PREPAREDNESS SUMMIT

PATHWAYS TO RECOVERY
IN THE AFTERMATH OF DISASTER

Measuring Local Disaster Risk: Introducing Cutting-Edge Public Health Jurisdictional Risk Assessment Tools

#PrepSummit25

San Antonio, TX
April 29-May 2, 2025

PREPAREDNESS SUMMIT

Session Agenda

- **Three Presentations on Jurisdictional Risk Assessment:**
  - **Sharon Medcalf, University of Nebraska Medical Center**
  - **Kathleen Moloney, University of Washington**
  - **Claire Grant, Washington State Department of Health**
- **Q & A**
- **Discussion Questions**
- **Closing**

Nebraska 2023 Local and Statewide JRA Process + 2024 RADE (Risk Assessment Data Elements

Background

- My own education.

- Research….research….research
  - So many iterations
  - So complex

- Until…….Utah to the rescue (via CA)

I bow to the experts who created……

- Giving credit where credit is due!

- A huge thank you to

1. Mindy Colling (via Andrea Skewes)
2. Brandon Dean (LA County)

Goals

1. Local districts conduct their own JRA

1. Process broken into manageable bites

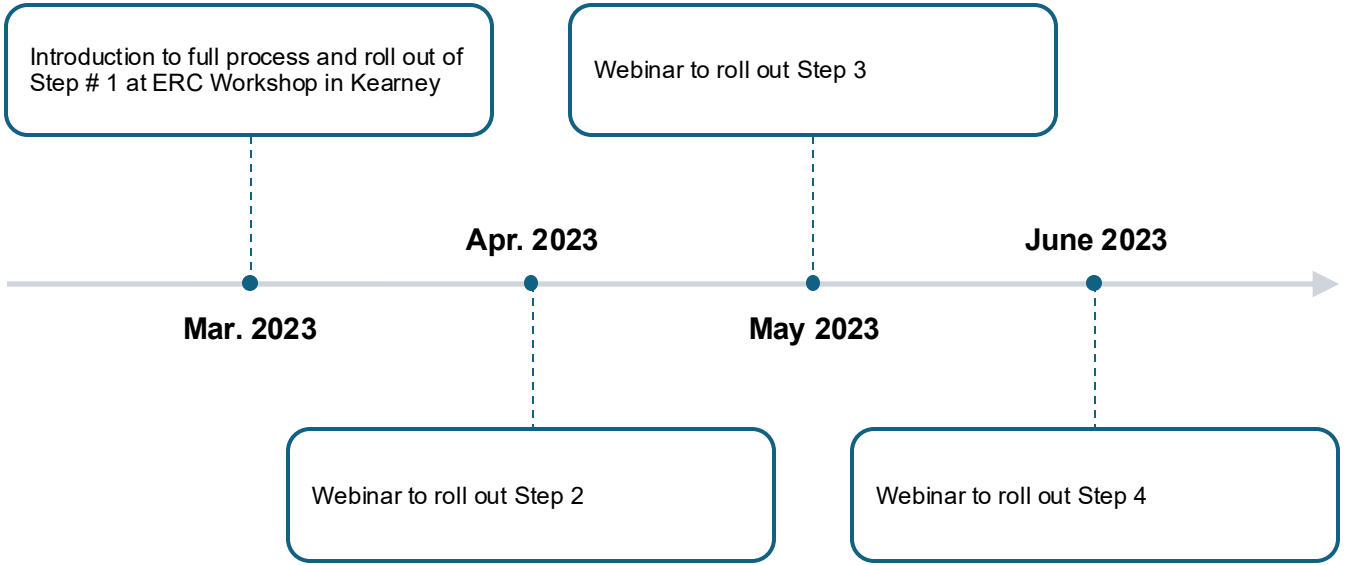
1. Capture the data and aggregate for a statewide Public Health JRA presented back to DHHS

1. New in 2024: Add in CDC’s RADE (Risk Assessment Data Elements)

Overview: JRA in 4 Steps

1. Select/discern your district's top 5 threats
2. Assess all your PHEP/HPP capabilities for each specific threat
3. Distill the effects of each specific threat to:
    1. Public Health
    2. Healthcare
    3. Environmental Health
    4. Mental Health
4. Describe areas for improvement for each threat

Timeline


Introduction to full process and roll out of Step # 1 at ERC Workshop in Kearney
Webinar to roll out Step 3
Apr. 2023
June 2023
Mar. 2023
May 2023
Webinar to roll out Step 2
Webinar to roll out Step 4

2024 Risk Assessment Data Elements (RADE)

1. Ranking of top 5 risks: Already Done!
2. Identify an expert to consult for each threat: May need to add
3. For each threat: Describe public health consequences and associated vulnerabilities: Half done. May need to add here
4. Resources used to conduct risk assessment (empower, SVI, CDC PLACES, etc…): May need to add

2024 Risk Assessment Data Elements (RADE) con’t

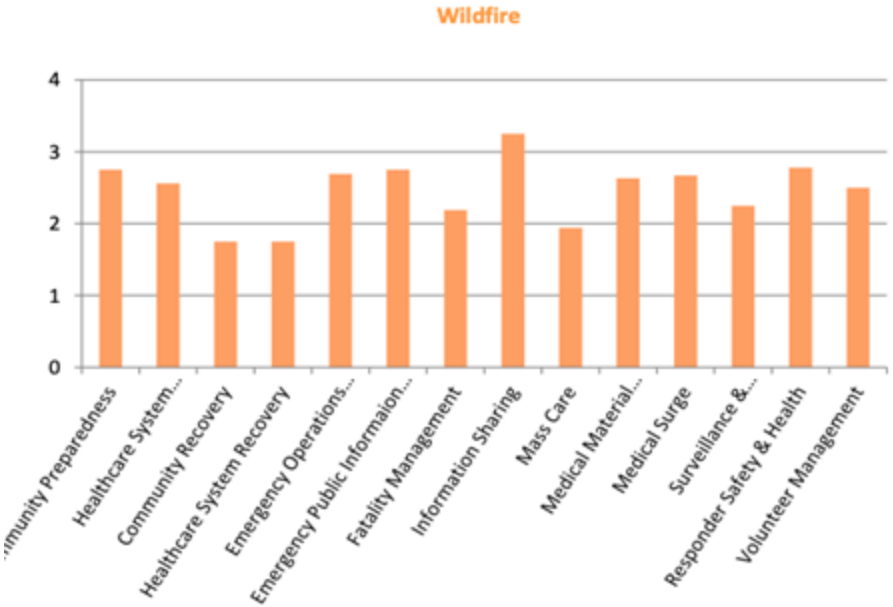
5. Report who was involved
6. Must involve EM and HPP leads
7. Review the JRA from 2023

Step 1:Top Five THIRA Threats – An Example

Hazard	Possible Scenarios
Wildfire	Very high-impact wildfire; crowning fire that spreads by wind and moves quickly along the tops of the trees; high-intensity burn rates; spreads rapidly across geographic area; short distance spotting prevalent; weather conditions not favorable to fire control (sustained strong winds, dry air).
Hazardous Material	Release of a large concentration of chemical with a high toxicity; highly reactive/combustable to surrounding environment; contamination spread over large area; exposed persons exhibit serious, long lasting acute health affects; serious environmental effects could linger for months.
Infectious Disease / Pandemic	An outbreak with 0.5 to 1% case fatality rate (excess fatality rate of 150 to 300 per population of 100,000), a 1 to 2% case fatality rate (excess fatality rate of 300 to 600 per population of 100,000), or a 2%+ case fatality rate (excess fatality rate more than 600 per population of 100,000).
Earthquake	Richter scale 7.0+; well-built wooden structures destroyed with foundations; rails greatly bent, and bridges destroyed; at worst-total destruction; lights of sight and level distorted; objects thrown into air.
Severe Weather / Flood	Crippling winter storm (6.0 to 10.0 on the Northeast Snow Impact Scale), characterized by snowfall between 4 inches and 30+ inches. An ice storm including winds from 15-35+ mph and radial ice accumulation of 1.5 inches. Extremely hazardous travel, catastrophic damage to exposed utility systems is likely. Major flooding, resulting in inundation of structures and roads and mandatory evacuations. Damaging wind gusts between 90-150 mph (78-130 knots), damaging buildings, infrastructure.

Here is where we can add RADE related to threat-specific experts

Step 2: Rate the PHEP/HPP Capabilities for each threat



#	Preparedness & Response Rating Scale
1	**Lacking.** Outdated/no related response plan, exercises/training, or assets, poor working relationships for hazard & capability
2	**Moderate.** Approved plan; drills/exercises occur but without partner agencies; resources lacking; relations lacking
3	**High.** Approved & updated plans. Exercises & training on plan frequent with outside players. Backup systems & resources. Good working relationships.
4	**Exceptional.** Approved & updated response & COOP plans; regular training & exercises w/partners; employee training on personal preparedness; specialized resources ready; maintained backup systems; MOUs/MOAs in place & tested; regularly engaged with community stakeholders.

Rating Scale

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Worksheet to save!

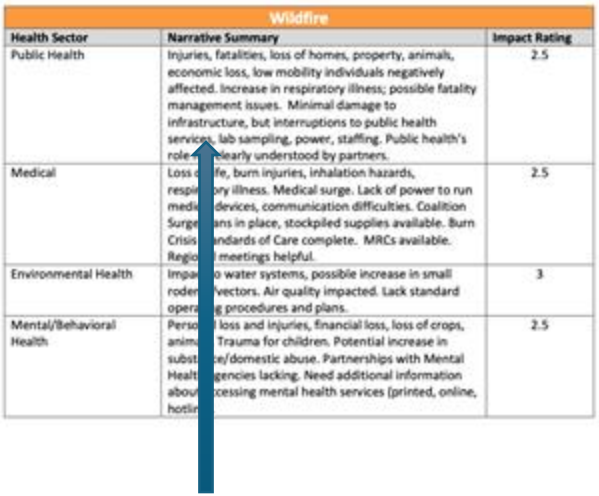
PHEP Capability	Threat #1 Rating	Threat #2 Rating	Threat #3 Rating	Threat #4 Rating	Threat #5 Rating
Community Preparedness					
Community Recovery					
Emergency Operations Coordination					
Emergency Public Information and Warning					
Fatality Management					
Information Sharing					
Mass Care					
Medical Countermeasures Dispensing and Administration					
Medical Materiel Management and Distribution					
Medical Surge					
Non-Pharmaceutical Interventions					
Public Health Laboratory Services					
Public Health Surveillance and Epidemiological Investigation					
Responder Safety and Health					
Volunteer Management					

Step 3: Disaster Impact Summary for each threat

Wildfire		
Health Sector	**Narrative Summary**	**Impact Rating**
Public Health	Injuries, fatalities, loss of homes, property, animals, economic loss, low mobility individuals negatively affected. Increase in respiratory illness; possible fatality management issues. Minimal damage to infrastructure, but interruptions to public health services, lab sampling, power, staffing. Public health's role not clearly understood by partners.	2.5
Medical	Loss of life, burn injuries, inhalation hazards, respiratory illness. Medical surge. Lack of power to run medical devices, communication difficulties. Coalition Surge Plans in place, stockpiled supplies available. Burn Crisis Standards of Care complete. MRCs available. Regional meetings helpful.	2.5
Environmental Health	Impact to water systems, possible increase in small rodents/vectors. Air quality impacted. Lack standard operating procedures and plans.	3
Mental/Behavioral Health	Personal loss and injuries, financial loss, loss of crops, animals. Trauma for children. Potential increase in substance/domestic abuse. Partnerships with Mental Health agencies lacking. Need additional information about accessing mental health services (printed, online, hotline).	2.5

- 1 = low / minimal impact
- 2 = limited disruptions, handled by local response
- 3 = critical; declared state emergency
- 4 = catastrophic; declared national emergency

Step 3: Disaster Impact Summary for each threat



Wildfire		
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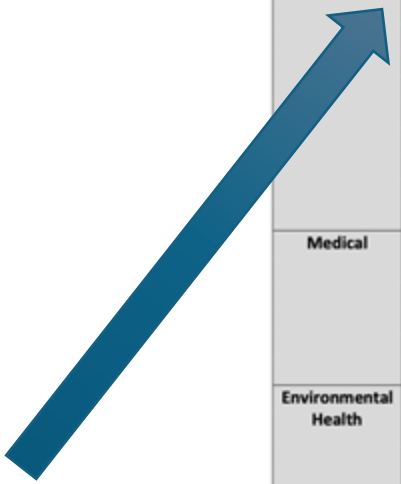
Here is where we can add RADE related to at-risk populations

Step 4: Areas for Improvement for each threat



Wildfire			
Health Sector	**Improvement Action**	**Capability**	**Parties Responsible**
Public Health	Public Education on Dangers	Community Preparedness	Public Health
	Health Monitoring of Responders	Responder Safety and Health	Public Health
	Public Warning Systems	Emergency Public Information and Warning	Public Health
	Mass Care Plan Review/Revision	Mass Care	Public Health
	Epidemiological Surveillance Plan	Surveillance and Epi Investigation	Public Health
Medical	Proper Equipment Upkeep	Healthcare System Preparedness	Hospitals, Long-term Care, Public Health, EMS
	Testing of Emergency Utility Systems	Healthcare System Preparedness	Hospitals, Long-term Care, Public Health, EMS
	Medical Surge Preparation	Healthcare System Preparedness	Hospitals, Long-term Care, EMS, Public Health
Environmental Health	Public Access to Air Quality Information	Emergency Public Information and Warning	Public Information Officer, Environmental Quality, Public Health
	Training for Environmental Health Professionals	Responder Safety and Health	Local Health Department
Mental / Behavioral	Outreach and Partnerships with Local Mental Health	Information Sharing	Local Health Dept, Mental Health
	Conduct Exercise Scenario with Local Mental Health Agency	Community Preparedness	Local Health Department, Local Mental Health Agency

Here is where we can add RADE related to at-risk populations

Next Steps each month

- Monday: You received two things

1. Worksheet Table(s) with detailed instructions

1. Link to RedCap Survey for data entry

1. Invitation to the April Webinar (will be recorded)

RedCap learning curve

1

Find an expert and use them

2

Track who has completed and who hasn’t. Nudge them

3

Know how to extract a person’s data

Final Report

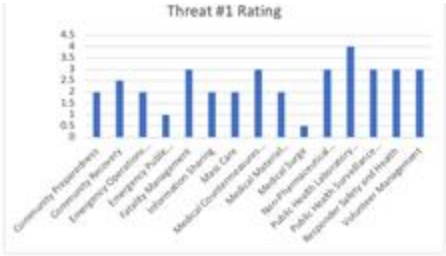
Local Demographics

If you want…you can add some information about your district here. Population, landscape, etc…

Jurisdictional Risk Assessment (JRA) Step 1

In this first step of the JRA, [*insert health department name*] here has consulted with Emergency Management and the Healthcare Coalition leads and has determined that the following 5 threats would affect the population's health the most in the district covered by [*insert health department name here]*

Insert table from Step 1 worksheet here



Here are the instructions to get these bar charts from your table in Step 2 worksheet:

1. *In the Step 2 worksheet, Click on the crossed arrows in top left side of the table and this will highlight the whole table*
2. *Open Excel and highlight the first cell in a spreadsheet and paste your table. It should now look like a regular table in Excel*
3. *To get your Threat #1 bar graph: Highlight the first two columns in the table (PHEP Capabilities and Threat #1). Click in Insert in the task bar above and then Charts. Pick a bar chart*
4. *Your chart (like the one above) will appear to the right of your data. You can double click on the title to change "Threat #1" to the your actual first threat. And so on for each chart you make*
5. *Then you can copy and paste this first chart into the report above*

The H²azaRDS Project:

Developing a tool to support local public health emergency preparedness in Washington State

Kathleen Moloney

Research Scientist

University of Washington Center for Disaster Resilient Communities

CENTER FOR DISASTER RESILIENT COMMUNITIES

UNIVERSITY of WASHINGTON

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CENTER FOR DISASTER RESILIENT COMMUNITIES
UNIVERSITY of WASHINGTON

Washington State Department of HEALTH

H^2azaRDS Project Background

Washington has experienced many disasters over the last few years...

November 2021 Floods in Sumas, WA
Source: NBC News

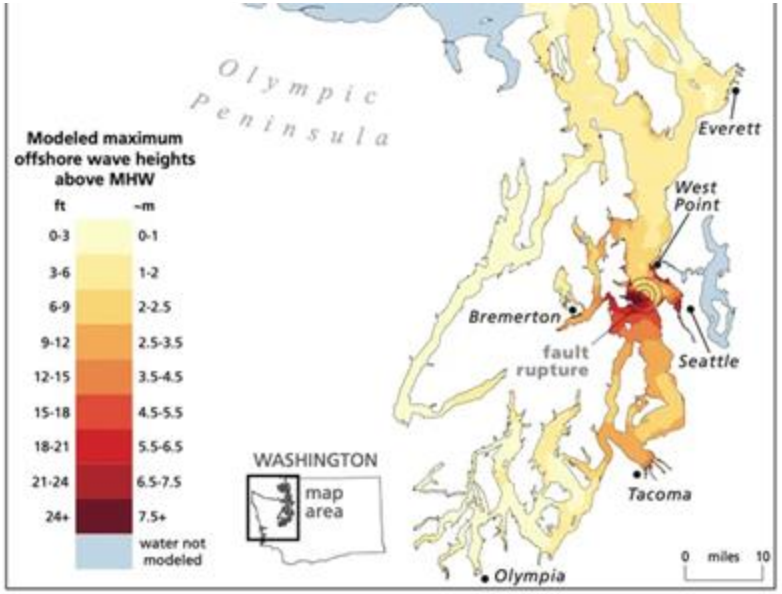
July 2021 Wildfires near the Methow Valley
Source: The Seattle Times

...and faces many potential future disasters

NEWS

New models show tsunami's effects on Kitsap after Seattle Fault quake

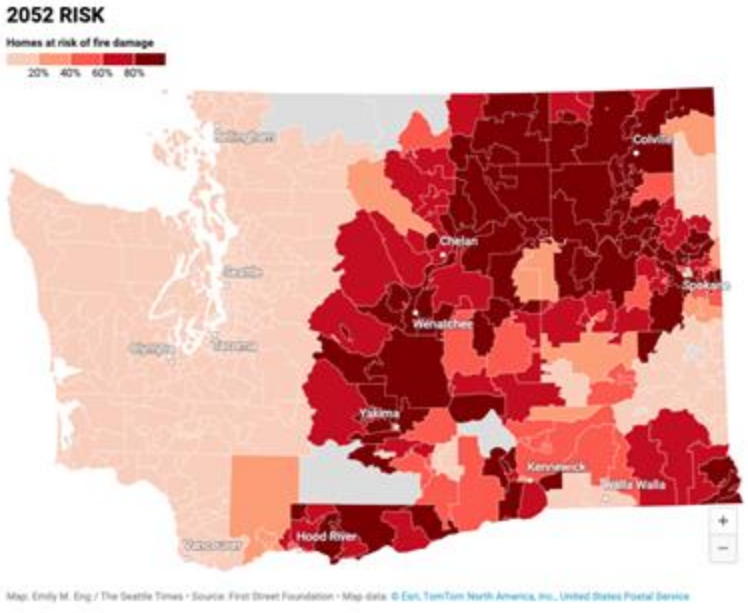
Zachary Fletcher
Kitsap Sun



Source: Kitsap Sun

The Seattle Times

Wildfire risk expected to increase in Washington



Source: the Seattle Times

How should local public health officials prioritize preparedness efforts for these risks?

Local health jurisdictions face **multiple potential hazards** and have **limited resources**

Local health jurisdictions **lack a standardized process** to assess public health risk from disasters

Data can help allocate resources strategically, but it is **costly to collect** and **time-consuming to interpret** at scale

Project Origins

Idea: The Washington State **Department of Health** (WA DOH) asked the University of Washington **Center for Disaster Resilient Communities** (CDRC) to build a tool to **support local health jurisdictions' public health emergency preparedness planning**

Funding: CDC Public Health Emergency Preparedness (PHEP) funding, administered by WA DOH

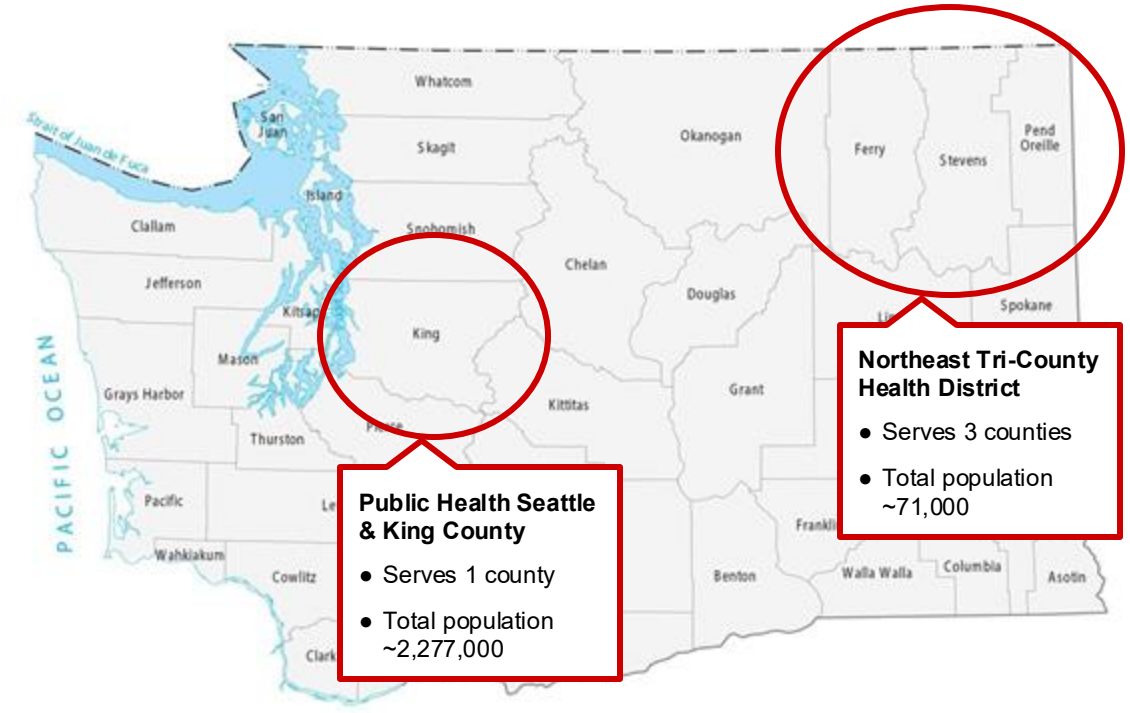
Health & Hazards Risk Decision Support ("H²azaRDS") Tool

H²azaRDS Project Goals

- Develop a **web-based tool** that local health officials can use to assess public health risk from disasters and identify risk drivers
- Allows local jurisdictions to conduct **locally tailored risk assessments** using a consistent methodology and the best data available
- Tool uses pre-existing data when possible to **minimize burden on local jurisdictions**

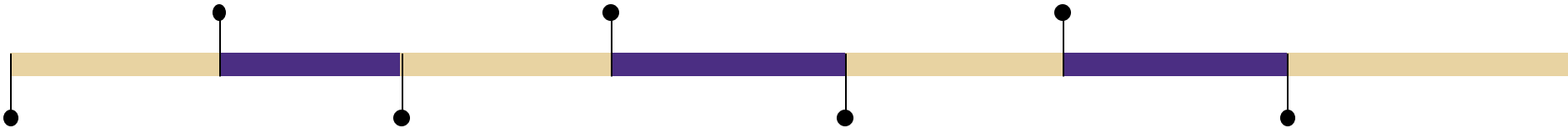
Washington State Local Health Jurisdictions

How can we make a tool that meets the needs of users?



- **35 local health jurisdictions**
- **Diversity of resources, structures & communities served**

Project Timeline



Step 1 (complete):
Environmental scan of existing tools from other states

Step 2 (complete):
Partner focus groups to discuss needs/priorities

Step 3 (complete):
Develop conceptual framework and identify data sources

Step 4 (in progress):
Interdisciplinary advisory committee workshops tool construction

Step 5 (complete):
Create tool user guide

Step 6 (early to mid 2025):
Build and test tool prototype

Step 7 (mid 2025):
Plan tool rollout

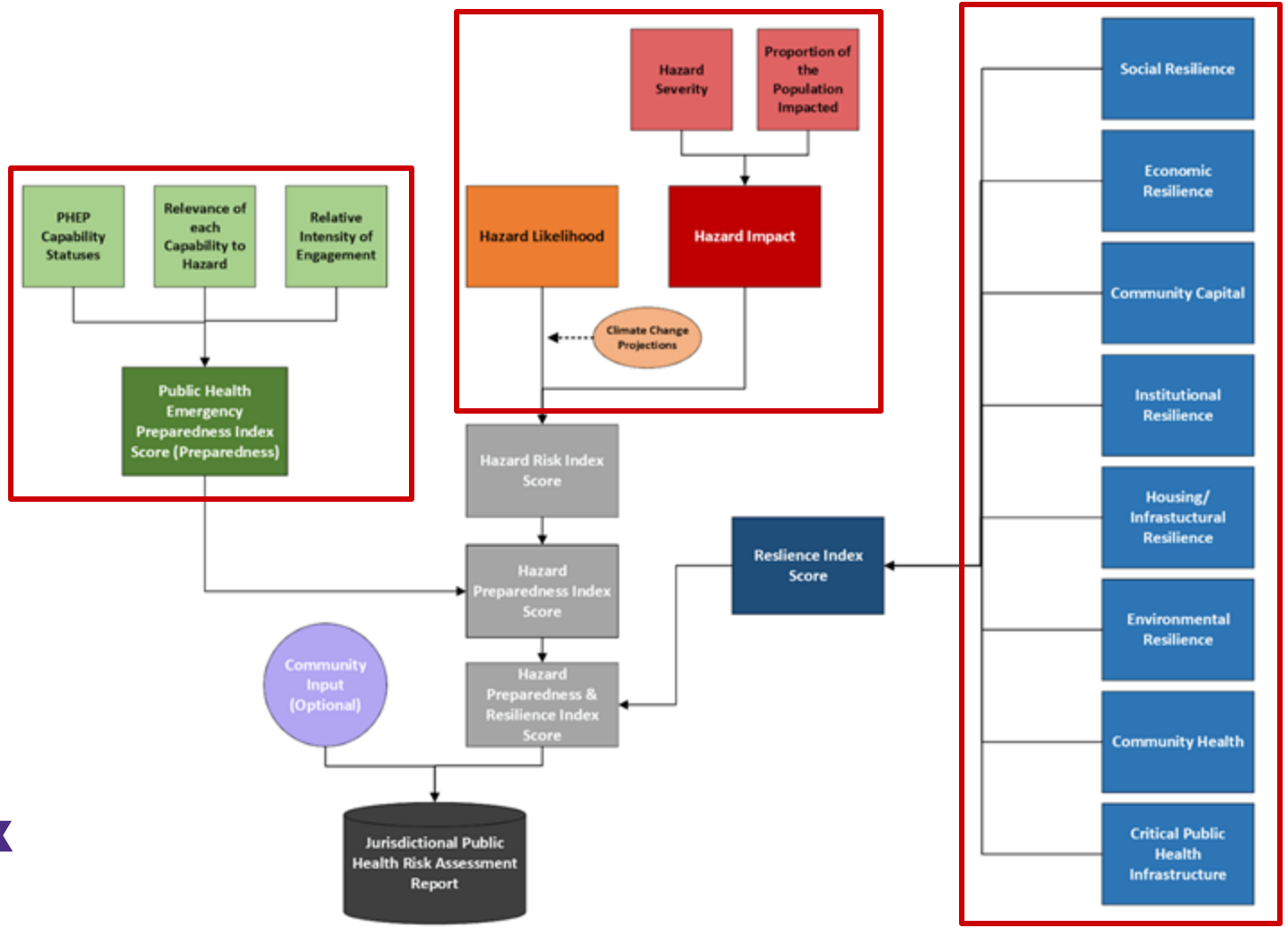
Key Focus Group Findings

- All LHJs **lacked a formal process** for conducting a public health disaster risk assessment
- LHJs broadly **support integrating** the new process **with existing emergency management-led assessments**
- **Resource constraints limit their ability** to conduct formal public health disaster risk assessments
    - Despite limited resources, most wished to **complete public health disaster risk assessment locally**
- **Local vulnerability to hazards** is often **not well captured** by **existing data sources**

USING THE H²azaRDS TOOL

CENTER FOR DISASTER RESILIENT COMMUNITIES
UNIVERSITY of WASHINGTON

H²azaRDS Tool Conceptual Framework



User Inputs Required for Tool Use

Local Hazard Information:

- Select hazards relevant to the local jurisdiction
- Rank hazards' relative probability
- Estimate potential hazard severity
- Estimate the proportion of the population impacted by each hazard

Relative Intensity of Engagement:

- The intensity of response each hazard will necessitate from the local health jurisdiction using the tool

PHEP Capability Operational Readiness:

- The local health jurisdiction's ability to perform each of the 15 CDC Public Health Emergency Preparedness (PHEP) capabilities

Data Pre-populated in the Tool

Community Resilience:

- ~100 individual variables from datasets collected by the US Census Bureau, EPA, CDC and numerous other sources
- Used to estimate pre-disaster, community-level characteristics that may impact hazard resilience

Relevance of each PHEP Capability to Hazard:

- Data which measures the relevance of each CDC PHEP capability to local health jurisdictions' ability to respond to and recover from a potential hazard

Tool Results Overview

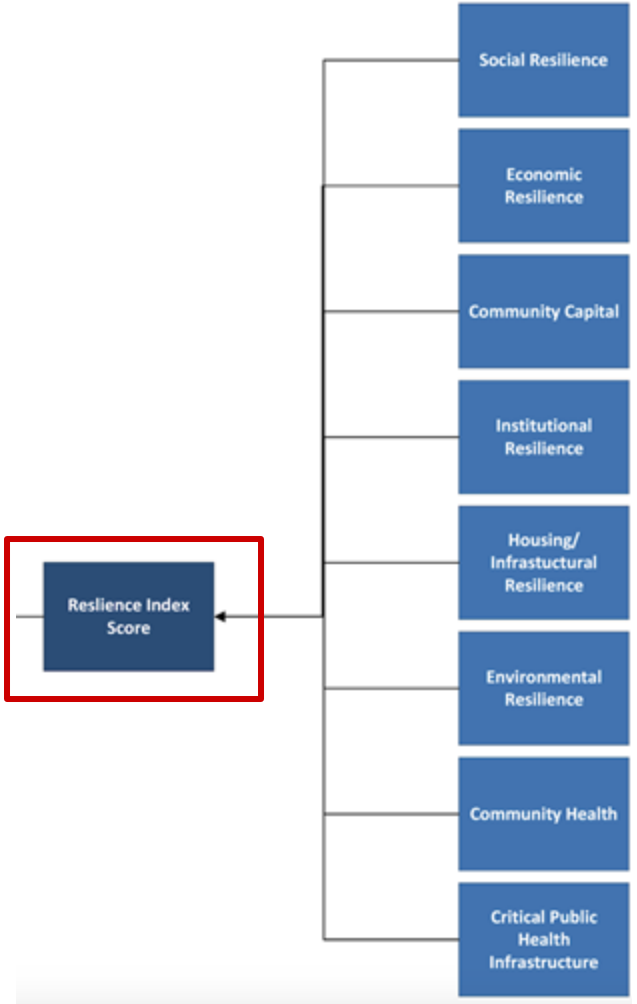
- The tool will produce a report that presents and explains **5 different index scores**

- These **scores are based on previously compiled data and user inputs**; some scores are calculated separately for each hazard, while others are calculated as overall scores

- Results are presented with **customizable, interactive visualizations** to **identify the domains contributing most to risk** for each hazard and overall

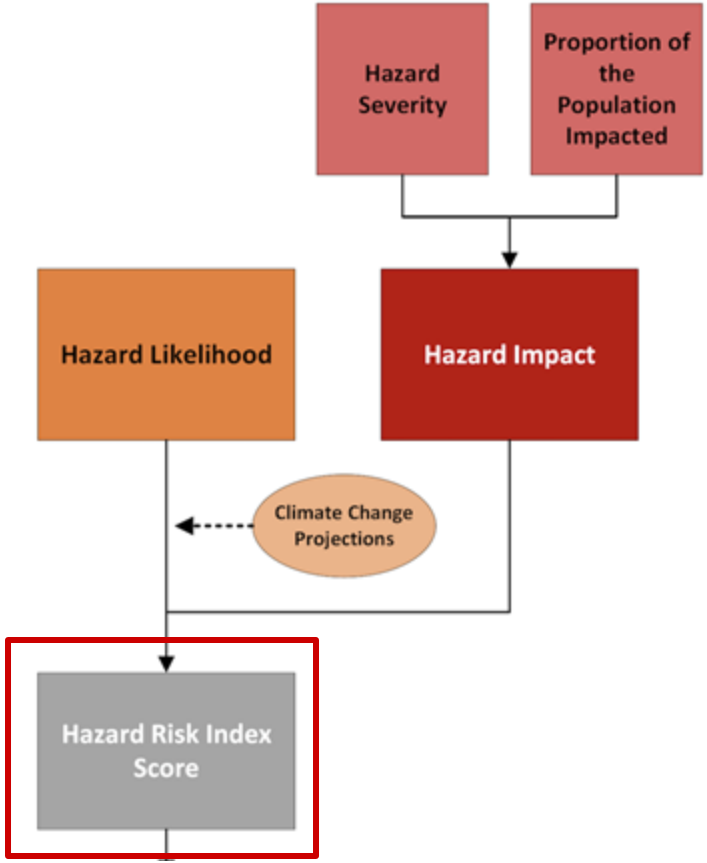
Resilience Index Score

- Measures overall resilience to hazards
- A function of social resilience, economic resilience, community capital, institutional resilience, housing/infrastructure resilience, environmental resilience, community health, and critical health infrastructure
- The tool provides one overall resilience index score



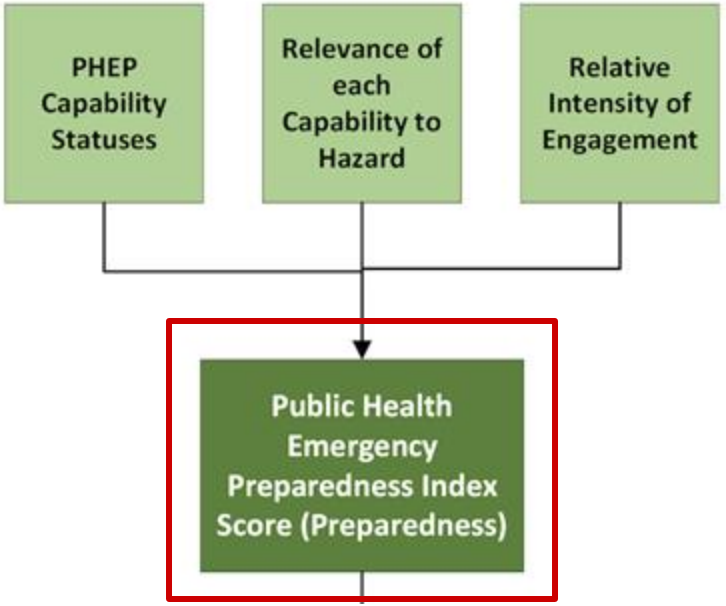
Hazard Risk Index Score

- Measures the potential risk a hazard poses
- A function of hazard exposure, potential severity, and relative likelihood of occurrence
- A separate hazard risk index score is provided for each hazard



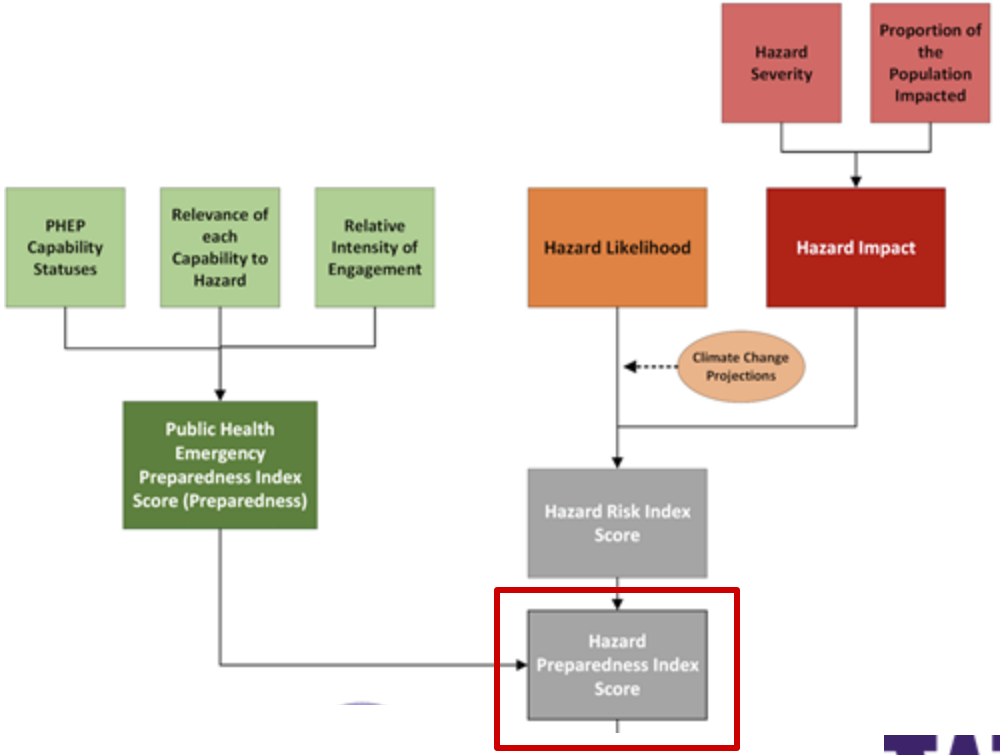
PHEP Index Score

- Measures public health emergency preparedness in the local health jurisdiction
- A function of status of each CDC-defined PHEP capability, the relevance of each PHEP capability to each hazard considered, and the relative expected intensity of engagement for each hazard considered
- A separate PHEP index score is provided for each hazard



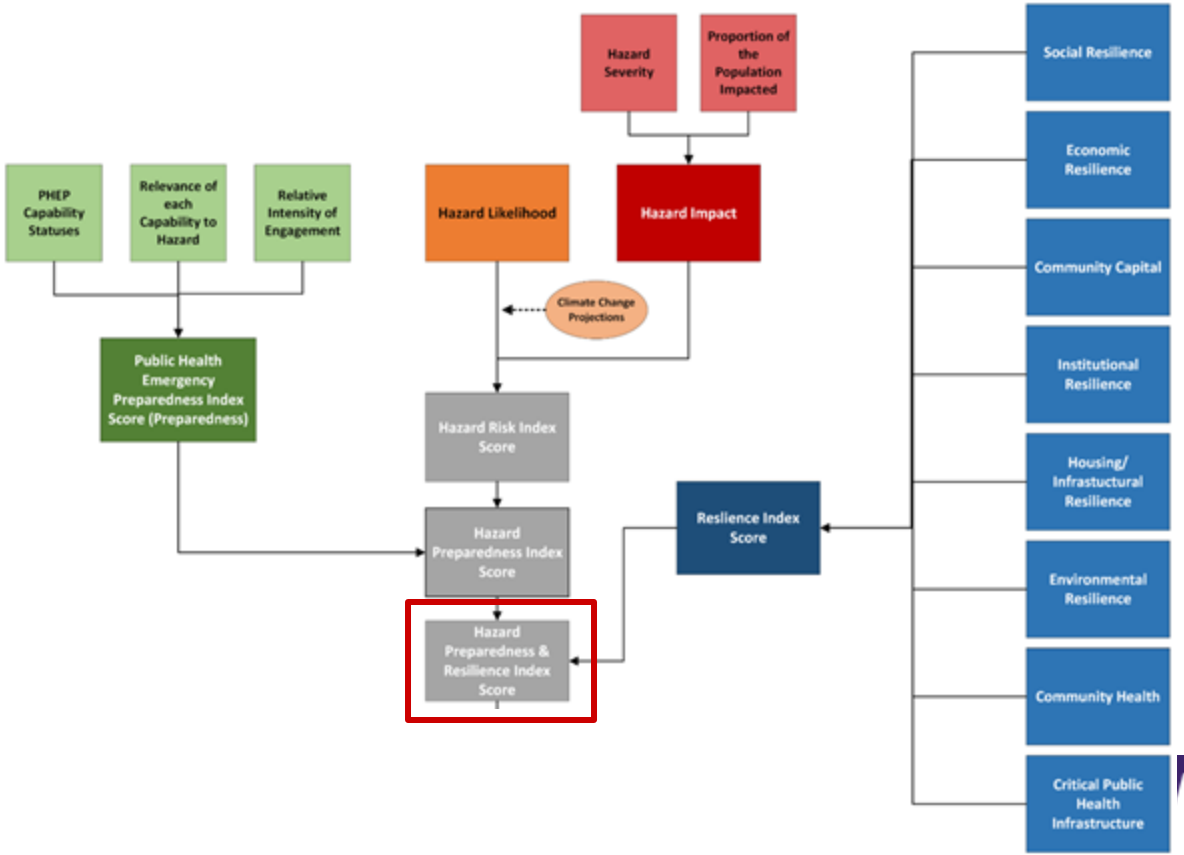
Hazard Preparedness Index Score

- Measures the extent to which the jurisdiction's current PHEP capabilities align with its risk from each hazard
- Combines the hazard risk index score and PHEP index score for each hazard
- A separate hazard preparedness index score is provided for each hazard



Hazard Preparedness and Resilience Index Score

- Overall score measuring the jurisdiction's state of readiness for hazards
- Combines the resilience index score, hazard risk index score and PHEP index score
- A separate score is provided for each hazard



Limitations of the Tool

User-ranked inputs

- Increases user workload
- Ranking hazard likelihood measures only perceived relative likelihood, not actual likelihood of occurrence

Climate modeling uncertainty

- Complexity and range of possible outcomes make this difficult to predict over time

Resolution versus accuracy

- Inherent tension between geographical resolution and measurement accuracy

Acknowledgements

- Other University of Washington project team members:
  - Data science team: John Y. Choe, Matthew Martell & Ribhu Sengupta
  - Web developer: Tom Kiehne
- The Washington State Department of Health (WA DOH)
- Representatives from LHJs; state, local and tribal emergency management; community-based organizations; and healthcare coalitions from across Washington State who provided critical input to support the development & refinement of the H^2azaRDS Tool

Washington State Department of HEALTH

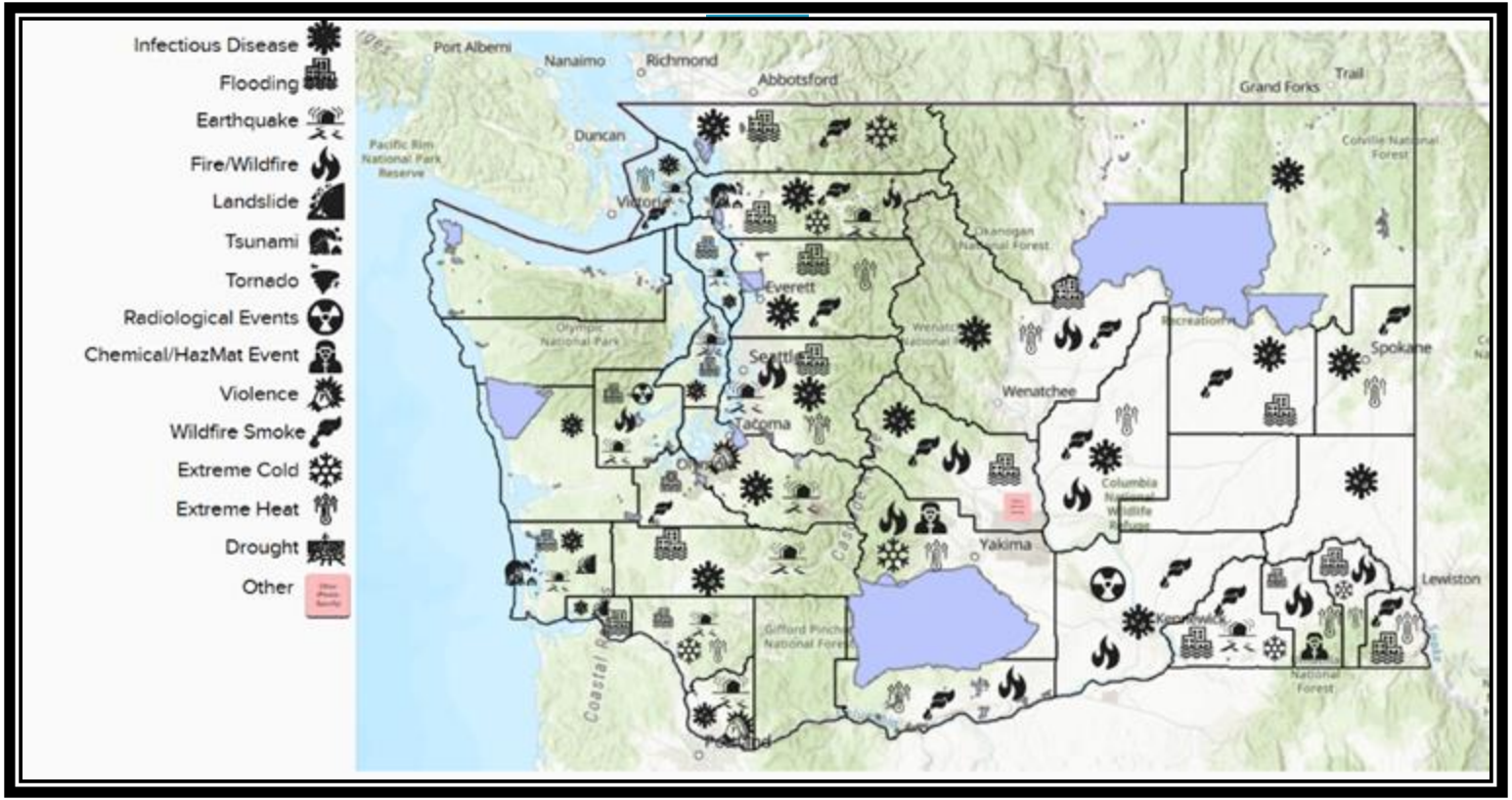
MOTIVATIONS IN DEVELOPING H^{2}AZARDS TOOL

Claire Grant – Resilience and Preparedness Strategist
Office of Resiliency and Health Security

When People Ask What I do for Work

"Here in the corner attic of America, two hours' drive from a rain forest, a desert, a foreign country, an empty island, a hidden fjord, a raging river, a glacier, and a volcano..." – Timothy Egan

LHJ-Identified threats, IPPW 2025



What do we do when business as usual isn't working?

Landscape Summary

Gaps:

- Lacking a **public health** specific tool
- **Data driven** assessment
- Specific to **each jurisdiction**, not statewide
- **Standardized** process

Considerations

- Limited resources (time and money!)
- Intensive research, planning, and even gathering data sources takes time
- Our local PHEP partners are already busy enough!
  - We want the tool to work for *them*, not make them work for the tool

Benefits Summary

- Complex, yet user-friendly
- Accounts for variations in geography, climate, rurality, etc.
- Combines expertise and lived experience with data
- Standardizes risk assessment process
  - (1x year, part of CON-CON funding)
- Minimizes the burden on local health jurisdictions

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Q&A

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San Antonio, TX
April 29-May 2, 2025

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Discussion Questions

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Thank you!

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