

Appendix B – Santa Monica Vulnerability Assessment for the Safety Element

Vulnerable communities experience heightened risk and increased sensitivity to hazards, including climate change effects, and have less capacity and fewer resources to cope with, adapt to, or recover from these hazards. These disproportionate effects are caused by physical (built and environmental), social, political, and/or economic factor(s), which are exacerbated by climate change or other factors. This report provides analyses of the various hazards that have the potential to occur in the City, and identifies the communities that are most vulnerable to these hazards. The table below summarizes each hazard and identified vulnerable populations:

Hazards	Identified Vulnerable Communities in Santa Monica
<i>Geologic and Seismic Conditions</i>	
Unstable Soil Conditions	<ul style="list-style-type: none"> Households located in and near the City’s former landfill and claypit areas– these households are located in the City’s Bergamot Area within the Pico neighborhood (Census Tract 701801).
Slope Failures	<ul style="list-style-type: none"> Households located downslope of the Palisades Bluffs on the western edge of the City. Households located on steep slopes in the northeastern corner of the City around the Brentwood Knoll.
Fault Rupture	<ul style="list-style-type: none"> Households located within the CGS- designated Santa Monica Earthquake Fault Zone, which include 2,694 parcels that are located in the North of Montana Avenue (NOMA), Northeast (Northeast), and Mid-City neighborhoods.
Earthquakes	<ul style="list-style-type: none"> Households living in seismically deficient buildings. Based on a review of recent City data for the City’s Seismic Retrofit Program, there are approximately 800 buildings that have been identified as needing retrofit. Most of the remaining buildings requiring retrofit are located within the Wilmont and Mid-City neighborhood. Populations with a disability– highest percentages located in the Downtown (Census Tract 701902), Wilmont (Census Tract 701402, and Pico (Census Tract 701802). Senior Population –The City’s population over 65 years of age are mostly located in the North of Montana neighborhood (Census Tract 701201). Highest percentages of lower income households are located within the Pico neighborhood (Census Tracts 701801 and 701802) and Downtown (Census Tract 701902). Households without access to a vehicle – mostly concentrated in Downtown (Census Tract 701902) and Pico (Census Tract 701801).

Hazards	Identified Vulnerable Communities in Santa Monica
Liquefaction	<ul style="list-style-type: none"> Households living in identified liquefaction zones, which include those living within the Beachfront district and some households on the eastern edge of the City within Pico neighborhood (Census Tract 701801).
<i>Flooding</i>	
FEMA Flood Zones	<ul style="list-style-type: none"> Households living in identified FEMA flood zones, which include those living within the Beachfront district at the coastal western edge of the City.
Tsunami	
Dam Inundation	<ul style="list-style-type: none"> Households living in the easternmost portion of the City within the Pico neighborhood (north and south of the I-10 freeway) Pico Census Tract 701801 is located in the Stone Canyon Dam inundation area and has a higher percentage of populations with a disability, lower income households, and households without access to a vehicle than the rest of the City.
<i>Fires</i>	
Wildfires & Urban Fires	<ul style="list-style-type: none"> The higher-income households of the North of Montana neighborhood are the closest to the wildfire hazard zones for the Santa Monica Mountain and therefore, are most likely to be directly impacted by wildfires and wildfire evacuation orders. These households are more likely to have greater percentages of senior population 65 years and older. The central areas of the City including the Pico (Census Tracts 701801 and 701802), Mid-City (Census Tracts 701701 and 701702), and Downtown (Census Tract 701902) neighborhoods have the highest percentages of populations with asthma. The City’s population 5 years of age and younger are mostly located in the City’s single family zoned areas, such as North of Montana (Census Tracts 701202, 701201, and 701304) and Sunset Park (Census Tract 702300) neighborhoods. Older buildings are more vulnerable to urban fires. Approximately 7,400 of the City’s housing stock was built in the 1930’s and earlier – these buildings are most susceptible to collapse during a fire. Census data indicate Downtown (Census Tract 701902), Wilmont (Census Tract 701402), and Pico (Census Tract 701802) have the highest percentages of households with a disability. Highest percentages of lower income households are located within the Pico neighborhood (Census Tracts 701801 and 701802) and Downtown (Census Tract 701902). Households without access to a vehicle are mostly concentrated in the Pico neighborhood (Census Tract 701801) and Downtown (Census Tract 701902).

Hazards	Identified Vulnerable Communities in Santa Monica
<i>Climate Change Effects</i>	
Extreme Heat Drought Extreme Precipitation Severe Winds Sea Level Rise	<ul style="list-style-type: none"> • The highest percentages of lower income households are located within the Pico (Census Tract 701801 and 701802) and Downtown neighborhoods (Census Tract 701902). • Households with seniors 65 and older- mostly located in the North of Montana neighborhood (Census Tract 701201). • Households without access to a vehicle are mostly concentrated in the Downtown (Census Tract 701902) and Pico (Census Tract 701801). • Households with infants and children younger than 5 years of age. • Populations with chronic medical conditions
<i>Other Human Made Hazards</i>	
Hazardous Materials	<ul style="list-style-type: none"> • Households living in proximity to identified hazardous materials sites. The Mid-City and Pico neighborhoods have the greatest concentration of these hazardous materials sites. Additionally, unidentified soil and groundwater contamination may exist in the Bergamot and Industrial Conservation zoned properties due to past land uses.
Airport Safety	<ul style="list-style-type: none"> • Households living near the SM Airport Influence Area (Census Tract 702300)

Contents

Seismic Hazards	5
Flooding	14
Tsunami	21
Dam Inundation	28
Fires	35
Climate Change Effects	39
Hazardous Materials.....	40
Vulnerability Assessment Data	44
CDC/ATSR Social Vulnerability Index	44
CalEnviroScreen 4.0	46
Healthy Places Index.....	51

Seismic Hazards

In 2017, the California Geological Survey (CGS) designated the Santa Monica earthquake fault zone, which extends through the northeast portion of the City. Based on the mapping of the Santa Monica Fault, approximately 2,694 parcels in the City covering 539 acres are located within the Santa Monica Fault Zone. These parcels are zoned mostly R1 (60%) and R2 (33%) and are developed with single family homes, condos, and apartments. These properties tend to be occupied by households that are higher income, white, and with greater number of populations over 65 years of age.

Due to the large-scale nature of seismic events, however, the entirety of Santa Monica is generally at risk of seismic hazards. Based on a review of recent City data for the City's Seismic Retrofit Program, there are approximately 800 buildings that have been identified as needing retrofit. Most of the remaining buildings requiring retrofit are located within the Wilmont and Mid-City neighborhood. Residents in older, apartment buildings that have not been seismically retrofitted, particularly soft-story buildings, are the most vulnerable to earthquake effects. These buildings could experience collapse during a strong earthquake, causing bodily injury, property damage, and even loss of life.

Liquefaction risk has been identified in the coastline areas and a small eastern portion of the City in the Pico Neighborhood. Approximately 416 parcels lie within the liquefaction zone, most of which are zoned R1 (44%) and R2 (29%). The portion of the liquefaction zone located in the eastern portion of the City is located in Census Tract 701801 which has higher percentages of low income households, households with no vehicles, and non-white households. percentage Census blocks are the small geographic unit available for Census data, and the liquefaction areas near the coast crosses only through small western portions of different Census blocks. As such, it is difficult to obtain socioeconomic data that is accurately representative of the properties within the coastal liquefaction zone. In general, the portion of the liquefaction zone within the Downtown is located in Census tracts that have higher percentages of populations with a disability, lower income households, and households with no vehicles.

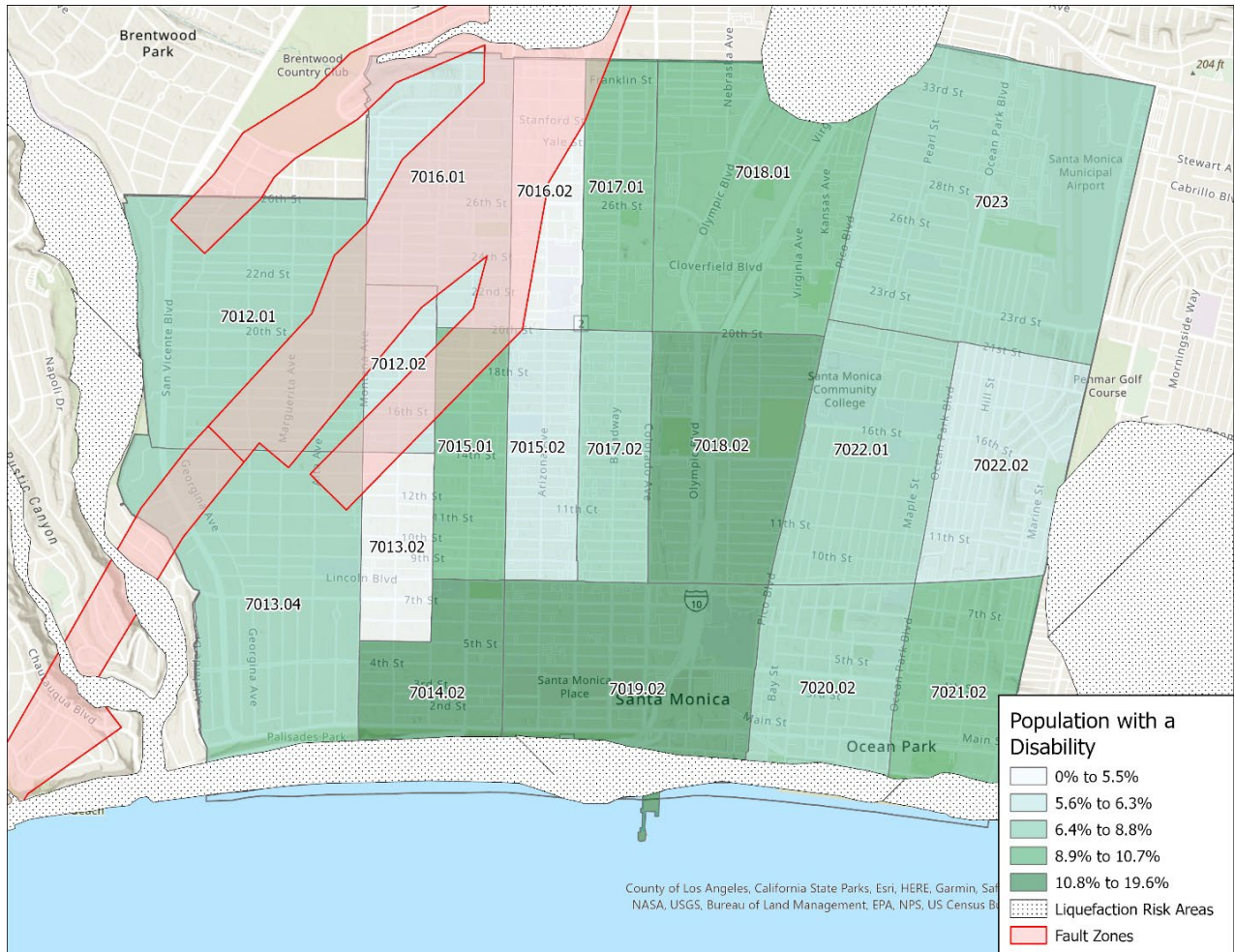
Other identified vulnerable populations for seismic hazards include:

- Populations with a Disability – Populations with a disability are particularly vulnerable to seismic hazards, as their disability could affect emergency evacuation in an earthquake. The Downtown (Census Tract 701902), Wilmont (Census Tract 701402, and the Pico (Census Tract 701802) neighborhoods have higher percentages of populations with a disability than the rest of the City.
- Lower Income Households – Lower income households are more likely to encounter issues related to home and infrastructure damage, as well as face financial issues when trying to rebuild their homes and buildings and access resources after earthquakes. Highest percentages of lower income households are located within the Pico neighborhood (Census Tracts 701801 and 701802) and Downtown (Census Tract 701902).
- Senior Population – Older adults may face issues with mobility, have compromised health, or struggle with communication, making them more vulnerable in the event of a seismic

event and less likely to recover afterwards. The City's population over 65 years of age are mostly located in the North of Montana neighborhood (Census Tract 701201).

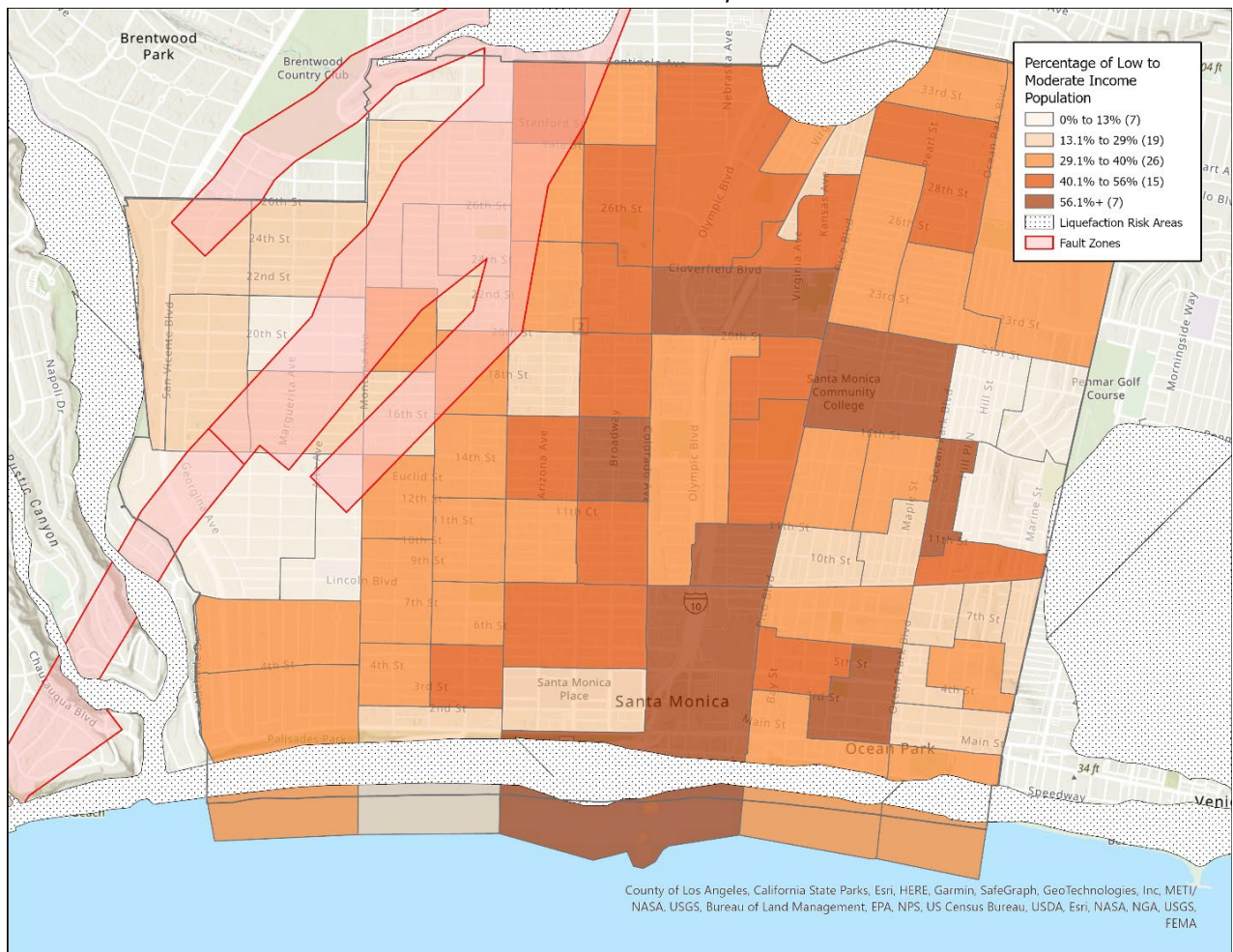
- Households without Access to a Vehicle - Households without access to a vehicle may encounter challenges during an emergency evacuation. These households are concentrated in Downtown (Census Tract 701902) and Pico (Census Tract 701801).

Seismic Hazard Zone – Populations with a Disability



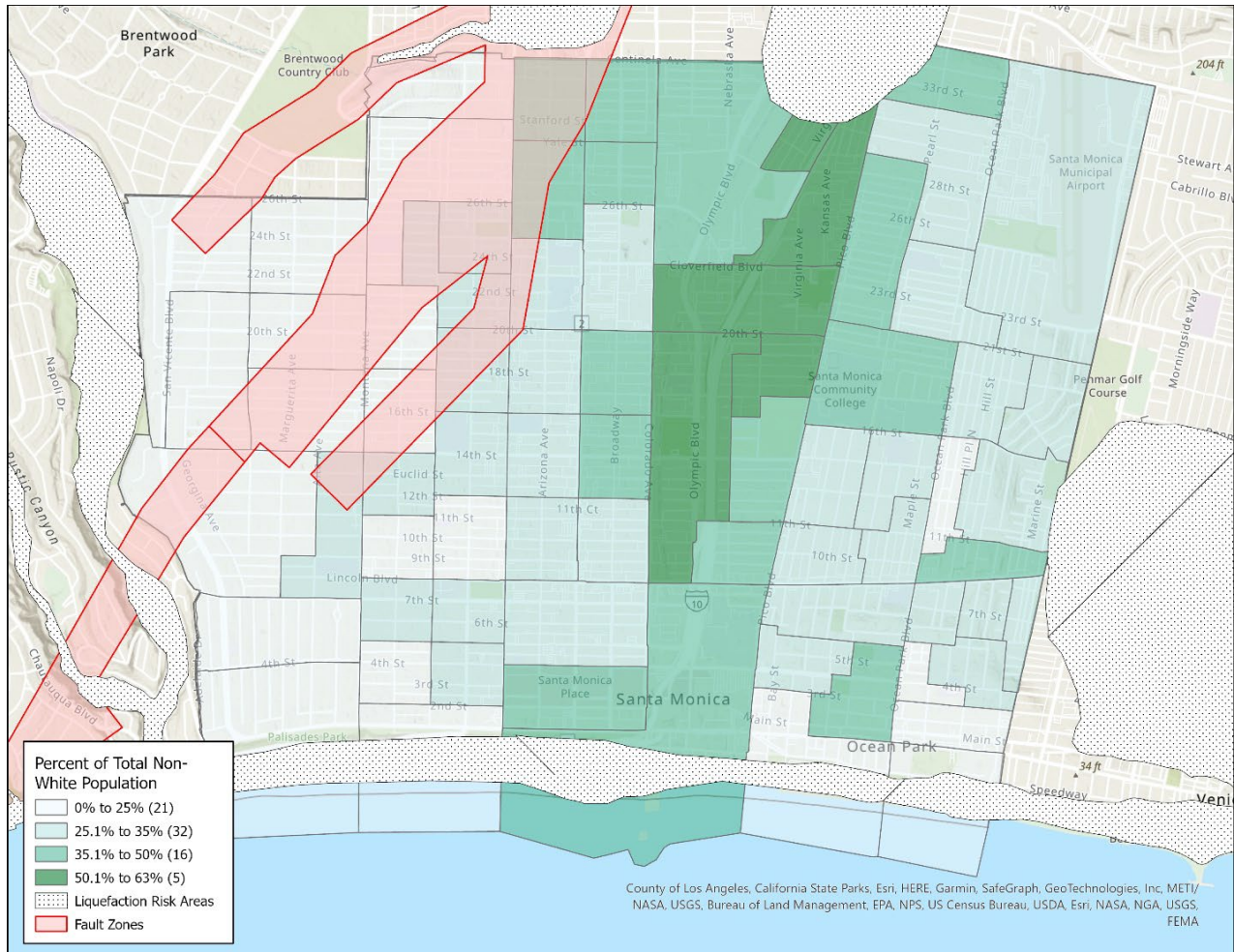
Source Data: California Geological Survey, Seismic Hazard Zones, Beverly Hills Quadrangle, 2002; American Communities Survey, 2019 5 year estimates

Seismic Hazard Zones – Low to Moderate Income Populations



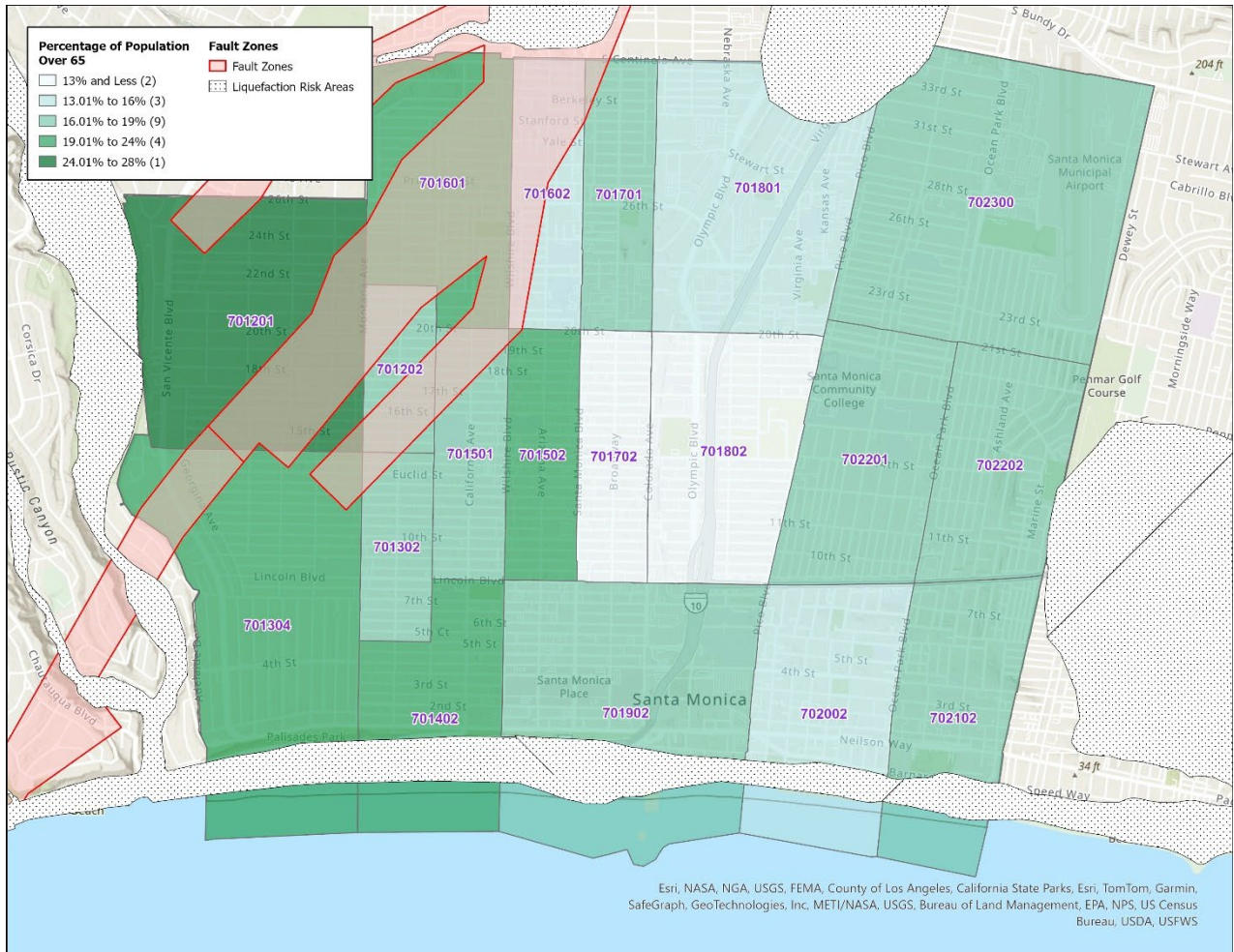
Source Data: California Geological Survey, Seismic Hazard Zones, Beverly Hills Quadrangle, 2002; American Communities Survey, 2019 5 year estimates

Seismic Hazard Zones – Non-White Populations

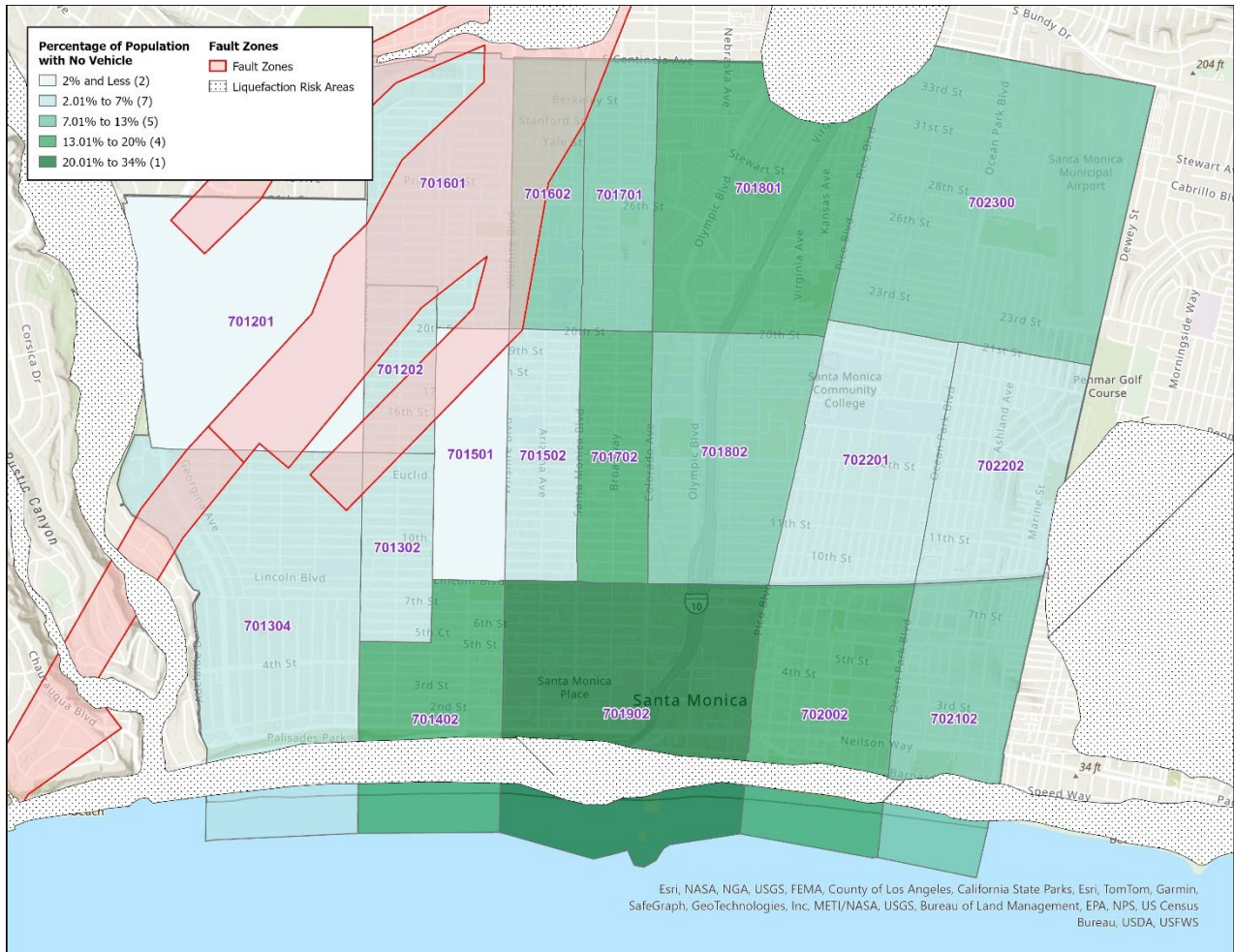


Source Data: California Geological Survey, Seismic Hazard Zones, Beverly Hills Quadrangle, 2002; American Communities Survey, 2019 5 year estimates

Seismic Hazard Zones – Population Over 65 Years of Age

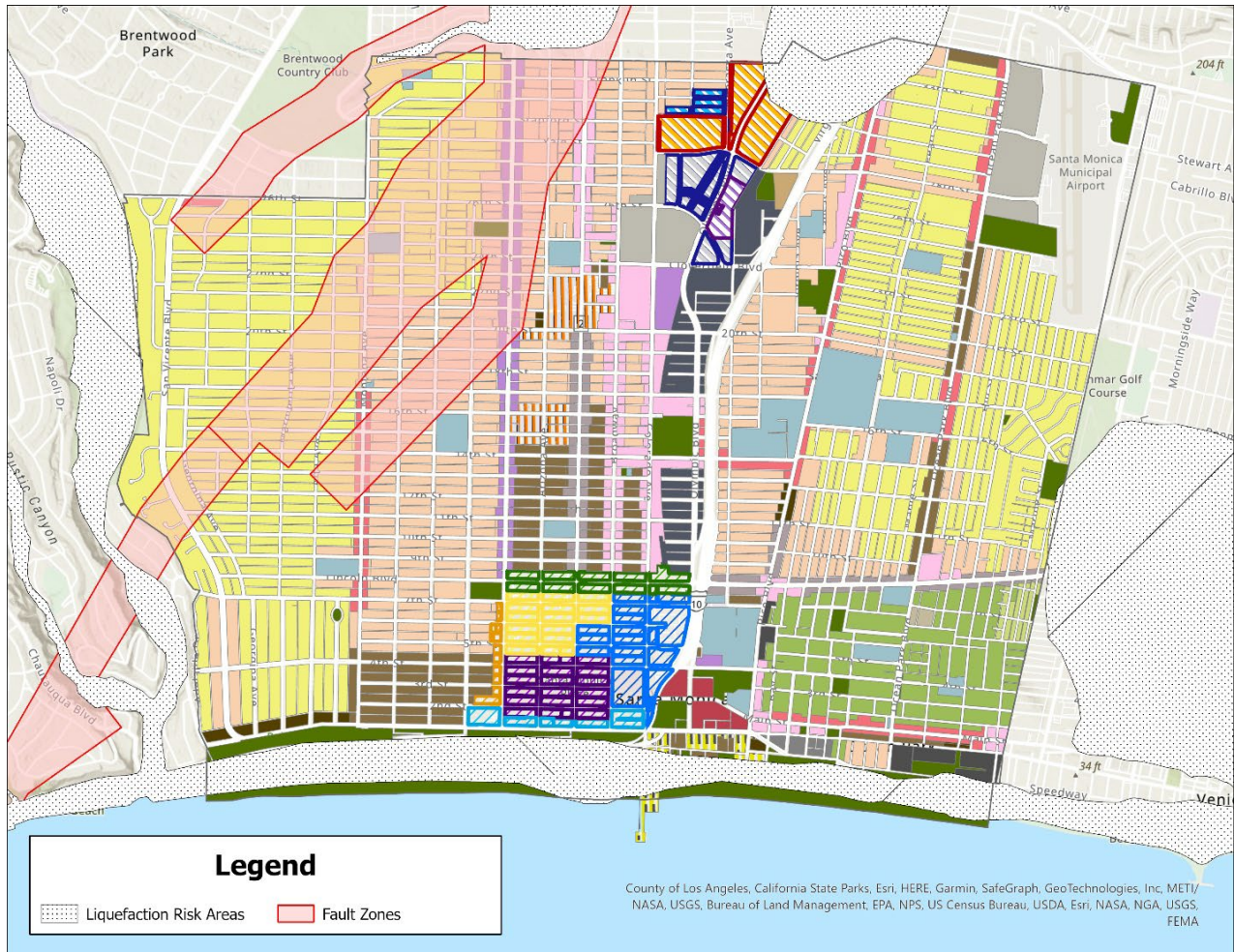


Seismic Hazard Zones – Households with No Vehicles



Source Data: California Geological Survey, Seismic Hazard Zones, Beverly Hills Quadrangle, 2002; American Communities Survey, 2021 5 year estimates

Seismic Hazard Zones – Zoning Districts



Fault Zone – Zoning Analysis

Zone	Parcels	% of Parcels	SF	Acres	% of Acres
R1	1619	60%	13,397,631	308	57%
MUB	98	4%	1,461,829	34	6%
R2	900	33%	7,914,888	182	34%
NC	41	2%	334,218	8	1%
MUBL	35	1%	349,741	8	1%
HMU	1	0%	15,019	0.3	0.1%
TOTAL	2694	100%	23,473,325	539	100%

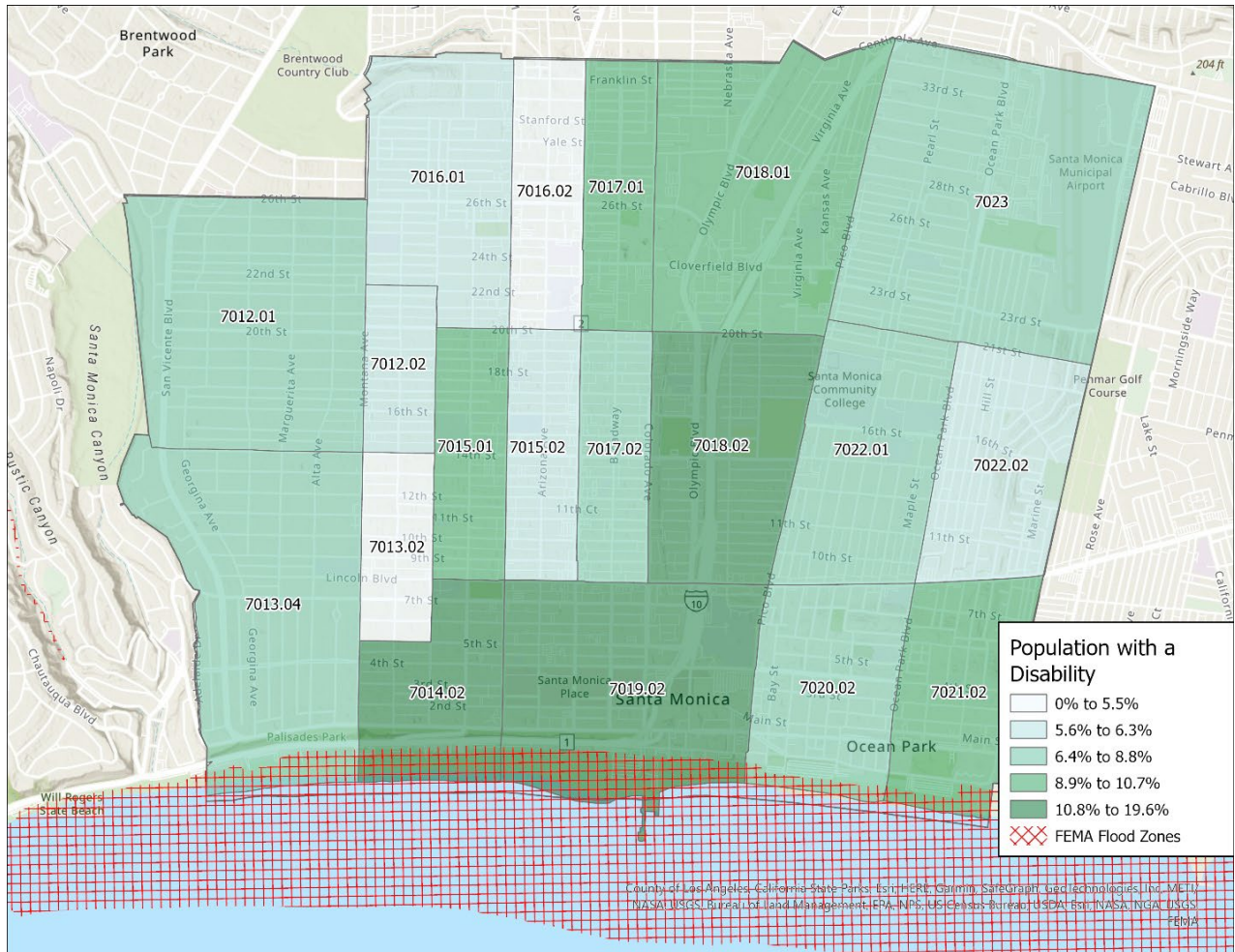
Liquefaction Zone - Zoning Analysis					
Zone	Parcels	% of Parcels	SF	Acres	% of Acres
OP4	45	11%	5,602,175	129	45%
OS	12	3%	2,586,411	59	21%
R1	182	44%	1,479,053	34	12%
R2	119	29%	1,035,068	24	8%
R3	7	2%	67,834	2	1%
OF	14	3%	571,550	13	5%
MUC	10	2%	759,694	17	6%
MUBL	6	1%	184,195	4	1%
NC	21	5%	78,186	2	1%
TOTAL	416	100%	12,364,166	284	100%

Flooding

Only the coastal areas of the City are mapped as Special Flood Hazard Areas as a result of both storm flooding (AE zones), and coastal flooding due to storm surges (VE zones). The low-lying properties located at the coastal edge of the City are at the highest risk for impacts due to flooding from storm surge and sea-level rise. Of the 132 parcels located partially or wholly in the FEMA Special Hazard Flood areas, the majority (77 parcels - 58%) are zoned R2 and developed with single unit dwellings or duplexes. The other parcels are zoned Open Space (39 parcels - 30%), Oceanfront (12 parcels - 9%), and R3 (4 parcels - 3%).

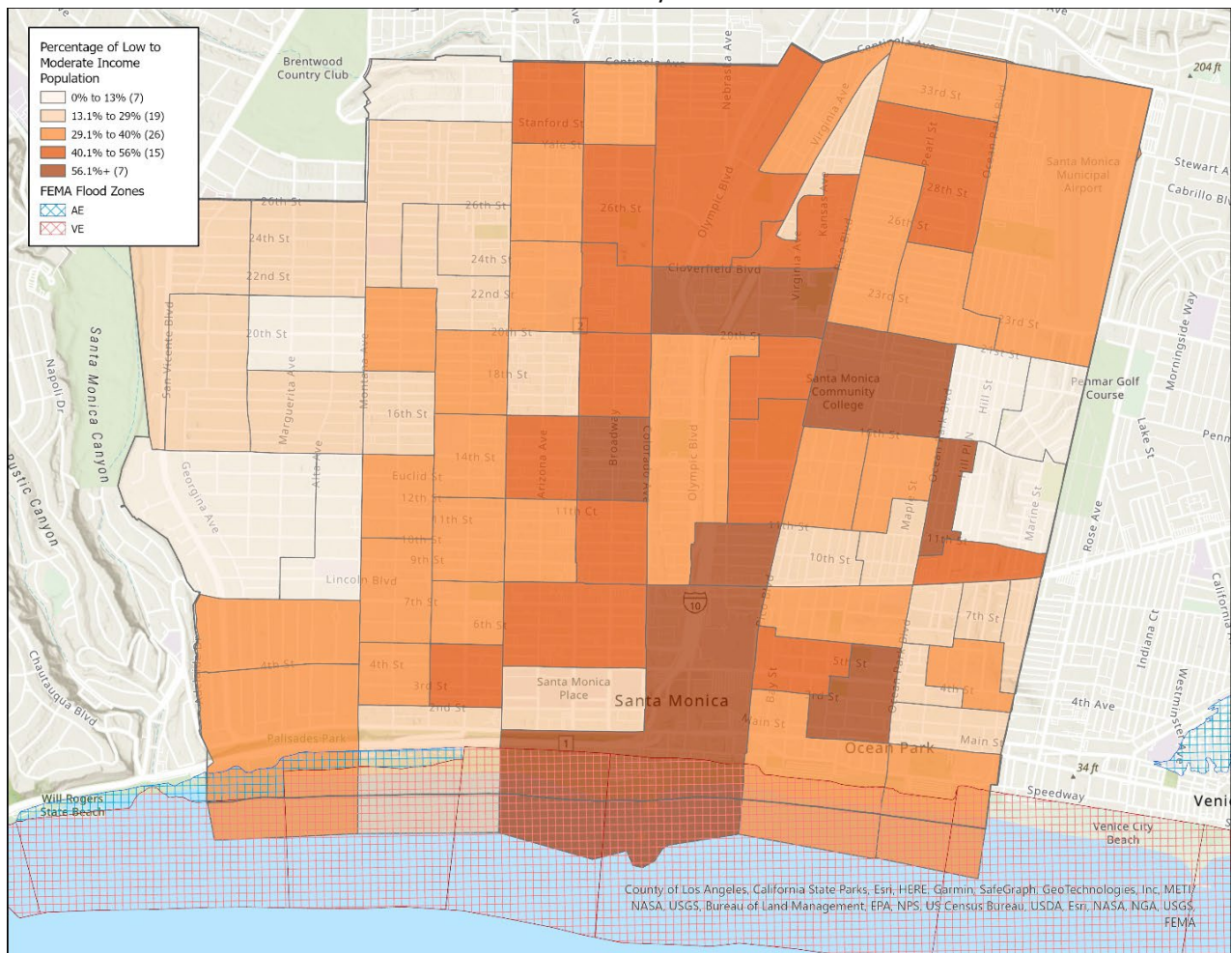
Census blocks are the small geographic unit available for Census data, and the FEMA flood zone crosses only through small western portions of different Census blocks. As such, it is difficult to obtain socioeconomic data that is accurately representative of the properties within the FEMA flood zone. In general, the portion of the flood zone within the Downtown lie within Census tracts that have higher percentages of populations with a disability, lower income households, and households with no vehicles. Populations with a disability, lower income households, and households with no vehicles are more likely to face evacuation challenges during a natural disaster emergency.

FEMA Flood Zone – Populations with a Disability



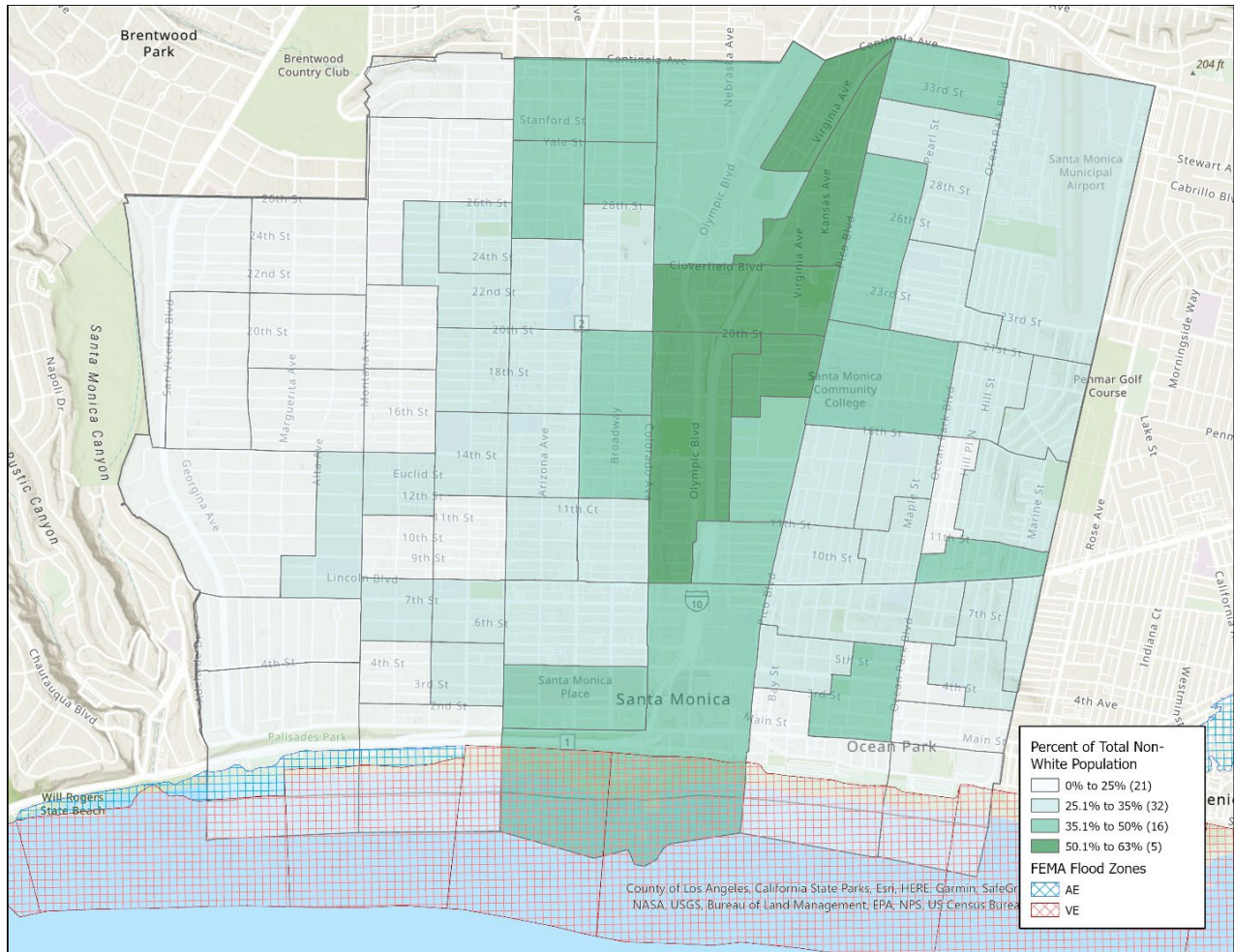
Source Data: Federal Emergency Management Agency Flood Insurance Rate Map Panels 06037C1569G and 06037C1588G, effective April 21, 2021; American Communities Survey, 5 year estimates

FEMA Flood Zone – Low to Moderate Income Populations



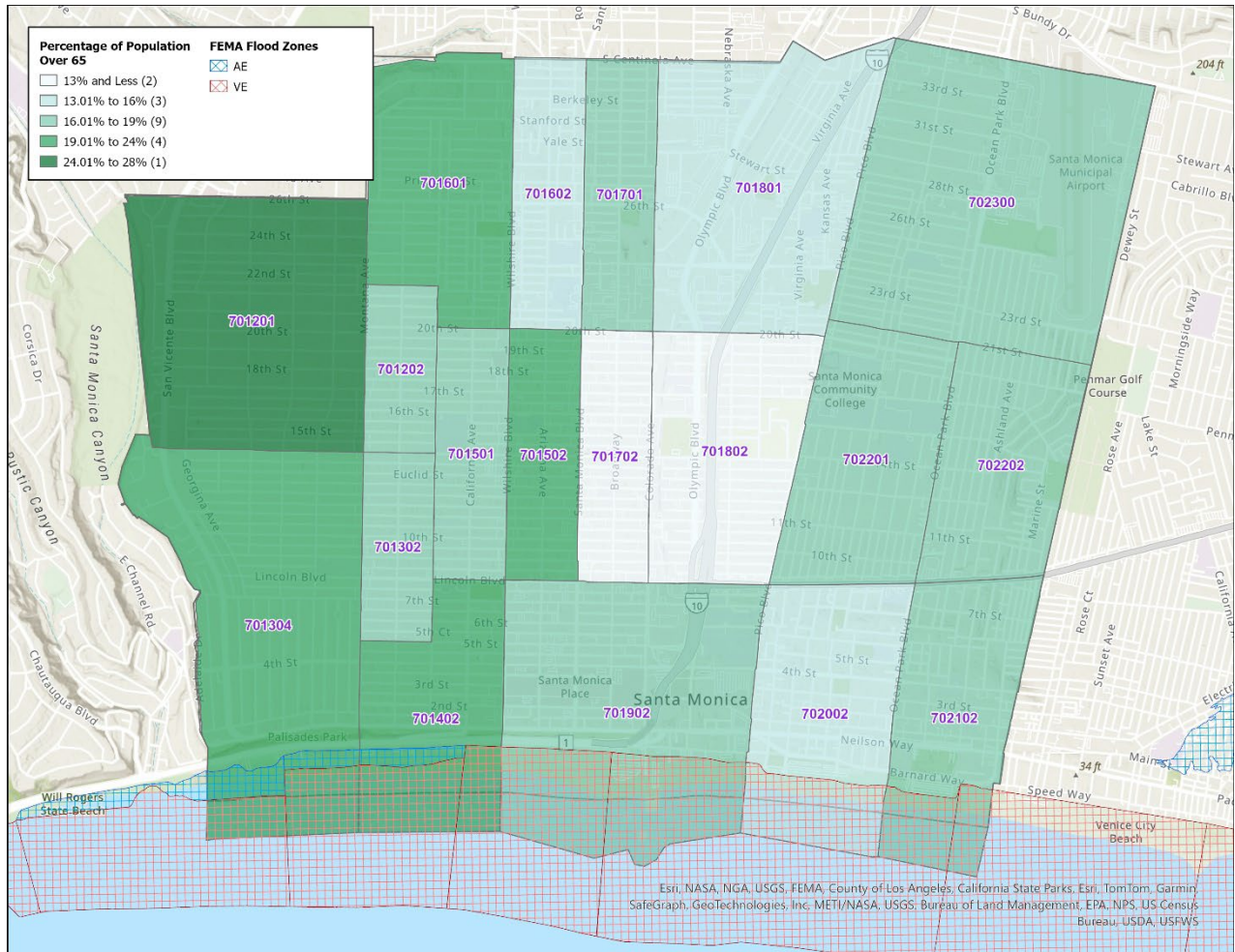
Source Data: Federal Emergency Management Agency Flood Insurance Rate Map Panels 06037C1569G and 06037C1588G, effective April 21, 2021; American Communities Survey, 5 year estimates

FEMA Flood Zone – Non-White Populations



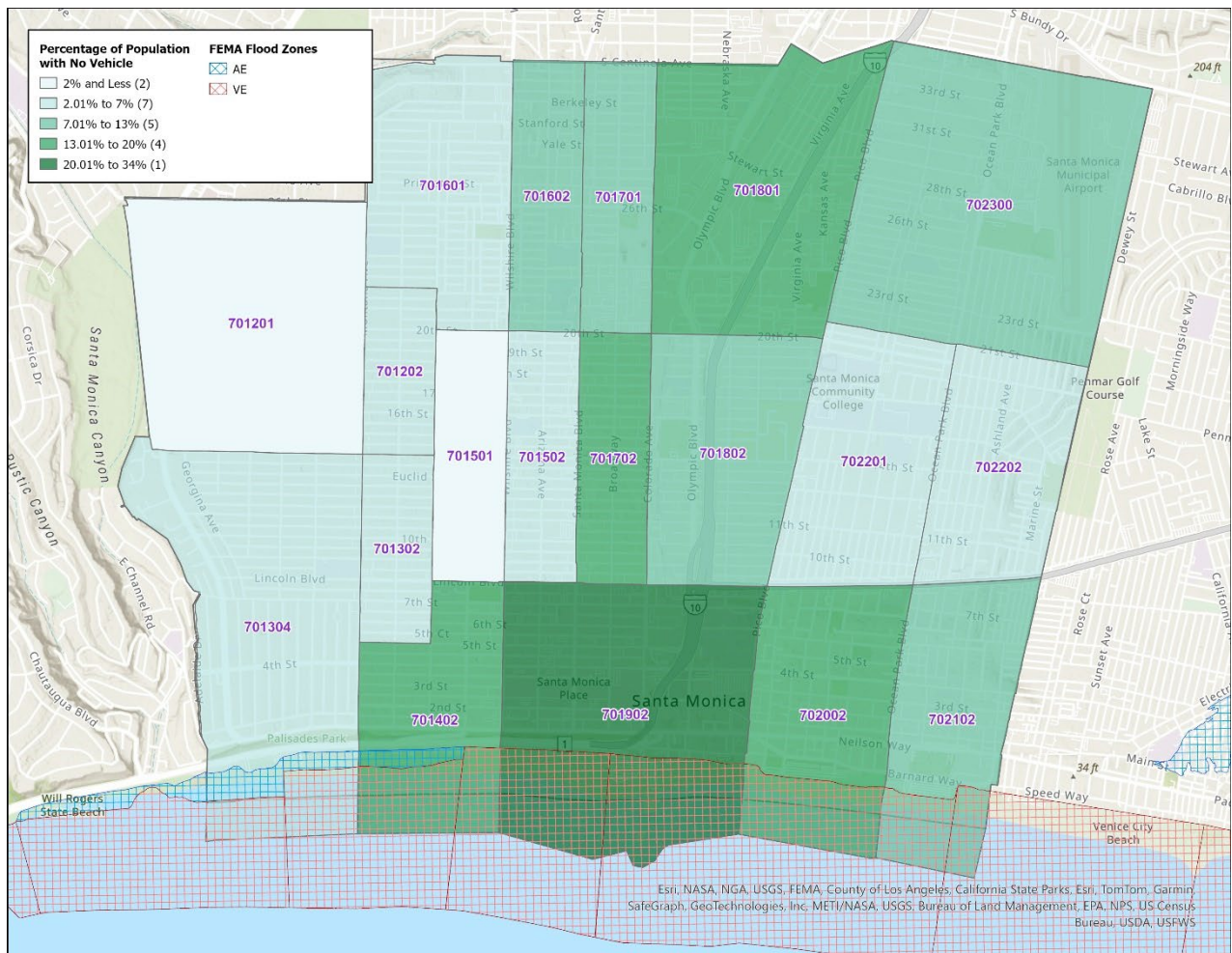
Source Data: Federal Emergency Management Agency Flood Insurance Rate Map Panels 06037C1569G and 06037C1588G, effective April 21, 2021; American Communities Survey, 5 year estimates

FEMA Flood Zone – Population Over 65 Years of Age

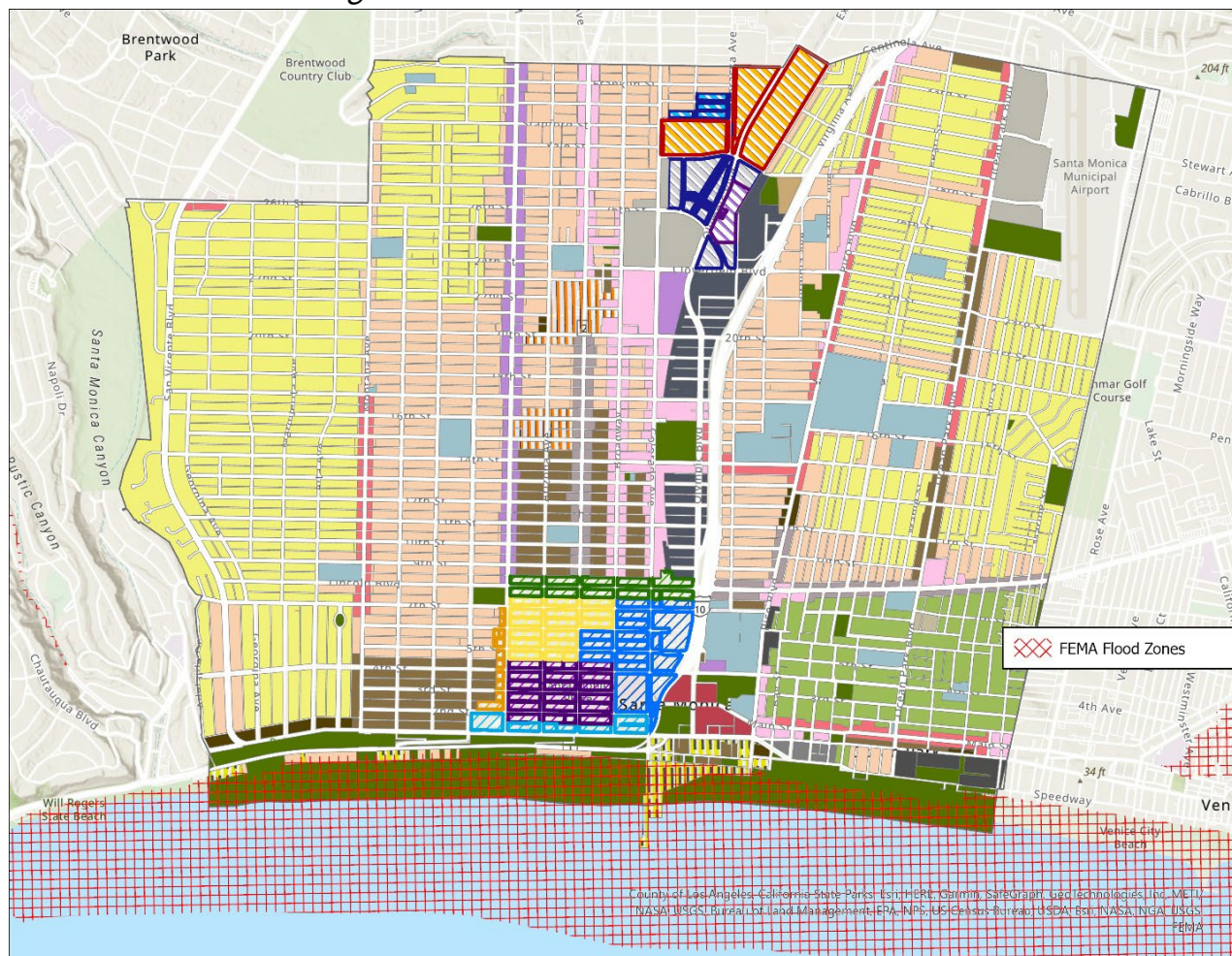


Source Data: Federal Emergency Management Agency Flood Insurance Rate Map Panels 06037C1569G and 06037C1588G, effective April 21, 2021; American Communities Survey, 2021 5-year estimates

FEMA Flood Zone – Households with No Vehicle



FEMA Flood Zone – Zoning Districts



Source Data: Federal Emergency Management Agency Flood Insurance Rate Map Panels 06037C1569G and 06037C1588G, effective April 21, 2021

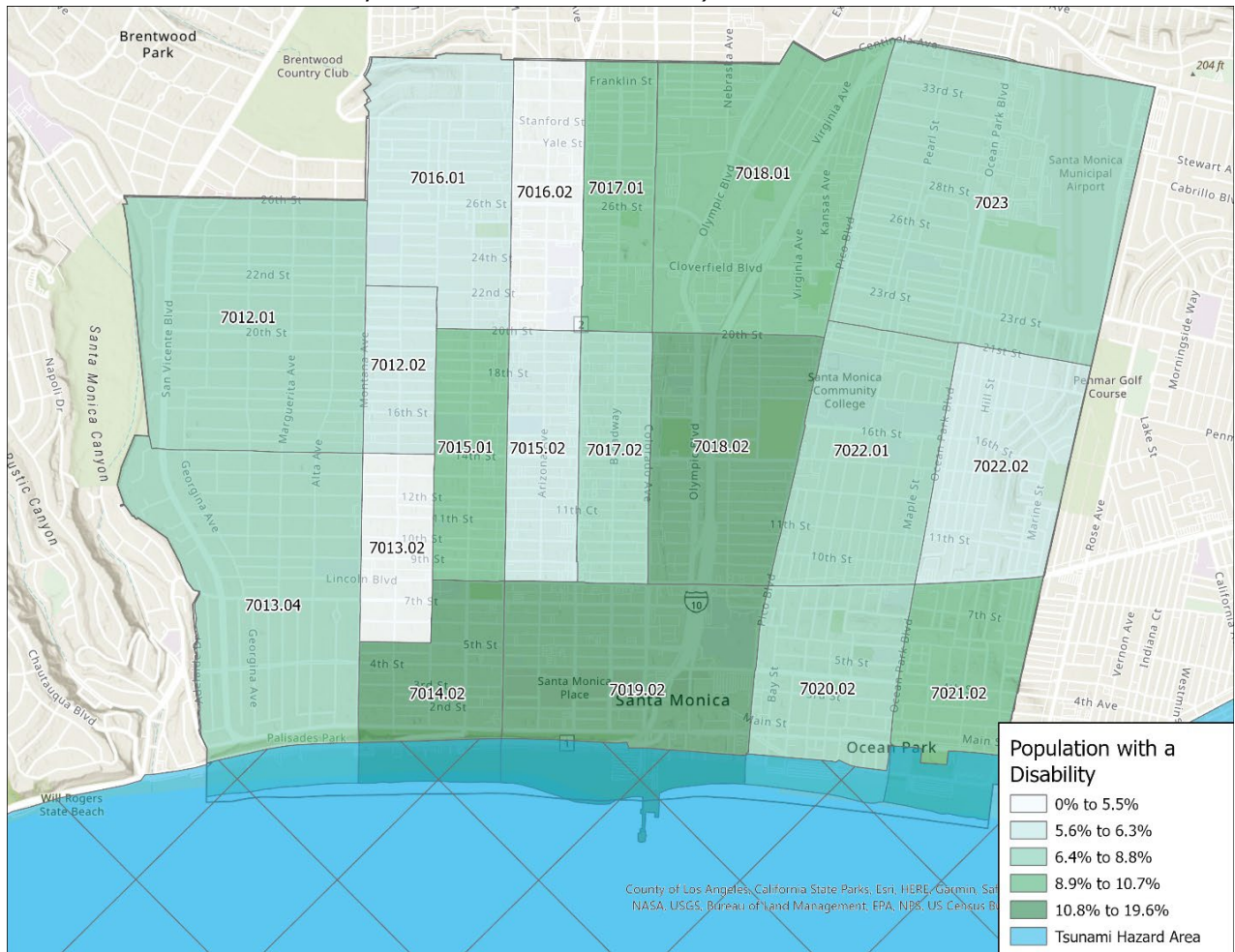
FEMA FLOOD ZONE - ZONING ANALYSIS						
Zones	Parcels	% of Parcels	SF	Acres	% of Acres	
OS	39	30%	4,564,593	105	75%	
OF	12	9%	1,000,525	23	16%	
R2	77	58%	483,213	11	8%	
R3	4	3%	29,963	1	0%	
TOTAL	132	100%	6,078,295	140	100%	

Tsunami

A total of 228 parcels are located within the tsunami zones and are comprised mostly of residential properties. Within the tsunami zone, 77 parcels are zoned R2 (34%), 64 are zoned OP4 (28%), 59 are zoned Open Space (26%), 21 are zoned Oceanfront (9%), and 7 are zoned R3 (3%).

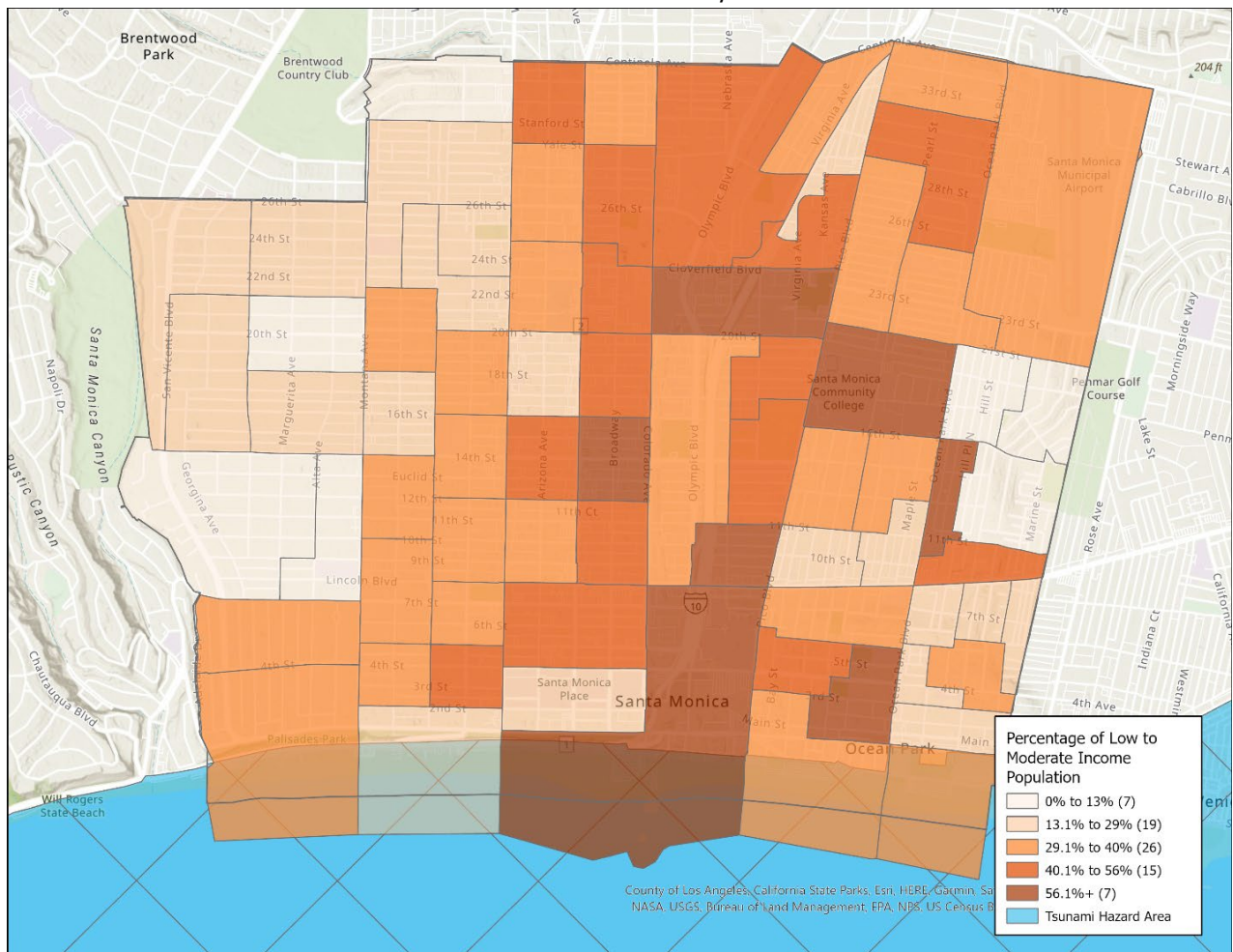
Census blocks are the small geographic unit available for Census data, and the tsunami hazard area crosses only through small western portions of different Census blocks. As such, it is difficult to obtain socioeconomic data that is accurately representative of the properties within the tsunami hazard area. In general, the portion of the tsunami hazard area within the Downtown has higher percentages of populations with a disability, lower income households, and households with no vehicles. Populations with a disability, lower income households, and households with no vehicles are more likely to face evacuation challenges during a natural disaster emergency.

Tsunami Hazard Area – Populations with a Disability



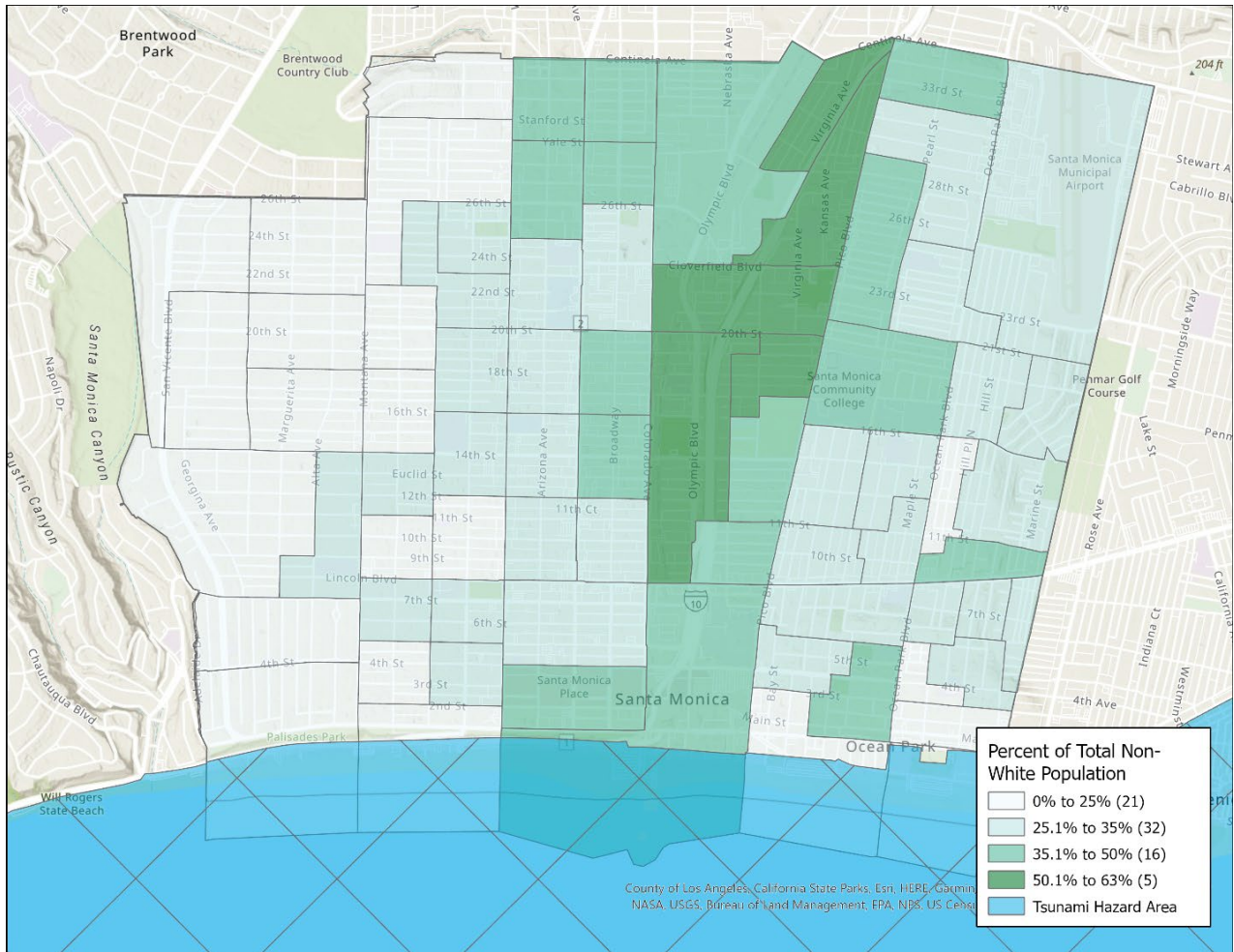
Source Data: State of California Tsunami Hazard Area Map, Los Angeles County, California Geological Survey and the California Governor's Office of Emergency Services; dated March 22, 2021 ; American Communities Survey, 5 year estimates

Tsunami Hazard Area – Low to Moderate Income Populations



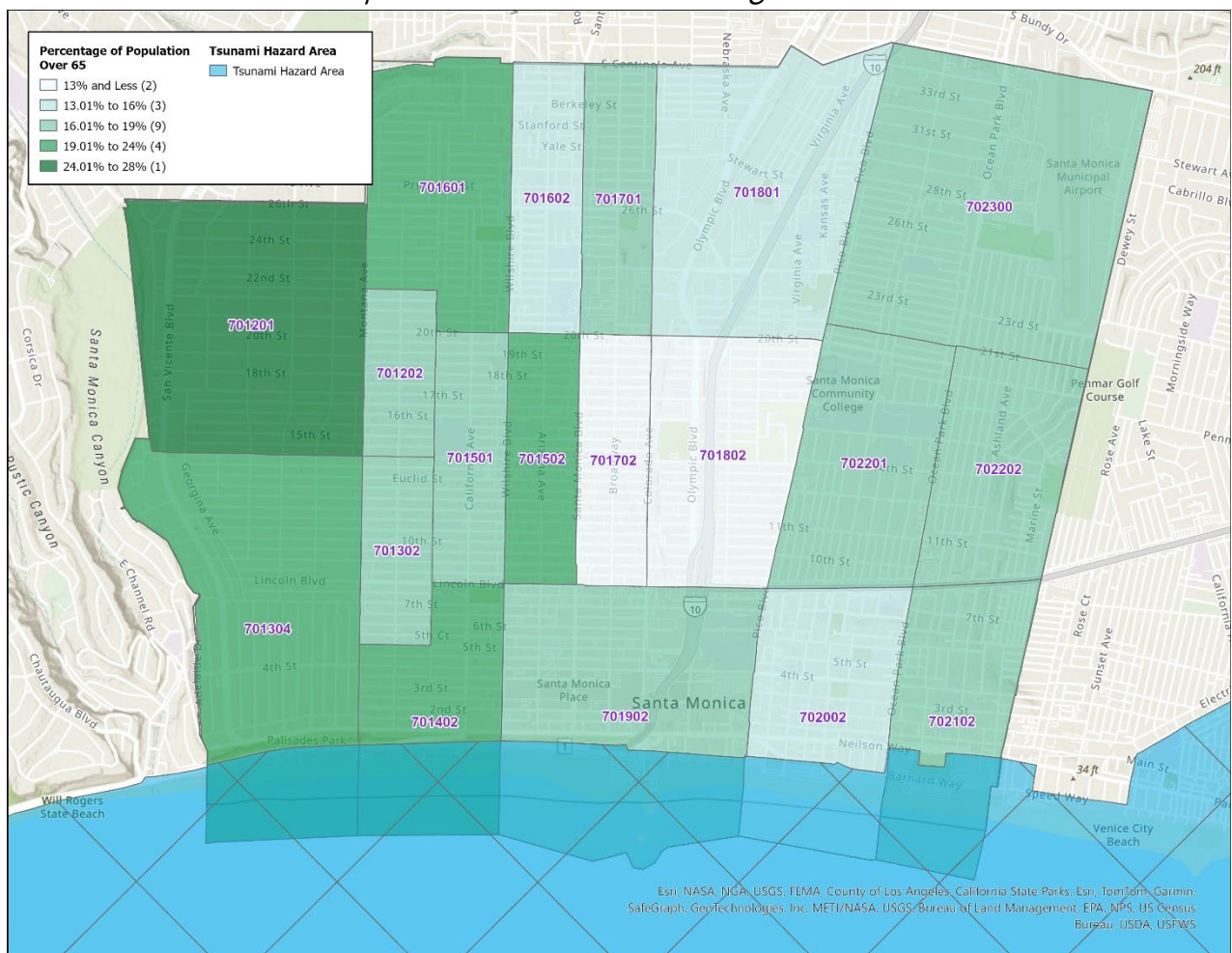
Source Data: State of California Tsunami Hazard Area Map, Los Angeles County, California Geological Survey and the California Governor's Office of Emergency Services; dated March 22, 2021; American Communities Survey, 5 year estimates

Tsunami Hazard Area – Non-White Populations



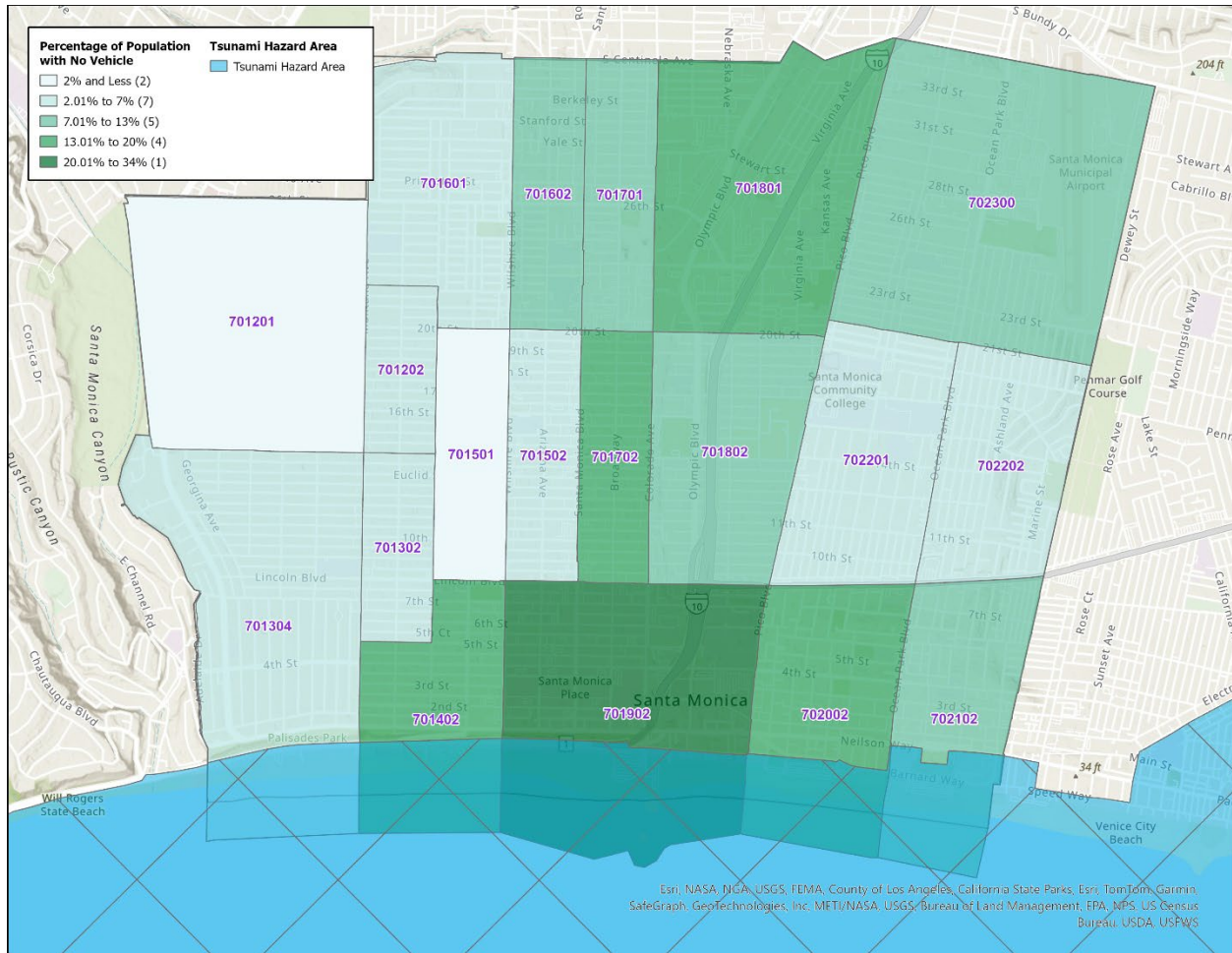
Source Data: State of California Tsunami Hazard Area Map, Los Angeles County, California Geological Survey and the California Governor's Office of Emergency Services; dated March 22, 2021; American Communities Survey, 2019 5 year estimates

Tsunami Hazard Area – Population Over 65 Years of Age



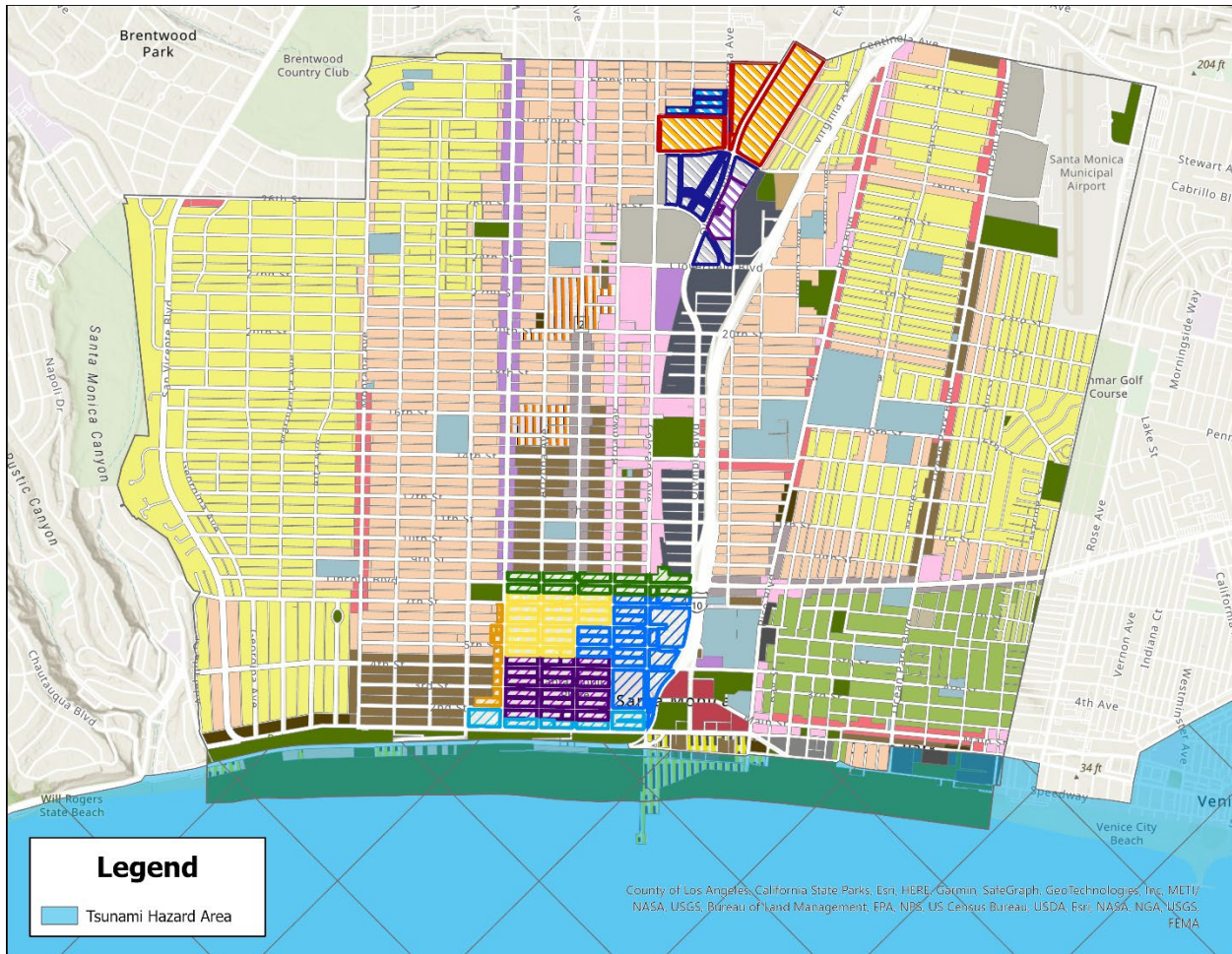
Source Data: State of California Tsunami Hazard Area Map, Los Angeles County, California Geological Survey and the California Governor's Office of Emergency Services; dated March 22, 2021; American Communities Survey, 2021 5 year estimates

Tsunami Hazard Area – Households with No Vehicle



Source Data: State of California Tsunami Hazard Area Map, Los Angeles County, California Geological Survey and the California Governor's Office of Emergency Services; dated March 22, 2021; American Communities Survey, 2021 5 year estimates

Tsunami Hazard Area – Zoning Districts



Source Data: State of California Tsunami Hazard Area Map, Los Angeles County, California Geological Survey and the California Governor's Office of Emergency Services; dated March 22, 2021

Tsunami Hazard Areas - Zoning Analysis					
Zone	Parcels	% of Parcels	SF	Acres	% of Acres
OS	59	26%	6181,407	142	38%
OP4	64	28%	8,224,007	189	51%
OF	21	9%	1,130,613	26	7%
R2	77	34%	483,213	11	3%
TOTAL	228	100%	16,087,075	369	100%

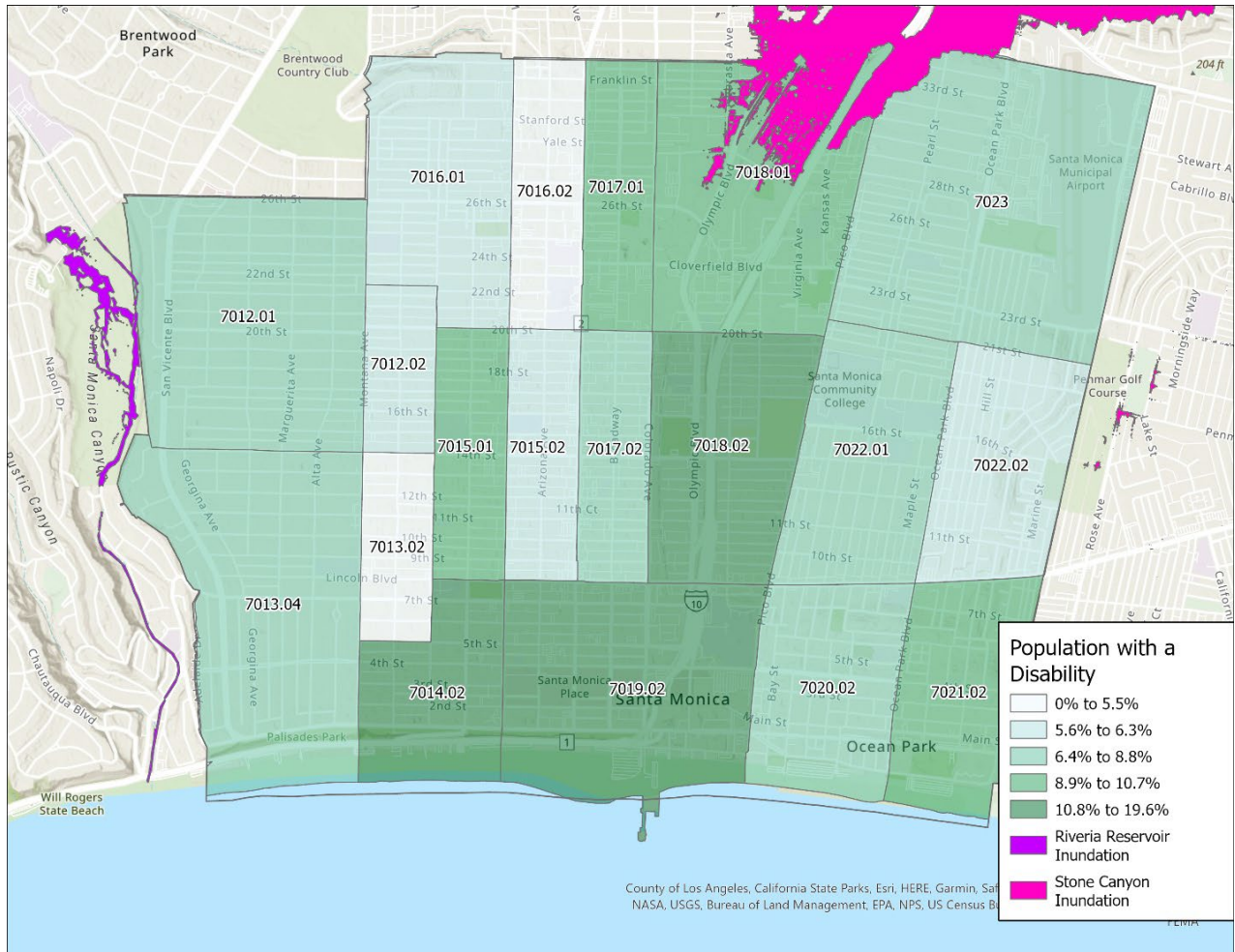
Dam Inundation

In the event of a dam failure of the Stone Canyon Dam, households living near the eastern edge of the City within the Pico Neighborhood (north and south of the I-10 freeway) would experience between 1-10 feet of flooding. Approximately 386 parcels, mostly in Census Tract 701801 with a small portion in Census Tract 702300, lie within the inundation area of the Stone Canyon Reservoir. The majority of these parcels are zoned R1 (224 parcels – 58%) and R2 (70 parcels – 18%) within the Pico neighborhood.

In general, vulnerable populations to dam inundation include:

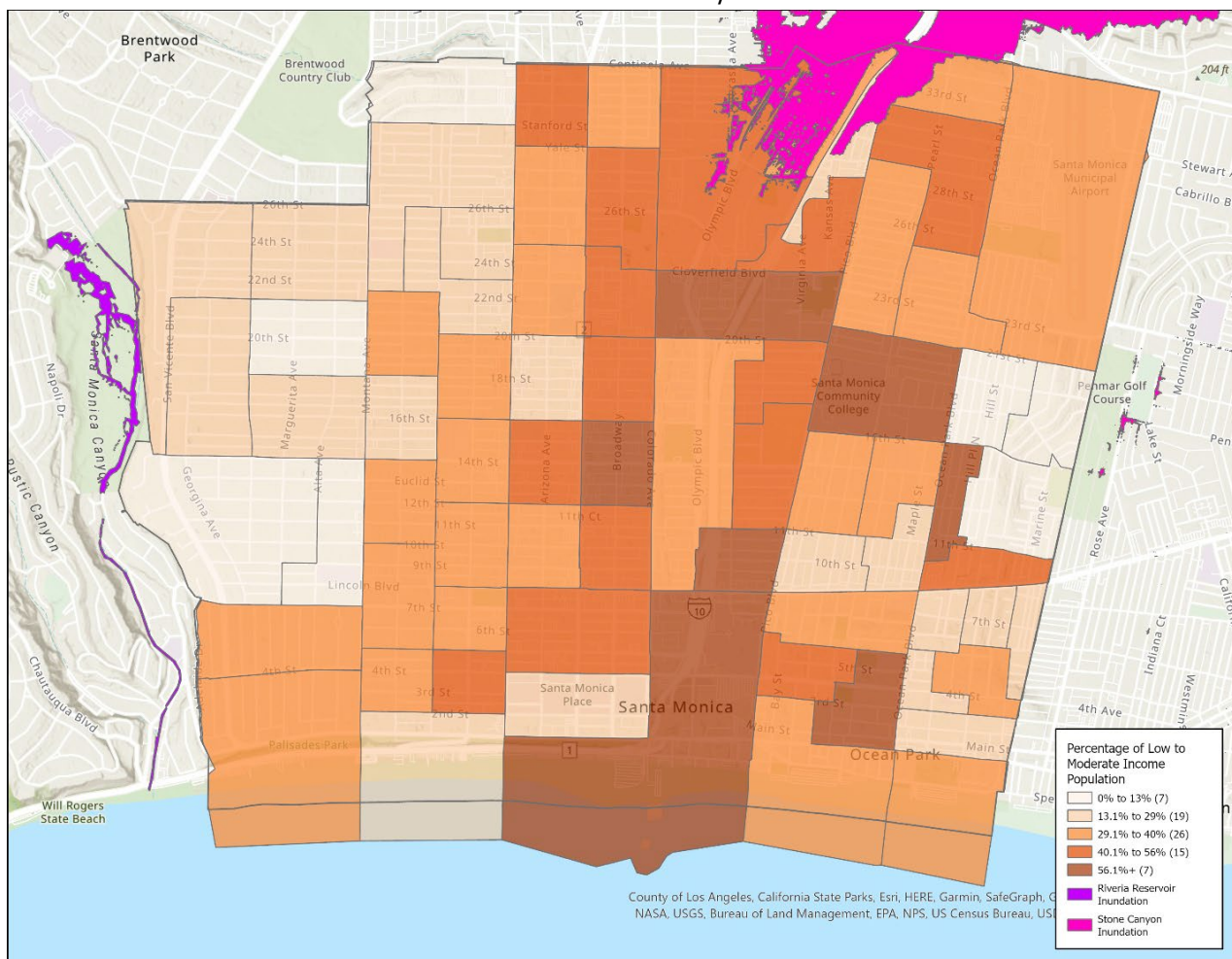
- Populations with a Disability – Populations with a disability are particularly vulnerable to seismic hazards, as their disability could affect emergency evacuation in an earthquake. Pico Census Tract 701801 is located in the dam inundation area and has a higher percentage of populations with a disability than the rest of the City.
- Lower Income Households – Lower income households are more likely to encounter issues related to home and infrastructure damage, as well as face financial issues when trying to rebuild their homes and buildings and access resources after earthquakes. Pico Census Tract 701801 is located in the dam inundation area and has a higher percentage of lower income households than the rest of the City.
- Households without Access to a Vehicle – Households without access to a vehicle may encounter challenges during an emergency evacuation. Pico Census Tract 701801 is located in the dam inundation area and has a higher percentage of households without access to a vehicle than the rest of the City.

Dam Inundation Area – Populations with a Disability



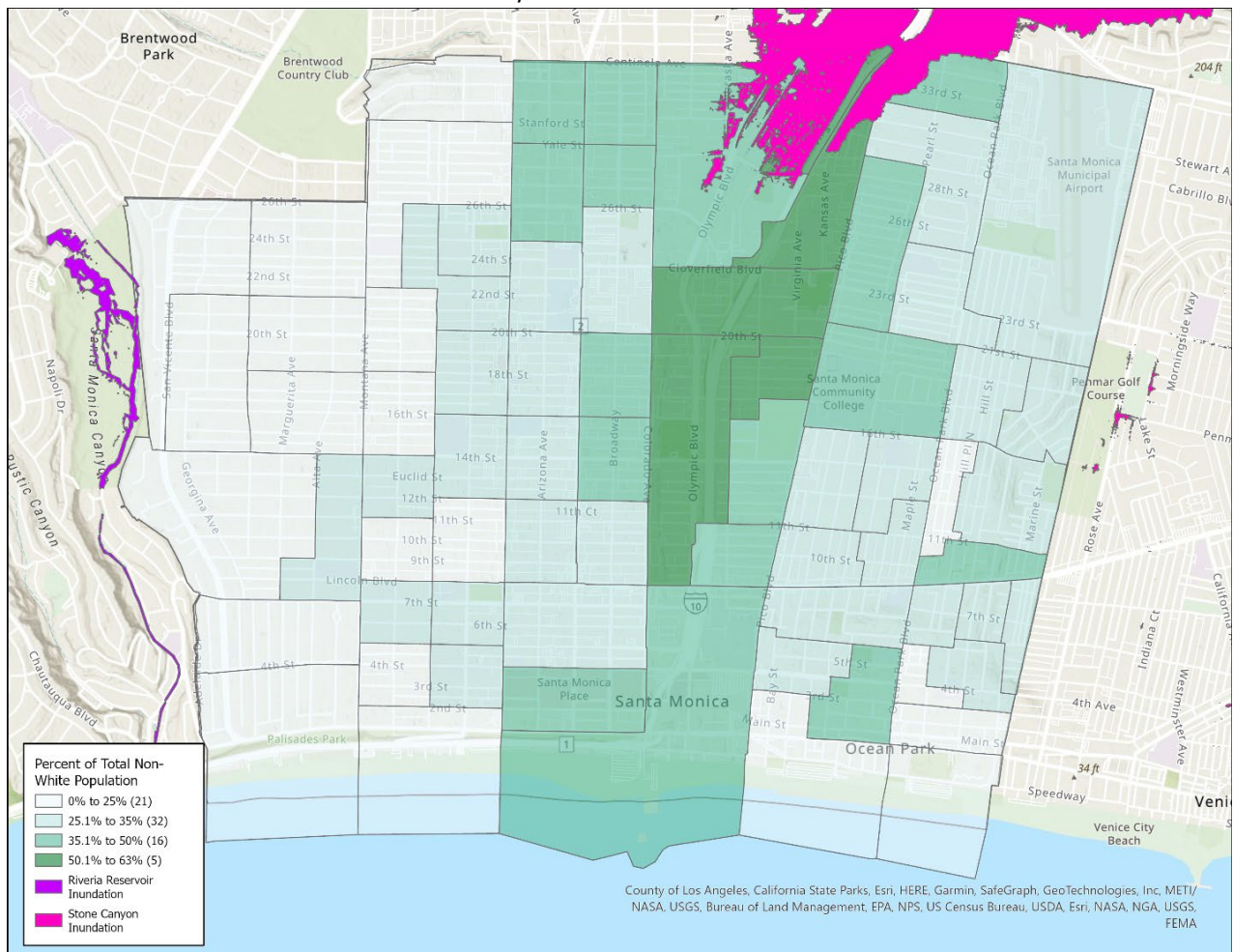
Source data: California Department of Water Resources, Division of Safety of Dams, Riviera Reservoir Dam Inundation Map, dated April 30, 2019 and Stone Canyon Dam Failure Scenario, dated June 29, 2018; American Communities Survey, 5 Year Estimates

Dam Inundation Area – Low to Moderate Income Populations



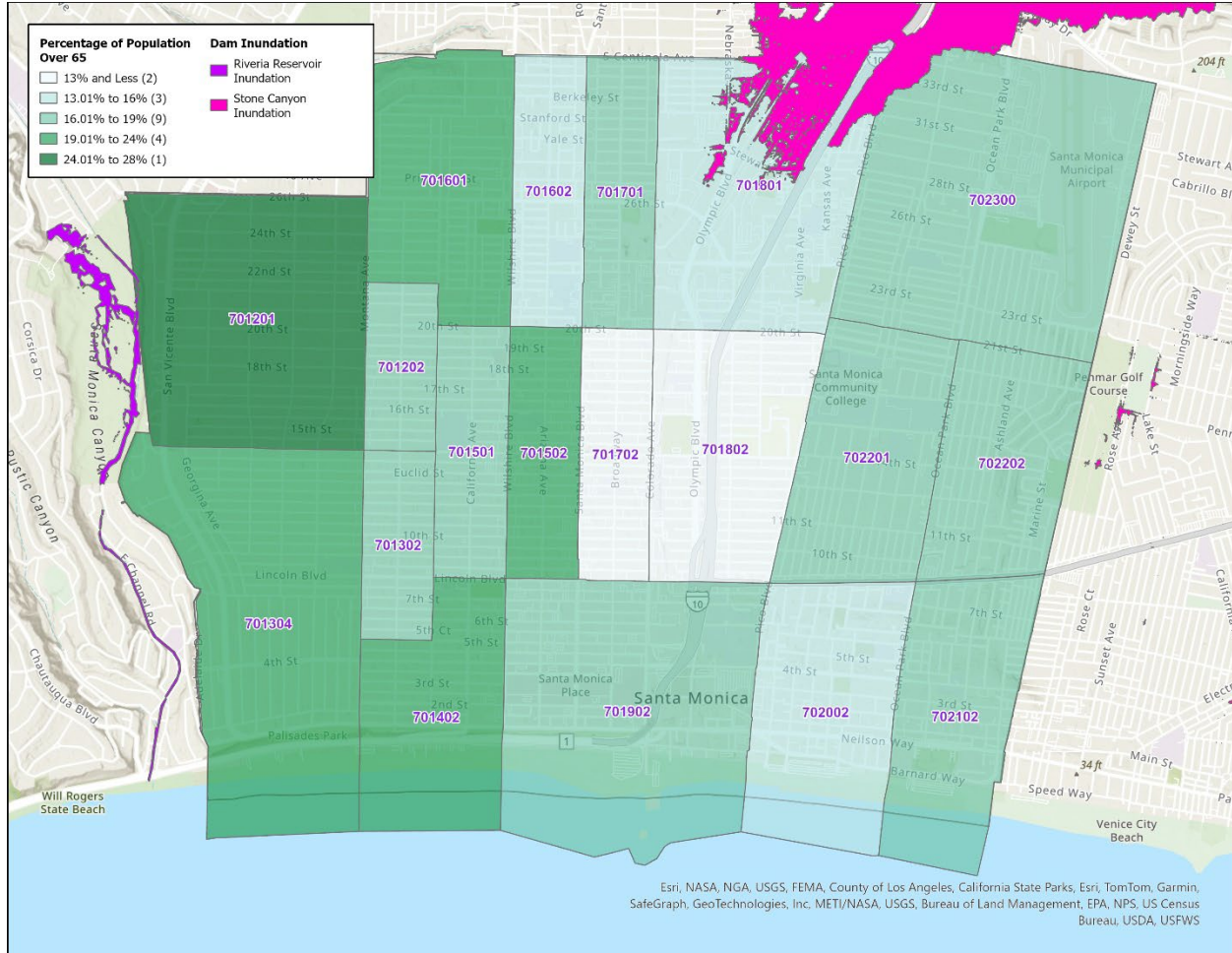
Source data: California Department of Water Resources, Division of Safety of Dams, Riviera Reservoir Dam Inundation Map, dated April 30, 2019 and Stone Canyon Dam Failure Scenario, dated June 29, 2018; American Communities Survey, 5 Year Estimates

Dam Inundation Area – Non-White Populations



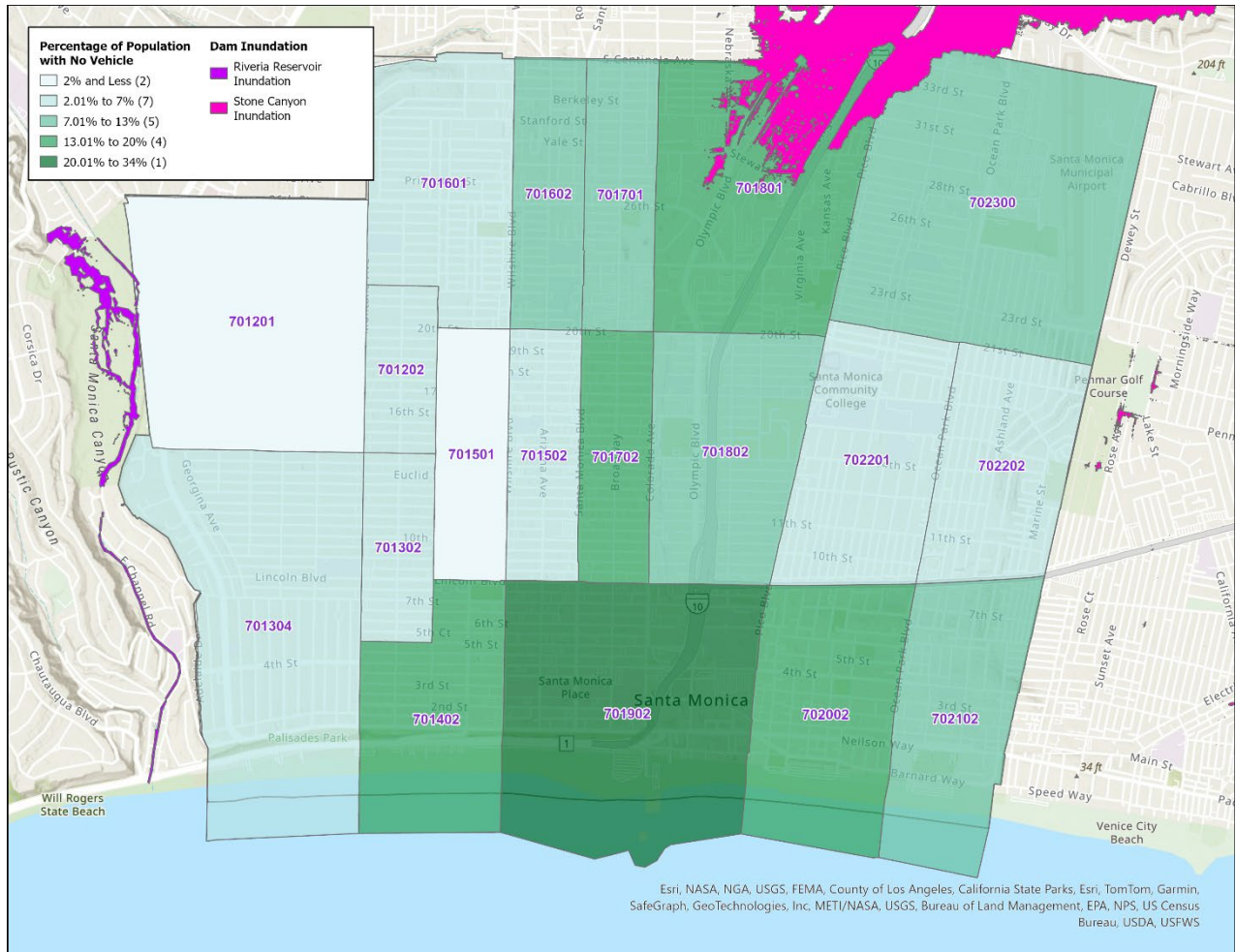
Source data: California Department of Water Resources, Division of Safety of Dams, Riviera Reservoir Dam Inundation Map, dated April 30, 2019 and Stone Canyon Dam Failure Scenario, dated June 29, 2018; American Communities Survey, 5 Year Estimates

Dam Inundation Area – Populations Over 65 Years of Age



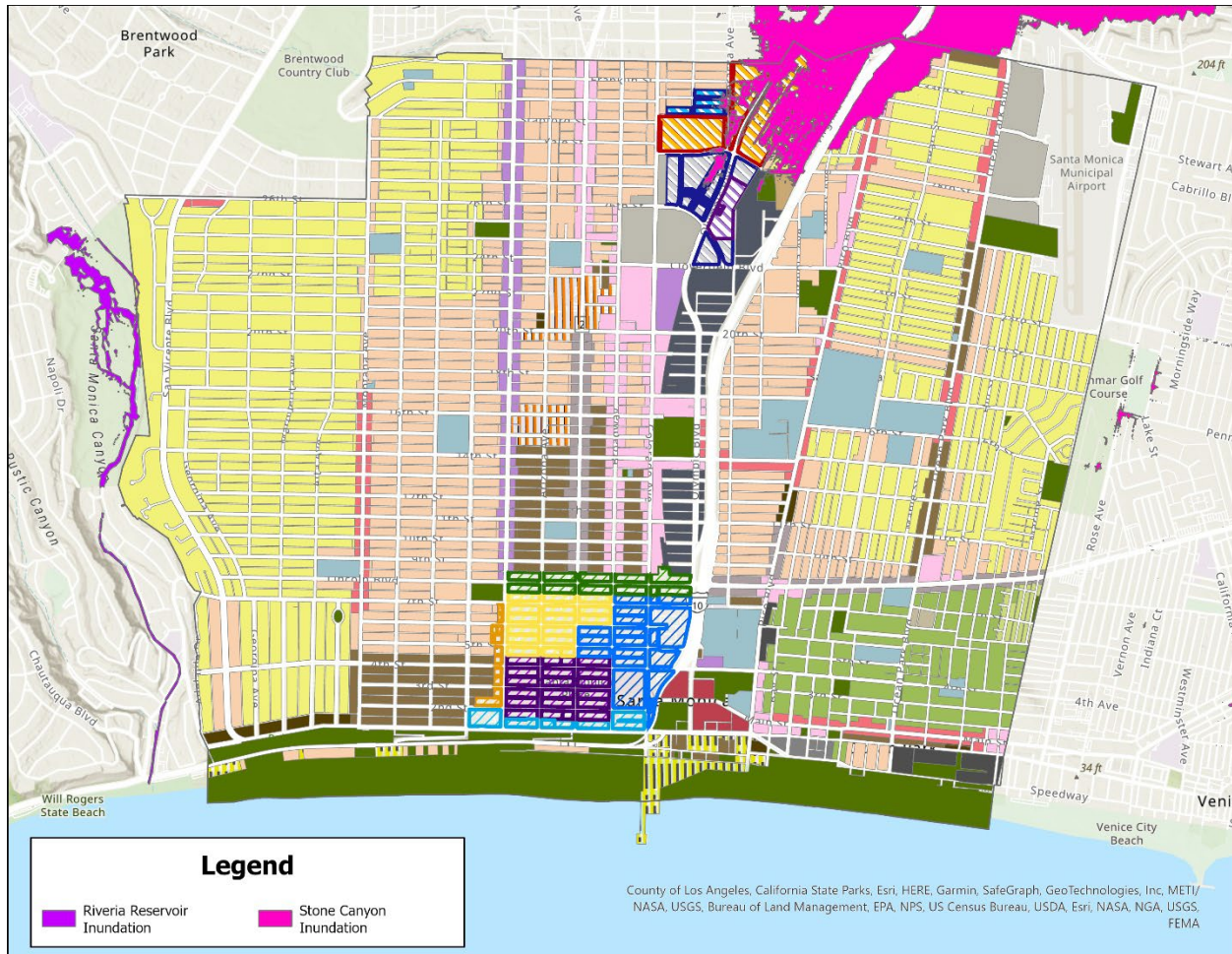
Source data: California Department of Water Resources, Division of Safety of Dams, Riviera Reservoir Dam Inundation Map, dated April 30, 2019 and Stone Canyon Dam Failure Scenario, dated June 29, 2018; American Communities Survey, 5 Year Estimates

Dam Inundation Area – Households with No Vehicles



Source data: California Department of Water Resources, Division of Safety of Dams, Riviera Reservoir Dam Inundation Map, dated April 30, 2019 and Stone Canyon Dam Failure Scenario, dated June 29, 2018; American Communities Survey, 2021 5-Year Estimates

Dam Inundation Area – Zoning Districts



Dam Inundation – Zoning Analysis					
Zone	Parcels	% of parcels	SF	Acres	% of acres
MUC	39	10%	2,161,400	50	32%
R2	70	18%	715,164	16	11%
NC	27	7%	101,037	2	2%
IC	1	0%	813,595	19	12%
R1	224	58%	1,545,100	35	23%
MUBL	7	2%	198,949	5	3%
R3	9	2%	207,716	5	3%
BTV	3	1%	593,933	14	9%
CCS	4	1%	120,078	3	2%
RMH	1	0%	203,064	5	3%
No Zoning	1	0%	33,815	1	1%
TOTAL	386	100%	6,693,850	154	100%

Fires

Although there are no designated wildfire zones in the City, uncontrolled wildland fires in the Santa Monica Mountains could potentially spread beyond the wildland areas into urban areas. The higher-income households of the North of Montana neighborhood are the closest to these zones and therefore, are most likely to be directly impacted by wildfires and wildfire evacuation orders. The indirect effects of wildfires, however, are more widespread as smoke can greatly impact children, immunocompromised individuals, seniors, lower-income populations, the disabled, unhoused populations, and outdoor workers.

Several census tracts in Santa Monica have significant percentage of populations that are considered to be disproportionately vulnerable to fire effects, due to health conditions, age, income levels, no access to a vehicle, and/or disabilities. Essentially, these populations are more likely to be affected by wildfire disasters because they lack the resources to prepare for, respond to, and recover from a wildfire. Vulnerable populations to fires include:

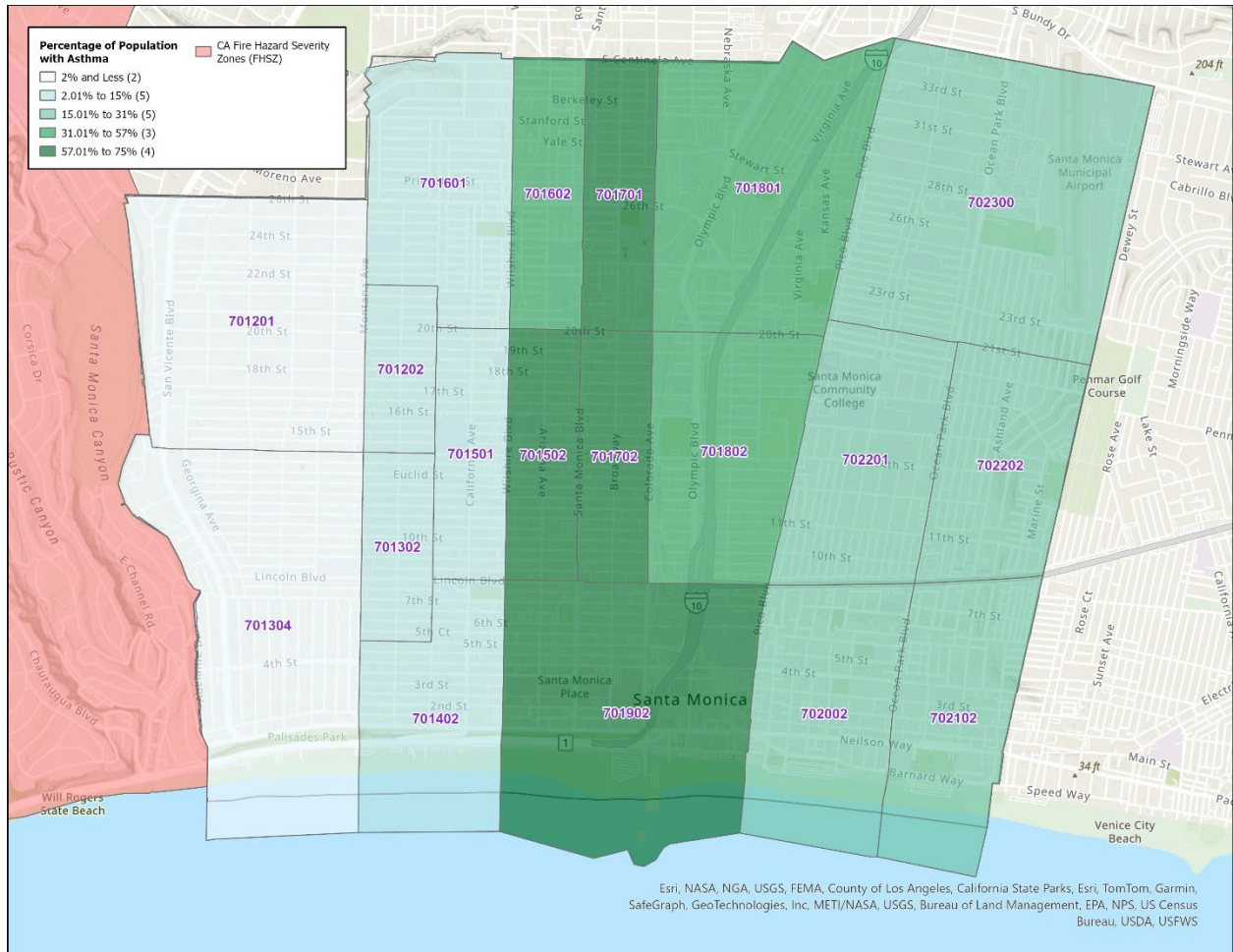
- Population with Asthma – People with pre-existing asthma and other respiratory disease are at greater risk of health effects from wildfire smoke. Based on emergency room visit data from the Office of Statewide Health Planning and Development (OSHPD), the central areas of the City including the Pico (Census Tracts 701801 and 701802), Mid-City (Census Tracts 701701 and 701702), and Downtown (Census Tract 701902) neighborhoods have the highest percentages of populations with asthma.
- Young Children – The risk of fine particle-related health effects varies throughout a lifetime. Risk is generally higher during childhood, lower in young adulthood, and greater in middle age through old age as the incidence of heart and lung disease, hypertension, and diabetes increases.¹ The City's population 5 years of age and younger are mostly located in the City's single family zoned areas, such as North of Montana (Census Tracts 701202, 701201, and 701304) and Sunset Park (Census Tract 702300) neighborhoods.
- Senior Population – Older populations are also particularly sensitive to health problems related to smoke from fires. Older populations are more likely to have pre-existing medical conditions or compromised mobility that can limit or hinder their ability to respond to a wildfire. The City's population over 65 years of age are mostly located in the North of Montana neighborhood (Census Tract 701201).
- Households without Access to a Vehicle – Households without access to a vehicle are less likely to evacuate or access emergency response centers. These households are concentrated in Downtown (Census Tract 701902) and Pico (Census Tract 701801).
- Populations with a Disability – Populations with disabilities, especially those with mobility issues and medical conditions, are likely to have a reduced ability to respond to natural disasters, including wildfires and urban fires. The Downtown (Census Tract 701902),

¹ Environmental Protection Agency, *Wildfire Smoke and Your Patients Health*, <https://www.epa.gov/wildfire-smoke-course/which-populations-experience-greater-risks-adverse-health-effects-resulting>; accessed 2/5/24

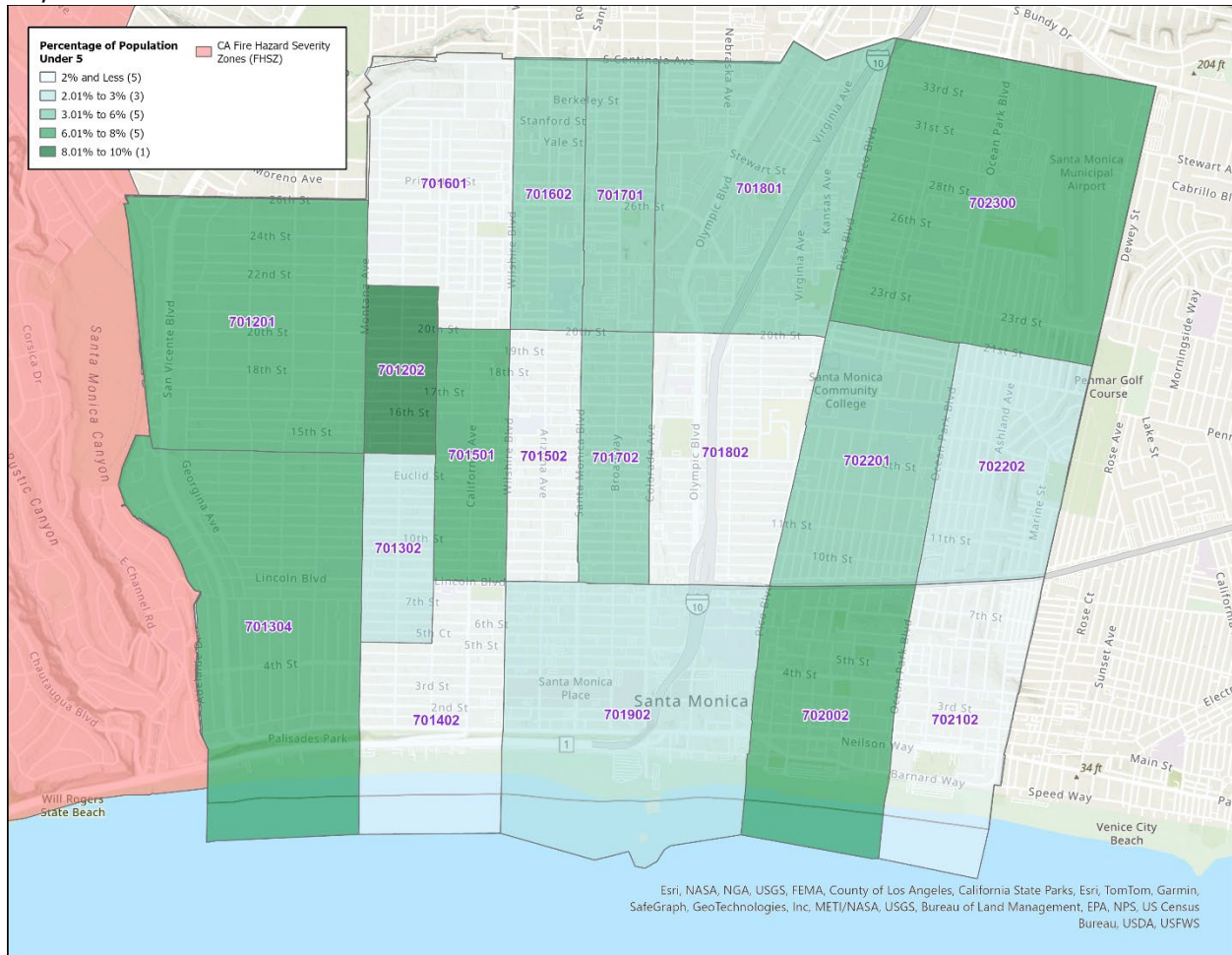
Wilmington (Census Tract 701402), and the Pico (Census Tract 701802) neighborhoods have higher percentages of populations with a disability than the rest of the City.

- Lower Income Households – Low income is considered the strongest predictor for compromised health and ability to recover from a disaster. Low-income residents are generally disproportionately impacted by fires because they lack the financial resources and time to take proactive measures in advance of a fire, are less likely to be able to evacuate or relocate, experience more acute emotional stress, are more likely to be overlooked by emergency response services, and are less likely to have adequate property insurance so they bear a greater burden from property damage following a fire. Highest percentages of lower income households are located within the Pico neighborhood (Census Tracts 701801 and 701802) and Downtown (Census Tract 701902).

Population with Asthma



Population Under 5 Years



Climate Change Effects

Vulnerable population groups to climate change related effects, such as extreme heat, floods, poor air quality, and other climate-related events generally include infants and young children, seniors, persons with chronic medical conditions, persons with disabilities, and certain occupational groups.

For example, the adverse impacts of extreme heat are felt most acutely by older adults, children, and those with pre-existing health conditions such as asthma and cardiovascular disease. Combining these characteristics with additional factors, such as poverty, occupation (outdoor workers), language barriers, lack of cooling systems, and housing insecurity can put individuals at disproportionately high risk of heat-related illness and death. *Figure – Population with Asthma* shows that the Downtown, Mid-City, and the Pico neighborhoods have higher percentages of populations with asthma. *Figure – Population with Cardiovascular Disease* indicates that populations with cardiovascular disease are concentrated in the Wilmont neighborhood.

Additionally, lower income households are disproportionately affected as they may not be able afford to relocate or make necessary improvements to prepare for extreme climate related events. Seniors and adults with limited mobility as well as households without vehicles are also less likely to adapt to or evacuate from an extreme weather event. Within Santa Monica, the Downtown and Pico neighborhoods have the highest percentages of households that are lower income, populations with a disability, and households without access to a vehicle. The census tract with the largest population of senior households is located in the North of Montana neighborhood within Census Tract 701201.

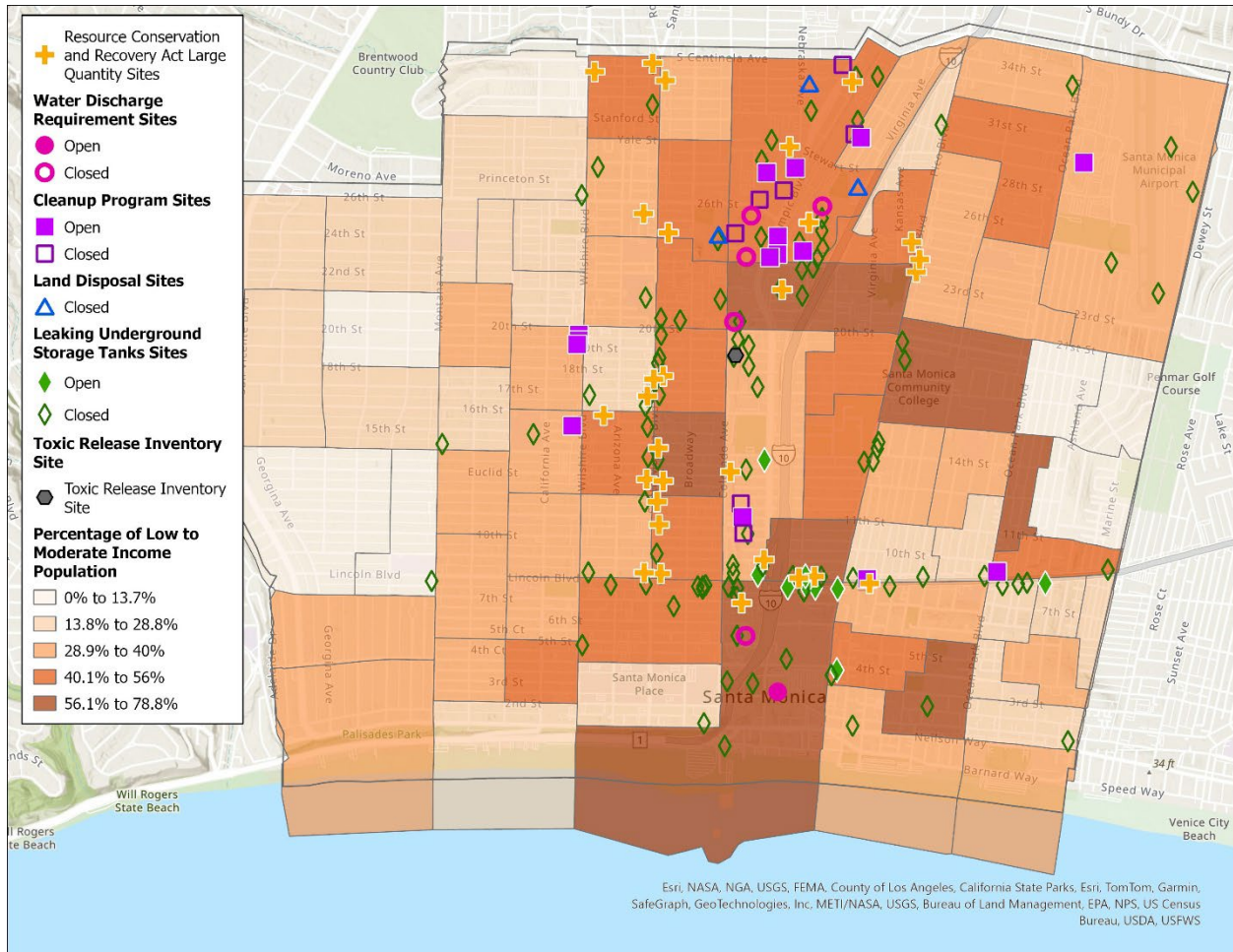
Hazardous Materials

The City's large quantity generators (aka sites that currently handle large quantities of hazardous materials) include automobile service/repair shops, pharmacies, hospitals, medical clinics/offices, the City Yards, and Santa Monica Airport. Additionally, there are also sites in the City that are deemed to be potentially hazardous due to underlying soil and/or groundwater contamination that have occurred from current and/or past land uses. Most of these sites are located along Santa Monica Blvd's "Auto Row", along Lincoln Boulevard, and in the Bergamot Area which are predominantly occupied by lower income and non-white households based on Census data.

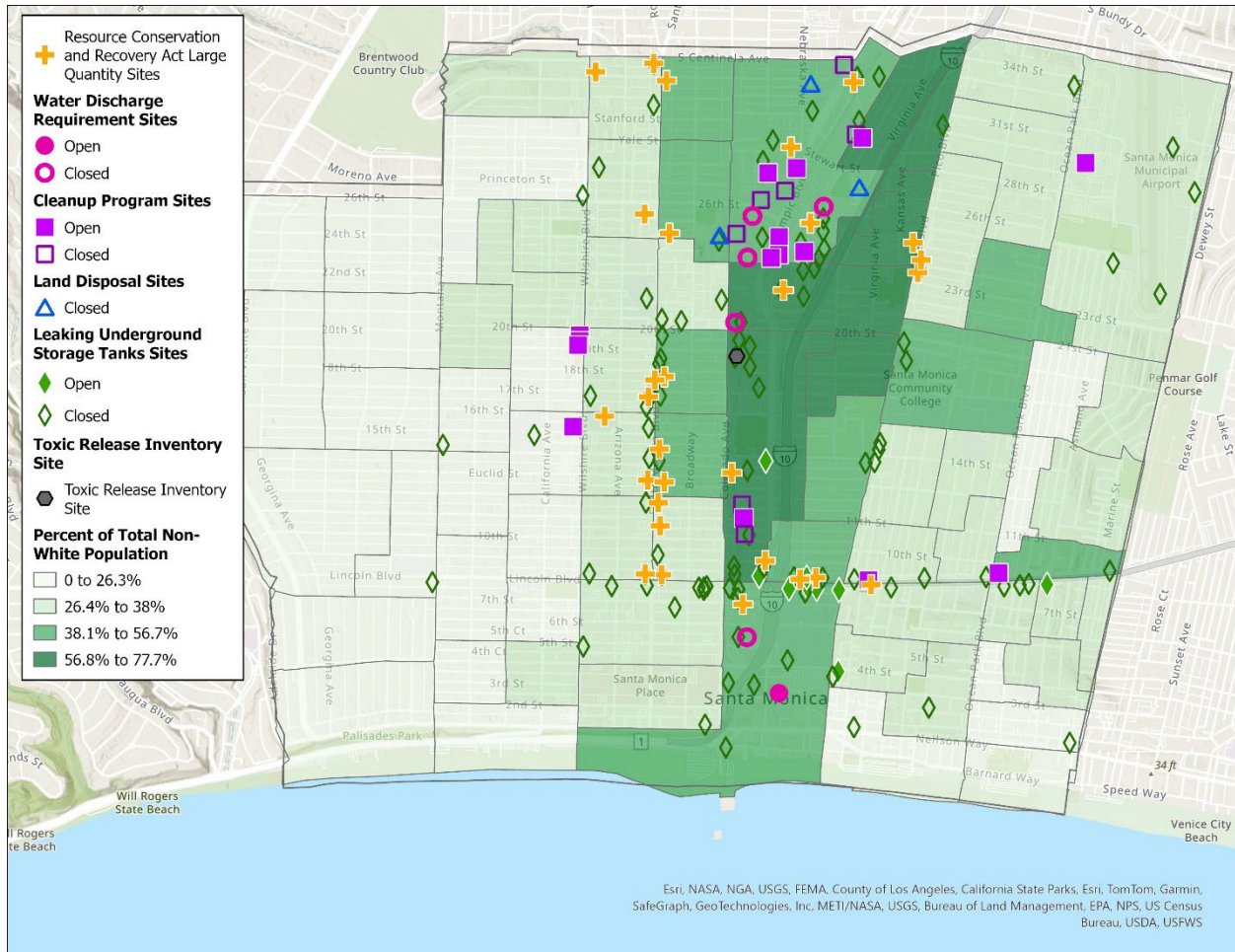
In addition to the identified sites, areas that have historically had industrial uses such as the Bergamot Area and the Industrial Conservation District are likely to have unknown underlying contamination from past land uses. Contamination at unidentified sites may not be discovered until a subsurface investigation is completed.

The properties at and near the Airport is also another area of concern for groundwater contamination due to aviation fueling activities and prior use of hazardous materials. This area has a higher population of children 5 years of age and younger as compared to other census tracts in the City.

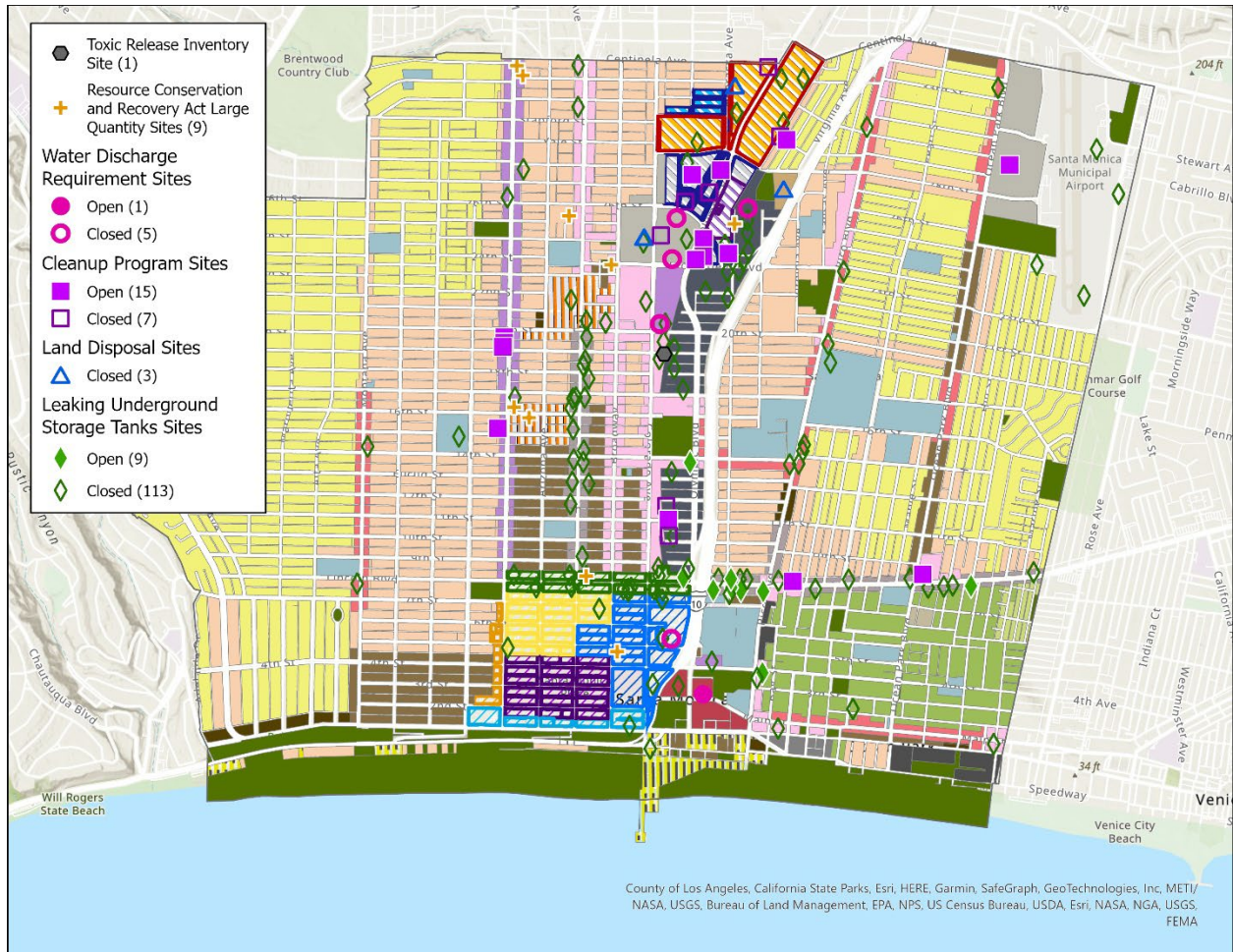
Hazardous Materials Sites – Lower Income Households



Hazardous Materials Sites – Non-White Population



Hazardous Materials Sites – Zoning

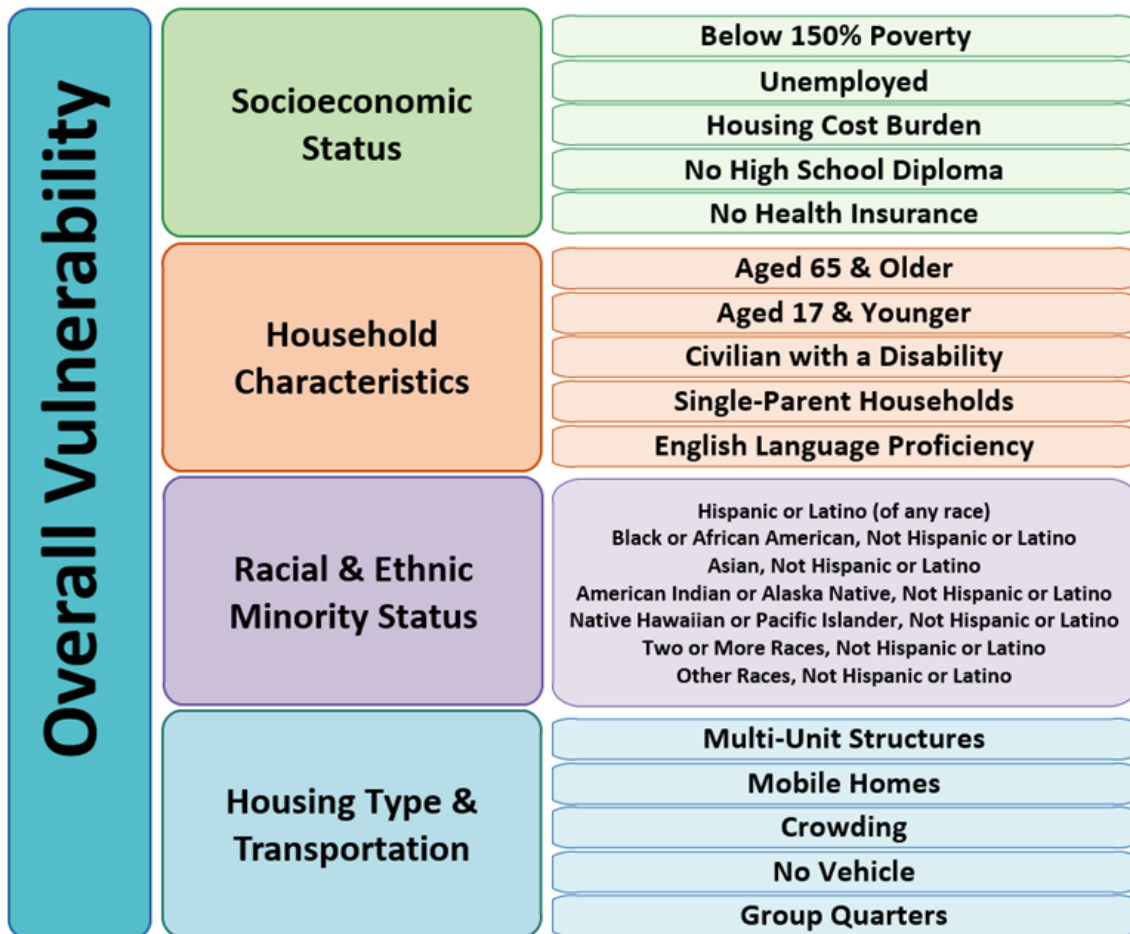


Vulnerability Assessment Data

CDC/ATSR Social Vulnerability Index

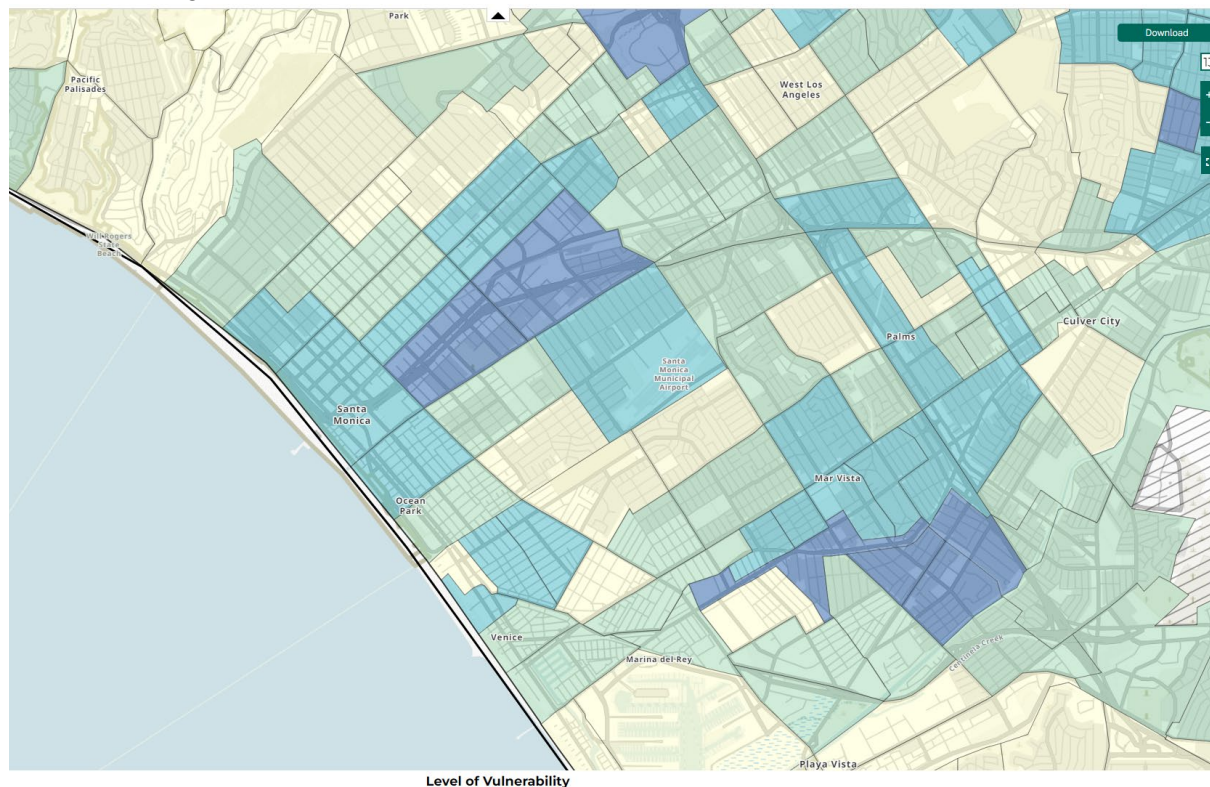
Social vulnerability is a term describing how resilient a community is when confronted by external stresses on human health. These stresses can range from natural or human-caused disasters to disease outbreaks. Reducing social vulnerability can decrease both human suffering and economic loss.

The Center for Disease Control/ Agency for Toxic Substances Disease Registry (CDC/ATSDR) has developed a Social Vulnerability Index (SVI) to help local officials identify communities that may need support before, during, or after disasters. SVI indicates the relative vulnerability of every U.S. Census tract using 16 social factors, including unemployment, racial and ethnic minority status, and disability, and further groups them into four related themes.² Thus, each tract receives a ranking for each Census variable and for each of the four themes as well as an overall ranking. A high SVI score indicates high social vulnerability, whereas a low score indicates low social vulnerability.



² <https://www.caloes.ca.gov/wp-content/uploads/Hazard-Mitigation/Documents/Multiple-Hazards-Eligibility-Analysis-Updated-8.2.22.pdf>

Based on a review of the CDC SVI index, there are 8 census tracts within the City that have medium to high vulnerability, and 2 census tracts with “high” vulnerability. These 2 census tracts are located in the Pico Neighborhood.



Census Tract	Neighborhood	2020 National SVI	Vulnerability Level
701201	North of Montana	0.0843	Low
701202	Wilmont	0.0874	Low
701302	Wilmont	0.3652	Low to medium
701304	North of Montana	0.263	Low to medium
701402	Wilmont	0.7109	Medium to high
701501	Wilmont	0.4345	Low to medium
701502	MidCity	0.4854	Low to medium
701601	Northeast	0.2259	Low
701602	MidCity	0.6653	Medium to high
701701	MidCity	0.5613	Medium to high
701702	Pico	0.6853	Medium to high
701801	Pico	0.9219	High
701802	Pico	0.7681	High
701902	Downtown	0.7292	Medium to High
702002	Ocean Park	0.5327	Medium to High
702102	Ocean Park	0.4411	Low to Medium
702201	Sunset Park	0.4066	Low to Medium
702202	Sunset Park	0.2124	Low
702300	Sunset Park	0.5007	Medium to High

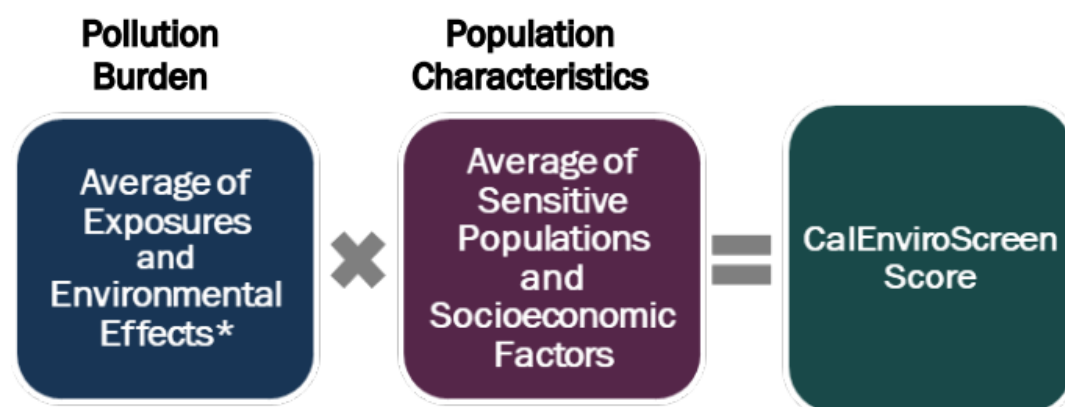
Source: Center for Disease Control/Agency for Toxic Substances and Disease Registry (CDC/ATSDR) Social Vulnerability Index (SVI) Interactive Map, Data Year 2020 https://www.atsdr.cdc.gov/placeandhealth/svi/interactive_map.html; Accessed 1/19/24

CalEnviroScreen 4.0

Developed by CalEPA and its Office of Environmental Health Hazard Assessment (OEHHA), CalEnviroScreen includes an online mapping tool, a supplemental race analysis, and related documents. It analyzes data on environmental, public health and socioeconomic conditions in California’s 8,000 census tracts to provide a clear picture of cumulative pollution burdens and vulnerabilities in communities throughout the state. CalEnviroScreen uses the following 21 statewide indicators to characterize both Pollution Burden and Population Characteristics:

Pollution Burden	
<ul style="list-style-type: none"> • Ozone • PM2.5 • Diesel Particulate Matter • Drinking Water Contaminants • Children’s Lead Risk • Pesticide Use • Toxic Releases from Facilities 	<ul style="list-style-type: none"> • Traffic Impacts • Cleanup Sites • Groundwater Threats • Hazardous Waste • Impaired Waters • Solid waste Sites
Population Characteristics	
<ul style="list-style-type: none"> • Asthma • Cardiovascular disease • Low Birth Weight • Education 	<ul style="list-style-type: none"> • Housing Burden • Linguistic Isolation • Poverty • Unemployment

CalEnviroScreen uses percentiles to assign scores for each of the indicators³ in a given geographic area, and then averages the score for the set of indicators in each of the four components (Exposures, Environmental Effects, Sensitive Populations, and Socioeconomic Factors). The component scores are then combined to produce a CalEnviroScreen score for a given place, using the formula below.



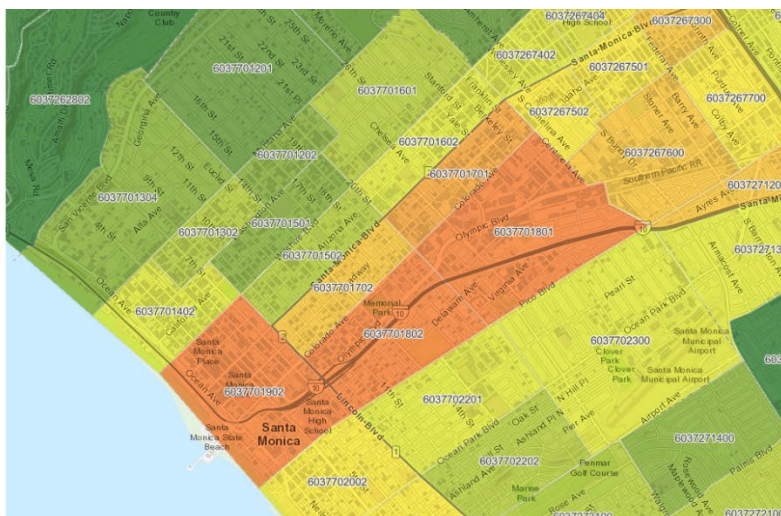
* The Environmental Effects score was weighted half as much as the Exposures score.

³ <https://oehha.ca.gov/media/downloads/calenviroscreen/report/calenviroscreen40reportf2021.pdf#page=151>

Based on a review of the CalEnviroScreen 4.0 model and interactive map tool, there are 3 census tracts that have scores in the 90-100 percentile. These include Census Tract 701801 and 701802 in the Pico Neighborhood and Census Tract 701902 in the Downtown.

Legend

CalEnviroScreen 4.0 Results

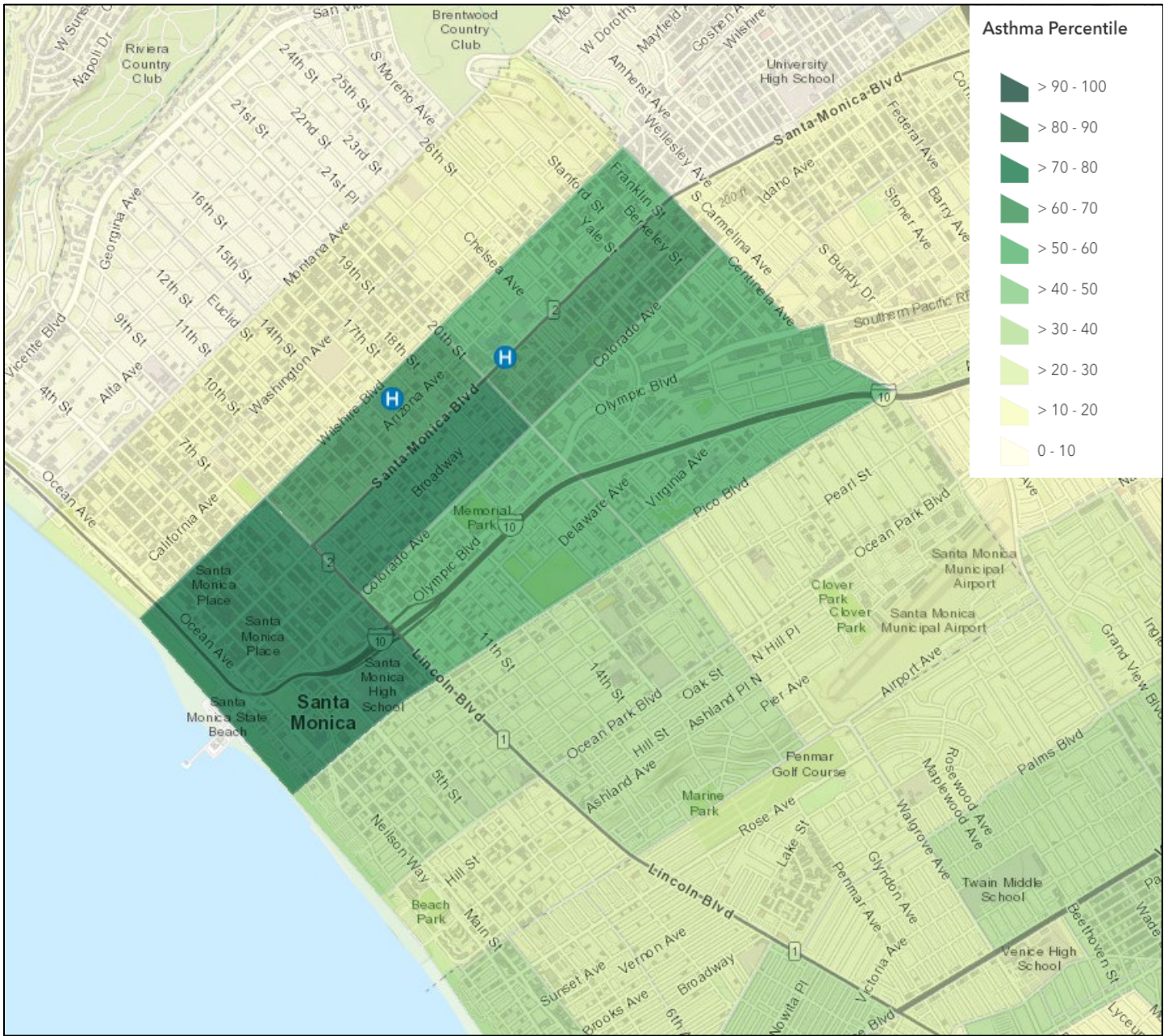


CalEnviroScreen 4.0 High Pollution, Low Population

Census Tract	Neighborhood	CalEnviroScreen 4.0 Percentile	Pollution Burden Percentile	Population Characteristic Percentile
701201	North of Montana	18	29	16
701202	Wilmington	23	33	20
701302	Wilmington	33	35	33
701304	North of Montana	23	30	22
701402	Wilmington	41	55	32
701501	Wilmington	21	55	11
701502	MidCity	39	64	26
701601	Northeast	34	45	28
701602	MidCity	48	64	37
701701	MidCity	72	85	55
701702	Pico	69	82	53
701801	Pico	85	96	62
701802	Pico	81	94	58
701902	Downtown	81	81	72
702002	Ocean Park	54	75	38
702102	Ocean Park	50	58	42
702201	Sunset Park	49	82	29
702202	Sunset Park	31	51	23
702300	Sunset Park	45	90	21

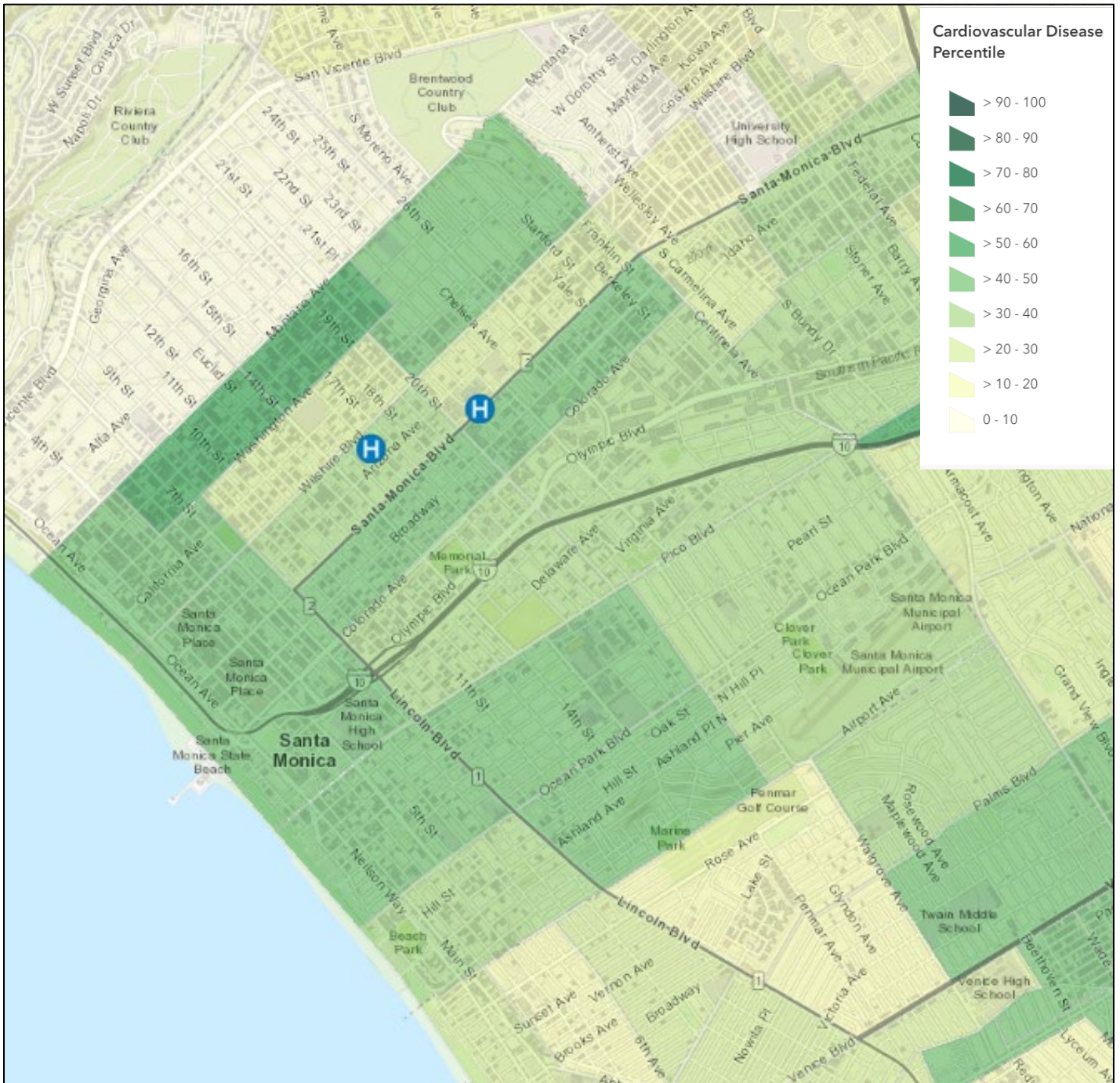
Source: California Office of Environmental Health Hazard Assessment, CalEnviroScreen 4.0, online at https://experience.arcgis.com/experience/11d2f52282a54ceebcac7428e6184203/page/CalEnviroScreen-4_0/

Final Appendix B – February 2025
 Population with Asthma



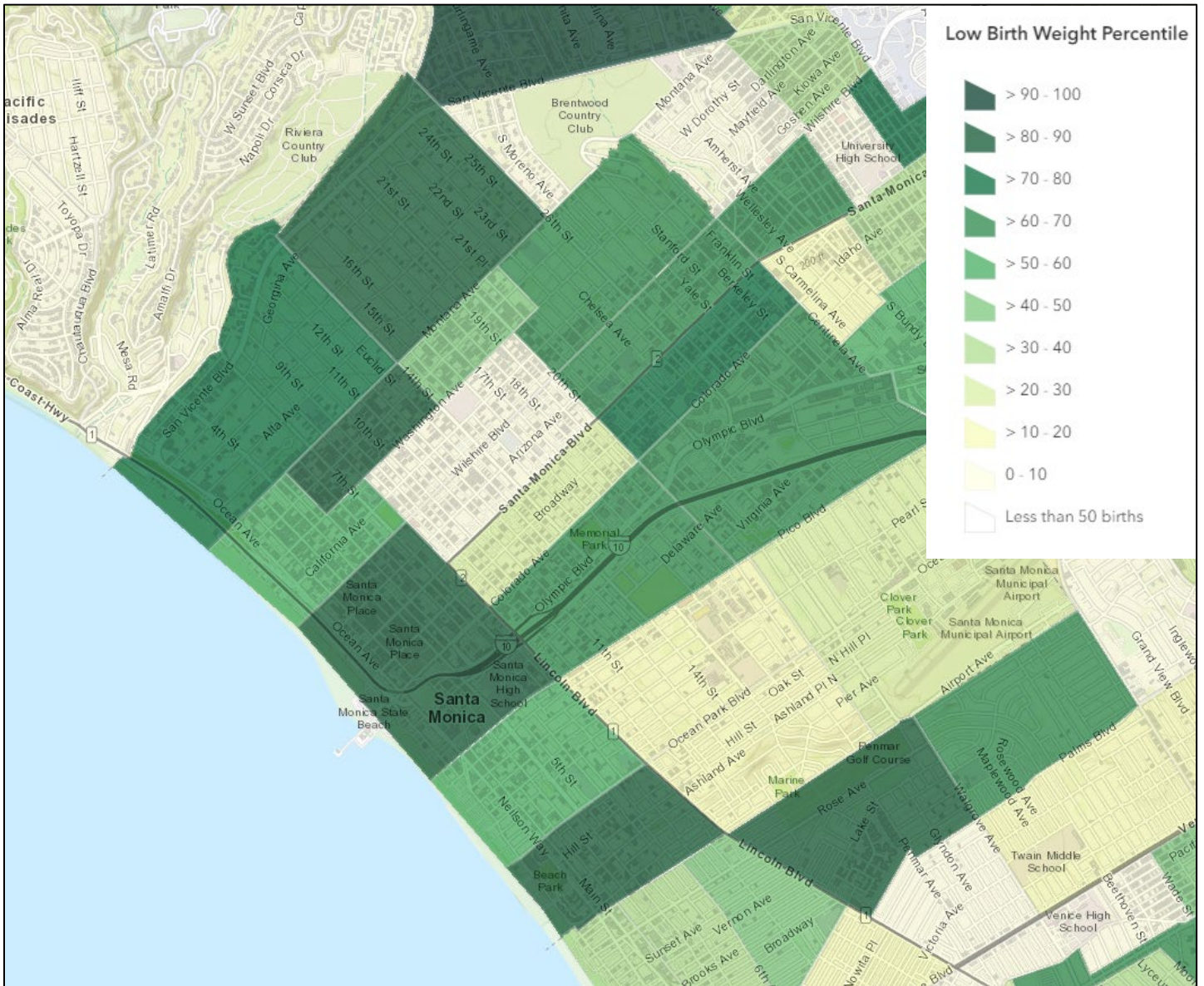
Source Data: Age-adjusted rate of emergency department (ED) visits for asthma per 10,000 (averaged over 2015–2017); Emergency Department and Patient Discharge Datasets from the State of California, Office of Statewide Health Planning and Development (OSHPD)

Final Appendix B – February 2025
 Population with Cardiovascular Disease



Source Data: age-adjusted rate of emergency department (ED) visits for acute myocardial infarction per 10,000 (averaged over 2015-2017); Emergency Department and Patient Discharge Datasets from the State of California, Office of Statewide Health Planning and Development (OSHPD)

Final Appendix B – February 2025
 Population with Low Birth Weight



Source Data: Percent low birth weight averaged over 2009-2015; California Department of Public Health (CDPH)

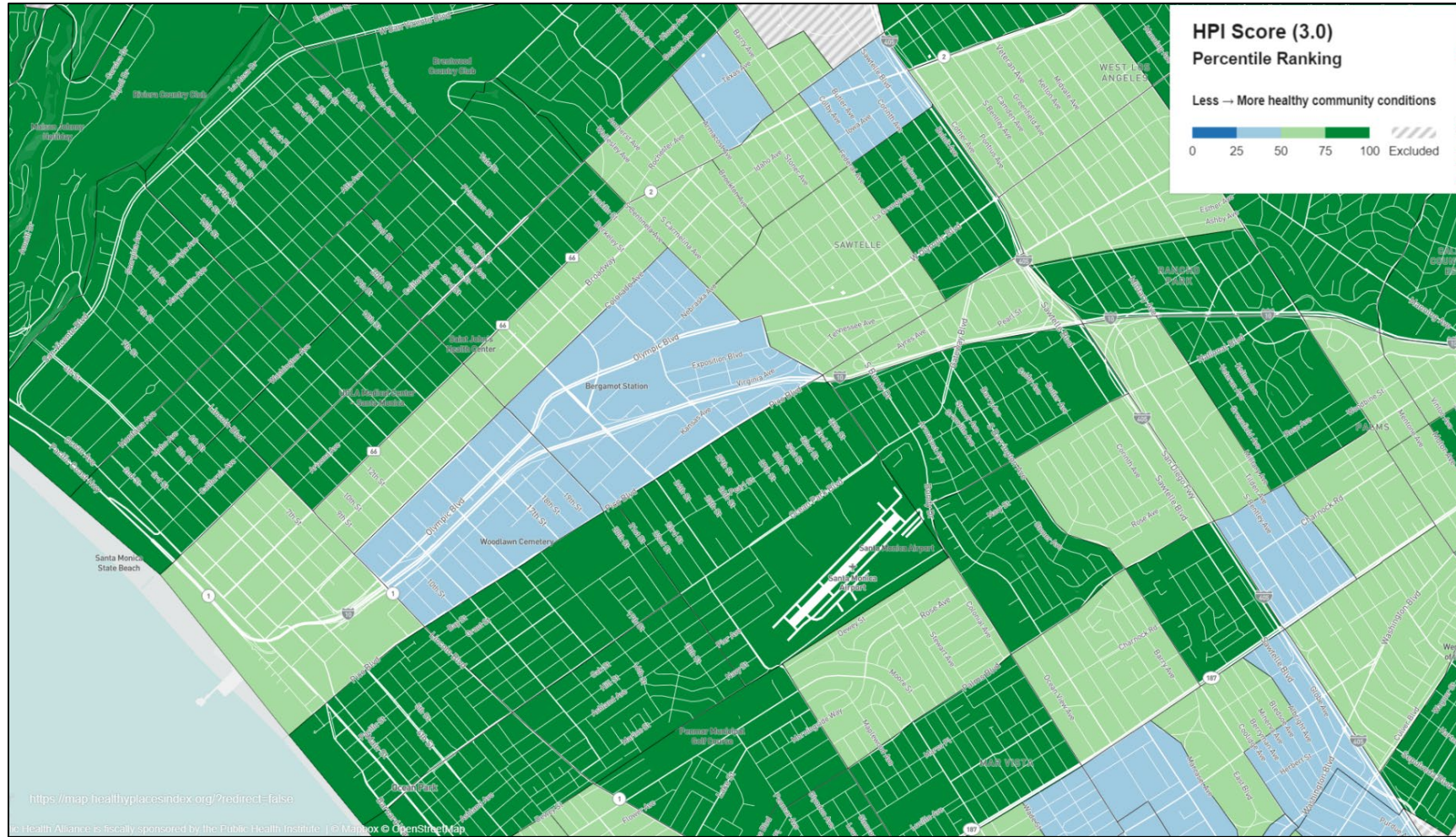
Healthy Places Index

The Public Health Alliance of Southern California (a collation of 10 health departments in Southern California) created the Healthy Place Index (HPI), a tool that evaluates health equity data. HPI evaluates the relationship between 23 identified key drivers of health and life expectancy at birth on a neighborhood level. These key drivers cover economic status, educational attainment and opportunity, social participation, transportation availability, healthcare access, neighborhood conditions, housing characteristics, and environmental health. Based on the analysis of these key drivers, the HPI produces a score ranking from 1 to 99 that shows the relative impact of conditions in a selected area compared to all other such places in the state.

The HPI score rank is divided into four quartiles and displayed on a map where users can explore healthy conditions across census tracts, cities, counties, congressional districts, school districts, and now, ZIP codes and unincorporated areas. Additionally, the HPI platform provides detailed data about specific social drivers of health in any location and allows users to filter by race, ethnicity, and country of origin.

The HPI ranks most of the City of Santa Monica above the 50th percentile, with the exception of Census Tract 701801 and 701802 in the Pico Neighborhood. The HPI scores for these two census tracts are 44.0 and 46.5 respectively. The relative lower scores of these two Census tracts compared with the rest of the City are consistent with other vulnerability metrics/scores, including CalEnviroScreen 4.0.

Healthy Places Index



Source: Public Health Alliance of Southern California, California Healthy Places Index Version 3.0, <https://www.healthyplacesindex.org/>; accessed 1/22/2024. Data sources used for the HPI come from the American Community Survey (2019 5 year estimates), Comprehensive Housing Assessment System; California Environmental Protection Agency; GreenInfo, (CaLANDS), National Land Cover Database; U.S. Environmental Protection Agency; LEHD Origin-Destination Employment Statistics (LODES), and University of California, Berkeley