ABOUT CALIFORNIA 100

The California 100 Initiative envisions a future that is innovative, sustainable, and equitable for all. Our mission is to strengthen California’s ability to collectively solve problems and shape our long-term future over the next 100 years.

California 100 is organized around 5 policy themes and 5 core values, and driven by interrelated stages of work: research, policy innovation, and engagement with Californians. California 100’s work is guided by an expert and intergenerational Commission.

Through various projects and activities, California 100 seeks to move California towards an aspirational vision—changing policies and practices, attitudes and mindsets, to inspire a more vibrant future. This Regional Analysis was produced as part of California 100’s research stream of work.

The California 100 initiative is incubated through the University of California and Stanford.

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The largest cities within each of the counties in the South Coast Region include:

- Los Angeles (Los Angeles County, 3,849,297)
- Irvine (Orange County, 309,031)
- Long Beach (Los Angeles County, 456,062)
- Santa Clarita (Los Angeles County, 224,593)
- Glendale (Los Angeles County, 192,366)
- Lancaster (Los Angeles County, 170,150)
The South Coast region is made up of Los Angeles and Orange Counties. Spanning 4,800 square miles, the two-county region makes up roughly 3 percent of California’s total area, but it is home to more than one-third of the state’s total population: about 13.2 million people. The majority of these residents—10 million people—live in California’s largest county, Los Angeles (in roughly 4,000 sq. mi.), while Orange County is home to 3.2 million.

Bounded on the west by the Pacific Ocean, and by the San Gabriel and San Bernardino Mountains on the east, the South Coast is a relatively flat plain characterized by dry summer months, and a rainy winter season. In the coming years, climate change is expected to have continued effects on the South Coast region, including elevated risk of flooding as precipitation on the mountains that used to fall in the form of snow will now fall as rain and reach the coastal plain as torrents of water causing floods.²

Water in Los Angeles is sourced from local groundwater, the Colorado River, and imported from the State Water Project, a series of canals and reservoirs that runs for 705 miles through California.³⁴ Four major rivers run through Los Angeles: the Los Angeles River, the Santa Clara River, the San Gabriel River, and the Rio Hondo River.⁵

Orange County imports about 50 percent of its water, including from the Colorado River and the Diamond Valley Lake in Riverside County, which is the largest reservoir of drinking water in Southern California. The remaining water is sourced locally, including groundwater from the Orange County Basin aquifer, as well as water that is desalinated in San Diego County and sent to South Orange County.⁶
The South Coast is the Most Populous Region in California with 13.2 Million Residents

Figure 1

SOURCE: U.S. Census Data, 2020
Although Orange County’s Demographics More Closely Align to the State’s Population, Los Angeles County has Significantly More Hispanic/Latino Residents and Fewer White Residents Than the Rest of the State

**Source:** U.S. Census Data, 2020

**Note:** According to PPIC analysis, roughly one-third of Los Angeles County is categorized as very hard to count, indicating that the most recent Census Bureau data may lead to undercounting, particularly among the African American, Latino, or Native American populations.
Neither County Aligns with the Statewide Political Leanings: Orange County is More Republican and Los Angeles County is More Democratic

**Source:** California Secretary of State, 2022.
Prior to Spanish settlement, the South Coast region was home to the Tata-viam and Tongva people, who were later named Gabrieleño by the Spanish missionaries. These native peoples subsisted off the land for thousands of years, before the settlement of the Spanish in 1769 with the expedition led by Gaspar de Portola. Traveling north from Mexico to Monterey, Portola was accompanied by the missionary, Father Juan Crespi who served as Portola’s diarist along the journey. That year, Portola passed through present-day Los Angeles and Orange Counties, noting that the region’s native peoples had significant and useful knowledge and were able to provide his party with a map of the region north of Los Angeles, into Santa Barbara and the Channel Islands.

Here, Crespi also recorded information about the suitability for settlement of the region near what would soon become the site of the Mission San Gabriel because of its proximity to communities of native peoples, a river – the San Gabriel River – and its fertile soil. For 12 years, the site was named, “Our Lady of the Angels of Porciuncula,” in honor of the Fran-
ciscan celebration of St. Francis of Assisi that fell on the day Portola arrived. In 1781, the governor of Spain’s Alta California territory, Felipe De Neve established a pueblo, or community that supported the nearby mission, at the site after a careful geographical survey of sites around present-day Southern California. Selected for its agricultural promise, the area is believed to have taken the name, El Pueblo de Nuestra Señora la Reina de los Ángeles de Porciúncula, or “The Town of Our Lady the Queen of the Angels of Porciúncula.” However, historians do not agree about the exact variation of the original name.

The pueblo, home to plots of land surrounding a central plaza, was situated a few miles west of the Mission San Gabriel, and south of the nearby Sierra Madre mountains. Initially a small settlement of about 40 people, the original residents established an irrigation system to support an agricultural economy along the Río de Porciúncula, later the Los Angeles River, with grassy land also designated for grazing cattle. By 1800, the population had grown to 315 residents and, with Mexico’s declaration of independence from Spain in 1822, continued to grow steadily. Under Mexican rule, the territories of present-day Los Angeles and Orange Counties were sold off as ranchos, for grazing cattle to wealthy Mexican citizens. In 1835, rising political tensions between residents of Southern and Northern California led to the replacement of Monterey as the capital of Alta California with Los Angeles, officially designated Los Angeles as a ciudad, or city.
The South Coast region remained largely rural despite its new designation, with its population rising modestly until the start of the Mexican–American War in 1846. After months of fighting, Andres Pico, leader of the Mexican military, and John Fremont of the U.S. military met in the Cahuenga Pass of the Santa Monica Mountains to sign a treaty ending military action between the two sides in January 1847. The war formally ended with the signing of
the Treaty of Guadalupe Hidalgo a year later, when Mexico ceded more than half of its territory to the U.S., including the state of California.\(^{24}\) In the years immediately following, Los Angeles County continued to serve as an agricultural hub, shipping wine grapes throughout the state in the 1850s.\(^{25}\) The economy faltered periodically, however, as the region was struck by a series of calamities due to alternating floods and drought. In the winter of 1861-1862, it rained for 28 straight days, washing away vineyards, fruit trees, and cattle. Much of Los Angeles County was left as a shallow lake. In the winter of 1862, Los Angeles recorded less than four inches of rain, which had the effect of killing crops and cattle. The drought persisted through 1862 to 1864 and by 1864, approximately 70 percent of the cattle herds in Southern California had died.\(^{26}\) In 1876-1877, another drought wreaked havoc with the region. Thus began a mass sell-off of the region’s rancho land.

Anaheim, one of the earliest towns settled in Orange County, initially formed around viticulture. German immigrants from Northern California purchased rancho land in 1857 one year after a severe drought, and started growing wine grapes after constructing irrigation canals; shortly thereafter, more farming towns developed in the area, including Santa Ana, Orange, and Garden Grove which depended on water from the nearby Santa Ana River.\(^{27}\) Ultimately, it was the advent of the railroad system in the late 19th century that helped spur growth in Los Angeles County, and shortly thereafter, Orange County.
INTRODUCTION OF THE RAILROAD, WATER, AND OIL

In October 1869, Los Angeles opened its first railroad line, albeit a modest line that ran roughly 20 miles south to San Pedro Bay.\(^{28}\) The opening of the line fell just a few years after the end of the Civil War, a period when residents of southern states moved west in search of new opportunities, seeking land and work.\(^{29}\) Former ranchos throughout the region were subdivided into smaller plots, as agriculture and farming continued to develop; the region began to adopt large-scale fruit production because of its well-suited climate and developments in irrigation.\(^{30}\) Southern California’s rise in population was gradual, with some migrants practicing farming, and others forming mining communities further east into the Owens Valley region.\(^{31}\) The railroad allowed for increased transportation of the region’s output, while inventions like the refrigerator car, led to the possibility of goods produced in Southern California making their way to eastern states.\(^{32}\)

By 1876, the Southern Pacific Railroad had taken control of the local Los Angeles track, and completed a line between San Francisco and Los Angeles; by 1875, the Southern Pacific had built a line extending between Los Angeles and Anaheim.\(^{33}\) As it continued construction throughout Southern California, the Southern Pacific also began a campaign to promote the settlement of the region, for the benefit of distributing its customers across its rail lines.\(^{34}\) Between 1880 and 1890, the population of Los Angeles County grew by more than 200 percent, and Orange County was divided from Los Angeles County in 1889 as more settlers poured into the cities south of Los Angeles.\(^{35}\) This growing population was able to spread across the region more easily with the adoption of the automobile: between 1920 and 1930, the number of automobiles registered to L.A. County residents increased by nearly 400 percent, reaching more than 800,000 for a population of just over 2 million people.\(^{36}\)

Although the introduction of railroad lines made travel to Southern California easier for tourists and residents, it was the discovery of oil in the late 19th century that caused a sharp population boom: in 1892, Edward Doheny discovered oil around present-day Echo Park in downtown Los Angeles.\(^{37}\) For generations, the native Tongva people in Los Angeles had used oil seeping from the La Brea Tar Pits for various purposes, including the waterproofing of their canoes.\(^{38}\) Centuries later, Doheny dug the first oil pits, later discovering the reservoir of oil, the Los Angeles City Oil Field as well as additional deposits in Mexico.\(^{39}\) For a period, Doheny and his partner became the largest producers of oil in the world.\(^{40}\) The ensuing oil rush hit between 1917 and 1925, when oil was discovered in Long Beach at Signal Hill, leading to a demand for a series of secondary industries, including piping, trucking, and rigs for drilling.\(^{41}\) The population again spiked, hitting more than 2.2 million people across the county by 1930.\(^{42}\)
Since their introduction into the regions, oil drilling sites in Southern California have caused concern for their environmental and health risks. In 1930, Venice Beach was an active drilling site with about 50 wells operating; that year, one of the wells exploded, polluting the bay and closing a nearby school. Even before the explosion, however, the drilling sites spewed waste into the nearby canals. Meanwhile, the oil industry was developing a stronghold in nearby Orange County, which had previously been dependent primarily on its citrus farming: oil fields rapidly sprung up across La Habra, Placentia, and Huntington Beach between 1890 and 1920. Today, the effects of the oil industry remain — about 35,000 wells are idle today, and sit within 600 feet of more than 350,000 California residents. Left idle, these wells can release toxic chemicals, like methane and carbon dioxide.

Despite the growth of the oil industry, land use in Orange County continued to evolve in the early 20th century, as the region maintained its agricultural roots — by 1930, Orange County produced more than 15 percent of the country’s Valencia oranges — while industrial oil activities and manufacturing continued to grow. In order to accommodate its growing population, Southern California, and Los Angeles specifically, required access to water. Until the early 20th century, the city’s water supply had been managed by a private company, called the Los Angeles City Water Company, which was later purchased by the city’s municipal government. Under the ownership of the city, efforts were made to identify
a water source that could sustain the needs of the city. A city engineer, William Mulholland, determined that the Owens River, which ran along the Sierra Nevada Mountains 250 miles to the north, would provide enough water and in 1908, construction began on an aqueduct to bring water to the city. By 1913, construction on the 233-mile long aqueduct was completed, though the aqueduct remained contentious as it drew water from farming communities in the Owens Valley, and in 1928, a dam north of Los Angeles burst, killing hundreds of residents as billions of gallons of water were released.

Meanwhile, during the early 20th century, the entertainment industry started to gain traction with the advent of Hollywood, which was annexed by the city of Los Angeles in 1910. Initially, Hollywood had been the site of early movie productions because California had consistently good weather and a range of scenery for filming, and also because Thomas Edison – the inventor and patent holder of an early camera, the Kinetoscope – had a weaker ability to enforce his patent in California than in New Jersey, where he was based, due to the costs and challenges associated with transcontinental travel. The earliest films were...
silent, though by the late 1920s, sound was introduced. Years later, during the Great Depression, an estimated 80 million people went to the movies weekly.52

As new industries took hold in Southern California, the region continued to grow in size: the significant jump in population motivated the founding of the University of Southern California (USC) in 1880, which was initially a small liberal arts college, but soon grew to offer education in law and medicine.53 In 1881, following years of population growth, the California governor signed a bill to create an institution for training teachers; nearly four decades later, the site of the school would become known as the Southern Branch of the University of California, and the campus would later move to Westwood in 1929, becoming the University of California, Los Angeles (UCLA).54 In the following decades, the higher education network continued to expand, with the opening of Cal State University campuses in Los Angeles (1947), Long Beach (1949), Fullerton (1957), Northridge (formerly known as San Fernando Valley, 1958), and Dominguez Hills (1960), and the University of California, Irvine (UCI) in 1965.55
WORLD WAR I & II

Prior to the first World War, the South Coast region had begun to develop as an industrial epicenter because of its stable climate and proximity to both the Ports of Los Angeles and Long Beach. In addition to its oil and entertainment industries, Los Angeles had become the largest aircraft producer in the country by 1939.\textsuperscript{56} During the first World War, its location also drew the interest of the U.S. Navy, which made Los Angeles the home to its Pacific Fleet in 1919.

The relationship between the U.S. government and Los Angeles continued to strengthen, particularly during the Great Depression in the years following World War I, when public works projects injected money, and consequently jobs, into the region. For example, the Hoover Dam was completed in 1935 with New Deal funds, sending water to Los Angeles and generating roughly 70 percent of the city’s power at the time.\textsuperscript{57} As the host of the 1932 Olympics, Los Angeles city also expanded its Memorial Coliseum and developed temporary housing in Baldwin Hills for the athletes; however, the ultimate effects on Los Angeles were minimal because there was no other city bid to host the games, the Olympics were scheduled for only 16 days compared to the traditional 70, and the national economy was weak.\textsuperscript{58}

Rather, pockets of Los Angeles began to experience the weight of the Great Depression unequally: by the 1930s, unemployment for white residents in Los Angeles had hit 25 percent, roughly half that experienced by Black residents. Consequently, Black residents were overrepresented among the city’s homeless
population. Challenges finding housing were exacerbated by racially-restrictive covenants, relegating Black communities to just 5 percent of the city's total residential area. Increasingly throughout the mid-20th century – in part because of wartime restrictions and rapid influxes of new residents – the region experienced a housing crisis, leading to overcrowding and violence.

**Skid Row** demonstrates how Great Depression-era poverty and homelessness persists today. At the time, it was common for men, usually white, to travel West in search of seasonal employment. During the winter months, these men found cheap lodging near the Southern Pacific Railroad terminal in Los Angeles. Over time, the roughly 50-square block neighborhood east of downtown Los Angeles emerged as Skid Row, marked by its crowded and impoverished conditions. By 2020, Skid Row was home to more than 4,600 unhoused people.

World War II helped the region’s economy to rebound from the Great Depression, however, as industries like aircraft manufacturing and shipbuilding boomed with defense orders. Following the attack at Pearl Harbor, aircraft companies including Northrop, Hughes, North American, Douglas, and Lockheed expanded their manufacturing footprint in the region with the help of federal funding, employing more than 228,000 workers at the height of the war.

The attack on Pearl Harbor not only catalyzed U.S. involvement in the War, but also further entrenched discrimination against Asians and Asian Americans, particularly against Japanese residents. In 1941, Los Angeles was home to more than 35,000 Japanese residents, many of whom had immigrated to the region to support infrastructure projects, including the construction of railroads. The following year in 1942, more than 120,000 Japanese Americans were forcibly removed from their homes because of an executive order signed by President Franklin D. Roosevelt, and many were subsequently relocated to horse stables in Santa Anita and Hollywood Park as internment camps in Manzanar, Inyo County completed construction.

Meanwhile in Orange County, the growing industries of agriculture and manufacturing led to the development of tract-housing subdivisions in the 1950s, with freeways soon to follow. In the ensuing decades, the population–roughly 130,000 in 1940–swelled to nearly 2 million in 1980, and as of 2020, is about 3.2 million.
PRESENT-DAY ECONOMIC EXPANSION DEPENDS UPON EXISTING INDUSTRY

FREIGHT AND MANUFACTURING

The Southern Pacific Railroad has had a lasting impact on Los Angeles’ economy, helping to establish a strong trade business rooted in the region. Today, the Port of Los Angeles is the nation’s busiest port, moving cargo valuing nearly $300 billion per year.68 The Port of Long Beach follows closely behind that of Los Angeles, although the two were recently ranked among the least efficient ports in the world by a World Bank analysis.69

Throughout the pandemic, ports across the world experienced backlogs and bottlenecks as consumer demand for goods reached unprecedented levels; in Long Beach and Los Angeles, the effect of this backlog was cargo ship idling, which released pollutants into the atmosphere. A 2021 analysis by the California Air Resources Board estimated that the ports were moving roughly 20 percent more cargo in the first three quarters of 2021 compared with the same time period in 2019 before the pandemic. Concurrently, emissions of nitrogen oxides rose by about 20 percent, while particulate matter emissions also rose.70
Particulate Matter Emissions near the Los Angeles and Long Beach Ports Rose Following Increased Demand and Freight Movement

Already, residents in this area – particularly, around Carson, Wilmington, and Long Beach cities – are exposed to elevated levels of air pollution, from nearby oil wells, major freeways, and the ports. In Wilmington, the cancer risk associated with diesel pollution is 98 percent higher than in the whole of Los Angeles. Moreover, a 2021 oil spill of roughly 250,000
gallons off the coast of Orange County was linked to a Long Beach container ship that had dragged its anchor along a pipeline, causing the spill and releasing even higher levels of air pollution to the region.73

Aside from its relatively convenient location for trade with Asia, the Port of Los Angeles’ prominence in the shipping industry is tied to the region’s strong manufacturing economy, as well as the Inland Empire’s significant logistics industry for the distribution of goods. For years, Los Angeles County has been designated the top manufacturing center in the U.S., although automation and off-shoring have led to a steady decline in the number of workers employed within the industry.74

Such industries, however, have added to pollution concerns: Los Angeles has the highest levels of PM 2.5 pollution from vehicle exhaust in California.75 Given its location between ports along the coast, warehousing in the Inland Empire, and the sprawl of its residents throughout the region, the South Coast is also often congested, with traffic quickly returning to pre-pandemic levels by 2021.76

**ENTERTAINMENT**

Home to a number of film studios and theme parks, the South Coast region has long been associated with entertainment. The Film and Digital Media industry in Los Angeles is also one of its top employers, with roughly 265,000 employees across film, publishing, broadcasting, and business operations.77 California continues to lead as a top filming location; however, in recent years, the state has experienced declines. Specifically, California saw a roughly 39 percent drop between 2020 and 2021.
for television filming, while states like Georgia, Texas, and Utah experienced flat or modest growth. In response to this trend, in 2021, California state legislators voted to increase tax incentives for film and TV production. Funding was also allocated to measures that address the lack of diversity in the entertainment industry, and for the construction of additional soundstages, as chronic shortages of adequate filming locations have forced filmmakers to take productions out of state.

Likewise, the entertainment industry extends to the region’s many amusement parks, including Disneyland, Universal Studios, Six Flags Magic Mountain, the Aquarium of the Pacific, and Knott’s Berry Farm. A 2018 study by Cal State Fullerton found that the cumulative economic impact of the Disneyland Resort was $8.5 billion across its employees and annual visitors who stay in the area. For a period, Disneyland was the largest employer in Orange County; prior to the pandemic, the park employed roughly 32,000 people. Because of state-mandated theme park closures, thousands of employees were furloughed or laid off. As of 2022, the park’s hiring has accelerated, and the park now employs about 30,000 people.

**HIGHER EDUCATION & ADVANCED TECHNOLOGY**

Today, UC Irvine (UCI) has surpassed The Walt Disney Company in employment, and is currently Orange County’s largest employer across its university campuses, medical centers, and research facilities. Similarly, in Los Angeles, UCLA is among the top public-sector employees in Los Angeles County, providing nearly 110,000 jobs as of 2019. UCLA generates $16.6 billion to the local economy between the university and the UCLA Health network of physicians.
With its cluster of higher education institutions – from public institutions, like UCLA and UCI, to private colleges including the California Institute of Technology, USC, and Claremont Colleges – the South Coast region has emerged as a hub for advanced technology. According to a 2022 analysis by the commercial real estate firm, CBRE, the market of Los Angeles-

**Figure 6** Significant Employment Sectors in the Los Angeles-Long Beach-Anaheim Metro Area

- **Health care and social assistance**
- **Retail Trade**
- **Manufacturing**
- **Professional, scientific, and educational services**
- **Accommodation and food services**
- **Construction**
- **Transportation and warehousing**
- **Arts, entertainment, and recreation**

**SOURCE:** Stacker, "Industries with the Highest Employment in Los Angeles," February 26, 2021.
Angeles and Orange County ranks 12th in the nation in terms of its workforce in technology-oriented roles and local educational network, employing more than 235,000 workers in 2021.84 Among the largest of such employers in the technology sector include Google, Yahoo!, YouTube, Amazon, Apple, and Netflix. The region also remains active in the aerospace industry, with companies like Boeing (that took over McDonnell-Douglas that had incorporated Douglas Aircraft), Northrop Grumman, and SpaceX located in Los Angeles.

**THE FUTURE OF THE SOUTH COAST’S ECONOMY**

Due to its sheer size and location on the Pacific Ocean, with two busy ports through which a significant fraction of American trade flows, the South Coast is thriving. Los Angeles has over a dozen major industries, historically strong sectors such as entertainment and aerospace, and world-class universities such as Cal-Tech, UCLA, and USC. Orange County has UC Irvine and Cal State Fullerton that add to the innovative potential of the region, particularly through the provision of medical services and the development of new medical techniques and cures. The region has a fast-growing high-tech industry and a highly creative economy due to its many complementary industries. It has a highly educated workforce. At the same time, it faces challenges as not all of its communities have shared in its prosperity, housing prices are high, and climate change affects its water supplies, livability, and exposure to severe shocks such as floods, heat waves, or droughts.
Southern California has long been characterized by its sunny, temperate climate, and for more than 100 years, has been dependent on external resources for its water supply. After the construction of the L.A. Aqueduct, which drew water from the Owens Valley, the Colorado River Aqueduct and State Water Project brought new water sources to the region in 1939 and 1964, respectively.85

**Figure 7** Los Angeles’ Water Comes from Across the State, With Only a Fraction Sourced Locally

**SOURCE:** Sierra Club Angeles Chapter. “Los Angeles Depends on Imported Water,” July 24, 2019.86

**NOTE:** The Los Angeles aqueduct serves roughly 4 million people, the California Aqueduct 19 million, and the Colorado River Aqueduct also 19 million.87
For much of its history, Los Angeles has procured water from across the state with relative ease, often to the detriment of its source as was the case for the Owens Valley – the act of drawing water from Owens Lake led to the disturbance of fine, dust-particulate matter, which has damaging effects on lungs, for which the Los Angeles Department of Water and Power (LADWP) has paid more than $2.5 billion in the last 30 years trying to remedy the problem. Moreover, according to some researchers, this accessibility to water led to its urban sprawl, allowing new communities to expand across the region, exploiting water resources from across the state.

In recent years, however, Southern California has been increasingly affected by a warming climate, both in terms of a tightening water supply and extreme heat events. Consequently, the city of Los Angeles has targeted a goal of 70 percent locally-sourced water by 2035. For decades, the city has been steadily adapting to decreased water availability, particularly after the 1987-92 drought, after which the city of Los Angeles funded the retrofitting of existing housing to include low-flow plumbing fixtures. By the early 2000s, the city had continued to invest in expanding its water storage infrastructure, such that more water can be captured in particularly wet years.

Decreasing water usage is a necessity for the state, however, as Southern California’s water sources are rapidly drying up: Lake Mead, the reservoir formed by the Hoover Dam on the Colorado River, was roughly 28 percent full as of November 2022, while water collected...
from the Sierra snowpack through the State-Water Project is steadily decreasing, reaching only 60 percent of its yearly average in 2021. As of June 2022, more than 6 million residents in Southern California had restrictions placed on their outdoor water usage in an effort to cut down water consumption by roughly 35 percent.

Some communities have adapted more easily to the water restrictions than others: Orange County currently recycles much of its water, purifying up to 200 million gallons of wastewater per day to replenish its groundwater reserves. Also in Orange County, the California Coastal Commission approved plans to build a desalination plant in Dana Point in October 2022. According to some researchers, desalination may provide up to half of the state's potable water, thereby easing concerns associated with a decreasing supply of water due to extreme heat. However, the process is both cost-intensive and creates its own environmental risks; namely, the desalination process yields a byproduct of brine that often gets released back into the ocean, which could harm sea life that is already at risk of getting trapped in pump systems.

Between 2000 and 2018, the western states of the U.S. experienced one of the most severe droughts in the past millennium, second only to a dry period in the late 16th century. Estimates indicate that, in the western U.S. states, temperature rises between 2.5° to 3° Fahrenheit can be linked to human activity. In addition to its effects on water, this warming has led to more frequent and intense heat waves each year, particularly in Southern California, where nighttime temperatures are rising by roughly 0.41° Celsius each decade. Rising temperatures in the evening are concerning for all residents, but particularly for vulnerable populations, including children and older people, who may be at elevated risk of heat stroke or organ failure. An inability to cool off at night can have negative physiological effects.
In Los Angeles, among other urban areas, studies have found that low-income, disabled, Black, Hispanic, and non-English speaking communities are disproportionately represented in higher-temperature census tracts. A UC Davis analysis reported that in Los Angeles, the wealthiest decile of neighborhoods are, on average, 2.5 °C (4 °F) cooler than the lowest decile of neighborhoods in terms of income. In part, this differential in temperature can be attributed to the heat island effect, in which highly-urbanized areas retain more heat through buildings and pavement, whereas regions with more greenery do not trap heat and are consequently cooler during the daytime and nighttime. A national study by the nonprofit, American Forests found that high-income neighborhoods have up to 65 percent more tree cover than low-income neighborhoods. And often, those who live among urban heat islands with...
little tree coverage are people of color, who are more likely to live in warmer urban areas than white residents. Within these highly-urbanized areas, including the City of Industry, Vernon, and Carson, a higher proportion of workers are classified as climate-exposed, meaning they work in occupations that they either spend more time outdoors (e.g., agriculture and construction), or exposed indirectly to high heat or cold (e.g., transportation and warehousing).

Among other vulnerable populations to the effects of extreme heat are residents of mobile homes: roughly 56 percent of people who live in mobile homes are in regions designated as high-heat exposure areas, whereas only 38 percent of the total county lives in such a region. Across the country, people aged between 60 and 69 make up the largest share of those who live in mobile homes, and research has indicated that these adults generally report lower incomes and lower levels of education than those in other living situations. In such living conditions, these residents are particularly susceptible to extreme heat. According to a 2021 analysis by the Los Angeles Times, the number of deaths caused by extreme heat may be as high as 3,900 in the past 10 years, or more than six times what has been recorded by official California death certificates.

In Los Angeles, this disparity is in part tied to the racial segregation practices common in the early 20th century. Through redlining and other segregation practices, Black and Asian residents were relegated to roughly 5 percent of the city and were restricted from purchasing 95 percent of the homes available. As such, some neighborhoods in Los Angeles, like Inglewood, are some of the most segregated in the country – second only to Detroit – with a population that is 50 percent Black and 43 percent Latino. Within segregated, and oftentimes lower-resourced communities, the effects of rising temperatures are felt unequally: a 2022 Brookings Institute analysis found that in Southern California, roughly 20 percent of households do not have air conditioning units, and that nationally, a lack of access to AC occurs most commonly in low-income households. According to the Brookings Institute, both renters and Black and Latino or Hispanic households are less likely to have access to AC. Consequently, the Los Angeles City Council has recently considered mandating that rental units in the city have cooling appliances as is required with heating in residential units. Recently, an attempt to mandate safe-temperature standards in rental units stalled at the state level until 2025. However, elsewhere, cities like Dallas, Texas and Tempe, Arizona, have set requirements under which property owners must keep indoor temperatures below a set threshold because of concerns that heat levels have become too dangerous for residents.

Even with mandates, the risks associated with rising temperatures may still disproportionately affect lower-income individuals who cannot afford to pay for AC. For those with AC units, the cost to run them is often prohibitive, leaving these populations unable to pay to cool off during extreme heat waves. As of September 2022, the LADWP increased the rebate offered to low-income residents who purchase portable or window-unit air conditioners from $75 to $225, a rebate that nearly 240,000 residents are eligible to receive.
During the pandemic, however, debt owed by LADWP customers swelled from $85.6 million in February 2020 to $226.9 million by August 2022. Until November 2022 when LADWP halted the practice, such customers were often subjected to shutoffs if unable to pay their utility bills. According to recent research, the majority of shutoffs occurred in low-income households in Los Angeles, with Black and Latino residents roughly two times more likely to have their utilities disconnected than white residents.

HOUSING, MIGRATION, AND THE LOSS OF THE MIDDLE CLASS

In recent years, the number of Californians leaving the state has grown. The trend was particularly pronounced during the pandemic, when the percent of residents leaving grew from roughly 16 percent in 2016 to more than 20 percent by September 2021. According to the Census Bureau’s most recent population estimates, Los Angeles County lost more residents in terms of population than any other county in the U.S. during 2021. Since 2015, the most often cited reason for such a move has been housing.
For more than 20 years, California has consistently lost more residents than it brought in, and relative to those who migrate to the state, the share of California residents leaving tends to have lower income and education levels according to PPIC research. Consequently, California is in the midst of a demographic transition – the net migration loss is occurring primarily in lower and middle-income adults out of California. Meanwhile, in the years between 1990 and 2012, the number of middle-wage jobs in fields like

**Figure 9** Los Angeles County Experienced the Greatest Numeric Population Decline While More Affordable Counties Saw the Greatest Increases

<table>
<thead>
<tr>
<th>County</th>
<th>Population Change</th>
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<tbody>
<tr>
<td>Los Angeles County, CA</td>
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<tr>
<td>New York County, NY</td>
<td>-100,000</td>
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trade, manufacturing, and healthcare declined by 27 percent, while the region witnessed a 15 percent growth in the number of low-wage positions.\(^{127}\)

Income inequality is a growing problem in California and in the South Coast. As of 2020, the gap between earners in the top 10 percent versus those in the bottom 10 percent in California is among the most significant in the country ($270,000 vs. $25,000); those at the top earn roughly 11 times that of those at the bottom of the income distribution, compared with just 7 times in 1980.\(^{128}\) In Southern California, a UCI analysis found that median income is 23 percent higher than in other large, comparable regions; however, median rents are 50-60 percent greater in Southern California than elsewhere, while the median home values range from 110-140 percent greater.\(^{129}\) Moreover, research from UC Berkeley's Oth-er-ing and Belonging Institute found that 78 percent of neighborhoods in Southern California are zoned for single-family homes. Their findings also indicate that in neighborhoods that are majority-single-family-only, home prices are nearly double that of neighborhoods where only 10 percent of land is zoned for single-family homes.\(^{130}\)

Among the findings in the study, titled, “Single-Family Zoning in Greater Los Angeles,” the researchers discovered that home prices are more than twice as high in neighborhoods that are at least 90 percent single-family-only zoned (median value of $811,492) compared to those that are less than 10 percent single-family-only zoned ($405,875).
Figure 10  Top Incomes Have Grown More Quickly and More Consistently Over the Long Term

Change in family income since 1980


NOTES: Chart shows percent change family income before taxes, which includes wages and earnings, income earned from businesses, farms and/or investments, retirement account withdrawals, social security, cash welfare, unemployment insurance, and other sources. Family income does not include stimulus payments or resources from in-kind safety net benefits. Family income is adjusted for inflation and stated in 2020 dollars; to make families comparable, income is normalized to reflect the equivalent for a family of four. The time series is adjusted to account for ASEC survey changes in 2015 and 2019; entropy weights are used 2018-2020.
In Orange County, research has indicated that affordable housing is often one of the leading causes of homelessness, along with finding a job that pays a sustainable wage and family issues, including domestic abuse.\textsuperscript{131} The County has a shortage of roughly 65,000 housing units relative to demand, and of that, the majority needed is affordable housing.\textsuperscript{132} Relative to Los Angeles, however, rates of homelessness in Orange County are improving: in the last three years, the number of unhoused people has declined by about 17 percent. In recent years, the opportunities for shelter have grown, with funding from the state program, Project Homekey, initiated during the pandemic which involves purchasing and converting hotels and other buildings to house people in California.\textsuperscript{133}

As of late 2022, approximately 70,000 people in Los Angeles County were experiencing homelessness.\textsuperscript{134} Among the Continuums of Care (CoC), or designated geographic areas by the U.S. Department of Housing and Urban Development (HUD) to allocate resources, the homeless population in Los Angeles ranks among the highest in the country.\textsuperscript{135} The reasons for such a high rate are manifold; however, studies often find an association between housing affordability and homelessness.\textsuperscript{136} In 2020, a study by the USC Sol Price School of Public Policy found that up to 75 percent of households in Los Angeles are cost-burdened, or spending more than 30 percent of income on rent and utilities.\textsuperscript{137} For many who are cost-burdened, the rising costs of housing, coupled with wage stagnation, particularly among low-wage workers, has left residents unable to afford housing, and the issue of chronic homelessness on the rise.
Los Angeles County is Second Only to New York City in its Number of Unhoused Residents

According to 2018 research from Zillow, in areas where housing costs exceeded between 30-34 percent of median income, there was an uptick in rates of homelessness.\(^\text{138}\) For decades, housing affordability and homelessness have been chronic issues in Southern California. Between the 1970s and 80s, social programs including funding for affordable housing and for mental institutions declined, and in the ensuing years, homelessness began to rise.\(^\text{139}\)


- **New York City CoC**
- **Los Angeles City & County CoC**
- **Seattle/King County CoC**
- **San Jose/Santa Clara City & County**
- **Oakland, Berkeley/Alameda**
- **San Francisco CoC**

Following the passage of Proposition HHH in 2016, Los Angeles has gradually added more housing, with more to follow to meet the goal of 10,000 units of housing over 10 years. However, rising costs and Los Angeles’ permitting process have both limited the extent to which HHH can secure housing for vulnerable populations – as of 2022, only 1,142 units opened. Local activists have also noted that the process to procure housing is often challenging, requiring referrals; moreover, they add that the decrease in the number of homeless people touted as progress does not account for the number of unhoused people who have died during the pandemic. In 2021, many of these deaths were attributed to drug overdoses, often fentanyl, while others were caused by health issues including COVID-19. According to coroners’ data, more homeless died in the year 2021 than in any year prior. Meanwhile, finding housing in Orange County during the pandemic became more challenging, with a low rental vacancy rate.
The South Coast region is the most populous in the state, home to about one-third of California’s population. The region experienced modest growth early in its history, thanks to a burgeoning agricultural industry, which benefited from the development of the Southern Pacific Railroad. It was the discovery of oil, however, in the late 19th century that spurred an explosion in population. As a consequence of its sudden population growth, Los Angeles began to draw water from nearby sources to support its residents, using reserves in regions like the Owens Valley, and moving on to others such as Colorado River water and the State Water Project that relied upon snowpack in the Sierra. Water remains a challenge as climate change has reduced flow in the Colorado River and reduced the Sierra snowpack.

The region continued to reinvent itself after exhausting many of its oil resources: in the 1920s and 30s, the South Coast region prospered as the entertainment industry emerged, and spending for military and space exploration rose. In the following decades, the South Coast became home to a vibrant multi-industry economy that is particularly strong in trade, entertainment, space exploration, new transportation technologies, advanced technology, health care and innovation, among others. The region’s prosperity, however, has not been experienced equally. The South Coast has long suffered from a homelessness crisis, and in recent decades, experienced a decline in the availability of middle-income jobs. Consequently, many residents have been priced out of their neighborhoods. Moreover, as the region warms, it is likely low-income residents that will be most acutely affected, as many households lack access to air conditioning, and lower-resourced, highly-urbanized neighborhoods are often warmer than their counterparts due to the heat-island effect.
ENDNOTES

1 U.S. Census Bureau. QuickFacts
3 California Department of Water Resources. State Water Project.
4 Los Angeles County Public Works. Water Sources.
5 Los Angeles Almanac. Rivers of Los Angeles County.
6 Municipal Water District of Orange County. Orange County Water Supply.
12 Sacred Heart Catholic Church. “Our Lady of the Angels – Portiuncula”
14 City of Los Angeles. “The History of Los Angeles.”
18 Steen, Francis F. and UCLA Communication Studies, eds. “A Short History of Los Angeles.”
19 Baugh, op. cit. 16.
20 Orange County Historical Society. “A Brief History of Orange County.”
21 Masters, Nathan. “This 1835 Decree Made the Pueblo of Los Angeles a Ciudad – And California’s Capital.” KCET, April 1, 2016.
25 Baugh, op. cit. 16.
27 Orange County Historical Society. “A Brief History of Orange County.”
29 Ibid.
31 Spitzzeri, op. cit. 28.
32 Nash, op. cit. 30.
33 Orange County Historical Society. “A Brief History of Orange County.”
39 Ibid.
40 City of Beverly Hills. “History of Greystone.”
42 Los Angeles Almanac. “Historical Census Counts from 1850 to Present for Los Angeles County, California.”
44 Schnalzer, op. cit. 41.
45 Chiotakis, Steve. “20,000 Oil Wells in LA County Can Cause Health Problems for Nearby Residents,” KCRW, October 18, 2021.
46 Orange County Historical Society. “A Brief History of Orange County.”
48 Ibid.
49 Ibid.
52 op. cit. 50.
54 “The History of How UCLA Came to Be.” UCLA Alumni Newsletter.
55 The California State University. “About the CSU.”
57 Water and Power Associates. “Construction of Hoover Dam.”
60 Verge, op. cit. 56.
61 Los Angeles Homeless Services Authority. “2020 Greater Los Angeles Homeless Count—Skid Row.”
63 Verge, op. cit. 56.
65 Verge, op. cit. 56.
67 United States Census Bureau QuickFacts. “Orange County, California.”
68 The Port of Los Angeles. “2021 Facts & Figures.”
70 “Emissions Impact of Ships Anchored at Ports of Los Angeles and Long Beach.” California Air Resources Board.
72 Yee, Erica, and Hannah Getahun. “A Hot Spot for Polluted Air: By the Numbers.” CalMatters, February 1, 2022.
40 THE SOUTH COAST REGION

77 Beacon Economics. "Film and Digital Media Industry: Los Angeles County Perspective," County of Los Angeles, Chief Executive Office.
78 Film LA. "2021 Television Report."
80 California State University, Fullerton. "Titan Economists Quantify Disneyland's Impact on Southern California,"
81 MacDonald, Brady. "Disneyland 'Really Close' to Pre-Pandemic Employment Levels," Orange County Register, February 23, 2022.
92 NASA. “California Heatwave Fits a Trend.”
104 NASA. “California Heatwave Fits a Trend.”


106 Ibid.


108 Ibid.


113 Davis, Mike. City of Quartz: Excavating the Future in Los Angeles, p. 161


118 LA County Chief Sustainability Office. “LA County Climate Vulnerability Assessment,” October 2021.


122 Pineda, op. cit. 120.


126 Ibid.


129 Inequality and Segregation in Southern California, Metropolitan Futures Initiative Quarterly Report (UCI)


132 Hipp, John, Clarissa Iliff, Emily Owens, George Tita, Seth Williams. “The Impact of Affordable Housing on Housing & Crime in Orange County.” Livable Cities Lab, Department of Criminology, Law and Society School of Social Ecology University of California – Irvine.