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CALIFORNIA STATE UNIVERSITY, DOMINGUEZ HILLS

SOUTH BAY
ECONOMIC FORECAST AND INDUSTRY OUTLOOK

2018

MESSAGE FROM
THE UNIVERSITY PRESIDENT

Greetings.

The *2018-19 South Bay Economic Forecast* was prepared by the UCLA Anderson School and is a comprehensive report of data and analysis on key industries that make up our dynamic South Bay region. The forecast is designed to provide important contextual information for the continued development and economic success of our region.

Since 2015, CSU Dominguez Hills' comprehensive economic forecast has been a go-to resource for industry leaders, researchers, journalists, and others seeking a deep examination of the financial vitality and market indicators that are driving business and investment in today's robust South Bay workforce. The annual report specifically focuses on the South Bay in recognition of the importance and economic power of the region, and the critical role higher education plays in creating an educated workforce.

As the report makes clear, few regions across the nation offer the business diversity and economic strength of the South Bay. With nearly 1.1 million people living within its borders, if the South Bay were a county in its own right, it would be the 10th largest out of California's 58 counties. The majority of its working residents are employed in manufacturing, followed by health care, retail trade, food services in hotels, and restaurants.

The economic forecast report also reveals how universities and community colleges are among the South Bay's most valuable assets and critical to the success of local businesses. CSU Dominguez Hills works closely with companies to develop academic programs and degrees that provide our graduates with the knowledge and skills necessary to succeed in their chosen field, as the university works to expand its connections with industry leaders and enhance its numerous existing business partnerships. The economic diversification within our region is strong, but it requires the important role that higher education plays in providing additional focus and emphasis across industries and economic sectors for it to fully bloom.

Today's speakers are testimony to the role higher education plays in the economic vigor and ingenuity found within the South Bay's robust workforce. They will share a broad variety of futuristic technological developments that affect the way you do business, and the way you live. Over the past year, business and consumer markets have seen the release of advanced technologies that were once considered the stuff of science fiction. Self-driving vehicles, artificial intelligence, 3D printing, fintech, and facial and biometric identification systems are here to stay. Even a robot, named Sophia, has earned national citizenship.

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In the South Bay alone, underground commuter tunnels and a brand new mode of transportation called hyperloop are in development stages, while 5G networks, which will begin to roll out this year, will significantly enhance the capabilities of mobile devices and wearables. As more technologies begin to emerge, they give us a glimpse of the high-tech reality we're moving toward, and how technology will help shape and guide our future.

I am confident you will find the South Bay Economic Forecast report richly detailed, informative, and valuable. It is an honor to share it with you, and we look forward to continuing to support the growth and success of our vibrant South Bay region.

Sincerely,

Thomas A. Parham, Ph.D.
President, California State University, Dominguez Hills

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WELCOME TO THE SOUTH BAY ECONOMIC FORECAST AND INDUSTRY OUTLOOK

About California State University, Dominguez Hills

California State University, Dominguez Hills 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 CSU Dominguez Hills has served a diverse community of learners an educators collaborating to change lives and communities for the better. CSU Dominguez Hills is committed to connecting its students to a higher-quality, transformative education while providing the LA region with a vital resource for talent, knowledge, skills, and leadership needed to thrive today and tomorrow. Of the university's over 100,000 alumni, 65 percent live and work within 25 miles of campus.

About the South Bay Economics Institute

Jose N. Martinez

Fynnwin Prager

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.

Jose N. Martinez
Co-Director
South Bay Economics Institute
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About the Author

William Yu
Economist, UCLA Anderson Forecast

William Yu joined the UCLA Anderson Forecast in 2011 as an economist. At Forecast he focuses on the economic modeling, forecasting and Los Angeles economy. He also conducts research and forecast on China's economy, and its relationship with the US economy. His research interests include a wide range of economic and financial issues, such as time series econometrics, data analytics, stock, bond, real estate, and commodity price dynamics, human capital, and innovation.

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South Bay[1] Economic Forecast and Industry Outlook 2018-2019

By William Yu, Economist, UCLA Anderson Forecast

U.S. ECONOMY OVERVIEW

This season marks the 10-year anniversary of the fall of the Lehman Brothers and the outbreak of the global financial crisis in 2008. During this period, the U.S. went through the housing market collapse, which led to the Great Recession, four rounds of quantitative easing, and a sluggish recovery. Recently, in particular in the aftermath of the new tax cut and reform bill in 2017, U.S. economic growth is accelerating. The GDP growth rate in 2018Q2 was a robust 4.2% and Q3 looks like it will be resilient as well. We predict the overall GDP growth in 2018 will be a solid 3% or more. GDP growth is forecast to slow down to 2% in 2019 as part of the stimulus effect of the new tax bill fades away.

Escalating trade tensions, especially with China, present a risk factor for economic optimism. Since the beginning of the year, the U.S. has begun to impose tariffs and request new trade agreements with its trading partners, which has led to a lot of discussion about its damaging effects. Based on the trade data up to July, however, U.S. exports and imports continue to expand. International trade as a whole was not disrupted by rising trade rhetoric. Plus, the newly-achieved U.S.-Mexico-Canada (USMCA) trade agreement indicates compromises will be made with others, such as Japan and Europe in the near future to improve the current trade framework.

The trade tensions between the U.S. and China are far more serious. Besides the disputes of significant trade imbalances and trade barriers, there are thorny issues such as market openness, joint ventures, technology transfers, intellectual property law enforcement, state-owned enterprises, and industry subsidies. Moreover, there is rising competition around global economic and political power between these two largest economies in the world. The clash between "America First" and "The China Dream" makes negotiations more difficult than with other countries. At this moment, we assume that trade disputes between the U.S. and China will linger over the next year, but its damage to the U.S. economy will be limited. The reason is that we believe many of Chinese imports will be substituted sooner or later through other countries, in particular in Southeast Asia, by the relocation of global supply chains.
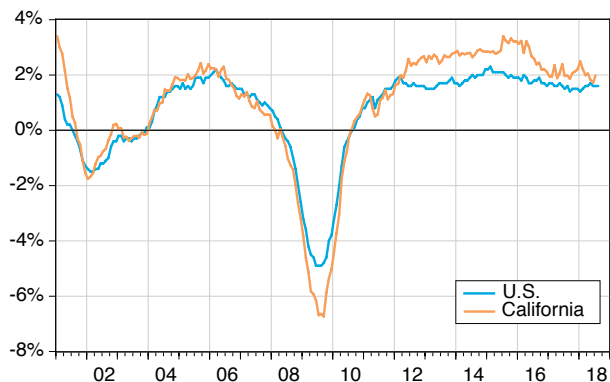
CALIFORNIA ECONOMY OVERVIEW

California's economy has been doing better than the nation's persistently over the past 7 years. As shown in Figure 1, the year-over-year growth rate of payroll employment in California (red line) has been higher than that in the U.S. (blue line) since 2012. The main reason is that California is the center of high tech and innovation both in the country and in the world. The tech industry has performed very well these years. For example, over the past eight years, while the S&P 500 stock index has increased by 154%, the NASDAQ index, which consists of many tech companies, has increased by 275%. Many valuable tech companies are located in California, such as Apple, Google, and Facebook.

The 3% payroll growth prior to 2015 has slowed down to around 2% growth in California over the past two years, converging to a normal growth rate similar to the nation's. Figure 2 shows the six major coastal California metros, which accounts for 2/3 of employment in the state. We can see, by and large, three tiers of regional growth rates: (1) outstanding growth: San Francisco (San Francisco and San Mateo Counties) and

Sources: Bureau of Labor Statistics and California Employment Development Department

Silicon Valley (Santa Clara County), (2) robust growth: East Bay (Alameda and Contra Costa Counties), San Diego, and Orange County, and (3) normal growth: Los Angeles. Growth rates in all regions have been slowing down in the past two years except for in Silicon Valley.

There are two major reasons for the slowing of California's economy and job growth. First, the economy is reaching a so-called full employment state. That said, it is more difficult to hire workers with skills that employers demand. Second,

Figure 2   Payroll Employment Year-over-year Growth Rates in
6 Coastal California Regions
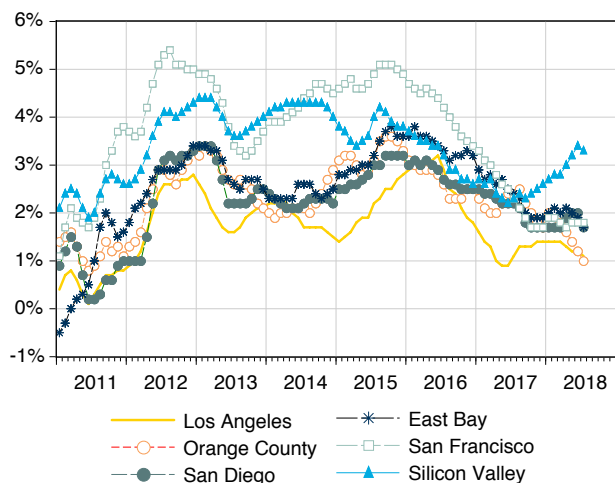
Source: California Employment Development Department; the year-over-year growth is adjusted by 3-month moving average to remove short-term fluctuations.

the cost of housing has been rising rapidly over the past several years in California, which makes it more challenging for a business to expand or establish itself because of more expensive rents and wages to compensate and compete for workers.

Why is Los Angeles growing slower than other coastal California metros? Keep in mind L.A. is a big metro, accounting for around one quarter of the state's population and employees. L.A.'s workforce is about three times that of Orange County's and four times that of Silicon Valley's. It is usually more difficult to see high growth from a large base. The vibrant Silicon Beach with its high skills, human capital, and wages is only a portion of L.A. Around one-third of L.A. still lags behind with its low human capital . In the 21st century, a city with high human capital and skilled workforce will more likely be productive and prosperous.[2]

SOUTH BAY ECONOMY AND INDUSTRY

Overview

Figure 3 shows the total payroll jobs in the private sector[3] in South Bay from 2005 to 2017. South Bay's economy grew at a steady pace (1.4%) in 2017.[4] In 2017Q3, there were about 445,000 private-sector jobs in South Bay, which is about one-tenth of L.A.'s workforce or half of San Francisco's metro workforce. Similar to the trend of L.A. jobs, payroll jobs in South Bay recovered and increased rapidly in 2011 to 2015 and then slowed down in the last two years for the same reason: a full employment state is being reached.
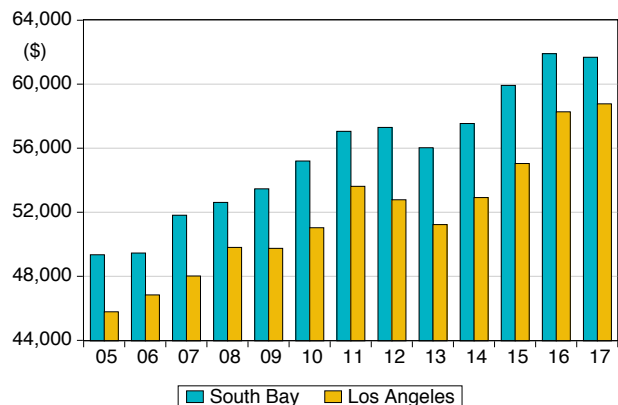
Figure 3   Payroll Employment in Private Sector in South Bay
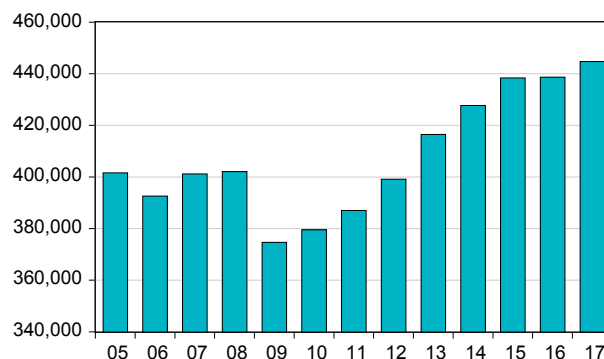
Source: California Employment Development Department; data for each year is the third quarter of each year from QCEW (Quarterly Census for Employment and Wages)

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2. See "Problems and Solutions for Los Angeles Economy: Human Capital, Public Education, and Migration," Anderson Forecast Quarterly Report, March 2014, William Yu. http://www.anderson.ucla.edu/documents/areas/ctr/forecast/chci/uclaforecast_Apr2014_WYu.pdf
3. California EDD does not provide most job numbers in the public sector by zip code.
4. The latest data to see the job growth in the South Bay region is 2017Q3 provided by California Employment Development Department (EDD).
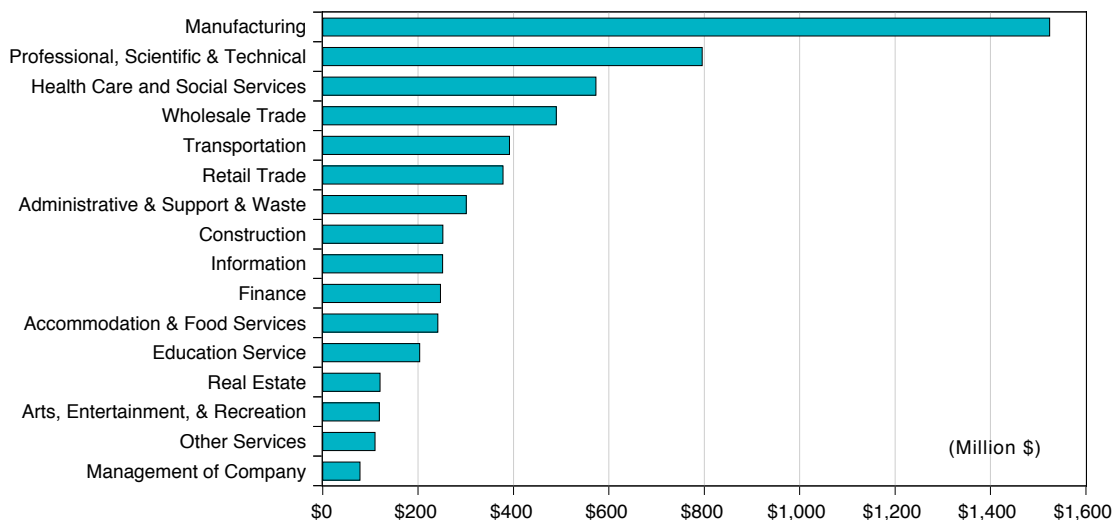
Figure 4 presents the average annual wage of a worker in South Bay and Los Angeles County from 2005 to 2017. Both regions have seen a steady increase in wages over time except in the period of 2013 and 2014. The average wage in South Bay ($61,700) is higher than that in L.A. ($58,800) in 2017, reflecting the fact the workers in South Bay have slightly higher productivity and human capital than those in the whole of L.A. County on average.
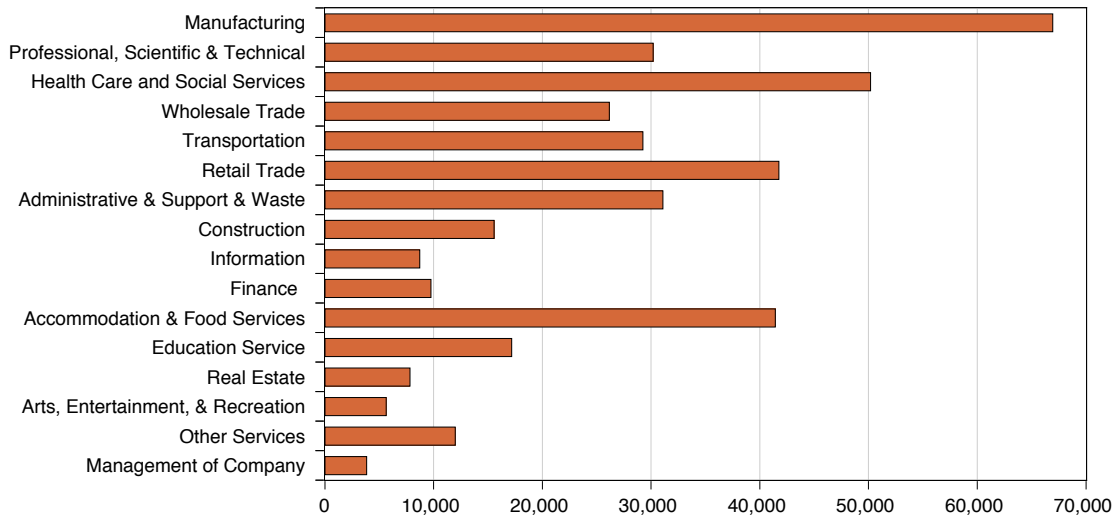
South Bay Industry

Here we discuss the industry details in South Bay. Figure 5 lists the 16 industries in South Bay, ranked by their total wage payments. The value is directly related to the value added by an industry and represents its importance to the local economy. It is clear to see that the most important sector to South Bay is the manufacturing industry, in particular for aerospace and defense. Total wage in manufacturing amounts to $1.52 billion, almost twice as much as the second most important sector: professional, scientific, and technical services ($0.8 billion). The third sector is health care and social services ($0.57 billion), followed by the wholesale trade ($0.49 billion), and transportation and warehousing ($0.39 billion) sectors.

Figure 6 shows the payroll employment by sector in South Bay in 2017. The largest job creator is the manufacturing sector with 67,000 jobs, followed by the health care sector (50,000 jobs), retail trade (42,000), and accommodation and food services, such as hotels and restaurants (41,000). Figure 7 presents the annual job growth from 2016 to 2017 (blue bar) and annual compound growth rate from 2011 to 2017 (yellow bar) by sector. By looking at both, we can see how the sector has been doing in the short term (latest year) and long term (6-year period of recovery). The health care and social services sector has very impressive job growth from 2011 to 2017, averaging 7% per year, and almost 9% from 2016 to 2017.

The education services sector has shown robust growth in the past years (16-17: 4.8%; 11-17: 4.2%) as well as accommodation and food services (16-17: 3.5%; 11-17: 4.1%). Even

Figure 4   Average Annual Wage in Private Sector in South Bay and Los Angeles

Source: California Employment Development Department; data for each year is the third quarter of each year from QCEW (Quarterly Census for Employment and Wages) calculated by zip code.

Figure 5   Total Wage By Sector in South Bay, 2017

Source: California Employment Development Department; data is the third quarter of 2017 from QCEW (Quarterly Census for Employment and Wages) calculated by zip code.

Figure 6   Payroll Employment By Sector in South Bay, 2017

Source: California Employment Development Department; data is the third quarter of 2017 from QCEW (Quarterly Census for Employment and Wages) calculated by zip code.
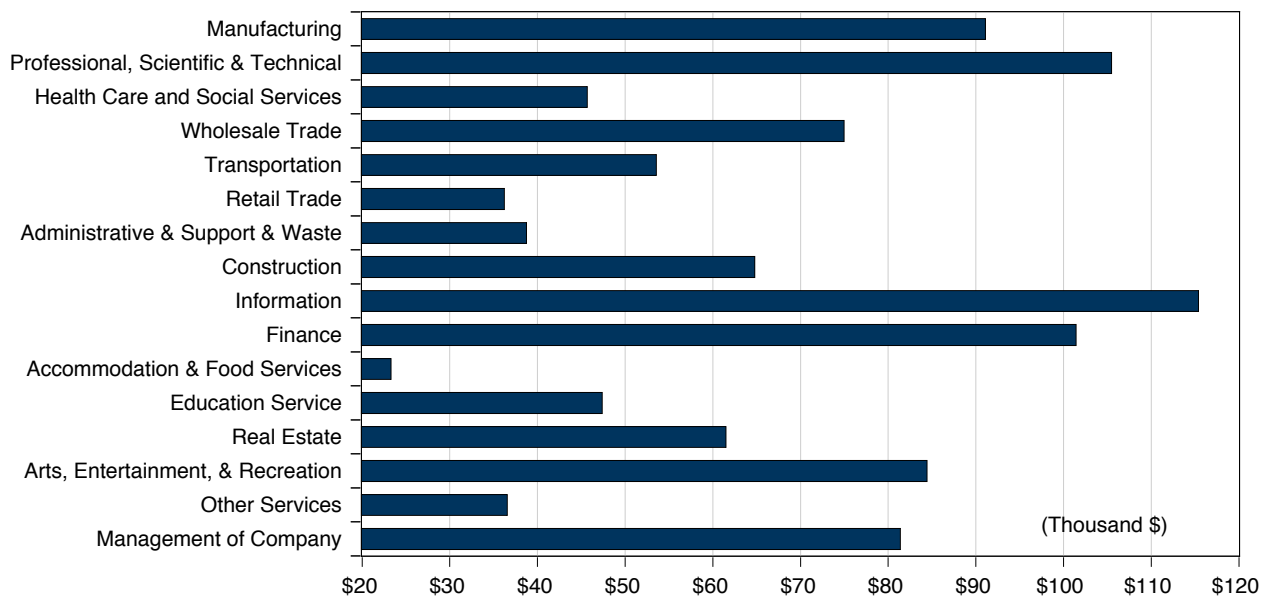
Figure 7   Annual Job Growth 2016-2017 and Annual Compound Growth Rate 2011-2017, By Sector in South Bay, 2017
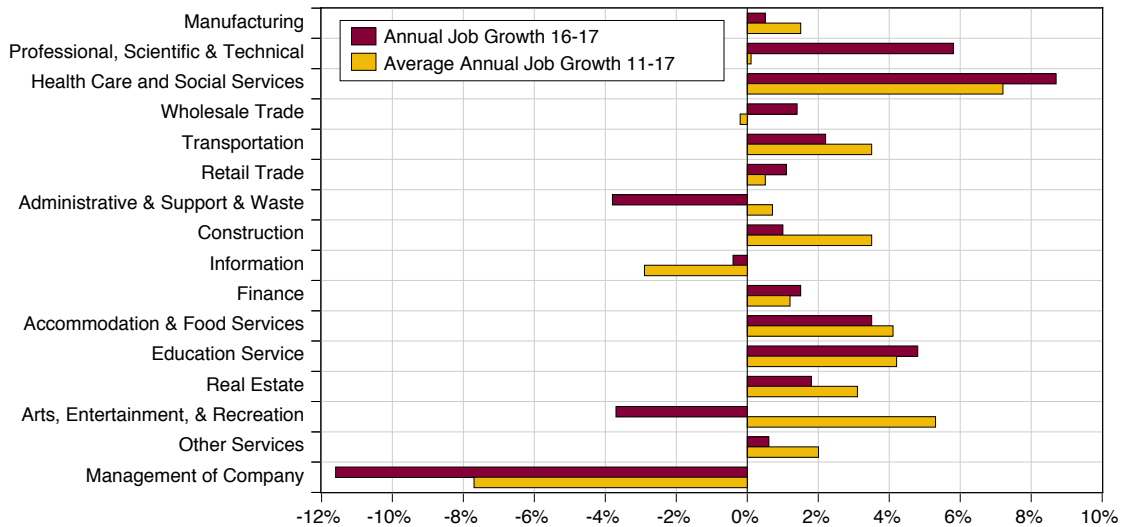
Source: California Employment Development Department; data is the third quarter of 2017 from QCEW (Quarterly Census for Employment and Wages) calculated by zip code.

though the professional, scientific and technical services has almost no job growth from 2011 to 2017, it is encouraging to see its strong growth of 5.8% in 2016-17. The most prominent sector, the manufacturing sector, has a normal growth of 1.5% per year in 2011-17, with a slowing growth rate of 0.5% in 2016-17.

However, based on the payroll numbers for the whole of L.A. County from July 2017 to July 2018 , we see a strong surge of

growth on the part of the manufacturing sector: the aerospace sector, which is up 5.5%, from 36,200 to 38,200, and the computer and electronic products sector, which is up 2.4%, from 42,100 to 43,100. We believe that the boost in the aerospace industry is due to the reversal of the federal government's policy on defense spending from the current administration. That said, aerospace and defense manufacturing will be a resilient driver for the local economy as long as there is no change on the defense budget from Washington.

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5. The breakdown of payroll employment to South Bay is not available at this moment.

Figure 8   Average Annual Wage By Sector in South Bay, 2017

Source: California Employment Development Department; data is the third quarter of 2017 from QCEW (Quarterly Census for Employment and Wages) calculated by zip code.

Figure 8 displays the average annual wage by sector in South Bay in 2017. The two highest paying industries are the information ($115,000) and the professional, scientific, and technical services ($105,000) sectors. These two sectors represent most of the high tech industry with their high skills and human capital. The finance sector has the third highest wage with an average salary of $101,000. The fourth is the pillar of South Bay: the manufacturing sector with a $91,000 average wage. Note that there is a wide disparity of average annual wages across industries, from 6-figure wages in the aforementioned industries to $46,000 in the health care and social services sector, $36,000 in the retail sector, and $23,000 in the accommodation and food services sector.

Figures 9 to 15 illustrate the percentage of jobs in selected industries over total private-sector jobs by zip code in South Bay in 2017Q3. The red color means higher than the median percentage while the blue color represents lower than the median value. The darker the color, the higher (red) percentage or lower (blue) the percentage. Figure 9 shows the percentage of manufacturing jobs over the total jobs. We can see there is a higher concentration of manufacturing jobs

in El Segundo and Hawthorne, where several world pioneer aerospace and defense companies are located, such as Raytheon, Northrop Grumman, Boeing, SpaceX, and so on. For instance, with the rise of SpaceX, Hawthorne has seen remarkable job growth from 2011 to 2017 (4.7% annually), higher than South Bay and the whole of L.A. County. With rising U.S. federal defense spending, these manufacturers and regions will most likely do well in the next few years. Additionally, Honda in Torrance is also a major manufacturer employing many workers in South Bay.

Figure 10 shows the density of professional, scientific, and technical jobs in the South Bay region. El Segundo again leads the region in having the highest concentration of this kind of high skill and high tech job, followed by Manhattan Beach, Hermosa Beach, and Torrance. Figure 11 shows the density of information sector jobs. Similar to professional jobs, El Segundo, Manhattan Beach, and Torrance have more of the highest-paying sector jobs. Figure 12 shows the density of finance sector jobs. It has a similar pattern: located near coastal areas, with more concentration in Manhattan Beach.

Figure 9   Percentage of Manufacturing Jobs Over Total Private Jobs
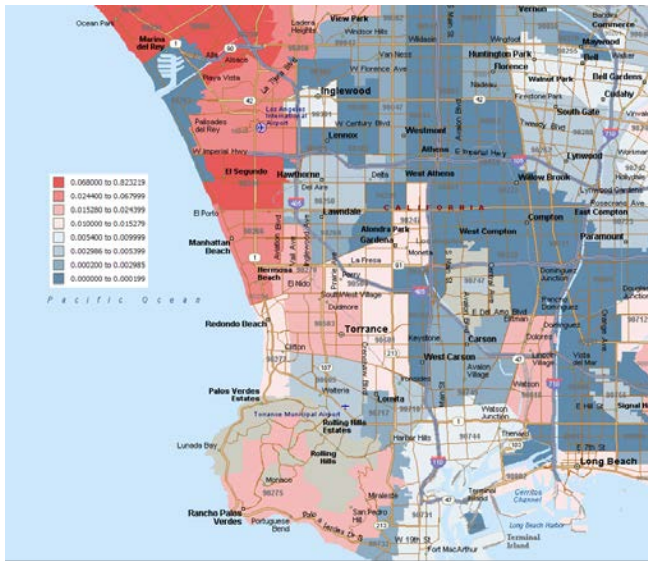   in South Bay, 2017
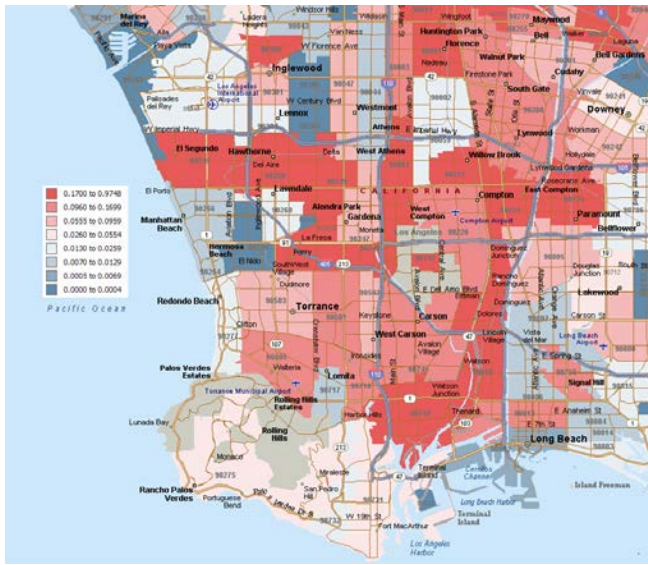
Source: California Employment Development Department

Figure 10   Percentage of Professional, Scientific, and Technical Jobs
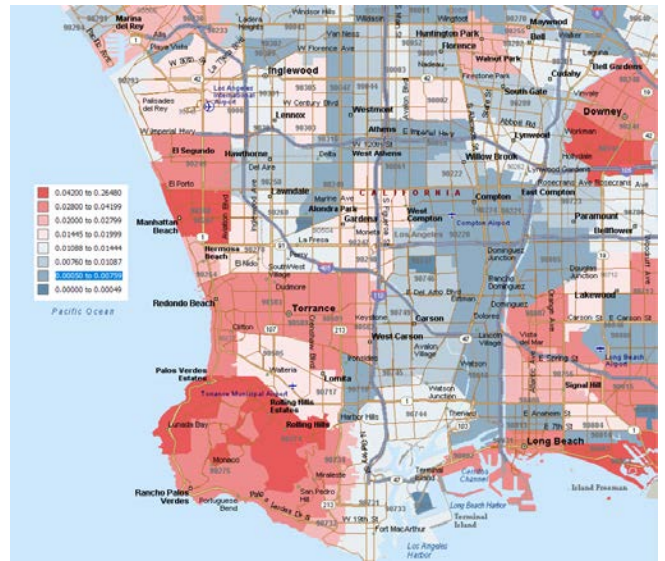   Over Total Private Jobs in South Bay, 2017
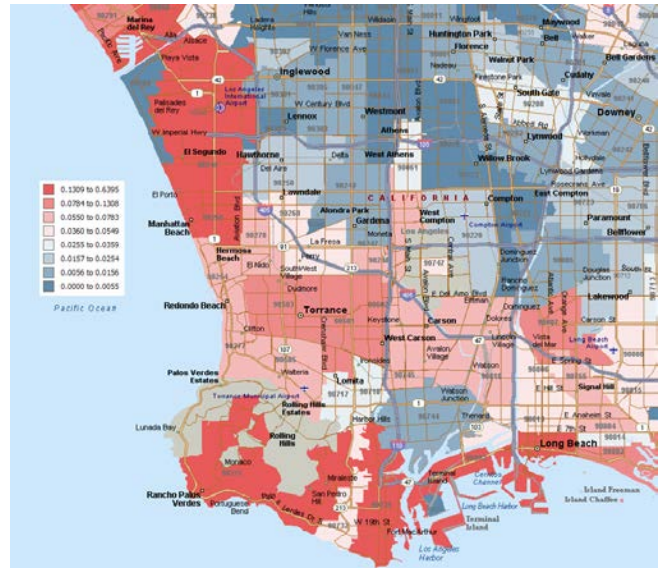
Source: California Employment Development Department

Figure 11   Percentage of Information Jobs Over Total Private Jobs
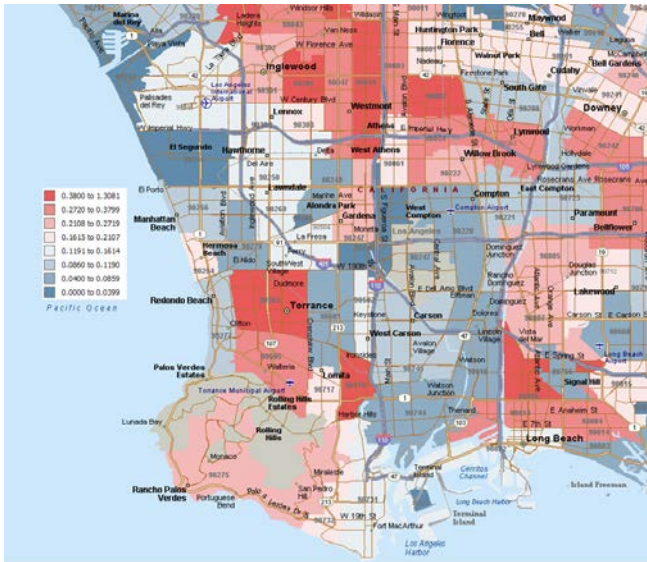   in South Bay, 2017

Source: California Employment Development Department

Figure 12   Percentage of Finance Jobs Over Total Private Jobs
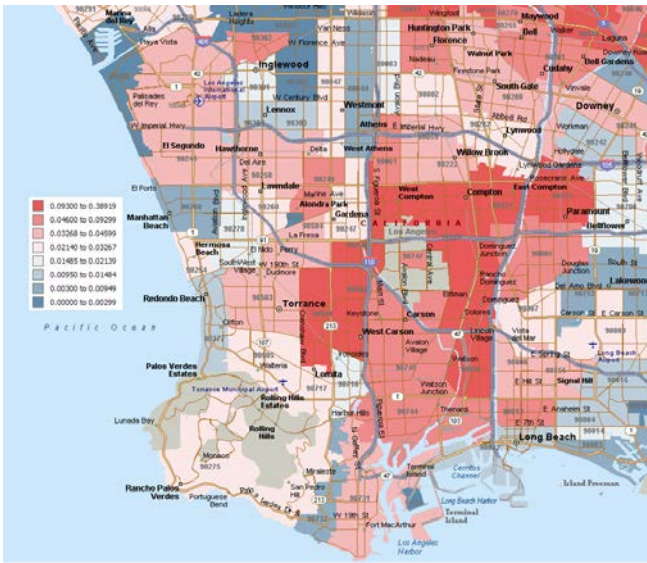   in South Bay, 2017

Source: California Employment Development Department

Figure 13   Percentage of Health Care and Social Services Jobs Over
Total Private Jobs in South Bay, 2017

Source: California Employment Development Department

Figure 14   Percentage of Wholesale Trade Jobs Over Total Private Jobs
in South Bay, 2017

Source: California Employment Development Department

Figure 13 shows the density of health care and social services jobs. There is more density of these jobs in Inglewood and Torrance. Figure 14 shows the density of wholesale trade jobs. These are more concentrated in the inland part of South Bay, where rents are less expensive. Figure 15 shows the

Figure 15   Percentage of Transportation and Warehousing Jobs Over
Total Private Jobs in South Bay, 2017
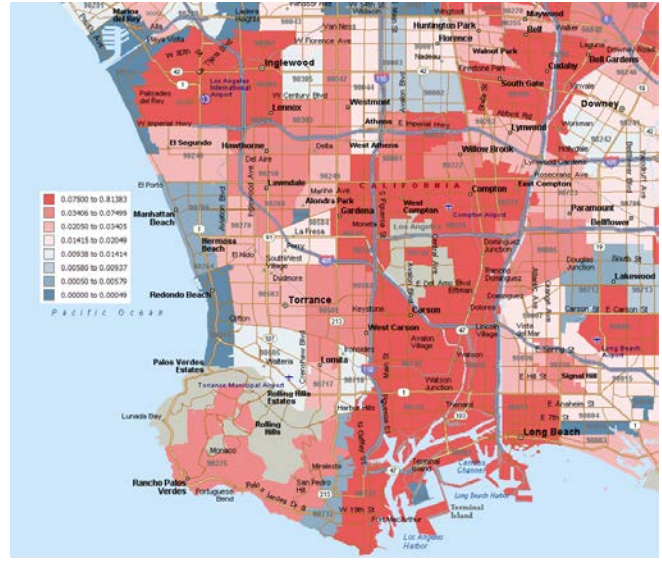
Source: California Employment Development Department

density of transportation and warehousing jobs, which center around LAX, Gardena, and Carson.

Startup Activity

As the southern part of Silicon Beach, South Bay is also an active place for startups and venture capital funding, mostly concentrated in 5 cities. We use the funding, from all kinds of sources[6], including venture capital, debt, private equity, and IPO received from January 2017 to September 2018 to get a picture of startup activity in the area:

- Hawthorne (funding: $1,640M). One company: SpaceX.

- El Segundo (funding: $1,070M). 18 companies, such as Radiology Partners ($496M, Healthcare), Centerfield ($156 mMon ($66M, Food), PeerStreet ($62M, Internet), and Navitas Semiconductor ($42M, Electronics). We can say El Segundo is not only the center of aerospace manufacturing but also the center of startup activities, as it is full of innovative and entrepreneurial activities.

- Torrance (funding: $114M). There are 3 major companies: Emmaus Life Sciences ($45M, Healthcare), Health-Ade Kombucha ($35M, Food), Phyn ($25M, Mobile software).

- Inglewood (funding: $96M). ImahinAb ($48M, biotechnology), and Relativity Space ($45M, Industrial)

- Manhattan Beach (funding: $70M). There are many small startups, most of which are Internet companies.

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6. Data is from CB Insights.

"...aerospace and defense manufacturing will be a resilient driver for the local economy as long as there is no change on the defense budget from Washington."

"With their convenient geographic location, prosperous SpaceX company, and the upcoming attractions of a new stadium for the Rams and Chargers in Inglewood, we expect these two cities will see transformative growth in the near future."
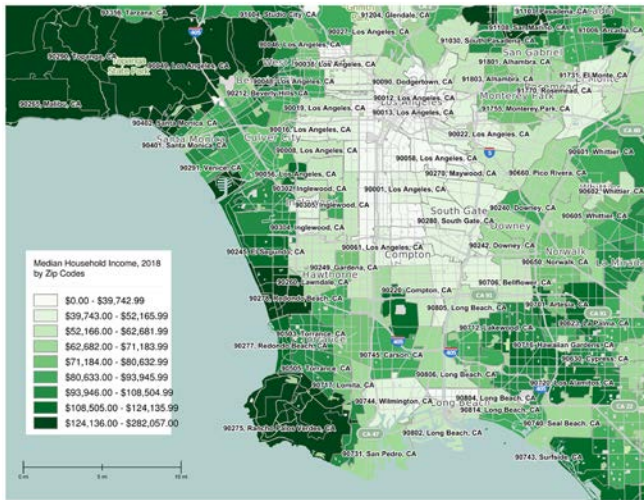
SOUTH BAY HOUSEHOLD INCOME STATISTICS

In the previous section, we discussed the information for industry by workplace. Here we will analyze the statistics by residence. Figure 16 illustrates the median household income by zip code in South Bay in 2018. The darker the color, the higher the value. Manhattan Beach and Rancho Palos Verdes have the highest median household income in the region. By and large, the coastal South Bay area has higher income than the inland South Bay, except for the neighborhood of Cal State, Dominguez Hills.

It is not surprising to see that household income is highly correlated with education level by zip codes. Figure 17 exhibits the percentage of adult residents with an educational attainment of college or higher. It looks similar to Figure 16. Income and education level are also highly correlated with housing values, as shown in Figure 18. Note that the housing values are still relatively affordable in Hawthorne and Inglewood. With their convenient geographic location, prosperous SpaceX company, and the upcoming attractions of a new stadium for the Rams and Chargers in Inglewood, we expect these two cities will see transformative growth in the near future.

Figure 17   Percentage of Education for College or Higher by Zip Code in South Bay, 2018

Source: U.S. Census through SimplyAnalytics

Figure 16   Median Household Income by Zip Code in South Bay, 2018
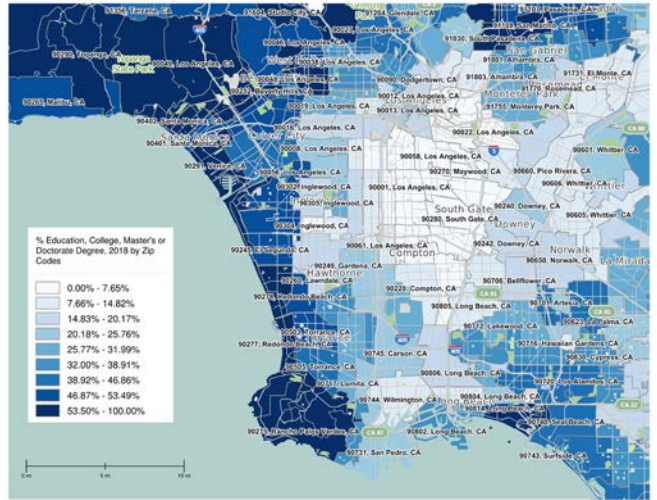
Source: U.S. Census through SimplyAnalytics

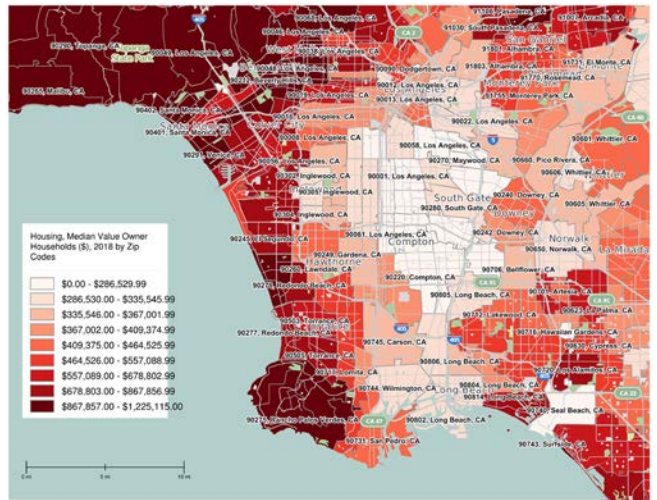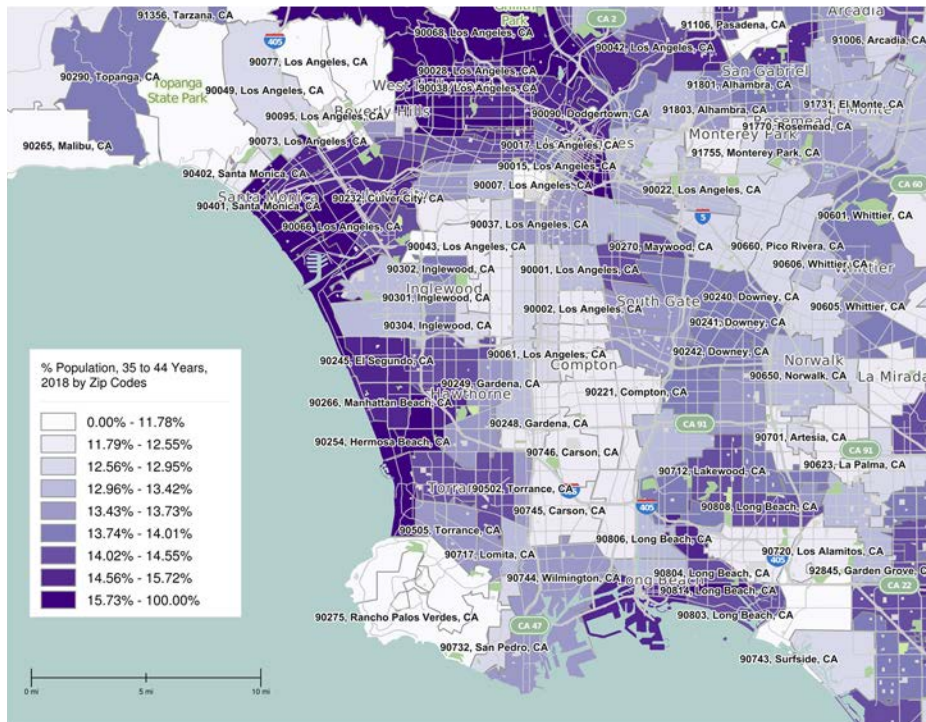Figure 18   Median Housing Value by Zip Code in South Bay, 2018

Source: U.S. Census through SimplyAnalytics

Figure 19   Percentage of Population of Age 35 to 44 by Zip Code in South Bay, 2018

Source: U.S. Census through SimplyAnalytics

Figure 20   Percentage of Population of Age 25 to 34 by Zip Code in South Bay, 2018

Source: U.S. Census through SimplyAnalytics

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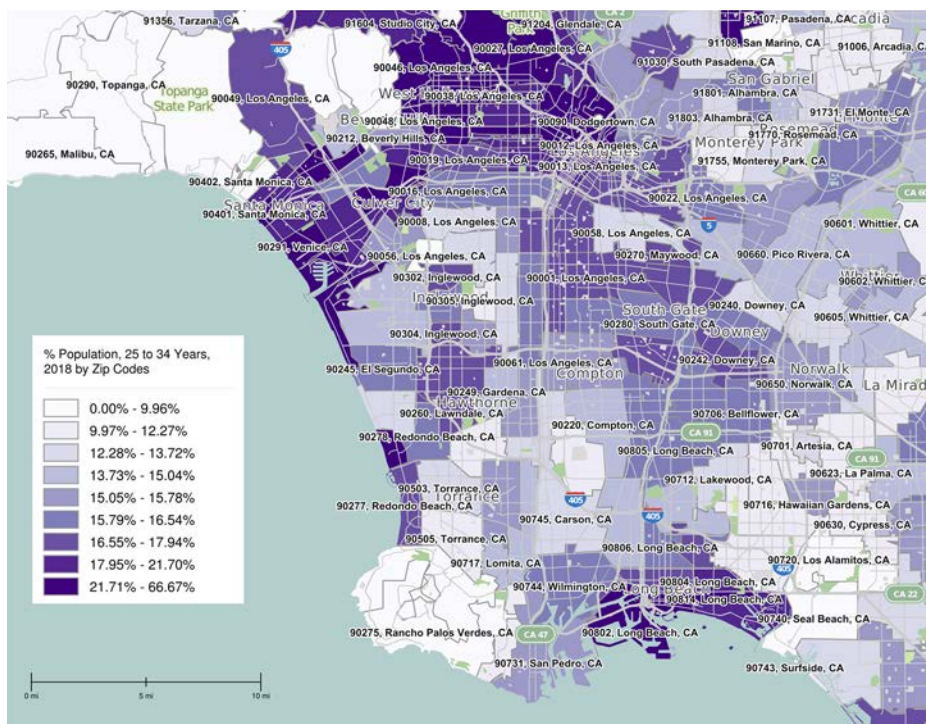
Figure 19 illuminates the percentage of population by zip code aged 35 to 44 years old, who are the backbone of the working age group. Note that the difference of percentages by different level of color is not large. We still can see a slightly higher density in the coastal region, however. Figure 20 depicts the percentage of population aged 25 to 34, who might just be graduating from college or in the early stage of their career. It is interesting to see there is only a small portion of area, such as Hermosa Beach and Redondo Beach, which attracts more young adults to live.

SOUTH BAY ECONOMIC OUTLOOK

In the past several years, the South Bay economy followed closely with the pace of the whole L.A. economy. From 2011 to 2017, its payroll employment growth was 1.5% annually on average. The most important driver of South Bay's economy is the manufacturing sector, the crown jewel of which is the aerospace and defense industry. We predict that South Bay's growth rate will accelerate over the next year, mostly due to the expansion of the federal government's defense budget. Additionally, SpaceX and the new NFL stadium will continue to transform and advance the local economy.
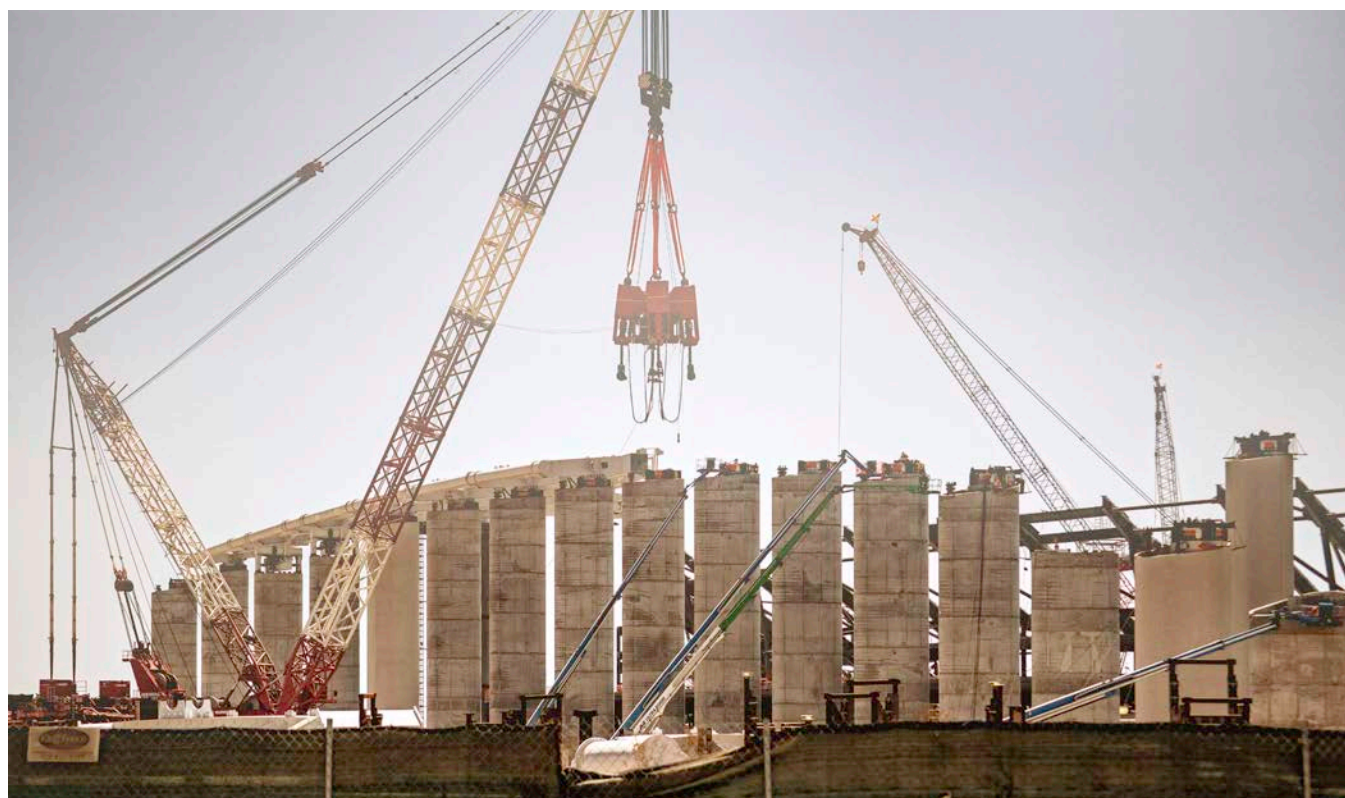
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F O R E C A S T

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