Are Settlement Patterns Changing in the United States as We Emerge from the COVID-19 Pandemic?

Elaine Ng
Jeremy Albright
Holi Urbas
Kurt Usowski
U.S. Department of Housing and Urban Development

The views expressed in this article are those of the authors and do not represent the official positions or policies of the Office of Policy Development and Research, the U.S. Department of Housing and Urban Development, or the U.S. Government.

Abstract

The COVID-19 pandemic dramatically changed the way people work, the state of the nation's housing markets, and, crucially, where people choose to live. This article identifies relocation patterns between counties of different population density types within metropolitan areas following the onset of the pandemic. Density types are defined as the population per square mile divided into four quantiles: high-density or urban (99th density percentile and above), intermediate-density (89th to 98th percentile), suburban-density (25th to 88th percentile), and rural-density (24th percentile and below). This analysis examines the county-weighted year-over-year change in the 12-month average of sales prices and sales volume as well as the year-over-year change in the four-quarter moving average of apartment rents and vacancy rates in 118 combined statistical areas that contain multiple counties of at least two density types. These combined statistical areas were classified into relocation patterns by first comparing the integral of price changes by density type both before and after the onset of the pandemic. This comparison was then supplemented with a visual identification of trends, using graphs to verify that the classifications made sense. The relocation trends are classified into four patterns: (1) Business as Usual, (2) the Donut Effect, (3) the Rise of Intermediate Cities, and (4) the City Paradox. The results showed that approximately 9 percent of the sales markets and 19 percent of the rental markets in metropolitan areas display a Business-as-Usual pattern, 30 percent of sales markets and 46 percent of rental markets in metropolitan areas exhibit the Rise of the Intermediate City trend, and 28 percent of sales markets and 20 percent of rental markets in metropolitan areas exhibit a Donut Effect trend. A subset of metropolitan areas classified as exhibiting a Donut Effect trend are likely to have been classified as exhibiting the City Paradox pattern, but this pattern was not examined in this analysis. Finally, case studies of each of the four resettlement patterns are presented.

Introduction

The COVID-19 pandemic vastly accelerated the adoption of telework in many industries and occupations as businesses and governments maintained operations while avoiding physical presence in worksites. During the first 2 months of the pandemic, approximately 35 percent of workers reported that they had switched from commuting to working from home (Brynjolfsson et al., 2020). Although many facets of life have returned to prepandemic norms more than 2 years later, the workplace for many of these office workers is likely forever changed. Even after the nation finally exits the pandemic, workers with jobs suitable for remote work will likely have options previously unavailable to them. These options include full-time remote work and hybrid work arrangements in which workers report to the office on a part-time schedule. In a comprehensive examination of the effects of vastly expanded remote work arrangements on social and economic policies in G-7 countries, the Organization for Economic Co-operation and Development (OECD, 2021) posits four potential directions for the evolution of settlement patterns in developed countries based on recent academic literature and their own analysis. OECD refers to the four scenarios as Business as Usual, the Rise of Intermediate Cities, the Donut Effect (Ramani and Bloom, 2021), and the City Paradox (Althoff et al., 2020). The scenarios are not mutually exclusive, particularly in a large and diverse country such as the United States. This article will describe each of the scenarios in detail and describe how an informed observer, rather than an econometrician, might observe their development in available data and then describe cases of places in the United States where they appear to be manifesting.

Settlement Pattern Scenarios

The *Business as Usual (with more telework)* scenario is characterized by employment centers remaining concentrated in big cities, and it is more likely to arise if employers resist allowing extensive full-time remote work. The need for some regular in-office time will maintain the attractiveness of central locations, but permanently higher telework levels will reduce peak traffic and transit ridership. No great redistribution of employment from current to new locations would occur, but within metropolitan areas, increased housing demand in outlying suburbs and immediate exurban locations is expected as longer commutes become somewhat more tolerable because they are somewhat rarer. Some movement of consumer services business to suburban and exurban locations may take place, following the population. Effects on house prices and rents would occur largely within metropolitan areas rather than between them as suburban and exurban prices and rents increase relative to those in more central locations. Building permits, often concentrated in outlying areas prepandemic, would continue as such, with perhaps somewhat greater intensity.

The *Rise of Intermediate Cities* scenario envisions more fundamental changes in employment locations among metropolitan areas as remote work technologies and practices remain widely adopted and more fully replicate the advantages of physical proximity in innovation and productivity growth. Initially, remote-enabled workers will gravitate toward intermediate cities, seeking lower housing costs and, perhaps, greater environmental amenities. As physical agglomeration effects weaken but do not disappear, firms will find advantages to relocating to smaller metropolitan areas with lower housing costs and other attractions for workers. The Rise of Intermediate Cities would be characterized by much more rapid house price and rent growth in smaller, as opposed to larger, metropolitan areas, as well as faster increases in building permit issuance in smaller areas. This trend is most prevalent between metropolitan areas, rather than within metropolitan areas, because many of the metropolitan areas that have experienced net in-migration from urban-density counties in this study contain only intermediate- and suburban-density counties.

The *Donut Effect* describes one of the more profound changes in the urban form of the four scenarios: a radical flattening of the density gradient from urban to outlying locations. It posits a weakening, but not complete breakdown, of physical proximity for the realization of agglomeration economies. High-skilled workers mostly move away from large city centers, seeking larger houses and more space, generally in the suburbs and urban periphery, but they remain connected to the city by the need to make occasional commutes. Eventually, due to reduced demand for centrality, city centers become more like surrounding suburbs, with lower-density housing and business use and more green space. If such a fundamental long-term transition were beginning, a very sharp change in the relationship of house prices and rents between central locations and outlying areas would be expected, with the outlying locations becoming relatively more valuable. The price shocks would be followed by adaptive reuse of existing structures and the demolition of more obsolete buildings for lower-density development. Permitting would remain strong in outlying areas, but these changes would be largely contained within metropolitan areas, without widespread movement among metropolitan areas of different sizes.

Like the Donut Effect, the *City Paradox* posits a weakening of the need for physical proximity to realize agglomeration effects, but it pushes further to assume that physical proximity agglomeration effects are nearly gone entirely. Thus, along with the flattening of the density gradient in major metropolitan areas, the City Paradox predicts a move toward smaller cities and rural areas as in the Rise of Intermediate Cities scenario. Consequently, along with a flattening of rent and house-price gradients in metropolitan areas of all sizes, the City Paradox would see moves from larger cities to smaller cities and rural areas, with the attendant move toward more equalized prices across metropolitan areas of different sizes.

The main thing to keep in mind at this point is that changes as comprehensive as the development of new settlement patterns will take generations to be fully realized because the United States typically only builds the equivalent of about 1 percent of the housing stock each year. That said, early signs of these changes can be seen in house prices, rents, and building permits.

Data and Analysis

To see if any of the settlement patterns within metropolitan areas have been taking hold and persisting since early 2020, the authors analyzed recent home sales and apartment data. For this analysis, all 3,100 plus counties in the United States were categorized as either urban, intermediate, suburban, or rural on the basis of their 2020 Census[1] resident population density. Counties in the

[1] The U.S. Census Bureau recognizes only urban and rural areas; therefore, the definitions of the terms in this report differ from theirs.

top 99th percentile of population density—such as New York County, New York; San Francisco County, California; and the District of Columbia[2]—were categorized as urban. Intermediate counties, categorized as counties with a population density between the 89th and 98th percentile, represent medium-sized metropolitan areas with thriving downtowns but to a lesser extent than urban counties. Counties such as Maricopa County, Arizona (Phoenix); Travis County, Texas (Austin); and Ada County, Idaho (Boise) are among the intermediate counties that were identified. Suburban counties are classified as those with population densities between the 25th and 88th percentile and include counties such as Sonoma County, California (Santa Rosa); El Paso County, Colorado (Colorado Springs); and San Bernardino County, California (Riverside-San Bernardino). The remaining counties, at the bottom 24th percentile of population density, were categorized as rural, and they include counties such as Gallatin County, Montana (Bozeman); Fairbanks North Star Borough, Alaska (Fairbanks); and Coconino County, Arizona (Flagstaff). County-level data were used to observe settlement patterns within the metropolitan area. For instance, to identify the Donut Effect, in which workers move just outside the central urban core, a comparison of urban, suburban, and intermediate counties within a metropolitan area—such as New York-Newark-Jersey City—is needed. This study may be the first to use this county population density categorization thresholds to analyze settlement patterns.[3]

Using the four population density categorizations—urban, intermediate, suburban, and rural—the authors examined 118 metropolitan areas with more than one county and at least one intermediate or urban county to identify within-metropolitan area trends. Two different periods of equal length were analyzed to determine the impact of the pandemic on settlement trends: April 2020 through October 2021, compared with September 2018 through March 2020. For the sales market, the authors used the year-over-year change of running 12-month county-weighted averages of sales prices, using CoreLogic sales data to calculate the cumulative difference in growth rates between each population density category. The cumulative difference in the prepandemic period was then compared with the cumulative difference in the period after the onset of the pandemic. The authors applied the same calculations for the apartment market, using year-over-year changes of a running four quarters of asking rents and stabilized vacancies using CoStar Group data. Important to note is that with this analysis, the authors are unable to classify a significant amount of settlement that is happening from one metropolitan area to another.

Sales and Rental Market Trends

Sales Market Trends

Both sales and rental housing markets have generally tightened across the country because of various factors, including low mortgage interest rates, greater rental affordability during the beginning of the pandemic, and, importantly, an increased ability to work remotely from anywhere. Compared with the prepandemic period of September 2018 to March 2020, average annual home sales price growth in most counties of the nation was higher in the post-pandemic-onset period,

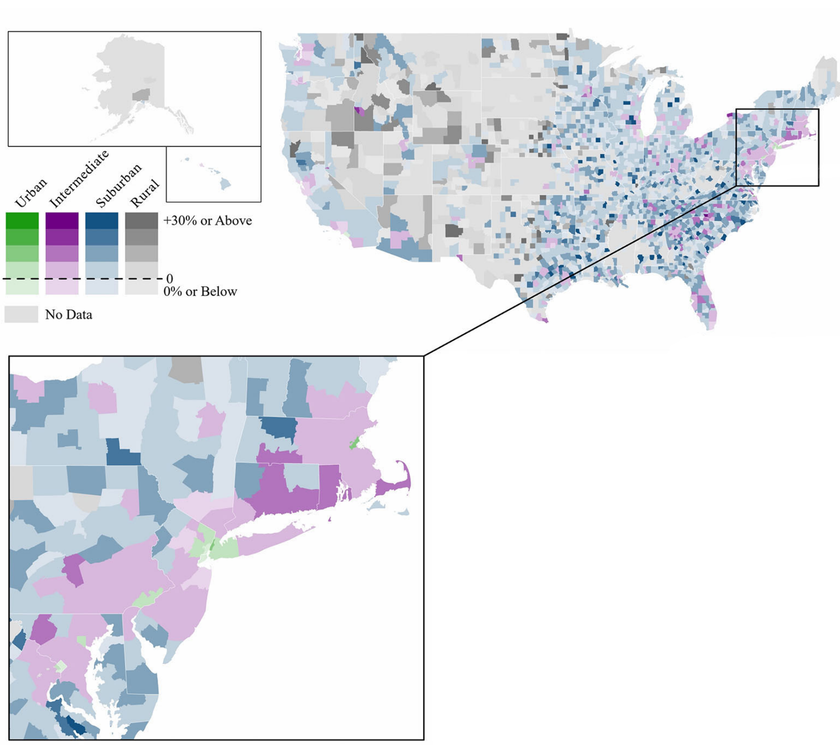
[2] The District of Columbia is treated as a county in this analysis.

[3] Meeker and Mota (2021) used a similar categorization in their report analyzing purchase mortgage applications, classifying high-density ZIP Codes as the top 20th percentile of people per square mile for each core-based statistical area, comparing them with lower-density ZIP Codes.

from April 2020 to October 2021, suggesting that the sales market tightened overall, despite relocations (CoreLogic, Inc., 2022). The impact of the pandemic on sales market conditions was most noticeable for urban counties, where average annual home sales price increases during the post-pandemic-onset period were higher in 96 percent of urban counties compared with prepandemic average annual growth. A still significant proportion of lower-density counties also recorded higher price growth during the post-pandemic-onset period, with average annual price growth higher in 86, 85, and 82 percent of suburban, intermediate, and rural counties, respectively (exhibits 1 and 2). The difference in the rate of price growth between the two periods was significant, with roughly three-quarters of intermediate, suburban, and rural counties reporting average annual price growth for home sales since April 2020 that was at least double the rate in the same county during the prepandemic period, and more than one-half of counties in the three lower-density categories reporting price growth at least triple the prepandemic rate. For urban counties, the difference was even starker, with 93 percent of urban counties reporting at least double the rate of price growth during the post-pandemic-onset period and 79 percent of urban counties reporting price growth at least triple the prepandemic rate.

Exhibit 1

Average Annual Price Growth for Homes Sold from September 2018 to March 2020, by County Density

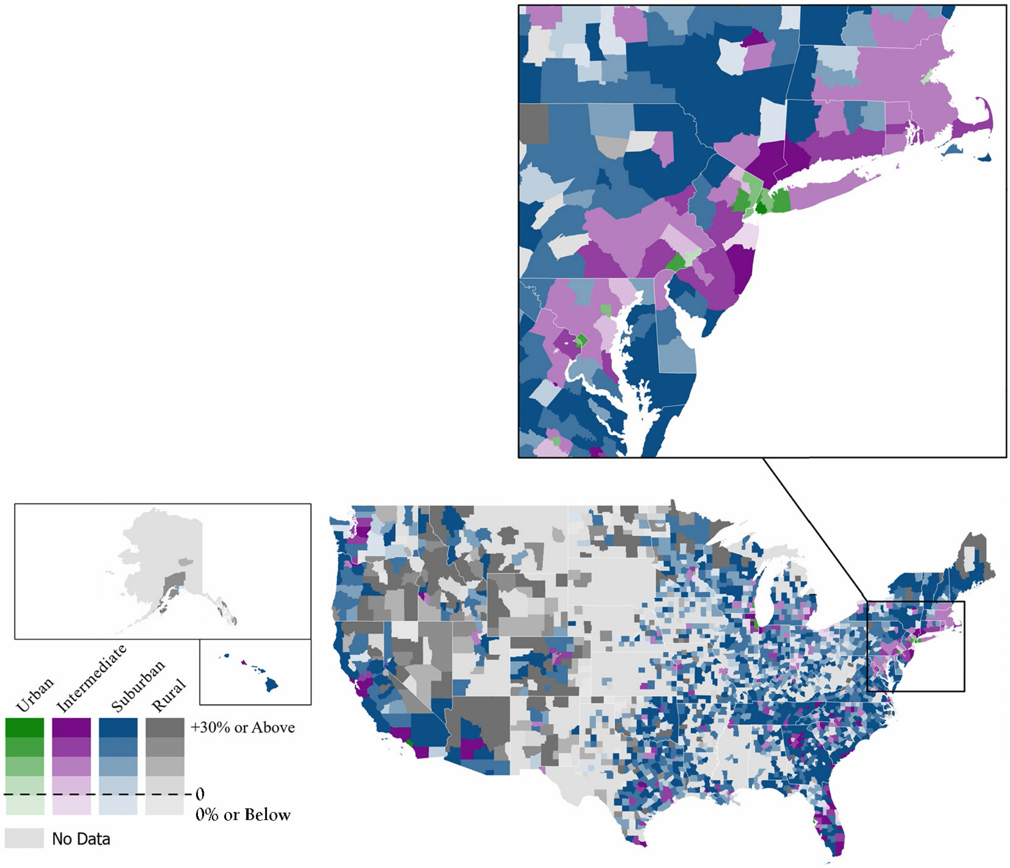


Notes: Because urban counties are classified as the top 99th percentile of population density, they account for only about 10 percent of counties in the United States and are, therefore, less visible on the national map. The area between the District of Columbia and Boston has a number of urban counties and has been highlighted for greater visibility.

Source: CoreLogic, Inc.

Exhibit 2

Average Annual Price Growth for Homes Sold from April 2020 to October 2021, by County Density



Notes: Because urban counties are classified as the top 99th percentile of population density, they account for only about 10 percent of counties in the United States and are therefore less visible on the national map. The area between the District of Columbia and Boston has a number of urban counties and has been highlighted for greater visibility.

Source: CoreLogic, Inc.

The sales data suggest that 19 metropolitan areas, or slightly more than 15 percent, fall into the Business-as-Usual settlement pattern, where the gap between sales and price growth of urban, intermediate, suburban, and rural counties within a metropolitan area is similar to the gap before the pandemic. About 38 metropolitan areas, or almost 32 percent of metropolitan areas, fall into the Donut Effect settlement pattern, with significantly higher growth in sales and prices in lower-density counties than higher-density counties and with a clear break between the prepandemic and post-onset-pandemic trends. A subset of these metropolitan areas is likely to fall into the City Paradox settlement pattern, but a lack of within-county price distribution prevented classification with the available data. Roughly 25 percent of metropolitan areas demonstrated a Rise of Intermediate Cities settlement pattern, with the highest growth in intermediate-sized counties. However, many metropolitan areas determined to be exhibiting this settlement pattern had only two density types: intermediate and suburban. In these metropolitan areas, sales and price growth in the intermediate counties was faster during the post-pandemic-onset period than in the suburban counties. Because only intra-metropolitan trends are examined in this report, it is also possible that demand from outside the metropolitan area to the intermediate counties is driving growth, rather than within-metropolitan area movement from the suburban to intermediate counties. Finally, 29 metropolitan areas did not exhibit clear characteristics of any of the four settlement patterns, and in three metropolitan areas, there was higher growth in high-density urban counties during the post-pandemic-onset period relative to lower-density counties, which was a reversal of prepandemic trends.

A plurality of counties in all density categories had growth in the number of home sales but to a much smaller extent than the differences in price growth would suggest, likely due to the historically low levels of housing construction after the Great Recession, supply and labor constraints on key inputs to residential development, and the natural inability of production to quickly meet demand. Around two-thirds of urban, suburban, and rural counties recorded an increase in average annual home sales during the post-pandemic-onset period, but the proportion was much lower, at 36 percent, in intermediate counties. For intermediate counties, this percentage still accounts for the plurality of counties because 39 percent of intermediate-sized counties have unreported data.

Apartment Market Trends

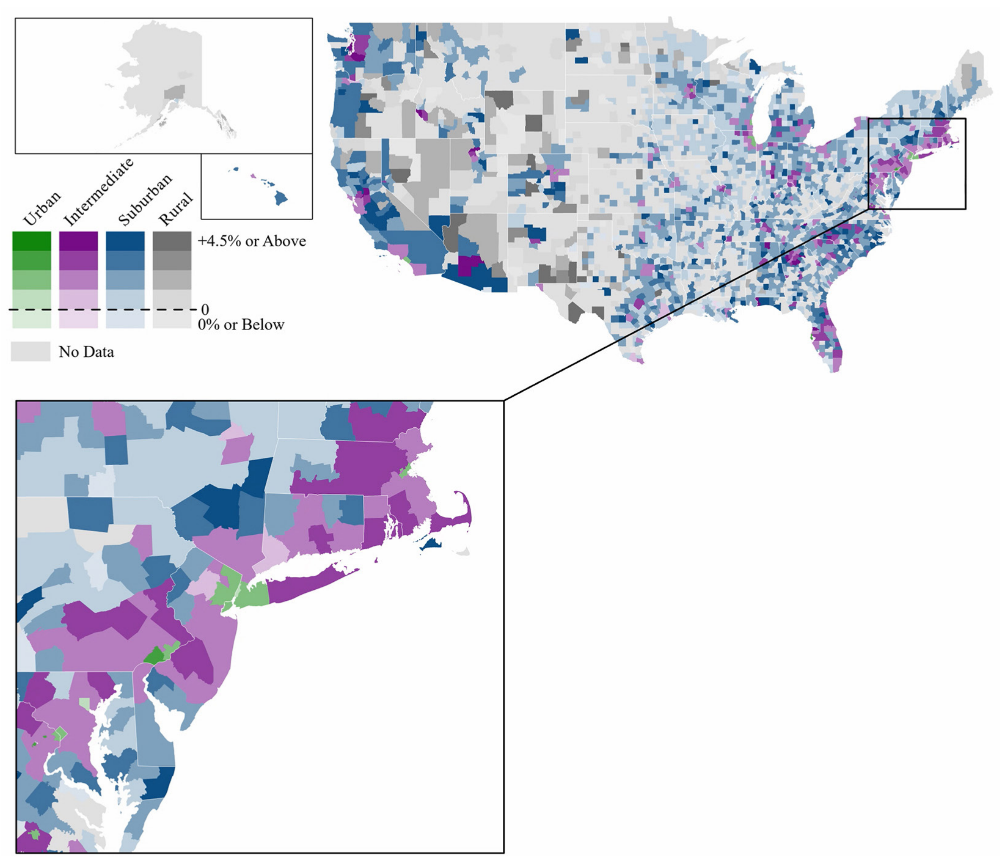
Unlike the sales market, in which home sales price growth during the post-pandemic-onset period was greater than before the pandemic almost uniformly across the board, apartment rent growth varied more on the basis of county density. An overwhelming 92 percent of intermediate-sized counties had higher average annual rent growth since the second quarter of 2020 than in the prepandemic period, suggesting that intermediate-sized counties across the country were the primary beneficiaries of pandemic-related rent growth (exhibits 3 and 4). In 86 percent of intermediate-sized counties, the stabilized vacancy rates have declined faster since the second quarter of 2020 compared with the prepandemic period (CoStar Group, 2022). Apartment markets in suburban counties were also significantly affected by pandemic demand; 60 percent of suburban counties had higher rent growth since the second quarter of 2020, whereas stabilized vacancy rates declined faster during the same period in 67 percent of suburban counties. The apartment market in urban counties responded similarly, with 61 percent of urban counties reporting higher rent growth and 55 percent reporting stabilized vacancy rates declining faster. Apartment markets in rural counties also tightened but to a significantly smaller extent, with only 44 percent of rural counties reporting higher rent growth since the second quarter of 2020.

The extent of rent growth during the post-pandemic-onset period was also significantly skewed toward intermediate-sized counties, with 80 percent of these counties recording average annual rent growth at one-and-one-half times higher than the rate of growth during the prepandemic period, and 62 percent of these counties recording double the rent growth. For urban, suburban, and rural-density counties, rent increases were one-and-one-half times higher than the rate of growth during the prepandemic period for a respective 35, 42, and 27 percent of these counties.

In the apartment market, 19 percent of metropolitan areas displayed the Business-as-Usual pattern. The pattern was unclear in 10 percent of metropolitan areas, and in 4 percent of metropolitan areas, greater growth occurred in higher-density counties, similar to the respective percentages for the sales markets. However, the apartment market in 46 percent of metropolitan areas demonstrated the Rise of Intermediate Cities pattern, and 20 percent of metropolitan areas demonstrated the Donut Effect pattern. Interestingly, in 51 metropolitan areas, or 43 percent, the categorization of the settlement pattern in the apartment market did not match the settlement pattern that the sales market suggested. Comparing the apartment market classification to the sales market classification revealed no clear trends.

Exhibit 3

Average Annual Rent Growth from 3Q2018 to 1Q2020, by County Density

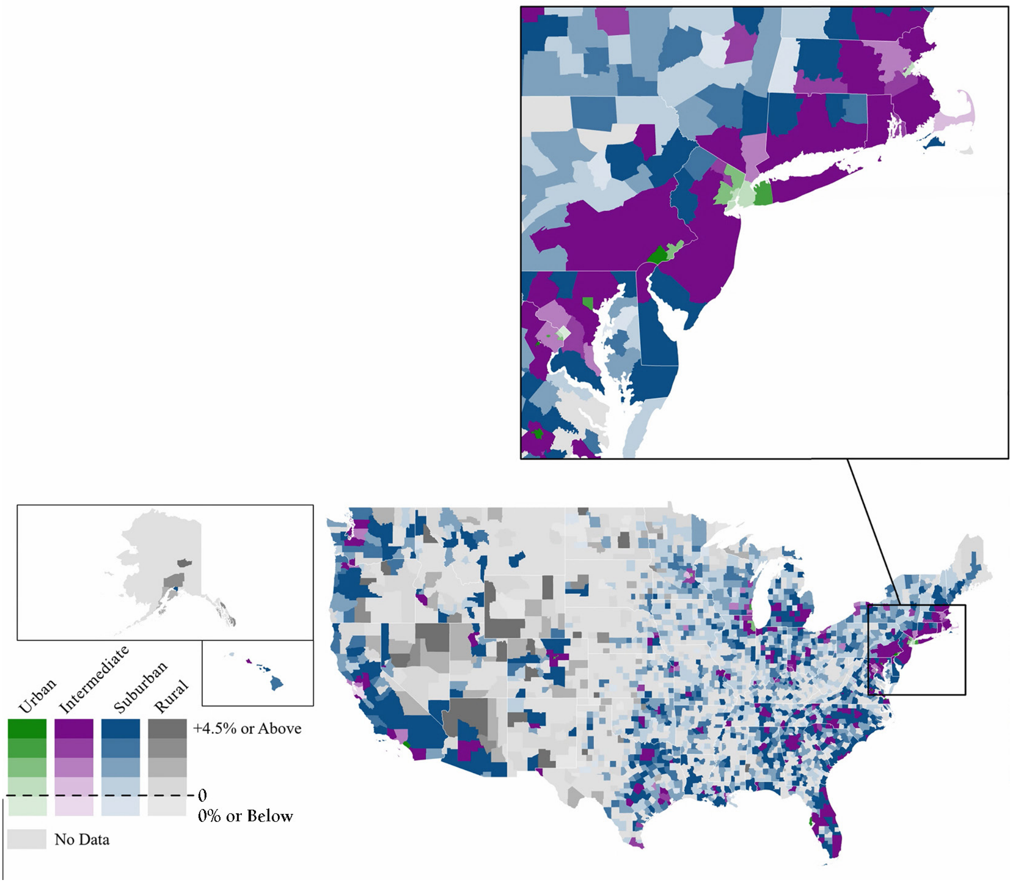


Notes: Because urban counties are classified as the top 99th percentile of population density, they account for only about 10 percent of counties in the United States and are, therefore, less visible on the national map. The area between the District of Columbia and Boston has a number of urban counties and has been highlighted for greater visibility.

Source: CoStar Group

Exhibit 4

Average Annual Rent Growth from 2Q2020 to 4Q2021, by County Density



Notes: Because urban counties are classified as the top 99th percentile of population density, they account for only about 10 percent of counties in the United States and are, therefore, less visible on the national map. The area between the District of Columbia and Boston has a number of urban counties and has been highlighted for greater visibility.

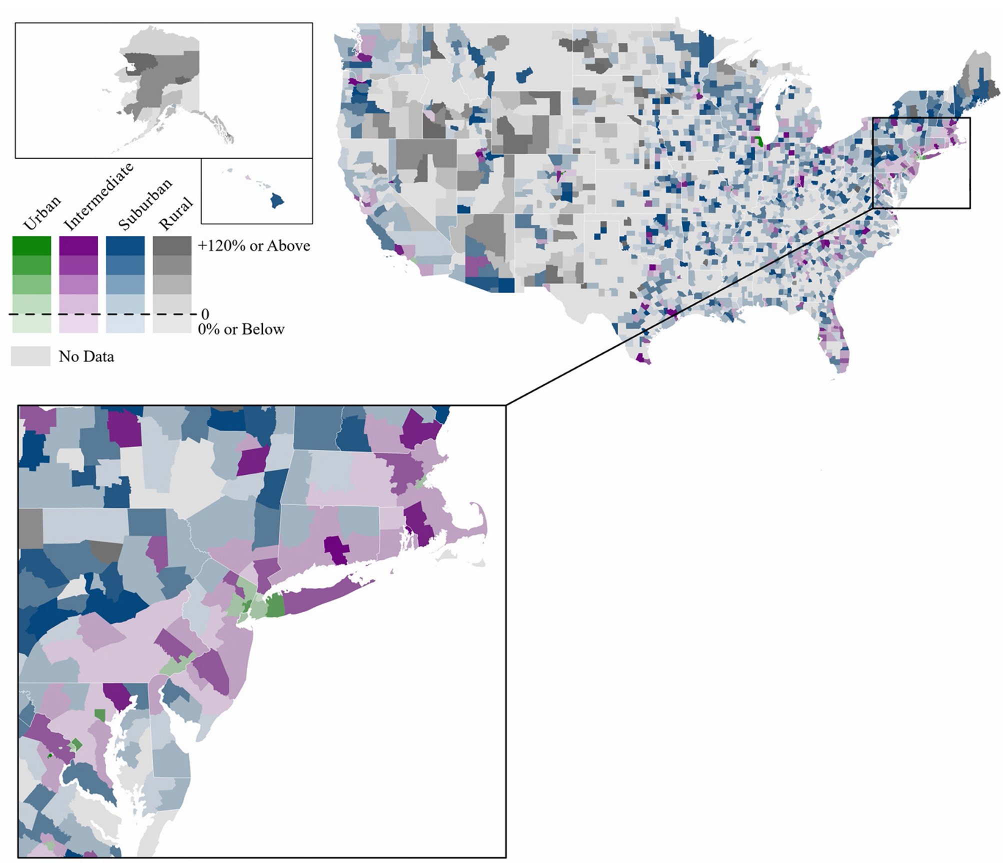
Source: CoStar Group

Residential Building Permit Trends

Residential construction activity, as measured by the number of building permits issued for multifamily units and single-family homes, typically should respond to tightening conditions in both the apartment and sales markets. During the prepandemic period, the number of residential units permitted increased in almost three-quarters of all counties, with positive growth in permits in 68 percent of urban counties, 72 percent of intermediate-sized counties, 72 percent of suburban counties, and 69 percent of rural counties (U.S. Department of Housing and Urban Development and U.S. Census Bureau, 2022). The response to sales market conditions was much swifter in lower-density counties, with single-family home permitting activity increasing in 76 percent of all counties, a proportion that was similar across all density types except for urban counties, where a higher 84 percent of those counties reported an increase in single-family building permits issued (exhibit 5). However, the reverse was true for multifamily construction activity, in which the number of multifamily units permitted increased in 16 percent of urban counties and 26 to 30 percent of lower-density counties during the period (exhibit 6).[4] For multifamily units, residential construction activity in almost one-half of the counties remained unchanged during the post-pandemic-onset period, likely a result of the push and pull of higher demand with greater supply and labor constraints on construction. Single-family construction activity, however, has been able to respond more quickly, and only a small fraction of counties of all density types—typically less than 10 percent—have not seen any change in the post-pandemic-onset period.

Exhibit 5

Average Annual Growth in Single-Family Homes Permitted from September 2018 to March 2020 Compared with April 2020 to October 2021, by County Density



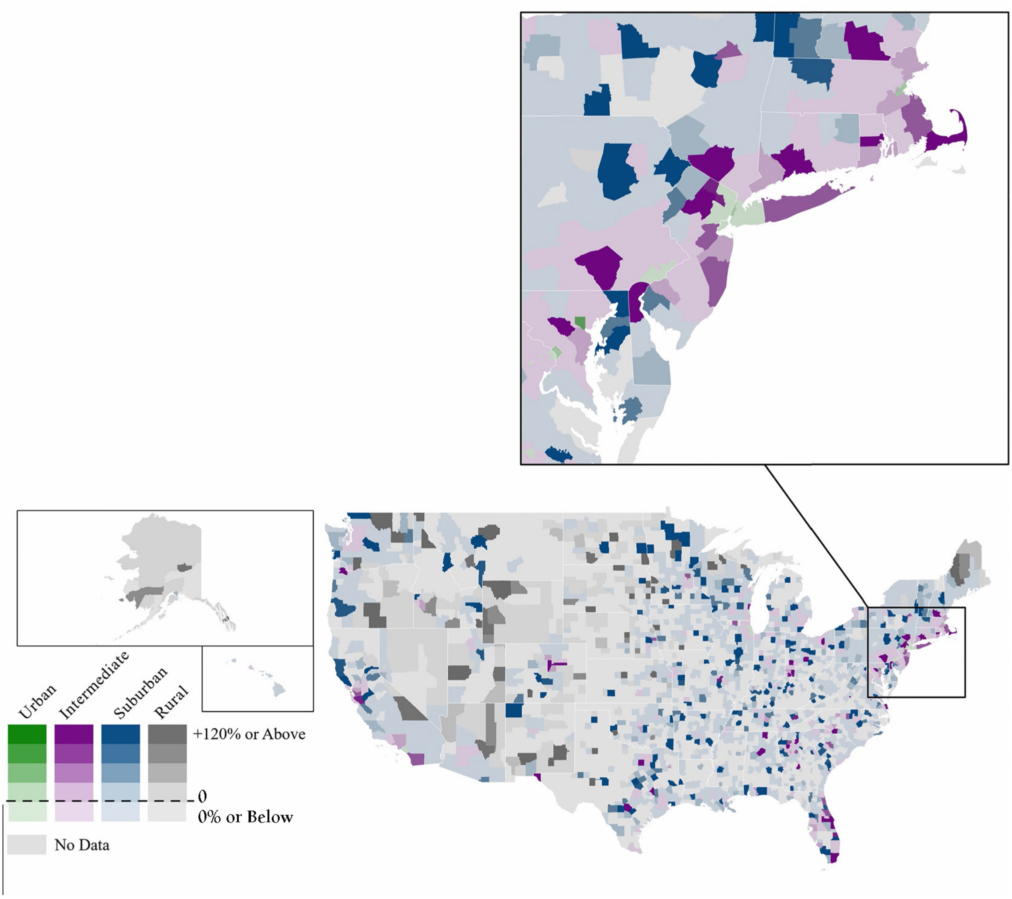
Notes: Because urban counties are classified as the top 99th percentile of population density, they account for only about 10 percent of counties in the United States and are therefore less visible on the national map. The area between the District of Columbia and Boston has a number of urban counties and has been highlighted for greater visibility.

Source: U.S. Department of Housing and Urban Development and U.S. Census Bureau, Building Permits Survey

[4] The Building Permits Survey collects data by structure type, not by the intended tenure of the unit. Therefore, permits for multifamily units include those for apartments, condominiums, and townhomes.

Exhibit 6

Average Annual Growth in Multifamily Homes Permitted from September 2018 to March 2020 Compared with April 2020 to October 2021, by County Density



Notes: Because urban counties are classified as the top 99th percentile of population density, they account for only about 10 percent of counties in the United States and are therefore less visible on the national map. The area between the District of Columbia and Boston has a number of urban counties and has been highlighted for greater visibility.

Source: U.S. Department of Housing and Urban Development and U.S. Census Bureau, Building Permits Survey

Settlement Pattern: Business as Usual (with more telework)

Case Study: Philadelphia-Camden-Wilmington, PA-NJ-DE-MD Metropolitan Area

The Philadelphia-Camden-Wilmington, PA-NJ-DE-MD metropolitan area is characterized as Business as Usual because growth rates in sales prices and apartment rents between counties of different density levels closely mirror one another, due in large part to the metropolitan area's high concentration of employment in the education and health services sector. Net out-migration from the Philadelphia-Camden-Wilmington metropolitan area from 2012 through 2017 helped drive down demand for homes. Average home sales prices in suburban and urban counties wavered between declining year-over-year and averaging low single-digit price growth until 2019. Following the onset of the pandemic, however, mortgage rates fell to historical lows, net in-migration increased, and, in late 2020, stock-holding households found their assets more valuable than they had been before the pandemic. These factors increased owner demand, and the metropolitan area saw home prices rise at unprecedented rates. Crucially, before the pandemic and after its onset, home sales and prices in the suburban counties grew at similar rates to the urban counties, separated by only a few percentage points. Despite the enactment of countermeasures to contain the pandemic and the adoption of remote work for white-collar jobs, a significant redistribution of the population to new locations does not appear to have occurred.

Many workers in the Philadelphia-Camden-Wilmington metropolitan area are employed in sectors that were either unable to transition to remote work or had strong intentions to return to full-time, in-person work. The largest payroll sector in the area, the education and health services sector, includes numerous jobs unsuitable for remote work. In the Philadelphia metropolitan area, this sector made up 21 percent of nonfarm payrolls in 2021 and supported more than 90 postsecondary educational institutions and nearly 60 hospitals (U.S. Bureau of Labor Statistics, 2022a). In the highest-density counties of Philadelphia and Delaware, the share of jobs in this sector was even more concentrated, at 34 and 25 percent of nonfarm payrolls in 2020 (U.S. Bureau of Labor Statistics, 2022b). The Philadelphia-Camden-Wilmington metropolitan area was not exempt from the widescale adoption of remote working at the onset of the pandemic; however, many workers with occupations in the professional and business services or financial activities sectors were able to relocate to more affordable housing in suburban counties, pushing suburban rents and home prices slightly higher than in urban areas.

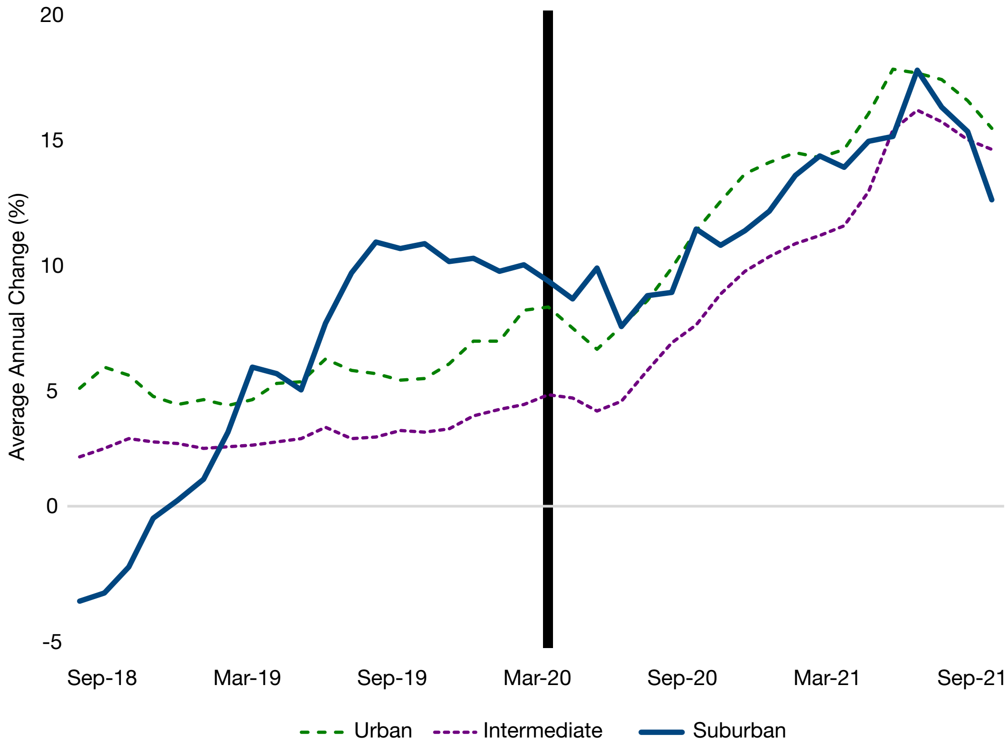
The relative importance of high-density urban counties as job centers in the metropolitan area remained strong, and increased housing demand pushed up apartment rents, apartment occupancy rates, home prices, and home sales at similar rates across counties of all densities.

The overlapping growth rates, as seen in exhibit 7, illuminate the nearly identical growth rates in home prices between density types both before and after the onset of the pandemic. Whereas price growth rose significantly for counties of all density types in the metropolitan area for much of the period after the onset of the pandemic, the difference in price growth among the density categories was similar to prepandemic trends, suggesting that the housing market tightened across the board. Sales price growth in densely populated urban counties and intermediate-sized counties was separated by an average of 3 to 4 percentage points after 2020, similar to the average of 2 to 3 percentage points before the pandemic (CoreLogic, Inc., 2022). Although variation in suburban price growth has increased since 2019, average price growth in suburban counties has generally been below that of urban counties.

Home sales volume similarly grew at accelerated rates for all counties, following a drop in home sales in response to stay-at-home orders instituted in the early months of the pandemic. Year-over-year growth in the running 12-month total of home sales reached 15 to 20 percent in July 2021 for counties of all densities—annual growth rates not seen in the metropolitan area since 2016. During the latter part of 2021, home sales growth was fastest in the highest-density counties of Philadelphia and Delaware.

Exhibit 7

Average Annual Price Growth for Homes Sold in the Philadelphia-Camden-Wilmington MSA, by County Density Illustrating "Business as Usual"

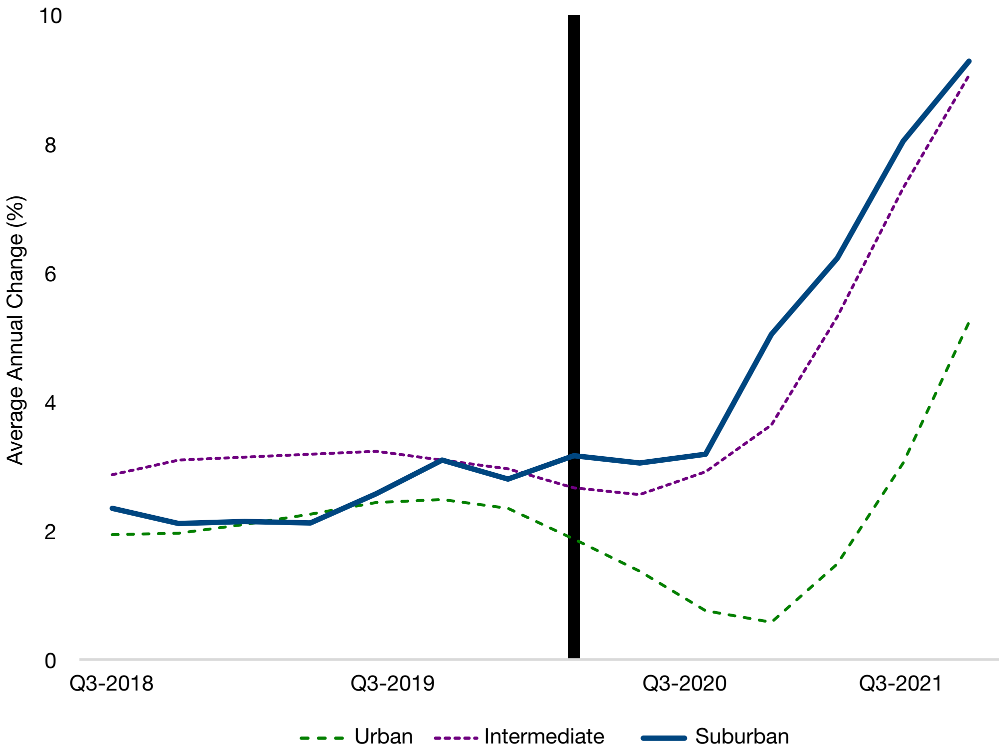


Source: CoreLogic, Inc.

The continued strength of the urban and intermediate areas of the Philadelphia-Camden-Wilmington metropolitan area is also evident in the apartment market. Average rents in all counties have historically grown at similar rates, and although rents in the highest-density counties have lagged those in lower-density counties, rents in intermediate-sized counties have grown at nearly the same rate as those in suburban counties following the onset of the pandemic, as can be seen in exhibit 8 (CoStar Group, 2022). Year-over-year growth in the running four-quarter average of rents has been nearly identical between suburban counties and intermediate-sized counties, separated by an average of 1 percentage point or less since the onset of the pandemic, similar to the gap in rent growth before the pandemic. Growth rates for rents in the highest-density counties have trailed rates in other, less dense counties, indicating relocation away from the downtown urban core. According to the Joint Center for Housing Studies of Harvard University (2020), renters are more likely to be single, have no children, and have more geographic flexibility than homeowners with similar telework flexibility, perhaps explaining why renter relocation is slightly more pronounced than owner relocation.

Exhibit 8

Average Annual Apartment Rent Growth in the Philadelphia-Camden-Wilmington MSA, by County Density Illustrating "Business as Usual," Although with Faster Suburban Rent Growth



Source: CoStar Group

Apartment vacancy rates have mirrored relocation trends in apartment rents and the sales market. Vacancy rates across area density types closely tracked one another before the pandemic, indicating a stable population distribution within the metropolitan area. Following the onset of the pandemic, vacancy rates across density types continued to track one another, but they decreased slightly faster in suburban and medium-density counties than in the highest-density counties of Philadelphia and Delaware. The discrepancy in vacancy rate change, as with rent growth rates, suggests that increases in rental demand affected all counties similarly but that some workers in the downtown urban core with the ability to adopt remote work relocated to less dense counties.

The Business-as-Usual pattern, or lack of relocation due to the relative strength of the downtown urban core to the surrounding suburbs, is likely to continue in coming years. One of Philadelphia's largest universities, Temple University, has expressed a commitment to returning to in-person instruction and established a Return Team to ensure a safe and complete return to on-campus activity.

The continued importance of the downtown urban core to the Philadelphia-Camden-Wilmington metropolitan area can also be observed in home construction activity, as measured by the number of single-family homes permitted. Total single-family homes permitted have increased annually since 2018, indicating that developers expect demand to continue through 2022. Specifically, from 2019 to 2021, the number of single-family homes permitted grew by an average of 30 percent in both urban and suburban counties (U.S. Department of Housing and Urban Development and U.S. Census Bureau, 2022).

The recent trend in the number of multifamily units permitted also indicates the expected strength of the urban core. Permits for multifamily units increased at an average annual rate of 30 percent in urban counties during 2019 and 2020 and more than five-fold during 2021 in urban counties, particularly Philadelphia County. However, the recent increase is not necessarily due to developers responding to a spike in apartment demand but rather a change in the tax abatement policy. In the suburban counties, no multifamily construction activity occurred from 2016 to 2020, but construction activity began to rise in 2021. The Indianapolis, IN and Columbus, GA metropolitan areas also present a Business-as-Usual settlement pattern.

Settlement Pattern: The Rise of Intermediate Cities

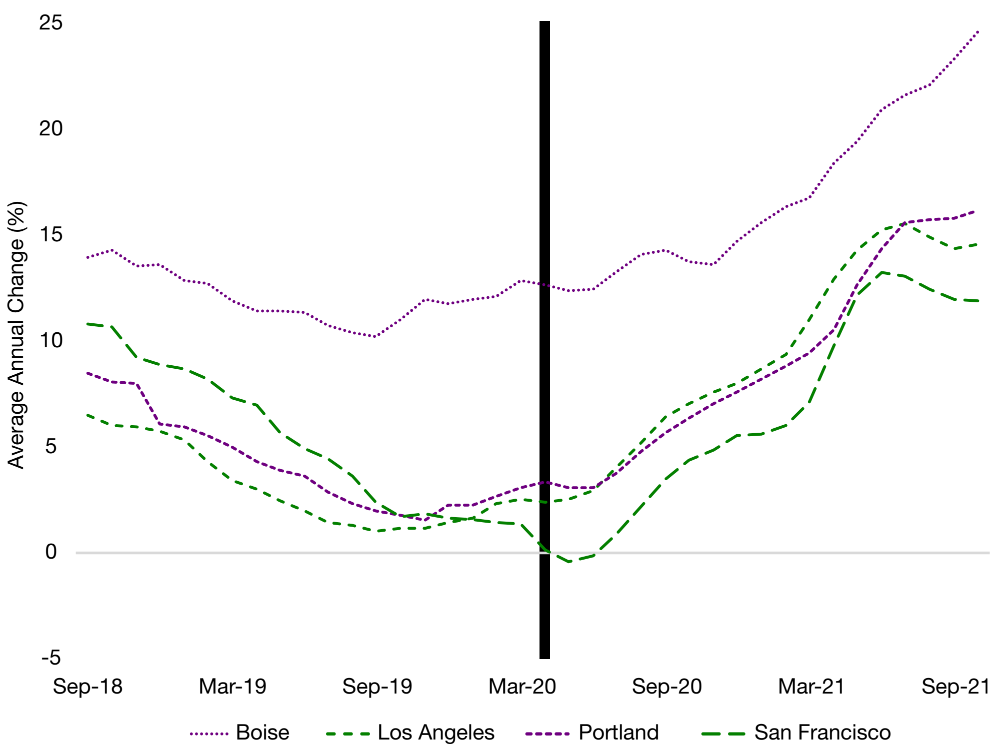
Case Study: Boise City, ID Metropolitan Area

The Boise metropolitan area fits the mold of a rising intermediate city, benefiting from the drain of residents from high-cost urban environments, and the pandemic has exacerbated this pattern. From 2015 to 2019, net in-migration to the Boise metropolitan area was strongest from higher-cost areas, with the largest concentration moving from the Los Angeles metropolitan area (U.S. Census Bureau, 2021a). Other popular areas of origin include the San Francisco and Portland metropolitan areas. This dynamic exists largely because of the relatively lower cost of living in the Boise metropolitan area coupled with many quality-of-life factors that entice people to the area, as evidenced by recent accolades. The Boise area ranked third on the list of Best Cities for Remote Workers 2021 (Chaplin et. al, 2021) and third on the list of Top U.S. Metros for Digital Nomads (Zillow and Yelp, 2021). Coworking spaces were available in the Boise metropolitan area before the pandemic, but several new operations have opened recently to support the increased use of remote work, including Nine to Five, Kiln, and Fort Builder, the latter of which opened two locations. Furthermore, apartment developers have recognized the shift in working patterns and are adopting new unit mixes to target the work-from-home demographic, with at least two proposed townhome developments that will include a large portion of live/work units. Live/work units are apartment homes that include a commercial component, such as an office or retail space, that is used by the primary occupant of the unit.

The influx of households from higher-cost and more urban metropolitan areas partly contributed to swift home sales price growth in the Boise metropolitan area, a pattern that has accelerated since the pandemic started. In 2015, the average sales price of a home in the Los Angeles metropolitan area was 3.0 times greater than the average sales price in the Boise metropolitan area, and that disparity fell to 2.5 times greater in 2019, before the pandemic (CoreLogic, Inc., 2022). Similar patterns are visible in the San Francisco and Portland metropolitan areas, where the disparities declined from 3.6 to 2.6 times and 1.4 to 1.1 times, respectively, during the same periods. Sales price growth in the Boise metropolitan area averaged almost 9 percent annually during the same period, compared with average annual growth of less than 5 percent in the Los Angeles metropolitan area and 6 and 7 percent in the San Francisco and Portland metropolitan areas, respectively (exhibit 9). During 2020, the average sales price of a home in the Boise metropolitan area rose 15 percent before accelerating to 24 percent in 2021 (CoreLogic, Inc., 2022). During the same time, in the Los Angeles metropolitan area, prices increased 8 and 15 percent, respectively, whereas price growth more than doubled in the San Francisco and Portland metropolitan areas compared with a year earlier, to 12 and 17 percent, respectively. These trends caused the disparity in housing costs to lessen further in 2021, and the average sales prices in the Los Angeles, San Francisco, and Portland metropolitan areas were 2.1, 2.6, and 1.1 times greater than in the Boise metropolitan area. The inflow of households from the urban, high-cost metropolitan areas, coupled with historically low mortgage interest rates, led to a surge in home sales in the Boise metropolitan area beginning in the fall of 2020, when the percent increase in year-over-year home sales reached double digits, a pattern that resurfaced in the spring of 2021. However, ongoing inventory shortages resulted in declining home sales in the Boise metropolitan area during the last part of 2021, and home sales were down 8 percent year over year. An increase in single-family home construction, with 8,350 single-family units permitted in 2021 compared with 8,150 units in 2020, could help ease some of the inventory crunch.

Exhibit 9

Average Annual Price Growth for Homes Sold in the Boise City MSA and Higher-Density MSAs Illustrating a "Rising Intermediate City"

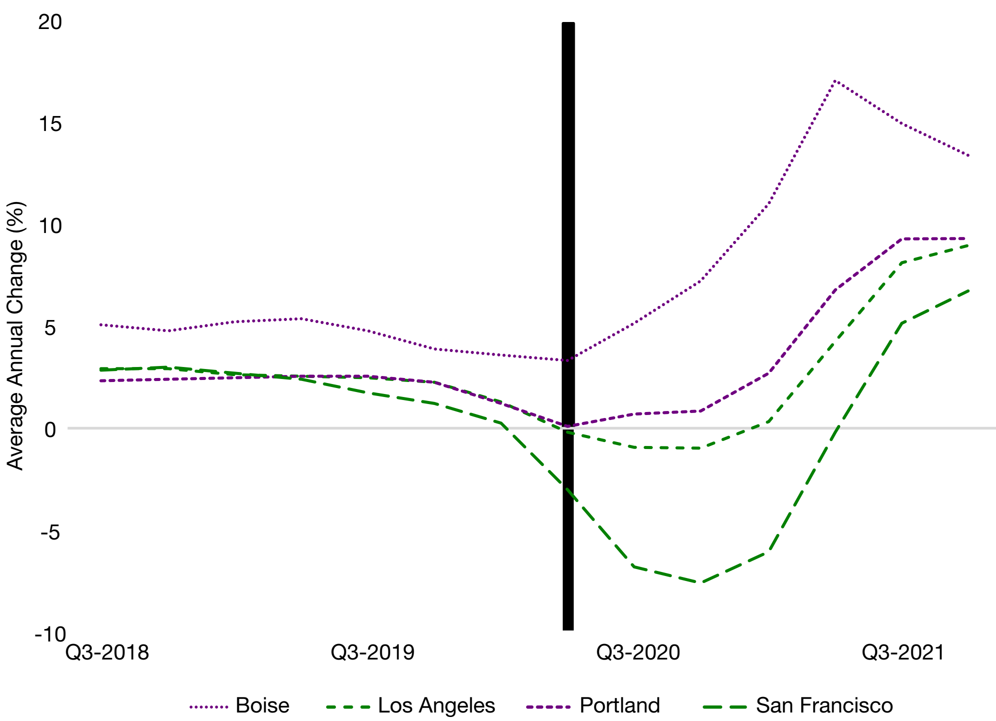


Source: CoreLogic, Inc.

Rental demand, especially for apartments, has increased in the Boise metropolitan area during the pandemic, partly because of a prolonged shortage of for-sale housing stemming from strong demand from higher-cost areas. In addition, some younger households have likely accumulated savings during the pandemic, whether by living with parents or roommates, receiving federal stimulus payments, or decreased spending on social events—or a combination of those factors—which in turn enabled new household formation; this subset of people is most likely to be renters. The apartment vacancy rate fluctuated little from 2015 through 2019, ranging from a high of 6.5 percent to a low of 4.3 percent. During the pandemic, the rate peaked at 5.9 percent during the third quarter of 2020 and has generally trended down since then (CoStar Group, 2022). Year-over-year rent growth ranged from 3 to 7 percent from 2015 through 2020, subsequently accelerating to double digits each quarter in 2021, coinciding with the gradual relaxing of COVID-19 restrictions (exhibit 10). Rent and vacancy trends were similar in the Los Angeles metropolitan area, although the magnitude of change was less than in the Boise metropolitan area, with accelerated rent growth starting in early 2021, whereas vacancy rates remained low. In the San Francisco metropolitan area, rents declined year over year from the second quarter of 2020 through the first quarter of 2021, whereas vacancy rates increased to their highest levels since at least 2012. Year-over-year rent

Exhibit 10

Average Annual Apartment Rent Growth in the Boise City MSA and Higher-Density MSAs Illustrating a "Rising Intermediate City"



Source: CoStar Group

growth returned during the third quarter of 2021, reaching 7 percent during the fourth quarter of 2021, which is the fastest rent growth since the fourth quarter of 2015. The apartment vacancy rate in the Portland metropolitan area was 5.1 percent or less from the onset of the pandemic through the fourth quarter of 2021, and like the other areas of comparison, rent growth increased significantly during 2021 but at lower rates than in the Boise metropolitan area.

To meet the rising demand for apartments, multifamily permitting in the Boise metropolitan area in 2021 reached its highest level since at least 1980, with more than 3,850 units permitted, surpassing the previous peak in 2019 by 26 percent. Multifamily permitting in 2020 decreased significantly from 2019 levels but was generally in line with average annual permitting of 1,575 units from 2014 through 2018. Although apartment markets in all three of these metropolitan areas have seemingly recovered from the effects of the pandemic, the data clearly show that the Boise metropolitan area has outperformed these more dense, urban markets, largely by continuing to attract high levels of residents from outside the metropolitan area. Other Rise of Intermediate City settlement patterns can be seen in the Phoenix, AZ and Charlotte, NC metropolitan areas.

Settlement Pattern: Donut Effect

Case Study: New York-Newark-Jersey City, NY-NJ-PA Metropolitan Area

In the spring of 2020, densely populated New York City was the epicenter of the COVID-19 pandemic in the United States, and as an early adopter of economic shutdowns and remote work to temper the spread of the virus, dramatic shifts occurred where people wanted to live within the larger metropolitan area.[5] Home sales fell precipitously at the start of the pandemic, and the average apartment vacancy rate rose to its highest level since the early 2010s throughout the entire metropolitan area. Shortly after this initial widespread softening of the housing market in the metropolitan area, the Donut Effect is visible in the home sales and rental data, with pronounced strength in markets of suburban and intermediate-density counties. During this time, home sales and prices in these counties grew at rates higher than during the housing boom,[6] and urban markets suffered a prolonged decline in home sales and prices. On the rental side, apartment rent growth in these counties has exceeded previous record rates, whereas rents declined in urban counties for the first time in at least a decade.

Beginning in August 2020, the running 12-month total of home sales in suburban counties of the New York metropolitan area continued to climb every month, reaching a peak of 43 percent year-over-year growth during the 12 months ending June 2021 (CoreLogic, Inc., 2022). Similarly, year-over-year home price growth in the suburban counties reached 44 percent by July 2021. For urban counties, home sales continued to decline through the 12 months ending April 2021. At its lowest point since the beginning of the pandemic, home sales in the urban counties declined 18 percent during the 12 months ending September 2020. Although urban county home prices did not decline, price growth in these counties has been consistently below suburban county price growth since late 2018, and the gap between urban and suburban county sales price growth

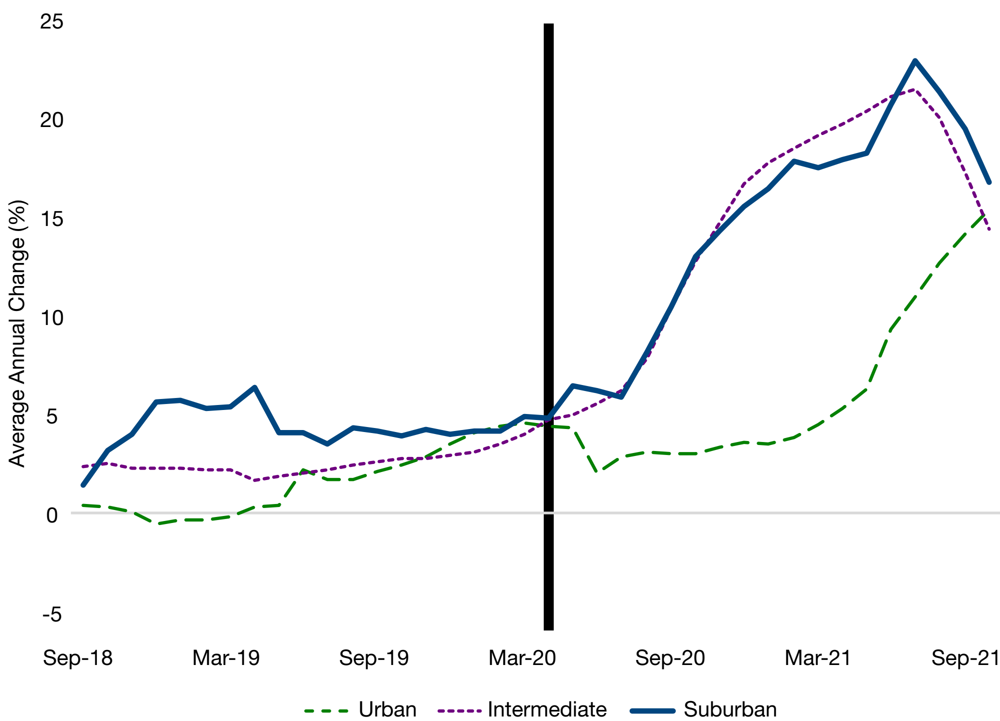
[5] As measured by sales and rental market data trends.

[6] The housing boom generally includes the 3 years before the start of the Great Recession in 2007.

has widened dramatically since the start of the pandemic (exhibit 11). The widest gap occurred during the 12 months ending February 2021, when home prices in suburban and intermediate counties increased 18 and 19 percent, respectively, but home prices in urban counties increased by less than 4 percent. These trends coincide with findings from the Office of the New York City Comptroller (2021), which analyzed United States Postal Service (USPS) change of address forms and found that the net loss from move-outs exceeding move-ins more than tripled from 2019 to 2020. A separate analysis of the same change of address data found that the majority of permanent movers—79 percent—did not leave the central metropolitan area; they moved to other urban boroughs but also to intermediate counties, such as Westchester and Suffolk Counties (Patino, Kessler, and Holder, 2021).

Exhibit 11

Average Annual Price Growth for Homes Sold in the New York-Newark-New Jersey MSA, by County Density, Illustrating the "Donut Effect"

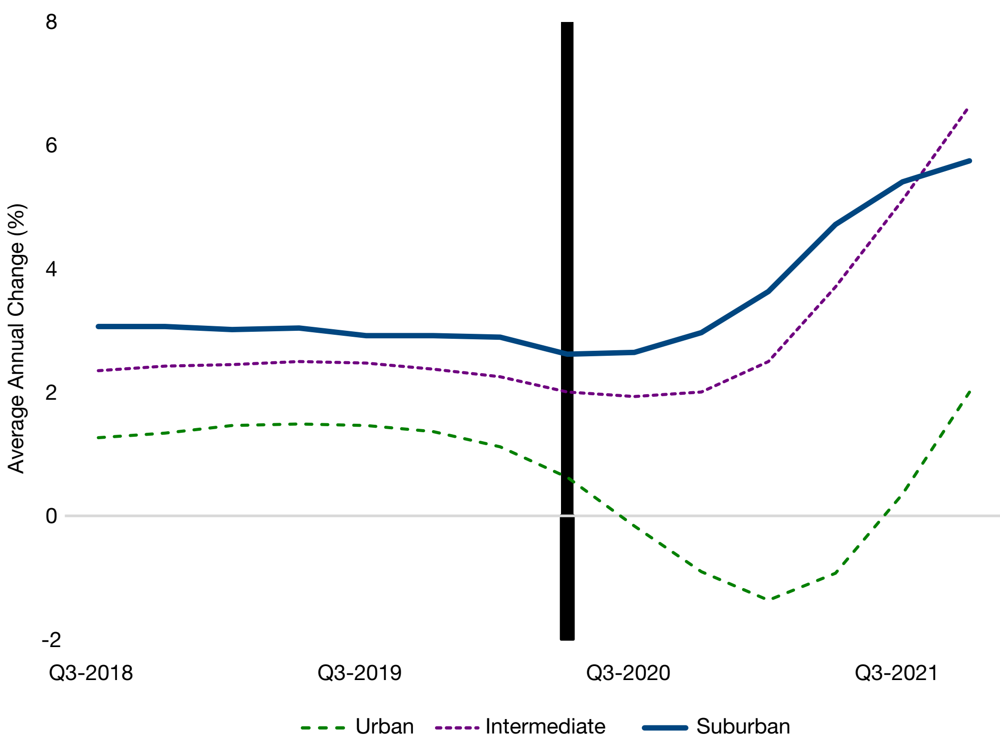


Source: CoreLogic, Inc.

The impact of the pandemic was similar in the apartment market, where urban counties continued to experience a year-over-year decline in average rents for three consecutive quarters, starting in the fourth quarter of 2020, whereas average rents in the suburban and intermediate counties increased faster than in previous years. From 2016 to 2020, rent growth in the suburban and intermediate counties of the New York metropolitan area consistently ranged from 2 to 3 percent (CoStar Group, 2022). After the first quarter of 2021, rent growth continued to climb, peaking at an average of 6 percent in suburban counties and 7 percent in intermediate counties. Although rent growth in the urban counties recently turned positive during the fourth quarter of 2021, it is still significantly below rent growth in the outlying counties of the metropolitan area, with a 2 percent year-over-year increase (exhibit 12). Even though rent growth is now positive, the pandemic's impact on rents has increased affordability, particularly in dense urban neighborhoods. According to a recent analysis, significant rent declines and high levels of inventory in New York City during the second half of 2020 more than doubled the number of homes—an addition of 40,000 units—that would be made affordable for HUD's Section 8 Housing Choice Voucher program, compared with the same period in 2019 (Wu, 2021). Large gains in the affordable inventory occurred in ZIP Codes covering the Bronx, and similar gains, on a percentage basis, were also recorded in ZIP Codes covering Manhattan, where the affordable inventory was extremely low before the pandemic.

Exhibit 12

Average Annual Apartment Rent Growth in the New York-Newark-New Jersey MSA, by County Density Illustrating the "Donut Effect"



Source: CoStar Group

This Donut Effect settlement pattern may not persist, however. The state of New York fully lifted all COVID-19 restrictions in June 2021, and public schools returned to full-time, in-person learning in September 2021. This full reopening overlaps with a sharp decline in the rate of both home sales and price growth in suburban and intermediate counties and a marked increase in both statistics for urban counties within the New York metropolitan area. During the 12 months ending November 2021, the average home sales price rose 40 percent in urban counties, 10 percent in suburban counties, and less than 1 percent in intermediate counties (CoreLogic, Inc., 2022). During the same period, home sales were up 30 percent in urban counties and down by 2 and 3 percent, respectively, in intermediate and suburban counties. The USPS change of address data analyzed by the Office of the New York City Comptroller (2021) similarly show an estimated net *gain* of approximately 6,325 movers into New York City from July to November 2021. The neighborhoods with the highest per capita net gains in movers were the same ones that had experienced the largest net losses during the early part of the pandemic: Chelsea/Midtown, Murray Hill/Grammercy, Battery Park City/Greenwich Village, and Chinatown/Lower East Side.

Residential building activity trends in the metropolitan area support the Donut Effect resettlement pattern; the share of permitting in the intermediate counties has increased since the pandemic, whereas the share of permitting in the urban counties fell. From 2015 through 2019, the urban counties captured 68 percent of all residential construction, and the intermediate counties accounted for 30 percent. The shift in household preferences because of the pandemic led to a 19-percent decline in construction activity in the urban counties in 2020, whereas the intermediate counties saw an 18-percent increase. Residential building increased in both categories in 2021, although growth was twice as fast in the intermediate counties, and permitting rose to its highest level since 2002. As a result, from 2019 through 2021, 42 percent of all residential building was in the intermediate counties, whereas the urban share fell to 55 percent. The suburban counties accounted for 2 percent or less of all residential construction since 2015.

The potential recent reversal of the Donut Effect pattern may reflect some movement from the suburban and intermediate counties back to the urban core, but it may also be due in larger part to new household formation in the newly reopened downtown, particularly among younger households. Households in New York City tend to follow a life cycle, and the pandemic and low financing costs may have pushed older millennial households or households on the edge to make the leap into the suburbs. The accumulation of household savings from federal stimulus money and COVID-19-related shutdowns and significant wealth generation from the bullish stock market may have encouraged this new household formation. The resurgence of entertainment and activities and the increasing affordability of residential housing in downtowns has increased the attractiveness of urban living for those new households. Established households, particularly larger ones with families and those in owner-occupied housing that have already moved to intermediate or suburban counties, are likely not accounting for a significant portion of movers into urban counties, especially if hybrid work is prevalent. That same reversal of the Donut Effect pattern has not occurred in the apartment market. The Donut Effect settlement pattern during the pandemic and its recent reversal can be seen in other large metropolitan areas, such as Boston, MA, and Denver, CO.

Settlement Pattern: City Paradox

Although the data from this study did not allow for identification of the City Paradox for all metropolitan areas, those areas that exhibited the Rise of Intermediate Cities scenario were supplemented with county-specific rental price data to examine trends by price point.

Case Study: San Francisco-Oakland-Berkeley, CA and Sacramento-Roseville-Folsom, CA

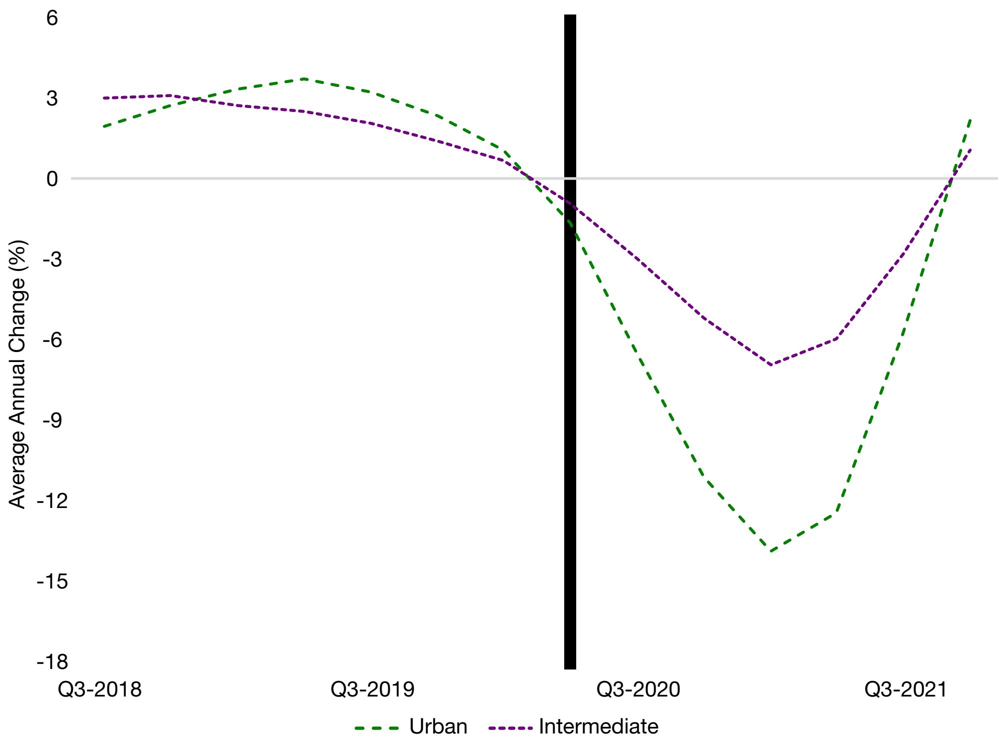
To examine the potential for the City Paradox settlement pattern, the authors analyzed not only trends between urban, intermediate, suburban, and rural counties within a metropolitan area but also the trends within different tiers of the housing market. Large and densely populated cities are the most expensive places to live, and, paradoxically, the cost is paid by workers with occupations most suitable for remote work. In these cities and metropolitan areas, highly skilled workers are likely to occupy rental units with the highest rents or homes in the highest price ranges. Although the home sales data used in this paper do not allow for the division of the market into different price intervals, the apartment market data can be analyzed at different classes. Class A apartments typically represent the highest-quality buildings and are generally newer properties with top amenities in well-located neighborhoods of the market. Units in these types of properties generally command the highest rents in a market. Class B and C properties tend to be older, may have some deferred maintenance issues or are in need of renovations, and are less likely to be professionally managed. The City Paradox settlement pattern would suggest that Class A units in the suburban and intermediate counties have faster rent growth and lower vacancies than Class A units in the urban and intermediate counties of a metropolitan area as highly skilled workers move outside the central business district.

Whereas many of the moves during the pandemic were likely temporary and within the same metropolitan area, analysis of the USPS change of address forms suggests that the story is different for moves out of the San Francisco metropolitan area. Permanent moves out of the metropolitan area increased by more than 23 percent, compared with an increase of 3 percent nationwide, mainly to other locations in California, such as Sacramento (Patino, Kessler, and Holder, 2021). Therefore, in examining the City Paradox pattern, the authors have evaluated trends in the San Francisco and Sacramento metropolitan areas to capture the moves of high-income earners to Sacramento. The only urban county in this larger area analyzed is the city and county of San Francisco, whereas all other counties in the Bay Area are categorized as intermediate density, and most counties in the Sacramento metropolitan area are categorized as suburban density except Sacramento County, which is intermediate density. El Dorado and Placer counties within the Sacramento metropolitan area include parts of Lake Tahoe, a popular second home and weekend retreat destination for many Bay Area households.

Class A year-over-year rent growth diverged widely at the start of the pandemic, with consecutive rent declines in urban San Francisco County from the second quarter of 2020 until the third quarter of 2021 (CoStar Group, 2022). The average rent decline in the county bottomed out at 14 percent during the first quarter of 2021. The intermediate-density counties of the San Francisco metropolitan area followed a similar pattern but to a much smaller extent, with rent declines bottoming out at 7 percent during the same quarter. Meanwhile, average Class A rent growth in the suburban counties of the Sacramento metropolitan area and intermediate-sized Sacramento County continued to increase every quarter until reaching peaks of 11 and 9 percent, respectively, during the fourth quarter of 2021 (exhibits 13 and 14).

Exhibit 13

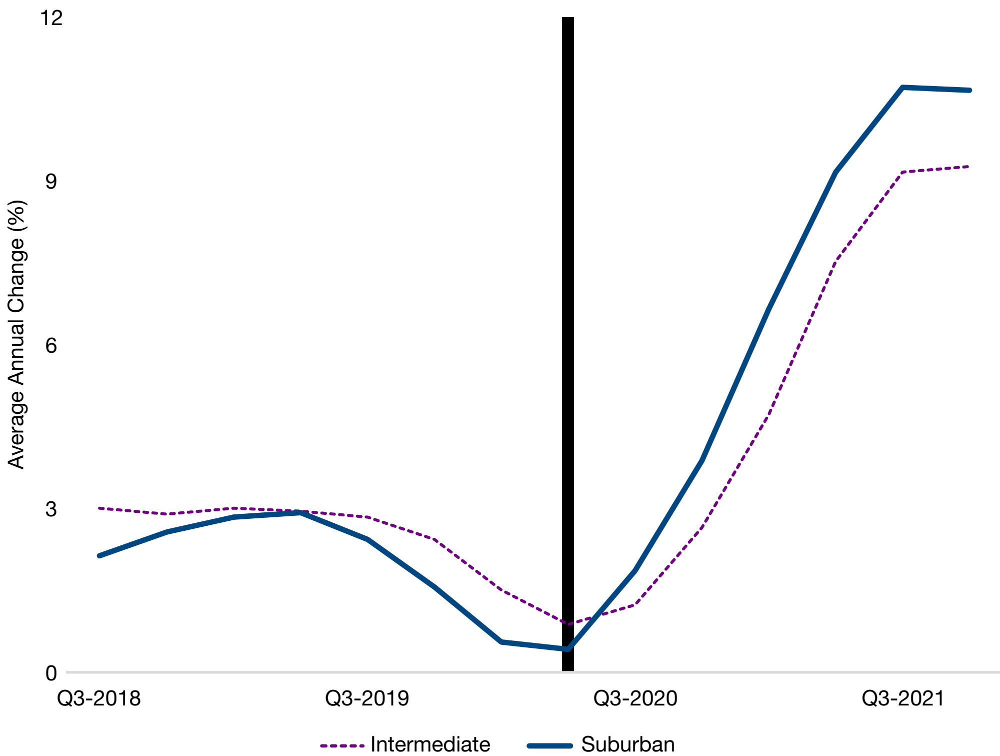
Average Annual Rent Growth for Class A Apartments in the San Francisco-Oakland-Berkeley MSA, by County Density



Source: CoStar Group

Exhibit 14

Average Annual Rent Growth for Class A Apartments in the Sacramento-Roseville-Folsom MSA, by County Density



Source: CoStar Group

These trends fit into the larger picture of movement out of the expensive and densely populated San Francisco County during the pandemic, particularly given the high proportion of people "untethered" to the region. The "untethered class" is a term coined by Apartment List, and it refers to people that fit several criteria: (1) they have an occupation that is easily transitioned into remote work, (2) they have no school-age children, (3) they rent their homes rather than own, and (4) either they have no spouse or their spouse has a remote-friendly occupation or is unemployed (Salviati, 2021). Younger, high-income earners generally meet these criteria. The San Francisco metropolitan area has the highest share of untethered workers in the country, at 13.5 percent, compared with 5.6 percent nationwide. Data on migration trends are not yet available for 2020 and beyond, but an analysis completed before the pandemic by the Terner Center at the University of California, Berkeley, and BuildZoom found that the highest-income households, earning more than $200,000 a year, generally migrated the furthest and left the state altogether at higher rates (Romem and Kneebone, 2018).

A comparison of multifamily building permit data before and during the pandemic shows that when workplace disruptions caused by COVID-19 were at their peak, multifamily building activity declined precipitously in the San Francisco metropolitan area and surged in the Sacramento metropolitan area. In 2020, the number of multifamily units permitted in the urban county of San Francisco and the intermediate-density counties in the San Francisco metropolitan area declined 38 and 32 percent, respectively, compared with 2019 (U.S. Department of Housing and Urban Development and U.S. Census Bureau, 2022). Whereas the decline in multifamily units permitted was similar in the urban and outlying counties of the San Francisco metropolitan area, permit activity in the two areas diverged in the subsequent recovery. In 2021, the number of multifamily units permitted increased 25 percent in the urban county of San Francisco but remained at the lowest level in 10 years (aside from 2020). This fact is in stark contrast to the intermediate-density counties in the San Francisco metropolitan area, where the number of multifamily units permitted in 2021 grew twice as fast as in the urban county and surpassed the 2019 level. Counter to the declines in permits of multifamily units in the San Francisco metropolitan area, the Sacramento metropolitan area in 2020 permitted multifamily units at levels not seen in more than a decade; the number of multifamily units permitted increased 58 and 109 percent in the intermediate-density county of Sacramento and the suburban counties, respectively. After the initial shock of the pandemic subsided, the number of multifamily units permitted in 2021 declined 22 and 30 percent in Sacramento County and its suburban counties, respectively, but remained notably higher than the average annual levels in the 5 years before the pandemic.

Conclusions

The COVID-19 pandemic sent shockwaves through the economy and housing markets in the United States. The rapid wide adoption of remote work in response to pandemic lockdowns may have jumpstarted a trend toward wider acceptance of remote work for the long term and changed the relationship between owner and renter housing demand and current settlement patterns. This study found early evidence of the development of all four post-COVID-19 settlement patterns identified by the OECD, although the evidence is not always consistent between owner and renter housing within markets. Furthermore, in some cases, the early trends toward these new settlement patterns are already slowing or even reversing.

Because it is early in the process, the question remains whether the changes observed so far will be permanent or if they represent an adjustment in the timing of regular generational housing demand cycles. Much will depend on the willingness of employers to permanently embrace higher levels of remote work or if further advances in communications technology (e.g., virtual reality telepresence) will be needed before they do. Observing changes in demand for housing and permanent changes in settlement patterns as the COVID-19 pandemic shockwave subsides will continue to be important for ensuring that housing development policies are adjusted appropriately.

Data Limitations and Future Research

Central to the analysis presented in this article is the classification of resettlement patterns by metropolitan area. Although most of the classifications can be easily identified using relative differences in rates of house price and rent change across locations, the authors acknowledge that the supplemental classification performed by visually observing graphed data is subjective.

In addition, the building permit data used in this article are by structure type and do not distinguish between units permitted for sale or rental purposes. At the national level, a substantial majority of multifamily units permitted are rental apartments, and nearly all single-family units permitted enter the home sales market; however, this pattern can vary significantly by metropolitan area.

As previously noted, the authors cannot classify a significant amount of settlement that is happening from one metropolitan area to another in this analysis, but it would be an interesting topic for future research.

Acknowledgments

The authors wish to thank Erin Browne for her invaluable assistance in writing this report and Robert Stephens for edits during the writing process. They would also like to thank Marissa Dolin for creating the maps. Finally, we would like to thank our internal partners for data collection, making this article possible.

Authors

Elaine Ng is an Economic Market Analysis Division regional director at the U.S. Department of Housing and Urban Development. Jeremy Albright is a field economist and Holi Urbas is a regional economist at the U.S. Department of Housing and Urban Development. Kurt Usowski is the Deputy Assistant Secretary for Economic Affairs at the U.S. Department of Housing and Urban Development.

Correspondence concerning this article should be addressed to Elaine Ng, U.S. Department of Housing and Urban Development, San Francisco Regional Office, One Sansome Street, Suite 1200, San Francisco, CA 94104. Email: elaine.ng@hud.gov.

References

Althoff, Lukas, Fabian Eckert, Sharat Ganapati, and Conor Walsh. 2020. The City Paradox: Skilled Services and Remote Work. CESifo Working Paper 8734. Munich: CESifo. https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3744597.

Brynjolfsson, Erik, John J. Horton, Adam Ozimek, Daniel Rock, Garima Sharma, and Hong-Yi TuYe. 2020. COVID-19 and Remote Work: An Early Look at US Data. NBER Working Paper No. 27344. Cambridge, MA: National Bureau of Economic Research. https://www.nber.org/papers/w27344.

Chaplin, Justin, Kimi Kaneshina, and Chris Salviati. 2021. "Best Cities for Remote Workers 2021." Apartment List. https://www.apartmentlist.com/renter-life/best-cities-for-remote-workers.

CoreLogic, Inc. 2022. Market Trends. Real Estate Analytics Suite (REAS). Proprietary and Confidential Build. https://www.corelogic.com/find/housing-trends/.

CoStar Group. 2022. Commercial Real Estate Market Analytics. https://www.costar.com/products/analytics.

Joint Center for Housing Studies of Harvard University. 2020. *America's Rental Housing 2020*. https://www.jchs.harvard.edu/sites/default/files/Harvard_JCHS_Americas_Rental_Housing_2020.pdf.

Meeker, Rebecca, and Nuno Mota. 2021. *COVID-19's Impact on Housing Demand in High-Density Areas—Evidence from Purchase Mortgage Applications*. Fannie Mae. https://www.fanniemae.com/media/38866/display.

Office of the New York City Comptroller. 2021. *The Pandemic's Impact on NYC Migration Patterns*. https://comptroller.nyc.gov/reports/the-pandemics-impact-on-nyc-migration-patterns/.

Organisation for Economic Co-operation and Development (OECD). 2021. *Implications of Remote Working Adoption on Place Based Policies: A Focus on G7 Countries*. https://www.oecd.org/cfe/implications-of-remote-working-adoption-on-place-based-policies-b12f6b85-en.htm.

Patino, Marie, Aaron Kessler, and Sarah Holder. 2021. "More Americans Are Leaving Cities, But Don't Call It an Urban Exodus," *Bloomberg*, April 26. https://www.bloomberg.com/graphics/2021-citylab-how-americans-moved/.

Ramani, Arjun, and Nicholas Bloom. 2021. The Donut Effect of COVID-19 on Cities. NBER Working Paper No. 28876. Cambridge, MA: National Bureau of Economic Research. https://www.nber.org/papers/w28876.

Romem, Issi, and Elizabeth Kneebone. 2018. "Disparity in Departure: Who Leaves the Bay Area and Where Do They Go?" Berkeley, CA: Terner Center for Housing Innovation, University of California at Berkeley. https://ternercenter.berkeley.edu/wp-content/uploads/pdfs/Disparity_in_Departure.pdf.

Salviati, Chris. 2021. "Remote Work Revolution Gives Rise to a New 'Untethered Class," *Apartment List*, March 10. https://www.apartmentlist.com/research/remote-work-untethered-class.

U.S. Bureau of Labor Statistics. 2022a. *Current Employment Survey*. https://www.bls.gov/data/home.htm.

———. 2022b. *Quarterly Census of Employment & Wages*. https://www.bls.gov/data/home.htm.

U.S. Census Bureau. 2021a. *Metro Area-to-Metro Area Migration Flows: 2015–2019 American Community Survey*. https://www.census.gov/data/tables/2019/demo/geographic-mobility/metro-to-metro-migration.html.

U.S. Department of Housing and Urban Development and U.S. Census Bureau. 2022. *Building Permits Survey*. https://www.census.gov/construction/bps/.

Wu, Nancy. 2021. "Pandemic Rent Drops Double NYC's Voucher-Accessible Housing," *StreetEasy*, July 2. http://streeteasy.com/blog/voucher-apartments-nyc-double-during-pandemic/.

Zillow and Yelp. 2021. "Zillow and Yelp Rank the Top U.S. Metros for Digital Nomads." Press release. Zillow. http://zillow.mediaroom.com/2021-04-28-Zillow-and-Yelp-Rank-the-Top-U-S-Metros-for-Digital-Nomads.