SAN JOAQUIN VALLEY REGION

A CALIFORNIA 100 REPORT
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.

CALIFORNIA 100 RESEARCH TEAM

Henry E. Brady, Ph.D., Director of Research
Lindsay Maple, M.P.P., Deputy Director of Research
Meghan Hodges, Research Analyst

A special thank you to Daniel Huang, Caroline Siegel Singh, and Linda Tran for research assistance.

THE CALIFORNIA 100 EXECUTIVE LEADERSHIP TEAM

Allison Berke, Ph.D., Director of Advanced Technology
Henry E. Brady, Ph.D., Director of Research
Amy Lerman, Ph.D., Director of Innovation
Jesse Melgar, M.P.P., Senior Advisor and Director of Engagement
Karthick Ramakrishnan, Ph.D., Executive Director

DISCLAIMER  The contents of this report reflect the views of the authors, who are responsible for the facts and the accuracy of the information presented herein. This document is disseminated under the sponsorship of the University of California in the interest of information exchange. The University of California assumes no liability for the contents or use thereof. Nor does the content necessarily reflect the official views or policies of the State of California. This report does not constitute a standard, specification, or regulation.
The largest cities within each of the counties in the San Joaquin Valley Region include:

- Fresno (Fresno County, 544,510)
- Bakersfield (Kern County, 407,615)
- Stockton (San Joaquin County, 322,120)
- Modesto (Stanislaus County, 218,771)
- Visalia (Tulare County, 142,978)
- Merced (Merced County, 89,308)
- Madera (Madera County, 67,944)
- Hanford (Kings County, 58,496)
California’s geographic center is cut through by the San Joaquin Valley. The Valley is a large agricultural region drained by the San Joaquin River. The land surface of the Valley is shallow in most places and higher near its edges. The majority of the Valley is located close to sea level. The San Joaquin Valley comprises eight counties: from south to North: Kern, Kings, Tulare, Fresno, Madera, Merced, Stanislaus, and San Joaquin.

Agriculture has been the region’s primary industry for decades, producing more than half of the state’s total agricultural output. More than 60 percent of the region’s 8.4 million acres is farmland—totaling nearly 11 percent of the state’s total land mass, of which just 6 percent qualifies as urban centers. The San Joaquin Valley has about 4.3 million residents—11 percent of the state’s total—across its eight counties. Although the valley is predominantly rural, Fresno—at the center of the valley—is the fifth largest city in the state, the most populous inland city, and the largest in the region, with more than 500,000 residents, making Fresno County the largest county in the Valley with nearly 1 million residents. Bakersfield, at the southern end of the valley, is the ninth most populous city in the state with more than 400,000 residents.

About 4.3 million people live in the eight San Joaquin Valley counties, roughly 11 percent of California’s total area and about 11 percent of its population. The San Joaquin Valley comprises Kern, Kings, Tulare, Fresno, Madera, Merced, Stanislaus, and San Joaquin counties.
The San Joaquin Valley Region Has A Large Population Under Age 35, Particularly of Younger Hispanic/Latino Residents

**Figure 1**

**Source:** U.S. Census Data, 2020
The San Joaquin Valley is overwhelmingly Hispanic/Latino compared to the rest of the state, particularly in Tulare and Merced Counties.

**Figure 2**

<table>
<thead>
<tr>
<th>County</th>
<th>Hispanic or Latino</th>
<th>White</th>
<th>Black or African American</th>
<th>Asian or Native Hawaiian and Other Pacific Islander</th>
<th>Two or More Races</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fresno</td>
<td>54%</td>
<td>27%</td>
<td>4%</td>
<td>11%</td>
<td>3%</td>
</tr>
<tr>
<td>Kern</td>
<td>55%</td>
<td>31%</td>
<td>5%</td>
<td>5%</td>
<td>3%</td>
</tr>
<tr>
<td>Kings</td>
<td>57%</td>
<td>29%</td>
<td>5%</td>
<td>4%</td>
<td>3%</td>
</tr>
<tr>
<td>Madera</td>
<td>60%</td>
<td>31%</td>
<td>3%</td>
<td>3%</td>
<td>3%</td>
</tr>
<tr>
<td>Merced</td>
<td>62%</td>
<td>24%</td>
<td>3%</td>
<td>7%</td>
<td>3%</td>
</tr>
<tr>
<td>San Joaquin</td>
<td>42%</td>
<td>28%</td>
<td>7%</td>
<td>18%</td>
<td>4%</td>
</tr>
<tr>
<td>Stanislaus</td>
<td>48%</td>
<td>38%</td>
<td>3%</td>
<td>7%</td>
<td>4%</td>
</tr>
<tr>
<td>Tulare</td>
<td>66%</td>
<td>26%</td>
<td>3%</td>
<td>15%</td>
<td>4%</td>
</tr>
<tr>
<td><strong>STATEWIDE</strong></td>
<td><strong>39%</strong></td>
<td><strong>35%</strong></td>
<td><strong>5%</strong></td>
<td><strong>15%</strong></td>
<td><strong>4%</strong></td>
</tr>
</tbody>
</table>

**Source:** U.S. Census Data, 2020
Compared to the Rest of California, the San Joaquin Valley has a Much Higher Rate of Republican Voters

| Figure 3 |

**NOTE:** Likely due to the high rates of immigrants living in the San Joaquin Valley, the region has the highest rates of eligible, non-registered voters in the state.

**SOURCE:** California Secretary of State, September 9, 2022 Report of Registration.
Tulare Lake, Buena Vista Lake, and Kern Lake nearly flooded the San Joaquin Valley more than 12,000 years ago. The Chumash, Miwok, and Yowlumne Yokut tribes, as well as other inhabitants of the Valley, depended on these water sources for their daily needs. Each of these tribes relied in some way on fishing. The other lakes, however, gradually diminished to the point where the former Buena Vista Lake is largely gone after 19th-century settlers redirected the Kern River for agricultural purposes in the area. The Valley’s wetlands were destroyed for farm irrigation in the 19th and 20th centuries, accounting for about 90 percent of them by the end of the 20th century.

The San Joaquin Valley’s southernmost lake, Tulare Lake, had a surface area of more than 800 square miles during wet seasons, making it the largest lake west of the Mississippi River. Steamboats were used in the 1800s to cross Tulare Lake. In the course of three months in 1888, 70,000 pounds of fish were taken from the lake and transported to San Francisco for sale.
AGRICULTURE CHANGED THE VALLEY’S LANDSCAPE

Following the 1849 Gold Rush, which brought millions of settlers to California and expedited statehood into the United States, many settlers remained in California to focus on agricultural pursuits due to the state’s fertile soil and redirected irrigation from mining to agriculture. Feeding miners became a much more reliable form of wealth than hoping to strike gold. Although California farmers had grown barley before the Gold Rush, the significant needs of miners shifted large-scale production in the state to wheat as the primary grain. By 1870, California had increased its wheat production to nearly 17 million bushels, with 72 percent originating in the Sacramento and northern San Joaquin Valleys. Expanded railroad access made wheat production and expansion easier to sell to new markets and brought new farmers into the state.

To produce such large quantities of wheat and other crops, farmers hired cheap itinerant workers to harvest their crops. As agriculture throughout the state grew in profits and scale, many immigrants came to California to work in the fields. Native American and Chinese laborers were more readily available and accepted lower wages, increasing their acceptance as laborers. These groups generally worked hard and accepted the instructions of a leader of their own without bargaining or complaining. Minimum decencies expected for other laborers were often not given to Native Americans and Chinese.
Black farm workers started settling in the San Joaquin Valley in the late 1800s as a result of the Chinese Exclusion Act. As cotton production became more significant in the area, local farmers began hiring Black farmworkers from the South. As the Black population increased, some cities implemented laws or continued violent practices aimed at segregating them.¹²

The San Joaquin Valley became the location where oil was discovered on the bank of the Kern River near the end of the 19th century. The southern San Joaquin Valley experienced an oil boom as a result of this “black gold” discovery. Soon, seven out of every 10 oil barrels coming from California were produced at the Kern River. By the early 20th century, California became the highest oil-producing state in the United States due to Kern River oil.¹³

Following the Kern River discovery, “oil prospectors” spread out across the San Joaquin Valley in search of lucrative oil wells. These prospectors made numerous discoveries, but they are best known for creating the spectacular gushers in Kern County at Lakeview, Coalinga, McKittrick, and Midway-Sunset.¹⁴
20TH CENTURY: EXPANDED AGRICULTURE AND EMPLOYMENT AMIDST ORGANIZED DISCRIMINATION

THE FEDERAL MIGRANT LABOR PROGRAM

During the 1930s, the Great Plains region of the United States experienced the environmental disaster known as the Dust Bowl. Widespread drought and unsustainable farming practices caused the area’s topsoil to dry out and be carried away by powerful dust storms. These dry conditions caused crop failure and foreclosure of small farms and displaced millions of people in the region as they sought alternative means of survival during the Great Depression. People from these states which included Colorado, Kansas, Oklahoma, Texas and New Mexico participated in one of the largest migrations in U.S. History and were commonly referred to as ‘Okies’ because so many came from Oklahoma.15 Many people traveled west to California’s Central Valley to look for work in the agricultural industry but found that they were met with stiff competition and discrimination from Californians.

One of the most extensive Federal New Deal programs was the Federal Migrant Labor Program. This program created thousands of job opportunities and aimed to restart the economy. One of the many camps built as part of this program was the Arvin Federal Govern-
ment Camp in Kern County, also known as the Weedpatch Camp. The majority of the original residents of this camp came from Oklahoma, Texas, and Arkansas. Weedpatch Camp was made famous by John Steinbeck in “The Grapes of Wrath.” Photographers such as Dorothea Lange documented the suffering and mistreatment at the camps.

In 1934, the Mexican land reform led to a decrease in the number of migrant pickers in California, which created a shortage of workers for the agricultural industry. To make up for this shortage, farmers and growers initially welcomed the arrival of the Okies. However, the number of people who arrived quickly overwhelmed the available jobs, which led to a decrease in wages for these laborers. As a result, many new arrivals to the San Joaquin Valley lived in impoverished conditions.

**KEY 20TH-CENTURY WATER PROJECTS**

In 1868, the Kings River became the first irrigation canal in the San Joaquin Valley near Centerville. Irrigation canals would crisscross over thousands of miles in the Valley for the next 100 years. Through hydrologic engineering, the natural landscape was transformed into an agricultural powerhouse that connected with significant dam and reservoir projects throughout the state. Around 10 million acre-feet of water are moved across the state by the two major water systems, the Central Valley Project and the State Water Project, primarily from north to south. The major rivers, such as the Kern, Kaweah, Tule, Kings, and San Joaquin Rivers, were connected by dams, reservoirs, levees, canals, pumps, tunnels, and pipelines.
The Central Valley Project (CVP) provides water mostly to agricultural producers, including to more than 250 contractors across half of California’s 58 counties. This water contributes to 7 percent of the state’s gross product. Long-term agreements ensure that CVP water supplies are available to agricultural and industrial sectors. The CVP has significantly impacted the Central Valley, providing irrigation water for millions of acres of farmland and supporting the growth of towns and cities in the area.

The State Water Project (SWP), which provides drinking water for more than 23 million people and generates an average of 6,500 GWh of hydroelectricity annually, is one of the largest public water and power utilities in the world. Despite this energy generation, the SWP is the state’s biggest single power user, with a net usage of 5,100 GWh. Irrigation throughout the San Joaquin Valley uses about 30 percent of the water available from the SWP, while urban areas and industry in Southern California and the San Francisco Bay Area use about 70 percent.

The SWP and CVP share many facilities: Water can be swapped between SWP and CVP canals to meet peak demands of each project’s constituents. The SWP directly supports two-thirds of California’s $2.8 trillion economy annually.
“BRACERO” PROGRAM

As America interned thousands of Japanese immigrants and descendants during World War II, California quickly realized how vital the group was to its success as an agricultural producer. By 1942, the California Citrus Growers Association announced that half of its crop would rot in the fields due to a lack of field labor. In response to California’s need for farmworkers to prevent agricultural losses, the U.S. State Department negotiated with Mexico to initiate a program permitting Mexican farmworkers to enter the U.S. as agricultural workers.

In 1942, the Bracero Program provided a temporary solution to the labor shortages in the United States caused by the war. The program allowed Mexican braceros to work on farms in the United States for short periods of time, typically 6-12 months. From 1942 to 1964, the U.S. government signed more than 4.6 million contracts to bring farm workers to the U.S., with many individuals returning multiple times on different contracts. It was the largest U.S. contract labor program and disproportionately benefited California. More than half of the 219,000 Mexicans who came to the U.S. under the Bracero program between 1942 and 1947 went to California.

Although the program was supposed to conclude at the end of World War II, the program continued until the civil rights movement ended it. The braceros were often subjected to poor working conditions and low wages, and many were subjected to discrimination and abuse. The program also had an impact on the local communities, as the influx of
temporary workers led to increased competition for jobs and housing. Additionally, the Bracero Program did not address the underlying issues that caused labor shortages in the agricultural sector, such as low wages and poor working conditions, which led to a reliance on a migrant workforce.  

It was not until 1975 that farmworkers could organize for collective bargaining under the California Agricultural Relations Act, following the well-remembered strikes by the United Farmworkers led by Cesar Chavez. It is only beginning in 2023 that California farmworkers have a recognized right to overtime pay.  

THE DELANO GRAPE STRIKE  

The Delano Grape Strike was a labor strike by farm workers, primarily Filipino-American and Mexican-American, in the San Joaquin Valley, California. The strike began in 1965 and lasted for five years. The workers, whom the major grape growers employed in the area, were striking for better wages and working conditions, as well as for recognition of their union, the Agricultural Workers Organizing Committee, which later became the United Farm Workers (UFW).
Cesar Chavez and Dolores Huerta, prominent labor leaders and civil rights activists, led the strike, uniting various labor unions. Growers and local authorities employed various tactics to break the strike, such as using strikebreakers and police to intimidate the workers.

Despite the challenges, the strike successfully brought attention to the poor working conditions of farm workers and the need for labor rights and union representation. The strike led to the signing of the first collective bargaining agreement between farm workers and growers and helped to establish the UFW as a significant force in the labor movement.

The Delano Grape Strike also significantly impacted the San Joaquin Valley, highlighting the exploitation of farm workers and the need for labor rights in the agricultural sector. The strike brought national attention to the plight of farm workers and helped to spur the farm workers’ movement, which continues to fight for justice and the rights of agricultural workers to this day.

**REDLINING AND SYSTEMIC DISCRIMINATION**

Congress created the Home Owners’ Loan Corporation (HOLC) in the 1930s, which was designed to provide low-interest, long-term loans to new homeowners across the country. As part of this program, the government developed residential safety maps to classify the desirability of different neighborhoods in cities throughout the U.S. These maps categorized the least desirable zones of cities in red, which is how the term “redlining” was developed. The more racially diverse a neighborhood was, the lower it scored. Redlining was pervasive throughout the San Joaquin Valley, particularly in Fresno, Stockton, and Modesto.

Banks and other financial institutions practiced redlining by denying loans and insurance to people living in specific neighborhoods, particularly those predominantly African American, Latino or Asian. Federal, state, and local policies that restricted the ability of people of color to access housing, education, and employment opportunities reinforced this system of discrimination.

When Black residents first arrived in Fresno in more significant numbers after World War II, particularly following the closure of Bay Area armament factories, they arrived at a place where segregation had been built into the city grid. By the 1950s, nearly 100 percent of Fresno’s Black residents lived west of the railroad tracks. In the next 10 years, Fresno had the highest rate of Black-white segregation in California. By 1973, a real estate broker and longtime Democratic political operative openly referred to Highway 99 as “Fresno’s Berlin Wall.” Shaw Avenue, which runs east-west and cordons Fresno’s South and west sides from the sprawling and majority-white northern developments, would be called the city’s Mason-Dixon line in an official city planning document and, more recently, in major national news articles.

The effects of redlining and systemic racism were devastating for communities of color in the San Joaquin Valley. It resulted in a lack of investment and resources in neighborhoods that were predominantly Black, Latino, or Asian, which led to the decline of those areas and the subsequent displacement of many residents.
COLLEGES AND UNIVERSITIES

The history of public universities in the San Joaquin Valley began in the early 20th century with the establishment of the California State University system in the region. The first public university in the San Joaquin Valley was California State University, Fresno, founded in 1911. California State University, Stanislaus, followed in 1957. In the late 20th century, the University of California system established its presence in the San Joaquin Valley with the University of California, Merced, founded in 2005. According to the U.S. News and World Report rankings, in 2022, UC Merced is ranked fourth for creating social mobility and eighth for the economic diversity of its students, with more than 60 percent of the school’s undergraduate students receiving Pell Grants, the federal financial aid program for low-income families. These universities have played an essential role in the region by providing higher education opportunities and supporting the economic and social development of the San Joaquin Valley.

Additionally, several community colleges in the San Joaquin Valley serve the region, including the State Center Community College District, the College of the Sequoias, Reedley College, and Clovis Community College. They offer vocational and technical programs, associate degrees, and transferable coursework to four-year institutions.
The San Joaquin Valley has long been the agricultural powerhouse for California and the U.S. with its naturally fertile soil, historically inexpensive and available labor sources, and miles of irrigation infrastructure designed to direct water to where it is most needed. However, California is beginning to experience climate challenges that may affect its agricultural supremacy.

The San Joaquin Valley spans an area of nearly 28,000 square miles. Of this space, about 8,000 square miles are considered important and active farmland. These designations are based on soil, climate, and terrain quality regarding crop yields. The total acres of farmland is greater than 5 million, of which 74 percent is planted with one of the top 10 crops.46 Only 9 percent of the roughly 5 million acres of irrigated farmland in the San Joaquin Valley is experiencing low water stress.47

Fresno ranked as the top agricultural county in 2020, swapping places with Kern County after its lead in 2019.48 The table shows that seven of the San Joaquin Valley’s eight counties were in the top eight agricultural-producing counties in California in 2020. Half of the counties in the top 10 grow enough almonds and produce enough milk to include them in lists of leading commodities. Other frequently cultivated and valuable crops include cattle (in four counties), grapes (in four counties), and pistachios (in three counties).49
Of the leading commodities in the table above, almonds and pistachios have the highest economic value but require the most water inputs. Figure 1, on the next page, shows that other commodities like strawberries and spinach require significantly less water to produce but also are less lucrative for producers.
**Figure 1** Water-Intensity of Significant Agricultural Products Grown in California by Export Value Rank (excluding Cattle and Milk production)

NOTE: The Value Rank (vertical axis) shows lower rankings (closer to the horizontal axis) as having the highest economic value for the state. Therefore, California’s highest economic value crops shown above are almonds, blueberries, raspberries, and pistachios.

SUSTAINABILITY ISSUES DUE TO RESOURCE-INTENSIVE PRACTICES

WATER SCARCITY AND DROUGHT

Water scarcity is a longstanding issue for agriculture in the San Joaquin Valley, despite recent record rainfalls in early 2023. California’s Fourth Climate Change Assessment about the San Joaquin Valley states that the region’s annual precipitation ranges from 8 inches to 20 inches, showing the large year-to-year variability.\(^5\) This variability depends on the prevalence of atmospheric rivers in California. Historically, these atmospheric rivers bring about 20 to 50 percent of the state’s precipitation. At the beginning of 2023, California experienced significant rainfall through atmospheric rivers.

From 1988 through 2017, the San Joaquin Valley’s net water use averaged 16.7 million acre-feet per year, with 87 percent used for farming and the remainder consumed by natural vegetation and managed wetlands (10%) and cities (3%).\(^5\) As Figure 2 below shows, water use varies dramatically between wet and dry years, but the majority of water available in the San Joaquin Valley goes towards agriculture. With limited availability of irrigation water, farmers across the state must depend on some combination of surface water—water that is open to the surface, including lakes, rivers, and streams—and groundwater—water that exists underground—for agricultural irrigation.
**Figure 2**  Water Use Varies Across Regions and Between Wet and Dry Years

Average annual applied water use (1998–2015)

Statewide applied water use, millions of acre-feet (maf)

Wet year (2006)
- Environment: 104 maf, 62%
- Agriculture: 8 maf, 8%
- Urban: 8 maf, 29%

Dry year (2014)
- Environment: 61 maf, 61%
- Agriculture: 28 maf, 28%
- Urban: 11 maf, 11%


**NOTES:** The figure shows applied water use. The statewide average for 1998–2015 was 77.2 million acre-feet (maf). Environment (38.3 maf average) includes water for “wild and scenic” rivers, required Delta outflow, instream flows, and managed wetlands. Urban (7.9 maf) includes residential, commercial, and industrial uses; and large landscapes. Agriculture (31 maf) includes water for crop production. Net water use—i.e., the volume consumed by people or plants, embodied in manufactured goods, evaporated, or discharged to saline waters—is lower. The figure excludes water used to actively recharge groundwater basins (3% for urban and 1% for agriculture on average), conveyance losses (3% for urban and 8% for agriculture), and water used for energy production (less than 2% of urban use).
One of the main issues is the need for access to water for irrigation. Despite the recent rainfalls in early 2023, the Valley’s water supply is heavily dependent on snowmelt and rainfall from the Sierra Nevada mountains, which can vary from year to year. Additionally, the Valley has been experiencing drought for several decades, which has made it difficult for farmers to access the water they need to grow their crops.52

Another issue is the competition for water between different users, such as agriculture, urban areas, and the environment. The Central Valley Project (CVP) and State Water Project (SWP) have been criticized for their water allocation practices, which have favored large agribusinesses over small farmers and urban areas.

GROUNDWATER DEPLETION

The San Joaquin Valley is one of the most heavily groundwater-dependent regions in the state and has been facing groundwater deficit conditions for several decades.53 Farmers may pump groundwater from one of California’s 515 groundwater basins and subbasins where surface water is not easily available or restricted.54 Larger farms with more financial assets, including corporate farms and large agribusinesses, can afford to drill deeper than smaller farms can.55

The over-pumping of groundwater has resulted in some negative impacts, such as land subsidence, which is the sinking of the land surface...
due to the removal of water from underground aquifers, and the reduction of water quality. Additionally, it has also led to a decline in groundwater availability for future use and the environment. Furthermore, the over-pumping of groundwater also impacts the economy as it increases the cost of pumping water, making it more difficult for farmers to access the water they need to grow their crops.

Private groundwater wells, which have been installed more frequently by farmers and agribusiness in recent decades due to water scarcity, have exceeded the groundwater available. In fact, the San Joaquin Valley has experienced significant land subsidence as a result of the millions of acre-feet of groundwater that have been pumped (up to 11.5 feet in some areas of the region), which has ironically expanded the engineering challenges associated with maintaining water infrastructure such as the California Aqueduct and levees.

AGING INFRASTRUCTURE

The San Joaquin Valley faces several concerns about aging infrastructure that affect the region’s economy, environment, and residents. One primary concern is the aging water infrastructure, including dams, levees, canals, and
pipelines. Many of these structures were built in the 1930s and 1940s and have reached the end of their intended lifespan.59 These aging structures are at risk of failure, which can lead to flooding and water shortages, as well as environmental impacts such as habitat destruction.

California’s most troubled large dam is at Lake Isabella, built in the 1950s on what was thought to be a dormant earthquake fault by the Army Corps of Engineers on the Kern River above Bakersfield.60 The fault has since been shown to be active, and out of concerns that the dam could fail, the authorities restricted the level of the lake behind it.61 In early 2023, officials assured nearby residents that the lake levels and the dam remained safe despite heavy rains.

Another concern is the aging transportation infrastructure, such as highways and bridges. Many of these structures were also built in the 1930s and 1940s and require maintenance and repair. The poor condition of these roads and bridges can lead to increased traffic congestion, air pollution, and accidents, as well as the impact on economic development in the region.62 The San Joaquin Valley’s aging electric grid is also a concern, and the grid needs modernization to improve its reliability, efficiency, and ability to integrate renewable energy sources.63
DISPROPORTIONATE IMPACTS ON SMALL, FAMILY FARMS

Due to the significant changes that the San Joaquin Valley has undergone over the years, small, family-owned farmers experience disproportionate effects on operating farms in the region. These changes have often occurred due to the shift towards large-scale industrial farming, which has led to the displacement of many small family farms. For example, the high costs of land and equipment, as well as the increasing competition from large agribusinesses, have made it difficult for family farmers to continue operating.

In 2021, California had 69,000 farms, giving it a ranking of the ninth largest number of farms in the U.S., despite its loss of nearly 600 farms since 2020. More than half of these farms were between 1 and 49 acres in size. Most of these farms are family-owned (52,930), although the number of corporation-owned farms has been steadily growing in California from 5,367 corporate farms in 1987 to 7,271 farms in 2017. Almost 1,000 corporate farms were added between 2012 and 2017. A sizable number of farm families receive more than half of their income from non-farm income.

However, there is no definitive answer to the number of family-owned farms versus agribusinesses in the San Joaquin Valley because the definition of agribusiness can vary depending on the source. According to the 2017 Census of Agriculture, Fresno County alone had 4,774 farms and ranches in 2017, making...
it the county with the largest number of farms in California. Tulare County had the second-largest number of farms in California, with 4,187 farms and ranches. Many farms and ranches in the San Joaquin Valley may operate as family businesses rather than large-scale agribusinesses. Additionally, some agribusinesses may be headquartered outside the San Joaquin Valley but operate farms and facilities in the region.

In general, California farmers receive less in federal subsidies than midwestern states in spite of having a large amount of agribusiness. This has been attributed to federal subsidies going primarily to large landowners growing fewer perishable crops, like wheat and beans, rather than to the smaller fruit, nut, and vegetable growers who make up a large percentage of California growers. In 2021, California farms received $1.2 billion in federal government payments, compared to Iowa who received $2.1 billion, Texas who received $1.8 billion, and Illinois who received $1.5 billion. Most of the perishable crops grown in California do not qualify for program subsidies under the federal farm bill, which are generally only available for corn, soybeans, wheat, cotton, and rice production based on acreage or when market prices drop.

Farm labor in the U.S. includes both family farmworkers and hired farmworkers. The number of employed farm workers across the United States has reduced with on-farm mechanization. However, the proportion of hired farmworkers versus permanent workers has increased. Hired farmworkers include field crop workers, nursery workers, livestock workers, graders and sorters, agricultural
inspectors, and farm supervisors. Farm labor remains a significant employer throughout the San Joaquin Valley, particularly in Fresno, Tulare, and Kern counties.72

Based on Social Security numbers associated with a job, researchers found that two workers fill each year-round equivalent of a farm labor job for a total workforce of 829,300.73 Most farmworkers are connected to a labor contractor who moves farmworkers from one farm to another. In 2014, 85 percent of the farm workers were employed by a crop support firm, fruit and nut farm, or a vegetable and melon farm.

Another factor affecting family farmers in the San Joaquin Valley is the ongoing water crisis. The region relies heavily on irrigation to support agriculture, but drought and overuse of water resources have led to a scarcity of water. This has led to reduced crop yields, higher costs, and financial difficulties for many family farmers who are already struggling to make ends meet. Additionally, the changing climate has led to more extreme weather events, such as droughts and floods, which further impact the ability of family farmers to operate effectively. These weather events can lead to crop failures, loss of livestock, and damage to infrastructure, leading to significant financial losses for farmers. Presently, smaller farmers with less financial assets are more impacted by the excess use of groundwater. Larger farms with more financial assets can afford the costs ($30,000-40,000) of drilling deeper wells to replace wells that have gone dry.74

Despite these challenges, there are efforts being made to support family farmers in the San Joaquin Valley. These efforts include programs and initiatives aimed at improving water management, providing financial assistance, and promoting sustainable farming practices. Additionally, there is a growing movement towards local and organic farming, which provides opportunities for family farmers to differentiate themselves from larger agribusinesses and market their products to consumers who value sustainable and locally sourced food.
AIR POLLUTION AND CONTAMINATED WATER CAUSE SEVERE HEALTH ISSUES

The San Joaquin Valley has a high rate of negative health outcomes, particularly among low-income communities and communities of color from air pollution, water quality, and lack of access to healthcare. A new study finds that minority neighborhoods where residents were long denied home loans through a practice called redlining have twice as many oil and gas wells as mostly white neighborhoods. Authors of the study say their findings suggest that ongoing health risks in Black and Latino communities are at least partly tied to historical structural racism.

Disproportionate exposure to oil and gas wells could contribute to health disparities. Recent population health studies have reported that racially and socioeconomically marginalized people had disproportionately high risk of adverse birth outcomes with exposure to oil and gas production facilities. Gonzalez et al. observed that exposure to oil and gas production was associated with higher risk of spontaneous preterm birth among parents in the San Joaquin Valley, California, and that the risk was confined to parents who were Hispanic, Black, or had not completed high school. A 2022 meta-analysis by Lee et al. found significantly higher risk of preterm birth in historically redlined neighborhoods compared to non-redlined neighborhoods, and oil and gas wells have been found to emit air pollutants associated with preterm birth risk. These findings, in aggregate with the present study, indicate one plausible biological pathway through which redlining could increase preterm birth risk.

AIR POLLUTION

Air pollution is a major issue in the San Joaquin Valley, which has some of the worst air quality in the United States. The Valley is home to several sources of air pollution, such as agricultural operations, transportation, and other industrial operations. In fact, the San Joaquin Valley has the highest pollution burden in the state, including the highest rates of particulate matter (PM2.5). These particles can typically include dust, soot, and metals, and often come from cars, trucks, and factories. They can travel deep into the lungs because they are so small and cause various health problems, particularly for children and the elderly. Wildfires are an additional source of this particulate matter in California, due to the small size of smoke particles. During the 2008 wildfires throughout the state, the northeast San Joaquin Valley experienced PM2.5 concentrations that far exceeded air quality standards and were significantly more toxic than normal PM2.5.
Figure 3  Pollution Burden in the San Joaquin Valley

Agriculture is a significant contributor to air pollution in the San Joaquin Valley due to the use of pesticides, fertilizers, and heavy machinery. Additionally, the Valley’s location and geography also contribute to air pollution, as it is surrounded by mountains, which can trap pollutants in the air.

Transportation is another major source of air pollution in the Valley, as the region has many vehicles on the road, and trucks and trains transport many of the region's goods. This results in high levels of smog, particulate matter, and other pollutants in the air. Similarly, industrial operations – such as factories and power plants – also contribute to air pollution in the San Joaquin Valley. These operations emit pollutants such as nitrogen oxides and sulfur dioxide, which specifically harm air quality.

Air pollution in the San Joaquin Valley significantly impacts the health of residents, particularly those living in low-income communities and communities of color. It can cause respiratory issues such as asthma, bronchitis, heart disease, and cancer.
WATER QUALITY

The San Joaquin Valley is home to several sources of water pollution, such as agricultural operations, industrial activities, and urban development, which can contaminate the water supply and make it unsafe to drink or use. Like air pollution, one of the leading water quality issues in the San Joaquin Valley is contamination from agricultural operations, such as pesticides and fertilizers. Urban development can also contribute to water pollution, leading to increased runoff, which can carry pollutants from roads, parking lots, and other urban areas into the water supply.

**Figure 4** The San Joaquin Valley is a Hot Spot of Drinking Water Problems

![Water systems out of compliance with water quality standards (July 2018)](image)

- Arsenic
- Nitrate
- Surface water treatment issues
- Other chemicals
- Multiple chemicals

![Water systems and households facing shortages (2012–16)](image)

- Households reporting water shortages
- Small water systems applying for emergency drought funding

Low-income communities are disproportionately impacted by the ongoing issue of access to clean drinking water throughout California. According to a 2018 study by the University of California Davis Center for Regional Change, as many as 350,000 people in the San Joaquin Valley alone do not have access to potable water. Others refer to it as the "Appalachia of the West," while many claim that the conditions are similar to those in developing countries.

Lack of access to affordable, clean, and safe water in California jeopardizes public health and wellbeing. It also violates the state’s Human Right to Water (HRTW) law, as codified in 2012. Regardless, drinking water is frequently unsafe, particularly in disadvantaged unincorporated communities, which are low-income communities outside of city limits. The drinking water supply in many of these areas is harmed by insufficient wastewater treatment and disposal systems, industrial byproducts (typically connected to agriculture, oil and gas production, transportation, and manufacturing), and naturally occurring toxic substances like arsenic and uranium. In order to get safe water, many DUC residents in the San Joaquin Valley must pay a triple price: they must pay high prices for the unsafe water they must buy, as well as buy “substitute” water (usually expensive bottled water) for drinking and cooking.

These water quality issues can significantly impact the health of residents, particularly those living in low-income communities and communities of color. Exposure to contaminated water can lead to various health problems, such as gastrointestinal illness, skin rashes, and other infections. Overall, water quality issues in the San Joaquin Valley are a severe concern that can significantly impact the health of residents, particularly those living in low-income communities and communities of color.

**HEALTH EFFECTS FROM POLLUTION AND CONTAMINATION**

The San Joaquin Valley has a high rate of negative health outcomes, particularly among low-income communities and communities of color. Several factors, including air pollution, lack of access to healthcare, and poor housing conditions, cause these adverse health outcomes.

One of the main negative health outcomes in the San Joaquin Valley is respiratory problems, such as asthma and bronchitis. According to the California Department of Public Health, the San Joaquin Valley had the highest asthma hospitalization rate in California in 2019, as shown in Figure 5. Furthermore, a study by the California Environmental Health Tracking Program found that the San Joaquin Valley had some of the highest levels of particulate matter, which can cause respiratory problems, in the state.
Figure 5  Childhood Emergency Room Visits for Asthma in 2016

Rate of ER visits per 10,000 children in 2016

30-60
60-90
90-120
120+


DATA SOURCE: California Department of Public Health. “California Breathing County Asthma Data Tool.”
Another negative health outcome in the San Joaquin Valley is cardiovascular disease. A study by the California Department of Public Health found that the San Joaquin Valley had some of the highest rates of heart disease in the state, with a higher rate than the state average. Additionally, a study by the San Joaquin Valley Public Health Consortium found that the San Joaquin Valley had higher rates of premature death due to heart disease than the rest of California.

Furthermore, the San Joaquin Valley also has a high rate of cancer, particularly lung cancer. A study by the California Cancer Registry found that the San Joaquin Valley had higher rates of lung cancer than the state average and that these rates were exceptionally high in rural areas of the Valley.

POVERTY IN DISADVANTAGED AREAS AMIDST URBAN SPRAWL

California’s San Joaquin Valley is one of the most agriculturally rich regions in our nation, contributing over half of the state’s total value in agricultural production. However, it is also home to some of the nation’s poorest communities. A California Human Development report from 2011 found that the San Joaquin Valley’s 20th congressional district ranked the lowest in the nation on resident well-being based on an assessment of health, education, and income. As of 2020, more than 20 percent of residents in the San Joaquin Valley had incomes below 100 percent of the federal poverty level, demonstrating that poverty continues to plague the region. Among the poorest and most isolated of these communities are places outside city limits that lack the essential features of a safe, healthy, sustainable neighborhood—potable drinking water, sewer systems, safe housing, public transportation, parks, sidewalks, and streetlights.

Every county in the San Joaquin Valley outpaces the state’s poverty rate, with Merced, Madera, Fresno, Tulare, and Kings counties each exceeding 20 percent of residents living in poverty on the California Poverty Measure. High school and college graduation rates likewise lag behind California’s rate in all counties. Just one county in the region, San Joaquin, performs above 80 percent in high school graduations. Fresno County, similarly, is the only county with more than 20 percent of its population having received Bachelor’s degrees or higher.

DISADVANTAGED UNINCORPORATED COMMUNITIES

Disadvantaged unincorporated communities in the San Joaquin Valley are areas outside the boundaries of an incorporated city. They often need more basic services and infrastructure, such as water and sewage systems, sidewalks, streetlights, and public transportation. These
The San Joaquin Valley is Home to Hundreds of Disadvantaged Unincorporated Communities, Many of Which Have More than 50,000 Residents

**Figure 6**

communities are often characterized by poverty, unemployment, and low levels of educational attainment.

Data show that the majority of disadvantaged unincorporated communities in the San Joaquin Valley are located in rural areas and are home to a high proportion of low-income residents, particularly those living in poverty. According to the U.S. Census Bureau, the poverty rate in these communities is often higher than the state average. For example, in 2016, the poverty rate in unincorporated communities of Tulare County was 32.6 percent, more than double that of the state average at 14.5 percent.

The San Joaquin Valley is home to 54 percent people of color, and they make up a disproportionate share of the population in underdeveloped areas. These neighborhoods have historically been inhabited by African Americans, Latinos, and a growing Southeast Asian population. These communities are systematically underserved in the overall distribution of public resources and are frequently excluded from local decision-making processes because they are governed by counties that were not designed to provide services to dense urban areas and lack the representation of a city council. Concentrated poverty, institutionalized racism, and California’s systems of public finance and land use regulation all contribute to the predicament of these disadvantaged unincorporated communities.

As discussed in the last section, this lack of representation through existing governance systems is one reason why these residents experience cumulative effects from environmental contamination brought on by close proximity to air pollution, pesticides, toxic facilities, and waste disposal. There are no local governments to directly represent their interests or offer necessary services.

Perhaps even more concerning for residents in these areas is that few county officials and decision-makers are aware that these communities exist. Because these communities exist outside of traditional city boundaries, the people living in these areas cannot access resources typically available to low-income communities. When these communities are not officially recognized, the people and organizations that reside in and operate in these communities have difficulties gaining political attention, compiling and giving a sense of scale to the problems faced across communities, and easily accessing vital public resources that are allocated based on community-level data. Locating the places where communities face specific and unique challenges is the first stage of a longer process to organize and mobilize, develop strategies and priorities, and respond to these issues.

**URBAN SPRAWL**

Urban sprawl, the spread of urban development over large areas of land, has negatively affected the San Joaquin Valley and will continue to do so. Urban sprawl in the San Joaquin Valley typically involves low-density, car-dependent development that spreads outward from urban centers and encroaches on agricultural land and open space. As a result of this development pattern, the region has experienced significant loss of farmland.
and natural habitats, fragmented communities, and increased air and water pollution.

The California 100 report on Economic Mobility and Income Inequality describes urban sprawl in the region: “In line with the region’s history of capitalizing on expansive open space, recent economic growth has instead been driven by private and public real estate development. Similar to the Inland Empire, warehouse and transportation jobs have been a major source of job growth (e.g., 22,500 jobs added in San Joaquin County alone between 2009 and 2019). Sub-division and other single-family housing development growth in the early 2000s, and somewhat continuing today, provided workers who are remote or who are willing to endure mega-commutes to the Bay Area with affordable housing.”

In the urban areas of the San Joaquin Valley—in Fresno, Stockton, Bakersfield, and Modesto—sprawl often takes the form of large, sprawling subdivisions with single-family homes on
large lots, surrounded by wide streets, parking lots, and commercial areas. Many of these developments are located on the outskirts of cities and towns, and lack walkability, public transit access, and other amenities that would make them more livable and sustainable.

One of the main effects of urban sprawl is increased traffic congestion and air pollution. As urban areas expand, more people drive long distances to work and school, increasing traffic on roads and highways. This type of commuting can lead to increased emissions of pollutants such as particulate matter and nitrogen oxides, which can harm air quality and human health.

In addition to the negative environmental and social impacts, urban sprawl also has economic consequences. It leads to increased infrastructure costs, longer commutes, and higher energy consumption, which can place a strain on municipal budgets and the finances of households. It also exacerbates inequality by concentrating poverty in certain neighborhoods and limiting access to job opportunities, education, and other resources for low-income residents. As the previous section on disadvantaged unincorporated communities already stated, urban sprawl can continue to isolate and result in underinvestment in these already disadvantaged neighborhoods.

Urban sprawl can also lead to increased costs for public services, such as schools, hospitals, and police and fire departments. As urban areas expand, the demand for these services increases, which can strain local government budgets. Urban sprawl can also lead to the displacement of residents, particularly low-income residents and communities of color, as urban development often occurs in areas where housing costs are relatively low. These cost increases in housing can lead to the erosion of these communities and a loss of social cohesion and cultural identity.

**LOW EDUCATIONAL OUTCOMES**

Educational outcomes in the San Joaquin Valley have been a concern for many years. The region has a high rate of students who are not graduating from high school and have low levels of educational attainment. According to data from the California Department of Education, the graduation rate in the San Joaquin Valley is lower than the state average, with an average graduation rate of 83 percent in 2020, compared to the state average of 90 percent. Furthermore, data shows that students in the San Joaquin Valley have lower scores in math and English Language Arts tests when compared to students in the rest of the state. Moreover, the San Joaquin Valley has a high rate of students not attending college, with only about 25 percent of high school graduates in the region enrolling in college in 2020, compared to the state average of 38 percent.

Overall, educational outcomes in the San Joaquin Valley are a concern, with lower graduation rates and academic performance than the rest of the state. Addressing this issue will require a comprehensive approach that includes investments in education and programs and policies aimed at improving the academic performance of disadvantaged students.
CONCLUSION

Although the **San Joaquin Valley** has been the agricultural powerhouse for the United States and California, it faces a multitude of challenges that pose significant threats to its environment and communities. One of the most pressing issues is water scarcity, exacerbated by prolonged drought conditions and increasing demands for agricultural and urban use. The region heavily relies on groundwater, leading to excessive depletion and subsidence, endangering long-term water availability. Furthermore, the San Joaquin Valley is plagued by air and water pollution, largely attributed to agricultural activities, which adversely affect both human health and ecosystem integrity. The need for sustainable agricultural practices is crucial to address these environmental concerns effectively.

Additionally, the San Joaquin Valley struggles with persistent poverty and inequality, as economic disparities persist, particularly in disadvantaged unincorporated communities, exacerbating the social and environmental challenges faced by the region. Addressing these multifaceted challenges requires comprehensive strategies that promote water conservation, pollution reduction, equitable resource allocation, and inclusive economic development to ensure a sustainable future for the San Joaquin Valley.
ENDNOTES

1. U.S. Census Quick Facts, July 2022 ACS.
3. Ibid.
5. Austin, op. cit. 2.
8. Ibid.
14. Ibid.
17. Ibid.
18. Wagner, op. cit. 15.
22. Ibid.
25 California Department of Water Resources, op. cit. 23.
31 Ibid.
39 Ibid.
THE SAN JOAQUIN VALLEY REGION


48 California Agricultural Statistics Review, 2020-2021, California Department of Food and Agriculture.

49 Ibid.


55 California Agricultural Statistics Review, 2020-2021, California Department of Food and Agriculture.


64 California Department of Food and Agriculture. “California Agriculture Statistics Review 2021-2022,” n.d.; USDA Economic Research Service, Charts and Maps About your States. (The state with the largest number of farms is Texas with 247,000 farms, followed by Missouri with 95,000 farms and Iowa with 85,000 farms.); Telesetsky, op. cit. 28.

65 USDA 2017 Census of Agriculture.


68 Ibid.

69 Telesetsky, op. cit. 28.

70 USDA Economic Research Service, Charts and Maps About your States

71 The federal Farm Bill is reauthorized every five years. The most recent re-enactment is the Agriculture Improvement Act of 2018, Public Law No: 115-334 (12/20/2018).

72 Telesetsky, op. cit. 28.


74 Cecille, Giacoma. “As Their Wells Dry Up, California’s Small Farms Seek Emergency Relief,” Civil Eats, August 18, 2021; Telesetsky, op. cit. 28.


77 Gonzalez, Nardone, Nguyen, and Casey, op. cit. 75.

78 Ibid.


81 Ibid.


85 Real, op. cit. 12.


90 California Department of Public Health. April 2022. “County Health Status Profiles 2022.”


93 California Health and Human Services Open Data Portal.


97 Ibid.

98 Brynjolfsson, Erik, Mark Duggan, Christie Ko, and Dan Sholler, May 2022, “Economic Mobility, Workforce, and Inequality in California California: Productivity and Polarization.” California 100.

99 Flegal, Rice, Mann, and Tran, op, cit, 96,

100 Ibid.

101 Ibid.

102 Ibid.

103 Brynjolfsson, Duggan, Ko, and Sholler, op. cit. 98.