This report has been prepared by the Center for Business and Policy Research at the University of the Pacific. This publication was supported by Wells Fargo. The statements, findings, conclusions, recommendations, and other data in this report are solely those of the authors and do not necessarily reflect the views of Wells Fargo.
<table>
<thead>
<tr>
<th>Date</th>
<th>Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>1/20/2020</td>
<td>CDC confirms first case of the coronavirus in the United States</td>
</tr>
<tr>
<td>2/26/2020</td>
<td>CDC announces COVID-19 spread and that the “disruption to everyday life may be severe”</td>
</tr>
<tr>
<td>3/6/2020</td>
<td>Coronavirus Preparedness and Response Supplemental Appropriations Act signed into law</td>
</tr>
<tr>
<td>3/13/2020</td>
<td>US declares a national emergency</td>
</tr>
<tr>
<td>Mar-20</td>
<td>Local and then State-wide closures of schools and stay at home orders imposed in Mid-March</td>
</tr>
<tr>
<td>Mar-20</td>
<td>Declines to S&amp;P 500 trigger market-wide circuit breakers trading halts on 4 separate days in mid-March</td>
</tr>
<tr>
<td>3/17/2020</td>
<td>California authorizes $1.1 billion in emergency funding for ventilators, hospital beds and hotels.</td>
</tr>
<tr>
<td>3/18/2020</td>
<td>Families First Coronavirus Response Act signed into law</td>
</tr>
<tr>
<td>3/19/2020</td>
<td>Governor Newsom issues first statewide stay-at-home order except for essential needs</td>
</tr>
<tr>
<td>3/27/2020</td>
<td>The CARES Act, including the Paycheck Protection Program (PPP) signed into law</td>
</tr>
<tr>
<td>Apr-20</td>
<td>IRS begins issuing Economic Impact Payments</td>
</tr>
<tr>
<td>4/3/2020</td>
<td>FEMA launches “Project Roomkey” to facilitate housing homeless individuals during the pandemic</td>
</tr>
<tr>
<td>4/28/2020</td>
<td>Defense Production Act invoked to order meat and poultry processors to continue operating</td>
</tr>
<tr>
<td>5/20/2020</td>
<td>CDC provides guidance to mitigate spread of COVID-19 as some states begin to reopen in early May</td>
</tr>
<tr>
<td>5/25/2020</td>
<td>George Floyd is killed by a police officer</td>
</tr>
<tr>
<td>5/26/2020</td>
<td>Protests commence against the killing of George Floyd and for accountability and anti-racism</td>
</tr>
<tr>
<td>6/28/2020</td>
<td>With a resurgence in COVID-19 cases California follows other states and reverses reopening</td>
</tr>
<tr>
<td>11/3/2020</td>
<td>U.S. presidential election</td>
</tr>
<tr>
<td>Dec-20</td>
<td>IRS begins issuing second Economic Impact Payment</td>
</tr>
<tr>
<td>12/11/2020</td>
<td>FDA issues an Emergency Use Authorization for the first COVID-19 vaccine</td>
</tr>
<tr>
<td>12/27/2020</td>
<td>The Consolidated Appropriations Act, 2021, signed into law</td>
</tr>
<tr>
<td>12/30/2020</td>
<td>Delta variant of COVID-19 is reported for the first time in the U.S.</td>
</tr>
<tr>
<td>2/1/2021</td>
<td>CDC requires masks on public transportation conveyances or in transportation hubs</td>
</tr>
<tr>
<td>Mar-21</td>
<td>IRS begins issuing third Economic Impact Payment</td>
</tr>
<tr>
<td>3/11/2021</td>
<td>American Rescue Plan Act of 2021 signed into law</td>
</tr>
<tr>
<td>5/31/2021</td>
<td>The Paycheck Protection Program (PPP) ended</td>
</tr>
<tr>
<td>7/19/2021</td>
<td>California AB 140, including Regional Early Action Planning (REAP) 2.0, signed into law</td>
</tr>
<tr>
<td>7/27/2021</td>
<td>CDC updates guidance requiring masks indoors in areas with substantial or high transmission</td>
</tr>
<tr>
<td>10/21/2021</td>
<td>CDC recommends COVID-19 booster shots for people 65+ and 18+ if at higher risk</td>
</tr>
<tr>
<td>10/25/2021</td>
<td>U.S. Administrative order allows all nonimmigrant foreign national travel to the U.S. if fully vaccinated</td>
</tr>
<tr>
<td>11/2/2021</td>
<td>CDC recommends vaccination of children 5 to 11</td>
</tr>
<tr>
<td>12/1/2021</td>
<td>Omicron variant of COVID-19 is reported for the first time in the U.S.</td>
</tr>
<tr>
<td>2/25/2022</td>
<td>CDC relaxes requirement for masks on buses or vans operated by public or private school systems</td>
</tr>
<tr>
<td>2/24/2022</td>
<td>Russia invades Ukraine</td>
</tr>
<tr>
<td>4/18/2022</td>
<td>Court order ends CDC requiring masks on public transportation conveyances and at transportation hubs</td>
</tr>
<tr>
<td>5/6/2022</td>
<td>California relaxes indoor masking requirements except for health care and some other group settings</td>
</tr>
<tr>
<td>6/12/2022</td>
<td>CDC rescinds order requiring negative COVID-19 test result before boarding a flight to the U.S.</td>
</tr>
</tbody>
</table>
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Communities around the world have endured many challenges throughout the COVID-19 pandemic. After several periods of false hope when it felt as though the pandemic might soon be ending, we now appear to be in a time of sustained recuperation. However, it does not look as if life will return to the way it was before. It seems the pandemic will have an enduring socio-economic impact far beyond those directly affected by the COVID-19 virus. While globally many parts of the pandemic experience were similar, the socio-economic impacts of COVID-19 varied significantly across nations, regions, and communities.

This report explores the impacts of the pandemic on the North San Joaquin Valley (NSJV) region. Consisting of three adjoining California counties – San Joaquin, Stanislaus, and Merced – the NSJV has a population of more than 1.6 million residents. While known for a large variety of agricultural products, most of the region’s population lives in its largest cities: Stockton, Modesto, Tracy, Merced, and Manteca. The NSJV is uniquely situated in California’s heartland at the intersection of the San Francisco Bay Area, the Sacramento Capital Region, and the South San Joaquin Valley Region. The NSJV’s connections with these neighboring regions distinguish it as a cohesive area and substantially define its economic future. These relationships also shaped the regional COVID-19 impacts. For example, the NSJV has a cluster of essential industries serving the Northern California Mega-Region, which resulted in it suffering worse health impacts than the adjacent San Francisco Bay Area, but the NSJV had comparatively fewer negative economic impacts.

The figure on the page to the right shows that the NSJV has endured greater rates of COVID-19 fatalities throughout much of the pandemic. The impact of the virus during the late summer of 2020 is particularly noticeable, as is the rise in the latter part of the summer of 2021 when the Delta variant was prevalent. Cumulatively, between 1 February 2020 and 31 May 2022 some 4,730 people in the NSJV died from COVID-19, which equates to 290 fatalities per hundred thousand residents. This gives the NSJV a 28 percent greater number of COVID-19 fatalities per capita than California as a whole. In looking for causes of this disproportionate number of deaths, studies of the impact of the pandemic on workers in the NSJV have shown that many essential workers, who could not telecommute, experienced greater levels of worker distress and COVID-19 infections and yet often lacked a meaningful safety net [see Endnote 130 for details]. As this report shows, the NSJV continues to play a critical role supplying agricultural products to other parts of California, nationally, and globally. It also details the rising importance of
the region as a logistical hub for the megaregion. While ensuring these critical activities continued throughout the pandemic, our analysis shows that the region has incurred a disproportionate share of the pandemic’s impacts. These were not just in terms of the health (and mortality of its residents), but also in many other ways, ranging from declining adult education enrolment and rising housing costs to accelerating inter-regional integration.

In the first part of the report, effects of COVID-19 on the NSJV’s economy are reviewed. Beginning with employment, the pandemic’s highly varied influence across economic sectors is shown to not only be an important regional feature, but also distinguishes the NSJV from other parts of the megaregion. The impacts on gross regional product (the value of outputs) of the NSJV are then examined. Although broadly similar, available data through 2020 shows interesting differences in nondurable goods manufacturing as well as transportation and warehousing across the region. An analysis of income effects is the focus of the third section. While pandemic relief programs are apparent at an aggregate level, the unprecedented challenge the pandemic put on many households who were already income insecure across the region is also discussed.

Further consideration of economic impacts continues with an analysis of the pandemic’s influences on the region’s agricultural economy. Among other features, it shows that despite labor shortages and historic drought and fire seasons, all three counties realized increased net farm income between 2019 and 2020. Effects on the regional health care system are then reviewed. While a focus throughout the pandemic, stay-at-home-orders and health concerns led many to postpone or have reduced access to their usual healthcare providers, further increasing the pandemic’s impacts on the health of NSJV residents.

Entrepreneurship in the region during the pandemic is the focus of the subsequent section. Following statewide and national trends, the NSJV experienced significant growth in new business applications, which, if sustained, could be an important driver of economic development and recovery. Attention then turns to the pandemic’s bearing on the region’s transportation and
warehousing sector. While experiencing significant growth before the pandemic, the rise of e-commerce, particularly in the initial months of lockdown, led to a further acceleration in this area of regional competitiveness.

The second part of the report considers some of the pandemic’s impacts on people and society in the NSJV. It begins with a review of demographic influences, including population change, components of that change (natural change and total net migration), and forecasted population growth. Using change of address data from the U.S. Postal Service, our analysis shows that the majority of the region’s increased net migration came from the San Francisco Bay Area. The next section reviews some of the considerable effects the pandemic has had on human capital formation. While amplifying many pre-existing challenges, the pandemic’s impacts thus far have been particularly marked on the region’s adult education and community college systems.

In the third part of the report, COVID-19’s impacts on some of our relationships with the region as a place are examined. The first section considers its effects on housing. Housing costs were already a regional challenge, and the pandemic added to these with large and rapid increases in rents and home prices. The second section examines some influences on transportation in the NSJV. While the pandemic had moderate impacts on time away from the workplace, available data suggests that at least some of the regional public transportation systems continue to endure severe reductions in ridership. The last section reflects on the health of residents across the region. It highlights the disparate nature of the pandemic on residents’ health, and its impacts on some of the most vulnerable populations in the NSJV.

Through this review of the pandemic in the NSJV, it is hoped that the report supports a process of regional reflection and discussion. As the region looks toward and plans for its future, ensuring these and other important impacts of the pandemic are considered along with pre-existing challenges will help build a meaningful transformative basis to move forward.

**KEY FINDINGS INCLUDE THE FOLLOWING:**

**COVID-19 AND THE NSJV ECONOMY**

- The differentiated nature of the pandemic’s impacts is reflected in sectoral data at the county level, as well as in county-wide, regional, and inter-regional employment data.
- Our analysis also highlights the varied impacts of the pandemic on people’s ability to work, as well as the likely decline in real wages that has occurred after accounting for workforce composition effects. These composition effects may appear to drive up wages as a result of more low-paid workers losing their jobs while high-paid workers retain them, creating an upward shift in the average wage.
- The pandemic realized a very large scale impact on employment, including some 66,800 jobs lost across the NSJV between March and April of 2020.
- Despite the pandemic, the NSJV labor force actually grew in 2020. This was in stark contrast to other regions in the NCMR where declines were up to 4.4 percent.
- While the NSJV had a 0.9 percent decline in gross regional product, growth in several key sectors in the region prevented a significantly larger decline.
- Pandemic stimulus payments made important contributions to per-capita income in the NSJV and all of its counties. However, despite stimulus impacts, interregional incomes continued to diverge with the technology intensive San Francisco Bay Area seeing its per-capita income...
INTRODUCTION

gap grow over the NSJV and other parts of the megaregion by some 20%.

• Despite pandemic relief payments, many households across the region had considerable income difficulties that exacerbated challenges predating the pandemic.

• Although experiencing a severe drought, the value of the NSJV’s agriculture products grew and net farm income improved in each county.

• Entrepreneurship seems to have risen during the pandemic, with high quantities of new businesses created across the region.

PEOPLE AND SOCIETY IN THE NSJV

• In contrast to most other regions across northern California, the NSJV’s population has grown during the pandemic. In addition to its comparatively youthful population, an increased influx of residents from the San Francisco Bay Area contributed to this growth.

• Within the region, growth was largest in the cities that are closest to the San Francisco Bay Area, such as Lathrop, Patterson, Manteca, Los Banos, and Tracy. As a result of this growth, between January 1st, 2020, and January 1, 2021, the City of Lathrop realized the highest rate of population growth in California among cities with populations over 20,000. Following 2021, growth rates across the region slowed or declined in 2022, with the notable exception of Lathrop and Patterson.

• Over the period from 2020 to 2060, we project NSJV population growth will average 0.6 percent annually. After adjusting for deaths from COVID-19 and changes in migration patterns, the NSJV’s population is expected to exceed two million people around 2057, which is much later than in prior estimates.

• The onset of the pandemic realized a significant impact on enrollment in primary/elementary education and high school (K-12); however, in the NSJV, public school enrollment declined at half the rate as California and the United States as a whole. The largest decline occurred in kindergarten, with the NSJV experiencing an 11 percent decline in kindergarten enrolment. Regionally, other large enrolment declines included grade six (-2.9 percent), grade seven (-2.9 percent), and grade eight (-3.3 percent).

• The adult education system in the NSJV has seen sharp declines. Enrollment in the adult education consortia serving the NSJV dropped 54.3 percent from 2018-2019 to 2020-2021.

• The NSJV’s community college system has also seen declining enrolment, with a 9.2 percent decline between the 2019-2020 and 2020-2021 school years. Previous challenges in male enrolments in the system grew during the pandemic, with the proportion of male students in the NSJV dropping to 36.4 percent of the student body in 2021.

THE NSJV AS A PLACE

• Housing supply has been constrained during the pandemic with housing inventories in the region declining by 44 percent between April 2019 and April 2021.

• Between 2019 and 2020, the median days a house was on the market declined across the NSJV. Whereas, it was down 70% to 9 days in Merced County, in Stanislaus County it declined 58 percent to 7 days, and San Joaquin County experienced a 61% reduction to 8 days.

• Home values have risen substantially during the pandemic. Between March 2020 and December 2021, home values increased by 37 percent in Merced County, nearly 32 percent in Stanislaus County, and about 38 percent in San Joaquin County.

• Despite resumption of many pre-pandemic activities, several transit systems in the NSJV have followed statewide and national trends of limited passenger utilization.
Employment

Several distinct periods of employment may be distinguished during the COVID-19 pandemic, including those initial days of lockdown in March/April 2020 when attention and gratitude focused on essential workers in critical infrastructure occupations and, especially, frontline workers. As the pandemic and our experience living in it continued, travel restrictions and stay-at-home orders gradually eased to allow more non-essential businesses to open, even if operating under restrictions. As vaccination rates rose following deployment of the first COVID-19 vaccine in December 2020, a process of further removal of restrictions ensued. With uncertainty caused by the pandemic easing in 2021, we witnessed a record number of employees quit their jobs in what is being referred to as the “Great Resignation,” which continues to characterize the current employment environment.

We review these employment impacts from the pandemic on the NSJV in this section. Sectoral impacts are considered first and then we examine each county’s employment changes during the pandemic. A review of hiring changes in the NSJV during the pandemic are then reviewed before turning to a comparison of employment experiences across the Northern California Megaregion (NCMR). The section concludes with an NSJV employment forecast that incorporates our current thinking about the pandemic’s impacts.

SECTORAL IMPACTS

Despite the imposition of travel restrictions and stay-at-home orders to curb the spread of the pandemic, policies recognized from the outset that there are many sectors whose continued operation was critical to economic security, public health, and public safety. As such, these sectors could continue at least some operations and identify some portion of their staff as an essential workforce that would be allowed access to their workplaces during times of community restrictions.

These essential industries include medicine and healthcare, telecommunications, information technology systems, defense, food and agriculture, transportation and logistics, energy, water and wastewater, law enforcement, public works, and

### EMPLOYED UNABLE TO WORK DUE TO COVID

<table>
<thead>
<tr>
<th>Employed persons unable to work at some point in the last 4 weeks because employer closed or lost business due to the pandemic</th>
<th>May 2020 %</th>
<th>March 2021 %</th>
<th>March 2022 %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agriculture and related industries</td>
<td>13%</td>
<td>1.5%</td>
<td>0.4%</td>
</tr>
<tr>
<td>Mining, oil and gas extraction</td>
<td>16%</td>
<td>5.3%</td>
<td>0.3%</td>
</tr>
<tr>
<td>Construction</td>
<td>25%</td>
<td>6.9%</td>
<td>1.6%</td>
</tr>
<tr>
<td>Manufacturing</td>
<td>17%</td>
<td>2.4%</td>
<td>0.8%</td>
</tr>
<tr>
<td>Wholesale and retail trade</td>
<td>20%</td>
<td>3.7%</td>
<td>0.8%</td>
</tr>
<tr>
<td>Transportation and warehousing</td>
<td>24%</td>
<td>4.7%</td>
<td>1.1%</td>
</tr>
<tr>
<td>Utilities</td>
<td>8%</td>
<td>0.2%</td>
<td>0.3%</td>
</tr>
<tr>
<td>Information</td>
<td>12%</td>
<td>6.0%</td>
<td>1.7%</td>
</tr>
<tr>
<td>Finance and insurance</td>
<td>7%</td>
<td>2.3%</td>
<td>0.6%</td>
</tr>
<tr>
<td>Real estate and rental and leasing</td>
<td>23%</td>
<td>7.2%</td>
<td>1.1%</td>
</tr>
<tr>
<td>Professional and technical services</td>
<td>14%</td>
<td>4.2%</td>
<td>1.1%</td>
</tr>
<tr>
<td>Management, administrative, &amp; waste srvcs</td>
<td>22%</td>
<td>7.9%</td>
<td>1.1%</td>
</tr>
<tr>
<td>Educational services</td>
<td>19%</td>
<td>3.0%</td>
<td>0.7%</td>
</tr>
<tr>
<td>Hospitals</td>
<td>15%</td>
<td>1.4%</td>
<td>0.5%</td>
</tr>
<tr>
<td>Health services, except hospitals</td>
<td>23%</td>
<td>3.7%</td>
<td>1.2%</td>
</tr>
<tr>
<td>Social assistance</td>
<td>25%</td>
<td>3.1%</td>
<td>0.7%</td>
</tr>
<tr>
<td>Arts, entertainment, and recreation</td>
<td>41%</td>
<td>11.7%</td>
<td>2.5%</td>
</tr>
<tr>
<td>Accommodation and food services</td>
<td>41%</td>
<td>7.8%</td>
<td>1.3%</td>
</tr>
<tr>
<td>Other services</td>
<td>35%</td>
<td>8.5%</td>
<td>3.0%</td>
</tr>
<tr>
<td>Public administration</td>
<td>9%</td>
<td>2.0%</td>
<td>0.4%</td>
</tr>
</tbody>
</table>

Source: U.S. Bureau of Labor Statistics
education. As such, it was a large and varied group. Importantly though, as public health priorities and greatly diminished demand led to many businesses to close, especially during the early days of the pandemic, not all those who worked in “essential” industries prior to the pandemic were needed continuously throughout it.

While NSJV specific data is not available, the U.S. Bureau of Labor Statistics (U.S. BLS) added questions to their Current Population Survey (CPS) to measure the effects of the pandemic on the national labor market. The table on the page to the left summarizes that data across three periods during the pandemic: May 2020 (when these questions were first asked), March 2021, and March 2022. This data shows clearly how varied the pandemic’s impacts were across sectors. In the May 2020 survey, over forty percent of employees in accommodation and food services as well as arts, entertainment, and recreation industries reported that they were unable to work at some point in the previous four weeks because of the pandemic. In the same May 2020 survey, fewer than ten percent of employees in essential sectors, such as finance and insurance, and public administration reported an inability to work due to the pandemic.

Data about the pandemic’s impact on operations was also collected by the U.S. BLS from businesses. That data shows similar patterns with 48% of establishments in the arts, entertainment, and recreation sector and 36% of establishments in the accommodation and food services sector reporting that they experienced a government-mandated closure in 2020. In contrast, only 2.5% of establishments in agriculture and 7% in finance and insurance reported mandated closures in 2020.

These sectoral differences persisted throughout the pandemic, despite significant improvement over time. For example, the percentage of employed persons in the accommodation and food service sector that reported they had been unable to work because of the pandemic dropped from 41% in May 2020 to 7.8% in March 2021. However, in March 2021, only 2.3% of employees in the finance and

<table>
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</tr>
</thead>
<tbody>
<tr>
<td>Natural Resources</td>
<td>45,546</td>
<td>-5%</td>
<td>799</td>
<td>10%</td>
</tr>
<tr>
<td>Construction</td>
<td>27,548</td>
<td>5%</td>
<td>1,284</td>
<td>5%</td>
</tr>
<tr>
<td>Manufacturing</td>
<td>50,894</td>
<td>1%</td>
<td>1,217</td>
<td>8%</td>
</tr>
<tr>
<td>Trade, Trns. &amp; Utlt.</td>
<td>126,310</td>
<td>7%</td>
<td>1,004</td>
<td>11%</td>
</tr>
<tr>
<td>Information</td>
<td>2,188</td>
<td>-25%</td>
<td>1,318</td>
<td>15%</td>
</tr>
<tr>
<td>Financial activities</td>
<td>14,532</td>
<td>-3%</td>
<td>1,328</td>
<td>15%</td>
</tr>
<tr>
<td>Prof. &amp; Bus. Srvcc.</td>
<td>40,658</td>
<td>3%</td>
<td>984</td>
<td>3%</td>
</tr>
<tr>
<td>Healthcare &amp; Edu</td>
<td>79,451</td>
<td>-2%</td>
<td>1,133</td>
<td>5%</td>
</tr>
<tr>
<td>Leisure &amp; Hospitality</td>
<td>45,134</td>
<td>-7%</td>
<td>469</td>
<td>17%</td>
</tr>
<tr>
<td>Other services</td>
<td>12,148</td>
<td>-7%</td>
<td>775</td>
<td>11%</td>
</tr>
<tr>
<td>Government</td>
<td>87,937</td>
<td>-5%</td>
<td>1,295</td>
<td>7%</td>
</tr>
</tbody>
</table>

Source: U.S. Bureau of Labor Statistics
insurance sector reported being unable to work.

The table on the previous page (page 11) shows a similarly diverse range of employment impacts across sectors in the NSJV. Sectoral recovery, and in some cases growth, of employment varied considerably. Even within the region there have been different experiences. For instance, the trade, transportation, and utilities sector in San Joaquin County grew by 13% or some 10,000 jobs between Q2 of 2019 and Q2 of 2021. In contrast, the sector’s employment declined by 1% in Stanislaus and 2% in Merced during this period. Perhaps the most important implication of these different sectoral impacts is that certain workers have been impacted much more adversely than others.

While the pandemic’s impacts on the labor force are discussed later in this section, growth in real average wages are an important feature that is also reflected in the NSJV sectoral data reported below. This growth has varied, but real average wages have increased across all sectors.

Given these increases along with high job vacancy and quit rates, as well as declining labor force participation rates, it could be tempting to conclude that labor demand growing faster than labor supply contributed to this real wage growth; however, several other factors have also been at play. When considering these changes in real average wages, it is important to realize that shifts in the composition of those employed have also been a significant influence, largely due to the volatile labor market during the pandemic. These composition effects may drive up wages as a result of more low-paid workers losing their jobs while high-paid workers retain them, creating an upward shift in the average wage.7

While no regional data is available, the U.S. BLS publishes national data through its Employment Cost Index (ECI) which adjusts for and fixes the composition of the workforce.8 After controlling for inflation and the composition of the workforce, ECI data shows that real wages and salaries have declined 3.5% nationally between March 2020 and March 2022.9

CHANGE IN SEASONALLY ADJUSTED PAYROLL JOBS ACROSS COUNTIES IN THE NSJV

Source: QCEW - X-13ARIMA-SEATS monthly seasonal adjustment method
INTRA-REGIONAL IMPACTS

In March 2022, NSJV employment had recovered to pre-pandemic levels in Merced and San Joaquin Counties. San Joaquin County was the first to recover, with September 2021 employment exceeding September 2019 levels. It was followed by Merced County, which returned to pre-pandemic employment levels in February 2022. In order to show the difference in employment experiences across the three counties, we illustrate the relative month-on-month seasonally adjusted employment changes in the figure at the bottom of the page to the left.

A broadly similar pattern was followed by each county across the NSJV, with the most significant decline in April 2020 being followed by a sustained recovery. However, the story was somewhat nuanced among the counties, with Stanislaus falling the most and then lagging the other two counties in employment recovery and Merced and San Joaquin counties dropping in April 2020 to 92% and 89% of their February 2020 levels, respectively.

RECRUITMENT DYNAMICS

To further understanding of employment changes during the pandemic, we analyzed online job posting data across the NSJV from the year before the pandemic and the year following it. The table above compares the qualification levels that

<table>
<thead>
<tr>
<th>Qualifications</th>
<th>03/01/2019-02/29/2020</th>
<th>03/01/2020-02/28/2021</th>
<th>% Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>Associate’s degree</td>
<td>16%</td>
<td>18%</td>
<td>2%</td>
</tr>
<tr>
<td>Bachelor’s degree</td>
<td>35%</td>
<td>30%</td>
<td>-5%</td>
</tr>
<tr>
<td>Master’s degree</td>
<td>10%</td>
<td>8%</td>
<td>-2%</td>
</tr>
<tr>
<td>Doctoral degree</td>
<td>3%</td>
<td>3%</td>
<td>0%</td>
</tr>
<tr>
<td>Total*</td>
<td>48,553</td>
<td>53,682</td>
<td>5,129</td>
</tr>
</tbody>
</table>

* =Total positions where qualifications were specified

Source: Burning Glass

JOB POSTINGS BY QUALIFICATIONS

CHANGE IN SEASONALLY ADJUSTED PAYROLL JOBS ACROSS REGIONS IN THE NCMR

Source: QCEW - X-13ARIMA-SEATS monthly seasonal adjustment method
were being sought. It shows that recruitment following the pandemic shifted towards lower qualified workers with postings for jobs seeking an associate degree or lower qualification rising by 7% while those seeking a bachelor’s degree or higher declined by 7%.

Using the same data, we also examined the years of experience that was being requested. The results of that analysis demonstrated that overall recruitment of individuals with two years or less of experience increased by 3% while recruitment of those with 3 to 5 years of experience declined by 2%. This change in recruitment towards less experience and less qualified workers corresponds to the initial challenges faced by front-line workers as well as its impacts on labor force participation and employment. However, before turning to a discussion of those dynamics it is useful to compare the employment experiences of regions across the megaregion.

INTER-REGIONAL IMPACTS

The distinct nature of the NSJV region is perhaps most apparent when its experience is compared with other regions across the NCMR. The figure on the previous page (page 13) shows a seasonally adjusted index of employment change since just before the pandemic in February 2020. This data shows that initial job losses across the NCMR ranged from a 19% decline in the North San Francisco Bay Area to a 13% decline in the NSJV. Between NCMR regions, the Sacramento region followed the NSJV’s recovery and, by June 2021, only lagged slightly the NSJV. At the other end, the San Francisco Bay Area and the North Bay Area continued to endure the pandemics employment impacts with employment still 8% and 9% below pre-pandemic levels, respectively. In between those regions’ experiences, the Monterey Bay Area realized an initial decline of some 18% of employment but largely recovered in the second quarter of 2021 to just 6% below their February 2020 employment levels.

This divergence of regional experiences appears to be largely associated with the scale of the regions’ leisure and hospitality sectors, with the large visitor economies of the San Francisco Bay Area and the North SF Bay Area being particularly impacted by the travel restrictions and spread of remote work and the associated exodus of many of the regions’ residents. The data shows that the hardest hit workers occupy low-wage service jobs based in tourism-dependent locations and high-income communities with many remote workers.

IMPACTS ON LABOR FORCE

In the initial months of the pandemic, there was considerable discussion over its impacts on the labor market. Speculation was rife about what the post-pandemic recovery in employment might look like. Would jobs over time look like a V, a K, or an L?

NCMR LABOR FORCE CHANGE 2019 TO 2020

<table>
<thead>
<tr>
<th>Region</th>
<th>Labor Force</th>
<th>Employed</th>
</tr>
</thead>
<tbody>
<tr>
<td>SF Bay Area</td>
<td>-3.4%</td>
<td>-8.6%</td>
</tr>
<tr>
<td>North Bay Area</td>
<td>-4.4%</td>
<td>-9.6%</td>
</tr>
<tr>
<td>Greater Sacramento</td>
<td>-0.9%</td>
<td>-6.0%</td>
</tr>
<tr>
<td>North San Joaquin Valley</td>
<td>0.4%</td>
<td>-4.8%</td>
</tr>
<tr>
<td>Monterey Bay Area</td>
<td>-4.0%</td>
<td>-8.6%</td>
</tr>
</tbody>
</table>

Source: CA EDD
While our understanding continues to evolve, we are reaching a point where we can understand certain lessons.

In December 2021, Merced County’s monthly unemployment rate returned below pre-pandemic levels, but unemployment rates in San Joaquin and Stanislaus Counties did not return to their pre-pandemic levels until March 2022.\(^{14}\)

Despite the loss of 66,800 jobs between March 2020 and April 2020, the NSJV benefitted from a relatively steady labor force with an average size around 688,000 and a standard deviation around 4,900. The stability of the NSJV’s labor force is to a large extent the result of San Joaquin County where following a 6,500 person decline in the labor force between February 2020 and April 2020, its labor force has slightly exceeded its pre-pandemic levels since May 2020.\(^{15}\) In contrast, Stanislaus and Merced Counties’ labor forces have largely remained below their pre-pandemic levels through April 2022. Given that changes in the labor force size may reflect a combination of population change and/or residents’ attitudes and abilities to participate...
in the labor market, it is interesting to compare the NSJV’s experience to other regions across northern California.

The table on page 14 compares the percentage change in the labor force across the NCMR between 2019 and 2020. This data shows that between 2019 and 2020, the NSJV experienced a 0.4% growth in its labor force. This growth stands in contrast to that of other NCMR regions. The large labor force declines in the North Bay Area, the Monterey Bay Area and the San Francisco Bay Area stand in contrast to the NSJV experience. While the Greater Sacramento Area’s declined much less than the other regions, its experience was more in line with other Central Valley regions like the South San Joaquin Valley (SSJV), which experienced a 1.2% decline in its labor force. These distinct patterns are also evident in employment levels where the number of employed workers dropped relatively less in the NSJV (-4.8%) compared to other Central Valley regions like the Greater Sacramento (-6%) and SSJV (-5.5%) regions—and much less than the declines in excess of 8% experienced in other parts of the NCMR.

This divergence of the NSJV from other Northern California regions is further evidence of the very differentiated nature of the pandemic’s impacts. As the recovery continues to progress, it will be important to monitor further trends as the composition of job growth and labor force participation will inform the extent to which the NSJV economy and other regions are permanently transformed because of the pandemic.16

**Output**

The different economic impacts of the COVID-19 pandemic are also illustrated in GDP data. As the broadest measure of economic activity, GDP and output are highly correlated with incomes and the wellbeing of a region. However, the diverse impacts of the pandemic on the economy means that the sum of the value of all goods and services produced in an economy may mask important details.

**INTRA-REGIONAL GDP IMPACTS**

Current dollar GDP in the NSJV was $66.4 billion in 2020, of which $32.5 billion was in San Joaquin County, $24.2 billion was in Stanislaus, and $9.6 billion was in Merced. Thus, San Joaquin County represents 49%, nearly half, of the overall economic output of the NSJV economy.

Real GDP growth, which controls for inflation, declined by 0.9% in the NSJV in 2020, substantially less than the 4.8% decline in employment that

**NSJV REAL GDP (MILLIONS OF 2012$) TREND**

![Graph showing NSJV Real GDP trend from 2016 to 2020.](source: Bureau of Economic Analysis)
## REAL GDP CHANGE 2019 TO 2020

### Source: Bureau of Economic Analysis

<table>
<thead>
<tr>
<th>Description</th>
<th>San Joaquin</th>
<th>Stanislaus</th>
<th>Merced</th>
<th>San Joaquin</th>
<th>Stanislaus</th>
<th>Merced</th>
<th>Monterey Bay Area</th>
<th>Greater Sacramento Area</th>
<th>California</th>
<th>North San Francisco Bay Area</th>
<th>SSJV</th>
<th>Northern San Joaquin Valley</th>
<th>San Francisco Bay Area</th>
</tr>
</thead>
<tbody>
<tr>
<td>All industry total</td>
<td>28,417,585</td>
<td>21,439,045</td>
<td>9,099,866</td>
<td>-0.9%</td>
<td>-1.0%</td>
<td>-0.2%</td>
<td></td>
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</tr>
<tr>
<td>Agriculture &amp; Natural Resources</td>
<td>2,516,286</td>
<td>(D)</td>
<td>(D)</td>
<td>12.4%</td>
<td>(D)</td>
<td>(D)</td>
<td></td>
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</tr>
<tr>
<td>Mining, incl. oil and gas</td>
<td>184,246</td>
<td>4,042</td>
<td>1,394</td>
<td>-16.1%</td>
<td>-36.6%</td>
<td>45.8%</td>
<td></td>
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</tr>
<tr>
<td>Utilities</td>
<td>485,111</td>
<td>(D)</td>
<td>(D)</td>
<td>-3.0%</td>
<td>(D)</td>
<td>(D)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Construction</td>
<td>1,340,966</td>
<td>797,094</td>
<td>232,569</td>
<td>-1.7%</td>
<td>-1.9%</td>
<td>-17.8%</td>
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</tr>
<tr>
<td>Durable goods manufacturing</td>
<td>1,078,969</td>
<td>694,027</td>
<td>187,921</td>
<td>3.2%</td>
<td>-6.4%</td>
<td>2.9%</td>
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</tr>
<tr>
<td>Nondurable goods manufacturing</td>
<td>1,448,955</td>
<td>2,652,267</td>
<td>883,425</td>
<td>4.2%</td>
<td>-2.6%</td>
<td>-4.6%</td>
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</tr>
<tr>
<td>Wholesale trade</td>
<td>2,216,359</td>
<td>(D)</td>
<td>(D)</td>
<td>-6.9%</td>
<td>(D)</td>
<td>(D)</td>
<td></td>
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</tr>
<tr>
<td>Retail trade</td>
<td>2,076,745</td>
<td>1,812,204</td>
<td>591,509</td>
<td>-4.0%</td>
<td>-2.1%</td>
<td>-2.4%</td>
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</tr>
<tr>
<td>Transportation and warehousing</td>
<td>2,703,408</td>
<td>787,265</td>
<td>328,051</td>
<td>16.3%</td>
<td>-0.4%</td>
<td>-6.6%</td>
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</tr>
<tr>
<td>Information</td>
<td>355,298</td>
<td>298,074</td>
<td>64,528</td>
<td>-9.0%</td>
<td>2.0%</td>
<td>-2.2%</td>
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</tr>
<tr>
<td>Finance and insurance</td>
<td>667,748</td>
<td>456,111</td>
<td>172,942</td>
<td>5.9%</td>
<td>6.3%</td>
<td>17.9%</td>
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</tr>
<tr>
<td>Real estate, rental, &amp; leasing</td>
<td>3,835,449</td>
<td>2,690,003</td>
<td>919,167</td>
<td>-0.3%</td>
<td>0.4%</td>
<td>-1.4%</td>
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</tr>
<tr>
<td>Prof., sci., &amp; tech. services</td>
<td>575,982</td>
<td>548,844</td>
<td>99,350</td>
<td>-2.8%</td>
<td>-2.4%</td>
<td>-20.1%</td>
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</tr>
<tr>
<td>Mngmt of corps. &amp; enterprises</td>
<td>423,956</td>
<td>315,221</td>
<td>216,656</td>
<td>7.4%</td>
<td>2.3%</td>
<td>1.3%</td>
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</tr>
<tr>
<td>Admin., waste mgmt services</td>
<td>838,247</td>
<td>534,962</td>
<td>136,985</td>
<td>4.5%</td>
<td>-1.7%</td>
<td>0.0%</td>
<td></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Educational services</td>
<td>236,647</td>
<td>55,401</td>
<td>11,254</td>
<td>-15.6%</td>
<td>-22.8%</td>
<td>-24.7%</td>
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<td></td>
</tr>
<tr>
<td>Health care &amp; social assistance</td>
<td>2,271,205</td>
<td>2,640,097</td>
<td>592,283</td>
<td>-4.7%</td>
<td>-0.8%</td>
<td>-2.7%</td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Arts, entertainment, &amp; recreation</td>
<td>65,891</td>
<td>45,853</td>
<td>11,049</td>
<td>-42.4%</td>
<td>-42.4%</td>
<td>-52.6%</td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Accommodation &amp; food services</td>
<td>567,602</td>
<td>444,967</td>
<td>148,042</td>
<td>-26.1%</td>
<td>-23.9%</td>
<td>-21.2%</td>
<td></td>
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<td></td>
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</tr>
<tr>
<td>Other services</td>
<td>554,387</td>
<td>373,492</td>
<td>144,249</td>
<td>-11.2%</td>
<td>-11.8%</td>
<td>-9.7%</td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Govt &amp; govt. enterprises</td>
<td>4,013,483</td>
<td>2,498,585</td>
<td>1,471,764</td>
<td>-3.5%</td>
<td>-5.4%</td>
<td>-3.5%</td>
<td></td>
<td></td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>

Source: Bureau of Economic Analysis
the region experienced. Nevertheless, the 2020 decline comes after several years of growth. In the four years from 2016 to 2019, the NSJV averaged a 2.9% growth in real GDP, which compares to a 2.3% rate nationally during the same period. In terms of intra-regional trends across the four years from 2016 to 2019, San Joaquin County had the highest average annual real GDP growth, 3.2%, which was followed by Stanislaus County with a 2.8% average and Merced County with a 2% average real GDP growth.

Within the NSJV, the largest real GDP decline between 2019 and 2020 was the 1% decline experienced in Stanislaus County, which was followed closely behind with a 0.9% decline in San Joaquin County. Merced County experienced a more moderate decline of 0.2% as the pandemic impacted the local economies in 2020.

**INTER-REGIONAL GDP**

The importance of the global knowledge intensive industries of the San Francisco Bay Area are readily apparent in the figure at the top of the previous page (page 17) where the percentage change in real GDP statewide is compared to the five regions that compose the NCMR. While severely impacted in terms of employment, the San Francisco Bay Area’s economy grew by 0.5% from 2019 to 2020. In large part, this was due to the importance of the information sector to the San Francisco Bay Area’s economy. In 2019, the information sector formed 21% of its regional GDP; however, in contrast to many other sectors, the information sector grew by 9.5% between 2019 and 2020.17

In contrast, the Monterey Bay Area experienced a 4.7% decline in GDP between 2019 and 2020. Again, the sectoral composition was important to these impacts. The Monterey Bay Area’s arts, entertainment, recreation, accommodation, and food services sector composed 6% of its GDP in 2019, and it experienced a 40% decline between 2019 and 2020 as pandemic related restriction impacted it. However, that sector only composed 3% of the NSJV economy in 2019 and it declined by 27% between 2019 and 2020.

**IMPACTS ON OUTPUT BY INDUSTRY**

Further evidence of the pandemic’s diverse sectoral impacts is reported in the table at the bottom of the previous page (page 17). While privacy concerns prevented disclosure of data on Stanislaus and Merced counties’ agricultural, utilities, and wholesale trade sectors, which account for 16% and 29% of their respective economies. In order to address this data gap, we further discuss the regional agriculture sector using employment and crop data to detail county specifics in the Agriculture Section of this review.

In comparing regional dynamics, the experience of manufacturing is interesting. While the value of nondurable goods manufacturing output declined by 4.6% in Merced County and 2.6% in Stanislaus, nondurable goods manufacturing increased by 4.2% between 2019 and 2020 in San Joaquin County. While the value of the sector in Merced County was two-thirds the size of the sector in San Joaquin County, the sector in San Joaquin County was half the size of Stanislaus County’s sector. The slowdown in the food manufacturing sector is likely a major contributor to the intra-regional differences, with the sector accounting for 68% of all manufacturing employment in Merced County, 45% in Stanislaus County, and 28% in San Joaquin County.

Another distinct intra-regional pattern was seen
in the transportation and warehousing sector. In both Merced and Stanislaus counties the sector accounted for 4% of GDP (it composed 3% statewide and nationally), but it experienced a 6.6% decline in Merced County and a 0.4% decline in Stanislaus County. In contrast, transportation and warehousing formed 8% of total GDP in San Joaquin County, but it experienced a 16.3% growth in its value between 2019 and 2020.

**FORECAST ECONOMIC OUTPUT**

The figure below shows a forecast that real regional GDP is expected to grow by some 1.9 times 2022 levels by 2060, which, in terms of GDP per capita, equates to a level in 2060 1.5 times that of 2022. Growth is expected to average 1.9% per year in the period from 2022 to 2030. That growth will slow to 1.7% annually during the 2030s and 2040s. It will then slow further to 1.6% during the 2050s as population and employment growth slow.

**Income**

Income is an important measure of a community’s standard of living. The pandemic’s impact on income is another important dimension. In response to the COVID-19 pandemic, the US government implemented a series of unprecedented stimulus packages. Among their impacts, these stimulus programs expanded unemployment benefits, food assistance and housing assistance, deferred student loan payments, and provided direct cash payments.

**INTRA-REGIONAL INCOME IMPACTS**

The early pandemic relief programs impacts can be seen in the regional data shown in the figure at the bottom of the next page (page 20) where the marked rise in real per capita income is seen across all three counties of the NSJV. Between 2019 and 2020, real per capita income in Merced County rose...
14.3% to $43,380 (in 2019$), which was followed by a 13.6% increase in San Joaquin County to $51,190 (2019$), and an 11.4% increase in Stanislaus County to $48,360. In contrast, real per capita income statewide increased just 7.5% to $69,340 (2019$) between 2019 and 2020.

While pandemic associated stimulus funds were an important force in 2020’s income growth, real per capita income increased every year from 2011 to 2020 in San Joaquin County. Similarly, during that period, Stanislaus County experienced real per capita income growth in every year except 2018. Further, Merced County also had growth in real per capita income during this period, but between 2011 and 2020 declines occurred in 2012, 2016, and 2018.

However, in terms of income relative to the state as a whole, the region has seen growing division and inequality. Statewide per capita income was on average 1.43 times higher than Merced County’s from 1992 to 1996, by 2002 to 2014 the average had risen to 1.55 times, and the ratio had increased to 1.63 times Merced’s per capita income on average in the period from 2015 to 2019.

Similarly, statewide per capita income was on average 1.29 times higher than Stanislaus County’s from 1992 to 1996, and the average had risen to 1.38 times by 2002 to 2014 and rose to 1.44 times after consistent increases in the ratio each year from 2015 to 2019. The pattern repeats in San Joaquin County, with statewide per capita income rising from 1.24 times the county’s in 1992 to 1996, to 1.34 times the county’s between 2002 to 2014, and to 1.42 from 2015-2019, with a moderate improvement in the 2019 ratio following five years of declining relative per income over 2014 to 2018.

**INTER-REGIONAL INCOME IMPACTS**

The figure on the bottom of the page to the right shows that growth in statewide per capita income is largely related to the per capita income growth in the San Francisco Bay Area and its significant knowledge economy. In fact, the figure below
shows the considerable differences in income across the NCMR, but especially in the NSJV. Between 1992 and 1996, per capita income in the North San Francisco Bay Area was 92% of the SF Bay Area’s level, it was 80% in the Monterey Bay Area, it was 76% in the Greater Sacramento Area, and it was 61% in the NSJV. However, by the period between 2016 and 2020, per capita income relative to the San Francisco Bay Area declined about 20% across all other regions of the NCMR. In the North SF Bay Area, per capita income dropped to 74% of the SF Bay Area’s level, to 60% in the Monterey Bay Area, to 55% in the Greater Sacramento Area, and to 43% in the NSJV. In recent years, the NSJV has done somewhat better than other parts of the Central Valley, with per capita income in the SSJV declining from 98.5% of NSJV levels in 2014 to 93.5% of NSJV levels in 2020.

INCOME SECURITY IMPACTS

Despite the overall effects on income, the pandemic had severe impacts on many communities and population groups. In order to capture these impacts, the US Census Bureau designed a Household Pulse Survey to collect data on how the pandemic was affecting people’s lives. The tables at the bottom of the next page (page 22) show the results of the survey for California residents on two important income-related questions: 1) Whether the household had

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**REAL (2019$) PER CAPITA INCOME STATEWIDE AND ACROSS THE NCMR**

![Graph showing real per capita income from 2011 to 2020 across different regions of the NCMR](Source: Bureau of Economic Analysis)
difficulty paying usual household expenses and 2) Whether the household had sometimes or often not enough to eat. Data around difficulty with household expenditures began to be collected around the end of August 2020, at which point over a third of households in California reported difficulty paying usual household expenses. This rate increased late in the fall of 2020, rising to over 40% of households through mid-February 2021 before falling to slightly less than 30%, but then rising again and exceeding 35% in February 2022.

Data around food scarcity was collected from early May 2020, at which point about 10% of California households reported food scarcity. This level fluctuated around a higher level, sometimes exceeding 14% of California households, until February 2021 when it began falling and stabilizing around the 10% level. While this pandemic impact data is not available for the NSJV because of sampling size, the table below shows that there was significant vulnerability among households in the region even before the pandemic. According to these estimates, 44% of two adult households with one child earned less that a living wage in 2019. Therefore, without relief payments, it is reasonable to assume the pandemic’s impacts on most households in the NSJV would have been even more significant.\(^\text{20}\)

### PERCENTAGE OF NSJV HOUSEHOLDS EARNING LESS THAN LIVING WAGE (2019)

<table>
<thead>
<tr>
<th></th>
<th>1 Adult</th>
<th></th>
<th></th>
<th>2 Adults</th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>0 Children</td>
<td>1 Child</td>
<td>2 Children</td>
<td>3 Children</td>
<td>0 Children</td>
<td>1 Child</td>
<td>2 Children</td>
<td>3 Children</td>
</tr>
<tr>
<td>Living Wage</td>
<td>57%</td>
<td>80%</td>
<td>86%</td>
<td>96%</td>
<td>43%</td>
<td>44%</td>
<td>48%</td>
<td>59%</td>
</tr>
<tr>
<td>Poverty Wage</td>
<td>26%</td>
<td>21%</td>
<td>29%</td>
<td>50%</td>
<td>9%</td>
<td>10%</td>
<td>12%</td>
<td>19%</td>
</tr>
<tr>
<td>Minimum Wage</td>
<td>48%</td>
<td>29%</td>
<td>34%</td>
<td>48%</td>
<td>16%</td>
<td>12%</td>
<td>10%</td>
<td>13%</td>
</tr>
</tbody>
</table>

Source: U.S. Census Bureau

### DIFFICULTY WITH USUAL HOUSEHOLD EXPENSES

Source: U.S. Census Bureau

### HOUSEHOLDS EXPERIENCING FOOD SCARCITY

Source: U.S. Census Bureau
Impacts on Agriculture

Agriculture remains one of the most important economic bases of the NSJV, which is one of the most productive agricultural regions in the country and a critical part of the state’s economy and the nation’s food supply. In addition to the COVID-19 pandemic, drought and wildfires have created significant challenges.

The pandemic has impacted agricultural export markets, dramatically reducing demand from the food service industry (especially initially), and interrupted agricultural supply chains. It has also created substantial challenges to secure sufficient agricultural workers and highlighted the difficulties and importance of farmworkers (and their families) accessing healthcare.

The severe wildfire seasons of 2020 and 2021 have also impacted agriculture in the region. In fact, these were the two largest fire seasons in California’s recorded history, with 4.3 million acres burned in 2020 and 2.6 million acres burned in 2021.23 While agricultural acreage in the NSJV was largely unaffected by fires directly, smoke from these fires increased health risks to farmworkers and affected the flavor of some crops.24

Drought added further challenges to agriculture as the 2020 and 2021 water years were the second driest on record. However, while surface water deliveries were curtailed and some irrigated cropland unplanted, the NSJV has had comparatively less water delivery cutbacks than other parts of the state.26

REAL VALUE OF OUTPUT

Despite these challenges, the total value of agricultural output in the NSJV rose from $9.4 billion in 2019 to $9.9 billion in 2020, a $532 million increase. After accounting for the effects of inflation, this translated into a real rate of growth of 4.4% regionally. This increase was supported by rising commodity prices and comes after a

TOTAL REAL (2019US$) VALUE OF AGRICULTURAL PRODUCTION (IN MILLIONS)

Source: County Crop Reports
4.1% decline in 2018 and a 2.1% decline in real value of output in 2019. With unique production characteristics, the revenues from agricultural varied across the three-county NSJV region. In Stanislaus County, the value of output declined by $122 million, which, in real terms, was a 4.6% contraction. Merced County experienced a $240 million increase, which equated to a 6.3% increase in real value; however, that increase follows five consecutive years of declining revenues from 2015 to 2019. As the largest increase in revenue among the NSJV’s counties, a $413 million increase occurred in San Joaquin County, which was a 14.4% increase in real terms.

**NET INCOME**

Net income measures the profitability of farming in the NSJV, and it is an important measure of the overall health of the NSJV farm economy. Net income is an important indicator because the total value of agricultural production does not take into account how changes in costs affect the income or profitability of farming, and these rising costs have been particularly significant during the pandemic.

In 2020 as production expenditures declined by $268 million and total revenue increased by $894 million, the figure below shows net farm income in the NSJV rose by $1.3 billion. After adjusting for inflation, this equated to an 88% increase in real net farm income. Of the NSJV counties, Merced is most reliant on agriculture, with its farm production providing the highest share of gross economic output.

**COSTS AND INCOME**

The average composition of farm expenses between 2016 and 2020 are reported on the top-right of the page to the right. That table shows that

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**AGRICULTURAL NET REAL (2019US$) INCOME TRENDS (IN MILLIONS)**

Source: Bureau of Economic Analysis
hired farm labor expenses composed a quarter of all farm expenses, but that composition varied from forming 31% in San Joaquin County to 23% in Stanislaus County and 21% in Merced County. Regionally, feed purchases constitute another 20% of farm production expenses, but, owing to its smaller dairy and poultry business, these expenditures only formed 11% of San Joaquin County’s expenditures while forming 21% in Stanislaus County and 25% in Merced County.

**VALUE OF NSJV AGRICULTURAL PRODUCTS**

The table on the bottom of the page displays the composition of agricultural products by value. While almonds accounted for 24% of the value of agriculture product across the NSJV in 2020, they formed just 15% in Merced County, 24% in San Joaquin County, and 32% in Stanislaus County. Similarly, although milk was 22% of the NSJV’s total regional production by value, milk was 15% in

### AVERAGE % OF FARM EXPENSES IN NSJV

<table>
<thead>
<tr>
<th>Expenses</th>
<th>San Joaquin</th>
<th>Stanislaus</th>
<th>Merced</th>
<th>NSJV</th>
</tr>
</thead>
<tbody>
<tr>
<td>Livestock purchased</td>
<td>4%</td>
<td>10%</td>
<td>20%</td>
<td>30%</td>
</tr>
<tr>
<td>Seed purchased</td>
<td>20%</td>
<td>10%</td>
<td>5%</td>
<td>5%</td>
</tr>
<tr>
<td>Fertilizer and lime</td>
<td>5%</td>
<td>3%</td>
<td>7%</td>
<td>10%</td>
</tr>
<tr>
<td>Labor expenses</td>
<td>30%</td>
<td>15%</td>
<td>20%</td>
<td>20%</td>
</tr>
<tr>
<td>Petroleum products</td>
<td>0%</td>
<td>10%</td>
<td>8%</td>
<td>10%</td>
</tr>
<tr>
<td>All other expenses</td>
<td>30%</td>
<td>50%</td>
<td>30%</td>
<td>30%</td>
</tr>
</tbody>
</table>

Source: Bureau of Economic Analysis

### VALUE OF AGRICULTURAL PRODUCTION TRENDS (IN MILLIONS)

<table>
<thead>
<tr>
<th>Top Commodities 2020</th>
<th>San Joaquin</th>
<th>Stanislaus</th>
<th>Merced</th>
<th>NSJV</th>
</tr>
</thead>
<tbody>
<tr>
<td>Almonds</td>
<td>$731,381,000</td>
<td>$1,123,961,000</td>
<td>$494,114,000</td>
<td>$2,349,456,000</td>
</tr>
<tr>
<td>Milk</td>
<td>$439,824,000</td>
<td>$736,644,000</td>
<td>$1,053,041,000</td>
<td>$2,229,509,000</td>
</tr>
<tr>
<td>Chickens</td>
<td>$2,629,000</td>
<td>$342,099,000</td>
<td>$318,522,000</td>
<td>$663,250,000</td>
</tr>
<tr>
<td>Cattle &amp; Calves</td>
<td>$109,354,000</td>
<td>$201,783,000</td>
<td>$262,187,000</td>
<td>$573,324,000</td>
</tr>
<tr>
<td>Grapes</td>
<td>$340,913,000</td>
<td>$35,557,000</td>
<td>$63,419,000</td>
<td>$439,889,000</td>
</tr>
<tr>
<td>Nursery Products</td>
<td>$132,255,000</td>
<td>$210,746,000</td>
<td>$75,109,000</td>
<td>$418,110,000</td>
</tr>
<tr>
<td>Potatoes</td>
<td>$80,205,000</td>
<td>$19,278,000</td>
<td>$269,895,000</td>
<td>$369,378,000</td>
</tr>
<tr>
<td>Walnuts</td>
<td>$221,926,000</td>
<td>$103,040,000</td>
<td>$17,165,000</td>
<td>$342,131,000</td>
</tr>
<tr>
<td>Vegetables, Other</td>
<td>$118,685,000</td>
<td>$106,257,000</td>
<td>$111,176,000</td>
<td>$356,118,000</td>
</tr>
<tr>
<td>Eggs</td>
<td>$181,649,000</td>
<td>$39,021,000</td>
<td>$70,886,000</td>
<td>$291,556,000</td>
</tr>
<tr>
<td>Corn, silage</td>
<td>$83,990,000</td>
<td>$75,633,000</td>
<td>$104,347,000</td>
<td>$263,970,000</td>
</tr>
<tr>
<td>Tomatoes</td>
<td>$61,473,000</td>
<td>$37,991,000</td>
<td>$145,056,000</td>
<td>$244,520,000</td>
</tr>
<tr>
<td>Cherries</td>
<td>$186,512,000</td>
<td>$32,557,000</td>
<td>$63,419,000</td>
<td>$219,068,000</td>
</tr>
<tr>
<td>Pollination</td>
<td>$36,781,000</td>
<td>$89,255,000</td>
<td>$31,542,000</td>
<td>$157,578,000</td>
</tr>
<tr>
<td>Hay, Alfalfa</td>
<td>$54,968,000</td>
<td>$18,463,000</td>
<td>$65,117,000</td>
<td>$138,548,000</td>
</tr>
<tr>
<td>Silage, Other</td>
<td>$39,380,000</td>
<td>$23,865,000</td>
<td>$41,504,000</td>
<td>$104,749,000</td>
</tr>
<tr>
<td>Turkeys</td>
<td>$3,941,000</td>
<td>$54,117,000</td>
<td>$29,552,000</td>
<td>$87,610,000</td>
</tr>
<tr>
<td>Cotton</td>
<td>$66,119,000</td>
<td>$66,119,000</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Source: County Crop Reports
San Joaquin County, 21% in Stanislaus County, and 31% in Merced County, much higher than elsewhere in the NSJV.

The third most valuable commodity in the NSJV in 2020 was chicken, which composed 7% of the region’s total production value. While large chicken producers led to it forming 10% of Stanislaus County’s total value and 9% of Merced County’s, it only formed 0.1% of total production value in San Joaquin County. In contrast, while grapes formed 11% of San Joaquin County’s total production, primarily because of its large wine grape industry, it only formed 4% of the NSJV’s total production value. In Merced County, by contrast, grapes only formed 2% of their total production value in 2020 and, in Stanislaus County, they only formed 1%.

Impacts on the Health Care System

The health care system has been essential to the pandemic response. However, hospitals and other health care providers not only struggled to meet the continuing waves of demand for COVID-19 treatment after the onset of the pandemic, they also struggled to meet other ongoing healthcare needs of the population while operating with a decline in revenue as a result of a significant decrease in utilization of health care services after the onset of the pandemic. The financial impact of the pandemic on hospitals and other health care providers varied by several factors, including the impact of the pandemic on their revenues and expenditures, their financial health prior to the pandemic, and the extent of assistance they received from state and federal government.

“Despite these challenges, the total value of agricultural output in the NSJV rose from $9.4 billion in 2019 to $9.9 billion in 2020, a $532 million increase.”

Impacts of Health Care System Utilization

The pandemic created several surges of high hospitalization across the NSJV. The figure on the page to the right shows four distinct waves of utilization. The first wave from roughly mid-June 2020 to October 2020 and the second wave from roughly mid-November 2020 to June 2021 resulted in similar patterns of hospitalization as the third wave from mid-July 2021 to mid-December 2021 and the fourth wave from January 2022 to April 2022; however, the first two waves resulted in a greater number of deaths as the figure on the next page illustrates. Indeed, whereas the twelve-month period from May 2020 to May 2021, which overlaps the first two waves, resulted in 2,819 deaths associated with COVID-19 in the NSJV, the twelve-month period from April 2021 to April 2022, which overlaps with the third and fourth waves, resulted in 1,888 deaths associated with COVID-19 in the NSJV. Several factors likely contributed to the improved mortality rates over time, including better clinical treatments, changing demographics of patients, improved hospital capacity, and epidemiological factors.28

Importantly, the pandemic has had significant impacts on the utilization of the broader health care system. Particularly, many non-hospital businesses were closed or operating on a severely reduced scale during the initial stay-at-home orders. For example, in May 2020, some 22.6% of employees in health services reported that they were unable to work during the previous four weeks because their employer closed or lost business as a result of the pandemic.29 While the number of non-hospital health services employees reporting the pandemic impacted their ability to work dropped to 3.7% in March 2021 and just 1.2% in March 2022, the
pandemic significantly reduced non-hospital health services utilization.\textsuperscript{30} This reduced utilization of non-hospital health services led to many delaying or not seeking preventative care, which has contributed to an increase in the number of non-COVID-19 deaths, particularly among minorities and other socioeconomically disadvantaged populations.\textsuperscript{31}

**FINANCIAL IMPACTS ON THE HEALTH CARE SYSTEM**

Hospitals struggled to remain profitable after the onset of the pandemic. Although hospital revenue increased over time, reports show that total health care spending did not increase to expected levels as of the second quarter of 2021.\textsuperscript{32} Government assistance helped offset some of the revenue shortfall, but continued federal funding remains uncertain.

Like hospitals, physicians also experienced a decline in revenue as a result of decreases in in-person service utilization; however, primary care visits appeared close to 2019 levels as of December 2020. In addition to rebounding service utilization, charges for telehealth services also helped offset the decline in revenues experienced by physicians.\textsuperscript{33}

Additionally, nursing facilities experienced a decline in service utilization, as well as declines in staffing of approximately 10\% between February and December 2020, which may present long term financial challenges despite prior infusions of government assistance helping to offset earlier revenue losses after the onset of the pandemic.\textsuperscript{34}

Finally, health care providers that serve a high proportion of Medicaid and uninsured patients provide an important safety net; however, they experienced significant financial challenges after the onset of the pandemic. Indeed, safety-net providers already operated with low profit margins prior to the pandemic, and their focus on serving populations disproportionately impacted by the pandemic likely further contributed to their financial struggles.\textsuperscript{35}

With the federal COVID-19 Uninsured Program without funds to continue to reimburse health care providers for caring for the uninsured, the impact

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**NUMBER OF COVID-19 HOSPITALIZATIONS**

Source: California Department of Health Care Access and Information
on the industry and on vulnerable people may worsen, especially in the event of another wave of the pandemic.

**Impacts on Entrepreneurship**

Entrepreneurship is fundamental to economic dynamism. Business formation is an important measure of entrepreneurial activity and helps drive economic development and recovery. Therefore, although many employers temporarily or permanently closed as a result of the pandemic, the surge in business applications during the pandemic provides additional hope for regional economic development and recovery.

After the onset of the pandemic, the NSJV experienced an initial dip and then a significant increase in the number of applications to form a business. With 2019 experiencing an approximately 7% increase in the number of business applications in the NSJV compared to 2018, the average annual increase in the number of business applications in the NSJV from 2006 to 2019 was about 2%. After the onset of the pandemic in 2020, however, the number of business applications in the NSJV increased by nearly 27% compared with 2019—the highest rate of increase in the dataset that started in 2005. While this demonstrates an increased entrepreneurial spirit after the onset of the pandemic, the approximately 161 business applications, the highest annual number on record in the dataset, reflects a statewide trend also experienced by other regions.

Indeed, the Greater Sacramento region experienced a similarly impressive 25% increase in business applications. Further, the North San Francisco Bay Area realized a 19% increase, the San Francisco Bay Area posted a 13% increase, and the Monterey Bay Area reported an 8% increase. While much less of an increase than the NSJV, the SSJV realized an increase of 3%. Overall, business applications in California increased by nearly 20% from 2019 to 2020. Stimulus funding, coupled with people who lost their jobs or saw their jobs furloughed or who began to work remotely, likely contributed to the uptick in business applications.

Although business applications remain above pre-pandemic levels, a closer look at the data reveals that the growth in business applications does not reflect
a significant increase in high-propensity businesses, which somewhat tempers some of the expected benefits. As defined by the U.S. Census Bureau, high-propensity businesses are likely to develop into businesses with employees and a payroll. While regional data is not available, statewide applications for high-propensity businesses reflected only about 24% of the growth in business applications from 2019 to 2020.

**Impacts on Transportation and Warehousing**

Much like it affected the workplace by massively growing the number of remote workers, so the pandemic also impacted our shopping experience by accelerating an expansion of e-commerce. Nationally, e-commerce grew 43% between 2019 and 2020. The figure on the top-left of the next page (page 30) shows the dramatic impact the pandemic had on e-commerce sales, raising them from 11.1% of all retail sales in the last quarter of 2019 to 16.4% of all retail sales in the second quarter of 2020. Although dropping towards its longer-term growth trend as social distancing restrictions have eased, at least some of the growth seems to be structural.

Another major impact of the pandemic has been on supply chains. Whether it be early periods of rapid demand for personal protective equipment, household goods such as toilet paper, or pent-up demand as restrictions eased, there has been a dramatic rise in the demand for goods compared to before the pandemic. This been a global phenomenon resulting in supply chain challenges worldwide.

These are especially important issues locally as the region benefits from its established multi-modal transportation and logistics infrastructure, including road, water, rail, and air capabilities. Many companies’ warehouses and distribution centers developed in the NSJV region in recognition of the area’s relative strengths in warehousing, distribution, logistics, and transportation support.
The number of jobs in the industry. While growth in transportation and warehousing jobs rose by an annual average of 1,080 jobs between 2011 and 2014, the industry’s annual employment growth averaged 6,320 jobs in the period between 2015 and 2020. While this rapid employment growth has brought significant opportunities to many residents across the region as these jobs require lower educational and work experience, the scale of the growth also creates significant challenges as automation is expected to reduce the total number of jobs and increase the skill profile of the remaining jobs.41

A growing backlog in the ports demonstrates another manifestation of supply chain challenges. The onset of the pandemic also realized a significant decline in the proportion of goods exported through the Port of Stockton and a concomitant increase in the proportion of goods imported. Indeed, whereas 61% of goods shipped through the Port of Stockton were exports in 2019, that number decreased to 46% in 2020 and by another six percentage points to 40% in 2021.

Further, the overall amount of goods shipped through the Port of Stockton initially declined with the onset of the pandemic. Indeed, the amount of goods, as measured by the shipping weight of cargo going through the port, decreased by nearly 28% in 2020 compared with 2019. Nonetheless, shipments from the Port of Stockton largely rebounded in 2021 to slightly exceed the amount of goods shipped just before the pandemic in 2019.

While 2021 realized a rebound of shipping at the Port of Stockton, ports across California continue to experience significant shipping challenges that threaten dependent industries. For the Port of Stockton, however, the bottlenecks at larger ports led to increased demand. Although the Port of Stockton does not utilize shipping containers, some companies that traditionally shipped their products in containers began to ship in the bulk carriers available through the Port of Stockton instead.42

Regional air passenger travel and air freight cargo is reported in the tables to the lower-right of...
The pandemic dramatically reduced passenger enplanements (trips). Between 2019 and 2020, NSJV enplanements dropped by some 116,000 or 54%. While passenger numbers improved substantially in 2021, they were still 31% less than 2019 levels.

In terms of regional composition, the Stockton Metropolitan Airport has the largest regional operations accounting for all the freight cargo and over 92% of passenger enplanements between 2017 to 2021. Merced Regional Airport accounted for nearly all the other passenger enplanements (7%), with the Modesto City-County Airport accounting for less than one percent of passenger enplanements during this period.

Airfreight growth in the NSJV has been another byproduct of regional e-commerce growth. Before the 2010s, there was very limited airfreight through the region; however, in 2016, Amazon began air cargo flights through Stockton, which have driven regional air freight growth. Following an 8% decline between 2019 and 2020, 2021 saw record air freight volume.

“While growth in transportation and warehousing jobs rose by an annual average of 1,080 jobs between 2011 and 2014, the industry’s annual employment growth averaged 6,320 jobs in the period between 2015 and 2020.”
Demographics

Nationally, as international immigration and natural population increases (births in excess of deaths) declined, the onset of the pandemic exacerbated population trends preceding the pandemic and corresponded with the lowest overall population growth in over a century. The pandemic also realized a trend of domestic migration out of large cities to smaller cities. Indeed, for the first time since at least 1990, the population size of the 56 largest metropolitan areas in the United States, each with a population over 1 million, declined between July 2020 and July 2021. Meanwhile, smaller metro areas experienced population growth at a higher rate than the two years preceding the pandemic, and non-metropolitan counties realized their greatest population growth rate in more than a decade. Despite the shift in population from more densely populated areas to less densely populated areas, the first year of the pandemic also realized the lowest level of mobility, as measured by changes in residence, since the U.S. Census Bureau began tracking migration data in 1947.

Much like smaller metropolitan areas and non-metropolitan areas across the nation as a whole, the figure below demonstrates that the NSJV experienced a population gain while surrounding areas with greater populations in the NCMR, as well as the state as a whole, experienced population declines. Indeed, the figure below demonstrates that the NSJV (+0.3%) experienced slight population growth. Meanwhile, the Greater Sacramento area experienced no growth and California (-0.89%), the Monterey Bay Area (-1.08%), the North San Francisco (SF) Bay Area (-1.47%), and the SF Bay Area (-2.06%) all experienced population declines.

COMPONENTS OF POPULATION CHANGE

The decennial Census of the U.S. population occurred on 4/1/2020. Therefore, we have a unique snapshot of the population during the pandemic. As detailed in the table on the opposite page, the NSJV’s population increased by nearly 14,000 people.
residents in 2021 (between July 2020 and July 2021). That was up from the estimated change of 8,854 in 2020, but less than each of the preceding six years (2014-2019) of annual growth. Two factors can be used to describe the change in population: the growth (or decline) from natural change and the growth (or decline) from total net migration.

The extent of natural change is determined by the difference between the number of births and the number of deaths. Given the pandemic, it is not surprising that deaths increased substantially in 2020 and 2021 in each of the counties and regionally. It is also likely that the pandemic contributed to some of the decline in births in 2020 and 2021 across the counties as well as regionally. The NSJV appears relatively youthful in that each of the NSJV counties post median ages below those of the state and nation. Indeed, whereas the U.S. median age is 38.2 years and California’s median age is 36.7 years, Merced County’s median age is 31.2, Stanislaus County’s median age is 34.3, and San Joaquin County’s median age is 34.4. Related to this younger demographic is the region’s higher birth rates vis-à-vis California and the nation as a whole. Indeed, birth rates per 1,000 women in 2020 stood at 52 in the United States, 48 in California, 54 in Merced County, 55 in San Joaquin County, and 52 in Stanislaus County. Still, like much of the nation, birth rates are regularly declining in the NSJV. As a result of that and the pandemic, the 2021 increase of 6,222 was less than half its 2011 value.

Total net migration is estimated by adding net international migration and net domestic migration. Regionally, net international migration has been a smaller component. In Merced County, international migration has been negative, with more people moving from Merced out-of-the-country than moving to Merced from out-of-the-country, for the past five years. In Stanislaus County, international migration has been negative over each of the past three years. However, international migration in San Joaquin County has been positive, although it has declined from a little over 2,000 in 2016 to around 150 in 2021.

Domestic migration recently has been positive in both Merced and San Joaquin counties, but it has been negative in Stanislaus County since 2019 and, in 2021, it was –1,870. While detailed county-to-county migration data is not available yet, the U.S. Postal Service publishes timely household change of address data that gives us some insight as to where domestic migrants were moving from (and to). That data shows that much of the intrastate migration to the NSJV in 2020 came from surrounding metro areas with greater populations. For example, the larger San Francisco-Oakland-Berkeley and San Jose-Sunnyvale-Santa Clara metropolitan statistical areas (MSAs) accounted for over 45% of the California-based household

**NSJV POPULATION AND ANNUAL CHANGE, JULY 1, 2020 TO JULY 1, 2021**

<table>
<thead>
<tr>
<th>Geography</th>
<th>Population Estimate July 1, 2020</th>
<th>Population Estimate July 1, 2021</th>
<th>Total Population Change</th>
<th>Natural Change</th>
<th>Total Net Migration</th>
</tr>
</thead>
<tbody>
<tr>
<td>NSJV</td>
<td>1,614,953</td>
<td>1,628,870</td>
<td>13,917</td>
<td>6,222</td>
<td>7,499</td>
</tr>
<tr>
<td>Merced County</td>
<td>281,726</td>
<td>286,461</td>
<td>4,735</td>
<td>1,513</td>
<td>3,220</td>
</tr>
<tr>
<td>San Joaquin County</td>
<td>780,517</td>
<td>789,410</td>
<td>8,893</td>
<td>2,623</td>
<td>6,199</td>
</tr>
<tr>
<td>Stanislaus County</td>
<td>552,710</td>
<td>552,999</td>
<td>289</td>
<td>2,086</td>
<td>-1,920</td>
</tr>
</tbody>
</table>

Source: U.S. Census Bureau
NSJV CITIES’ WITH POPULATIONS OVER 20,000 BY 2021-22 GROWTH RATE

<table>
<thead>
<tr>
<th>City</th>
<th>County</th>
<th>2020-21 % Change</th>
<th>2021-22 % Change</th>
<th>2021 Rank</th>
<th>2022 Rank</th>
<th>Total Population: Jan. 2022</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lathrop</td>
<td>San Joaquin</td>
<td>6.3%</td>
<td>6.6%</td>
<td>1</td>
<td>2</td>
<td>31,331</td>
</tr>
<tr>
<td>Patterson</td>
<td>Stanislaus</td>
<td>0.7%</td>
<td>2.2%</td>
<td>58</td>
<td>15</td>
<td>24,370</td>
</tr>
<tr>
<td>Manteca</td>
<td>San Joaquin</td>
<td>2.9%</td>
<td>2.2%</td>
<td>7</td>
<td>16</td>
<td>86,859</td>
</tr>
<tr>
<td>Los Banos</td>
<td>Merced</td>
<td>2.4%</td>
<td>1.0%</td>
<td>12</td>
<td>32</td>
<td>46,639</td>
</tr>
<tr>
<td>Tracy</td>
<td>San Joaquin</td>
<td>2.9%</td>
<td>1.0%</td>
<td>8</td>
<td>33</td>
<td>94,538</td>
</tr>
<tr>
<td>Merced</td>
<td>Merced</td>
<td>3.1%</td>
<td>1.0%</td>
<td>5</td>
<td>34</td>
<td>89,058</td>
</tr>
<tr>
<td>Lodi</td>
<td>San Joaquin</td>
<td>1.1%</td>
<td>0.6%</td>
<td>37</td>
<td>47</td>
<td>66,570</td>
</tr>
<tr>
<td>Oakdale</td>
<td>Stanislaus</td>
<td>0.6%</td>
<td>-0.2%</td>
<td>64</td>
<td>98</td>
<td>23,071</td>
</tr>
<tr>
<td>Turlock</td>
<td>Stanislaus</td>
<td>-0.3%</td>
<td>-0.3%</td>
<td>149</td>
<td>108</td>
<td>71,531</td>
</tr>
<tr>
<td>Modesto</td>
<td>Stanislaus</td>
<td>0.4%</td>
<td>-0.4%</td>
<td>81</td>
<td>118</td>
<td>217,880</td>
</tr>
<tr>
<td>Stockton</td>
<td>San Joaquin</td>
<td>0.5%</td>
<td>-0.4%</td>
<td>68</td>
<td>122</td>
<td>322,489</td>
</tr>
<tr>
<td>Riverbank</td>
<td>Stanislaus</td>
<td>0.2%</td>
<td>-0.6%</td>
<td>97</td>
<td>156</td>
<td>24,583</td>
</tr>
<tr>
<td>Ceres</td>
<td>Stanislaus</td>
<td>0.0%</td>
<td>-0.8%</td>
<td>115</td>
<td>182</td>
<td>48,586</td>
</tr>
<tr>
<td>Atwater</td>
<td>Merced</td>
<td>0.5%</td>
<td>-1.1%</td>
<td>71</td>
<td>266</td>
<td>31,652</td>
</tr>
</tbody>
</table>

Source: California Department of Finance

Increases in the NSJV.

Whereas the San Francisco-Oakland-Berkeley MSA contributed a net inflow of 6,209 households to the NSJV in 2020, the San Jose-Sunnyvale-Santa Clara MSA contributed 3,737 households to the NSJV during this same time period. These inflows were not distributed evenly across the region though. For example, 77% of the households from the San Francisco-Oakland-Berkeley MSA and 59% of the households from the San Jose-Sunnyvale-Santa Clara MSA moved to San Joaquin County. Stanislaus County accounted for a further 17% of the households from the San Francisco-Oakland-Berkeley MSA and 23% of the households from the San Jose-Sunnyvale-Santa Clara MSA.

While Merced County gained 1,039 households from those two San Francisco Bay Area MSAs in 2020, it gained nearly as many, 767 households, from other parts of the NSJV. San Joaquin County on net lost some 262 households through migration to Stanislaus County and lost a further 812 households to other parts of California. However, the scale of San Francisco Bay Area in-migrants led to a net increase of some 5,898 households from California as a whole.

INTRA-REGION POPULATION DYNAMICS

Looking at cities within the NSJV, the table below displays a statewide ranking of NSJV cities with populations of 20,000 or more in terms of their population growth percentage. This table again reflects the influence of San Francisco Bay Area migrants, with the fastest growing cities in the region being on or near primary travel corridors.
to the Bay Area. In San Joaquin County, the City of Lathrop realized the highest rate of population growth in California in the pandemic’s first year as measured from 1 January 2020 to 1 January 2021. Further, Lathrop followed that with the second highest rate in the state from January 2021 to January 2022. Two other San Joaquin County cities posted top ten rankings for population growth rates from 2020 to 2021: Manteca, which was ranked seventh in California, and Tracy, which was ranked eighth. Also in the NSJV, the City of Merced was the 5th fastest growing from 2020 to 2021.

With the notable exceptions of Lathrop and Patterson, growth rates across the region slowed, or declined, from 2021 to 2022. From January 2021 to January 2022, population growth in the City of Merced slowed by 2.1% and growth in Tracy slowed by 1.9%. In fact, while Turlock was the only one of these cities to register a decline in population from 2020 to 2021, seven of these cities experienced a decline in population from 2021 to 2022.

**POPULATION FORECAST**

CBPR produces an NSJV population forecast, which can assist local governments and policymakers with planning for the future needs of residents by projecting where population growth will be concentrated and what will be the demographic makeup of each county in the NSJV. This year’s forecast foresees a somewhat lower rate of growth than before with an average annual growth rate of 0.6% in the period between 2020 and 2060. Growth will occur at around 0.9% per year up until 2025 when the growth rate begins to decline. After adjusting for deaths from COVID-19 and changes in migration patterns, the NSJV’s population is expected to exceed two million people at around 2057, which is much later than in prior estimates.

In addition to a relatively young, although aging, population, the NSJV population will continue to reflect the rich diversity of the region. Indeed, as the largest city in the NSJV and 11th largest in California, the City of Stockton was recently

### NSJV POPULATION FORECAST 2020—2060

![Population Forecast Chart](chart.png)

Source: CBPR Forecast
recognized as the most racially and ethnically diverse large city in the nation. Whereas non-white racial/ethnic groups are projected to experience a population growth by 2060, the Chican@/Hispanic/Latinx population is expected to grow the most from about 48% of the NSJV population in 2022 to 59% by 2060.

**Human Capital Formation**

Similar to how the COVID-19 pandemic worsened a longstanding housing affordability crisis in California and the NSJV, the pandemic also exacerbated an education crisis in California and the NSJV. As one article noted just prior to the pandemic, “California once had one of the best funded, most envied public education systems in the United States” prior to the late 1970s.

However, the state enacted Proposition 13 in 1978, which reduced property taxes and thereby decreased a significant funding source for public schools. California public school funding fell as a whole to below the national average of per pupil funding within a decade of Proposition 13. Thus, for a variety of reasons, California public schools experienced a decline far before the pandemic—and the pandemic made things worse, especially for those already most underserved.

Indeed, prior to the pandemic, one annual study ranked California public schools as 38th in the nation in 2019; however, after the onset of the pandemic, California ranked 41st in the nation in 2021. Further, the pandemic profoundly impacted education and exacerbated racial and economic disparities, as well as disparities for students with disabilities, and the effects threaten to reverberate for years. Previous studies of natural disasters suggest a likelihood of learning losses compounding over time, especially without implementing additional evidence-based supports. Changes since the onset of the pandemic challenged students, parents and guardians, and educators in new ways, including with regard to emotional and mental health. One study found that the pandemic worsened an existing student mental-health crisis in that “[c]hildren already coping with mental health conditions have been especially vulnerable to the changes, and now we are learning about the broad impacts on students as a result of schools being closed, physically distancing guidelines and isolation, and other unexpected changes to their lives.” From enrollment to achievement and completion rates in primary/elementary, middle, secondary, and post-secondary/tertiary education levels, the pandemic brought substantial changes and challenges to an educational system already beset with significant achievement and equity gaps.

Overall, national data suggests that “the impact of the pandemic on K–12 student learning was significant, leaving students on average five months behind in mathematics and four months behind in reading by the end of the school year.” Further, across the nation, the “pandemic widened preexisting opportunity and achievement gaps, hitting historically disadvantaged students hardest.

**NSJV Kindergarten Enrollment**

![Graph showing kindergarten enrollment](source: California Department of Education)
In math, students in majority Black schools ended the year with six months of unfinished learning, students in low-income schools with seven.”57 Although beyond the scope of this study, another significant finding from national studies that most likely applies in the NSJV suggests that “the crisis had an impact on not just academics but also the broader health and well-being of students, with more than 35 percent of parents very or extremely concerned about their children’s mental health.”58 With an understanding of the inequities and challenges in education laid bare by the pandemic, the NSJV must not only consider how best to help students catch up from pandemic-induced impacts but also how to help improve a system with longstanding issues predating the pandemic.

**K-12 SYSTEM IMPACTS**

The onset of the pandemic realized a significant impact on enrollment in primary/elementary education and high school (K-12). While public school enrollment typically increases each year on a national basis, the pandemic coincided with a significant decline in public school enrollment. The earliest grade levels realized the greatest losses. Overall, nationally, public school enrollment dropped by approximately 3 percent in 2020, which means approximately 1.5 million students left the U.S. public education system about six months after the World Health Organization declared COVID-19 a pandemic. According to research from Stanford University, for the traditional school system, the “enrollment decline is an important leading indicator of the educational impact of the pandemic. In particular, the existence and magnitude of this enrollment decline implies a myriad of potential consequences for schools and students.”59

Like California as a whole, which realized a declining K-12 enrollment in private and public schools even before the pandemic, K-12 enrollment in public schools regularly increased each year prior to the pandemic in the NSJV. After the pandemic, public school enrollment declined in the NSJV at about half of the rate that it declined in California and the United States as a whole.

Similar to the statewide and national trends noted above, the decline in overall K-12 public school enrollment experienced in the NSJV largely reflects significant declines in kindergarten enrollment. Whereas the United States as a whole experienced a 9 percent decline in kindergarten enrollment, California posted a 12 percent decline, the NSJV realized a nearly 11 percent decline. The next largest public school enrollment

<table>
<thead>
<tr>
<th>Racial/Ethnic Group</th>
<th>2018</th>
<th>2019</th>
<th>2020</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Enrollment</td>
<td>% Change</td>
<td>Enrollment</td>
</tr>
<tr>
<td>Hispanic or Latino</td>
<td>190,715</td>
<td>1.9%</td>
<td>193,074</td>
</tr>
<tr>
<td>White</td>
<td>64,274</td>
<td>-2.4%</td>
<td>62,516</td>
</tr>
<tr>
<td>Asian, including Filipino</td>
<td>32,690</td>
<td>1.5%</td>
<td>33,415</td>
</tr>
<tr>
<td>African American</td>
<td>16,086</td>
<td>-0.5%</td>
<td>15,950</td>
</tr>
<tr>
<td>Two or More Races</td>
<td>9,383</td>
<td>6.7%</td>
<td>9,787</td>
</tr>
<tr>
<td>Pacific Islander</td>
<td>2,001</td>
<td>-0.5%</td>
<td>2,017</td>
</tr>
<tr>
<td>American Indian or Alaska Native</td>
<td>1,969</td>
<td>-3.8%</td>
<td>2,055</td>
</tr>
<tr>
<td>Not Reported</td>
<td>3,481</td>
<td>0.3%</td>
<td>3,523</td>
</tr>
</tbody>
</table>

Source: California Department of Education
decline occurred at another transition point, middle school, which experienced a 2.9 percent decline in enrollment in grades 6 and 7, as well as a 3.3 percent decline in grade 8 enrollment, in Fall 2020; however, public high school enrollment, another transition point, experienced an increase in the NSJV, with enrollment in grades 9 and 10 both increasing by over 3.5 percent in Fall 2020.

Analyzing the public school enrollment data by race and ethnicity, the table at the bottom of the previous page (page 37) shows that “African-American”, “American Indian or Alaska Native”, and “White” groups realized the greatest percentage declines in enrollment after the pandemic. “Asian” and “Two or More Races” posted small increases in the number of students enrolled; however, these increases represent a decline in the rate of enrollment increases realized in prior years. “Hispanic or Latino” enrollment went from a three-year average of 1.6 percent growth prior to the pandemic to a 0.3 percent decrease in enrollment after the onset of the pandemic.

Unlike the K-12 public school enrollment disparities experienced with regard to race and ethnicity, the rate of enrollment declines for females (-1.3 percent or 2,116 less students from 157,501 in 2019 to 155,385 in 2020) and males (-1.4 percent or 2,219 less students from 164,813 in 2019 to 162,594 in 2020) appeared roughly equal in the NSJV.

Similar to the trend statewide that saw a 2.3 percent increase in charter school enrollment after a 3.2 percent increase the prior year, charter school enrollment—driven by increases in San Joaquin County—increased by 3.98 percent after the onset of the pandemic, which represents a decrease in the rate of growth from prior years.

Similarly, while dropout rates remained fairly constant in California as a whole, actually slightly declining after the start of the pandemic, dropout rates, largely driven by San Joaquin County, increased in the NSJV (except in Merced County).

Indeed, whereas dropout rates improved slightly (0.12%) statewide after the onset of the pandemic, dropout rates worsened in the NSJV overall by about 1.7 percent during that same time period. This pattern largely reflects the findings of a national study, which similarly demonstrated that “High schoolers have become more likely to drop out of school, and high school seniors, especially those from low-income families, are less likely to go on to postsecondary education.”

Similar to these national findings, of the 318,031 K-12 students enrolled in the NSJV during the onset of the pandemic, over 67 percent (214,407 students) were eligible for free/reduced-price meals compared to nearly 59 percent of K-12 students eligible statewide—and enrollment in postsecondary education declined in the NSJV.

ADULT EDUCATION SYSTEM IMPACTS

A recent poll found that “37 percent of adults pursuing education abandoned their educational

<table>
<thead>
<tr>
<th>Region</th>
<th>2018-19</th>
<th>2019-20</th>
</tr>
</thead>
<tbody>
<tr>
<td>California</td>
<td>84%</td>
<td>84%</td>
</tr>
<tr>
<td>NSJV</td>
<td>85%</td>
<td>83%</td>
</tr>
<tr>
<td>Merced</td>
<td>91%</td>
<td>91%</td>
</tr>
<tr>
<td>San Joaquin</td>
<td>84%</td>
<td>80%</td>
</tr>
<tr>
<td>Stanislaus</td>
<td>84%</td>
<td>83%</td>
</tr>
</tbody>
</table>

Source: California Department of Education
goals due to financial hardships, changes at work, or lack of access to programs” during the pandemic. Reflecting this, after increasing by about 11.1 percent in 2017 to 2018, statewide enrollment in adult education, as measured by reportable individuals, declined by about 6 percent in 2018-2019 and, after the onset of the pandemic, decreased by approximately 13.4 percent in 2019-2020 and 30.2 percent in 2020-2021.

The Gateway Adult Education Network, Delta Sierra Adult Education Alliance, and Stanislaus Mother Lode (Yosemite) Consortium provide adult education services to students in a geographic area centered around the NSJV, but also including a smaller service population that includes all or part of six other counties. Adult schools often provide free or low-cost classes for adults to meet a variety of career, community, and educational goals; however, similar to the statewide decline in enrollment, enrollment in the consortia serving the NSJV declined by approximately 17 percent in 2019-2020 (-2,851 students) and by another 44.9 percent in 2020-2021 (-4,108 students) after decreasing by about 1.7 percent in 2018-2019 and increasing by about 12.3 percent in 2017-2018. Thus, enrollment in the adult education consortia serving the NSJV declined by 54.3 percent from 2018-2019 to 2020-2021.

Interestingly, while enrollment declined in traditional adult education models, data shows “demand is booming for flexible, digital offerings,” such as the alternative credentials “awarded by companies, industry associations, and other non-institutional providers, which have increased around 75 percent over the last year.” Thus, the pandemic realized a continued trend “of the growing appeal of non-degree credentials” offered through an online platform in “non-institutional and non-traditional contexts” at a time when many employers are “embracing skills-based hiring practices.”

With hundreds of thousands of new infrastructure jobs generated through increased public funding and investment, the demand for skilled workers to fill resulting vacancies will continue to increase. While community colleges train students to fill workforce needs, community college enrollment drastically decreased during this period of intensifying demand for skilled labor. Further, the decline in enrollment appeared particularly acute among skills trades courses. As one article on the topic noted, “[w]hile most lecture courses were able to go virtual, it was nearly impossible for on-site labs and workshops, where students learn by working with tools, machinery and equipment.”

In addition to the practical difficulties of learning and teaching hands-on skills during a pandemic, many prospective students chose to pursue work opportunities instead of education.

**COMMUNITY COLLEGE SYSTEM IMPACTS**

Similar to the concerns raised with regard to emotional and mental health in the introduction of this section, “[a]fter almost two years of remote schooling, restricted gatherings and constant...
Testing, many students are anxious, socially isolated, depressed — and overwhelming mental health centers.” Indeed, a third of college students reported a mental health disorder in 2020 and a quarter report taking psychiatric medications, and 73 percent of university presidents reported student mental health as their greatest concern. During isolation, students and their friends changed, and the pandemic provided few opportunities to develop new connections. Some of these college students started college with little orientation and after already missing “all the rituals of senior year in high school — a real prom, college tours, graduation.”

Amidst this, national data suggest that students’ top concerns include “[l]oneliness or isolation, along with loss of motivation or focus.”

Unlike K-12 students who face increased stress at home and in schooling due to the pandemic, college students often face the stress of transitioning to college, including, for some, the transition to a new, more independent living situation. Thus, a survey of California college students found increased levels of concern for finances, courses, and wellbeing after the onset of the pandemic. In addition to the stresses already faced by many college students, the pandemic realized elevated concerns about climate change and brought an economic crisis that “has put many students and their family members out of work. Remote instruction comes with its own stressors, from unusual schedules to racist Zoombombers. First-generation and immigrant students sheltering at home say they are taking on more family responsibilities, while many Black students face compounded anxiety over the killing of George Floyd and violent police responses to ensuing protests.” Further, while the pandemic exacerbated the trend, “the rate of depression, anxiety and serious thoughts of suicide has doubled among college students” over the last decade.

Within public higher education in California, the onset of the pandemic led to swift enrollment declines in the California community college system starting in Fall 2020, the CSU system’s enrollment decline did not occur until fall 2021, and the UC system experienced slight enrollment increases in each of the years after the onset of the pandemic. Similar to the inequitable impact of the onset of the pandemic on students in K-12 education, “colleges of all kinds grapple with how to come back from a pandemic that deepened existing educational inequities.” Indeed, as David O’Brien, vice chancellor of governmental relations for the California community college system recognized, “COVID did not create new challenges or inequities for our system and our students so much as it shined a spotlight on and exacerbated in many cases the challenges that were already there.”

Community colleges provide valuable education and training to equip individuals with greater knowledge and understanding to engage with society and to pursue a variety of interests, as well as skills to secure better jobs. Despite the importance of the community college system, enrollment “fell roughly by 10 percent nationally – a loss of over 544,200...
students – in fall 2020 compared to fall 2019.75

Even greater than the 12 percent decline in enrollment in kindergarten in California, some estimates indicate that California community college enrollment declined by about 15 percent to the lowest level in at least three decades.76 This translates to over 300,000 less students in “the nation’s largest, most accessible system for higher learning, and for a student body that skews lower-income, more racially and ethnically diverse, and older than those at four-year institutions.”77 Statewide, enrollment declined most drastically among African American students, Native American students, male students and older students.78 And the decrease in students aged 40 and over accounted for nearly a third of the overall decline in enrollment.79

Although enrollment data continues a refinement process, the latest numbers available at this time indicate that the California community college system experienced a nearly 12 percent decline in enrollment between the 2019-2020 and 2020-2021 years. And this decline came after realizing an approximately 1.9 percent enrollment decline in the prior year and an approximately 0.3 percent decline in 2018 to 2019—and five years of similarly small growth before then. With 283,296 less students than the prior year, the 2020-2021 student head count of 2,137,763 represents the result of the sharpest annual decline in enrollment since the dataset began in 1992, as well as the lowest annual enrollment since 1995-1996’s student head count of 2,125,691.80

With declining enrollment, some see a future of intensified poverty and unemployment, lessened civic engagement and innovation, more divisiveness, slowed economic growth, escalated labor shortages, lowered life expectancies, increased depression and divorce rates, greater demand for social services, and diminished tax revenues.81

Similar to statewide enrollment in California community colleges, the NSJV, largely driven by a 14.8 percent decline at Modesto Junior College, experienced a significant decline in enrollment after the onset of the pandemic. Indeed, community college enrollment in the NSJV, as measured by annual student head count, decreased by about 9.2 percent, representing 6,512 less students, between 2019-2020 and 2020-2021 after previously increasing every year since 2013. Like California community college enrollment as a whole, the overall decline in enrollment in the NSJV represented the sharpest annual decrease in enrollment since the dataset began in 1992.82

Nationally, some studies on college enrollment have reported that “men have been hit particularly hard — accounting for roughly three-fourths of pandemic-driven dropouts — and depicted an accelerating crisis in male enrollment” that started in the late 1970s.83 Indeed, after the onset of the pandemic, “women were less likely than men to leave community college, despite their disproportionate responsibility for caregiving and domestic work, because they no doubt understood the bleak long-term job prospects for women
Without a credential.” While females continue to face an increased need to enroll in college, as well as lower wages despite higher college enrollment, some “view the male-driven dive in community college enrollment over the last 18 months as a calamity.”

California experienced an approximately 16.1 percent decrease in male enrollment after the onset of the pandemic compared to a nearly 8 percent decrease in female enrollment in the same time period, which exacerbated the recent trend of a declining male proportion of the student population from about 45 percent of the student population in 2016 to about 42 percent in 2021. The NSJV similarly experienced a sharp decline in male enrollment that continued a trend in male students’ decreasing proportion of the student population. Indeed, whereas female enrollment significantly dropped by about 5.3 percent (-2,253 students from 42,132 in 2019-2020 to 39,878 in 2020-2021) in 2021 after years of increases in the NSJV, male enrollment dropped by about 14.9 percent (-4,095 students from 27,408 in 2019-2020 to 23,313 in 2020-2021)—nearly three times as much of a percentage decline and nearly double the absolute decline—in the NSJV during the same time period. As a result, the proportion of male community college students in the NSJV dropped over four percentage points from about 40.6 percent in 2016 to about 36.4 percent in 2021.

Interestingly, all three community colleges in the NSJV experienced a decline in female and male enrollment, with Merced College’s female enrollment dropping by approximately 3 percent and male enrollment dropping by about 16.1 percent, Modesto Junior College’s female enrollment dropping by about 12.5 percent and male enrollment dropping by about 25.7, and San Joaquin Delta College’s female enrollment dropping by less than 1 percent and male enrollment dropping by about 11.3 percent after the onset of the pandemic.

**UNIVERSITY SYSTEM IMPACTS**

A recent article noted that undergraduate and graduate enrollment declined across the nation and that “[n]early one million fewer students have enrolled in higher education since the beginning of the pandemic. The losses have been felt across all types of institutions and in almost every state.” Indeed, nationally, “public four-year universities have seen undergraduate enrollment fall about 2.5%” in 2021. In California, 17 of the 23 CSU campuses experienced enrollment declines in 2021. Overall, looking at the impact of the pandemic on higher education in California and the NSJV, the onset of the pandemic correlated with different outcomes between community colleges, the private non-profits, and the state’s CSU and UC systems.

Whereas enrollments drastically declined for NSJV community colleges in 2020, enrollments decreased slightly for University of the Pacific (UOP) and increased slightly for CSU Stanislaus and UC Merced. By Fall 2021, however, retention of CSU students declined and the system “entered...
this school year with fewer than 57,000 first-year freshman, representing a 16 percent decline from the previous fall and making it the smallest such class since 2011.” And, similar to enrollment declines in the community college system, Sylvia Alva, executive vice chancellor for academic and student affairs with the CSU system, noted that “underserved students were most reflected in these drops.”

Meanwhile, UOP realized a more moderate decrease in enrollment in 2021. UC Merced reported another enrollment increase in Fall 2021 after a record number of admissions across the UC system. Whereas enrollment declines largely fell on some of the most underserved and vulnerable populations in the community college and CSU systems, the UC system, while more difficult to achieve admission than in the past, admitted its “largest most diverse class ever” in 2021. Indeed, “the University of California drew a record number of applicants for fall 2021 while CSU applicants tumbled — a disparity reflected nationally by robust growth at many selective institutions and struggles at less resourced ones.”

Less-resourced community colleges in California, including those in the NSJV, serve a particularly diverse student body and provide socio-economic mobility and greater opportunities to support progress toward a more equitable society. With the decline in enrollment, some higher education researchers note that “[t]he gains that we made in reducing class-based and racial inequality are being wiped away.” Indeed, since the community college “transfer role is especially important for low-income students, first-generation college students and students from underrepresented groups because they’re more likely to start their higher education journey in a community college,” less community college students further exacerbates growing inequality. And with community colleges normally providing tens of thousands of transfer students to CSU and UCs, as well as to private non-profit institutions, the impacts could reverberate throughout higher education as a whole.

Safety

The onset of the COVID-19 pandemic realized significant impacts on crime rates. Governments around the world often responded to the COVID-19 pandemic by restricting activities, such as through travel restrictions, business closures, curfews, and stay-at-home orders implemented in early 2020. Global studies demonstrate “that more stringent restrictions over movement in public space were predictive of larger declines in crime.” Indeed, the pandemic realized reductions in nearly all types of crime. Unlike other types of crime, however, initial studies suggest that homicide rates typically realized a small, statistically insignificant reduction in a sample of cities around the world during the pandemic.

In the United States specifically, one study found that “[w]hile overall crime rates are lower than they have been in past years, homicides and shootings are much higher than usual.” The study also found that “Home burglaries dropped while commercial burglaries and car thefts rose” nationwide. Another study of the impact of the pandemic on crime in a sample of U.S. cities found that the number of crimes reported, the number of arrests, and the number of persons jailed all decreased.
after the onset of the pandemic. Similarly, the study found an increase in motor vehicle thefts, but also found “[t]here were mixed reports from jurisdictions, with some reporting a decrease in violent crimes and others seeing the crimes double during the pandemic.”

Whereas the NSJV possessed relatively high crime rates before the pandemic, the pandemic realized a closing of the gap between crime rates of the NSJV and rates statewide. Similar to the aforementioned global and national findings, crime rates, arrests, and jail populations in the NSJV generally declined during the pandemic. Indeed, in the NSJV, theft was down in all monetary values, shoplifting was substantially down, burglary was down, domestic violence calls were slightly down by about 1 percent, arrests for status offenses, property offenses, and misdemeanor offenses were down, and the average daily population in county jails began to reduce in the NSJV by June 2020. While property crime and violent crime both drastically declined overall in the NSJV to some of the lowest levels on record, arson and homicides increased significantly.

The impact on violent crime rates varied among the NSJV, California, and the United States as a whole. Indeed, whereas the violent crime rate increased to its highest level in the last decade in the United States and stayed nearly the same in California in 2020, the 2020 violent crime rate in the NSJV decreased to its lowest level in the entire decade under study from 2011 to 2020.

The unique impact on violent crime rates in the NSJV vis-à-vis California and the United States as a whole after the onset of the pandemic warrants further study to understand the mechanisms driving the differences in change. For example, additional study might control for factors related to “population size and density, economic conditions, employment rates, prosecutorial, judicial, and correctional policies, administrative and investigative emphases of law enforcement, citizens’ attitudes toward crime and policing, and the effective strength of the police force.”
Impacts on Housing

Like California as a whole, the North San Joaquin Valley (NSJV) continues to experience an escalating housing affordability crisis that predates the pandemic. Overall, while the pandemic did not cause the longstanding affordability crisis in California and the NSJV, data suggests that it exacerbated it. With a higher demand for housing in the NSJV, coupled with a lower supply, as well as a host of challenges faced by some of the most underserved and vulnerable, the pandemic made the need for affordable housing even more acute.

SUPPLY AND DEMAND IMPACTS

Heightened demand for and limited supply of housing can lead to higher housing costs, which can create affordable housing challenges and reduce the attractiveness of the region for new business investment. Further, high housing costs reduce disposable income and can make meeting other financial needs a challenge for households. Limited affordable housing can result in long commutes, limited free time, and increased traffic congestion.

Demand for housing, as represented by sales count and time on market, increased in the NSJV after the onset of the pandemic. All NSJV counties experienced more single-family home sales in April 2021 compared to April 2020, with Merced County posting 0.8 percent more sales, Stanislaus County posting 26 percent more sales, and San Joaquin County posting 18 percent more sales. Overall, sales of single-family homes in the NSJV initially went down after the onset of the pandemic until about July 2020 when sales, except in Merced County, generally went up until about July 2021.101

Additionally, as another indication of the increased demand for housing during the pandemic, the median time a single-family home stayed on the market decreased after the onset of the pandemic. In 2019 the median number of days a single-family home stayed on the market was 24 in California overall, 29 in Merced County, 17 in Stanislaus County, and 21 in San Joaquin County. However, by 2021, the median days on the market in California was 10 days (a nearly 60% decline from 2019), in Merced County it was 9 days (a nearly 70% drop), in Stanislaus County 7 days (an approximately 59% reduction), and in San Joaquin County it was 8 days (a decline of approximately 62%).102 Thus, multiple measures indicate that demand for housing intensified during the pandemic.

While demand increased, supply, as measured by new listings and overall inventory, fell significantly after the onset of the pandemic. The pandemic realized less new listings and a smaller inventory of houses for sale overall in the United States and within the NSJV. New listings in the NSJV dropped from 1,636 in April 2019 to 1,469 in April 2021—an over 10 percent decline.103 The reduction in inventory not only represented a drop in new listings but also a loss in overall listings available. For example, while the NSJV listed 3,821 single family homes for sale in April 2019, after the onset of the pandemic that number dropped to 3,069 in April 2020, and it had declined to 2,151 by April 2021—a 44 percent drop in inventory between April 2019 and April 2021.104

Regarding supply from new development in the NSJV after the pandemic’s onset, the table on the next page (page 46) displays the average number of residential building permits issued in NSJV jurisdictions between 2018-19 and 2020-21. This data shows a significant increase in construction

<table>
<thead>
<tr>
<th>Geography</th>
<th>2019</th>
<th>2021</th>
</tr>
</thead>
<tbody>
<tr>
<td>California</td>
<td>21</td>
<td>10</td>
</tr>
<tr>
<td>Merced County</td>
<td>29</td>
<td>9</td>
</tr>
<tr>
<td>Stanislaus County</td>
<td>17</td>
<td>7</td>
</tr>
<tr>
<td>San Joaquin County</td>
<td>21</td>
<td>8</td>
</tr>
</tbody>
</table>

Source: California Association of Realtors (C.A.R.)
across the region, but especially in San Joaquin County where the average annual number of single-family building permits has risen 25% since the pandemic. Again, this growth in construction is occurring in communities with the greatest proximity to the San Francisco Bay Area, with Lathrop leading the growth of building permits in San Joaquin County, Patterson leading growth in Stanislaus County, and Los Banos leading Merced County’s increase.

Another important feature of residential construction during the pandemic has been a decline in multi-family units. In the years prior to the pandemic, multi-family units had formed 14 percent of residential building permits, but that share began to decline with the onset of the pandemic, dropping to just six percent in 2021. Whether due to changing consumer preferences, supply chain disruptions caused by the pandemic, or something else altogether, the relative decline in multi-family units adds to the NSJV’s socio-economic challenges.

A related difficulty associated with the supply of housing is a general decline in the number of smaller “starter” or “entry level” homes being built. For example, one recent national study on the housing market found that construction of entry level homes (i.e., homes less than 1,400 square feet) has been in decline for several decades and that

### RESIDENTIAL BUILDING PERMITS IN THE NSJV

<table>
<thead>
<tr>
<th>City</th>
<th>Single Family Units</th>
<th>Multi-Family Units</th>
<th>% Change</th>
<th>Average '18-'21</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Avg '18-'19</td>
<td>Avg '20-'21</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Atwater</td>
<td>31</td>
<td>15</td>
<td>-52%</td>
<td>0</td>
</tr>
<tr>
<td>Dos Palos</td>
<td>3</td>
<td>2</td>
<td>-40%</td>
<td>0</td>
</tr>
<tr>
<td>Gustine</td>
<td>5</td>
<td>5</td>
<td>0%</td>
<td>0</td>
</tr>
<tr>
<td>Livingston</td>
<td>78</td>
<td>63</td>
<td>-19%</td>
<td>1</td>
</tr>
<tr>
<td>Los Banos</td>
<td>238</td>
<td>362</td>
<td>52%</td>
<td>1</td>
</tr>
<tr>
<td>Merced</td>
<td>611</td>
<td>656</td>
<td>7%</td>
<td>100</td>
</tr>
<tr>
<td>Unincorporated Areas</td>
<td>132</td>
<td>57</td>
<td>-57%</td>
<td>0</td>
</tr>
<tr>
<td><strong>Merced County Totals</strong></td>
<td>1,097</td>
<td>1,158</td>
<td>6%</td>
<td>102</td>
</tr>
<tr>
<td>Ceres</td>
<td>42</td>
<td>11</td>
<td>-74%</td>
<td>0</td>
</tr>
<tr>
<td>Hughson</td>
<td>15</td>
<td>14</td>
<td>-7%</td>
<td>5</td>
</tr>
<tr>
<td>Modesto</td>
<td>173</td>
<td>163</td>
<td>-6%</td>
<td>53</td>
</tr>
<tr>
<td>Newman</td>
<td>31</td>
<td>4</td>
<td>-89%</td>
<td>0</td>
</tr>
<tr>
<td>Oakdale</td>
<td>35</td>
<td>39</td>
<td>10%</td>
<td>30</td>
</tr>
<tr>
<td>Patterson</td>
<td>25</td>
<td>92</td>
<td>268%</td>
<td>1</td>
</tr>
<tr>
<td>Riverbank</td>
<td>29</td>
<td>38</td>
<td>32%</td>
<td>1</td>
</tr>
<tr>
<td>Turlock</td>
<td>90</td>
<td>131</td>
<td>46%</td>
<td>0</td>
</tr>
<tr>
<td>Waterford</td>
<td>56</td>
<td>105</td>
<td>88%</td>
<td>1</td>
</tr>
<tr>
<td>Unincorporated Areas</td>
<td>104</td>
<td>29</td>
<td>-72%</td>
<td>2</td>
</tr>
<tr>
<td><strong>Stanislaus County Totals</strong></td>
<td>597</td>
<td>622</td>
<td>4%</td>
<td>91</td>
</tr>
<tr>
<td>Escalon</td>
<td>9</td>
<td>11</td>
<td>24%</td>
<td>0</td>
</tr>
<tr>
<td>Lathrop</td>
<td>323</td>
<td>633</td>
<td>96%</td>
<td>37</td>
</tr>
<tr>
<td>Lodi</td>
<td>175</td>
<td>187</td>
<td>7%</td>
<td>40</td>
</tr>
<tr>
<td>Manteca</td>
<td>527</td>
<td>669</td>
<td>27%</td>
<td>7</td>
</tr>
<tr>
<td>Ripon</td>
<td>77</td>
<td>12</td>
<td>-84%</td>
<td>12</td>
</tr>
<tr>
<td>Stockton</td>
<td>493</td>
<td>593</td>
<td>20%</td>
<td>95</td>
</tr>
<tr>
<td>Tracy</td>
<td>418</td>
<td>392</td>
<td>-6%</td>
<td>169</td>
</tr>
<tr>
<td>Unincorporated Areas</td>
<td>524</td>
<td>674</td>
<td>29%</td>
<td>18</td>
</tr>
<tr>
<td><strong>San Joaquin County Totals</strong></td>
<td>2,544</td>
<td>3,170</td>
<td>25%</td>
<td>378</td>
</tr>
</tbody>
</table>

Source: CIRB
decrease has accelerated since the Great Recession. This has led to a situation where the number of entry level homes “is more than 80 percent lower than the amount built in the 1970s.” At a time when the NSJV and the nation needs more affordable units in denser, walkable communities, it appears that the opposite is occurring with greater prevalence.

PRICES AND AFFORDABILITY

As a result of a swelling demand for the diminished supply of housing in the NSJV after the onset of the pandemic, housing prices increased during a period in which many households already experienced reduced employment and reduced income. Indeed, whereas the percentage of households that could afford to purchase a median-priced, single-family home in California was 26 percent in February 2018, 30 percent in February 2019, and 33 percent in February 2020, the amount reversed its positive trajectory and dropped to 23 percent by February 2021.

While people often view the NSJV as an affordable alternative to the Bay Area, the data shows housing affordability as a growing challenge for the region. Rents are rising at some of the fastest rates in the nation. In addition to supply and demand dynamics, the lack of affordable housing in the NSJV results from a variety of causes, including rising construction costs and development fees that result in less multifamily units in particular, as well as population growth increasing demand for housing in the region.

The U.S. Department of Housing and Urban Development defines cost-burdened households as those who spend more than 30% of their household income on housing. As displayed in the table at the top of this page, whereas 49 percent of U.S. renter households and 27 percent of U.S. owner households with a mortgage are cost-burdened, it is 54 percent of renter households and 38 percent of owner households with a mortgage in California. Largely in line with data for California as a whole, 52 percent of renter households and 35 percent of owner households with a mortgage in the NSJV are

<table>
<thead>
<tr>
<th>Geography</th>
<th>Percentage of owners with mortgage spending more than 30% of income on housing</th>
<th>Percentage of renters spending more than 30% of income on housing</th>
</tr>
</thead>
<tbody>
<tr>
<td>NSJV</td>
<td>35%</td>
<td>52%</td>
</tr>
<tr>
<td>Merced County</td>
<td>33%</td>
<td>48%</td>
</tr>
<tr>
<td>Stanislaus County</td>
<td>36%</td>
<td>52%</td>
</tr>
<tr>
<td>San Joaquin County</td>
<td>34%</td>
<td>54%</td>
</tr>
<tr>
<td>U.S.</td>
<td>27%</td>
<td>49%</td>
</tr>
<tr>
<td>California</td>
<td>38%</td>
<td>54%</td>
</tr>
</tbody>
</table>

Source: U.S. Census Bureau
housing cost-burdened.\textsuperscript{110} The U.S. Census Bureau considers housing units with more than one person per room as crowded and those with more than 1.5 persons per room as severely crowded.\textsuperscript{111} As the figure on the previous page (page 47) shows, California and NSJV households have much higher rates of crowding and severe crowding than overall households nationwide.\textsuperscript{112} Although reliable data is not yet available for the period after the onset of the pandemic, the increase in housing costs likely worsened the percentage of cost-burdened and overcrowded households, especially since income did not keep pace with the rise in the cost of housing.

The likely increase in cost-burdened households and overcrowding corresponds with a large increase in the cost of housing in the NSJV before and especially after the onset of the pandemic. Indeed, while the nation realized a national rent rate increase of 11.3 percent over five years, San Joaquin County recently posted the nation’s fastest growing rents after rising 29 percent in just five years.\textsuperscript{113} By 2021, the annual average of monthly average rents in San Joaquin County appeared about 34 percent higher than that of the United States as a whole.\textsuperscript{114}

Further, in the 21 months from April 2020 through December 2021, the median price of a single-family home in California increased over 31 percent, and it increased by about 37 percent in Merced County, by nearly 26 percent Stanislaus County, and by over 24 percent in San Joaquin County.\textsuperscript{115} Looking at home prices in the NSJV from the onset of the pandemic to December 2021, the figure on the bottom of the next page shows this price escalation after the pandemic’s onset. By comparison, the median price in the 21 months from April 2018 through December 2019 went up just 5.2 percent in California, 7.6 percent in Merced, 9.5 percent in Stanislaus County, and 4.4 percent in San Joaquin County.\textsuperscript{116}

Median home values also increased after the onset of the pandemic in March 2020 across each of the NSJV counties. Between March 2020 and

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**MEDIAN PRICE OF SINGLE-FAMILY HOMES**

Source: California Association of Realtors
December 2021, home values increased by over 29 percent in California as a whole, by about 37 percent in Merced County, by nearly 32 percent in Stanislaus County, and by about 38 percent in San Joaquin County.

With costs of owning or renting a home rising dramatically after the onset of the pandemic, the onset of the pandemic exacerbated the NSJV’s housing affordability crisis. Projections suggest that the trend in rising costs will continue. For example, in terms of a forecast, data suggests that the gap between San Joaquin County values and U.S. values will continue to widen with San Joaquin County projected to realize a 15.3 percent increase in home values over the next year compared to the projected U.S. home value increase of 14.3 percent.

To afford a home, homebuyers often delay purchasing a home, sacrifice a greater portion of their income for housing, share housing expenses with more people, increase commute times, and/or move out of the NSJV. Thus, the lack of affordable housing production contributes to a whole host of negative externalities, such as poverty, food insecurity, crowded housing (crowded housing is four times more common in California than in the U.S. as a whole), traffic, and environmental degradation; in turn, these also contribute to other negative outcomes, such as negative impacts on health, well-being, familial relationships, and educational achievement. Clearly then, the NSJV needs more housing, and the pandemic has increased this need.

Impacts on Transportation

Across the United States, the pandemic-induced lockdowns corresponded with a significant decline in the amount of time spent at one’s place of employment. As a result, telework and working from home became widespread. Though regional data is not available, national statistics indicate that, in May
March 2021, and it was down to 11 percent by March 2022, the pandemic has created a fundamental shift in the workplace with hybrid and remote flexibility part of the future of work for many. Like so many aspects of the pandemic, the impact of remote flexibility on the NSJV and its transportation systems vary considerably. Using anonymized data from Google COVID-19 Community Mobility Reports, the table on the previous page (page 49) shows regional and inter-regional differences in the amount of time spent away from home at their workplace during the pandemic compared to January 2020. While the time spent at people’s workplace has increased everywhere since the days of pandemic stay-at-home orders in April 2020, there are striking differences at the inter-regional level. For example, the time spent at the workplace has risen 89 percent in Merced County, from down 38 percent in April 2020 to down four percent in April 2022; but in the Oakland-Hayward-Berkeley MD the time spent at the workplace has risen 44 percent, from down 61 percent by April 2020 to 34 percent in April 2022.

While post-pandemic commuting data is not currently available, we know that prior to the pandemic some hundred thousand NSJV residents’ primary place of employment was in the San Francisco Bay Area. The figure on the previous page (page 49) shows that these inter-regional commuters far outnumber flows between other regions, even much more populous regions like the Greater Sacramento Area. Given the evidence of the pandemic continuing and possibly increasing, as well as the in-migration of residents from the San Francisco Bay Area to the NSJV region, the extent to which inter-regional commuting numbers change after the pandemic will be an important indicator to track. Although remote flexibility creates some hope for reducing travel time for commuters across the NSJV, the return to pre-pandemic time at the workplace across the NSJV and increasing frequent reports of congestion on regional highways and roads tempers that optimism.

Among factors rebounding and potentially

Source: APTA Ridership Trends
“A lack of attention to health care access and utilization for vulnerable populations, such as farmworkers, may threaten their lives and livelihoods, as well as the communities they live in and the essential work they do for society.”

The occupational profile of NSJV residents will also influence the extent to which remote flexibility impacts commuting activity. For example, in May of 2020 some 77 percent of people in computer and mathematical occupations reported that they teleworked because of COVID-19; however, in contrast, only 8 percent of people in service occupations teleworked. If NSJV jobs and NJSV inter-regional commuters are in occupations that require being on site, the impact of remote flexibility on commuting flows and associated congestion will be muted.

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The costs of congestion are not limited to additional time in traffic. Congestion increases engine idle time and inefficient accelerations and decelerations, including associated air pollution, fuel waste, and wear and tear on the vehicle. As an environmental justice issue, studies suggest that low-income people, people of color, and people with low levels of English proficiency tend to experience impacts of traffic pollution at disproportionately high rates. Further, congestion increases domestic violence, mental health risks, physical health risks, and risk of accidents. And congestion reduces employment growth and economic productivity. Additionally, congestion reduces travel reliability. In response to that uncertainty, travelers may schedule additional time to ensure they arrive at their destination on time—further increasing commuting costs.

Impacts on Health

The onset of the pandemic highlighted existing health inequities and exacerbated challenges related to access to health care and inequality of health outcomes. The figures on page 53 demonstrate some of the disparities with regard to age, race/ethnicity, and economic status. Indeed, the figure on the top-left of page 53 shows a direct relationship between COVID-19 vaccination rates and age in the NSJV: vaccination rates increased with age. Some of this may be explained by earlier access to vaccines for 65+ populations due to their increased vulnerability to COVID-19.
and later access for populations aged 5-11. The figure on the top-right of page 53 demonstrates disparities with regard to race/ethnicity in the NSJV, with “Asian” people experiencing the highest rates of vaccination, followed by “American Indian or Alaska Native” people, “Latino” people, “Black or African American” people, and “White” people. Finally, with regard to economic determinants of health and the impacts of COVID-19, data in the figure on bottom of page 53 elucidates an inverse relationship statewide between household income and the incidence of COVID-19. Ensuring vaccine access and utilization across all groups in society is important in order to prevent disparities and to prevent overall increases in cases over time in the population as a whole.

While local data is not available, Black, Indigenous and People of Color (BIPOC) people nationally experienced age-adjusted rates of hospitalization from COVID-19 infection at five times the rates of white people. Additionally, BIPOC people have been at greater risk from the virus, including with regard to infection, hospitalization, and mortality rates. Related to this, BIPOC people experience greater rates of pre-existing health conditions that elevate the risk of serious illness and death from COVID-19. Further contributing to a greater risk from COVID-19, researchers suggest that BIPOC people experience higher rates of living with more than one person per room, living in conditions with increased levels of air pollution, working in conditions with closer proximity to people, being unable to avoid working in person, relying on public transportation, and lacking access to personal protective equipment in the work environment. BIPOC people also possess a lower rate of access to health care and health insurance.

The experience of farmworkers in the San Joaquin Valley, which was hit especially hard by COVID-19, provides an illustrative example of significant health disparities experienced by BIPOC people and by people with lower incomes in the NSJV after the onset of the pandemic.

Indeed, research shows that the variety of “structural factors” and “social determinants of health” that lead to disproportionate impacts interact with regard to farmworker communities in the broader San Joaquin Valley. An estimated 650,000 farmworkers and members of their families live and work in the San Joaquin Valley, which includes the three counties in the NSJV plus much of Fresno, Kings, Madera, and Tulare counties. Latinx people represent about 97% of the farmworker population in California as a whole, with a majority lacking legal status (56%), and the population experiences more socio-economic disadvantage and fewer legal protections. Almost half (43%) lack health insurance. Thus, the experience of farmworkers during the pandemic highlights the disproportionate impact of the pandemic on some of the most vulnerable populations, including those in the NSJV. While data regarding farmworkers specifically is limited, half a year after the onset of the pandemic, data demonstrated many California counties with the highest per capita infection rates were heavily engaged in agriculture, including all of the counties in the NSJV.

Failing to prevent disparities can harm some of the most vulnerable populations, including essential workers, while also increasing risk of infection for the overall population. Reflective of many of the factors producing disparate access to health care for BIPOC people and people with lower incomes, after the onset of the pandemic, farmworkers continued to work as essential, yet low-income, workers in an industry with limited ability to practice social distancing and while living in conditions that are more often densely occupied. All of these factors are correlated with increased impacts from COVID-19 and with the uncertainty of impacts of long COVID and related disabilities. A lack of attention to health care access and utilization for vulnerable populations, such as farmworkers, may threaten their lives and livelihoods, as well as the communities they live in and the essential work they do for society.
COVID-19 VACCINATION BY AGE IN NSJV

VACCINATION BY RACE/ETHNICITY IN THE NSJV

CALIFORNIA’S COMMUNITY CASE RATE BY MEDIAN ANNUAL HOUSEHOLD INCOME

Source: California Department of Public Health

Source: Institute for Health Metrics and Evaluation
COVID-19

Comparative COVID-19 Mortality Rates

EMPLOYMENT

Employed Unable to Work Due to COVID-19

NSJV Employment Change by Sector
U.S. Bureau of Labor Statistics, Quarterly Census of Employment and Wages - All Employees in Total Covered Total, all industries for All establishment sizes

Change in Seasonally Adjusted Payroll Jobs Across Counties in the NSJV
U.S. Bureau of Labor Statistics, Quarterly Census of Employment and Wages - All Employees in Total Covered Total, all industries for All establishment sizes. Adjusted for seasonality with U.S. Census Bureau X-13 ARIMA-SEATS monthly seasonal adjustment method.

Job Postings by Qualifications
Emsi Burning Glass - economicmodeling.com

NCMR Labor Force Change 2019 to 2020
State of California Employment Development Department (EDD): Labor Market Information Division, Local Area Unemployment Statistics (LAUS)

NSJV Labor Force Changes
State of California Employment Development Department (EDD): Labor Market Information Division, Local Area Unemployment Statistics (LAUS)

NSJV Forecast Employment 2022-2060
CBPR employment forecast of the NSJV region, January 2022.

OUTPUT

NSJV Real GDP Trend
Bureau of Economic Analysis (BEA), Real GDP in Chained Dollars

Real GDP Change 2019 to 2020
Bureau of Economic Analysis (BEA), Real GDP in Chained Dollars

Real GDP by Industry and County Output By Industry and County
Bureau of Economic Analysis (BEA), Real GDP in Chained Dollars

NSJV Forecast Real GDP 2022-2060
CBPR gross regional product forecast of the NSJV region, January 2022.

INCOME

Real Income Per Capita Income Statewide and Across the NSJV
Bureau of Economic Analysis (BEA), Personal Income and Employment by County and Metropolitan Area, Personal Income, Population, Per Capita Personal Income (CAINC1)

Bureau of Economic Analysis (BEA), Personal Income and Employment by State, Personal Income, Population, Per Capita Personal Income, Disposable Personal Income, and Per Capita Disposal Personal Income (SAINC1/SAINC51)

Real Income Per Capita Income Statewide and Across the NCMR
Bureau of Economic Analysis (BEA), Personal Income and Employment by County and Metropolitan Area, Personal Income, Population, Per Capita Personal Income (CAINC1)

Bureau of Economic Analysis (BEA), Personal Income and Employment by State, Personal Income, Population, Per Capita Personal Income, Disposable Personal Income, and Per Capita Disposal Personal Income (SAINC1/SAINC51)

Percentage of NSJV Households Earning Less than Living Wage
I-PUMS Microdata of U.S. Census Bureau, American Community Survey (ACS) 5-Year Estimates, Mean Household Income of Quintiles (B19081)

Difficulty with Usual Household Expenses
U.S. Census Bureau, Household Pulse Survey (COVID-19)

Households experiencing Food Scarcity
U.S. Census Bureau, Household Pulse Survey (COVID-19)

AGRICULTURE

Total Real Value of Agriculture Production
Agricultural Commissioners, Annual Report of Agricultural Production in Merced, Stanislaus, and San Joaquin County

Agriculture Net Income in Trends
Bureau of Economic Analysis, Local Area Annual Series, Farm Income and Expenses (CA45)

Average Farm Expenses in NSJV
Bureau of Economic Analysis, Local Area Annual Series, Farm Income and Expenses (CA45)

Value of Agricultural Production Trends
Agricultural Commissioners, Annual Report of Agricultural Production in Merced, Stanislaus, and San Joaquin County
HEALTH CARE SYSTEM

**Number of COVID-19 Hospitalizations**  

**COVID-19 Mortality Rates**  

ENTREPRENEURSHIP

**Business Applications**  
U.S. Census Bureau, Business Formation Statics

TRANSPORTATION AND WAREHOUSING

**E-Commerce Retail as Percent of Total Sales**  
U.S. Census Bureau, Quarterly E-Commerce Report

**Transportation and Warehousing Jobs**  
U.S. Bureau of Labor Statistics, Quarterly Census of Employment and Wages

**Port of Stockton Exports & Imports**  
U.S. Census Bureau, U.S. Trade Online Database.

**NSJV Air Passenger & Air Freight**  
U.S. Bureau of Transportation Statistics, Transportation Statistics.

DEMOGRAPHICS

**Population in Change Statewide and across the NCMR**  
California Department of Finance, E-6. Population Estimates and Components of Change by County

**NSJV Population Change 2020 to 2021**  
California Department of Finance, E-6. Population Estimates and Components of Change by County

**Growth Rate of NSJV Cities with Populations over 20,000**  
California Department of Finance, E-1. Population Estimates by City

**NSJV Forecast Population 2020-2060**  
CBPR population forecast of the NSJV region, January 2022.

HUMAN CAPITAL

**NSJV Kindergarten Enrollment**  
California Department of Education, Education Data Partnership.

**NSJV Public School Enrollment K-12**  
California Department of Education, Education Data Partnership.

High School Graduation Rates  
California Department of Education, Four-Year Adjusted Cohort Graduation Rates & Outcomes, Four-Year Adjusted Cohort Graduation Rate

NSJV Adult Education Pipeline  
California Community Colleges—Launch Board: Adult Education Pipeline

NSJV Community College Enrollment  
California Community Colleges Chancellor’s Office, Management Information System Data Mart.

NSJV Community College Enrollment by Gender  
California Community Colleges Chancellor’s Office, Management Information System Data Mart.

NSJV University Enrollments  
California State University, Reports & Analytics; University of California, Information center, University of the Pacific, Fast Facts.

HOUSING

**Median Days on Market**  
California Association of Realtors, Historical Housing Data

**Residential Housing Permits in the NSJV**  
Construction Industry Research Board, CIRB Building Permit Data

**Cost-Burdened Households**  
U.S. Census Bureau, American Community Survey (ACS) 1-Year Estimates, Burdened Households (DP04)

**High Occupancy Housing**  
U.S. Census Bureau, American Community Survey (ACS) 1-Year Estimates, Occupants per room (DP04)

**Median Price of Single-Family Homes**  
Zillow Real Estate Research

TRANSPORTATION

**2019 Commuter Flows of Workers Into and Out of NSJV – Map**  
U. S. Census Bureau, Longitudinal Employer-Household Dynamics (LEHD), Origin-Destination Employment Statistics (LODES)

**Time Outside Home at Work**  
Opportunity Insight, Track the Recovery Database

**Regional Transit Ridership**  
American Public Transportation Association, APTA Ridership data.
to Economic Impact Payments during the COVID-19 Pandemic and the Role of Subjective Assessments of Well-Being: A View from the


While congress authorized over $5 trillion in pandemic relief, there has been nearly another trillion in relief from the Biden and former

1. An overview of the pandemic’s impact on essential and frontline workers is available at: https://econofact.org/essential-and-

2. Context on the Great Resignation is provided in: Fuller, J. & W. Kerr (2022), “ The Great Resignation Didn’t Start with the Pandemic”,

3. The definition of essential critical workers evolved over time, but the basics of who formed this group of workers is described on

the U.S. Cybersecurity and Infrastructure Security Agency website at: https://www.cisa.gov/identifying-critical-infrastructure-during-

covid-19
4. Further details of the US BLS Covid-19 supplemental data from the CPS can be found: https://www.bls.gov/cps/effects-of-the-
coronavirus-covid-19-pandemic.htm
5. Establishments were the focus of the Business Response Survey (BRS) to the coronavirus pandemic, details of which is available at:

https://www.bls.gov/brs/

bls.gov/brs/data/tables/2020/
7. For more information about the composition effect and its influence on real wages during the pandemic see: https://www.dallastfed.

org/research/economics/2022/0215
8. For more information about the Employment Cost Index see: https://www.bls.gov/ncs/ect/home.htm
9. Based on Employment Cost Index Table 8 Employment Cost Index for wages and salaries, released on 4/29/2022 and accessed

5/23/2022 at: https://www.bls.gov/ncs/ect/#tables
10. While preliminary estimates suggested Stanislaus County had also returned to pre-pandemic employment levels in March 2022,

revised and updated data released in June of 2022 suggests that employment in Stanislaus is still below pre-pandemic levels.

11. Source: Emsi Burning Glass – economicmodeling.com


14. Based on month to month employment comparisons to the year preceding the pandemic, March 2019 to February 2020, California Local Area Unemployment Statistics (LAUS), updated 5/20/2022 and accessed 5/23/2022 at: https://data.edd.ca.gov/Labor-Force-and-

Unemployment-Rates/Labor-Force-and-Unemployment-Rate-for-California-C/r8rw-9pxx/data
15. U.S. Bureau of Labor Statistics Quarterly Census of Employment and Wages (QCEW) program data adjusted for seasonality using the

X-13 ARIMA-SEATS seasonal adjustment software produced, distributed, and maintained by the U.S. Census Bureau. For further details see:

16. For further discussion of current thinking around the pandemic’s impact on the labor market see Hornstein, A & M. Kudlyak (2022)


17. In fact, the SF Bay Area’s growth is due to growth in Santa Clara County, in fact it had the largest GDP growth of any large county

in the nation (defined as those over 500,000 residents), for further discussion see G. Greschler (2021) “While most Bay Area

18. While congress authorized over $5 trillion in pandemic relief, there has been nearly another trillion in relief from the Biden and former

president Trump administrations in the form of disaster assistance and tax relief, and the Federal Reserve is estimated to have spent

some $4.2 trillion to stabilize the economy through monetary policy. The Committee for a Responsible Federal Budget track federal

pandemic expenditures on their website at: https://www.covidmoneytracker.org/

Economic Impact Payments during the COVID-19 Pandemic and the Role of Subjective Assessments of Well-Being: A View from the

papers/2021/ec210060.htm
20. A December 2020 survey conducted by the Community and Labor Center at the University of California, Merced found that 44 percent of rural San Joaquin Valley households in Merced, Fresno, and Tulare counties realized income reduction during the pandemic, 30 percent struggled to secure food, 15 percent could not pay rent, and 57 percent were unable to work from home. See Flores, E. (2020) “The Impact of the COVID-19 Pandemic on Rural San Joaquin Valley Households and Workers”, Research Brief, Community and Labor Center at the University of California Merced, December 2020. https://clc.ucmerced.edu/sites/clc.ucmerced.edu/files/page/documents/harvesting_safety_study.pdf The Center on Budget and Policy Priorities examines the effects of the pandemic on food, housing and employment challenges and the effects of pandemic-relief measures using data from the U.S. Census Bureau’s Housing Pulse Survey: https://www.cbpp.org/research/poverty-and-inequality/tracking-the-covid-19-economys-effects-on-food-housing-and

21. For further information see the U.S. Department of Agriculture Economic Research Service’s webpage on COVID-19’s economic implications for agriculture, food and rural communities at: https://www.ers.usda.gov/covid-19/


23. In comparison to the 3,437,664 million acres burned on average in 2020 and 2021, between 2012 and 2016 the annual average acreage burned was 721,366. Source: CalFire Redbook, 2012-2021, accessed at: https://www.fire.ca.gov/stats-events/


34. See footnote [32] for reference details.


44. Using the 2020 Census as its base, the NSJV’s population increased by nearly 14,000 residents between 2020 and 2021. Because the 2019 to 2020 estimated growth of 8,854 is based off of the 2010 Census as its base, some of the difference is due to the revised benchmark.


47. See footnote [43] for reference details.

48. Estimates based on CBRE summary data of the U.S. Postal Service’s (USPS) dataset on permanent change-of-address records. For a description of the dataset see: https://postalpro.usps.com/mailing-and-shipping-services/NCOALink


52. See footnote [50] for reference details.


55. NAMI (2022) “Schools During the Pandemic: Mental Health Impacts on Students”, National Alliance on Mental Illness – California. https://namica.org/blog/impact-on-the-mental-health-of-students-during-covid-19/


57. See footnote [56] for reference details.

58. See footnote [56] for reference details.


60. See footnote [56] for reference details.


62. The Gateway Adult Education Network covers Merced and Mariposa Counties; the Stanislaus Mother Lode (Yosemite) Consortium covers Stanislaus and Tuolumne Counties and parts of Calaveras County; the Delta Sierra Adult Education Alliance covers San Joaquin County as well as parts of Calaveras, Sacramento, San Joaquin, Solano, and Yolo Counties.

63. See footnote [61] for reference details.

64. See footnote [61] for reference details.


68. See footnote [66] for reference details

69. See footnote [66] for reference details


71. See footnote [70] for reference details

72. See footnote [70] for reference details

73. See footnote [66] for reference details


75. See footnote [74] for reference details


78. See footnote [74] for reference details

79. See footnote [77] for reference details


82. See footnote [80] for reference details


84. See footnote [83] for reference details

85. See footnote [83] for reference details


88. See footnote [87] for reference details

89. See footnote [74] for reference details

90. See footnote [74] for reference details


93. See footnote [81] for reference details


95. See footnote [94] for reference details


97. See footnote [96] for reference details

98. See footnote [96] for reference details
ENDNOTES


102. See footnote [101] for reference details


104. See footnote [103] for reference details

105. The preference for permitting single-family housing, as well as larger housing units overall, also promotes urban sprawl and unsustainable development practices that increase unaffordability while further threatening the environment as well as potentially increasing inequity. For instance, research indicates that the observed preference for single-family development, when linked to local zoning restrictions that limit density, supports racial segregation and inhibits desegregation. For example, see: Rothwell, J. & D. Massey (2009) “The Effect of Density Zoning on Racial Segregation in U.S. Urban Areas”, Urban Affairs Review, July 1, 2009, 44(6), 779–806. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4083588/


107. See footnote [101] for reference details


110. See footnote [109] for reference details


112. See footnote [109] for reference details


114. See footnote [103] for reference details

115. See footnote [101] for reference details

116. Based on data referenced in footnote [101] and [103]

117. Based on data referenced in footnote [101] and [103]

118. See footnote [103] for reference details


124. The decline in ridership is estimated by comparing the 2019 annual average of weekly ridership for the San Joaquin RTD (70,422) and ACE Train ridership (28,522) to their 2021 annual averages, which were 28,522 and 4,220 respectively. Based on APTA Ridership data. https://transitapp.com/APTA

126. While there has been a lot of discussion about post-pandemic hybrid work models, understanding of what different group can, and can't, do remotely in a post-pandemic environment is an issue which currently lack clarity.


132. About 300,000 agricultural workers and 350,000 family members in farmworker households - See footnote [130] for reference details

133. See footnote [130] for reference details


We would like to recognize

WELLS FARGO

for their support of the
North San Joaquin Valley COVID-19 Impact Review.