



SCENARIO PLANNING CARDS

Extreme Weather Events

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Introduction

The Flood, Food System, and Heat Scenario cards and Extreme Heat Worksheet were developed as a flexible tool to help communities, organizations, and educational programs start the conversation on extreme heat. The basic format is a worksheet and a card deck. The card deck consists of WHAT, WHO, and HOW cards. The WHAT cards indicate several events or impacts that can occur during a heat wave. The WHO cards identify different groups of people who experience heat in different ways and may be at greater risk for heat-related illnesses. The HOW cards provide reactive and proactive actions that communities can implement to respond to or mitigate the impacts of extreme heat. Many of these actions may be familiar to the group, but others may be completely new. Ideally, the HOW cards encourage participants to think creatively about what resources they have, what resources they need, and which actions to prioritize in their communities.

The cards can be applied in multiple ways and delivered across several modalities (in-person meetings, classroom activity, online workshop, etc.).

The following guide presents several options for using the cards and accompanying worksheet; however, feel free to adapt the cards and content for your own use.

In addition to the heat cards, this guide can be adapted for the Flood Cards and Food System Cards.

The general goals of the card deck and worksheet are to:

- Inform stakeholders of heat, flood, or food system risks and challenges.
- Facilitate initial conversations on developing heat action, flood risk, or food system preparedness plans.
- Assist decision-makers in prioritizing resilience actions for their communities.
- Teach students about the impacts of extreme heat, flood, and food system challenges and potential actions to take.

The intended general learning outcomes:

- Understand how extreme events pose health risks across a community.
- Identify specific actions to prevent illness and injuries across vulnerable populations.
- Create feasible short- and long-term solutions to reduce extreme weather impacts.

As with the cards, please feel empowered to develop your own goals and learning outcomes for using the cards.

Use Case #1

In-person Workshop

Use case #1 – in-person workshop on extreme weather awareness and planning for your community

This first use case can be completed in as little as 2-hours or up to 4-hours, depending on how much time you would like to spend introducing the topic, working with data sources, and allotting time for in-depth discussions.

Focusing on your own community, you may want to introduce the problems of extreme heat, flooding, or food system risks, as well as recent trends observed in your community.

What data or evidence suggests our community should be concerned about heat?

Recommended time (45 minutes)

A useful tool for exploration is the [National Risk Index](#), which includes historical exposure to various climate-driven community risks. You can take additional steps to assess your community's future risk by following this [step-by-step guidance](#), which points you to tools that provide location-specific risk data and future predictions of climate-driven risks.

Another interesting source of information is [this article](#), which examines the economic impacts of climate change across the U.S. Risks are presented as a function of GDP at the county level.

For example, according to the [New York State Climate Impacts Assessment](#) (2024) the average daily temperatures have risen by approximately 2.6°F. This trend does not show signs of changing, with future daily temperatures predicted to rise 5°F to 11°F higher over the next several decades.

The type of observed change above may help start a conversation among the group on what changes others in the room have observed. A [study published in 2022](#) shows as humidity increases, our ability to withstand higher temperatures decreases. Hot days are starting to feel warmer to us due to an increase in humidity. For more details on this, you can show the video in [this link](#), produced by the Weather Channel.

Ask participants to share their personal observations of climate impacts in your area.

- What changes have you noticed as a result of heat in our community?
- How has this impacted you?
- What concerns you most about these changes?

Start the Exercise

1

Introduction: 1-hour or longer

To begin the exercise it is helpful to assess the community and identify critical data, such as the size of the community, the population and key demographics such as age, income, and education. It may be helpful to consider some of the social determinants of health within the community such as healthcare access, health insurance, language, transportation, built environment (urban areas with a lot of concrete and little to no greenspace tend to be hotter), social networks, and other factors that may influence a person's ability to stay healthy during extreme events.

Once you have the key characteristics of your community defined and critical data (either formal data from the resource provided earlier or through anecdotal evidence developed through conversation you can set the stage for an extreme heat event (or flood or food systems). You may want to break into smaller groups to work through different impacts, populations, and solutions, as each group receives different cards to create a slightly different scenario. After each group has worked through their cards and the worksheet, you can go around the room to report out on different lessons learned and ideas for prioritized actions.

2

Prompt 1 for Heat (adjust as needed for flood or food systems)

The National Weather Service has indicated a heat wave is on the horizon. Several days of high temperatures are expected; however, the exact level of heat and number of days are uncertain. To provide additional details on the exact nature of the heat wave, provide each group with three WHAT cards (there are 24 WHAT cards; if you have more than eight groups, you may want to provide fewer cards to each group).

The first set of questions on the worksheet (at least 15 minutes):

Indicate the events listed on the WHAT cards you received:

How might the events listed on the cards impact your community?
Describe the economic, social, and health implications of these events on your community.

What initial actions or steps might you begin to take to respond to the event?
Which actions would you prioritize and why?

What resources do you currently have or need to effectively respond to the events?



3

Prompt 2 (at least 15-minutes)

After identifying initial responses, challenges, and needs to the events on the WHAT cards, you should receive three WHO cards (there are 24 WHO cards, adjust accordingly for the number of groups you have). The WHO cards identify several groups of people who may experience extreme heat in different ways. Some groups are more sensitive than others to extreme heat or have different levels of exposure.

- Indicate the groups listed on the WHO cards.
- In what ways might the groups on the WHO cards be at risk from the events happening (the WHAT cards)?
- What actions should be taken to ensure the safety and well-being of the "WHO"? Are these the same actions you identified earlier or different? If they are different, why?



4

Prompt 3 (at least 15-minutes)

The last set of cards are HOW cards and they offer several solutions or responses to extreme heat. Some of the solutions are reactive and can be implemented rapidly, while others are proactive, longer-term solutions that may require more planning and resources to reduce the impacts of extreme heat in your community. Provide each group with three to four HOW cards (there are 30 HOW cards). Now explore the HOW cards and write down which cards you received.

The HOW cards include a variety of actions to take to protect the public against heat-related illness. Many of these actions you might already be familiar with, while other options might be new to you.

- Which actions, or HOWs, might you prioritize immediate responses to protect the WHO groups from the WHAT events? Are there longer-term actions you would ideally like to implement if you had the funding and resources to do so?
- What actions could you implement within your community, with the resources you currently have?
- What actions would need additional resources to implement? What would implementation entail?

Group Discussion

After groups have completed their discussion of their unique scenario, invite each group to share out the top takeaways from their discussion, briefly summarizing the WHAT, WHO, and HOW cards they worked with (20 minutes)

Ask each group to share what they learned and what surprised them about the activity.

To help promote action from the exercise, you can initiate a discussion on what actions are a priority for the community. Among the prioritized actions, discuss which could be implemented within your community, and start building the pieces of a heat action plan (30 minutes to 2 hours, depending on your goals for the session).

- For your community, which actions are a priority for keeping people safe during an extreme heat event?
- Based on the responses, are there actions you could put into practice should an extreme heat event occur in your community? If so, which ones?

- Who would be in charge of activating these actions? What partnerships need to be in place to ensure these actions are carried out effectively?
- Are there additional roles and responsibilities to consider?
- What longer-term actions could you start developing plans for?



Use Case #2

Online Workshop (1-hour)

To use the cards in an online webinar, it may be best to provide a description of a community. You could set up the cards, prompts, and questions in a shareable online collaborative space, such as Google Slides, and assign people to specific breakout rooms to fill in their responses. Other online whiteboard workspaces, such as Mural, Miro, or Canva. You can set up the whiteboard spaces ahead of the webinar and share the extreme heat worksheet before the meeting. You may also want to share guidance on how to use a whiteboard space for those unfamiliar with these tools.

Fictional community

The city of Blueton has begun the recovery process after experiencing unprecedented levels of heavy rainfall and flooding after a recent hurricane. Although Blueton is located inland, warmer ocean temperatures strengthened the hurricane, pushing it inland and unleashing over a foot of rain over several days. In addition to the astounding levels of rainfall, landslides blocked roads into Blueton for ten days, leaving the city cut off from outside help and food became scarce. After this experience the Blueton government wants to ensure if and when future events disrupt the local food system, it is prepared to provide food to people.

The mayor of Blueton has assembled several stakeholders, including you, to help develop a food systems resilience plan. You will work with stakeholders with different backgrounds to identify the risks for Blueton and possible solutions.

Blueton is located in a temperate climate with four seasons. The region typically receives an average rainfall of 31 inches per year, but does experience flooding due to its proximity to a large lake, and various rivers and streams. The city is prone to river-based flooding and urban flooding, also known as pluvial or overland flooding. Urban flooding occurs when heavy rainfall overwhelms sewer systems or exceeds absorption rates in low-lying areas.

The city routinely has heavy, lake effect snow, with an average of one to two snow storms per year, resulting in 4 or more feet of snow, shutting down roads for several days. The city has also seen an increase in the number of heat waves, with roughly three heat waves per summer.

The city has a relatively young population distribution compared to the national average – 6.4% of the population is under 5 years old (compared to 5.6% nationally), 22.9% is under 19 years old (compared to 21.7% nationally), and 10.7% is at least 65 years old (compared to 17.3% nationally).

Fictional community continued

By race, the population is 43.1% White only, 35.2% Black, 0.4% American Indian and Alaska Native, 6.6% Asian, and 7.1% more than two races. Fifteen percent of the population is Hispanic.

The median household income in Blueton is lower than the national average; \$62,367 in Blueton versus \$75,149 nationally. The median monthly rent is higher than the national average; \$1,399 in Blueton versus \$1,268 nationally. Most jobs in Blueton are in the food production and processing sector, as one major distribution center is located in the city, housing 21 wholesalers and 400 farmer market tenants, distributing fresh produce to 5000 retailers across the region.

Comparable with national averages, there are 2.43 persons per household, 22.3% of residents speak a language other than English at home, and 91.9% of households have broadband Internet. While the proportion of residents with High School diplomas is similar in Blueton to nationwide (89.7% in Greenville versus 89.1% nationally), the proportion of residents with a Bachelor's degree is lower in Blueton than nationally (30.6% in Blueton versus 34.3% nationally). More Blueton residents do not have health insurance than the nationwide proportions (14% in Blueton versus 9.3% nationally), and Blueton's poverty rate is similar to the national average (11.9% in Blueton and 11.5% nationally).

Example online whiteboard using Canva (online [access here](#))

Canva tips

Essential shortcuts

- Sticky notes**
Search & create sticky notes.
You can add sticky notes to pages, slides, and boards.
Use Magic Write to create a variety of your notes.
- Lines**
Select & to generate lines.
Select lines to edit their style or color online or add new.
- Shapes**
Select & to generate shapes.
Select & to generate a rectangle, circle, or other shapes.
- Magic commands**
Image with Magic commands.
Type a prompt and search for relevant images, stickers, charts, icons, and more.

Helpful features

- Elements tab**
Access a vast library of images, shapes, patterns, and more to enhance your designs.
- Tools tab**
Access drawing tools, tables, and more to help you create.
- Embedded content**
Embed video, audio, and more to make your designs more interactive.
- Real-time collaboration**
Share your designs and collaborate with others in real-time.

Breakout Group 1

Tabletop Demo

1 Introduction

Assignment: July 16, 2023

The health director receives a call from a concerned citizen reporting a case of heat-related illness in a community. The health director immediately calls the local emergency services to respond to the situation.

The health director is reporting that the health director keeps on updating on the situation and what the plans are moving forward for managing what seems like a heat emergency. He is particularly concerned that a number of preventable deaths might occur due to several days of heat-related risk.

Unfortunately, due to staff turnover, the Greenville Health System's emergency response is slow. To the city, each of the residents is not in a position to try to figure out what is going on. Their objective is to try to figure out the situation and come up with an answer to the health director's question: "How do we prevent heat-related deaths?"

2 WHAT - The WHAT cards provide several concurrent events that could happen within a community during a heat wave.

Based on the WHAT statements, what action or steps might you take to respond to the events? Use the sticky notes to add your ideas.

WHAT

Air Quality Index is 125 (Unhealthy for sensitive groups, Change).

60% of homes experience a basement.

3 days with an average temperature of 85°F. Sun 70°F high 85°F, 100% humidity.

3 WHO - The WHO cards depict several populations that may experience extreme heat in different ways and thus may have additional needs or require different interventions to prevent heat-related illness.

In what ways might the groups on the WHO cards be at risk from the events currently unfolding? Use the sticky notes to add your ideas.

WHO

Elementary school children enrolled in summer school.

Managerial outdoor workers.

People with cognitive impairments.

4 HOW - The HOW cards include a variety of actions to take to protect the public against heat-related illness.

Get an air-conditioner.

Find building codes, water heaters.

Coordinate outreach for mobile residents.

Many of these actions you might already be familiar with, while other options might be new to you. Which actions, or policies might you prioritize immediate responses to protect the WHO groups from the WHO?

HOW

Background

Due to concerns about extreme heat, you have been asked to join a task force to help the community of Greenville respond to extreme heat. Geographically, Greenville sits at the base of a major mountain range and has temperate weather year-round but it experienced a significant heat wave a few years ago, resulting in over 100 deaths.

Although the community has not had an event of the same magnitude, temperatures in the summer have been increasing with more days with moderate heat risk, compared to summer a decade ago.

You will work in teams to suggest actions to take within the community to respond to events as they unfold.

About Greenville City, Greenville County, Greenville is a midsize city in the Southern region of the United States with a total population of 484,328. The population is spread across the city's area, with the population per square mile being 2,300.

The city has a relatively young population distribution compared to the national average. 4.4% of the population is under 5 years old compared to 5.5% nationally. 22.3% under 19 years old compared to 21.7% nationally, and 15.7% at least 65 years old compared to 17.3% nationally. By race, the population is 43.1% White only, 35.2% Black, 0.4% American Indian and Alaska Native, 6.6% Asian, and 7.1% more than two races. Fifteen percent of the population is Hispanic.

The median household income in Greenville is lower than the national average, \$68,367 in Greenville versus \$75,149 nationally. The median monthly rent is higher in Greenville than the national average, \$1,399 in Greenville versus \$1,268 nationally. Most jobs in Greenville are in the technology and finance sectors, as two major banking headquarters reside in the city. Compared with national averages, there are 2.43 persons per household, 22.3% of residents speak a language other than English at home, and 91.9% of households have broadband Internet in Greenville. While the proportion of residents with high school diplomas is similar to Greenville's nationwide (89.7% in Greenville versus 89.1% nationally), the proportion of residents with a Bachelor's degree is higher in Greenville than nationally (30.6% in Greenville versus 34.3% nationally).

More Greenville residents do not have health insurance than nationwide proportions (14% in Greenville versus 9.3% nationally), and Greenville's poverty rate is similar to the national average (11.9% in Greenville and 11.5% nationally).

Use Case #3

Class lesson

You can use any of the scenario cards or all of them to introduce the impacts of climate change to your students. The cards can be used in planning, policy, health, and science courses.

The cards can be used over one or two class sessions. The first session can cover the science and impacts of climate change, as well as its effects on communities.

You can then introduce the discussion on climate change in your community, asking students what changes they have seen and what they are most concerned about.

Cards for class

You can introduce one type of extreme weather event and split the students into small groups. Give each group three WHAT cards and ask them to describe what actions they might take based on the events listed on the cards.

Next, give each group three WHO cards and ask them to consider how each group might need additional support or have different needs during an extreme weather event. Ask the students to discuss how they might adjust their earlier actions based on the different populations on the WHO cards.

Lastly, give each group three HOW cards. Invite the students to discuss which solutions on the HOW cards will be feasible in their community. What actions seem most appropriate to them? Which actions would they prioritize to keep people safe in their community?



Group Discussion

Bring all the groups back and ask them to report out on what they found and which solutions they prioritized and why. After hearing all of the groups' solutions and approaches, collectively, how might they move forward or encourage policymakers to make broader changes in the community?

You can take this a step further by turning this into a policy brief to share with policymakers, making them aware of students' concerns in ensuring effective community preparedness for all.

To download cards
and exercise materials
click [here](#) or use the
QR code below.



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