The State of the Region

The Inland Empire 2024

by

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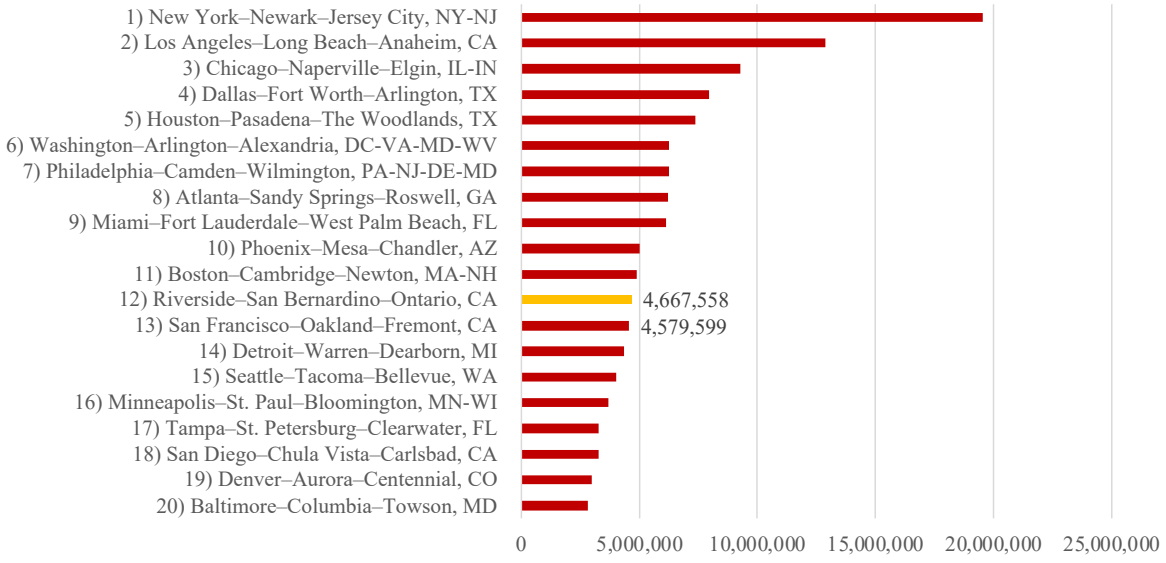
What's Past is Prologue:
Inland Empire State of the Region 2024

Welcome to the Inland Empire State of the Region report. Our task here is to set out an overview of the recent economic developments of the regions, how these came about, and where we see the region heading.

The region has undergone some fundamental changes over the last twenty years, and especially since the onset of the Coronavirus downturn in 2020. If you had to describe the area, what would you have to tell an outsider (perhaps someone who has never heard of the Inland Empire)?

1. The Inland Empire (Riverside-San Bernardino-Ontario Metropolitan Statistical Area (MSA)), is a large geographical two county area. San Bernardino County has the most square miles of the 3,143 counties in the U.S. San Bernardino County and Riverside County have become the 12th most populous MSA, passing the San Francisco MSA recently. There are roughly 4.7 million residents in our area. Next ahead of us is the Boston-Cambridge MSA. If we add 200,000 more residents, we are passing Beantown and will enter the top-10 once we catch up with Phoenix (another small step). Figure 1 shows the top 20 MSAs in the United States.

Figure 1: Top-20 MSAs by Population
2022 Estimate



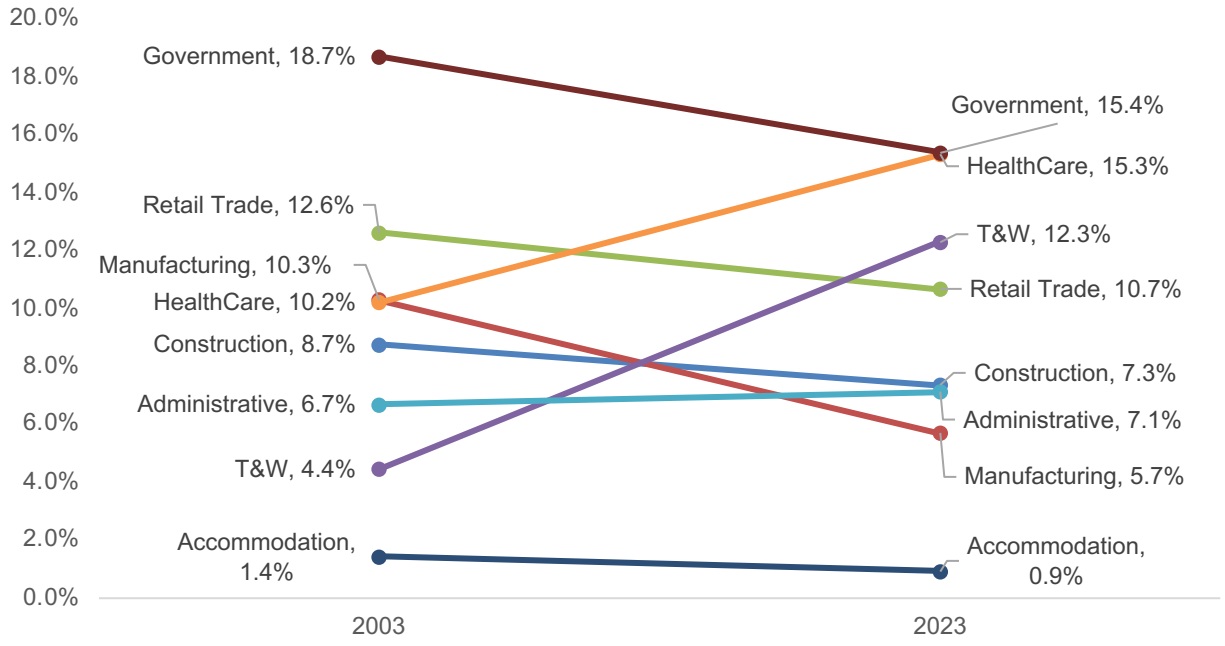
2. Roughly 30% of the Inland Empire's labor force commutes. Close to 400,000 people travel every day from the Inland Empire into the coastal areas. To understand this number, imagine that the entire Coachella Valley (gardeners, servants, doctors, nurses, resort administrators, etc.) started their days getting into their cars (mostly) and driving past Cabazon and Morongo down the I-10. Table 1 below gives you details.

Table 1: Commuters, Inland Empire, 2023

Destination	Riverside County	San Bernardino County
To LA	53,000	132,000
To San Diego	47,000	3,000
To Orange County	75,000	38,000
Total Coastal	175,000	173,000
SBC/RIC	113,000	78,000
Total	**288,000**	**251,000**
Share of Total Employment	*30%*	*23%*

3. The area has undergone massive industrial sector changes over the last 20 years or so. Figure 2 shows the employment shares of various sectors between 2003 and 2023. Both Health Care and Transportation and Warehousing have seen large increases in employment shares. Had we included Private Education with Health Care as is typically done in the North American Industrial Classification System (NAICS), and added Whole Sale to Transportation and Warehousing to create the Logistics sector, then those two sectors would be the top employers in 2023, with Logistics falling short by some 5,000 workers to take the overall lead. The role of Government has diminished significantly over that time span. Construction and especially Manufacturing have seen significant declines in the share of employment.

Figure 2: Employment Shares, Industrial Sectors
Inland Empire, 2003 and 2023, CES



It is important to stress that the Inland Empire cannot be analyzed by itself. Instead it must be seen as part of the Southern California region (the two counties are part of the Southern California Association of Governments, or SCAG). The area is heavily affected by events elsewhere in the state and the nation due to its connection in trade and logistics. As a result, we will have to address expected socio-economic drivers that will affect the area but which have their origins elsewhere.

Summary of National Economy and Outlook

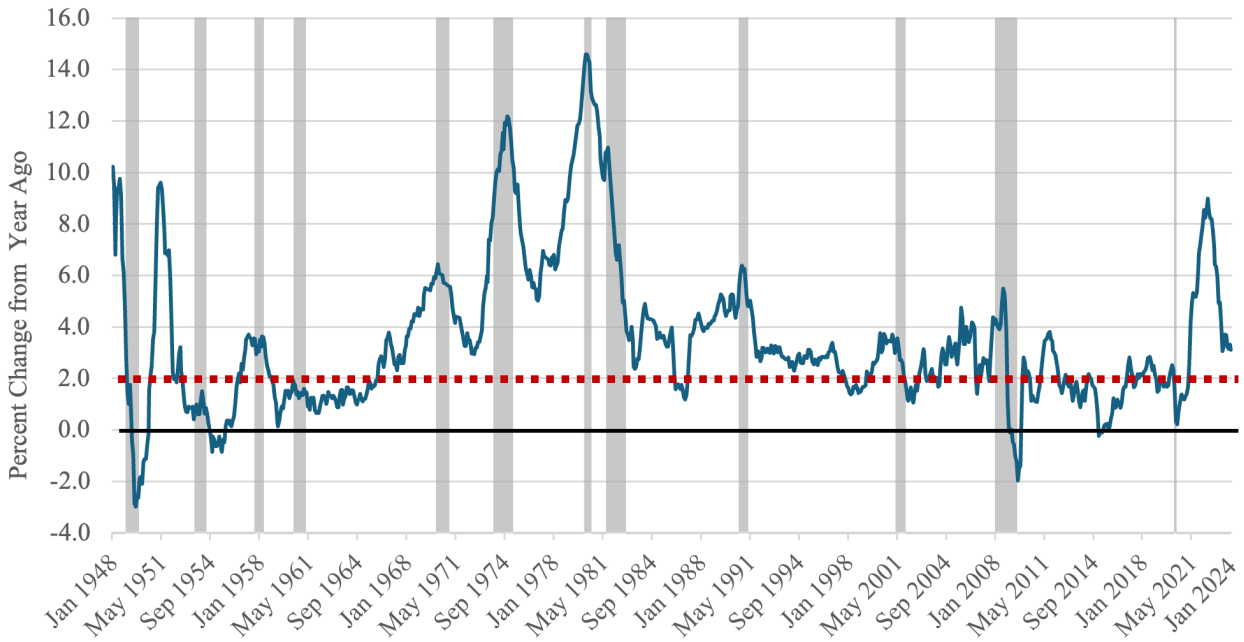
"Mission Impossible" almost achieved: for only the second time in post-World War II economic history, inflation was brought down significantly without an associated increase in the unemployment rate and recession. This had happened only once before (in the early 1950s) when the national level of inflation had reached 4% and the unemployment rate was below 5%, partially explaining why the forecast by so many was for the U.S. economy to go into a recession late in 2023. Both conditions were in place when the Federal Reserve began its rounds of interest rate increases to bring down the inflation rate, which reached 9% by June of 2022.

Inflation was tamed in 2023. When measured by the annual change in the consumer price index, it decreased from 6.4% in January 2023 to 3.1% (see Figure 3a). The 2% target (albeit for a different price index) set by the Federal Reserve is within reach.

Economic Growth of output or Gross Domestic Product proved surprisingly strong, especially in the third quarter when the economic pace was almost 5%. The latest numbers published for the fourth quarter show a continued strong expansion of 3.3%. The dreaded **recession did not occur**. In short, the Federal Reserve seems to have pulled off a **soft landing,** meaning a reduction in the inflation rate without an economic downturn.

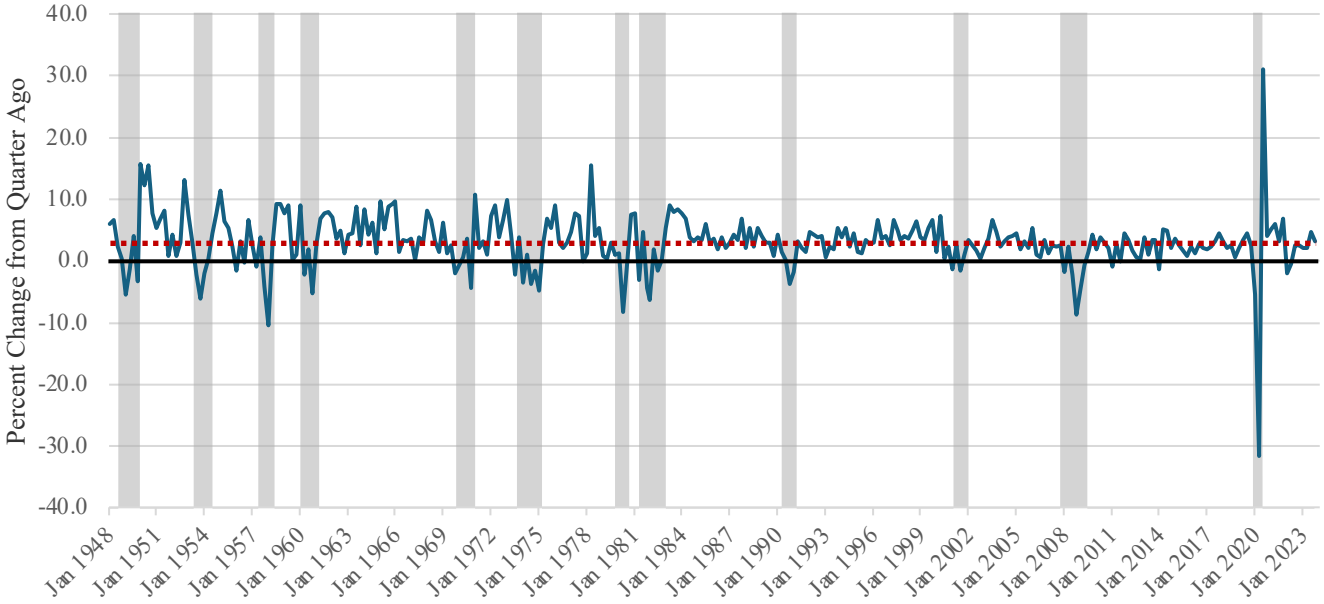
The labor market proved resilient against the repeated and rapid interest rate increases orchestrated by the Federal Reserve, with the **unemployment rate not changing much during 2023**, finishing the year in December 3.7%, a small increase from the 3.4% in January. Both numbers are at half century historical lows, and an unemployment rate of below 4% for 24 consecutive months was last seen in the 1960s.

Figure 3a: Inflation Rate, Percentage Change in Consumer Price Index from a Year ago, January 1948 - January 2024



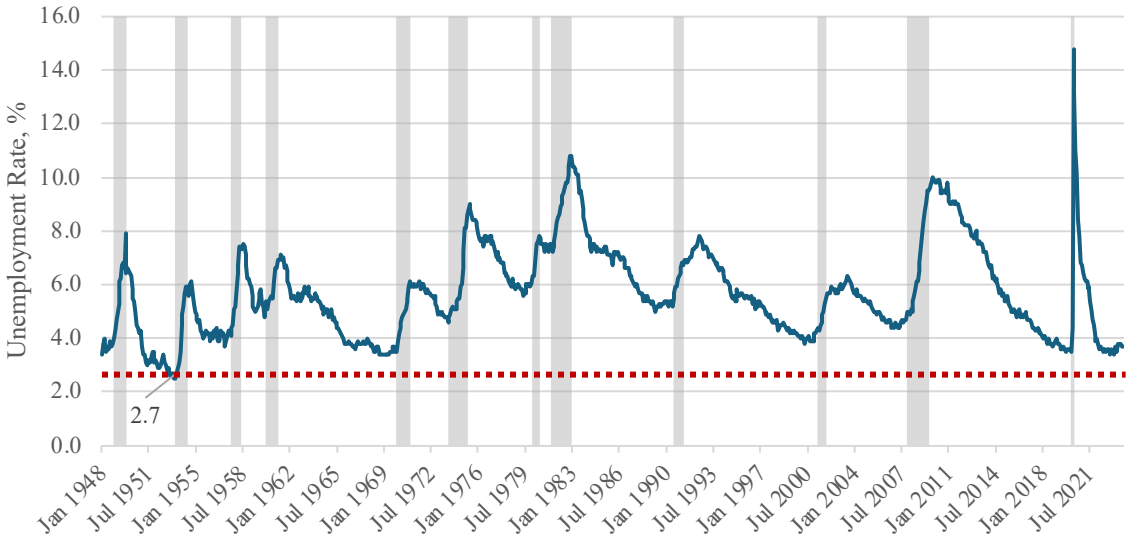
- Inflation ended the year at 3.1% as measured by Consumer Price Index (shown above).
- Inflation reached a peak of 8.9% in June 2022.
- Fed target inflation rate is 2% as measured by the personal consumption price index (shown in red). The target for that price index currently stands at 2.6%.

Figure 3b: Economic Growth, Percentage Change in real GDP from a Quarter ago Annualized, Quarter 2 1947 - Quarter 4 2023



- Quarter 4 was relatively strong with 3.3% GDP growth, following high 4.9% growth in Q3, 2023.
- Earlier part of 2023 was weaker, resulting in less than 2.5% annual growth, slightly below long term historical average of 3%, but higher that the average 2.0% observed since 2008, and the 2.4% seen during the Trump presidency.
- Two quarters of negative growth in 2022 were due to measurement errors, not recession.

Figure 3c: Unemployment Rate in the U.S., Percent, SeasonallyAdjusted. January 1948 - January 2024



- Unemployment rate experienced only a marginal increase in 2023, reaching 3.7%.
- Strong monthly growth in employment keeps the unemployment rate at half-century lows.
- Unemployment rate has stayed below 4% for 2 years, an event not seen since the 1960s.

The **outlook for 2024**, an election year, is relatively positive, despite some negative signals from retail sales and housing starts in January. Many of the leading economic indicators point towards a much rosier future than a year ago. The University of Michigan's Index of Consumer Sentiment increased for the third month in a row, although it is still 20% lower than it was pre-COVID19. The stock market has recently entered record-high territory. GDP growth is likely to be significantly above the average 3% rate early in 2024. As for inflation, it will reach the Federal Reserve target of 2% later this year, enabling the Fed to initiate interest rate cuts (most likely three 25 basis point reductions starting in June). The labor market will deteriorate a little but unemployment rates will not increase much above 4% and stay below 4.5%. Even if the rate reached 4.3% by July, this would not result in a national recession. The outlook for the labor market looks good for the rest of the year, despite the recent job cuts announced by Amazon, Google, and UPS.

Caveats to the forecast: the situation in the **Near East** and in **Ukraine** could become worse and result in supply chain problems for oil and trade in general. Domestically, Congress may decide that the peace time **high budget deficit** of almost 9% of GDP deserves attention in the form of cutbacks in government expenditures (there is no appetite for tax increases, especially during an election year). Finally, **inflation could be more persistent** than forecasted (perhaps as indicated by the recent increase in the producer price index) and require the Federal Reserve to raise interest rates again.

We attach a low probability to any of these scenarios. It is true that an escalation of the war in the Near East may have costly effects on the world economy due to ships being unable to pass through the Suez Canal and having to go around the Cape of Good Hope in Africa. This has already happened, as the latest numbers from the ports indicate. This would result in significant container delivery delays. Also a continued drought in Panama will close that shipping route for the largest vessels. Both scenarios would actually result in more business at the Ports of Los Angeles and Long Beach, and hence more economic activity in logistics in the Inland Empire.

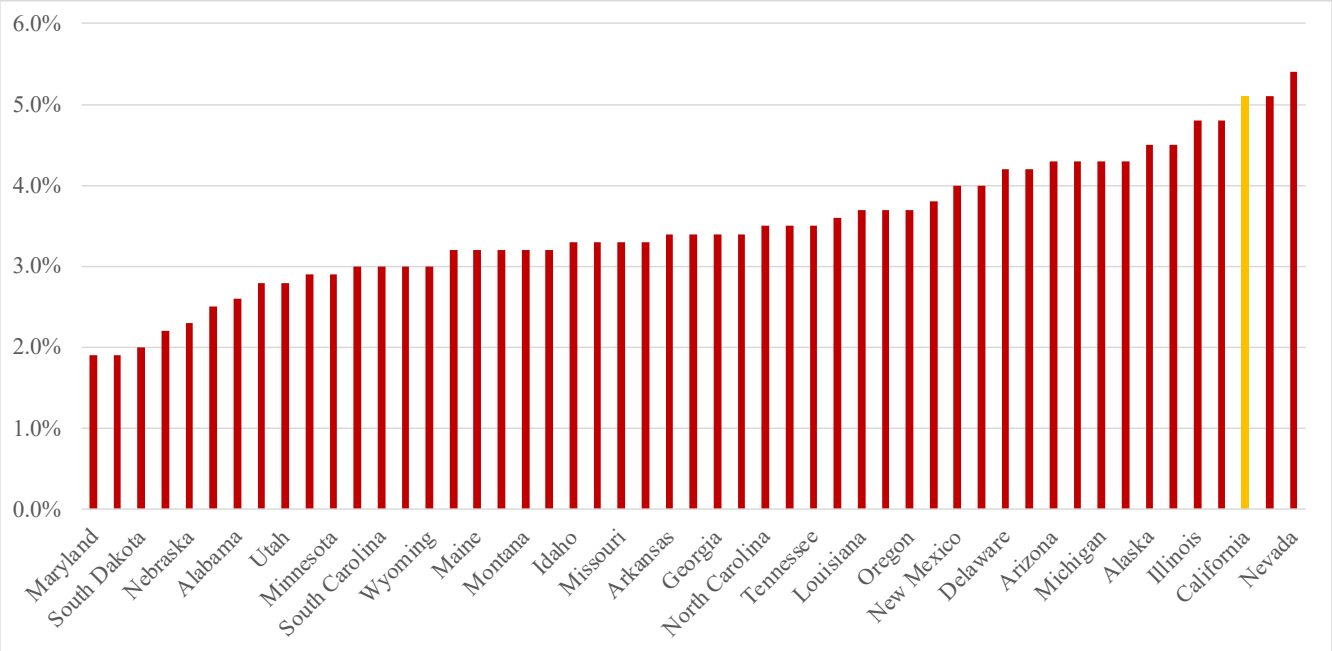
One worrisome factor that we do not think will vanish soon is the American public's feeling of uncertainty about the future, especially given the current stalemate in economic policy making in Washington. However, that seems to affect the popularity rating of the President and the political parties more so than the U.S. economy.

The State Outlook

California has the fifth-largest economy on the planet, right behind Japan and ahead of India and the United Kingdom. The composition of California's economy is different from the U.S. as a whole and is also different from the states to which it is often compared.

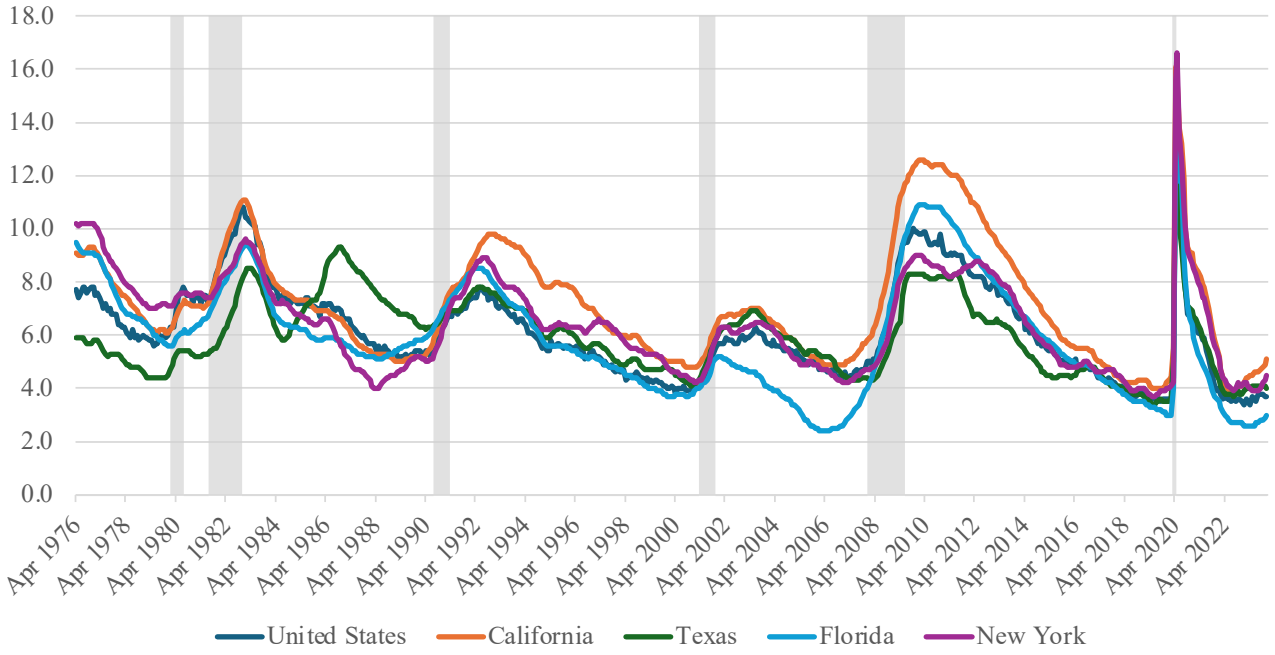
When compared to the U.S, California's current economic performance generally aligns with recent history. The state's December unemployment rate was 5.1% while the U.S. rate was 3.7%, and hence significantly higher. The 1.4 percentage point difference matches the average differential between the two rates since 2010, and may be attributed to differences in the composition of the California economy when compared with the U.S. as a whole. On the other hand, nonfarm job growth in the state typically outpaces that of the U.S. Since 2010, nonfarm jobs in California grew by an average of 1.7% year over year, marginally higher than the 1.3% average growth rate for the U.S. For 2023 California's annual nonfarm job growth was marginally slower than the nation's (2.1% compared to 2.3%), but again, this was due in part to differences in the mix of industries between the two. On the other hand, California Gross State Product has outpaced U.S. GDP growth over the past five years (2019-2023), advancing by an average of 2.6% year over year, which is marginally higher than 2.1% for the nation.

Figure 4a: Unemployment Rates by State, SA, December 2023



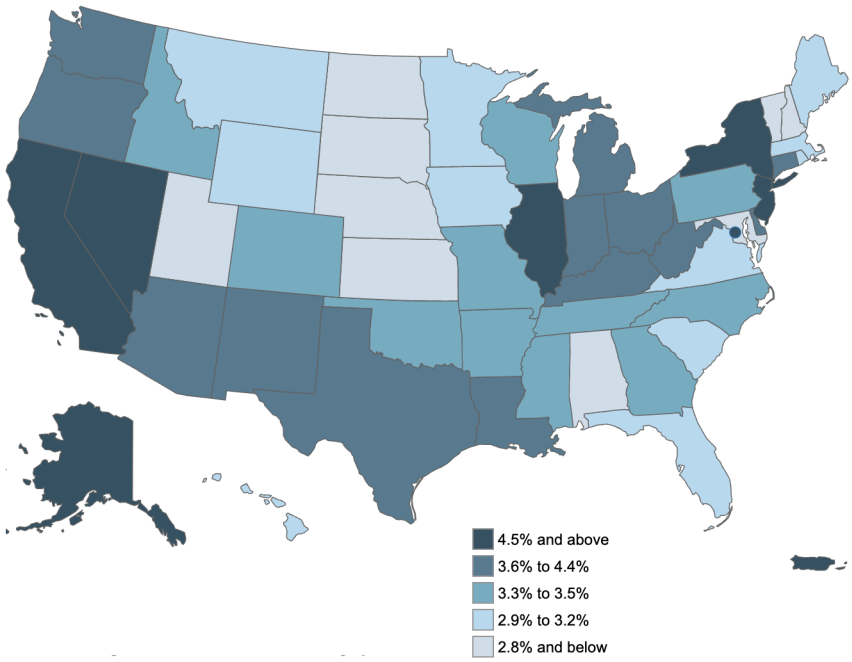
California comparisons with other states are not as favorable. Figure 4a shows a bar chart of the unemployment rate across the 50 U.S. states: only Nevada (5.2%) beats us in terms of higher unemployment rates. Maryland and North Dakota, at the other end, have unemployment rates of 1.9%. Figure 4c displays the geographic distribution.

Figure 4b: Unemployment Rate, Four Most Populous U.S. States, U.S., SA
April 1976 - December 2023



- California consistently has had the highest unemployment rate among the four most populous states.
- Texas' performance often depends on oil price movements.
- Florida's unemployment rate has become significantly better performing starting at the beginning of the millennium

Figure 4c: Unemployment Rates by State, SA, December 2023



Source: U.S. Bureau of Labor Statistics.

- While only California and Nevada have unemployment rates north of 5%, a significant number of states show 4% and more.
- Western and Southwestern states currently perform poorly, as do some Midwestern states.
- Some smaller states have extraordinarily low current unemployment rates.

Figure 4b investigates the extent to which California's poor relative current labor market performance is due the recovery from the Coronavirus downturn or whether this is a long-term characteristic. Some have argued that having a higher degree of stringency during the COVID19 recovery (California, New York) resulted in a poorer relative performance compared to U.S. states that kept the economy more open (Texas, Florida). The simple answer is that there is little evidence of that. California, **historically, has had higher unemployment rates**, presumably due to its socio-economic composition. The performance of the second largest state, Texas, crucially depends on oil price movements, which is not surprising since it is one of the oil producing states. Note that Texas performs particularly well during the two OPEC episodes in the early and late '70s, and does poorly when oil prices crash (see the mid '80s). Florida, the third largest state, changes its relative performance in its favor in the run-up to the Great Recession, but given that it was one of the epicenters of the housing market crash, it is hit harder during the crash and takes longer to recover.

It is also important to show how the state has fared since the worst years of the pandemic. On the plus side, nonfarm payroll jobs in the state were 2.9% higher than in February 2020, the month preceding the onset of the pandemic shutdown. However, on the negative side, neither the statewide labor force nor household employment levels have recovered: The labor force is still 1.2% lower than its February 2020 level, and household employment (which includes payroll jobs and self-employed) is still 2% shy of its February 2020 level. Moreover, the state's population continues to decline and is slightly below 40 million. This has resulted in a loss of a congressional seat for the first time in the 170 year history of the state.

The outlook for California over the next year is mixed. During the pandemic, the state relied heavily on strong growth from sectors such as tech and logistics. Growth in these two sectors was more tempered in 2023, but other sectors have gained momentum. Education services, leisure and hospitality, health care, and other services led the state in year-to-year job growth last year and should continue to grow in 2024. But the pace of growth for these industries and the state as a whole will be slower than in 2023. The state must also face challenges brought on by a decline in population, a labor force that is smaller than before the pandemic, and long-playing concerns about the high cost of living in general, and the high cost of housing in particular.

The State of the Inland Empire Economy

Time to focus on the **Inland Empire economy.** Figure 5 shows the unemployment rate for the Inland Empire since 1990, and also plots that variable for the nation and the state for comparison purposes. The graph shows that the Inland Empire typically has a higher unemployment rate. This is due to socio-economic factors such as the composition of its labor force and the industrial structure. The MSA is typically worse affected by a recession. This was the case after the recession in the early 1990s when the "peace dividend" had negative consequences here (shutdown of military bases and negative effects on aerospace industry). The same is visible following the Great Recession of 2008/2009, when we were one of the epicenters of the housing collapse.

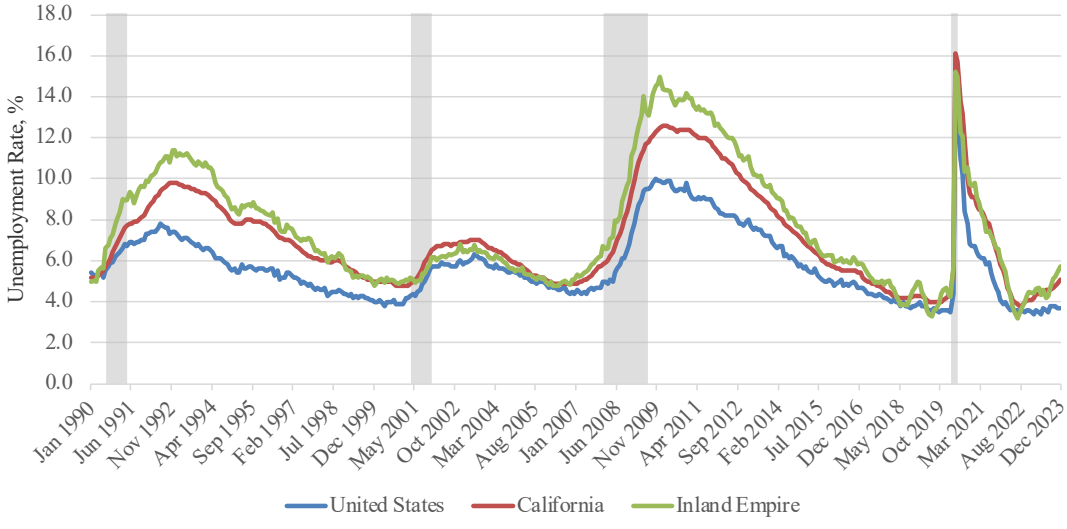
There are exceptions to this rule:

- the dot.com recession at the turn of the millennium, when the economic downturn was centered in Northern California;
- the period immediately prior to the housing market crash in 2006, when the Inland Empire was at the height of the building boom;
- during the Coronavirus downturn, when other parts of California, such as the Greater Los Angeles area, were more severely affected.

In general, our region has been characterized in the popular press as being **"First In, Last Out"** when it comes to business cycle downturns. You can think of a lake that freezes from the periphery and thaws first from the center (Greater Los Angeles MSA). As we understand the local labor market, the attribute is primarily due to commuters being laid off first in the Greater Los Angeles area, since their human capital is not as high as the average human capital in the coastal region (if it were as high, they could afford to live there and would not have to commute). **Unemployment is measured by residency**, and therefore the unemployment rate in the Inland Empire goes up first while the unemployment rate in the Greater Los Angeles area, where the job was lost, is initially not affected. As the recession becomes more severe, residents in the coastal regions lose their jobs as well. The recovery works in reverse.

To illustrate this, take Manfred Keil, who works at Claremont McKenna College in Los Angeles County. Manfred lives in Upland, in San Bernardino County, and is a commuter (although his commute is not the typical one, lasting less than five minutes by car - but remember, nobody walks in LA). If he is laid off at Claremont McKenna College, the unemployment rate in LA County remains the same, but the unemployment rate of San Bernardino County and the Inland Empire goes up as long as he claims that he is

Figure 5: Unemployment Rate, SA, U.S., California, Inland Empire
Jan 1990 - December 2023.



- Inland Empire unemployment rate typically higher than U.S. and California.
- There are exceptions during the dot.com and Coronavirus recessions.
- Inland Empire did better during the recovery from the 2020 recession.

looking for a new job.

Most of you are interested in the more recent economic developments of the region. The unemployment rate in the Inland Empire stood at 4.3% non-seasonally adjusted (or 4.2% seasonally adjusted) in February 2020, just before the shutdown occurred. This was also the end of the longest post World War II economic expansion (140 months or over 11 years). Within two months (April 2023), it reached a record high 15.4%, but that was still a better situation than the experience in the Greater Los Angeles MSA, where unemployment rates peaked at 19%.

The latest published number for December 2023 by the Employment Development Department (EDD) is 5.1% (seasonally adjusted, this gets worse: 5.7%). This does not sound very good. We have not returned to **pre-Pandemic levels** of the unemployment rate. **The rate is actually 1.2 percentage points higher** (1.5 percentage points with seasonally adjusted data).

Despite this appearance, we are going to argue here that the Inland Empire was **the poster child of the economic recovery** from the Coronavirus downturn. How is that possible? Come along for the ride.

Table 2 shows the change in the unemployment rate for the U.S., California, the Inland Empire, and our neighbors, since February 2020. The Inland Empire shows the highest increase, with the national unemployment rate just being 1.2 percentage points above the February 2020 level, and Los Angeles County only showing a 0.1 percentage point increase. So far, not so good.

Table 2: Decomposition of Unemployment Rate Change into Labor Force Growth and Employment Growth,December 2023 to February 2020, U.S., California, Inland Empire and rest of SCAG Region

Region	U.S.	CA	IE	LA	OC	VT
Change in Unemployment Rate	0.2	0.5	1.2	0.1	1	1
Growth Rate of Employment	1.8	-1.2	2.8	-6.3	-1.6	-1.7
Growth Rate of Labor Force	1.6	-1.7	1.6	-6.4	-2.6	-2.7

Here is a fact that will give you deeper insights in unemployment rate movements: **the change in the unemployment rate is the difference between the labor force growth rate and employment growth.** The easiest way to understand this is by thinking of a labor force that is not growing (constant) while employment increases. In that scenario, you would intuitively expect the unemployment rate to decrease - and indeed it does. Next: the labor force grows but employment remains the same: the unemployment rate actually increases despite the fact that employment did not shrink, since the new entrants did not find a job. You can think of this situation as semi-positive: after all, people felt sufficiently good about the labor market to return to the labor force. So, the outcome is intuitively clear. Third scenario: the labor force decreases due to discouraged workers while employment stays the same - this is not healthy but the unemployment rate falls.

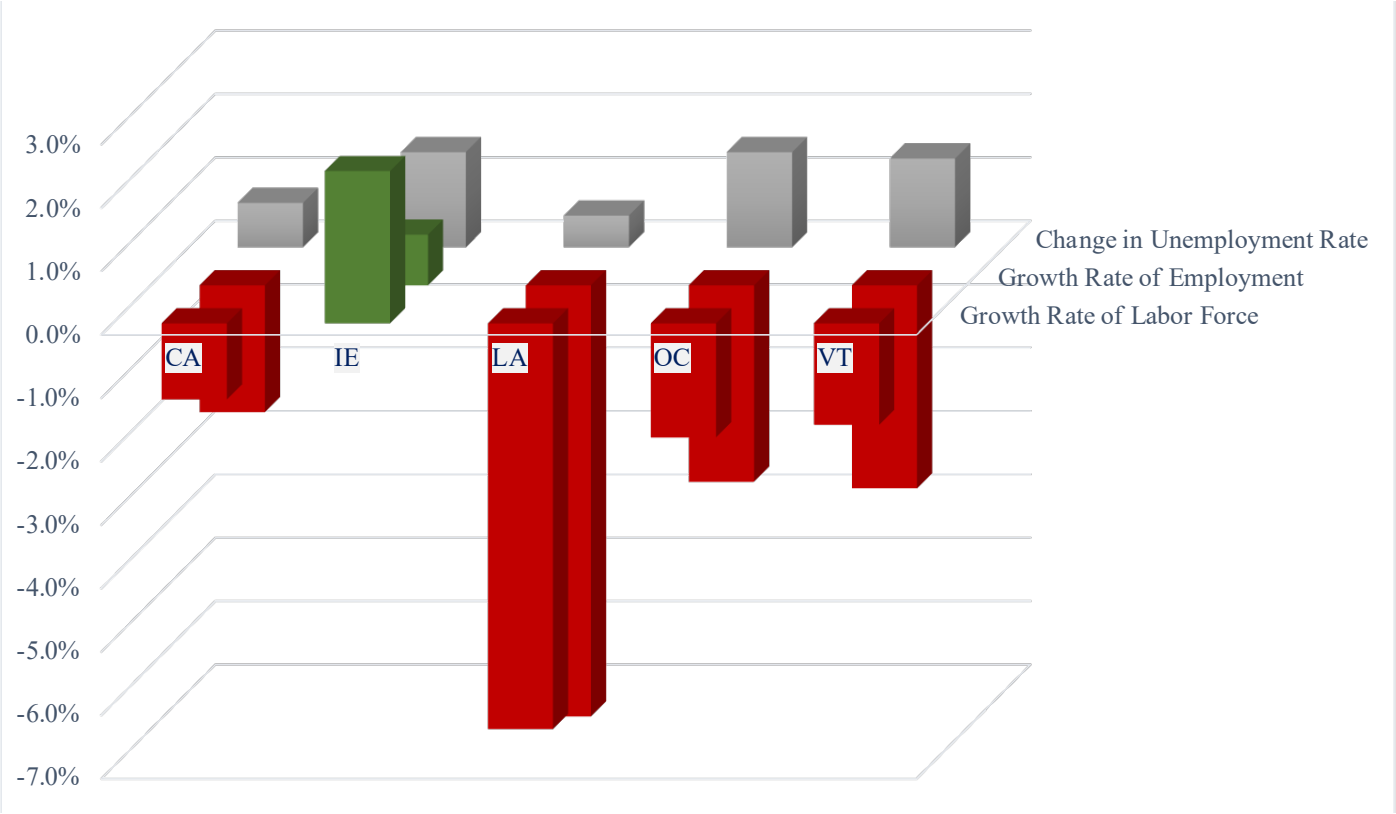
Finally, employment grows, but the labor force grows faster: the unemployment rate goes up. That is the scenario for the Inland Empire and the nation. While we wish that employment growth had been stronger, this is still a relatively healthy scenario. Note from the table that **employment in the Inland Empire grew by as much as that for the nation**. The only reason why the unemployment rate in the Inland Empire increased by more than for the U.S., is that our labor force grew by a whole percentage point faster.

Look at California, Orange County, and Ventura County and especially **Los Angeles County** instead (Table 2). Those areas do not look healthy to us. LA County **saw a decrease in both its labor**

force and employment of over six percentage points. More than one in twenty people lost their jobs when compared to the previous peak in economic activity. Even the "mighty" Orange County labor force and employment are shrinking. These are not desirable developments.

Figure 6 displays the same information with a more dramatical visual effect. Clearly you prefer to be the "green bars" even if your gray bar shows a higher increase in the unemployment rate.

Figure 6: Decomposition of Unemployment Rate Change into Labor Force Growth and Employment Growth, Current Population Survey (CPS), December 2023 to February 2020, California, Inland Empire and rest of SCAG Region.



We can extend this analysis beyond Southern California and look at all 29 MSAs and MDs in California. The resulting bubble graph, at first, looks a bit scary (see Figure 6).

Figure 7: Labor Force Growth versus Employment Growth
February 2020 to December 2023, California MSAs and MDs

- In the right half of the plane, counties below the 45-degree line saw a decrease in the unemployment rate, those above it saw an increase. In the left half, the situation was reversed. The compared levels are taken from February 2020 and December 2023.
- Both the employment and the labor force grew in the Inland Empire, but the latter outpaced the former, resulting in an increase of the unemployment rate in the region.
- Los Angeles MD did not see a change in the unemployment rate, even though both the employment and the labor force shrunk by more than 6%. This serves as a reminder that the unemployment rate is not always a good measure of how well a region is doing.

Let's place the labor force growth on the vertical axis and employment growth on the horizontal axis. Then if both grow at the same rate, you would find that bubble to lie on the 45 degree line (I know, high school nightmares come back to you, but just try). We also used the size of the bubble to indicate the size of the population living there (actually the size of the labor force): Salinas has fewer people than San Francisco, so its bubble is smaller (suggesting we care less about it).
Where would you prefer to find the bubble of your home area? I would prefer to be in the Northeast quadrant rather than in the Southwest quadrant. Indeed, that is where the Inland Empire is, while San Francisco and Los Angeles County are in the "sicker" area. Now you can get fancy and ask: if I am in the desirable Northeast quadrant, would I rather be above or below the 45 degree line. The answer is that you would prefer to be below that line, since employment would have grown faster than the labor force in that case (think of Salinas). The slightly negative news is that the Inland Empire lies above the 45 degree line.

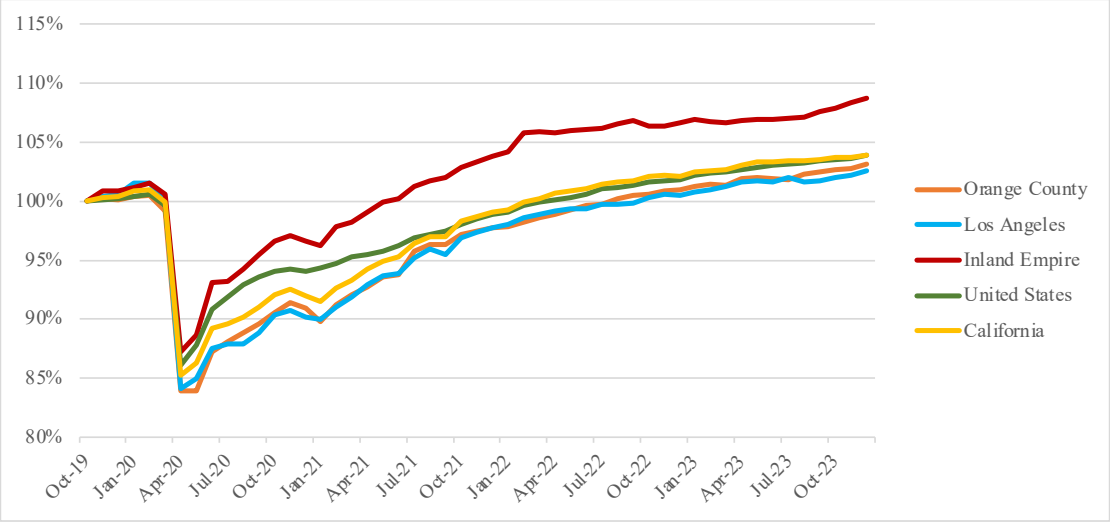
Inland Empire, the Poster Child of Economic Recovery from Coronavirus Downturn?

How did the Coronavirus downturn affect employment in the Inland Empire when compared to other regions in Southern California, the state and the nation? Figure 8 shows employment compared to October 2019, or a month during the fall before the shutdown in March 2020.

The graph shows that **the Inland Empire lost fewer jobs when compared to other areas,** including the state and nation. It certainly outperformed the Greater Los Angeles area. But what is more impressive from the graph is the subsequent recovery: **the Inland Empire recovered faster (by early 2021 it had recovered the jobs lost) and continued to outpace job growth in the other areas until mid-2022.** We have seen a bifurcated recovery.

Since mid-2022, the Inland Empire has not done as well. Seasonally adjusted unemployment rates (not shown here) reached a low of 3.2% in June 2022. For the following nine months, employment actually declined first before recovering, and then grew again. We will see further below that this was **primarily due to the Logistics Industry adjusting** to a shift of consumers away from durable goods and more into services (restaurants, hotels, etc.).

Figure 8: Employment, October 2019 to December 2023, SA Indexed at 100 in October 2019.



Half a decade ago, the Los Angeles Times ran the following cartoon on the recovery from the Great Recession. At the time, there was also a bifurcated recovery, but the Inland Empire did not fare so well then (neither did Stockton-Lodi up north, the equivalent of the Inland Empire).

After all, we were one of the **epicenters of the housing bust**, which created a "mancession" with massive job losses in the Construction and Manufacturing industries (both dominated by male employment).

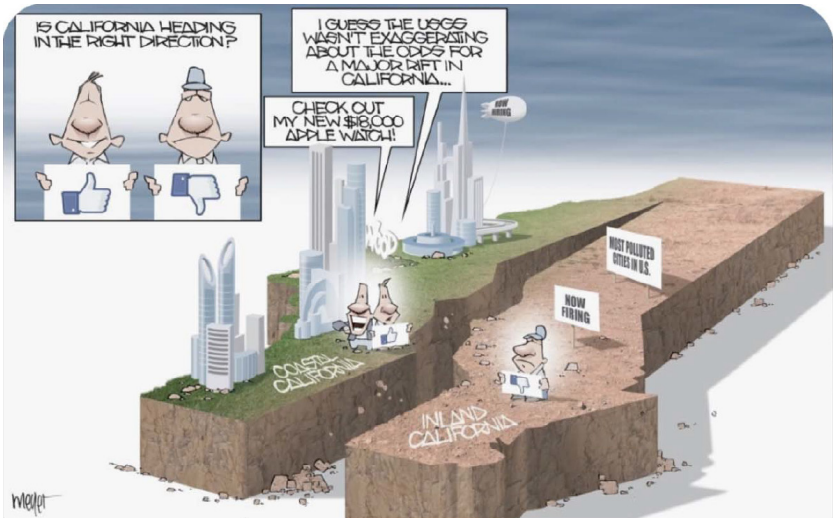
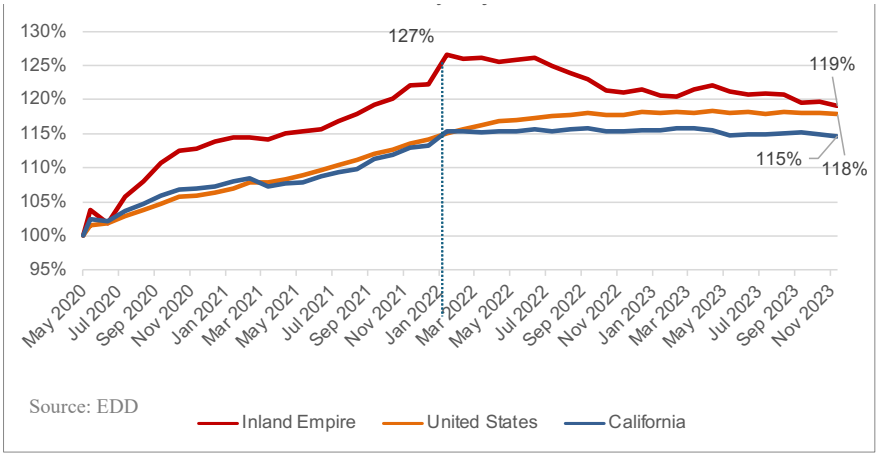


Figure 9 supports our conjecture that it was the Logistics Industry that stands behind the extraordinary job growth during the earlier phase of the recovery and the subsequent cooling down. **Following the Coronavirus downturn, many consumers increased their retail online shopping**, which required more movements in transportation, warehousing, and wholesale activity. The graph shows employment growth in the Logistics industry in the Inland Empire and compares it to job growth of that sector in the state and the nation. Logistics jobs grew everywhere in the U.S., but especially in the Inland Empire. **Overall, and remembering the level we started from, the industry has seen a phenomenal increase in employment since the end of the Coronavirus recession in May 2020.**

Figure 9 also points out that the **Logistics hiring frenzy came to an end early in 2022**. By this time the **consumers shifting away from durable goods towards services** became all too obvious, and we speculate that many employers in the Logistics Industry had miscalculated the need for additional workers, perhaps out of fear of being unable to find workers in the future. There was clearly some overshooting in hiring, and employers adjusted to the new reality by laying off excess labor. Note that Logistics employers in the state and the nation also did not hire much additional labor, but there was no overstocking like in the Inland Empire. As for the region, while employment in the Logistics sector has declined significantly over the last 18 months or so, it is still 19%, or almost a fifth, higher than it was in May 2020 at the beginning of the recovery. However, it is more in line with growth in jobs in that industry for the state and the nation. Accepting

Figure 9: Logistics Employment as % of May 2020, SA, Inland Empire, California, U.S



- Inland Empire's change in Logistics employment is very different from those of California and the U.S., which have seen comparable growth, except that it was more gradual.

- The decrease in Logistics employment can be explained by the consumers' shift from goods to services, as well as "labor hoarding" by the employers who expected the boom in the industry to continue.

the initially stellar performance of the Logistics Industry and its subsequent decline, what can we say about the recent performance of the Inland Empire and the performance of the rest of its economic sectors. Table 3 gives the answer. **The Inland Empire continues to be one of the top performers in job creation** over the last year. It is certainly basically at par with the other SCAG regions for the last 12 months. The 32,400 new jobs created parallel the employment growth in Orange County and are only outpaced by the much larger Los Angeles MD. While Ventura County has seen a relatively higher growth rate in jobs, it has only created 8,000 new ones. The Inland Empire has seen higher job growth than the San Diego, San Francisco, or Silicon Valley areas, and also grew faster than the inland area up north (Stockton-Lodi). **It continues to be a poster child of the recovery.**

Table 3: Employment Level, Large MSAs/County, CES, Change from Year Ago, Dec 2023

Area	Dec-23	YtY Change	% Change
Riverside-San Bernardino-Ontario MSA	1,703,700	32,400	1.9%
Los Angeles-Long Beach-Glendale Metro Div	4,682,300	95,900	2.1%
Oxnard-Thousand Oaks-Ventura MSA	322,200	8,100	2.6%
Anaheim-Santa Ana-Irvine Metro Div	1,730,400	35,900	2.1%
Sacramento--Roseville--Arden-Arcade MSA	1,102,900	29,700	2.8%
Fresno MSA	394,900	8,400	2.2%
Oakland-Hayward-Berkeley Metro Div	1,206,500	22,100	1.9%
San Diego-Carlsbad MSA	1,581,400	23,400	1.5%
San Francisco-Redwood City-South San Francisco Metro Div	1,214,400	15,600	1.3%
San Jose-Sunnyvale-Santa Clara MSA	1,190,300	13,400	1.1%
Bakersfield MSA	293,100	3,100	1.1%
Stockton-Lodi MSA	277,800	1,600	0.6%

Note: SoCal areas highlighted in blue

To complete our explanation of economic development in the Inland Empire since the beginning of 2020, we want to figure out and find supportive evidence as to why the Inland Empire saw

1. less of an increase in unemployment during the Coronavirus downturn, and
2. a speedier recovery than other areas (MSAs, MDs) in California did.

Increases in Unemployment Rates from February 2020 to May 2020

Most of us can remember the initial shock of the Coronavirus to our economic system (for that matter, to our personal system). Unemployment rates started to seriously increase in March as the government began to shut down the economy to keep mortality rates and the spread of the virus in check. We measure the employment status through the Current Population Survey, and it is administered during the week surrounding the 12th day of each month. As a result, the March 2020 unemployment rate does not display the huge increase in unemployment that we eventually see in April 2020. The most stringent economic actions by the government did not occur until around the 20th of March.

For the U.S. as a whole, unemployment rates increased from 3.5% (February) to 14.8% (April), an unprecedented 11.3 percentage point rise in a single month (although it did not show until later). California fared worse with rates moving from 4.4% to 16.1% at the same time (an 11.7 percentage point increase), while the Inland Empire experienced a rise from from 4.2% to 15.2% (11 percentage points; every ninth person losing their job). Different regions in California experienced a variety of increases, with the Greater Los Angeles area faring worse, and unemployment rates there reaching 19%. The question is why different areas in California saw such variation in the increase.

We claim that the degree of unemployment rate increases depended on the industrial composition in the area. The worse affected sectors were

- Leisure and Hospitality,
- Retail Trade,
- Private Education and Health Services,
- Professional and Business Services.

Somewhat as a surprise is the Health Service sector experiencing such a decline. However, you may recall how all of us tried to avoid any contacts with hospitals and even dentists unless it was actually necessary (Coronavirus related). The U.S. did not stand alone in this experience. In the U.K., entire hospital wards were shut down unless they were related to treatment of COVID-19 patients. Another industrial sector that was heavily impacted was Other Services (spas, health clubs, tattoo parlors, manicure and pedicure, etc.), but the total number of workers in that sector is actually relatively small.

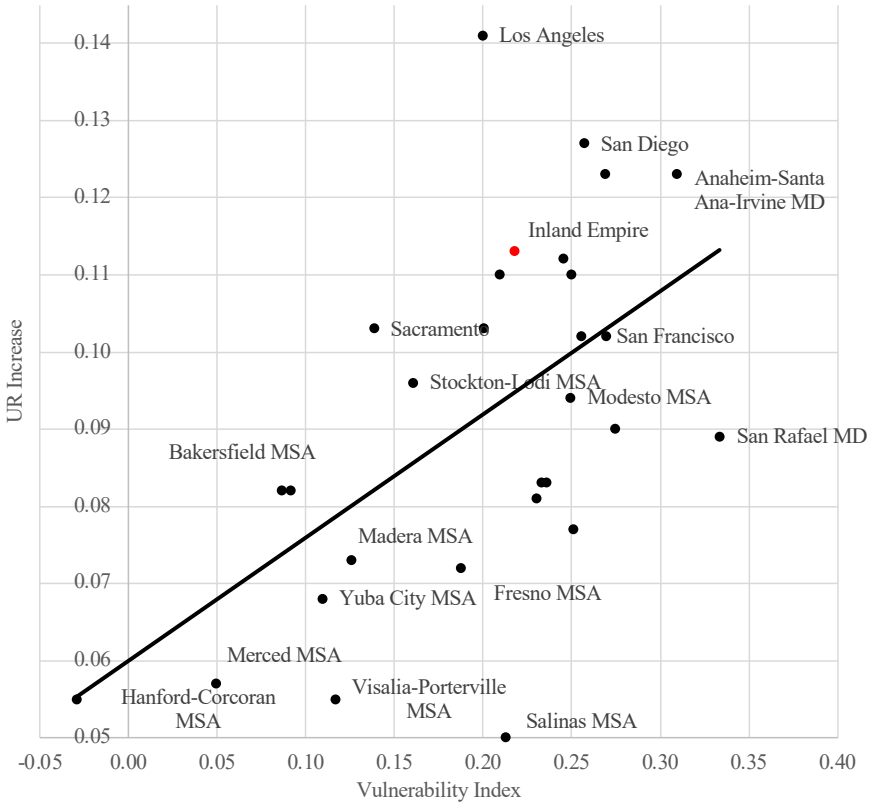
The least affected sectors were

- Government,
- Information,
- Financial Activities,
- Mining and Logging.

Here we have created a "vulnerability index" for each of the 29 California MSAs or MDs. The index is the difference in employment shares in the area between the four most and least affected industrial sectors. If the employment share was particularly high in the most affected sectors relative to the least affected sectors, then we postulate that the unemployment rate would increase the most.

For the Inland Empire, the vulnerability index stood at 0.22, Silicon Valley had a value of 0.27, Orange County at 0.32 (one of the highest), San Diego at 0.26, and San Francisco at 0.26. All of these values were higher than those seen in the Inland Empire and we would expect the unemployment increases in those MSAs to be higher than in the Riverside-San Bernardino-Ontario MSA. Figure 10 shows the crossplot between the increase in the unemployment rate and the vulnerability index.

Figure 10: Increase in Unemployment Rate vs. Vulnerability Index
California MSAs and MDs, February 2020 to May 2020, SA, CPS.



The figure shows that the Inland Empire actually did somewhat worse than what we expected. According to the vulnerability index, we only predicted an increase in the unemployment rate by about 9.5 percentage points instead of the slightly higher 11 percentage points seen. Still, it seems that the Inland Empire got lucky: it just happened to have an **industrial mix that resulted in less employment affected by the shutdowns.**

A Regional Analysis of Business Growth since COVID-19

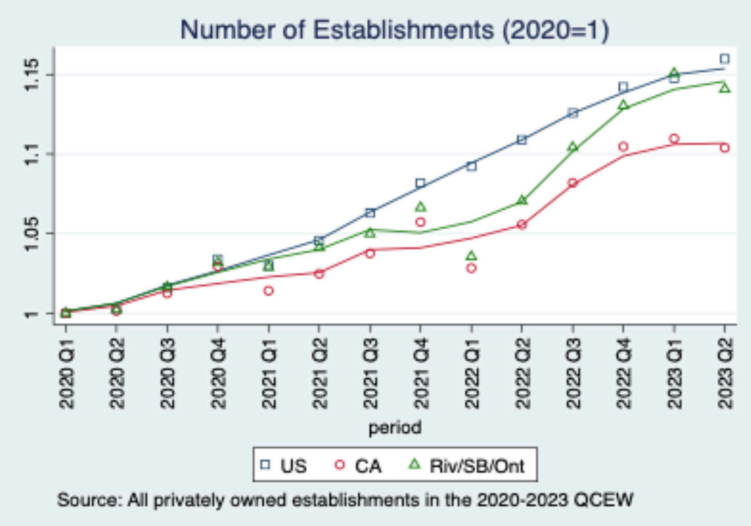
But how can we explain regional vulnerability and differences on the rate of economic recovery? Similar to the question as to what caused the difference in unemployment rate increases, we need to ask why some regions were more resilient than others. Much has been said of the Inland Empire's reliance on a few sectors of the economy: its reliance on the Logistics Sector during the aftermath of COVID-19 or its reliance on the Construction Sector during the real estate expansion prior to the Great Recession. Most importantly for the future of the region, is the current industry mix preparing us to overcome the challenges of the next recession?

We want to explore what has driven private business growth since the outbreak of COVID-19 in 2020. Every recession comes not only with its unique challenges but also with unique opportunities. Austrian economist Joseph Schumpeter famously remarked "For capitalism, a depression is a good cold douche," (by which he meant shower) as recessions weed out inefficient firms and generate new creative ones. Some of the most ubiquitous businesses today were created during a recession: Disney in 1929, Microsoft in 1975, MTV in 1981, Electronic Arts in 1982, or Venmo in 2009 were all "recession babies." These firms disrupted their industries and transformed how we consume, play, trade, and invest.

Figure 11, shows business growth, measured in the number of establishments, of business cre-

ation since 2020. Three years after the pandemic, private establishment growth in the U.S. has outpaced California's and the Inland Empire. At the same time, our region has outpaced the state's establishment growth. The main policy question is how entrepreneurs respond to the local market conditions and institutions surrounding them. The availability of capital, well-developed infrastructure, regulation, and the ability to enforce contracts are essential elements of an entrepreneurial ecosystem. But, since COVID-19, the blueprint of these ecosystems has changed: industry consolidation, improved logistics, labor market shortages, and automation present a new set of opportunities for would-be entrepreneurs. The need to connect people and ideas, as the entrepreneurs' ecosystem evolves, is more critical now than ever.

Figure 11: Business Creation since 2020



- The Inland Empire outperformed the state in the creation of new businesses during the recovery from the 2020 recession.
- Business creation in the Inland Empire accelerated starting with the second quarter of 2022.
- By quarter 2 of 2023, business creation in the Inland Empire started to see levels approaching those of the country as a whole.

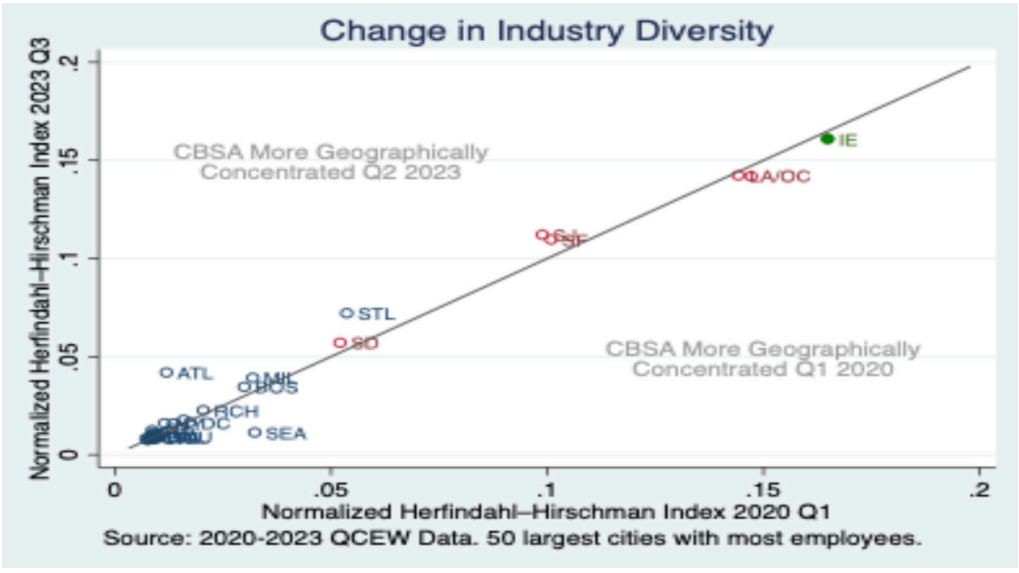
Figure 12 zooms into the region's industry cluster evolution during the recovery. This figure divides industry clusters into **traded and local clusters.** Industries in traded clusters are those whose output is traded globally, local industries are those whose output is traded within the region. **Economic growth and affluence are usually associated with traded industries.** Clusters above the 45-degree line are those that have grown in absolute size since the pandemic, those below the line have decreased in size.

Two results are salient in this figure: first, most clusters are above the 45-degree line, confirming the region's growth in Figure 11. Second, the largest clusters in the region are local clusters, this is not surprising. But our region's reliance on local clusters is a challenge we wrote about in last year's STOR. In fact, before the pandemic, almost six out of every seven firms were in local services; that frequency has remained unchanged.

Figure 12: Industry Clusters in the Inland Empire

Figure 13 shows the change in the composition of industry diversity during this period. To do this, we use the so-called "Normalized Herfindal-Hirschman Index" (HH Index) which is a **measure of each region's industry concentration.** This normalized index lies between zero and one. The larger the measure, the less diverse and more concentrated a region's industry mix is. T**he Inland Empire, highlighted in red, is amongst the less diverse and more concentrated metropolitan areas in the United States.** Indeed, all of California's major cities are at the bottom of the industry diversity composition. This is hardly surprising; the growth of California's regions has been mostly based on high-skilled, knowledge-based industries. The inertia of these clusters will attract new firms and workers at the cost of other industries who now face higher labor and land costs. These firms, those outside the expanding clusters, will adapt by either migrating to other states, by permanently closing, or by transforming into a new-more profitable industry.

Figure 13. Industry Diversity Across Different Metropolitan Areas



Finally, in Figure 14 we explore how industry diversity, as measured with the HHI at the time of the pandemic, is associated with the recovery since the pandemic. The horizontal axis presents the 2020 Q1 HHI (recall that smaller index values represent more industry diversity). Larger values represent less diversity, and more concentration. The vertical axis represents the change in the number of establishments in percentage points. We also present the best-fitted line, which indicates the association between these two variables. The data in this table suggests that industry diversity is indeed positively correlated with establishment growth. In fact, moving from the bottom 75 percentile (less diverse) to the 25 percentile (more diverse) is associated with a full percentage point of establishment growth.

Figure 14: Industry Diversity and Growth

Figure 14 also shows that California's metropolitan areas are the least diverse in terms of industry composition. This lack of diversity is not surprising, as the industry clusters in our state tend to have strong centrifugal forces, attracting firms and workers alike. One can think of the preponderance of the technology cluster in Silicon Valley, health sciences in San Francisco, biological sciences in San Diego, video and entertainment clusters in Los Angeles, and the logistics sector in the Inland Empires. Firms benefit from congregating next to each other and profit from thick labor markets and a common infrastructure. These agglomerating economies result in within-cluster positive shocks to productivity and higher earnings, limiting regional affordability. Firms outside the cluster will move to other more affordable areas. This agglomeration cycle continues to decrease industry diversity further. But lack of industrial diversity leaves a region vulnerable to industry-specific shocks, like Detroit in the 1980s or the dot.com collapse in the early 2000s. **Thus, policymakers should be aware that the (very real) benefits of aggregation may result in less resilience and more vulnerability next time the economy crashes.**

The Inland Empire in 2045

The Wall Street Journal ran an article on February 17 (recently) under the following title:

"62% of Americans Lack a College Degree. Can They Solve the Labor Shortage?"

The article mentioned that some large firms such as IBM, Delta, Google, Walmart, GM etc. no longer require a college degree for some of their better paying jobs. In doing so, these companies were hoping to cope better with the labor shortage observed in the nation.

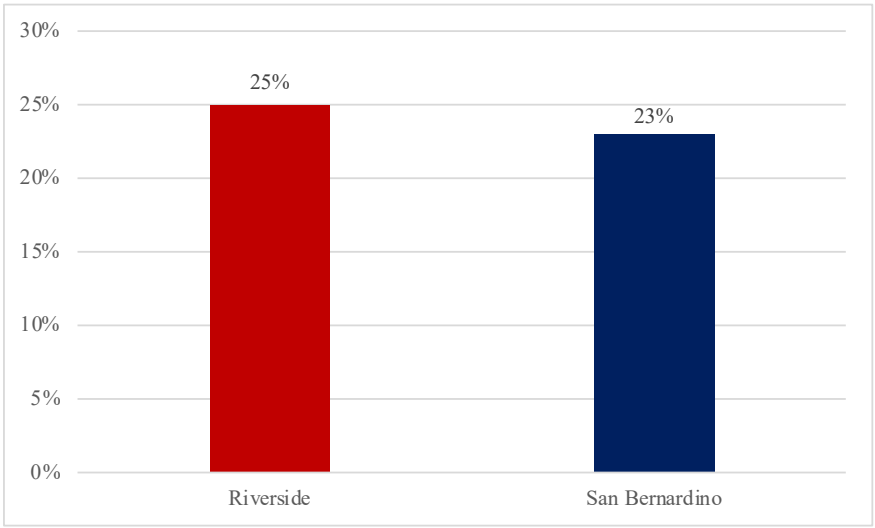
Had this article been written about the Inland Empire, the headline would have been as follows:

"78% of Inland Empire Residents Lack a College Degree. Can They Solve the Labor Shortage?"

To make matters more serious, the Inland Empire number includes commuters, and while we do not have the exact figures, it is fair to assume that a higher percentage of commuters has a college degree. They are more qualified to take on jobs that require more skills than those who work and reside in the Inland Empire. This is, after all, the reason for their commute: while they could take on a job in the Inland Empire, which would avoid long commutes, they choose not to do so because the coastal area jobs are better paying. To qualify for these coastal jobs, you need more human capital.

Figure 15 shows the percent of Prime-Age Workers with at least a bachelor's degree in Riverside County and San Bernardino County.

Figure 15: Percent of Prime-Age Workers with at least a Bachelor's Degree by Race, Riverside County and San Bernardino County

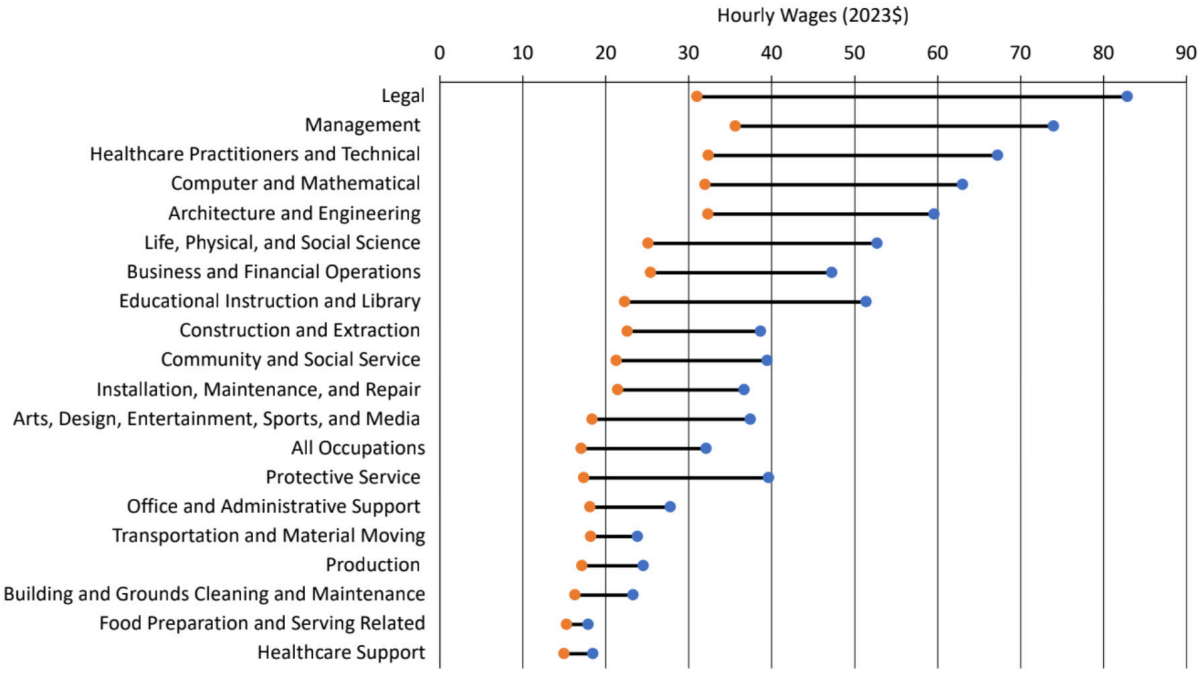


The lack of qualified workers plays directly into our outlook for the Inland Empire in 20 years or so. Even without considering the results of increased pollution, automation, and energy-use in the area, which we will address in a moment, there are other concerns regarding the weight logistics has received in terms of attention by local politicians.

First there is the idea that the **logistics industry does not generate much value added** in terms of its output and income. There are easy to cal-

culate measures to substantiate these allegations. While the Inland Empire has become the 12th most populous MSA in the U.S., the region falls substantially in the rankings once we measure the Wealth of the Region by **output per capita.** By this measure, we are ranked closer to the 300s out of 380 MSAs, sitting next to either areas you have never heard of, or places that are not particularly desirable to live in such as Waco, Texas. This is the result of producing output that is not particularly valuable in dollar terms to the region and therefore can only pay low wages. Figure 16 presents the wages for the employment sectors in the Inland Empire.

Figure 16: Wages by Occupation, Inland Empire, 25th to 75th Percentile, 2023 Quarter 1



The figure also contains the reason for the 400,000 or so daily commutes from the Inland Empire into the Coastal Regions: commuters are simply not willing to work for the relatively low wages offered by many of the industries in the region. Note that no one in their right mind enjoys commutes that last as long as 4 hours on a round trip per day (Upland to Downtown on a Thursday; the 37 mile distance takes 4.5 hours to cover if you leave at 7:00 a.m. and return at 5:00 p.m.). These individuals would rather just have a job in Ontario, Riverside, Covina, or Fontana. Unfortunately their human capital endowment allows them to make considerably more money, on average, than the jobs that are available to them in the Inland Empire - hence the commute.

It is against this background that the current discussion regarding the relative value of the Logistics Industry to the Inland Empire is being held. **Logistics is, no doubt, important to the region**. However, if you want to attract industries that produce more value-added products, and thereby lift per capita GDP perhaps to levels that we observe in the Phoenix MSA (ranked about 190), then you have to find ways to increase the average human capital level of its workers. Firms that are higher value added-producing otherwise simply will not come. Note that the percent of residents holding at least a Bachelor's degree is 35% in the Phoenix area. Bottom line, if your labor force has half of its workers who have never attended a college class, then firms will not settle here. **If you don't build it, they will not come.**

Manfred Keil recently spoke at an event in the

city of Fontana. The speaker before him was an IT security specialist who mentioned that his team had several openings but could not find qualified workers for it. Hence it is not the lack of workers that prevents him from doing the hires - it is the lack of *qualified workers*. When I asked him how he intended to solve the problem, he said that they would automate the positions, that is, solve it through capital-labor substitution.

Environmental Concerns of Logistic Industry in Inland Empire

There are two more topics which you could consider the "elephant" in the room that we have not addressed: **automation** and **environmental concerns** stemming from expansions of warehousing.

Let's start with the potential effect of **automation** on the employment situation in the Inland Empire, and more specifically on the Logistics Industry. As we wrote last year, automation potentially may have a significant negative effect on the area, as there could be a massive capital-labor substitution in that industry. Any visit to an Amazon warehouse will make it clear what we are talking about. We are therefore looking at many jobs in danger of being eliminated in the industry in the near future. However, and while we can see some of the effects of the 4th industrial revolution already, these developments have not been as rapid as we once feared. We no longer anticipate automation to be of major concern over the next five years or before 2030. Hence we will not expand on this topic here.

That leaves us with the second topic: **environmental concerns** associated with the Logistics industry. There is rising local opposition to new warehouse construction and further expansion of the industry. The city of Beaumont was one of the first that decided not to pursue the construction of a new warehouse complex covering 2.5 million square feet. That was late in 2022. In 2023, Moreno Valley similarly opted not to pursue a warehouse complex covering 1.3 million square feet. Fontana also decided not to build three warehouses with more than 500,000 square feet of coverage.

At the same time, there was a group of vocal environmental institutions under the leadership of the Robert Redford Conservancy for Southern California Sustainability who submitted an 80 page study to Governor Newsome asking for a two-year moratorium of the expansion of the logistics industry (warehousing) in the Inland Empire. The claim was that increased diesel trucking, which is the result of the vast expansion of warehousing and the logistics industry in general, has caused such environmental damage to our area that any expansion should be halted for the near future. While the governor did not react to the submission, there were several California Assembly Bills (ABs) under consideration which would have halted further expansion of the logistics industry. AB 1000, for example, which was sponsored by Assemblymember Reyes (D-Colton), would have banned any new warehouse projects exceeding 100,000 square feet close to (1,000 feet) an array of so-called sensitive receptors. These were quite a variety of institutions such as schools, churches, prisons, playfields, etc. where children, elderly, and others at heightened risk of health problems due to exposure to air pollution congregate. As of now, the bill was pulled. Still, Attorney General Rob Bonta released a memorandum of "best practices" for constructing warehouses in compliance with the California Environmental Quality Act in September 2022; it included a clear recommendation to comply with AB 1,000. AB627 went further in potentially prohibiting diesel-fueled heavy duty trucks to be operated past 2030 on either city streets or county roads in the Inland Empire.

Here is the pollution argument in short: **The emission of PM2.5** - fine particulate matter less than 2.5 micrometers in diameter - poses health risks when appearing in high concentration in the air. PM2.5 is a negative externality stemming from the logistics industry. These particles are dangerous due to their ability to penetrate the lung wall and enter the bloodstream. This matter can cause respiratory problems such as asthma and lead to

heart attacks or premature death. These particles can be carried over long distances by wind and then settle on ground or water, thereby leading to further environmental concerns. In general, the transit of goods in the supply chain emits greenhouse gasses that contribute to **atmospheric warming.** Moreover, to maintain warehouses requires air conditioning and heat insulation. Some of this could be mitigated through the use of solar panels and electrification.

There have been recent developments that should lessen environmental concerns. As reported in the Los Angeles Times on February 15, the Energy Department has decided to award as much as a $1.2 billion payment for a public-private partnership to create a hydrogen hub in California. Along the same lines, semi-trucks with hydrogen fuel cells are developed by manufacturers and even shipping lines have started to take steps towards hydrogen or methanol powered container ships. In addition, there is the potential for developing heavy rail locomotives that will be hydrogen powered. Obviously these developments are still years away and will not affect the current situation, but they are a big step in the right direction.

This leads us to a more general discussion of the costs and benefits of the logistics industry to the Inland Empire. On the one hand, there has been an immense benefit to the region as a result of increased employment. For example, since 2005, employment in the logistics industry has increased from 320,500 to 530,000 in 2022 or by 65% when employment growth for the region was only 420,000 or 34%. Hence more than 40% of the regional employment growth was generated by a single industry. The sector has grown in significance over the years: in 2005, it was the 8th largest sector, while by 2022 it has become the second largest employer in the Inland Empire (only Health and Private Education has more employees).

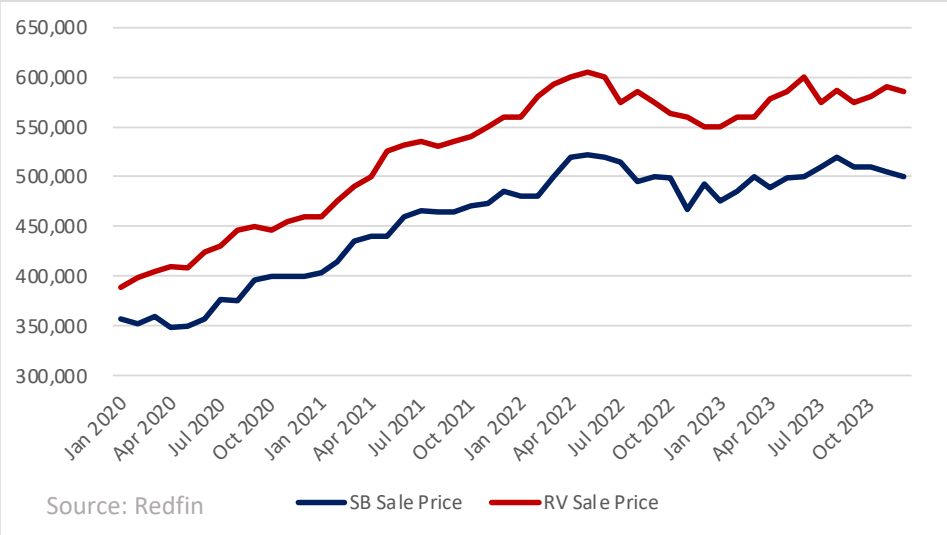
What we are asking for is an **objective study of the cost and benefits of the Logistics Industry in the Inland Empire.** Such an analysis has not been conducted to this day, and it seems strange to us that the two extreme voices (environmental concerns, employment gains) are being paid attention to separately. To put this into perspective: consider that in the U.S. every year 40,000 people die on the road (road fatalities). Would you really want to consider a policy that would reduce that to zero by imposing a 5 mph speed limit on all roads in the U.S.? Similar discussions must have been on the minds of administrators when considering mortality rates from COVID-19 with the benefits of keeping the economy open, not shut. Focusing on one effect without considering the other must be misleading.

Housing

Like other sectors of the economy that are sensitive to interest rates, housing was hit hard by interest rates that have risen to their highest level in two decades as the Fed has fought to bring inflation down. The Fed began a series of rate hikes in early 2022 pushed the Fed Funds Rate from near zero (0.25%) to 5.33% by July 2023. Mortgage rates followed suit, increasing from a near-record low of approximately 3% in early 2022 to 7.62% by October of 2023 before pulling back marginally. The effect on home sales was predictable, falling to levels not seen since before the Great Recession in 2007. But home prices were more resilient, mainly due to extremely limited supplies of homes for sale. Rents also rose over the past year as the vacancy rate in the region remained low. Finally, the region saw gains in new home construction.

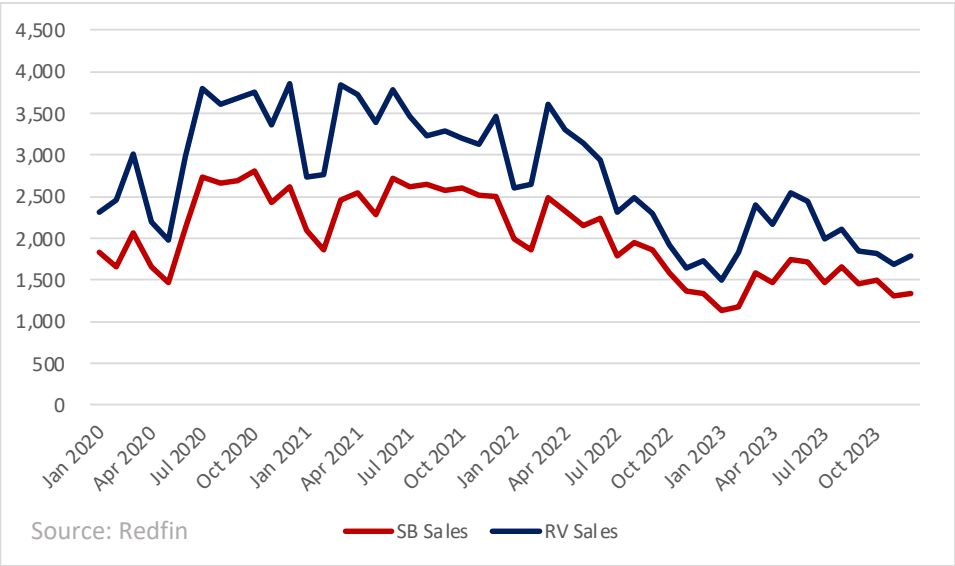
In the Inland Empire rental market, low

Figure 17: Home Prices, Inland Empire
January 2020 - December 2023



- Higher rates cause the monthly payment to increase and reduce affordability, but home prices generally held steady at or near record high levels because of extremely lean supply, offering little affordability relief to buyers.
- The median price in San Bernardino County finished 2023 at $500,000 (+1.5% over the year) with Riverside ending the year at $585,000 (+6.4% over the year).

Figure 18: Home Sales, Inland Empire
January 2020 - December 2023.

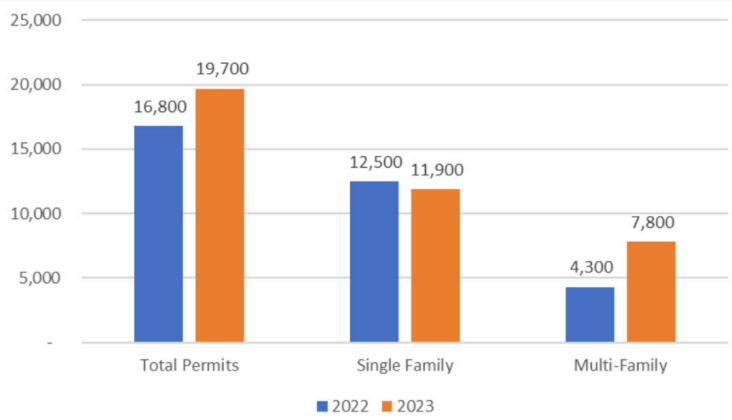


- There was a chilling effect on home sales from early 2022 through the first part of 2023. There was a seasonal bounce in mid-2023 but that too gave way to the downward pressure from higher rates.
- For the year as a whole, sales in San Bernardino County fell by 23.5% and by 21.2% in Riverside County.

vacancy rates fueled an increase in average rent. The vacancy rate for all of 2023 was 3.6%, virtually unchanged from 2.5% a year earlier. Anything below four percent should be viewed as lean supply that will push rents up. Indeed, average rent increased by 4.2% from $2,400 per month in 2022 to $2,500 per month in 2023. Rents will likely increase again in 2024, but may be tempered slightly by new multifamily rentals, which increased in 2023 compared to 2022.

Like the rest of Southern California and much of the state, the Inland Empire has faced rising housing costs for some time, in part because supply has fallen short of demand. The region's new housing needs are estimated to be close to 300,000 units between 2021 and 2029. Despite an 18% increase from 2022 to 2023, there were less than 20,000 permits in each of the last two years. With such a chronic housing shortfall, housing costs are expected to increase over the next year.

Figure 19: Housing Permits, Inland Empire
2022 - 2923



- The increase in permits from 16,800 in 2022 to 19,700 in 2023 was entirely due to much-needed new multi-family construction, which increased by 82% from 4,300 units to 7,800 units.
- Single-family home construction fell by 4.3% over the same period from 12,500 to 11,900 units.

Despite the rising costs of housing in the Inland Empire, homeownership was 71% in 2023, up from 65% in 2022. The region's homeownership rate is much higher than in the Los Angeles-Orange County metro area (48%) and the state (56%).

Looking ahead, the housing market will face some difficult months in the first half of 2024, until some relief is offered around mid-year in the form of interest rate cuts. How the market reacts remains to be seen. If it appears that the Fed may undertake a series of cuts, would-be buyers may continue to exercise patience. On the other hand, if it signals that it will cut rates once and wait before cutting rates further, the market may see a short-term bounce. As a final note, keep in mind that the Millennial generation is large, and most of its members are in their prime years for household formation and buying their first homes. Whether they can afford to depends on the direction of rates and the supplies of both new and existing homes.

We add two articles which we wrote for the Southern California News Group (SCNG) and which appeared in their papers. One, a semi-serious, semi-humorous piece we wrote at the end of 2023 and the other more recently on the bifurcated recovery from the Coronavirus recession.

The Inland Empire Economic Partnership is a contributor to the newspapers of the Southern California News Group. We publish an article every other week for the weekend editions.

23 Good Things that Happened in 2023

BY

Jinghan Hu, Manfred Keil, Ivan Kolesnikov

1. We avoided the national recession forecasted by the majority of economists for late 2023. An economic downturn would have had amplified negative consequences for the Inland Empire since the Logistics industry operations depend on business cycle sensitive imports through the Ports of Los Angeles and Long Beach. It increasingly looks like we will have a so-called soft landing - reducing inflation rates to 2% without creating significant unemployment.
2. The multiyear drought ended last year and we had more than twice the normal annual rainfall. Now we are back to sunshine in the Inland Empire. Invite friends from the East Coast or the Midwest to spend New Years Eve with you in SoCal. Suggest for them to fly in for a visit. Then say "Oops, I'm sorry, I forgot you can't come because your airport is shut down due to snow/ice."
3. Both the Dow Jones and the S&P 500 set new records during the year. The one year stock market return was over 11% for the Dow Jones Industrial Index. That will allow some of you to retire earlier, and those in retirement to withdraw more funds without decreasing the value of the account. Or to spend more dollars on yourself and leave less for the children, who will be better off than you in the future anyway.
4. We are going to get a "high speed" rail connection from Rancho Cucamonga to Las Vegas. Leaving the Inland Empire at 5:30 p.m., you will be able to watch Cirque du Soleil at 8:00. The trip will take less than driving into Downtown LA from Upland on a Thursday morning at 7:00 a.m. Also good news for Victor Valley: there will be a stop in Apple Valley. Phoenix is roughly the same distance away as Vegas (hint, hint, hint…).
5. Lithium Valley looks like a potential solution to so many of our local environmental and economic problems. The area close to the Salton Sea, which is the largest inland body of water in California (you have never been there? Google 'Salton Sea' and look at images and then book an Airbnb in Bombay Beach), is potentially the equivalent of the Gold Rush over the next decade. There is enough lithium in the area just south of Riverside County to supply the entire fleet of electrical vehicles being produced in the U.S.
6. You went to watch a Barbie movie - could not have seen that coming last year. Oppenheimer perhaps, but Barbie for 10 year olds and above? The movie hit $575.4 million domestically. Assuming an average ticket price of $11, that's about 52.3 million tickets sold. Though surveys have shown that 70% of viewers were women, two third of the male movie goers said the movie helped them better understand workplace gender bias. So next time you

see someone wearing the "I am (K)enough" sweatshirt, give them a pat on the back. Or say "Soy SufficiKENte."

7. November 27 marked the official end of the Coronavirus pandemic in California. Even in hospital areas you are no longer required to wear face masks. On the latest count, cumulative COVID-19 mortality rates in California resulted in 40% fewer deaths than Florida did. This came at an economic cost of lost output and employment (California still has the second highest unemployment rate among the 50 U.S. states currently). Whether or not it was worth shutting down Disneyland while keeping Disneyworld open should depend on an objective and non-emotional calculation of the balance between the economic cost of shutting down versus the value of life.
8. The Oxford Dictionary declared "rizz" the "word of the year" 2023. If you have never heard/used it ("she's got serious rizz") then ask the Gen Z people for the meaning. In case you wonder, the Gen Z people are the ones who make fun of me (only one of us is a Boomers). Next time you are insulted as a boomer, counter with a "snowflake" phrase for them - remember, in their generation, "everyone is special." The Economist made "ChatGPT" the word of the year. For the Inland Empire Economic Partnership's State of the Region conference, we had ChatGPT generate an alternative economic report. There were some factual mistakes in it and other shortcomings, but overall, it was not bad - and improved, not surprisingly, once we asked it "What kind of economic report would Manfred Keil write."
9. While we lost a Congressional seat due to outmigration, we still have the fourth highest per capita GDP of the 50 U.S. states. Only New York, Massachusetts, and Washington are ahead of us. Texas? No 19. Florida? No 27. You are considering moving there? #RUSERIOUS. Our state received more venture capital last year than the next ten states combined, we have more Fortune 500 companies than Texas. And remember, California knows how to party (not so sure about the others). Kate Perry is not considering a new song "Texas Gurls…"
10. Taylor Swift sold out six shows at SoFi Arena. The Federal Reserve even mentioned that she boosted the local economy, including hotel revenues (the so-called TSwift Lift). Few people know this, but she was tricked into performing a live concert in 2012 at Harvey Mudd College in Claremont. The official story was that the other Claremont Colleges helped with the vote and since votes were normalized by school size, Mudd won. The unofficial story was that Harvey Mudd students hacked the website. Sing along: "Talk About a Gold Rush."
11. The Inland Empire became the 12th most populous Metropolitan Statistical Area in the U.S. There are 386 of these in the U.S. consisting either of one or two counties. We just passed San Francisco. Roughly 12% of Californians live in San Bernardino County and Riverside County. Next MSA ahead of us? Boston-Cambridge.
12. BlackPink Opened the Coachella Music Festival attended by 124,999 each day over two weekends. Jisoo, Jennie, Rosé, and Lisa were the first Korean band to do so. Most of us don't understand what they are saying, but we listen. Watch for (G)I-DLE and LE_SSERAFIM to be next. Despite writing the Economic Report for the Coachella Valley Economic Partnership, we did not get backstage passes (a small damper on the good news).
13. The I-10 freeway was reopened swiftly after the underpass fire by Thanksgiving, avoiding a parking lot situation all the way to the Inland Empire by the close to 400,000 commuters into the coastal areas.
14. Sam Bankman-Fried, former CEO of one of the biggest cryptocurrency exchanges, was tried in October for misappropriating customer deposits and convicted on all counts in November, following his extradition from the Bahamas to the United States. A year when justice prevails is a good year, right? Bad is bad even if your parents are Stanford law professors.
15. Employment within the Inland Empire grew by

3.4% from January 2023 to November 2023. According to the establishment survey, we added roughly 57,000 jobs. While that growth was not equally distributed across all sectors of our economy, it is still quite an impressive number.

16. A small liberal arts college, Claremont McKenna College, at the border of San Bernardino County and LA County, managed to outperform USC and UCLA as No 9 of all colleges and universities in the U.S. in the 2023 Wall Street Journal ranking of academic institutions. Princeton, MIT, Yale came in as the Top 3, followed by the first California institution at No 4 (Stanford). The ranking is based on student experience, salary impact, and social mobility.
17. After laying off 76,000 (or 42%) of its employees due to the pandemic, the Leisure and Hospitality sector has fully recovered, first reaching the February 2020 employment level in March of 2022. Expect further increases in employment in that sector and hence more women returning to the labor force, since consumers are switching back to spending more on services.
18. If you missed Billy Idol's concert in a Coachella Valley casino, he will be back again early in 2024. Don't tell your kids you are going, they will claim you don't even know how to pronounce the name properly, it is Billy Eilish.
19. No collapse of the financial system, although Silicon Valley Bank, the second largest bank failure in U.S. history, Signature Bank (third largest), and First Republic Bank went under. Some bankers did not remember their Principles of Accounting lesson of what happens to certain asset valuations as interest rates rise before the bills become due.
20. The mighty Dodgers finished first in the National League West, winning a stunning 100 games during the regular season. Best to stop writing here about 2023 baseball. At least the Giants did not win it all. No good news about that team from behind the Orange Curtain (OC). And Ohtani is now a Dodger.
21. Ontario airport (ONT) is not only seeing substantially more passenger traffic. The total number of passengers will pass the 6 million mark by the end of December. Year to year increases have been impressive at 12.5%. The airport has added new shops and restaurants that are certainly an improvement from 1995 when I landed here for the first time, you walked outside from the plane to the baggage carousel, and the parking lot on Vineyard less than 500 yards away. The number of international travelers doubled.
22. Housing prices soared - well, at least for owners that is good news. Perhaps not so much for potential buyers. The Inland Empire remains more affordable compared to coastal areas.
23. 23. Done, we are at 23. Phew! Imagine it was 1999 ("Party like it's 1999"). I would now have to go on 24., 25., …., 63., … 87., …., 98., 99. Thank the force that you are spared that.

Our latest submission details some of the insights we presented in the State of the Region Report 2024. In many ways, it reflects our thought process about the current economic state of the region.

Bifurcated Economic Recovery from the Coronavirus Recession: And the Winner is…?

BY

Manfred Keil and Arlo Jay

The latest employment report released by the California Employment Development Department (EDD), contains labor market information on the 58 California Counties and 26 Metropolitan Statistical Areas (MSAs). The report does not contain much positive news for the Inland Empire MSA (San Bernardino County and Riverside County). The raw data, which does not take into account regularly occurring seasonal fluctuations, saw a slight 0.1 percentage point increase in the unemployment rate, but this was for December, a month during which seasonal employment should increase every year significantly because of the holidays. Once we remove the regularly occurring employment fluctuations, the Inland Empire unemployment rate increases to 5.7%, up from 5.4% in November, which is a large jump in terms of month-to-month changes. It means that while we missed a national recession in 2023, we are not out of the danger zone yet. Unfortunately there will be no report in mid February due to the annual revisions of the data, and we cannot tell before mid March what the underlying forces are. While there are many signs of a soft landing, don't unbuckle your seatbelts yet until the plane comes to a full stand still.

Time to look at the big picture.

The economic expansion between the end of the Great Recession (June 2009) and the beginning of the Coronavirus downturn (March 2020) was the longest period of uninterrupted economic growth in U.S. post World War II history: it lasted 128 months. The initial recovery was not spectacular at all: it took five years (July 2014) for employment levels to return to pre-recession levels. Workers who had lost their jobs during the 2008-2009 recession were primarily working in manufacturing and construction (hence referred to as a 'mancession'), and did not regain employment for quite some time.

The recoveries that followed the Great Recession and the Coronavirus downturn were uneven across industries and regions. Since our expertise is on the Inland Empire and the role it plays in Southern California, we want to focus here on San Bernardino County and Riverside County labor market behavior.

Let's start with the Great Recession of 2008 to mid 2009, and then compare that situation to the more recent Coronavirus episode. The Inland Empire had a "first in, last out" experience since we were one of the epicenters of the housing bust. With hindsight, we should have seen the oncoming train in the tunnel since housing prices started to decline long before the start of the recession in December 2007. Employment in construction and manufacturing peaked in June 2006, a year before the peak in total employment. Unemployment rates in the Inland Empire reached 14.2% in November of 2010. This was worse than the unemployment rate for California (12.6%), and much worse than the national rate (10.0%). Subsequently we saw a bifurcated recovery, where coastal regions performed significantly better than inland areas across the state of California.

What about the Coronavirus recession and its recovery? It is well known that the most affected industrial sector was Leisure and Hospitality. Hence geographical areas that had a higher share of employment in that sector suffered more than those that had a lower share: over 50 percent of the variation in the initial unemployment rate increase

across the Metropolitan Statistical Areas can be explained by the difference in labor shares for Leisure and Hospitality. Hence while the Inland Empire peaked at 15.2% in May of 2020, Los Angeles County reached 19% and even California as a whole showed a 16.1% rate.

Subsequently, the Inland Empire experienced a much faster recovery back towards unemployment rate levels seen at the end of the previous expansion (February 2020). Logistics played a major role during the recovery. In the Inland Empire, it became the second largest employer, since we are the 'warehouse capital of the world' according to The Economist magazine. By December 2021 we saw extraordinarily low levels of unemployment rates in the Inland Empire, especially after seasonally adjusting the data: 3.2% (June 2022).

Since then, economic activity in the Inland Empire has slowed significantly. We do not attribute this to the early sign of a national recession ('first in…'), but instead to the adjustment by consumers from shifting expenditure patterns away from consumer goods and back towards services (eating out, hotels, entertainment, etc.). At face value, the impact of this transition struck the Inland Empire more than other regions in Southern California and indeed both the state and the nation. Since February 2020, the seasonally adjusted unemployment rate in the Inland Empire has increased by 1.5 percentage points, reaching 5.7%. It is thereby significantly above the U.S. figure (3.7%) and higher than the state's 4.9%. The Inland Empire unemployment rate is also significantly higher than that of Orange County (4.3%), Ventura County (5.0%), and Los Angeles County (5.6%).

This does not sound good at first. But the unemployment rate is made up of two underlying variables: the labor force and employment. The unemployment rate will change by the amount that the labor force growth outpaces employment growth. For example, if the labor force does not grow at all but employment increases by 0.3 percentage points, the unemployment rate falls by 0.3 percentage points. Now comes a less intuitive example: employment increases, say by 0.1% but the labor force attracts more people, not all of which find a job right away. Let's say this amounts to 0.3 percentage points. Here the unemployment rate will increase by 0.2 percentage points despite the fact that employment grew.

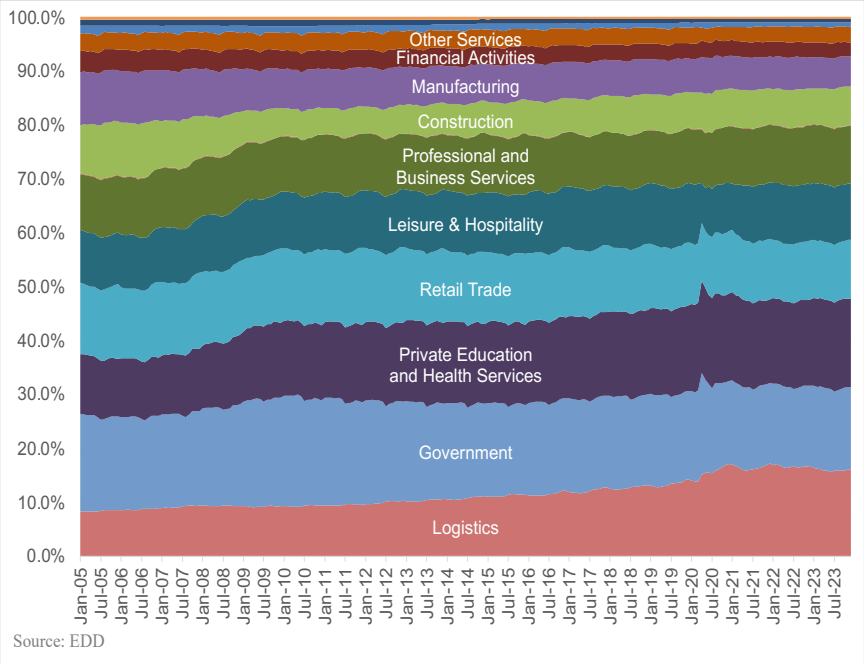
We are trying to torture you with a bit of algebra for a reason because it is relevant to understand the current situation in the Inland Empire labor market. Yes, we have the highest unemployment rate, but in all other Southern California areas, both the labor force and employment have shrunk since February 2020! The Inland Empire is the only region in Southern California where employment and the labor force have actually grown - this is a healthy situation. Unfortunately, the labor force grew faster than employment (it was up by 2.4% while employment increased by 0.9%), and hence our unemployment rate is 1.5 percentage points higher. If people had not joined the labor force in such large numbers, the unemployment rate for the Inland Empire would be roughly a percentage point below what it was in February 2020, namely at 3.3%. This suggests that we should worry less about our relatively high unemployment rate - we are doing comparatively well.

What about the other Southern California areas? Not so good. Los Angeles County did worse - its labor force shrank by 6.4% since February 2020 (roughly 1 out of 20 workers gone). Whether this is due to out net migration to another state or just a migration to the Inland Empire, which becomes more attractive with more work done from the home office and therefore less commuting, needs to be seen. The county also has an older worker population so this may partly be due to older workers leaving the labor force due to retirements. Employment in Los Angeles County also fell by 6.4% leading to a relatively small increase in its unemployment rate of 0.5 percentage points. Orange County is another loser: its labor force shrank by 1.8% and its employment by 3.1%. Similar numbers hold for Ventura County.

The bottom line is that the Inland Empire is doing relatively well economically and we are experiencing a bifurcated recovery. Compared to a year ago, we have the second highest employment growth among major MSAs in the state, including Silicon Valley and San Francisco. The Inland Empire used to be the loser in the recovery, it is

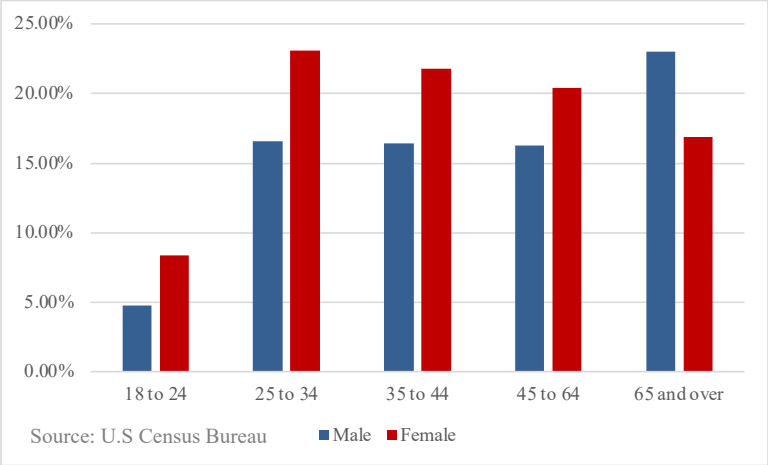
Additional Graphs and Figures

Figure 20: Inland Empire Employment by Industry Between 2005-2023



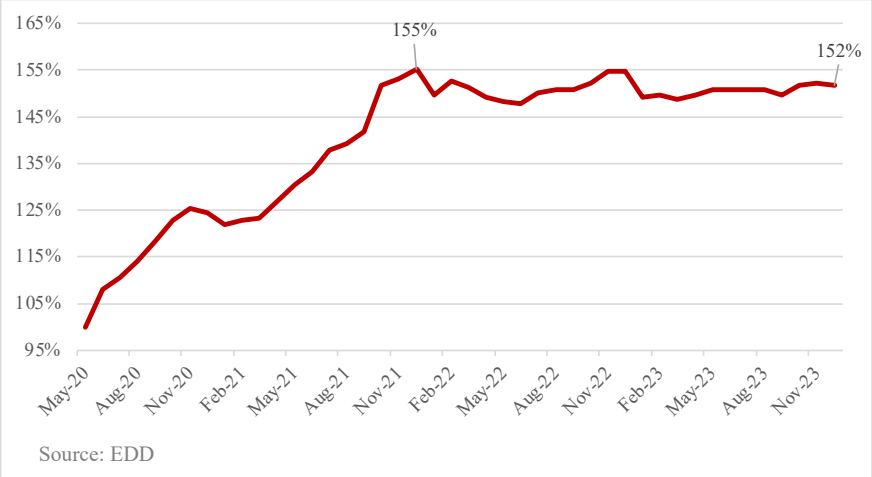
- Over the past 18 years, there has been a strong shift to logistics, government, education and healthcare service employment across the Inland Empire given the rise of warehousing to support the biggest ports across the US, Los Angeles and Long Beach.
- Before the pandemic, government employment accounted for the largest employment sector in the Inland Empire. However, in September 2020, for the first time, logistics overtook government employment, demonstrating the growth and demand for wholesale trade, transportation, and warehousing.
- Despite logistics rapidly increasing in the region, the overhiring in the region led to a slight drop again in 2021. Nevertheless, the sector has remained stable, accounting for roughly 16% of total employment.

Figure 21: % of Population with Bachelor's Degree or Higher Kern County, 2022 Estimates



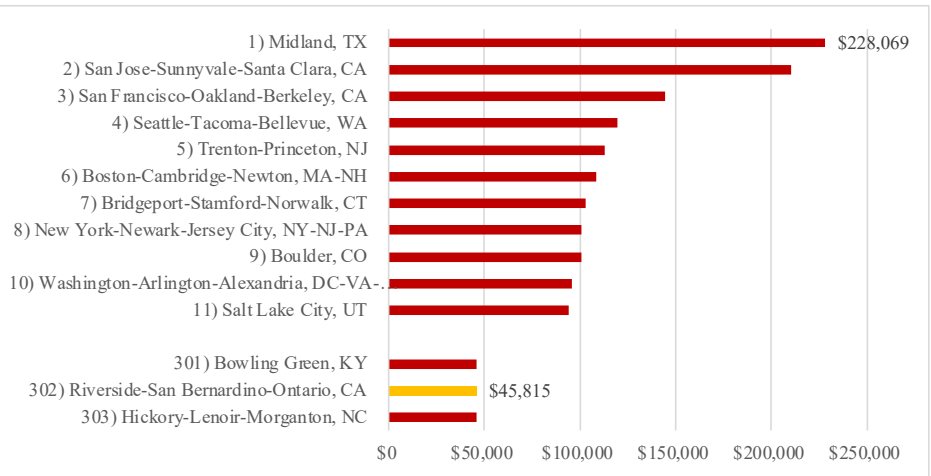
- Except for the part of the population that is 65 years or older, females in each age group have higher rates of higher education than males;
- The most educated group in Kern County are females who are 25 to 34 years old. The least educated are males between 18 and 24 years.
- In California, 35.9% of the population over 25 years have at least a bachelor's degree, indicatng that the population (and, hence, the labor force) of Kern county is significantly less educated than that of the state.

Figure 22: Logistics Employment in the "Warehouse Capital" As % of May 2020



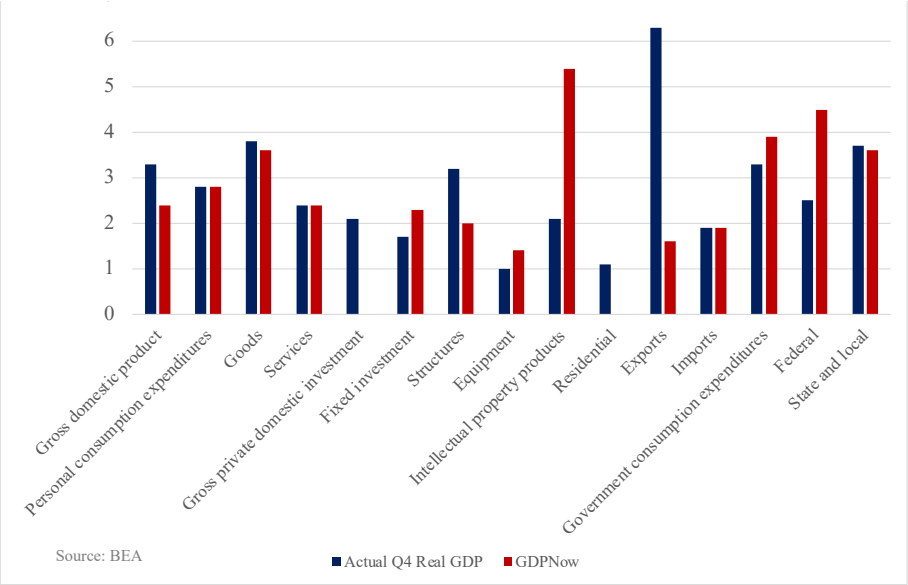
- Since reaching the bottom in May of 2020, employment in the Logistics industry went up by more than 55% in just 18 months and has been stable since then.
- Other regions have seen a gradual decline in the Logistics industry employment after February 2022 due to the consumption shift from goods to services.
- The national level of employment in the industry reached only 118% of the May 2020 level, which is 30 percentage points lower than in the "Warehouse capital".

Figure 23: GDP Per Capita in Selected MSAs 2021, USD



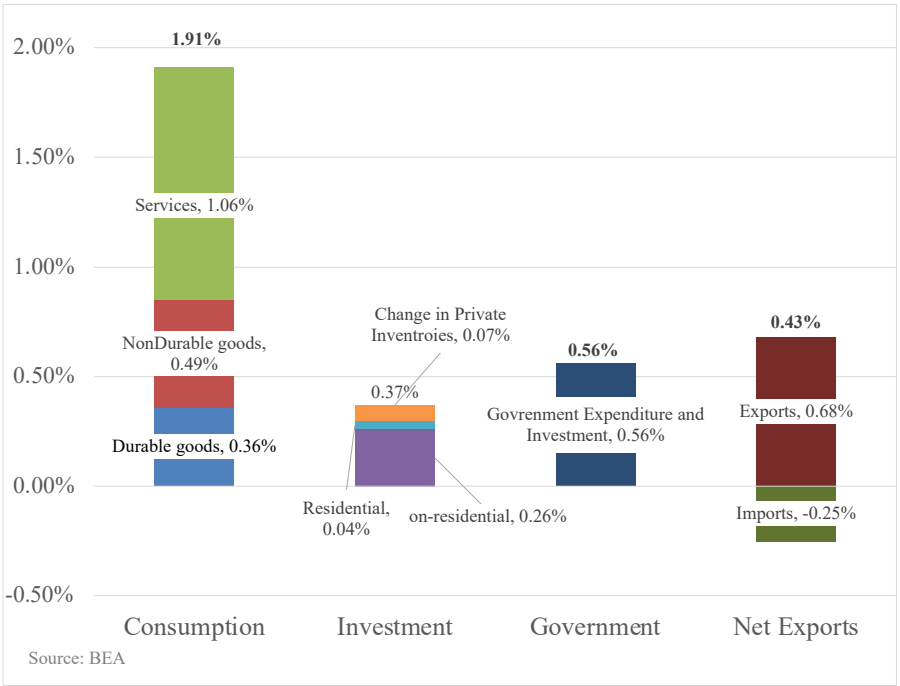
- Despite being the 12th- largest MSA in the country by population, the Inland Empire cannot compete with regions like Bowling Green in terms of GDP per capita. That is due to the low productivity and educaiton level of the workers.
- The most productive sectors, like Financial Services and Information, have very low employment levels in the region. On the other hand, Logistics, Government, and Private Education and Healthcare have the largest shares of total employment, but one of the smallest productivity levels.
- There are 382 MSAs in the United States, each consists of one or two counties. Only 20% of all U.S. MSAs show lower GDP Per Capita than the Inland Empire.

Figure 24: GDPNow Prediction vs. Actual Percent Change in Real GDP Q4 2023



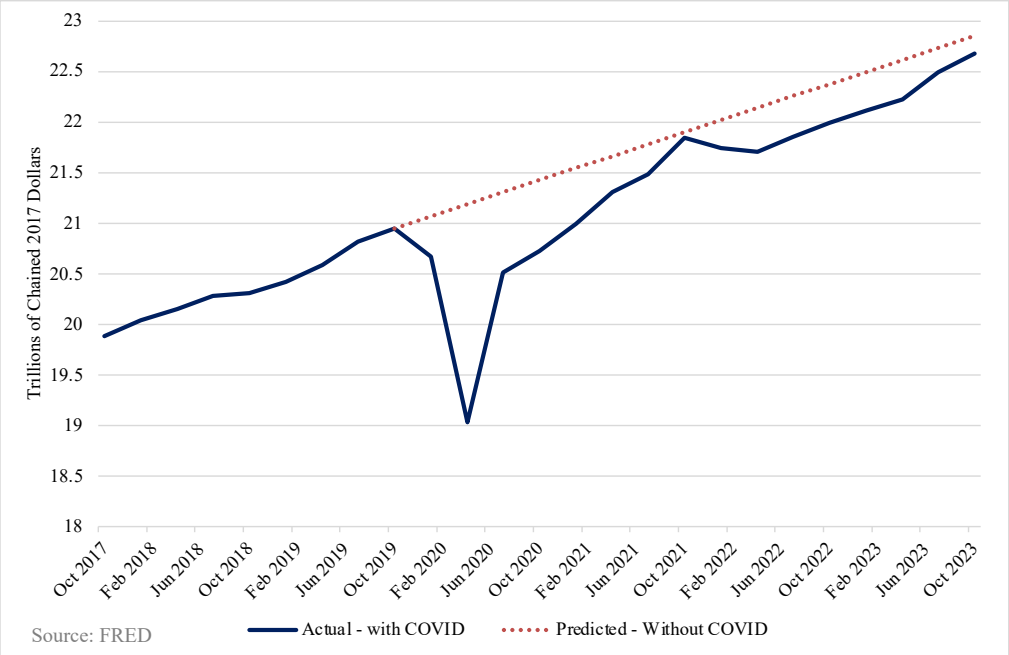
- Compared to the models, there was an unexpected increase in exports, gross private-domestic investment, and residential investments.
- IP products, government expenditures, and fixed investments grew less than predicted.
- GDPNow creates predictions based on purely mathematical models, which leads to the errors seen in the graph.
- Slower-than-predicted Intellectual property growth could be the result of the low IPO and M&A volumes in Q4, increased debates over foreign aid, or higher interest rates.

Figure 25: Contributions to Percent Change in Real GDP Q4 2023



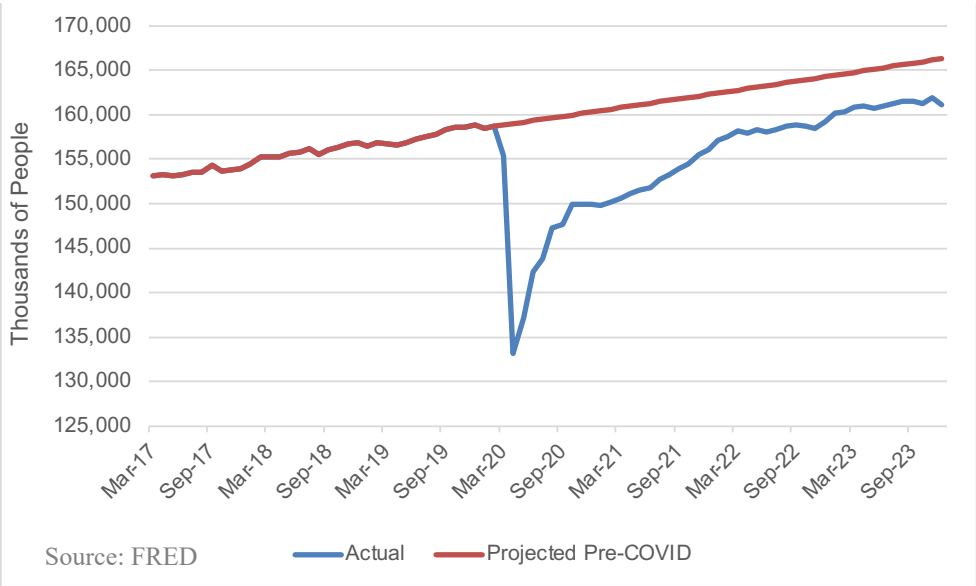
- Real GDP grew 3.3% at an annual rate in Q4.
- Largest contributor to Real GDP growth in Q4 was personal services, 1.06%.
- Imports were the greatest detractor from real GDP at -0.3%.
- Consumption represented the greatest contribution category at a combined ~+2%

Figure 26: Real GDP, Actual and Predicted Level, U.S.



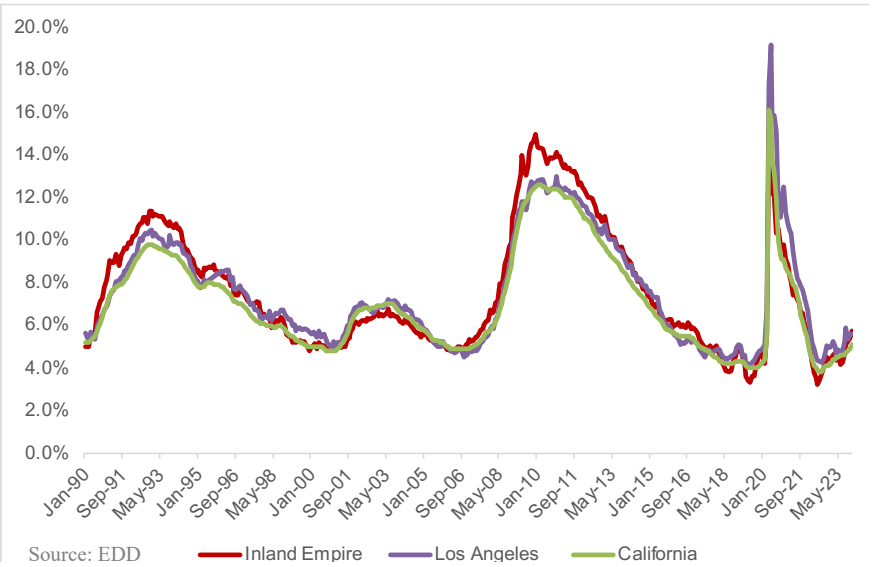
- Actual real GDP experienced a strong recovery since Q2 2020.
- The strong recovery momentum peaked in October 2021, with an actual GDP of 21.8
- trillion USD rivaling the predicted GDP of 21.9 trillion USD.
- Though GDP growth momentum has slowed since October 2021, the US economy is again experiencing strong GDP growth.

Figure 27: Employment Level, U.S.
Mar 2017 - Dec 2023



- The gap between projected pre-pandemic outcomes and the actual employment level has not necessarily continued to close on aggregate within the past 12 months.
- Since May 2023, however, this difference has increased slightly and currently sits at ~5,115,000 as of December 2023 (~3,956,000 was the lowest observed value since the pandemic; observed in March 2023).

Figure 28: Unemployment Rate, Seasonally Adjusted
Jan 1990 - December 2023

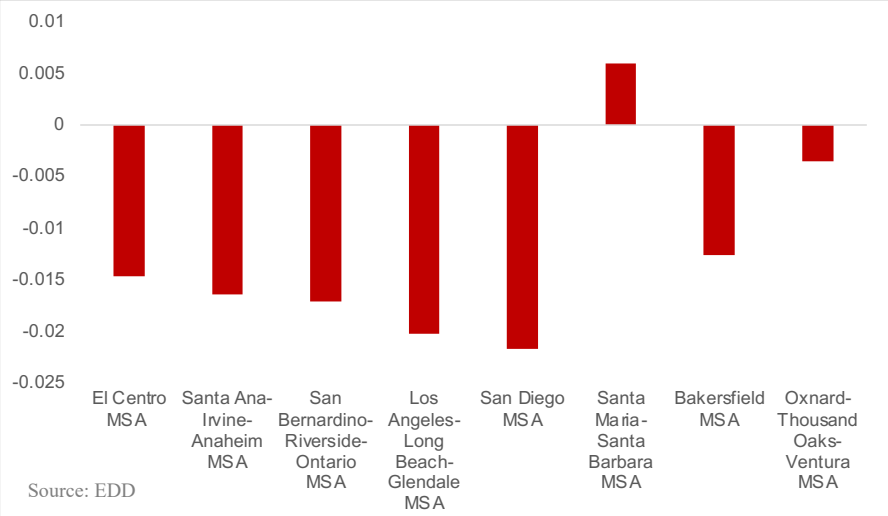


- Note that unemployment typically increases during economic recessions, including the Great Recession and the Covid-19 Recession. Unemployment rates have decreased in all three regions since the Covid-19 Recession, indicating recovery, but began to climb slightly in mid-2022. They are still several percentage points below early-pandemic levels.
- During the Great Recession, the Inland Empire faced particularly high increases in unemployment at the epicenter of the housing bubble. Comparatively, it fared better during the Covid-19 Recession; its unemployment levels were lower than Los Angeles's and closely tracked the state level. This may be attributed to stability provided by the logistics sector.
- For much of the past three years, Los Angeles has had a higher unemployment rate than the Inland Empire. However, the Inland Empire had greater increases in unemployment than Los Angeles between June 2022 and the end of 2023, leading the two rates to converge, both slightly above state levels. This may be attributed to the disproportionate effect of consumer shifts from goods to services on the Inland Empire.

Figure 29: Percentage Change in Personal Consumption Expenditures
Year to Year Change from 2018-2020

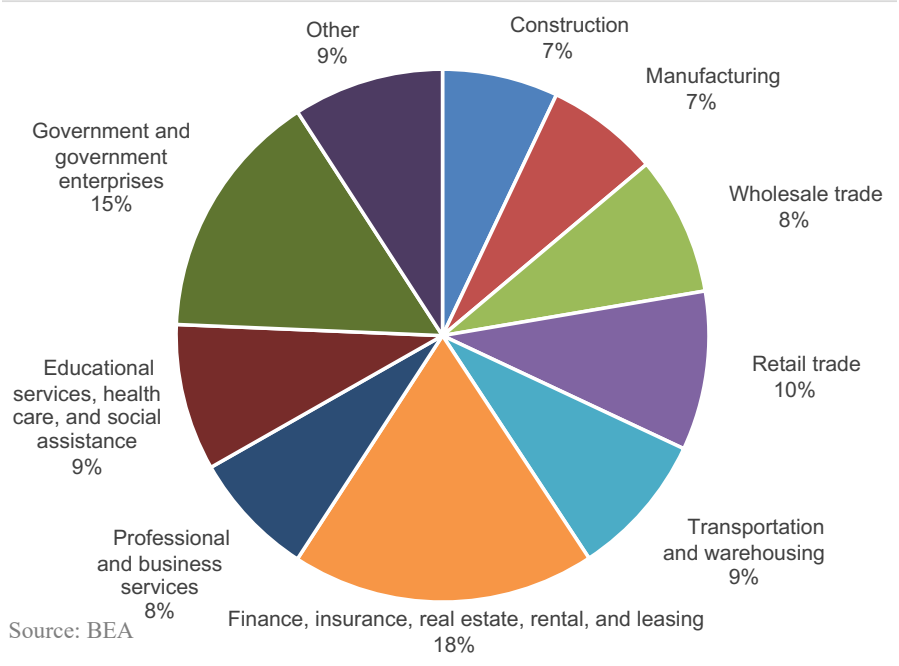
- The Personal Consumption Expenditures (PCE) level is an indicator of consumer expectation as it demonstrates consumers sentiment towards the current and future economic situation
- During the COVID-19 pandemic, the economy and social aspects were heavily affected by uncertainty in economic property given that stores were forced to shut down and unemployment rose to 14%. Hence, the economic outlook was minimal, depressing the PCE by roughly 20 percent.
- As the economy rebounded in early 2021 and the Federal Reserve injected multiple interest rate hikes to combat inflation, the PCE has recovered to a stable rate. However, it is worthy to note that the PCE is slightly more volatile in the last year compared to pre-pandemic levels, indicating remaining uncertainty about the FED's interest hikes.

Figure 30: Comparison of Employment Change in SoCal MSAs
% Change, December 2022 - December 2023



- Santa Maria - Santa Barbara MSA exhibits the only positive growth in employment with a 0.6% growth rate, while others experienced negative rates.
- San Diego exhibits the most substantial negative percentage change in employment among all MSAs.This decline can be attributed to small cuts across various sectors, with manufacturing facing the largest reduction.
- Oxnard - Thousand Oaks - Ventura MSA demonstrates the least negative growth.

Figure 31: Share of total output by Industry
Inland Empire, 2022



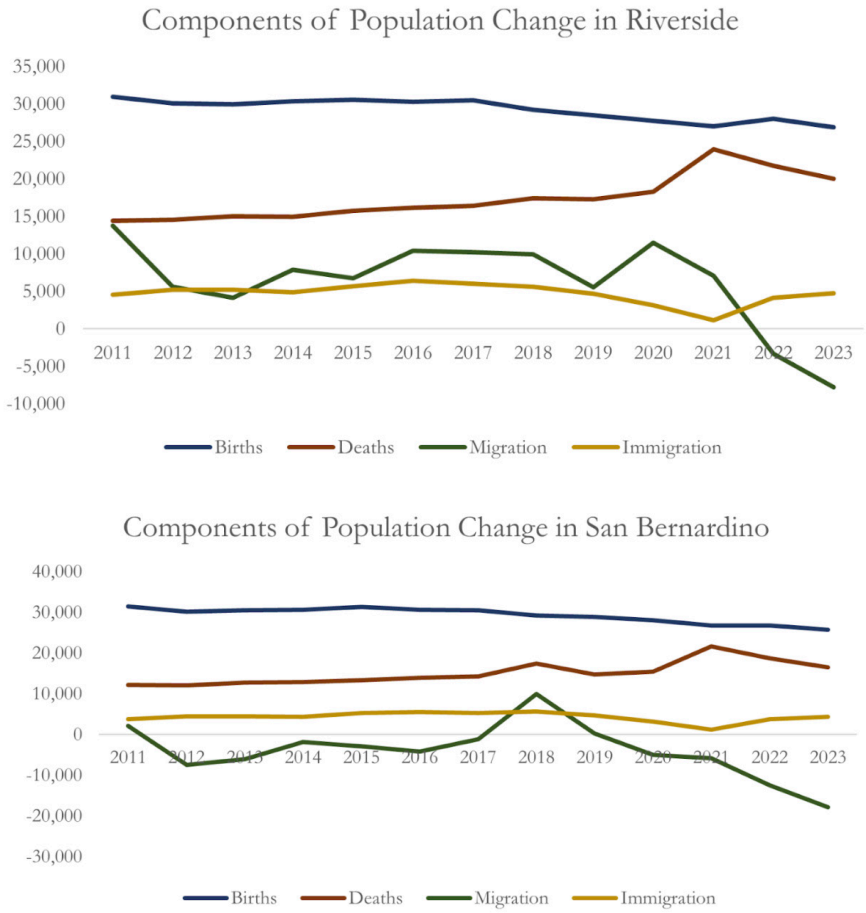
- The industries with the highest share of output in the Inland Empire MSA are government and government enterprises and finance, insurance, real estate, rental and leasing. Real estate, rental and leasing makes up a significantly higher share of output over finance and insurance, making up 86 percent of the output within that industry.
- The "other" category consists of (1) mining, quarrying, and oil and gas extraction, (2) agriculture, forestry, fishing and hunting, (3) utilities, (4) information, and (5) arts, entertainment, recreation, accommodation and food services.

Comparison of San Bernardino and Riverside Counties

Arlo Jay and Kiefer Tierling

While we generally picture the Inland Empire as a fairly homogenous unit, there are certain differences between its major counties that are worth noting. One major difference between the San Bernardino and Riverside Counties are their respective shares of logistics (analyzed in detail) and out-of-county workers, which include commuters and remote workers. These differences in industry shares are likely related to demographic disparities in areas such as household income and education and could have determined the severity of employment fluctuation through the Covid recession and recovery. Along with industry shares and employment, the counties have experienced different rates of migration loss in recent years, and interesting conclusions can be drawn from an analysis of zoning in each county.

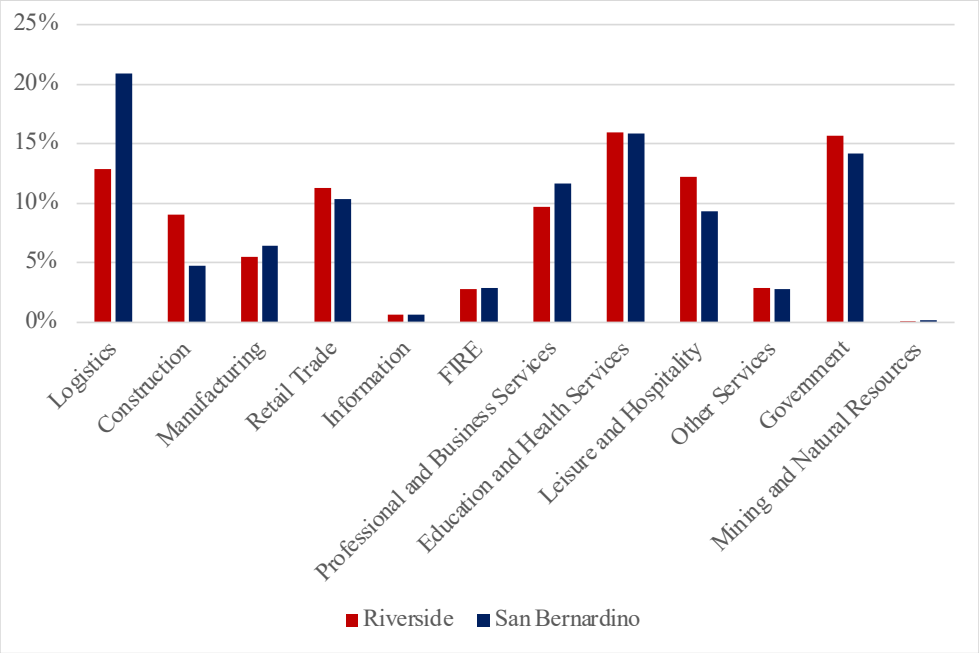
Figure 32: Components of Population Change in RIverside and San Bernardino



- We have seen net immigration decrease significantly post-pandemic, driven mostly by migration out of both counties to surrounding regions. San Bernardino has consistently seen net migration out of the county as cost of living has risen while Riverside has only recently experienced migration loss post-pandemic.

- We have also observed a continuous decrease in births in both counties, as mortality rates increased. This indicates a gradual shift towards an older population.

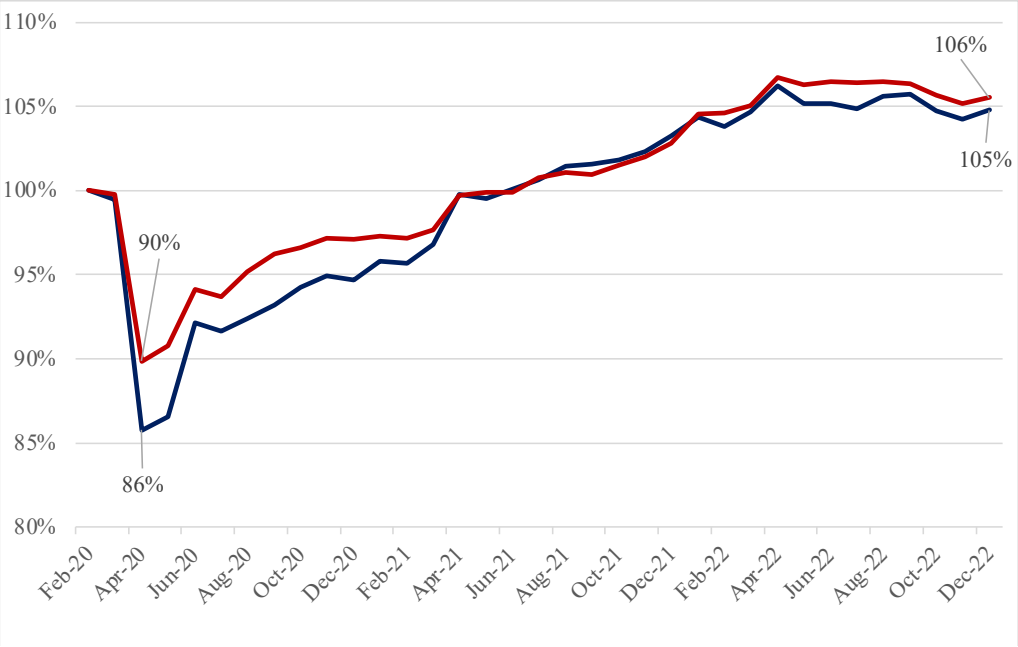
Figure 33: Industry Share of Total Employment, 2022



- As of 2022, San Bernardino employed a total of 178,600 people in the Logistics industry, meaning that 18% of employed workers in San Bernardino county work in Logistics, while Riverside employed 105,300 people in the Logistics industry, which is only 10% of total employment in the county.

- On the other hand, Riverside had a total of 284,100 out-of-county workers in 2022 (26% of workers in the county), more than double San Bernardino's share of 12%, or just 113,000, out-of-county workers.

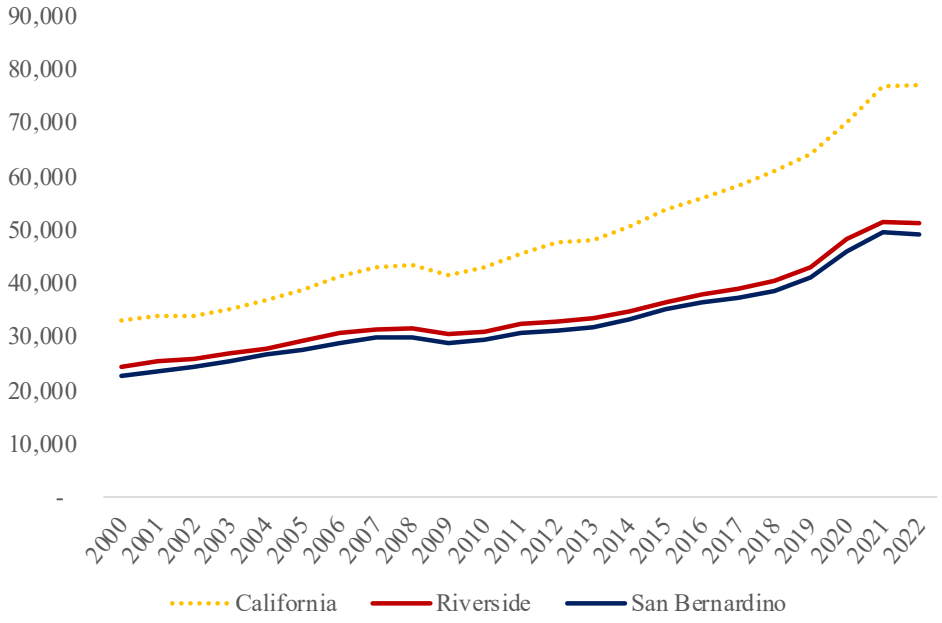
Figure 34: Percent of February 2020 Employment Seasonally Adjusted



- San Bernardino has done significantly better than Riverside since February 2020, losing less workers during the Covid recession and gaining more workers during the recovery that followed. This could be attributed to the greater share of logistics employment in San Bernardino and the greater share of out-of-county workers in Riverside.

- At the peak of the recession, in May 2020, Riverside lost 110,000 workers, 14% of its total employment, while San Bernardino lost 82,000 workers, only 10% of its total employment.

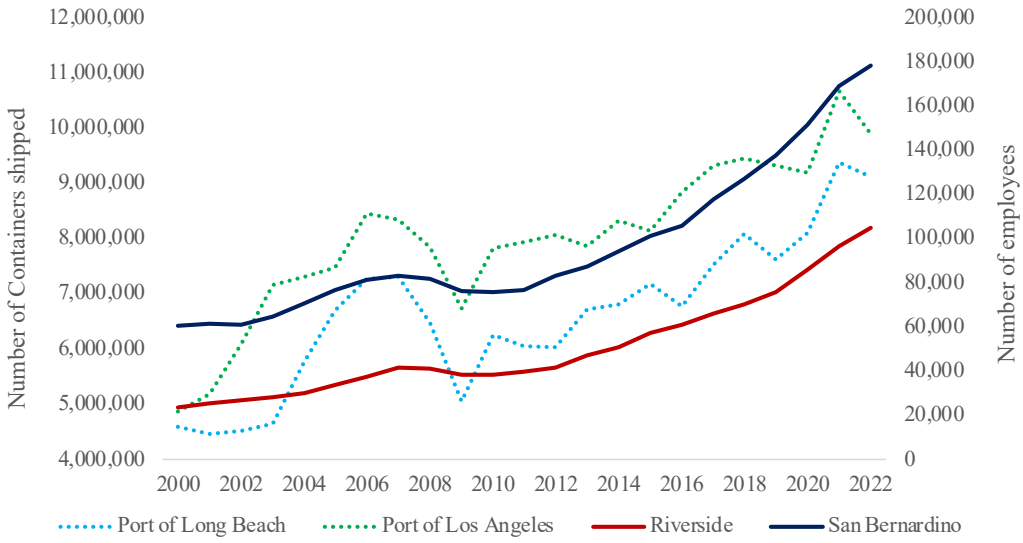
Figure 35: Per Capita Personal Income



- We have seen per Capita GDP growth lag behind the rest of California, which may be an indicator of economic growth potential. The gap between per capita personal income for California and the Inland Empire has continued to expand.

- Riverside and San Bernardino boast have income, with the latter consistently slightly behind. Both county's per capita incomelevels were boosted by a shipping boom during the pandemic, but have since experienced a pull back as eCommerce has dipped slightly.

Figure 36: Trade Volumes (Left axis) and Logistics Employment (Right Axis)



- A statistical analysis of annual TUES (20-foot-equivalent unit) flow through both ports reveals a strong correlation between shipping volume and logistics employment in Riverside (0.891) and San Bernardino (0.887). We have seen strong growth from shipping through both ports, driving demand for warehousing to process and store goods in the Inland Empire.

- Similarities in logistics employment in both San Bernardino and Riverside (correlated at 0.995), indicate trade from both ports are indiscriminate to logistics processing in either county. As shipping through both ports continues to increase, we may see further increases in logistics employment in both counties, a strong indicator of future economic growth.