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From L.A. to Boise: How Migration Has Changed During the COVID-19 Pandemic

Peter Haslag
Vanderbilt University Owen Graduate School of Management
peter.haslag@vanderbilt.edu (corresponding author)

Daniel Weagley
Georgia Institute of Technology Scheller College of Business
daniel.weagley@scheller.gatech.edu

Abstract

We examine how broad changes in work arrangements and lifestyles brought on by the COVID-19 pandemic have affected households' location decisions. Using data on over 360,000 residential, interstate moves over the last 5 years, we find that more than 12% of moves were directly influenced by the pandemic. Among pandemic-influenced movers, over 15% of households cite that remote work influenced their move. Lifestyle-related (job-related) migration increased (decreased) significantly, particularly for the set of households who are likely to have access to remote work. We further find that these changes in migration patterns are positively related to post-pandemic economic growth.

I. Introduction

The onset of the COVID-19 pandemic led to broad shifts in work arrangements and lifestyles for those in remote work-capable occupations. One artifact of this shift is an expansion of viable places to live without changing jobs. Recent theoretical work predicts a relocation of households in response to the shift toward remote work that will impact the structure of cities and local economies (Brueckner, Kahn, and Lin (2023), Davis, Ghent, and Gregory (2023), and Delventhal and Parkhomenko (2022)).

Motivated by these theories, we test for a shift in households' motivations for moving and altered migration flows, especially for higher-income households, after the onset of the pandemic. We find that households are moving more for lifestyle and financial reasons, and less for work-related reasons. This effect is largely being driven by high-income households, who are moving out of larger cities and choosing to relocate to smaller suburbs or towns. These results support the notion that remote work arrangements are giving higher-income households greater flexibility in where to live. We further find that the relocation of higher-income households

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during the pandemic is positively related to post-pandemic local economic activity with areas in the top 25% of COVID-19-era migration shifts experiencing greater establishment, Small Business Administration (SBA) lending, employment, and personal income growth post-pandemic than areas in the inner quartile. Many of the changes we document in households' motivations for moving, migration patterns, and local economic activity have persisted through the end of 2021. Our analysis provides insights into people's expectations of the future of work, and how lifestyles, local economies, and the structure of cities are changing since the onset of the pandemic and the broad shift toward remote work.

For our main set of analyses, we use proprietary move-level data from UniGroup, C.A., a major domestic moving company, on more than 360,000 interstate moves within the United States over the past 5 years. The data have detailed information on each individual move (e.g., origin and destination ZIP codes), as well as survey responses on reasons for moving and demographics for a subset of movers. The detailed data allow us to examine not only how move origin and destination locations have changed during the pandemic, but also how households' reasons for moving and the demographics of movers have changed. The movers in our sample are of higher average income than the general population of movers, making them especially consequential for local economies. We supplement our main data and analyses by examining more representative data from Current Population Survey (CPS) migration surveys, Internal Revenue Service (IRS) migration data, and U.S. Postal Service (USPS) change of address data. The data sets vary in their sample coverage, information on movers, whether or not they have county-to-county flows, and the time period covered, especially in the post-pandemic period. While the UniGroup data cover, typically, longer-distance movers with a greater income, we do find that the origin and destination choices in our sample are positively correlated with the migration flows in the other data sets.

We find that, while households are conducting fewer interstate moves during the pandemic than in previous years (continuing a downward trend), more than 1 in 7 movers report that the pandemic influenced their decision to move. The percentage of moves influenced by the pandemic has persisted even as vaccines have become widely available and the United States has returned to relative normalcy. Even in the last quarter of 2021, almost 9% of movers cited the pandemic as an influence. This suggests that the impact of the pandemic on migration was not merely a brief shock, but instead may have a longer-lasting impact on households' location decisions.

We gain greater insight into how COVID-19 affected households' migration decisions by examining "free responses" for a subset of survey respondents. Responses such as "COVID-19 and its subsequent requirement to work remotely eliminated my need to pay high rent in a prime area near my workplace" illustrate the impact of the pandemic on households' location preferences. We classify individuals' free responses on how COVID-19 affected their move and find that the three most common reasons are related to family (typically, the desire to be closer to family), the ability to work remotely, and job loss. The ability to work remotely was an especially important factor after the first few months of the pandemic. By the third quarter of 2020, around 13% of pandemic-influenced respondents cited remote work as a reason for their move and this number has

hovered between 15% and 22% through the end of 2021. The persistence of this pattern suggests that remote work arrangements will continue to play an important role in migration patterns going forward. There is a disparate impact of the shift toward remote work across household income though, with 70% of respondents who mention remote work in households earning over $100,000 per year despite representing only 42% of the sample of movers. Interestingly, the local spread of COVID-19 and local government restrictions, which are more temporary in nature, are rarely stated as motivations for moving among those who stated that their relocation was driven by the pandemic.

We further examine how the pandemic shifted households' migration decisions using respondents' selections of their main reasons for moving from categories such as "Job," "Family," "Retirement," "Lifestyle," "Health," and "Cost of Living." These reasons can be broadly categorized into work and lifestyle reasons. This question was asked of all movers throughout our sample period allowing us to examine how the distribution of responses changed after the onset of the pandemic. One might expect that the broad shift to remote work during the pandemic gives individuals more flexibility on where they work, thus decreasing the shadow cost associated with work location proximity and increasing the importance of quality-of-life reasons. This would lead to fewer work-related reasons for moving. On the other hand, job loss was a common theme at the beginning of the pandemic, which may lead to more work-related moves. On the net, our evidence supports the former, with households moving much less for new jobs or company transfers during the pandemic and relatively more for family and lifestyle reasons, as compared with the pre-pandemic period. We further find that these shifts mimic patterns in the CPS data for both interstate and intrastate moves.

Considering higher-income households are more likely to work in remote work-capable occupations (Bick, Blandin, and Mertens (2021)) and more frequently stated remote work reasons for moving in the free responses, we test whether higher-income households experience a greater relative shift toward nonwork-related reasons for moving during the pandemic. We find that higher-income households have been motivated to move relatively more for nonwork reasons during the pandemic, citing family and lifestyle reasons relatively more. Lower-income households, in contrast, continue to move for work-related reasons at a similar frequency during the pandemic and are more likely to cite the cost of living than higher-income households. Beyond income, mid-career households and those with more than 3 individuals, like families, are also moving relatively less for work and relatively more for lifestyle reasons than other cohorts. The greater shift in motivations for higher-income and mid-career individuals is both surprising and meaningful, as these groups have relatively higher human capital and tend to be less geographically mobile.[1] This represents a significant shift in the spatial reallocation of human capital.

We further explore how the pandemic shifted the value households place on location features through revealed preferences. A unique aspect of the UniGroup data is that we can observe the origin–destination pair at the ZIP-code level.

[1]The 2017–2018 Census mobility data show that workers making 100,000+ are 1.2 pps *less* likely to move, or a 12% relative reduction in the likelihood of moving, as compared with the unconditional probability of moving. Those who are 30–64 years old are 1.44 pps less likely to move.

Utilizing differences between the features of origin and destination locations and identifying systematic differences through time allow us to shed light on how the relative value of certain area features changed post-onset of the pandemic. Separating location aspects into themes of pandemic-related, lifestyle, and financial reasons, we find that the flows of households during the post-pandemic period are significantly related to the lifestyle and financial characteristics of the local areas. More specifically, the data suggest that households tilted migration toward areas with lower rent, better schools, warmer temperatures, lower crime rates, and better access to nature.

Prior to the pandemic, there was a growing concentration of high-income individuals in the largest cities (Gaubert, Kline, Vergara, and Yagan (2021), Moretti (2012)). Theoretical models of cities by Davis and Dingel (2019) and others predict that higher-income households are drawn to larger, more expensive cities because of the agglomeration benefits of idea sharing, which leads to higher individual productivity. With the onset of the pandemic, there were many changes to work and social arrangements that potentially altered the direct benefits of agglomeration, particularly the idea-sharing productivity gains. Thus, we examine if the trend of higher-income individuals concentrating in large cities has at least partially reversed. We find that higher-income households are leaving larger, more expensive cities at a higher rate and landing in less populated areas during the pandemic. This relative exodus of higher-income individuals out of more expensive cities has the potential to reduce the idea-sharing agglomeration benefit of living in a major city (e.g., Davis and Dingel (2019)).

In our final set of analyses, we study the impact of the documented shift in the flow of households on local economies. We find that areas with a greater influx of pandemic-era migrants experienced greater growth in establishments, small business lending, employment, and personal income. The relationship is economically meaningful with areas in the highest quartile of COVID-19-era flows experiencing 1.5 pps greater establishment growth and 1.2 pps greater employment growth, as compared with the areas that experienced smaller changes in migration. The economic impact is asymmetric, for the most part, with insignificant changes in establishments and employment for areas in the lowest quartile area. While there are other potential factors that could be related to migration rates and economic outcomes during the pandemic, the results suggest that, at a minimum, the areas experiencing greater COVID-19-era flows of households are experiencing relative economic vibrancy and these changes are not a continuation of pre-pandemic trends.

Overall, our article makes three key contributions to the literature and our understanding of how shifts in migration patterns were brought on by the pandemic. First, we document that the pandemic continues to impact migration decisions almost 2 years after its onset, and the ability to work from home has been an important and persistent reason for people to move. Second, the reasons why people are moving have shifted during the pandemic toward nonwork-related reasons, particularly for higher-income, mid-career individuals. With that, the relative importance of particular location features has changed with migrants putting a greater emphasis on financial and lifestyle features in the pandemic era. Understanding the reasons households are moving (for more permanent reasons like lifestyle and remote work,

and not for temporary reasons, like the spread of the virus) helps predict future migration flows and the future spatial allocation of households and human capital. Third, the shift in the flows of households during the pandemic is related to economic activity at the local level. The shift in where households and human capital are located is likely to continue to influence decisions such as investments in public goods and municipal debt issuance, real estate investments, and how firms structure work arrangements for their employees. All of which have the potential to propagate further household reallocation.

II. Literature Review

There has been a broad interest in how the pandemic has changed work arrangements and worker productivity, migration, real estate markets, and local economies with a number of relatively contemporaneous papers written on the subject.

There is a growing literature on the effect of remote work on worker productivity. Duchin and Sosyura (2021) find that CEOs who work remotely underperform, whereas Bloom, Liang, Roberts, and Ying (2015) find that working from home leads to an increase in productivity for call center employees. Ben-Rephael, Carlin, Da, and Israelsen (2022) find that analysts who benefited the most from forgoing their commute during lockdowns were able to work longer and exhibited higher forecast accuracy. Barber, Jiang, Morse, Puri, Tookes, and Werner (2021) find that women and faculty with young kids suffer greater relative drops in productivity during the pandemic. Our article does not directly examine how remote work is related to worker productivity, but rather its impact on households' location decisions.

Recent theoretical work predicts that the large-scale adoption of remote work will shift migration patterns both intracity and intercity (Brueckner et al. (2023), Davis et al. (2023), and Delventhal and Parkhomenko (2022)). Empirically, survey data from Ozimek (2020) estimate that 14–23-million Americans planned on moving in response to the increase in remote work capabilities, with more than half moving more than 2 hours away. In contemporaneous work, Ramani and Bloom (2023) use USPS change of address data to document a "donut effect" of the pandemic on where people are living. They find a sizeable increase in population in city suburbs and a decline in population in urban areas mainly in the largest U.S. cities. While intracity moves are not the focus of our article, we do find results consistent with and supporting Ramani and Bloom (2023). Specifically, we find that a preference for suburban versus urban areas in our interstate moves data with a greater frequency of moves out of urban cores and into suburban or rural areas (see Figure IA.A1 in the Supplementary Material). Compared with their analysis, we are able to observe where people are moving to and from, examine reported motivations for moving, and utilize demographic details to investigate differences in behaviors and motivations.

Several papers have examined how local asset prices and other economic outcomes are related to households and workers relocating during the pandemic.[2]

[2]Examples include, but are not limited to, Ling, Wang, and Zhou (2020), Brueckner et al. (2023), Guglielminetti, Loberto, Zevi, and Zizza (2021), Liu and Su (2021), Ramani and Bloom (2023),

Recent studies by Dalton, Dey, and Loewenstein (2022) and De Fraja, Matheson, Mizen, Rockey, and Taneja (2022) find that areas experiencing greater uptake of remote work experienced lower consumption of services, particularly in city centers. A main theme from the real estate literature echoes this result, finding house prices in the suburbs increased relative to city centers. While real estate prices are an important outcome to study, movement in real estate prices does not provide direct evidence of the motivations behind migrants' moves. Work by Gustafson, Haslag, Weagley, and Ye (2022) documents the impact of these migratory changes on municipal bond yields. They find that the shock to migration induced by the pandemic affected municipalities' borrowing rates even 18 months after the onset of the pandemic. We complement their work by showing that some of the underlying mechanisms for local economic growth are correlated with our migration patterns.

Overall, our results support many of the theoretical predictions on the impact of remote work on migration patterns and households' motivations for moving. By studying migration patterns using our unique data of origin–destination moves for higher-income individuals coupled with survey responses, we can provide a greater understanding of several pandemic-related phenomena that nicely complements other empirical work.

III. Data and Summary Statistics

A. Move and Survey Data

Our main data on moves are sourced from UniGroup, C.A. The data include all domestic, nonmilitary moves performed by MayFlower and United Van Lines brands from Jan. 2017 to Dec. 2021, with details including the ZIP codes of origination and destination locations, dates, and freight weight. We focus our analysis on interstate moves, which represent 98.6% of moves performed by UniGroup. Our sample contains just over 360,000 interstate moves, which is roughly 5% of all interstate moves during this time period.[3] Only 3.5% of the moves are partial moves, suggesting that the vast majority of the moves we examine are permanent in nature. We provide the time series of moves in Figure IA.A2 in the Supplementary Material.

For approximately 90,000 moves, or roughly 25% of the sample, movers completed a survey with questions on the main reason(s) for their move, income bracket, age bracket, and the size of the household.[4] The survey is mainly used to capture additional details about households who moved and their satisfaction with their experience.

In June 2020, UniGroup began including additional survey questions regarding how COVID-19 affected the respondent's willingness to move.[5] These data

Mondragon and Wieland (2023), Rosenthal, Strange, and Urrego (2022), Gupta, Mittal, Peeters, and Van Nieuwerburgh (2022a), and Gupta, Mittal, and Van Nieuwerburgh (2022b).

[3]Interstate moves represented 14% of all moves in the United States in 2019.

[4]Some respondents provide only one piece of demographic information, so total responses differ across demographic variables.

[5]UniGroup also reached out to customers who moved prior to June to solicit additional responses. United Van Lines' assessment can be found at https://www.unitedvanlines.com/newsroom/covid-moving-trends.

include both form and free responses citing particular reasons for their move. We categorized over 3,400 free responses from Mar. 2020 to Dec. 2021 using the following procedure: i) we perform a preliminary read-through of the responses to create 14 categories, ii) assign 3 research assistants to separately classify the free responses into one or more of the 14 categories, and iii) if ≥ 2 of the research assistants agree on a category, then the response is given that categorization. We allow for responses to have multiple categorizations.

The nature of our data means that our sample of movers is not representative of all movers in the United States. The data are tilted toward higher-income, older households (discussed more in Section III.B) and only capture interstate moves. While there is considerable debate about the geographical level at which to examine migration, our focus on interstate moves is not uncommon (Molloy, Smith, and Wozniak (2011)). Although the UniGroup data are not representative of all movers, the subset of movers we study is an especially important subset to study. These individuals are more likely to be switching local labor markets and tax jurisdictions. Moreover, the relocation of higher-income individuals can have more severe consequences for local economies, which we document in Section IV.C. Despite the tilt toward higher-income households, we are able to exploit heterogeneity in income within our sample to conduct some cross-sectional analysis across income groups.

One may be concerned that there is an idiosyncratic, time-varying demand for the services of the particular moving company providing our data. Any variation of this kind is unlikely to materially affect the interpretation of our results. The bulk of our analysis investigates the cross section or accounts for variation in the number of moves over time. In this way, we remove any common variation in demand for our moving company's services over time. Further, UniGroup branches are dispersed throughout the country with locations in 48 of the 50 states (excluding Hawaii and West Virginia), suggesting that we are not capturing variation within certain subgeographies of the United States. We have no reason to suspect that there are any local-level demand shocks for the services of the moving company or that any changes in demand would likely arise from systematic factors that would impact our interpretation of the results.

B. Additional Migration Data

In addition to the UniGroup migration data, we utilize three additional migration data sets: i) CPS ASEC (Annual Social and Economic Supplement) migration survey data, ii) USPS change of address data, and iii) IRS county-to-county migration data. Each data set has limitations in terms of data coverage, yet by comparing the UniGroup data to these other sources, we can better characterize our data and relate the patterns in our sample to broader migration patterns.

We compare each additional data set to our main data set in detail in the Supplementary Material. Briefly, we find that our sample is tilted toward higher-earning, older households when comparing the CPS data with our data. We also find that the proportion of county-to-county moves conducted by UniGroup is strongly positively correlated with the adjusted gross income per move in the IRS data (column 1 of Table IA.B2 in the Supplementary Material), further suggesting that UniGroup movers are of higher income.

Given the tilt toward higher-income households in our sample, we expect that the flows of the more general population should be correlated but not perfectly correlated with the flows of households in our sample. That is what we find. We find a correlation between UniGroup state-year level flows and flows constructed from USPS permanent change of address data, which is broader and more representative of the U.S. population, of 0.36 and 0.48 for origin and destination states, respectively. Next, comparing UniGroup flows and flows in the IRS county-to-county migration data, we find a correlation of 0.63 between UniGroup and IRS annual interstate flows between counties in the pre-period. This suggests that the UniGroup interstate flows are largely in line with more general interstate flows.

Finally, as we discuss in more detail in Section IV.A.2, we find that the changes in reasons for moving during the pandemic in the UniGroup data are closely related to those in the CPS data, both for interstate and intrastate moves. Taken together, these tests suggest that the UniGroup flow measures and survey responses are fairly similar to the flows and reasons for moving for the broader population during this time period, though not perfectly correlated given the tilt toward higher-income households in the UniGroup sample.

C. Data on Location Characteristics and Economic Outcomes

In order to understand how location characteristics are related to the location decisions of moving households, we collect data on location-specific characteristics for the origin and destination locations in our sample from various sources.[6] We provide some details below and further describe each variable in detail and list the data source in the Appendix.

We collect data related to the spread of COVID-19 and local government response. Data on daily COVID-19 cases and deaths by county are from the *New York Times* (https://github.com/nytimes/covid-19-data). The per-capita calculation is scaled by 10,000. Data on state-level COVID-19-related restrictions are collected from Hale, Webster, Petherick, Phillips, and Kira (2020). In particular, we use the Stringency Index, which counts the number of categorical restrictions based on containment or closure policies. We use the COVID-19 cases per capita and Stringency Index as of July 1, 2020 to capture cross-sectional variation in COVID-19 spread and government stringency. We chose July 1, 2020 as most locations had experienced the first wave by this point. Indices as of July 1, 2020 are highly correlated with the cross-sectional sorting through time, so the point-in-time measure proxies well for cross-sectional ranks over time. In other words, a county with stricter restrictions as of July 1, 2020 is likely to have relatively more restrictions later in the sample.

We utilize ZIP-code-level telework proportions using data from Su (2020).[7] Density and population data are collected from the 2010 Census at the ZCTA level. We collect median rent at the ZCTA level from Manson, Schroeder, Van Riper, Kugler, and Ruggles (2020). State tax data are collected from NBER's tax rate

[6]As a base, we utilize Anthony D'Agostino's improvements on a ZIP-county crosswalk (https://anthonylouisdagostino.com/a-better-zip5-county-crosswalk/).

[7]We thank Yichen Su for sharing these data. For some tests, we aggregate the data to the county and CBSA levels. This measure is highly correlated with the measure in Dingel and Neiman (2020).

database (https://users.nber.org/taxsim/state-tax-rates/real.html). We use the location's marginal income tax rate for an income of 100,000 in 2018.

For local lifestyle characteristics, we gather data on school quality, crime rates, temperature, and access to nature. For school quality, we calculate the percentage of high school students who had proficient math scores across all school districts in the county using 2018 EDFacts data. For crime rates, we use the crime rate per capita using the FBI's Uniform Crime Reporting (UCR) data in 2016. Temperature and access to nature data are collected from Manson et al. (2020). Temperature is the average annual temperature, and nature proportion is the percentage of county land that is occupied by forests or water.

For our analysis of economic outcomes, we obtain data from multiple additional sources. We obtain quarterly county-level employment and establishment data from the Quarterly Census of Employment and Wages (QCEW) from Q1 2017 to Q4 2021. We use data from the SBA to aggregate annual gross loan approvals in the county each year from 2017 to 2021, including both the 7(a) and 504 lending programs. We chose to aggregate the data to an annual level to reduce the noise arising from infrequent lending in some areas, but the results are robust to using other frequencies. Finally, we collect annual personal incomes from 2017 to 2021 from the Bureau of Economic Analysis (BEA). The BEA's personal income measure is unique in that it captures the income based on the location of the household, as opposed to the location of work. Thus, it is likely to better capture the impact of remote work over other income measures.

D. Summary Statistics

Panel A of Table 1 summarizes the data. The majority of these moves are of significant distance. The 25th percentile of move distance (DISTANCE) is 603 miles, and the average distance is 1,191 miles, which is approximately the distance from Los Angeles, CA to Helena, MT. We provide separate summary statistics for origin and destination locations for the percentage of occupations with remote work capabilities (REMOTE_WORK), density (DENSITY), median rent (MEDIAN_RENT), marginal tax rate (TAX_RATE), state-level Stringency Index (STRIGENCY), population (POPULATION), COVID-19 cases per capita (COVID_CASES), and lifestyle variables (SCHOOL_QUALITY, CRIME_RATE, AVG_TEMP, and NATURE_PROPORTION).

The difference between the mean values for moves pre-pandemic and mean values for moves post-onset of the pandemic (all moves on or after Apr. 1, 2020 are in the post-period), along with the statistical significance, is reported in the last 2 columns of Table 1.[8] Comparing the characteristics of the origin and destination locations and the pre- versus post-pandemic changes in characteristics provides a glimpse into how migration patterns changed during the pandemic. We conduct a more formal analysis of how the characteristics of origin and destination locations changed post-onset of the pandemic in Section IV.B.

[8]To test statistical differences, we double-cluster standard errors by year-month and origin or destination state, depending on the outcome of interest. We use the delivery date as the relevant date. Our results are virtually unchanged if we use registration dates.

TABLE 1

Summary Statistics

Table 1 presents summary statistics of our main sample, constructed using data from Jan. 2017 to Dec. 2021. Detailed variable definitions can be found in the Appendix. DISTANCE is the distance in miles between the origin and destination ZIP codes. WEIGHT is the total weight of items moved. CBSA_POPULATION is the total population of the CBSA calculated from the 2010 Census ZCTA-level data. CBSA_REMOTE_WORK is the percentage of jobs classified as remote-capable and is aggregated from ZIP-level data provided by Su (2020). STRINGENCY is an index that measures the number of state-level restrictions on mobility/closures and is calculated using data from Hale et al. (2020). COVID_CASES is the number of COVID-19 cases per 10,000 residents at the county level aggregated by the *New York Times*. STRINGENCY and COVID_CASES are both measured as of July 1, 2020 to approximate the first wave of the pandemic in our data. Thus, the pre-pandemic means for these variables are simply capturing the weighted average for origins and destinations as of July 1, 2020. MEDIAN_RENT is the simple average across the county of ZIP-code-level median rent (data sourced from Manson et al. (2020)). TAX_RATE is the state-level marginal tax rate sourced from NBER's marginal tax rate for households making more than $100,000. DENSITY is the population density of the county calculated from the 2010 Census ZCTA-level data. SCHOOL_QUALITY is the percentage of high school students who score proficient in math tests. CRIME_RATE is the number of crimes per 100,000 residents. AVG_TEMP is the average annual temperature over the previous 30 years. NATURE_PROPORTION is the proportion of county land covered by water or forests. For the location characteristic variables, we denote whether the variable is for the move origin (ORIG) or destination (DEST). Column labels indicate the statistic presented. In the last 4 columns, we provide the pre-pandemic mean, the post-pandemic mean, the difference between the post-pandemic mean and the pre-pandemic mean, and the *p*-value of this difference, respectively. Panel B reports survey demographic counts and rates for all UniGroup survey respondents, representing approximately 25% of all moves.

Panel A. Summary Statistics

	N	Mean	Std. Dev.	Min.	25%	Median	75%	Max.	Pre-Mean	Post-Mean	Pre−Post	*p*-Value
DISTANCE	363,249	1,190.6	757.5	0.0	603.0	1,028.0	1,668.0	8,295.0	1,183.4	1,205.9	22.4	0.074
WEIGHT	339,496	8,113.0	5,819.2	0.0	3,594.0	6,680.0	11,085.0	137,004.0	7,994.6	8,388.7	394.1	0.000
$CBSA\_POPULATION_{ORIG}$ (millions)	364,000	4.3	5.2	0.0	0.6	2.2	5.6	18.9	4.3	4.5	0.2	0.016
$CBSA\_POPULATION_{DEST}$ (millions)	363,972	3.3	4.4	0.0	0.5	1.9	4.3	18.9	3.4	3.2	−0.1	0.000
$CBSA\_REMOTE\_WORK_{ORIG}$	358,401	32.9%	3.7%	19.3%	30.6%	33.6%	35.1%	41.2%	32.9%	33.0%	0.1%	0.002
$CBSA\_REMOTE\_WORK_{DEST}$	355,527	32.2%	3.8%	19.3%	29.4%	33.0%	35.0%	41.2%	32.3%	32.0%	−0.3%	0.000
$STRINGENCY_{ORIG}$	364,005	63.2	7.6	38.0	57.4	64.8	67.6	83.3	63.2	63.3	0.2	0.002
$STRINGENCY_{DEST}$	364,003	62.8	7.5	38.0	57.4	62.5	67.6	83.3	62.8	62.7	0.0	0.753
$COVID\_CASES_{ORIG}$	356,712	88.03	64.57	0.58	42.15	74.78	117.52	2,137.83	87.42	89.33	1.9	0.103
$COVID\_CASES_{DEST}$	360,279	78.23	55.43	0.58	40.26	66.80	107.29	2,284.64	78.66	77.31	−1.4	0.000
$MEDIAN\_RENT_{ORIG}$	364,004	1,197.5	348.5	315.0	932.4	1,145.1	1,391.3	2,201.5	1,190.9	1,211.7	20.8	0.000
$MEDIAN\_RENT_{DEST}$	364,000	1,144.2	3,18.5	368.0	898.9	1,109.2	1,283.0	2,201.5	1,150.1	1,131.5	−18.6	0.000
TAX_RATE_{ORIG}	364,005	4.8	2.9	0.0	3.2	5.0	6.9	9.3	4.8	4.9	0.1	0.143
TAX_RATE_{DEST}	364,003	4.3	3.0	0.0	0.0	4.9	6.3	9.3	4.3	4.2	−0.2	0.000
$DENSITY_{ORIG}$	364,005	2,592.1	8,187.0	0.7	343.6	889.3	2,001.7	74,160.1	2,557.4	2,666.0	108.7	0.282
$DENSITY_{DEST}$	364,003	1,855.6	6,511.9	0.4	268.6	644.4	1,680.4	74,160.1	1,944.1	1,667.1	−277.0	0.049
$SCHOOL\_QUALITY_{ORIG}$	356,223	95.92	3.30	49.00	95.00	96.64	98.00	99.00	95.94	95.90	−0.04	0.035
$SCHOOL\_QUALITY_{DEST}$	358,888	95.73	3.85	49.00	94.98	96.67	98.04	99.00	95.69	95.82	0.1	0.001
$CRIME\_RATE_{ORIG}$	363,883	383.38	245.88	0.00	198.18	348.87	486.95	1,792.00	384.03	382.02	−2.0	0.000
$CRIME\_RATE_{DEST}$	363,688	380.31	242.01	0.00	201.59	345.42	478.66	1,792.00	383.59	373.32	−10.3	0.000
AVG_TEMP_{ORIG}	364,005	13.66	4.57	0.43	10.08	12.82	16.72	24.40	13.70	13.59	−0.1	0.000
AVG_TEMP_{DEST}	364,002	14.29	4.94	0.43	10.13	14.02	18.09	24.40	14.24	14.39	0.1	0.223
$NATURE\_PROPORTION_{ORIG}$	364,005	24.2%	19.2%	0.0%	7.5%	19.3%	36.8%	94.6%	24.2%	24.3%	0.0%	0.831
$NATURE\_PROPORTION_{DEST}$	364,005	24.2%	19.2%	0.0%	7.5%	19.3%	36.8%	94.6%	24.2%	24.3%	0.0%	0.641

(continued on next page)

TABLE 1 (continued)

Summary Statistics

Panel B. Survey Demographic Distributions

Age Bracket	Count	Pct.	Income Bracket	Count	Pct.	Household Size	Count	Pct.
18–24	1,153	1%	Less than $15,000	300	0%	1	16,816	23%
25–34	11,306	13%	$15,000–$24,999	700	1%	2	38,108	52%
35–44	12,832	14%	$25,000–$34,999	1,218	1%	3	8,316	11%
45–54	12,985	15%	$35,000–$49,999	2,760	3%	4	6,985	9%
55–64	19,843	22%	$50,000–$74,999	8,065	9%	5+	3,643	5%
65–74	18,094	20%	$75,000–$99,999	9,355	11%			
75 or older	6,335	7%	$100,000–$149,999	14,536	16%	Total	73,868	
Prefer not to answer	6,517	7%	$150,000 or more	23,207	26%			
Total	89,065		Prefer not to answer	28,937	32%			
			Total	89,078				

Panel B of Table 1 documents the summary statistics of demographic variables recorded from the survey data. The survey response rate hovers around 25%, and about 95% of survey respondents are willing to provide some demographic information. The key areas of interest are household size, income, and respondent age. The movers in our sample tend to be older, with a median age between 55 and 64; higher income, with a median income of at least $100,000; and have smaller families, with a median household size of 2.

In Panel A of Table IA.B1 in the Supplementary Material, we examine how the demographic distribution of interstate movers in our data compares to the demographics of interstate movers in the more representative CPS data set between Mar. 2017 and Mar. 2021. We find that the UniGroup sample is tilted toward older and higher-income individuals as compared with the general population of movers. For instance, 42% of CPS respondents are under the age of 35, whereas only 14% of our movers are of the same age group. For those who respond, 63% of the UniGroup sample are in households making more than $100,000, whereas only 33% of the CPS sample fall into that category. The survey respondents in our sample are typically from smaller households with 75% of households consisting of less than 3 individuals as compared with 53% in the CPS. In sum, the UniGroup sample is tilted toward longer, interstate moves and smaller, higher-income households compared with all movers in the United States. While the UniGroup population is not necessarily representative of the entire population of movers, the tilt toward higher-income, remote work-capable individuals allows us to focus our main analysis on the subset of movers that are likely to have the greatest local economic impact.

IV. Results

Our analysis consists of three parts. First, we use survey response data to examine how the onset of COVID-19 has impacted households' migration decisions and, more broadly, how households' reasons for moving have changed during the pandemic. Second, we examine how the types of places households are leaving and moving to have changed during the pandemic. Third, we examine how local economic outcomes are related to COVID-19-era changes in migration patterns.

A. Survey Evidence

1. COVID-19-Induced Migration and the Role of Remote Work

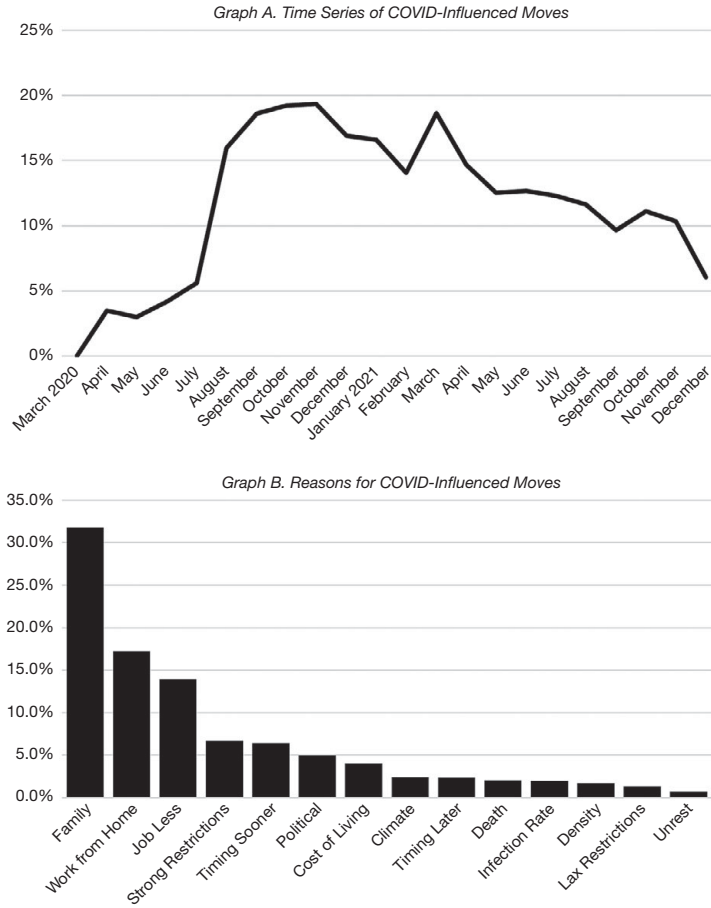
We begin by providing direct evidence on the pandemic affecting households' migration decisions. In Graph A of Figure 1, we show the proportion of respondents who indicate that COVID-19 influenced their move by month. The proportion increases over time and then stays between 11% and 19.3% from Aug. 2020 to Aug. 2021.[9] Even in the last quarter of 2021 (almost 2 years after the onset of the pandemic and several months of increased vaccination rates), a significant proportion of moves were motivated by the pandemic (8.7%). The impact of the pandemic

[9]UniGroup began surveying movers on the influence of COVID-19 in Aug. 2020. For months prior to August, the company attempted to resurvey previous respondents. This can potentially account for the large jump in pandemic-related moves in Aug. 2020.

FIGURE 1

COVID-19-Influenced Moves and Stated Reasons for Moving

Figure 1 presents the time series of COVID-19-influenced moves and the reasons for COVID-19-influenced moves. Graph A displays the monthly time series of the percentage of moves between Mar. 2020 and Dec. 2021 that the respondent indicated their move was influenced by the pandemic. Graph B contains the percentage of free responses that indicated that the respondent's move was for a particular reason, conditional on indicating that their move was influenced by the pandemic. The reasons are categorized into 14 different potential categories, and we allow for a free response to be categorized into more than one category.



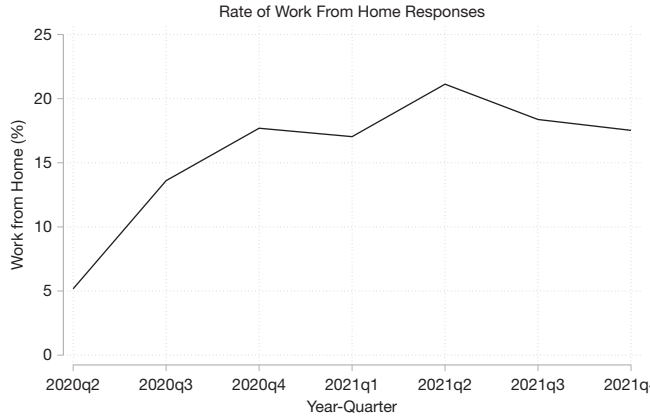
and all it entailed was a direct factor in a significant portion of moves during the period.

The cumulative effect of these moves suggests a significant reallocation of households in response to the pandemic. To the extent that we can extrapolate from this single company's moving data, and given 4-million individuals move across state lines in a typical year, a conservative estimate implies that more than 700,000 individuals will have moved across state lines since the summer of 2020 in response to the pandemic (10% of moves × 4-million annual interstate moves in 2018–19 × 1.75 years). The persistence of COVID-19-influenced moves suggests that many more households will choose to relocate due to the ongoing societal shifts the

FIGURE 2

Time Series of Work-from-Home-Related COVID-19 Moves

Figure 2 displays a quarterly times series of the percentage of COVID-19-influenced movers who cited remote work as a key reason for their move.



pandemic has brought about. The moves in our sample are costly in nature, suggesting that they are likely to be permanent moves as well.

While COVID-19 played a major role in many households' relocation decisions, there are a number of potential channels through which the pandemic could influence someone's decision. To provide more detail in this vein, we analyze the free responses of this set of pandemic-influenced movers to a prompt asking how COVID-19 impacted their decision to move. We classify each household's free response into categories, and the results are presented as a bar chart in Graph B of Figure 1. The most common COVID-19-related reasons for moving are "Family," at 31.8% of respondents, "Work from Home," at 17.2%, and "Job Loss," at 14%.

"Work from Home" has proved to be a persistent driver of COVID-19-induced moves over time. In Figure 2, we plot the percentage of pandemic-induced movers each quarter who cite the shift to work from home as affecting their decision to move. The percentage increases over the first six quarters, peaks at almost one in five moves in the second quarter of 2021, and remains above 15% at the end of 2021. The persistence of remote work-influenced migration suggests that many households expect remote work to persist and that more households are learning of the permanence of their arrangement. Moreover, it is likely that other individuals outside this survey are moving as a result of the increased work-from-home flexibility, but may not have tied themselves to the response of being pandemic-induced and, therefore, were not asked for their free response.

Returning to Graph B of Figure 1, we find that a smaller proportion of moves were attributed to COVID-19-specific risks and government actions. Strikingly, only 2% of respondents mentioned the local infection rate as a factor in their decision. This could be due to several reasons: the widespread and somewhat unpredictable nature of the spread of the virus; individuals not expecting

COVID-19 infection rates to persist longer term; or individuals not weighing the risk heavily in their decision. A small, but not insignificant, number of moves were driven by the government's response to the pandemic, which is consistent with households "voting with their feet" (Tiebout, 1956). We see moves in response to both governments being too lax (only 1.4%) and governments being too strict (6.7%). Of the households moving because the government response was too strict, 94% left states that voted for the Democratic candidate in the 2020 presidential election. A small percentage of moves were related to "Social Unrest" and "Politics," which reinforces the fact that the pandemic has become a political issue for a portion of the population.

The patterns we observe for COVID-19-influenced moves suggest that the pandemic has had a significant impact on moves over the first 21 months of the pandemic. Households induced to move by the pandemic are moving for family reasons and because of the flexibility related to remote work, whereas some are relocating due to job loss. Considering that the free responses were only asked after the onset of the pandemic, we cannot conclude from these responses that family and job loss reasons are more prominent among COVID-19-induced moves compared with other moves or in normal times. In the next section, we examine how households' reasons for moving changed from pre- to post-pandemic using the full sample of survey respondents.

2. Changing Motivations for Moving During the Pandemic

We next investigate how migrants' motivations for moving changed from pre-pandemic to post-onset of the pandemic. Throughout our sample, survey respondents could select one or more primary reasons for moving from the following five categories: job, family, retirement, lifestyle, and health. Two additional categories, COVID-19-induced and cost of living, were added after the onset of the pandemic. For each of the five categories that were asked throughout the sample period, we calculate the change in the proportion of moves from pre-COVID-19 to post-onset of COVID-19. For the two categories added during COVID-19, we calculate the post-pandemic proportion of moves attributed to that category. We use the full time series of responses and do not adjust for seasonality, although the results are not sensitive to accounting for seasonality or using only 2019 as the pre-pandemic period.

We present the results in Panel A of Table 2. As discussed above, 12.1% of moves from Apr. 2020 to Dec. 2021 explicitly stated that COVID-19 impacted their move. For a small proportion of moves, 5.7%, cost of living was an important reason for moving. Without information for the pre-period, we cannot conclude from the survey responses whether cost of living became a more or less relevant factor overall during the pandemic.

The most drastic change in proportions was the 13.5 percentage point decrease for reasons related to new jobs or company transfers (job). Family-related reasons experienced the most significant increase with a 6.6 percentage points increase (or 27% increase from 24.7% to 31.3%). The increased proportion of family-motivated moves could partially be due to the desire to create social "bubbles"

TABLE 2

Reasons for Moving During the COVID-19 Pandemic

Table 2 presents the proportion of COVID-19-influenced moves, the proportion of cost of living-motivated moves, and the change in the proportion of respondents citing particular reasons for moving (Job, Family, Retirement, Lifestyle, or Health) in the pandemic relative to pre-pandemic. We present these values for their full sample of survey respondents in Panel A. In Panels B–D, we delineate by household demographic (Income, Age, and Household Size). Households choose from a preset list of reasons for their move and may select multiple reasons. The first column calculates the proportion of respondents *within* a given demographic bracket who answered "yes" to COVID-19 influencing their move. Similarly, we present the proportion of respondents selecting "Cost of Living" during the COVID-19 era (this option was added in the summer of 2020, so we cannot compare to the pre-COVID-19 period). In the remaining columns, we calculate the proportion of households within each group who respond with a particular reason (e.g., "Job") after the onset of the pandemic (Apr. 2020 to Dec. 2021) minus the portion selecting that reason prior to the pandemic (Jan. 2019 to Mar. 2020). Demographics are obtained from the survey data.

	COVID-19 Proportion		COVID-19 Proportion − Pre-COVID-19 Proportion				
	COVID-19-Induced	Cost of Living	Job	Family	Retirement	Lifestyle	Health
Panel A. All							
All	12.1%	5.7%	−13.5%	6.6%	1.5%	2.5%	0.2%
Panel B. Income Brackets							
≤ $49,999	10.18%	8.77%	−2.81%	−1.07%	−0.74%	−4.24%	−1.02%
$50,000–$99,999	10.29%	5.75%	−9.94%	5.70%	0.13%	0.12%	1.15%
≥ $100,000	13.85%	5.79%	−13.80%	7.08%	2.00%	4.02%	0.26%
Panel C. Age Brackets							
≤ 34 years	12.37%	3.88%	−10.73%	5.52%	−0.01%	2.38%	0.63%
35–54 years	16.31%	6.10%	−16.90%	7.17%	1.07%	6.25%	0.78%
≥ 55 years	10.07%	6.01%	−4.78%	3.37%	−0.24%	−0.62%	−0.41%
Panel D. Household Size Brackets							
1 member	11.97%	5.10%	−11.55%	6.89%	−0.22%	0.83%	0.92%
2 members	10.97%	6.18%	−9.28%	5.24%	1.37%	1.46%	0.34%
3+ members	13.47%	6.40%	−16.53%	7.56%	1.28%	5.49%	0.04%

with family during the pandemic (e.g., for grandparents to help with childcare). Also, being closer to family became a more viable option for people in jobs that shifted to remote work. A similar reasoning could be driving the 2.5 pps increase in lifestyle reasons (13.7%–16.1%). We see a modest increase in retirement reasons (19.7%–21.2%) likely due to the uncertainty, job loss, and shift in work arrangements brought on by the pandemic. Health shows only a minor increase during the pandemic. This provides additional evidence that the spread of COVID-19 did not play a major role in households' relocation decisions.

We provide more detailed results on the changes in reasons in the Supplementary Material. In Table IA.A2 in the Supplementary Material, we provide the level of the percentage of respondents reporting each reason in the pre- and post-pandemic periods. Further, we show how the changes in reasons for moving vary across states in Figure IA.A5 in the Supplementary Material.

The documented patterns further support the impact of the pandemic on family and lifestyle-related reasons for moving, which for some movers was made feasible by the shift toward remote work. Yet the impacts of the spread of COVID-19, government and firm responses, and the shift toward remote work did not fall equally on all households. In Panels B–D of Table 2, we examine differences in the changes in reasons for moving across household income, age, and size groups. These within-demographic changes will remove any time-invariant differences

across groups. Thus, comparing across different groupings serves as a difference in difference for changes in proportions.

We find that the patterns documented for the overall sample are amplified for the higher-income households, middle-aged households, and larger households. This is the cohort we would expect to benefit the most from a shift to remote work and an untethering of work from location.[10] We find that these households were more likely to cite COVID-19 as affecting their move, experienced the biggest drop in job-related moves and largest increases in lifestyle and family-related moves. The most significant differences across the income and age distributions are related to jobs and lifestyles. High-income households (>100,000) are citing job 13.8 percentage points less during the pandemic, whereas lower-income households ($\leq$49,999) are citing jobs only 2.81 percentage points less. High-income households are citing lifestyle reasons more during the pandemic (4.02 pps), whereas lower-income households are citing lifestyle much less (−4.24 pps). This difference across high- and low-income groups represents a 57% swing as compared with the unconditional lifestyle proportion of moves. Middle-aged households experienced the largest decline in job-related moves with a drop of almost 17 percentage points and the greatest increase in lifestyle-related moves with an increase of over 6 percentage points.

Examining the other reasons, we see that cost-of-living reasons were more pronounced for lower-income and older households, with modest differences across household sizes. Households making less than $50,000 in income cite "Cost of Living" about 51% more often than households making more than $100,000 (8.77% compared with 5.79%). We find only minor variation in changes in health- and retirement-related reasons across demographic groups. Middle-aged households, the highest-income households, and households with 2 members experience the largest upticks in retirement-related reasons, although all are less than or equal to 2%.

In the Supplementary Material, we provide additional analyses of the responses across demographic groups. We find that the differences in COVID-19-induced moves across demographic groups persist throughout the pandemic period (see Figure IA.A3 in the Supplementary Material). We also find that the differences in reasons for moving during the pandemic are not merely a continuation of longer-term trends (see Figure IA.A4 in the Supplementary Material). For instance, between 2017 and 2019, higher-income households moving for "Job"--related reasons dropped slowly from around 63% to 59%. Yet, in 2020, only 48% of moves were for "Job"-related reasons for the highest income group. This 1-year 11% decline is 2.75 times larger than the previous 3 years combined. One of the more striking figures shows how lower-income households used to cite "Lifestyle" significantly more than any other group. However, in 2020–2021, there is a complete reversal where higher-income households become 33% more likely to cite migration for "Lifestyle" reasons. Geographically, we show, in Figure IA.A6 in the Supplementary Material, that there was an increased proportion of moves by high-

[10]As evidence, this group cites remote work as a motivation to move 6 pps (or 35% on a relative basis) more in their free responses.

income households, younger households, and households with more than 2 members out of west coast states during the pandemic.

In Table IA.B3 in the Supplementary Material, we examine how the patterns we document for our selected sample of typically higher-income, interstate movers are compared with patterns for both intrastate and interstate movers in the more representative CPS data. While there is no perfect overlap in the potential set of reasons, we find that the CPS intrastate and interstate movers' motivations shifted in a manner broadly similar to our sample. Within the CPS data, there is a relatively high correlation of 0.51 between the interstate and intrastate changes in reasons. We discuss these results in more detail in Appendix B of the Supplementary Material. Overall, the results suggest that there are broadly similar shifts in motivations for moving during the pandemic for within-state moves as for across-state moves.

Taken together, these results suggest that higher-income households are moving more due to COVID-19-related influences, less for job-related reasons, and more for nonjob, lifestyle-related reasons during the pandemic. The higher-income, middle-aged family was relatively more exposed to a number of pandemic-related factors that could motivate moves: the shift to remote work, virtual schooling for children, and older parents with health risks. The higher rates of moves for this group are interesting, considering that they are mid-career and might previously be more tied to their location via their job, and they are more likely to have school-aged children. These factors make them ex ante less likely to move and ex post more likely to stay put following the move. Lower-income households, on the other hand, are less likely to be in occupations that experienced this broad shift toward remote work and, therefore, do not have the same flexibility to relocate for lifestyle reasons. As such, the lower-income cohort experienced a relatively small change in job-related motivations for moving. These results highlight how the disparate impact of COVID-19 on lower versus higher-income households has affected households' migration decisions. These results add to the results of Chetty, Friedman, Hendren, and Stepner (2020), who show a wide gap in the net effects of the pandemic based on income or wealth.

B. Analysis of Migration Patterns

In our second set of analyses, we examine how the places people are moving from and to have changed during the pandemic. In Figure 3, we map the proportional change in moves by the origin state (Graph A) and the destination state (Graph B) since the onset of the pandemic. Specifically, for move origins (destinations), we compute the proportion of moves from (to) a particular state in the pandemic period and then subtract the proportion of moves from (to) that state during the pre-pandemic period. Comparing moves as a proportion of all moves allows us to abstract away from the ebbs and flows of the total number of moves and strictly focus on the cross-sectional shock.

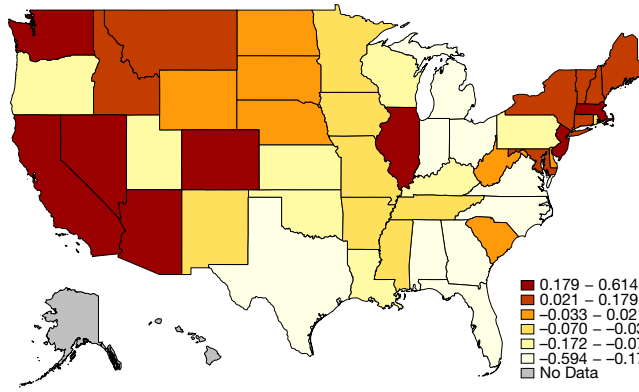
We find that many of the mountain west states experienced significant increases in inflows, as well as some southern states, whereas many of the coastal states experienced a significant increase in outflows during the pandemic as predicted by Delventhal, Kwon, and Parkhomenko (2022). The magnitudes of

FIGURE 3

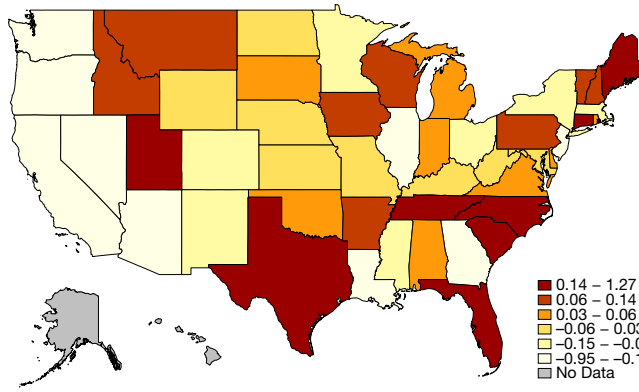
Proportional Changes in Moves by State

Graphs A and B of Figure 3 display a map denoting the change in the proportion of moves out of (into) each state from the pre-pandemic period to the post-pandemic period in Graph A (Graph B). The proportion is calculated as the number of moves out of (into) the state as compared with the total number of moves across all areas in the pre-pandemic period (Jan. 2019 to Mar. 2000) and the post-pandemic period (Apr. 2020 to Dec. 2021). Proportions, and therefore differences, are measured in percentage points.

Graph A. Proportional Change in Origin Following COVID–19 Outbreak



Graph B. Proportional Change in Destination Following COVID–19 Outbreak



these shifts are nontrivial. Colorado experienced the largest increase in outflows at 0.61pps, and Florida saw the largest decrease of −0.59 pps. Florida saw the biggest proportional increase in inflows of 1.27 pps, whereas California saw the largest drop in inflows with a −0.95 pps proportional drop. We find broadly similar patterns if we use the more representative USPS permanent change of address data, which does not delineate between in-state and out-of-state moves, with correlations between our state-level flows and USPS for state-level flows of 0.36 and 0.48 for the origin and destination states, respectively. The states people are moving into at a greater rate tend to have lower tax burdens and lower overall cost of living.

We next more formally examine changes in flows of migrants between county pairs using regression analysis.[11] The goal of this analysis is to uncover changes in the importance of locational features with the onset of the pandemic via a revealed preference. We run a Poisson regression of the number of moves between county pairs each year on differences in location characteristics between destinations and origins (e.g., $\text{MEDIAN\_RENT}_{\text{DEST}} - \text{MEDIAN\_RENT}_{\text{ORIG}}$) and their interaction with a post-COVID-19 dummy variable.[12] We include origin–destination pair fixed effects to absorb any time-invariant flows between county-pairs and year fixed effects to address broad time trends (e.g., reduction in overall migration or changes in demand for moving services).[13] The year fixed effects absorb the post-COVID-19 dummy variable. The interaction terms are the coefficients of interest and capture whether differences in characteristics between areas promote different movement patterns after 2019, as compared with before. The explanatory variables are standardized to give an easier interpretation of the data, and standard errors are clustered at the origin-county level.[14] The data are well balanced with all county pairs represented each year, but county pairs that experience no moves between them over the 5 years will be omitted due to the inclusion of origin–destination pair fixed effects.

The results are presented in Table 3. We run separate regressions for pandemic-related, financial, and lifestyle characteristics in columns 1–3, respectively.[15] Examining just the pandemic-related characteristics in column 1, we find that households are more likely to move to counties that had relatively less stringent COVID-19-related restrictions during the pandemic. A 1-standard-deviation increase in relative July 2020 stringency leads to a 1.5% decline in the number of moves between counties (calculated $(e^{-0.015} - 1) \times 100 = -1.6\%$). We also find that destinations with relatively lower infection rates, as compared with the origin county, experience a relative increase in the number of moves. People may move to avoid infection, or this result could be due to urban areas being hit harder earlier on and households leaving larger cities and more urban areas.

In column 2 of Table 3, we find a greater frequency of moves to lower-cost-of-living areas, as proxied by rent, during the pandemic. The economic magnitude is significant, where a 1-standard-deviation decrease in relative rent is associated with an 8% increase in the expected number of moves between the pairs. We also see that households were more likely to move toward lower tax areas, with a

[11] Alternatively, we could analyze origins and destinations separately. This analysis (unreported) gives similar insights as comparing changes in the means from pre-pandemic to during the pandemic as provided in the summary statistics. Additionally, in Table IA.A2 in the Supplementary Material, we provide results examining changes in the proportion of inflows and outflows for each state pair. These results reinforce the interpretation of the county-pair results.

[12] Cohn, Liu, and Wardlaw (2022) advocate for the use of a Poisson regression model because of the unbiased nature and efficiency of the estimation. We use the PPMLHDFE package from Correia, Guimarães, and Zylkin (2020) in our analysis.

[13] Figure IA.A7 in the Supplementary Material contains the raw averages of Origins and Destination characteristics. These figures mimic many of the results presented here.

[14] We do not cluster along the year dimension since clustering with a small number of clusters (5) risks biasing the standard errors (Thompson (2011)).

[15] In Table IA.A3 in the Supplementary Material, we run individual regressions for each characteristic and find similar results.

TABLE 3

Origin–Destination Pair Analysis

Table 3 presents Poisson fixed-effect regression results examining changes in the relative characteristics of origin and destination locations during the pandemic. The data cover all moves performed by UniGroup from Jan. 2017 to Dec. 2021, and the panel is strongly balanced. In Panel A, the unit of observation is at the Origin County–Destination County-Year level. We regress the number of origin–destination pair moves on the difference in the location characteristic between the Destination and Origin locations, interacted with POST, which takes the value of 1 if the date the move was completed occurs in 2020 or 2021, and 0 otherwise. All differences are standardized for easier interpretation. In Panel A, we examine the following location characteristics (more details are provided in the Appendix): STRINGENCY, which is an index that measures the number of state-level restrictions on mobility/closures, COVID_CASES, which is the number of COVID-19 cases per 10,000 residents, MEDIAN_RENT, which is the simple average across the county of ZIP-code-level median rent, TAX_RATE, which is the state-level marginal tax rate, DENSITY, which is the population density of the county, SCHOOL_QUALITY, which the percentage of high school students who score proficient in math tests, CRIME_RATE, which is the number of crimes per 100,000 residents, AVG_TEMP, which is the average annual temperature over the previous 30 years, and NATURE_PROPORTION, which is the proportion of county land covered by water or forests. Panel B similarly examines how the population of origin–destination locations changed during the pandemic at the CBSA level. Columns 2 and 3 of Panel B subset on whether the origin CBSA had above (below) median level of remote work capability. All regression analysis includes Origin–Destination pair and year fixed effects, which absorb the main effects of the characteristics and the POST dummy. Standard errors clustered at the origin level are shown in parentheses. ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively.

Panel A. County Origin–Destination Characteristic Differences

	NUMBER_OF_MOVES			
	1	2	3	4
$(STRINGENCY_{DEST} - STRINGENCY_{ORIG}) \times POST$	−0.015**			0.002
	(0.006)			(0.006)
$(COVID\_CASES_{DEST} - COVID\_CASES_{ORIG}) \times POST$	−0.034***			−0.003
	(0.006)			(0.006)
$(MEDIAN\_RENT_{DEST} - MEDIAN\_RENT_{ORIG}) \times POST$		−0.081***		−0.093***
		(0.008)		(0.009)
$(TAX\_RATE_{DEST} - TAX\_RATE_{ORIG}) \times POST$		−0.024***		−0.007
		(0.007)		(0.008)
$(DENSITY_{DEST} - DENSITY_{ORIG}) \times POST$			−0.087***	0.013
			(0.019)	(0.016)
$(SCHOOL\_QUALITY_{DEST} - SCHOOL\_QUALITY_{ORIG}) \times POST$			0.023***	0.013**
			(0.007)	(0.006)
$(CRIME\_RATE_{DEST} - CRIME\_RATE_{ORIG}) \times POST$			−0.006	−0.038***
			(0.008)	(0.009)
$(AVG\_TEMP_{DEST} - AVG\_TEMP_{ORIG}) \times POST$			0.043***	0.058***
			(0.007)	(0.008)
$(NATURE\_PROPORTION_{DEST} - NATURE\_PROPORTION_{ORIG}) \times POST$			0.034***	0.030***
			(0.009)	(0.007)
Orig–dest pair FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
No. of obs.	752,365	752,365	752,365	752,365
Pseudo-R^2	0.312	0.313	0.313	0.313

Panel B. CBSA, Population, and Remote Work Comparisons

	Number of Moves Origin–Destination-Year		
	1	2	3
$(POPULATION_{DEST} - POPULATION_{ORIG}) \times Post$	−0.018***	−0.019***	0.005
	(0.001)	(0.001)	(0.006)
Subset	No	High WFH	Low WFH
Orig–dest pair FE	Yes	Yes	Yes
Year FE	Yes	Yes	Yes
No. of obs.	340,150	226,520	73,630
Pseudo-R^2	0.645	0.669	0.153

1-standard-deviation increase in the relative state marginal income tax rate associated with approximately 2.4% fewer moves, consistent with the theoretical predictions of Brueckner et al. (2023) and the empirical results of Duchin and Sosyura (2021) on the location preferences of executives who work from home. These

results suggest that financial reasons were an important factor in households' relocation decisions.

Examining variables related to lifestyle in column 3 of Table 3, we see individuals are more likely to relocate to less dense areas following the onset of the pandemic. The time series of the average destination density suggests that the bulk of this effect is coming from the destination choice as opposed to the origin (see Figure IA.A7 in the Supplementary Material). We also find that there is an increase in migration to places with better schools, higher average temperatures, and greater coverage by forests or water. Differences in crime rates across counties are unrelated to the shift in COVID-19-era flows in this specification. The result that households are moving to less dense, warmer areas is similar to preferences exhibited by corporate executives (Duchin and Sosyura (2021)); when remote work allows households or executives to have freedom in where they live, lifestyle reasons are key factors in their location decision.

Altogether, the results suggest that people moved for pandemic-related, financial, and lifestyle reasons. Of course, there are significant correlations across these variables. We attempt to delineate the most important factors by moving to a horse race-style regression. In column 4 of Table 3, we include all variables of interest and find that rent differential is economically the most important and statistically the most significant coefficient. The coefficients on school quality, average temperature, and coverage by forests or water also remain statistically significant and of similar economic magnitude. Crime rate becomes statistically significant in this specification with a coefficient of -0.038, suggesting that crime rate is a factor after controlling for financial reasons and pandemic-related reasons, as well as other lifestyle characteristics. The more temporary characteristics, COVID-19 case rate and government stringency, have little explanatory power, suggesting that moves are motivated more by the characteristics that are expected to persist beyond the depths of the pandemic.

In Table IA.A4 in the Supplementary Material, we examine whether the documented patterns differ across income groups or have changed as the pandemic has progressed. In columns 1 and 2, we rerun the analysis but break the sample of moves into lower- and higher-income moves, respectively. We classify mover income based on whether the *origin* ZIP-code median income per capita falls above or below the median income. We use a ZIP-code-level income measure to allow us to capture all movers, including those who did not fill out the survey. The estimated coefficients for the subset of higher-income households tend to be similar or greater than those for the subset of lower-income households, particularly for lifestyle outcomes. This provides suggestive evidence that these higher-income households are actually more responsive to lifestyle motivations, consistent with the survey evidence.

In columns 3 and 4 of Table IA.A4 in the Supplementary Material, we repeat the analysis but only include either 2020 or 2021 in the post-period. We find similar patterns across both years, although crime, school quality, and proportion of the county that is nature have slightly larger coefficients in 2021 than in 2020. It is perhaps unsurprising that the more persistent factors remain key predictors of migration as the pandemic continues.

There are at least three potential explanations for the negative relationship between the relative cost of living and the number of moves during the pandemic. One potential reason is the decline in the value of the amenities in higher-cost-of-living areas during the pandemic, although it is not clear that a temporary decline in access to amenities should drive out-migration from high-cost-of-living cities since individuals should be maximizing lifetime utility. Either households believe that the shock to amenities is not temporary, have high discount rates, or believe that the quality of these amenities is likely to decline. A second potential explanation is that the labor market and idea-sharing benefits of high-cost-of-living locations may have fallen as well. A third potential explanation is that high-cost-of-living cities have more individuals in occupations who are able to work from home. These individuals may have transitioned to full-time work from home, which would allow them to live anywhere and find locations that better suit their preferences (Davis et al. (2023), Delventhal and Parkhomenko (2022)). Relatedly, remote work typically requires home office space that many people living in high-cost-of-living areas may not have. By moving to lower-cost-of-living areas, they can afford more space on a similar budget.

Given that these characteristics have a great deal of common variation (many of these variables are strongly related to CBSA size), we use the size of the migrants' CBSA as a proxy for local characteristics. In Panel B of Table 3, we examine flows at the CBSA level and test whether the CBSA population (POPULATION) is related to COVID-19-era flows. In column 1, we find a 1-standard-deviation increase in CBSA population differential leads to 1.8% fewer moves across the CBSA pair. Columns 2 and 3 repeat this regression, but subset on above and below median levels of *origin* remote work capability.[16] We focus on the origin remote work capability instead of the destination as this is likely that the more influential proxy of one's ability to work remotely and choosing to move to a location where remote work is more prominent is secondary. Interestingly, the effect only exists among the areas with above-average ability to work remotely. This is consistent with increased movement from high-population areas to lower populations areas being related to the ability to work remotely, although we caution that overinterpreting this result as remote work ability is correlated with the CBSA population.

Considering that higher-income occupations tend to be more remote work-capable, we examine whether there is a differential exodus out of large cities for higher-income households versus lower-income households. Graph A of Figure 4 shows the average population of the origin CBSA by income bracket over time. There is a marked increase in the average origin CBSA population for high-income earners during the pandemic, whereas the time series for low- and medium-income households is relatively flat.

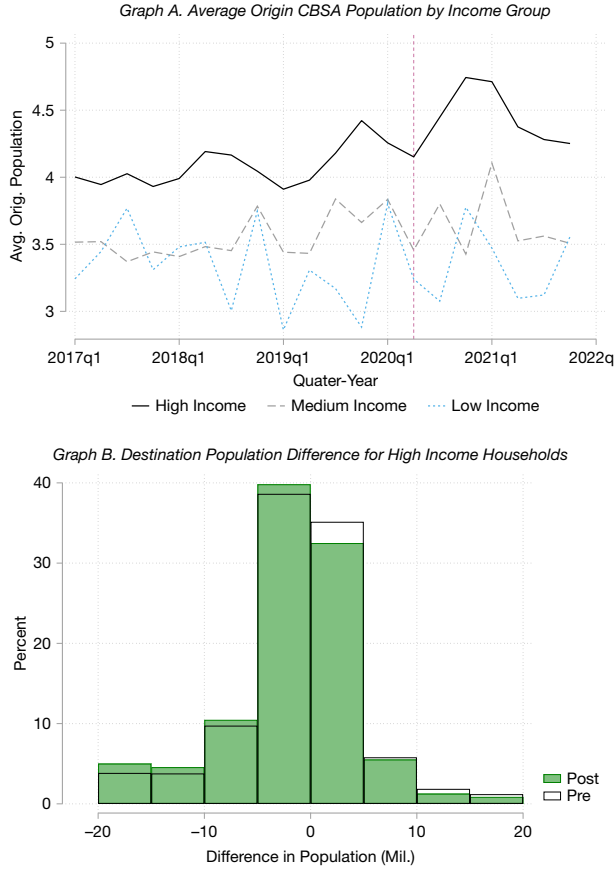
We further examine the flows of higher-income individuals in Graph B of Figure 4. We calculate the difference between destination and origin populations for the highest-income group ($100,000+) and present the distribution of this

[16]Differences in observation counts arise from areas with lower remote work having more origin–destination pairs with zero moves across them. Thus, more observations are absorbed by the origin–destination pair fixed effects.

FIGURE 4

Changes in Origin and Destination CBSA Population by Income Group

Graph A of Figure 4 shows the average origin population by income group on a quarterly basis. The sample represents data for survey respondents which are approximately 25% of the entire sample from Jan. 2017 to Dec. 2021. We define the groups as Low Income (<$50,000), Medium Income ($50,000–$99,999), and High Income ($100,000+). Populations are determined at the CBSA level using 2010 Census data, measured in millions. Graph B calculates the difference in CBSA-level population, comparing the destination population with the origin. The green-shaded bars represent the pandemic period, defined as moves completed from Apr. 2020 to Dec. 2021, whereas the clear bars represent the pre-pandemic period (Jan. 2017 to Mar. 2020).



difference for the pre-pandemic period and the pandemic period, separately. We bucket the variable in 5-million-person increments. It is evident that high-income individuals are not only leaving origins with higher populations, but choosing to move to dramatically less populated areas. There is an absolute decrease in households moving up to more populous areas and an increase in households moving to less populous areas.

Overall, we find that households are moving for cost-of-living and lifestyle reasons, and they are moving to smaller cities. The flow of individuals to smaller cities is only present among CBSAs with higher levels of remote work capability in the population, and the migration out of larger cities is especially pronounced for higher-income households who are more likely to be able to work from home.

The patterns we observe support the theoretical predictions of Brueckner et al. (2023), Davis et al. (2023), and Delventhal and Parkhomenko (2022) on the reallocation of households in response to a shift toward remote work.

C. Pandemic-Era Migration and Local Economies

In our final set of analyses, we examine how the documented changes in migration patterns brought on by the pandemic and the shift toward remote work are related to local economic outcomes.[17] The impact of the higher-income migrants in our sample on the local economy is likely to be through increased (decreased) local consumption in areas with greater in-migration (out-migration). In areas with high COVID-19-era in-migration, the higher-income migrants will boost consumption of local goods and services (at higher levels than lower-income households), which can create additional business and employment opportunities in the local area to satisfy the increased demand. For instance, Moretti (2010) finds large local employment multipliers for higher-skilled tradable jobs, especially those in high-tech industries. An outcome of this multiplier effect should be higher local income growth. In addition, lending activity may increase as businesses access capital to start or expand.

While the higher-income migrants may have a sizable indirect impact on local employment, their relocation may have a minimal *direct* impact on the local workforce. If the migrants are able to retain their job in their prior location or elsewhere due to remote work, their human capital may not be used for production in the local economy. The goal of our analysis is to examine whether, on the net, areas with greater in-migration during the pandemic experienced greater local economic growth post-onset of the pandemic. Specifically, we examine whether the shift in migration patterns among our sample of higher-income movers is related to changes in the number of establishments, small business lending, employment, and local incomes at the county level. Summary statistics of these variables are provided in Table IA.A5 in the Supplementary Material.

We focus on outcomes over the period of 2017 to 2021 while dropping 2020 to ensure that we are not capturing the initial shocks related to the onset of the pandemic. We run a Poisson regression of the economic outcome of interest (e.g., establishments) on a measure of the county-level COVID-19-era shock to migration (COVIDFLOWS) flows plus county, and time fixed effects. The county fixed effects account for county-level differences, and the time fixed effects account for any broader time trends.

We calculate COVIDFLOWS as the change in average annualized net inflows per capita between the post-period and the pre-period, where net inflows is the number of moves into an area less the number of moves out. More specifically, COVIDFLOWS is defined as the difference in annualized net inflows per capita from Apr. 2020 to Dec. 2020 less the average annualized net inflows per capita for April to December periods between 2017 and 2019. Taking the difference between the pre- and post-periods allows us to account for any pre-trends in migration in the

[17]Related work documents how COVID-19-era migration is impacting real estate prices and municipal bond yields as discussed in the literature review. Our innovation is in examining how the relocation of higher-income households is affecting broad economic outcomes.

TABLE 4

COVID-19-Era Migration and Economic Outcomes

Table 4 presents the results of Poisson fixed-effect regressions examining how local economic outcomes are related to COVID-19-era migration. The county-level dependent variables are quarterly total establishments, ESTABLISHMENTS, obtained from the QCEW (column 1); annual total dollar amount of Small Business Administration (SBA) loans, SBA_LOANS, obtained from the SBA (column 2); quarterly total employment, EMPLOYMENT, obtained from the QCEW (column 3); and annual total personal income, PERSONAL_INCOME, obtained from the BEA (column 4). We regress the county-level outcome of interest on an interaction between a POST dummy variable and a top 25% COVIDFLOWS dummy variable (TOP_25%_COVIDFLOWS), and an interaction between a POST dummy variable and a bottom 25% COVIDFLOWS dummy variable (BOT_25%_COVIDFLOWS), where COVIDFLOWS is defined as the difference in annualized net inflows per capita from Apr. 2020 to Dec. 2020 less Apr. to Dec. 2017–2019. POST is a dummy variable equal to 1 if the year is 2021, and 0 otherwise. More details on the variables are provided in the Appendix. We exclude 2020 data from the sample. We include county and time fixed effects, which absorb the main effects of POST and the COVIDFLOWS dummy variables. Standard errors clustered at the county level are shown in parentheses. ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively.

	ESTABLISHMENTS	SBA_LOANS	EMPLOYMENT	PERSONAL_INCOME
	1	2	3	4
POST × BOT_25%_COVIDFLOWS	−0.002	0.070	−0.008	0.005
	(0.01)	(0.09)	(0.01)	(0.01)
POST × TOP_25%_COVIDFLOWS	0.015*	0.182**	0.012**	0.011**
	(0.01)	(0.08)	(0.01)	(0.00)
County FE	Yes	Yes	Yes	Yes
Year FE	No	Yes	No	Yes
Year-quarter FE	Yes	No	Yes	No
No. of obs.	45,852	7,860	45,852	11,296
Pseudo-R^2	0.999	0.968	0.999	0.999

data. Isolating the April to December period accounts for any seasonality in migration, whereas omitting the migration in 2021 allows us to avoid a potential look-ahead bias, in which we would examine outcomes before a migration occurs or contemporaneously. This strategy is similar to that of Gustafson et al. (2022), who examine municipal bond outcomes. The results are both economically and statistically similar if we recalculate the shock including moves over the entire sample in a similar way (see Panel B of Table IA.A7 in the Supplementary Material).

We split our migration shock into quartiles and treat the interquartile range (middle 50%) as our base group. This allows us to examine whether the effects are primarily driven by counties experiencing more downside or upside migration changes. We present the results of our analysis in Table 4. In column 1, we find that areas in the top quartile of COVID-19-era migration flows experienced a 1.5% ($e^{0.015} - 1$) increase in the number of establishments relative to counties with more modest migration flows. Areas in the bottom quartile do not experience a significantly different change in establishments suggesting that inflows are more strongly related to local establishment growth than outflows, at least in the short run. In column 2, we investigate the relationship between COVID-19-era migration and small business lending, using the total gross amount of SBA lending. We observe a significant increase in the amount of small business lending for the top quartile counties, consistent with the growth of establishments. The relative increase in establishments and small business financing in the high migration areas suggests that high in-migration is associated with a more dynamic economy post-COVID-19.

We next examine how COVID-19-era migration is related to total employment and personal income. In column 3 of Table 4, we find counties with greater net

inflows experienced 1.2% more employment growth following the pandemic. In column 4, we find that the total personal income of the high in-migration counties experienced a 1.1% relative increase. It is important to note that the BEA's calculation of personal income is matched to a place of residence and not the work location. Thus, this increase is likely driven by a combination of remote work entrants and new hires or salary increases stemming from increased labor demand. Interestingly, we do not estimate statistically significant negative outcomes in counties experiencing greater outflows (bottom 25%). One potential explanation is that there was significant government support for many businesses and economies after the onset of the pandemic, which could have minimized the potential adverse effects of out-migration in the short run.

In further analysis, presented in Table IA.A6 in the Supplementary Material, we find that the relationship between economic outcomes and migration is amplified when the entrants are of higher income, as proxied by the average origin ZIP-code income. Taken together, the increase in the number of establishments, small business lending, employment, and personal income in the high-in-migration areas suggests that there are potential positive spillovers to the local economy from the relocation of the high-income COVID-19-era movers.

The results in this section provide suggestive evidence that the changes in migration patterns that occurred with the onset of the pandemic have impacted local economies. It is an empirical challenge to identify the causal effect of migratory flows on economic outcomes though. It is possible that the features that drew in greater migration are also those that allow for a stronger economy during the pandemic. While we cannot completely rule out alternative explanations such as these, we are able to address a few potential concerns through robustness tests.

First, in Panel A of Table IA.A7 in the Supplementary Material, we rerun our main regressions including state × year fixed effects, which allows us to account for any state-level restrictions on economic activity and to help address state-level differences in federal funding from the CARES Act. However, we note that the identifying variation in this setting comes from variation in interstate migration *within* the state. For instance, the state × year fixed effects will remove the impact of the significant influx of households into Florida during the pandemic, isolating only relative county-level variation within Florida. Implementing this tighter specification, we find that the magnitudes of the coefficients are slightly smaller but remain statistically and economically significant, with the exception of an insignificant effect on small business lending. In this specification, we also find that the bottom quartile of COVIDFLOWS experiences statistically significant negative growth in establishments and employment. One interpretation is that after we account for a state's economic policies, the counties within that state that appear relatively less desirable after the pandemic do indeed suffer relatively lower economic growth. The results from this specification suggest that state-level variation in economic outcomes or policies is important but is unlikely to be driving the main results.

Second, in Figure IA.A8 in the Supplementary Material, we examine the dynamic relationship between the COVIDFLOWS and the outcomes of interest. The time-series plots show a clear pattern: The positive shock areas are on similar

trends pre-pandemic and then experience positive growth over time with no attenuation through the end of 2021. This evidence suggests that the results are not part of a pre-pandemic trend.

Overall, the results are consistent with those areas that attracted higher-income households during the pandemic experiencing better economic outcomes in the initial aftermath of the pandemic. Going forward, the geographical relocation of these higher human-capital households has the potential to further impact local business creation and agglomeration economies (e.g., Davis and Dingel (2019)) both in the areas they are moving to and the areas they are leaving.

V. Conclusion

We document important shifts in migration patterns after the onset of the pandemic. We find that more than 10% of all interstate moves performed by a large national moving company, UniGroup, were directly motivated by the COVID-19 pandemic and over 10% of these moves were driven by remote work arrangements. We find that high-income households, who are more likely to have shifted toward remote work, are moving more for nonwork reasons during the pandemic, whereas low-income households move for work-related reasons at a similar frequency as pre-pandemic and are moving less for nonwork reasons. We also document that households have significantly altered where they are moving from and to during the pandemic: people are moving to less populated areas and to areas with a lower cost of living, better schools, warmer climates, lower crime rates, and better access to the outdoors.

The changes in migration patterns during the pandemic are meaningful. We find that areas experiencing greater migration experienced greater growth in establishments, small business lending, employment, and personal income. Beyond the local economic relationships shown in this article, the evidence has important implications for real estate, companies, and governments, as well as the future structure of cities and their agglomeration benefits.

Appendix. Variable Definitions and Sources

This appendix presents variable definitions and sources for all variables used in our analysis.

Move-Level Variables

SURVEY_RESPONSE_%: Movers who elect to fill out the survey may select multiple pre-set listed reasons for their move. Source: UniGroup, C.A.

COVID_INFLUENCED_MOVES: An indicator that is equal to 1 if a survey respondent indicated that their move was influenced by the pandemic, and 0 otherwise. Source: UniGroup, C.A.

DISTANCE: Distance in miles between origin and destination ZIP codes. Source: UniGroup, C.A.

WEIGHT: Weight recorded for each move in pounds. Source: UniGroup, C.A.

ZIP-Code-Level Variables

ZIP_REMOTE_WORK: Number of jobs that are remote-capable/Total number of jobs. Source: Su (2020).

ZIP_DENSITY: Population/land area using the 2010 Census figures. Source: Manson et al. (2020).

ZIP_MEDIAN_RENT: Median rent. Source: Manson et al. (2020).

RUCA: Urban if RUCA = 1, suburban if RUCA = 2 or 3, and rural if RUCA > 3. Source: USDA.

County-Level Variables

STRINGENCY: State-level number of restrictions on mobility and business closures. Our main variable uses data as of July 1, 2020. Source: Hale et al. (2020).

COVID_CASES: Number of active COVID-19 cases. Our main variable uses data as of July 1, 2020. Source: *New York Times* COVID-19 Case Database.

MEDIAN_RENT: Average median rent across all ZIP codes within a county. Source: Manson et al. (2020).

TAX_RATE: State-level marginal tax rate for those earning over $100,000. Source: NBER.

DENSITY: The sum of all ZIP-code populations within the county, scaled by the sum of all land area in the county. Source: Manson et al. (2020).

SCHOOL_QUALITY: Percentage of high school students who scored proficient on math exams across all school districts within a county in 2019. We assign the median value of the range if a school district has insufficient observations to warrant the true percentage. Source: EdFacts.

CRIME_RATE: The annual number of crimes per 10,000 residents in 2016. Source: FBI UCR.

AVG_TEMP: Average annual temperature over the last 30 years, as of 2015. Source: Manson et al. (2020).

NATURE_PROPORTION: Proportion of county land covered by forests or water, calculated using 2011 land cover data. Source: Manson et al. (2020).

EMPLOYMENT: Total number of employed individuals at the end of the county-quarter level. Source: QCEW.

ESTABLISHMENTS: Total number of establishments at the county-quarter level. Source: QCEW.

SBA_LOANS: Gross dollar amount of SBA loans aggregated to the county level by a borrower ZIP code. These data include both 7(a) and 504 programs. Source: SBA.

PERSONAL_INCOME: The annual total personal income by place of residence. Source: BEA.

AGI_PER_MOVE: Total AGI for county-to-county migration, scaled by the number of filings (moves). Source: IRS Statistics of Income.

CBSA-Level Variables

CBSA_REMOTE_WORK: Sum of remote work-capable jobs divided by the sum of all jobs at the CBSA level. Source: Su (2020).

CBSA_POPULATION: Sum of population for all ZIP codes within a CBSA using 2010 Census data. Source: Manson et al. (2020).

State-Level Variables

CPS_MIGRATION: Details on the count, household demographics, and reasons for interstate migration. Source: CPS ASEC Survey.

USPS_MIGRATION: Net Inflows of permanent moves. Source: USPS Change of Address Data.

Supplementary Material

To view supplementary material for this article, please visit http://doi.org/10.1017/S002210902300073X.

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