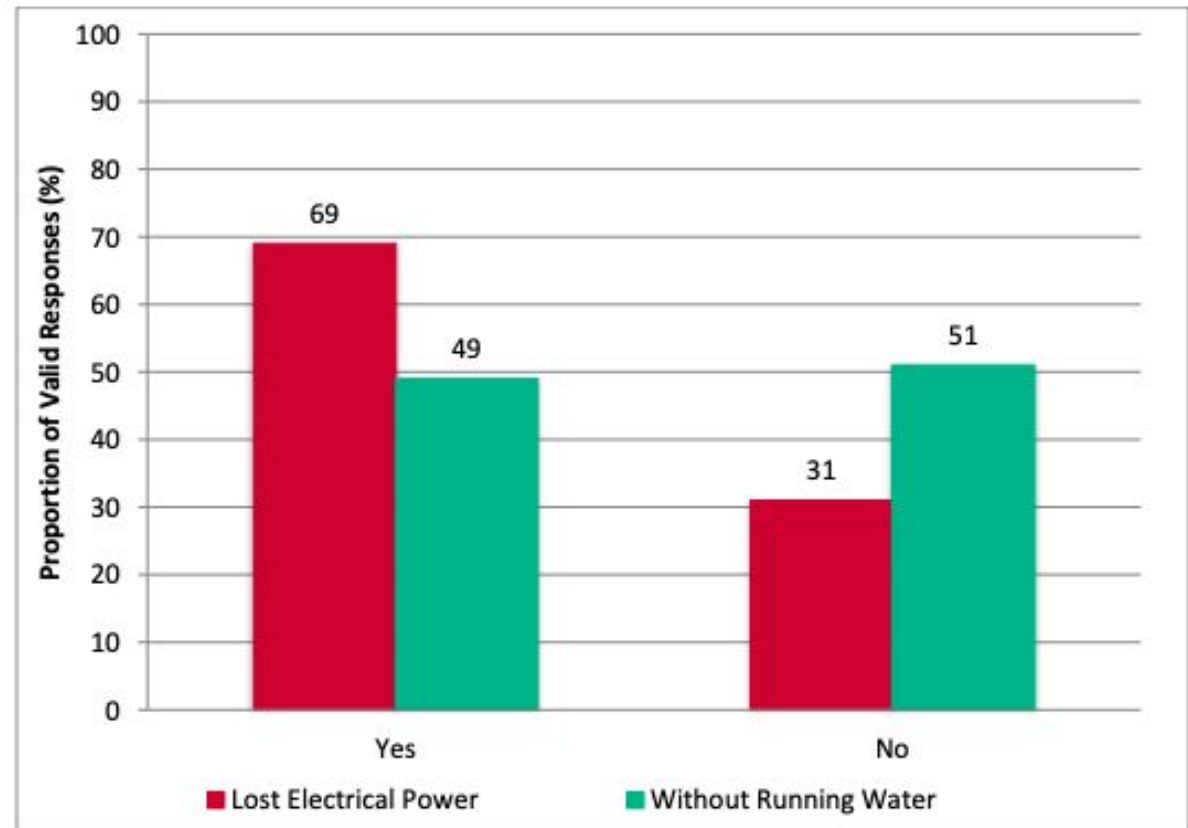
Threats to ecosystems



Public Health & Utilities

Loss of Power and Water During the 2021 Winter Storm

Figure 3. Did You Lose Electrical Power or Were You Without Running Water at Any Time During the Winter Storm?



Source: [Hobby School of Public Affairs, University of Houston, 2021](#)

Racial Disparities & Winter Storm Uri

Figure 4. Ethnicity/Race and Loss of Electrical Power in Home During the Winter Storm

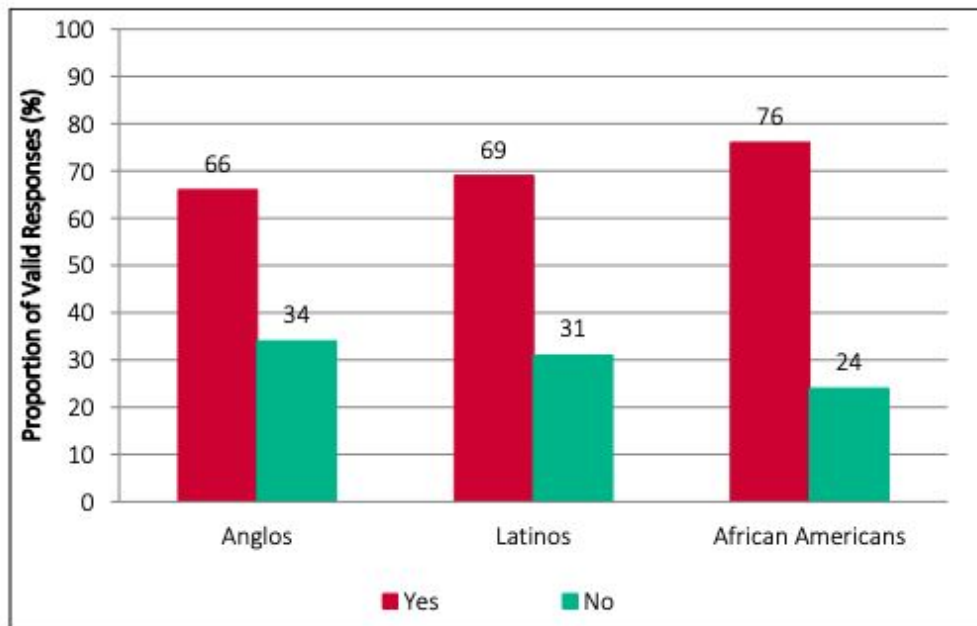
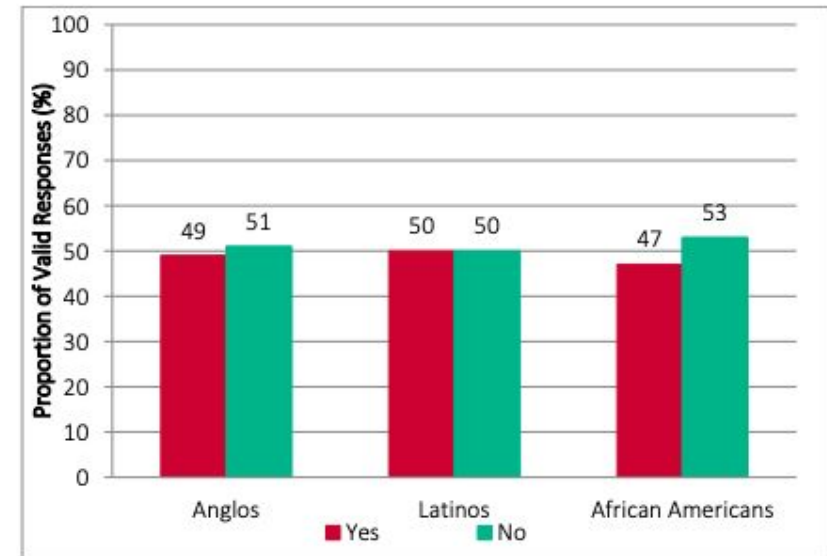


Figure 6. Was Your Home Without Running Water at Any Time During the Winter Storm?



Public Health Implications

Cold injuries, such as hypothermia

Carbon monoxide poisoning

Electricity required for medical therapies

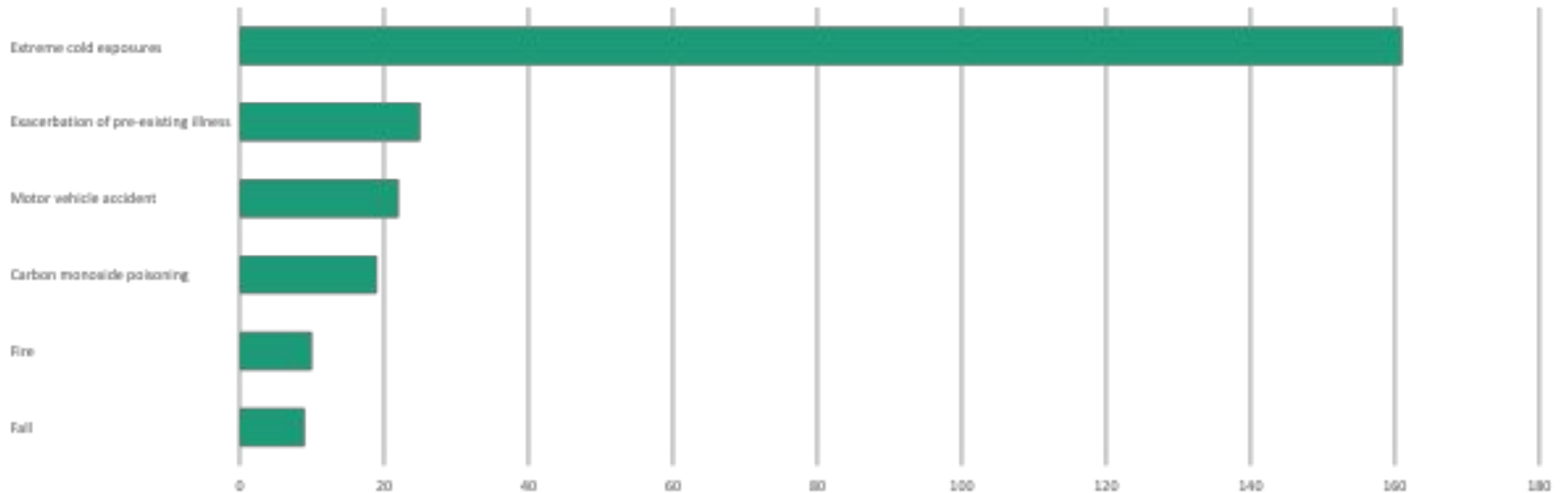
Contaminated water and water shortages

Destruction of property

Reduce access to health care services

Mental health impacts

Causes of Death Linked to Winter Storm Uri



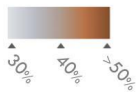
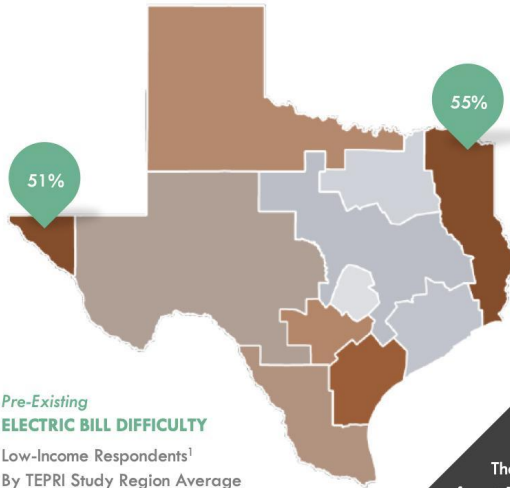
Source: Texas Department of Health and Human Services, 2021



Energy Insecurity & Health

Energy Insecurity: Why it Matters

Economic fragility is the leading factor for households experiencing energy insecurity. The relationship between economic circumstances and the ability to afford adequate energy are compounded by other factors, including presence of children in the home, condition of housing, and appliance efficiency. TEPRI is tracking how the COVID-19 crisis deepens energy insecurity in Texas and seeking partners to co-develop effective, timely response solutions.



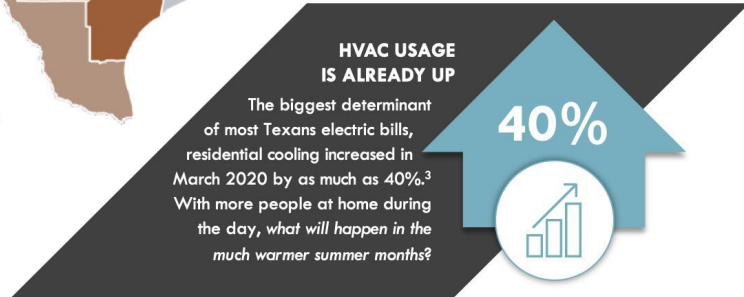
NO FINANCIAL BUFFER

The share of American households who were already without sufficient resources to pay an unexpected \$400 expense.⁴

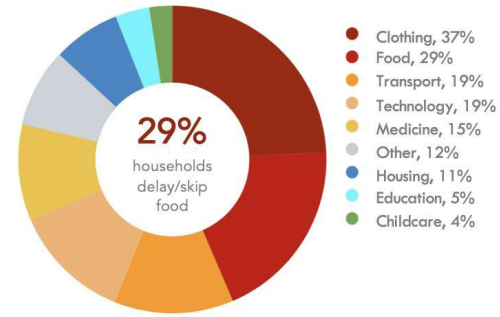


SINGLE-PARENT HOUSEHOLDS

The share of Texas children who live in a single-parent household.⁵ How are these households balancing economic uncertainty, school closures, and increased energy needs?

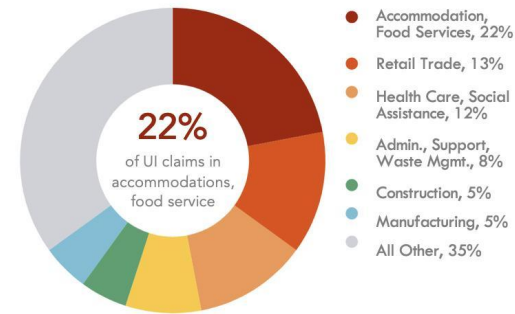


HOUSEHOLDS MAKE TRADE-OFFS TO AFFORD ELECTRICITY BILLS



Low-income households make difficult trade-offs. When asked if utility bills cause them to delay or skip necessary spending on a list of categories, the most common responses were clothing, food, transport and technology.²

THREE MILLION TEXANS EMPLOYED IN TWO MOST AFFECTED INDUSTRIES



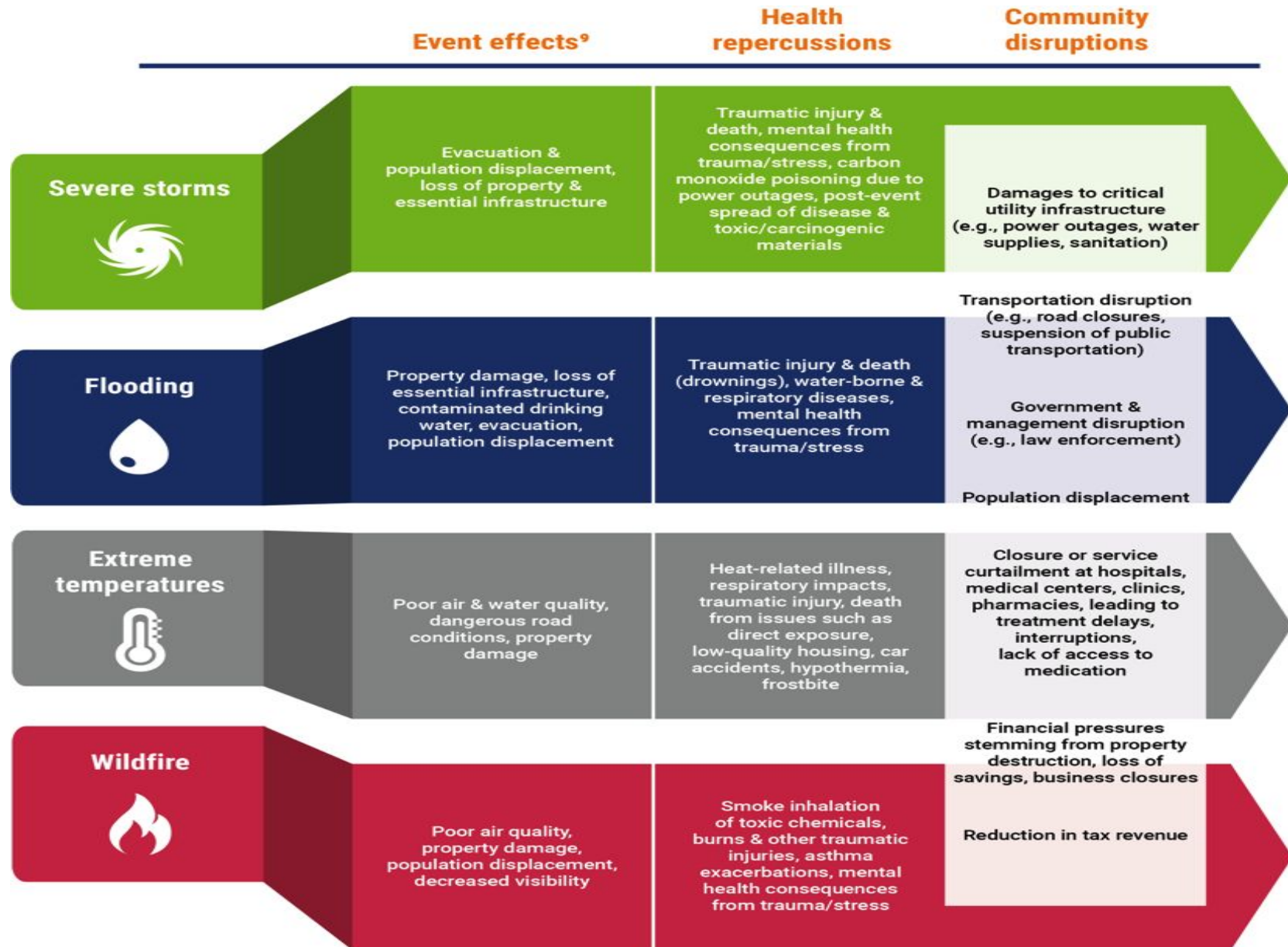
Unemployment Insurance (UI) claims in Texas were up 1,735% in the first four weeks of the economic slow-down. Before the crisis, there were approximately three million Texans employed in the top two industries listed above.⁶

1) Low-income defined as 0-80% of Area Median Income (AMI); 2) TEPRI, 2019; 3) Pecan Street Inc., 2020; 4) The Board of Governors of the Federal Reserve System, 2019; 5) County Health Rankings, 2020; 6) Texas Workforce Commission, 2020. Details for all references are available here: [txenergy-poverty.org/2020/04/blog-energy-insecurity-covid19](https://www.energy-poverty.org/2020/04/blog-energy-insecurity-covid19).

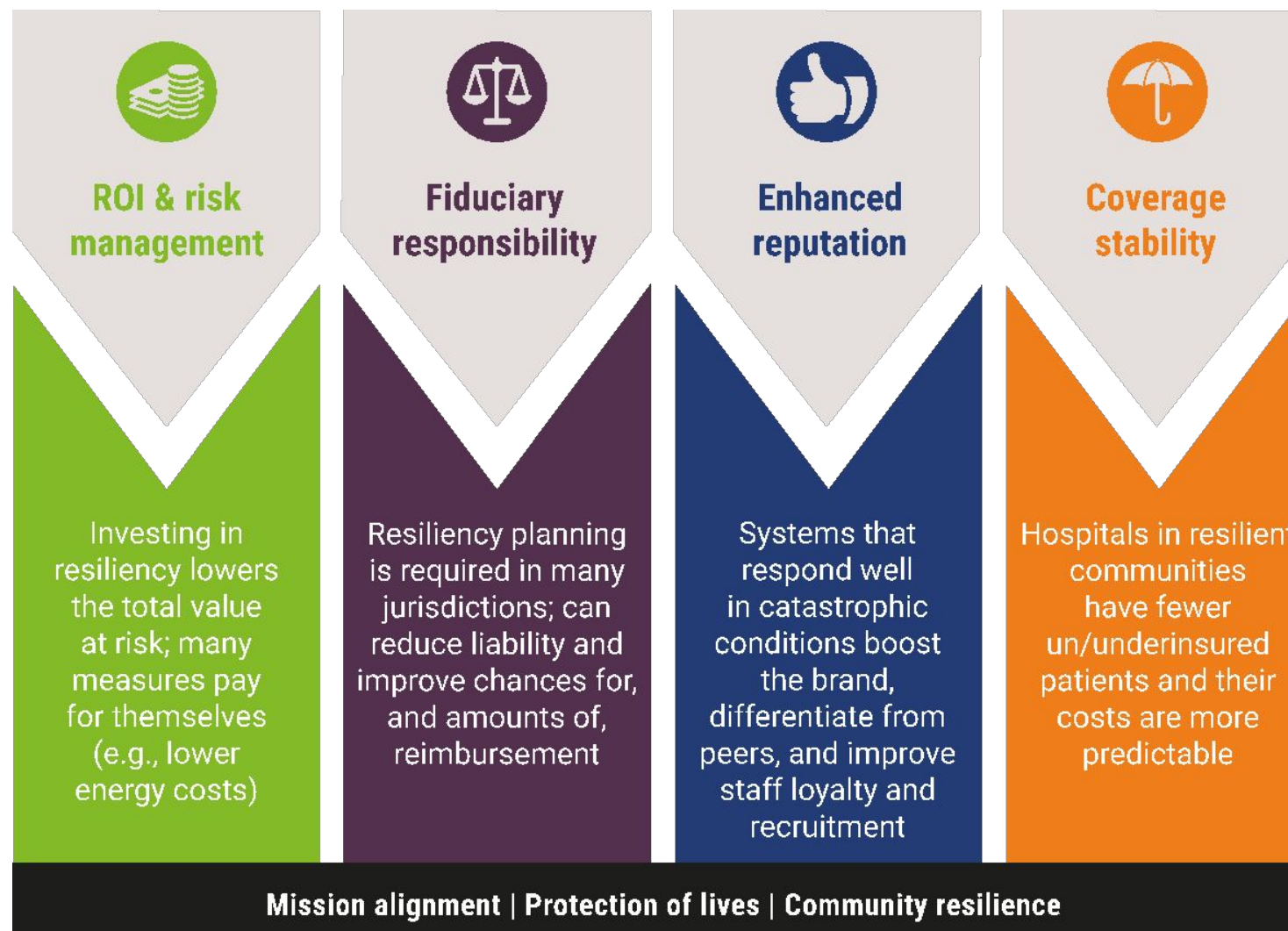


On the front
lines of climate
change

Risks of being ill-prepared



Benefits of preparedness



A lesson in preparedness: Texas Medical Center

Hurricane Allison in 2001

☐ Not prepared

Hurricane Harvey in 2017

☐ Open for business

Source: Health Care Without Harm

Texas Medical Center: Learning from the past

1. The event: Devastation during Hurricane Allison

- 1,000-year historic flood with 3 feet of rain
- 22 dead, \$5B in damages to county
- Widespread systems failure and property damage at TMC
- Lost \$2B in TMC research (e.g., 60K tumor samples, 30K research animals)

3. The rebuild: \$50M in infrastructure upgrades

- Hazard Mitigation Plan
- Flood Management Group
- Sustainable design measures
- Engagement of stakeholders
- On-site utility plant
- Flood alert system

5. The focus now

- Mitigating future business continuity risks by sharing lessons learned with local authorities
- Advocating for improved regional resilience measures like elevating streets and improving flood protection

2. The lessons: Protocols & infrastructure

- Housing of vital utility and mechanical controls in the complex's basements made it extremely vulnerable to flooding
- Insufficient infrastructural and engineering fortification against flood damage
- Lack of flood protocols made it difficult to coordinate an emergency response

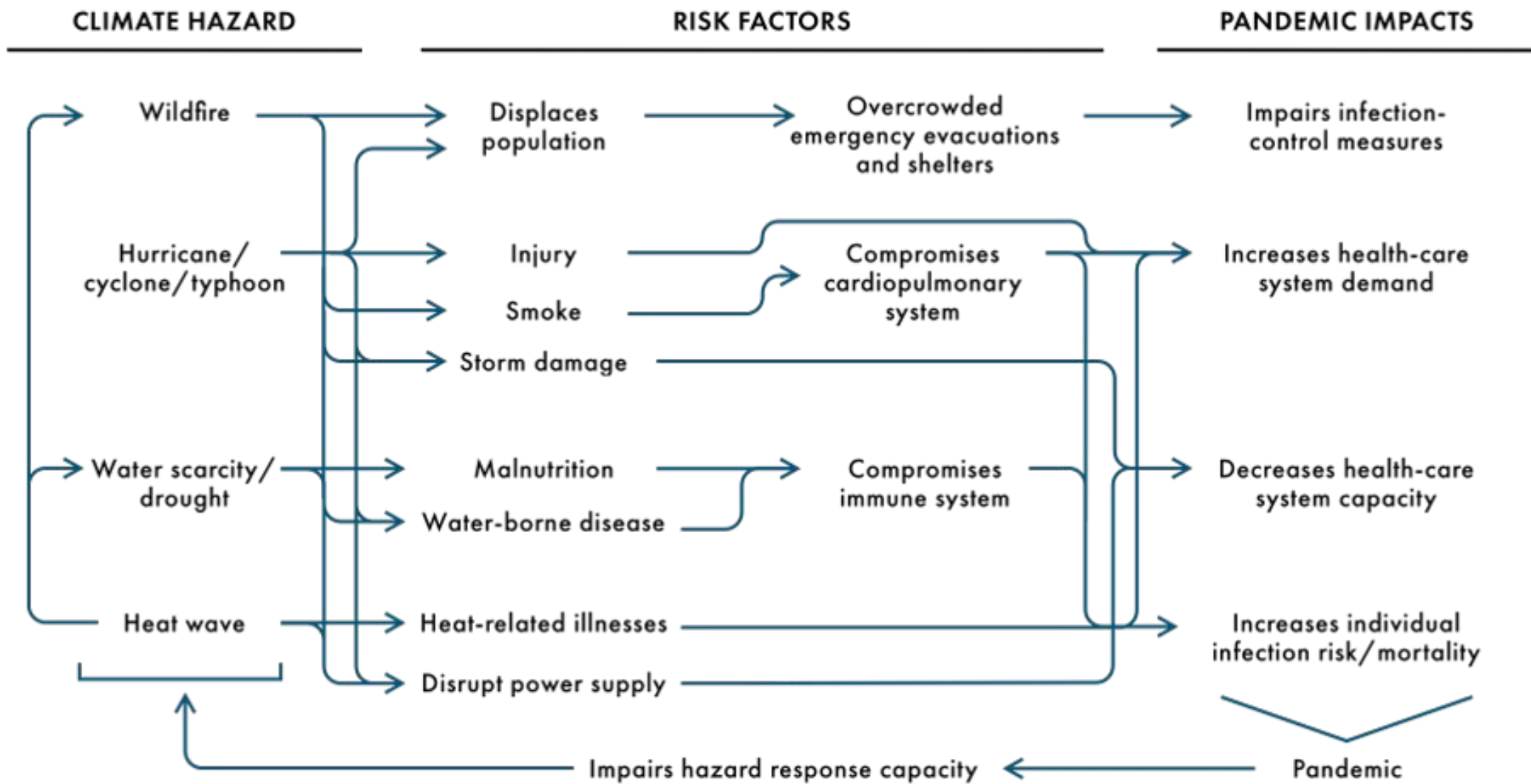
4. The rebound: Preparedness for Hurricane Harvey

- Largest amount of rainfall on an urban area in US history
- All 23 hospitals and emergency rooms in the complex stayed operational
- Storm gates protected all basements and subterranean parking on campus



Winter Storm Uri & Healthcare Impacts

Climate Change & COVID-19



Source: [Centre for International Governance Innovation, 2020](#)

Solutions



Health in All Policies Approach



First Steps in Healthcare Preparedness



Hospital Preparedness Program

The Hospital Preparedness Program is a federally-funded initiative that supports regional health care system preparedness in order to improve patient outcomes, minimize the need for supplemental state and federal resources during emergencies, and enable rapid recovery. The program operates through local health care coalitions (HCCs) that bring together diverse and often competitive health care and emergency management organizations. A list of all HCCs can be found here:

<https://www.cms.gov/Medicare/Provider-Enrollment-and-Certification/SurveyCertEmergPrep/Downloads/By-Name-by-State-Healthcare-Coalitions.pdf>

Include climate risks in your facility and regional emergency preparedness planning and implementation?



US Climate Resilience Toolkit

The Department of Health and Human Services added a health care-specific chapter to the US Climate Resilience Toolkit. This "Sustainable and Climate-Resilient Health Care Facilities Toolkit" includes an overview document and a suite of online tools and resources that highlight emerging best practices for developing sustainable, climate-resilient health care facilities. The guide provides information about threats from extreme weather events and how organizations around the country are responding. It is available here: <https://toolkit.climate.gov/topics/human-health/building-climate-resilience-health-sector>

Vulnerability assessments for healthcare facilities

Just Transition

A path or plan for those workers displaced by transformations in the economy. ([Labor Network for Sustainability](#)).

Vision-led, unifying and place-based set of principles, processes, and practices that build economic and political power to shift from an extractive economy to a regenerative economy ([Climate Justice Alliance](#)).

Framework for a fair shift to an economy that is ecologically sustainable, equitable and just ([Indigenous Environmental Network](#)).



Collaboration Across Sectors

Questions?

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