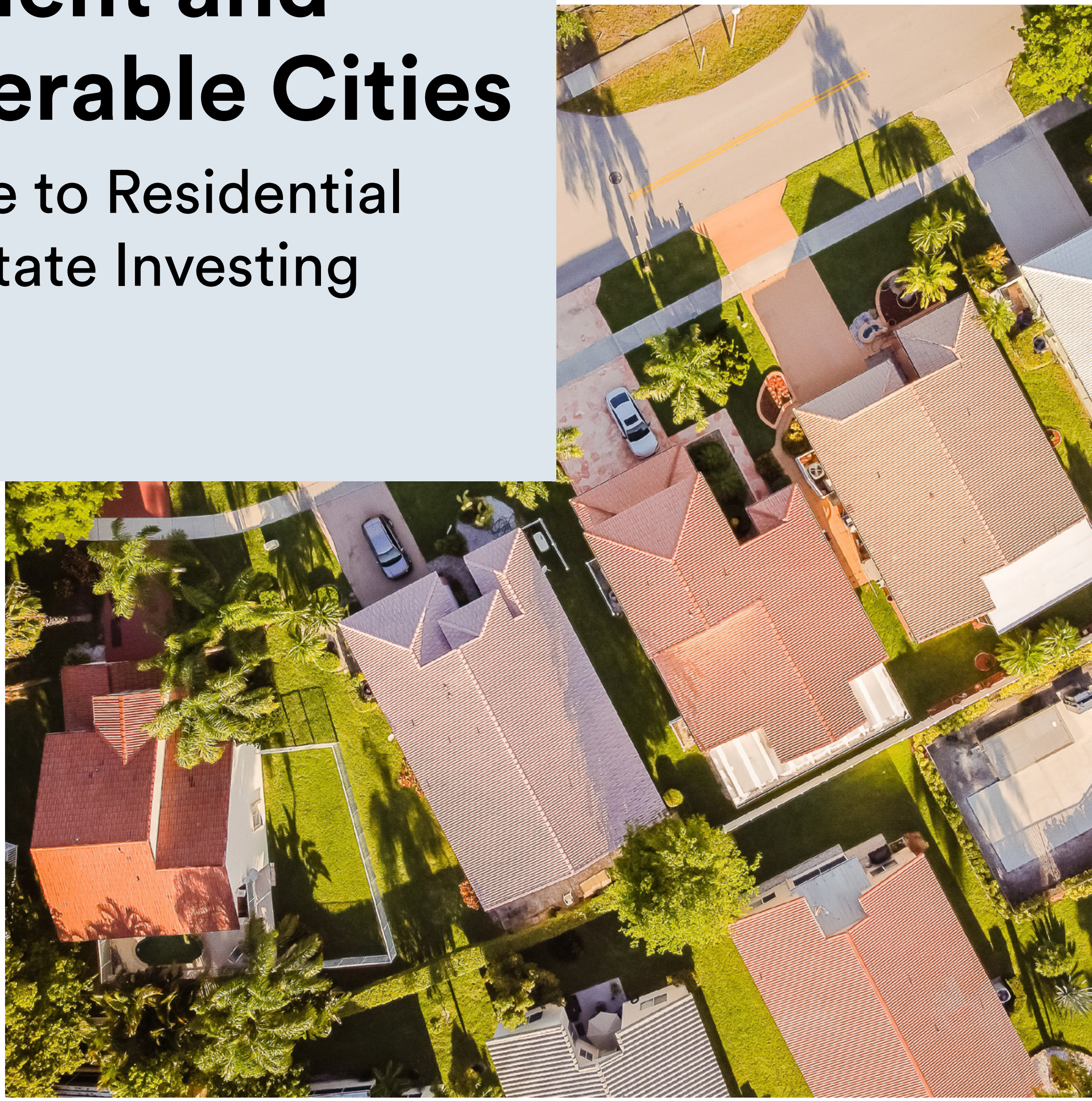
Resilient and Vulnerable Cities

A Guide to Residential Real Estate Investing



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Together, you can.

Preface

On Thursday March 12th, I crossed a bridge for the last time this year. I drove to Marin County to bring a colleague a webcam and to show him how to use Zoom. My colleague, Fred, and I were co-teaching personal finance to two classes of 300 students each and it didn't look as though class the following Monday would be held in person. Fred and I taught remotely for the rest of the semester. Though small classes may meet in person this fall, large classes are unlikely to do so. So Fred and I will again teach remotely. Eventually, normal campus life will resume. However, Fred and I may continue to teach our large classes remotely. There is evidence that lectures in large auditoriums are not pedagogically optimal. And remote teaching technologies provide new ways to engage students.

Over the last few months, consumers and businesses have changed many behaviors in order to adapt to stay-at-home and social distancing recommendations. As recommendations ease, some behaviors will return to pre-pandemic norms. But some may not. Consumers who have enjoyed the ease of online shopping, may not return to malls; those who have been comforted by watching movies at home, may not return to cineplexes; and families who have learned how video conference with distant relatives, may not travel at Thanksgiving.

Businesses, too, have changed. Many information technology companies here in the Bay Area have already told employees to continue to work at home for the rest of this year. Companies that extend that practice into the future will need less office space.

As the demand for office space drops, well paid employees now working from home are likely to put a premium on homes with home offices, even if those homes are a bit further from the corporate office. Homebuyers wary of crowded public spaces, may want more leisure space at home. And those who have discovered the joy of cooking while staying-at-home, may look for a larger kitchen. Long-term changes in how space is used will affect long term demand for different types of real estate.

In the shorter run, jobs are what matter. All business have been affected by the COVID-19 pandemic. Most have suffered, a few have benefitted. Job resilient industries such as information technology have fared relatively well and are likely to rebound quickly. Job vulnerable industries, such as travel and tourism, have been hit hard and likely face slow recoveries. Resilient and vulnerable businesses are not evenly distributed across the nation's cities. Thus the effect of COVID-19 on real estate, both residential and commercial, will not be evenly distributed. Cities with more resilient industries will have more resilient real estate. Cities with vulnerable industries will have vulnerable real estate.

This report, "Resilient and Vulnerable Cities" from Unison analyzes which industries and cities are resilient, which are vulnerable, and how these differences will affect real estate demand in the near and more distant future.

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Introduction

In the old world, retail activities took place in retail spaces, and commercial activities took place in commercial spaces. In the COVID-19 world, the home has become a center for commercial and retail activity. Workers work from home; shoppers shop from home. Students are educated from home, athletes work out from home, and friends socialize from home. While our everyday life will inevitably normalize, this 3-month social experiment will play a large role in shaping the new normal. Effective real estate managers targeting exposure to retail and commercial activity will adapt by investing capital away from office buildings and malls and into diversified residential real estate. Residential real estate is one of the largest asset classes in the world[1]. For portfolio managers, it is a core investment. For people, a home. And for society, an evolving center of economic activity.

In this paper, we lay out one of Unison's data-driven frameworks used to make investment decisions on owner-occupied residential real estate. Inspired by the housing market during and following the Global Financial Crisis, we relate resilient job markets to outperformance in home prices. Finally, we analyze each industrial sector's unemployment claims and classify cities as resilient or vulnerable based on their employment composition by sector.

> "Residential real estate is one of the largest asset classes in the world. For portfolio managers, it is a core investment. For people, a home. And for society, an evolving center of economic activity.

Resilient Jobs Make Resilient Cities, Vulnerable Jobs Break Vulnerable Cities

The United States is heading into its third month since the World Health Organization (WHO) declared the coronavirus a global pandemic on March 11, 2020. With most of the 50 states mandating residents to shelter-in-place over the course of weeks or months, the U.S. has seen a devastating disruption to consumer demand and supply chains. Businesses have been forced to close, many of which will never re-open.

An unprecedented number of Americans filed for unemployment beginning in the second week of March and continuing through May. Unemployment claims data released by the Bureau of Labor Statistics provides an indication of the long-term effects of the pandemic on the economy. Notably, the surge in unemployment has disproportionately affected certain vulnerable industrial sectors. The vast majority of job losses occurred in the following North American Industry Classification System (NAICS) supersectors[2]:

- **Leisure and hospitality**
- **Mining, quarrying, and oil and gas extraction**
- **Manufacturing**
- **Wholesale, retail, transportation and utilities**
- **Construction**

Resilient industrial sectors have adapted quickly to maintain the productivity of their employees and have therefore enjoyed a higher level of job stability. In three short months, many businesses have learned how to function without face-to-face interactions. Online sales and marketing have become core revenue channels, cloud services have enabled remote access to databases, and conference call technology has maintained global connectivity. Specifically, the following three supersectors have maintained relative job stability:

- Information technology
- Professional and business services
- Financial services

Two sectors remain off of either list. First, a severe loss of jobs associated with "education and health services" is expected to reverse very quickly once the recovery begins and has subsequently been removed from the vulnerable sector list. Second, jobs associated with "agriculture and related private wage and salary workers" constitute a very small component of urban wages and have thus been excluded from the analysis.

Historical analysis shows that, during an economic downturn, **owner-occupied residential real estate in cities with fewer job losses will outperform cities with more vulnerable job markets.** While significant government support in the form of direct payments, mortgage forbearance and lower interest rates will support home prices nationally, strong wage growth and low unemployment are ultimately the best macroeconomic precursors of home price performance.

> "...the surge in unemployment has disproportionately affected certain vulnerable industrial sectors."

Unemployment's Effect on Home Prices During the Global Financial Crisis of 2007-08

The Global Financial Crisis caused a wide assortment of economic issues, but people typically recollect at least two things: a severe surge in unemployment, and a sharp drop in home prices. Linking these two events together makes economic sense. A city with significant job loss should naturally see a decrease in demand for homes.

Figure 1 shows the relationship between increases in unemployment rate and decreases in home prices during the Global Financial Crisis. Home price drops are represented by the maximum drawdown of the Home Price Indices of each city in the S&P CoreLogic Case-Shiller 20-City Index from 2006 to 2012. This index measures the home prices of geographically diverse yet largely-populated cities across the U.S. Change in unemployment rate represents the maximum increase in unemployment rate during this time period.

With the historical performance of each city collected and shown, a positive trend between unemployment rate and home price drawdown manifests in the graph. Las Vegas suffered the most by both accounts. As we will show in later sections, a large proportion of jobs in Las Vegas fall under the leisure and hospitality sectors, which suffered during the Great Financial Crisis. The same sector has seen huge unemployment spikes during COVID-19, and Las Vegas will likely suffer similarly again. On the flipside, Dallas, Denver, and most noticeably Charlotte did not see a drastic loss of home value with Charlotte seemingly an outlier due to a relatively large increase in unemployment.

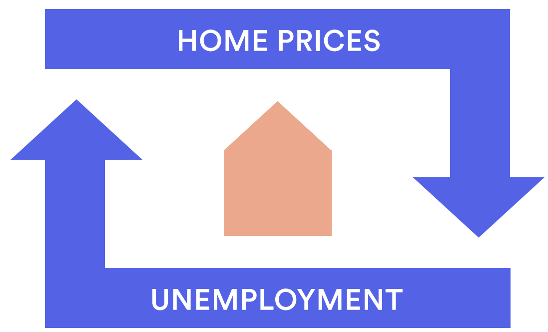


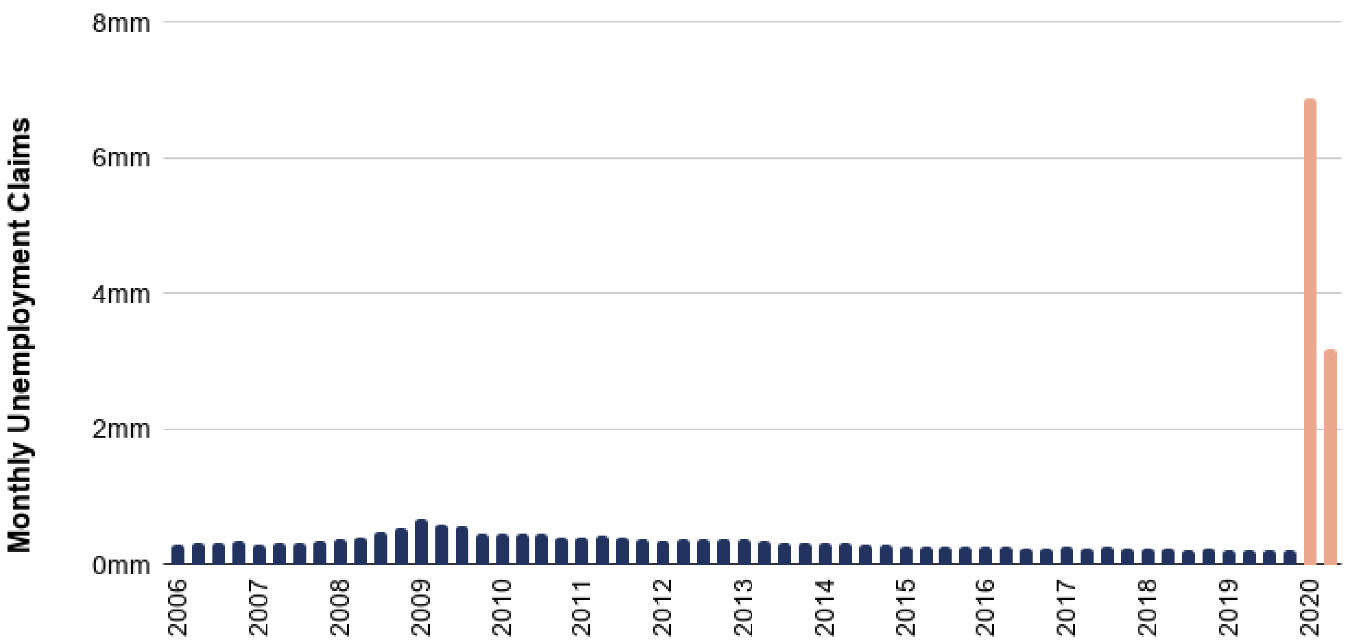
Figure 1: City by City: Change in Unemployment vs HPI Drawdown[3]

Jobs Lost to COVID-19 Pandemic

During the Global Financial Crisis of 2007-08, unemployment claims reached 665,000 in a single week, the highest reading since 695,000 in October 1982. This record was recently shattered when the number of initial jobless claims skyrocketed to 6.8 million in a single week in late March 2020. The unemployment rate has already hit post-war highs and is on track to test the all-time high of 24.9% seen during the Great Depression. The employment shock introduced by COVID-19 has long-term consequences for the future of work, as society rethinks the need for a colocated workforce and the value of in-person services. In some sectors, both the headcount required and the type of work performed could be dramatically altered.

> "COVID-19 has long-term consequences for the future of work and commercial real estate."

Figure 2: Cumulative Monthly Initial Claims[4]

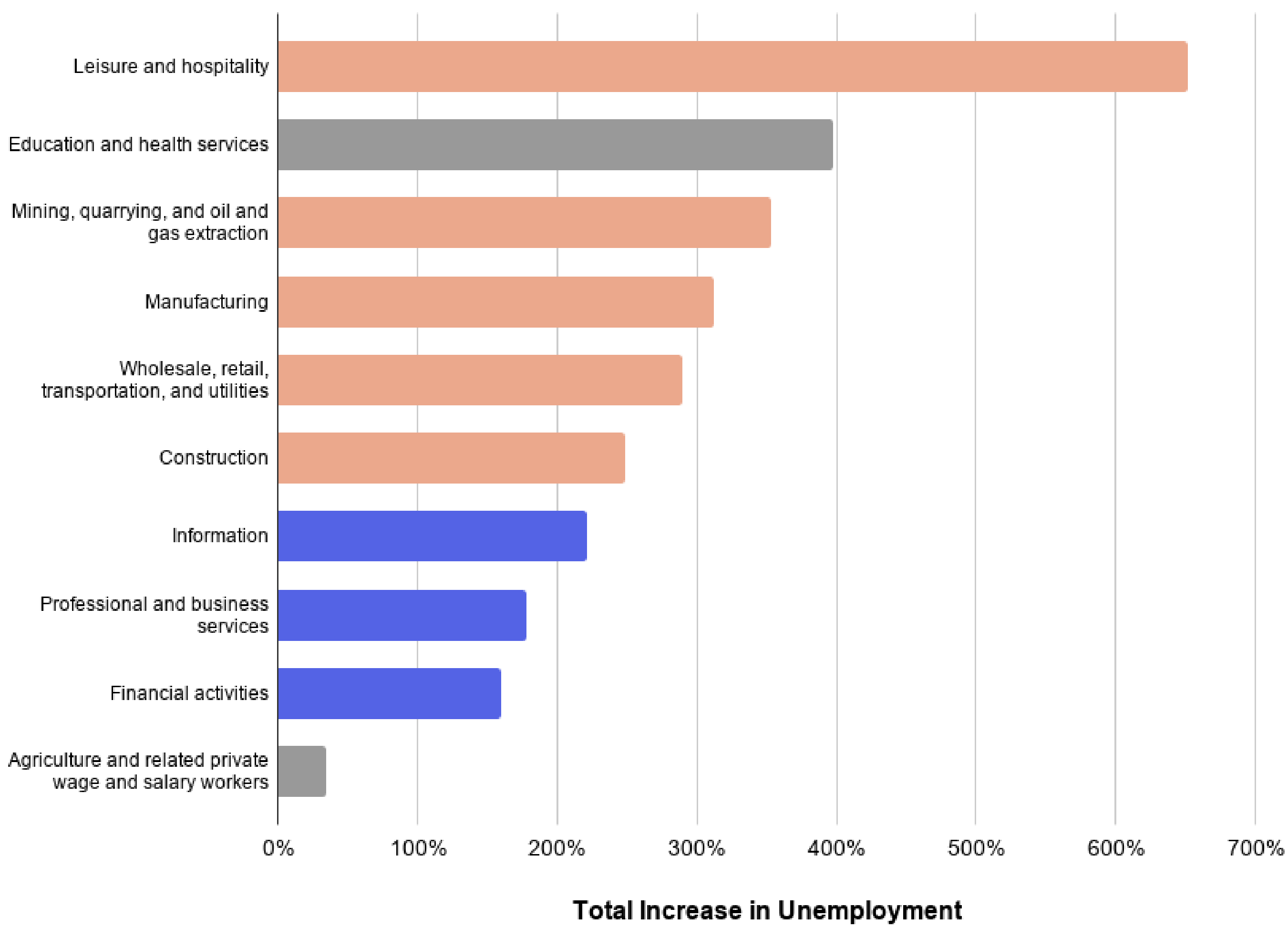


Jobs Lost to COVID-19 Pandemic

It is important to distinguish between the economic shocks caused by the Global Financial Crisis (GFC) and COVID-19. Most notably, professional and financial services, sectors that were devastated by the GFC, have fared relatively well from COVID-19. Not surprisingly, cyclical sectors such as **leisure, hospitality, retail,** and **construction** were decimated by both crises. On the other hand, COVID-19's sweeping impact fell heavily on **education and healthcare services,** and **manufacturing** - sectors that are typically non-cyclical. Finally, the oil and gas sector has also come under severe pressure due to demand shock coinciding with the dissolution of Organization of the Petroleum Exporting Countries's oil supply agreement.

The Bureau of Labor Statistics (BLS) released its April unemployment changes by sector in its latest Current Employment Statistics report shown in **Figure 3**.

Figure 3: Changes in Total Number of Unemployed Workers from April 2019 to April 2020

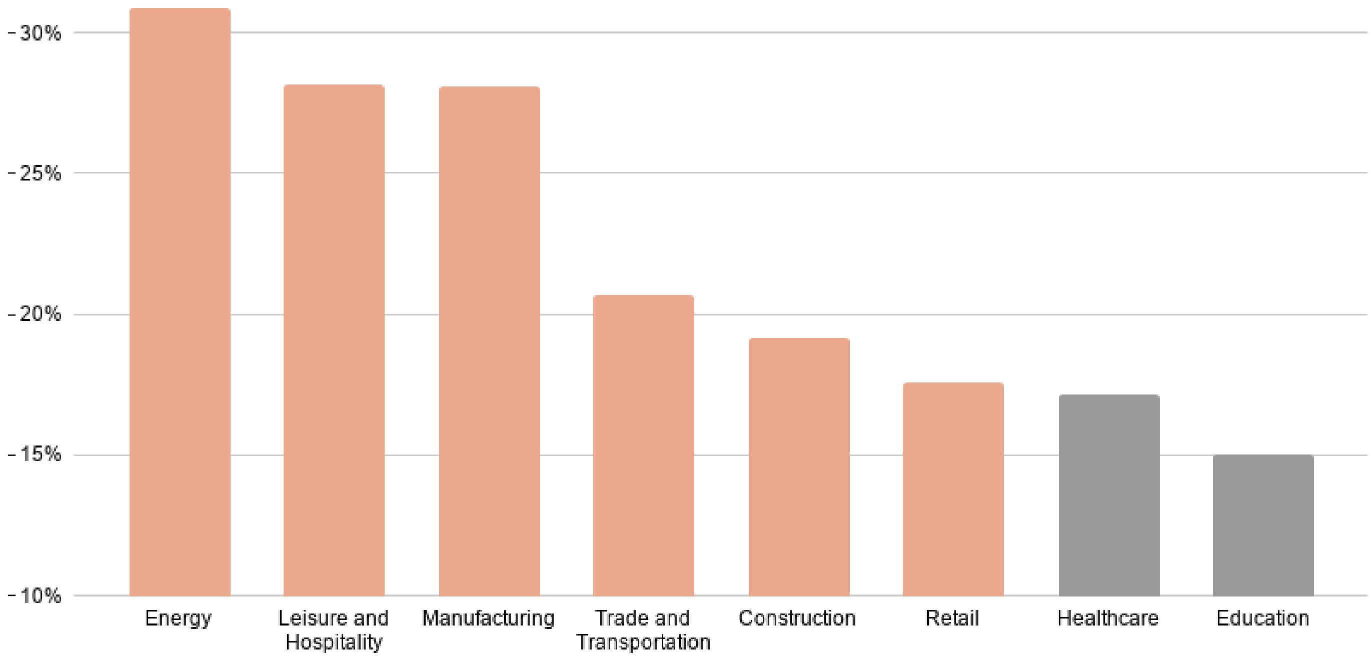


Jobs Lost to COVID-19 Pandemic

The pandemic necessitated swift adoption of once-novel innovations to cope with the social-distancing reality. **We are seeing winners driven by necessity**—grocery delivery, e-classrooms, digital home closings—and by secular shifts accelerated by convenience, including eCommerce and remote work.

As we learn to shop, work out, and entertain without face-to-face interaction, certain service jobs will inevitably be reduced or eliminated altogether, as technology reduces the need for human facilitators. It is yet unclear whether remote work will become the norm, **but its adoption has more to do with the location of work and dwelling, and less to do with the number of workers.** We will explore the implication of work mobility on wages and housing in a separate piece.

Fig 4: Decrease in Glassdoor Job Openings from Feb-April 2020[5]



Vulnerable Business Sectors

An industry's market health can be measured by the total jobs lost and the increase in job openings afterwards. Both factors play a crucial part in an industry's recovery. **Figure 3** highlights in red the five sectors we expect will suffer the slowest recoveries: Leisure and Hospitality; Trade, Retail, and Transportation; Oil and Mining; Manufacturing; and Construction. **Figure 4** (on previous page) reveals that the number of job openings in Education and Health Services decreased only 15% and 17% respectively, the lowest of the sectors with high unemployment increases. As students begin to return to schools, teachers will be quickly brought back to fill in lost positions. In addition, while elective medical services such as dentistry and ophthalmology have temporarily halted their business, they will reopen and bounce back as soon as people are allowed to schedule appointments with them again. Hence, this sector is not included in the list of vulnerable sectors, as they will likely recover in a much shorter time frame. The economic explanation for how we identified these vulnerable industry sectors is below:

Leisure, Hospitality, and Ancillary Services

> "Recovery in leisure and hospitality employment depends largely on whether the pandemic fundamentally changes how we travel..."

Leisure and business travel ceased globally practically overnight in the coronavirus fallout, resulting in truly unprecedented demand shocks for the leisure and hospitality sector. Hotels and airlines are well-understood to be cyclical businesses: profitable in boom years and loss-making in recessionary environments, with occupancy rates to match. However, even the strongest balance sheets and the highest profit margins are ill-equipped to withstand months of near-zero demand.

Recovery in leisure and hospitality employment depends largely on whether the pandemic fundamentally changes how we travel (including work-related travel), and the time it takes the industry to get back to breakeven volume. Airline executives from Delta[6] and United[7] airlines have noted that their companies will emerge from the crisis with smaller operations. Delta is also rumored to be converting some planes to all-business class seats[8]. If social-distancing becomes a new way of life, de-densification will result in more personal space, higher prices, and lower employment across the leisure and hospitality space.

Trade, Retail, Transportation, Utilities

The BLS data aggregates Trade, Retail, Transportation, and Utilities into one supersector. We believe the Retail and Transportation sectors, in particular, will be slower to recover.

A secular decline in the profitability of store-front retailers preceded the pandemic as Amazon, Wal-Mart, Shopify and other e-commerce platforms cannibalized in-person shopping. Shelter-in-place orders necessitated shopping online and provided a boon to e-commerce. E-tailers no longer need to compete with brick and mortar on prices, and consumers who value in-person shopping experience are now forced to try out substitutes in the online world. We expect a portion of shoppers to permanently shift to online shopping. Store count and staffing levels will shrink as a result.

The transportation sector consists of two polarized themes. We believe goods and product shipping will be quick to recover, but see significant employment risks in passenger transportation.

Environmental benefits of public transportation have been deemphasized in favor of limiting viral transmission, at least in the short-term. As of June 2020 bus and subway ridership are still down across the country, while gasoline demand has rebounded. Since public transportation is mostly run by government entities, a significant portion of transportation jobs are secure in the near term. Similar to the airline theme discussed above in the leisure and hospitality section, more jobs will be lost if commuter behavior changes and de-densification efforts become permanent trends. A silver lining for employment is that more jobs may open up in the gig economy for Lyft and Uber drivers if consumers continue to shun public transportation.

Natural Resources and Mining (Oil and Gas)

While extraction of oil and gas only comprises 2% of GDP[9], the supporting services industries support over 10 million jobs, roughly 6% of the workforce[10]. Employment recovery will be slow as energy prices remain depressed.

Saudi Arabia and Russia's decision to flood the oil markets coincided with an unprecedented drop in demand in April 2020. The subsequent drop in crude oil prices led a large number of shale producers to shut-in production wells. Unlike assembly lines for consumer goods, where production can be adjusted tactically, shut wells typically lose productivity and require significant human and financial capital to restart.

U.S. oil production faces headwinds to recovery. Demand loss has outpaced supply cuts as of May 2020 and the imbalance is expected to carryover into at least Q3 2020[11]. We are seeing lower crude and gasoline prices as a result[12]. Once demand returns, production will resume starting from areas with the lowest marginal cost. The U.S., while a dominant oil producer based on capacity, has one of the highest cost structures among top oil producers[13]. The longer oil prices stay low, the harder it will be to secure investment capital to fund future projects and to recover lost jobs.

Manufacturing and Construction

New orders for manufactured durable goods decreased in both March and April by a total of 31% according to a US Census release on manufacturing[14]. This likely points to a slow recovery in the manufacturing industry as demand continues to stay down.

Since the shelter-in-place policy was enforced in March, many companies have continued to ask their employees to work from home, whether voluntarily or because they were required to. Some companies such as Twitter and Facebook have extended this to the end of the year or even indefinitely. Hence, the **demand for commercial real estate construction is at one of its all-time lows.**

The lack of demand for new space extends into residential real estate as well. The US Census released a report on new residential construction statistics for April 2020 citing a 19% decrease in building permits and 30% decrease in housing starts since April 2019[15]. Due to the time-consuming nature of planning and obtaining permits, it is unlikely that construction will see a quick recovery.

19%
decrease in building permits

30%
decrease in housing starts

Select Vulnerable Cities

The rate of job recovery will vary drastically across cities, depending on their industry composition. The cities most concentrated in at-risk industries are expected to see slower job recoveries and more challenging housing markets. The rate of job recovery will vary drastically across cities, depending on their industry composition. The cities most concentrated in at-risk industries are expected to see slower job recoveries and more challenging housing markets. We analyze the vulnerability and resilience of counties[16] and census tracts[17] within each city by analyzing the distribution of their resident's jobs.

The vulnerable cities share the following characteristics:

1. **High concentrations of at-risk job sectors**
2. **Employment opportunities tied largely to a few headline sectors**
3. **Lack of anchor employers with acyclical staffing needs**

Figure 5: NAICS Supersector Concentration by City
Distribution of resilient and vulnerable job categories in the 20 largest cities tracked by the S&P CoreLogic Case-Shiller 20-City Index. Ordered by most to least vulnerable.

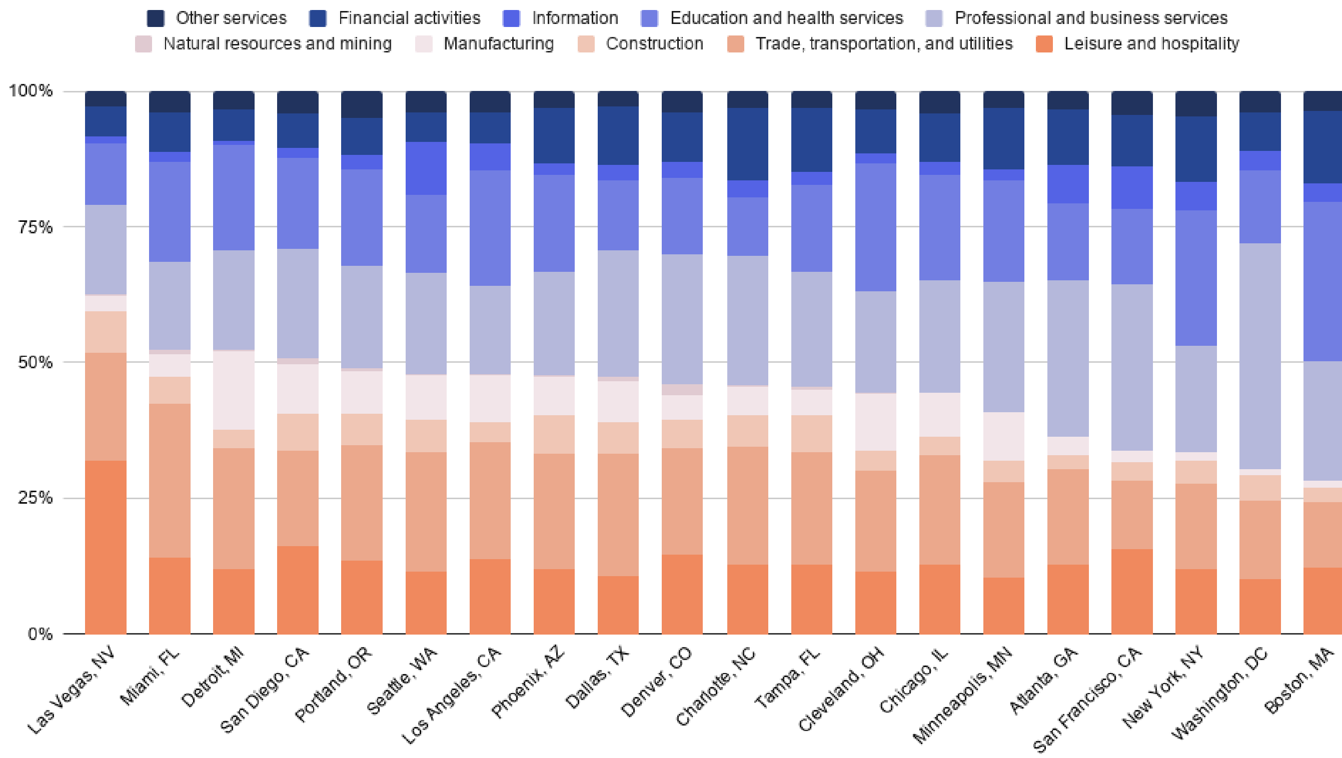
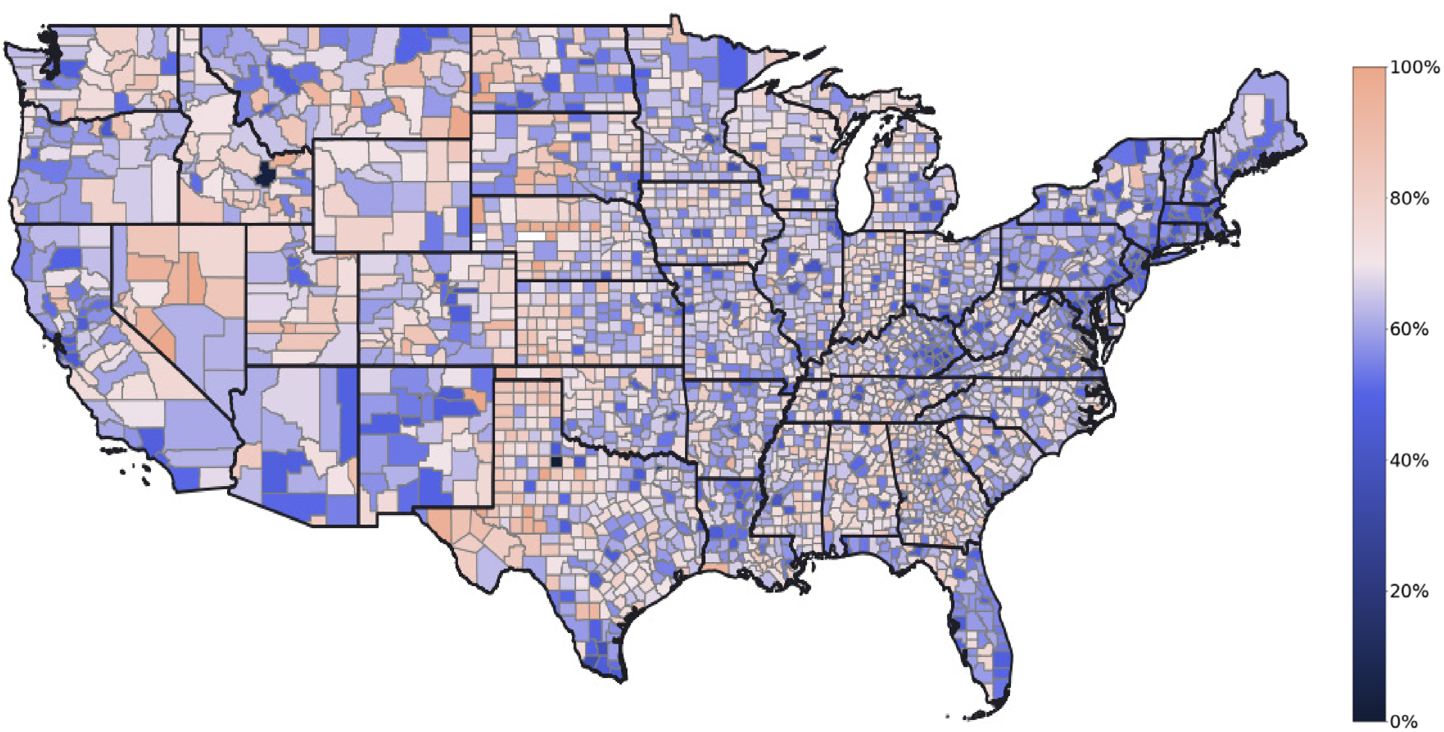


Figure 6: Vulnerable vs. Resilient Counties
% of households with residents with primary job in vulnerable industries



Las Vegas - Vulnerable Industry Concentration

Las Vegas was the poster child of market boom and bust leading up to and during the GFC, as it experienced housing price drawdown and unemployment rate in excess of 60% and 10%, respectively. With the highest concentration of construction (7.7%) and leisure & hospitality (31.8%) jobs, Las Vegas leads all cities in at-risk sector employment share (62.6%) and is most likely to see the weakest home price performance. Not only is Vegas the leisure and hospitality center, its role in transportation cannot be overlooked, as the city is home to the 8th busiest airport in the U.S.

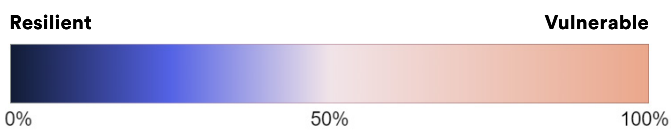
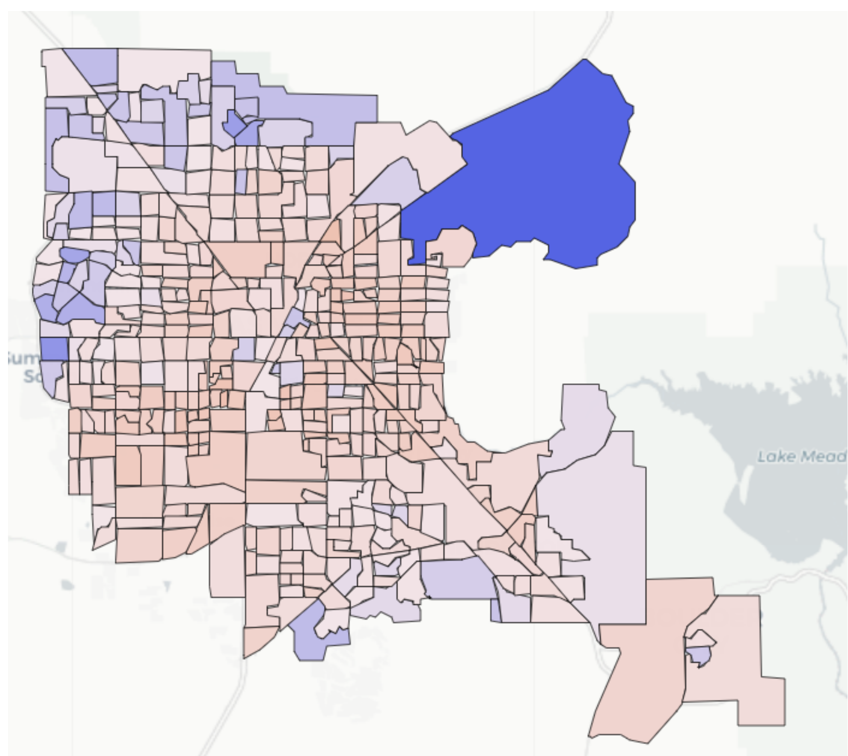


Figure 7: Las Vegas Vulnerable Industry Concentration
% of households with residents with primary job in vulnerable industries



Miami - Vulnerable Industry Concentration

Like Las Vegas, Miami's heavy concentration in leisure, hospitality, and retail makes it vulnerable to shocks in discretionary spending. Miami is also the cruise capital of the world. Partially offsetting the grim tourism outlook is the potential rebound in local commercial activities, as Florida is among the states most eager to reopen its economy.

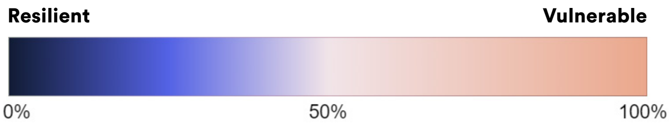
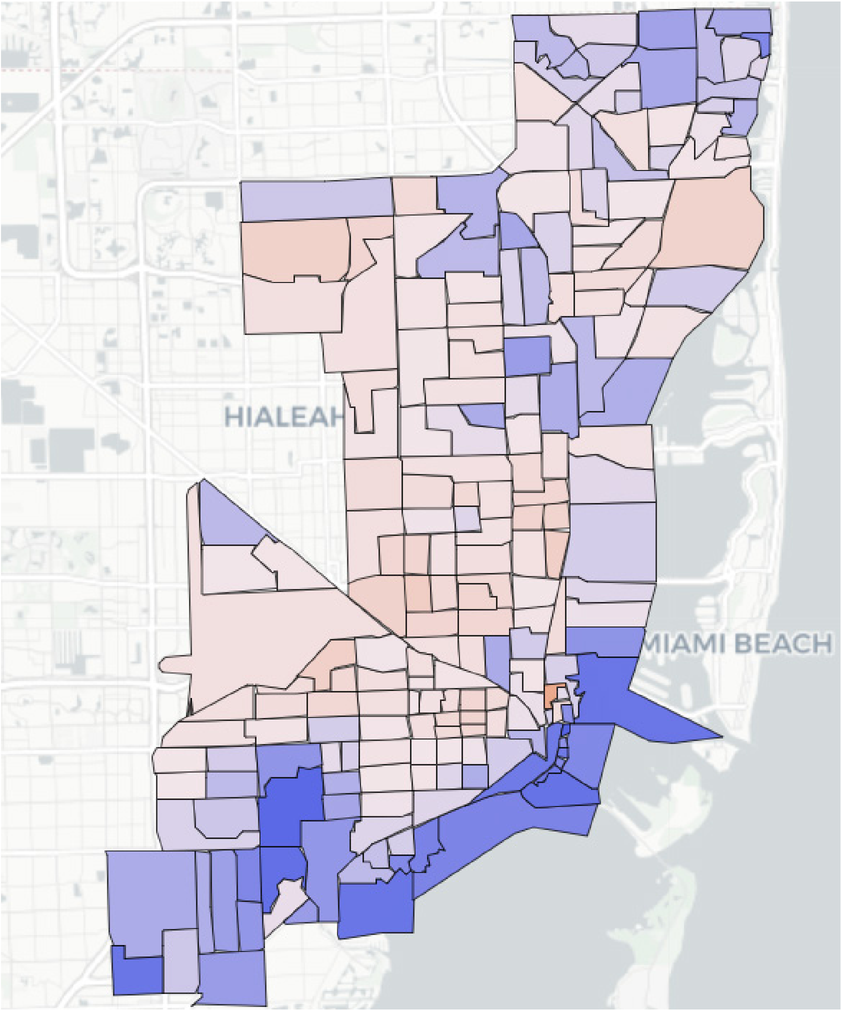


Figure 8: Miami Vulnerable Industry Concentration
% of households with residents with primary job in vulnerable industries



Detroit - Vulnerable Industry Concentration

Detroit has the highest concentration (14.3%) of manufacturing jobs among the 20 metro areas we explored. Synonymous with Motown, “Big-3” automakers Ford, General Motors, and Fiat Chrysler sit atop Detroit’s list of employers[18].

Several factors tied to automotive activities contribute to the pessimistic outlook for Detroit’s job market. First, new vehicle sales for March and April are down 42% and 88% year-over-year, respectively[19]. Second, nationwide shelter-in-place orders have drastically reduced car usage, taking away months of wear and tear and need for replacement[20]. Third, Hertz’s bankruptcy and reductions in fleets from other car rental companies are expected to hurt automakers in two ways: car rental companies are buying fewer new cars; they are also selling more used cars into the market, making used car pricing more attractive[21]. Finally, there is a strong negative correlation (-0.80) between unemployment rate and auto sales[22].

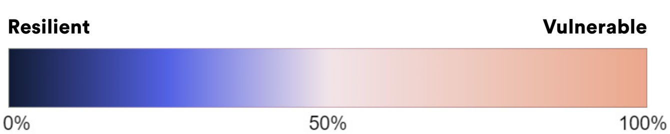
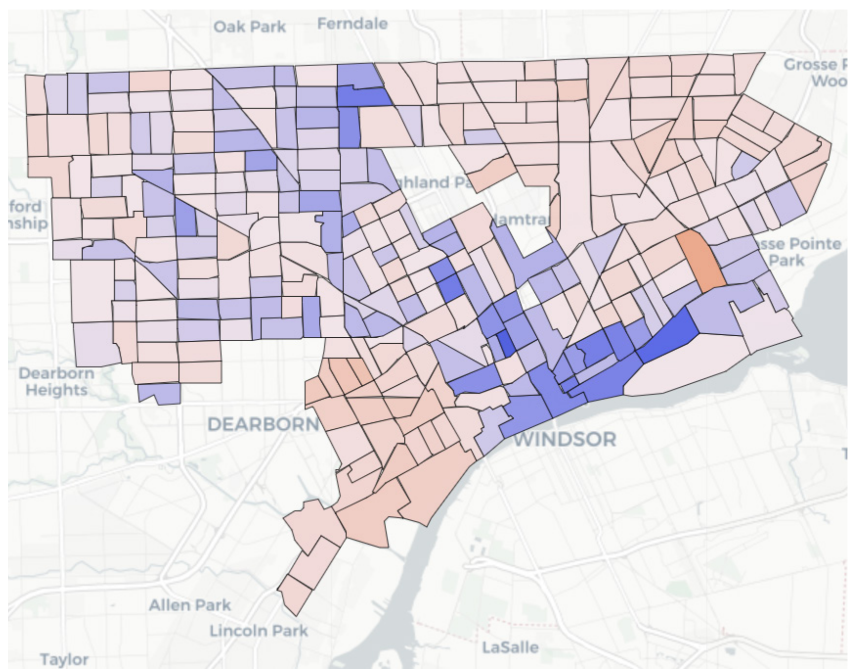


Figure 9: Detroit Vulnerable Industry Concentration
% of households with residents with primary job in vulnerable industries

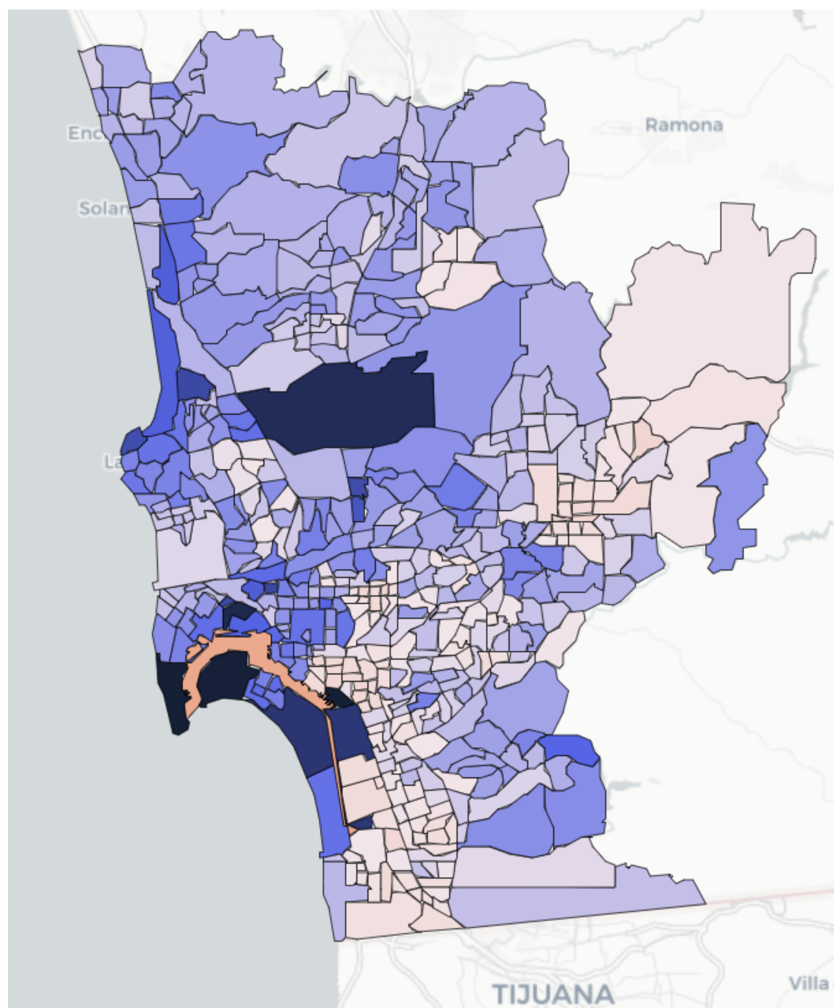


San Diego - Vulnerable Industry Concentration

San Diego has an anchor employer in the U.S. Navy and does not have a one-dimensional job market, but it does have the fourth highest concentration of vulnerable sectors. San Diego is second in concentration of jobs in the leisure and hospitality industry (16.2%), behind only Las Vegas. It also has the third highest concentration of manufacturing jobs, behind Detroit and Cleveland. San Diego is also third in construction share, behind Phoenix and Las Vegas.

San Diego's job market diversity is both its strength and its weakness. On the one hand, San Diego jobs are concentrated in at-risk sectors, and full recovery may not be achieved until economic activities in all sectors are back to healthy levels. On the other, a diversified job market provides workers the opportunity to pivot to other sectors. A roaring recovery in just one sector may be able to lift unemployment for the entire city.

Figure 10: San Diego Vulnerable Industry Concentration
% of households with residents with primary job in vulnerable industries



Resilient **Vulnerable**

0% 50% 100%

Resilient Cities

We expect the following cities to recover faster than the rest of the country for 4 reasons:

1. **Low concentrations of at-risk job sectors**
2. **Large, diversified economies that can accommodate workers pivoting between sectors**
3. **Robust roster of anchor employers in stable financial health**
4. **Prominent employers in Information Technology, Financial Services, and Professional Services sectors**

Boston - Resilient Industry Concentration

Boston lists numerous prestigious universities and hospitals among its top employers, as well as some of the largest insurance and investment management companies in the world. Beyond education, healthcare, and financial services, Boston also has strong employment representation from biotech, technology, and government sectors.

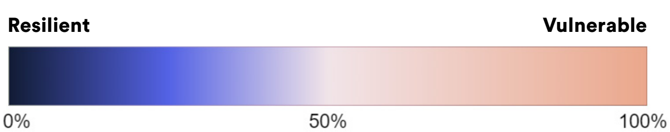
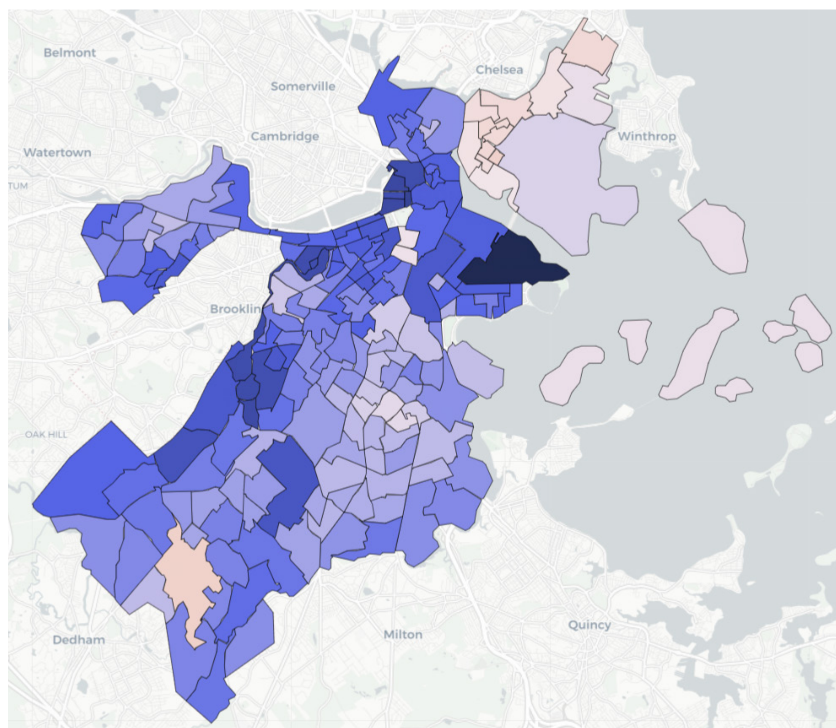


Figure 11: Boston Resilient Industry Concentration
% of households with residents with primary job in resilient industries



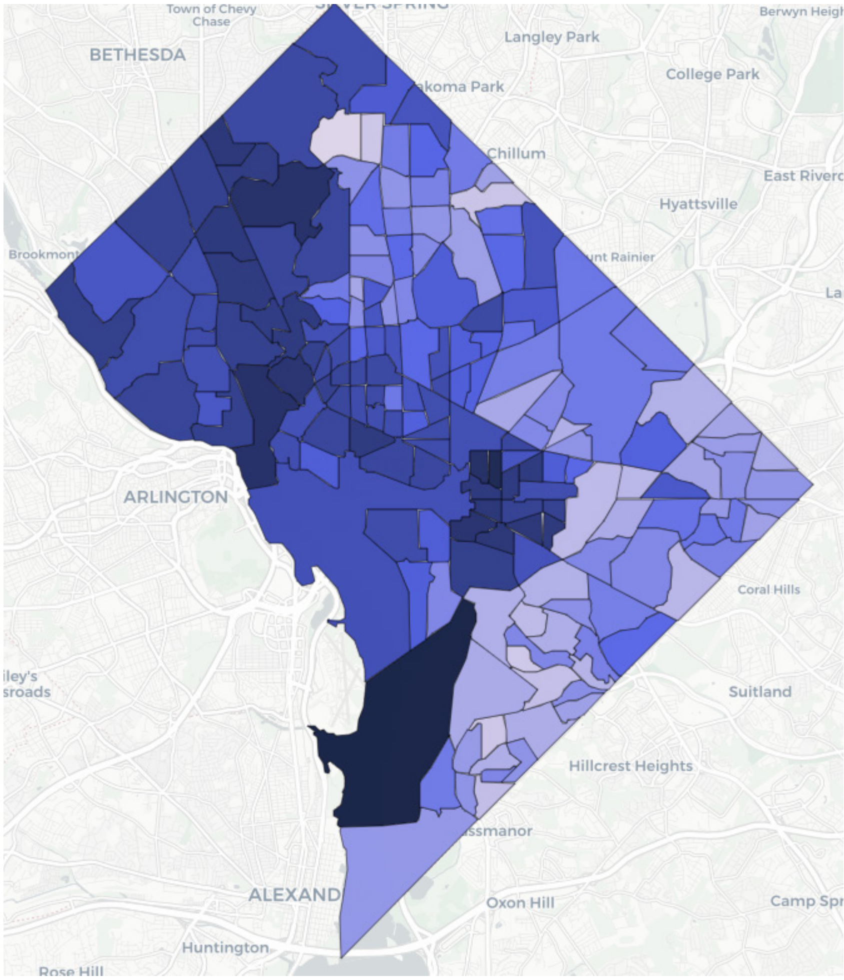
Washington, D. C. -
Resilient Industry Concentration

Government agencies make up close to a quarter of jobs in Washington, D.C., with more government-related jobs in law, defense contractor, non-profit organizations anchoring the employment landscape. Furthermore, D.C. is the fifth largest financial center in the country, behind only New York, San Francisco, Chicago, and Boston. Amazon's planned HQ2 is also a boost to D.C.'s future employment prospects.

Resilient **Vulnerable**

0% 50% 100%

Figure 12: Washington, D.C. Resilient Industry Concentration
% of households with residents with primary job in resilient industries



New York City Five Boroughs - Resilient Industry Concentration

Despite its status as a major tourist destination, only 12% of New York City private sector workers are employed in the hospitality sector. New York's economy is anchored by its world-leading financial services sector. Following close behind are robust education and healthcare systems, who actually make up more than a quarter of private sector jobs in the city. All of these top sectors are expected to rebound relatively quickly. NYC's job market is further stabilized by the abundance of government jobs. In fact, the largest employers in NYC, ordered by number of workers employed, are: NYC Department of Education, City of New York, the United State government, Metropolitan Transit Authority, and the State of New York[23].

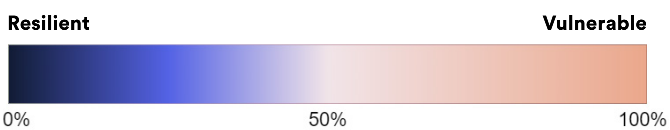
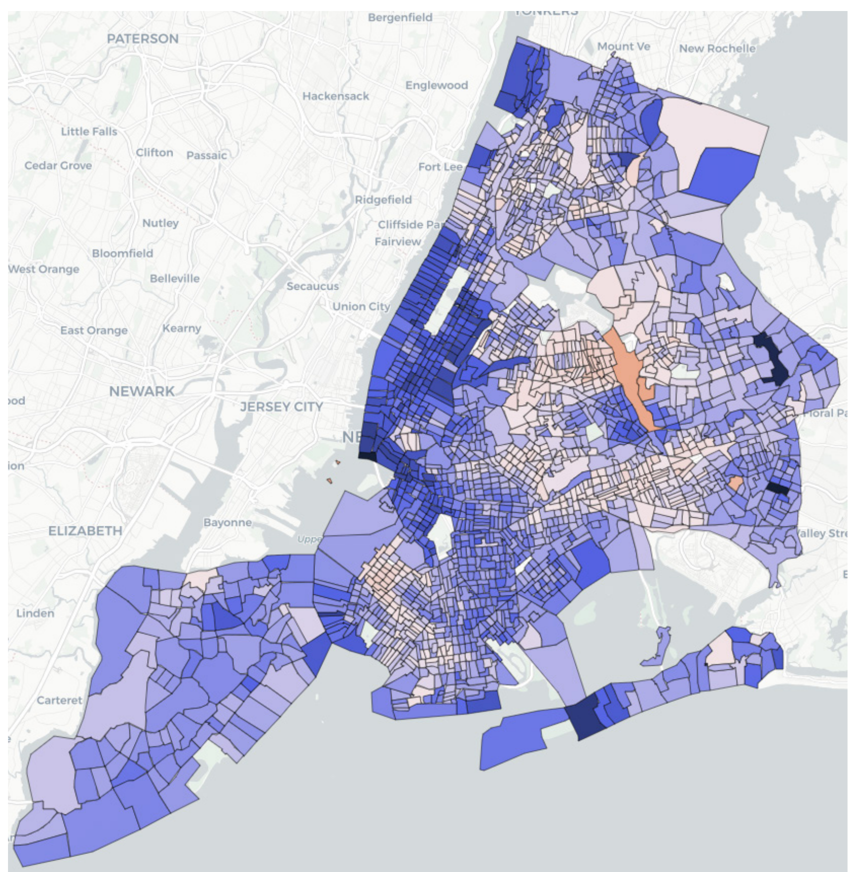


Figure 13: New York City Five Boroughs (The Bronx, Brooklyn, Manhattan, Queens, and Staten Island) Resilient Industry Concentration
% of households with residents with primary job in resilient industries



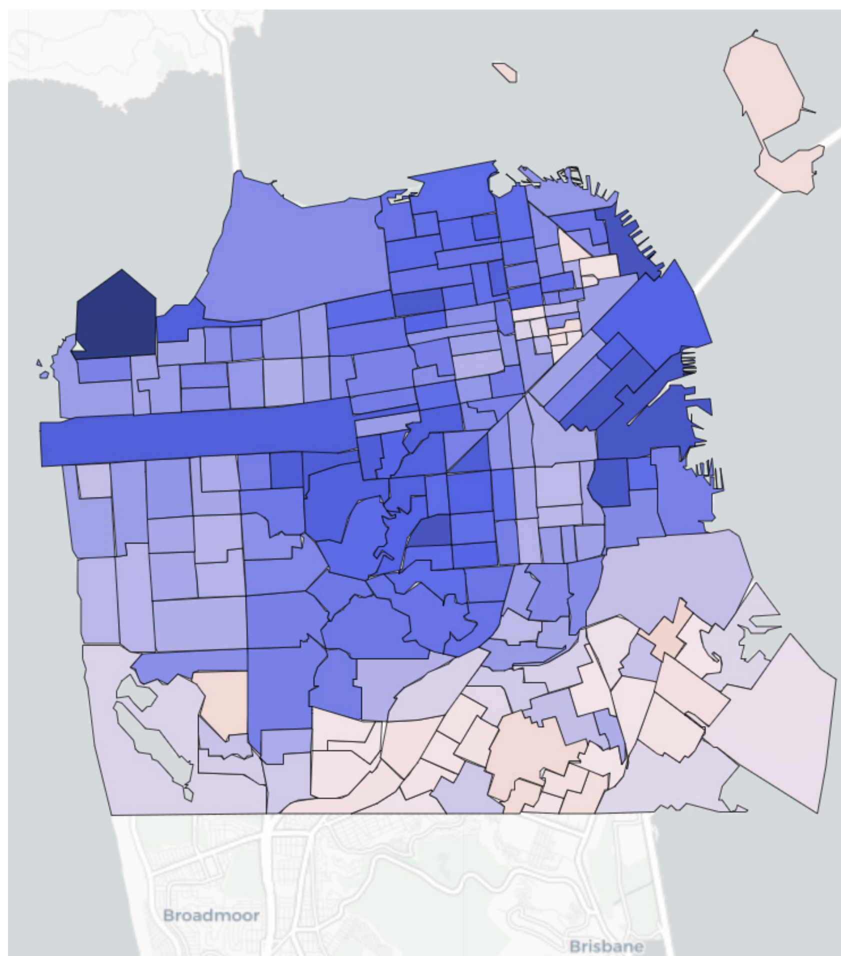
San Francisco - Resilient Industry Concentration

At first glance, San Francisco appears to be a one trick pony, since a big portion of the jobs look like “tech” jobs. However, the actual sector composition becomes much more diverse once we look into the actual economies these tech employers serve. For example, AirBnB, Slack, Uber, Twitter, Yelp, Instacart, and Salesforce each play in very different sectors, with their company fortunes driven more by the constituents they serve than by the livelihood of the technology sector. Also lost in the high-tech fanfare is the fact that San Francisco is the second largest financial center in the U.S. and home to firms like Wells Fargo, Visa, SoFi, and Square.

Resilient **Vulnerable**

0% 50% 100%

Figure 14: San Francisco Resilient Industry Concentration
% of households with residents with primary job in resilient industries



Conclusion

"While the home has become more important than ever, performance of residential real estate prices will be largely determined by the ability for households to earn an income."

The sweeping global lockdowns will be a speed bump for some industries, while for others, this could be an inflection point leading to major shakeups across industries. During the shelter-in-place “lost quarter”, we have adapted to both consume and produce at home. We are all now better chefs who can shop for groceries (among other things) at home, go to the movies at home, work out at home, entertain at home, and most importantly— work from home.

While the home has become more important than ever, performance of residential real estate prices will be largely determined by the ability for households to earn an income. Each city houses residents from a variety of different industry sectors. Recent data published by the BLS informs which sectors have disproportionately lost jobs. Using this data we can identify **vulnerable cities** with overweight exposures to sectors with significant and persistent job loss and contrast them with **resilient cities** with relatively fewer lost jobs. This analysis can be repeated within a city, by identifying **vulnerable neighborhoods** and **resilient neighborhoods.** A strategy that targets investments in resilient residential real estate is forecasted to outperform the national benchmark.

About Unison

Unison is revolutionizing the home financing marketplace through long-term co-investment partnerships. The company works with select institutional investors to integrate homeownership investing into the U.S. home financing system through its HomeOwner programs. Unison HomeOwner provides existing homeowners with cash without the added debt or payments of a home equity line of credit (HELOC). The company's co-investment through this program is a true equity partnership, with no monthly payments, in which Unison shares in the increase or decrease in the future value of a home. Headquartered in San Francisco, Unison operates in 30 states plus Washington, D.C.

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unison
Together, you can.

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