

**Title:** Marin County Flooding and Sea Level Rise Hazard Vulnerability Model

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## **Background**

As climate-related events increase in frequency and severity, public health departments and the communities they serve need to prioritize actions to build resilience and enable effective response. Data identifying populations at heightened risk can provide criteria for prioritization. This study aims to develop a method to describe census tract-level flooding and sea-level rise (SLR) vulnerability ratings within Marin County using publicly-available data.

## **Methods**

Data was extracted from the American Census Survey (ACS) and CalAdapt and analyzed using a community-level climate vulnerability framework. This framework consists of 3 domains, exposure risk, built environment factors, and social vulnerability. The exposure risk for SLR was the percentage of population living in sea inundation zones. Impervious surface was the built environment factor and 15 social vulnerability indicators were chosen for the last domain. Total social vulnerability for each tract is calculated by measuring the 75th percentile of each indicator compared to census tracts within Marin. A map is created to identify tracts using a bivariate model of exposure risk and social vulnerability. This map was created along with a dashboard to describe census tracts of highest SLR vulnerability

## **Results**

The analysis of social vulnerability to sea level rise by census tract was published on the Marin County website. Of the 19 tracts identified as high risk of SLR, 9 scored high in social vulnerability. These 9 tracts are the highest priority for public health response and SLR preparedness.

## **Conclusion**

This study provides a model for public health flood preparedness and identifies priority census tracts for public health programming to build resiliency against climate change effects. The climate vulnerability framework created for this SLR vulnerability project can be used to frame projects assessing vulnerability of sub-county level populations to other climate hazards of interest including extreme heat, extreme cold, wildfires, poor air quality, and extended power outages.