

Applying Data Science Methods to Better Preparing Portlanders for a Cascadia M9.0 Earthquake

**A Proposal for
The City of Portland**

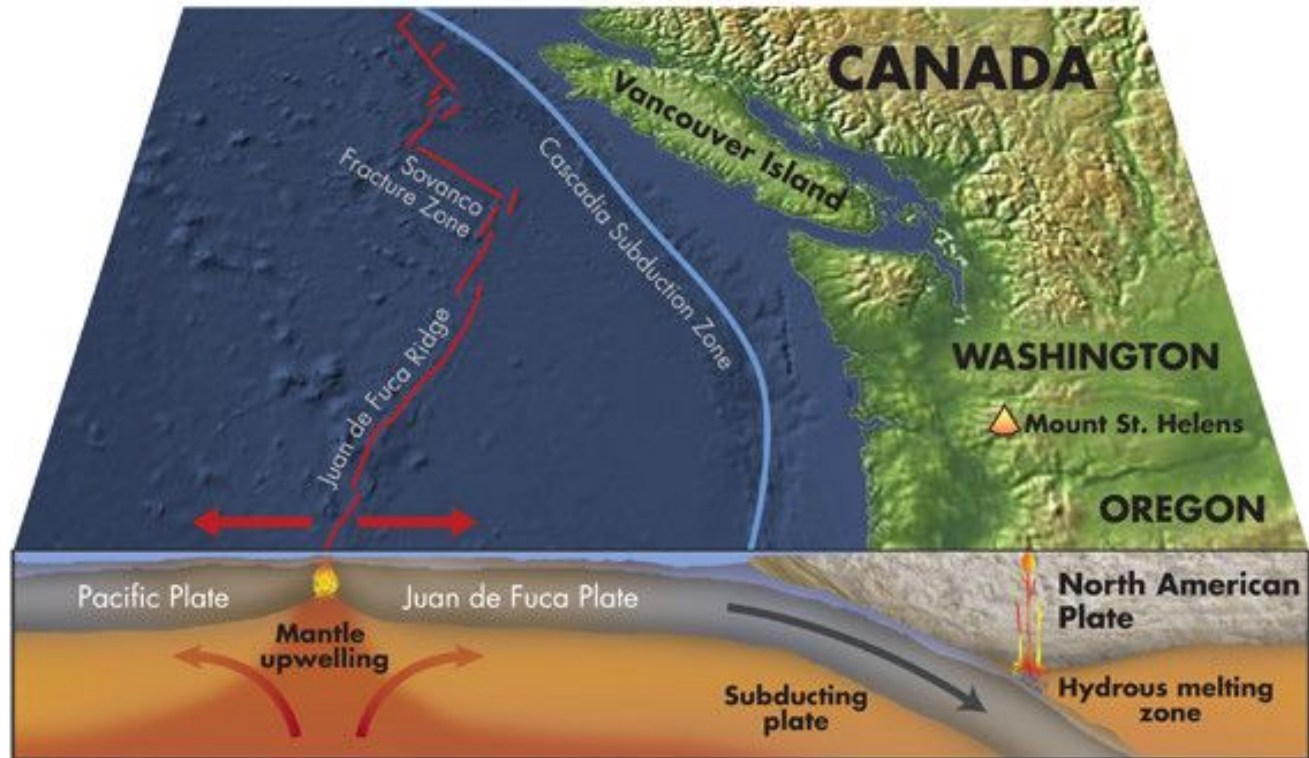


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Geologic Context



Geologic Context



MOTIVATION

- Finding information
on the earthquake
is a challenge

24%

chance a M 9.0
occurring in the next
50 years

MOTIVATION

To Help Portlanders

- Know how much food and water to buy
- Know how to respond
- Know where to go for help

Proposed IMPACTS

- **Provide individualized plans**
- **Reduce human suffering**

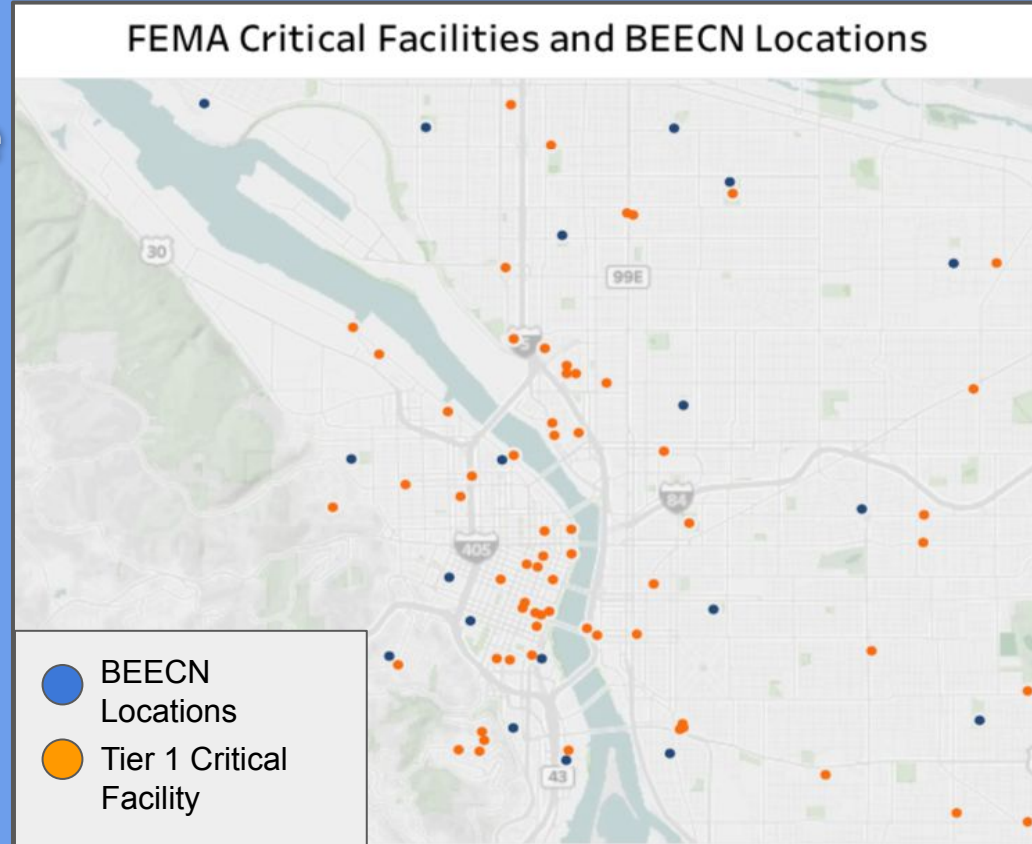
Data science can help make sense of government and scientific datasets to provide individualized earthquake plans to all Portlanders.

DATASETS

- **Government Earthquake
Response Plan**
- **Housing Data**
- **Predicted Utilities
Outages**

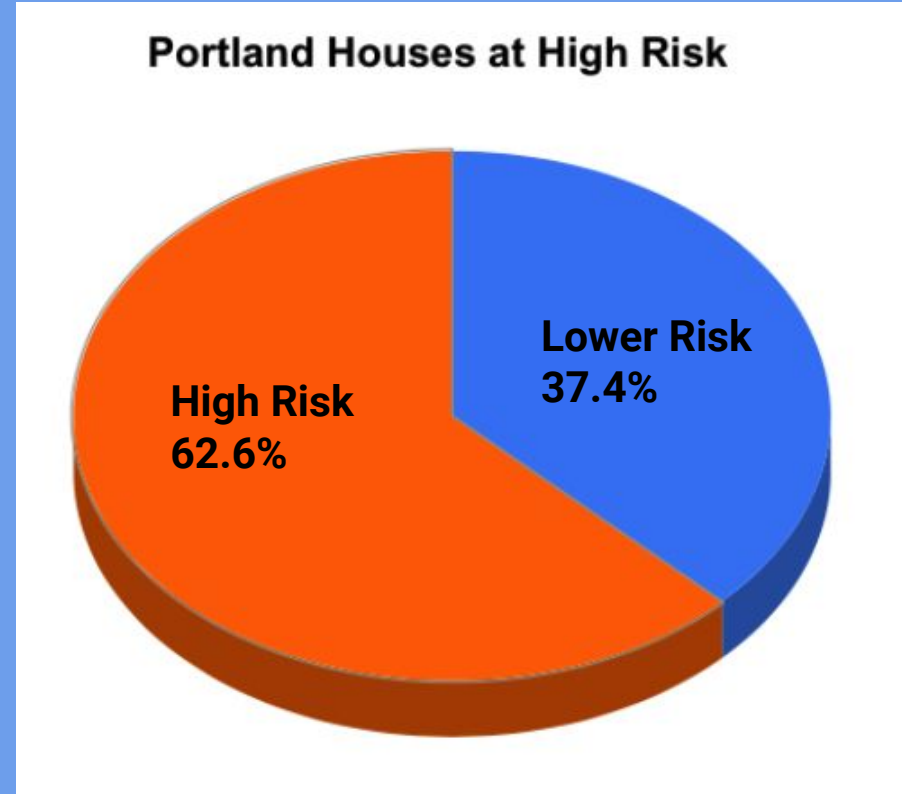
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DATASETS

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Critical Services	Estimated Time to Restore Services
Electricity	1 to 3 months
Police and fire stations	2 to 4 months
Drinking water and sewer	1 month to 1 year
Healthcare facilities	18 months

DATA SCIENCE SOLUTION:

Supervised Machine Learning Model

Classification

- Response recommendation based on housing data
- Closest BEECN and Critical Facilities

Regression

- Risk assessment/risk score
- Food and water storage



Vision & Application

Input:

- Address
- Number of people in the home

Output:

- Recommendation to duck and cover or leave home
- Amount of food and water to have stocked up
- Closest FEMA facility
- Closest BEECN station

Future work: Implement the model in Portland. Expand to the entire state of Oregon

