Understanding and Assessing Indirect Impacts from Natural Disasters – A Focus on Health

NAIC 2023
SPRING NATIONAL MEETING
THURSDAY, MARCH 23RD
12:00 PM – 1:30 PM (ET)
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.

Source: https://www.ncei.noaa.gov/access/billions/
2022 losses => $165 billion in economic costs (60% insured) & 474 fatalities

• These costs include:
  o physical damage to residential, commercial, and municipal buildings;
  o material assets (content) within buildings;
  o time element losses such as business interruption or loss of living quarters;
  o damage to vehicles and boats;
  o public assets including roads, bridges, levees;
  o electrical infrastructure and offshore energy platforms;
  o agricultural assets including crops, livestock, and commercial timber;
  o and wildfire suppression costs, among others.

• These disaster costs do not take into account losses to:
  o natural capital or environmental degradation;
  o mental or physical healthcare related costs,
  o the value of a statistical life (VSL);
  o or supply chain, contingent business interruption costs.

Estimates should be considered conservative with respect to what is truly lost, but cannot be completely measured due to a lack of consistently available data.

Source: https://www.ncei.noaa.gov/access/billions/
Measuring Disaster Losses

**Direct** = Immediate effect due to direct contact with the hazard (e.g., loss of life, physical and monetary loss)

**Indirect** = Occurs as a result of and in response to the direct impacts in the medium-long term (e.g., relief, recovery, reconstruction costs, longer term socio-economic effects)

Source: Making communities more flood resilient: The role of cost benefit analysis and other decision-support tools in disaster risk reduction
Thinking About (Indirect) Impacts in Space & Time

IDA IMPACTS
THROUGH THURSDAY
• Flooding rainfall
• Storm surge
• Damaging winds
• Road closures
• Energy & commerce sector disruptions
• AccuWeather RealImpact™ Scale: 4 for U.S.
# U.S. Disasters from 2003 to 2022 - Human Impacts

<table>
<thead>
<tr>
<th>Disaster Type</th>
<th>Total Deaths</th>
<th>Number Injured</th>
<th>Number Affected</th>
<th>Number Homeless</th>
<th>Total Affected</th>
</tr>
</thead>
<tbody>
<tr>
<td>Drought</td>
<td>181</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Earthquake</td>
<td>5</td>
<td>345</td>
<td>9,489</td>
<td>120</td>
<td>9,954</td>
</tr>
<tr>
<td>Extreme Temp</td>
<td>696</td>
<td>31</td>
<td></td>
<td></td>
<td>31</td>
</tr>
<tr>
<td>Flood</td>
<td>625</td>
<td>387</td>
<td>11,462,881</td>
<td>17,300</td>
<td>11,480,568</td>
</tr>
<tr>
<td>Landslide</td>
<td>79</td>
<td>43</td>
<td>1,338</td>
<td>150</td>
<td>1,531</td>
</tr>
<tr>
<td>Storm</td>
<td>6,262</td>
<td>9,038</td>
<td>96,431,485</td>
<td>129,948</td>
<td>96,570,471</td>
</tr>
<tr>
<td>Volcanic activity</td>
<td></td>
<td></td>
<td>2,500</td>
<td></td>
<td>2,500</td>
</tr>
<tr>
<td>Wildfire</td>
<td>297</td>
<td>937</td>
<td>1,006,377</td>
<td>55,245</td>
<td>1,062,559</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>8,145</strong></td>
<td><strong>10,781</strong></td>
<td><strong>108,914,070</strong></td>
<td><strong>202,763</strong></td>
<td><strong>109,127,614</strong></td>
</tr>
</tbody>
</table>

Source: https://public.emdat.be/

*Significant source of indirect impacts to potentially ensue*
Closing of Insurance Claims - Hurricane Harvey

Average Number of Days to Close a Claim:
- Coastal Bend: 87.1 days
- Houston Area: 51.3 days
- Central Texas: 48.7 days
- All Other: 51.6 days
- All Regions*: 59.8 days

Status of Claims as of Reporting Date:
- Coastal Bend: 3%
- Houston Area: 2%
- Central Texas: 1%
- All Other: 2%
- All Regions*: 2%

Percentage of Reported Claims:
- Coastal Bend: 69%
- Houston Area: 33%
- Central Texas: 51%
- All Other: 49%
- All Regions*: 43%

Floodwaters have increased concentrations of semi-volatile organic compounds beyond safe thresholds.

Homes with greater flood damage after a hurricane have higher levels of mold growth and airborne mold spores.

Exposure to airborne chemicals increases due to the loss of electricity (e.g., carbon monoxide) and post-hurricane restoration (e.g., debris removal and infrastructure repair).
Research Literature
“Stylized Facts”
Immediate Health Effects of Natural Disasters

• Examples include injury, electrocution, drowning, violence

• Most prominent among more vulnerable populations
  • > 50 percent are likely to be age 75+
  • More likely for those who **shelter in place**
    • disproportionately suffer from **chronic illness**
    • disproportionately **poor** or members of other traditionally **marginalized groups**, such as minorities and disabled

• High ED visits from those on electronic medical devices
Immediate Effects - Disruptions in Healthcare Delivery

• Serious damage to medical facilities, which can significantly **impair access to care**.
  • Hospitals
  • Free-standing treatment centers (dialysis centers, cancer treatment centers)
  • Exacerbates existing medical conditions for some due to untimely management
  • Displaced individuals with complex medical histories especially likely to find accessing care difficult

• Disruptions in medical transport
• Power outages are known to disrupt access to Electronic Health Records (EHRs) and healthcare devices more generally.
Long-Term Health Impacts

- **Excess death due to all causes, especially for seniors**
- **Associations with cancer and exacerbation of existing cancers**
  - e.g., particulate matter following wildfires; toxins and carcinogens in flood water
  - Post- Harvey, residents were exposed to toxins and carcinogens in standing water for **months**.
  - Existing cancer patients may also suffer a disruption of time-sensitive cancer management.

- **Exacerbation of chronic illnesses** (e.g., diabetes, cardiopulmonary diseases, cancers)
  - Leading causes of **excess** deaths post-Maria were heart disease, diabetes, Alzheimer’s, and septicemia

- **Exacerbation of asthma is common, particularly in children.**
  - “Wealth of evidence” documenting a relationship between **mold exposure** and lower respiratory problems

- **Infectious diseases** (44% of diseases occurred a year+ following a sample of hurricanes)

- **Stress-related mental health problems** (increasing over time post-event; **through 3 years+**)
  - Stress can also aggravate symptoms associated with comorbidities
  - Those reporting “a lot of fear and distress” during Hurricane Sandy were at much increased risk of being hospitalized **two years later**.
Direct & Indirect Health loss values have been shown to matter in economic analyses

![Pie chart](https://www.nibs.org/files/pdfs/NIBS_MMC_MitigationSaves_2019.pdf)

**Figure 1:** Total costs and benefits of meeting the 2018 IRC and IBC.

Sampling of Industry & Regulatory Actions

• **Health Insurance Providers Actions Concerning Natural Disasters**
  
  o If members
    ▪ are in a mandatory evacuation zone they can refill their prescriptions right away, even if they are not due to be refilled
    ▪ have been displaced, they may see an out-of-network provider at in-network benefit levels and replace medical equipment and supplies, if needed
  
  o Outreach by text message, email, and phone to remind them to refill and pick up prescriptions
  
  o Expanded engagement with Medicare and commercial members in potentially impacted areas to ensure member safety and access to emergency services
  
  o Members are eligible for $0 virtual visits through Teladoc for non-emergency health conditions
  
  o Availability of a bilingual 24/7 hotline for immediate emotional support at no extra cost, even for non-members
  
  o Suspension of prior authorization requirements for all prescriptions and medical services, covering medical services regardless of participating or non-participating provider networks, and proactively contacting high-risk members to ensure their medical needs are met

• **Florida OIR Notice to Industry during Hurricane Ian**

  This notice is a reminder that all health insurers, managed care organizations, and other health entities must comply with provisions of [section 252.358, Florida Statutes](https://www.flstateStatutes.org/statutes/title02/ch252.html), which allows for early prescription refills in the event the Governor issues an Executive Order declaring a State of Emergency. This mandate remains in effect until the Governor’s Executive Order is rescinded or expires.
Panel Members

Karam Ahmad
Colorado Health Institute

Grace Arnold
Minnesota Department of Commerce

Dale Hall
SOA Research Institute

Maanasa Kona
NAIC Consumer Rep, Georgetown University
Reference Slides
# Potential Short-, Medium-, and Long-Term Health Impacts of Hurricanes

## Short-term
- Drowning from floodwater
- Injury from debris during storm, evacuation, or mitigation (for example preparing home for storm), electrocution from downed power lines
- Threats to high-risk individuals (for example dialysis patients, cardiac patients, or persons in nursing homes) in connection with evacuation, medical centers without power
- Auto accidents during evacuation or resulting from unsafe roads
- New or exacerbated mental health conditions, including anxiety, post-traumatic stress disorder, substance use disorder, or depression at the time of the incident, evacuation or displacement

## Medium-term
- Infections – skin, gastrointestinal, eye, ear resulting from unsafe conditions
- Unsafe premises, lack of food or water, contamination to food or water, carbon monoxide poisoning from poor ventilation
- Impaired access to usual healthcare for displaced people
- New or exacerbated mental health conditions, including post-traumatic stress disorder, substance use disorder, depression, or anxiety following incident, evacuation, or displacement
- New or escalated physical abuse / maltreatment

## Long-term
- Consequences from disruption to preventive care
- New or exacerbated mental health conditions, including post-traumatic stress disorder, substance use disorder, depression, or anxiety following incident, evacuation, or displacement
- Respiratory ailments due to mold growth in damaged homes or dust from repair activities – asthma, chronic obstructive pulmonary disease

## DIFFERENT MEASURES OF HURRICANE SEVERITY

<table>
<thead>
<tr>
<th>Storm</th>
<th>Date Range</th>
<th>Landfall Date</th>
<th>Category at Landfall (^{17})</th>
<th>Damage (^{2})</th>
<th>US Deaths Direct / Indirect (^{2})</th>
<th>Displaced Population (^{18})</th>
<th>Affected Population (^{19})</th>
<th>Evacuations (^{20})</th>
</tr>
</thead>
<tbody>
<tr>
<td>Harvey</td>
<td>8/17/2017 to 9/1/2017</td>
<td>8/25/2017</td>
<td>4</td>
<td>$136.3B</td>
<td>68/35</td>
<td>848,000</td>
<td>12,272,331</td>
<td>Evacuations began 8/24. Half of deaths in Harris County which was evacuated late.</td>
</tr>
</tbody>
</table>

Interactive Mapping Tool

Health and Climate Index - For Web

Source: https://www.coloradohealthinstitute.org/research/2022-climate-change-health-index
Question 4: Risks
Summarize the current or anticipated risks that climate change poses to your company. Companies answering yes by line of business, 2012–2018

P&C

Life

Health

Source: National Association of Insurance Commissioners
Question 6: Mitigate
Summarize steps the company has taken to encourage policyholders to reduce the losses caused by climate change-influenced events. Companies answering yes by line of business, 2012–2018

Source: National Association of Insurance Commissioners
Question 7: Mitigate
Discuss steps the company has taken to engage key constituents on the topic of climate change. Companies answering yes by line of business, 2012–2018

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<thead>
<tr>
<th></th>
<th>P&amp;C</th>
<th>Life</th>
<th>Health</th>
</tr>
</thead>
<tbody>
<tr>
<td>2012</td>
<td>742 average responses</td>
<td>248 average responses</td>
<td>149 average responses</td>
</tr>
<tr>
<td>2018</td>
<td>80%</td>
<td>50%</td>
<td>30%</td>
</tr>
<tr>
<td>2018</td>
<td>80%</td>
<td>50%</td>
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Source: National Association of Insurance Commissioners
References – Stylized Facts


