

SOUTH BAY ECONOMIC FORECAST & INDUSTRY OUTLOOK

2023-2024

PREPARED BY

**SOUTH BAY
ECONOMICS
INSTITUTE**

CALIFORNIA STATE UNIVERSITY, DOMINGUEZ HILLS

CSUDH

Our Sponsors



PRESENTING SPONSOR

CHASE



GOLD SPONSORS



Ms. Bree Nguyen
CSUDH Alumna



Ivy & Leo Chu

SILVER SPONSORS

- Goodwill Southern Los Angeles County
- Linda DeYampert; Director Health & Safety (National Football League)
- Systems Technology, Inc.
- Venture Management

PARTNERING ORGANIZATIONS

- Carson Chamber of Commerce
- Los Angeles Area Chamber of Commerce
- South Bay Association of Chamber of Commerce
- South Bay Workforce Investment Board (SBWIB)
- Torrance Chamber of Commerce

Welcome

About California State University, Dominguez Hills

California State University, Dominguez Hills (CSUDH) was founded in 1960 and permanently relocated to Carson in 1965 in response to the Watts Rebellion and the need to increase access to higher education for Southern California residents.

For over 50 years, CSUDH has served a diverse community of learners and educators collaborating to change lives and communities for the better. CSUDH is committed to connecting its students to a higher-quality, transformative education while providing the L.A. region with a vital resource for the talent, knowledge, skills, and leadership needed to thrive today and tomorrow. Of the university's over 110,000 alumni, 60% live and work within 25 miles of campus.



Jose N. Martinez, PhD



Fynnwin Prager, PhD



Jennifer Brodmann, PhD



Jian-yu Ke, PhD



Nestor Garza, PhD

About the South Bay Economics Institute

The South Bay Economics Institute at CSUDH aims to lead the South Bay region with innovative and forward-thinking economics education and research. The Economics Institute serves the College of Business Administration and Public Policy faculty and students, as well as community stakeholders, by:

- Developing CSUDH economics curriculum and teaching while incorporating proven high-impact practices;
- Engaging our diverse student body in economic analysis projects through mentoring programs, guest speakers, and community outreach opportunities;
- Facilitating faculty development through economics research resources, grant writing deliverables, and local business and government community engagement.

Jennifer Brodmann, PhD
Faculty Researcher

South Bay Economics Institute
California State University, Dominguez Hills

Jose N. Martinez, PhD
Co-Director

South Bay Economics Institute
California State University, Dominguez Hills

Fynnwin Prager, PhD
Co-Director

South Bay Economics Institute
California State University, Dominguez Hills

Headline Statistics

		2022 ACTUAL	2023	2024 FORECAST
Real GDP	National	+2.1%	+1.5% (Pro)	+0.8%
	South Bay	+1.4%	+1.4% (Pro)	+0.7%
Unemployment	National	+3.6%	+3.8% (YTD)	+4.3%
	L.A. County	+4.9%	+5.0% (YTD)	+5.5%
Housing Prices	L.A. County	+4.5%	+0.62% (YoY) ^a	Stable
	South Bay Coastal	+7.1%	-24.7% (YoY)	-4.3%
	South Bay Inland	+10.0%	-9.9% (YoY)	+1.9%
Inflation	L.A. County	+6.9%	+3.8% (YTD)	+2.6% ^b
International Trade	Imports (Ports of LA, LB)	-5.4%	-23.4% (YTD)	Rebound anticipated
Transportation	INRIX traffic congestion	+53% ^c	+N/A	Further growth
	L.A. Public Transit	+34.6% ^d	+4.7%	Slowing growth
Tourism	Passengers at LAX	+37.5%	+16.1%	Further growth, especially international

Year To Date (YTD), Projected (Pro), or Year-on-Year (YoY)

^a House prices in L.A. County increased 0.62% between July 2022 – July 2023, much lower than 4.52% during July 2021 – July 2022. However, the prices remain significantly higher than at the start of the Covid-19 emergency in March 2020.

^b US national estimate, from Federal Reserve (Philadelphia): <https://www.philadelphiafed.org/surveys-and-data/real-time-data-research/inflation-forecasts>

^c Down –8% from Pre-COVID: <https://inrix.com/scorecard>

^d Down –30% from Pre-COVID: <https://isotp.metro.net/MetroRidership/YearOverYear.aspx>



Overview

Strengthening the South Bay's Competitive Edge

This past year, our lives and the regional economy have been “getting back to normal” after the pandemic. Major entertainment events have returned—from Taylor Swift at SoFi Stadium to Barbie at every multiplex—and retail and hospitality are above pre-pandemic levels (see *Figure 4*). Travel habits are returning more slowly, for better or worse. Passenger numbers at LAX, traffic congestion, and public transit use are all still yet to reach pre-pandemic numbers. We are hanging on to some pandemic-era habits. E-commerce has continued to increase its share of retail, though the pandemic bounce has dissipated. Working from home rates remain higher than before COVID. On the other hand, cannabis sales have softened since the pandemic.

Hyperinflation appears to be behind us, as U.S. Federal Reserve interest rate increases have had the desired effect. Inflationary pressures appear to have softened demand across numerous sectors of the South Bay and L.A. economies. The L.A. area CPI is now down to around a 3% increase year-on-year, which is within a more “normal” range, especially compared to the 8.5% highs of last year. The producer price index has also softened over the past year¹. This has reduced pressures on businesses and households, though many have already adjusted spending habits. U.S. consumer confidence remains high², though manufacturing conditions are more mixed³.

Despite recent economic challenges, the labor market has remained strong overall. Layoffs in some sectors—especially IT—have received media attention. However, unemployment rates have remained low overall, meaning that household spending has remained strong despite high inflation. As shown in Table 1, most forecasters anticipate unemployment to increase over the next two years, but not to unmanageable levels.

The importance of consumer spending to the economy means that the South Bay region faces many of the same conditions as the state and national economy. Moreover, the South Bay's economic diversity, with industries across the industrial spectrum, mean that our regional forecast for 2023 and 2024 tracks closely to that of the national economy, which has remained remarkably resilient despite inflation and high interest rates. The U.S. continues to outpace other wealthy nations thanks to its dynamic and highly-educated workforce, fiercely competitive corporate culture, and large and self-sufficient economy.

Our region has many competitive strengths, including high tech industries, a strong start-up and investment culture, sectoral diversity, a highly-educated workforce, major ports and infrastructure, and demographic diversity. All these factors—along with California's natural amenities—mean that the South Bay is likely to continue to attract investment from businesses and households alike.

Our tech panel companies this year represent many of the South Bay's qualities. Varda Space Industries of El Segundo are innovating biotech through space manufacturing, while John Deere Intelligent Systems Group of Torrance are leading technological innovations in the agricultural sector. Azure Printed Homes of Culver City are disrupting homebuilding to drastically reduce construction time and cost, while DSA Signage of Rancho Dominguez have incorporated robotics to keep manufacturing in the South Bay.

¹ U.S. Bureau of Labor Statistics (2023) Producer Price Index. <https://www.bls.gov/ppi>

² The Conference Board (2023) US Consumer Confidence <https://www.conference-board.org/topics/consumer-confidence>

³ Trading Economics (2023) US Manufacturing PMI <https://tradingeconomics.com/united-states/manufacturing-pmi>



Overview

Nonetheless, numerous challenges confront the region. Homelessness and poverty continue to strain families and communities across L.A. High rents are a key contributing factor exacerbating homelessness⁴. Our region needs to build more houses to keep prices down. The L.A. region was built on ever-sprawling housing tracts, but we’ve reached limits to such growth. Innovative companies like Azure Printed Homes are helping to address this with infill development, ADUs, and other ways to maximize the space we have. Cities also need more flexible and responsive zoning and development planning.

People are leaving in part because of high housing prices and rents. This is the first time since records began that California has experienced population declines. While media reports of a “CalExodus” are overblown⁵, California has always relied on migration from the rest of the U.S. and the world. COVID-19 border shutdowns reduced inflow from abroad, which contributed significantly to population decline. This will likely level off as international migration increases once again.

L.A. has experienced a “hot labor summer,” with strikes at a higher level than prior years. Some workers face no other options to achieve better working conditions or higher wages in the face of high inflation. Others, such as striking Hollywood writers, are concerned about the potential for jobs to be replaced by AI and robotics. The launch and popularity of the AI language model ChatGPT has been a hot topic of discussion. In academia, we have heard a range of responses, from concerns about students using ChatGPT to write their essays through professors requiring students use the tool to support their projects. In the wider workplace, many high-skilled professionals are now using ChatGPT to save them time on more mundane writing tasks. These tools will clearly change our workplaces, and while it is still far too early to tell to what extent, efficiency and productivity improvements through technological changes have benefited our region for decades. It is important our businesses and education systems adapt.

TABLE 1. SOUTH BAY MACROECONOMIC FORECAST

FORECASTER	REAL GDP			UNEMPLOYMENT		
	2023	2024	2025	2023	2024	2025
UCLA Anderson Forecast	1.4%	1.2%	2.4%	4.4%	4.8%	4.6%
U.S. Congressional Budget Office	1.5%	1.0%	2.2%	3.7%	4.5%	4.6%
U.S. Federal Reserve	1.9%	0.5%	-	3.6%	4.0%	-
U.S. Fed (Philadelphia)	1.3%	1.0%	2.4%	3.7%	4.3%	4.4%
Wells Fargo	2.1%	0.4%	-	3.6%	4.4%	-
Deloitte	1.5%	1.4%	1.8%	3.8%	4.0%	3.8%
OECD	1.6%	1.0%	-	3.7%	4.4%	-
Fannie Mae	1.9%	-0.2%	-	3.5%	4.3%	-
SwissRe	0.9%	0.8%	-	-	-	-
Bloomberg Consensus^a	1.1%	1.1%	-	-	-	-
NATIONAL AVERAGE	1.5%	0.8%	2.2%	3.8%	4.3%	4.4%
SOUTH BAY REGION FORECAST^b	1.4%	0.7%	2.0%	4.8%	5.5%	5.2%

^a Survey of economic forecasters

^b Unemployment for South Bay Region is based on L.A. County estimate model

⁴ Kushel, M and T. Moore. 2023. Towards a New Understanding. The California Statewide Study of People Experiencing Homelessness. https://homelessness.ucsf.edu/sites/default/files/2023-06/CASPEH_Report_62023.pdf

⁵ Holmes, N. 2022. CalExodus: Are People Leaving California? California Policy Lab. <https://www.capolicylab.org/wp-content/uploads/2022/02/CalExodus.-Are-People-Leaving-California.pdf>

Jobs and Unemployment

Analyzing the broader labor market situation in California and the U.S., the labor force participation rate tends to be consistently slightly smaller for California than for the U.S. (August 2023: 62.4% and 62.8%, respectively). Conversely, the unemployment rate is consistently higher in California than for the U.S. (August 2023: 4.6% and 3.8%; Figure 1).

As shown in Figure 2, South Bay employment has a similar trend to California as a whole. However, L.A. and South Bay employment, which track almost identically, have both recovered more rapidly than California since the COVID-19 pandemic.

FIGURE 1. U.S. AND CALIFORNIA UNEMPLOYMENT RATE (NOT SEASONALLY ADJUSTED)

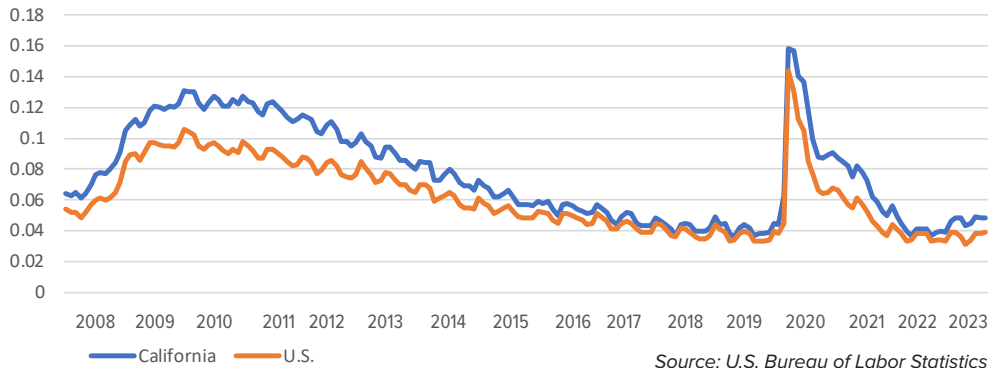
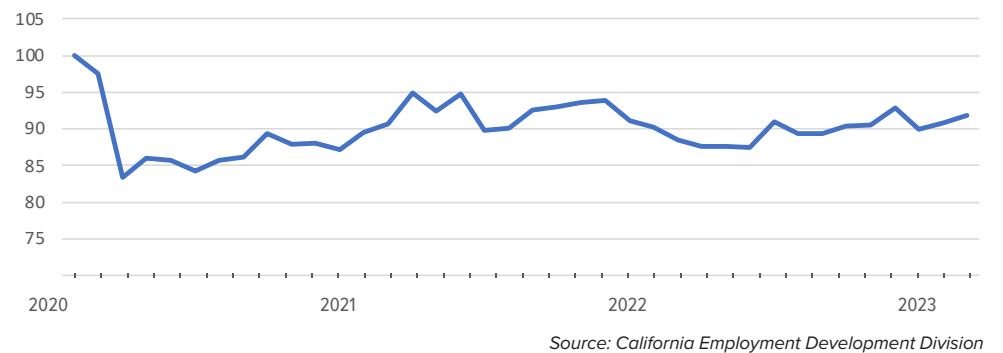


FIGURE 2. SOUTH BAY MONTHLY TOTAL EMPLOYMENT



INDUSTRY	SHARE OF SOUTH BAY WORKFORCE	INDUSTRY	SHARE OF SOUTH BAY WORKFORCE
Agriculture, Forestry, Fishing and Hunting	0.67%	Professional, Scientific, and Technical Services	7.03%
Construction	9.70%	Management of Companies and Enterprises	2.77%
Manufacturing	0.75%	Admin. and Support and Waste Mgmt	10.62%
Wholesale Trade	5.17%	Educational Services	4.96%
Retail Trade	6.45%	Health Care and Social Assistance	5.98%
Transportation and Warehousing	2.01%	Arts, Entertainment, and Recreation	6.27%
Information	4.88%	Accommodation and Food Services	5.79%
Finance and Insurance	5.33%	Other Services (except Public Administration)	10.11%
Real Estate and Rental and Leasing	8.92%	Public Administration	2.60%

Source: California Employment Development Division



Jobs and Unemployment

CSUDH Alumni Employment

To say we are proud of our graduates is an understatement. Our students have unique grit and resilience, which helps explain why CSUDH consistently ranks among the best in the nation for social mobility.⁶ CSUDH alumni work in most economic sectors, with the highest paying average incomes in Utilities, Government, and Manufacturing for bachelor’s degree holders, and Information, Manufacturing, and Wholesale Trade for graduate degree holders. Table 2 shows the value-added of a graduate degree, while those with CSUDH bachelor’s degrees are likely to earn \$15,000 per year more than peers without degrees.

Our students usually stay local, serving the communities they were raised in. Lightcast Alumni Outcomes data shows one third of our alumni live in the City of L.A., with 6% in Long Beach, 4% in Torrance, 2.5% in Carson, 1.4% in Hawthorne, 1.3% in Inglewood, 1.2% in Gardena, and 1.1% in Redondo Beach. Major employers for CSUDH alumni include L.A. Unified School District, the California State University system, Kaiser Permanente, University of California, Northrop Grumman, L.A. County Department of Children and Family Services, Amazon, Providence, Long Beach Unified School District, and Cedars Sinai.



TABLE 2. AVERAGE INCOMES BY SECTOR FOR CSUDH GRADUATES

EMPLOYMENT SECTOR	BACHELORS	EMPLOYMENT SECTOR	GRADUATE DEGREE
Utilities	\$75,968	Information	\$124,260
Government	\$65,792	Manufacturing	\$91,950
Manufacturing	\$62,323	Wholesale Trade	\$89,115
Mgmt of Companies & Enterprises	\$58,005	Utilities	\$88,530
Finance & Insurance	\$56,569	Scientific & Technical	\$84,991
Wholesale Trade	\$55,760	Government	\$82,549
Educational Services	\$50,890	Real Estate, Rental/Leasing	\$81,160
Scientific & Technical	\$50,073	Finance & Insurance	\$79,980
Information	\$48,457	Educational Services	\$75,320
Health Care & Social Assistance	\$44,601	Health Care & Social Assist.	\$72,506

Source: Calstatepays

⁶ CSUDH (2023) National Rankings and Awards. <https://www.csudh.edu/about/campus-facts/national-rankings-awards/>

Inflation

High inflation has been a drag on economic growth since mid-2021. Higher prices reduce consumer spending power and are particularly challenging for low-income households. L.A. Metro Area prices increased substantially between the end of COVID-19 restrictions in early 2021 and this summer (*Figure 3*), stoked by U.S. federal stimulus payments, the war in Ukraine, and COVID-related supply chain disruptions. Figure 3 omits that inflation had not been above 8 percent in L.A. since 1982. Figure 4 suggests high inflation did not undermine post-pandemic recovery of retail and food services sales in the South Bay and L.A., yet consumer spending growth has been dampened in late 2022 and early 2023.

FIGURE 3. CONSUMER PRICE INDEX, L.A. METRO AREA

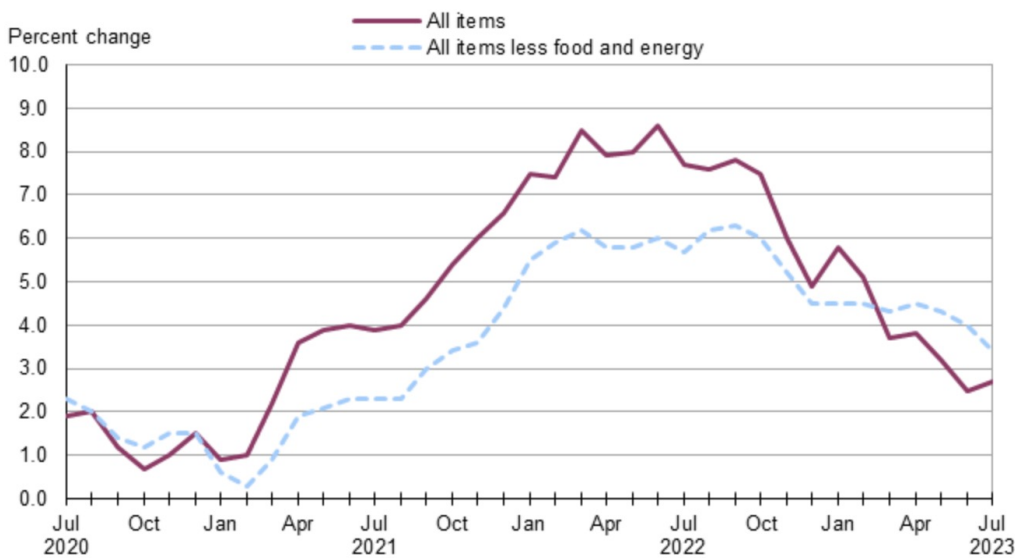
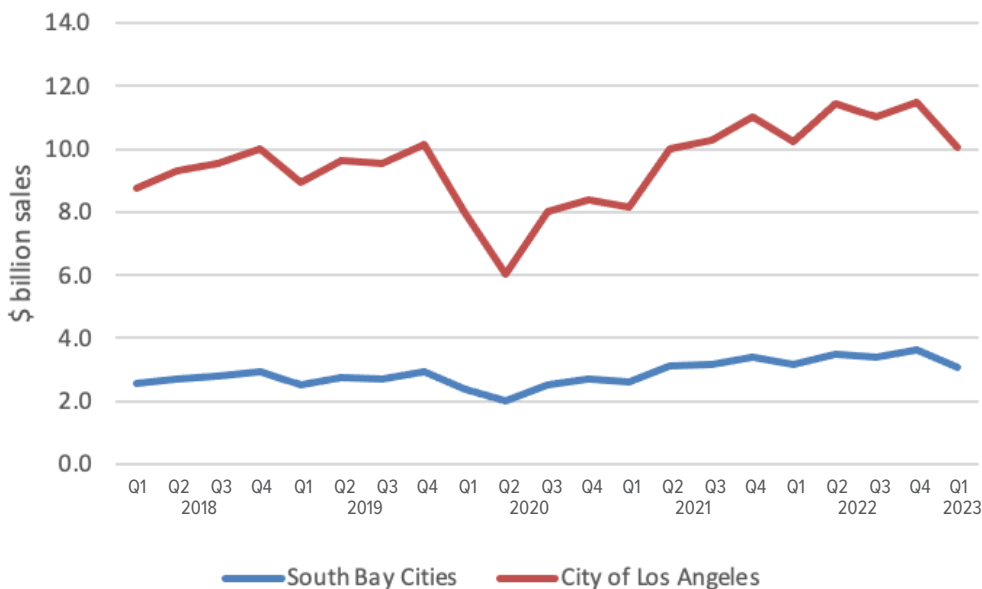


FIGURE 4. QUARTERLY SALES OF RETAIL AND FOOD SERVICES (\$ BILLIONS)



Supply Chains

Inflation has declined to more manageable levels in part due to supply chain effects. The price of raw materials is key. Petroleum prices increased due to the war in Ukraine, while material inputs into high tech products and construction materials could not meet demand, further inflating prices. However, as shown in Figure 5, purchasing managers' perceptions of prices have been relatively stable since late 2022.

Supply chain logistics challenges had also contributed to high inflation. Rapid growth in imports post-lockdown led to severe port congestion. The number of vessels waiting outside the port peaked in November 2021, with ships waiting for nearly 25 days to secure a berth. The peak containerized import volume for both ports occurred in the first half of 2022, after which it declined noticeably in the subsequent 12 months (Figure 6). These challenges contribute to higher costs of doing business.

Recent declining imports and exports at the San Pedro Bay ports are concerns for our region. Federal Reserve interest rate rises to combat high inflation may have contributed to a decline in manufacturing activity, decreasing new orders and back orders for U.S. manufacturers, all of which had a direct impact on the volume of cargo handled by the San Pedro Bay ports. The Ports of L.A. and L.B. have lost 5.9% of U.S. market share to the ports of New York and Newark, Savannah, Houston, and Norfolk in the past decade (Figure 7 on next page).

FIGURE 5. PURCHASING MANAGERS' PERCEPTION OF PRICES INDEX

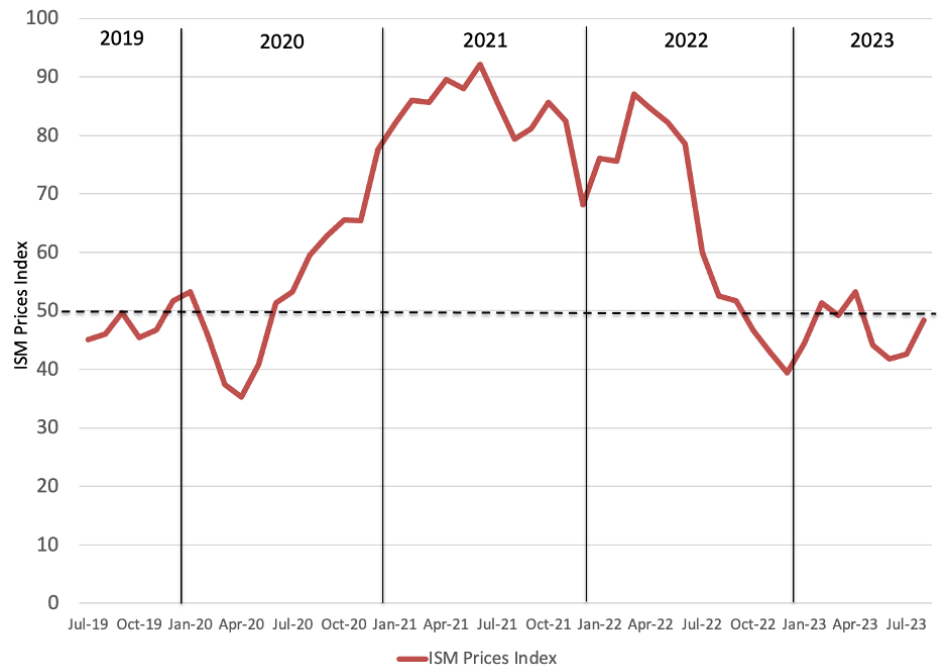
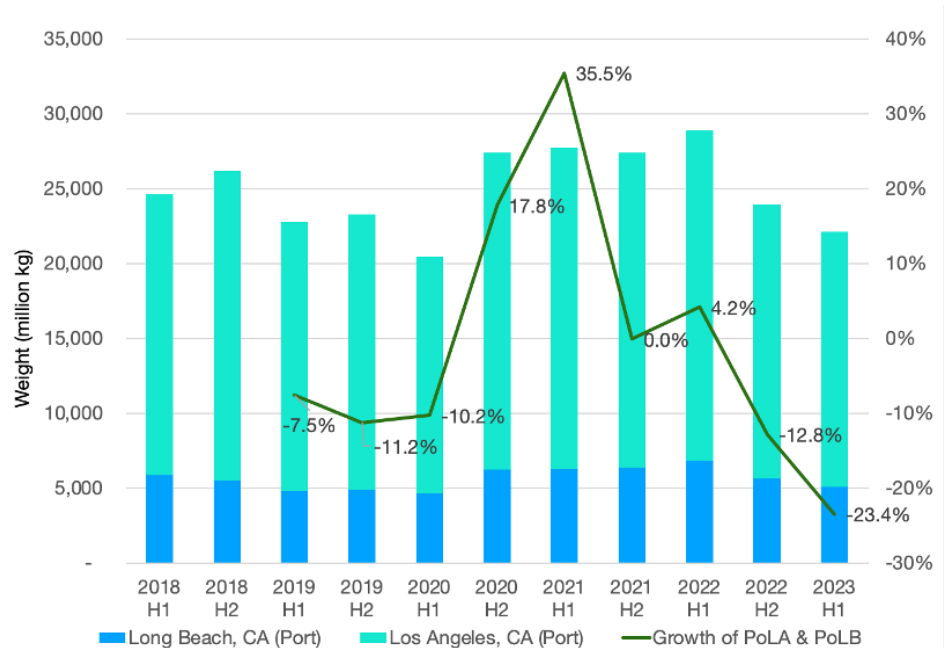
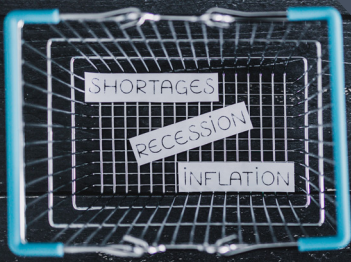


FIGURE 6. CONTAINERIZED VESSEL IMPORT AND ITS GROWTH – PORTS OF L.A. AND LONG BEACH



Source: Census Bureau

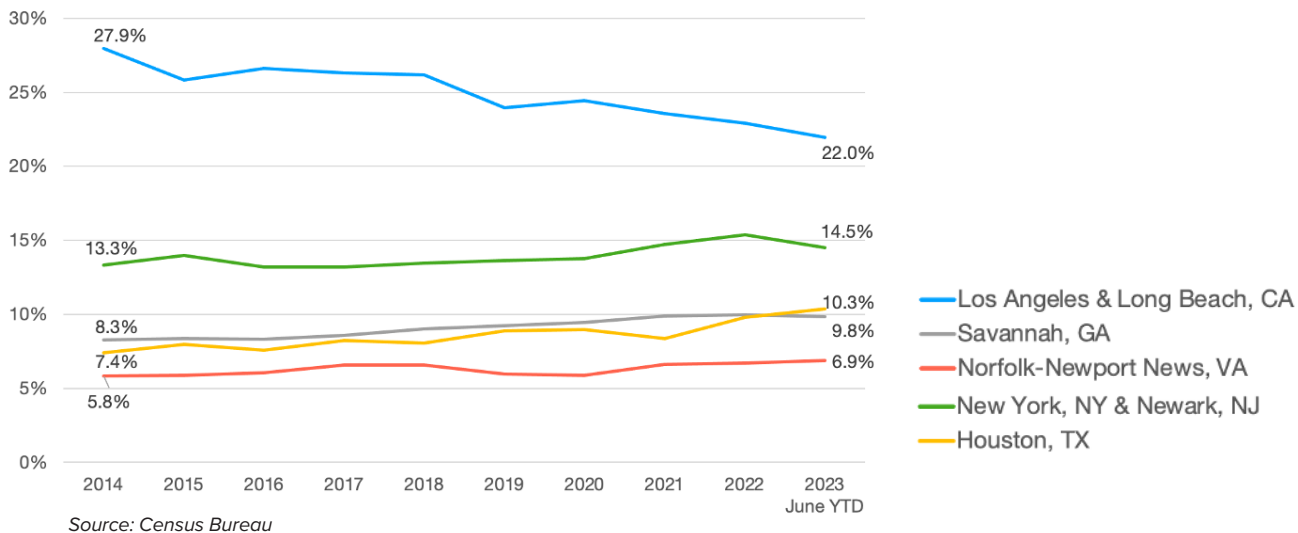


Supply Chains

Over the past two decades, east and gulf coast ports have made substantial infrastructure investments in anticipation of the 2016 Panama Canal expansion. Another factor is that in 2019 businesses began diversifying commodity sources, redirecting some production away from China towards Southeastern and Southwestern Asian countries due to U.S.-China trade tensions and China's "zero-COVID policy." Some of these countries are better suited to Panama Canal or even Suez Canal routes to the East Coast.

Labor negotiations at West Coast ports, a shift in U.S. population growth towards the Sun Belt states, and disruptions at the San Pedro ports during the pandemic have also contributed to this market share loss. The Retail Industry Leaders Association (RILA) reported its members, including Home Depot, Target, and Best Buy, have redirected some of their cargo away from the west coast in favor of gulf coast ports (*Bloomberg*, 2023).⁷

FIGURE 7: MARKET SHARE OF CONTAINERIZED VESSEL IMPORT AND EXPORT WEIGHT – U.S. MAJOR PORTS, 2014 TO 2023 JUNE YTD



Concerns over China

The San Pedro ports' declining import market share highlights the importance of China to the South Bay and L.A. economies. China's economic growth had been remarkable: between 2000 and 2019, it consistently achieved annual growth rates around 9%. However, this period ended when China's rigorous three-year "zero-COVID" policy dampened economic expansion and foreign investments. The post-COVID reopening in late 2022 failed to reignite economic confidence, resulting in GDP growth of only 3.2% in Q2 2023. China's exports declined 8.8% year-on-year in August, marking an eight-month consecutive downturn in 2023. Foreign direct investment also declined 87% year-on-year to \$4.9 billion in Q2 2023. China experienced deflation in consumer prices during July.

The most pressing challenge for China's economy is the downturn in the real estate market. Home prices are falling and major developers such as Evergrande and Country Garden have defaulted. The government has been attempting to stabilize the real estate sector by reducing interest rates and ensuring builders' access to financing. The significant slowdown in China raises profound questions for the global economy too, as the country's supply chains are interconnected with all regions of the world.

⁷ Curtis, L. (2023, May 8). California's port dominance is slipping as U.S. cargo shifts East. Bloomberg. <https://www.bloomberg.com/news/articles/2023-05-08/california-s-port-dominance-is-slipping-as-us-cargo-shifts-east>.

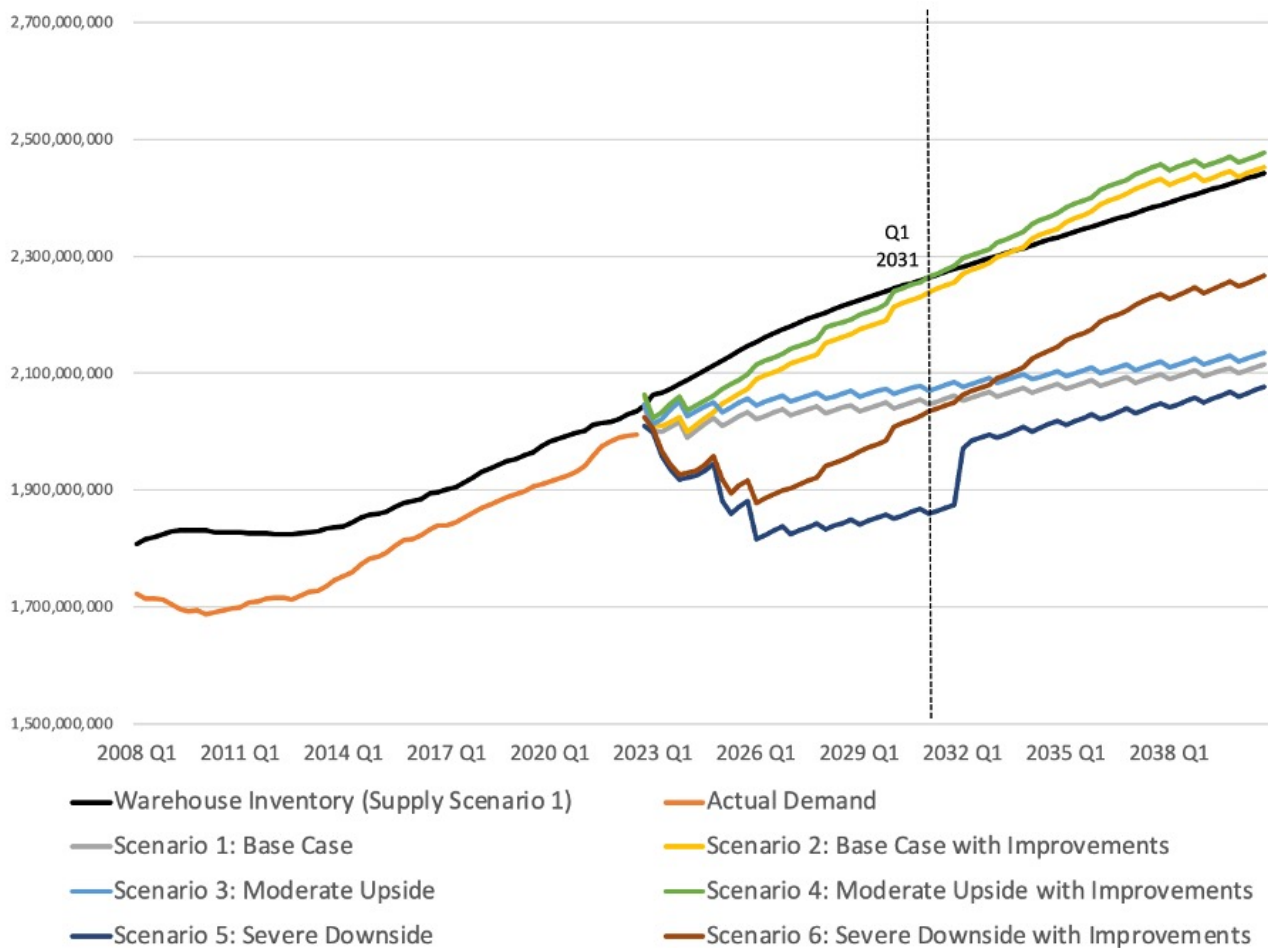


Warehousing in Southern California

COVID-19 also significantly impacted warehousing in the region. The demand surge discussed above in the third quarter of 2021 caused warehouse vacancies in Southern California to fall to only 1.0%. This severe shortage in warehouse capacity acted as a bottleneck, impeding the smooth flow of containers through the congested supply chain.

Between 2022 and 2023, our research team investigated the dynamics of warehouse space demand and supply in Southern California. Our findings (*Figure 8*) indicate that aggregate demand for warehouse space likely surpasses aggregate supply in Q1 2031. L.A. County and Orange County are expected to grapple with a shortage of warehouse space from 2023 through 2040. The gap in available inventory space will predominantly be filled by the surplus in the Inland Empire. However, when considering the potential impact of warehouse moratoriums, inventory shortages are anticipated to materialize three years earlier, in the first quarter of 2028.

FIGURE 8: WAREHOUSE SUPPLY AND DEMAND FORECASTS – SOUTHERN CALIFORNIA



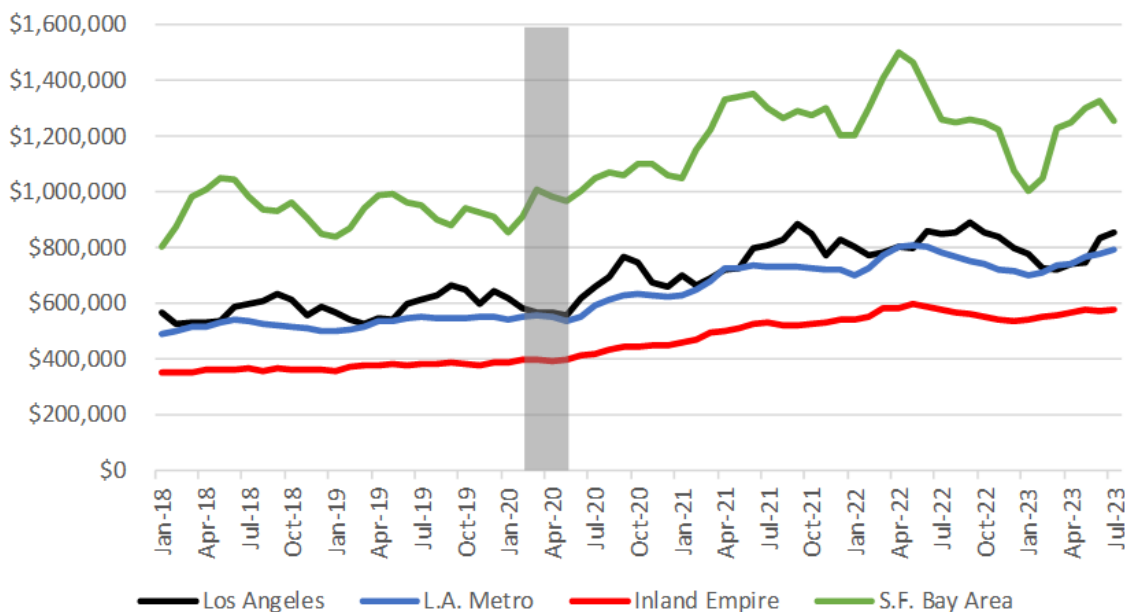


Housing Market

Prices in California Metro Areas

Unlike international trade, housing markets were relatively unaffected by COVID-19 (Figure 9). The impact was smaller and did not have the far-reaching effects of the Great Recession of 2008-09. Housing prices decreased during March – May of 2020, recovering strongly during 2021-22. There was a deceleration in all major markets—especially San Francisco—at the beginning of 2023, but since then we can see strong price increases across these markets.

FIGURE 9. MEDIAN PRICE FOR SINGLE FAMILY HOMES 2018-2023, PER METRO



Source: own elaboration using California Realtors Association data. Grey bar represents COVID period.

In contrast, sales activity fell drastically during COVID-19 in April-May 2020 and then during most of 2021-23. These abnormally high prices are likely due to supply scarcity. Figure 10 shows that the median time on market has been drastically lower during 2021 and 2022 than during 2018-2020. The slow rotation of real estate (Figure 11) and low inventories (Figure 12) in the state and the region, affecting supply. In other words, homeowners in the region are not selling, either waiting for better prices, wary of the very high buying prices everywhere else, or simply not needing to move out.

L.A. real estate markets also have long-standing problems. First, localized and restrictive planning structures, enacted during the period of metropolitan consolidation during the 1960s and 1970s mean that housing development is more challenging and costly than it needs to be. Second, Proposition 13, enacted in 1978 after the tax strikes, decelerates real estate rotation. A comprehensive re-haul of planning frameworks, property taxation and urban design (low-density car-oriented) are required, if the metropolitan region is to accommodate its present and future economic and population growth. These changes are challenging politically. For example, state attempts to increase flexibility and incentivize development of affordable housing have been met with a mixed reception by cities.

FIGURE 10. PERCENT CHANGE IN SALES BY METRO AREA (YEAR-ON-YEAR)

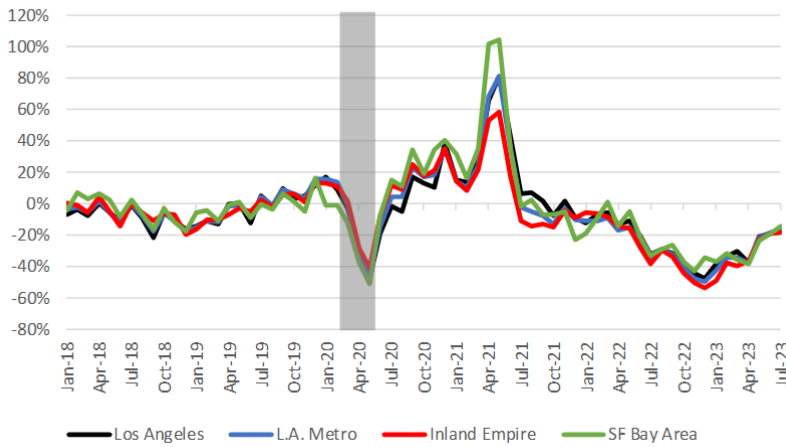


FIGURE 11. MEDIAN TIME ON MARKET (DAYS) PER METRO

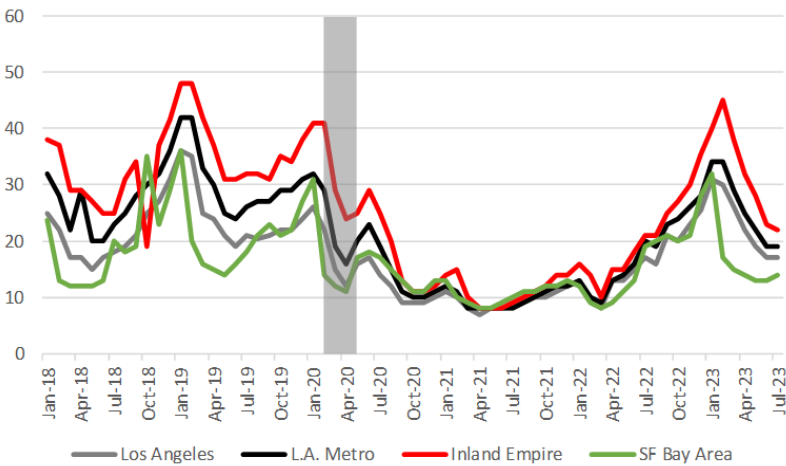
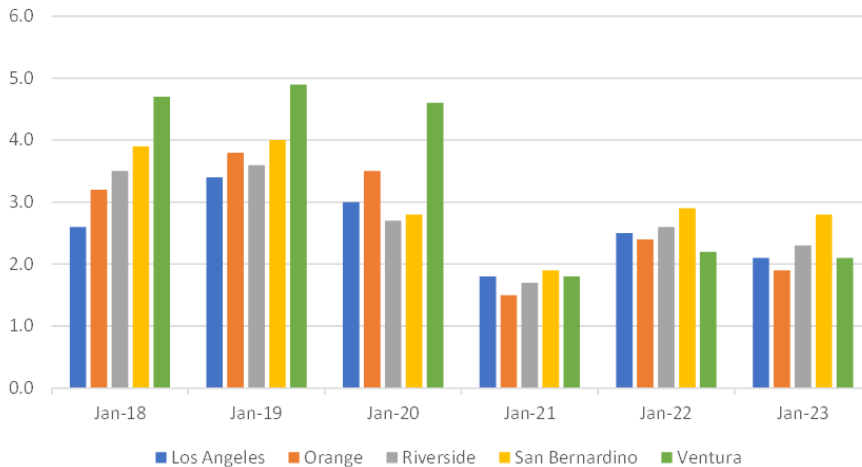


FIGURE 12. UNSOLD INVENTORY INDEX



South Bay Housing

Coastal South Bay cities such as Hermosa Beach, Manhattan Beach, and Palos Verdes Estates have higher house prices, yet the growth rate is diverse. Figure 13 shows negative price growth in most cities of the South Bay during 2022-2023, which contrasts with strong price increases during 2021-2022 and 2020-2021. Only Wilmington and Hermosa Beach have positive price growth, while most highly priced coastal cities tend to show strongly negative growth rates.

The patterns observed in Figure 14 clearly contrast with the price growth of Figure 15. Most cities in the South Bay have negative growth in transactions during 2022-2023, with the most negative growth in Wilmington clearly associated to its higher price growth in Figure 13. The cities with growth in the number of transactions were Inglewood, El Segundo, Carson, and Lomita. All of them experienced negative price growth during the period. Hermosa Beach was the only city with growth in both transactions and prices, although that relates to just 159 transactions in total.

FIGURE 13. SOUTH BAY MEDIAN HOME SALE PRICES

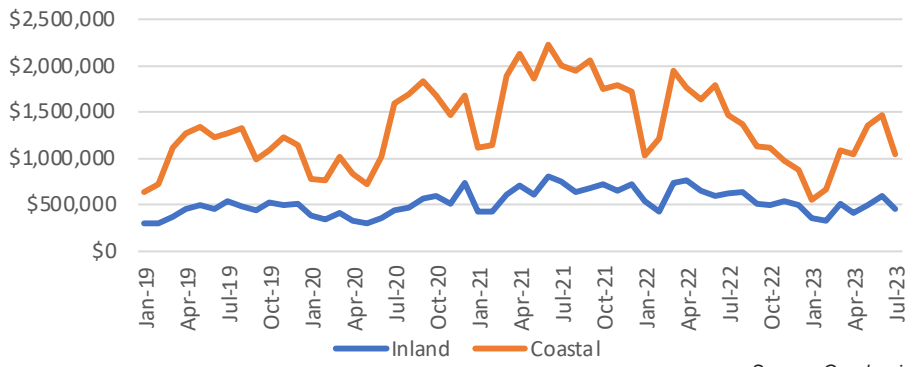


FIGURE 14. MEDIAN PRICE GROWTH JUNE 2022 – JUNE 2023

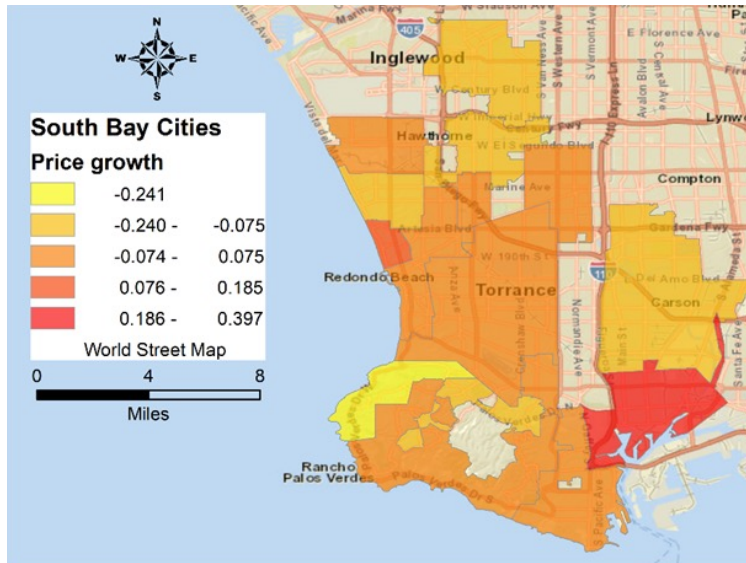
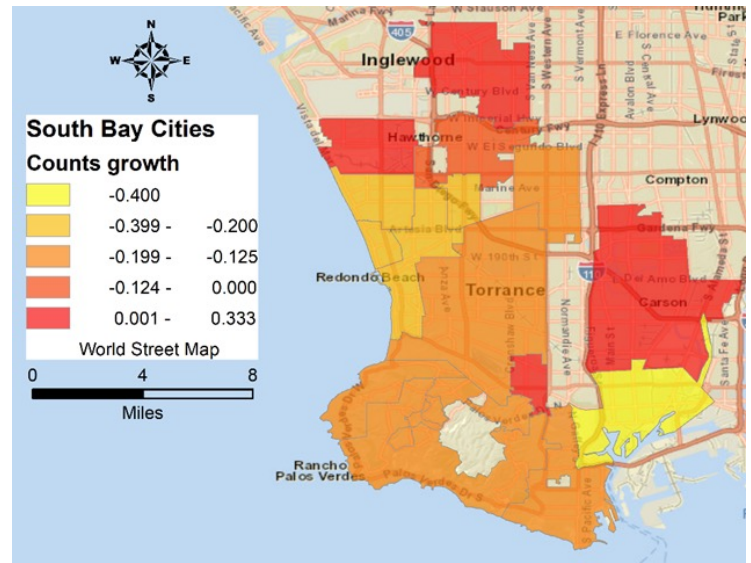


FIGURE 15. TRANSACTIONS GROWTH DURING JUNE 2022 – JUNE 2023



House prices across our region follow Federal Reserve interest rate changes. Currently, home mortgage rates for 30-year fixed loans are around 7.5%. The Federal reserve has increased the federal funds rate eleven times since March 2022 (from 0.25% to 5.5%). This has led to a large decline in sales in South Bay cities, especially for coastal communities. Some homeowners have likely paused relocation or upgrade plans to avoid a large mortgage rate penalty. For homebuyers, rate increases restrict choices due to significantly larger mortgage payments. For the median home price in L.A. County, a mortgage payment with 20% down would be more than \$2,100 higher today than in February of 2022.

Based on our data analysis, Table 3 presents some forecast for the next 12 months (Aug. 2023 – July 2024). These forecasts are based on the assumption of no reduction in the federal funds rate this year and a continuing climate of global economic uncertainty.

TABLE 3. SOUTH BAY HOUSING FORECAST 2023-2024

	Sales	Prices
Coastal	-11.3	-4.3%
Inland	1.3	1.9%

Source: Author's calculations based on CoreLogic



Cannabis

The 2016 legalization of recreational cannabis in California through Proposition 64 has created the largest licensed cannabis market in the U.S. However, since implementation began in 2018, cannabis industry stakeholders have experienced challenges with the spotty roll-out of municipal policy and uneven outcomes across industry sectors and with respect to income and racial groups. There are clear disparities between L.A. County demographics and cannabis company ownership: in particular, Whites are overrepresented as owners while Latinx are underrepresented as owners. When considering the disproportionate criminalization of Black Californians for cannabis-related offenses (Hartzog & Natekal, 2019), social equity programs might pay most attention to these groups.

Retail cannabis in L.A. County appeared to generate approximately 16,000 jobs across California in 2021. Of these jobs, we estimate that around 11,300-11,600 are within L.A. County, and 4,400-4,700 are in other California counties. This highlights the benefits that L.A. County cannabis retail brings to the rest of the California economy. Retail outlets account for the largest portion of employment among cannabis sectors within L.A. County (around 6,700 jobs), followed by manufacturing (2,400 jobs), cultivation (800-1,100 jobs), and distribution and labs (1,500).

Industry data from four cannabis sectors—cultivation, manufacturing, distribution, and retail—tells an interesting story about the early years of cannabis legalization in California. Prior to legalization implementation, the best estimates suggested that Northern California was a hotbed of cannabis cultivation, providing to relatively unregulated and unmonitored medical marijuana dispensaries in the major urban areas. Since legalization, data on licensed activity suggests that Southern California and the Central Coast and Central Valley regions are the dominant cultivation locations in the state. From there on the cannabis supply chain in California is dominated by L.A. More transfers are made originating and finishing in L.A. Cannabis manufacturing has increased across all measures, with L.A. County becoming a dominant player with respect to units, weights, and volume, depending on the product.

Our statistical analyses suggest that adding more licenses—within currently-licensing cities and in new markets—could increase cannabis sales and hence tax revenues. Reducing taxes benefits cannabis businesses directly and may attract more customers. It would also reduce the differential between licensed and illegal retailers. However, studies suggest that demand for licensed cannabis is somewhat inelastic, and therefore reducing taxes may not substantially stimulate demand. As a result, city governments may lose tax revenue in a time of tight budgets.





Entrepreneurship

South Bay start-ups total 5,056 headquartered companies with over \$350 billion capital invested. The companies to watch (Table 4) are from a wide range of businesses, including consumer finance; broadcasting, radio, and television; internet software, aerospace and defense, recreational goods, and automotive. The top investors (Table 5) are angel investment group NuFund, government organizations the U.S. Department of Defense and National and Aeronautics and Space Administration (NASA).

Top public companies (Table 6) by deal count are recreational goods manufacturer Mattel (the owner of Barbie), automotive company Fisker, and electronic systems and components designer and manufacturer OSI Systems. The top private companies (Table 7) by deal count are rocket and spacecraft product developer SpaceX, online media and software services company operator Internet Brands, and subscription-based fashion platform operator TechStyle Fashion Group.

TABLE 4. COMPANIES TO WATCH (BY TOTAL CAPITAL RAISED)

American Honda Finance Total Raised: \$58.13B Last Deal Type: Debt HQ Location: Torrance	DirecTV Total Raised: \$15.61B Last Deal Type: Debt HQ Location: El Segundo	Internet Brands Total Raised: \$11.70B Last Deal Type: Debt HQ Location: El Segundo
SpaceX Total Raised: \$9.70B Last Deal Type: Later Stage VC HQ Location: Hawthorne	Mattel Total Raised: \$6.15B Last Deal Type: Debt HQ Location: El Segundo	Faraday Future Total Raised: \$6.02B Last Deal Type: PIPE HQ Location: Los Angeles

Companies headquartered in the South Bay. Source: Pitchbook

TABLE 5. TOP INVESTORS (BY DEAL COUNT)*

NuFund (formerly known as Tech Coast Angels) Deal Count: 24 HQ Location: San Diego, CA	U.S. Department of Defense Deal Count: 23 HQ Location: Washington DC	NASA Deal Count: 21 HQ Location: Washington DC
Wavemaker Partners Deal Count: 21 HQ Location: Singapore	Techstars Deal Count: 19 HQ Location: Boulder, CO	National Science Foundation Deal Count: 17 HQ Location: Alexandria, VA

*Top investors who have engaged in deals with South Bay Companies headquartered in the South Bay. Source: Pitchbook

Entrepreneurship

TABLE 6. TOP PUBLIC COMPANIES (BY DEAL COUNT)

Mattel Market Cap: \$7.66B Enterprise Value: \$9.04B HQ Location: El Segundo	Fisker Market Cap: \$2.01B Enterprise Value: \$1.91B HQ Location: Manhattan Beach	OSI Systems Market Cap: \$1.96B Enterprise Value: \$2.06B HQ Location: Hawthorne
Peakstone Realty Trust Market Cap: \$950.55M Enterprise Value: \$2.45B HQ Location: El Segundo	A-Mark Precious Metals Market Cap: \$869.02M Enterprise Value: \$1.44B HQ Location: El Segundo	Beyond Meat Market Cap: \$824.56M Enterprise Value: \$1.76B HQ Location: El Segundo

Companies headquartered in the South Bay. Source: Pitchbook

TABLE 7. TOP PRIVATE COMPANIES (BY DEAL COUNT)

Space X Last Post Valuation: \$137B Last Deal Type: Later Stage VC HQ Location: Hawthorne	Internet Brands Last Post Valuation: \$12B Last Deal Type: Debt Refin. HQ Location: El Segundo	TechStyle Fashion Group Last Post Valuation: Last Deal Type: Secondary Private HQ Location: El Segundo
The Boring Company Last Post Valuation: \$5.68B Last Deal Type: Secondary Private HQ Location: Hawthorne	Radiology Partners Last Post Valuation: \$4.29B Last Deal Type: Debt HQ Location: El Segundo	Cetera Financial Group Last Post Valuation: \$2.77B Last Deal Type: Debt HQ Location: El Segundo

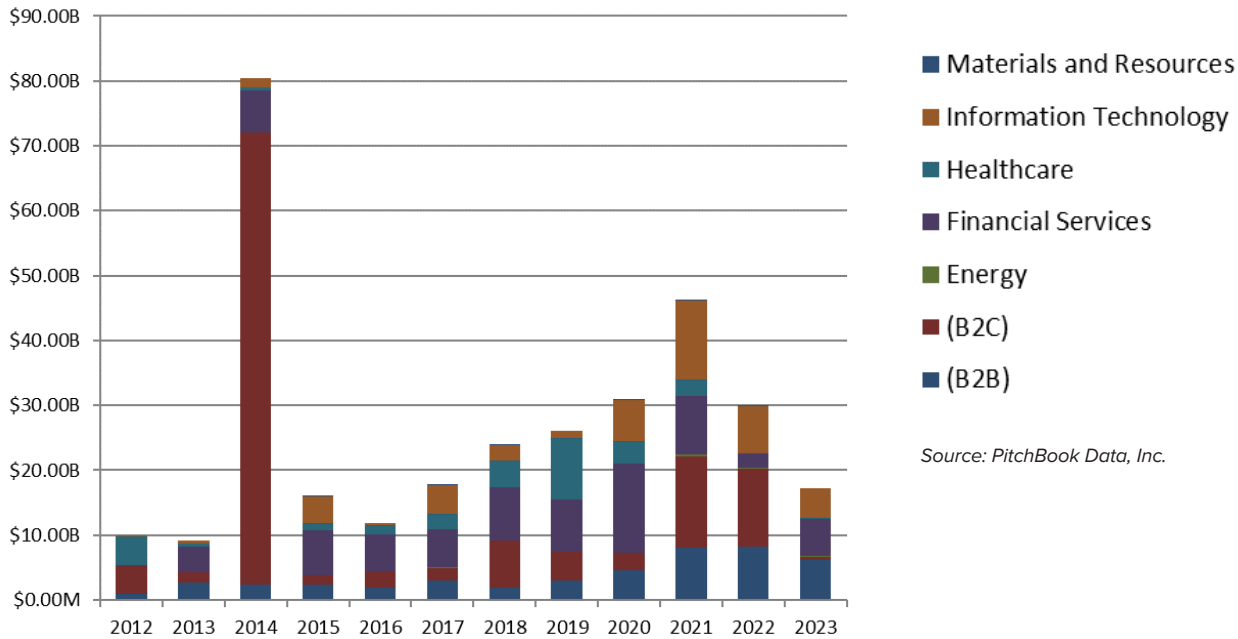
Companies headquartered in the South Bay. Source: Pitchbook

Deal activity for South Bay businesses has increased out of the pandemic in 2021 and 2022 from 2020 lows, but has somewhat slowed down, due to higher costs of capital from Federal Reserve interest rate hikes.⁸ Most capital invested in South Bay startups for 2023 thus far is in Business to Business (B2B) at \$6.22 billion followed by Financial Services at \$5.76 billion and Information Technology at \$4.51 billion (Figure 16).

⁸ MacArthur, H., Burack, R., Rose, G., De Vusser, C., Yang, K., & Lamy, S. (2023, February 27). *Private Equity Outlook in 2023: Anatomy of a Slowdown*. Bain <https://www.bain.com/insights/private-equity-outlook-global-private-equity-report-2023/>

Entrepreneurship

FIGURE 16. CAPITAL INVESTED IN FIRMS WITH SOUTH BAY HEADQUARTERS BY INDUSTRY



Emerging Spaces

The Top 10 Emerging Industries in the South Bay have a total capital invested of over \$85 billion and include transportation (electric vehicle (EV) platforms, EV charging infrastructure, autonomous trucking), and aerospace and aviation (commercial space launch) (Table 8).

TABLE 8. TOP EMERGING INDUSTRIES IN THE SOUTH BAY

RANK	NAME	COMPANIES	DEALS	CAPITAL INVESTED
1	Electric Vehicle Platforms	3	38	\$31.16B
2	Auto Commerce	6	30	\$22.91B
3	Commercial Space Launch	6	86	\$13.68B
4	Electric Vehicle Charging Infrastructure	62	116	\$9.01B
5	Ghost Kitchens	9	20	\$2.51B
6	Autonomous Trucking	3	15	\$2.13B
7	Air Taxis	5	11	\$1.27B
8	Long Duration Energy Storage	3	13	\$1.04B
9	Silicon Photonics	8	40	\$987.32M
10	Small Satellites	14	61	\$898.98M

Companies headquartered in area codes 310 and 424 (Westside and South Bay regions of L.A. County) referenced from <https://www.cpuc.ca.gov/AreaCodes/>
Source: Pitchbook



Aerospace Feature

The Launch of the Aviation Industry

The 1910 L.A. Air Meet was the first aviation meet held in the United States and the second aviation meet in the world. This historic event brought in approximately 226,000 spectators to Dominguez Field (the present-day CSUDH campus), which is believed to have launched the West Coast aviation industry. The story about this event is being documented by the Dominguez Documentary Project led by CSUDH faculty Rod Hay and Mario Congreve.⁹

Aerospace and Defense Industry in South Bay L.A. Now

The South Bay continues to be a hub for aviation with an active Aerospace and Defense industry. There are over 75 companies, with over 270 deals, over 500 investors, and over 50 exits, with the largest deal being \$4.7 billion. There is \$29.65 billion capital invested with a median post-valuation of \$94 million. Major players (see Table 9) by total capital raised are rocket and spacecraft product developer SpaceX (\$9.7 billion) and electronic systems and components designer and manufacturer OSI Systems, based in Hawthorne (\$293.59 million). Aerospace and defense products and systems manufacturer Aerojet Rocketdyne Holdings, launch vehicle developer ABL Space Systems, and flight hardware and software operating systems developer Skyrise from El Segundo raised totals of \$2.78 billion, \$419.35 million, and \$253.97 million respectively. High-power microwave technology developer Epirus from Redondo Beach raised \$293.59 million.

Aerospace Industry Overview

- 78 Companies
- 272 Deals
- 502 Investors
- 51 Exits
- Largest Deal: \$4.7B
- Capital Invested: \$29.65B
- Median Post-valuation \$94M

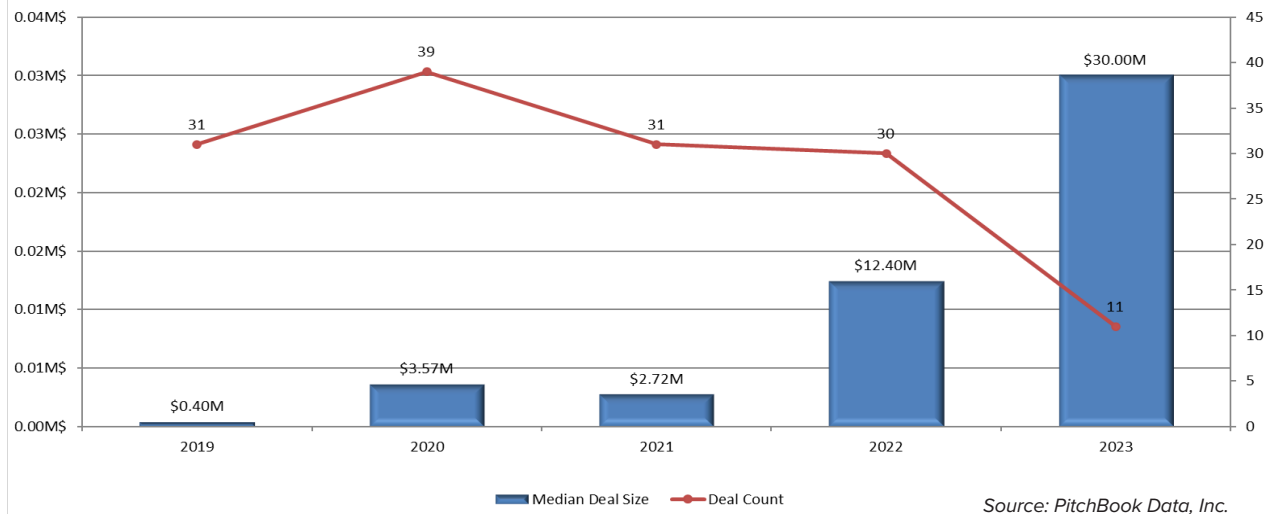
TABLE 9. COMPANIES TO WATCH IN SOUTH BAY AEROSPACE (BY TOTAL CAPITAL RAISED)

SpaceX Total Raised: \$9.70B Last Deal Type: Later Stage VC HQ Location: Hawthorne	Aerojet Rocketdyne Total Raised: \$2.78B Last Deal Type: M&A HQ Location: El Segundo	ABL Space Systems Total Raised: \$419.35M Last Deal Type: Secondary Private HQ Location: El Segundo
Epirus Total Raised: \$293.59M Last Deal Type: Grant HQ Location: Redondo Beach	OSI Systems Total Raised: \$273.26M Last Deal Type: PIPE HQ Location: Hawthorne	Skyrise Total Raised: \$253.97M Last Deal Type: Series B HQ Location: El Segundo

⁹ Additional information on the project can be found at <http://www.1910airmeet.com/>

Aerospace Feature

FIGURE 17. ANNUAL MEDIAN DEAL SIZE FOR SOUTH BAY AEROSPACE FIRMS



Capital investment slowdowns from interest rate increases have not affected the Aerospace and Defense industry as much as other industries; median deal size has increased (Figure 17). Median deal size for Aerospace companies is more than twice what it was last year, increasing from \$12.4 million in 2022 to \$30 million in 2023 thus far. Deals have been much larger in size, with 30 deals in 2022 and 11 in 2023. Capital raised has increased from 2020 to 2021 and 2023 is looking strong as well.

New entrants include electric wire manufacturer Senra Systems in Torrance, space technology firm AnySignal in El Segundo, microgravity Manufacturer reOrbital in Hermosa Beach, aviation and aerospace component manufacturer Impulse Space in Redondo Beach, and semiconductor and pharmaceuticals manufacturer Varda Space Industries in El Segundo.

Starburst Accelerator

Previous South Bay Economic Forecast panelist Starburst Aerospace was founded in 2012 and based in El Segundo, Calif. with a focus on three activities: accelerators, consulting, and ventures in the Aerospace and Defense industry (Figure 18). The organization has developed a large community, with over 60 corporate and government contracts, and holds a portfolio of over 140 startups focusing on early-stage investment. In just four years since the launch of the Starburst Accelerator program, the program has grown to over 20 programs with an international team operating two venture funds, Starburst Ventures in the U.S. and Expansion in the EU. Within the Aerospace and Defense Industry, the majority of the investments in terms of deal count have been in information technology and in business products and services (B2B) in terms of capital invested (Figure 19).

Starburst Accelerator has invested in eight companies based in the South Bay, which include Morf3D, Novo Space, and Ravyn in El Segundo; Ampaire and Launcher in Hawthorne; Exosonic in Torrance; and Morpheus Space in L.A., and operate in emerging space, such as Electric Flight, Commercial Space Launch, Small Satellites, and Supersonic Travel.

FIGURE 18. STARBURST ACCELERATOR CAPITAL INVESTED BY INDUSTRY

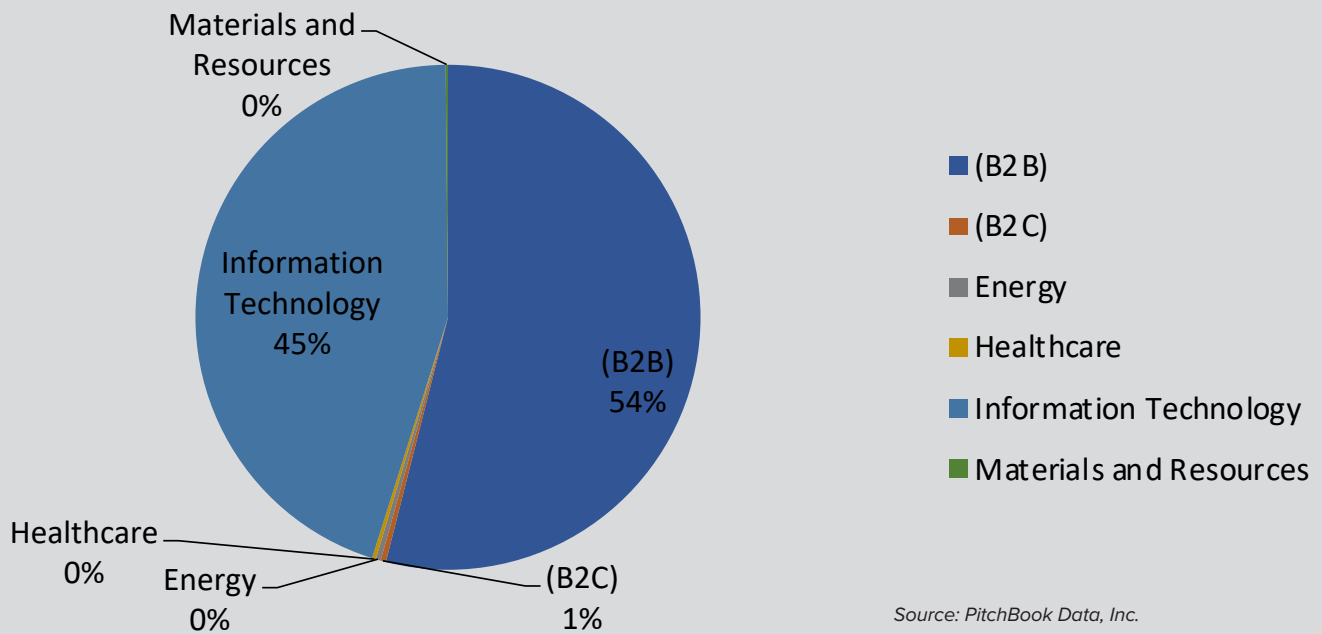
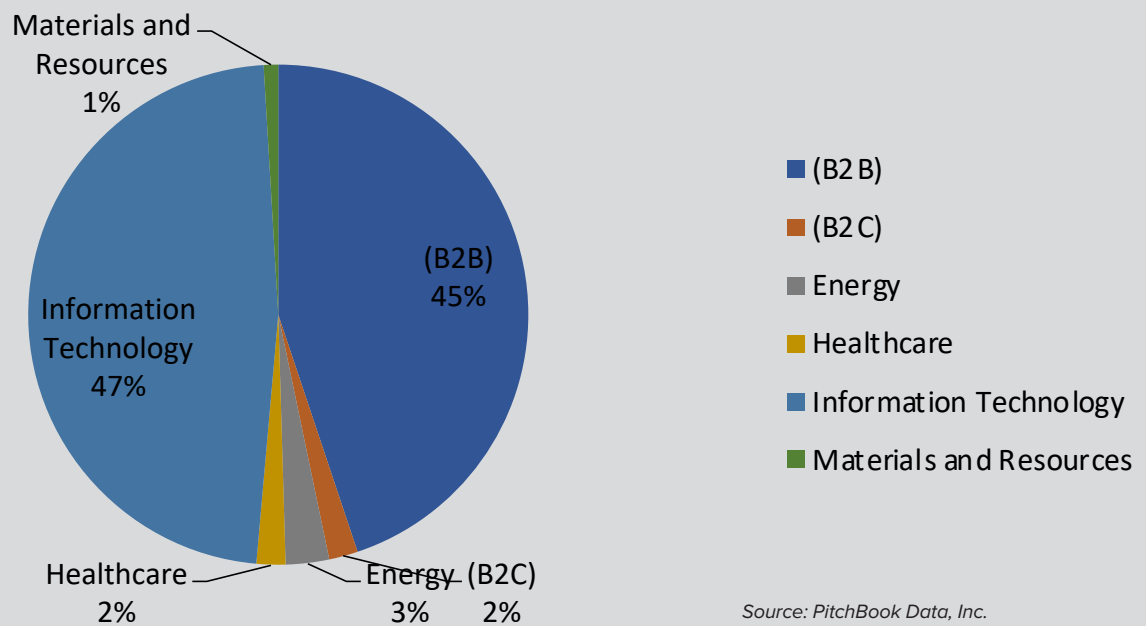


FIGURE 19. STARBURST ACCELERATOR DEAL COUNT BY INDUSTRY





Artificial Intelligence (AI) describes machines performing human-like cognitive processes such as learning, reasoning, and interaction. While AI technology has been conceptualized for decades—early computer scientists such as Alan Turing were equally focused on artificial intelligence—recent models such as ChatGPT have brought AI back into public debate. While many industries, including education, have begun to experiment with how AI can improve productivity, there are also concerns about the potential for AI to replace workers. It is worth highlighting that economic progress is driven by technological innovation and automation, and both have tended to create more new jobs than are lost. There are also substantial opportunities for South Bay companies to benefit from future growth in demand for AI, which is anticipated to be particularly impactful for high tech, banking, education, pharmaceuticals, and telecoms.¹⁰

There are 24 companies based in South Bay that are developing Artificial Intelligence. The capital invested has increased dramatically from \$10.02 million to \$237.66 million. Deal count has increased slightly, which indicates there are larger deals being made to invest in AI in the South Bay (Figures 20 and 21).

The Top Private Companies are GrayMatter Robotics in Gardena, Carbonated in El Segundo, Preveta and The Human Baton in Redondo Beach, DataPlor in Manhattan Beach, and Brandwood Global in Torrance. Leading Investors are mostly based outside of California with the National Science Foundation, ff Venture Capital, Adara Ventures, OCA Ventures, Quest Venture Partners, and Techstars. Only Quest Venture Partners is based in California, in Palo Alto. The majority of investment is through venture capital.

FIGURE 20. CAPITAL INVESTED AND DEAL COUNT FOR AI COMPANIES

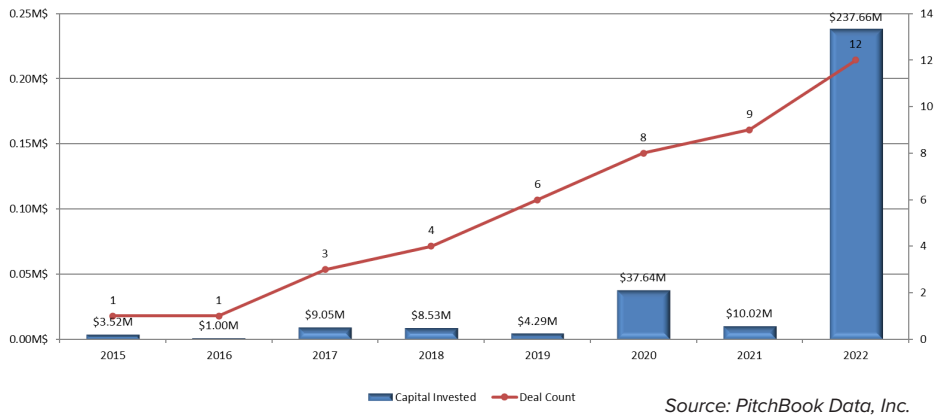
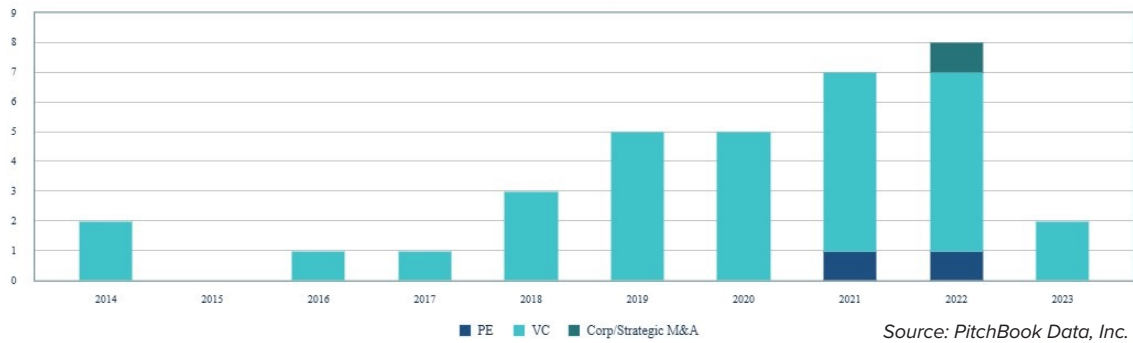


FIGURE 21. INVESTMENTS OVER TIME FOR SOUTH BAY L.A. AI COMPANIES



¹⁰ McKinsey (2023) The Economic Potential of Generative AI: The Next Productivity Frontier. <https://www.mckinsey.com/capabilities/mckinsey-digital/our-insights/the-economic-potential-of-generative-ai-the-next-productivity-frontier>

ESG Investment

Previous research has reflected that investors are embracing Environmental, Social, and Governance (ESG) investing.¹¹ Forbes contributor Joan Michelson states “Investors – and the public – are demanding more transparency, disclosures and socially responsible leadership from companies.”¹² With this rise in interest, we explore ESG investment in the South Bay.

Currently, there are five investors in the South Bay that focus on ESG investments, which include K1 Investment Management in Manhattan Beach, Financial Finesse Ventures and ScopeFour Capital in El Segundo, Platinum Eco Capital in Rancho Palos Verdes, and TriLinc Global in Manhattan Beach. The majority of the investors focus on impact investing, followed by private equity/buyout and corporate venture capital. The largest investor is K1 Investment Management, with a team of 70 investment professionals, 210 investments, 17 exits, and an active portfolio of 51 investments.

Company investment and deal count in Table 10 show a rise in interest in ESG investment from South Bay investors, with the number of companies invested in increasing by over 6 times from 4 in 2013 to 29 in 2022. Median capital invested has also increased over the past decade from \$37 million in 2013 to \$65.06 million in 2022. Mean and median revenue has increased post pandemic from \$11.59 million to \$44.2 million and \$4.77 million to \$33.40 million respectively.¹³

TABLE 10. INVESTMENT BY SOUTH BAY L.A. ESG INVESTORS

YEAR	COMPANY COUNT	DEAL COUNT	CAPITAL INVESTED	REVENUE	
			MEDIAN	MEAN	MEDIAN
2022	29	29	75.06	44.20	33.40
2021	45	48	76.05	11.59	4.77
2020	23	23	35.00	13.30	13.30
2019	21	21	92.00	17.24	18.36
2018	19	19	112.50	5.53	5.53
2017	24	24	50.00	57.45	20.50
2016	14	14	55.00	64.60	42.24
2015	10	11	45.90	43.02	4.86
2014	8	8	61.90	9.38	5.30
2013	4	4	37.00	69.15	69.15
2012	2	2	23.50	5.53	5.53
2011	1	1	17.00	24.02	24.02
2010	1	1	-	-	-
2009	2	2	7.50	-	-
All	194	215	60.95	31.75	14.70

Source: Pitchbook

¹¹ PriceWaterhouseCooper (2022) Asset and wealth management revolution 2022: Exponential expectations for ESG. https://www.pwc.com/gx/en/industries/financial-services/asset-management/publications/asset-and-wealth-management-revolution-2022.html?WT.mc_id=CT11-PL1000-DM2-TR2-LS4-ND1-TTA9-CN_gx-fy22-xlos-esg-awm-esg-revolution-pressrelease

¹² Michelson, J. (2022, November 18) ESG investing is “soaring.” What does it mean? *Forbes*. <https://www.forbes.com/sites/joanmichelson2/2022/11/18/esg-investing-is-soaring-what-does-it-mean/?sh=2602c42251bc>

¹³ S&P Global (2022, February 10) Fed rate hike anticipation pushes investors into value stocks over growth. *Market Intelligence*. <https://www.spglobal.com/marketintelligence/en/news-insights/latest-news-headlines/fed-rate-hike-anticipation-pushes-investors-into-value-stocks-over-growth-68810450>



**SOUTH
BAY**

ECONOMIC

FORECAST

MARKETING
INDUSTRY
WORK
CUSTOMER
GOAL
ACCESS
CE
ECONOMY
PLANNING
BANK
PRICE
INNOVAT
TUP
OFFER
PRODUCT
MANAGEMENT
DEAL
BENEFIT
MONEY
PARTNERSHIP
STARTUP
NOISIA
TRAD
B
INVEST
TIENT
ANALYSIS
WORK
PROFIT
STRATEGY
PROFESSIONAL
MARKETING
LYSIS
TRAD
B
INVEST
TIENT
MANAGEMENT
DEAL
BENEFIT
MONEY
PARTNERSHIP
STARTUP
NOISIA