**NORTHWEST HEALTHCARE Response Network.**

# Kitsap County Healthcare
# Hazard Vulnerability Assessment

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**Attachments**

Attachment A: Kitsap County Healthcare HVA Survey

# PROJECT BACKGROUND

**Background**

The Northwest Healthcare Response Network (the Network), a healthcare emergency preparedness coalition, coordinates regional preparedness, response and recovery activities with its healthcare, public health, emergency management and other partners.  Hazards, be they natural or human-caused, can strike communities with little to no warning and cause an array of impacts ranging from minimal to catastrophic. Consequently, it is important to evaluate hazards that can potentially disrupt the healthcare delivery system. These evaluations often take the form of hazard vulnerability assessments, which can form the basis of healthcare emergency management programs and assist in prioritizing organizational activities and resources.

In 2016-2017 the Network drafted its first Regional Healthcare Hazard Vulnerability Assessment (HVA) to assess hazards in King and Pierce counties. The HVA involved collaborating with healthcare, public health, and emergency management partners.  Through this process, hazards were identified and prioritized based on expert input from healthcare emergency preparedness leaders.

**Purpose**

The 2017 King-Pierce County HVA was created to help assure preparedness and response activities align with identified healthcare and regional vulnerabilities. With the incorporation of Kitsap County into the coalition in 2017, the Network identified a need to conduct a similar assessment to update the regional HVA with input from partners in Kitsap. As the Network continues its work, this and other HV's will be updated/created to maintain up-to-date information for emergency management activities.

**Goals**

- Determine if Kitsap County regional healthcare hazards match identified hazards of 2017 HVA using existing healthcare facility and regional HVAs.
- Seek participation from Kitsap County regional healthcare, public health and emergency management experts to validate identified hazards and assess regional healthcare impacts.
- Produce a Kitsap County-specific report on HVA Assessment results.
- Develop a broader Regional Healthcare Hazard Vulnerability Assessment.
- Share finding with local, regional and state partners.

## PROJECT METHODS OVERVIEW

This HVA report and its project components are based on the same methodology as the 2017 King and Pierce County HVA using a modified Delphi technique. The Delphi method is a consensus building survey technique that is traditionally done in three rounds of surveys.  For this project, the Network chose to perform one round of surveys in contrast to the two rounds of surveys done in the previous HVA report. This decision was made to streamline the data collection process as the first round was to identify and rank the likelihood of the type of hazards faced by the region which would be the same for Kitsap County as King and Pierce.

**Consensus**
Hazards were deemed to have reached consensus on their regional healthcare impact if they were rated consistently by 75% of HVA participants.  Participants rated the regional healthcare impact for each hazard using a three-point Likert-type scale (Low, Moderate, or High).

The following hazard matrix illustrates the scheme used to map hazards which reached consensus on a Likelihood-Impact scale.

**Figure 1:** Hazard Risk Matrix

| LIKELIHOOD | | IMPACT | |
|---|---|---|---|
| **HIGH** | Medium | High | Extreme |
| **MODERATE** | Low | Medium | High |
| **LOW** | Insignificant | Low | Medium |
| | LOW | MODERATE | HIGH |

## PRE-ASSESSSMENT DATA COLLECTION AND IMPACT RATING

Please refer to the 2017 King-Pierce HVA and its attachments on the Network's website (www.nwhrn.org) for a detailed description of the data collection and hazard identification process. This HVA utilized the same set of jurisdictional and state HVAs with the addition of the Kitsap County Department of Emergency Management Hazard Vulnerability Analysis. The impact rating for hazards identified in the assessment were also based upon the 2017 King-Pierce HVA Report.

## ASSESSMENT

### Overview

On February 5, 2018, the Network disseminated a Regional Healthcare HVA Survey to colleagues in Kitsap County, seeking their input on regional hazards. Participants were provided an overview of each hazard, the ranking determined in the previous HVA, any comments from previous HVA participants, and additional documents. Participants were asked to assess the hazards and determine: "Based on the hazard definition, regional likelihood, and comments from the first HVA round discussion, how would you rank the regional healthcare impact of…" each hazard (see Appendix 1). Participants were asked to consider the ranking from the 2017 HVA round before ranking each hazard on a 3-point Likert Scale (Low, Moderate, or High) using the same definitions for impact as outlined in the 2017 HVA.

The survey was disseminated via SurveyMonkey and was open for responses from February 5 – March 12, 2018.

### Results

A total of 12 respondents participated in the survey. Of the 28 hazards, a total of 10 reached consensus. Of the remaining hazards, most had a clear majority with 50% or more votes except for Power Outage (Isolated) which had only a 42% consensus. Power Outage (Isolated) was also the only hazard that did not align with the impact level of the 2017 King/Pierce County HVA (Moderate vs. Low Impact).

The following hazards did not reach defined consensus (75%), but at least half of participants agreed upon a specific hazard level. The hazards that did reach at least 50% agreement (along with the majority Impact rating) are in alphabetical order:

- Active Threat – 66% Moderate
- Dam Failure – 66% Low
- Fire (Structure) – 72% Low
- Fire (Wildfire) – 58% Low
- Fires (Wildland Urban Interface) – 72% Low
- Flooding (Major) – 72% Moderate
- Geomagnetic Storm – 50% High
- Hazardous Materials Incident (Small) – 72% Low
- Hazardous Materials Incident (Large) – 58% Moderate
- Health (Epidemic, pandemic, and bioterrorism) – 66% High
- Power Outage (Regional) – 64% High
- Technology Threats – 66% High
- Terrorism (Small) – 64% Moderate
- Terrorism (Large) – 66% High
- Transportation – 66% Moderate

Figure 2 below provides an in-depth breakdown of the rated impact and percent consensus:

**Figure 2:** Hazard Likelihood and Impact Rating for Kitsap County

| Hazard | Likelihood | Impact | Consensus (%) |
|---|---|---|---|
| Active Threat | Low | Moderate | No (66%) |
| Avalanche | High | Low | Yes (75%) |
| Dam Failure | Low | Low | No (66%) |
| Earthquake | | High | Yes (91%) |
| Fires | | | |
|    Structure Fire | High | Low | No (72%) |
|    Wildfire | High | Low | No (58%) |
|    Wildland/Urban Interface | Low | Low | No (72%) |
| Flooding | | | |
|    Minor Flooding | High | Low | Yes (75%) |
|    Major Flooding | Low | Moderate | No (72%) |
| Geomagnetic Storm | Low | High | No (50%) |
| Hazardous Materials Incident | | | |
|    Small | High | Low | No (72%) |
|    Large | Low | Moderate | No (58%) |
| Health (epidemic, pandemic, and bioterrorism) | High | High | No (66%) |
| Infrastructure Failure | Low | Moderate | Yes (75%) |
| Landslide | High | Low | Yes (75%) |
| Pipeline incident | Low | Low | Yes (91%) |
| Power Outage (Isolated) | Low | Moderate | No (42%) |
| Power Outage (Regional) | Low | High | No (64%) |
| Severe Weather/Storm | | | |
|    Storm | High | Moderate | Yes (84%) |
|    Excessive Heat | High | Low | Yes (84%) |
| Social Unrest | Low | Low | Yes (75%) |
| Technology Threats | High | High | No (66%) |
| Terrorism | | | |
|    Small | Moderate | Moderate | No (64%) |
|    Large | Low | High | No (66%) |
| Transportation | Low | Moderate | No (66%) |
| Tsunami and Seiches | Low | Moderate | Yes (75%) |
| Water Shortage/Drought | Low | Low | Yes (83%) |
| Volcano | Low | High | No (50%) |

## Participant Demographics

Participants represented a variety of healthcare organizations, local health jurisdiction, local fire departments, and EMS agencies.

Participants represented the following sectors:

- Behavioral Health (1)
- Dialysis (1)
- EMS (2)
- Hospital (2)

- Long-term Care (2)
- Outpatient (1)
- Public Health (1)
- Local Fire Departments (2)

Participants noted significant professional experience in their respective fields. All of them have been in their field for at least 1 year, just under half ranging between 5-20 years, most participants reported having over 20 years of professional experience (see chart). All the participants are from organizations within Kitsap County. A few participants also noted that their organizations additionally serve in surrounding counties.

### Participant Years of Experience
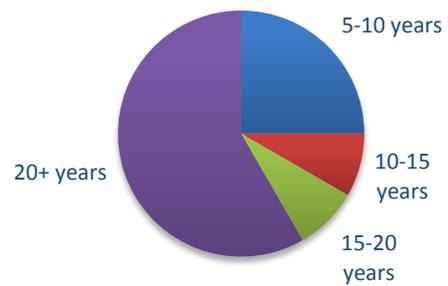
## FINAL ANALYSIS

The results of the 2018 Kitsap Regional HVA indicate a high level of agreement between the Kitsap survey results and the previous King-Pierce survey in terms of the priority level of impact for each hazard. The only hazard that did not align with the 2017 HVA was Power Outage (Isolated), as this hazard did not reach a consensus threshold in the Kitsap survey. The lack of consensus for Power Outage (Isolated) and the handful of other hazards that did not reach a high level of consensus may be due to the smaller number of respondents for the Kitsap HVA.

Figure 3 presents a visual placement of the hazards onto a matrix from insignificant to extreme based on the combination of their likelihood and impact. The only hazard that could not be placed is Power Outage (Isolated) due to not reaching the consensus threshold by the respondent group. Based upon the similarity of Kitsap County's results to King and Pierce counties in its rankings of the other hazards, we can assume with a moderate degree of confidence that the impact rating for this hazard would be also be low or moderate.

The high level of agreement in impact ratings and priority for the Kitsap County HVA compared to the King-Pierce County HVA provide support for a combined regional HVA describing the hazards and level of impact for the three-county region of King, Kitsap, and Pierce counties.
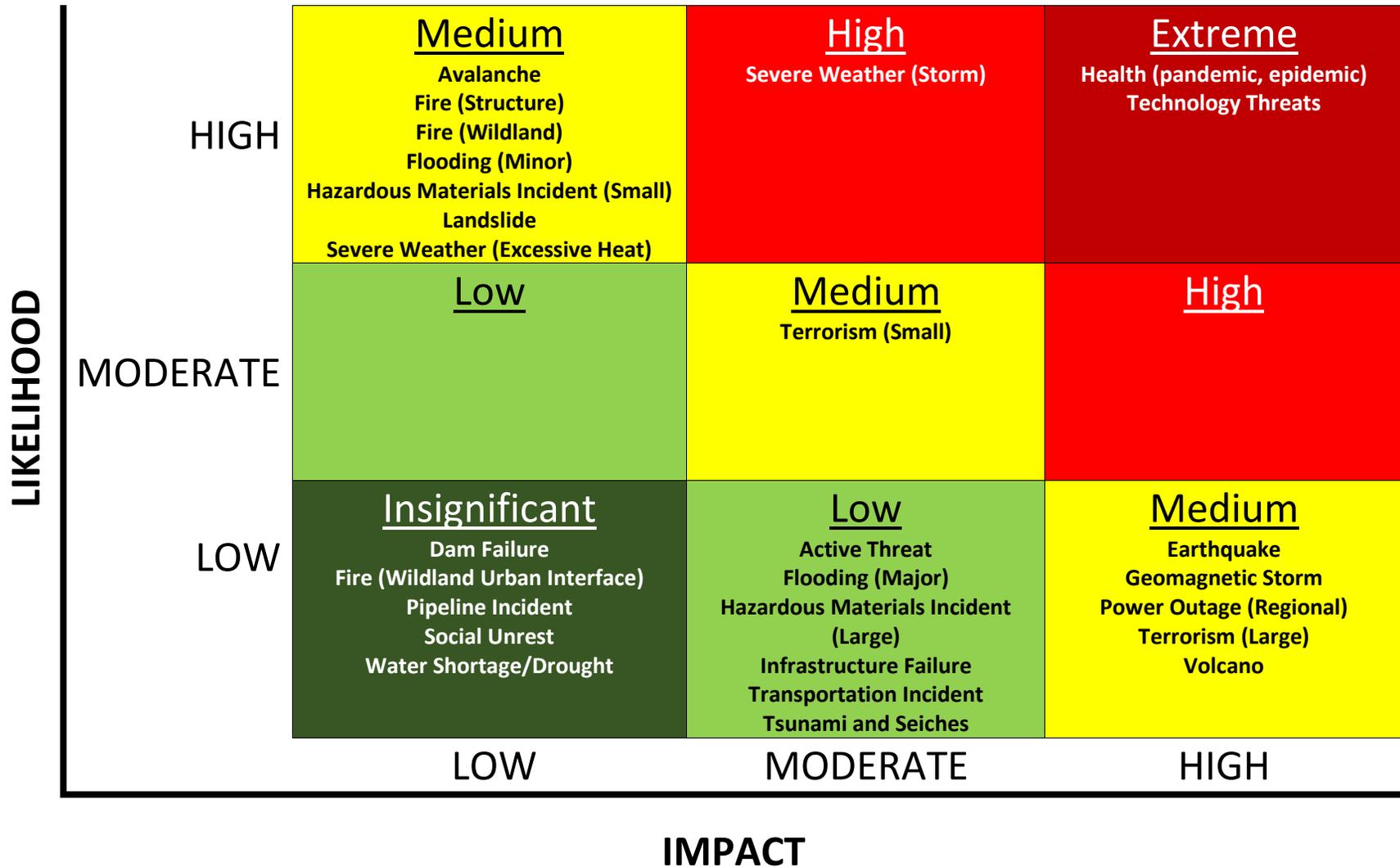
## CONCLUSION AND FUTURE WORK

This Kitsap Regional Healthcare Hazard Vulnerability Assessment continues the Northwest Healthcare Response Network's work in analyzing and reporting of potential hazards impacting our region.  The aim of this individual report is to provide specific information for emergency managers in Kitsap County regarding Kitsap County healthcare hazards. The Network plans on performing regular reviews of the regionwide HVA to determine when updates are needed to individual counties, or the larger region.

**Figure 3:** Hazard Matrix Results

| MATRIX DESIGNATION | HAZARD | MATRIX DEFINITION |
|---|---|---|
| **Extreme** | • Health (epidemic, pandemic)<br>• Technology Threats | 'High' likelihood and 'High' impact |
| **High** | None | 'Moderate' likelihood and 'High' impact |
| | • Severe Weather (Storm) | 'High' likelihood and 'Moderate' impact |
| **Medium** | • Earthquake<br>• Geomagnetic Storm<br>• Power Outage (Regional)<br>• Terror Attack (Large)<br>• Volcano | 'Low' likelihood and 'High' impact |
| | • Terror Attack (Small) | 'Moderate' likelihood and 'Moderate' impact |
| | • Avalanche<br>• Fire (Structure)<br>• Fires (Wildland)<br>• Flooding (Minor)<br>• Hazardous Materials Incident (Small)<br>• Landslide<br>• Severe Weather (Excessive Heat) | 'High' likelihood and 'Low' impact |
| **Low** | • Active Threat<br>• Flooding (Major)<br>• Hazardous Materials Incident (Large)<br>• Infrastructure Failures<br>• Transportation Incident<br>• Tsunami and Seiches | 'Low' likelihood and 'Moderate' impact |
| | None | 'Moderate' likelihood and 'Low' impact |
| **Insignificant** | • Dam Failure<br>• Fire (Wildland Urban Interface)<br>• Pipeline Incident<br>• Social Unrest<br>• Water Shortage/Drought | 'Low' likelihood and 'Low' impact |
| **Uncategorized** | • Power Outage (Isolated) | Not categorized in Matrix due to lack of consensus |

**Figure 4:** Final Hazard Risk Matrix*

| | | | |
|---|---|---|---|
| **HIGH** | **Medium**<br>Avalanche<br>Fire (Structure)<br>Fire (Wildland)<br>Flooding (Minor)<br>Hazardous Materials Incident (Small)<br>Landslide<br>Severe Weather (Excessive Heat) | **High**<br>Severe Weather (Storm) | **Extreme**<br>Health (pandemic, epidemic)<br>Technology Threats |
| **MODERATE** | **Low** | **Medium**<br>Terrorism (Small) | **High** |
| **LOW** | **Insignificant**<br>Dam Failure<br>Fire (Wildland Urban Interface)<br>Pipeline Incident<br>Social Unrest<br>Water Shortage/Drought | **Low**<br>Active Threat<br>Flooding (Major)<br>Hazardous Materials Incident (Large)<br>Infrastructure Failure<br>Transportation Incident<br>Tsunami and Seiches | **Medium**<br>Earthquake<br>Geomagnetic Storm<br>Power Outage (Regional)<br>Terrorism (Large)<br>Volcano |
| | **LOW** | **MODERATE** | **HIGH** |

**LIKELIHOOD** (vertical axis)

**IMPACT** (horizontal axis)

*Power Outage (Isolated) not categorized in Hazard Risk Matrix due to lack of consensus