

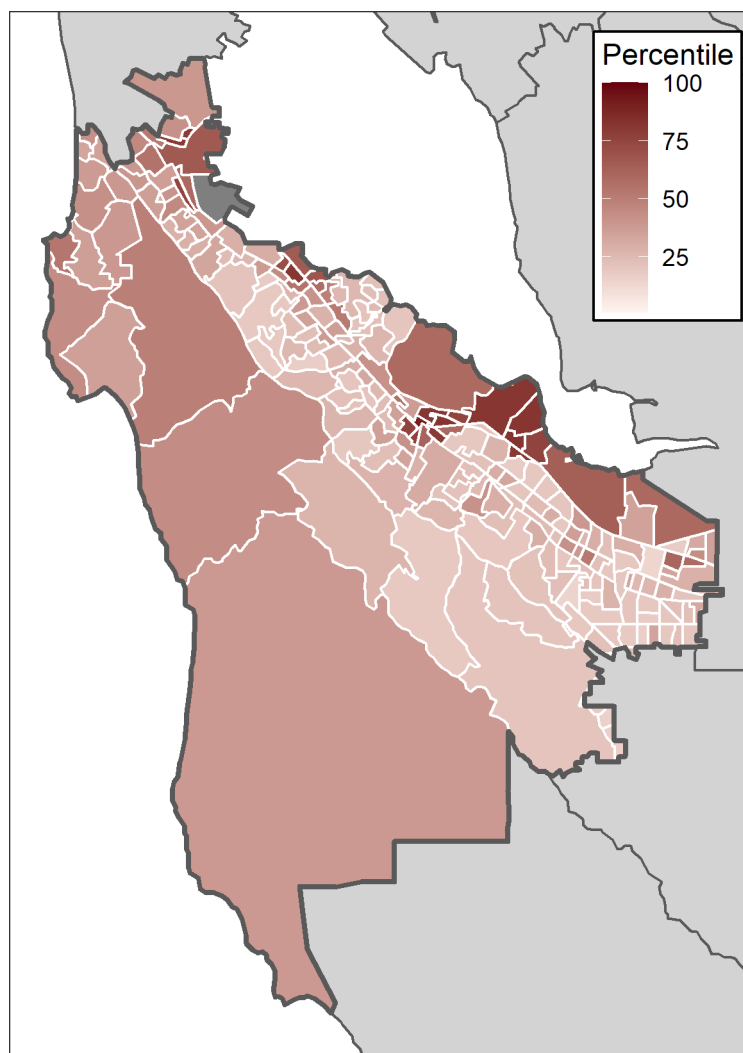
Senate District 13

Background

The statewide shelter-in-place orders have caused tremendous economic disruption. However, the experiences of individual households have been far from uniform. Those employed in essential industries, or those able to work remotely, are experiencing less negative impacts. Similarly, households with access to reliable infrastructure, economic reserves, and social resources are more resilient to economic disruption. By combining these two aspects of household vulnerability, this factsheet attempts to identify which communities are most likely to suffer negative economic impacts from coronavirus lockdown orders in California.

This first map shows the overall vulnerability of the US Census tracts to economic disruption. The subsequent sections show the individual-level employment vulnerability, household-level social vulnerability, and selected component indicators of the social vulnerability in final section.

Cumulative Economic Impact of Lockdown on Households by Tract



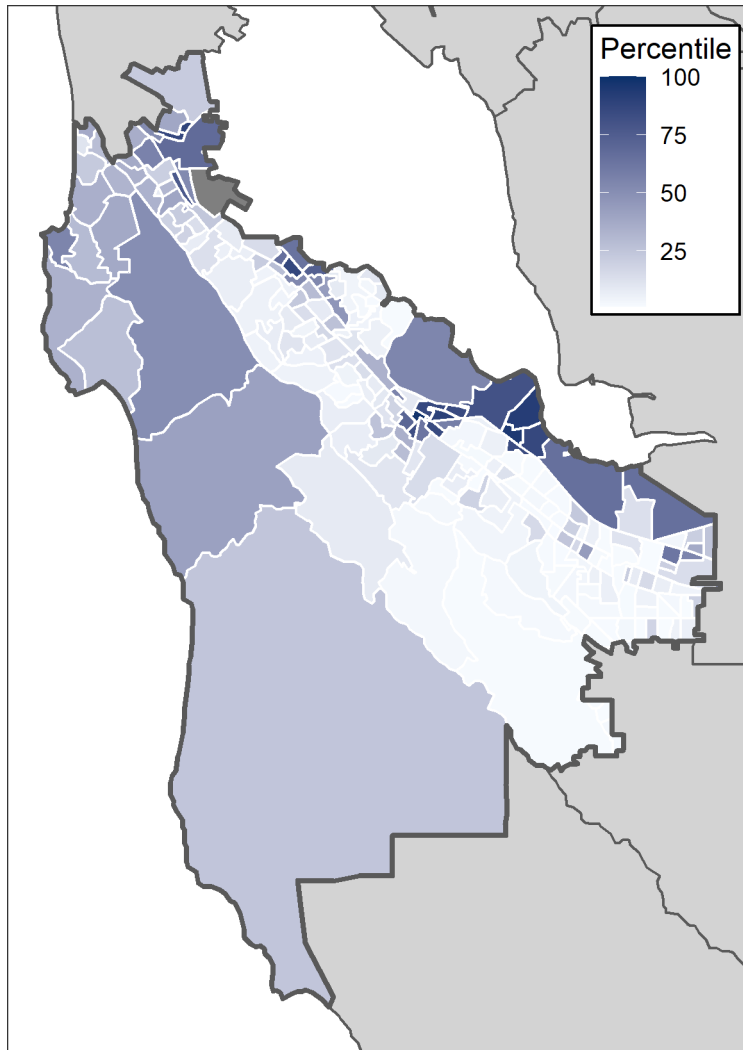
Overall vulnerability in Senate District 11 is concentrated towards the East of the District. This includes areas such as Menlo Park and East Palo Alto. Occupational vulnerability for Senate District 13 follows the same trend lines as that of the overall vulnerability for the region. Overall social vulnerability in Senate District 13 is concentrated towards the eastern part of the district., Overall vulnerability is higher in the east

of the district especially in South San Francisco and around Redwood City. Job loss vulnerability follows a similar pattern and social vulnerability is distributed throughout the district.

Combined Vulnerability to Job Loss by Tract

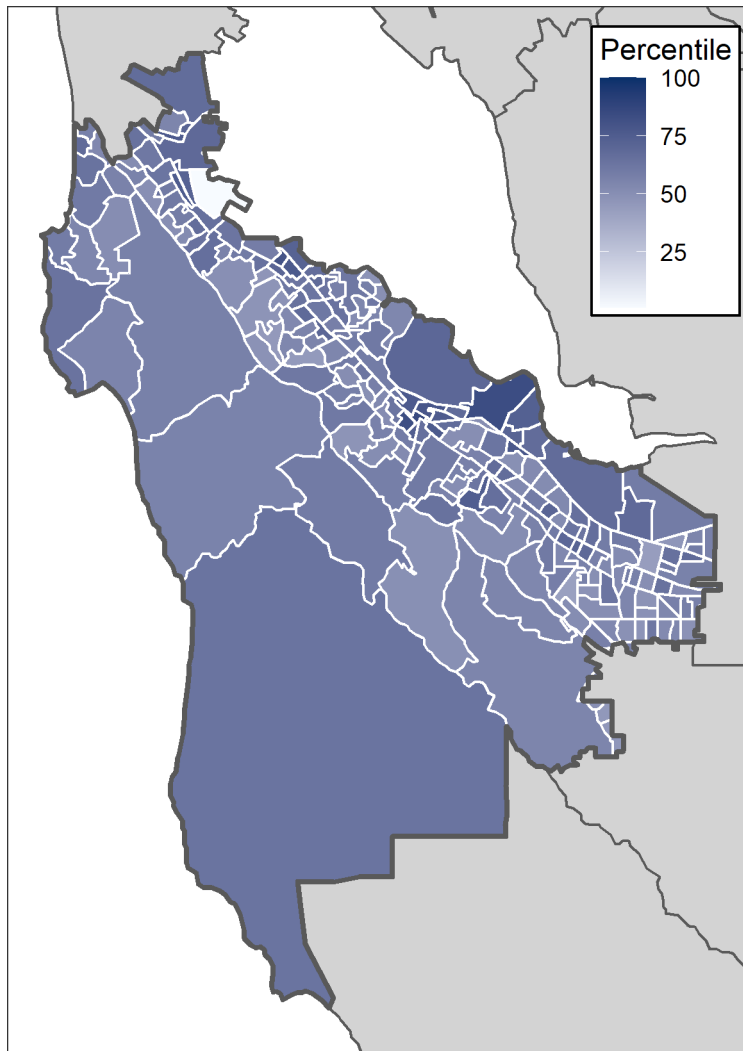
This map predicts levels of unemployment caused by the lockdown order by census tract. It combines data from a St. Louis Federal Reserve analysis (Gascon 2020) of the risk of unemployment from the Covid-19 lockdown for over 800 occupations with American Community Survey data on occupations by Census tract.

Risk of unemployment is determined by each occupation's suitability to work from home, the ratio of essential to non-essential workers and whether the role tends to be salaried or not.



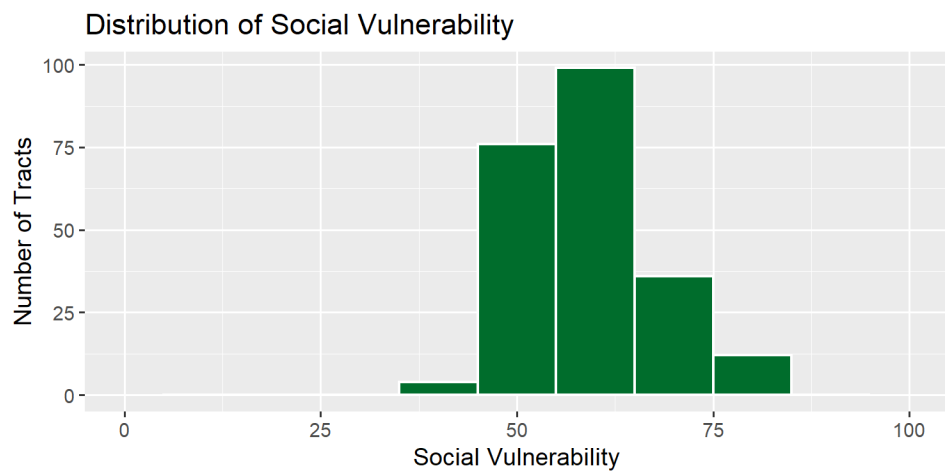
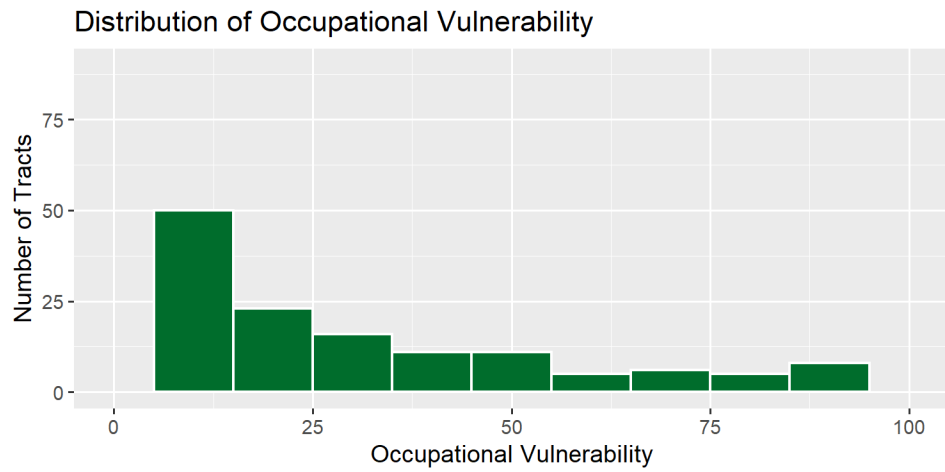
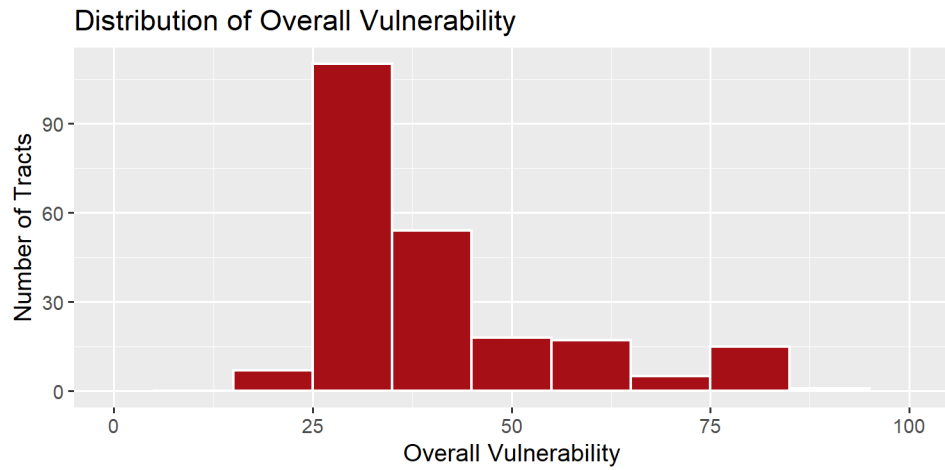
Combined Social Vulnerability by Tract

This map indicates the degree of social vulnerability at the Census tract level. Social vulnerability is the opposite of social resilience. It refers to the likelihood an individual or household will suffer negative consequences if they experience shocks or stresses, such as a job loss.

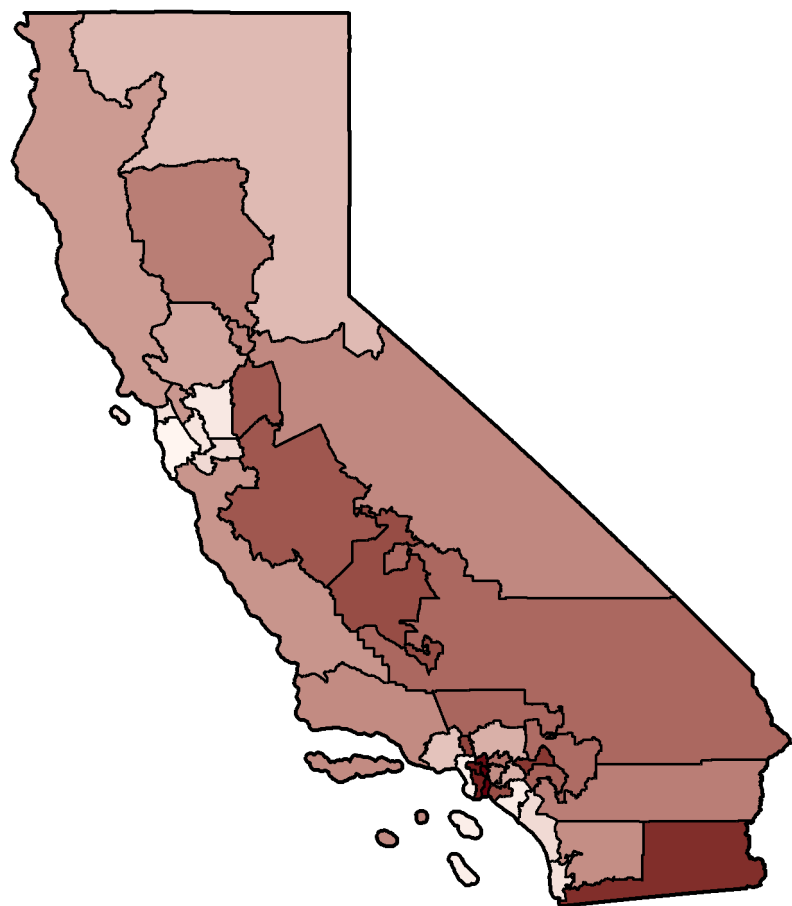


Histograms

Distribution of 1) Cumulative Economic Impact, 2) Vulnerability to Job Loss, and 3) Social Vulnerability by tract, within the district.



Cumulative Economic Impact of Lockdown on Households by District



Selected Individual Social Vulnerability Measures

Our measure of social vulnerability is made of 26 separate household-level indicators relevant to an individual and a household's ability to withstand shocks and stresses. The majority of the variables are derived from prior literature; however, our measure also includes a small number of variables that are missing from most mainstream measures of social vulnerability, and are meant to capture unique aspects of the Covid-19 shelter-in-place orders.

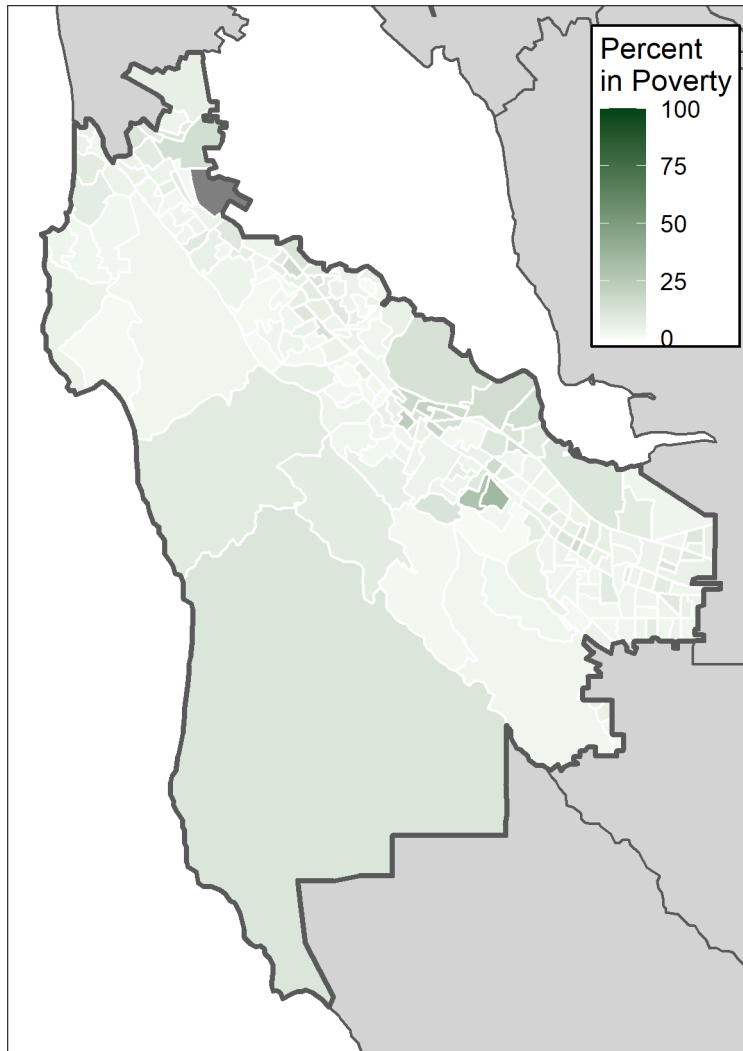
Maps for five highlighted indicators are published in the following pages. Individual maps for the rest are available from our interactive website at http://WEBSITE_HERE,

- Median age of the population in each community.
- Percentage of family households with only one parent present.
- Percentage of the population who are married with their spouse present.
- Percentage of the population who moved from out of state or abroad in the past year as of 2018.
- Percentage of female-headed households
- Percentage of households with undocumented individuals
- Percentage of households where over 30% of their income goes to paying rent
- Percentage of households who rent rather than own
- Percentage of households on public assistance such as SNAP or TANF
- Percentage of individuals that work part-time only
- Percentage of individuals without health insurance
- Percentage of individual without a diploma or equivalent
- Percentage of household with one or less earners
- Percentage of households where over 30% of their income goes to paying mortgages + utilities
- Percentage of individuals with a diploma or equivalent, but no college degree
- Percentage of households that are below the poverty line

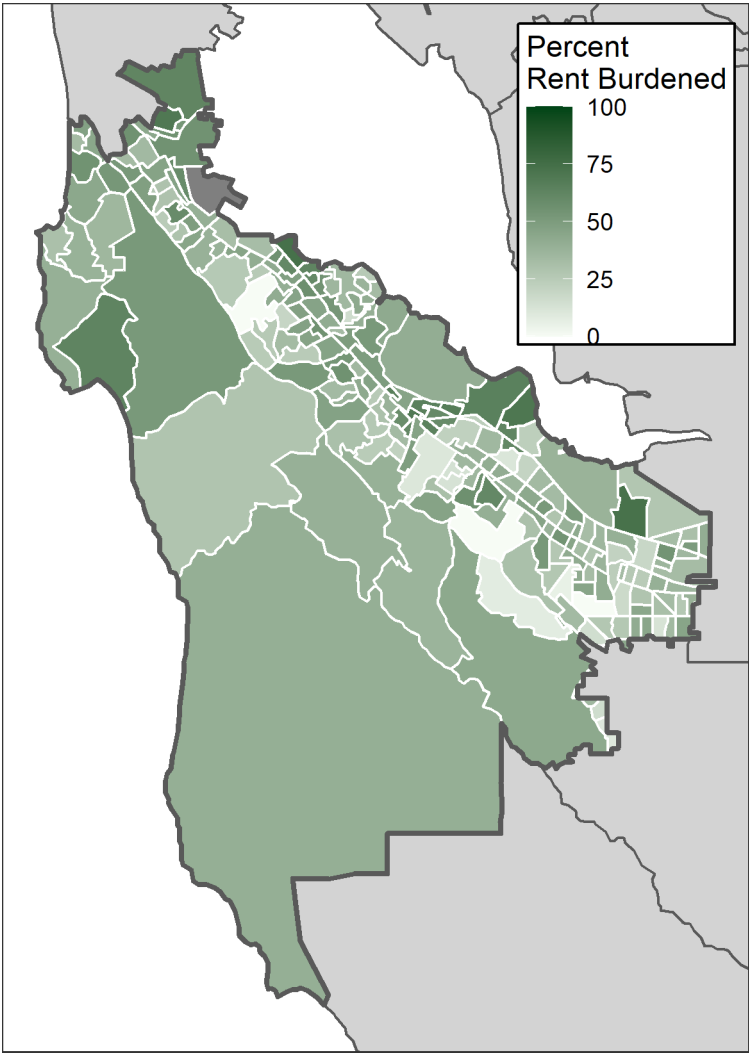
Covid-19 Relevant Indicators

- Percentage of children under age 10 enrolled in public school that are likely to need parental supervision due to shelter-in-place orders.
- Percentage of children with a disability.
- Percentage of households with low quality housing
- Percentage of individuals with only employment-based health insurance
- Percentage of individuals who rely on public transit to commute and own a car
- Percentage of individuals who rely on public transit to commute and do not own a car
- Percentage of individuals who do not own a computer
- Percentage of Individuals who own a smartphone and no other computing device
- Percentage of households with access to low speed internet only
- Percentage of households with no access to internet

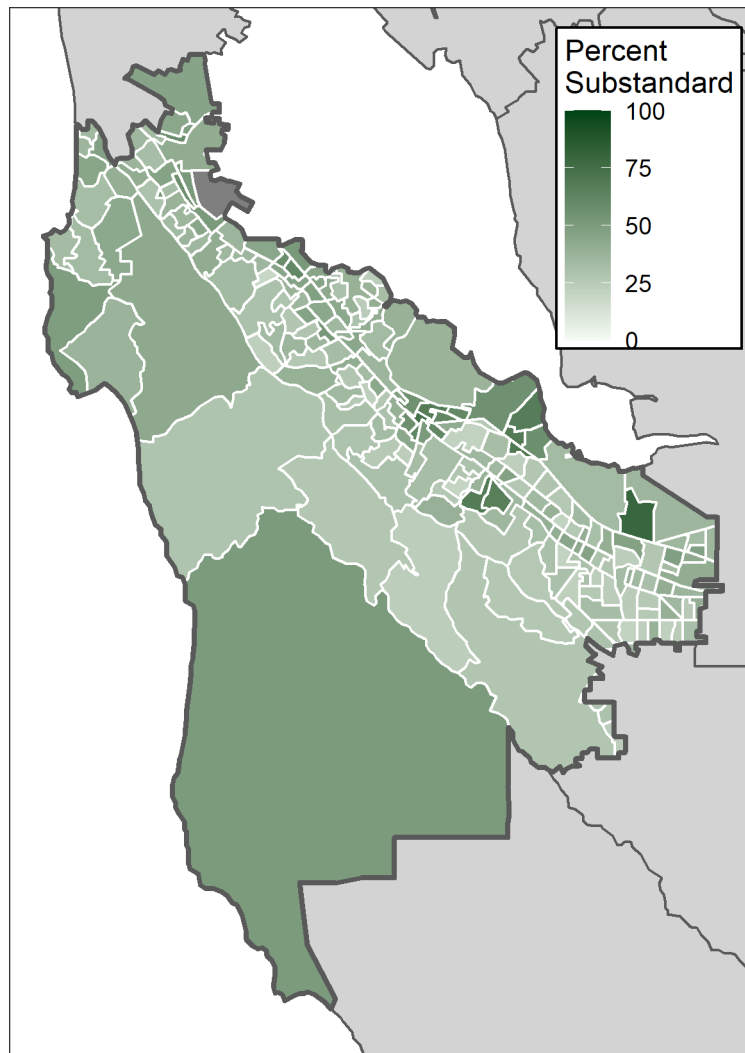
Percentage of Households in Poverty by Tract



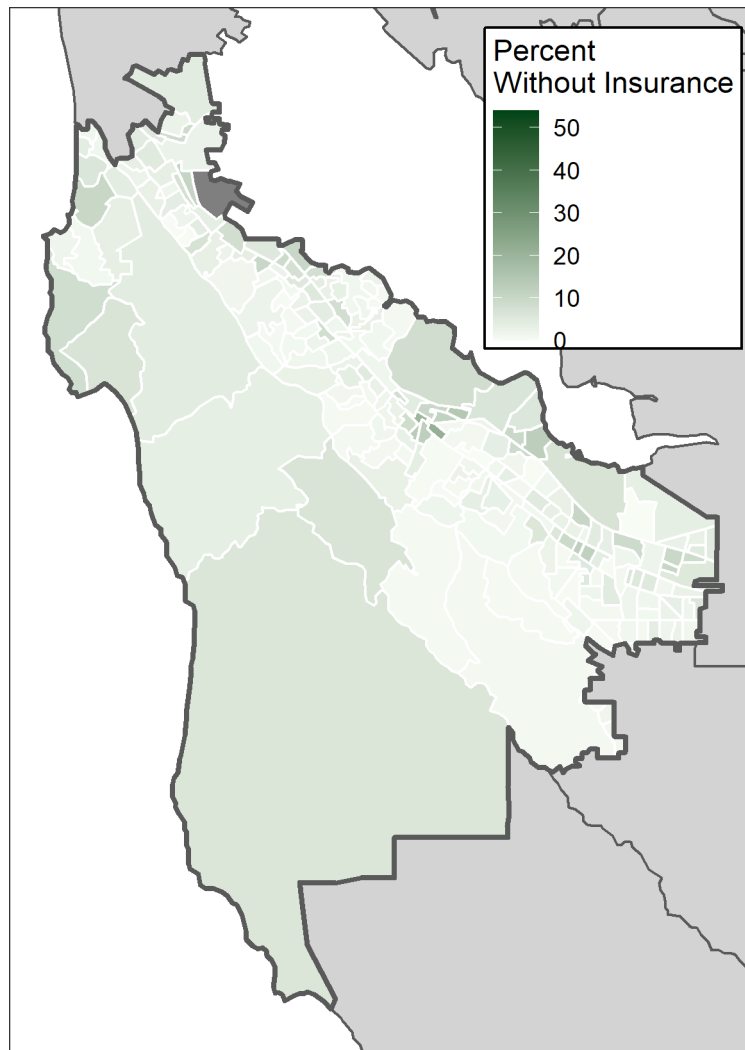
Percentage of Rent-Burdened Households by Tract



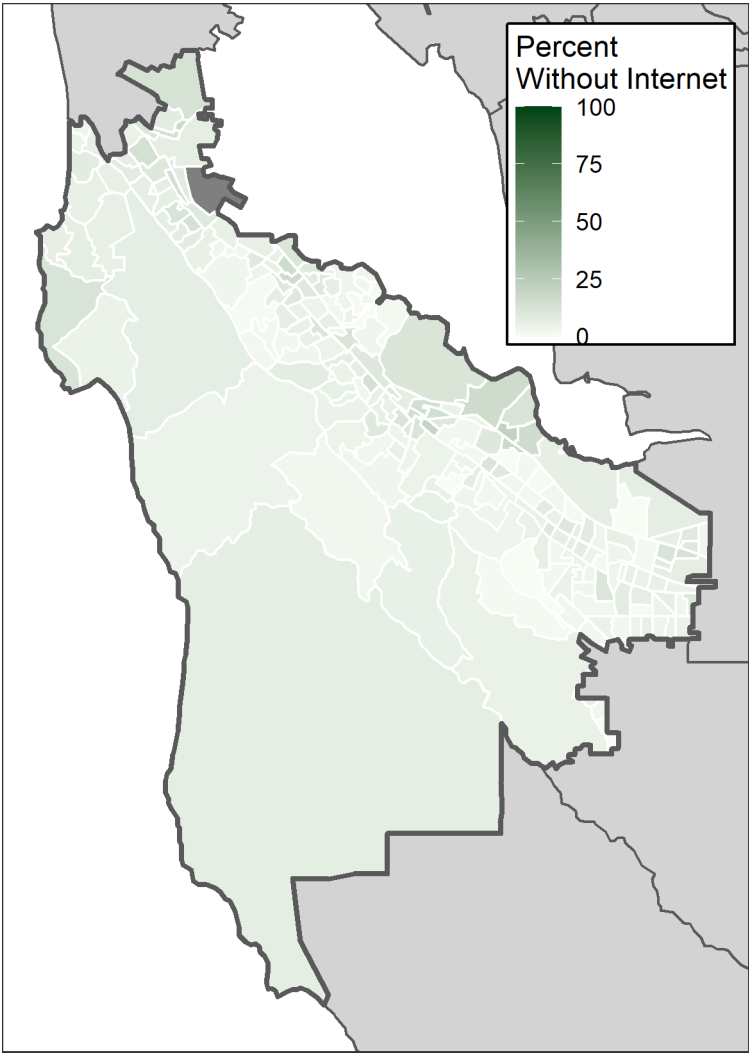
Percentage Households Living in Substandard Housing by Tract



Percentage of Individuals with No Insurance by Tract



Percentage of Households with No Internet Access by Tract



Works Cited

Social Vulnerability Metrics

- Social Vulnerability and Hurricane Impact Modeling by Christopher G. Burton. ASCELibrary. April 2010. 12 p. <https://ascelibrary.org/doi/abs/10.1061/%28ASCE%291527-6988%282010%2911%3A2%2858%29>
- Social Vulnerability to Environmental Hazards by Susan L. Cutter, Bryan J. Boruff, W. Lynn Shirley. UM Duluth. November 2003. 20 p. <https://www.d.umn.edu/~pfarrell/Natural%20Hazards/Readings/Cutter.%20Socail%20Vulnerability.pdf>
- In Harm's Way: California Workers at High Risk of Unemployment in the COVID-19 Pandemic by Daniel Flemin and Patrick Burns. Economic Roundtable. April 2020. 45 p. <https://economicrt.org/publication/in-harms-way/>
- Measuring Community Vulnerability to Natural and Anthropogenic Hazards: The Centers for Disease Control and Prevention's Social Vulnerability Index by Barry E. Flanagan et. al. ATSDR. February 2018. 4 P. https://svi.cdc.gov/Documents/Publications/CDC_ATSDR_SVI_Materials/JEH2018.pdf

Social Vulnerability Indicators

Age

- Cutter (2003)

Single Parent Households

- Cutter (2003)
- Mapping social vulnerability to enhance housing and neighborhood resilience by Shannon Van Zandt et. al. Housing Policy Debate. May 2012. 28 p. <https://www.tandfonline.com/doi/abs/10.1080/10511482.2011.624528>
- Pandemic Influenza Preparedness and Response Among Public-Housing Residents, Single-Parent Families, and Low-Income Populations by Karen Bouye et. al. PubMed. October 2009. 8 p. <https://pubmed.ncbi.nlm.nih.gov/19797740/>

Marital Status

- The influence of stress and social support on depressive symptoms in mothers with young children by Jennifer I. Manuel et al. Social Science and Medicine. December 2012. 14 p. <https://www.sciencedirect.com/science/article/abs/pii/S0277953612005886>
- Marital status, social capital, material conditions and self-rated health: A population-based study by Martin Lindstrom. Health Policy. December 2009. 9 p. <https://www.sciencedirect.com/science/article/abs/pii/S0168851009001390>

School Enrollment

- Judgments Regarding Appropriate Child Supervision to Prevent Injury: The Role of Environmental Risk and Child Age by Lizette Peterson et. al. UM Columbia. June 1993. 18 p. <https://pubmed.ncbi.nlm.nih.gov/8339704/>
- Child abuse and neglect experts' determination of when a child being left home alone constitutes child neglect by Charles A. Jennissen et. al. Injury Epidemiology. December 2017. 8 p. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5893514/>

Disabled and Special Needs Dependents in Household

- Vulnerability in an Influenza Pandemic: Looking Beyond Medical Risk by Tracey O'Sullivan and Maxime Bourgoin. University of Ottawa. October 2010. 39 p. https://www.researchgate.net/publication/282817477_Vulnerability_in_an_Influenza_Pandemic_Looking_Beyond_Medical_Risk

Access to Grocery Stores

- The Perilous Nature of Food Supplies: Natural Hazards, Social Vulnerability, and Disaster Resilience by Susan L. Cutter. *Environment, Science, and Policy for Sustainable Development*, December 2016. 13 p. <https://www.tandfonline.com/loi/venv20>
- Disparities and access to healthy food in the United States: A review of food deserts literature by Renee E. Walker, Jessica G. Burke. *Health and Place*. September 2010. 9 p. <https://www.sciencedirect.com/science/article/abs/pii/S1353829210000584>

Means of Transportation to Work

- Flanagan (2018)
- Development of an Index of Transport-User Vulnerability by Kain Glensor. *Sustainability Journal*. March 2018. 12 p. https://www.researchgate.net/publication/326279461_Development_of_an_Index_of_Transport-User_Vulnerability_and_its_Application_in_Enschede_The_Netherlands

Types of Computing Device in Households

- Cutter (2003)

Types of Internet Subscription in Households

- Social vulnerability in the context of bushfire risk at the urban-bush interface in Sydney: A case study of the Blue Mountains and Ku-ring-gai local council areas by Daminda Solangaarachchi et al. *Natural Hazards Journal*. November 2012. 27 p. https://www.researchgate.net/publication/326279461_Development_of_an_Index_of_Transport-User_Vulnerability_and_its_Application_in_Enschede_The_Netherlands

Citizenship/Residency Status

- Hispanic Adults in Families with Noncitizens Disproportionately Feel the Economic Fallout from COVID-19 by Dulce Gonzalez et al. *The Urban Institute*. May 2020. 10 p. https://www.urban.org/sites/default/files/publication/102170/hispanic-adults-in-families-with-noncitizens-disproportionately-feel-the-economic-fallout-from-covid-19_1.pdf

Mortgage/Rent Burdened Households as Percentage of Income

- Assessing the Financial Vulnerability of Mortgage/Rent-Indebted Euro Area Households by ECB. *Financial Stability Review*. December 2005. 9 p. https://www.ecb.europa.eu/pub/pdf/fsr/art/ecb.fsrart200512_03.en.pdf
- Flanagan (2018)

Housing Quality

- Why High-Poverty Neighborhoods Persist: The Role of Precarious Housing by Rolf Pendall et al. *Urban Affairs Review*. September 2016. 33 p. <https://journals.sagepub.com/doi/10.1177/1078087414563178>

Percentage of Home Owners vs. Renters

- Cutter (2003)
- Vulnerability in crisis: urban household food insecurity by Godfrey Tawodzera. *Food Security Review*. November 2011. 18 p. <https://link.springer.com/article/10.1007/s12571-011-0152-1>
- Distribution of impacts of natural disasters across income groups: A case study of New Orleans by Michel Masozera et al. *Ecological Economics*. August 2006. 8 p. <https://www.sciencedirect.com/science/article/abs/pii/S0921800906003053>

Reliance on the Welfare State

- Cutter (2003)

Part Time vs. Full Time Employment

- Glauber (2013)

Health Insurance Coverage

- O’Sullivan and Burgoin (2010)

Source of Insurance Coverage

- Insurance Matters For Low-Income Adults: Results From A Five-State Survey by Cathy Schoen et al. Health Affairs. October 1997. 9 pp. <https://www.healthaffairs.org/doi/full/10.1377/hlthaff.16.5.163>

Poverty Status

- Cutter (2003)
- Is Education a Key to Reducing Vulnerability to Natural Disasters and hence Unavoidable Climate Change? By Raya Muttarak and Wolfgang Lutz. Ecology and Society. Mar 2014. 9 p. https://www.jstor.org/stable/26269470?seq=1&cid=pdf-reference#references_tab_contents

Occupational Vulnerability

- COVID-19: Which Workers Face the Highest Unemployment Risk? by Charles Gascon. St Louis Federal Reserve “On the Economy”. March 2020. 1 p. <https://www.stlouisfed.org/on-the-economy/2020/march/covid-19-workers-highest-unemployment-risk>
- COVID-19 and Unemployment Risk: State and MSA Differences by Charles Gascon. St Louis Federal Reserve “On the Economy”. April 2020. 1 p. <https://www.stlouisfed.org/on-the-economy/2020/april/covid-19-unemployment-risk-state-msa-differences>