Seattle Hazard Identification

CAE 744 Risk Management and Resilience Course – Fall, 2021

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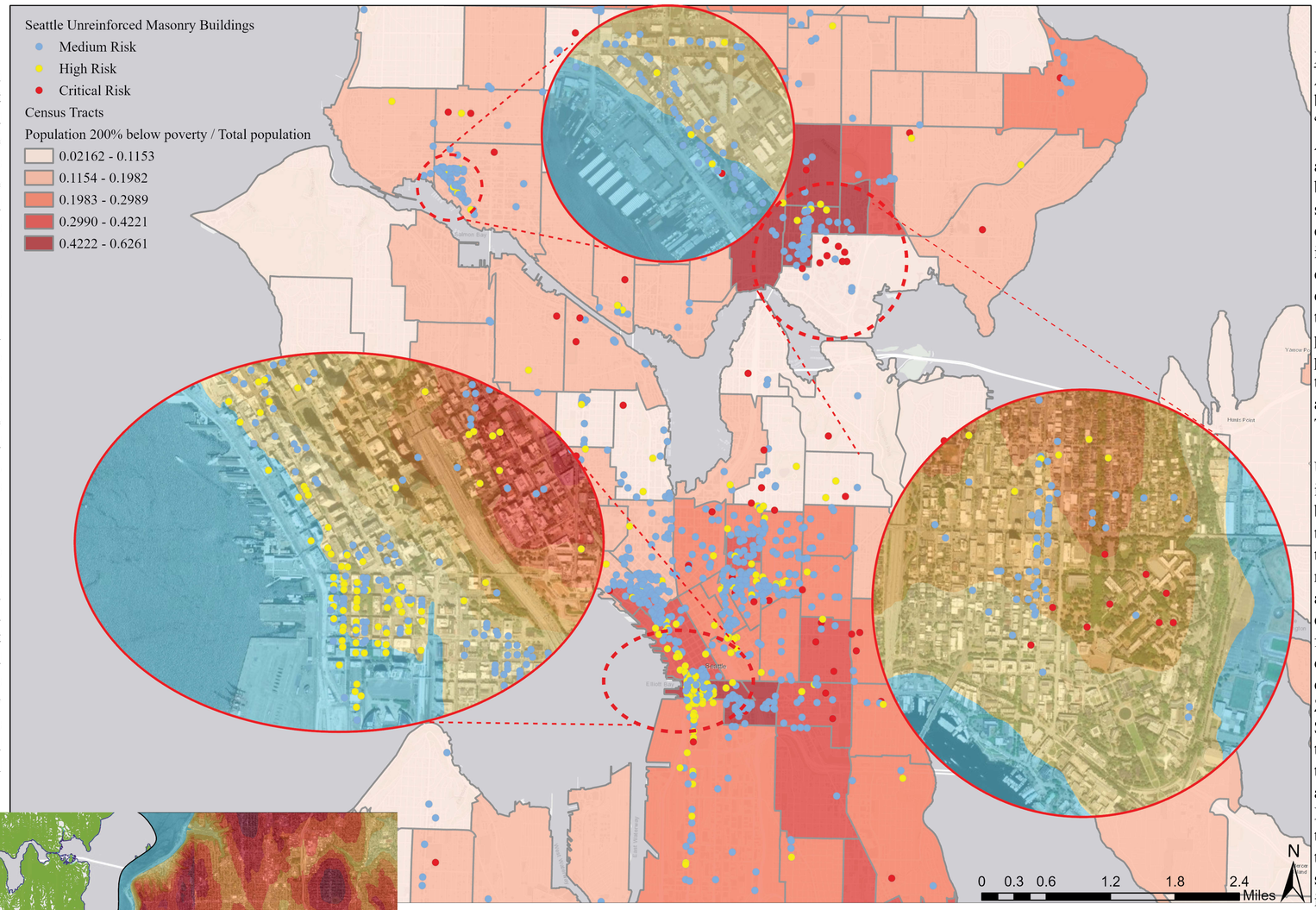
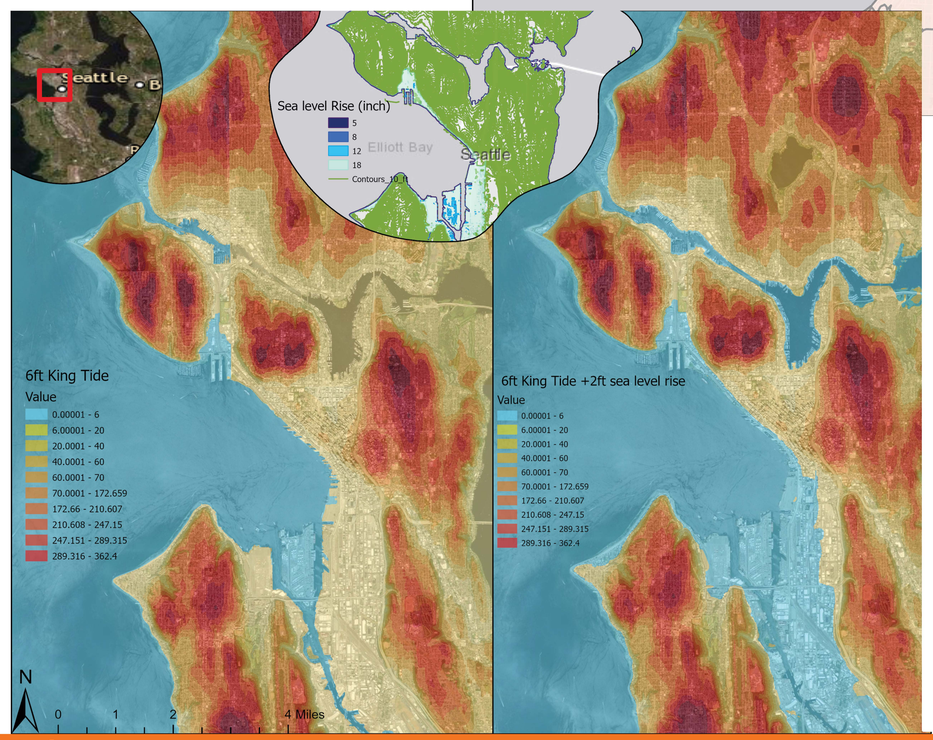
King Tide

Problem:
Tidal levels in Seattle have only risen 6 inches in the past hundred years. However experts expect another 10 inches of sea level rise by 2050 and 28 inches by 2100. This sea level rise will create more frequent tidal flooding events known as "king tides". The typical tidal levels in Seattle fluctuate an average of 6 feet between high and low tide, but during king tide events this fluctuation can be much higher.

Not typically associated with heat, Seattle has averaged only a handful of 90 degree (F) days per year during the past few decades. By the end of this century, such events are expected to become more common, with more than two weeks of 90 degree (F) days likely each summer. Also certain to increase are nighttime temperatures and humidity. Increased temperatures will likely increase water demand, which SPU feels it can address through its comprehensive water conservation program.

Pacific Northwest winters are projected to become warmer and wetter, and summers warmer and drier. That means more rain than snow falling on the Cascade Mountains and eventually more prolonged periods of drought. It also likely means changing forests, stressed salmon habitat, and even wildfires. SPU has assessed potential impacts to our water supply and identified some adaptation options and is committed to updating these assessments and options periodically and researching related issues as needed.

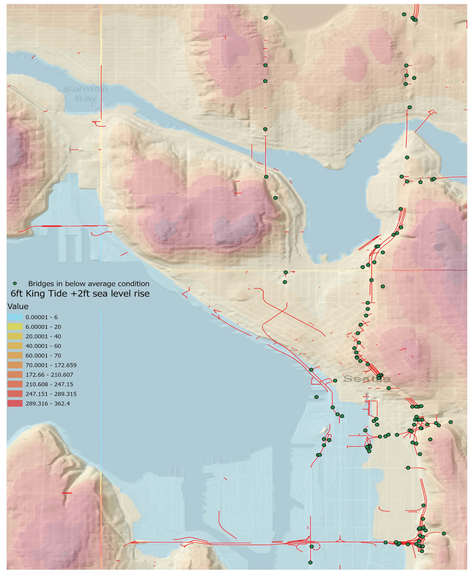




Deteriorating Infrastructure

Problem:
According to an audit conducted in 2019, of Seattle's 77 bridges, only 22 are in "good" condition while 50 are in "fair" condition and 5 are in "poor" condition. Additionally, two of the most heavily used bridges are among those rated "poor". Furthermore, the number of bridges in "fair" condition has increased dramatically since 2010 while the number of bridges in "good" condition had decreased. The SDOT is taking three steps to improve infrastructure maintenance: (1) They will report condition assessments on a more component-by-component basis, (2) they will create a three-year Strategic Advisor position dedicated to producing a strategic, long-term capital replacement, preservation, and maintenance plan for bridges based on the results of the new component-based condition assessment, and (3) they will publish their first ever Transportation Asset Management Plan.

Unreinforced concrete masonry buildings are also an issue in Seattle. There are over 1,100 unreinforced masonry buildings in Seattle, and, after an earthquake in 2001, over two-thirds of them were deemed unsafe. Experts believe the chance of a damaging earthquake in the Puget Sound region in the next thirty years is significant. In addition to a repeat of damaging deep earthquakes such as those experienced in 1949, 1965, and 2001, Seattle potentially faces much stronger shaking from shallow earthquakes originating from the Seattle Fault or longer duration earthquakes originating from the Cascadia Subduction Zone. At the time, the estimate for a retrofit ranged from $5-40 per square foot. There is currently no policy in place that requires a major seismic retrofit of URM buildings that are not undergoing a major improvement or alteration.The proposed standard – referred to as the URM Retrofit Standard in this document – is a modification of the Bolts Plus retrofit for qualifying URMs. It requires that: (1) parapets be braced, (2) floors and roofs be structurally connected to URM walls, (3) framing be interconnected to strengthen floors and roofs, and (4) weak interior and exterior bearing walls be strengthened.



Increasing Poverty / Homelessness

Problem:
Seattle has roughly 11% of its population living in poverty according to 2018 data, which is actually down from 12.5% in 2017. This level is close to the national average of 11.4%, however, certain neighborhoods in Seattle have over 50% of their population living in poverty. Additionally, from 2006 to 2020, King Country population growth averaged 1.7% per year while homelessness grew twice as fast at a rate of 3.5% per year and unsheltered homelessness grew at 13.4% per year. More than half the homeless population have cardiovascular disease, a quarter have mental health issues, they are twice as likely to be hospitalized, four times as likely to require critical care and are between two and three times more likely to die from disease than the average population. Homelessness is estimated to cost the city of Seattle one billion dollars per year. Currently, the City of Seattle only budgets for $80 million for the Division of Homeless Strategy and Investment. In April 2021, the voter initiative Charter Amendment Measure 29, known as Compassion Seattle proposed to amend the Seattle charter adding a clause which requires the municipal administration to allocate at least 12% of its general financial budget to human services.

From 2010 to 2020 the King County added 67,000 units to the 112,000 lost due to the growth of rental canons which overcome the 80 percent of area median income (about $23,000 per year for a family of four in 2017). The root causes of homelessness are complex and multifaceted. According to a report issued by the mayor's office. These causes include issues with mental health and addiction, economic disparities and poverty, lack of affordable housing, racial disparities, the criminal justice system, the decentralized response to a regional crisis, and lack of wrap around services for youth within and exiting the foster system. Some reasons for homelessness have been attributed to the cost of living in Seattle having significantly risen in the past decade due to gentrification, lack of publicly owned affordable housing, and the economic impact of the Covid-19 pandemic. These have all culminated in an increase in the homeless population. Another contributing factor to the rising price of housing has been Amazon establishing its headquarters in downtown Seattle and the subsequent influx of high-wage tech workers due to the tech boom, between 2010 and 2017 the median rental cost in Seattle rose 41.7%, while the national average was only a 17.6% increase.

Reference

Esri, HERE, City of Seattle, Bureau of Land Management, Garmin, INCREMENT P, USGS, EPA, Maxar

Source(s):
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