Who Gets to Call California Home?

CENTER FOR CALIFORNIA REAL ESTATE

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CENTER FOR CALIFORNIA REAL ESTATE SPECIAL REPORT

California is witnessing an historic housing shortage. While this is universally recognized, there is less agreement about how to define and measure it, or even what makes the shortage so intense. This study measures the shortage as the gap between the percentage growth of employment each year and the percentage rate of housing construction. Annual gaps were widest before 2016, during the steepest part of the recovery from the Great Recession, and they continued through 2019. Shortages are cumulative and prices keep escalating as a result.

An additional factor is the large size of the Millennial generation, which boosted the number of young renters and would-be homebuyers in the key ages when people typically form households and launch housing careers. This has applied acute pressure in the housing market amid the general shortage conditions.

There are many consequences for Californians from the shortage. No one is likely exempt from the effects. The report's authors compared housing outcomes relative to shortages in the 50 largest metropolitan areas in the nation, placing California metros in comparative context.

1 Young adults have been delayed in launching their independent lives. Evidence shows a strong correlation between slower household formation and conditions that produce greater housing shortages. The report finds Black and Latino young adults are impacted even more acutely than whites.

2 Shortages are closely linked to higher rents and prices, and higher cost burdens, that residents face in a metro area.

3 Higher cost burdens drive down rates of household formation, which means more people are doubled up with their parents or roommates, or forced to sleep in their cars, or worse.

4 Higher cost burdens also drive down homeownership. In comparison to all 50 large metros across the U.S., California adults aged 35-44 ("old enough" to be homeowners) have much lower homeownership rates. The greatest difference between California metros and other U.S. metros is found for white households: this group's homeowner rates are very high in many other metros but unusually depressed in Los Angeles and the Bay Area.

5 The generation gap between older and young homeownership rates is also greatest for the white households, but the gap between older and middle-aged homeownership rates is greatest for African Americans. The problem is nationwide, but especially severe in California and in Los Angeles specifically.

6 Low homeownership attainment by age 35 locks in a low future trajectory into homeownership that tops out at a rate that is lower than was true of earlier generations among white, Black, Latino and Asian residents. These faltering trajectories are much lower in California than the whole of the U.S. This augurs poorly for California's future homeownership rate, which hovers at 54.8%, ten points lower than the U.S. average.

7 Under conditions of housing shortage, there is greater competition for limited opportunities. In addition to rising rents and prices, people face an absolute shortage of housing units, forcing many to go without housing. This opportunity deficit falls disproportionately on the most vulnerable, including the newest entrants into the housing market (young adults or migrants from out of town), those with the least economic resources (disproportionately Black and Latino), and renters more generally.

8 The data supports that, just as expected, renters are impacted by repercussions from declining opportunities for homeownership. Frustrated, would-be buyers are forced to remain renting (as shown by declining rates of homeownership and higher-than-national rates of renting), augmenting the demand for rentals that places these generally higher-income renters in competition with middle- and lower-income renters. Because older units now filter upward (see item 10), units built before 1980 go to higher-income residents, leaving very little left for lower-income renters. This greatly aggravates conditions in the rental market and may force the lowest income renters completely out of housing.

9 Shortages of middle-income, or market-rate, rental housing force those middle-income renters to scavenge for opportunities downscale, also encouraging landlords to upgrade their properties to fill the gap not supplied by new housing. This also places greater pressure on renters who are competing for a limited supply of low-cost rentals.

10 The filtering process for providing affordable rental opportunities has broken down in the last decade, both in California and nationwide. Before 2010, filtering transferred market rate rentals from lower- to middle-income brackets as the units grew older; however, due to shortages created by increased Millennial demand nationwide, filtering has reversed, so units are shifting upward to renters in higher incomes, rather than shifting downward to provide more low-income opportunity.

11 Shortages of housing opportunity have sent middle-income households searching into neighborhoods that are well-located, predominantly Black or Latino communities, as indicated by racial changes between the 2010 and 2020 censuses. This includes those gaining white residents in well-located areas near downtown LA or near the westside suburbs of LA, and those gaining Asian residents in far eastern suburbs of LA County or in Orange County to the south.

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TABLE OF CONTENTS

Soaring Housing Demand Despite Lagging Population Growth in California

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Abstract

This research brief addresses the overall question of how is it that housing demand is so strong at a time when population growth is so minimal? Our research points to the arrival of the large Millennial generation, whose members delayed their household formation and home buying but are now a driving force. (Later briefs address the strong impact of shortages when confronted by this rising demand.) We first conduct a close examination of the ripples in California's age structure, across which the Millennial wave can be traced. Next, we calculate linkage estimates between population growth by age group and the demand for housing. We find that the active force of entry into the housing market is concentrated in the very narrow age band where Millennials are now located. Finally, we address the popular narrative of California "exodus" and how the accelerating outmigration of the last few years differs by age, race, and educational attainment. Most importantly we examine how outmigration reflects differences among owners and renters. Today's outmigration in 2019 is less than back in 2006, but homeowners are a dominant factor in both eras. A broad story of California change can be read from these data, integrating demographic change, housing needs and demand, and the continuing struggles of young people in California. These forces of change deserve to be explored in more depth with more specific data, but the broad sketch presented here offers an accessible overview.

INTRODUCTION

Acute housing shortages have been estimated for California in recent years, reaching as high as Governor Newsom's ambitious target of 3.5 million units, or the Department of Housing and Community Development's policy target of 2.8 million units, a figure resembling earlier USC estimates,[1] that is roughly three times the size of that from the last cycle of housing need determination. At the same time, demand for home purchases has far outrun the available inventory, with multiple competing offers for every home that is offered for sale, even in times of recession, unlike previous property booms.

A puzzle is how this evidence of soaring housing needs and surging home buying demand can occur at the same time that population growth in California has fallen near zero. Prior to the pandemic, growth was already on a steep downward trajectory, since 2017 or earlier (Exhibit 1). All components of population growth have declined in concert. Births declined while deaths rose, producing a 38% decline in natural

Exhibit 1. Annual Population Growth and Components of Change in California
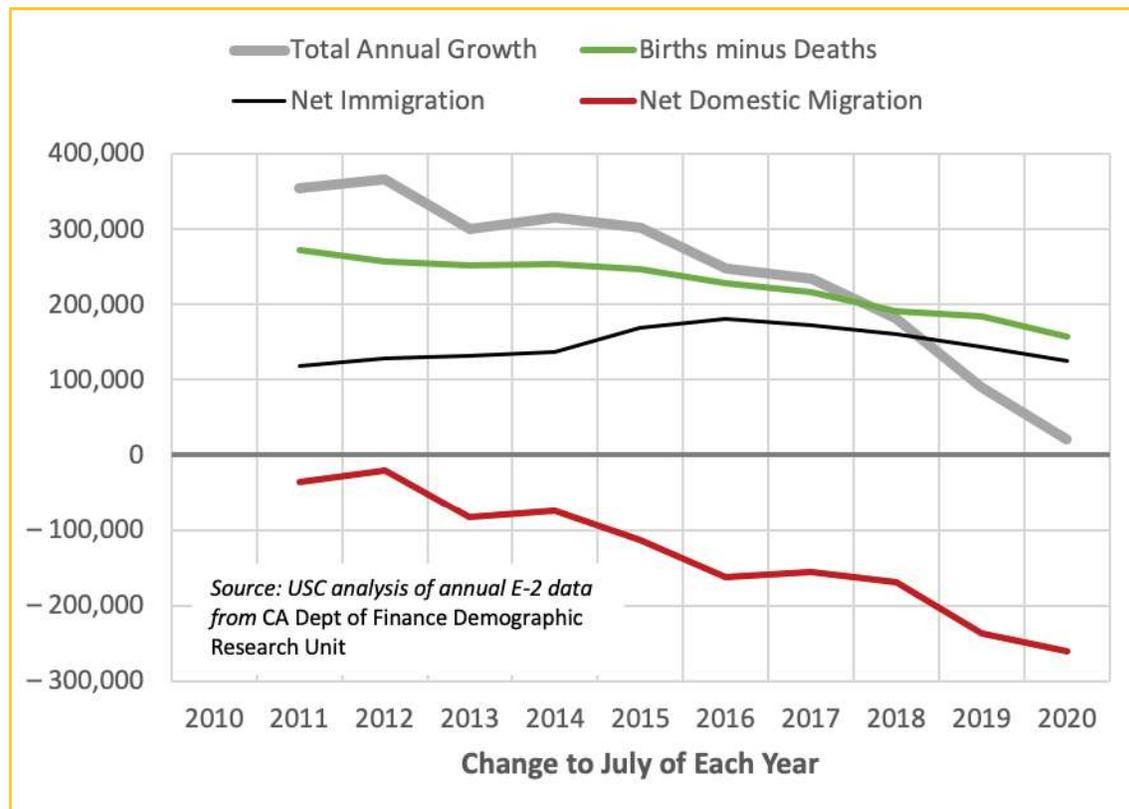
increase, while the positive growth from immigration began to lag as well. Domestic migration (to and from other states) fell most precipitously. In total, through July 1 of 2020, the state had eked out the slimmest amount of population growth, 21 thousand, far short of the 300 thousand annual growth that prevailed before 2016.Subsequent estimates reported by the same agency for the full calendar year of 2020 found growth had dipped negative by 182 thousand.[2] The general expectation of demographers is that California will rebound in population growth after recovery from the pandemic, but the current projected outlook is for population growth to remain growing very slowly from its current 39.95 million in July 2021. This could average 211 thousand additions per year through July 2030, a growth level barely two-thirds of that prior to 2017.[3] To underscore the long-term magnitude of this population slowdown, projections

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[1] Dowell Myers, JungHo Park, and Janet Li (2018) How Much Added Housing is Really Needed in California? https://cpb-us-e1.wpmucdn.com/sites/usc.edu/dist/6/210/files/2017/02/HRB-1-How-Much-Added-Housing-is-Really-Needed-in-California-1okfauc.pdf

[2] The press release issued May 7, 2021 by the California Department of Finance announced: "California's population dipped by 182,083 residents last year, bringing the state's total to 39,466,855 people as of January 1, 2021."

[3] "Report P-1A: Total Estimated and Projected Population for California: July 1, 2010 to 2060," prepared July 2021, California Department of Finance.

prepared by the Department of Finance in 2007, just prior to the Great Recession, anticipated the state's total population would reach 50 million by 2042. Under the latest projections, the state's population will only reach 43.55 million by that year, a state that is 13% smaller than previously expected at mid-century.

The puzzle of how low population growth can coexist with high housing needs cannot be dismissed as an idle question. Raising this question certainly should not be seen as an attack on the notion of housing shortages in California or on the accuracy of estimated housing needs. We have already addressed our growing concern about shortages in a series of recent studies. The fact of the matter is that total population growth is not key to generating excess demand unless that growth is concentrated in the age groups of the 20s and 30s, as will be demonstrated.

Explanations that fail to connect housing shortages and population trends risk failure at persuading policy makers and achieving solutions. In this report, we delve below the surface of total population to look at some detailed linkages and drivers of shortage. The foremost risk to any solution, of course, is that inadequate explanations can lead to incorrect diagnoses, which can frustrate successful remedies. In addition, solutions framed in terms of population dynamics also may contain another advantage for breaking the political gridlock. Population-based assessments offer a fresh perspective that could help with buy-in from fellow population members, the voters, who are key residents and decision makers.

This report examines the detailed connections between population and housing occupancy. We examine the outmigration trends in more detail, finding that the net-migration depends mainly on variation in rates of out-migration, with a much steadier rate of attraction of in-migrants to the state. That out-migration (or "exodus") appears much stronger during times of economic prosperity than recession. Jobs may be ample, but housing prices also are much higher in boom times, and the analysis to be presented suggests a particular relationship to homeownership changes.

Also to be examined closely are the housing growth trends within the California population, even if it were to stay constant in size. The lifecycle aging within the whole of the California population is placing ever greater strain on the available housing supply. How zero population growth can have that effect is explained most simply as the traditional pattern of lifecycle progress in the housing market, with young adults creating greater demand as they grow older and leave behind their prior lives as dependent children or students and roommates. Older adults also generate greater demand per capita even as they advance into their elderly years. Thus, the maturing of the California population is a major factor in increased housing demand. This is particularly evident in the case of the large Millennial generation that is rapidly moving into established adult roles and struggling to find suitable housing not already occupied by longer established generations.

POPULATION AGE WAVES CRASH INTO THE HOUSING MARKET

Even with zero population growth, it is possible for housing demand to increase substantially over the years. That might occur if in Year 0 much of the population consisted of children, and in Year +20, more of the population were adults. Even among adults, however, all ages are not equal and older ages typically consume more housing. In a later section, we demonstrate exactly how much difference aging makes to housing demand. In the short term, even where age groups are generally the same size, small systematic differences can generate considerable power when sustained over time. The natural analogy in California is the force rendered by the 3-foot wave height of an ocean swell when it meets a rising seabed and breaks onshore. In the case of housing, the "rising seabed" is presented by a housing supply insufficient to accommodate the incoming population wave.

Until presented with an obstacle, the ripples on the surface may be less visible. Consider the population portrait for California of changes among ages younger than 50, observed in 2000 and at regular intervals afterward (Exhibit 2). Very little change is apparent, as the ages ripple up and down. Overall, the population size is remarkably constant, with just over 2.5 million people in every 5-year bracket and little change between 2000 and later years. Yet, on close inspection, we can discern a downturn in the number of children, reflecting the fertility downturn noted above. And we also might note that the age profile for 2019 slopes upward from these children, reaching a distinct peak at age 25-29. The absolute largest "peak Millennial" cohort was born in 1990 in both California and the U.S. and so was age 29 in 2019. The astute observer may be able to make out this peak Millennial across each of the age cross-sections in Exhibit 2. In

hindsight, it is easy to see it coming as a ripple on the surface (and to foresee where it is going in the next 5 and 10 years), but urban observers, even the proclaimed experts, were blind-sided when the Millennials first landed in urban neighborhoods during the Great Recession (Myers 2016).

**Exhibit 2. Age Ripples on the Surface of Total Population**
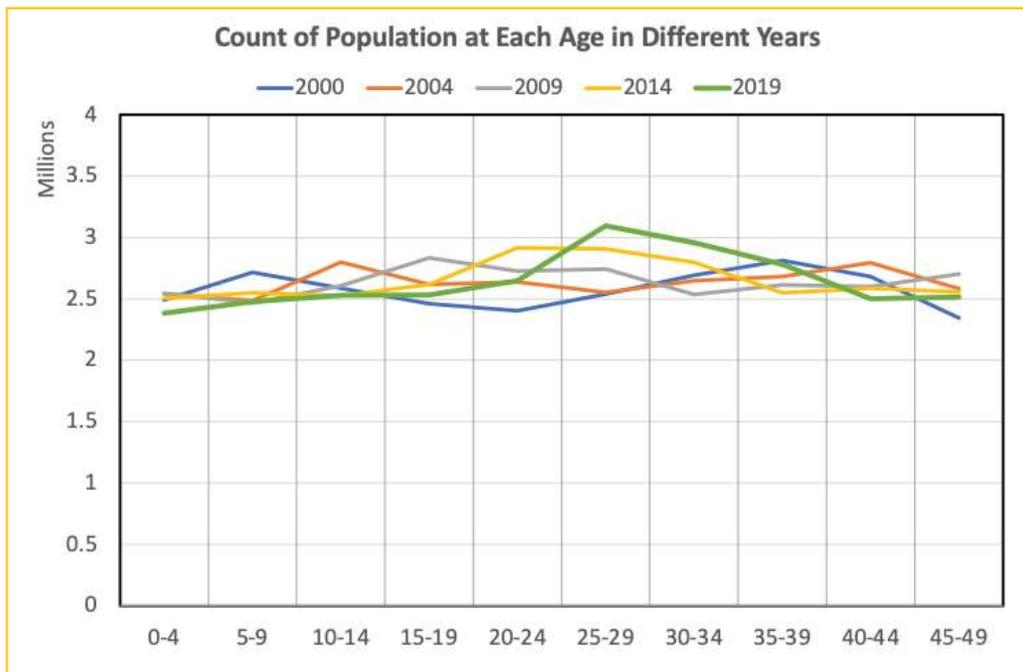
A better measure for these ripples is the percentage change in each age group that is recorded over a series of time points (Exhibit 3). At first glance, what is displayed seems to just bob up and down, but if we focus specifically on age 45-49 a clear trend appears. Growth has slowed dramatically since 2000. What had been a more than 12-percent growth in the early 2000s reverses to a greater than 5-percent decline in just 10 years. This marks the transition from the tail end of the baby boom generation before it aged onward and the onset of the under-sized Generation X. Or, at age 35-39, we find three periods of decline due to Generation X that are finally relieved by 9-percent growth, just in the most recent time period. This reflects the arrival of the leading edge of the large Millennial generation. We can trace the Millennial arrival five years earlier at age 30-34 and, at 25-29, for a full 15 years.

Exhibit 3. Growth Rates in 5-Year Age Groups Observed Since 2000

Soaring Housing Demand Despite Lagging Population Growth in California
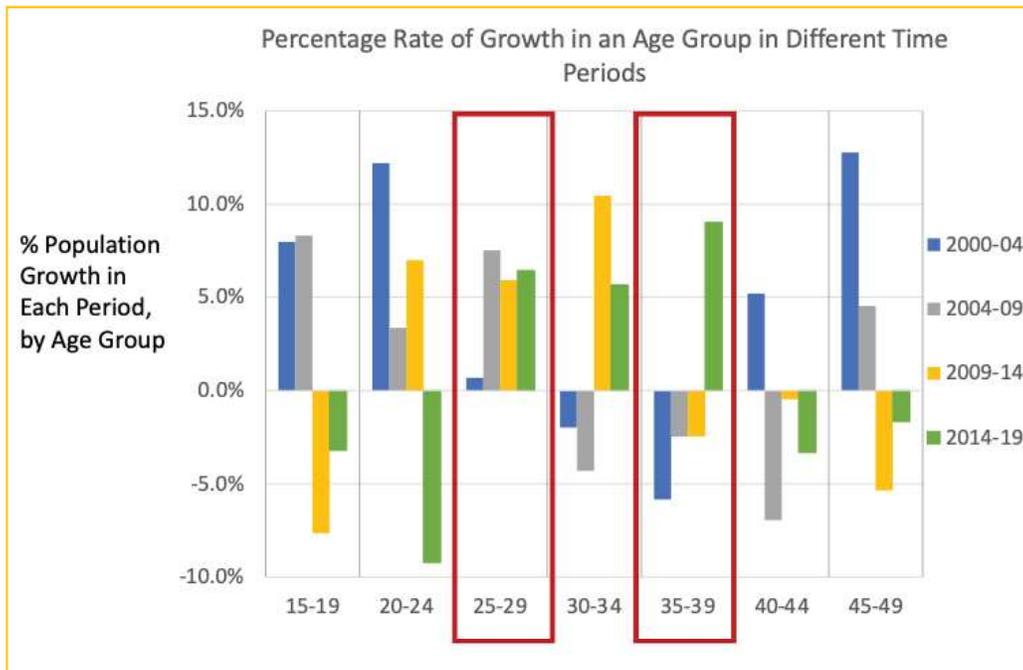
To better highlight this transition between Generation X and the Millennials, Exhibit 4 traces the growth wave for 5 years' time across all the age groups. We can see how the Millennials just advanced 5 years older while the Generation X downturn moved deeper into their 50s. But Generation X had a prime role in the housing market back in the period of 2000 to 2004, shown in Exhibit 5. That was the time of a finance-induced home buying boom that resulted in the "housing bubble." What is remarkable is that this boom transpired even while the number of potential home buyers in their 30s was declining. Ultimately, the lack of real buyers was too much to sustain. In this early period the leading edge of the Millennials (marked "M") was only age 20-24 (Exhibit 5). That meant they largely escaped the later wave of foreclosures, the brunt of which was taken by members of Generation X who were the "right age" to buy homes at the wrong time in history. After 2009, the Millennials advanced into prime ages for rental household formation and increasingly into prime home buying ages.

Exhibit 4. How the Aging of Millennials Replaces Smaller Gen X in Age Brackets That Are Key for Swelling Housing Demand
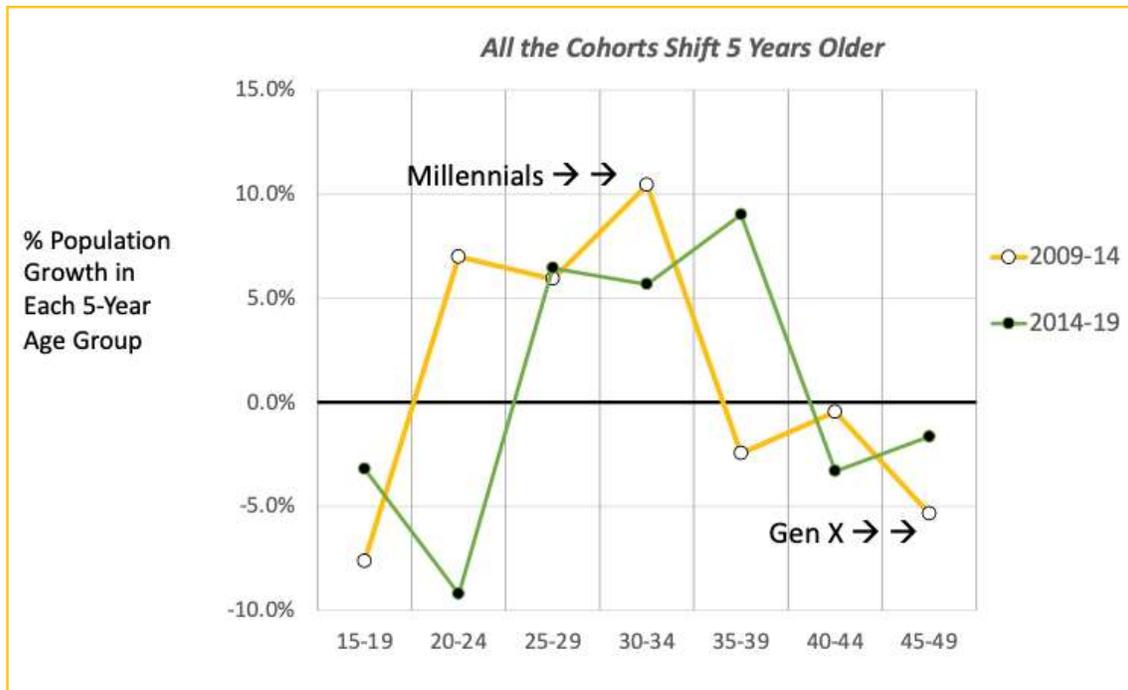
Exhibit 5. The Most Recent Positioning of Population Growth by Age Group Is Strongest for Household Formation and Entry into Homeownership
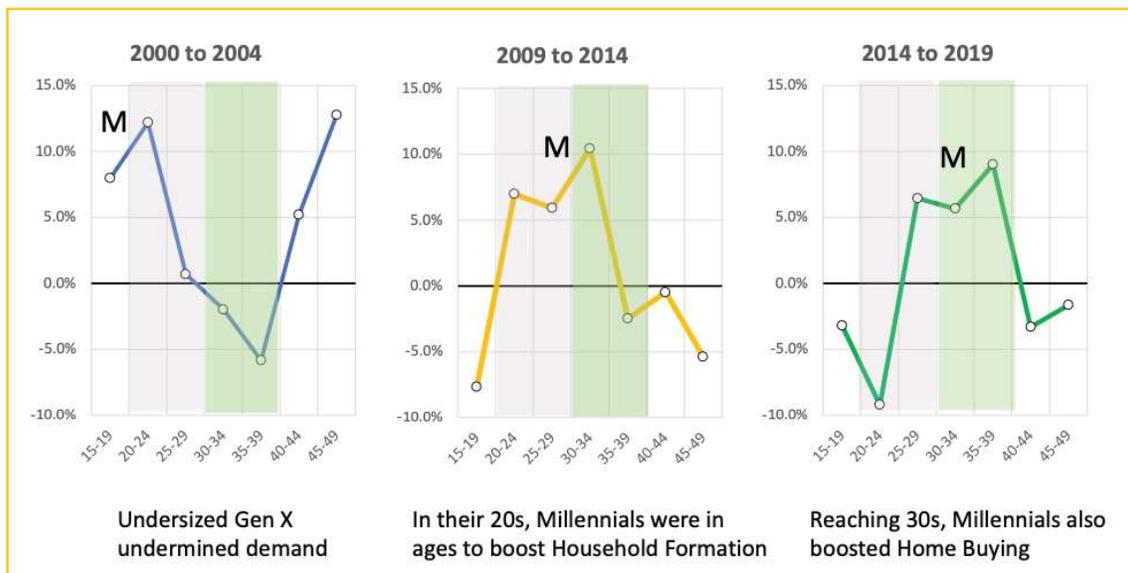
Formal identification of the "right age" to form households or buy homes relies on calculating ratios of housing activity to population in each age group.[4] Headship rates specify how many people in an age group are designated the householder reference person for every 100 people in the age group. In addition, these householders can be subdivided into renters and homeowners. Although the traditional homeownership rate measures the share of households that are owner-occupied, that leaves out the variable factor of household formation. Accordingly, we prefer to measure per capita homeownership, i.e., the share of people who are owner householders. We also measure per capita rentership in parallel fashion, and these two rates can be summed to equal total household formation.

Collectively, these lifecycle rates of housing demand afford a precise measurement of how many households are formed at each age, whether as renters or owners (Exhibit 6). Renting rises sharply after the age of 20, and it peaks in California at age 30-34 (25-29 in the U.S.), after which it slowly declines while more renters transition into homeownership. Homeownership rises more gradually and continues to rise even past age 70. Combined together, we see the total volume of households formed per 100 people at each age. It deserves noting that the upturn in headship very late in life reflects mortality of spouses, which leaves single survivors as the sole person who could be the householder.

Exhibit 6. Lifecycle Rates of Housing Demand in California: Sharp Rises in Young Ages
(calculated as the current residential status of population in 2018)
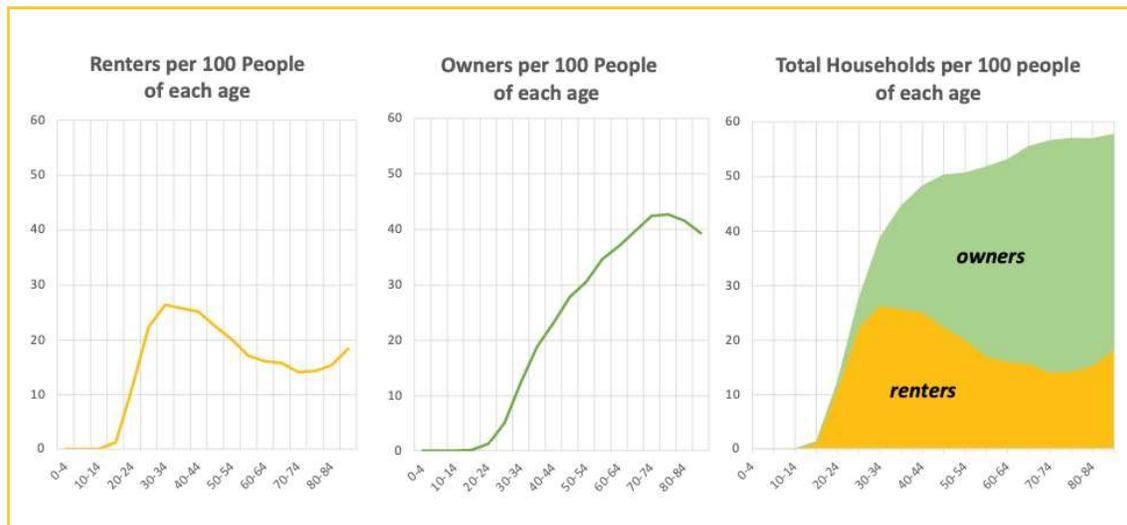

The above is a conventional display of housing demand. Most of these homes are long occupied and so the rates do not reflect new formation of households. Applying cohort techniques, we have estimated the gains in new formations at each age observed in the 5 years between 2013 and 2018 (Exhibit 7). Here we see how narrow an age range is responsible for true additions of households during the housing lifecycle. Over three-quarters (76.9%) of the maximum rental households are formed just between ages 20 and 29. Homeowning is gained over a more extended period, with only 41.2% of eventual lifecycle homeownership in California accomplished before the age of 40.

Comparison of California with the United States as a whole reveals just how delayed is housing demand in California (Exhibit 8). Renter formation peaks 5 years earlier (20-24) and at a much higher level in the U.S., while plunging negative at a younger age (30-34). Similarly, ownership attainment soars much higher and by an earlier age. Thereafter, from age 35-39 onward, the United States matches all the later-in-life homeownership gains of California. Thus, California can't even claim that advantage. A great many fewer people ever achieve homeownership.

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[4]Every occupied housing unit identifies one household member as the reference person or "householder," commonly termed the head. In practice, married couples operate as teams, really as co-heads, but only one represents the whole.

Exhibit 7. Lifecycle Timing of Housing Demand in California, per 100 People of Each Age
      (calculated as the net change from one age to the next)
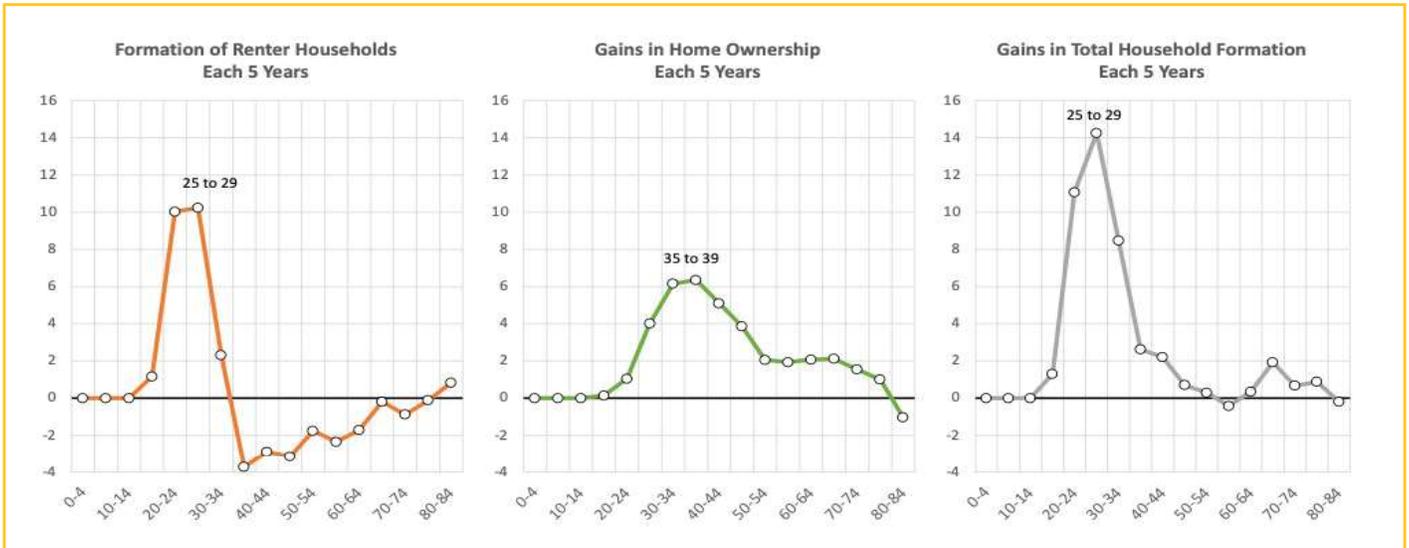
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The detailed linkages of population and housing presented in this section identify the concentrated age range in which key housing measures of demand are expressed. The indicators in California are substantially lower than average for the U.S., in part, for reasons of housing shortages. The householder accounting system equates one householder per occupied unit and, crucially, households cannot exceed units. Thus, any limitations on available supply effectively cap the number of households that can be formed, and potential households are always greater or equal to the number of housing units less a normal vacancy rate. The conclusion to this section is that maturation of the large Millennial generation into their 20s and 30s is adding substantial housing demand even if the total population is growing little at all.

Exhibit 8. Comparing Lifecycle Timing of Housing Demand in California and the U.S.
      (calculated as the net change from one age to the next)
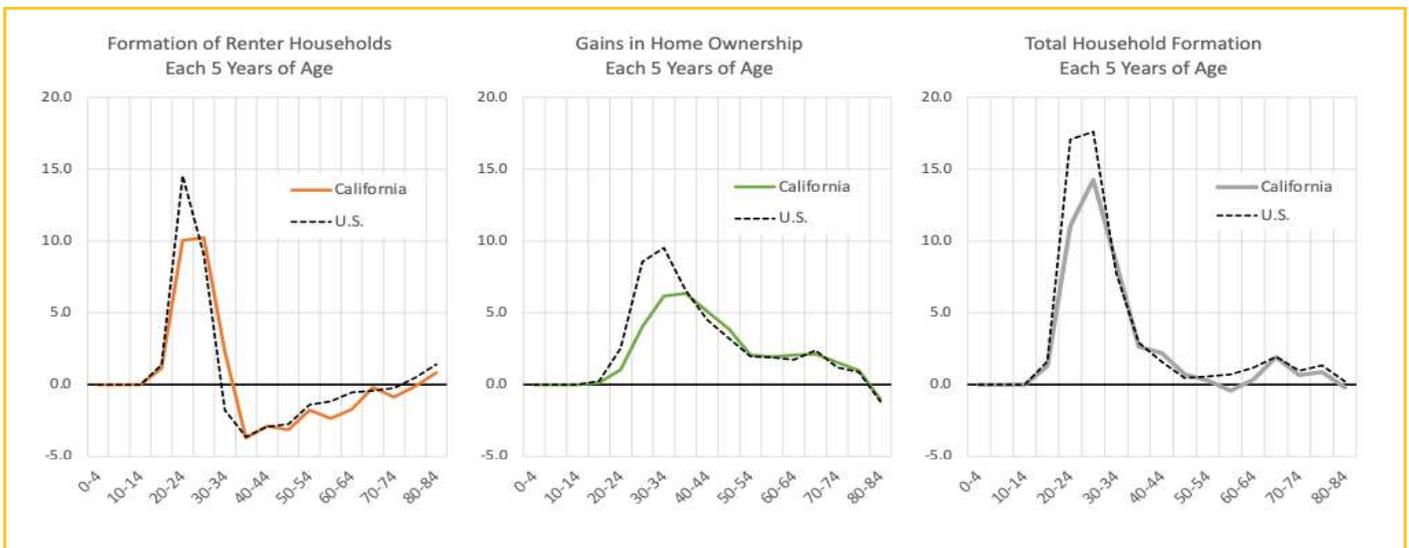
CALIFORNIA "EXODUS" BY RENTERS AND HOMEOWNERS

The earlier review of population growth trends in California identified the particular importance of domestic outmigration which has increasingly reduced total growth (Exhibit 1). News media and popular discourse in recent years have often referred to a California "exodus," usually suggesting this as a sign of growing troubles in the state. Most striking was the September 2019 survey finding, produced by the UC-Berkeley Institute for Governmental Studies (IGS), that "fully 52% of the state's registered voters admit to having given serious (24%) or some (28%) consideration recently to moving out of the state."[5] A subsequent Spring 2021 survey by UC-San Diego, using the same question wording as Berkeley IGS, found "there appears to be no major movement toward Californians overall planning to leave the state."[6] Demographic data summarized here reveals actual moving behavior is increasing but at a very low annual level of 2% to 3% out-movement per year from California. However, this movement does bear a striking relationship to trends in homeownership.

In 2018, the Legislative Analyst's Office (LAO) in the California state government supplied a dispassionate reading on this subject based on statistical analysis.[7] The LAO report showed that from 2007 to 2016, a total of 5 million people had moved into California, while 6 million moved away, a net loss of one million people over 10 years' time, the equivalent of 2.5% of the population. The LAO also looked at migration data collected by the IRS for tax filers for a longer period, back to 1990, and concluded that this pattern of net outmigration is longstanding and not an indicator of recent exodus spurred by current problems. An important caveat often overlooked is that the analysis pertained only to domestic migration, i.e., state-to-state movers within the United States, not including immigrant arrivals. The California Department of Finance estimates that the gains from international migration substantially exceed the losses from domestic migration, at least until the last few years of reduced immigration.

Two particular threats are posed by loss of population through net outmigration. First, is the potential failure to attract new workers to California to sustain growth in the economy, without which companies would need to relocate to other states, taking their tax contributions and employment opportunities elsewhere. In addition, as noted earlier, the natural increase of births over deaths produces a steady but diminishing flow of young people who are the state's greatest resource. Now being educated in California schools, the new generation will soon advance into the migration-prone years of early adulthood, coming at risk for outmigration if California does not produce enough jobs and housing to retain them in their 20s and 30s.

Bringing Housing into Study of California Migration

Analyses conducted in the USC Population Dynamics Research Group have closely studied the interaction of domestic outmigration with other aspects of demographic change in California. A distinctive feature of our research is integrating the housing where people live with the processes of demographic change.[8] The analysis of California migration presented below adds the important feature of housing tenure. For this purpose, we count the movement of households, which usually have either 1 or 2 adults and an average size of 2.9 persons per household. We account for the tenure (owned or rented) of their occupied housing unit and selected characteristics of the household head.

A key finding is that outmigration has increased notably between 2012 and 2019, rising from 174 to 228 thousand, an increase of 31% (Exhibit 9). In the same time frame, the number of in-movers to the state held virtually constant, rising only from 161 to 166 thousand. Accordingly, the gap between the two expanded sharply in recent years, producing a net outmigration in 2019 of 61 thousand compared to just under 13 thousand in 2012, a five-fold increase. However, often overlooked is that, back in 2006, at the peak of economic boom before the Great Recession, the gap of net outmigration was even greater, 84 thousand. Thereafter, outmigration was greatly reduced in the recession and during the lagging years of early recovery.

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5 Mark DiCamillo, Berkeley IGS Poll, Release #2019-08, https://escholarship.org/uc/item/96j2704t.

6 Thad Kousser and Cassidy Reller, "Do Californians See their State Moving in the Right Direction, Or Do They See Themselves Moving out of California?" https://www.universityofcalifornia.edu/sites/default/files/uc-san-diego-california-exodus-report.pdf

7 Brian Uhler and Justin Garosi, "California Losing Residents Via Domestic Migration," Legislative Analyst's Office, State of California, 2018.

8 The collection of housing studies has grown larger than all others on the USC PopDynamics website: https://sites.usc.edu/popdynamics/

If we only look at the trends from the beginning of the decade (2010 or 2012), we fail to grasp how migration trends may correspond to economic cycles. The LAO analysis of IRS data found a peak of outmigration occurred during the deep 1990s recession in California, but that was a time of massive job losses, especially great in comparison to the weaker effects in the rest of the U.S. economy. Economic disruptions in the Great Recession, in contrast, were much more equally spread across the states, blunting the advantages of outmigration. An alternative interpretation, developed below, focuses on housing prices, which peaked in California in 2006, far above the rest of the nation (four times Texas), before plunging after the financial crisis and until eventual revival in the housing market after 2014.[9]

Exhibit 9. Migration to and From California, by Owner and Renter Household Status After the Move, Annual From 2006 to 2019
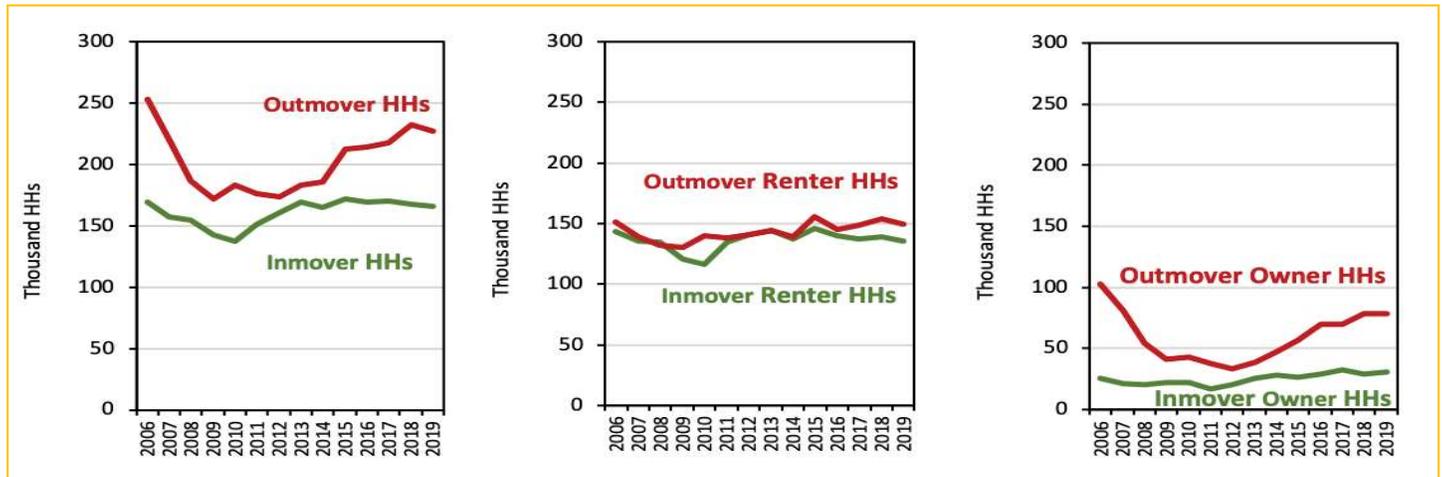
The striking contribution of Exhibit 9 is its breakout of migration trends by housing tenure of the households. Among those who rented after their move there is very little difference between the number of inmovers and outmovers, and we also observe no appreciable difference over the economic cycle (save a dip in 2009 and 2010, the deepest years of the recession). Among homeowners, however, the story looks substantially different. While the number of inmover homeowners remains fairly constant over the years, this is well below the number of outmover homeowners. In fact, the trend in outmovers is highly variable, with an extraordinary gap opening in boom years compared to 2012.

It bears emphasis: The growing gap between inmovers and outmovers from California depends almost entirely on growing outmigration (so, not due to reluctance of inmovers) and the gap depends solely on growing outmigration among homeowners.[10] The renter segment plays strikingly little role in trends of net migration from California.

What Demographic Groups Are Most Involved?

Migration trends do not affect the population equally. Previous studies in California have noted that outmigration involves lower-income and lower-skilled residents most of all. Only those with higher income can manage to move here. A 2021 blogpost from the Public Policy Institute of California (PPIC) summarized well the basic patterns: "California lost adults without a college degree, gained those with one," and "California lost middle- and lower-income adults, gained those with higher income."[11] Our focus on households allows us to investigate the make-up of rental and owner movers. We will focus on age and race, but also look at the educational profile so important to the state's economy.

Each of the curves in Exhibit 9 defines the trend over time in the total number of inmovers and outmovers, the gap equalling net change, repeated separately for renters and owners. We can usefully focus on the

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[9]A 20-year data compendium graphically compares California and US trends on many indicators: Dowell Myers and JungHo Park (2020), End of Housing and Economic Recovery from the Great Recession: How Good Did it Get by 2019? https://sites.usc.edu/popdynamics/

[10] What we cannot identify is the housing tenure of movers before their move. In some cases people owned homes before and after their move, but indirect evidence (as to be discussed) suggests younger adults were more likely to have gained homeownership for the first time after moving.

[11]Hans Johnson, "Who's Leaving California—and Who's Moving In?" blogpost, Public Policy Institute of California, 2021, https://www.ppic.org/blog/whos-leaving-california-and-whos-moving-in/

changes just among homeowners because the trends for renters are so constant over time. And among the homeowners it is the net change that varies most between years (the widening gap between the line for outmovers and inmovers). Let us look at what subgroups in the population account for the net migration of homeowners.

Age of householder is a key indicator of stage in the housing lifecycle (Exhibit 10). Young adults are just launching careers and moving for jobs. At the same time, when they choose a new residence they are striving to move up in housing quality, often transitioning from renting to homeowning. Older adults are pursuing different goals. Most are aging in place, but if they are migrating in or out of California, they are often pursuing homes near family or changing their investment portfolio for retirement. The low degree of outmigration by homeowners in 2012 and 2013 could stem from direct aftermath of the recession, but the lack of retirement age migration between 2009 and 2014 is striking.

Exhibit 10. Net Migration of Homeowners Out of California, by Age and Race or Hispanic Origin, Annual From 2006 to 2019
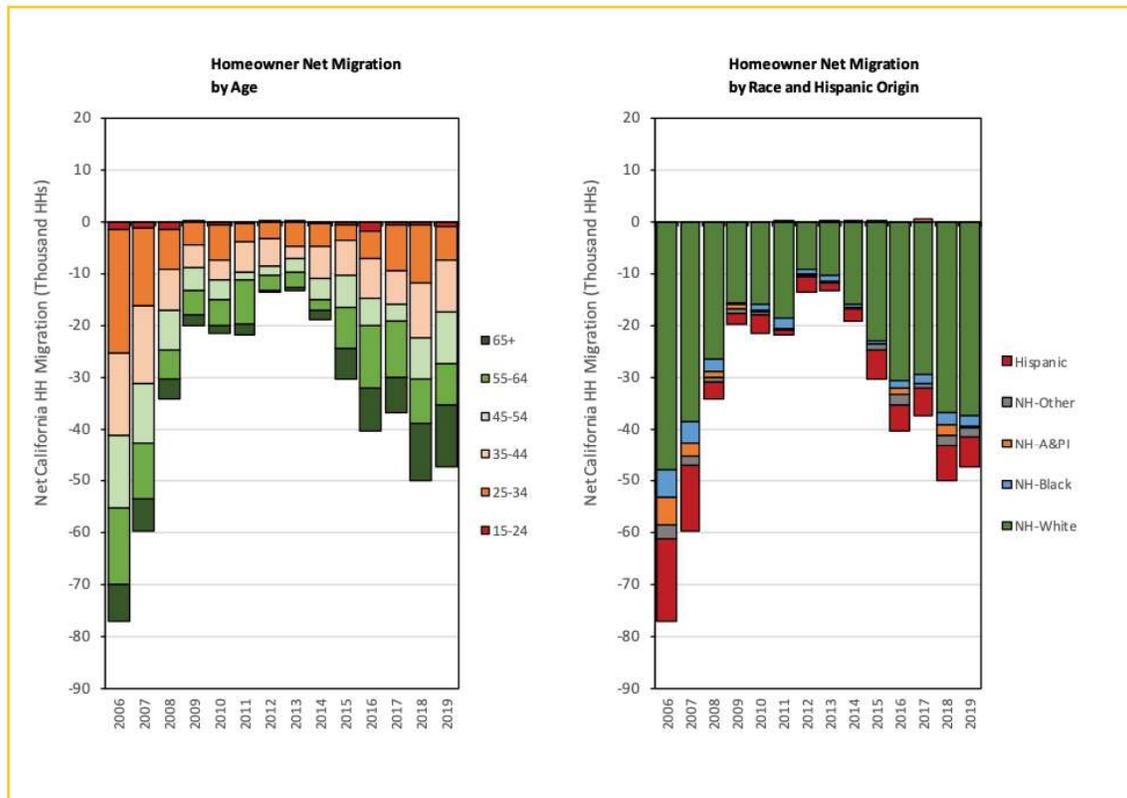
The subsequent escalation among homeowners ages 55 and older beginning in 2015 corresponds with revival of home prices and their upswing in successive years. This suggests more older homeowners were taking advantage of the recovery to cash out their home equity and move to a lower cost state. A parallel shift was evident in 2006 and 2007, also at a moment of peak gains in home appreciation. The LAO study found the major destinations for outmovers were Texas, Arizona, Nevada and Oregon, all states with substantially lower housing prices than California. One could either live in a larger house with more land or invest the net gains in a retirement fund. Among younger adults, on the other hand, the move to other states—and purchase there—suggests that migrants are seizing the opportunity to buy into homeownership, which has eluded so many in California. The large departure of homeowners aged 25-34 in 2006 and 2007 suggests an even stronger shift into homeownership out-of-state than later demonstrated in 2018 and 2019. It is noteworthy that prices in destination states were not as low recently as they were prior to the Great Recession.[12]

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[12] California holds a large median price differential over other states and that was higher in 2006 than in 2019 in major destination states: Texas (370% California premium in 2006 vs. 184% in 2019), Oregon (126% vs. 60%), Washington (100% vs. 47%), and Colorado (130% vs. 44%). Only the two closest neighboring states maintained a constant differential: Arizona (127% vs. 122% in 2019) and Nevada (70% vs. 79%). Median house values for all states and years are drawn from the American Community Survey.

The racial and ethnic profile of the net change in homeowner migrants, also shown in Exhibit 10, is largely comprised of non-Hispanic white households. The only other group of substantial size are the Hispanic homeowners. The large number of outmovers in 2006 and 2007 is striking and substantially greater than the number outmigrating in recent years.[13] These outmigrating homeowners precede the foreclosure crisis that hit the Hispanic community so hard. Moreover, our definition of an outmoving homeowner is that they purchase a home in their new destination. Overall, Hispanic outmovers in those early years were more than twice as numerous as they have been recently.

How Do Higher Educated Movers Fare?

The connection between housing and employment holds particular interest, as highlighted by the PPIC (Johnson 2021). Educational attainment indicates skill-levels of workers and is of vital importance for monitoring the flow of workers into the state's vaunted high-technology sector. Educational attainment also roughly approximates workers' expected income bracket over their lifetime and provides a more permanent measure than current income. Nonetheless, educational attainment yields a rather imbalanced picture of spending capacity for housing, because income rises rapidly in early adult ages before leveling off in the 40s and 50s, then falling in their 60s and 70s. Thus, we often find young college graduates living in much less expensive housing than less-educated people who are older (and who secured their homes decades earlier when they were less costly). As a result, the education and age dynamics of migration have intricate relations to the type of housing occupied.

We have not addressed net changes among renters, thus far, save to show in Exhibit 9 how their migration trends were fairly constant over time, unlike for owners. Accordingly, we have not displayed the variation by subgroups among renters. However, in the case of education, there are also important variations among renters between the different education classes (Exhibit 11). The net change of renters in California due to migration into or out of the state is greatly different between the college-educated and less-educated householders. There is a net loss virtually every year between 2006 and 2019 of less-educated householders among both renters and owners. However, the rental sector achieves positive net migration among those with a college degree (BA or higher). In fact, two-thirds of all inmovers to California (and of those that

Exhibit 11. Net Migration of Renters and Homeowners in California, by Education Level, Annual 2006 to 2019

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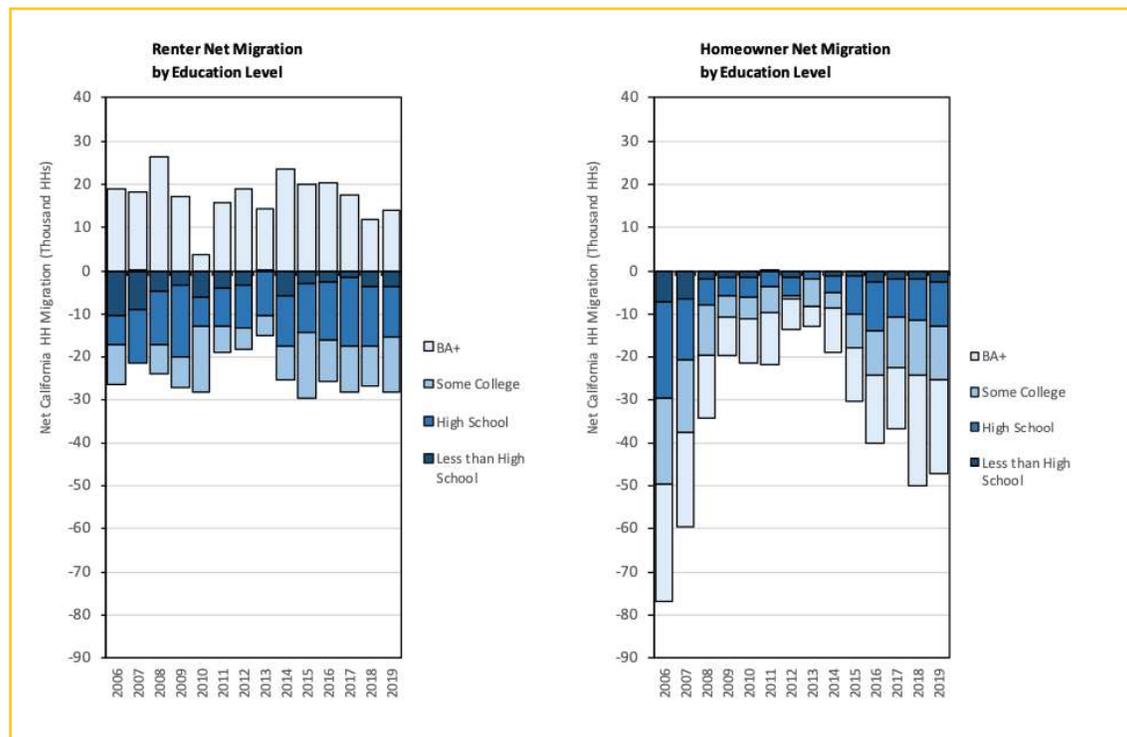
[13] The figures graphed for net outmovers are largely identical to the gross number of outmovers, because Hispanic inmovers who purchase in California are so few in number.

landed in rentals) were BA holders, while that education class made up only half of all the outmovers. This difference yields the net change favoring BA holders among renters, who are both younger on average and better able to work in jobs that can support the state's high housing costs.

Among homeowners, in contrast, all education groups exhibit a net outflow. This stems from the fact that interstate movers are much more likely to achieve homeownership if their destination is not California. Lacking survey data about the housing hopes and dreams of these movers, we can only speculate from the data in Exhibit 11. An overarching storyline that emerges begins with a pattern of young and ambitious BA-holders migrating to California and settling in rental units early in their careers. However, as they pass through their early adult life stages, they undergo dramatic changes in family statuses and housing preferences, changing rapidly especially from age 25 to 35, where the large Millennial generation is now positioned. Homeownership is a goal widely stated by young Americans. A majority of renters express hope that they will become homeowners the next time they move (Fannie Mae National Housing Survey). In recent years of the housing price boom, many of these rising early middle-age adults are unable to secure homeownership opportunities and they are forced to leave the state in order to advance in their desired housing careers. See also the age differences in Exhibit 10 above.

CONCLUSION

This research brief has addressed the overall question of why housing demand could be so strong at a time when population growth is so minimal. Indeed, even in the face of the pandemic recession, housing-purchase activity has escalated to levels not seen in more than a decade. Our research points to the "sleeping giant" of the Millennial generation, whose members delayed their household formation and home-buying but are now a driving force. While some might point to record-low mortgage interest rates as a spur, that factor helped escalate purchase prices but was not what got home buyers moving. Other observers have pointed to the abrupt change in housing preferences wrought by the pandemic. Health concerns of living in dense neighborhoods may have spurred a change in locations, emptying out congested urban areas that no longer offered their high-contact entertainment amenities. In addition, the large-scale shift to remote work from home certainly spurred widespread new demand for home offices and Zoom stations where doors could be closed against other household activities. However, underlying it all was a generation that was poised to live a thirty-something lifestyle but had lingered in its old habitat until spurred to suddenly make the leap. The technical analysis behind this lifecycle transition is explained in the first half of the brief.

In the second half, we address the popular narrative of California "exodus" and what it means. Tracked annually from 2006 to 2019, we have shown how the accelerating outmigration of the last few years differs by age, race, educational attainment, and most importantly by housing tenure. In particular, we find the growing net migration is almost entirely due to the outflow of people who become homeowners in their new states of residence. Perhaps of special interest is our comparison of the even greater outmigration of homeowners in 2006, during the boom that preceded the Great Recession, than in 2019, just before onset of the pandemic recession. Much is lacking from our data, but we have squeezed maximum information value from what is publicly available. A broad story of change in California can be read from the data, integrating demographic change, housing needs and demand, and the struggles of young people in California. Hopefully, this linkage of housing and demographics adds new facts and better perspective that can inform public understanding.

Soaring Housing Demand Despite Lagging Population Growth in California

EXHIBIT LIST

Growing Generation Gaps in Homeownership and Racial Disparities

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Abstract

This study takes a multi-decade view of generational progress in homeownership attainment, comparing California and Los Angeles to the United States as a whole. Generational attainments are measured within each of four broad ethnoracial groupings: white, Black, Hispanic/Latinx, and Asian and Pacific Islander. A different temporal pattern of achievement is found for each group, but the common denominator underscores that homeownership accumulates progressively as people grow older over their housing careers, and achievements in middle age and older years are built on the success at young ages. Generation gaps that have been growing threaten to erode the number of home buyers and total homeownership in California and the nation. Attention to the rising barriers blocking homeownership for young people thus has special importance to all.

INTRODUCTION

Homeownership has long been described as the American Dream, benefitting most households through wealth appreciation, stable residency, and the ability to remodel space to meet changing needs.[1] It certainly has been a cornerstone of the California Dream as well, with much stronger wealth appreciation in Los Angeles, for example, than in the U.S. as a whole,[2] even though California's homeownership rate (54.9% in 2019) has remained about 10 percentage points below the national average over the last three decades. In fact, the Federal Reserve has noted that homeownership is the most important path to wealth accumulation in the middle class.[3] Growing worries are being expressed that the divide between homeowners and renters is a key driver of growing economic polarization. Breaking down that barrier is more important than ever.

Access to homeownership has been unusually volatile over the last three decades, with surges in the national and California homeownership rates from 1995 to 2005, peaking in the housing bubble, and followed by steep and prolonged declines after the financial crisis and Great Recession. Only after 2016 did the total homeownership rate begin to recover, but that still lies below its level in 2000, prior to the housing bubble. Not all groups have fared equally well in this long sweep of time: older generations that were already established as homeowners have been less vulnerable to rising prices and limited housing opportunities.

The urgent problem is that newer (younger) generations have fallen behind the homeownership success of longer-established generations. We find that African American and Hispanic/Latinx households have achieved much lower levels of homeownership than non-Hispanic white households. Asian Americans have achieved distinctly greater success than other groups, but their achievements on average also still fall well below the homeownership attainments of older, white households. What is especially different in California, is that the younger generation of white households is also falling far short of the homeownership success enjoyed by the older white generation.

The unique contribution of this research study is that it traces and compares generations across multiple decades, comparing homeownership achievement in California to that in the United States as a whole. Here we are reaching beyond standard practice that compares groups only at a snapshot in time or traces selected individuals across several years.

Instead, through our cohort methods, we are able to trace and compare the aggregate trajectories of whole groups as they travel through their housing careers, growing older from decade to decade.[4] Tracing these arcs of homeownership accumulation through time, we compare achievements of different generations and racial subgroups when they were the same age in different decades and assess how rapidly they gain homeownership as they pass from age to age in different decades.

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[1] Goodman, Laurie S., and Christopher Mayer (2018) "Homeownership and the American Dream," Journal of Economic Perspectives, 32 (Winter): 31–58.

[2] Goodman and Mayer, table 5.

[3] Bhutta, Neil, Andrew C. Chang, Lisa J Detting, and Joanne W. Hsu (2020) "Disparities in Wealth by Race and Ethnicity in the 2019 Survey of Consumer Finances." Fed Notes. Board of Governors of the Federal Reserve System.

The racial disparities of homeownership rates are of keen policy concern, yet each group exhibits a distinct history and set of generational dynamics. As will be demonstrated, the achievement histories of Black and Hispanic households are distinctly different and their homeownership remains lower than the others. African Americans have suffered a more than 20 percentage point decline across the generations. While Hispanics initially were able to avoid declines, beginning with Generation X and then the Millennials, their homeownership has been set back by the post-2007 housing crisis and the lingering economic recovery. Younger households of white generations also have fallen progressively further short than the much more advantaged older generations of whites. In contrast, Asian Americans exhibit substantial progress relative to their older generations.[5]

A commonality across the ethnoracial groups is that all cohorts build higher homeownership achievement between their young and middle age range, continuing upward to a peak attainment rate near age 70. Gaps that open up in younger years are sustained and widen into middle age. This suggests that our attention should focus on assisting younger adults to launch successful homeownership trajectories to carry through their life cycle. Success of each of the four broad ethnoracial groups will be described through the achievements of their generational subgroups, including Millennials and Generation X compared to the Baby Boomers or older groups. As we will find, homeownership disparities start with the young and they build up over time. Now that the most advantaged homeownership generations are beginning to age out, the lower achievements of the younger generations will begin to pull down the nation's average homeownership rate.[6]

Overview of Ownership Rates and Racial Disparities for California and the U.S.

An overview of homeownership rates and disparities at the 2019 peak of the post-Great Recession expansion, prior to the pandemic recession, is offered in Exhibit 1. In California, the highest homeownership rate among all ages combined is reported for white households, 63.2%. The rate for African Americans is substantially lower, a gap of –26.2%. The Hispanic gap is –19.2%, while the race gap between white and the broad group of Asian households is only –3.2%.

In the United States as a whole, by contrast, the race gaps are all wider, by 3 to 5 percentage points for Black and Hispanic households, but 8 percentage points wider for Asian households (lower panel of Exhibit 1). It would seem to be good news that California's homeownership has smaller gaps between whites and other households. Yet, evidence in the table suggests that the smaller gap in California than the nation may stem from greater weakness in homeownership among white households in California. White homeownership is 9 percentage points lower in California than in the U.S., while Black homeownership is 6 points lower in California, Hispanics 4 points lower, and Asian Americans half a point lower. Thus, the traditional measurement of racial gaps in homeownership is skewed by greater weakness among whites.

Clues about why the white homeownership rate is more depressed in California are found in the achievements of younger age groups. Exhibit 1 reports the age gap between white households age 35 to 44 and those age 65 to 74. The younger age group (members of Generation X in 2019) has an age gap of –29.2%, compared to only a 15.6% gap in 2019 in the U.S. The age gap for whites is also wider than for all other race groups in California. Clearly the age gaps bear more attention than they are often given. These can be better understood when we look in more detail, using cohort longitudinal methods from housing demography to trace trajectories into homeownership as cohorts advance through their career over time.[7]

[4] Myers, Dowell, "Cohort Longitudinal Estimation of Housing Careers," Housing Studies 14 (4,1999): 473-90.

[5] It should be noted that the broad Asian and Pacific Islander group includes a diverse array of ancestries. Although the larger subgroups that collectively make up over three-quarters of this broad racial category have high homeownership rates in 2019 (Chinese, 63.0, Vietnamese, 66.9, Filipino, 62.2, Japanese, 65.9, Indian, 56.1, Korean 50.7), many of the small subgroups have much lower incomes and accordingly lower homeownership rates (Hmong, 51.1, Malaysian, 44.1, Burmese, 42.3, Mongolian, 30.9, Samoan, 31.4). Source: Alexandra Lee, 2021, "Rapid Growth of Asian-Headed Households Hides Significant Inequality," Zillow. https://www.zillow.com/research/asian-american-homeownership-2021-29536/

[6] Myers, Dowell and Hyojung Lee. 2016. "Cohort Momentum and Future Homeownership: The Outlook to 2050," *Cityscape: A Journal of Policy Development and Research,* vol. 18 (March): 131-143.

[7] Myers, Dowell, "Cohort Longitudinal Estimation of Housing Careers," *Housing Studies* 14 (4,1999): 473-90.

Exhibit 1. Disparities of Homeownership Rates by Race amd Age, California and United States 2019

CALIFORNIA					
	BLACK, NH	HISPANIC	ASIAN, NH	WHITE, NH	ALL RACES
ALL AGES	36.8	44.1	59.8	63.2	54.9
RACE GAP	-26.4	-19.2	-3.5	0.0	
SELECTED AGES					
35-44	27.5	36.6	60.5	50.2	45.3
65-74	48.7	63.2	73.2	79.4	73.3
AGE GAP	-21.3	-26.7	-12.7	-29.2	-28.1

| UNITED STATES					
	BLACK, NH	HISPANIC	ASIAN, NH	WHITE, NH	ALL RACES
ALL AGES	42.3	48.1	60.3	72.2	64.2
RACE GAP	-29.9	-24.1	-11.9	0.0	
SELECTED AGES					
35-44	34.6	44.7	60.8	68.4	58.3
65-74	59.4	64.9	75.1	84.0	79.3
AGE GAP	-24.7	-20.3	-14.4	-15.6	-21.0

Source: Module_3B__072321/Summary

Homeownership Rates by Age, 1990 to 2019

After 2000, homeownership rates of younger adults in California began to sag below the previous norm, plunging at the end of the decade, during the Great Recession, and then continuing to fall by an equal amount after the supposed recovery from the recession. This is evident in a graph of the age-specific homeownership rates reported in the census for four decades (Exhibit 2, left panel).[8] The largest age group decline is found at age 45 to 54 because two full decades of recently reduced homebuying have accumulated by the time people reached middle age.

The concept of cohort trajectories captures this essential connection between successive age groups over time (Exhibit 2, right panel). The trajectory graph plots the identical data points as in the standard age group graph but connects the dots for cohorts and generations that are aging across the decades. Popular terms are used to distinguish these generations, with Gen Z the newest—the shortest trajectory thus far—preceded by the Millennials, Gen X, and earlier generations that were progressively older by the time they are observed first in 1990. Noteworthy is how the trajectories appear to track on relatively parallel lines. Only small deviations occur after particularly favorable or unfavorable decades. By age 35 to 44, cohorts are fairly established in their housing careers. The Millennials are only age 25 to 34 in 2019, so the bulk of their future home buying still lies ahead. As highlighted in Module Report 1, the Millennials in 2019 are currently poised at the age when home buying increases most steeply.

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[8] Note that the 2019 data are collected in the American Community Survey and reported for a time period approximately 9 months prior to the decennial census. These data may be preferred to the actual census results or 2020 ACS data, when eventually released, because of pandemic disruption of data collection in 2020.

Exhibit 2. California Homeownership Rates by Age and Year
   (Percent of Households that are Homeowners)
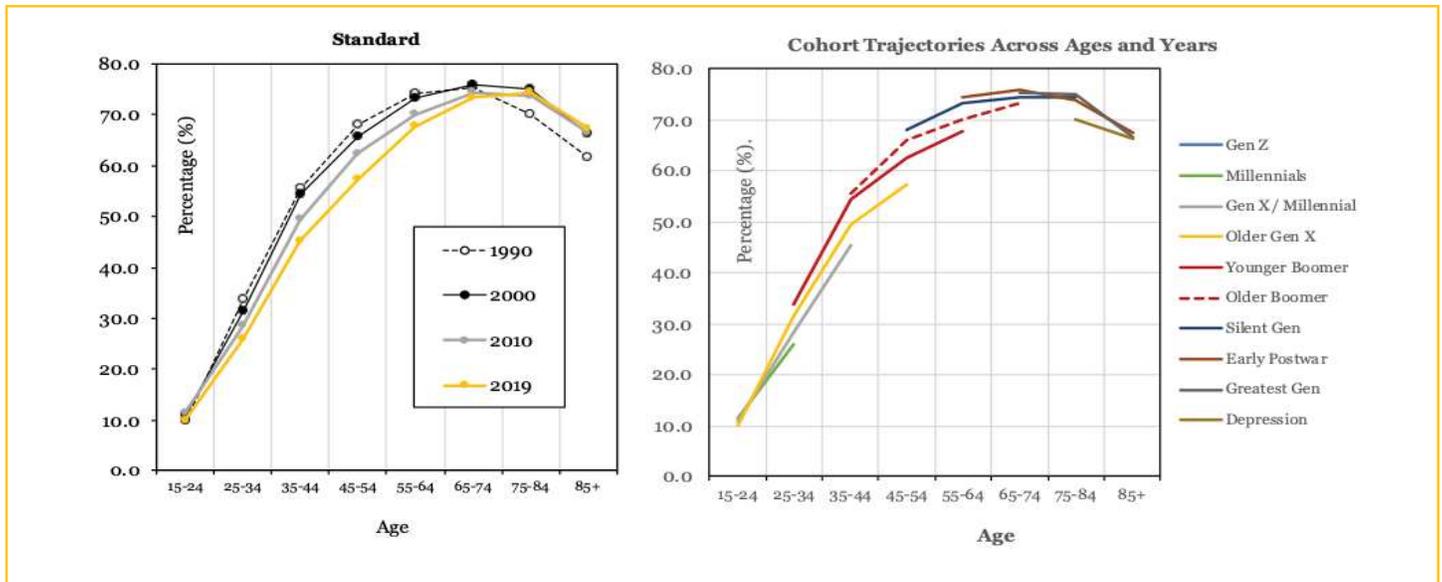
Trajectories of Homeownership Attainment, by Race Group

Trajectories in this report are estimated separately for each ethnoracial group, defining and comparing the four traditional broad groupings (subtracting all Hispanic/Latinx households out of other categories). We can better assess what is distinctive about California if we first compare trajectories for the United States as a whole. In addition, if we add Los Angeles County for separate analysis, we gain insight into how much a high-priced coastal area may differ from the state of California as a whole. The data cover 1990 to 2019.

The three geographic areas are ordered from larger to smaller subsets, i.e., U.S. on top, then California, followed by Los Angeles. For clarity, we first compare the trajectories of white and Black households (Exhibit 3), then the trajectories for Asian and Hispanic households (Exhibit 4). All the graphs show a maximum 90% homeownership on the vertical axis, so that comparisons are enabled across all the plots.

White Homeownership

White households have the highest trajectories into homeownership, highest of all for the U.S., followed by California, and then Los Angeles (Exhibit 3). Peak cohorts approximate 85% homeownership in the U.S., 80% in California, and 75% in Los Angeles. However, over the decades, the newer cohorts in each geography lie progressively lower. In the U.S., the cohorts overlap one another, showing that the trajectories are tracing relatively the same path for each generation. Only the oldest cohorts are much differentiated, reflecting how the oldest cohorts had lower careers of homeownership that began before the benefits of FHA programs and the general postwar prosperity. The cohorts with highest ultimate homeownership attainment were in their 20s in the early post-WWII or Silent Generation eras. Thereafter, homeownership attainments began to slowly decrease, declining even between the older (born 1945 to 1954) and younger (born 1955 to 1964) halves of the Baby Boomers.

Looking down the chart at the white trajectories for California, it is apparent that the slippage between successive cohorts is more substantial than in the U.S., even more so when the focus is on Los Angeles. The younger Boomers are falling 10 percentage points short of earlier peak white attainments of homeownership, and this slippage increases in Los Angeles, not the U.S., for the older Millennials and Gen X. This record of declining white attainment provides a benchmark of growing difficulties in accessing homeownership, economic difficulties in California that stemmed from faster growth in demand than supply, with the result that prices rose much faster than incomes. The exceptional rise in house prices in California was a boon to established homeowners in older generations, but it posed a growing barrier to entry for the newest generation. Whereas the older generations faced very favorable conditions in their early housing careers, creating a lifetime advantage, the growing disparities imposed on younger generations pose a threat of being carried forward for the rest of their housing careers.

Black Homeownership

Black homeownership rates were already lower in the postwar era than for white households (38% compared to 64% in 1960), but by 1980 Black homeownership had reached a high point of 45%, narrowing the gap with whites to 22 percentage points.[9] The 1990s proved to be more difficult for Black homeowners, their gap swelling to 26 percentage points. The Great Recession proved even more calamitous, so that by 2019 Black homeownership had fallen back to 42% and their gap with white homeownership had ballooned to 30.5 percentage points.[10] Richard Rothstein's Color of Law details the history of federal government enforced discrimination in many different programs, even in the San Francisco Bay Area, against Black homeowners in 1940 and during the early postwar era.[11] Investments denied in homeowning in this early period prevented an early generational investment that could have made homeownership more equal then and in the next generations.

When we look at the Black trajectories into homeownership after 1990, we find far greater slippage between generations in the U.S., beginning with the older Boomers, than was visible for white households. It is not certain what national trends could have instigated such an abrupt break in homeownership access. Older Boomers would have been age 30 around 1980, a time of extremely high interest rates. It is possible that this credit barrier might have impacted Black households more severely than white households. This also coincided with the period of deindustrialization, the beginnings of the "rustbelt," the decline of union jobs, and other factors that disproportionately would impact African Americans and make mortgage qualification more difficult.

In California, this pattern of Black slippage was even deeper, with the older Boomers (dashed line) falling even further behind their predecessors. This same generational separation occurs in Los Angeles, roughly to the same degree as in the state. Although trends in the price environment were roughly the same as for whites, incomes of Black households were lower and even less supportive of purchases in a rising environment. We also know that institutional rules supporting credit access were generally less supportive. However, the trends for younger generations in Exhibit 3 indicate that Black trajectories into homeownership held up better in California than the U.S., at least in comparison to the extreme downward slippage for white households. This is consistent also with annual data collected from the American Community Survey that show a stronger 3-year uptick in homeownership at the end of the decade for Black homeowners in California than the U.S.[12] This recent rebound holds out hope that the recent rebound prior to the pandemic indicates a readiness to seize housing opportunities if available.

The eye-catching uptick in homeownership late in life for African American households also deserves comment. What do these upturned trajectories indicate? Resembling a similar upturn found with respect to college education, this reflects a survivor bias. At the very oldest ages, better educated people who have led lives with higher incomes and homeownership, also have tended to live healthier lives. As a result, homeowners live longer and become a larger proportion of the elderly population late in their lives. Thus, as the cohort grows older, more of the homeowners remain in the data and the percent of the cohort who are homeowners rises in retirement ages. The rise in homeownership rates starting at age 55, especially in Los Angeles, also could reflect that Black households who are homeowners enjoy a more settled retirement, aging in place, while their peers living in rentals are more likely to give up their units to live with relatives, including migrating away to other counties or states.

Asian Homeownership

The record of cohort trajectories into homeownership for Asian households is distinctly different than the others (Exhibit 4). Prior to the older Baby Boomers (dashed line), the homeownership trajectories for older cohorts trended linearly downward, with steeper descent for California than the U.S. and for LA than California. This likely pertains to the living arrangements of older immigrants, who comprise the great majority of older Asians. U.S. born Asians do not reflect this pattern at all, because they have lived their entire housing career as heads of their own households, with growing homeownership, as reflected in the trajectories for Asian Americans who are now middle-aged.

[9] Carr, James H., Michela Zonta, and William Spriggs, 2021 State of Housing in Black America, NAREB, exhibit 1.
[10] Myers, Dowell, and JungHo Park, End of Housing and Economic Recovery from the Great Recession: How Good Did It Get by 2019? Population Dynamics Research Group, USC, 2020, exhibit 11a.
[11] Rothstein, Richard (2017) *The Color of Law: A Forgotten History of How Our Government Segregated America,* New York: W.W. Norton.
[12] Myers and Park, End of Housing and Economic Recovery, exhibit 11a.

At young ages, in the U.S., there is little difference found between recent and earlier generations. Only in Los Angeles is there slight evidence of the downward slippage that is so prominent among white and Black households. In fact, when compared with the downward trajectories of older cohorts, the strength of young Asian cohorts is so great that there could be actually an upturn in homeownership attainment between older and newer generations of Asians. This is unlike all other groups.
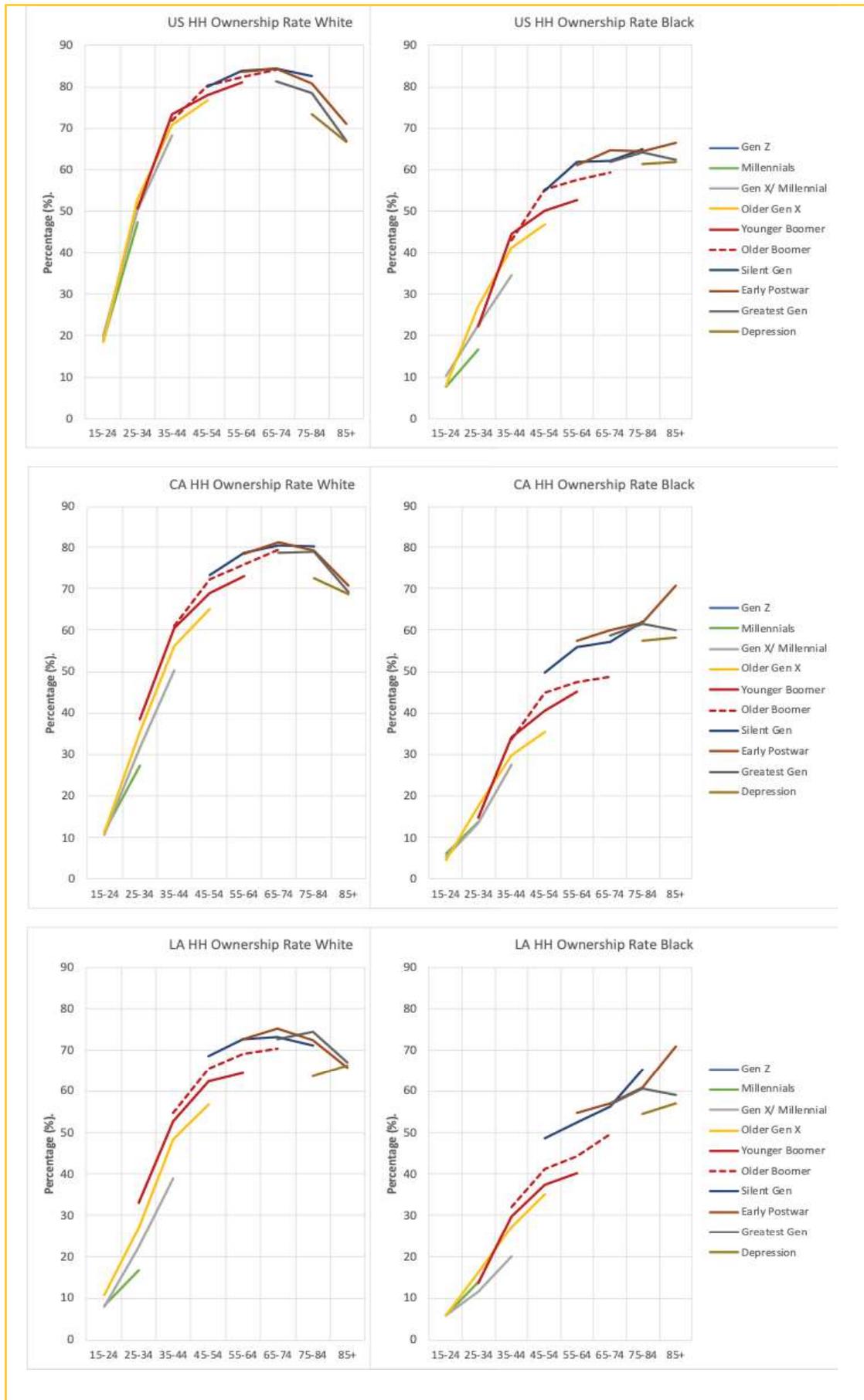
Hispanic/Latinx Homeownership

Homeownership trajectories for Hispanic or Latinx households rise to a lower peak than for white or Asian homeownership. However, there is less downturn in old age and the younger cohorts overlap one another so much that no sign appears of generational slippage. The most distinctive feature of the Hispanic cohort trajectories is that the most recent cohort segment, observed from 2010 to 2019, sticks out visually in its downward slippage in California, and especially Los Angeles, although not in the U.S. Three cohorts exhibit this, from the older Gen X down to young Millennials, each of whom has fallen off between 4 and 8 percentage points since 2010 from the upward trajectory of their immediate successor. Reasons for this sudden underperformance are not clear cut but we can offer some reasoned speculation.

What makes the Hispanic pattern most unusual is that, unlike other ethnoracial groups, there is no hint of this slippage prior to 2010. Nor is it an accident of random variability, given that all three of the youngest cohorts exhibit the same shortfall in homeownership attainment. Changes in immigration are an unlikely cause, because the post-2008 slowdown in Hispanic migration would have been revealed largely in the youngest cohorts and, if anything, this would be expected to increase the U.S.-born share of those cohorts and enhance their homebuying prospects, not decrease them. It is also significant that, unlike California and Los Angeles, no sign of young generational slippage among Hispanic households is evident for the U.S. as a whole. Perhaps, then, the unusually sluggish recovery of homeownership in California following the Great Recession is a factor dampening the normally strong rise in homeownership among young Hispanic cohorts. The puzzle is why this post-2010 slowdown has occurred only for Hispanics or, alternatively, why Hispanic cohort trajectories were so strong from 2000 to 2010. Any explanation likely must take account of the greater foreclosures that plagued Hispanics, in particular, after the financial crisis. Their aggressive entry into homeownership both elevated their homeownership gains for the 2000's decade and left them vulnerable to predatory lending that led to eventual foreclosures spilling into early years of the new decade. Many of the home losses were recorded after 2010, and damage to credit reports has lingering effects. Even those who escaped direct financial losses observed the harsh setbacks of friends and relatives beginning in the sharp plunge in the housing market after 2007. This is suspected to have left fears about risks of homeownership that discouraged home buying early in the decade (2011 to 2014) when homes were most affordable. Missing out on home buying in those early years would have been much more damaging to homeownership accumulation for the decade in high-cost California, especially Los Angeles, than elsewhere in the United States. All of these mechanisms are possible explanations for why Hispanic homeownership exhibited downward generational slippage only after 2010, contrary to the evidence shown for whites, Blacks and Asians.

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[13]Rugh, Jacob S. 2015. "Double Jeopardy: Why Latinos Were Hit Hardest by the U.S. Foreclosure Crisis," *Social Forces* 93 (3): 1139–1184. doi: 10.1093/sf/sou107

Exhibit 3. Cohort Homeownership, White and Black, U.S., California, and LA

Source: Intergenerational Gaps……/Comparisons_Arranged

Exhibit 4. Cohort Homeownership, Asian and Hispanic, U.S., California, and LA

Growing Generation Gaps in Homeownership and Racial Disparities

Summarizing and Estimating Decline Across the Generations

In general, we have identified growing generation gaps that are greater in California than the U.S. as a whole, but each of the four major ethnoracial groups have exhibited a distinctly different pattern of adjustment. Our evidence is contained in visual displays that are rich in detail, but it would be useful if we could summarize quantitatively what is the overall degree of generational slippage in homeownership attainment for each major group in the United States, California and Los Angeles.

The method we propose stitches together an overall assessment from the mosaic of temporal segments observed for older and younger generations at different ages. We adopt age 55 to 64 as an appropriate common age when generations can be compared to one another. Some of the cohorts already have attained this age in different decades. Taking as an example the white households in Los Angeles (bottom of Exhibit 3), four generations can be directly compared at age 55 to 64, declining from 73% homeowners among the Early Postwar and Silent generations to 64% homeowners among the younger Baby Boomers. The next cohort, Generation X, is 10 years younger but can be assumed to follow the slope of preceding cohorts passing into age 55 to 64. Cohorts even younger also could be assumed to continue following this trajectory into age 55 to 64, each paralleling the immediately preceding cohort. Lacking other information about the future, the assumption of parallel trajectories expresses the most likely outcome for homeownership attainment when each generation arrives at age 55 to 64.

This simple and direct method offers a credible extrapolation of the lower attainments by younger generations, given the lower attainment trajectories they are already following. Of course, the youngest generation has 30 years to vary its path into homeownership by age 55 to 64 and its members face many unknowns. The younger Millennials are least well-established in lifestyle or economic prospects and face volatile policy and economic changes. Coming out of the current pandemic era, with unknown changes to follow in housing supply and policy assistance, they have the greatest potential to alter course, either accelerating or tamping down their future homeownership gains. However, the most probable, but not destined, outlook remains the laissez-faire, parallel extrapolation.

Findings under this method are presented in Exhibit 5. For ease of comparison, we have graphed the estimates, with the youngest (newest) generations on the left and the oldest generations on the right. A separate trend is identified for the U.S. as a whole, for California, and for Los Angeles County. These are repeated first for all residents, regardless of race, and then for each of the four major groups.

The portrait drawn is one of declining generational fortunes in homeownership, with the spread between California and the United States gradually widening. The dominant case in the nation is the white population, which is not only the largest group but also experiences the greatest decline in California (–19 percentage points) relative to decline in the U.S. as a whole (–9 percentage points). Asian homeownership has actually been experiencing an increase of about 5 percentage points across successive generations in both the U.S. and California.

The trend assessment for Black and Hispanic homeownership is in between these extremes and more complex. Among Black households, the evidence for the U.S. indicates a steep decline in homeownership across the generations, a loss of more than 20 percentage points from a substantial base of achievement (61%) set earlier by the Silent and Early Postwar generations when they were ages 55 to 64. However, contrary to other trends observed for California, African-American homeownership in Los Angeles and California has fared better in recent generations than in the nation as a whole. There are signs of resisting further downturn among the younger generations, unlike the case in the U.S. Yet generational prospects for Black homeownership by ages 55 to 64 still remain just below 40% in California, 32% in Los Angeles.

In California, the largest group is now the Hispanic/Latinx population and its success in the housing market carries special importance. Generational homeownership among Hispanic households remained remarkably steady from the Early Postwar to the Young Baby Boomer generations, measuring just above 60% in both the U.S. and California. However, the newer generations are suffering substantial setbacks, estimated here to be about 5 percentage points in the U.S., 12 in California and 16 in Los Angeles. Reasons for these setbacks after 2010 were discussed above. It is always possible that some of these generational losses could be restored before the cohorts reach the benchmark age of 55 to 64.

Exhibit 5. Growing Gaps in Generational Achievement of Homeownership by Age 55-64, Comparing Race Groups in the U.S., California, and LA

Total Homeownership at Age 55-64
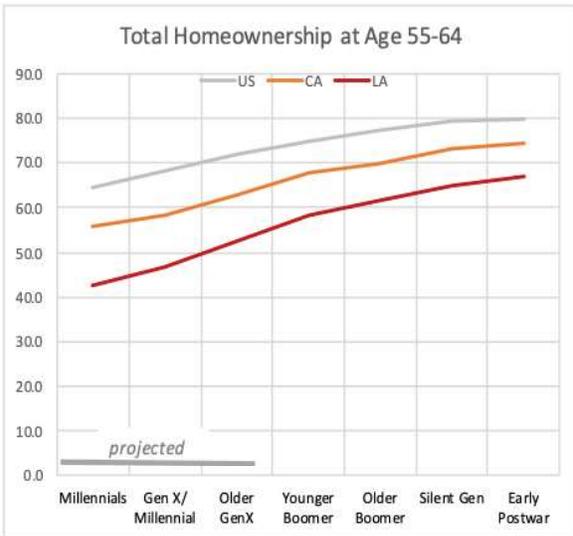
Note: Younger generations are projected for comparison at age 55-64 by extending their cohort trajectories currently revealed. Increments achieved by preceding cohorts in later age spans are assumed to be gained by younger cohorts when they reach that age.
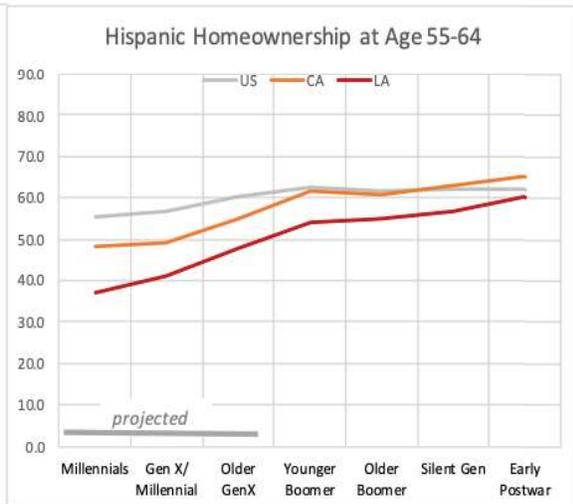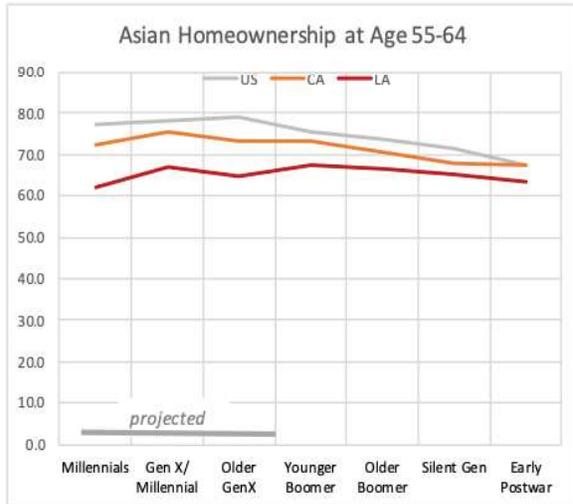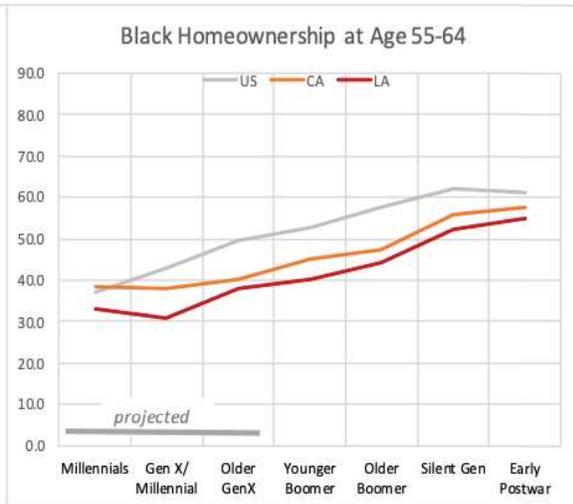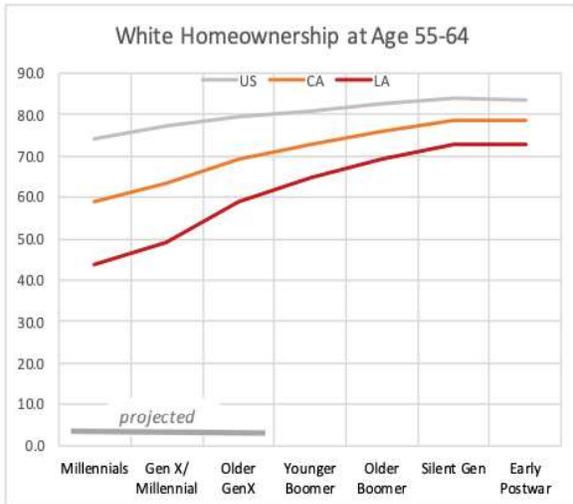
White Homeownership at Age 55-64

Black Homeownership at Age 55-64

Asian Homeownership at Age 55-64

Hispanic Homeownership at Age 55-64

Long-term decline in homeownership has numerous negative consequences. As stated at the outset, homeownership has been the largest source of generational wealth in the nation and California. Longstanding homeowners accumulate substantial gains in home equity, particularly in California with its history of rapid price gains. That in turn fosters the ability of "the Bank of Mom and Dad" to assist the homebuying of their children.[14] The unfortunate consequence of family assistance is that inequality becomes more deeply entrenched between families with differential resources and between members of racial groups that have stronger legacies of homeownership than others. Indeed, research shows that the gap in parental wealth and homeownership between Black and white parents can explain 12 percent of the subsequent homeownership gap between their young adult children.[15]

Rather than rely solely on private, family assistance for homebuying in the younger generation, public solutions are needed that facilitate more equitable access to homeownership, regardless of the wealth of parents. Government assistance may be warranted today also as a partial correction for past restrictions imposed by government on the homebuying of African Americans and other non-white groups, as legal scholar Richard Rothstein documents for the 20th century.[16] Policy solutions recommended by the National Association of Real Estate Brokers (NAREB) include major down-payment assistance as a step toward restorative justice and a reduction in credit penalties resulting from student loan debt (which would apply to loan applicants of all races).[17] Many other observers have underscored the growing drag that rising student loan debt imposes on the Millennial generation when trying to qualify for home purchase loans. Another problem has been penalties in mortgage qualifying for income earned in the 1099 "gig economy," when Millennials have much less access to W-2 wage earner positions than was common in earlier decades.

The Urban Institute has taken leadership in emphasizing the need to reform the entire mortgage credit scoring process so as to enable millions of credit-worthy Black and Hispanic renters to advance into homeownership. Specific suggestions include granting credit for a history of on-time rental payments and including multiple income sources in multigenerational home purchase applications. More broadly, affecting all potential home buyers, Laurie Goodman offers convincing evidence that credit restrictions were overly tightened in the aftermath of the Great Recession and should be returned to the underwriting standards that prevailed in 2000 prior to the onset of loose scoring and the housing bubble.[18]

Our opinion is that such an overhaul of the access to credit, if accompanied by an expanded supply of units for sale, would go a long way toward restoring the normal upward trajectories into homeownership. This could help introduce greater equity of access to homebuying across racial groups, and if accompanied by greater down payment assistance, it would begin to reduce the large generation gaps that have widened especially within white and Black communities. The data presented in the present study provide vital insight into these generation gaps. This is not just an act of fairness to help the younger generation. The foundation laid in early adult years underpins successful future trajectories into homeownership and will form the heart of a strong housing market. Successful homeownership futures in California and the United States will depend on expediting more equitable homebuying for all groups today.

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[14] Lee, Hyojung, Dowell Myers, Gary Painter, Johanna Thunell and Julie Zissimopoulos, (2020) "The Role of Parental Financial Assistance in the Transition to Homeownership by Young Adults," *Journal of Housing Economics* https://doi.org/10.1016/j.jhe.2018.08.002

[15] Choi, Jung Hyun, Jun Zhu, and Laurie Goodman. 2018. Intergenerational Homeownership: The Impact of Parental Homeownership and Wealth on Young Adults' Tenure Choices. Washington, DC: Urban Institute.

[16] Rothstein, Richard (2017) *The Color of Law: A Forgotten History of How Our Government Segregated America*, New York: W.W. Norton.

[17] Carr, James H., Michela Zonta, and William Spriggs, 2021 State of Housing in Black America, NAREB.

[18] Goodman, Laurie et al. (2021) "Housing Credit Availability Index," page 13 in Housing Finance at a Glance https://www.urban.org/research/publication/housing-finance-glance-monthly-chartbook-december-2021/

EXHIBIT LIST

Negative Effects of Housing Shortages on Housing Well-Being of Local Residents

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Abstract

This research brief addresses the impacts of housing shortages on housing attainments by residents in the nation's 50 largest metro areas, highlighting the four largest metros in California, San Francisco and San Jose in the Bay Area and, in southern California, Los Angeles-Orange County and the Inland Empire (Riverside-San Bernardino). We first address the definition and measurement of housing shortages, surveying the lack of consensus on best approaches, and developing two measures based on the disparity between job growth and housing permits. One addresses the recent 3-year trend and the other the cumulative post-Great Recession annual estimates of housing shortage. Analysis is then conducted through comparison of differences in the 50 largest metro areas in the U.S., bringing special attention to the Los Angeles region and the Bay Area. Emphasis in the report is placed on correlating shortages with the relative rental and ownership affordability of metro areas, and then linking both shortage and affordability to key measures of housing occupancy demand, principally household formation and homeownership attainment. We focus on adults in the entry ages for these housing attainments, comparing the impacts of shortages on metro residents who are white, Black, Hispanic/Latinx, and Asian. We explore major gaps or disparities between these groups. Major emphasis is given to the visualization of these many trends, highlighting the four major California metros so that their conditions can be seen in the context of the other large metros in the U.S.

INTRODUCTION

Housing shortages are now well-recognized as a problem in California. More recently, this has grown to be a problem across most of the larger urban areas in the nation. This report explores how the degree of housing shortage is linked to a number of measures of housing well-being in the California population. Shortages are generally assumed to be detrimental to the housing opportunities available in the state, but how can these negative effects best be quantified? And what are the implications of housing shortages for members of major race and ethnic (Hispanic and non-Hispanic) groups?

The approach taken in this research reported is to compare housing outcomes for residents in the nation's 50 largest metropolitan areas (MSAs), relating these outcomes to the relative housing shortage and level of affordability in each metropolitan area. The two largest metropolitan areas in California are Los Angeles-Anaheim and San Francisco-Oakland, representing the heart of southern and northern California, respectively. These two areas and their neighboring MSAs, San Jose and Riverside-San Bernardino, stand out in the national plots of housing well-being for their unfavorable circumstances, although the Riverside-San Bernardino MSA, widely termed the "Inland Empire," presents some unique advantages.

The first task is to develop a working definition of "housing shortage." We briefly review a number of alternatives used by professional and academic researchers and find little existing consensus. All measures seem inadequate to capture the practical meaning of "shortages" in local housing markets. The method with the widest acceptance computes the relative balance of housing and employment growth, and we settle on a particular formulation of the difference between the rate of new housing production and the rate of employment growth. The formulation relied upon in our study tests well in comparison to alternatives. It also enjoys an intuitive interpretation of measuring how much housing production is failing to keep up with employment growth.

Our next task is to define a set of indicators of aggregate housing well-being that can be compared between metropolitan areas. These are widely viewed as practical measures of per capita housing attainments and cover the broad contours of housing access. The indicators are rates of household formation and homeownership attainment, as well as a set of cost burden measures specific to both renters and homeowners. In order to compare different metros, it is necessary to control for key demographic differences. Accordingly, we also focus on the relevant indicators specific to key age groups, 25 to 34 for household formation, and 35 to 44 for homeownership attainment.[1] We also focus closely on the attainments of specific racial and ethnic groups, comparing the housing gaps of black and Latino groups, or of Asian-descent households, relative to the experiences of white, non-Hispanic, households in the same metropolitan area.

A vast amount of data can be assembled for all these groups in the 50 metro areas, and there are many variations to the various measures of housing attainment, as well as housing shortage. We have worked to winnow down this complexity, while still affording strong visual display of key dimensions compared across the 50 areas. We hope this compromise between detail and summary will prove a good balance and prove accessible to all readers.

DEFINING HOUSING SHORTAGE

Everyone knows a housing shortage when they see it. There are a great many surface indicators of shortage, including rapid rises in rents and sales prices, falling vacancies and time on the market, and number of contracts bid for each opening. More fundamentally, a "shortage" is a disparity between the growth in supply and demand. For our 50-metro analysis we need to measure both these factors.

In practice, the fact of a housing shortage is often inferred from indicators commonly measured in the industry, such as a shorter time on the market, Zillow's average days to pending, fewer months of supply

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[1] Some people form households before age 25 and also buy homes before age 35, but we focus on the 10 years after these ages to more fully capture the success of the recent generation of young people. This slightly older age is consistent with recent trends in California and choosing it allows a more even comparison with housing attainments in other parts of the U.S.

(current inventory divided by sales per month), falling vacancy rates, rising jobs-housing ratios, offers received over asking price, or simply a sharp upward trend of house prices. Despite their indicative accuracy, these measures have several deficiencies. Often the measures only apply to for-sale housing, not rentals, or not the market as a whole. Commonly used indicators also resemble outcomes of shortage more than the inputs that create a shortage. We must bear in mind that a housing shortage is often formed by both deficient supply and excess demand, forming two blades of the scissors (Myers, Park and Cho., 2021).[2] If we knew the key ingredients for a shortage, not just indicators of its result, we might have better hope about curing the problem.

Even though housing shortage problems in California have been severe after the Great Recession, this is not just a current issue but also occurred with similar severity in the depression in the 1930s and after World War II. Demographers Philip Hauser and A.J. Jaffe (1947) suggested the need for housing shortage measurement by framing a problem of economic and social reconstruction after the war.[3] They introduced close consideration of the population factor into the assessment of housing needs, arguing that the need for housing units is more accurately indicated by "Family Formation" rather than the rate of population growth itself (which was very low at the time). This "families" perspective remained current through the baby boom years of the 1950s, as featured in Peter Rossi's well-known seminal study, "Why Families Move" (1955).

A recent California wake-up regarding the new crisis of housing shortage was issued in a report by the California Legislative Analyst's Office (2015) that assessed the spiraling price of homes for sale and estimated the number of additional housing units needed to curb cost increases relative to other states in the country.[4] For their modeling, they primarily focused on the differences in housing prices among counties in California. Even though they captured the endogeneity of house prices using a two-stage least square model, they overlooked key demographic and employment inputs, including household formation, homeownership rates and migration.

No consensus has emerged in the last few years about how to define or estimate housing needs in the private market or at any geographic scale. In addition to the LAO price-modeling estimates of shortage, Freddie Mac (2020) estimated housing shortages at the state level as the ratio of forecasted households to occupied housing units and accounting for vacancies.[5] They built their model around the concept of long-run or natural vacancy rates. If any state has a large difference between the estimated and the historical average vacancy rate, the state could be said to experience shortage problems. This study found a need for 3.3 million additional housing units in the nation, increasing their estimate from two years earlier by 800,000 units.

An alternate accounting framework developed at the University of Southern California by Myers, Park, and Li (2018) estimated shortages as the contraction of headship rates since 2000, the reduction of homeownership and diversion into rental competition, and the resulting unmet needs for rental housing. This housing-demographic method was first carried out for the state of California and then repeated at the county level for Los Angeles.[6] Results indicated need for a tripling of the rate of construction prevailing in 2017 and 2018.

A separate set of studies has focused on the balance of employment growth and housing permits for new construction. The National Association of Realtors produces a housing shortage tracker that covers 178 metro areas (2019).[7] The shortage tracker calculates the number of issued building permits relative to the

[2] Dowell Myers, JungHo Park, and Seongmoon Cho (2021), Housing Shortages and the New Downturn of Residential Mobility in the US, Housing Studies. https://doi.org/10.1080/02673037.2021.1929860

[3] P.M. Hauser and A. J. Jaffe (1947), The Extent of the Housing Shortage. https://www.jstor.org/stable/1190114

[4] California Legislative Analyst's Office (2015), California's High Housing Costs: Causes and Consequences. https://lao.ca.gov/reports/2015/finance/housing-costs/housing-costs.aspx

[5] Freddie Mac (2020), The Housing Supply Shortage: State of the States. http://www.freddiemac.com/research/insight/20200227-the-housing-supply-shortage

[6] Dowell Myers, JungHo Park, and Janet Li (2018) How Much Added Housing is Really Needed in California? And Dowell Myers, JungHo Park, and Eduardo Mendoza (2018) How Much Added Housing is Really Needed in Los Angeles? https://sites.usc.edu/popdynamics/housing/

[7] National Association of Realtors (2019), Housing Shortage Tracker. https://www.nar.realtor/research-and-statistics/housing-statistics/housing-shortage-tracker

number of job increases. Both supply and demand are incorporated in this manner. Most recently, Myers, Park, and Cho (2021) incorporated employment growth and permits for new construction to represent both demand from core urban economic growth and the expansion of supply opportunities. This was the basis for a model that explained how housing shortages were constricting the normal process of residential mobility due to insufficient vacancy generation that would accommodate moves.

SHORTAGE ESTIMATION ADOPTED IN THIS STUDY

In this study we construct a new index of housing shortage that utilizes the widely available data on job growth in urban areas and housing construction permits in those same areas. Our definition of housing shortage is the difference between the rate of employment growth and housing permit increases in a metro area, measured as the percentage growth in employment less the percentage increase in housing. This has a simple interpretation as the degree to which local jobs are growing faster than housing is keeping up. To execute this concept, we compare growth over the last 3 years, 2017 through 2019, or alternatively on a cumulative basis for 8 years from 2012 through 2019, stopping before the pandemic disruption.

Employment growth is measured as the difference between the total employment in 2019 and the total in 2016. The growth rate is calculated as the percentage job increase for the three years between 2016 and 2019 relative to the level of employment in 2016.

Housing growth is measured through a different process, namely by summing the annual number of building permits for the consecutive three years from 2016 to 2018, applying a one-year lag to permits in order for them to represent construction available for occupancy in 2017 through 2019.[8] This summation of building permits is expressed as a percentage growth by dividing by the occupied housing units in 2016.

We then take the difference between the 3-year percentage employment growth and 3-year percentage housing growth, terming this our index of housing shortage. This has the intuitive explanation of measuring how well housing has kept up with the rate of employment growth in the three years before the pandemic. Larger positive numbers for the index formed by employment growth rate minus housing growth rate indicate a larger degree of housing shortage. An alternative version of this index cumulates the annual differences between job and housing growth for 8 successive years from 2012 through 2019. This cumulative shortage measure captures the growing deficits of the post-Great Recession decade.

The National Association of Realtors (NAR) Shortage Tracker has also utilized a definition of shortage based on employment and housing permits, as noted above, but their measure divides job growth by housing growth over the same 3-year period used in our method. They also apply their index to the 50 largest metro areas, with small variations from the sample used in our analysis. Calculations by our method can be compared to NAR's for the 47 metros shared in common in our samples (Appendix). On the surface, a jobs/housing ratio seems meaningful, and that concept is widely used in practice. However, a ratio between two very small numbers can be very large (e.g., 100 jobs added / 20 housing permits = 5) while in a difference calculation between growth rates this disparity could be negligible 0.50% job growth less 0.25% housing growth = 0.25. The entries for Cleveland and Pittsburgh in the Appendix, for example, illustrate the disparities of problem ranking that occur when these alternative methods are applied.

We can compare the two types of measures, the USC method of difference in growth rates for jobs and permits versus NAR's ratio of jobs and permits, by observing how they correlate with a few selected housing outcomes. Correlations of housing shortage with four different measures used later in our analysis are compared in Exhibit 1. The USC difference-based measure correlates much more strongly with every housing outcome than does NAR's ratio-based measure. This provides some validation for the chosen approach in this study.[9]

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[8] We assume a one-year lag for the completion of construction for occupancy, so construction 2017 through 2019 is represented by permits from the years immediately preceding, i.e., 2016 through 2018.

[9] Similar differences between the methods were observed for the several additional outcome measures tested but not summarized here.

Exhibit 1. Comparing Jobs-Housing Shortage Measures with Correlated Housing Outcomes (USC's growth differences versus NAR's jobs-housing ratios)

	USC Measures (% Job Growth minus % Permit Growth) 2017-2019			NAR Measures (Job Creation Divded by Total Permits) 2017-2019		
	Slope Coefficient	Std. Err.	R²	Slope Coefficient	Std. Err.	R²
Rental Cost Burden	1.11***	0.36	0.17	0.06	0.72	0.00
Price-To-Income	0.43***	0.11	0.25	0.46*	0.22	0.09
Headship Rate at 25-34	-1.87***	0.36	0.37	-0.96	0.82	0.03
Homeownership at 25-34	-1.37**	0.64	0.09	-1.02	1.22	0.02

Note: Largest 50 MSAs, excluding 3 MSAs for inconsistent definition between USC and NAR* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

As introduced above, a second variation of our jobs-housing difference in growth rates is also worth considering. In addition to measuring the imbalance in the last 3 years, it may prove useful to measure the cumulative imbalance for the period beginning in 2012, after immediate recovery from the Great Recession. Our second measure cumulates the annual differences in growth rates over an 8-year period from 2012 through 2019. The cumulative alternative gives equal weight to earlier and later years but captures the backlog of unmet demand accrued in earlier years and that is ignored by using solely the recent 3-years. As shown in Exhibit 2, the differential between 3-years' job and housing growth has narrowed in recent years. The 3-year difference in growth rates ending in 2014, 2015, and 2016 was virtually constant in San Francisco-Oakland, Los Angeles-Anaheim, as it was for the mean in our sample of metros. After 2016, however, the differences became progressively smaller, implying that shortages were growing smaller.

The alternative, cumulative measurement of jobs-housing differences provides an index of shortages that assumes past deficits do not disappear unless an overproduction of housing were to occur in later years. In fact, the time series of 3-year measurements reveals that the shortages have continued in recent years but the gaps between job growth and housing growth show smaller deficits being added since 2016, and so the total accumulation of shortage is still growing but more slowly (Exhibit 2, right panel).

The 3-year measure shows somewhat stable dispersion from the mean shortage across 50 metro areas. The standard deviation is from 2 to 3. However, the cumulative measure of the gap between employment and housing growth shows a rapidly widened standard deviation, but when adjusted for the growing mean this range is slowly expanding.[10] As the metro areas experienced different rates of employment and housing growth after the Great Recession, the cumulative measure reflects such a dispersion during the recovery period. This difference contributes to the comparison of short and long time periods. In our study, the cumulative measure appears more strongly correlated with housing outcomes, in general, and is also preferable for theoretical reasons because we believe housing shortages are cumulative and progressively degrade housing outcomes like affordability or household formation.

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[10] The standard deviation divided by the mean is known as the coefficient of variation, and in this case, it expands from 0.53 in 2011 to 0.69 in 2016 and 0.73 in 2019.

Exhibit 2. The Extent of Housing Shortage after the Great Recession
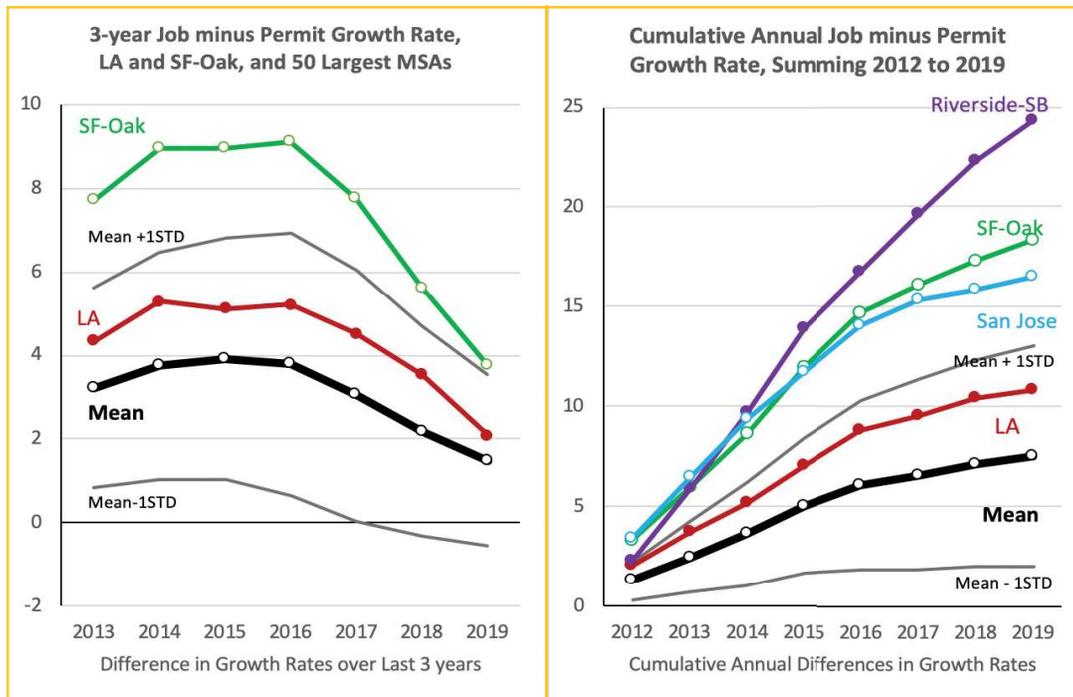
Tests of the two alternative shortage measures indicate that the cumulative measure is generally more strongly correlated than the short-term measure for homeowner outcomes, but with little difference among renters. For example, Exhibit 3 shows the correlation between housing affordability and shortage measures. The cumulative shortage measures explain 39% of the variance in homeowner affordability but only 15% of the variance in rental affordability. The short-term measure explains 26% of the variance in homeowner affordability and 17% of the variance in rental affordability.

In both measures, we obtain a positive association between the housing shortages and our adverse measures of affordability (cost burden for renters and price to income ratio for owners). The two measures reveal similar slopes, but they are on different scales and not readily compared (Exhibit 3). Even if the R-squares are similar in some comparisons, we prefer the cumulative to the short-term measure since we assume the housing outcomes such as affordability and homeownership are more a part of an accumulative shortage rather than the result of short-term imbalances of job and housing growth. We also see that the recent 3-year shortage has diminished from what it was in 2016 or earlier so reliance on the recent index may not reflect earlier conditions in all metros.

The four metros marked by color in Exhibit 3 and many of the charts to follow are the two major metros of the Bay Area in northern California (San Francisco-Oakland and San Jose metro areas) and, in southern California, the Los Angeles-Orange County and the Inland Empire (Riverside-San Bernardino) metro areas. LA-Orange has the highest adverse measure of owner affordability, 8.4, which means the median housing price is 8.4 times greater than the median household[11] income in the metro (See panel (a) in Exhibit 3). The Inland Empire has a price multiple of 5.3 which is smaller than the LA-Orange metro area but larger than the average of 3.8. It is notable that San Francisco-Oakland and San Jose metro areas carry similar price multiples of 8.0 and 7.6, respectively, reflecting close similarity unlike the major metros in Southern California. Looking at the panel (b) in Exhibit 3, the rental affordability suggests more severe problems in Southern California compared to the Bay Area.[12] What is striking is that renter households in the Inland Empire carry cost burdens nearly identical to those in LA-Orange, even though the owner affordability in the Inland Empire is relatively moderate compared to the LA-Orange metro.

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[11] This price-to-income ratio is based on all households, including renters and owners, not just the owners who have successfully purchased a home.

[12] The Bay Area was also flagged in a study of rental affordability for having an incidence of excessive rent burden that is lower than the national average, which was attributed to the higher incomes in SF-Oakland and San Jose that offset the high rents (Myers, Dowell and JungHo Park, 2019 "A Constant Quartile Mismatch Indicator of Changing Rental Affordability in U.S. Metropolitan Areas, 2000 to 2016," *Cityscape: A Journal of Policy Development and Research*.)

These basic themes of affordability and housing shortage—and the extreme housing conditions of the California metros—are interwoven in many of the topics to be studied in sections that follow, including the racial and ethnic disparities to be identified.

Exhibit 3. Correlation Between Housing Affordability and Shortage Problems, of Recent and Cumulative Period, Among Renters and Homeowners, 50 Largest Metro Areas

(A) Median Price-To-Median Income and Shortage Measures
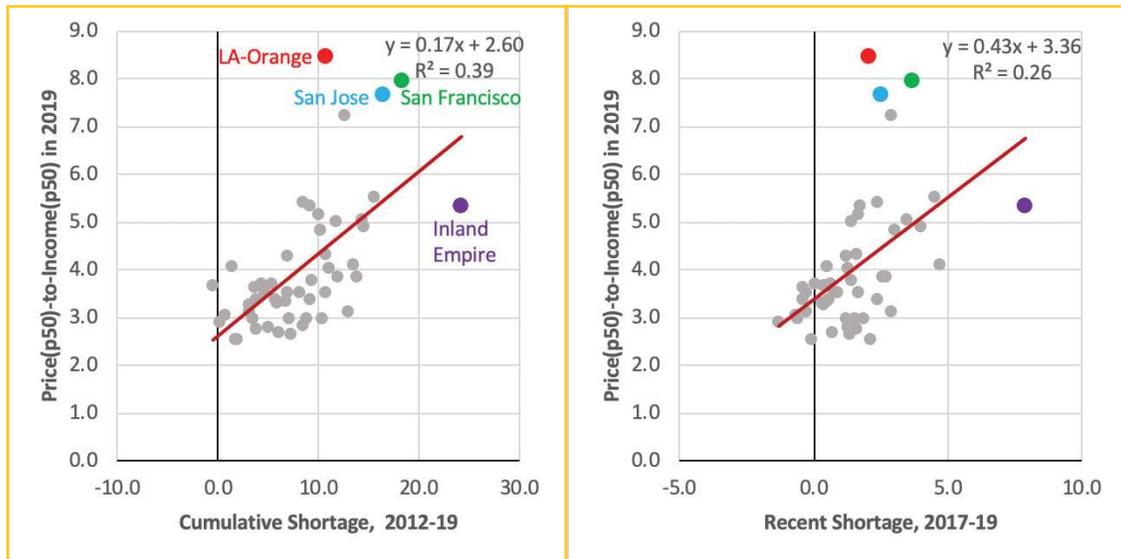
(B) Rental Excessive Cost Burden and Shortage Measures
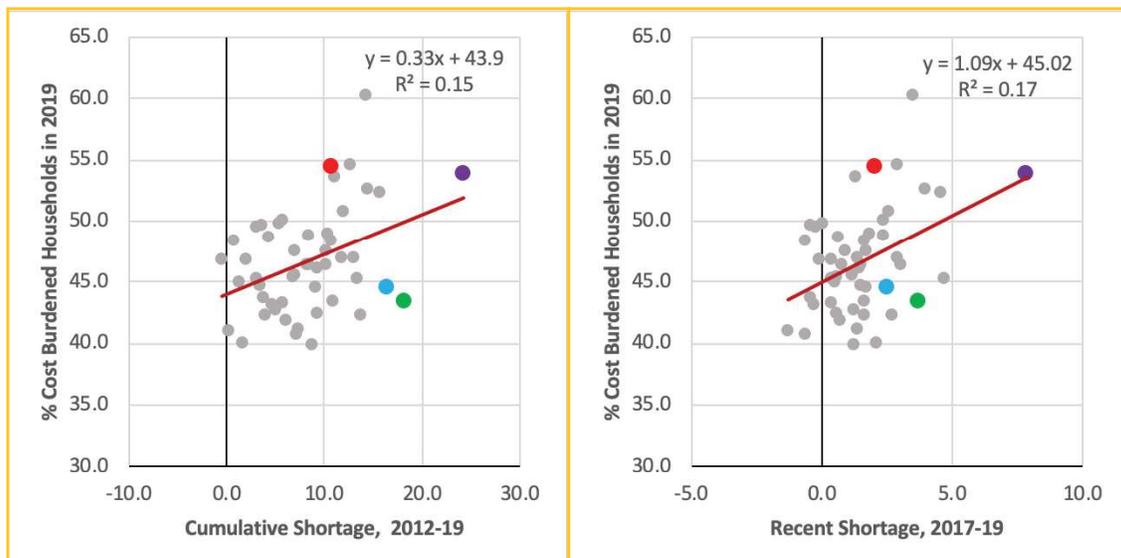
SHORTAGES AND HOUSEHOLD FORMATION

Forming a household is correlated with the opportunities of housing choices. An earlier report in this series (Module 1) identified ages 20 to 34 as the key lifecycle stage when people formed independent households. Household formation in California occurs more from age 25 to 34. If we focus on young adults in this age range, the correlation between household formation and housing shortage is especially strong.[13] The constraints in housing choices would hinder those who want to live independently from their parents. They are more likely to stay in their parents' home or live with siblings or roommates. The more constrained is

the local housing market, the harder it is for them to find a satisfying housing unit when they search for a home. Thus, household formation occurs more slowly and at a lower per capita rate in a constrained market.

The household formation is measured as headship rate at age 25 to 34 which equals the number of households (either owned or rented) headed by individuals ages 25 to 34 divided by the adult population of that age. Thus, a lower headship rate means fewer households are occupied for a given population. The two southern California metros of Los Angeles-Orange and Inland Empire exhibit the lowest rate of headship among the 50 largest metro areas in Exhibit 4. Although the two metros in the Bay Area adhere close to the trend line correlating shortage and household formation, the two metros in Southern California are below the expected level of household formation, given their degrees of housing shortage. Given that household formation reflects successful expression of housing demand, i.e., housing units have been occupied, the low headship rates in metro areas in California indicate unmet needs for housing in years following the Great Recession. This is best reflected in the association between the shortage measures and headship rates, but that might vary by the race and Hispanic origin of young adults (as examined below).

In both the cumulative and recent 3-year measures of shortages, a strong negative association is found with household formation. While the cumulative shortage measure explains 42% of variance in headship rates across the 50 metros, the recent 3-year measure explains 37% of variance in headship rates (See Exhibit 4). In either formulation, the LA-Orange metro has uniquely low household formation in light of its degree of housing shortages.

Exhibit 4. Negative Effects of Shortage on Household Formation at Age 25-34
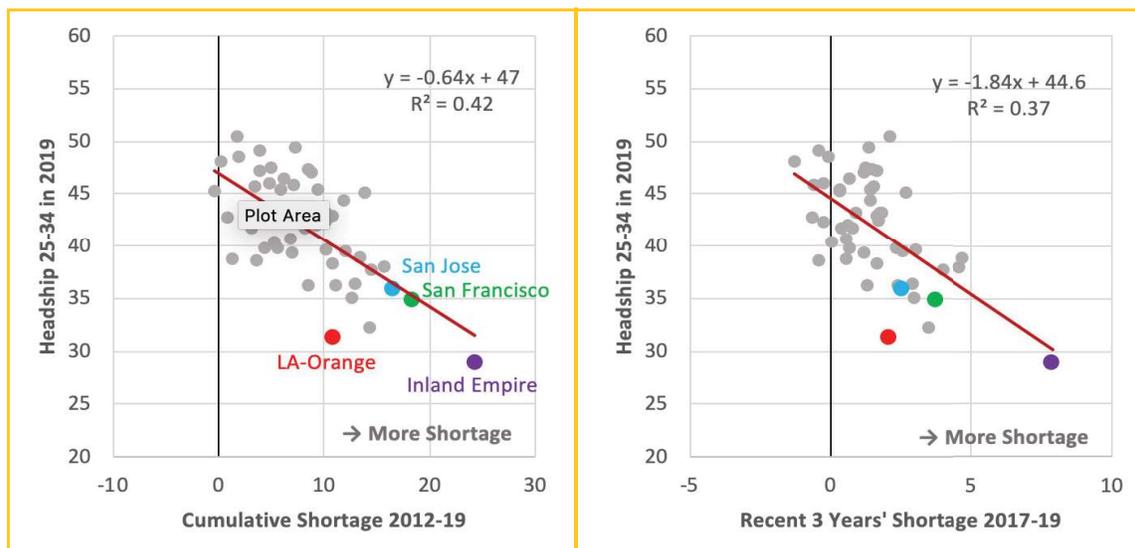
If we disaggregate the headship rates by racial groups, we display the differences in headship rates among racial groups and how those vary in relation to degree of housing shortages in the different metro areas (See Exhibit 5). Household formation is moderately correlated with the degree of shortage. Among white households, a 10-unit increase in housing shortage equates to a 3.9 percentage point decrease in household headship at age 25-34. However, comparing the slope of the trend lines across the racial groups, we see that the Black and Hispanic households are twice as strongly affected by the shortage problem. Given a 10-unit increase in shortage, headship among Blacks declines by 8.4 percentage points, and then among Hispanics by 7.7 percentage points. Among Asians, however, there is virtually no correlation of housing shortage with their household formation.

Key disparities grow visible through these racial comparisons. Earlier, in Exhibit 4, the LA-Orange metro was found to have uniquely low household formation for its degree of housing shortages. However, that exceptional status does not occur among the white households of Exhibit 5; instead, it is found most prominently among the Hispanic or Latinx households, whose household formation is lower in Los Angeles than any other large metro. (That is closely followed by the other California metros as well.) Headship is not

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[13] Household formation is measured specifically as the percentage of people of age 25 to 34 who are designated as the householder or reference person for an independent household occupying separate living quarters in a housing unit. (This is often termed the headship rate.) While this percentage is increasingly high at older ages, analysis in Module 1 shows that the new formation of households actually tails off substantially after age 34.

as exceptionally low among the Black or African-American households, but compared to other metros with similar degrees of shortage, Black headship is far lower than all but one other metro.

A direct way to assess the disparities of households of color is to measure the gap in household formation between white and other groups, comparing this gap to the degree of housing shortage. Does increasing housing shortage expand or reduce racial disparities? Looking at Exhibit 6, even though the explanation power is fairly weak, the Black-white and the Hispanic-white disparities are greater when shortages are greater, and the California metros, save the Inland Empire, have larger disparities for the same degree of shortage in other metros. This is not surprising in light of the previous findings that Black and Hispanic households were twice as strongly affected by shortages as were white households. Again, the lone exception is the Asian residents whose household formation and the disparity with whites bears no relation to the degree of shortages.

The Inland Empire deserves attention for its exceptional performance, providing greater access to house-hold formation than expected based on its degree of housing shortages, and yielding somewhat smaller gaps (2.1 percent points of Black-white and 5.7 percent points of Hispanic-white) compared to the other metros in California. This suggests that the Inland Empire has been a uniquely favorable destination for relocation by Black and Hispanic Californians.

Exhibit 5. Disparate Effects of Shortage on Household Formation by Race and Ethnic Groups at Age 25-34
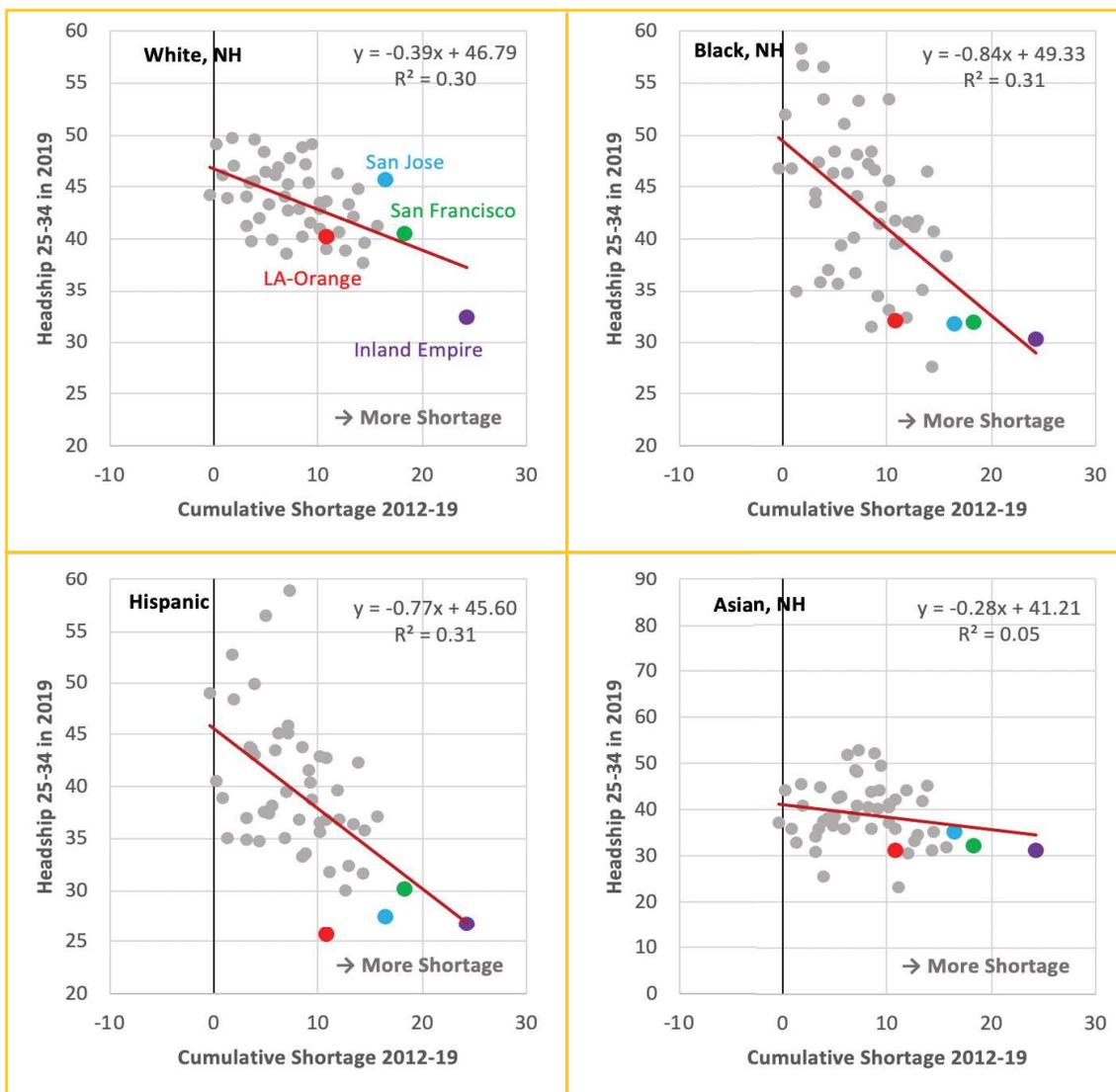
Exhibit 6. Housing Shortage and Gaps Between White and Other Groups' Household Formation at Age 25-34
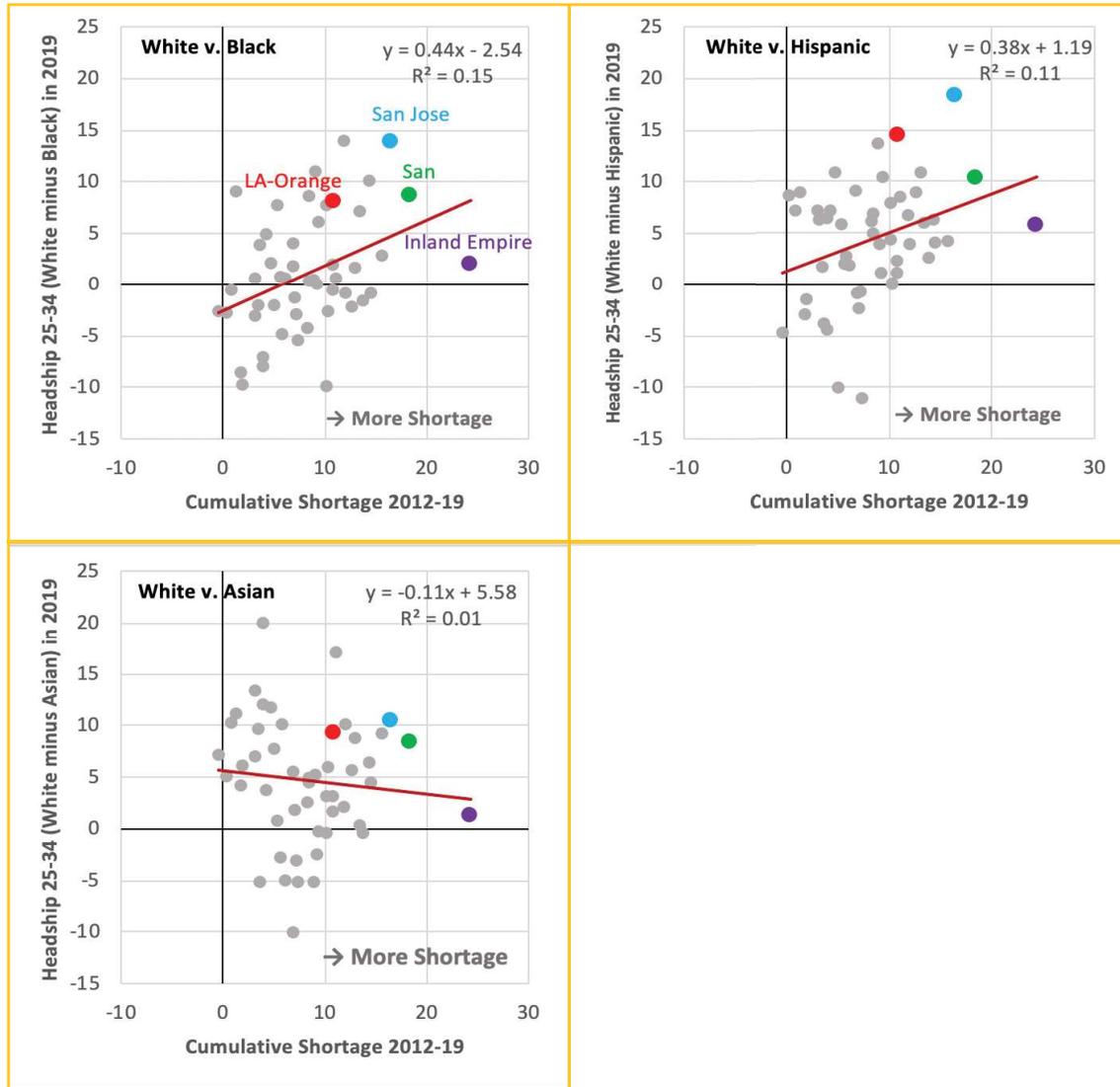
SHORTAGES, RENTAL AFFORDABILITY AND HOUSEHOLD FORMATION

A principal path by which housing shortages affect residence decisions is via housing affordability. This can be represented as a metro-wide condition affecting other outcomes, or we can alternatively treat cost burden experienced by young households as an outcome measure of housing well-being. We will take care to distinguish these two uses of affordability. The metro-wide condition of rental affordability used in this report is calculated as a percentage of renter households in a metro area who pay 30% or more of their household income for rent. The metro-wide measure reflects the whole rental housing market. Earlier (Exhibit 3) we found that housing shortage problems appear to be closely associated with metro-wide rental affordability.

When examined only for renters ages 25-34, however, the same shortage measures that closely limited household formation, whether cumulative or 3-years, appear not to explain the incidence of rental affordability for young households (Exhibit 7). The shortage measures explain only 6-7% of variation in rental affordability across metropolitan areas. We suspect a different interpretation is required specific to young households: prevalence of high cost-burdens in a metro effectively censors the household formation of young people with alternatives to fall back on, such as parents or roommates. Their household formation is curtailed by high costs, so that the young households that would have carried a high rent burden cease to exist. Among established adults of middle age, often married and with children, household formation is

much less discretionary, so those households exist and can be researched. This censorship or selection bias poses a challenge to consider in our interpretations.

The age specific affordability is the share of renter households at age 25-34 who experience cost burdens by dividing the renter households at age 25-34. The age specific measure reflects the sorting-out result after the household determined to rent a housing unit given their household income. In addition, if young adults changed housing tenure from renting to owning, such high-income tenants are removed from the affordability calculation based on rentals. Thus, the measure of affordability based only in ages 25 to 34 could be biased in two ways, including higher-income renters who have not yet chosen to move into homeownership, while also excluding very low-income young people who have options of living with their parents or roommates. In fact, metropolitan areas' general rental affordability based in all ages is closely correlated with the age 25-34 affordability (r = 0.89), but the age 25-34 affordability rate is a few percentage points lower than the general affordability rate in virtually every metro.

Exhibit 7. Weak Association of Shortage with Rental Affordability at Age 25-34
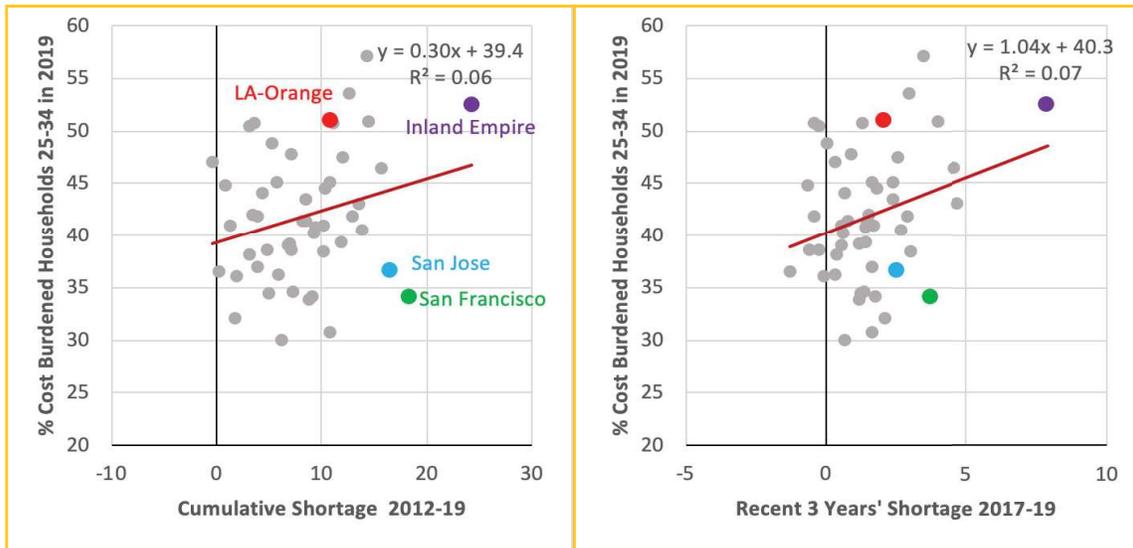
Exhibit 8. Negative Effects of Rental Affordability on Household Formation at Age 25-34, 2019
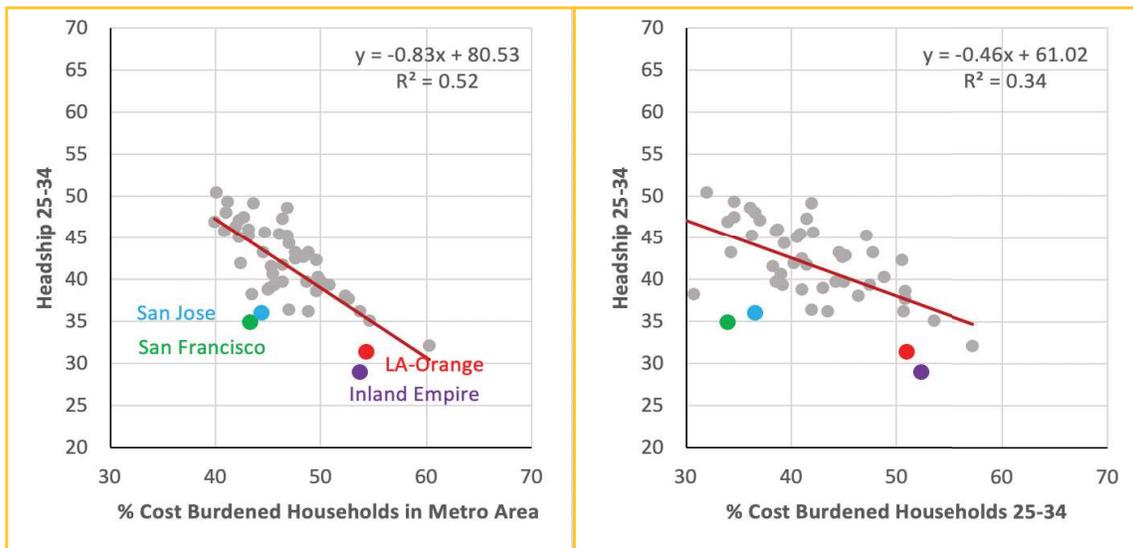
In Exhibit 8 we directly compare household formation of 25–34-year-olds with the two alternative formulations of cost burden. On the left is the association of young household formation with general rental affordability in metros. On the right is the same association but compared to the age-specific affordability measure focused only on ages 25-34. We see that the metro-wide affordability has a stronger correlation with headship rates at 25-34, explaining 52% of variation across the 50 metro areas.

Young adults living in metros where the prevalence of excessive cost burden is 10 percentage points higher have a household formation rate that is 8.3 percentage points lower. However, in the case of affordability measured only with renters of age 25-34, the correlation with household formation explains only 34% of variation. Moreover, the slope of the estimated effect is a 4.6 percentage-point lower rate of household formation given a 10 percentage-point increase in excessive cost burden (barely half that of when compared to all ages affordability). As a final observation about affordability and household formation in Exhibit 8, it is remarkable how much the two metros in Southern California and Bay Area, respectively, cluster together. This is not a random effect but in fact illustrates that these metros are not independent observations but are part of a larger shared region.

The analyses in following sections of rental affordability will continue to describe rental affordability of metro areas by the general, all ages prevalence of excessive cost burden among renters. Disaggregation by race allows us to explore racial differences in the effects of metro area affordability conditions on housing attainments in each group. In every racial group, the metro prevalence of high rental cost burden is negatively associated with their household formation (Exhibit 9). The headship rate of white residents is explained better by affordability than all other groups: with R-squares of 0.47 for white, barely half that for other communities of color (ranging from 0.27 to 0.29). However, looking at the slopes of the effect, household formation in the communities of color varies more strongly by rental affordability. If a metro area experienced a 10 percentage-point increase in the prevalence of cost burdened households, its share of household formations would be lowered as much as 5.7 percent among whites, 9.4 percent among Blacks, 8.8 percent among Hispanics, and 8.0 percent among Asians (Exhibit 9).

Exhibit 9. Disparate Effects by Race and Hispanic Origin of Rental Affordability on Household Formation at Age 25-34, 2019
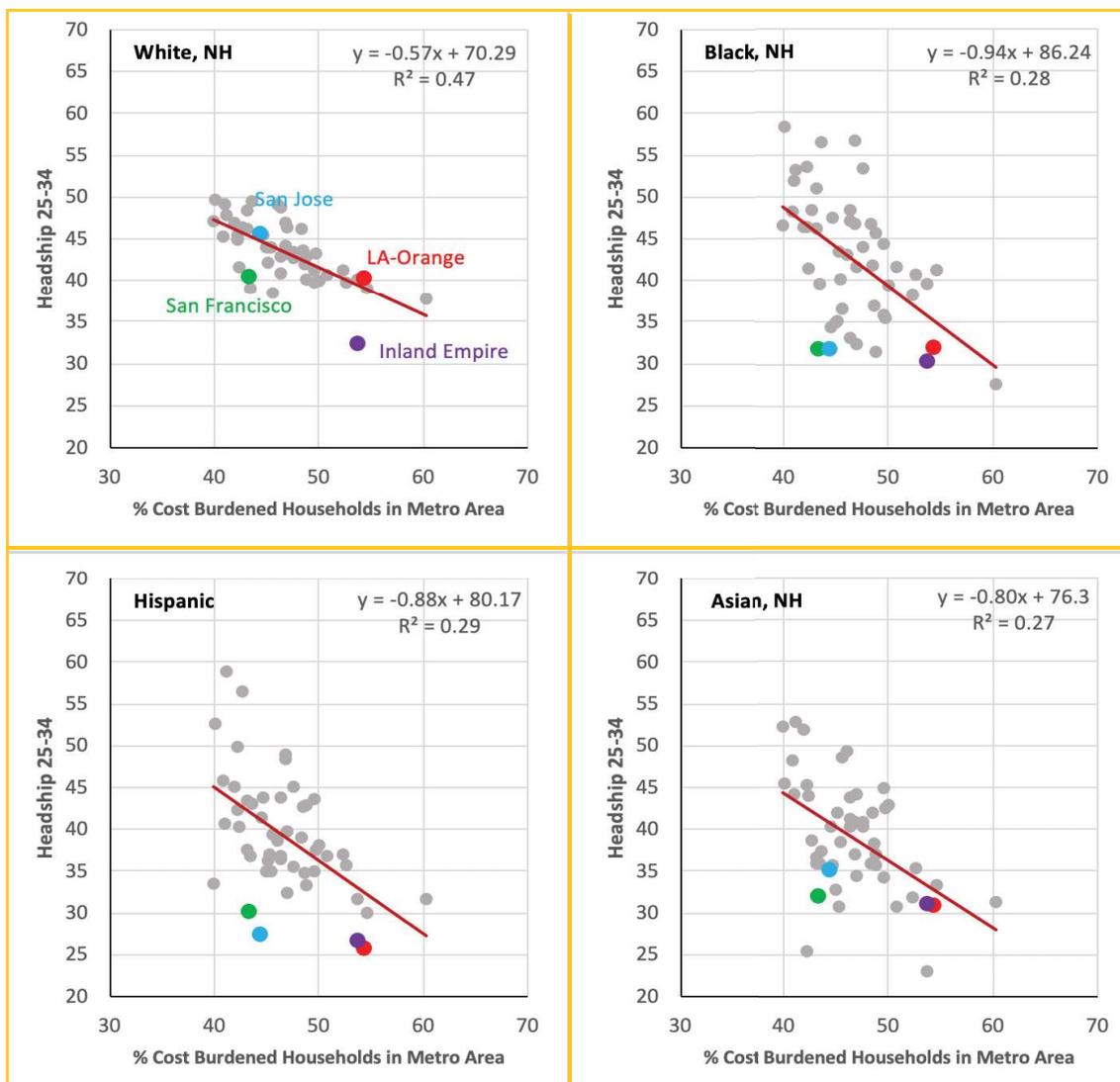
The second stage in the housing lifecycle after forming a new household, typically in rental housing, is advancing to homeownership. Our earlier report showed that the key age range for making that transition was between 25 and 39. Homeownership attainment in California generally occurs at an age that is 5 years older than in the U.S. in general. Also, in this report, we wish to assess attainments after they have been completed, so we selected the age range of 35 to 44 as the best time to assess recent attainments.

Different factors are important in explaining homeownership achievement than household formation. Personal factors are important such as marriage, income, length of education, credit access, and access to own or parental wealth (Lee et al 2020). However, our focus in this report is on metro-level factors of housing shortages and affordability. Unlike in the case of household formation, the shortage measure does not explain very well the homeownership rate at age 35-44. Owning a home is more likely to be the next step after forming a household from the lifecycle perspective. And the newly formed households are more likely to rent a home rather than buying a home, after which shortages may not play as much importance. A weaker correlation between the homeownership rate and shortage measures reflects such mechanisms. Nonetheless, shortage problems should still negatively affect the homeownership rate at age 35-44.

Comparing our short and long-term measures of housing shortages, we expect that the long-term process of home buying and of long durations in the home after purchase should make the cumulative measure of shortages more salient. In Exhibit 10, it is apparent that the cumulative, 8-year shortage measure contributes a greater explanation of variation (albeit still weak) across metros in the homeownership rate than does the 3-year measure. In fact, the latter has many more metros with negative shortages in the last 3 years and the great majority of metros are bunched in the lower range of shortage. With regard to the 3-year measure, the four major California metros stand as scattered outliers, varying far more greatly among themselves than the variation among the rest of the metros. In contrast, the cumulative measure of shortage offers a somewhat more continuous distribution and its time scale is more in line with the long-term nature of owner-occupancy. We will apply this cumulative measure of shortage throughout the remaining analyses.

Exhibit 10. Negative Effects of Shortage on Homeownership at Age 35-44
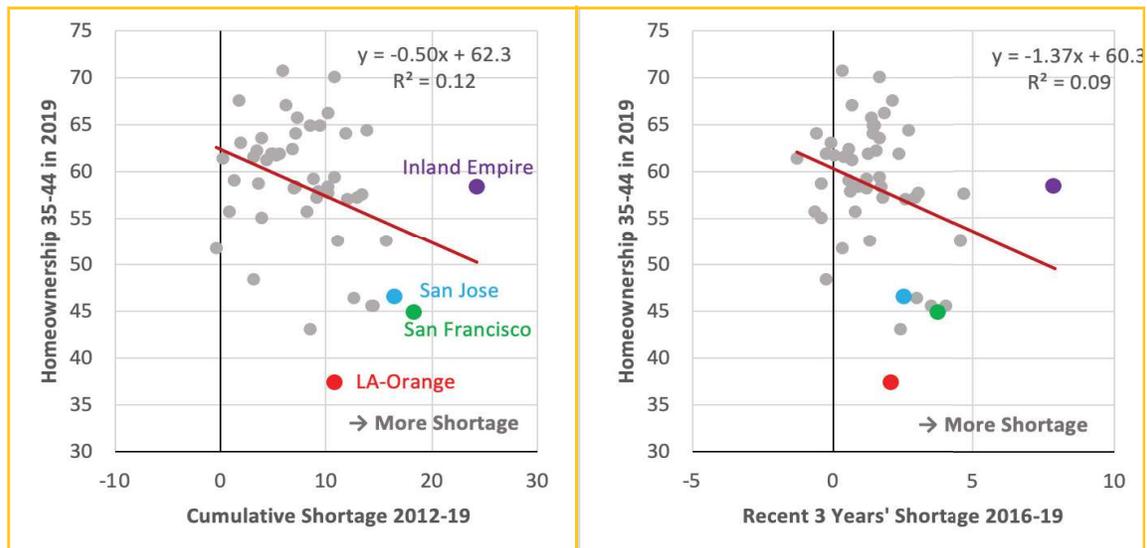
A comparison of the disparate effects of shortages on homeownership among different race and Hispanic groups is supplied in Exhibit 11. A strong and surprising finding emerges in that the group with the strongest negative association between homeownership and shortages is the white residents in the 50 metro areas. For this one group, shortages explain 31% of the variation in homeownership at age 35-44 across the metros, whereas for the others the variation explained is nil. Among whites, a 10-unit increase in shortage equates to a 9.5 percentage point lower homeownership rate. No such relationship can be divined in the case of the other groups.

Interestingly, the Inland Empire stands out for all groups, but especially Black and Hispanic, for its high homeownership rate despite its high shortages (Exhibit 11). Moreover, the Inland Empire stands out also for having the smallest racial gaps in homeownership for Black and Hispanic households, when compared to whites in Exhibit 12.

The shortage measure shows clear correlations with the racial gaps in homeownership rates. However, the direction of the correlation might seem counterintuitive: the greater the shortages the narrower is the gap between whites and other groups. The plausible mechanism behind this finding is not that shortages make Blacks and Hispanics better home buyers; rather the explanation is that shortages damage the prospects of white homeowners much more than anyone else. Accordingly the gap with whites narrows and shortages worsen. In fact, among Asians, the greater the shortages are, the higher their homeownership rate rises above that of whites. The Asian-white gap in homeownership shows a reverse gap, which means Asian households have a higher homeownership rate compared to white households when shortages worsen.

Exhibit 11. Disparate Effects by Race and Hispanic Origin of Shortage on Homeownership at Age 35-44
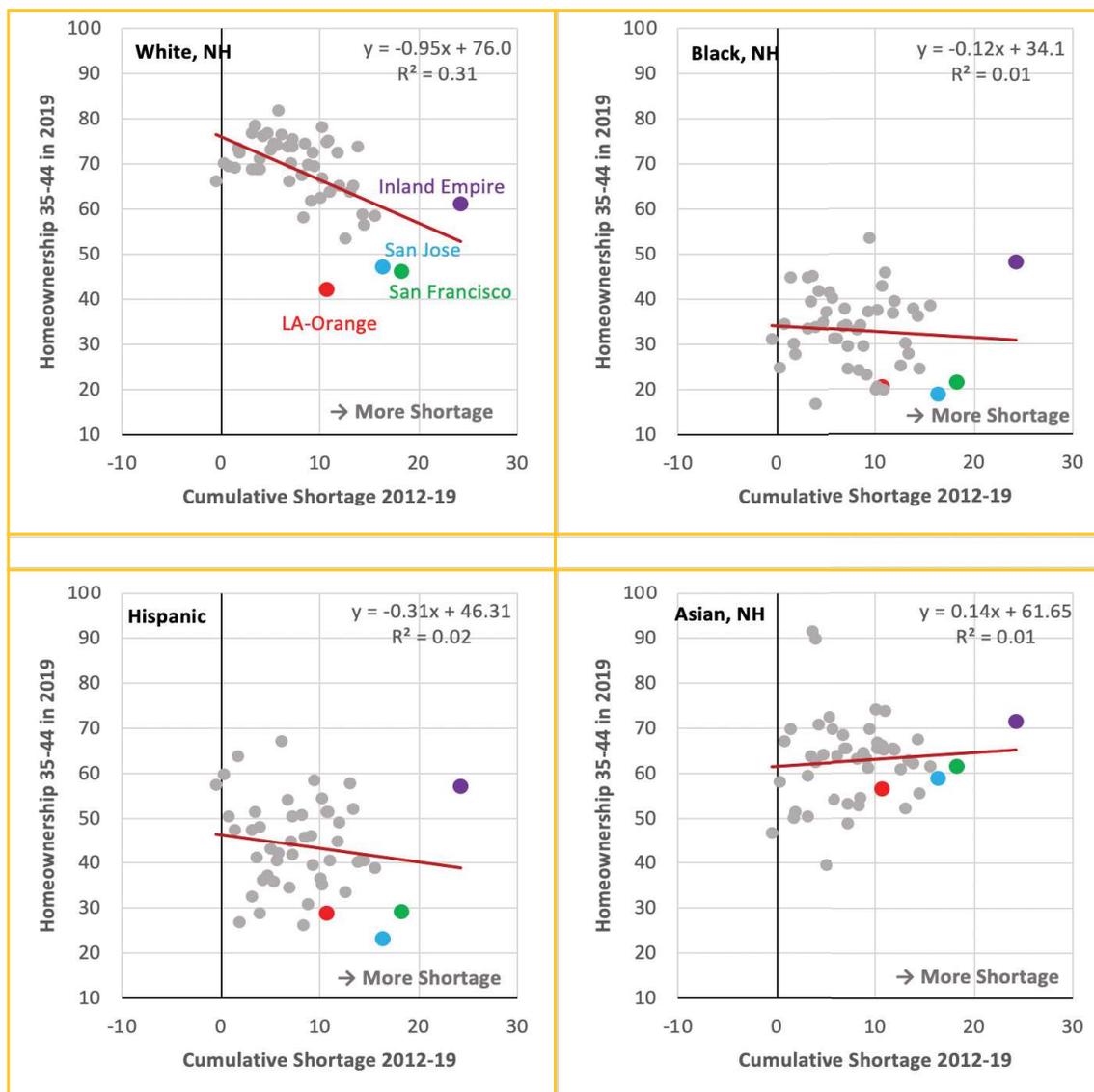
Exhibit 12. Housing Shortage and Gaps Between White and Other Groups' Homeownership at Age 35-44
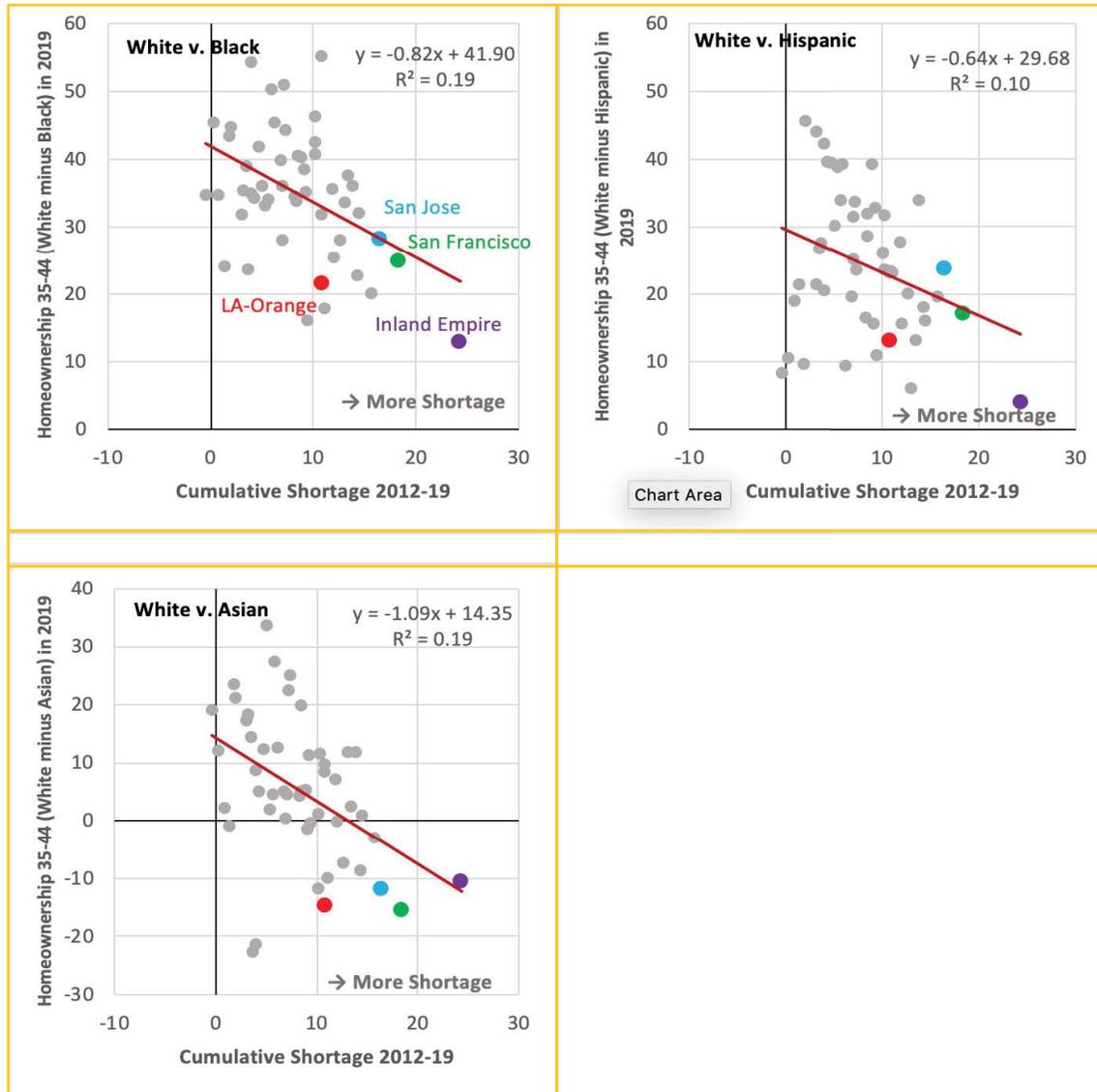
SHORTAGES, AFFORDABILITY, AND HOMEOWNERSHIP RATES

The shortage problem is directly correlated with homeowner affordability. The larger is the cumulative shortage, the more severe is homeowner affordability. Affordability for homeowners is measured by a version of "price multiples," the ratio of median house price in a metro to the median household income, for this purpose including both owners' and renters' incomes. The higher the price multiple, the less affordable a metro is for homebuyers. In this analysis we make use of an age specific affordability measure, which we found shows a stronger correlation with the homeownership rate. Thus we form the price multiples as the ratio of the median value of all owner-occupied homes to the median incomes of households age 35-44.

We compare associations with affordability of both our long and short-term measures of shortage (Exhibit 13). As anticipated, the stronger association is with the cumulative shortage measure, which explains 41% of variation in affordability across the 50 metros (as opposed to 28% variance explained by the short-term measure of shortage). This reflects that home prices ratchet upward over time, building on prior gains spurred by shortages in earlier years. The LA-Orange metro is worst off for homeowner affordability compared to all other metros, including SF-Oakland and San Jose, even though its cumulative shortages are somewhat less. That is likely because higher median incomes in the Bay Area metros help restrain the resulting price multiples.

Exhibit 13. Negative Effects of Shortage on Homeowner Affordability at Age 35-44, Under Two Alternative Measures of Housing Shortage
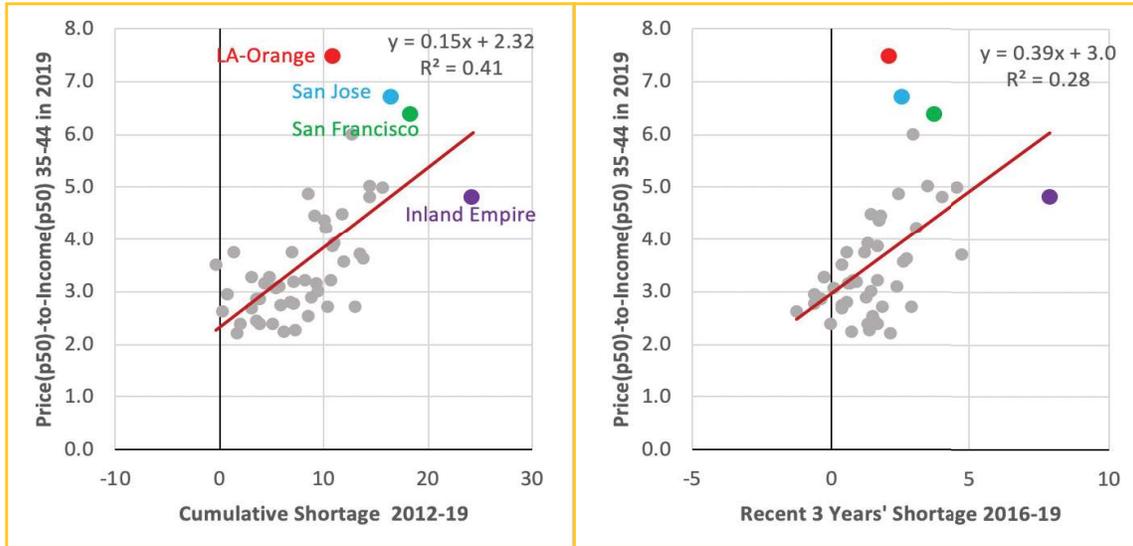
Metropolitan affordability of homeownership then produces strong correlations with homeownership rates (the percentage of households that are owners rather than renters), especially at younger ages. Among older homeowners, many acquired their homes decades earlier, when housing was much more affordable, and the current price multiples are an asset to them, not a hindrance. In the case of young adults, however, not only have they had less time to save for a downpayment and build their credit history, but they are also striving to break into the homeownership market in a time of much higher price multiples than faced by earlier generations. Our target age group for comparing homeownership rates is not the impossible dream of adults in their 20s but rather the reasonable expectations for achieving homeownership by age 35 to 44.

A sharp downward probability of attaining homeownership is found when the median price is higher compared to incomes (Exhibit 14). Each additional price multiple reduces the homeownership rate by either 3.8 or 4.7 percentage points, and the California metros are all perfectly lined up along the trend line, with LA-Orange leading this unfortunate downward parade. Two alternatives are tested that differ in what income is used to form the price multiples, that of all households in a metro or specifically focused on incomes of 35-to-44 year-olds. When the age-specific alternative is employed, the statistical fit is slightly improved and a stronger downturn in homeownership rates results. The general purpose, all-ages, price multiple measure may understate the effects on young households, yet it is still preferable for the reason that it maintains a commonality between older and younger homeowners. We also use the same general measure of metro affordability to compare race and Hispanic groups next.

Exhibit 14. Negative Effects of Affordability on Homeownership at Age 35-44
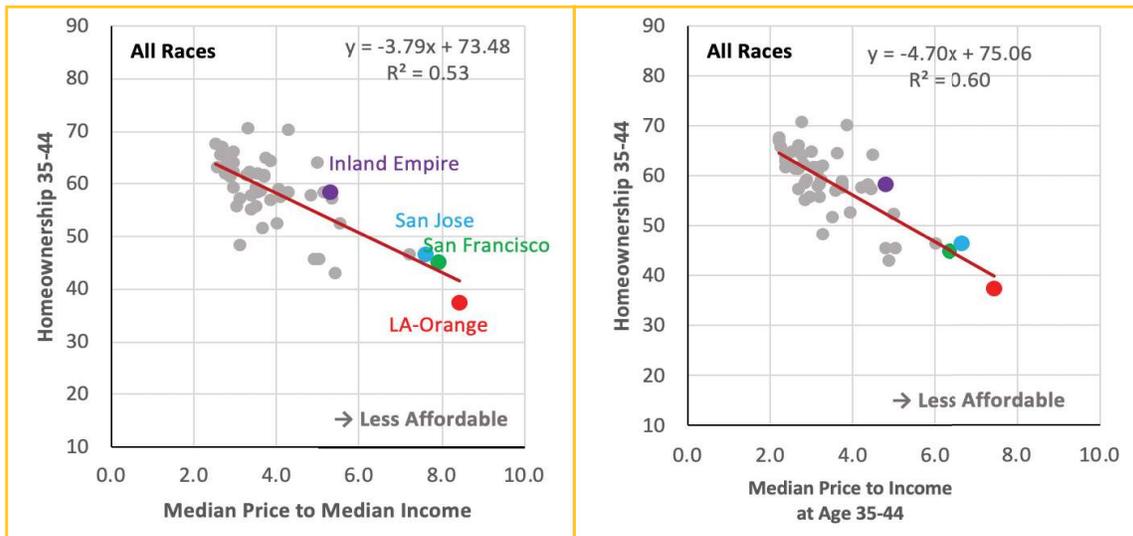
Disparate effects of metro homeownership affordability are found when an identical analysis is separately carried out for each of our four major race and Hispanic groups. What is striking is that homeownership for white households exhibits the strongest relationship to affordability—sharply negative—and with a very high R-square representing 77% of variance explained across the 50 metros by the metro price multiple for owned homes. The next highest explanation (24%) is found for Hispanic or Latinx homeownership, followed by Black (13%). Asian homeownership bears 0 correlation with homeownership affordability. The Inland Empire provides the one bright spot once again, exhibiting strikingly higher homeownership rates for all groups compared to other high-priced metros. The high achievements for Black and Hispanic or Latinx homeowners are extremely noteworthy.

It is puzzling why white homeowners ages 35-44 are so strongly affected by higher price multiples, while others are not. The key may be that white homeownership is so high (rates above 60%) in more than 40 metros and price multiples in those metros also are relatively low (less than 4.0) in more than 30 metros. Thus, in comparison, there is a steep drop-off in homeownership rates for whites in the Bay Area and in LA-Orange. Among Black and Hispanic households the homeownership rate in other metros is not nearly as high, so the drop-off cannot be as steep. Among Asian households, their homeownership rates are very high in California, higher than whites. As many other metros have lower homeownership for Asians as have higher homeownership for Asians, so there is no trend amongs Asians.

Exhibit 15. Disparate Effects by Race and Hispanic Origin of Affordability on Homeownership at Age 35-44, 2019
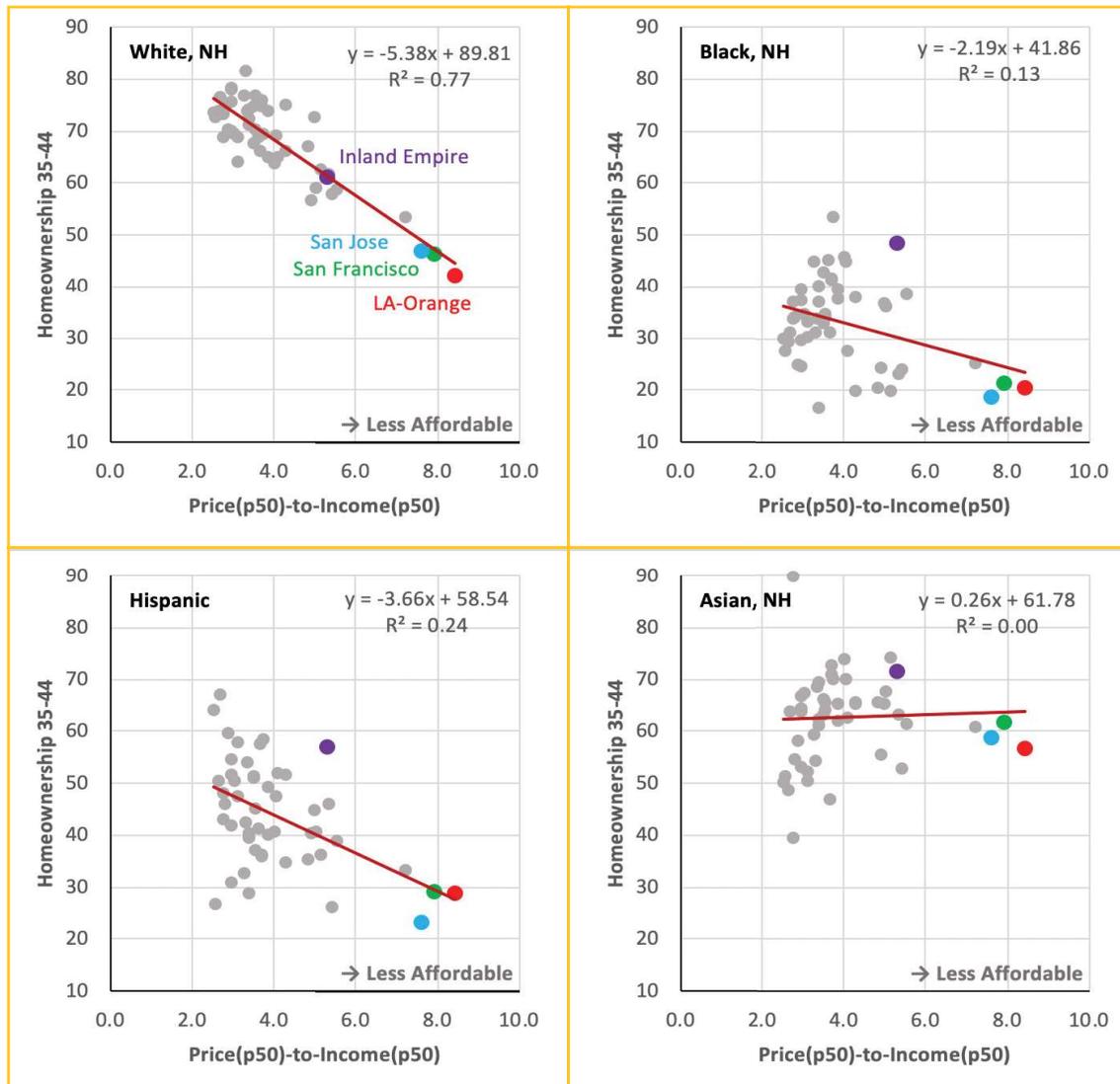
As in previous sections, we can directly calculate the gap between white homeownership rates and that of other major groups, measuring this gap relative to the affordability of different metros (Exhibit 16). In general, the gap is much reduced when prices are higher, mainly because white homeownership plunges more than other groups when price multiples are greater. As a result, among Black homeowners in LA-Orange, the gap with whites is smaller than in every other metro save 4. The homeownership gap in LA-Orange for Hispanic or Latininx households is smaller than in all but 8 metros. However, among Asians, the gap in LA-Orange is actually an increase in homeownership above whites that is greater than all but 3 other metros.

Finally, it deserves underscoring that the leading metro among the 50 largest in regard to equality of homeownership rates for Black and Hispanic/Latinx households, relative to whites, is the Inland Empire. While we saw above in Exhibit 15 that the white homeownership rate of 61.0% in the Inland Empire was more than 15 percentage points above that in LA-Orange or the Bay Area, Black and Hispanic/Latinx homeownership rates were nearly 30 percentage points higher in the Inland Empire than in those major California metros. Thus greater equality was found in the Inland Empire.

Exhibit 16. Affordability and Reduced Gaps Between White and Other Groups' Homeownership at Age 35-44, 2019
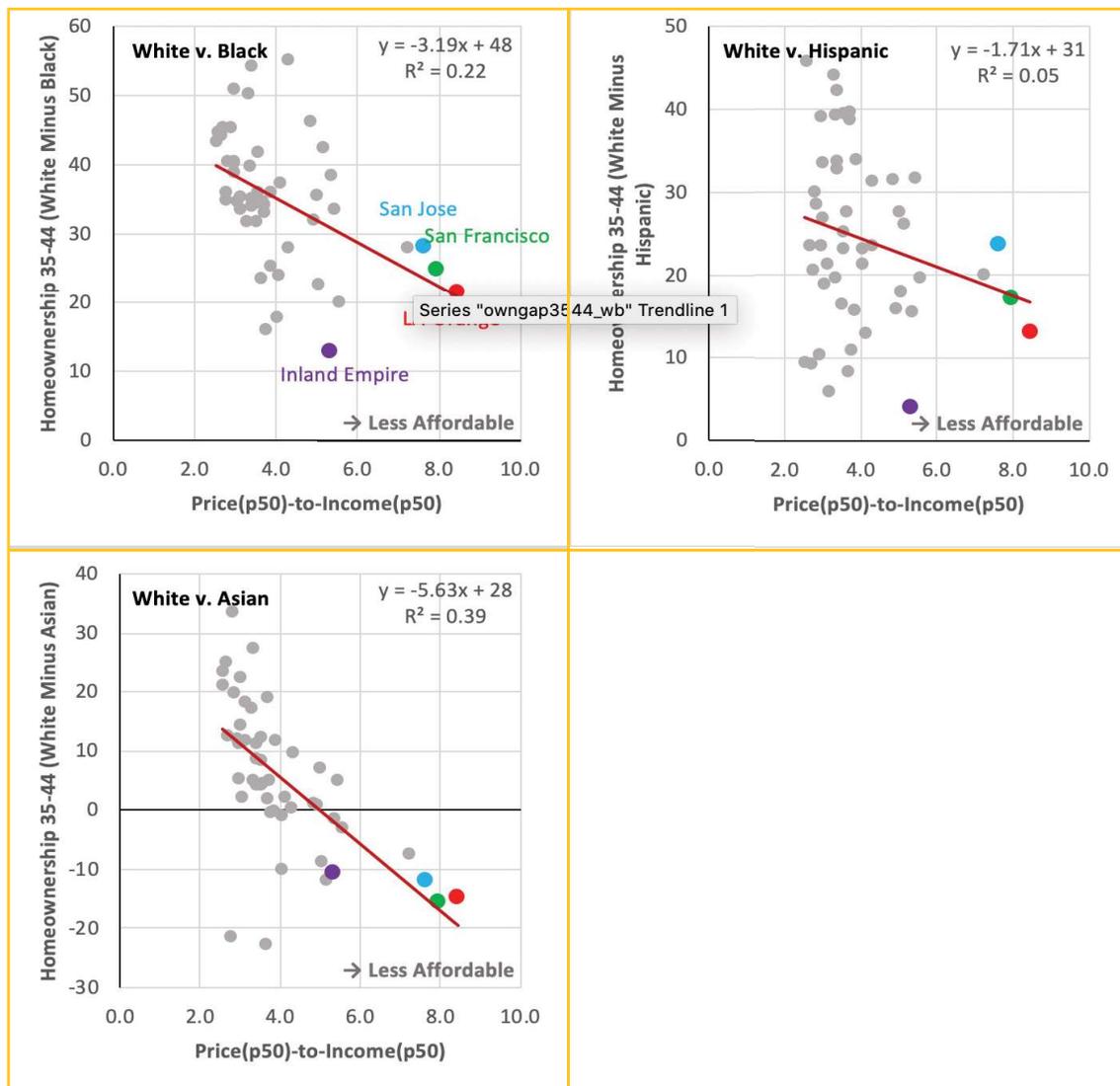
CONCLUSION

Comparison of California's large metropolitan areas to the 50 largest in the U.S. yields useful perspective on how housing shortages depress the housing well-being of California residents. Housing production in this state lags well behind employment growth. Although the annual gap has been smaller in recent years, the deep shortages of production for several years after the Great Recession have accumulated a permanent deficit in the housing stock. The direct impact of shortages is to provide too few housing opportunities for the growing economy. The indirect impact is to escalate rents and house prices through competitive bidding for the limited supply, creating a massive affordability problem. Those not making the cut for entry into this rationed supply are forced to double up, go homeless, or simply leave the area.

This study has examined these effects on all households and separately for renters and homeowners, focusing on the younger adults who are trying to establish their housing careers (and who are also the new workers in the growing economy). We also examined differences with regard to impacts of shortage and affordability between home seekers in the four major ethno-racial groups of white, Black, Hispanic/Latinx, and Asian and Pacific Islanders.

Household formation from the resident population was much reduced in metros that had greater shortages (Exhibit 4), especially for Black and Hispanic households (Exhibit 5). The gap between white and other groups' household formation was especially great in the LA, San Francisco, and San Jose metros, and was much smaller than otherwise expected in the Inland Empire (Exhibit 6).

Price to income ratios in metro areas among young homeowners are driven far higher when shortages are greater (Exhibit 13) and that is associated with markedly lower homeownership rates, with LA, San Francisco and San Jose metros the worst (Exhibit 14). Surprisingly, these effects are much more severe among white households than others (Exhibit 15), in part because homeownership is so much higher in other metros for whites. The Inland Empire is a welcome exception with its much lower cost burden and an even higher homeownership rate than would be expected, especially for Black and Hispanic households. In fact, the homeownership gap between white and Black people or Hispanics is the lowest of all 50 metros. The broad Asian group holds homeownership rates with a white gap that is actually negative in all four of the largest California metros, i.e., Asian rates are 10-15 percentage points higher than for whites. [14]

In broadest strokes, we find that shortages and affordability problems depress housing well-being for all groups of young Californians. While the white group may be least affected by limitations placed on household formation, it is most affected by the limitations on homeownership. The Inland Empire is the one major metro where all groups fare most equally, and where Black and Hispanic households achieve homeownership at rates near the highest in all 50 of the nation's largest metros. This may be because the Inland Empire provides a refuge for households seeking affordable homeownership otherwise denied in coastal metros.

APPENDIX. RANKING TABLE OF USC SHORTAGE MEASURE AND NAR HOUSING SHORTAGE TRACKER, 50 MSA

MSA ID	NAME	%Job Growth 17-19 (a)	%Permit Growth 17-19	USC Shortage Measure 17-19 (a)-(b)	NAR Shortage Tracker (2019)	Rank by USC Shortage Measure	Rank by NAR Shortage Tracker
35620	New York-Newark-Jersey City, NY-NJ-PA	4.38	1.98	2.40	2.24	13	10
31080	Los Angeles-Long Beach-Anaheim, CA	4.22	2.14	2.08	2.59	16	6
16980	Chicago-Naperville-Elgin, IL-IN-WI	2.23	1.69	0.54	1.28	37	34
19100	Dallas-Fort Worth-Arlington, TX	8.03	7.25	0.77	1.56	33	26

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[14] As discussed in Report 2, the Asian and Pacific Islander group is very broad, with diverse levels of economic achievement, especially for some of the smaller nationality groups.

MSA ID	NAME	%Job Growth 17-19 (a)	%Permit Growth 17-19	USC Shortage Measure 17-19 (a)-(b)	NAR Shortage Tracker (2019)	Rank by USC Shortage Measure	Rank by NAR Shortage Tracker
26420	Houston-The Woodlands-Sugar Land, TX	5.60	6.26	-0.65	1.20	49	36
47900	Washington-Arlington-Alexandria, DC-VA-MD-WV	4.10	3.56	0.54	1.69	38	21
37980	Philadelphia-Camden-Wilmington, PA-NJ-DE-MD	4.08	1.72	2.36	1.98	14	15
33100	Miami-Fort Lauderdale-West Palm Beach, FL	5.42	1.95	3.47	1.75	6	18
12060	Atlanta-Sandy Springs-Roswell, GA	6.94	5.27	1.67	1.70	20	20
38060	Phoenix-Mesa-Scottsdale, AZ	10.13	5.43	4.70	2.13	2	13
14460	Boston-Cambridge-Newton, MA-NH	5.32	2.29	3.02	.	7	
41860	San Francisco-Oakland-Hayward, CA	6.67	2.93	3.74	2.94	5	2
40140	Riverside-San Bernardino-Ontario, CA	10.76	2.86	7.89	2.85	1	3
19820	Detroit-Warren-Dearborn, MI	3.35	1.50	1.84	2.24	17	11
42660	Seattle-Tacoma-Bellevue, WA	7.25	5.52	1.73	1.70	18	19
33460	Minneapolis-St. Paul-Bloomington, MN-WI	3.71	3.36	0.35	0.89	41	46
41740	San Diego-Carlsbad, CA	5.72	2.78	2.94	2.61	8	5
45300	Tampa-St. Petersburg-Clearwater, FL	6.97	4.42	2.55	1.46	11	29
19740	Denver-Aurora-Lakewood, CO	7.23	5.83	1.40	1.66	26	22
41180	St. Louis, MO-IL	2.67	1.98	0.69	0.90	34	44
12580	Baltimore-Columbia-Towson, MD	3.03	2.36	0.67	1.59	35	25
16740	Charlotte-Concord-Gastonia, NC-SC	7.67	7.07	0.60	1.13	36	38
36740	Orlando-Kissimmee-Sanford, FL	9.81	8.51	1.30	1.46	28	28
38900	Portland-Vancouver-Hillsboro, OR-WA	6.70	5.01	1.69	1.46	19	30
41700	San Antonio-New Braunfels, TX	5.98	3.10	2.88	1.81	9	17
40900	Sacramento--Roseville--Arden-Arcade, CA	7.56	3.00	4.55	2.52	3	7
38300	Pittsburgh, PA	2.64	0.52	2.12	6.55	15	1
12420	Austin-Round Rock, TX	11.69	10.27	1.42	1.38	25	31
29820	Las Vegas-Henderson-Paradise, NV	9.22	5.22	4.00	2.06	4	14
28140	Kansas City, MO-KS	2.30	3.57	-1.27	0.90	50	43
17140	Cincinnati, OH-KY-IN	3.60	2.23	1.37	1.65	27	23
34980	Nashville-Davidson--Murfreesboro--Franklin, TN	10.08	7.38	2.70	1.52	10	27
26900	Indianapolis-Carmel-Anderson, IN	4.68	3.20	1.48	1.35	24	32
17460	Cleveland-Elyria, OH	2.33	1.07	1.27	2.32	29	9
18140	Columbus, OH	4.66	3.45	1.21	1.59	30	24
41940	San Jose-Sunnyvale-Santa Clara, CA	6.16	3.63	2.54	2.66	12	4
47260	Virginia Beach-Norfolk-Newport News, VA-NC	3.27	2.92	0.35	1.21	40	35
39300	Providence-Warwick, RI-MA	2.22	1.02	1.20	.	31	.
33340	Milwaukee-Waukesha-West Allis, WI	1.29	1.72	-0.42	1.15	47	37
27260	Jacksonville, FL	8.34	7.46	0.88	1.31	32	33
36420	Oklahoma City, OK	4.98	3.35	1.63	1.91	21	16
39580	Raleigh, NC	8.46	8.74	-0.27	0.99	45	40
40060	Richmond, VA	3.81	3.75	0.06	1.06	42	39
41620	Salt Lake City, UT	7.80	6.18	1.62	2.16	22	12
31140	Louisville/Jefferson County, KY-IN	2.70	3.31	-0.61	0.84	48	47
35380	New Orleans-Metairie, LA	1.60	2.00	-0.41	0.97	46	41
32820	Memphis, TN-MS-AR	2.52	2.77	-0.25	0.94	44	42
25540	Hartford-West Hartford-East Hartford, CT	1.48	1.10	0.38	.	39	.
13820	Birmingham-Hoover, AL	3.68	2.16	1.52	2.35	23	8
15380	Buffalo-Cheektowaga-Niagara Falls, NY	1.03	1.09	-0.06	0.89	43	45

Negative Effects of Housing Shortages on Housing Well-Being of Local Residents

OUTLINE OF EXHIBITS

A. **Introduction** (includes some references to the other modules)

B. **Defining and Measuring Shortage**
      B1. Text Discuss alternative reports
      B2. Text Summarize our data sources (details in Appendix)

      Ex 1 Comparing Jobs-Housing Shortage Measures with Correlated Housing Outcomes
          (USC growth differences versus NAR jobs-housing ratios)
      Ex 2 Extent of Shortages after the Great Recession (Recent 3 years or Cumulative)
      Ex 3 Correlation between Housing Affordability and Housing Shortages of Short and Long
          Duration, Among Renters and Homeowners

C. **Shortages and Household Formation**
      Ex 4 Negative Effects of Shortage on Household Formation at Age 25-34
      Ex 5 Disparate Effects of Shortage on Household Formation by Race and Ethnic
          Groups at Age 25-34
      Ex 6 Housing Shortage and Gaps Between White and Other Groups' Household
          Formation at Age 25-34

D **Shortages, Rental Affordability and Household Formation**
      Ex 7 Negative Effects of Shortage on Rental Affordability at Age 25-34
      Ex 8 Negative Effects of Rental Affordability on Household Formation at Age 25-34
      Ex 9 Disparate Effects by Race and Hispanic Origin of Rental Affordability on Household
          Formation at Age 25-34

E. **Shortages and Homeownership**
      Ex 10 Negative Effects of Shortage on Homeownership at Age 35-44
      Ex 11 Disparate Effects by Race and Hispanic Origin of Shortage on Homeownership
          at Age 35-44
      Ex 12 Housing Shortage and Gaps Between White and Other Groups' Homeownership at
          Age 35-44

F. **Shortages, Affordability, and Homeownership**
      Ex 13 Negative Effects of Shortage on Homeowner Affordability at Age 35-44
      Ex 14 Negative Effects of Affordability on Homeownership at Age 35-44
      Ex 15 Disparate Effects by Race and Hispanic Origin of Affordability on Homeownership at
          Age 35-44
      Ex 16 Affordability and Reduced Gaps Between White and Other Groups'
          Homeownership at Age 35-44, 2019

Housing Filtering, Prices, and Neighborhood Change in Communities of Color

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Abstract

This report addresses occupancy changes impacting lower-income households and communities of color in housing and neighborhoods over the last decade. The transition of housing from higher to lower income groups, termed "filtering," involves a complex interplay of factors. Analysis reported here employs new techniques comparing filtering in the largest California metros to other large metros in the U.S. Among renters, rapid gains before 2010 in the normal process of filtering—producing what is termed "naturally occurring" affordable housing—were attenuated in California metros and then strongly reversed in the last decade. Clear differences appear between Bay Area and Southern California metros. However, among homeowners filtering has proceeded more steadily over the decades, especially in the vintage of homes built between 1980 and 2000.

The report explores recent changes in communities of color, focusing especially on neighborhoods that are predominantly Black or Hispanic/Latinx within the Los Angeles-Orange County MSA. Analysis exploits newly released data from the 2020 census for the most up-to-date assessment of changes in communities of color and the nature of growing housing market competition from other groups due to shortages. We integrate additional tract-level information on housing price changes from the Census Bureau's American Community Survey. Analysis finds communities of color are in flux, with multiple groups vying for housing that is relatively more affordable to them. New graphic visualization techniques are developed to show these changes in spatial context. Communities predominantly of color that received an expanding share of white or Asian residents already had higher house prices and rents at the beginning of the decade. The north end of predominantly Black areas of South LA, extending up to the 10 freeway, and the north end of the predominantly Latino East Side, extending just north and west of downtown LA, were primary locations for influx of white residents, an accompaniment of gentrification. Influxes of Asian population decreased Latino concentration in portions of the San Gabriel Valley and Orange County. Meanwhile, new growth of Black and Latino residents spread outside established communities of color to areas with substantially higher prices and rents.

INTRODUCTION

The housing stock is composed of a multitude of different housing units, roughly 50% rentals and 50% owner-occupied, that provide housing services for many decades after construction. Built up over time, their locations span a panoply of different neighborhood types, many of which are home to communities of color. Black and Latino households frequently live clustered in areas with fellow co-ethnics, but in recent decades they have increasingly dispersed to areas of more broadly integrated settlement (Frey 2018). This integration process has been aided by the return of white residents, especially Millennials, to inner city areas, but that also has increased competition for housing in central locations, raising prices, and displacing residents.

In California, competition for housing is especially acute. As examined in other reports from this research project, housing shortages have grown more stringent in the aftermath of the Great Recession. This is attributed to the revival of housing demand in the economic recovery after 2012, which occurred in the same years as the coming of age of the large Millennial generation (Myers 2016). This advancing age wave filled prime ages for household formation in rental housing and, by the end of the 2010s, also the prime ages for entry into homeownership (see Report from Module 1). Similar effects are occurring nationwide, because the economic revival and maturation of Millennials is widespread, but the impacts may be more acute in California because our housing shortages are more intense.

The operational definition of housing shortage adopted in this study has been the growing gap between rate of employment growth and rate of housing construction. This gap is not cleared on an annual cycle but instead cumulates over the years, because housing not built adds to a growing deficit unless there is substantial overbuilding in later years. Shortages have many deleterious impacts on housing opportunities, especially for young adults trying to establish themselves in the housing market. The negative effects are often especially great for communities of color (see Reports on Module 2 and Module 3).

The scope of the present report summarizes analysis of Module 4, with findings on two broad questions. The first is an inquiry into how much housing shifts toward lower-income occupancy (filters down) as it grows older, comparing the decade after 2010 to the one preceding. The focus is on a comparison of the large metropolitan areas in California with other large metros nationwide. Direct data on this question is extremely limited, none of which is specifically focused on California cities (Weicher et al. 2018). However, we extend a method of inference that was recently developed for comparison of metropolitan areas in a project for the National Multi Housing Council (NMHC) by Myers and Park (2020).

The second question for inquiry concerns how much communities of color have shifted their neighborhood locations, given growth in different groups of the population and limitations on the overall supply of housing. For this we take advantage of the newly released data from the 2020 census that reports racial distributions by census tracts. When compared to the same data from the 2010 census, and augmented with data from the American Community Survey, we can generate a fresh portrait of racial shifts and their alignment with house values and rents in neighborhoods. We offer an interpretation of how these shifts in the last decade may reflect the workings of gentrification and displacement rather than filtering.

DOWNWARD FILTERING OF HOUSING

The concept of filtering dates back as far as the early 1900s (Baer and Williamson 1988), with Ratcliff (1949) formalizing these discussions into the classic model of filtering. In his paper, filtering is defined as "the process described most simply as the changing of occupancy as housing that is occupied by one income group becomes available to the next lower income group as a result of decline in market price" (Ratcliff, 1949). While some are skeptical about the process, subsequent studies have generally confirmed the presence of filtering in some form, providing naturally occurring affordable housing for lower-income families through aging of housing and market mechanisms (Rosenthal 2014; Baer and Williamson 1988). Yet, it is also possible that the rate of filtering can vary across local housing markets when there is greater new construction.

People of color have generally benefited in decades when there was substantial filtering, because more opportunities opened at an affordable price. However, these benefits accrued at some risk of segregation. By definition, this filtering occurred in housing that was at least 20 years old and often much older, which implies that the opportunities from filtering were concentrated in older parts of cities. Meanwhile, opportunities in new construction were being dominated by white households with higher-than-average incomes. Between 1940 and 1980, the homeownership rate among metropolitan African American households increased by 27 percentage points. However, nearly three-quarters of this increase occurred in central cities, and Boustan and Margo (2013) show that rising black homeownership in central cities was facilitated by the movement of white households to the suburban ring, representing a very large filtering transfer that was a "silver lining to white flight." The downside to this process is to reinforce the segregation of people of color in older neighborhoods. This process can be reversed, with opposite effects when filtering flips to gentrification (higher income or more advantaged people moving into housing previously occupied by less advantaged). This was always theoretically possible if insufficient new supply were added at the same time as competition was growing for affordable rentals or for first-time homeownership. That has now materialized, in fact, due to extreme housing shortages following the Great Recession. The recent return to the city movement among Millennials and others poses a competitive hazard to established residents in neighborhoods predominantly occupied by communities of color.

Definition and Measurement of Filtering

A practical definition of whether filtering works to supply housing opportunity is whether units become home to lower-income households as the units grow older over time. For this assessment, we need to observe changes over longer time periods of one or two decades. A first step is to define what is "lower income." In this study, we use the HUD method of defining household income as a percentage of the area median income (AMI). The most common HUD definition of lower income is households with less than 50% of AMI. This measure was adopted in the Myers-Park (2020) study of rental housing. As shown in Exhibit 1, that income grouping described 39% of renters in both 2000 and 2019. However, the same definition only covers 14% or 15% of homeowners. To achieve a similar 39% share of homeowners that are "lower income," we propose to raise the income threshold to less than 100% of AMI (or simply all homeowners with incomes below the household median—owners and renters combined—in the area). Comparison of data from 2000 and 2019 shows that this definition yields a very consistent relative measure of "lower income" households.

Exhibit 1. Lower-Income Households Defined in Rental and Owner Housing

	CENSUS 2000						2019 AMERICAN COMMUNITY SURVEY					
	Total	(%)	Owners	(%)	Renters	(%)	Total	(%)	Owners	(%)	Renters	(%)
All Households	67,382	100.0	42,698	100.0	24,684	100.0	80,048	100.0	49,336	100.0	30,712	100.0
AMI < 30%	8,627	12.8	2,896	6.8	5,732	23.2	10,895	13.6	3,686	7.5	7,209	23.5
AMI < 50%	15,703	23.3	6,060	14.2	9,644	39.1	19,576	24.5	7,488	15.2	12,088	39.4
AMI < 80%	26,927	40.0	11,929	27.9	14,998	60.8	32,332	40.4	14,049	28.5	18,283	59.5
AMI < 100%	33,641	49.9	16,021	37.5	17,620	71.4	39,965	49.9	18,533	37.6	21,432	69.8
AMI < 120%	39,700	58.9	20,085	47.0	19,615	79.5	46,663	58.3	22,844	46.3	23,818	77.6

Source: Authors' analysis based on the Census 2000 and the 2019 American Community Survey 1-Year Public Use Microdata Sample (PUMS). Note: The sample is restricted to the households within the top 100 MSAs.

How much difference is there in older ages of housing, compared to newer, in the share of occupants that have lower income? And is this difference similar among renters and owners? The following table offers a "snapshot-in-time," 2019 display of how many occupants are lower income in housing that was built longer ago and now is older (Exhibit 2), based on the two definitions given above for renters and owners. In a nutshell, over 40% of the housing built earlier than the 1980s vintage have lower income residents, while less than 30% of residents in newer units have lower incomes. These differences are somewhat greater among homeowners than renters.

Exhibit 2. Larger Share of Lower-Income Households Reside in Older Housing in 2019

|	ALL HOUSEHOLDS			OWNER-OCCUPIED			RENTER-OCCUPIED		
	Total	Lower-Income	(%)	Total	Lower-Income	(%)	Total	Lower-Income	(%)
All Units	80,048	30,621	38.3	49,336	18,533	37.6	30,712	12,088	39.4
Pre-1960 Vintage	22,319	9,722	43.6	13,561	5,927	43.7	8,758	3,794	43.3
1960s Vintage	8,705	3,780	43.4	5,153	2,234	43.4	3,552	1,546	43.5
1970s Vintage	11,528	4,943	42.9	6,576	2,845	43.3	4,952	2,098	42.4
1980s Vintage	10,532	4,083	38.8	6,391	2,498	39.1	4,142	1,585	38.3
1990s Vintage	10,470	3,461	33.1	6,824	2,179	31.9	3,646	1,282	35.2
2000s Vintage	10,579	3,122	29.5	7,413	2,087	28.1	3,166	1,035	32.7
2010s Vintage	5,914	1,510	25.5	3,419	763	22.3	2,496	747	29.9

Source: Authors' analysis based on the 2019 American Community Survey 1-Year Public Use Microdata Sample (PUMS). Note: The sample is restricted to the households within the top 100 MSAs.

Although this clearly suggests that lower-income households reside in older housing, this snapshot in 2019 does not necessarily show that they gravitate to those homes over time. It is also possible that older housing held lower-income residents from the time it was first built. After all, newer housing has been built with more modern amenities, technology and fashions. The concept of filtering presumes changes over time, and for that we must follow a vintage of housing *as it grows older* to see whether it accumulates a greater share of lower-income residents after a decade or two. For that we need to survey residents at two points in time, a resource that the Census Bureau has kindly provided through its periodic censuses and surveys.

Trends over Time in Filtering

The findings on filtering over time are displayed in Exhibit 3, restricting this only to housing built before our first observation in 2000. We separately identify all housing built before 1980 from that built from 1980 to 1999. The data reported here are aggregated across the 50 largest metros of the U.S., in order to represent the national pattern in large urban areas.

Exhibit 3. Rising Share of Lower Income Households Among Renters and Owners as Housing Grows Older, by Two Vintages, but Reversing After 2010 for Renters (50 U.S. Metros Combined)
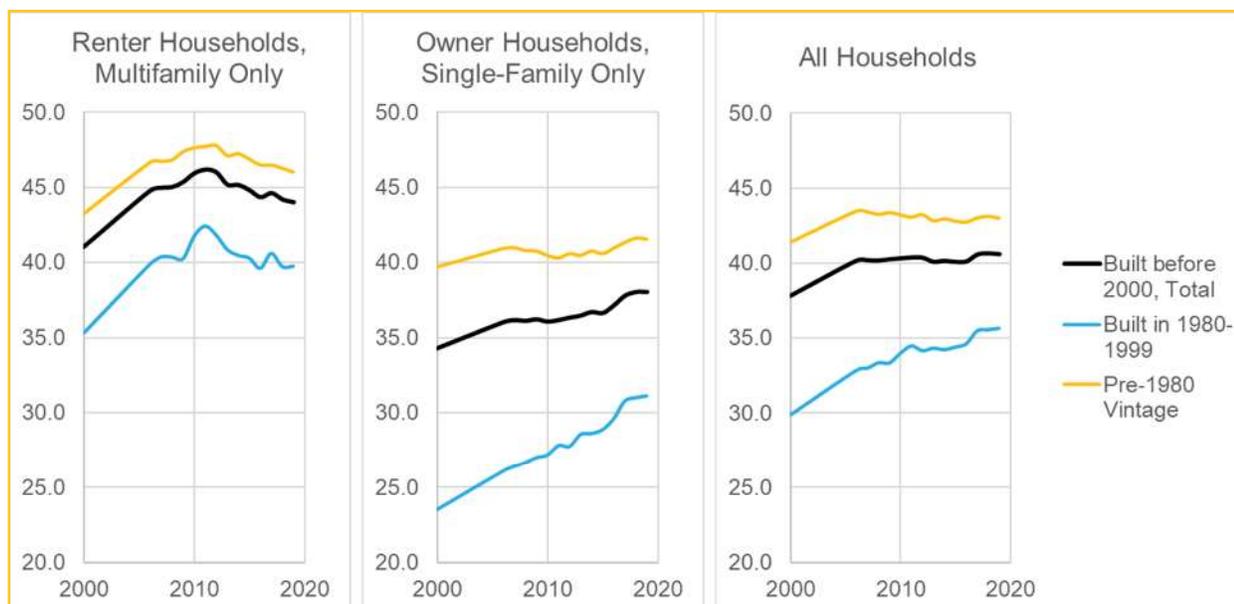
Source: Authors' analysis based on the Census 2000 and the 2006–2019 American Community Survey 1-Year Public Use Microdata Sample (PUMS). Note: The sample is restricted to the households within the top 50 MSAs.

Among renters[1] there is a clear accumulation of lower-income occupants after 2000, but this trend reverses sometime after 2008 or 2011 (as the impacts of the Great Recession were felt). Thereafter, we see a steady retreat of lower-income occupancy. Filtering appears to be working in the first decade, but it then reverses in the most recent decade. A similar pattern was found among multifamily rentals in the Myers-Park NHMC study, extending the decades of successful filtration back to 1980, which makes the recent reversal all the more anomalous.

The present study adds analysis of owner-occupied housing using a similar vintage aging method.[2] Within the older vintage housing (pre-1980) there is virtually no evidence of increased lower-income occupancy over time, remaining between 40% and 42% lower-income for 20 years. However, among the newer units, built 1980 to 1999, there is a steady rise in lower-income occupancy for 14 years, rising from 23.5% to 28.5% lower-income, followed by a 5-year upsurge to about 31.5% lower-income by 2019 (an 8 percentage-point rise overall, increasing the lower-income proportion by a full third). If we pool together the filtering evidence of owners and renters, we find a steady 6 percentage-point gain in lower-income occupancy in the vintage built 1980 to 1999 (one-fifth greater than in 2000). However, the lower-income occupancy in the older vintage maintains a high plateau, showing a post-2000 gain of only about 2 percentage points, all within the first 7 years, and none thereafter.

Here, we see the filtering process has not been functioning well since the financial crisis of 2007-2008, and that is largely due to what has happened in the rental market. Interpretation of these findings is that filtering has produced additional lower-income opportunities but those are muted in recent years. The sharp reversal among renters is consistent with the evidence of growing effects of housing shortage, both as shown in the Module 3 report, and also in a study of renter mobility rates that suddenly declined after 2012 (Myers, Park and Cho, 2021). An additional factor is that the plunge in homeownership after 2008 shifted more would-be owners into renting, likely increasing incomes in the rental sector from what they had been before.

On the homeowner side of filtering, the steady rise of lower-income occupancy in the vintage built 1980 to 1999 is especially noteworthy. Whether this results from fresh occupancies of new buyers with incomes below the median for their metro is unknown but less likely than the alternative that prior buyers have aged in place holding on to their homes while incomes have slipped downward in their older age (or as median

Exhibit 4. California Metros Exhibit Slower Increases in Lower Income Occupancy as Housing Grows Older, Particularly Among Renters, and With Smaller Distinctions Between Vintages (6 California Metros Combined)

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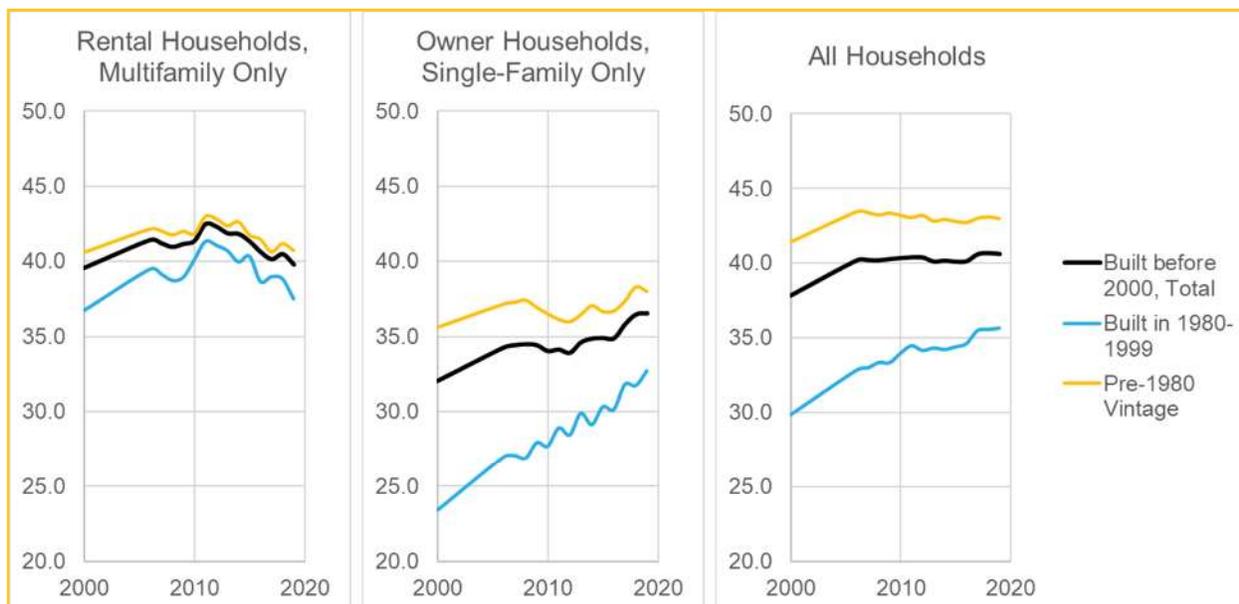
[1] Data pertain to renters in multifamily structures with 5 or more units, but equivalent trends are found among all renters.

[2] Data pertain to owners in single-family units, but equivalent trends are obtained if owners in all types of structures are combined.

incomes have risen compared to older peoples' incomes and retirees' fixed incomes). The latter interpretation is consistent with the steady high plateau of the pre-1980 vintage, whose incomes already had settled and now are joined (possibly) by new replacements who also have modest incomes.

The above analysis was carried out for the 50 largest metros in the nation. We now repeat that here for California by aggregating the six largest MSAs in California—Los Angeles, San Francisco, Riverside, San Diego, Sacramento, and San Jose (Exhibit 4). Results closely resemble those for the U.S., but with some key differences. Among renters, there is much less distinction between newer and older vintages, and the rate of filtering before 2010 is also much less in California.

Among owners in California, there also is less distinction between the vintages, largely because the older vintage has a smaller share that has lower income (defined for owners, again, as income less than the median income of all households in the metro area) than in the U.S. Among the newer vintage, there actually is a somewhat steadier increase in lower-income occupancy, suggesting slightly faster filtering.

Comparing the Rate of Filtering in Individual Metros

The reversal of filtering for renters, although not homeowners, appears widespread in California and the U.S. We can compare the rate of filtering in two decades by directly comparing each metro's percentage point gains in lower-income occupancy. Through this indicator we can compare the filtering rate of each individual metro in the 2010s against its rate in the 2000s, first for the older vintage (built pre-1980) of homes and then the newer vintage (built 1980-99). Each dot locates the rate of filtering of the same metro area in two consecutive decades, the earlier decade on the horizontal axis and the recent decade scaled on the vertical (Exhibit 5). Thus, dots located above the horizontal line represent faster filtering in the most recent decade. We repeat this separately for renters and homeowners.

Among homeowners in the older housing, built before 1980, there was virtually no filtering observed either decade in San Jose, while in the San Francisco-Oakland metro, substantial gains were made after 2010: a 5.0 percentage point gain in the share of occupants who were lower income, compared to a 1.0 percentage point decline in the earlier decade.
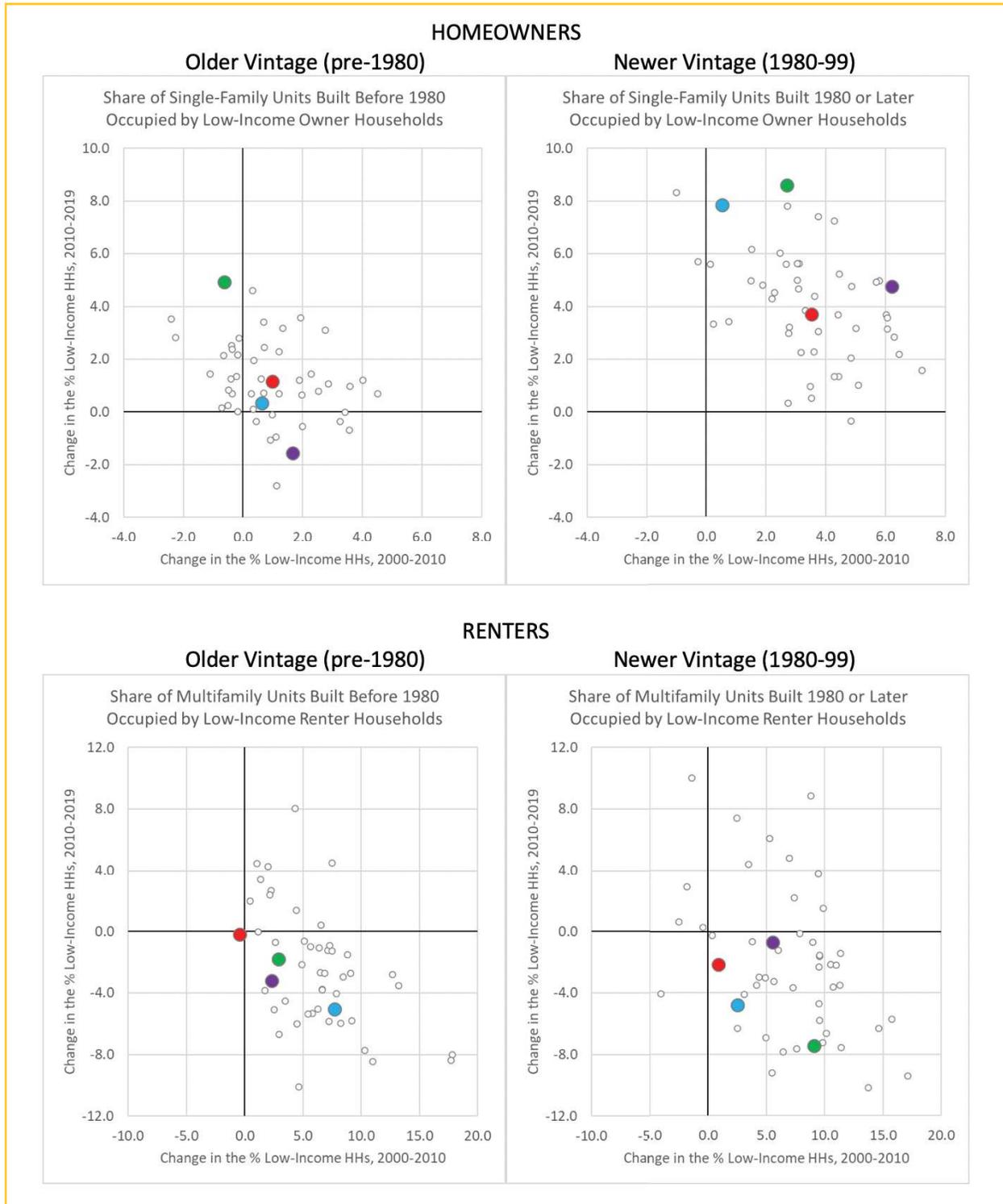
In contrast, within the newer vintage of housing (built 1980 to 1999), homeowners benefited from strong filtering that was widespread over the two decades after construction. The San Francisco metro's rate of filtering rose 9 percentage points in the recent decade compared to a rate of 3 percentage points in the previous decade. The Inland Empire (Riverside-San Bernardino) exhibited the most sustained rate of homeowner filtering across decades, rising 5 percentage points in the most recent decade, following a gain of 6 percentage points in the earlier decade.

Turning to renters' rate of filtering, we find the positive gains in filtering during the earlier decade were sharply reversed in many metros in both the older and newer vintages of rentals. The LA metro experienced very little rental filtering either decade in either vintage, whereas the San Jose metro reversed from a 7-point gain to a 5-point loss in the older vintage. In the newer vintage, San Francisco stands out for its reversal of filtering, switching from a 9-point gain in the earlier decade to a 7-point loss of lower income renters in the recent decade.

Overall Assessment of Filtering

Filtering is found to increase lower-income occupancy appreciably in a good decade, like 2000 to 2010, among both renters and owners. Among owners, sizable gains are achieved in housing units in their first two decades of service. However, the reversal of filtering in the recent decade among renters withdraws a former major source of lower-income housing opportunity.

Exhibit 5: Filtering Rate in 2010-2019 (y-axis) Compared to 2000-2010 (x-axis), by Two Vintages and Tenure Status (50 largest U.S. Metros and 4 Largest California Metros: SF-Oak (green), San Jose (blue), LA (red), Riverside-San Bernardino (purple)

HOMEOWNERS

Older Vintage (pre-1980)

Share of Single-Family Units Built Before 1980
Occupied by Low-Income Owner Households

Newer Vintage (1980-99)

Share of Single-Family Units Built 1980 or Later
Occupied by Low-Income Owner Households

RENTERS

Older Vintage (pre-1980)

Share of Multifamily Units Built Before 1980
Occupied by Low-Income Renter Households

Newer Vintage (1980-99)

Share of Multifamily Units Built 1980 or Later
Occupied by Low-Income Renter Households

RACIAL CHANGE IN CALIFORNIA AND ITS METROPOLITAN AREAS

The United States is undergoing profound demographic shifts, and California is at the front lines of this demographic change into a fully multiracial society. The recently released decennial Census 2020 reveals that the U.S. population is more racially and ethnically diverse than ever before, as the number of people of color grew substantially over the past decade. While non-Hispanic whites remain the racial and ethnic

majority of the country, their share fell to 57.8%, while African Americans grew to 12.1% of the population, Asian and Pacific Islanders accounted for 6.1%, and Hispanic or Latino residents grew to 18.7% of the nation's population. A final Other group, which includes indigenous and multiracial people, expanded its collective share of the population to 5.3%.

Compared to the nation, California has much greater shares of its population in people of color. While African Americans held a relatively small share in California in 2020 (5.4%, less than half the national share but still 2.1 million people), Asian and Pacific Islanders comprised 15.5% of the state's population (more than twice the national average). Meanwhile the Hispanic or Latino population grew to 39.4%, also twice the national average. The 2020 census reported that non-Hispanic whites accounted for 34.7% of the state's population, second largest after the Latino plurality. In total, people of color amounted to nearly two-thirds (65.3%) of California's population (Exhibit 6).

This diverse population is prevalent in all the large metros of California, generally reflecting the state's overall profile. Some differences are notable. The decline in the share of non-Hispanic white residents was more pronounced in Sacramento (–7.4 pp.), Riverside (–7.2 pp.), San Jose (–6.5 pp.), and San Francisco (–6.2 pp.), and it was least pronounced in Los Angeles (–3.1%). The Asian and Pacific Islander shares increased rapidly in the San Francisco (+4.3 pp.) and San Jose (+6.9 pp.) metros. During the period, San Jose witnessed its Hispanic share decrease by 1.5 percentage points, while the Hispanic share rapidly grew in all other metros, especially in Riverside (+4.3 pp.). See Exhibit 6.

Truly, each metro in California has a distinctive racial/ethnic mix, yet all have a complex blend of residents competing for housing in different parts of their metro area. The early release from the 2020 census provides a unique opportunity to assess the population changes (no housing data are yet released) over the last decade in every neighborhood (census tracts) of our largest metro areas. In following sections, we survey the spatial distribution of communities of color, identify areas where different race or Hispanic origin groups predominate, and spotlight areas of decline for different groups. But if people of color are declining in their traditional locations, they may be expanding elsewhere in the same metro, and we survey that. Finally, we identify what other groups may be expanding in lieu of the losses in traditional areas of residence. Using data from outside the census, we identify housing characteristics of different neighborhoods, focusing on their relative rents and price levels in 2010 that may have made them more attractive in the competition for affordable housing.

Exhibit 6. Population by Race/Ethnicity in U.S., California, and 6 California Metros, 2010-2020.

	Population (in 1,000s)				Population Share (%)			
	2000	2010	2020	2010-2020	2000	2010	2020	2010-2020
UNITED STATES	281,422	308,746	331,449	22,703	100.0	100.0	100.0	0.0
NH-White	194,553	196,818	191,698	–5,120	69.1	63.7	57.8	–5.9
Black	33,948	37,686	39,940	2,254	12.1	12.2	12.1	–0.1
Asian and Pacific Islander	10,477	14,947	20,241	5,294	3.7	4.8	6.1	1.3
Hispanic	35,306	50,478	62,080	11,602	12.5	16.3	18.7	2.4
Other	7,139	8,818	17,491	8,673	2.5	2.9	5.3	2.4
CALIFORNIA	33,872	37,254	39,538	2,284	100.0	100.0	100.0	0.0
NH-White	15,817	14,956	13,715	–1,241	46.7	40.1	34.7	–5.4
Black	2,182	2,164	2,119	–45	6.4	5.8	5.4	–0.4
Asian and Pacific Islander	3,753	4,904	6,117	1,213	11.1	13.2	15.5	2.3
Hispanic	10,967	14,014	15,580	1,566	32.4	37.6	39.4	1.8
Other	1,154	1,217	2,008	791	3.4	3.3	5.1	1.8

	Population (in 1,000s)				Population Share (%)			
	2000	2010	2020	2010-2020	2000	2010	2020	2010-2020
LOS ANGELES MSA	12,365	12,829	13,201	372	100.0	100.0	100.0	0.0
NH-White	4,418	4,057	3,762	−295	35.7	31.6	28.5	−3.1
Black	944	859	810	−49	7.6	6.7	6.1	−0.6
Asian and Pacific Islander	1,540	1,889	2,202	313	12.5	14.7	16.7	2.0
Hispanic	5,118	5,701	5,892	191	41.4	44.4	44.6	0.2
Other	345	323	536	213	2.8	2.5	4.1	1.6
RIVERSIDE MSA	3,255	4,225	4,600	375	100.0	100.0	100.0	0.0
NH-White	1,541	1,547	1,354	−193	47.3	36.6	29.4	−7.2
Black	243	302	320	18	7.5	7.1	7.0	−0.1
Asian and Pacific Islander	141	262	354	92	4.3	6.2	7.7	1.5
Hispanic	1,229	1,996	2,373	377	37.8	47.3	51.6	4.3
Other	101	119	198	79	3.1	2.8	4.3	1.5
SACRAMENTO MSA	1,797	2,149	2,397	248	100.0	100.0	100.0	0.0
NH-White	1,145	1,197	1,157	−40	63.7	55.7	48.3	−7.4
Black	124	150	159	9	6.9	7.0	6.6	−0.4
Asian and Pacific Islander	167	266	370	104	9.3	12.4	15.4	3.0
Hispanic	278	434	533	99	15.5	20.2	22.2	2.0
Other	83	102	178	76	4.6	4.7	7.4	2.7
SAN DIEGO MSA	2,814	3,095	3,299	204	100.0	100.0	100.0	0.0
NH-White	1,549	1,500	1,422	−78	55.0	48.5	43.1	−5.4
Black	154	147	145	−2	5.5	4.7	4.4	−0.3
Asian and Pacific Islander	257	342	414	72	9.1	11.0	12.5	1.5
Hispanic	751	991	1,120	129	26.7	32.0	33.9	1.9
Other	102	116	198	82	3.6	3.7	6.0	2.3
SAN FRANCISCO MSA	4,124	4,335	4,749	414	100.0	100.0	100.0	0.0
NH-White	2,026	1,840	1,718	−122	49.1	42.4	36.2	−6.2
Black	387	350	323	−27	9.4	8.1	6.8	−1.3
Asian and Pacific Islander	810	1,024	1,325	301	19.6	23.6	27.9	4.3
Hispanic	733	939	1,086	147	17.8	21.7	22.9	1.2
Other	167	182	297	115	4.1	4.2	6.2	2.0
SAN JOSE MSA	1,736	1,837	2,000	163	100.0	100.0	100.0	0.0
NH-White	769	648	575	−73	44.3	35.3	28.8	−6.5
Black	45	43	43	0	2.6	2.3	2.1	−0.2
Asian and Pacific Islander	433	573	762	189	24.9	31.2	38.1	6.9
Hispanic	429	510	527	17	24.7	27.8	26.3	−1.5
Other	60	63	94	31	3.5	3.4	4.7	1.3

Source: Authors' analysis based on the 2010 and 2020 decennial Census data.

LOS ANGELES-LONG BEACH-ANAHEIM, CA METRO AREA

The largest metro area in California affords the best venue for witnessing how neighborhood demographics have been changing. In 2010–2020, a dramatic shift in the racial and ethnic composition continued in the Los Angeles MSA, which is comprised of Los Angeles County and Orange County. This metro is only slowly growing, a total population gain of 2.9% over the decade, and none of its race/ethnic groups are changing rapidly (Exhibit 7). Thus the local area changes we identify result, not from large increases of any particular groups in the region, but from a re-sorting of the existing number of residents as people seek to adjust their housing. In addition, none of the groups accounts for a majority of the population in the metro area, the largest in the 2020 census being the Hispanic or Latino group (44.6%). Yet all of the groups occupy significant positions in the urban area, often overlapping with one another in particular neighborhoods. Thus, the communities of color are not sharply bounded in space and they continue to spread over time.

Overview of the Metro Change

We identify an inner core of the metro area as the area within the 15-mile ring surrounding city hall in the city of Los Angeles. This metropolitan core is 30 miles wide, spanning east-west from Santa Monica to El Monte, and north-south from La Crescenta-Montrose to Gardena, including downtown Los Angeles and all of its inner-city neighborhoods. The central area holds about 6 million people, slightly less than half (45%) of the total population in the Los Angeles MSA in 2020 (13.2 million), and that 6 million number has remained virtually unchanged over time. The African American share in the central area (9.0%) is substantially greater than that in the MSA (6.1%). As shown in data in the lower panel of Exhibit 7, there was a greater decline of three groups in this inner core than for the full metro (Asian, Black, and Latino), which indicates that group members were shifting over the decade to the outer sections of the metro. Conversely, the white population declined by 295,000 in the metro but none at all inside the central core, reflecting the concentration of young, white, college graduates in the downtown area during the period.

Exhibit 7. Population by Race/Ethnicity in the Los Angeles-Long Beach-Anaheim, CA Metro Area, 2010-2020.

	Population (in 1,000s)				Population Share (%)			
	2000	2010	2020	2010-2020	2000	2010	2020	2010-2020
LOS ANGELES MSA	12,365	12,829	13,201	372	100.0	100.0	100.0	0.0
NH-White	4,418	4,057	3,762	−295	35.7	31.6	28.5	−3.1
Black	944	859	810	−49	7.6	6.7	6.1	−0.6
Asian and Pacific Islander	1,540	1,889	2,202	313	12.5	14.7	16.7	2.0
Hispanic	5,118	5,701	5,892	191	41.4	44.4	44.6	0.2
Other	345	323	536	213	2.8	2.5	4.1	1.6
< 15 mi. of City Center	5,852	5,918	5,987	70	100.0	100.0	100.0	0.0
NH–White	1,459	1,403	1,402	0	24.9	23.7	23.4	−0.3
Black	692	599	538	−60	11.8	10.1	9.0	−1.1
Asian and Pacific Islander	673	778	837	59	11.5	13.1	14.0	0.8
Hispanic	2,868	3,007	2,989	−18	49.0	50.8	49.9	−0.9
Other	159	132	221	89	2.7	2.2	3.7	1.5

Source: Authors' analysis based on the 2000–2020 decennial Census data.

Given these general demographic trends, we will examine how communities of color in 2010 have evolved during the following decade up to 2020. We first identify communities of color in 2010 based on their racial/ethnic concentration in clusters of census tracts. In doing so, we categorize census tracts into three groups:

1. predominant neighborhoods where a group has a plurality or majority,
2. second-tier neighborhoods of above average prevalence, and
3. below-average neighborhoods of low prevalence.

For example, "predominant" Black neighborhoods refer to the neighborhoods in which Black population is more prevalent than any other racial/ethnic group (a plurality); "second-tier" Black neighborhoods include the area where Black share is not the most prevalent but greater than the MSA average (6.7% in 2010); "below-average" neighborhoods include all the rest, in which Black population share is less than the MSA average. We focus on communities of Black plurality or prevalence and those of Hispanic plurality or prevalence in this analysis. We excluded neighborhoods with less than 200 residents, either in 2010 or 2020, as their changes can have extreme percentages and most other tracts are in the range of 2,000 to 5,000 residents.

Black Prevalence and Changes in Communities

Exhibit 8 presents Black communities in the Los Angeles MSA in 2010, based on our groupings. Consistent with the public's perception, most of the "predominant" Black communities were concentrated in core areas in Los Angeles County, including the large agglomeration southwest of downtown LA but also including suburbs of Inglewood and Carson, among others. Also visible is the Black community of Altadena above Pasadena. The "second-tier" Black communities include broader areas bordering the large swath of predominant neighborhoods, plus neighborhoods near downtown LA, the southern suburb of Compton, and parts of Pasadena, as well as the exurban neighborhoods in the far north of LA county, Palmdale and Lancaster.

**Exhibit 8. Black Communities in the Los Angeles MSA in 2010.**
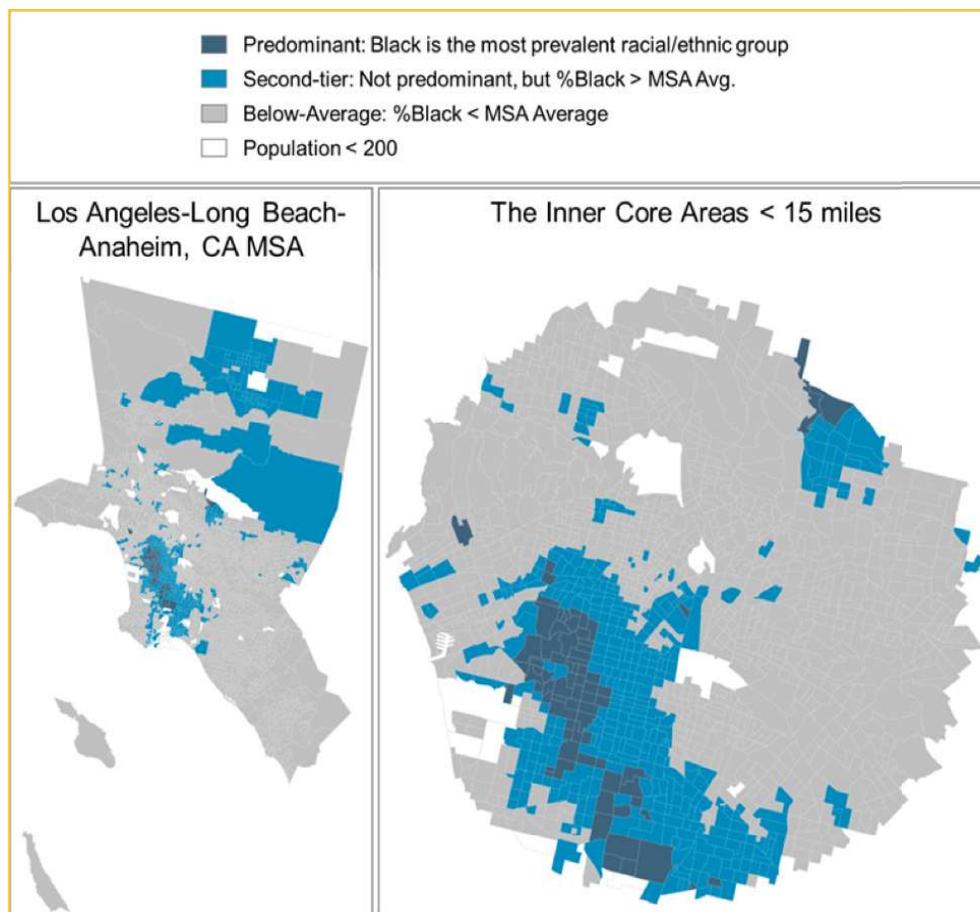
1. Modest decline in established Black communities and outward dispersal

As discussed above, the Black share very slightly declined in Los Angeles MSA (–0.6 percentage point), especially in the central area (–1.1 pp.), from 2010 and 2020. Against this backdrop of average change, we identify the census tracts of substantial decline (shares falling more than 5 pp.) in the "predominant" and "second-tier" Black communities. A total of 67 out of 76 predominantly Black areas experienced substantial decline, averaging –10.1 percentage points in all the predominant areas, with an average Black share of 62.2% at the beginning of the decade for those communities (Exhibit 10). In contrast, in the much more numerous second-tier communities of Black prevalence, only 123 out of 583 areas experienced substantial decline in Black share, averaging –2.6 percentage points in all the second-tier areas. The Black share rose 0.2 percentage points across the numerous (2,231) non-Black areas. Accordingly, although the declining Black share in predominant Black communities could be alarming, the overall picture is one of deconcentration of the Black population with reduced segregation and greater integration in the whole metro area.

In Exhibit 9 we map the location of areas of substantial decline, identifying the many predominantly Black neighborhoods in 2010 that experienced substantial decline in Black share by 2020. And we find that many second-tier Black neighborhoods that are geographically adjacent to the predominant Black neighborhoods also experienced similar, large decline in Black share. Overall, the number of Black residents in the neighborhoods within 15 miles from the city center declined by 60,000 during the decade, but the decline in the Black share is explained by shrinking, or displaced, Black population in those traditional enclaves.

Exhibit 9. Black Communities with Substantial Population Share Decline in the Los Angeles MSA in 2010–2020.
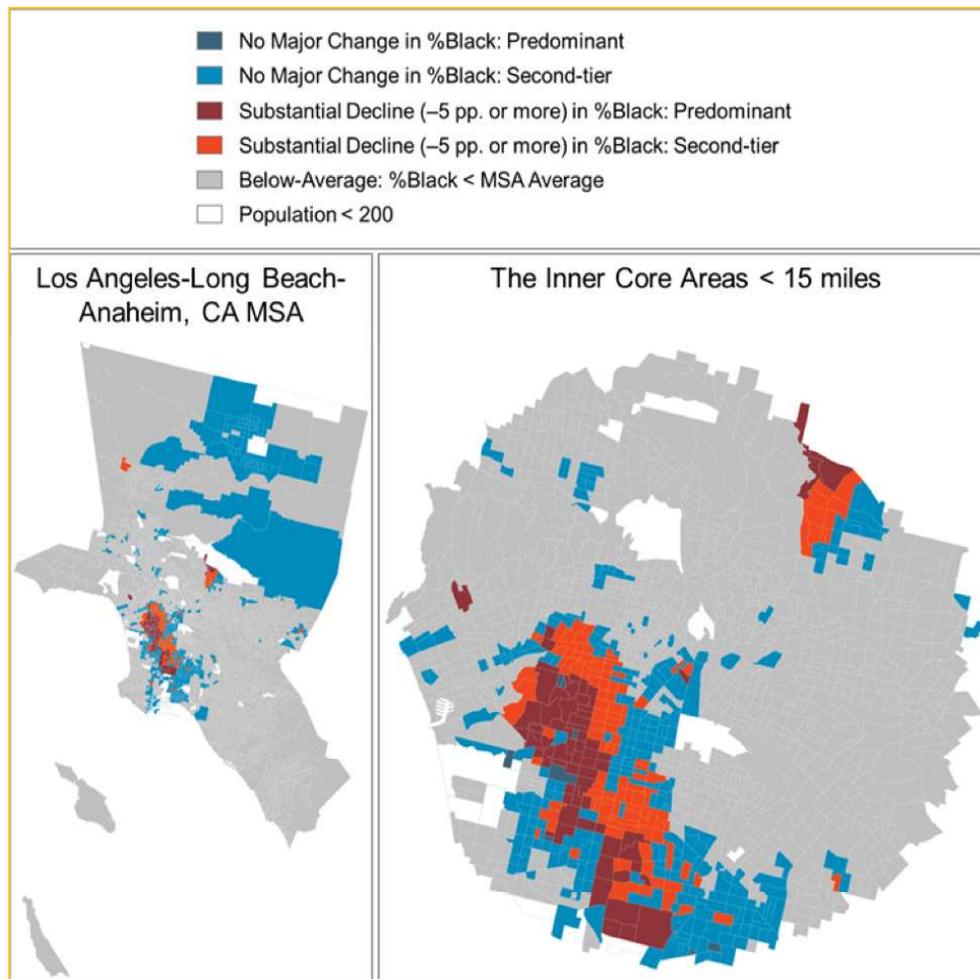
2. New replacements follow Black declines

While the Los Angeles metro and its central area witnessed declines in both absolute number and relative share of Black population in the 2010s, both areas experienced slight increases in the total population. This indicates that the decline of Black population was offset by increase of other racial/ethnic groups. Population share is a zero-sum process as decline in one racial/ethnic group's population share implies gain in another racial/ethnic group's share (in order to maintain 100% total). We cannot know the reasons for Black decrease or gains by other groups (but we examine local housing prices in a later section). A first step is to inquire which racial/ethnic group gained the most in those traditionally Black communities that experienced substantial decline in Black population share. (A later step will inquire about the neighborhoods where Black population has increased.)

The racial/ethnic group that increased the most is referenced as the "top gainer," and we map their spatial distribution on top of the established community of 10 years earlier. For example, suppose that a neighborhood experienced substantial decline in the share of Black population, say 11 percentage points, from 2010 to 2020. In the neighborhood, if non-Hispanic white share increased by 6 percentage points and Hispanic by 5 percentage points, we would term non-Hispanic whites as top gainers in the neighborhood. However, in any specific census tract it is most often a single race/ethnic group that accounts for the bulk of the replacement population. Exhibit 10 presents changes in racial/ethnic composition in the Black communities, and Exhibit 11 shows the geographic distribution of the "top gainers" in the area.

Exhibit 10. Racial/Ethnic Changes in Black Communities in the Los Angeles MSA, 2010-2020

	N of Tracts	%Black			%White		
		2010	2020	Diff.	2010	2020	Diff.
LOS ANGELES MSA	2,890	6.8	6.2	−0.6	32.2	28.8	−3.4
Predominant	76	62.2	52.1	−10.1	5.8	7.8	2.0
Substantial Increase in %Black	0	-	-	-	-	-	-
No or Minor Changes	9	50.8	48.4	−2.4	7.8	8.0	0.2
Substantial Decline in %Black	67	63.8	52.6	−11.2	5.6	7.8	2.2
Top gainer: NH-White	13	62.5	50.2	−12.3	8.5	14.9	6.4
Top gainer: Asian & PI	1	49.4	33.2	−16.2	20.1	24.7	4.6
Top gainer: Latino	48	64.2	53.3	−11.0	4.6	5.7	1.1
Top gainer: Other	5	65.2	56.2	−9.0	4.1	6.2	2.1
2ND TIER	583	17.3	14.7	−2.6	17.6	16.0	−1.6
Substantial Increase in %Black	29	13.3	17.8	4.5	26.9	24.2	−2.7
No or Minor Changes	431	13.9	12.3	−1.6	20.0	17.7	−2.4
Substantial Decline in %Black	123	30.1	22.4	−7.7	6.7	8.3	1.6
Top gainer: NH-White	31	29.5	21.1	−8.5	9.2	15.0	5.8
Top gainer: Asian & PI	13	24.3	18.0	−6.3	18.3	16.0	−2.3
Top gainer: Latino	75	31.4	23.8	−7.7	2.7	3.3	0.6
Top gainer: Other	4	27.7	21.8	−5.9	24.6	24.6	0.0
NON-BLACK	2,231	2.2	2.4	0.2	36.9	32.9	−4.0
Substantial Increase in %Black	37	3.7	7.7	3.9	29.3	26.9	−2.3
No Change or Decline in %Black	2,194	2.2	2.3	0.1	37.1	33.0	−4.1

Exhibit 10. Racial/Ethnic Changes in Black Communities in the Los Angeles MSA, 2010-2020

	N of Tracts	%Asian			%Hispanic		
		2010	2020	Diff.	2010	2020	Diff.
LOS ANGELES MSA	2,890	14.3	15.9	1.5	44.1	45.1	1.0
Predominant	76	3.1	3.9	0.7	25.7	30.9	5.2
Substantial Increase in %Black	0	-	-	-	-	-	-
No or Minor Changes	9	4.4	4.2	−0.3	33.4	34.4	1.0
Substantial Decline in %Black	67	3.0	3.8	0.9	24.7	30.4	5.7
Top gainer: NH-White	13	6.4	6.9	0.5	18.4	21.0	2.6
Top gainer: Asian & PI	1	11.3	18.0	6.6	14.4	15.7	1.2
Top gainer: Latino	48	2.0	2.8	0.8	26.5	33.5	7.0
Top gainer: Other	5	1.7	2.6	0.9	25.6	28.4	2.8
2ND TIER	583	9.5	10.1	0.6	53.2	55.3	2.1
Substantial Increase in %Black	29	11.1	10.8	−0.3	45.6	42.4	−3.2
No or Minor Changes	431	10.9	11.4	0.5	52.6	54.7	2.1
Substantial Decline in %Black	123	4.0	5.2	1.2	57.2	60.6	3.4
Top gainer: NH-White	31	5.2	6.6	1.4	53.2	52.4	−0.8
Top gainer: Asian & PI	13	10.8	16.5	5.7	43.8	45.4	1.6
Top gainer: Latino	75	2.0	2.3	0.3	62.3	67.9	5.6
Top gainer: Other	4	8.9	10.4	1.4	35.0	36.5	1.5
NON-BLACK	2,231	16.0	17.8	1.8	42.4	42.9	0.5
Substantial Increase in %Black	37	25.0	22.5	−2.5	39.3	38.6	−0.6
No Change or Decline in %Black	2,194	15.8	17.7	1.9	42.4	43.0	0.5

Source: Authors' analysis based on the decennial Censuses 2010 and 2020.

Exhibit 11. Top Gainers in the Black Communities With Substantial Population Share Decline in the Los Angeles MSA in 2010–2020.
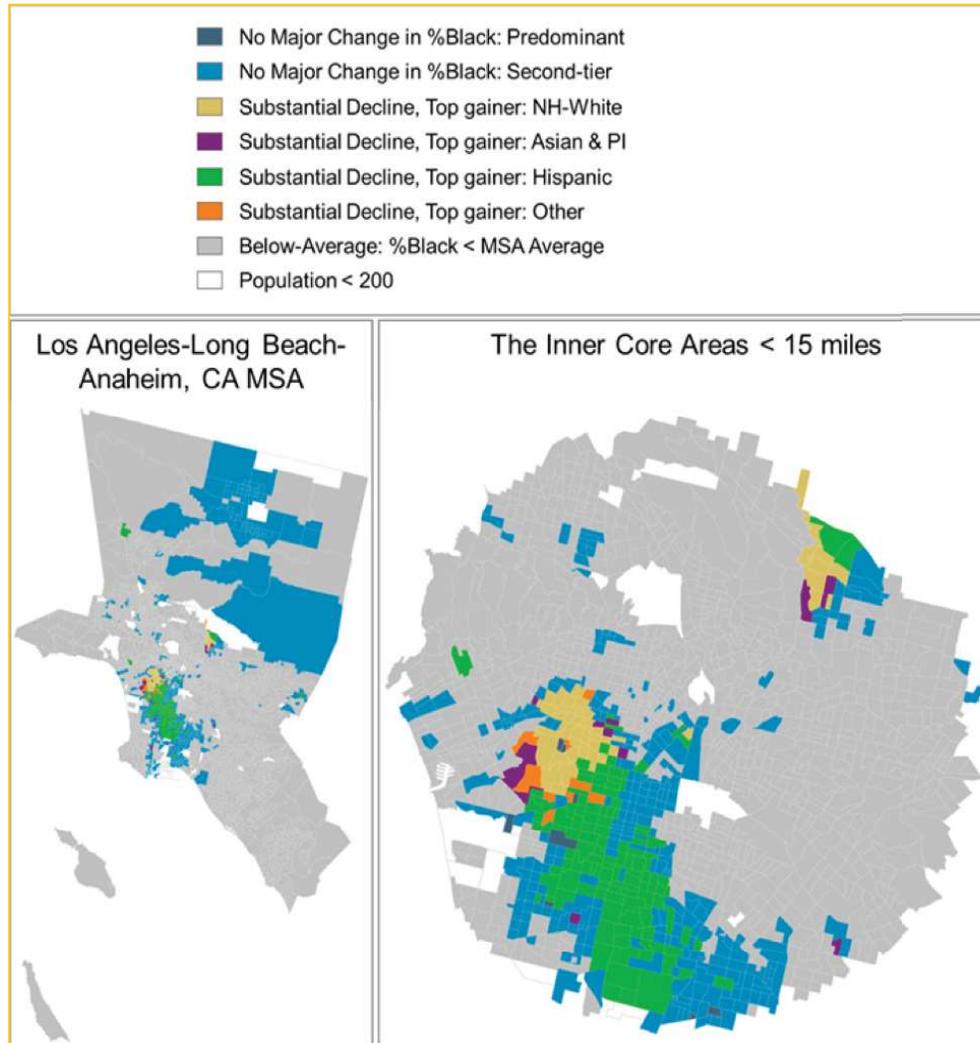
When we analyze the spatial patterns of such top gainers, we identify two key patterns. First, we see a cluster of neighborhoods that were Black communities (either "predominant" or "second-tier") and experienced substantial increase in non-Hispanic white share, mostly along the I-10 and I-405 freeways, and west of Western Avenue, including Inglewood, Baldwin Village, and View Park-Windsor Hills, among others (Exhibit 11). The same pattern of white influx has occurred in the western part of Altadena or in Pasadena, as well. The pattern is consistent with media reports about gentrification in these neighborhoods.[3] We address this more in the discussion of house prices in a following section.

Second, there was another large cluster of Black neighborhoods that saw substantial increase in Latino population. These are generally located in South Los Angeles, such as West Athens, West Compton, Willowbrook, and Carson. The pattern reflects racial/ethnic turnover in South Los Angeles from Latino to Black, which has been observed for several decades (Hondagenue-Sotelo and Pastor 2021). In addition, there are scattered neighborhoods where Asian population is the top gainer in the presence of Black decline and also a few where "other" racial groups (multiracial or Native American/indigenous) provided the most growth.

3. Outward spread of Black residents

With the Black population holding fairly constant in total within the LA metro, and given the substantial declines in concentrated areas of Black residence, where then did Black residents relocate within the

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[3] Erika D. Smith, "To protect South L.A. 'Don't sell your damn house!'" *Los Angeles Times*, A1, October 24, 2021.

metro? We can identify the neighborhoods, either previously Black neighborhoods or not, in which the Black population share has increased by 2.5 percentage points (Exhibit 12). If we can find many dispersed areas with such growth of Black population share, it could be indicative of greater racial/social integration in the broader Los Angeles metro. The map shown below highlights areas near downtown LA, especially right north of the I-10 highway. Exurbs like Lancaster and Palmdale also saw substantial increases of Black population share.

However, this Black exodus from established communities appears to be thinly spread far and wide. Compared to the prevalence of Black tracts experiencing substantial decline of Black share, the number of tracts with substantial growth of Black population share is fewer than expected. An explanation is that Black residents have relocated to a larger number of areas with even lower Black concentration share—less than 2.5% Black.

Exhibit 12. Communities With Substantial Black Population Share Increase in the Los Angeles MSA in 2010–2020.
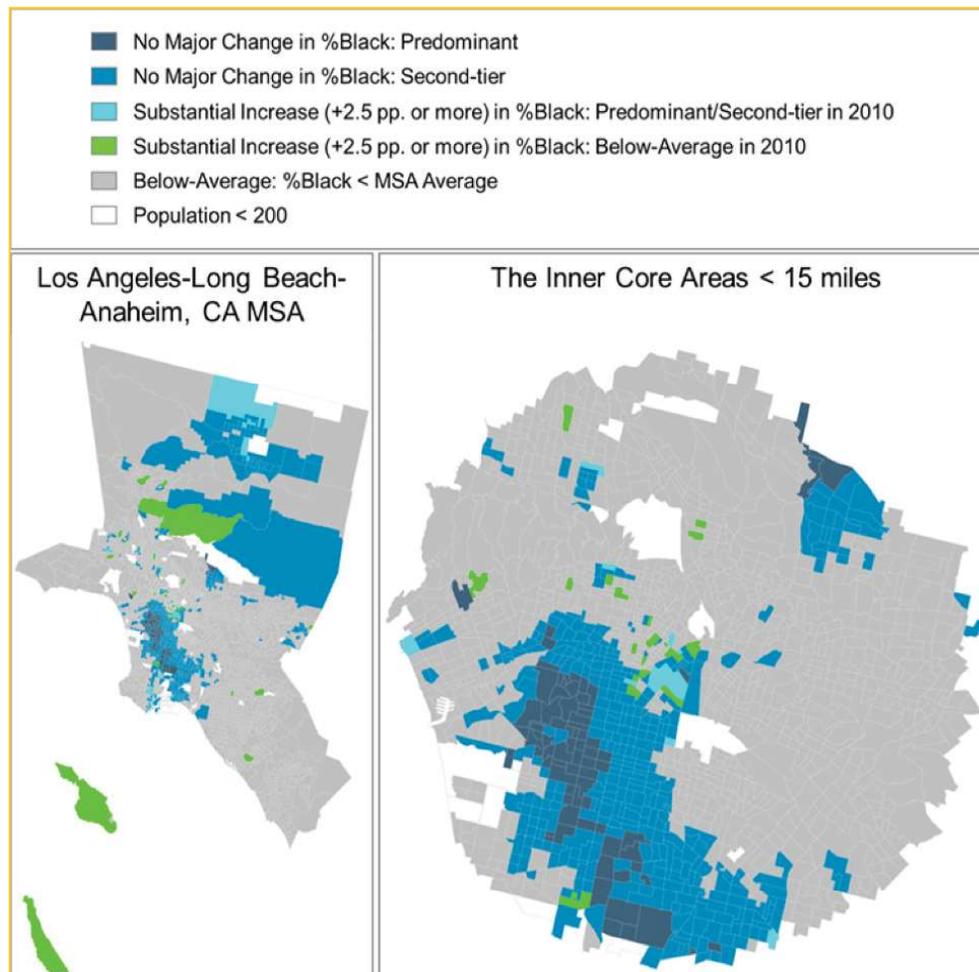
Hispanic or Latino Prevalence and Changes in Communities

A similar analysis deserves to be conducted for Latino population in the Los Angeles metro, identifying "predominant" and "second-tier" Latino communities in 2010. A key difference is that the Latino population is 7 times larger than the Black population and so it prevails over a much larger area. Exhibit 13 presents a spatial display of the categorization. Given their population share in the Los Angeles MSA (44.4%) and central area (50.8%) in 2010, it would be not surprising to see many neighborhoods in which Latino population is the predominant racial/ethnic group or, if not the most prevalent group, still had a prevalence higher than the MSA average. The "prevalent" Latino neighborhoods include a great many neighborhoods in downtown Los Angeles, Echo Park, East Los Angeles, Pasadena, Sun Valley, among others.

Exhibit 13. Latino Communities in the Los Angeles MSA in 2010.
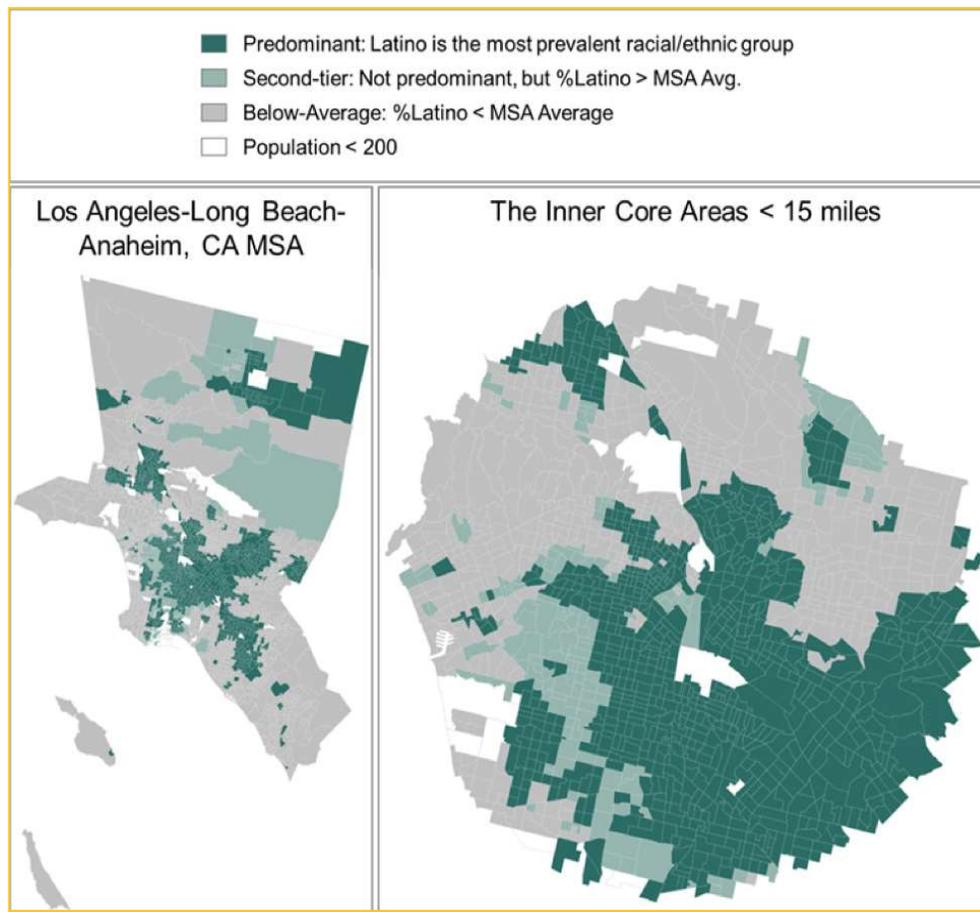
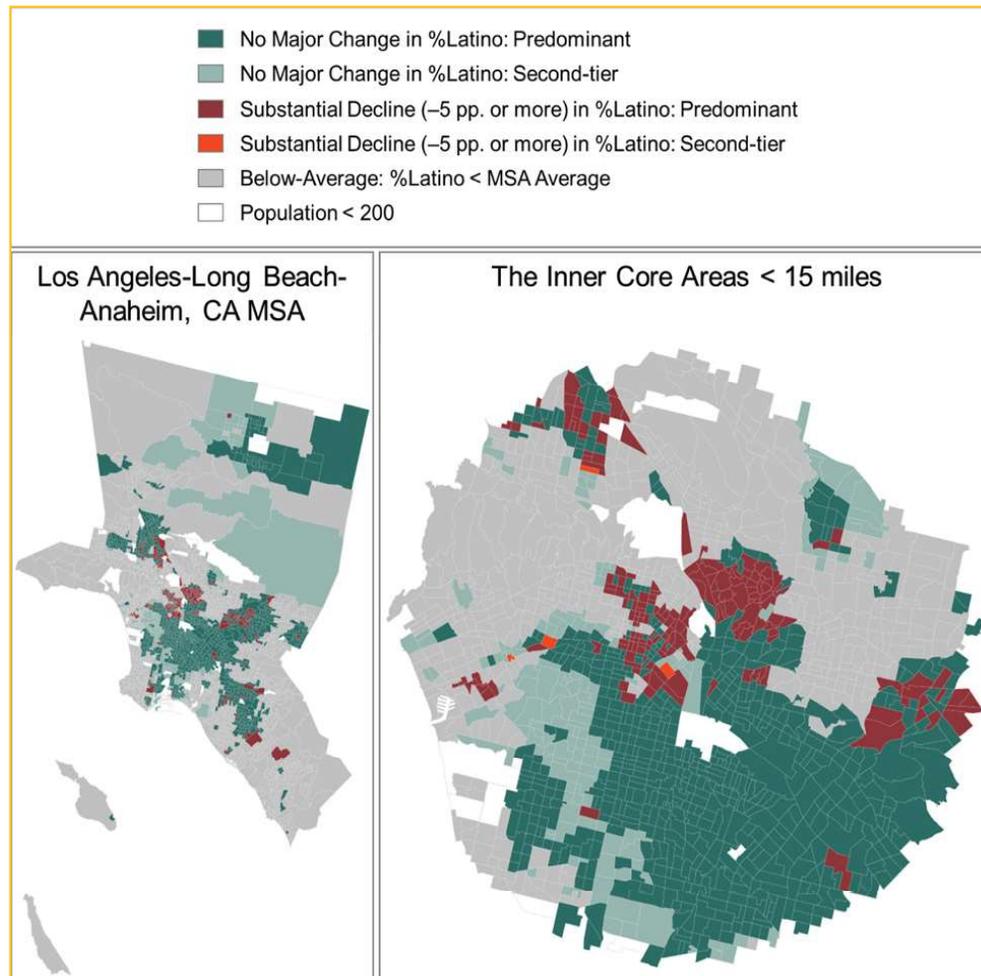## 1. Modest decline in established Latino communities

As with other communities, Latino communities also saw noteworthy changes in their demographic make-up during the 2010s (Exhibit 14). As before, we identify those "predominant" and "second-tier" Latino communities in 2010 that experienced substantial decline in their share. Different than Black communities in Los Angeles, Latino share has declined mainly along the northern fringe of its predominant areas. We can identify clusters of such neighborhoods to the north and west of Downtown Los Angeles—Echo Park-Silver Lake-Los Feliz, Highland Park-Cypress Park, Normandie/Olympic. Also prominent are changes in the San Fernando valley to the northwest and in the San Gabriel valley to the east.

2. New replacements following Latino declines

When we analyze which racial/ethnic group gained the most in those Latino communities that experienced substantial decline in their share, we could see that it was mostly non-Hispanic whites. Of the 234 "predominant" and "second-tier" Latino neighborhoods that experienced substantial decline, 140 or about 60% were receiving non-Hispanic Whites as the principal gainers and another 32% were receiving Asian Americans as the principal gainers.

Notably, gentrifying neighborhoods in Highland Park, Echo Park, and eastern San Fernando Valley experienced substantial increase in their white share, while several communities in Koreatown and the eastern San Gabriel Valley, as well as pockets in south Los Angeles County and Orange County, saw increases in their share of Asian and Pacific Islander people. The full pattern of replacements is given in Exhibit 15 and Exhibit 16.

Exhibit 14. Latino Communities with Substantial Population Share Decline in the Los Angeles MSA in 2010–2020.

Legend:
- No Major Change in %Latino: Predominant
- No Major Change in %Latino: Second-tier
- Substantial Decline (−5 pp. or more) in %Latino: Predominant
- Substantial Decline (−5 pp. or more) in %Latino: Second-tier
- Below-Average: %Latino < MSA Average
- Population < 200

Los Angeles-Long Beach-Anaheim, CA MSA

The Inner Core Areas < 15 miles

3. Consolidation and spread of Latino residents

If Latinos left areas where they predominate, where else did they move to inside the metro? We also analyze where the Latino share increased by 2.5 percentage points or greater in the Los Angeles MSA. The resulting map looks very different from that for Blacks in Los Angeles MSA, as 44% (546) of the below average Latino neighborhoods in the Los Angeles metro experienced such growth (Exhibit 17). The most extensive areas of increase lie in Orange County. What is interesting is there was virtually no change in the Latino share in the Los Angeles MSA overall from 2010 to 2020 (+0.2 pp.), although the share declined from 50.8% to 49.9% in the central areas. Nonetheless, in the central core of the LA metro the Latino population tended to in-crease its share in the vast district to the south of downtown LA in which it already predominated. In this view, the Latino population has consolidated in its densest concentrations, even as it has spread its growth to new outlying areas. In sum, while the Latino share in the metro as a whole held constant, Latino share of residents was trimmed down in the northern range of Latino predominance by growing white and Asian prevalence (Exhibit 16), while Latino share was increased in a middle zone of existing Latino predominance in southern LA county (Exhibit 17), and in addition Latino share was strengthened in nearly half the outlying areas of below average Latino prevalence.

Exhibit 15. Racial/Ethnic Changes in Latino Communities in the Los Angeles MSA, 2010-2020

	N of Tracts	%Hispanic			%White		
		2010	2020	Diff.	2010	2020	%Chg.
Los Angeles MSA	2,890	44.1	45.1	1.0	32.2	28.8	–3.4
Predominant	1,444	69.3	68.8	–0.6	12.4	11.5	–0.9
Substantial Increase in %Latino	354	58.7	64.2	5.5	17.6	13.0	–4.6
No or Minor Changes	860	73.5	72.6	–0.9	10.2	9.7	–0.6
Substantial Decline in %Latino	230	70.2	61.7	–8.5	12.2	15.9	3.6
Top gainer: NH-White	136	68.4	59.8	–8.6	14.2	20.2	6.0
Top gainer: Black	12	71.9	63.0	–8.9	9.7	11.3	1.6
Top gainer: Asian & PI	76	74.8	66.4	–8.4	7.4	7.3	–0.2
Top gainer: Other	6	50.5	43.2	–7.3	33.3	35.3	2.0
2nd Tier	213	24.3	27.9	3.6	29.2	27.3	–1.9
Substantial Increase in %Latino	134	24.0	30.1	6.1	25.8	22.8	–3.0
No or Minor Changes	75	24.4	24.2	–0.2	35.4	34.7	–0.6
Substantial Decline in %Latino	4	31.6	24.9	–6.7	28.3	36.4	8.1
Top gainer: NH-White	4	31.6	24.9	–6.7	28.3	36.4	8.1
Top gainer: Black	0	-	-	-	-	-	-
Top gainer: Asian & PI	0	-	-	-	-	-	-
Top gainer: Other	0	-	-	-	-	-	-
Non-Latino	1,233	18.0	20.3	2.3	56.0	49.4	–6.6
Substantial Increase in %Latino	546	19.0	23.8	4.8	57.6	48.8	–8.8
No Change or Decline in %Latino	687	17.2	17.6	0.4	54.7	49.9	–4.8

	N of Tracts	%Black			%Asian		
		2010	2020	Diff.	2010	2020	%Chg.
Los Angeles MSA	2,890	6.8	6.2	–0.6	14.3	15.9	1.5
Predominant	1,444	7.4	6.6	–0.8	9.3	10.6	1.3
Substantial Increase in %Latino	354	13.5	11.1	–2.4	8.1	8.6	0.5
No or Minor Changes	860	5.9	5.3	–0.6	8.9	10.2	1.2
Substantial Decline in %Latino	230	3.5	4.4	0.9	12.5	15.1	2.6
Top gainer: NH-White	136	3.0	3.7	0.7	12.7	12.9	0.2
Top gainer: Black	12	8.8	14.5	5.7	7.7	8.0	0.3
Top gainer: Asian & PI	76	3.5	3.7	0.2	13.2	20.7	7.5
Top gainer: Other	6	5.2	6.9	1.7	8.5	9.3	0.8
2nd Tier	213	29.6	25.3	–4.3	13.2	13.6	0.4
Substantial Increase in %Latino	134	35.7	30.2	–5.4	10.9	11.2	0.3
No or Minor Changes	75	19.5	17.2	–2.2	16.9	17.6	0.7
Substantial Decline in %Latino	4	16.8	13.8	–3.0	19.0	18.4	–0.6
Top gainer: NH-White	4	16.8	13.8	–3.0	19.0	18.4	–0.6
Top gainer: Black	0	-	-	-	-	-	-
Top gainer: Asian & PI	0	-	-	-	-	-	-
Top gainer: Other	0	-	-	-	-	-	-
Non-Latino	1,233	2.2	2.4	0.2	20.4	22.4	2.1
Substantial Increase in %Latino	546	2.5	2.7	0.2	17.5	19.1	1.7
No Change or Decline in %Latino	687	2.0	2.2	0.1	22.7	25.1	2.4

Source: Authors' analysis based on the decennial Censuses 2010 and 2020. [corrected]

Housing Filtering, Prices, and Neighborhood Change in Communities of Color

Exhibit 16. Top Gainers in the Latino Communities With Substantial Population Share Decline in the Los Angeles MSA in 2010–2020.
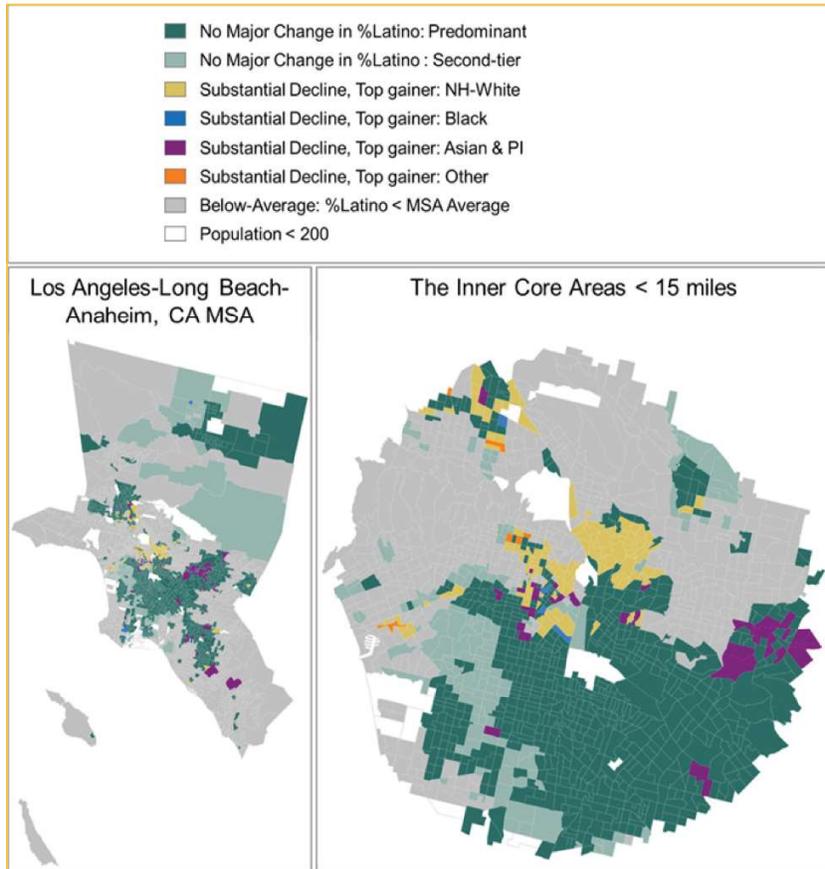
Exhibit 17. Communities With Substantial Latino Population Share Increase in the Los Angeles MSA in 2010–2020.
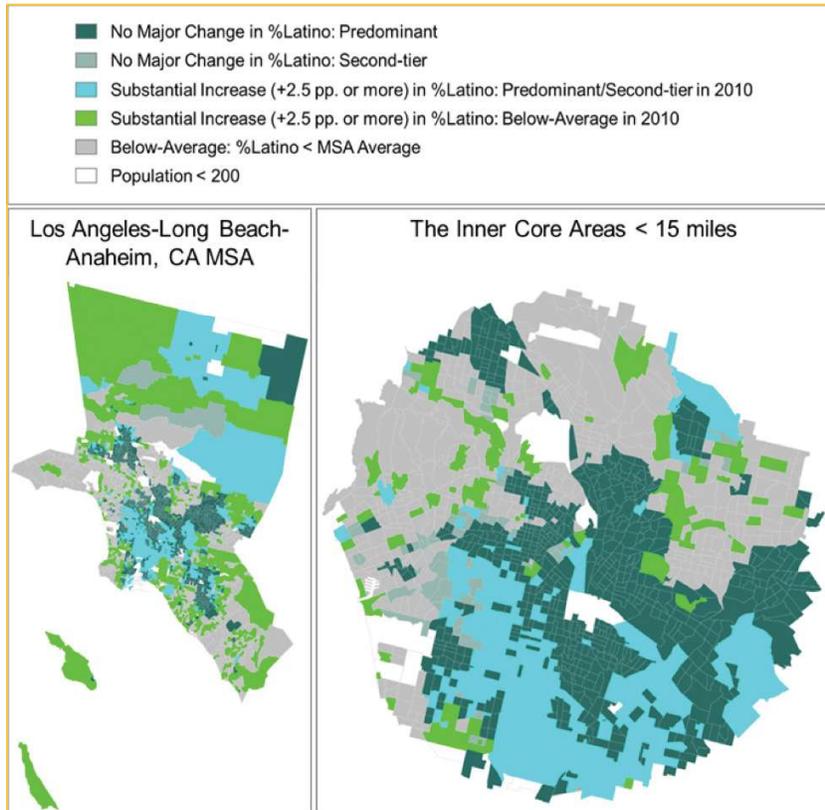
A primary way that competition for space is mediated is through housing prices, but those are not the sole factor. Social networks are important for sharing information about housing opportunities, and social proximity is a strong attribute that can make housing more valuable to one person or group than another. In evaluating the role of housing price, we should view it in this broader context.

It bears emphasis that we have no knowledge of the true motivations for why people leave a neighborhood or move into another, or what these dynamics mean to the residents who seek to stay in place. Deep interviews are required for such information. In this study we are only able to observe statistical summaries and make reasoned interpretations that cannot exceed the bounds of known information.

Prices in general mean something different to homeowners than rents mean to renters. The financial transactions, of course, are completely different. But the real cost of housing also differs. Rent is payment for the user value of monthly services, while purchase price represents an expectation of a sum of the "user value" of shelter services plus expected returns on investment (the "investment value"). The latter rests on beliefs about recent and projected trends, which attracts investors for owner-occupancy as well as for rental property. These differences enter into interpretations we will give to findings from the data analysis that follows.

Our neighborhood-level analysis of recent changes in communities of color is augmented with census tract data on reported rents and house values that are collected through the Census Bureau's American Community Survey (ACS). We will analyze the median rent and value in 2010 and 2019, focusing on both housing costs at the beginning of the decade and changes over the decade.[4] When a group of tracts are combined for comparisons, the reported housing values and gross rents are averages of the median values and gross rents of each neighborhood type, and dollar figures are not inflation adjusted – they are reported as nominal 2010 and 2019 dollars, respectively.

Analysis is in two stages, first addressing community differences in prices at the beginning of the decade, showing how those prices relate to subsequent population changes. In a second stage we assess how changes in house values and rents over the decade correlate with simultaneous changes in population.

1. Relative prices in 2010 and later Black community change

House values and rents for different communities of color are summarized in Exhibits 18 and 21. A graphic portrayal focusing on 2010 variations across Black neighborhoods is found in Exhibit 19 (house values) and Exhibit 20 (rents). One overarching finding is that rents in Black areas are lower than the MSA average, while house values are sometimes above the average, because rents reflect only the user value of the quality and size of the unit, while house values also include investment value of land and location. The most striking feature is that Black communities of color that later received substantial white and Asian growth already had higher housing prices and rents in 2010. This suggests that white and Asian inmovers selected neighborhoods that were priced higher as a reflection of their locational advantages and/or the quality of their housing stock. Inspection of Exhibit 11, shown earlier, shows that many of the formerly mostly Black tracts where whites are top gainers are clustered closest to the expensive westside of LA, Culver City, and the Expo light rail to Santa Monica, USC, and downtown LA. This premium location commanded a premium price in 2010. Some neighboring Black tracts also drew in Asians as the major group of new residents.

In contrast, the many Black neighborhoods further to the south were relatively low-opportunity neighborhoods, commanded lower prices than in the northern end of Black South LA, and drew in Latinos as the leading new residents (Exhibit 11). Nonetheless, these Latino new residents also selected neighborhoods with higher house prices than the ones retained by the Black neighborhoods without population change (see Exhibit 19).

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[4] The ACS information is collected over 5 consecutive years to ensure a large enough sample size by the final year. Thus, the 2010 data are drawn from 2006 to 2010 and the 2019 data are drawn from 2015 to 2019. The resulting estimates lag the reported year and generally are lower than current rents or values. They also represent estimates by the occupants and are generally lower than current asking prices or recent contracts. For present purposes what is important is that the data afford a reliable, relative measurement for comparing locations, and the Census Bureau data excel for their quality of relative representation.

A final observation about house prices and rents in the greater Black community is that housing costs are lowest in the predominantly Black areas that remained without population change and rose steadily as the Black share came closer to average for the MSA (Exhibits 19 and 20). This indicates that dispersal outward from the core of the Black community came with the requirement of paying higher housing costs.

Exhibit 18. Changes in the Housing Prices in Black Communities in the Los Angeles MSA, 2010-2020

|	N of Tracts	Value (in $1,000s)			Gross Rent		
		2010	2020	Diff.	2010	2020	%Chg.
LOS ANGELES MSA	2,890	530	647	22.2	1,286	1,694	31.7
Predominant	76	428	511	19.4	1,022	1,361	33.2
Substantial Increase in %Black	0	-	-	-	-	-	-
No or Minor Changes	9	295	371	25.9	901	1,132	25.6
Substantial Decline in %Black	67	438	524	19.6	1,038	1,392	34.1
Top gainer: NH-White	13	570	701	22.9	1,079	1,526	41.5
Top gainer: Asian & PI	1	490	607	24.0	1,611	2,036	26.4
Top gainer: Latino	48	390	458	17.5	1,012	1,346	33.0
Top gainer: Other	5	557	694	24.6	1,059	1,353	27.7
2ND TIER	583	414	479	15.8	1,084	1,393	28.5
Substantial Increase in %Black	29	428	500	16.6	1,021	1,270	24.3
No or Minor Changes	431	410	471	14.8	1,111	1,425	28.2
Substantial Decline in %Black	123	423	503	19.0	1,003	1,310	30.7
Top gainer: NH-White	31	506	684	35.3	1,002	1,374	37.1
Top gainer: Asian & PI	13	518	609	17.5	1,168	1,531	31.0
Top gainer: Latino	75	364	402	10.3	961	1,226	27.5
Top gainer: Other	4	557	626	12.4	1,319	1,714	29.9
NON-BLACK	2,231	563	695	23.4	1,347	1,784	32.4
Substantial Increase in %Black	37	536	640	19.4	1,075	1,464	36.1
No Change or Decline in %Black	2,194	563	696	23.4	1,352	1,789	32.4

Source: Authors' analysis based on the decennial Censuses 2010 and 2020; 2006–2010 and 2015–2019 American Community Survey 5-year estimates. Note: Dollar figures are in 2010 dollars and 2019 dollars, respectively.

Exhibit 19. Median Home Value of Black Neighborhood in 2010 Relative to Subsequent Population Change (value in 1000's of 2010$)
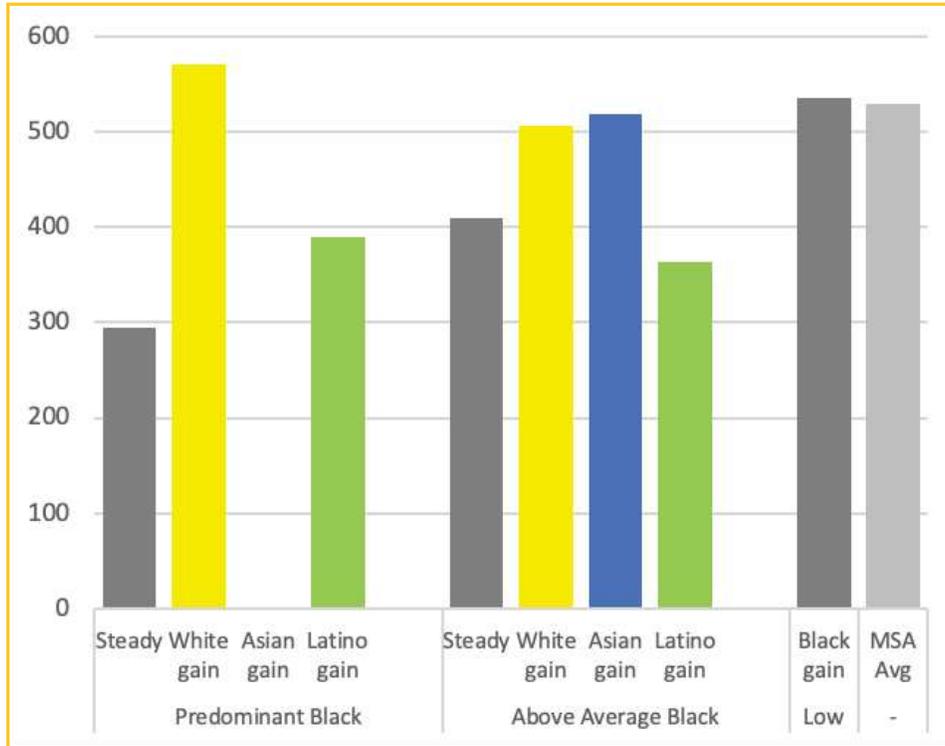
Source: Exhibit 18

Exhibit 20. Median Rent of Black Neighborhood in 2010 Relative to Subsequent Population Change (gross rent in 2010$)

Source: Exhibit 18

Housing Filtering, Prices, and Neighborhood Change in Communities of Color
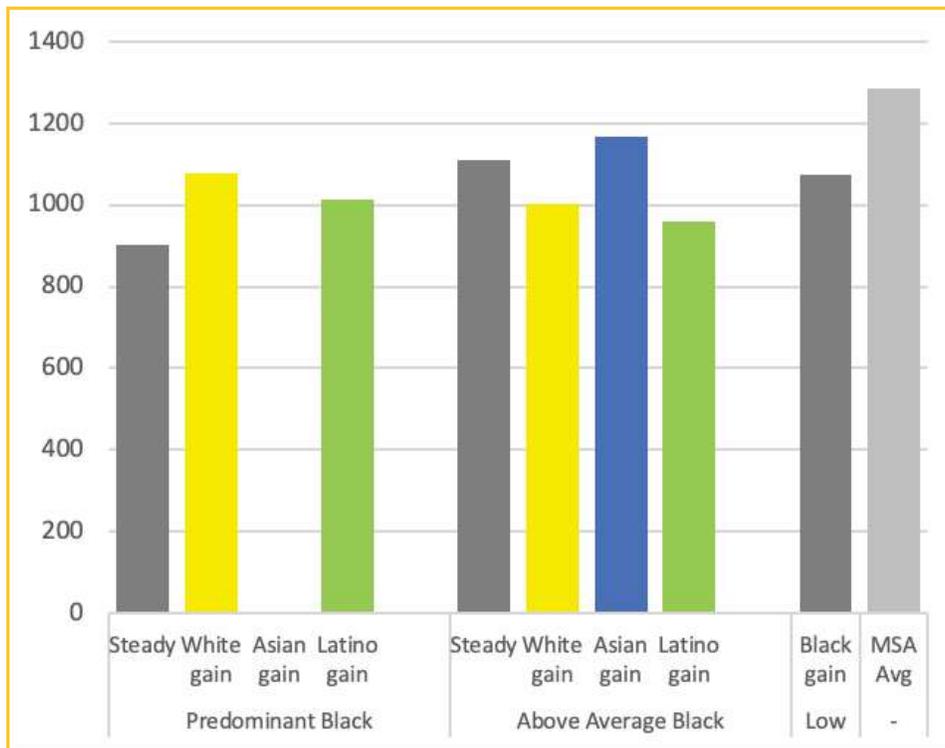
2. Relative prices in 2010 and later Latino community change

A similar analysis of housing costs can be made that is focused on the much larger Hispanic or Latino community. Half of all the census tracts in the Los Angeles MSA are predominantly Latino. And many more tracts experienced an increase than a decrease in Latino residents.

An overall summary of changes in Latino neighborhoods is found in Exhibit 21, and graphic displays of housing costs and subsequent community change are provided in Exhibit 22 (house values) and Exhibit 23 (rents). The first major finding, as with the Black community, is that house values and rents are progressively higher in the Latino community as we proceed from neighborhoods that are predominantly Latino to neighborhoods with average and below average concentrations of Latino residents. Also note-worthy is that Latino tracts receiving gains in Latino population were somewhat more affordable than ones remaining steady in their Latino share. And once again, as with the Black community, predominantly Latino tracts that later drew increased white residents had substantially higher house values (although not rents) in 2010. Referring back to Exhibit 16, we see the white influx is concentrated north and west of Downtown LA, areas such as Highland Park or Echo Park, premium locations now gentrifying. Dynamics of this racial and generational turnover are described in Myers and Moctezuma (2021).

Exhibit 21. Changes in the Housing Prices in the Latino Communities in the Los Angeles MSA, 2010-2020

|	N of Tracts	Value (in $1,000s)			Gross Rent		
		2010	2020	Diff.	2010	2020	%Chg.
LOS ANGELES MSA	2,890	530	647	22.2	1,286	1,694	31.7
Predominant	1,444	414	476	14.8	1,088	1,390	27.8
Substantial Increase in %Latino	354	391	434	11.1	1,149	1,443	25.6
No or Minor Changes	860	413	468	13.2	1,081	1,378	27.5
Substantial Decline in %Latino	230	458	576	25.9	1,018	1,354	33.0
Top gainer: NH-White	136	492	638	29.5	978	1,329	35.9
Top gainer: Black	12	398	437	9.8	789	1,077	36.5
Top gainer: Asian & PI	76	399	471	18.1	1,123	1,435	27.8
Top gainer: Other	6	505	697	38.1	1,027	1,389	35.2
2ND TIER	213	489	596	21.7	1,199	1,583	32.0
Substantial Increase in %Latino	134	448	521	16.4	1,168	1,506	28.9
No or Minor Changes	75	567	735	29.7	1,247	1,707	36.9
Substantial Decline in %Latino	4	532	692	30.3	1,282	1,814	41.5
Top gainer: NH-White	4	532	692	30.3	1,282	1,814	41.5
Top gainer: Black	0	-	-	-	-	-	-
Top gainer: Asian & PI	0	-	-	-	-	-	-
Top gainer: Other	0	-	-	-	-	-	-
NON-LATINO	1,233	670	853	27.3	1,536	2,076	35.1
Substantial Increase in %Latino	546	631	749	18.6	1,523	2,038	33.8
No Change or Decline in %Latino	687	701	934	33.2	1,547	2,105	36.1

Source: Authors' analysis based on the decennial Censuses 2010 and 2020; 2006–2010 and 2015–2019 American Community Survey 5-year estimates. Note: Dollar figures are in 2010 dollars and 2019 dollars, respectively.

Exhibit 22. Median Home Value of Latino Neighborhood in 2010 Relative to Subsequent Population Change (value in 1000's of 2010$)
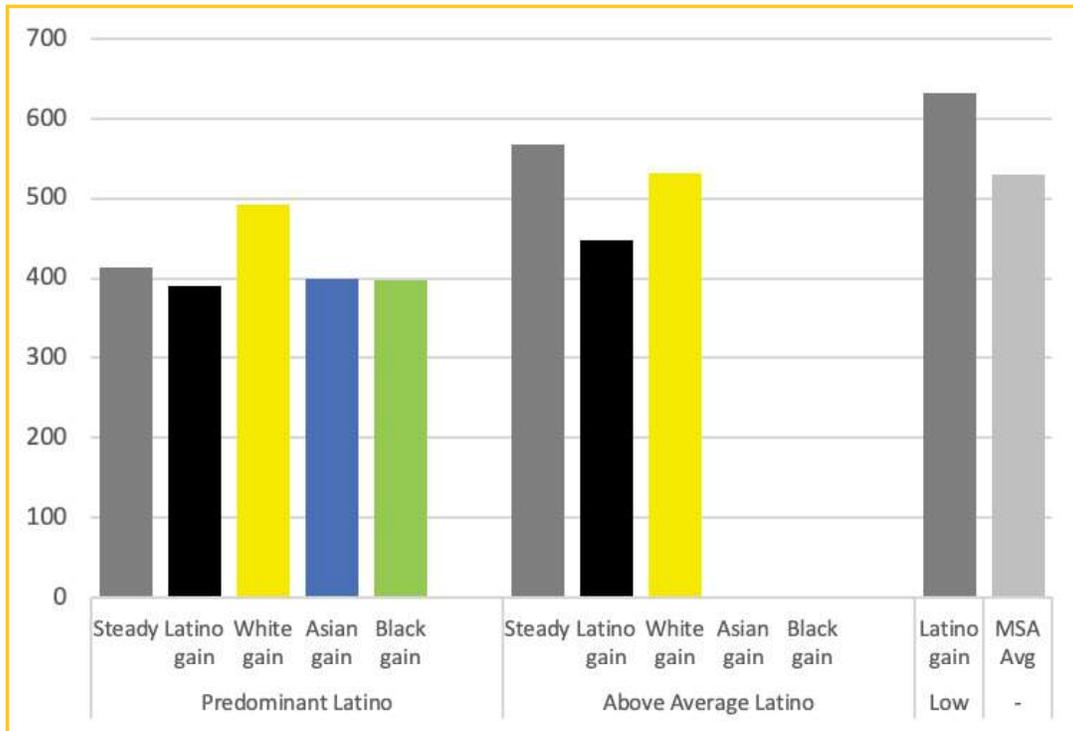
Source: Exhibit 21

Exhibit 23. Median Rent of Latino Neighborhood in 2010 Relative to Subsequent Population Change (gross rent in 2010$)
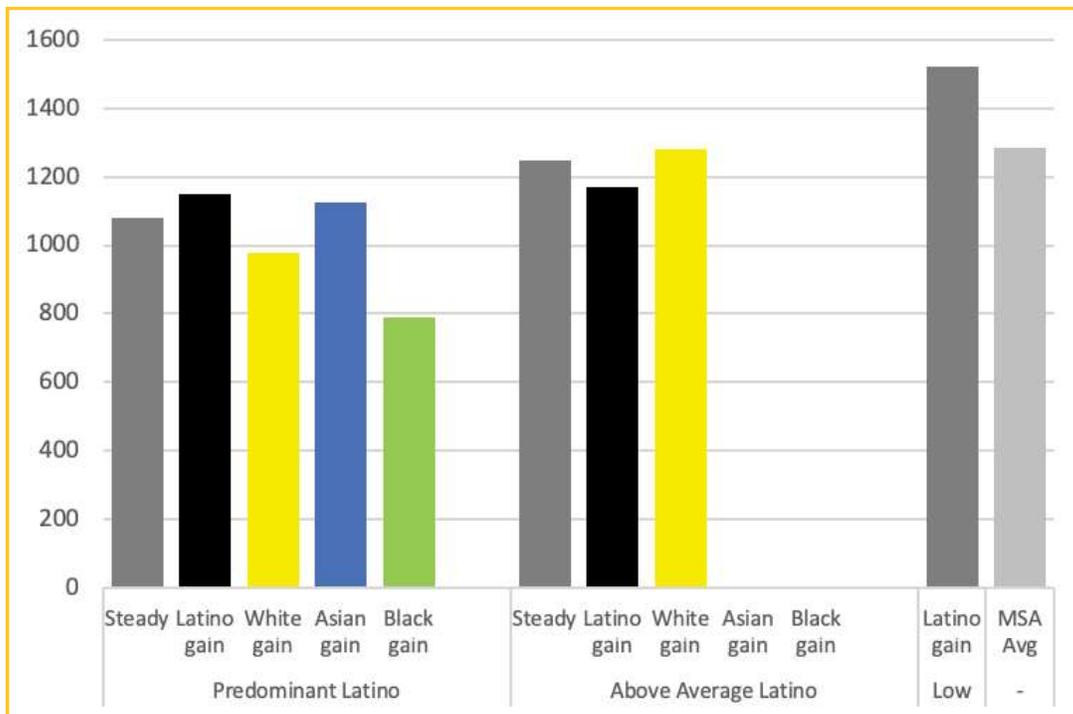
Source: Exhibit 21

CONCLUSION

This report has incorporated two interrelated changes over the last decade, one the transformation in concentration and location of communities of color, and second, a set of processes regarding changes in housing prices and access to housing for people below the median income. Despite highly limited local-level data we were able to link together outcomes of the two processes, but this research provides only a partial view of the deep dynamics.

Our first section addressed filtering, the process by which an aging housing stock passes from higher to lower socioeconomic groups. The filtering process provides housing opportunities that have been termed "naturally occurring affordable housing," benefits supplied without need for housing subsidies that would be massive in view of the quantity of housing need. However, research reported here found that rental housing, in particular, was blocked from this process in the last decade compared to earlier decades, especially in California's large metropolitan areas, but also nationwide. In the last decade, filtering has actually reversed in rentals, shifting housing upward to slightly higher income groups rather than down-ward, as was the norm in the 2000s and earlier decades. This pathway to housing opportunity has been blocked in California, likely because of the severe shortage of apartment construction since 1990 in California but also in light of the burgeoning demand placed by the Millennial generation passing through its 20s.

An unexpected finding, however, is that filtering among homeowners has proceeded more steadily over the decades, with increasing occupancy by households whose income lies below the household median for their metro. This was especially true in the vintage built from 1980 to 1999. Explanations for this surprising finding cannot yet be determined. The leading hypothesis is that homeowners are aging in place, with slow declines in their incomes. Given the rapid rise in house prices, it is highly unlikely that new buyers could gain entry to homeownership if their incomes fell below the median.

The most extensive data available for this report comes from the new 2020 census, which provides for the most up-to-date assessment of changes in communities of color and the growing competition for hous-ing in the face of shortages of decent housing in neighborhoods across the region. The racial composition changes are reflections of underlying mobility processes that cannot be directly observed. We exploit these first details to be released from the 2020 census for the clues they provide about changes in communities of color.

A first finding is that each of the major California metros has a distinctly different racial profile and is witnessing different rates of change for each major group. A multitude of recent changes in communities of color are underway, reaching down to the neighborhood level, which we explored in depth for this report within the Los Angeles-Orange County MSA, whose 13.2 million residents comprise one-third of California's 39.6 million population. The maps generated for this report follow our own unique design, necessarily craft-ed here to accommodate California's multiracial changes in neighborhoods, reaching beyond the classic white-non white binary to explore exchanges among four major color groups. That's a complex task to de-pict over time; hopefully, the visual displays have been able to convey useful insight into those dynamics.

We focused primarily on changes that were happening in the last decade in Black and Latino communi-ties of color, noting both local declines in population and the influx of other groups. And we noted how both groups were spreading out to areas where they were previously less prevalent. What that could mean cannot be discerned in our data, because we lack interviews about the motivations about why people are moving.

One factor we could incorporate was data on the relative rents and house values in the many neighbor-hoods, measuring these at the beginning of the decade. We found that communities predominantly of col-or that received an expanding share of white or Asian residents already had higher house prices and rents at the beginning of the decade. The north end of predominantly Black areas of South LA, extending up to the 10 freeway, and the north end of the predominantly Latino East Side, just north and west of downtown LA, were primary locations for influx of white residents, an accompaniment of gentrification. Meanwhile, influxes of Asian population decreased Latino concentration west of downtown LA (Korea town) and in portions of the San Gabriel valley to the east (largely Chinese ancestry). Meanwhile, new growth of Black

and Latino residents spread outside established communities of color to low concentration areas that on average had substantially higher prices and rents.

At root of the changes discussed in this report, the cumulating shortages of housing due to slow construction, barely one-third of what is needed, intensified the pressures on the existing housing stock. One consequence was a slowing, indeed reversed, rate of filtering that once prevailed in California—no more old Victorians that could be had for a song, and no more neglected tract homes from the 1950s, newly glamorized as mid-century modern. The growing prevalence of homeowners with below median incomes suggests that existing homeowners are sitting tight, aging in place, and keeping their homes off the market. But the massive entry of a younger generation into the housing market (described in Report 1) creates intense competition for limited opportunities. Communities of color living in older housing are experiencing upward price pressures after decades of downward filtering once made their locations affordable. Locations that are most centrally located and proximate to major employment growth are subject to the most intense competition. Racial changes that result in selected areas often reflect a market expansion of the range of housing desirable to younger households of all races who have higher incomes (call it gentrification). Older people of color may be slowly but reluctantly selling their homes, but younger Blacks and Latinos are not able to replace their elders and replenish local communities of color, and thus the share of residents that are Black or Latino is declining. Meanwhile we all should work for an increase in fresh supply in the regional housing market, which can be the only relief from intense competition for space in neighborhoods.

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