Conceptualizing a Tribal Public Health Jurisdictional Risk Assessment Tool

Presenters:
Claire Grant
Washington State Department of Health

Kathleen Moloney
University of Washington

Evan Mix
University of Washington

Additional Project Leads:
Nicole Errett (UW)
Amber McPherson (WA DOH)
Heleen Dewey (WA DOH)

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Agenda

- **Background:** Overview of the development of the H^{2}azaRDS Tool, which aims to support WA local health jurisdictions' public health emergency preparedness planning

- **Using the H^{2}azaRDS Tool**
  - How H^{2}azaRDS models disaster risk, vulnerability, and resilience
  - What inputs are required from tool users
  - Sample results and limitations

- **Discussion**
  - Would a tool like this be useful to Tribes?
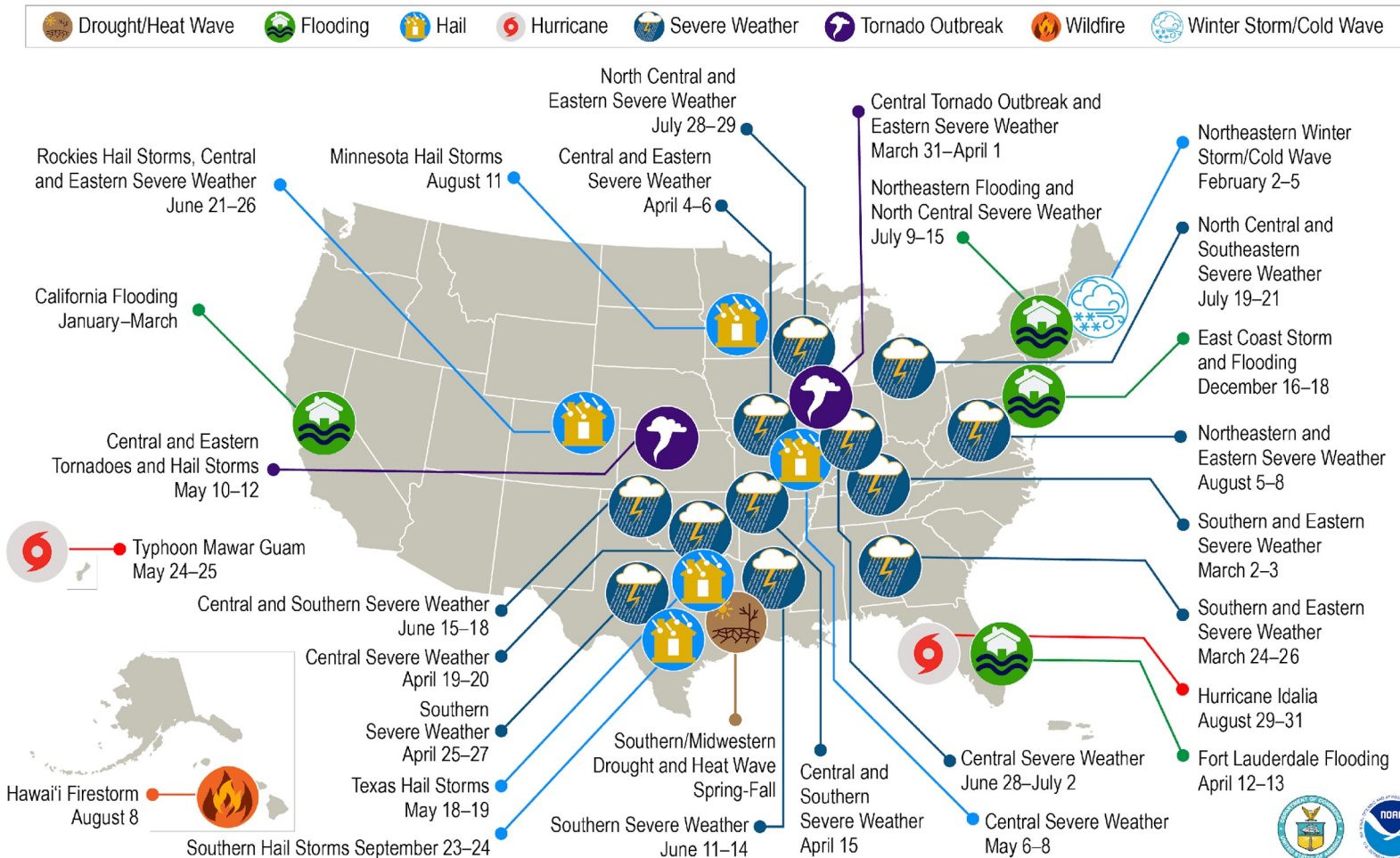 - What would need to be changed, added, etc.?

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Today's Goals

- Summarize the H^2azaRDS tool

- Discuss how a data-driven risk assessment tool for Tribes could look

- Consider who might use such a tool and for what

- Explore the feasibility of building a Tribe-specific tool

BACKGROUND

U.S. 2023 Billion-Dollar Weather and Climate Disasters

Legend: Drought/Heat Wave · Flooding · Hail · Hurricane · Severe Weather · Tornado Outbreak · Wildfire · Winter Storm/Cold Wave

Rockies Hail Storms, Central and Eastern Severe Weather
June 21–26

Minnesota Hail Storms
August 11

North Central and Eastern Severe Weather
July 28–29

Central and Eastern Severe Weather
April 4–6

Central Tornado Outbreak and Eastern Severe Weather
March 31–April 1

Northeastern Flooding and North Central Severe Weather
July 9–15

Northeastern Winter Storm/Cold Wave
February 2–5

North Central and Southeastern Severe Weather
July 19–21

East Coast Storm and Flooding
December 16–18

California Flooding
January–March

Central and Eastern Tornadoes and Hail Storms
May 10–12

Northeastern and Eastern Severe Weather
August 5–8

Southern and Eastern Severe Weather
March 2–3

Southern and Eastern Severe Weather
March 24–26

Typhoon Mawar Guam
May 24–25

Central and Southern Severe Weather
June 15–18

Central Severe Weather
April 19–20

Southern Severe Weather
April 25–27

Hurricane Idalia
August 29–31

Fort Lauderdale Flooding
April 12–13

Hawai'i Firestorm
August 8

Texas Hail Storms
May 18–19

Southern Hail Storms September 23–24

Southern/Midwestern Drought and Heat Wave
Spring–Fall

Southern Severe Weather
June 11–14

Central and Southern Severe Weather
April 15

Central Severe Weather
June 28–July 2

Central Severe Weather
May 6–8

*This map denotes the approximate location for each of the **28 separate billion-dollar weather and climate disasters that impacted the United States in 2023.***

How should local public health officials prioritize preparedness efforts for future disasters?

- Local jurisdictions face **many hazards** and have **limited resources**

- Local 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

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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 statewide to conduct **locally tailored risk assessments** using a consistent methodology and the best data available

- Tool is developed by the CDRC and maintained by WA DOH to **minimize burden on local jurisdictions**

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Project Timeline

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

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

Step 6 (mid- to late 2024):
Build and test tool
prototype

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

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

Step 5 (complete):
Create tool user guide

Step 7 (early 2025):
Plan tool rollout

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USING THE H²azaRDS TOOL

H²azaRDS Tool Conceptual Framework
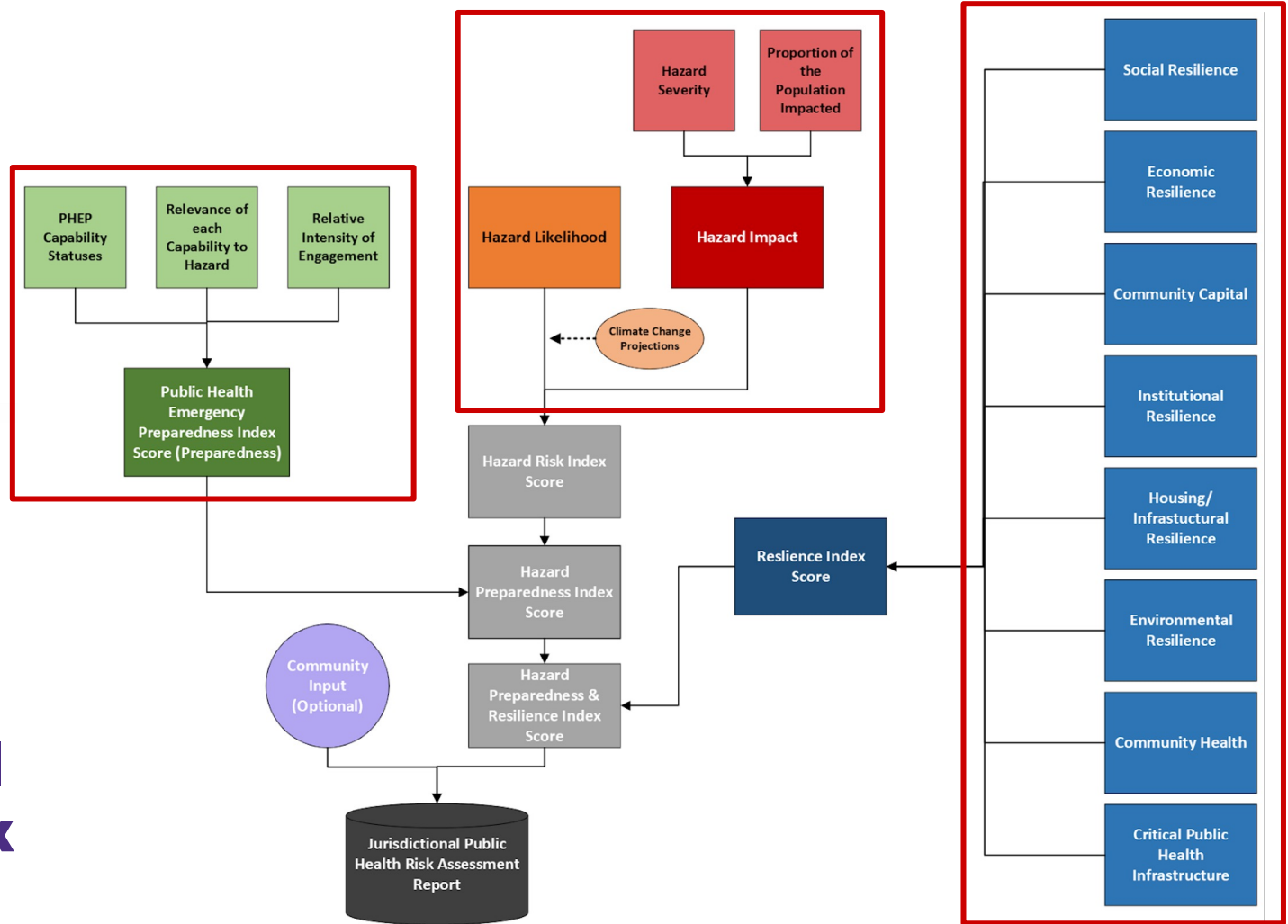
User Inputs Required for Tool Use

- **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

User Inputs Required for Tool Use (Cont.)

- **PHEP Capability Operational Readiness:**

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

1. Community Preparedness
2. Community Recovery
3. Emergency Operations Coordination
4. Emergency Public Information and Warning
5. Fatality Management
6. Information Sharing
7. Mass Care
8. Medical Countermeasure Dispensing
9. Medical Materiel Management and Distribution
10. Medical Surge
11. Non-Pharmaceutical Interventions
12. Public Health Laboratory Testing
13. Public Health Surveillance and Epidemiological Investigation
14. Responder Safety and Health
15. Volunteer Management

Image source: US Centers for Disease Control & Prevention

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

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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
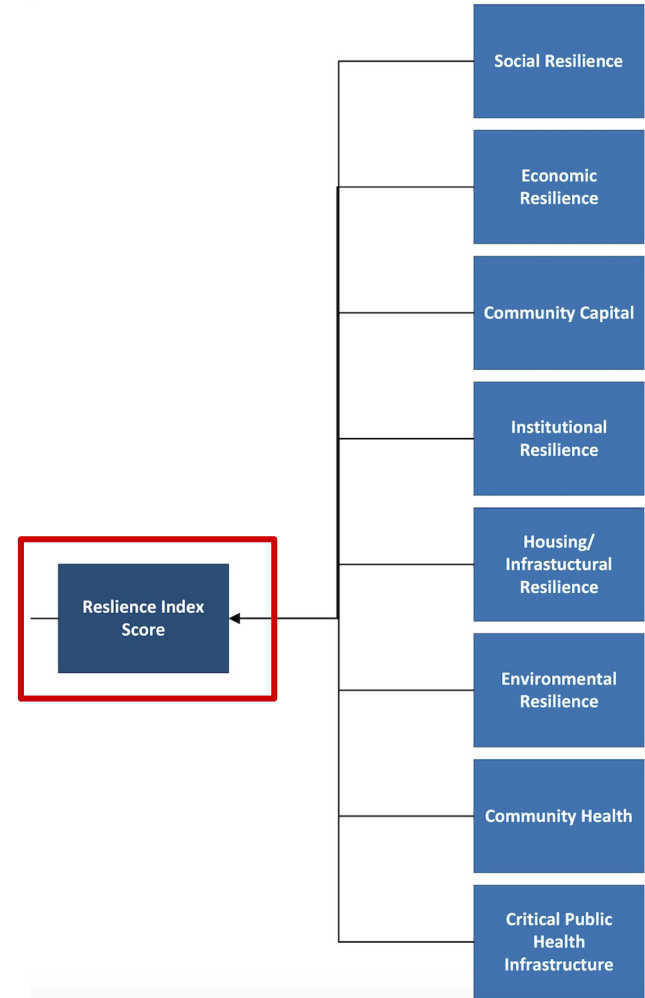
Hazard Risk Index Score

- Measures the potential risk a hazard poses

- A function of hazard exposure, potential severity, and relative likelihood of occurrence

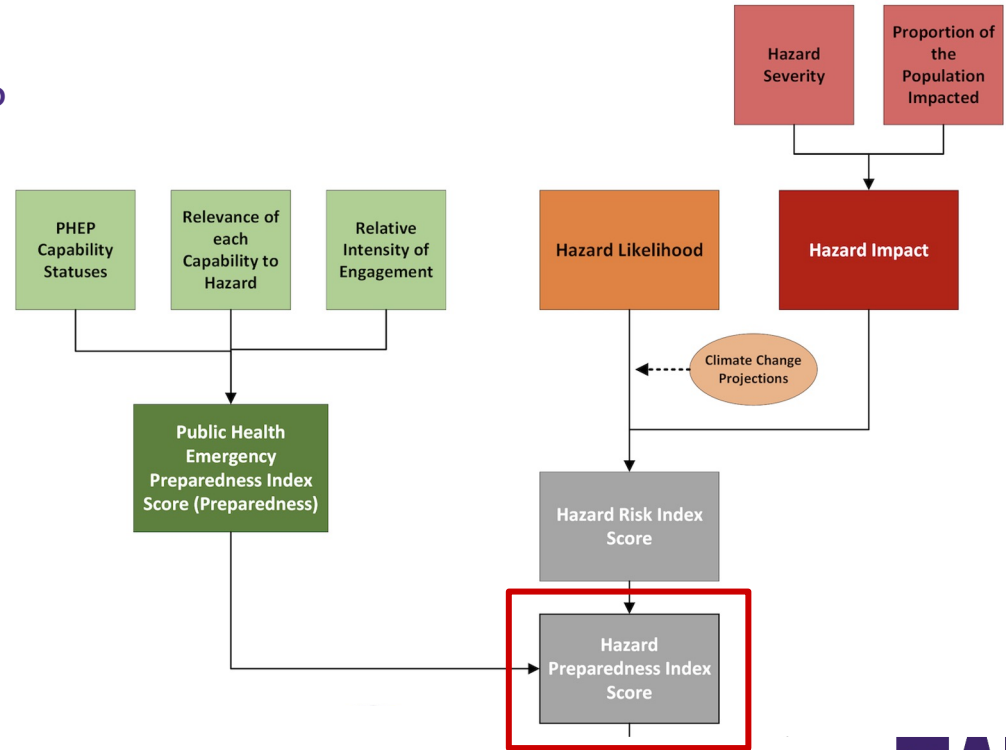- A separate hazard risk index score is provided for each hazard
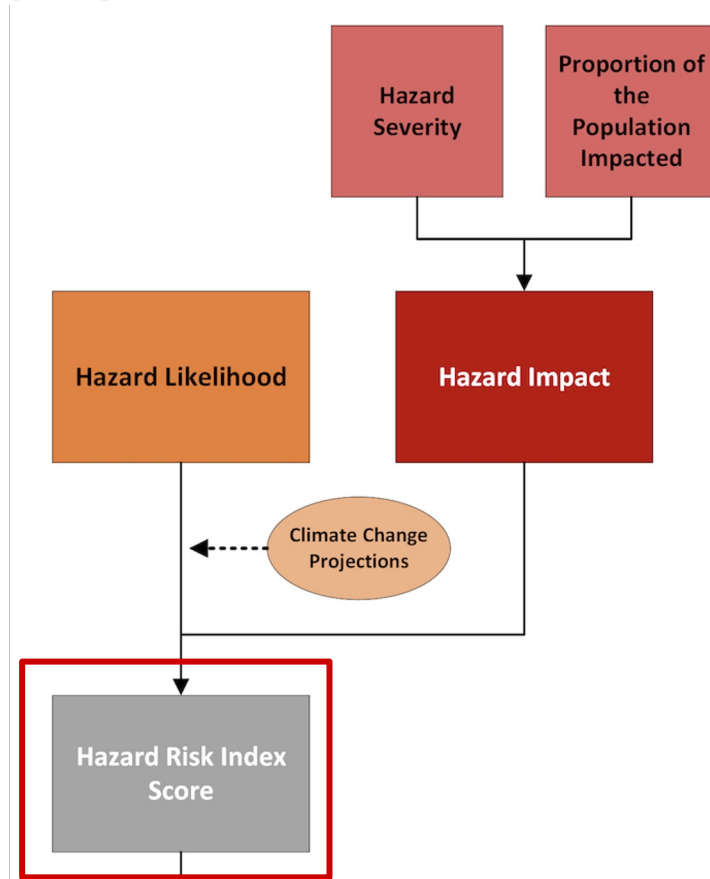
PHEP Index Score

- 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
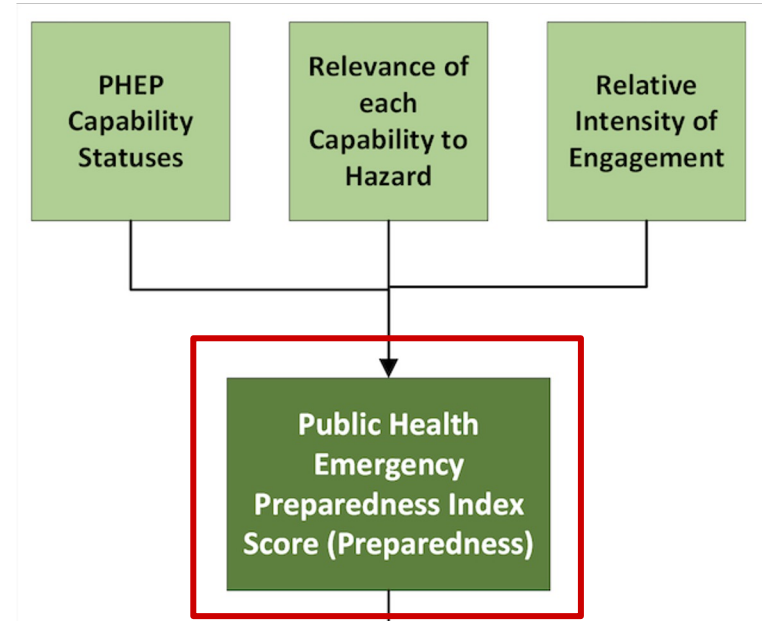
Hazard Preparedness Index Score

- 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
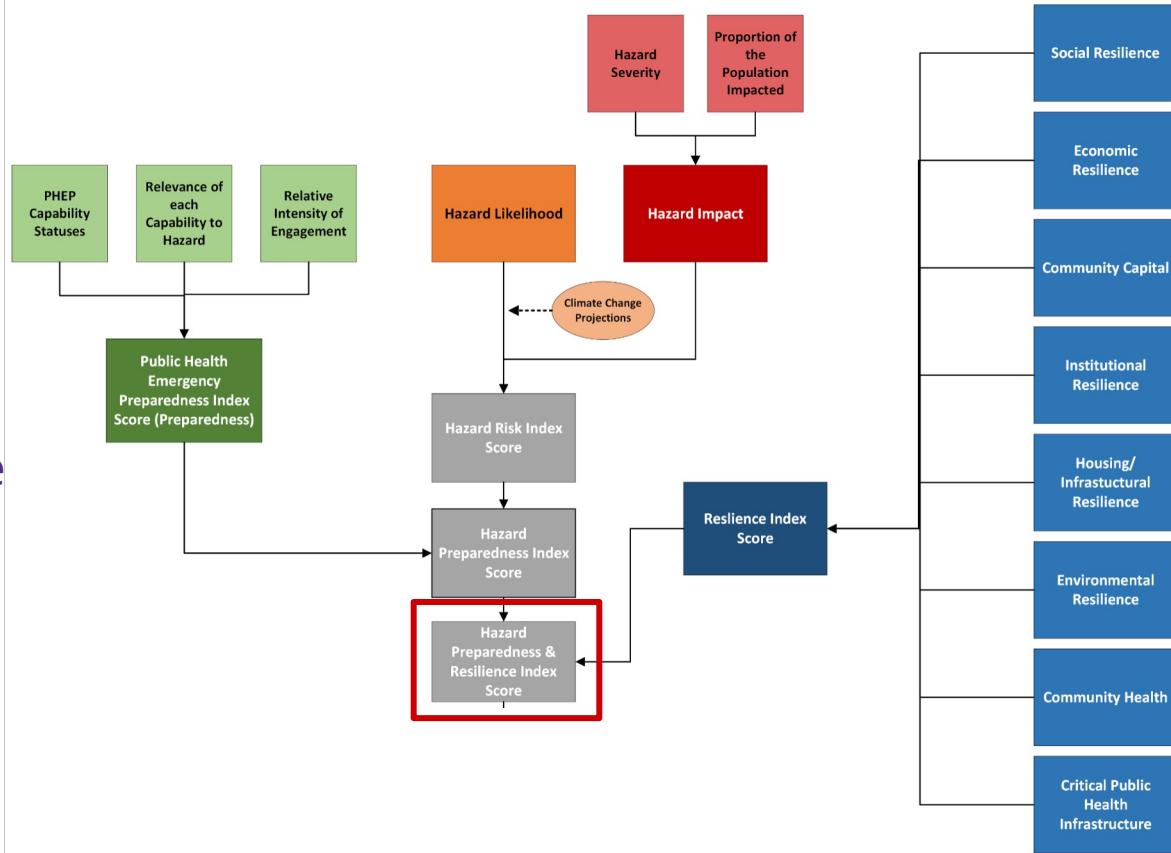
Limitations of the Tool

User-ranked inputs

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

Relevance of PHEP capabilities

- CDC PHEP capabilities may not be relevant for those not funded by CDC and/or who conceptualize public health emergency preparedness differently

Census data accuracy

- Census data has historically undercounted members of tribal nations & lacks the desired accuracy

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DISCUSSION QUESTIONS

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Discussion Question 1

Would Tribes benefit from a data-driven assessment tool like this one?

Consider:
- Relevance to specific needs of different Tribes
- Desire/ability to access and use
- Is a consistent, uniform approach like this desirable?

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Discussion Question 2

Would a Tribe-oriented tool **need to be different?** If so, how?

Consider:
- Accessibility issues
- Unique concepts/domains to include in the model
- Data availability/reliability
- Data sovereignty concerns

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QUESTIONS OR COMMENTS?

Kathleen Moloney (kmoloney@uw.edu)
Evan Mix (emix@uw.edu)