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The COVID-19 Recession

Which Urban Economies Have Performed Better or Worse and Why

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The COVID-19 pandemic hammered the U.S. economy, causing the number of nonfarm jobs nationwide to decline from 152.2 million in January 2020 to 133 million just five months later.[1] This was more than twice the job drop recorded during the Great Recession of 2008-10. Nowhere were pandemic-related job losses greater than in the nation's "superstar" cities and regions. Between January and May 2020, New York City lost 631,000 jobs[2] (-6.4%), Santa Clara County, the home of Silicon Valley, lost 133,000 jobs (-12.6%), and the Atlanta metro area lost more than 150,000 jobs. All three places have since gained back most of these job losses, but their visibility has prompted many business media and online commentators to wonder whether the era of cities and metropolitan areas as centers of U.S. innovation and economic growth may be waning.

To better understand the larger picture, I looked at recent employment trends in the nation's 105 largest metropolitan areas—those with more than 275,000 jobs—between January 2020 and May 2020 and then, again, between May 2020 and May 2021 as reported by the Bureau of Labor Statistics. January 2020 was the last full month before the effects of the COVID-19 pandemic were first felt in the national economy; May 2020 marked the depth of the nation's employment downturn, and May 2021 was the most recent month for which job totals were available when this was written. Altogether, these 105 metro areas account for two-thirds of U.S. nonfarm employment so they provide a pretty good picture of what's happened economically in the nation's cities and suburbs.

FIGURE 1

Top and Bottom 10 US Metro Areas Ranked by January 2020-May 2020 Job Loss Rates and January 2020-May 2021 Job Recovery Rates

	Metro Area	January 2020-May 2020 Nonfarm Job Loss Rate	Metro Area	May 2021 Nonfarm Jobs as a Share of January 2020 Jobs
Top 10 Metro Areas	Las Vegas	-32.4%	Fayetteville (AR)	104.1%
	Detroit	-28.8%	Provo-Orem	103.2%
	Honolulu	-23.6%	Lakeland	103.2%
	Los Angeles County	-23.6%	Jacksonville	102.4%
	Miami-Dade	-21.5%	Tampa-St. Petersbug	101.6%
	New York City[i]	-21.3%	Boise	101.6%
	Orlando	-21.3%	Madison	101.2%
	Providence	-18.6%	Oklahoma City	101.2%
	Fort Lauderdale	-16.7%	Colorado Springs	101.0%
	New Orleans	-16.7%	Kansas City	101.0%
Bottom 10 Metro Areas	Madison	-7.5%	Newark[ii]	92.0%
	Des Moines	-6.9%	Los Angeles County	91.7%
	Boise	-6.9%	Richmond	91.7%
	Columbia	-6.6%	Honolulu	91.6%
	Little Rock	-6.1%	Las Vegas	91.6%
	Phoenix	-5.3%	New Haven	91.4%
	Birmingham	-5.1%	San Francisco[iii]	91.1%
	Tucson	-4.8%	Miami-Dade	90.7%
	Fayetteville	-4.5%	Bridgeport	89.1%
	Omaha	-3.6%	Hartford	88.7%

Source: Data was compiled from the U.S. Bureau of Labor Statistics' metro area level economic statistics web page (www.bls.gov/eag/), downloaded the week of July 22, 2021.

i. Includes New York City and Westchester County.

ii. Includes Essex and Hudson Counties.

iii. Includes San Francisco and San Mateo Counties.

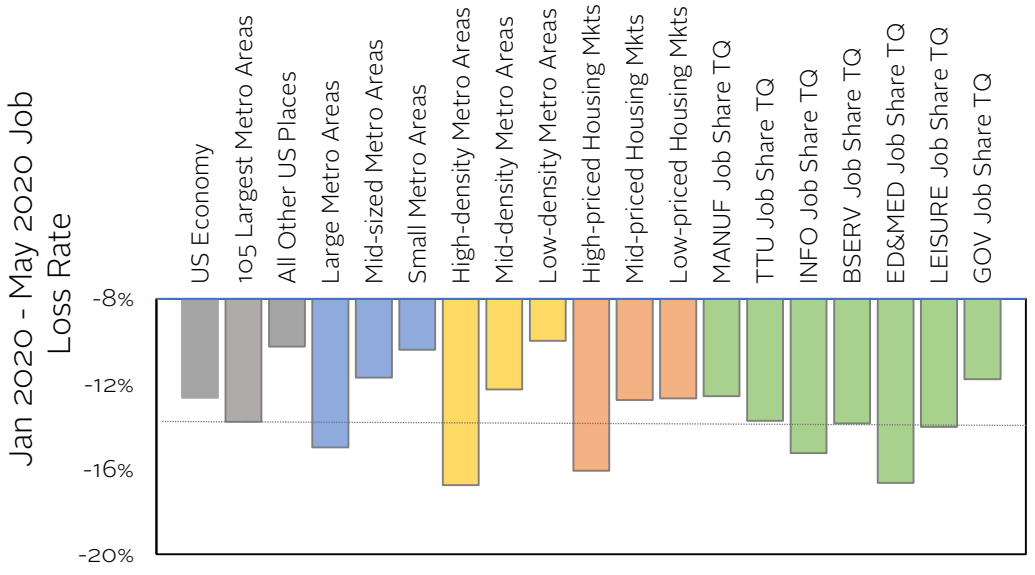
Measured across all 105 metro areas, the COVID-19 pandemic was responsible for a 14 percent employment drop between January 2020 and May 2020. This was slightly greater than the 13 percent job loss rate for the nation as a whole, and much worse than the 10 percent rate for the country's smaller metro areas and counties.

As in every recession, some metro areas did better and worse than others. At the severe end of the job loss spectrum, as of May 2020, the Las Vegas metro area had lost a staggering 32 percent of its January 2020 jobs (Figure 1). Over the same five-month period, Detroit lost 29 percent of its January 2020 jobs, Honolulu and Los Angeles lost 24 percent, Miami lost 22 percent, and New York City and Orlando each lost 21 percent. Among the metro areas whose economies were less affected by COVID-19, Omaha lost just 4 percent of its January 2020 jobs by May 2020; Fayetteville (Arkansas), Tucson, Birmingham, and Phoenix each lost just 5 percent; Little Rock lost 6 percent; and Columbia (South Carolina), Boise, and Des Moines lost 7 percent. January-to-May 2020 job loss rates and May 2020-to-May 2021 recovery shares for the full sample of metro areas is included as Appendix A.

The national media has made much of COVID-19 pandemic job losses being concentrated in larger and higher-density cities and metro areas, in places where housing prices are much higher than average, and in cities and metro areas with economies based in tourism. As Figure 2 shows, there is some truth to all of these observations. Compared to an average job loss rate of 14 percent for all the metro areas included in this analysis, larger metro areas (those with more than one million jobs) lost 15 percent of their jobs, and high-priced housing markets (those in which the median value of owner-occupied homes in 2019 exceeded $400,000) lost 16 percent. Higher-density metro areas, those with more than 1,350 residents per square kilometer of urbanized area, lost jobs at a much higher rate (-17%) than low-density metro areas with fewer than 950 persons per square kilometer (-10%). Las Vegas' spectacular jobs losses notwithstanding, economies with higher shares of

FIGURE 2

January 2020-May 2020 Job Loss Rate by Metro Area Category



Source: Data assembled from the Bureau of Labor Statitistics website (www.bls.gov). Notes: High-density metro areas are those with an average density above 1,350 persons per square kilometer or urbanized land area. Mid-density metro areas are those with an average density between 950 and 1,350 persons per square kilometer. Low-density metro areas are those with an average density of less than 950 persons per square kilometer. of priced housing markets are metro areas in which the 2019 Census-reported median home value was greater than $400,000. Low-priced markets are those in which the 2019 median home value was less than $200,000. Mid-priced markets are those in which the 2019 median home value was between $200,000 and $400,000. The annotation TQ indicates a metro area was in the Top Quartile of metro areas in terms of the share of January 2020 jobs in a particular sector.

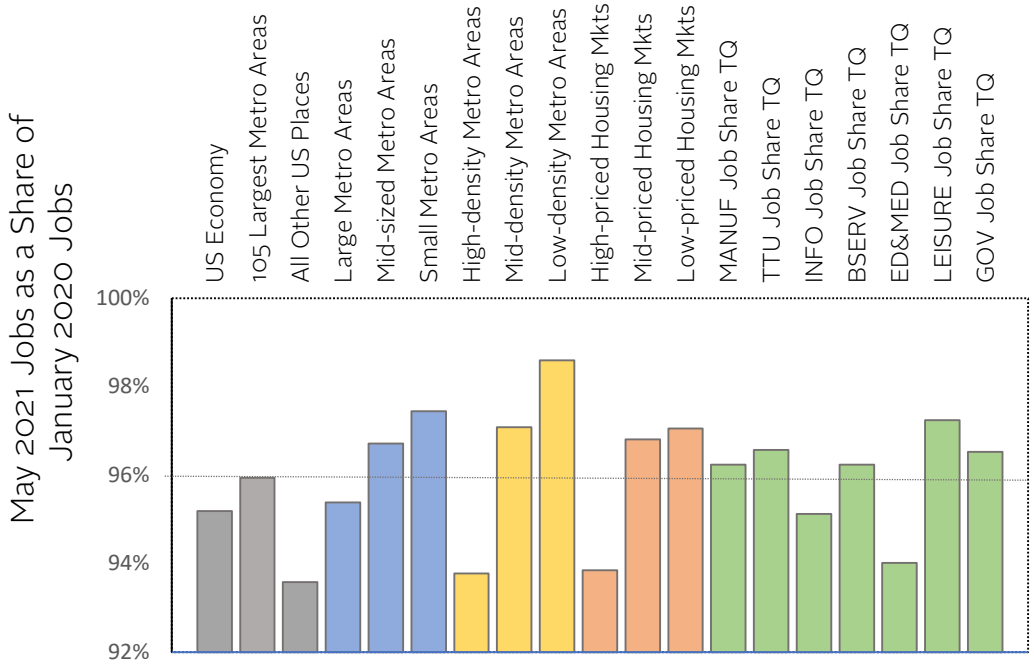
leisure and tourism employment lost jobs at the same overall rate, 14 percent, as non-leisure economies. By contrast, metro areas whose economies tilted toward health and higher education lost jobs at a higher-than-average rate of 17 percent, while those with government-based economies lost employment at a slower than average rate of 12 percent. Compared to past recessions, these are not big variations, indicating that despite its severity, COVID-19 was mostly an equal-opportunity job destroyer.

Although still not complete, the nation's economic recovery from the dark days of May 2020 has been substantial. By May 2021, the number of nonfarm U.S. jobs stood at 95 percent of its January 2020 level (Figure 3). This was slightly lower than the 96 percent comeback rate for the nation's 105 largest metro areas. When compared by size, population density and home value level, small and medium-sized metro area economies had recovered slightly faster than larger ones (97% vs. 95%); lower-density metro areas had recovered faster than higher-density ones (99% vs. 94%), and lower- and mid-value housing markets had recovered notably faster than higher-value housing markets (97% vs. 94%). Compared by industrial sector, metropolitan areas with economies based in health, education, and information continue to lag in their recoveries. As with the job losses discussed above, these recovery rate variations are not particularly large when compared to past recessions. For the most part, metropolitan areas across the board have been similarly resilient in terms of slowly coming back from the severe job losses caused by COVID-19.

Group averages like those presented in Figures 2 and 3 tell only a partial story. To dig deeper, I used regression analysis to identify the factors most closely associated with COVID-19-related job losses between January and May 2020, as well as with May 2020-to-May 2021 job recovery rates. In addition to

FIGURE 3

May 2021 Jobs as a Share of January 2020 Jobs, by Metro Area Category



Source: Data assembled from the Bureau of Labor Statitistics website (www.bls.gov). Notes: High-density metro areas are those with an average density above 1,350 persons per square kilometer or urbanized land area. Mid-density metro areas are those with an average density between 950 and 1,350 persons per square kilometer. Low-density metro areas are those with an average density of less than 950 persons per square kilometer. of priced housing markets are metro areas in which the 2019 Census-reported median home value was greater than $400,000. Low-priced markets are those in which the 2019 median home value was less than $200,000. Mid-priced markets are those in which the 2019 median home value was between $200,000 and $400,000. The annotation TQ indicates a metro area was in the Top Quartile of metro areas in terms of the share of January 2020 jobs in a particular sector.

high, medium and low fixed-effect variables for metro area job market size, population density, and housing values, I included variables measuring sectoral job shares (as of January 2020) for the following industry groups: manufacturing, trade and transportation, information, professional and business services, health and education, leisure and tourism, and government. In nearly all cases, these seven sectors accounted for 80 to 90 percent of non-farm metro area jobs.

To test whether an area's pre-COVID-19 job growth experiences contributed to its COVID-19 related job loss and recovery rates, I included a variable measuring job growth rates between January 2015 and January 2020. To explore the roles of labor force quality and demographic composition, I included variables measuring the share of adults with Bachelor's degrees and the share of non-native-born residents. Past research suggests that a better-educated workforce contributes to greater economic resilience. Likewise, immigrants typically bring entrepreneurial energy to the places where they settle. To investigate possible connections between and job loss and recovery rates and worker productivity, I included a measure of gross county product per job. To see if the number COVID-19-related deaths might have suppressed an area's recovery, I included the number of COVID-19 deaths per 100,000 state residents as of June 2021. Last, to investigate whether lower taxes might play any role in reducing job losses or speeding a job recovery, I included the top state income tax rate as of January 2020. More detail regarding each of these measures is included in Appendix B.

The regression results are presented in Figure 4. The top part of Figure 4 summarizes the results of Model A, which analyzes job loss rates between January and May of 2020. The bottom part of Figure 4 summarizes the results for Model B, which covers both job losses and subsequent gains over the longer January 2020 to May 2021 period. Because many of the variables included in the two models take on related values, I used

FIGURE 4

Stepwise Regression Results for Covid-19 Metro Area Job Loss and Recovery Rates

MODEL A: Dependent Variable: Job Loss Rate: Percent Change in Nonfarm Jobs between January 2020 and May 2020 by Metro Area (Mean = -12.7%)

Independent Variable (in order of standardized coefficient values)	Estimated Coefficient	Standardized Coefficient	Significance Level
Pct. Leisure and Hospitality Jobs, Jan 2020	-0.012	-0.54	0.00
Nonfarm Jobs, Jan-2020	-1.829E-8	-0.38	0.03
Pct. Foreign-born Residents, 2019	-0.170	-0.34	0.00
Pct. Health & Education Jobs, Jan 2020	-0.003	-0.26	0.00
Pct. Manufacturing Jobs, Jan-2020	-0.003	-0.19	0.00
Constant	0.090		0.01
r-squared (Goodness-of-fit)	0.44		
Number of observations	105		

MODEL B: Dependent Variable: Job Recovery Rate: Ratio of May 2021 Nonfarm Jobs -to-January 2020 Nonfarm Jobs by Metro Area (Mean = .967)

Independent Variable (in order of standardized coefficient values)	Estimated Coefficient	Standardized Coefficient	Significance Level
NLCD Population Density, 2011	-2.736E-5	-0.36	0.00
Prior 5-year Job Growth Rate	0.011	0.33	0.00
Gross County Product per job, 2019	-1.805E-7	-0.19	0.04
Constant	1.099		0.00
r-squared (Goodness-of-fit)	0.37		
Number of observations	100		

a procedure known as stepwise regression to enter them in order of their incremental explanatory power. Variables that add little beyond those already in the model are therefore not entered. Stepwise regression maximizes a model's explanatory power while minimizing the number of included variables. By using it, I am able to identify the factors that do the most to explain why U.S. metro areas lost jobs between January and May 2020, and then regained them between May 2020 and May 2021.

Viewed in combination, Models A and B provide three insights into the COVID-19 pandemic recession and its immediate aftermath. First, based on a comparison of goodness-of-fit values (i.e., r-squared) between Models A and B, the pattern of job losses between January and May 2020 was more consistent across U.S. metro areas than the post-May 2020 pattern of job gains.[3] Simply put, U.S. metro areas were more similar on the way down than on the way back.

Second, both the January-May 2020 downturn and the post-May 2020 recovery unfolded similarly in most metro areas. For the middle 80 percent of metro areas, January-to-May job loss rates fell within a narrow range of 10 to 13 percent. Likewise, by May 2021, the middle 80 percent of metro areas had recovered between 96 and 98 percent of their January 2020 jobs.[4]

Third, different factors played different roles during each period. Industrial structure mattered more during the January-May 2020 downturn period, with three of the five variables entering Model A consisting of sectoral employment percentages. By contrast, the three factors that determined how quickly a metro area economy recovered—its population density, job growth momentum, and worker productivity levels—were more cross-sectoral in nature.

Looking at each of the two models individually, the five factors that best explained a metro area's job loss rate between January and May 2020 were, in order of relative importance: (i) its share of jobs in the leisure and hospitality industry; (ii) its total number of jobs as of January 2020; (iii) the share of its residents born outside the U.S.; (iv) the share of its jobs in the health and education sectors; and (v) its share of jobs in manufacturing. The three sectoral share coefficients are all negative, indicating that places with larger shares of jobs in those sectors did worse than places with smaller shares. For reasons I discuss below, places with more jobs overall at the start of the COVID-19 pandemic also did worse. Finally, for reasons that are unclear, metro areas with higher proportions of foreign-born residents lost more jobs than those with lower proportions. None of the other tested variables entered the model: not population density, not housing price levels, not state tax rates, not COVID-19 death rates, not educational attainment levels, and not worker productivity.

Whereas sectoral composition played a major role in explaining job loss differences among metro areas, a different set of factors were at work during the recovery period. The metro areas that did better adding back lost jobs between May 2020 and May 2021 were those that were growing most vigorously before the pandemic. The metro areas that did worse were those with higher population densities and those with higher worker productivity numbers. Simply put, economies that were growing faster prior to COVID-19 recovered faster coming out of it, as did those with more labor-intensive economies. Among the factors not associated with a faster economic recovery were housing prices, state tax rates, educational attainment levels, COVID-19 death rates, or any of the seven industrial composition measures.

Considered in tandem, the two regression models provide several interesting insights into the nature of the COVID-19 pandemic recession and the still-in-process recovery. First, past job performance matters. Those urban economies that grew faster prior to the COVID-19 pandemic have recovered more quickly, and in several cases, now have more jobs than they did at the start of the pandemic. Second, as measured by total employment, larger economies were hit harder by COVID than smaller ones. This is probably because larger economies are characterized by bigger employment and income multipliers so that economic shocks like COVID-19 permeate more completely through the entire economy. Third, although urban economies with larger

shares of health, education, and information jobs may perform better when economic times are good, they are also more vulnerable when confronted with a major disruption like a pandemic. Fourth, while factors like population density and labor productivity which contribute to what economists call *agglomeration economies*--the economic synergies associated with complementary businesses locating near one another—may not make recession-based job losses worse, they do seem to impede post-recession recovery rates.

These results are subject to four important caveats. The first and most important is that the two regression models do only a fair job explaining pandemic-related metro area job loss and recovery rates. This means that there are many additional factors beyond those included in the models that are also important. Second, the fact that a particular variable did not enter one or both stepwise regression models does not mean that it is entirely unimportant, just that it is not as important as the variables that did enter. Third, these results apply only to large and medium-sized metropolitan areas. They do not necessarily apply to cities or counties, some of which performed better (or worse) than their metropolitan areas. Finally, I have not controlled for what statisticians call endogeneity, the possibility that the dependent variable exerts a causal effect on one or more independent variables. The fact that I have included variables in the proper time order—the independent variables are all measured as of January 2020 or earlier—and that the COVID-19 pandemic was fundamentally an external shock to the economic system lessens but does not eliminate the confounding effects of endogeneity.

To summarize, when it comes to the nation's largest metropolitan economies, the pattern of job losses induced by the COVID-19 pandemic has been both similar and different than that of prior recessions. It has been similar in that it has exposed previously overlooked vulnerabilities in particular industrial sectors. In the pandemic case, the most vulnerable economies have been those with higher shares of leisure and hospitality and health and education jobs. Where the COVID-19 pandemic recession has been different is in the general consistency of its job-destroying effects across metropolitan economies, and in the slowness, at least so far, with which many of the nation's most productive urban economies are taking to recover from it.

As to whether COVID-19 will lead to a rethinking of the economic attractions offered by big cities, this analysis provides a mixed verdict. On the one hand, larger metropolitan areas—which are also home to larger cities—lost more jobs and have recovered more slowly than mid-size and smaller metro areas. This suggests that large metro areas are inherently more vulnerable to COVID-like economic disruptions, and that officials in those places should look for ways to make their economies more resilient and not take their economic competitiveness advantages for granted. On the other hand, the differences in job loss and recovery rates between larger and smaller metro areas aren't all that large, and the post-pandemic recovery is not yet complete. This suggests that any economic penalties associated with city size may be transient.

Finally, what lessons can the experiences of the last 18 months teach public officials and local economic development planners about preparing for the next recession? The first should be not to put too much store in the likelihood that the next downturn will unfold in the same ways and for the same reasons as the COVID-19 recession. The COVID-19 recession came on more quickly and was deeper than any other economic downturn since the Great Depression. It was also met, successfully so, with the largest non-wartime fiscal and monetary stimulus response ever undertaken by the federal government. Future recessions are unlikely to be greeted with comparable government action. Second, beware conventional wisdoms. Since the early 1990s, planners and economic development officials have heartily touted the growth of the education, health, and information sectors because of their ability to create the jobs of the future. While they may indeed have such abilities, as the last 18 months have demonstrated, they also come with their own vulnerabilities. Third, notwithstanding our prior point about recessionary histories not repeating themselves, the metro areas that have best weathered the COVID-19 pandemic are those with lower population densities, plentiful housing supplies, modern infrastructure, minimal traffic congestion, and local governments committed to leveraging private sector job growth rather than trying to fine tune its composition or beneficiaries.

NOTES

1. Unless otherwise noted, the job estimates referred to in this paper are from the Bureau of Labor Statistics website (www.bls.gov/eag/).

2. New York City Independent Budget Office (www.ibo.nyc.ny.us)

3. R-squared measures the share of the variation in the dependent variable that can be explained by the linear combination of the independent variables. The r-squared value for Model A is .44, indicating that the independent variables explain 44 percent of the January-to-May 2020 percentage job losses among the different metro areas. For Model B, the r-squared value is .35, indicating that the model explains 35 percent of January 2020 to May 2021 job gains.

4. These ranges were calculated by sorting the predicted values of the dependent variables and taking the average of the middle eight deciles.

APPENDIX A

Covid-19 Job Loss and Recovery Rates for the 105 Largest U.S. Metropolitan Areas

State	Metro Area or Metro Area Division (MD)	Percent Non-farm Job Loss between January and May 2020	May 2021 Nonfarm Jobs as a Share of January 2020 Jobs
AL	Birmingham	-5%	1.00
AR	Fayetteville	-5%	1.04
AR	Little Rock	-6%	0.99
AZ	Phoenix	-5%	1.00
AZ	Tucson	-5%	0.99
CA	Anaheim (Orange County)	-8%	0.94
CA	Bakersfield	-11%	0.95
CA	Fresno	-9%	0.98
CA	Los Angeles County	-24%	0.92
CA	Oakland	-15%	0.93
CA	Oxnard (Ventura County)	-13%	0.95
CA	Riverside-San Bernardino	-14%	0.96
CA	Sacramento	-13%	0.96
CA	San Diego	-16%	0.93
CA	San Francisco MD	-16%	0.91
CA	San Jose	-13%	0.94
CA	Stockton	-8%	1.00
CO	Colorado Springs	-10%	1.01
CO	Denver	-11%	0.98
CT	Bridgeport	-10%	0.89
CT	Hartford	-8%	0.89
CT	New Haven	-8%	0.91
DC	Washington	-10%	0.94
DE	Wilmington MD	-11%	0.96
FL	Fort Lauderdale	-17%	0.97
FL	Fort Myers	-14%	0.98
FL	Jacksonville	-12%	1.02
FL	Lakeland-Winter Haven	-11%	1.03
FL	Miami-Dade County MD	-22%	0.91
FL	Orlando	-21%	0.93
FL	Sarasota-Bradenton	-14%	1.01
FL	Tampa-St. Petersburg	-12%	1.02
FL	W. Palm Beach	-16%	0.99
GA	Atlanta	-10%	0.98
HI	Honolulu	-24%	0.92
IA	Des Moines	-7%	0.97
ID	Boise	-7%	1.02
IL	Chicago MD	-15%	0.96
IL	Lake County-Kenosha (WI) MD	-14%	0.95
IN	Indianapolis	-10%	0.99
KS	Witchita	-10%	0.98
KY	Louisville	-9%	0.98
LA	Baton Rouge	-12%	0.97
LA	New Orleans	-17%	0.92
MA	Boston-Cambridge-Newton MD	-17%	0.96
MA	Springfield	-15%	0.96
MA	Worcester	-15%	0.95
MD	Baltimore	-10%	0.94
MI	Detroit	-29%	0.94
MI	Grand Rapids	-15%	0.96
MN	Minneapolis-St. Paul	-10%	0.97
MO	Kansas City	-14%	1.01
MO	St. Louis	-15%	0.96
NC	Charlotte	-14%	0.98
NC	Durham-Chapel Hill	-14%	0.97
NC	Greensboro-High Point	-16%	0.95
NC	Raleigh	-15%	0.98
NC	Winston-Salem	-11%	0.96
NE	Omaha	-4%	0.99
NJ	Camden MD	-14%	0.95
NJ	Newark MD	-14%	0.92
NM	Albuquerque	-11%	0.96
NV	Las Vegas	-32%	0.92
NY	Albany-Schnectedy-Troy	-8%	0.98

APPENDIX A

Covid-19 Job Loss and Recovery Rates for the 105 Largest U.S. Metropolitan Areas

State	Metro Area or Metro Area Division (MD)	Percent Non-farm Job Loss between January and May 2020	May 2021 Nonfarm Jobs as a Share of January 2020 Jobs
NY	Buffalo	-13%	0.99
NY	Nassau-Suffolk MD	-13%	0.95
NY	New York City-White Plains MD	-21%	0.92
NY	Rochester	-10%	0.99
NY	Syracuse	-9%	0.97
OH	Akron	-9%	0.94
OH	Cincinnati	-9%	0.96
OH	Cleveland	-16%	0.95
OH	Columbus	-8%	0.95
OH	Dayton	-10%	0.94
OH	Toledo	-15%	0.93
OK	Oklahoma City	-9%	1.01
OK	Tulsa	-8%	1.00
OR	Portland	-8%	0.99
PA	Allentown	-12%	0.96
PA	Harrisburg	-9%	0.97
PA	Montgomery-Bucks-Chester MD	-10%	0.96
PA	Philadelphia MD	-12%	0.92
PA	Pittsburgh	-11%	0.95
RI	Providence	-19%	0.95
SC	Charleston	-10%	1.00
SC	Columbia	-7%	1.00
SC	Greenville	-10%	0.99
TN	Knoxville	-9%	1.00
TN	Memphis	-9%	1.00
TN	Nashville	-13%	0.99
TX	Austin	-13%	0.99
TX	Dallas MD	-12%	0.98
TX	El Paso	-13%	0.97
TX	Fort Worth MD	-13%	0.98
TX	Houston	-12%	0.96
TX	McAllen	-11%	0.97
TX	San Antonio	-13%	0.98
UT	Provo-Orem	-8%	1.03
UT	Salt Lake City	-9%	1.00
VA	Norfolk-Virginia Beach	-10%	0.94
VA	Richmond	-10%	0.92
WA	Seattle MD	-12%	0.97
WA	Tacoma MD	-10%	0.96
WI	Madison	-8%	1.01
WI	Milwaukee	-9%	1.00

APPENDIX B

Metro Area-Level Independent Variable Included in Stepwise Regression Models

Factor	Independent Variable	Year or Period	Data Source
Job Market Size & Growth Rate	Nonfarm jobs	Jan-20, May-20, May-21	Bureau of Labor Statistics (BLS)
	0/1 variable for metros areas with more than 1 million jobs	Jan-20	BLS
	0/1 variable for metros areas with fewer than 500,000 jobs	Jan-20	BLS
	Nonfarm job growth rate between January 2015 and January 2020	Jan-20	BLS
Job Market Sectoral Composition	Share of nonfarm jobs in Manufacturing	Jan-20	BLS
	Share of nonfarm jobs in Trade, Transportation & Utiltities (TTU)	Jan-20	BLS
	Share of nonfarm jobs in Information	Jan-20	BLS
	Share of nonfarm jobs in Professional & Business Services (PBServ)	Jan-20	BLS
	Share of nonfarm jobs in Health and Education (H&E)	Jan-20	BLS
	Share of nonfarm jobs in Leisure and Hospitality (L&H)	Jan-20	BLS
	Share of nonfarm jobs in Government	Jan-20	BLS
Economic Productivity	Gross County Product (GCP) per nonfarm job	2019	Bureau of Economic Analysis (BEA)
	0/1 variable indicating metro is in the highest GCP/job quartile	2019	BEA
	0/1 variable indicating metro is in the lowest GCP/job quartile	2019	BEA
Population Density	Urbanized Land Area (sqkm) / Population	2011	National Land Cover Database (NLCD)
	0/1 variable indicating metro is in the highest density quartile (more than 1,350 persons per sqkm)	2011	NLCD
	0/1 variable indicating metro is in the lowest density quartile (less than 950 persons per sqkm)	2011	NLCD
Home Values	Median Home Value	2019	Census Bureau American Community Survey (ACS)
	0/1 variable indicating $400,000+ median home value	2019	ACS
	0/1 variable indicating $200,000 or less median home value	2019	ACS
Population Characteristics	Share of population older than 25 with a Bachelors degree	2019	ACS
	Non-native-born share of the population	2019	ACS
Tax Rates	State income tax top rate	2020	Tax Foundation
COVID-19 Deaths	COVID-19 death rate per 100,000 residents	Jul-21	Centers for Disease Control