The National Risk Index

A New Tool to Communicate and Interpret Community Risk

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ABS Consulting
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• What is the NRI?

• How was it developed?

• What are the components?

• How can I use the NRI site?

• What is the purpose and vision?
What is the National Risk Index?
NRI Components

18 NATURAL HAZARDS

COMMUNITY RESILIENCE

SOCIAL VULNERABILITY

BUILT ENVIRONMENT
Social Vulnerability (SoVI)
Built Environment (Hazus GBS)
<table>
<thead>
<tr>
<th>Natural Hazards</th>
<th>Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>Avalanche</td>
<td>CO Avalanche Information Center</td>
</tr>
<tr>
<td>Coastal Flood</td>
<td>NOAA National Weather Service, Storm Events Database, and Coastal sea level rise</td>
</tr>
<tr>
<td>Cold Wave</td>
<td>NOAA North American Climate Extremes Monitoring, National Weather Service, and Storm Events Database</td>
</tr>
<tr>
<td>Drought</td>
<td>National Drought Mitigation Center</td>
</tr>
<tr>
<td>Earthquake</td>
<td>National Earthquake Hazards Reduction Program</td>
</tr>
<tr>
<td>Hail</td>
<td>NOAA Storm Prediction Center and Storm Events Database</td>
</tr>
<tr>
<td>Heat Wave</td>
<td>NOAA North American Climate Extremes Monitoring and Storm Events Database</td>
</tr>
<tr>
<td>Hurricane</td>
<td>NOAA National Hurricane Center and Storm Events Database, Hazus Wind Probabilistic Geodatabase</td>
</tr>
<tr>
<td>Ice Storm</td>
<td>U.S. Army Corps of Engineers</td>
</tr>
<tr>
<td>Landslide</td>
<td>U.S. Geological Survey</td>
</tr>
<tr>
<td>Lightning</td>
<td>NOAA Severe Weather Data Inventory, Storm Events Database, and National Center for Environmental Information</td>
</tr>
<tr>
<td>Riverine Flood</td>
<td>FEMA Special Flood Hazard Exposure Map and National Flood Hazard Layer</td>
</tr>
<tr>
<td>Snowstorm/Blizzard</td>
<td>NOAA Storm Events Database and National Operating Hydrologic Remote Sensing Center</td>
</tr>
<tr>
<td>Strong Wind</td>
<td>NOAA Storm Prediction Center and Storm Events Database</td>
</tr>
<tr>
<td>Tornado</td>
<td>NOAA Storm Prediction Center and Storm Events Database</td>
</tr>
<tr>
<td>Tsumani/Seiche</td>
<td>NOAA National Center for Environmental Information, individual state sponsored datasets from HI, CA, OR, WA, and AK</td>
</tr>
<tr>
<td>Volcano</td>
<td>UN Office for Disaster Risk Reduction</td>
</tr>
<tr>
<td>Wildfire</td>
<td>U.S. Geological Survey and U.S. Forest Service</td>
</tr>
</tbody>
</table>
Composite Risk Index & Equation

Preliminary

\[
\text{HAZARD LIKELIHOOD} + \text{SOCIAL VULNERABILITY} + \text{BUILT ENVIRONMENT} - \text{COMMUNITY RESILIENCE} \equiv \text{NATIONAL RISK INDEX}
\]

Future

\[
\sum (\text{Hazard} \times \text{Exposure} \times \text{Physical Vulnerability}) \times \text{Social Vulnerability} \times \left(\frac{1}{\text{Resilience}}\right) = \text{National Risk Index}
\]
How was the NRI developed?

Pre-NRI Issues:

1) Decentralized data
2) Data at local scale
3) Not easily viewed on a map
4) One risk displayed
5) If multivariate, then independent of each other

NRI Solution:

1) Centralized risk data
2) National scale
3) Intuitive map display
4) Individual & multivariate
5) Risk Index combines risks
NRI Contributors

- Regional Government
- Federal Government
- Local Government
- Private
- Non-Profit
- FEMA
Identify hazard types & dataset sources

Design & develop a National Risk Index tool

NRI Working Groups

Natural Hazards
Vulnerability and Resilience
Data Analytics
How does the NRI site function & communicate risk?
Multiple Location Comparison Report

Multiple Location Comparison

Use this report to identify how selected locations compare to each other. Click a location name in any table below to open an individual report for the location and review more detail.

Risk Index

<table>
<thead>
<tr>
<th>Rank</th>
<th>Location</th>
<th>State</th>
<th>Score</th>
<th>Rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Multnomah County</td>
<td>OR</td>
<td>36.0</td>
<td>Relatively Low</td>
</tr>
<tr>
<td>2</td>
<td>Clackamas County</td>
<td>OR</td>
<td>35.0</td>
<td>Relatively Low</td>
</tr>
</tbody>
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Hazard Specific Risk

Hazard-specific risk scores are calculated using values for only a single hazard, and reflect a location’s relative risk for the individual hazard only.

Avalanche

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</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Multnomah County</td>
<td>OR</td>
<td>22.1</td>
<td>Very Low</td>
</tr>
<tr>
<td>2</td>
<td>Clackamas County</td>
<td>OR</td>
<td>20.4</td>
<td>Very Low</td>
</tr>
</tbody>
</table>

Coastal Flooding

| Rank | Location         | State | Score | Rating         |

National Risk Index

Print Report
Download Data

Print Report
Download Data
Multnomah County, Oregon

Overview

Risk Index: Relatively Low
Natural Hazard Incidence: Relatively Low
Social Vulnerability: Relatively Moderate
Built Environment: Relatively Low
Community Resilience: Relatively High

Risk Index: 35.0

Risk Index

The Risk Index is Relatively Low for Multnomah County when compared to the rest of the nation.

Risk Index Score: 35.0
National Rank: 2,530 / 33,758
State Rank: 29 / 50

Natural Hazard Incidence
Social Vulnerability
Built Environment
Community Resilience

Hazard-Specific Risk

Hazard-specific risk scores are calculated using values for only a single hazard, and reflect a location’s relative risk for the individual hazard only.

The chart to the right depicts Multnomah County's relative risk for each individual hazard. Hazards are sorted alphabetically in a clockwise fashion. The further the chart area reaches from the center of the circle to the exterior, the higher the
Single Location Report

Hazard-Specific Risk

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The chart to the right depicts Multnomah County’s relative risk for each individual hazard. Hazards are sorted alphabetically in a clockwise fashion. The further the chart area reaches from the center of the circle to the exterior, the higher the relative risk for a hazard.

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<tr>
<th>Natural Hazard</th>
<th>Hazard Risk Score</th>
<th>Rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>Avalanche</td>
<td>22.1</td>
<td>Very Low</td>
</tr>
<tr>
<td>Coastal Flooding</td>
<td>25.7</td>
<td>Relatively Low</td>
</tr>
<tr>
<td>Cold Wave</td>
<td>22.6</td>
<td>Relatively Low</td>
</tr>
<tr>
<td>Drought</td>
<td>26.5</td>
<td>Relatively Low</td>
</tr>
<tr>
<td>Earthquake</td>
<td>30.1</td>
<td>Relatively Moderate</td>
</tr>
<tr>
<td>Flood</td>
<td>92.8</td>
<td>Relatively High</td>
</tr>
</tbody>
</table>

Natural Hazard Incidence

In Multnomah County, natural hazard incidence is relatively low when compared to the rest of the nation.

17 of 16 natural hazards are factored into the natural hazard incidence factor for Multnomah County.
Single Location Report

Social Vulnerability

In Multnomah County, the susceptibility of social groups to the impacts of hazards is Relatively Moderate when compared to the rest of the nation. Such susceptibility may lead to disproportionate death, injury, loss, or disruption of livelihoods.

Built Environment

In Multnomah County, buildings of all occupancy types are valued at approximately $200,000,000, which is Relatively Low when compared to the rest of the nation.

Community Resilience

In Multnomah County, communities’ ability to prepare and plan for, absorb, recover from, and more successfully adapt to natural hazards is Relatively High when compared to the rest of the nation.

Interpretation & Application

To decrease your risk, you first need to understand what is driving it.

According to the National Risk Index, higher Natural Hazard Resilience, higher Social Vulnerability, higher Built Environment and/or lower Community Resilience increase your overall risk.

Next Steps: Natural Hazard Risk

Consider the following as you apply knowledge of natural hazard risk and take action to reduce it:

- Explore source information for hazards, social vulnerability and community resilience to understand each risk factor's contribution to your overall Risk Index score.
- Ask & Answer: Does your area of interest have a current risk assessment or established mitigation plan?
- Ask & Answer: How can you prepare for different natural hazards and mitigate risk in your community?
Vision for how the NRI can be used

- Enhance Hazard Mitigation Plans
- General public risk awareness and engagement
- Support FEMA RiskMAP and THIRA
- Inform long term community recovery
- Integrate into programmatic outreach (NFIP)
- Hazard mitigation grant program application and prioritization
- Natural hazards and resilience research
- Targeted investment of federal risk reduction programs
- Baseline risk assessment for highlighting areas that could benefit from more detailed analysis
• Late summer 2018
• Fema.gov URL
• Methodology reports available
• Data download
• Links to data source
• Official NRI email for support
Questions?

Contact: nmontague@absconsulting.com