Simulation approaches for assessing the impacts on equity in a region due to earthquakes

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How might extensive earthquake damage to US-101 disrupt the daily commute of people in Palo Alto versus San Francisco?

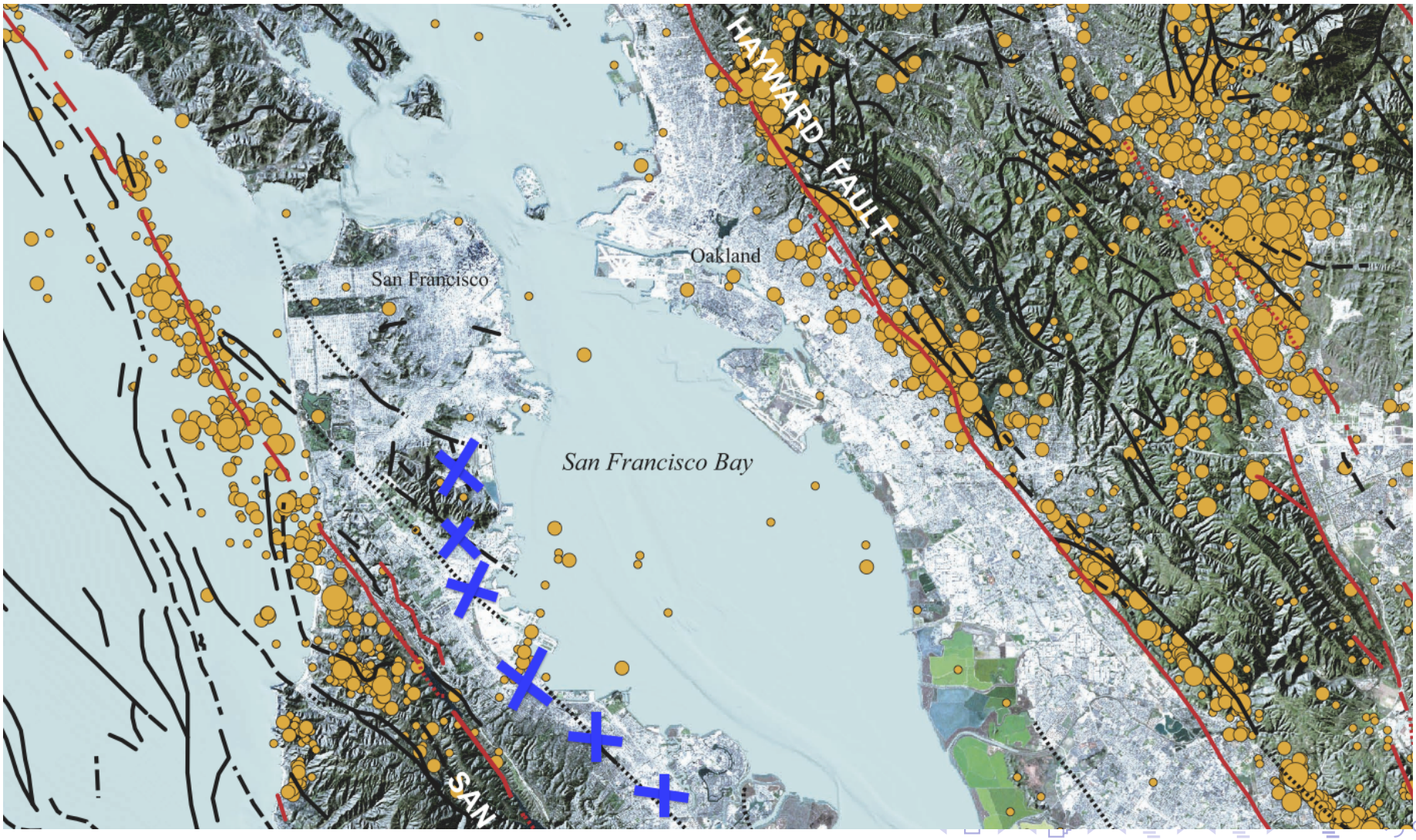

Image source: Modified from United States Geological Survey (USGS)

Challenges

The research problem is to assess the risk of natural disasters to lifeline networks

- at a large scale,
- in a risk-consistent probabilistic approach and
- examining the network impacts not only globally (region-wide) but also for individual communities and socio-economic groups

Summary

Today I have shown a method for assessing the impacts of earthquakes on equity. Results from a case study of the San Francisco Bay Area suggest:

1. Some geographic regions are at higher risk than others, particularly where there is limited public transit and/or limited redundancies in the roads

2. Wealthier households may be at higher risk of losses in accessibility

3. Prioritizing bridge retrofits by highest risk of collapse is different than prioritizing by impact on accessibility

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