Tracking Impacts of the COVID-19 Recession on the Bay Area Economy

Bay Area Economic Profile

2020

BAY AREA COUNCIL ECONOMIC INSTITUTE

About This Report

This Economic Profile, the eleventh in a series of Bay Area Economic Profile reports produced since 1997 by the Bay Area Council Economic Institute in partnership with McKinsey & Company, examines the region's economic strength prior to the COVID-19 pandemic and provides recent data points that highlight the region's experience during the recession and recovery. As previous reports have done, it benchmarks the Bay Area's performance against other knowledge-based economies to assess the region's national and global competitiveness. It also examines the economic and policy challenges that are likely to confront the region even after the COVID-19 pandemic subsides.

Acknowledgments

This Economic Profile report was prepared by the Bay Area Council Economic Institute in partnership with McKinsey and Company. The report was sponsored by Fifth Third Bank.

About the Institute

Since 1990, the Bay Area Council Economic Institute has been the leading think tank focused on the economic and policy issues facing the San Francisco/Silicon Valley Bay Area, one of the most dynamic regions in the United States and the world's leading center for technology and innovation. A valued forum for stakeholder engagement and a respected source of information and fact-based analysis, the Institute is a trusted partner and adviser to both business leaders and government officials. Through its economic and policy research and its many partnerships, the Institute addresses major factors impacting the competitiveness, economic development and quality of life of the region and the state, including infrastructure, globalization, science and technology, and health policy.

It is guided by a Board of Advisors drawn from influential leaders in the corporate, academic, non-profit, and government sectors. The Institute is housed at and supported by the Bay Area Council, a public policy organization that includes hundreds of the region's largest employers and is committed to keeping the Bay Area the world's most competitive economy and best place to live. The Institute also supports and manages the Bay Area Science and Innovation Consortium (BASIC), a partnership of Northern California's leading scientific research laboratories and thinkers.

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Introduction

The COVID-19 pandemic has created lasting impacts on economies across the country, resulting in economic shifts that will have enduring effects on the global economy. Despite being one of the nation's most resilient regions for the past fifty years, the nine-county San Francisco Bay Area similarly experienced unprecedented changes to the regional economy during the COVID-19 pandemic. Home to Silicon Valley and a thriving tech sector, the region's unmatched economic strength provided years of economic growth leading up to the COVID-19 pandemic.

The regional economy's strength leading up to the pandemic was due to factors such as the Bay Area's unparalleled workforce, world-class higher education system, leading startup ecosystem, and opportunities created by the region's concentration of venture capital. Despite the spectacular economic strength of the Bay Area, the region's economic growth has also spurred challenges. The Bay Area has some of the highest housing costs in the world, and as a result the region faces a homelessness crisis and has become increasingly unaffordable for low-income residents. Both the strengths and the challenges faced by the Bay Area economy leading up to the pandemic have been reshaped amidst the pandemic landscape, and this economic profile offers insights into how those shifts have played out across the regional economy.

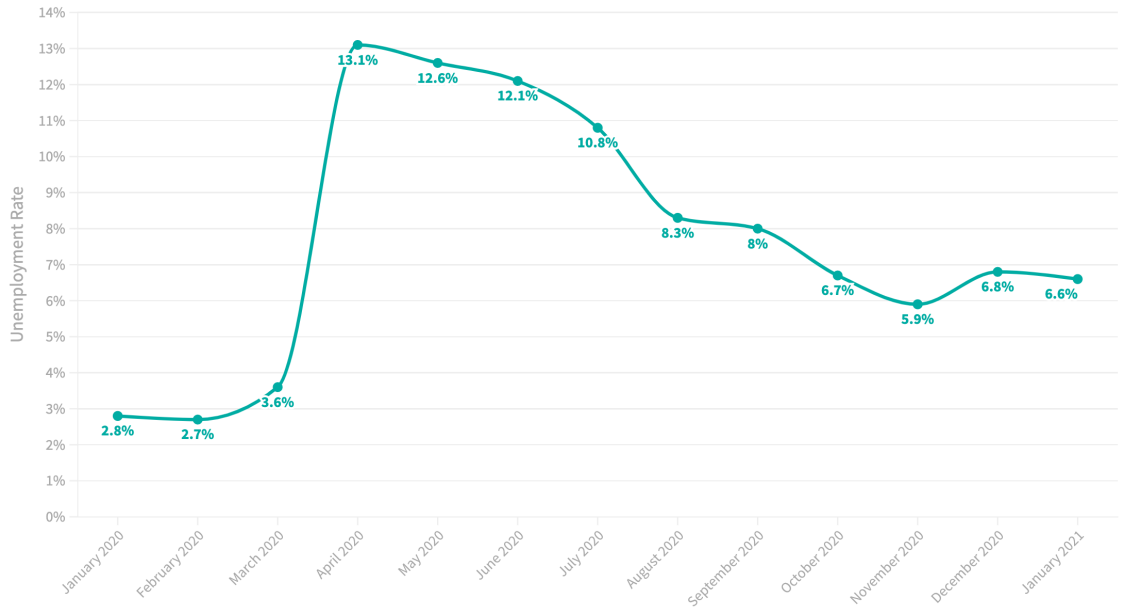
As private- and public-sector leaders shape the economic recovery through policy decisions, they must make data informed decisions. This report provides just such data and analysis. Each chapter provides data insights on different aspects of the regional economy. The report includes chapters focused on housing and transportation, venture capital and innovation, income inequality, higher education, regional migration, globalization trends, and labor force participation. The chapters provide data points that offer early insights into how the COVID-19 pandemic has impacted different aspects of the region and economy in 2020 to help the region plan for a strong and equitable economic recovery.

1

2020 Employment Data for the San Francisco Bay Area

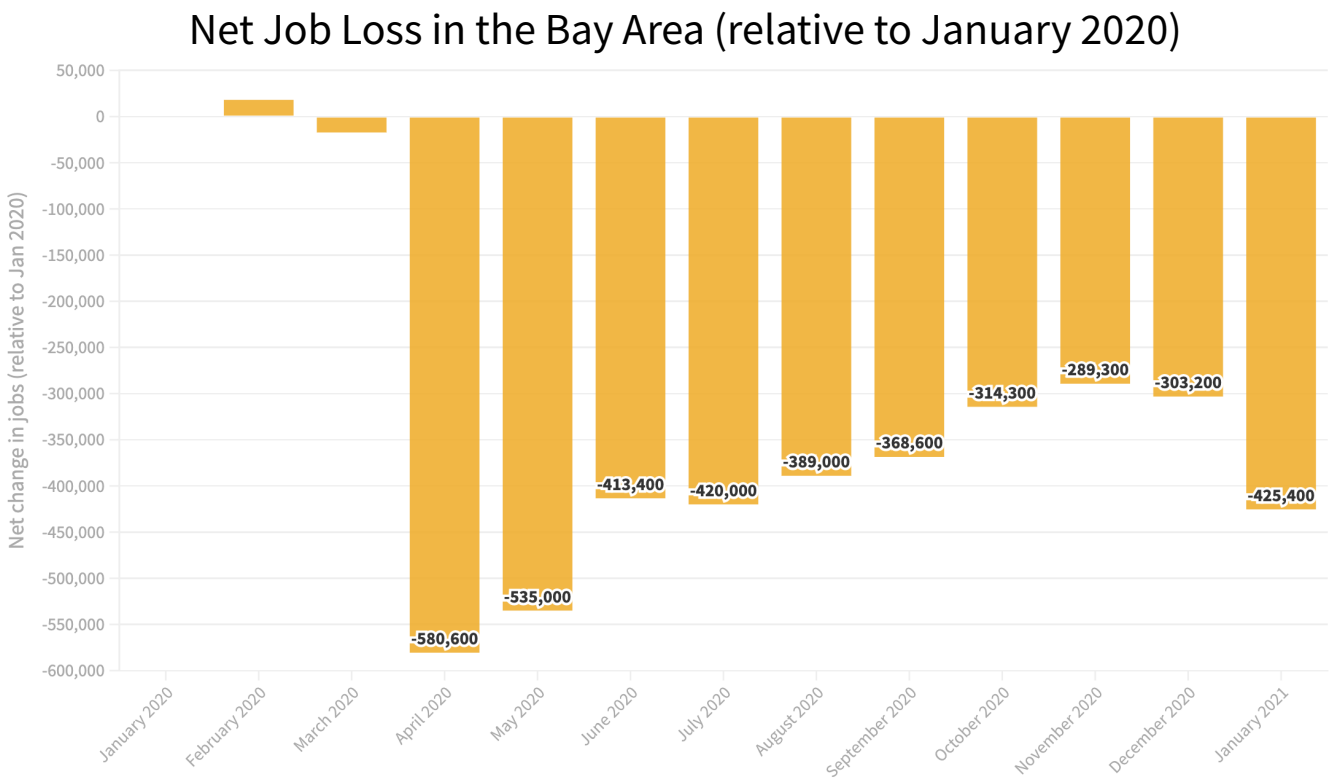
Local, regional, and national economies all experienced drastic shifts to employment circumstances in 2020. The COVID-19 pandemic and resulting global recession led to severe fluctuations in unemployment rates and changes to the size and level of participation in the labor force. Additionally, many regions experienced shifts in the industry make-up of the employment, with some industries halving their workforce while others remained comparably stable. This chapter explores the effects of the COVID-19 pandemic on employment in the San Francisco Bay Area, presenting data on the pace of the regional economic recovery over the course of 2020 and tracking the region's recovery againt other

Bay Area Unemployment Rate Jan 2020 – Jan 2021



Data: Bureau of Labor Statistics
Analysis: Bay Area Council Economic Institute

The unemployment rate in the Bay Area as of January 2021 was 6.8 percent. The regional unemployment rate spiked from 3.6 percent in March 2020 to 13.1 percent in April 2020, fell consistently month-over-month until September 2020, and since then has plateaued, hovering between 6% and 7%. Following a similar trajectory to the unemployment rate, net job loss was most severe in April 2020, at which point the region had over half a million less jobs than it had the start of 2020. Jobs were on a strong path to recovery for most of 2020 but saw a dip in the new year, with an additional 122,000 jobs lost between December 2020 and January 2021.



Data: California Employment Development Department
Analysis: Bay Area Council Economic Institute

Net job loss in the Bay Area as result of the COVID-19 recession is more acute than past recessions. Eleven months into the COVID-19 recession, net job loss in the region is five times that of the net job loss eleven months into the Great Recession and double that of the net job loss eleven months into the Dot-com Bubble. Job losses were much more sudden in the COVID-19 recession than the Dot-com Bubble and the Great Recession, but recovery has also been much faster than in past recessions. Nine months into the pandemic (November 2020) the region had recovered 50 percent of the jobs lost at the deepest point of job loss (which occurred in April 2020). In comparison, in the wake of the great recession, the region saw the biggest net job loss in January of 2010, over two years after the start of the recession, and it took until June 2012 to recover half of those jobs.

Employment loss in the Bay Area was most extreme in April, at which point the region had 14 percent or 580,000 fewer jobs than it had in January. Over the summer and fall the economy began to recover, but as of January 2021 the region saw further job loss with 10.5 percent or 425,000 fewer jobs in January 2021 than year prior.

COVID-19 Recession Employment Loss in the Bay Area vs. Past Recessions

COVID-19 Recession
-10.5%

net loss in total employment in the Bay Area 11 months into the start of the COVID-19 Recession (Feb 2020-Jan 2021)

Great Recession
-2.0%

net loss in total employment in the Bay Area 11 months into the start of the Great Recession (Dec 2007-Nov 2008)

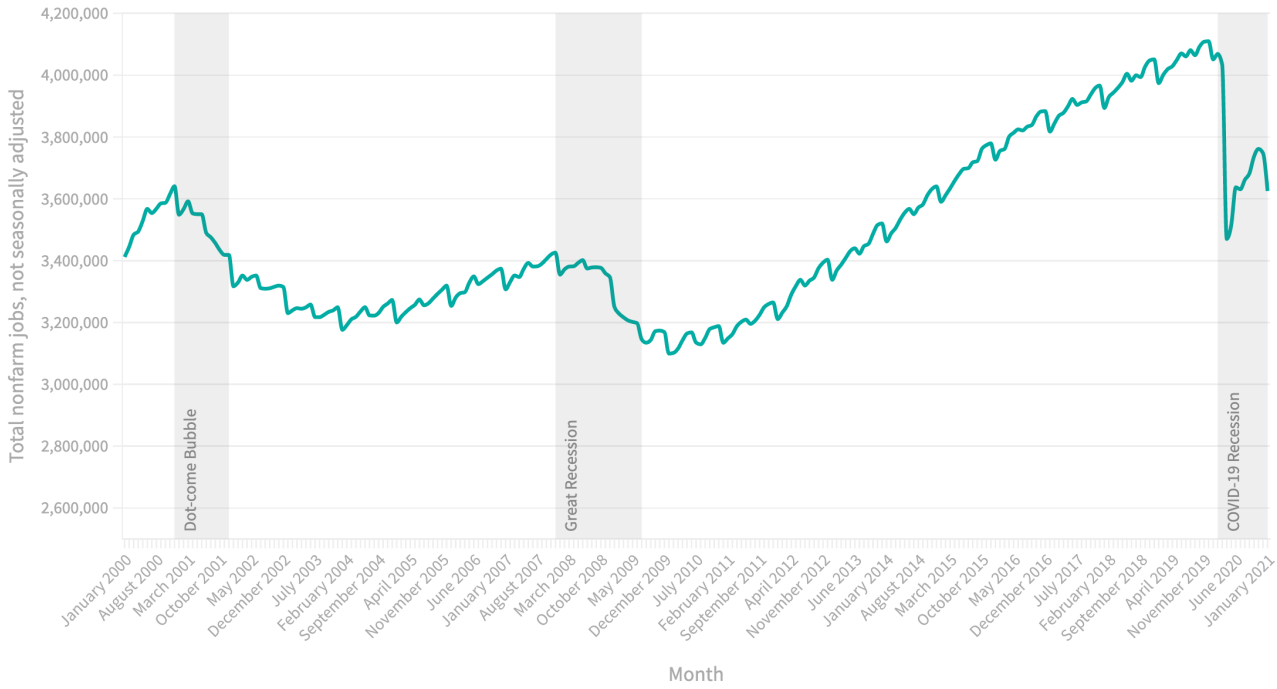
Dot-com bubble
-4.6%

net loss in total employment in the Bay Area 11 months into the start of the Great Recession (Dec 2000-Nov 2001)

Data: California Employment Development Department, total nonfarm employment, not seasonally adjusted
Analysis: Bay Area Council Economic Institute

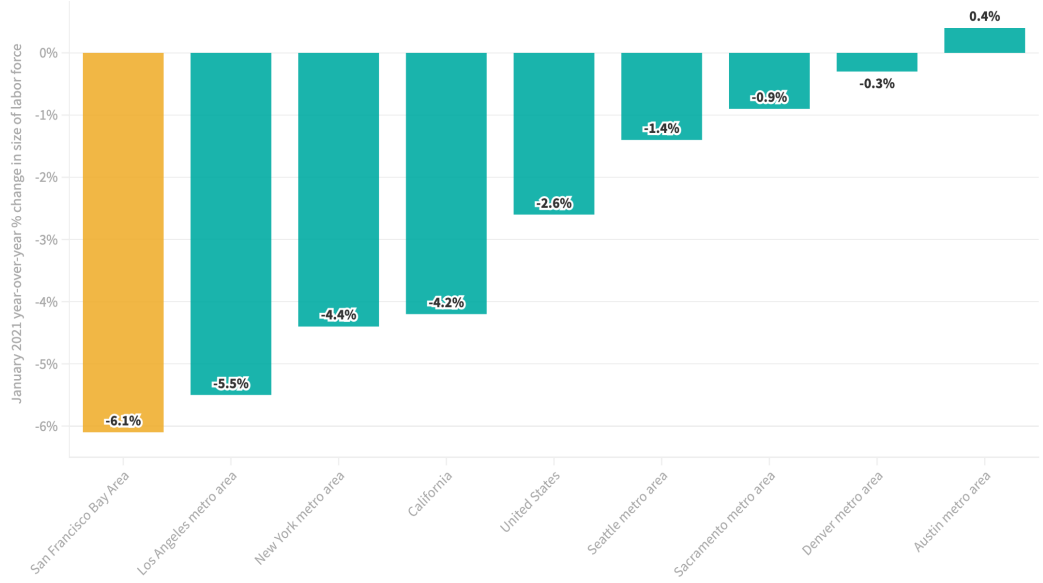
As of January 2021, the Bay Area's labor force (defined as those employed and those looking for work) shrank by over 6 percent, more significantly than many other peer metros, the U.S., and California. In contrast, Austin saw the labor force grow by half a percent and Denver and Sacramento metro areas lost less than 1 percent of their labor force since last January. This trend reflects just how many people in the region have been impacted by the pandemic fueled factors that are driving people out of the workforce, including unmet childcare needs, other unpaid family care responsibilities, and health concerns. If this trend persists, these individuals who have become disconnected from the labor force amidst the pandemic may have a hard time returning to the workforce, as typically the longer someone has been out of the labor force, the longer it takes them to find a job and return to work.

Total Employment in the Bay Area During Periods of Recession



Data: California Employment Development Department, total nonfarm employment, not seasonally adjusted
Analysis: Bay Area Council Economic Institute

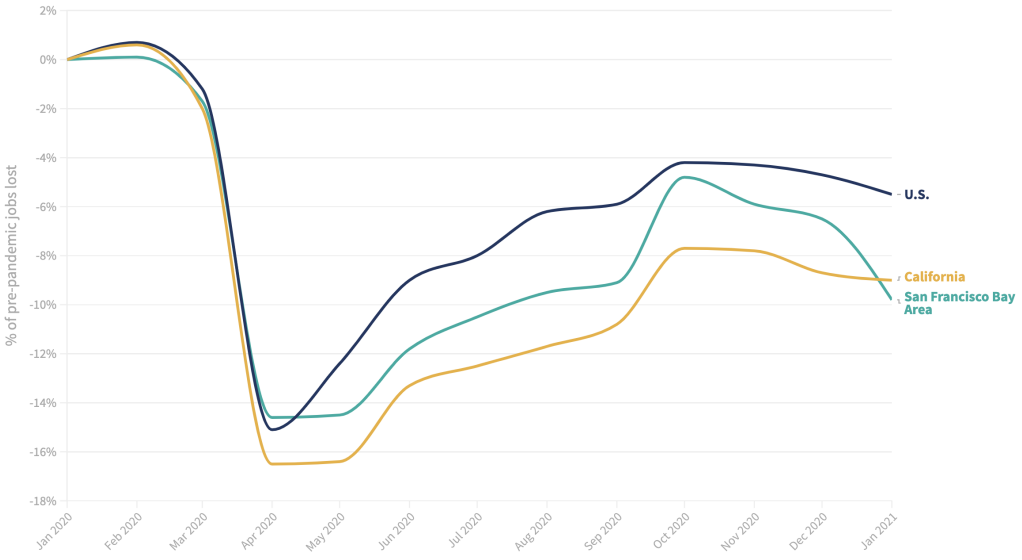
% Change in Labor Force in the Bay Area vs. Other Geographies



Data: Bureau of Labor Statistics
Analysis: Bay Area Council Economic Institute

The level of job recovery has plateaued in California and the U.S., but since October 2020 the Bay Area has seen additional job losses. Up until January 2021, the Bay Area was ahead of California in terms of recovering to pre-pandemic employment levels, but as of January 2021 the Bay Area has dipped below California in terms of total share of pre-pandemic jobs recovered. The Bay Area has recovered more jobs than metros such as New York (-10.2 percent year-over-year as of January 2021) and Los Angeles (-12.8 percent), but the region has seen slower job recovery than metro areas such as Austin (-2.3 percent year-over-year as of Jan 2021), Denver (-4.7 percent), and Seattle (-4.8 percent).

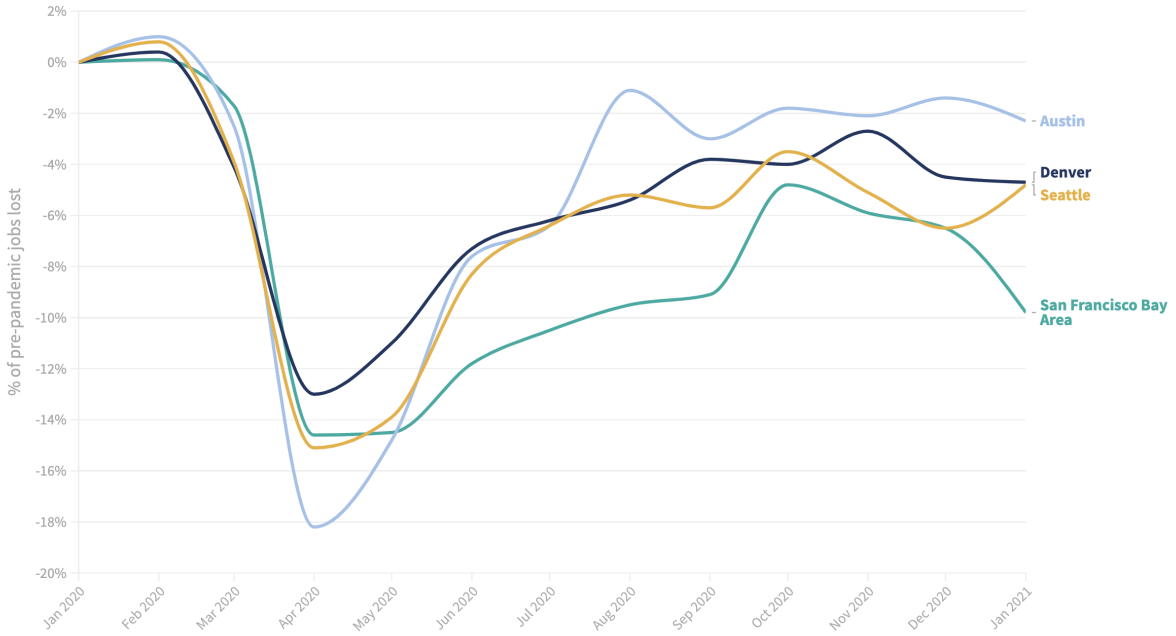
% Change in Employment in the Bay Area vs. the U.S. and California



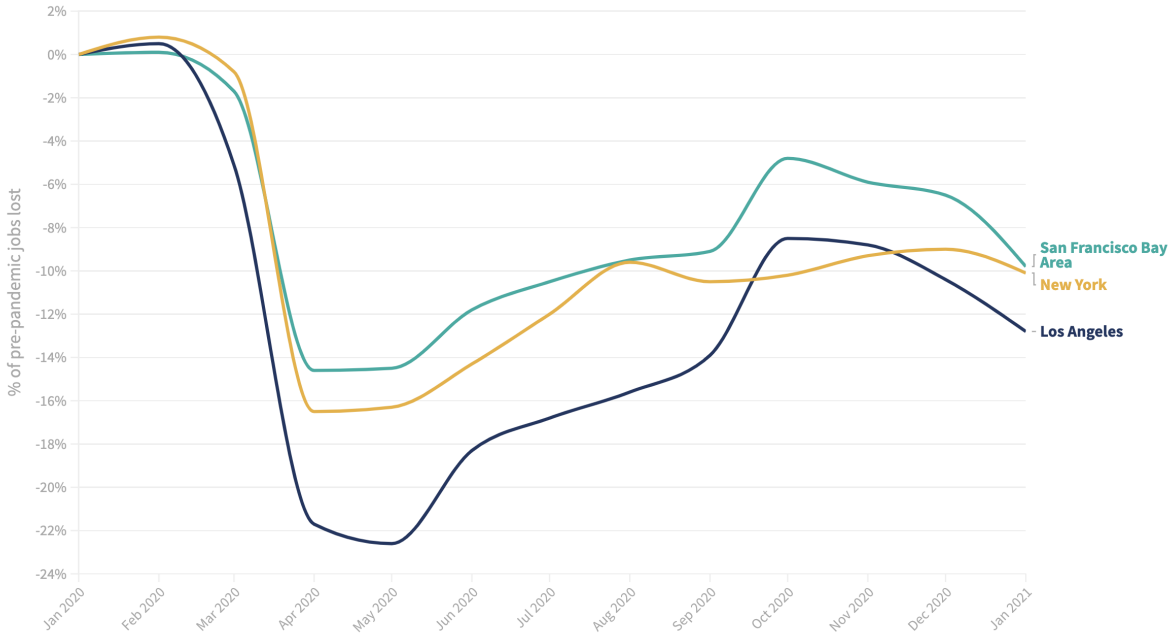
Data: Bureau of Labor Statistics
Analysis: Bay Area Council Economic Institute

2020 Employment Loss in the Bay Area vs. Other Metro Areas

Metros recovering jobs faster than the Bay Area



Metros recovering jobs slower than the Bay Area



Data: Bureau of Labor Statistics
Analysis: Bay Area Council Economic Institute

Examining job losses by industry provides more nuanced insight into the COVID-19 recession employment recovery in the region. In early 2020, employment across the travel and tourism and hospitality and services sectors were immediately impacted as local and statewide shelter in place mandates and travel guidelines were put in place in the Bay Area. As time went on, these effects transferred to other industries, leading to layoffs, furloughs, and hiring freezes across various industries.

In the Bay Area, the Leisure and Hospitality and Other Services industries were hit the hardest at the onset of the pandemic. As of April 2020, the region had 50 percent fewer jobs in the Leisure and Hospitality sector and 30 percent fewer jobs in the Other Services sector than it did in January of 2020. The two industries showed slow but consistent recover through the summer and fall but experienced steep loss again between December 2020 and January 2021. The changing and varied lockdown and health guidelines that were put in place across the region as the pandemic progressed impacted employment in these two sectors in the region throughout 2020.

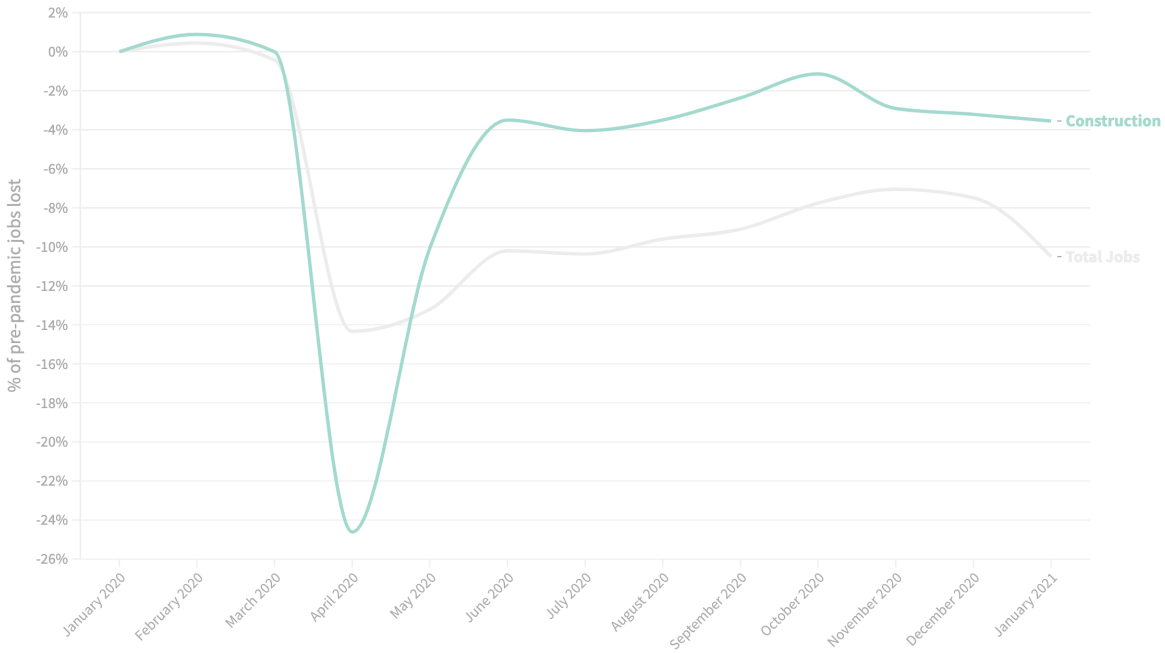
On the other hand, industries that typically employ white-collar workers such as Professional and Business Services and Financial Services were less impacted by employment loss throughout 2020. As of April 2020, compared to employment at the start of the year, the region had only lost 6.5 percent of jobs in the Professional and Business Services sector and 3 percent of jobs in the Financial Activities sector. Companies in these two sectors typically employ many people in occupations that can work remotely, which likely contributed to the lesser job loss seen in these two industries. However, these two industries also both experienced another drop in employment between December 2020 and January 2021.

Other sectors had unique trajectories of employment loss and recovery during 2020. The Construction industry had one of the most pronounced recoveries. The region lost 24% of Construction employment between March and April, but the industry recovered quickly, reaching 99 percent of pre-pandemic employment levels by October. This is in large part due to new safety guidelines that were put in place to allow construction workers to return to job sites. Government saw a delayed low point for employment loss, reaching the deepest level of job loss in July but remaining relatively stable into the new year.

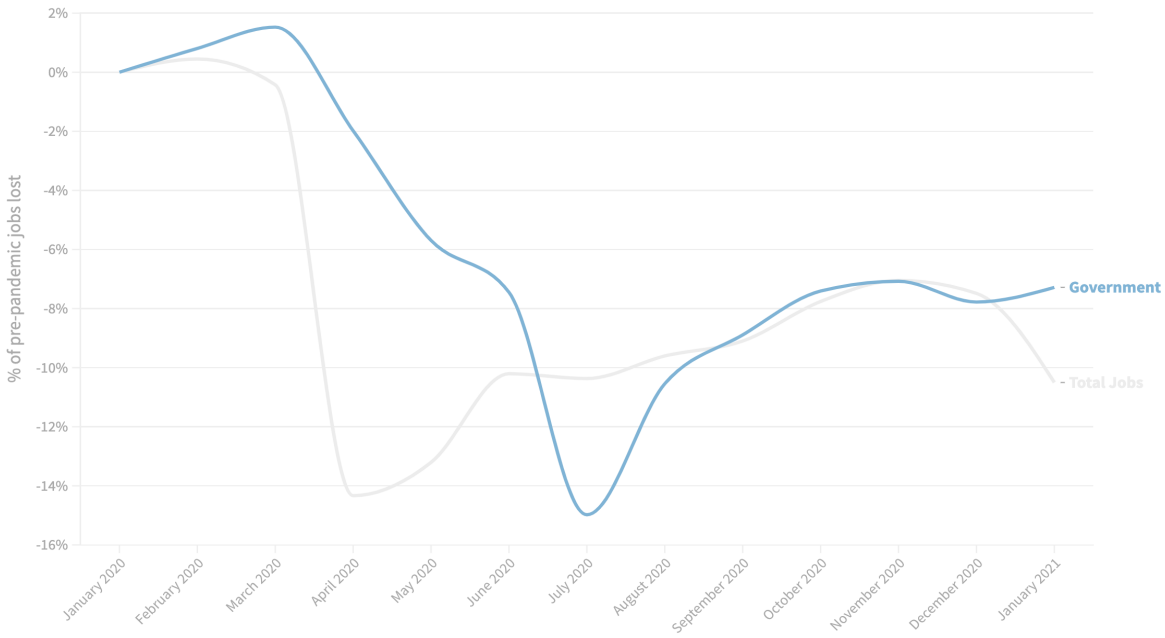
These employment and labor force data points presented in this chapter show that job loss differed significantly by industry and that, while the region outperformed some, many other geographies are recovering employment at a faster pace than the Bay Area. In the Bay Area, the shirking regional labor force as compared to other peer metro areas and the dip in reginal employment in the first month of 2021 reveals that the region needs a focused approach to economic recovery. The following chapters of this report examine specific parts of the regional economy, providing insights into how the pandemic has impacted various components of the Bay Area economy. These insights provide a deeper understanding of the ways in which the pandemic has affected different aspects of the regional economy, to help inform policy and decision makers across the region as they shape an equitable and strong regional recovery.

2020 Employment Loss in the Bay Area by Industry

Most significant rebounded



Delayed job loss



Data: Bureau of Labor Statistics
Analysis: Bay Area Council Economic Institute

2

The Future of the Bay Area's Innovation Ecosystem

How will COVID-19 shape the future of the Bay Area's innovation ecosystem?

The Bay Area is renowned globally for its strong presence of technology giants, successful startups, and unmatched ability to capture venture capital investment. These factors have largely influenced and driven the Bay Area's economic growth over the last decade, exemplified by its rapid GDP growth. Between 2015 and 2018, the Bay Area experienced a 5.9% compound annual growth rate in GDP – one of the highest growth rates among national economies, outpacing that of its peer U.S. cities. Home to many of the largest companies in the country based on market capitalization, the Bay Area's innovation ecosystem has attracted talent from across the globe, heightening the region's role as a global leader in innovation and entrepreneurship.

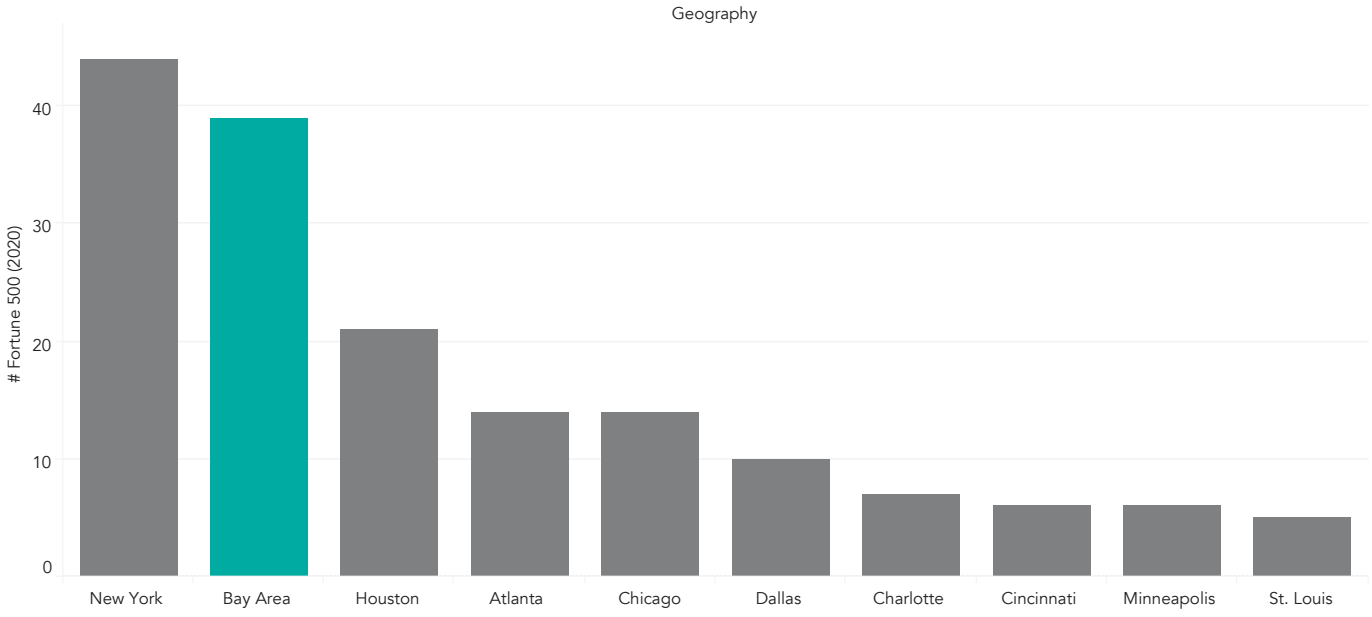
Venture capital, which has a larger share of investment in the Bay Area than any other region in the U.S., has served as the catalyst for the region's strength in technology and the growth of startups. Venture capital investment is an indicator of a region's financial and tech prowess, which in turn strongly influences its economic status at both a domestic and global level. Historically, the Bay Area's highly educated population has led to the growth of successful companies and spurred investment in others across the region.

Exhibit #1: Venture capital investment has become more concentrated in the Bay Area.

Since the early 2000s, venture capital investment in the Bay Area has sharply increased in total dollars invested, hovering between 40% and 50% of the share of total U.S. investment. Over the years, venture capital investment has become more concentrated in the Bay Area, moving from a quarterly average of 39% between 2005 and 2010 to 46% between 2015 and 2020. In contrast, total U.S. investment has remained constant since 2005, signaling that the region has increasingly captured more total U.S. investment over time.

Number of Fortune 500 companies across major U.S. metropolitan areas

Besides New York, the Bay Area has the largest concentration of Fortune 500 companies across major U.S. metropolitan areas.



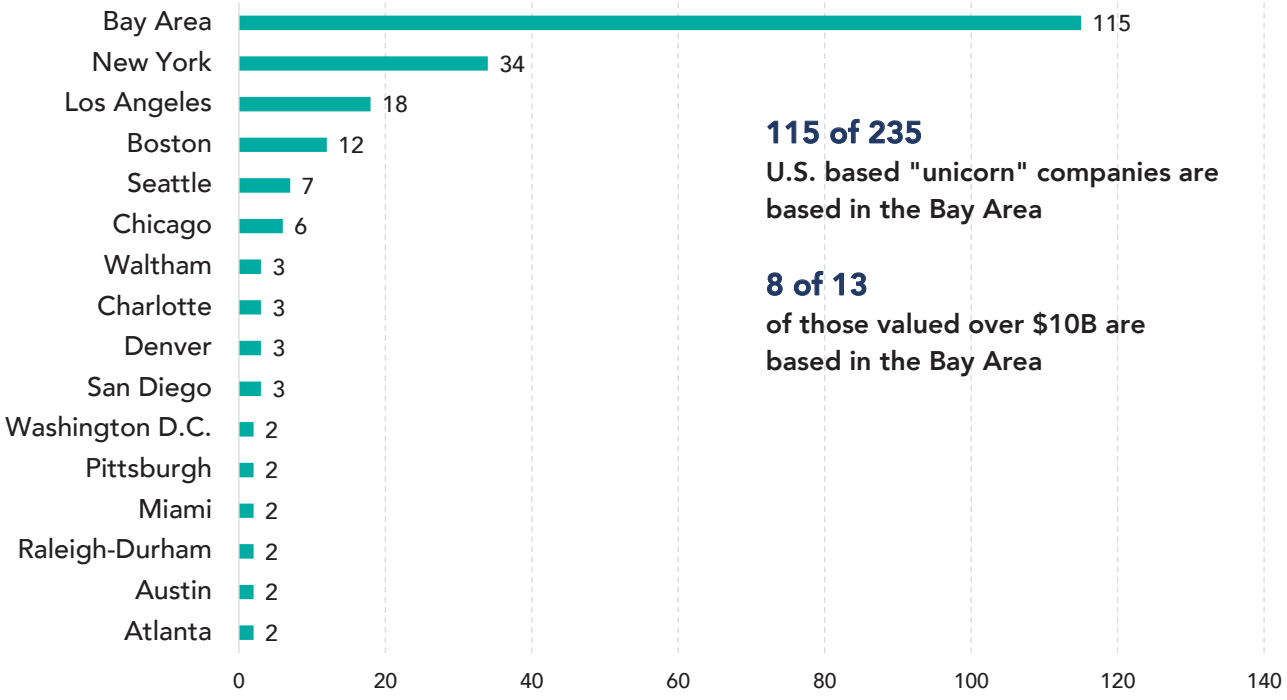
Source: Fortune 500 (2020)
Analysis: Bay Area Council Economic Institute

Exhibit #2: The Bay Area has more top-performing companies, particularly in the technology industry, than most major metropolitan areas.

The abundance of venture capital investment in the Bay Area has laid the groundwork for several Bay Area unicorn companies – private companies with valuations over $1 billion – which have benefited from significant venture capital investment. As of September 2020, the Bay Area had 115 U.S.-based unicorn companies, exceeding that of other major U.S. cities. Of the U.S.-based unicorns that are valued over $10 billion, over half were headquartered in the Bay Area.

Private Companies in IPO Pipeline with Valuations Over $1 Billion

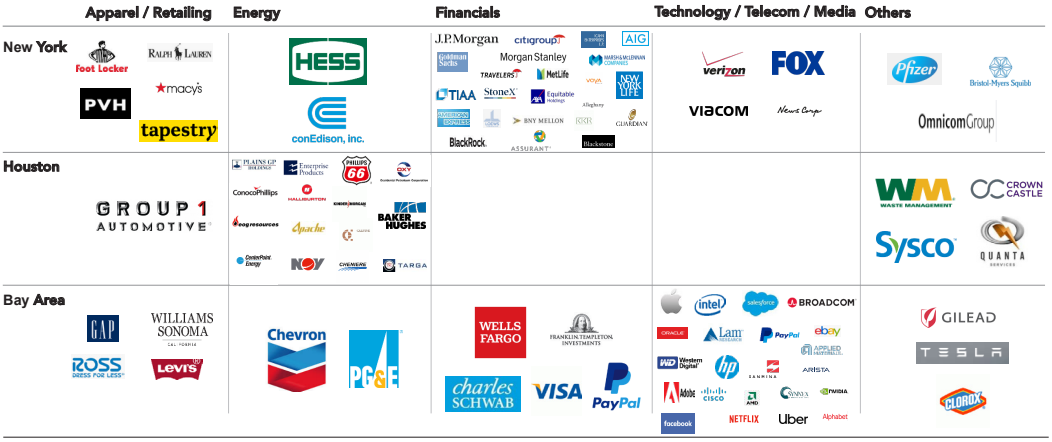
as of September 23, 2020



Source: CB Insights
Analysis: Bay Area Council Economic Institute
Note: There is one unicorn company located in each of the following locations: Buffalo (NY), Carpinteria (CA), Clearwater (FL), Columbus (OH), Dallas (TX), Detroit (MI), Goleta (CA), Guilford (NY), Houston (TX), Jacksonville (FL), Kansas City (MO), Lehi (UT), Milwaukee (WI), Minneapolis (MN), Plymouth (MI), Portland (OR), Stamford (CT), Provo (UT), Walpole (MA).

The Bay Area is more diversified across top performing companies compared to peers

2020 Fortune 500 Companies by Industry Sector



Source: Fortune
Analysis: Bay Area Council Economic Institute
Note: The Bay Area is comprised of Cupertino, Dublin, Emeryville, Foster City, Fremont, Los Gatos, Menlo Park, Milpitas, Mountain View, Oakland, Palo Alto, Redwood City, San Francisco, San Jose, San Ramon, San Mateo, Santa Clara, Santa Rosa, San Rafael, and Walnut Creek.

Venture-Backed IPOs in 2020
(as of October 1, 2020)

Company	Headquarters	Month of IPO	Valuation
Snowflake	Bay Area	September	$33,200,000,000
Palantir	Bay Area/Denver	September	$22,000,000,000
Unity	Bay Area	September	$13,700,000,000
ZoomInfo	Waltham	June	$8,200,000,000
Asana	Bay Area	September	$5,500,000,000
JFrog	Bay Area	September	$4,000,000,000
Amwell Health	Boston	September	$3,960,000,000
Kingsoft Cloud	China	May	$3,700,000,000
Duck Creek Technologies	Boston	August	$3,500,000,000
Jamf	Minneapolis	July	$3,000,000,000
nCino	Wilmington	July	$2,800,000,000
Vroom	New York	June	$2,500,000,000
Sumo Logic	Bay Area	September	$2,200,000,000
Agora	Baltimore	June	$2,000,000,000
One Medical	Bay Area	January	$1,700,000,000
Lemonade	New York	July	$1,600,000,000
BigCommerce	Austin	August	$1,600,000,000
Casper	New York	February	$476,000,000

Source: Crunchbase
Analysis: Bay Area Council Economic Institute
Note: In August, Palantir announced the move of its headquarters from Palo Alto to Denver.

The Bay Area's innovation environment in general exceeds that of many peer cities across the U.S. The region has a concentration of technology companies, but the region's top performing companies remain more industry diverse than its peer regions. As of 2020, the Bay Area had 39 Fortune 500 companies in the U.S., only second to New York at 44 companies. The Bay Area's share of Fortune 500 companies by market capitalization is largely found in the technology industry, while more than half of New York's share is found in the Financials industry (56%) and Chicago's share is largely found in the Industrials (39%) and Consumer Discretionary (32%) industries.

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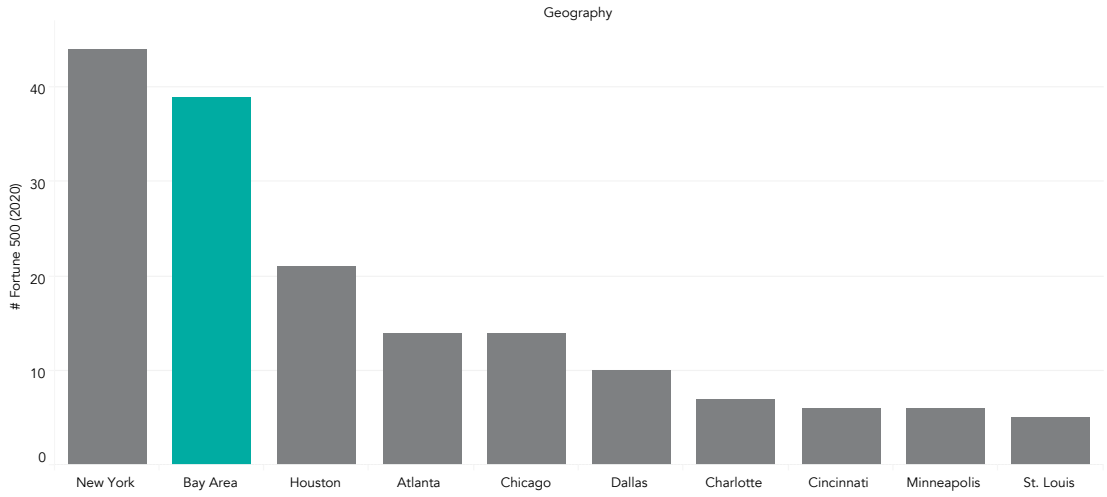


Source: Fortune 500 (2020)
Analysis: Bay Area Council Economic Institute

Exhibit #3: The demographic representation of employees in the venture capital and technology industries is still skewed toward white individuals.

While the dominance of the Bay Area's venture capital investment and technology presence is impressive, the racial and ethnic breakdown of these industries are imbalanced. Many tech companies lack diversity among employees, especially in leadership and technical roles, and this lack of diversity has shaped which businesses and companies receive investment and ultimately succeed in the region.

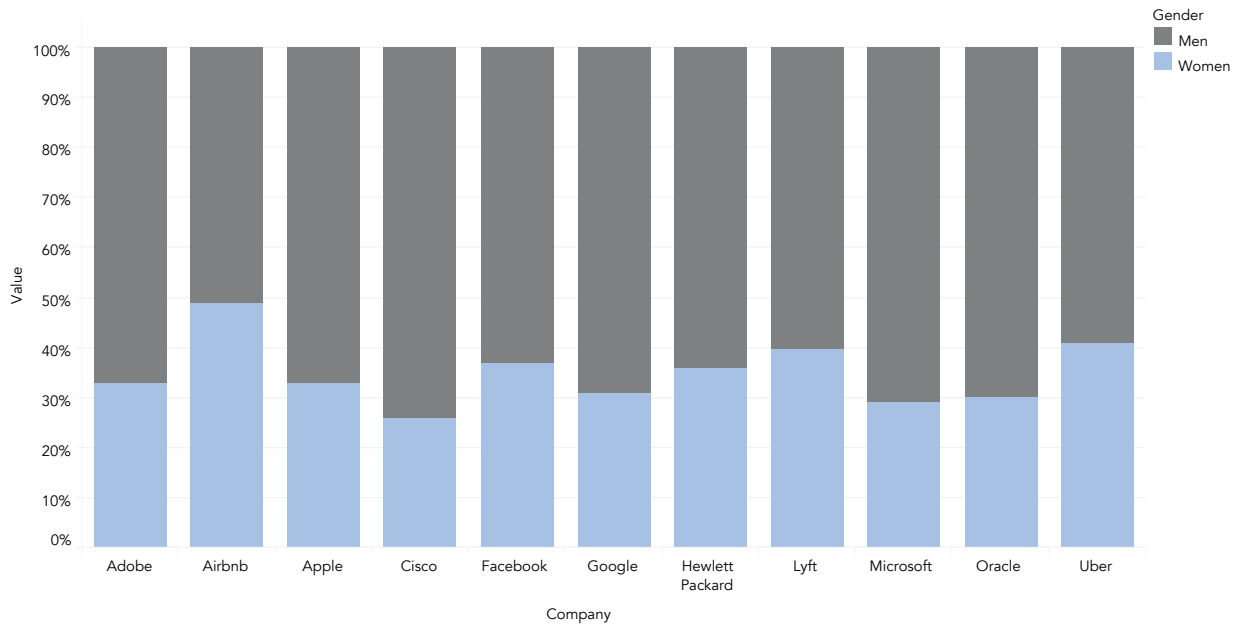
According to a 2018 Deloitte survey of venture capital firm and startup employees, over 75% of respondents were white, compared to 17% Asian/Pacific Islander and 4% Black.[1] Other sources have found that only 1% of VC-funded startups are Black, and only 8% are women.[2]

According to the most recent diversity reports of some major technology companies in the region, between 51% and 74% of the global workforce is male, and the majority of the U.S. workforce is either white or Asian.

ncreasing diversity in these industries can help advance economic equity for historically underrepresented groups that have not been able to break ground as company founders or as employees in technology and innovation roles.

In an effort to diversify the industry, nonprofits such as Transparent Collective are working to give underrepresented founders more exposure in the venture capital industry, connecting Black, Latinx, and female founders with entrepreneurs and providing valuable resources like fundraising preparation workshops. Likewise, technology companies, such as those represented in the charts above, have begun providing transparency around their workforce demographics through annual diversity reports and exemplifying a larger focus on diversity in their recruitment processes.

Representation of Major Global and U.S. Technology Workforces by Gender and Race



Source: Company Diversity Reports (ranging from 2018 to 2020)

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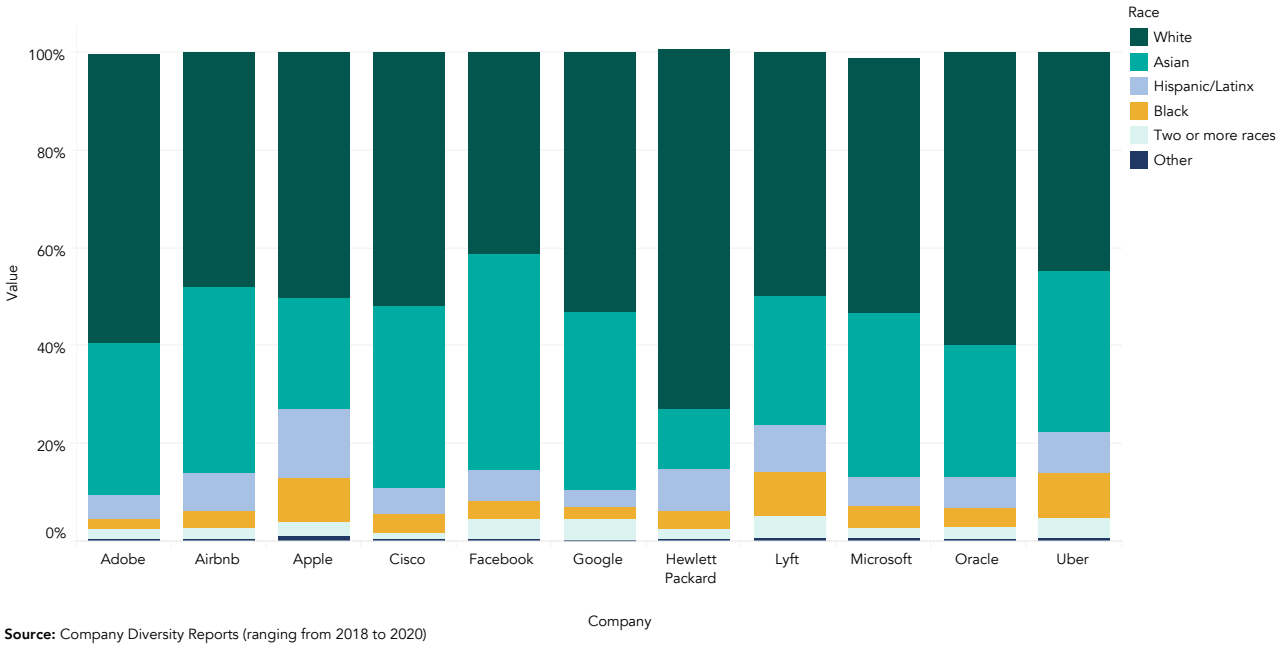


Source: Company Diversity Reports (ranging from 2018 to 2020)

Exhibit #4: How will COVID-19 affect the future of VC investment in the Bay Area?

The Bay Area's geographic positioning as the hub for venture capital investment, technology, and innovation has long been advantageous. But COVID-19 bears questioning whether location will continue to be relevant in determining venture capital investment. Likewise, how COVID-19 shapes the economic future of technology jobs across the Bay Area will also affect future venture capital investment.

Since the beginning of the COVID-19 pandemic and 2020 recession, venture capital investment has certainly slowed when comparing the number of deals that were made in 2019 to deals made thus far in 2020. According to Crunchbase, the number of deals made in the seed to Series B stages declined by 44% when comparing the March-June 2019 period to the March-June 2020 period.[3] Seed-stage deals were most impacted, shrinking by 57% during this time period, and Series B tech funding (particularly for travel tech companies) got hit the hardest for Series B deals. According to PwC/CB Insights' MoneyTree Report for Q2 of 2020, year to date funding declined by 7% compared to the first quarter of 2019. However, between Q1 and Q2 of 2020, deal activity for US-based VC companies rose by 3%, indicating that deal activity could rebound in the coming months.

As for jobs more generally, the Professional & Business Services and Information industries, which encompasses technology jobs, have remained more resistant compared to other industries in the region. For example, for the Professional & Business Services industry, the industry had its largest loss of jobs in April – a 7% loss of the jobs it had in January, but by August, had recovered 97% of those jobs. Conversely, the Leisure & Hospitality industry saw a 50% loss in jobs it had in January, and by August, had only recovered 74%.

Conclusion

Despite the region's continued success in both venture capital and technology in light of COVID-19, the re-shaping of "location" as a factor for where companies choose to locate and where venture capitalists choose to invest their money can have an impact on whether or

not the Bay Area will continue to have a concentration of venture capital investment and technology companies in the future. If location is no longer a primary driver for investment, venture capitalists might choose to start investing in companies in other parts of the country, and likewise, companies might choose to station themselves or their employees in less expensive regions. At the same time, many view the Bay Area's entrepreneurial spirit and conglomeration of venture capital to be a unique underlying factor that will not disappear in the near future.

Housing and Transportation in a Post-Pandemic Bay Area

Housing and transportation are two of the region's biggest challenges. How will they evolve post-COVID-19?

In the first quarter of 2020, San Francisco (ranking third) and Oakland (ranking seventh) were among the most expensive cities in the country, based on a cost of living index that measures the regional differences in the cost of consumer goods and services.[4] The high cost of living in these urban centers of the Bay Area is largely driven by the high costs of housing, which has spurred an affordability crisis, pushing lower income households to locations farther from the urban job centers. As a result, transportation systems that link to job hubs have become congested. In a post-pandemic Bay Area, both housing and transportation will inevitably be reshaped. The following analysis presents some emerging trends in housing and transportation, to shed insight on how these changes may unfold.

A reversal in housing costs have already materialized in some locations, with rents dropping in historically high cost urban job centers, like San Francisco, and rising in parts of the East Bay. As this redefinition in the geography of housing prices in the region plays out, thousands of people face unemployment in an unaffordable region, making future housing stability an uncertainty for many. Housing protections temporarily in place at the state and county level are set to expire on varying timelines, further contributing to uncertainty surrounding housing security for regional residents in poverty and those currently unemployed.

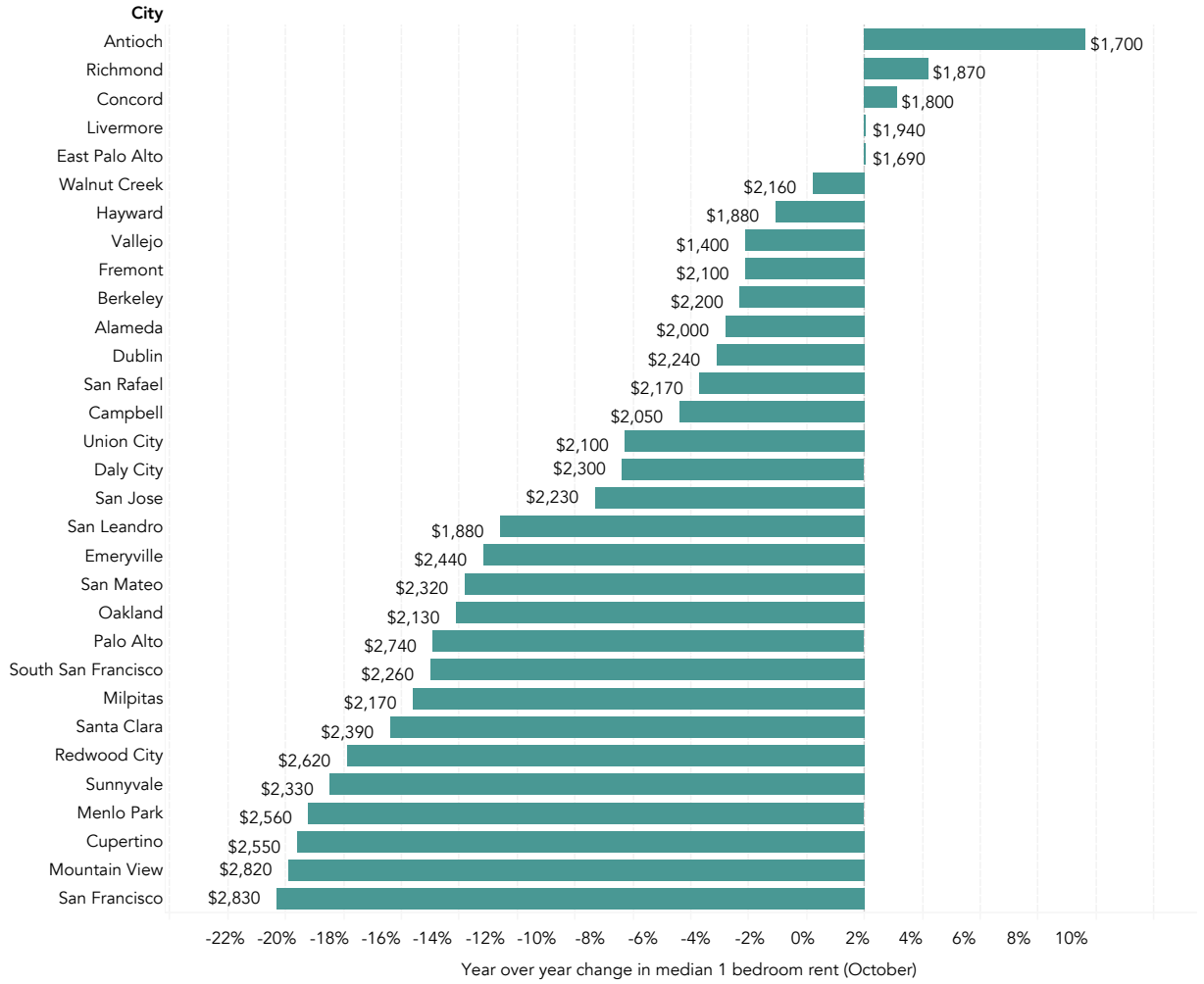
Transportation has seen unprecedented drops in ridership, leaving agencies across the region grappling with revenue shortfalls. Trends over the past few months show that the demand for transit is returning at a slower pace in the Bay Area than other metros nationally and internationally. Additionally, ridership has fallen less at transit stations in predominately Black and Latinx populations, showing that minority communities are more reliant on transit during the pandemic.

Exhibit #1: Rents and home sale prices show a change in housing demand and location desirability in the region.

In the months since COVID-19 emerged, the Bay Area housing market has seen significant disruption. Urban cores that have historically been the most expensive places to live have seen drops in median rent prices, while suburbs in inland counties of the region are experiencing rising housing costs. These trends could represent a temporary change in the desirability of housing in the urban core or they could signal a more permanent shift toward less dense suburban locations throughout the region becoming the preferred geography for more residents.

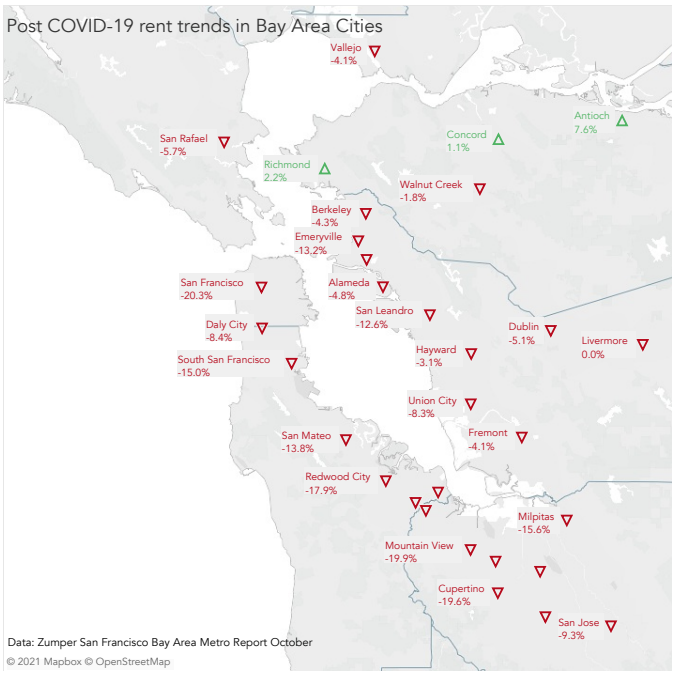
Average rent for a one bedroom in San Francisco has fallen by 20 percent year over year as of October 2020– the largest percent decrease out of any city in the nation including peer metros such as New York (-12 percent), Seattle (-12 percent), and Los Angeles (-11 percent). The locations in the Bay Area with the largest percent drop in rental prices still have the highest rents. For example, while average rent for a one bedroom in San Francisco is one fifth lower than a year ago, it remains the highest in the region at $2,830 per month. Similarly, peninsula cities such as Mountain View, Cupertino, and Menlo Park saw large percent decreases but still have nominally higher rental costs than other locations in the region.

Post COVID-19 rent trends in Bay Area Cities



Data: Zumper San Francisco Bay Area Metro Report October

In contrast to the drop in rental prices across the region, home sale prices have increased across the Bay Area during the pandemic. Across seven metro areas in the region, all have seen increases in sale prices in the eight months since January 2020. Most significantly, sale prices jumped by 35 percent in San Rafael metro area, 25 percent in San Jose metro area, and 22 percent in Oakland metro area– indicating growing popularity of suburban areas in the region.



The rise in home sale price, which is also playing out on a national scale, has been cited as a result of an undersupplied market, as people are more reluctant to list their homes during a pandemic. As a region with already limited supply of housing pre-COVID-19, this upward trend in home sale prices in the Bay Area is increasing pressure on the regional housing market. Home sale prices in metros such as Chicago (+17 percent), Los Angeles (+12 percent), Seattle (+10 percent), and New York (+8 percent) have increased less significantly during the pandemic than most metros in the Bay Area, particularly the suburban areas of the region.

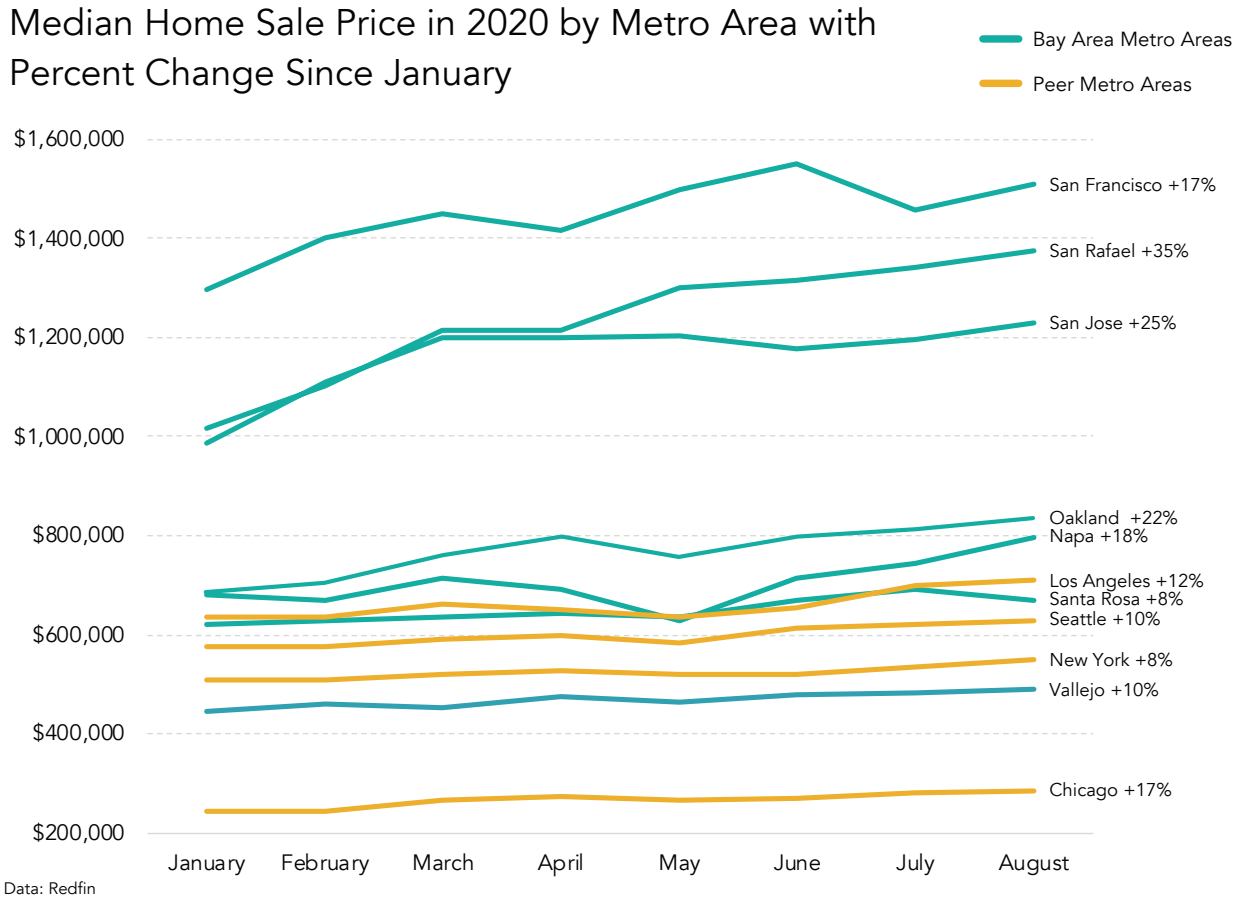


Exhibit #2: Housing cost burdened households are overrepresented in areas with high unemployment.

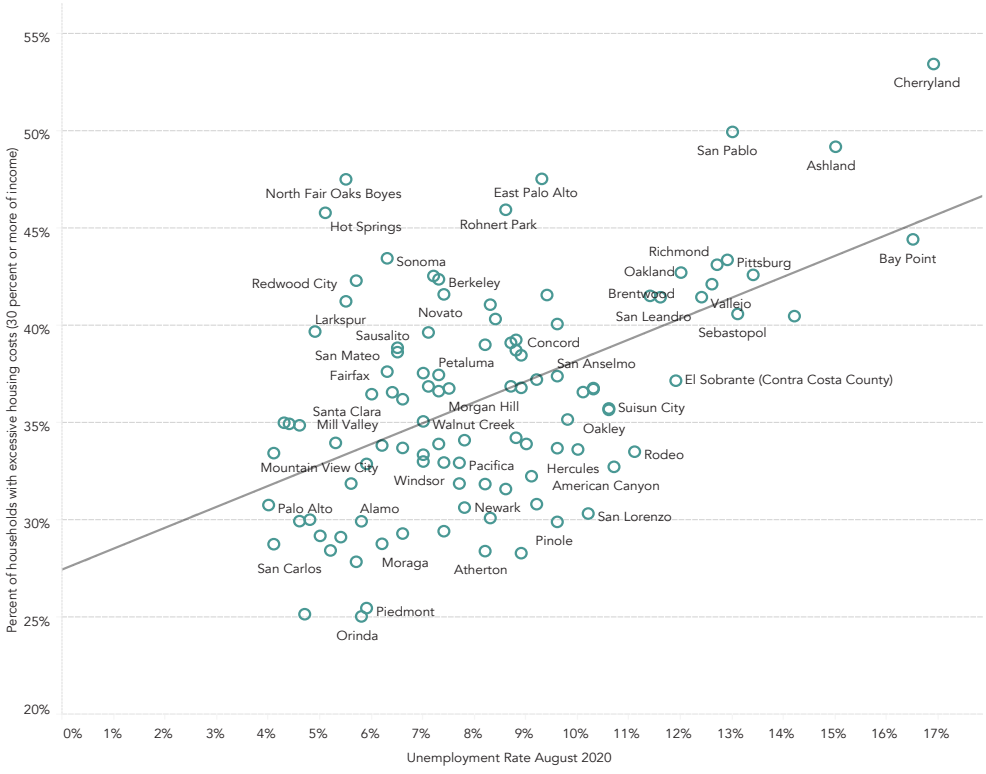
As various housing protections at the local, state, and national level are set to expire, housing stability among households faced with excessive housing costs hangs in the balance. At the national level, the CARES Act provided 120 days of eviction relief for people living in federally backed housing, which expired July 25, 2020. Since then, the CDC has issued an order to halt certain residential evictions through December 31, 2020. Fannie Mae and Freddie Mac announced assistance for borrowers, providing mortgage forbearance for 12 months, waving related late fees, and suspending reporting related delinquency to credit bureaus. Additionally, the two agencies suspended foreclosure sales and evictions until the end of December 2020 and have offered loan modification options for borrowers.

Under new legislation at the state level, no tenant can be evicted before February 1, 2021 for rent owed that was accrued as a result of COVID-19 hardship between March 4 and August 31, 2020. For rent owed that was accrued between September 1, 2020 and January 31, 2021 due to COVID-19 related hardship, tenants must pay 25 percent of the rent due to avoid eviction.

As these housing protections expire, households with unaffordable housing costs are at risk. Many locations within the Bay Area with the highest unemployment rates in the wake of COVID-19 are also locations that have higher shares of households with excessive housing costs. An example on the high end of the spectrum is Antioch, in Contra Costa County, which has a 13 percent unemployment rate and where 43 percent of total households are housing cost burdened, defined as 30 percent or more of income spent on housing costs. On the opposite end, Lafayette also in Contra Costa County, has only 6 percent unemployment and 28 percent of households that are housing cost burdened.

One study has estimated that in Contra Costa County alone 10,000 households are at risk of eviction when

Locations in the Bay Area with higher unemployment rates post-COVID-19 tend to have a larger share of households with excessive housing costs



Data: California EDD; ACS 1-year estimates 2018.

the eviction moratorium expires and an additional 9,500 became at risk of eviction when the Federal Pandemic Unemployment Compensation program expired.[5] The study also found that the most significant eviction risk is concentrated among Black and Latinx renters who are already disproportionately economically insecure. The concentration of households with excessive housing costs in locations with higher rates of unemployment reveals that the expiration of both unemployment benefits and eviction protections could have an impact on housing stability.

Based on a weekly Pulse Survey from the Census Bureau, 11 percent of renters were not caught up on housing payments as of the week of September 16, 2020 in the San Francisco Metro Area. As of this most recent update to the Pulse Survey, the San Francisco Metro Area has a smaller share of those unable to make housing payments compared to most peer metros. The New York (17 percent), Chicago (15 percent), and Los Angeles (15 percent) metro areas all saw larger percentages of people reportedly unable to make rent payments last month, while Seattle (6 percent) was had a smaller share behind on rental payments.

Though the San Francisco Metro Area has seen lower reports of those unable to pay rent, of those who did report an inability to pay rent last month over half (54 percent) were Latinx or Black while the same group makes up only 29 percent of the population. This inequity, along with the finding of increased eviction risk among Black and Latinx renters, reveals that the Bay Area has become disproportionately unaffordable for Black and Latinx individuals and households in the wake of COVID-19.

Exhibit #3: Ridership drops incite transit funding concerns.

Public transit demand fell sharply across the globe as shelter in place orders went into effect. As riders have begun to return to transit, locations are experiencing varying speeds in return to normal demand. Transit in the U.S. as a whole has reached two thirds of pre-COVID-19 demand, but the Bay Area is lagging behind the national recovery in demand, with only 10 percent of pre-COVID-19 transit demand as of early October 2020.

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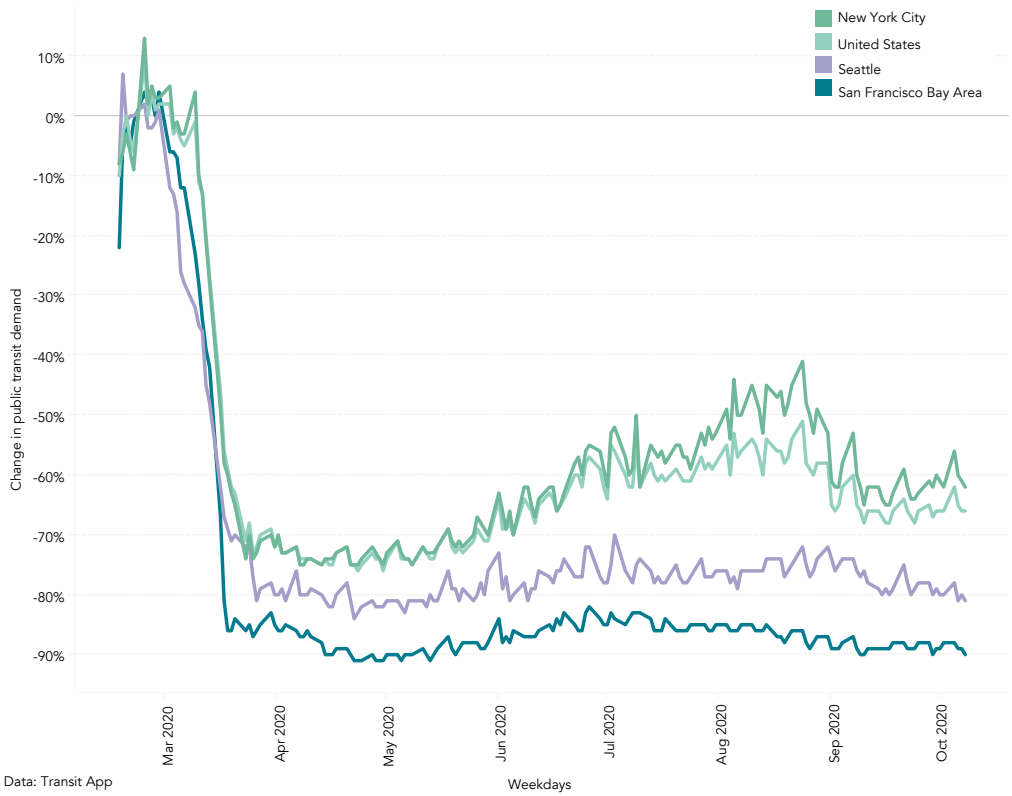
In terms of ridership trends by agency in the Bay Area, average weekday BART ridership was down 89 percent year-over-year as of September 2020 and total Caltrain ridership was down 95 percent year-over-year as of August 2020. In contrast, toll counts in the region have sustained less significant declines. As of the end of October 2020 the year-over-year decline in weekday toll tags was only 13 percent for the Bay Bridge, 34 percent for the San Mateo Hayward Bridge, and 44 percent for the Dumbarton Bridge. Bridges that have seen the most significant year-over-year loss in traffic volume had more of total pre-pandemic weekday toll volume concentrated in commute hours. For example, in September of 2019, 47 percent of total weekday Dumbarton bridge traffic volume occurred between 7AM and 10AM, while only 24 percent of the total weekday Bay Bridge traffic volume occurred during those same hours. This indicates that traffic in locations primarily servicing commuters that work traditional hours have seen slower demand recovery, more akin to transit demand decline, while routes serving more diverse types of trips are recovering to pre-pandemic volumes faster. This reveals the scale of transit demand recovery is likely tied to when and how many employees return to work in-person work in the region.

Recovery of public transit demand in the Bay Area lags behind peer metros

Normal usage is defined as Transit App sessions observed on the same day of the week one year ago, averaged over three weeks and corrected for yearly growth in the corresponding region or country.



Data: Transit App

As transit agencies grapple with the economic fallout from the precipitous drop in ridership, the finances of agencies will reshape how transit operates in the region. Prior to COVID-19, transit agencies in the Bay Area collected over $1 billion in farebox revenue annually, but with many of the region's agencies now projecting at least 50 percent loss in ridership for 2021, the budget shortfalls from ridership losses could amount to as much as $500 million. Factors such as continued remote work adoption and mode share trends based on population shifts away from the urban centers to suburban communities, could cause the decline in ridership to persist even once it is safe to return to work, further jeopardizing transit investments and operation in the Bay Area.

The transit agencies that provide relief to the highways on key commute corridors in the region, such as BART along the Transbay Corridor and Caltrain along the peninsula, are grappling with financial hardship as a result of lost ridership. These agencies relied heavily on farebox recovery prior to the pandemic. For fiscal year 19-20 Caltrain had the highest farebox recovery out of 23 transit agencies in the region at 68 percent. BART had the third highest in the region, at 51 percent for fiscal year 19-20. This leaves these agencies susceptible to revenue shortfalls that could impact their service.

Ensuring these regional rail agencies that operate along the most congested corridors in the region are able to continue operate with enough frequency and reliability to incentivize commuters choose to transit as they return to work will be important to achieving a sustainable mode share post-COVID-19 in the Bay Area. In order to continue to deliver reliable frequent transit despite ridership woes, collaboration and potentially consolation across agencies could aid a more feasible long-term vision for how transit investments and operations can be shaped and funded to match the changing commute patterns and home location desirability.

Year-over-year change in weekday traffic volume on Bay Area bridges as of October 22, 2020

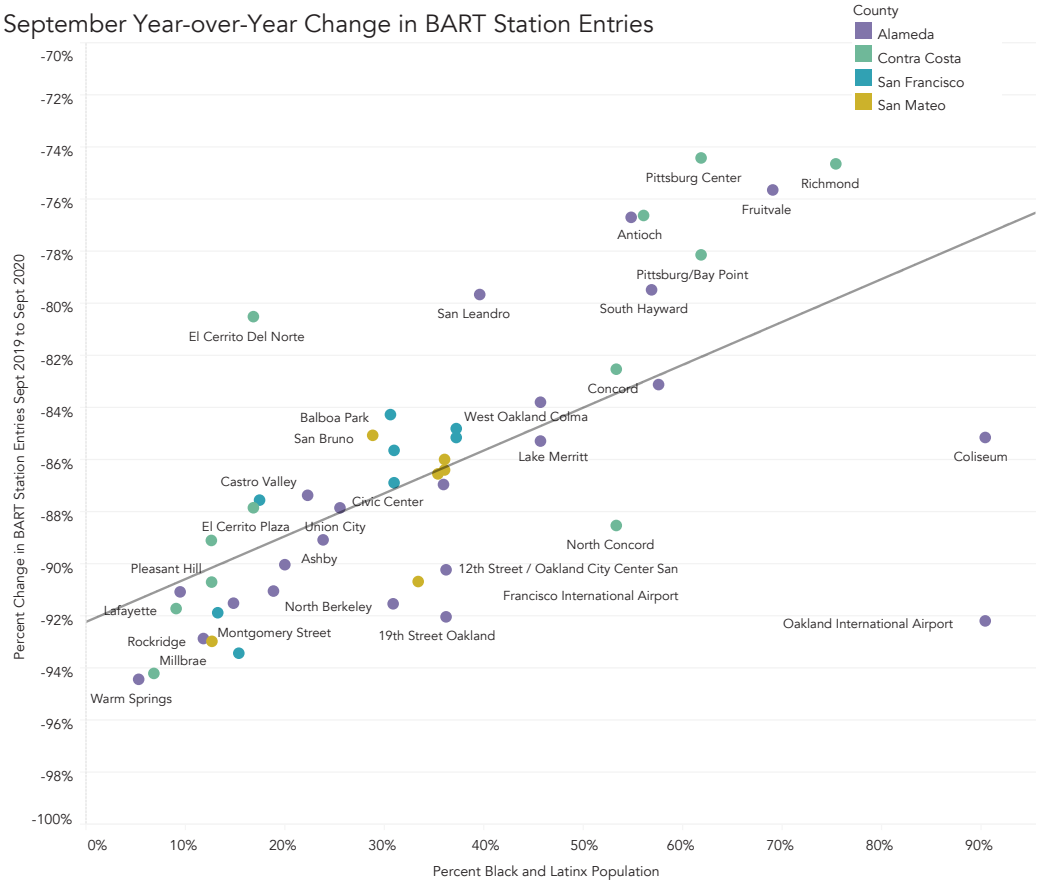
Data: Bay Area Toll Authority
Analysis: Bay Area Council Economic Institute

Exhibit #4: Change in station ridership shows racial disparities in BART usage during COVID-19.

BART ridership has fallen less significantly at stations located in neighborhoods with a higher percentage of Black and Latinx residents. An analysis of year over year change in BART entries by station in the months following the statewide shelter-in-place order shows that ridership—while still down significantly—was less impacted at stations located in predominately Black and Latinx zip codes.

Station entries across the whole BART system dropped 87 percent year over year in September 2020, but the loss in ridership was not consistent across all stations. Ridership at Orinda Station, which is located in a zip code where 72 percent of the population is white, saw a 94 percent drop in year over year ridership. In comparison, Richmond Station, which is located in a zip code where 75 percent of the population is Black or Latinx, saw an 75 percent drop in year over year ridership. This trend holds true across the system: the higher the share of Black and Latinx residents, the less significant the decline in ridership.

High unemployment, shifts to remote work, and cutbacks in service and frequency have all impacted BART ridership levels. This analysis reveals that Black and Latinx communities are more reliant on transit post COVID-19 than white communities. If service cutbacks persist as demand for transit stays low in the Bay Area, the effects of fewer travel options could disproportionately affect these minority groups that this analysis shows are most reliant on sustained and reliable transit service post-pandemic. Thus, ensuring that transit services are able to continue operation is not only an economic issue, it is also a racial equity issue.



Data: American Community Survey 5-year Estimates; BART
Note: Population percentage represents share of non-white popultion based on zip code of BART stations.

Conclusion

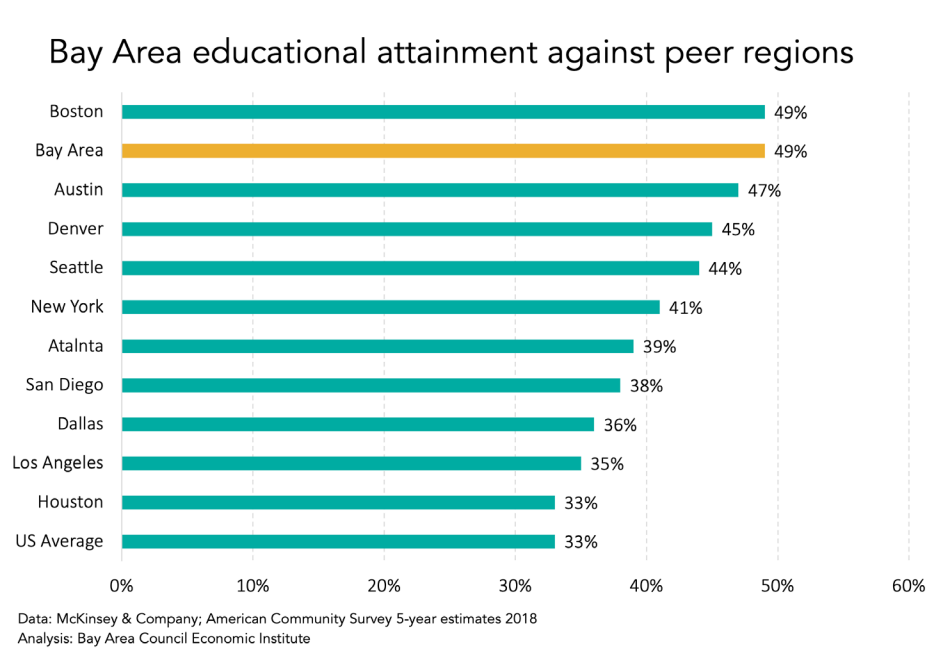
The growing popularity of suburban locations in the wake of COVID-19 suggests that regional public transit investments will be key to ensuring commute times along key corridors do not rise drastically if and when people return to work in the urban centers. While dependent on factors such as the long-term adoption of remote work and how long unemployment remains high in the region, the corridors that were congested with single occupancy commuters before COVID-19 are likely to return to the same congested state. If outmigration from the urban core continues to accelerate, population growth in locations with fewer transit options could push more commuters into their cars as the regional workforce returns to the office.

Tracking mode share trends as people return to in person work will be a key indicator as to how the region can prepare for the long-term impacts of housing preference shifting away from dense urban areas and its impact on the regional transportation network. As housing prices fluctuate across the region based on these developing factors, examining where high unemployment rates persist and the trajectory of home prices in varying geographies will be important indicators in ensuring housing affordability does not worsen for communities already burdened with excessive housing costs.

The Evolution of the Bay Area Higher Education System in the Wake of COVID-19

How will the Bay Area's higher education system evolve post COVID-19?

With 49% of the population over the age of 25 holding a bachelor's degree, the Bay Area has one of the most highly education populations in the nation. This level of educational attainment is matched only by Boston (also 49%) and is well above the 33% national average. The region is also home to several institutions making impressive research investments. UC San Francisco (3), Stanford (10), and UC Berkeley (26), all rank within the top institutions nationwide in terms of expenditure on science and technology R&D. Additionally, MBA and undergraduate degree holders from Stanford and UC Berkeley have started impressive numbers of companies backed by significant venture capital. According to an analysis of Pitchbook by McKinsey & Company, between 2009 and 2017 Stanford and UC Berkeley graduates started a total of 2,948 companies. The region also has five different California State University campuses and an array of community colleges.



The continued strength of the region's higher education institutions is a key input to the vitality of the Bay Area economy. These campuses produce entrepreneurial graduates and support significant investment in R&D, which are two integral inputs to the innovative nature of the Bay Area economy that drives economic growth in the region.

As these institutions grapple with the impacts of COVID-19, their future trajectories remain at least partially unknown. Revenue concerns driven by uncertain levels of enrollment, the possibility of partial or full remote teaching, and changes in first-choice school preferences among incoming students are all variables that could reshape higher education in the Bay Area in the wake of the virus.

Exhibit #1: Can the Bay Area make progress on racial disparities in educational attainment?

Compared to major regions across the country, the Bay Area leads the nation in terms of the share of people who hold bachelor's degrees. However, examining educational attainment among racial and ethnic groups shows wide disparities in the share of Bay Area residents age 25+ who hold bachelor's degrees. Only 28% of Black and 18% of Latinx Bay Area residents over the age of 25 hold a bachelor's degree, compared to 46% bachelor's degree holders among 25+ white residents.

High unemployment, shifts to remote work, and cutbacks in service and frequency have all impacted BART ridership levels. This analysis reveals that Black and Latinx communities are more reliant on transit post COVID-19 than white communities. If service cutbacks persist as demand for transit stays low in the Bay Area, the effects of fewer travel options could disproportionately affect these minority groups that this analysis shows are most reliant on sustained and reliable transit service post-pandemic. Thus, ensuring that transit services are able to continue operation is not only an economic issue, it is also a racial equity issue.

Admissions, enrollment, and college completion rates in California all show racial and ethnic inequities:[6]

Admissions: While progress has been made in recent years, the UC admissions rate for Black applicants in 2016 was still only 47% compared to 62% among white applicants.

Enrollment: Only 3% of all Black students enrolled in post-secondary education institutions in the state in 2016-17 were enrolled at UC colleges, compared to 6% of white students. Black students were more likely to be enrolled at a community college, with 72% of Black students enrolled in a post-secondary institute at community colleges (68% of white undergraduates).

College Completion: College completion rates for Black students lag behind the comparative rate for white students. The six-year completion rate at UC colleges is 75% for Black students compared to 86% for white students; 43% compared to 37% at CSU campuses; and 37% compared to 54% at community colleges.

The drivers behind this inequity in post-secondary education enrollment and completion are dependent on many factors that occur earlier on in the educational system. In particular, inequities in school funding can impact the readiness of graduates for post-secondary education.

Racial Inequities in Educational Attainment in the Bay Area

Percent 25+ with a bachelor's degree by county (*American Community Survey 5-year estimates 2018*)

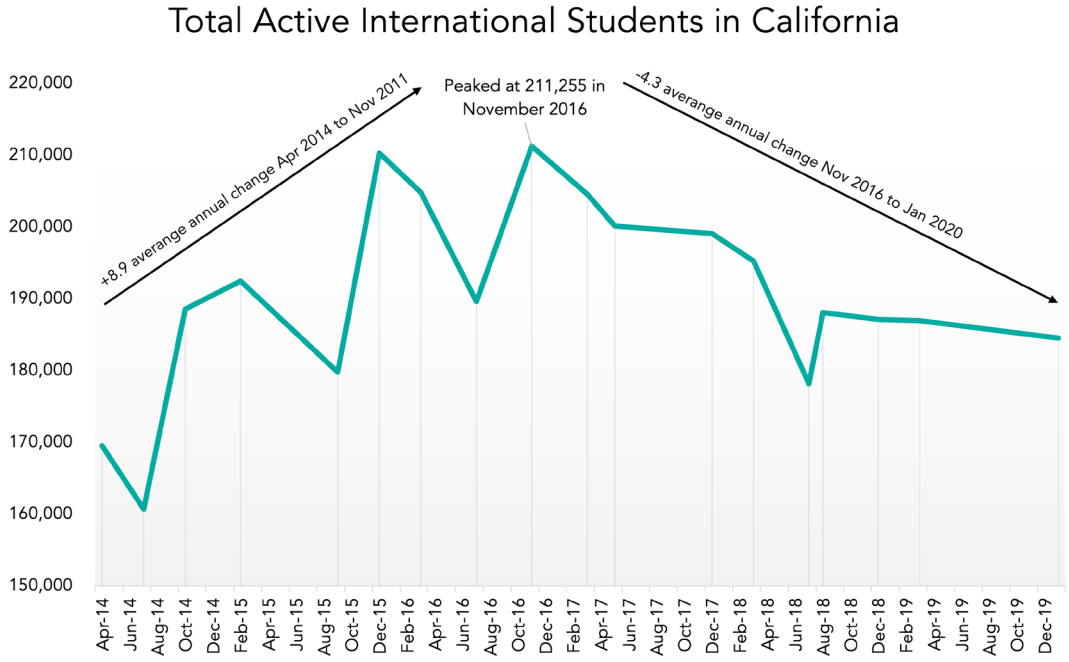
Exhibit #2: What impact would lower levels of international student enrollment have on Bay Area higher education institutions?

According an analysis by the National Foundation for American Policy, the enrollment of new international students is projected to decrease from 2018-19 levels by between 63% and 98% in 2020, based on current border restrictions due to COVID-19. Home to the largest number of international students out of all U.S. states, many California institutions would be particularly impacted by a decline in new international student enrollment. International students make up 14.4% of the UC system's overall enrollment, so a lasting decline could have significant impacts on the student population. In the Bay Area, schools such as UC Berkeley and Stanford University that contribute to the unique strength of the economy traditionally host thousands of international students.

Schools with the Largest Number of F-1 Students in the Northern California Megaregion

School Name	Total F-1 SEVIS IDS	National Rank by Number of F-1 SEVIS Students	County
University of California at Berkeley	12,821	8	Alameda
University of California, Davis	8,285	23	Yolo
San Jose State University	6,080	40	Santa Clara
Stanford University	6,049	41	Santa Clara
Academy of Art University	5,839	44	San Francisco
De Anza College	2,774	106	Santa Clara
Northwestern Polytechnic University	2,656	116	Alameda
University of California, Berkeley Extension	2,599	120	Alameda
University of California, Santa Cruz	2,445	133	Santa Cruz
University of San Francisco	2,444	134	San Francisco
California State University, East Bay	1,842	173	Alameda
Santa Clara University	1,701	187	Santa Clara
UC Davis Extension, International Programs	1,507	211	Yolo
Silicon Valley University	1,427	223	Santa Clara
San Francisco State University (SFSU)	1,398	227	San Francisco
International Technological University	1,367	230	Santa Clara
Foothill College	1,188	256	Santa Clara
California College of the Arts	1,041	284	Alameda
College of San Mateo	1,013	290	San Mateo
Westcliff University	952	309	Yolo
California State University, Sacramento	792	352	Sacramento
Golden Gate University	611	433	San Francisco
Ohlone College	593	447	Alameda
San Francisco State University (SFSU)	525	494	San Francisco
University of the Pacific	514	500	San Joaquin
TOTAL	**68,463**	-	-

Data: U.S. Department of Homeland Security Student and Exchange Visitor Information System



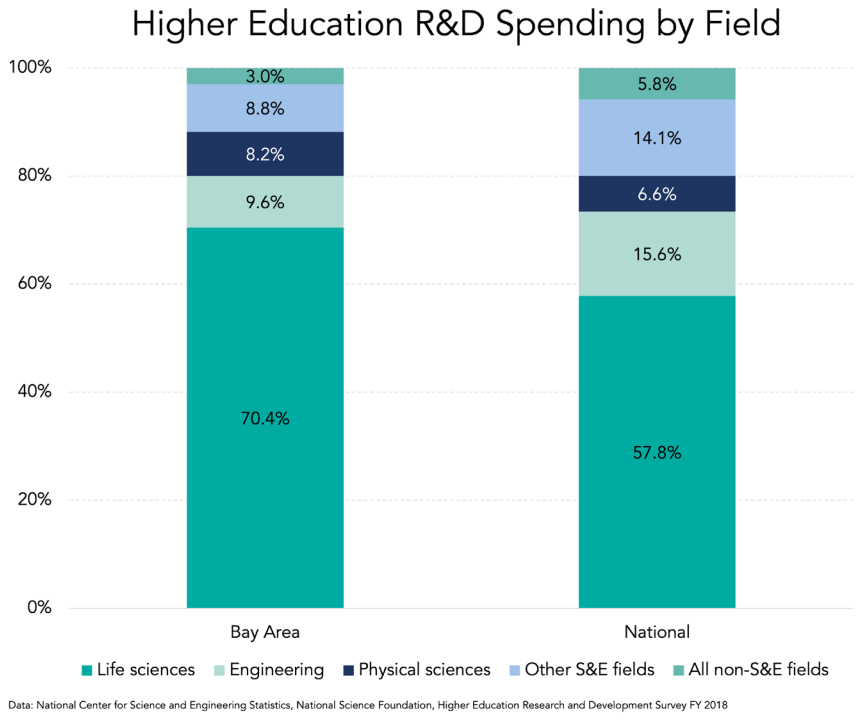
Data: U.S. Department of Homeland Security Student and Exchange Visitor Information System
Note: Number of active students reported at inconsistent intervals, averages calculated using annual equivalent of the total number of months between first reported total and peak and last reported total and peak.

Exhibit #3: How will university R&D investments shift in the wake of COVID-19?

The university systems of the region are also major contributors to research and development (R&D), particularly in the life sciences. While certain life sciences R&D labs are kicking into overdrive with the vital goal of developing a vaccine or treatment for COVID-19, other subsections of the field and non-life sciences R&D fields face challenges in continuing their course amidst the implications of the virus. Surveys have shown that R&D organizations estimate productivity has fallen between 25 and 75 percent due to remote work, likely a factor of operating capacity being reported as 50 percent below normal.[7]

Reduced operating capacity, supply chain disruptions, and laboratory shutdowns all have implications on the short-term productivity of product development, engineering, clinical trials, and more. Uncertainty around future market and customer demands further impact the ability of R&D organizations to prioritize programs and resourcing.

Compared to the breakdown of higher education R&D spending by field at the national level, the Bay Area has an over representation of spending in the life sciences field, with two-thirds of higher education R&D spending concentrated in life sciences as of fiscal year 2018. This concentration in life science R&D is a clear strength for the region, and it can be linked to the rapidly growing biotech industry in the Bay Area. With much of this R&D funding coming from state and federal grant programs, constrained public sector budgets in the wake of the pandemic could hamper spending levels going forward.



Data: National Center for Science and Engineering Statistics, National Science Foundation, Higher Education Research and Development Survey FY 2018

Conclusion

As the region begins to recover from the economic fallout of the pandemic, ensuring the strength of the Bay Area's higher education institutions and maintaining the comparatively high level of educational attainment in the region are both integral inputs needed to protect the long-term vigor of the regional economy. As such, keeping an eye to factors such as equity in educational attainment, barriers to international enrollment, and changes in R&D spending is important during this period of recovery.

The Impact of COVID-19 on the Regional Labor Force

How has the pandemic disrupted labor force participation in the region?

Prior to the COVID-19 pandemic, the Bay Area had one of the lowest unemployment rates in the nation—an indicator often cited to convey the region's strong economy. While less commonly referenced, the labor force participation rate—the percentage of the civilian population age 16 and older that are either employed or looking for work—has taken on added importance given the job dislocations that the pandemic has caused.

Looking backward, the Bay Area regionwide labor force participation rate hovered between 65 percent and 70 percent between 2000 and 2018. Over this period, the Bay Area's labor force participation was lower than peer metros such as Seattle, Boston, Austin, and Denver, but higher than New York, Los Angeles, and San Diego. The difference can largely be attributed to demographics.

At the height of the pandemic, the labor force participation rate in the Bay Area fell to a 61.6 percent low point in May 2020. Examining labor force participation rate changes across gender and education level reveals that the pandemic has unequally disrupted certain groups, and history shows that those who exit the labor market have a harder time returning. Labor force participation among women has showed slower signs of rebounding than men, and a larger share of the region's population holding only a high school degree have left the labor force than those with higher educational attainment.

Labor force participation rate is also an important indicator for regional economic recovery, as it provides greater nuance to reported unemployment rates. It can also be a reflection of migration during the pandemic. The chart below shows labor force changes by metro area across the U.S. Movement can partially be attributed to people dropping out of the labor force in each of these regions, but it may also be an early sign of population shifts particularly given that the areas with labor force increases are also the same regions where rents are increasing during the pandemic.

Since October 2019, the Bay Area labor force has fallen by more than 56,000 people. While not as steep of a drop as in New York, Chicago, Boston, and Los Angeles, the region's labor force loss does point to a combination of slow economic recovery—which has pushed those that have lost their jobs to not seek work—and potential population decline. Looking within the Bay Area, much of the labor force reduction can be attributed to Alameda, Contra Costa, Marin, San Francisco, and San Mateo counties, whereas Santa Clara County has actually grown its labor force year-over-year.

Total Labor Force by Metro Area (Employed + Looking for Work)

	October 2019	October 2020	Y-o-Y Change	% Change
New York	9,985,876	9,527,699	(458,177)	-4.59%
Chicago	4,845,658	4,646,119	(199,539)	-4.12%
Boston	2,836,192	2,677,520	(158,672)	-5.59%
Los Angeles	6,789,821	6,715,275	(74,546)	-1.10%
Bay Area	4,249,338	4,193,080	(56,258)	-1.32%
Seattle	2,178,160	2,159,287	(18,873)	-0.87%
Houston	3,440,488	3,429,442	(11,046)	-0.32%
Denver	1,695,627	1,692,991	(2,636)	-0.16%
Austin	1,251,714	1,256,957	5,243	0.42%
Sacramento	1,104,810	1,112,426	7,616	0.69%
Phoenix	2,535,869	2,547,632	11,763	0.46%
Dallas	4,012,036	4,029,405	17,369	0.43%

Source: Bureau of Labor Statistics Local Area Unemployment Statistics

Analysis: Bay Area Council Economic Institute

Total Labor Force by Bay Area Metro (Employed + Looking for Work)

	October 2019	October 2020	Y-o-Y Change	% Change
San Francisco-Oakland-Hayward, CA	2,608,916	2,557,035	(51,881)	-1.99%
Santa Rosa, CA	263,296	258,062	(5,234)	-1.99%
Vallejo-Fairfield, CA	210,932	208,259	(2,673)	-1.27%
Napa, CA	75,561	73,547	(2,014)	-2.67%
San Jose-Sunnyvale-Santa Clara, CA	1,090,633	1,096,177	5,544	0.51%

Source: BLS Local Area Unemployment Statistics

Analysis: Bay Area Council Economic Institute

Exhibit #1: COVID-19 has a regressive impact on female labor force participation.

On a national scale, woman made up 46 percent of the workforce before COVID-19 but have accounted for 54 percent of the unemployment claims during the pandemic.[8] Furthermore, women are disproportionately represented in industries that are expected to be negatively impacted by COVID-19 in the long term.

Aside from labor market dynamics, another major factor influencing women to drop out of the workforce is the increased burden of domestic and unpaid care work. Research has found that the pandemic has created additional unpaid and domestic work among households, and that the gender distribution of this additional work has remained similar to pre-pandemic: women take on more of the work.

Fifty-five percent of women and 64 percent of men reported an increase in overall unpaid care and domestic work as a result of COVID-19—a discrepancy likely due to women already spending more time per day on this type of work prior to the pandemic.[9] However, respondents of both genders were more likely to indicate that unpaid care and domestic work during COVID-19 is done mostly or 100 percent by women than to indicate the same about men.

A study examining female labor force participation and wage growth between 1980 and 2010 found a correlation between the two factors, showing that U.S. cities that saw the highest wage growth over the period tended to have higher female labor force participation rates.[10] Due to these connections between female labor force participation and this key economic indicator, ensuring that labor force participation in the Bay Area rebounds equitably is vital to ensuring that the region is able to continue leading on economic metrics.

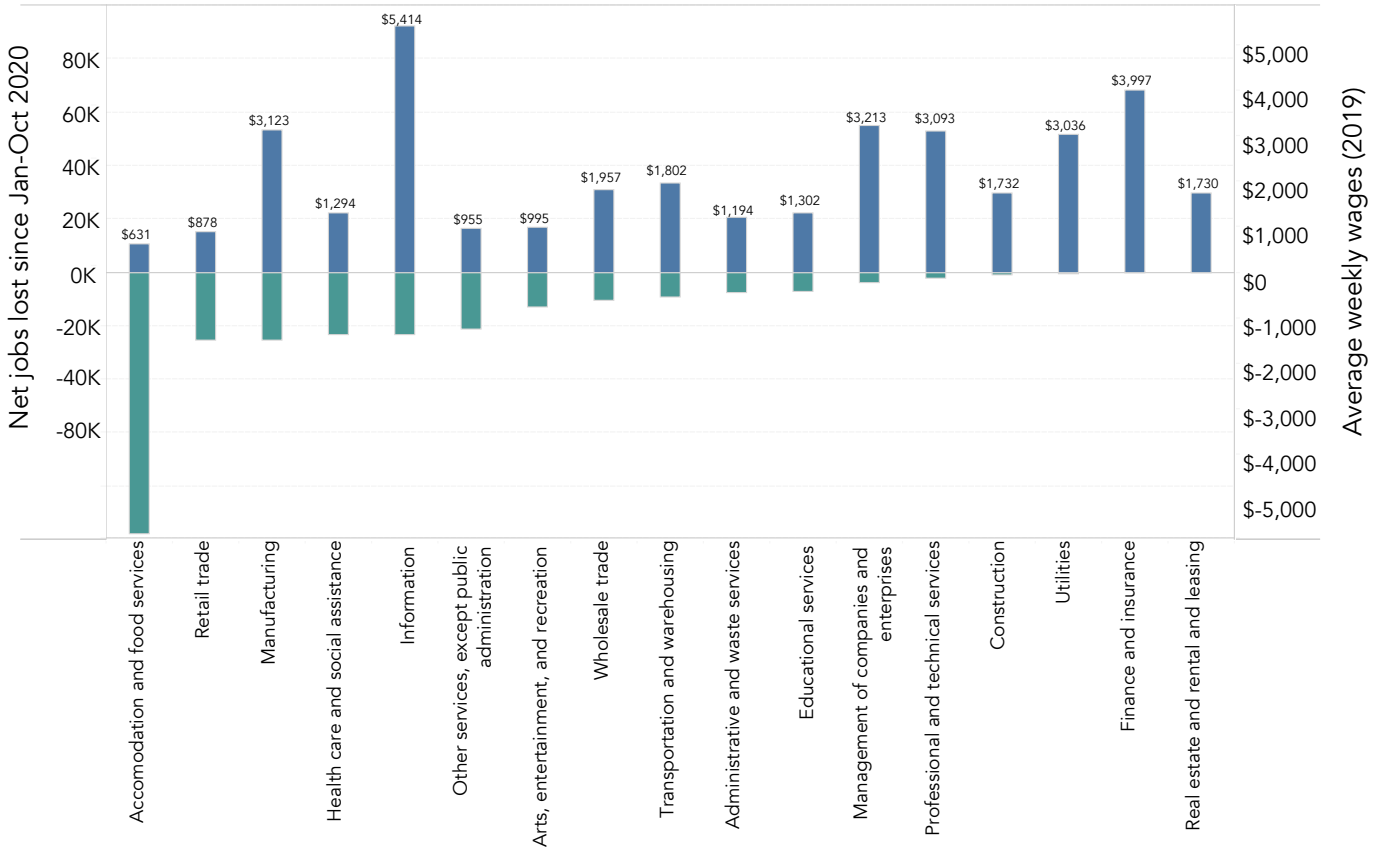
Exhibit #2: The lowest wage industries in the Bay Area have experienced the deepest and most sustained job loss.

The industries that have sustained the highest levels of net job loss in the Bay Area as a result of the COVID-19 pandemic are predominantly industries with the lowest average wages. Accounting for over one-third of the net jobs lost in the region, accommodation and food services is also the industry with the lowest average weekly wage in 2019. With the job losses concentrated in these low-wage industries, there is an opportunity to invest in retraining the inactive workforce with skills that help direct these previously low-wage workers into higher wage career trajectories as they return to the workforce.

Building upon the skills that workers previously employed in these lower wage industries would position many Bay Area residents for higher-wage, more resilient, and in-demand jobs in the post pandemic economy. Research on in-demand jobs that are resilient in the short term, to the pandemic, and in the long term, to factors such as automation, has found that the most resilient jobs are concentrated in technology, healthcare, and business management.[11] An analysis conducted prior to the pandemic found that nationally only 11 percent of the job postings in those three categories did not require a bachelor's degree, significantly limiting the pool of qualified candidates. Simultaneously shifting the mind sets of hiring managers to take a skilled-centered view of candidates and building opportunities for those who have either left the labor force or are unemployed as a result of the pandemic to build new relevant skills would provide a pathway to higher wage employment for many currently excluded from the regional economy's most resilient jobs.

This approach would also offer employers an opportunity to improve diverse representation in their workforce due to the higher concentration of women, Black, and Latinx workers in or previously in industries that have experienced the highest job losses.

Net job loss Jan-Oct 2020 by industry in the San Francisco Bay Area, with average weekly wage



Source: California Education and Development Department; Quarterly Census of Employment and Wages
Analysis: Bay Area Council Economic Institute

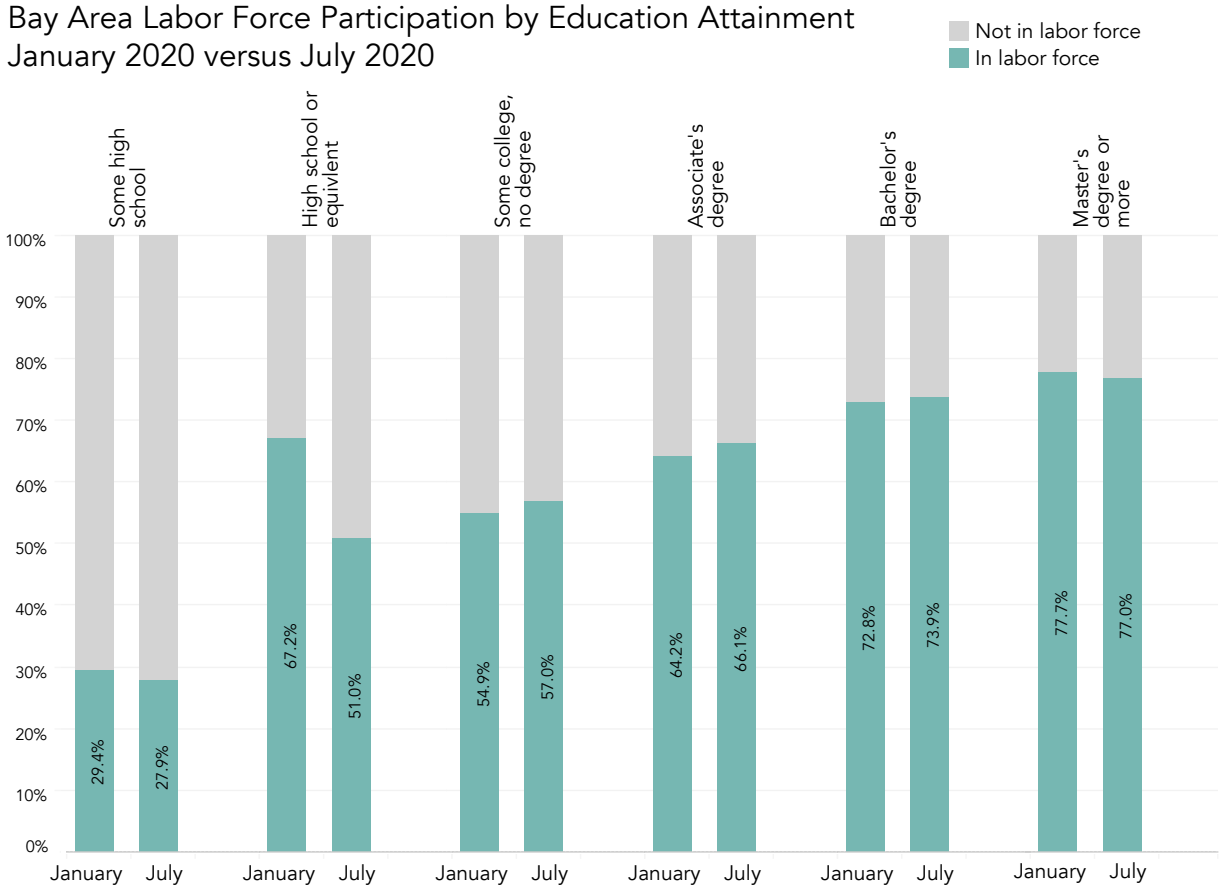
Exhibit #3: Labor force participation and educational attainment.

The decline in labor force participation in the wake of the COVID-19 pandemic has been most acute among Bay Area residents that do not have educational attainment beyond a high school degree. In January 2020, 67 percent of the Bay Area age 15+ population with a high school or equivalent level of education were participating in the labor force. As of July, the labor force participation among this group fell to 51 percent – a decrease representing over 100,000 people.

This dynamic is likely driven by the concentration of employment for those without a college degree in industries impacted most deeply by the pandemic.

Another factor at play could be the relationship between the ability to telework from home during that pandemic and education level. At the national level, 10 percent of those employed with a high school degree but no college were able to work from home as of July 2020.[12] The share with the ability to work from home rises to 19 percent among those with some college or an associate's degree and to 47 percent among those with a bachelor's degree or higher. The inability to work remotely for many with lower education attainment is another factor likely driving people from the workforce due the increased health risk now associated with maintaining onsite jobs.

Bay Area Labor Force Participation by Education Attainment
January 2020 versus July 2020



Note: Labor force participation rate excludes data from Napa county where monthly data was unavailable
Source: Current Population Survey, IMPUS
Analysis: Bay Area Council Economic Institute

Conclusion

The Bay Area's labor force rates as compared to peer metros will be an important indicator as the region tracks recovery from the COVID-19 economic downturn. The groups that are not seeking work or possibly leaving the region in the coming months will shape what the regional workforce looks like in the wake of the pandemic. Understanding not just the sheer number, but the demographics that are falling out of the labor force over the course of the region's economic recovery will indicate the equitability of the region's employment recovery.

6

Is More Globalization or Localization in the Bay Area's Future?

Will the Bay Area be more globalized or localized as a result of COVID-19?

The Bay Area is one of the world's most globally connected economies. Home to several major global corporations, as well as a large foreign-born workforce and student pool, the regional economy has long benefited from connections outside of the U.S. Technology and innovation is a key part of this global story, as the region continues to attract businesses and talent from across the globe, making it a central location for companies to do business.

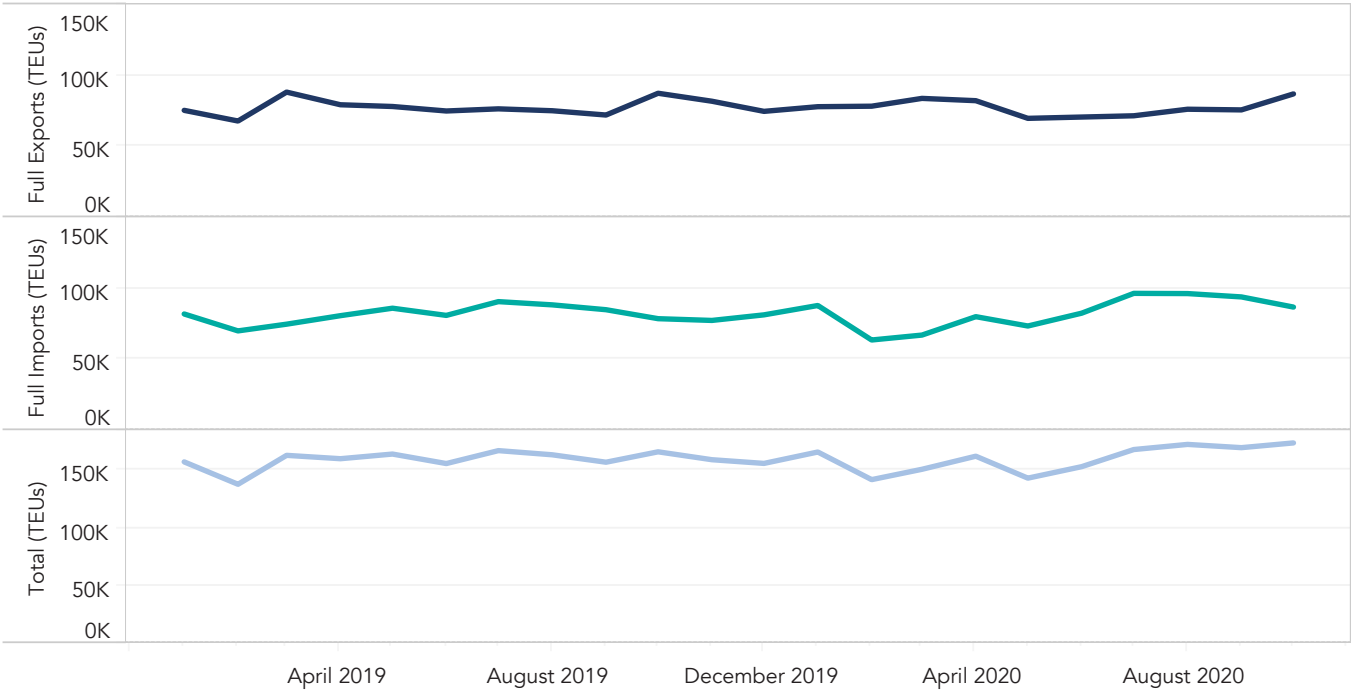
Globalization has been a clear benefit to the Bay Area, but how would the region operate if economies become more localized in the wake of the COVID-19 pandemic or there is a shift in federal policies? The early days of the pandemic saw disruption of supply chains for companies that rely on inputs that come from overseas and momentum built around reshoring. As the country and region look for strategies to recover economically from the pandemic, global positioning will take on renewed importance. Federal policy, in particular toward China, and the evolution of corporate supply chains will play a critical role in determining the future path of the region. A recovery focused on localization and advanced manufacturing stands to be less of a benefit to high-cost regions like the Bay Area. A recovery that embraces globalization could again mean an era of rapid employment growth for the region.

Exhibit #1: The Bay Area is a leading exporter of technology, medical devices, biopharmaceuticals, and other products and services.

The Bay Area's role as a leading exporter of technology and other goods is one way in which it has thrived as a global economy. California is home to three major trade ports – Los Angeles, Long Beach, and Oakland, which are also among some of the largest in the world. The Bay Area's Port of Oakland is responsible for 99% of goods coming through Northern California by containers. Additionally, according to a 2019 study, the Port of Oakland supports over 84,000 jobs, generating an economic value of over $130 billion.

In the first ten months of 2020, the Port of Oakland imported 827,715 twenty-foot equivalent units (TEUs) and exported 772,803 TEUs. While exports remained stable, the Port did see a 28% decrease in imports of TEUs between January and February of 2020. Import levels began to stabilize in April, with July seeing the largest number of imports from the Port in the year thus far at 96,420 TEUs.

Port of Oakland: Imports and Exports by Twenty-Foot Equivalent Units (TEUs), 2019-2020



Source: Port of Oakland
Analysis: Bay Area Council Economic Institute

Exhibit #2: The Bay Area is home to the R&D centers of several global corporations, many of which are not themselves headquartered in the region.

In addition to the Bay Area's trade prowess, the global nature of the region is also exemplified by its corporate R&D centers, many of which are operated by companies that are headquartered outside of the region and oftentimes even overseas. These R&D centers give companies an ability to participate in the Bay Area's innovation ecosystem. As of 2018, the Bay Area had over a hundred R&D centers. An example list of several R&D centers operating in 2018 can be seen on the following page.

Representative Bay Area, U.S., and Overseas Corporations with a Bay Area Research or Innovation Presence	
Bay Area Headquartered	Microsoft Research Silicon Valley
23andMe	Morgan Stanley
Adobe Research	Pfizer Worldwide Research & Development at Rinat
Agilent Research Laboratories	Qualcomm MEMS Technologies
Alphabet (Waymo)	SEPATON West Coast Advanced Development Office
Apple R&D	Sprint Applied Research & Advanced Technology Labs
Applied Materials Inc.	Staples Innovation Lab
AMD	Target Technology Innovation Center
Autodesk Technology Center	Texas Instruments
BioMarin	US Bank
Bio-Rad Laboratories	Verizon Innovation Center
Cadence	Walmart Labs
Calico	**Overseas Headquartered**
Chevron	Airbus (Europe)
Cisco Systems	Alibaba Group (China)
Cypress Semiconductor	Audi Innovation Research San Francisco (Germany)
Dolby Laboratories Inc.	AXA Labs (France)
Exelixis	Baidu (China)
Facebook	Bayer US Innovation Center (Germany)
Genentech (Roche)	BMW Technology Office (Germany)
Gilead Science	BNP Paribus (France)
Google X	Borgward (China)
HP Labs, Palo Alto	Bosch Research and Technology Center North America (Germany)
Impax Laboratories, LLC	BT (UK)
Intel Research	BYTON (China)
Juniper Networks Inc.	Carl Zeiss Meditec (Germany)
Kaiser	Daimler Business Innovation / Lab1886 (Germany)
Lam Research Corp.	Deutsche Telekom Silicon Valley Innovation Center (Germany)
LinkedIn	Dragon Group (China)
Lyft Level 5 Engineering Center	Elan (UK)
Nektar Therapeutics	Ericsson (Sweden)
Neustar	Genencor, a Danisco Division (Denmark)
NVIDIA	GlaxoSmithKlein (UK)
Onyx Pharmaceuticals	Hanwha Solar North America R&D Center (South Korea)
Oracle Labs	Hitachi Global Center for Innovation–North America (Japan)
PARC, A Xerox Company	Honda Innovations (Japan)
PlusAI	Huawei R&D (China)
Sandisk Corp.	Hyundai CRADLE (Republic of Korea)
Seagate	Infosys Digital Studio (India)
Symantec Research Labs	JOINN laboratories (China)
Tesla	Mercedes-Benz Research & Development North America (Germany)
Theravance Biopharma	Mindray (China)
Twitter	NEC Laboratories America, Inc.
Varian Medical Systems	Nestlé SVIO (Switzerland)
Visa Innovation Center	NIO (China)
Wells Fargo Digital Labs	Nokia (Finland)
Yahoo! Research	Novartis Institutes for Biomedical Research (Switzerland)
US Headquartered	Novo Nordisk (Denmark)
Abbott	Orange Labs (France)
Accenture Labs	Porsche Digital (Germany)
Amazon Lab 126	Renault-Nissan Research Center (France-Japan)
Amgen	Ricoh Innovations (Japan)
AT&T Foundry Innovation Center	Roche Molecular Systems (Switzerland)
Barnes & Noble	Royal Bank of Canada (Canada)
Boston Scientific	Samsung (Korea)
Bristol-Myers Squibb	SAP Labs (Germany)
Capital One Labs	Sennheiser Technology and Innovation Center (Germany)
Comcast Labs	SF Motors (China)
Corning	Siemens Next47 (Germany)
Delphi Labs @ Silicon Valley	Suning Commerce R&D Center USA (China)
FIS Innovation Lab	Swisscom (Switzerland)
Ford Research and Innovation Center Palo Alto	Tech Mahindra (India)
GE Digital	Tencent (China)
GM Advanced Technology Silicon Valley Office	Total Energy Ventures (France)
IBM Research–Almaden	TOTVS Labs (Brazil)
Lockheed Martin Corporation Advanced Technology Cent	Toyota Research Institute, Inc. (Japan)
Macy's Technology	Volkswagen Automotive Innovation Lab (Germany)
Mars Advanced Research Institute	Volvo Cars R&D Silicon Valley Technology Center (Sweden)
McDonald's	Wipro Silicon Valley Innovation Center (India)
Merck	Xuzhou Silicon Valley Science & Technology Exchange Center (China)
	ZGC Innovation Center (China)
	Zhejiang Innovation Center (China)

Exhibit #3: In 2018, more than half of Bay Area billion-dollar startups were founded by one or more immigrants.

Much of the Bay Area's innovation-driven economy is reinforced by immigrants. According to the National Foundation for American Policy, in 2018, more than half of the Bay Area's startups with a valuation of $1 billion or more had one or more immigrant founders. This strong immigrant presence in the region is reinforced by the state's overall demographics. According to the Public Policy Institute of California, in 2017, California had more immigrants than any other state, with the foreign-born population at 27% of the state's total. The Bay Area counties with the highest foreign-born populations were Santa Clara (39%), San Francisco (36%), and San Mateo (35%) counties—notably also where the state's concentration of technology workforce live and work.

Exhibit #4: 42% of the Bay Area's STEM workforce is foreign-born

Much like the founders of the region's major startup and unicorn companies, the STEM workforce of the region also has a significant international component. According to a 2017 report by the American Immigration Council, approximately 42% of California's STEM workforce was made up by immigrants in 2015. The demand for STEM workers, which has vastly increased in the Bay Area due to the region's growing innovation economy, has led to progressively more immigration for STEM jobs. Between 1990 and 2015, the number of immigrants working in STEM in California grew from 509,000 to nearly 2 million.

Exhibit #5: California has the most H-1B recipients out of any state in the nation, with new and continuing approvals across the state in FY 2019 totaling over 80,000.

Out of the top 20 California cities in terms of number of H-1B visas, 14 are in the Bay Area. Together these 14 Bay Area cities outpaced the State of Texas, which ranks second in the nation in terms of H-1B approvals. These 14 Bay Area cities had over 58,000 H-1B visa approvals in FY 2019 compared to 43,000 across all of Texas. The H-1B program supports employers who cannot obtain the needed business skills from the U.S. workforce by authorizing temporary employment to international talent. The concentration of these high skilled workers with H-1B visas in the Bay Area exemplifies the reliance that the regional economy has on the global flow of talent. While COVID-19 is impacting immigration currently, federal policy restrictions also may limit H-1B visas in the future. As such, trends in H-1B approvals in the Bay Area will be a key indicator of if the regional economy will emerge from the recession more or less globally connected than prior to the pandemic.

Top 20 California Cities for H-1B Initial and Continuing Approvals FY 2019, with Bay Area cities highlighted

	Total Approvals	Share of Statewide Approvals
San Francisco	10,455	13%
San Jose	8,821	11%
Mountain View	8,597	11%
Sunnyvale	5,932	7%
Santa Clara	5,207	6%
Menlo Park	3,954	5%
Cupertino	3,678	5%
Redwood City	3,151	4%
San Diego	2,981	4%
Palo Alto	2,903	4%
Los Angeles	2,082	3%
San Mateo	1,540	2%
Fremont	1,461	2%
Irvine	1,298	2%
Pleasanton	1,098	1%
Milpitas	900	1%
Foster City	875	1%
Santa Monica	576	1%
Aliso Viejo	575	1%
San Ramon	564	1%
Total California	**80,849**	**-**

Data: H-1B Employer Data Hub U.S. Citizenship and Immigration Services
Analysis: Bay Area Council Economic Institute

Conclusion

COVID-19 is testing all facets of life and has revealed that the economy is globally dependent. Months into the COVID-19 pandemic, businesses have begun re-learning how to operate. It is possible, therefore, that the region becomes more globalized in the aftermath of the pandemic, particularly if businesses are able to maximize the use of virtual and online platforms.

Conversely, COVID-19's shock to the world's economic system could also mean a decline in globalization. Over time, the Bay Area has increasingly become a more expensive place to live, forcing companies and residents to find other cities to call home. Additionally, if manufacturing jobs are what jumpstarts the national economy, but California is too expensive a location for these jobs, advanced manufacturing hubs could grow elsewhere. Lastly, if national immigration laws do not reflect the unique importance and benefit that immigration provides to the Bay Area and U.S. workforce—for example, restricting the use of H-1B visas, then the region could lose out on the global talent that has enriched its innovation economy.

7

Migration Trends in the San Francisco Bay Area Amidst the Pandemic

How have migration trends in the Bay Area and in California changed during the pandemic?

Data from the United States Postal Service (USPS) paints a picture of the migration situation across California during 2020. The USPS data, which tracks change of address requests, shows California experienced a significant uptick in the number of residents relocating out of the state during 2020.

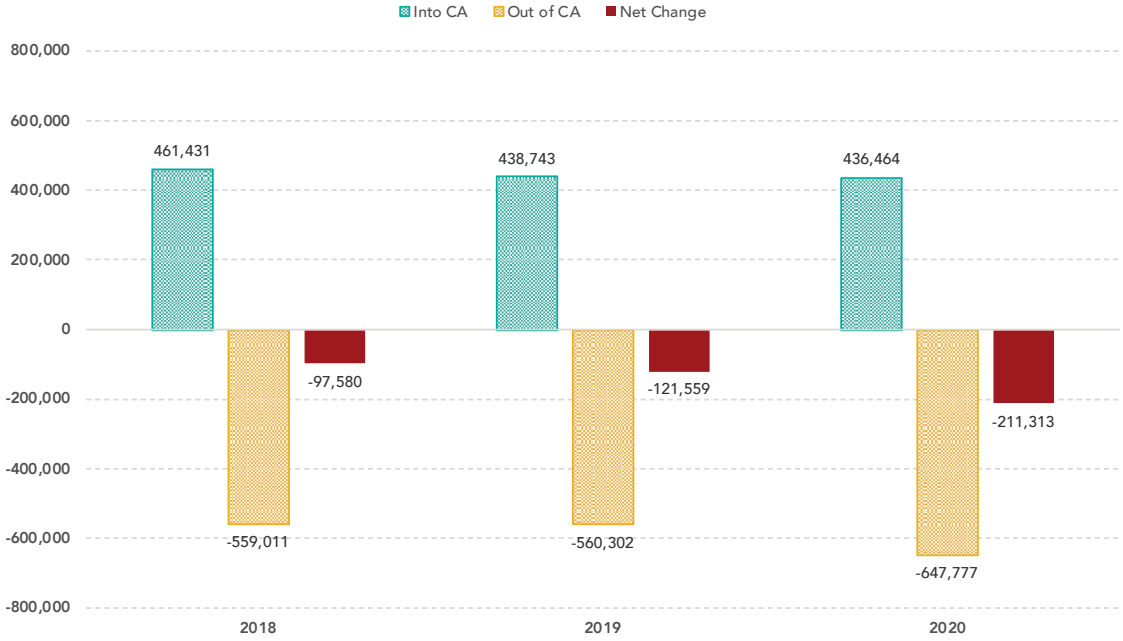
In 2020, the USPS data shows that nearly 650,000 moved out of the state—a sharp rise of over 15% when compared to previous years. That out-migration has not been offset by a corresponding rise of in-migration. Taken together, 2020 produced a net negative of 211,000 change of address requests from California, more than double the net figure from 2018.

These data points track all moves into and out of the state. Previously reported figures based on zip code suppress data when zip code-to-zip code movements are less than 10, which can have the effect of understating overall migration.

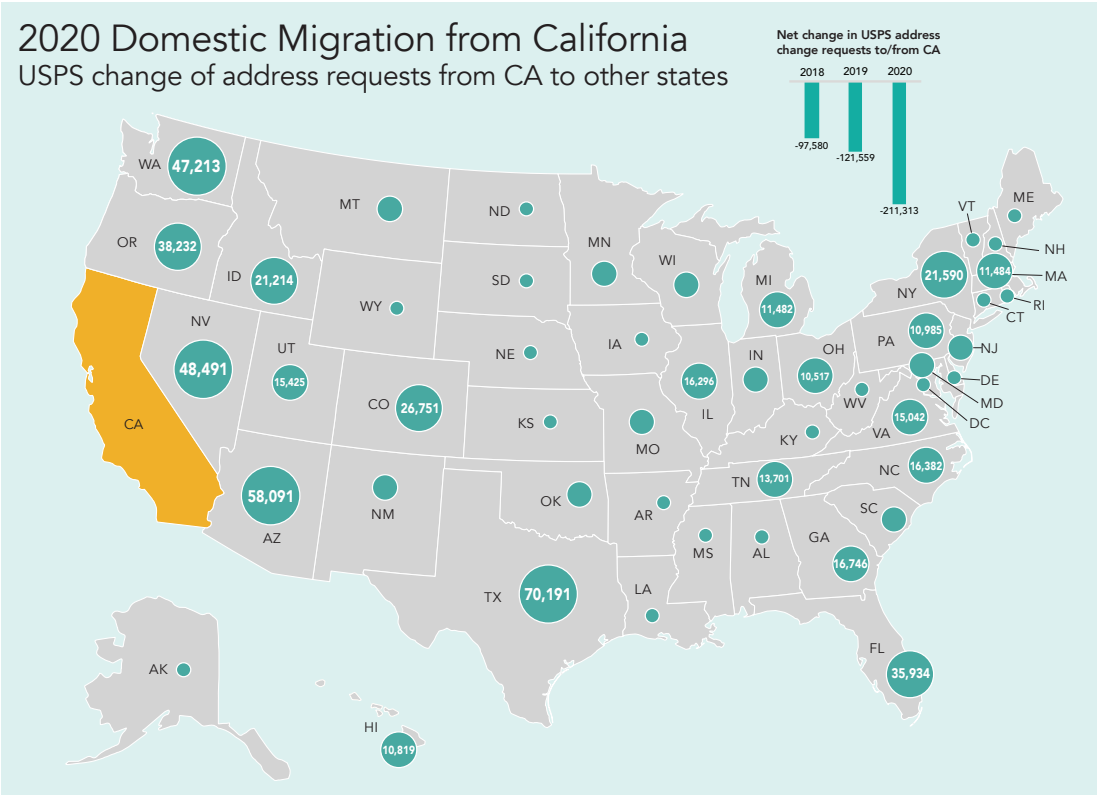
The top 10 states for California departures in 2020, according to USPS change of address requests, were:

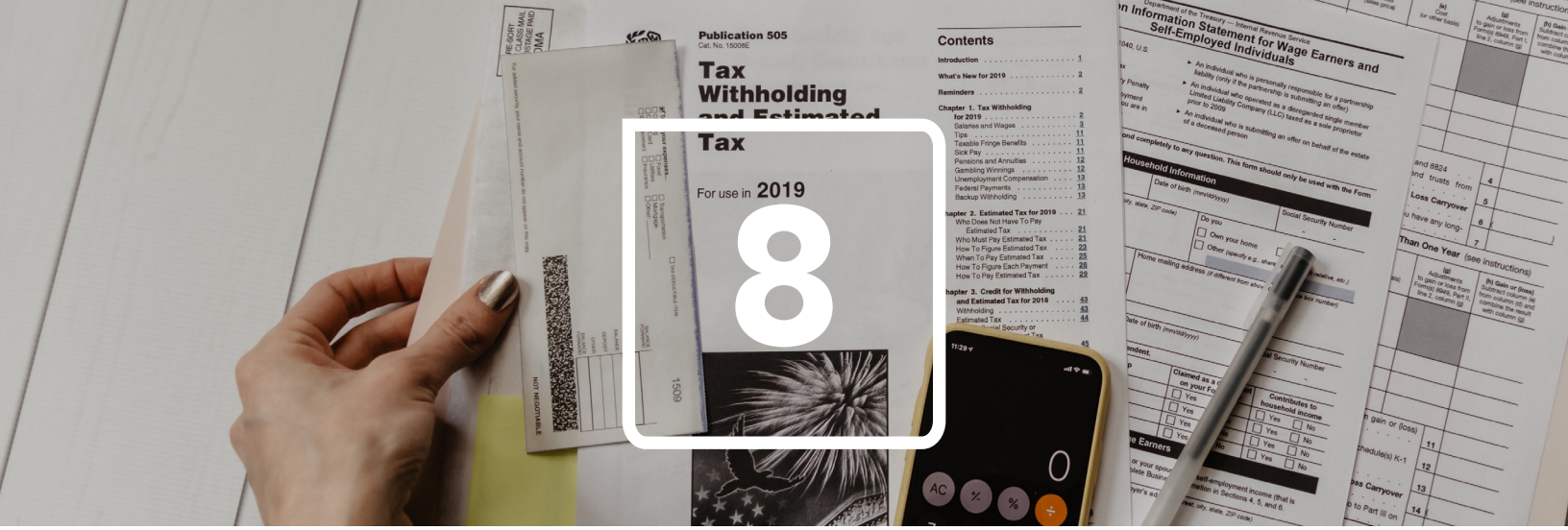
- Texas: 70,000
- Arizona: 58,000
- Nevada: 48,000
- Washington: 47,000
- Oregon: 38,000
- Florida: 36,000
- Colorado: 27,000
- New York: 22,000
- Idaho: 21,000
- Georgia: 17,000

USPS Change of Address Requests To and From California



Data Source: United States Postal Service
Analysis: Bay Area Council Economic Institute

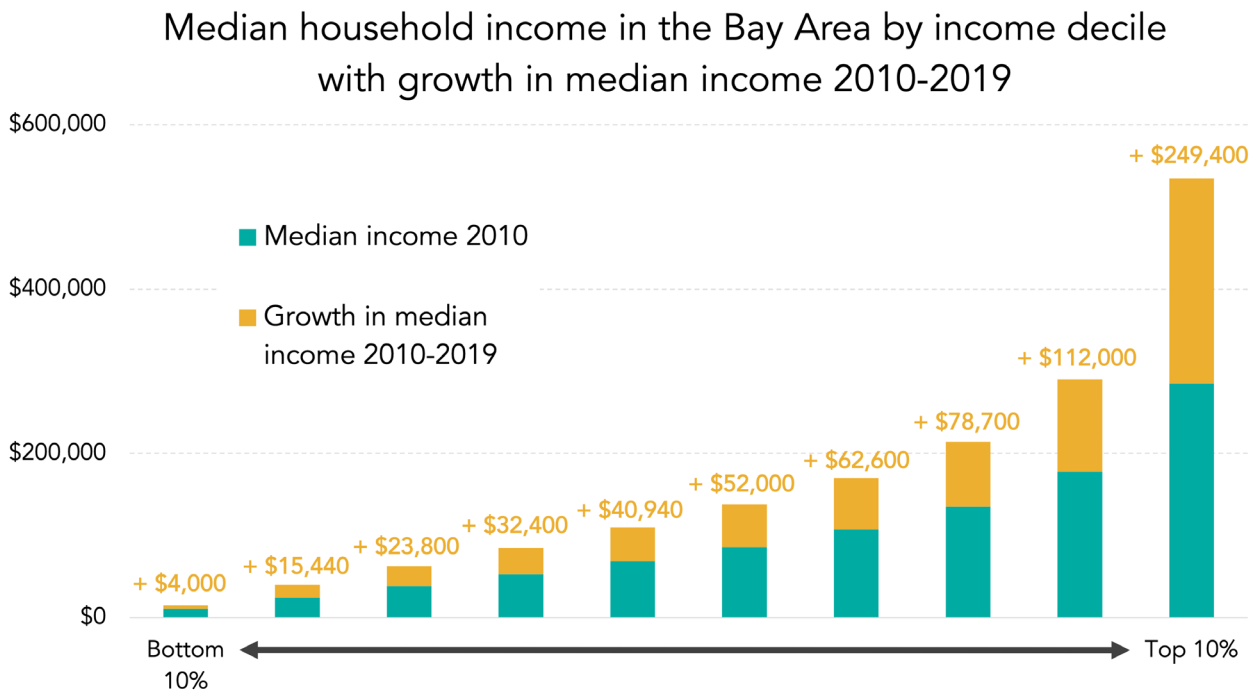




Income Inequality in the Bay Area

How has income inequality changed in the Bay Area over the last decade?

- **Over the last decade, household income grew much more significantly for top earning households than it did for bottom earning households in the Bay Area.** Median household income increased by nearly $250,000 (or 87%) among top earning households in the region and by only $4,000 (or 36%) among bottom earning households between 2010 and 2019.
- **Median household income for both bottom and top earning households grew faster in the Bay Area than it did for top and bottom earning households in California and the U.S.** For bottom earning households in the Bay Area, median household income increased by 36%, compared to 19% in California and 23% in the U.S. For top earning households in the Bay Area, median household income increased by 87%, compared to 52% in California and 40% in the U.S.
- **The difference between income growth for the top income group and the bottom income group was more pronounced in the Bay Area than in California and the U.S.** In the Bay Area, median household income among the top 10% of households increased 51% more than it did for the bottom 10% of households. While in California, the discrepancy in income growth between the bottom and top income groups is 33% and in the U.S., the difference is 17%.
- **The average rent burden – defined as the percentage of household income spent on rent – has declined for all income groups in the Bay Area, but not drastically.** For households in the bottom 10%, the average rent burden decreased from 96% in 2010 to 92% in 2019. As of 2019, among the bottom 30% of households in the Bay Area, the average household falls into the national categorization of "rent burdened".
- **Rent costs in the region have grown slower than median household income for all income groups over the past decade, but still remains highly unaffordable for the low-income households.** Among the bottom 10% of earners, median household income grew by 36% between 2010 and 2019, while average rent costs among the same group increased 31%.

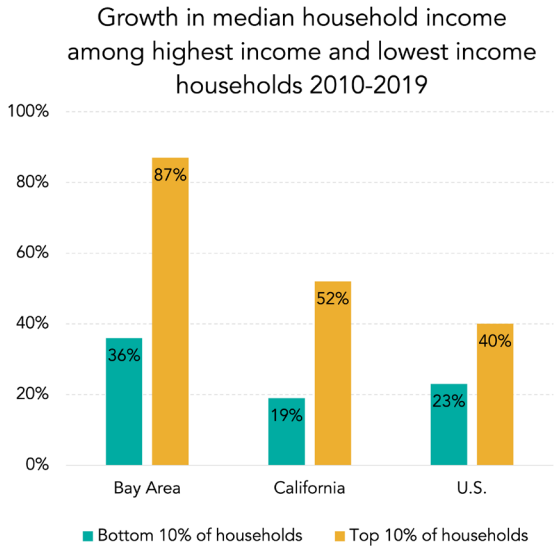


Data: American Community Survey 1-year estimates
Analysis: Bay Area Council Economic Institute

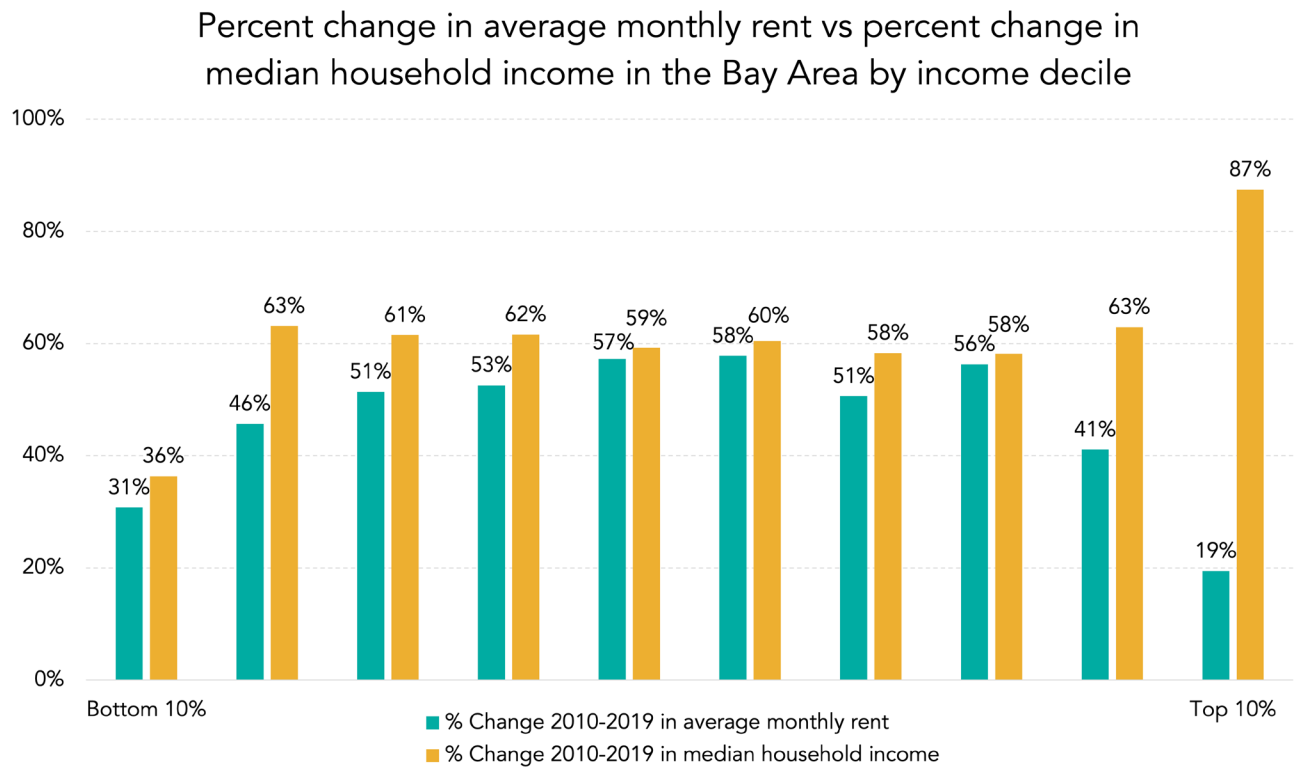
Annual income among the highest earning households in Bay Area nearly doubled over the past nine years, while median household income among the lowest earning households has grown by only 36%. Households that fall into the bottom 10% of earners in the Bay Area only saw an increase of $4,000 in median household income between 2010 and 2019, while the top 10% households saw an increase of nearly $250,000 in median household income over the same time period.

On a percentage basis, income among the lowest 10% of households grew by 36%, while the top 10% saw an 87% increase in median household income. The gulf between the level of wage growth for the lowest earners and top earners points to growing income inequality in the Bay Area. As of 2019, the chasm between median income for the top 10% and bottom 10% is over half a million dollars; with median households among the bottom 10% of earners at $15,000 per year, while the median household income among the top 10% has reached $534,600 per year.

Compared against California and the U.S., the Bay Area saw higher wage growth for both bottom and top earners. However, the difference between the income growth for top earners versus the income growth for bottom earners was most pronounced in the Bay Area. This geographic comparison underscores the growing income inequality in the region, but also shows that across the income spectrum wages are increasing faster in the Bay Area than in the state and the nation.



Data: American Community Survey 1-year estimates
Analysis: Bay Area Council Economic Institute



Data: American Community Survey 1-year estimates
Analysis: Bay Area Council Economic Institute

The high-cost housing in the Bay Area has historically eaten away at the above average wages in the region. However, rent costs in the region have grown slower than median household income for all income groups over the past decade. Middle income groups saw the closest matched rent and income growth rates, while bottom and top earning households saw bigger differences between the growth in median household income and the growth in average rent.

Despite this trend, housing for the average household in the Bay Area's bottom 10% is still highly unaffordable. In 2019, the bottom 10% had an average rent burden of 92%, which has fallen from 96% in 2010 – a result of average rent among the bottom 10% of households increasing from $10,600/year in 2010 to $13,900/year in 2019 while household income among the same group grew from $11,000/year to $15,000/year in 2019. Households in the 20th decile saw average rent burden fall from 52% in 2010 to 47% in 2019, and households in the 30th decile saw average rent burden fall from 37% to 35%. This means that among the bottom 30% of households in the Bay Area the average household still falls into the national categorization of "rent burdened"– defined by the U.S. Department of Housing and Urban Development (HUD) as any household spending more than 30% of their income on housing.

Impact of the COVID-19 econmoic crisis on income inequality.

While the long-term impact of the COVID-19 economic crisis on income inequality in the region remains unknown, data points on job loss by industry and changing housing costs over the past year provide insight to how the pandemic may impact top and bottom earning households in the region.

Industry job loss – Many households that fall into the bottom 10% rely on employment in industries that have experienced sizable job losses over the past year in the Bay Area. For example, Accommodation and Food Services saw the biggest loss of employment out of any industry in the Bay Area, with net loss of 118,000

jobs between January and December 2020. Among the bottom 10% of households, 10% had a head of household employed in Accommodation and Food Services in 2019. In contrast, 32% of the top 10% of households had the head of household employed in the professional Scientific and Technical Services industry, which was one of the few industries to see job growth in 2020, gaining 4,600 jobs between January 2020 and December 2020.

While the industry make-up among bottom and top earning households coming out of the pandemic is still unknown, pre-pandemic industry employment among top and bottom earning households indicates that job losses stemming from the COVID-19 recessions were likely felt by the bottom 10% more than the top 10%. This in turn suggests that the current economic crisis could put at risk the income of the region's most vulnerable households.

Cost of housing – In the past year, rents have fallen significantly as a result of the pandemic but rent in the regions three largest cities are still among the most expensive in the nation. San Francisco remains the most expensive rental market in the U.S. – with average one-bedroom rent costing $2,700 per month as of December 2020 (a 23% decrease year-over-year). San Jose remains the fourth most expensive in the country in terms of one-bedroom rental costs ($2,090/month; -14% year-over-year) and Oakland the fifth ($2,000/month; -19% year-over-year). Rents in the region where so high prior to the pandemic, that despite the drastic percentage drops in rent in Bay Area cities over the last year, housing costs are still unaffordable for many households. While the decline in rent has the potential to decrease the rent burden felt by low-income households, overall affordability of the region for low-income households is a factor of both rental costs and income, making wage growth for low-income households an important factor to prioritize in the wake of the pandemic.

Recovery tactics that focus on workforce development can protect low-income households in the region post-pandemic

While COVID-19 has accelerated many of the workforce challenges that were expected to play out over the next several decades, changing technology was disrupting labor force needs even prior to the pandemic. Investing in apprenticeships and earn and learn models that reskill and upskill lower income earners with resilient and in-demand skills is a strategy that could not only help the regional economy recover from the current economic crisis, but also protect low-income earners against future economic and technological disruptions to labor force needs. Upskilling low-wage workers who may have experienced job loss as a result of the pandemic is an opportunity for both business and public leaders to invest in the future workforce while simultaneously ensuring the bottom earners in the region continue to experience wage growth coming out of the pandemic, as they have over the past decade.

Advocating for additional public investment in apprenticeships and earn and learn models to upskill and retrain the regional workforce, while incentivizing business to play a central role in adopting workforce strategies focused in the Bay Area is a key step to ensuring the region remains competitive against peer metros post-COVID. The Bay Area has delivered faster wage growth for both bottom earners and top earners over the last decade, and ensuring the region continues to see growing wages for residents across the income spectrum is tied to the presence of the regions prosperous businesses. Therefore, ensuring that businesses continue to locate in the Bay Area and continue to have a vested interest in the development of the regional workforce directly impacts the economic health of households across the income spectrum.

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