How the Pandemic Influenced Trends in Domestic Migration across U.S. Urban Areas

By Jason P. Brown and Colton Tousey

In the years leading up to the COVID-19 pandemic, net domestic migration in the United States was generally increasing in smaller urban areas while declining in the largest urban areas. The pandemic may have accelerated this trend: business restrictions to slow the spread of the virus were more intense in larger urban areas, where population density was higher and economic activity was more service based. As a result, more people may have chosen to leave these areas to mitigate their exposure to COVID-19 or avoid stricter lockdown measures.

Changes in domestic migration trends may influence the longer-term growth prospects of places. For example, urban areas with higher net domestic migration tend to grow faster because more people generate greater demand for goods and services. However, investigating recent trends in domestic migration can be challenging because data releases from official government sources are released with a long lag—often a year or more.

One way to overcome this lag is by using higher frequency information on address changes self-reported by consumers. The credit rating agency Equifax, for example, collects data on consumer address changes monthly. We use these data to assess whether domestic migration between urban areas changed after the onset of the pandemic. We find that the rate of net domestic migration increased further in small and

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medium urban areas and declined further in very large urban areas. Moreover, the relationship between net domestic migration and two of its historical driving factors—population density and natural amenities—diminished only slightly during the pandemic. Our findings suggest that though the pandemic influenced net domestic migration, it has not yet drastically altered migration trends to less crowded urban areas with higher natural amenities.

Section I documents the trends in U.S. domestic migration by urban area before and during the pandemic. Section II estimates the relationship between historical factors driving migration and shows that those factors have not materially changed in importance during the pandemic.

I. Trends in Urban Domestic Migration

Measures of domestic migration often distinguish between moves within the same urban area and moves to different areas. The reason for this distinction is that moves within the same urban area are more likely to be housing-related, while moves to another area are more likely to be job-related (Frey 2019). Recent studies on migration within urban areas, for example, tend to emphasize differences in housing prices and rent in the urban core versus in the suburbs (Gupta and others 2021; Ramani and Bloom 2021). In this article, we focus on domestic migration between urban areas because these moves are more likely to be job- or pandemic-related. Moreover, moves between urban areas are more likely to represent longer-term changes in domestic migration.

The largest challenge in measuring domestic migration between urban areas close to the timing of an event, such as the pandemic, is data availability. Most measures of domestic migration are released with a multi-year lag and typically have limited geographical coverage. For example, the American Community Survey (ACS) releases migration data annually with at least a one-year lag; however, movement at the county level is only available over a five-year window. Although the Internal Revenue Service (IRS) Statistics of Income (SOI) capture county-to-county migration, SOI data, too, are released with a long lag and currently only available through 2018.

One possible solution is to use higher-frequency data from credit bureaus, which track not only individuals' debt but also their general location. When people move, they typically update their address with

financial institutions shortly thereafter, and credit rating agencies such as Equifax include these address changes in their data collection process. Recent work by DeWaard, Johnson, and Whitaker (2018) shows that one such data source, the Federal Reserve Bank of New York Consumer Credit Panel/Equifax (CCP), is comparable—and in some ways superior—to standard data used to study migration. One major advantage of the CCP is the frequency and timeliness of the data: the CCP is released quarterly about one month after the end of the quarter. Another advantage is the spatial disaggregation available in the CCP, which captures moves between counties and even between census block groups. One disadvantage, however, is that our measures may not capture moves of individuals without access to credit markets—typically, lower-income individuals (Wardrip and Hunt 2013; DeWaard, Johnson, and Whitaker 2018).

We use the CCP to measure migration between different urban areas. The CCP is a nationally representative anonymous random sample from Equifax credit files that tracks the credit use and address of approximately 12 million individuals at a quarterly frequency. We use the CCP county information and group counties into urban areas known as core-based statistical areas (CBSAs).[1] The U.S. Census Bureau defines CBSAs as either micropolitan or metropolitan depending on the population of urban areas within each county and neighboring counties. Constructing county tabulations allows us to show domestic migration from the smallest to the largest urban areas in the country. We label CBSAs as "small urban" (fewer than 220,000 people, such as Shawnee, OK), "medium urban" (220,000 to <1 million people, such as Omaha-Council Bluffs, NE-IA), "large urban" (1 to <4 million people, such as Kansas City, MO-KS), or "very large urban" (4 million or more people, such as Chicago-Naperville-Elgin, IL-IN-WI). Table 1 reports summary statistics of the assigned groups measured in 2019. Most of the CBSAs in the sample are small urban areas, with populations ranging from 13,000 to 219,000. Although the U.S. Census Bureau has no official definition of rural areas, many of these small urban areas could be considered rural in nature.

We calculate entry, exit, and net migration rates for 883 urban areas using quarterly data from the CCP.[2] When measuring migration, by definition, an entry into one urban area is an exit for another. Entry

Table 1
Population of Urban Areas in 2019

Urban area	Number	Population		
		Minimum	Maximum	Median
Small urban	720	12,728	219,186	54,399
Medium urban	154	220,411	999,101	417,345
Large urban	39	1,047,279	3,979,845	2,048,449
Very large urban	14	4,319,629	19,216,182	6,134,461

Sources: U.S. Census Bureau and authors' calculations.

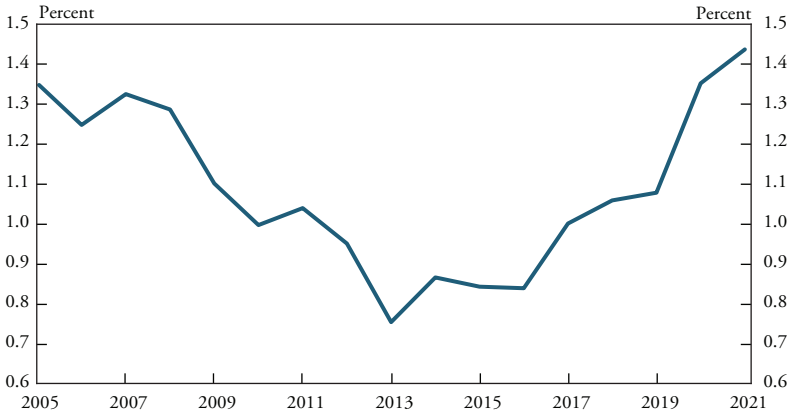
and exit rates capture the overall turnover in people (Brown and Tousey 2020). Net migration rates measure the difference between entry and exit rates: if the net migration rate is positive for a given urban area, that area has experienced population gains from domestic migration. Net migration rates also capture potential shifts in peoples' location preferences rather than movements related to life-cycle events such as marriage or retirement.

Chart 1 shows that the U.S. gross migration rate—that is, the overall propensity for people to move between urban areas—was in decline until 2013 but has since reversed course. Our measure of migration across all urban areas shows that about 1.3 percent of people moved annually to another urban area in the mid-2000s. This rate then fell by nearly half, bottoming out in 2013. Since then, the rate of domestic migration has steadily risen to a little above 1.4 percent as of 2021:Q1. This steady increase is notable because cross-state measures of domestic migration from the U.S. Census Bureau show a relatively flat rate from 2015 to 2019. One possible explanation for the difference between measures is that the CCP captures people who move to different urban areas within the same state as well as those who move to different states. Another possible explanation for the difference is that people with a credit history, who are therefore captured in the CCP, may be more likely to move.

The recent increase in domestic migration reflects an increase in both entry and exit rates across urban areas, regardless of size. Panels A and B of Chart 2 show the entry and exit rates, respectively, by urban area size from 2015 to 2021.[3] During that time, the entry and exit rates for both small and medium urban areas increased from about 0.9 to 1.7 percent. In addition, the chart shows that entry and exit rates in small

Chart 1

Aggregate Gross Migration between Urban Areas



Sources: Federal Reserve Bank of New York Consumer Credit Panel/Equifax and U.S. Census Bureau.

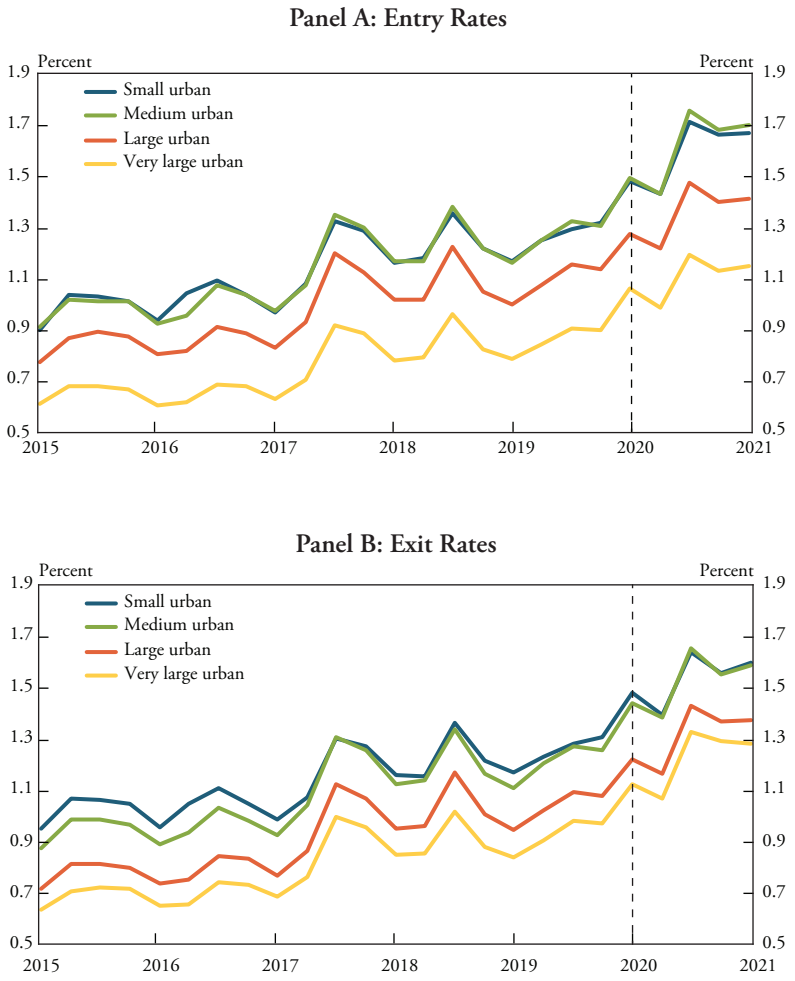
and medium urban areas have been persistently higher than in large and very large urban areas. In general, entry and exit rates tend to move together within a given urban area, making them highly correlated with each other. In other words, places with a higher entry rate tend to also have a higher exit rate.

Despite increased entry and exit rates, not all urban areas had net migration (and therefore population) gains. Chart 3 shows that the net gains from domestic migration have changed over time across urban areas of various size. Although medium and large urban areas (green and orange lines) had positive net migration throughout the entire 2015–21 period, small areas (blue line) experienced either net losses or no net gains prior to 2020. Similarly, very large urban areas (yellow line) consistently lost people on net. Our findings are consistent with Rappaport (2018), who shows that large—but not the largest—urban areas have experienced faster population growth over the past two decades.

The general rate of domestic migration between urban areas increased further after the onset of the COVID-19 pandemic, but not all urban areas experienced a net increase. For comparison, we define the pre-pandemic period as 2019:Q2–2020:Q1 and the pandemic period as 2020:Q2–2021:Q1 based on data availability. The first data column of Table 2 shows that in the pre-pandemic period, small, medium, and large urban areas had positive net domestic migration. In contrast, large

Chart 2

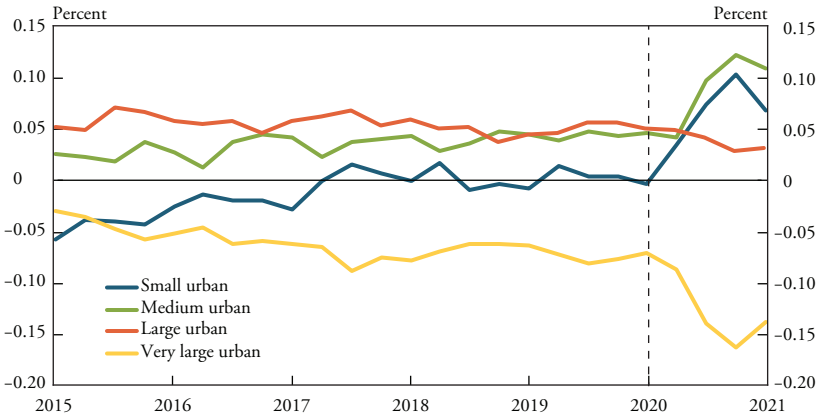
Urban Area Domestic Migration Rates



Note: Dashed vertical line represents the start of the pandemic in 2020:Q1, when the national emergency was declared.
Sources: Federal Reserve Bank of New York Consumer Credit Panel/Equifax, U.S. Census Bureau, and authors' calculations.

Chart 3

Urban Area Net Domestic Migration Rates



Note: Dashed vertical line represents the start of the pandemic in 2020:Q1, when the national emergency was declared.
Sources: Federal Reserve Bank of New York Consumer Credit Panel/Equifax, U.S. Census Bureau, and authors' calculations.

Table 2

Net Domestic Migration Rates, Pre-pandemic (2019:Q2–2020:Q1) versus Pandemic (2020:Q2–2021:Q1)

Urban area	Pre-pandemic (percent)	Pandemic (percent)	Change in net rate (percentage point)	Change in entry rate (percentage point)	Change in exit rate (percentage point)
Small urban	0.005	0.071	0.066	0.286	0.220
Medium urban	0.045	0.093	0.049	0.299	0.250
Large urban	0.053	0.038	−0.015	0.215	0.229
Very large urban	−0.079	−0.132	−0.053	0.154	0.207

Sources: Federal Reserve Bank of New York Consumer Credit Panel/Equifax, U.S. Census Bureau, and authors' calculations.

urban areas on average had negative net domestic migration, indicating more people were moving out of them. The second and third columns of Table 2 show that after the onset of the pandemic, net domestic migration increased further in small and medium urban areas, but declined slightly in large urban areas. In very large urban areas, the decline was much larger; in fact, in these areas, net migration turned further negative, on average. Finally, the fourth and fifth columns in Table 2 show that small and medium urban areas saw larger gains in entry rates than exit rates. Conversely, in large and very large urban areas, exit rates increased by more than entry rates during the pandemic.

Although changes in net domestic migration rates show which urban areas gained more people, net changes mask the underlying dynamics of moves between urban areas of different size. For example, even though *total* net migration to large urban areas decreased during the pandemic, net migration from very large to large urban areas may have increased (and been offset by decreases in net migration from small and medium urban areas). To account for these potentially different dynamics, Table 3 reports the change in net domestic migration by origin-destination pairs by urban area size between the pre-pandemic and pandemic periods.[4] In other words, Table 3 decomposes the change in the total net migration rate reported in Table 2 into the change in migration rates *from* each size of urban area *to* each size of urban area. Thus, the sum of the rows for a given column in Table 3 correspond to the number in the third column of Table 2.

Overall, the decomposition suggests that people left larger urban areas for smaller urban areas during the pandemic. The negative signs on the values in Table 3 show that net domestic migration from small and medium urban areas to large and very large urban areas decreased across the board. This indicates that on net, fewer people have moved to larger urban areas since the pandemic. At the same time, net domestic migration from larger to smaller urban areas increased. For example, net domestic migration from medium to small urban areas increased by 0.017 percentage points, and net migration from very large to medium urban areas increased by 0.039 percentage points. Although Chart 3 shows that net migration to medium urban areas increased during the pandemic, Table 3 highlights that these additional gains came from large (0.023 percentage points) and very large (0.039 percentage

Table 3

Change in Net Migration Rate by Origin-Destination Type, Pre-pandemic versus Pandemic

	Destination			
Origin	Small urban (percentage point)	Medium urban (percentage point)	Large urban (percentage point)	Very large urban (percentage point)
Small urban	–	–0.012	–0.013	–0.014
Medium urban	0.017	–	–0.021	–0.028
Large urban	0.020	0.023	–	–0.015
Very large urban	0.028	0.039	0.020	–

Sources: Federal Reserve Bank of New York Consumer Credit Panel/Equifax and authors' calculations.

points) areas, and not from small urban areas. Overall, the recent trend in the size of areas people have moved to and from has continued and perhaps even strengthened since the pandemic.

Our findings support other recent research documenting an "exodus" from larger cities during the pandemic. Haslag and Weagley (2021) and Whitaker (2021a, 2021b) both find a shift in migration away from larger urban areas into smaller cities during the pandemic. Haslag and Weagley (2021) estimate that 10 to 20 percent of moves from April 2020 to February 2021 were influenced by COVID-19. Additionally, they note that the moves were to smaller cities, areas with a lower cost of living, and areas with fewer pandemic-related restrictions.

II. Factors Influencing Domestic Migration between Urban Areas

The initial acceleration in domestic migration trends during the pandemic raises the question of whether the factors that have historically influenced domestic migration have also changed. From the summer of 2020 to the summer of 2021, various news outlets reported on "pandemic pilgrims" leaving big cities for less crowded areas (Mull 2020; Patino, Kessler, and Holder 2021; Walters 2021). Although most news coverage cited concerns of COVID-19 as the main factor behind these moves, many stories also mentioned the congestion and high cost of living in large urban areas. Another potential factor behind these moves was the greater prevalence of remote work during the pandemic (Dingle and Neiman 2020). This shift toward remote or partially remote work

may have given people more flexibility to maintain their jobs while living in more desirable areas, such as places with more natural amenities and outdoor activities that could offer an escape from pandemic life—provided these areas also have sufficient internet connectivity for remote work.

Preferences for where people want to live are often measured using local factors that capture characteristics of the area (Tiebout 1956). Typically, these factors are grouped into broad categories related to earnings potential, infrastructure, and natural amenities (Banzhaf and Walsh 2008). Previous research has documented that the average productivity of workers and wages are higher in larger urban areas, which tend to attract more workers and more economic activity in general (Glaeser and Saiz 2004; Henderson 2007; Glaeser 2011; Morreti 2012). Areas with better internet infrastructure also tend to grow faster (Kolko 2012). In addition, areas with higher natural amenities tend to attract more people over time (Rappaport 2007; McGranahan, Wojan, and Lambert 2011).

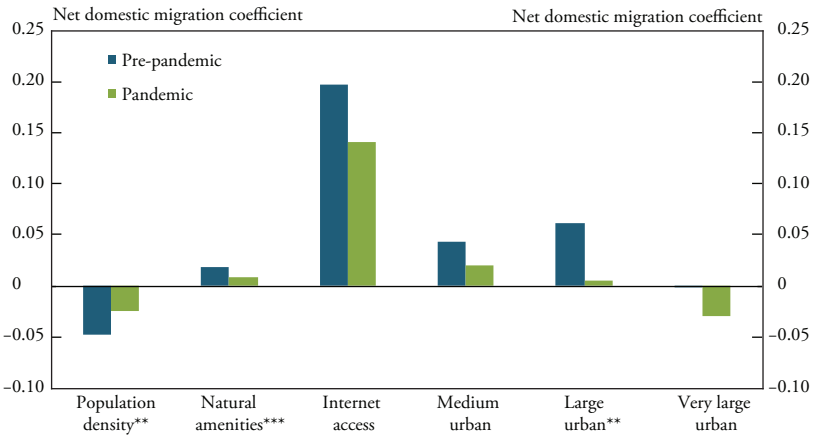
We test whether local factors that influence domestic migration have changed in importance during the pandemic. Specifically, we estimate the relationship between average net domestic migration and local factors in each urban area during the pre-pandemic and pandemic period. Descriptive statistics of these measures are provided in Table A-1 of the appendix, as are details of the econometric model.

We find that local factors that explain variation in net domestic migration between urban areas did not drastically change between the pre-pandemic and pandemic period, except for urban size. Chart 4 shows our estimation results for each factor during the pre-pandemic and pandemic periods. Overall, our results are consistent with previous findings on the determinants of domestic migration.

Comparing the blue and green bars in Chart 4 shows that population density has become marginally less important to migration during the pandemic. During the pre-pandemic period, population density is negatively correlated with net domestic migration. A 1 percent increase in an urban area's 90th percentile density is correlated with a 0.05 percentage point decrease in net migration, suggesting increased congestion costs in the densest portion of urban areas discourage people from moving there. Although congestion continued to weigh on

Chart 4

Differences in Urban Area Net Domestic Migration Coefficients, Pre-pandemic versus Pandemic



* Statistically different at the 10 percent level
** Statistically different at the 5 percent level
*** Statistically different at the 1 percent level

Sources: Federal Reserve Bank of New York Consumer Credit Panel/Equifax, U.S. Census Bureau, and authors' calculations.

migration during the pandemic, the effect was slightly weaker (–0.02 versus –0.05). This weakening suggests that congestion costs may have been slightly lower during the initial stages of the pandemic as people either left crowded areas or spent more time at home.

Surprisingly, natural amenities also appear to have become somewhat less important to migration during the pandemic. During the pre-pandemic period, a one-unit change in the natural amenities index is correlated with a 0.02 percentage point increase in net migration. However, during the pandemic, the marginal increase in net migration is only 0.01. If areas with higher natural amenities had become more attractive during the pandemic, we would expect to see an increase in this correlation, not a decrease.

Greater internet access is also correlated with higher net domestic migration, and this correlation has been stable across the two time periods. In the pre-pandemic period, a 1 percent increase in the share of households with a high-speed internet connection is correlated with a 0.20 percentage point increase in net migration. The marginal response

is slightly weaker in the pandemic period (0.15 versus 0.20), but the difference is not statistically significant. Although internet access was undoubtedly important for remote work and schooling during the pandemic, it does not appear to have become more important to migration.

In contrast, urban size became substantially more important to net migration in the pandemic period. During the pre-pandemic period, medium and large urban areas had 0.06 percentage point higher net migration than small urban areas. However, during the pandemic, this gap shrunk substantially to 0.01 percentage point. This relative reduction is consistent with people moving to smaller areas during the pandemic, which suggests more people may have chosen to move to small over medium and large urban areas during the pandemic.

Our findings suggest that though the pandemic has influenced domestic migration patterns, the factors driving net migration between urban areas have not appreciably changed thus far. Migration to smaller urban areas ticked up slightly during the pandemic, but it is too early to tell whether this shift is permanent. The general disruption created by the pandemic may have led people to leave larger, more dense urban areas at a higher rate, but the gains of living and working in larger urban areas will likely not disappear. A large portion of economic activity, especially in the service sector, is increasingly based on knowledge, idea exchange, and agglomeration, all of which are more highly concentrated in larger urban areas (Moretti 2012). These benefits will likely continue to attract more workers and therefore more people to large urban areas. However, people may also pursue more flexible work arrangements that allow them to choose a less crowded area in which to live.

Conclusion

Prior to the pandemic, net domestic migration in the United States had been increasing in smaller urban areas while declining in larger urban areas. The biggest factor pushing people away from the largest urban areas was likely a higher cost of living. Small and medium urban areas were net beneficiaries, as more people moved to places that had less congestion but the employment opportunities and amenities they desired.

The disruptions of the pandemic appear to have accelerated these trends. Overall movement between urban areas actually increased during the pandemic, though not all areas experienced a net increase in

migration. The largest net gains occurred in small and medium urban areas at the expense of very large urban areas, indicating people left these areas at an even higher rate.

Despite increasing migration out of the largest urban areas, the factors that help explain differences in net migration between urban areas did not change much during the initial quarters of the pandemic. As a result, trends in domestic migration between areas will likely revert to previous trends as the pandemic fades. Given the growing importance of knowledge-based service sectors in larger urban areas, it will be difficult for small urban areas to continue to have larger net gains in migration. That equilibrium will likely be determined by the advantages of more flexible work arrangements versus higher labor productivity in larger urban areas.

Appendix

Estimating the Relationship between Urban Area Characteristics and Net Migration

We estimate the relationship between average net domestic migration y in urban area i and local factors in each urban area for the pre-pandemic and pandemic period using a repeated cross-section. All local factors are measured before the pandemic and are held constant in our analysis. Population density, which captures potential congestion costs, is measured using 2010 census data in log terms at the 90th percentile of density in an urban area as experienced by people. The measure of natural amenities is the average indexed value of natural amenities across all counties in an urban area from U.S. Department of Agriculture's Economic Research Service (USDA ERS) based on 2000 data. A higher index value indicates areas with more natural amenities. Internet access is a proxy for local infrastructure and is measured using the share of households in an urban area that had access to a high-speed internet connection in 2016 from the Federal Communications Commission. We measure urban size using an indicator variable for medium, large, and very large urban areas using the previously defined population thresholds.[5] Descriptive statistics of these measures are reported in Table A-1.

For each period (pre-pandemic versus pandemic), the average net domestic migration for each urban area is used as the dependent variable in the following model:

$$y_{it} = \alpha + \beta_1 pop\ dens + \beta_2 natural\ amenities + \beta_3 internet\ access + \beta_4 medium\ urban + \beta_5 large\ urban + \beta_6 very\ large\ urban + \gamma_0 pandemic + \gamma_1 pandemic \times pop\ dens + \gamma_2 pandemic \times natural\ amenities + \gamma_3 pandemic \times internet\ access + \gamma_4 pandemic \times medium\ urban + \gamma_5 pandemic \times large\ urban + \gamma_6 pandemic \times very\ large\ urban + \varepsilon_{it}.$$

We control for urban area population density at the 90th percentile in log scale, natural amenities, internet access, and size indicators of urban areas based upon population thresholds previously discussed. The pandemic indicator and its interaction with each factor allow us to test

Table A-1
Sample Urban Area Descriptive Statistics

Net migration and local factors	Mean	Standard deviation
Net migration rate (pre-pandemic)	0.003	0.19
Net migration rate (pandemic)	0.020	0.08
Difference in net migration	0.010	0.16
Log 90th percentile population density	7.770	0.96
Natural amenities	0.430	2.64
Internet access	0.720	0.14
Small urban	0.770	0.42
Medium urban	0.170	0.38
Large urban	0.040	0.21
Very large urban	0.020	0.12

Note: Calculations are based on 883 urban areas.
Sources: Federal Reserve Bank of New York Consumer Credit Panel/Equifax, U.S. Census Bureau, U.S. Department of Agriculture Economic Research Service, Federal Communications Commission, and authors' calculations.

whether the relationship between each factor and net domestic migration changed during the pandemic.

The coefficient α measures the average net domestic migration rate across urban areas, while the coefficients β_1, β_2, β_3, β_4, β_5, and β_6 measure the correlation between net domestic migration and each local factor. The coefficient γ_0 measures the average net domestic migration rate during the pandemic period. Similarly, the coefficients γ_1, γ_2, γ_3, γ_4, γ_5, and γ_6 measure the correlation between net domestic migration and each factor during the pandemic. Factors not explained by the model are captured in a residual error term ε. In the pandemic period, the relationship between net domestic migration and each local factor is the sum of β and γ for a given factor: for example, $\beta_1 + \gamma_1$. After estimating the model, we report the results in Chart 4 for each period: for example, β_1 for pre-pandemic and $\beta_1 + \gamma_1$ for pandemic. The full set of model results are reported in Table A-2. We also indicate if the coefficient values pre-pandemic versus pandemic are statistically different from each other using a t-test in Table A-3.

Table A-2
Determinants of Net Domestic Migration Rates

Local factor	Net rate
Population density	–0.05*** (0.01)
Natural amenities	0.02*** (0.00)
Internet access	0.20** (0.09)
Medium urban	0.04*** (0.02)
Large urban	0.06*** (0.02)
Very large urban	–0.001 (0.04)
Intercept	0.21*** (0.07)
Population density × pandemic	0.02** (0.01)
Natural amenities × pandemic	–0.01*** (0.003)
Internet access × pandemic	–0.06 (0.09)
Medium urban × pandemic	–0.02 (0.02)
Large urban × pandemic	–0.06*** (0.03)
Very large urban × pandemic	–0.03 (0.04)
Pandemic	–0.11 (0.08)
R^2	0.15
Observations	1,766

* Statistically different at the 10 percent level
** Statistically different at the 5 percent level
*** Statistically different at the 1 percent level

Note: Robust standard errors are in parentheses.

Table A-3

Determinants of Net Domestic Migration Rates Pre-pandemic versus Pandemic

Characteristic	Pre-pandemic	Pandemic	Pre-pandemic versus pandemic t-test
Population density	–0.050	–0.02	2.59**
Natural amenities	0.020	0.01	7.08***
Internet access	0.200	0.15	0.19
Medium urban	0.040	0.02	0.92
Large urban	0.060	0.01	2.45**
Very large urban	–0.001	–0.03	0.26

* Statistically different at the 10 percent level
** Statistically different at the 5 percent level
*** Statistically different at the 1 percent level

Endnotes

[1]We use the 2020 CBSA definitions to construct urban area measures of migration. Metropolitan statistical areas have at least one urbanized area with a population of 50,000 or greater plus "adjacent territory that has a high degree of social and economic integration with the core as measured by commuting ties." Micropolitan statistical areas have at least one urban area with a population between 10,000 and 50,000 plus "adjacent territory that has a high degree of social and economic integration with the core as measured by commuting ties" (U.S. Census Bureau 2021).

[2]We use the total number of primary individuals in the CCP in each urban area in the previous quarter as a proxy for population.

[3]We include only first-quarter data for 2021.

[4]The population, or in this case the number of primary observations in the CCP, in origin urban areas was used as the denominator to calculate net rates between each origin destination pair (for example, small urban to medium urban).

[5]Small urban areas serve as the reference category, meaning the coefficients on medium, large, and very large urban areas measure the average net domestic migration in these areas relative to small urban areas.

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