

A photograph of the Golden Gate Bridge in San Francisco, viewed from a low angle looking up at the massive red towers and suspension cables. The bridge deck is visible in the foreground, with traffic moving away from the viewer. The sky is overcast.

CONSTRAINED CHOICES

Gentrification, Housing
Affordability, and Residential
Instability in the San Francisco
Bay Area

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APRIL 2021

FEDERAL RESERVE BANK OF SAN FRANCISCO

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Acknowledgments

We would like to thank Alex Kim, Brooke Tran, and Ada Zhou for their fantastic research assistance on this project and the Vice Provost of Undergraduate Education Urban Studies Summer Fellow Program at Stanford University for providing support to Stanford University for this work. We are also grateful to Karen Chapple, Laura Choi, Naomi Cytron, Lizzy Mattiuzzi, and Carolina Reid for their generous input in improving this report, to Laurel Gourd for editorial guidance, and the SF Fed Creative Team for graphic design.

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Executive Summary

This report describes how housing unaffordability and gentrification have created residential instability among San Francisco Bay Area residents. Residential instability includes moves, complex tradeoffs, and constrained choices in housing. We look at different levels and stages of neighborhood gentrification and residents' socioeconomic status (SES, which we categorize as low, moderate, middle, and high). In doing so, we draw on large-scale, individual-level data tracking over 200,000 Bay Area residents each year from 2002 to 2018 to examine: (1) Who is moving in the Bay Area? (2) Where are Bay Area residents moving from? (3) Where are Bay Area movers going—how far and to what conditions?

- **The period before and during the Great Recession (hereafter referred to as the Recession) was a critical time of residential movement in the Bay Area:**

Residents across socioeconomic levels moved more before and during the Recession than after it. All residents in our study—except for the highest-SES residents—moved far less after the Recession. These declines may reflect the effectiveness of housing policies that protect residents from forced moves or the decreasing availability of affordable housing options, which limited people's ability to move. The high moving rates may have facilitated high replacement rates by high-SES residents after the Recession. In other words, higher-SES residents may have moved into places that low-SES people left before and during the Recession.

- **Except for high-SES residents, Bay Area residents moved at high rates and moved into crowded households at increasing rates after the Recession:**

Throughout the period, low-, moderate-, and middle-SES residents moved at or above national levels. Moderate- and middle-SES residents moved out of their neighborhoods at the highest rates and moved disproportionately more than low- and high-SES residents. However, high-SES residents moved out of their neighborhoods less than other groups. Since the Recession, the share of low-, moderate-, and middle-SES residents who moved from households with one to two adults to households with four or more adults increased, while the share for high-SES residents decreased.

- **Low-SES residents moved less than moderate- and middle-SES residents. However, lower-SES movers disproportionately left the Bay Area and moved into crowded households more than other groups:**

Starting during the Recession, higher shares of low-SES movers left the Bay Area, compared with other SES groups. For most periods, low-SES residents

also moved from households with one to two adults to households with four or more adults more than other groups. But during the post-recovery period, moderate-SES residents moved into crowded households more than low-SES residents.

- **Low-SES residents moved out of neighborhoods at similar rates regardless of whether the neighborhood was gentrifying, and they moved at relatively high rates from neighborhoods showing early signs of gentrification:**

There were no visible differences in the moving rates of low-SES residents between gentrifying and nongentrifying neighborhoods based on standard indicators. Instead, low-SES residents moved out of neighborhoods more if the neighborhoods were showing early signs of gentrification, especially before housing prices surged. Moderate-SES residents moved more from gentrifying neighborhoods than from nongentrifying ones only after the housing market recovered from the Recession. Consistent with other research, middle- and high-SES residents were the primary drivers of higher moving rates from gentrifying neighborhoods, compared with nongentrifying ones.

- **Lower-SES residents moved the most from higher-SES places in the Bay Area:**

We expected more moves by low-SES residents from previously lower-income gentrifying neighborhoods compared with other neighborhoods, but low- and moderate-SES residents moved the most from suburban and wealthy areas in the Bay Area. Most people moved before and during the Recession. But lower-SES residents increasingly moved after the Recession—out of higher-income urban neighborhoods on the outskirts of cities and from outer areas of the region after the recession.

- **Low- and moderate-SES residents who moved from gentrifying neighborhoods made more constrained moves than others after the Recession:**

Low-SES residents who moved from gentrifying neighborhoods (compared with other neighborhoods) during the recovery and post-recovery periods were less likely to remain in the same cities. They also were more likely to move out of the Bay Area. Low- and moderate-SES movers from gentrifying neighborhoods who stayed in the Bay Area moved into crowded housing more often, moved longer distances, and moved farther from major downtown areas, compared with those moving from nongentrifying neighborhoods. These moves became increasingly farther over time. These trends applied to movers from neighborhoods experiencing gentrification, as well as from those showing early signs of it.

- **Low- and moderate-SES residents who moved from gentrifying neighborhoods increasingly moved to more affordable neighborhoods over time, while residents from nongentrifying neighborhoods and middle- and high-SES movers ended up in more expensive ones:**

Lower-SES residents in gentrifying neighborhoods tended to move to neighborhoods with median home values that were similar to where they started. But after the Recession, they moved to lower-value neighborhoods than where they started. Higher-SES residents from the same neighborhoods and lower-SES residents from nongentrifying neighborhoods moved to neighborhoods with higher median home values. This suggests that these latter moves were planned, rather than done under constrained circumstances.

- **Moving patterns by SES suggest that re-segregation is occurring:**

Lower-SES residents ended up in lower-opportunity neighborhoods—neighborhoods with higher poverty rates and lower health scores. Lower-SES residents also ended up in neighborhoods with more Black and Latinx* residents, compared with where higher-SES residents ended up. Lower-SES residents from gentrifying neighborhoods tended to move to neighborhoods with similar or slightly higher opportunity characteristics, compared with where they moved from. But this is largely explained by moves from major cities to suburban and exurban areas. Middle- and high-SES residents from gentrifying neighborhoods tended to move to neighborhoods with much greater opportunity levels and with greater shares of white residents than where they moved from. These moving patterns reinforce segregation.

- **Most lower-SES residents moving within the Bay Area moved to major cities and to dense suburban areas accessible by public transit, but the geography of these moves changed over time:**

Since the Recession, low- and moderate-SES residents increasingly moved to broad swaths of the East Bay, including more parts of Oakland. They moved less often to San Francisco and the South Bay.

* In this report Black, white, and Asian refer to non-Hispanic racial categories, and Latinx refers to Hispanic of any racial category. We elect to use these term Latinx, but we would like to acknowledge the complexity of evolving terminology to describe race/ethnicity and that many people in this ethnic group may prefer alternate terminology to identify themselves.

I. Introduction

Dynamics of Inequality, Gentrification, and Residential Instability in the San Francisco Bay Area

In a thriving and prosperous regional economy, residents of all income levels can afford to live in good-quality neighborhoods that enable access to economic opportunity. The San Francisco Bay Area has experienced unprecedented job expansion, population growth, and skyrocketing housing costs over the past decade. Amid growing inequality and wages that have not kept pace with rising costs, many residents are struggling to afford housing or to afford housing in places that enable economic opportunity. These phenomena create challenges for lower-income residents and may also negatively affect the regional economy. COVID-19 exacerbates housing affordability issues for those least well-off in the region because unemployment and lost wages are putting increasing financial pressures on households.

A. The Context of Housing Unaffordability in the Bay Area

Housing costs in the Bay Area have consistently been among the highest in the country, placing a heavy burden on the region's low- and moderate-income people. Many highly educated and highly paid workers are attracted to the Bay Area because of its strong economy. However, job growth in recent years has far exceeded the production of housing units, and production of affordable housing has been even more limited. San Francisco alone added 123,000 jobs from 2009 to 2015 while adding only 11,000 units to the housing stock (Bellisario et al., 2016). The Bay Area's residential vacancy rates are lower than those in similar metropolitan areas, such as New York or Chicago.¹ Since the Recession, rents and home prices in the Bay Area have increased significantly. Median market-rate rents in September 2018 ranged from \$2,169 in Solano County to \$4,269 in Marin County; median home values ranged from \$425,500 in Solano County to \$1,367,100 in San Mateo County. In San Francisco, the median market-rate rents and home values were \$4,206 and \$1,349,900, respectively.² Housing cost burdens also have been increasing. Even with the region's comparatively high wages and recent minimum-wage increases in some cities, nearly half of renters in the Bay Area spend more than 30% of their income on housing costs—up 26% from 2000.³ In the Bay Area, 74.3% of low-income residents report being rent-burdened.⁴ In counties with lower median incomes, such as Solano, Sonoma, and Contra Costa Counties, the share of rent-burdened households has grown faster than the regional average despite lower home prices and rents (Metropolitan Transportation Commission, n.d.).

¹ Source: U.S. Bureau of the Census. Housing Vacancies and Homeownership (CPS/HVS) Annual Statistics.

² Source: Zillow Research "Home Values" and "Rental Values" (<https://www.zillow.com/research/data/>). Retrieved October 17, 2018.

³ Source: Authors' calculation, using 2000 Census and 2016 American Community Survey one-year estimates.

⁴ Source: Authors' calculation, using CHAS 2012–2016 American Community Survey five-year estimates of families with incomes less than 50% of HUD Adjusted Family Median Income.

B. Implications for Gentrification and Displacement

Strong economic growth and rising housing costs in the Bay Area have contributed to the intensification and spread of gentrification. Gentrification refers to the influx of higher-SES residents and investment in previously low-income neighborhoods (Smith 1998). Gentrification has intensified and spread to more cities and neighborhoods since the turn of the century (Owens 2012; Hwang and Lin 2016). The intensification and spread are likely affecting those who earn relatively low wages. Moderate- and middle-class residents and even those living in nongentrifying neighborhoods in the Bay Area may also be affected.

As neighborhoods gentrify, the rising costs increase the risk that residents may have to move (i.e., be residentially displaced) from their current neighborhoods. Residential displacement can occur through formal processes (e.g., eviction, tax foreclosure, housing demolition, or ownership conversion of rental units) or informal processes that push residents to move (e.g., landlord neglect or harassment, financial inducements offered by landlords or developers to entice existing residents to leave, or through household decisions in response to rising costs and financial hardship) (Grier and Grier 1978; Marcuse 1986; Newman and Wyly 2006).

C. Beyond Displacement: The Complex Dynamics of Residential Instability

In addition to evictions or other forms of forced displacement, many residents experience residential instability. Residential instability includes residential displacement, as well as the complex tradeoffs and constrained choices residents face related to gentrification and housing unaffordability.

For lower-SES residents living in gentrifying areas, particularly those who have been historically disinvested, the influx of new, higher-SES residents and the increased value of the area may have negative consequences. Housing is likely to become less affordable and stable, and the neighborhood's changing character may also create new social and psychological burdens for existing residents. To stay in their neighborhoods, lower-SES residents may increasingly resort to financial insecurity and substandard living conditions, including overcrowded or poorly maintained housing (Newman and Wyly 2006). Residents may also avoid asking for improved housing standards and may accept landlord neglect to stay in their homes.

Those who are forced to move may face difficulty affording basic needs and dealing with the educational challenges that arise when children switch schools. Movers may also encounter longer and costlier commutes, as well as disruptions to social networks and access to cultural resources. These factors likely differ by race and ethnicity and can result in poorer physical and mental health. As gentrification intensifies and spreads throughout the region, fewer affordable options may push low- and moderate-SES residents to neighborhoods with fewer opportunities and resources and to outer areas of the region, or from the Bay Area altogether. These pressures may be worsening regional

segregation by race and class. Most studies on gentrification and displacement ignore the heterogeneity of circumstances that residents face when they move. Indeed, gentrification can provide financial advantage to some but exacerbate financial disadvantage for others. Even when residents move voluntarily, they may end up in similar or poorer-quality neighborhoods. When we examine the circumstances of movers beyond the move itself—including how far they are moving and the characteristics of their new housing and location—we learn more about the consequences of gentrification.

In these ways, expanding the purview of residential displacement to residential instability enables a broader understanding of how gentrification affects low-SES residents.

Historical Context on Racial Disparities in Homeownership and Neighborhood Investment

Our data lack individual demographic information on race and ethnicity. Therefore, we were unable to analyze residential mobility by race/ethnicity. But there is reason to believe that historical racial discrimination has put disproportionate risk of residential instability on communities of color, particularly Black, Latinx, and some Asian American communities.

In the Bay Area, as elsewhere, racial discrimination in policies and practices over time has resulted in affluent neighborhoods that have provided opportunities for economic prosperity and social mobility, while others have languished without resources and infrastructure. This unfair landscape reflects clear discrimination by government and other actors historically, as well as present-day systems that continue to provide fewer opportunities for communities of color, particularly Black communities (Moore et al. 2019).

Selected Policies and Practices That Have Produced Inequities by Place



Source: Prevention Institute, 2017.

In recent years, these same disinvested neighborhoods have seen rapid increases in demand for housing and a heightened pace of gentrification, which puts many low-SES residents of color at risk of being displaced. These residents are particularly at risk as a result of previous and ongoing discriminatory actions that limited their ability to buy homes and build wealth. Wealth-building through homeownership in the Bay Area has allowed some residents to maintain their housing and pass financial security and wealth through generations in this region of growing opportunity, even as housing costs have risen. Such an opportunity has been systematically denied to many people of color, and present-day systems continue to limit their access to neighborhoods of opportunity.

D. Research Questions

This report describes how gentrification is affecting moving patterns and residential instability among San Francisco Bay Area residents from 2002 to 2018, using large-scale, individual-level data. We examine trends across different levels and stages of neighborhood gentrification and residents' SES. Rather than limiting analyses to central city areas, we include all nine counties in the San Francisco Bay Area (Alameda, Contra Costa, Marin, Napa, San Francisco, San Mateo, Santa Clara, Solano, and Sonoma) because rapid housing cost increases are affecting the entire region. We focus on the following main research questions:

- (1) Who is moving in the Bay Area?**
- (2) Where are Bay Area residents moving from?**
- (3) Where are Bay Area movers going—how far and to what conditions?**

Our study builds on past work by using large-scale, individual-level data in the Bay Area spanning nearly two decades. These data allow us to examine moving patterns and the kinds of neighborhoods residents are moving to and from over time. Having a richer understanding of who is moving, where residents are moving from, and where they are going can inform practitioners and policymakers.

Others have documented residential displacement resulting from gentrification in the Bay Area by studying demographic changes in neighborhoods over long time intervals. They have done so through surveys and qualitative reports of residents moving to the outer areas of the region or by using data on individual residents' recent moves between large geographies (Chapple et al. 2017; Urban Displacement Project and the California Housing Partnership 2019). Demographic changes in gentrifying neighborhoods suggest that residential displacement of lower-SES residents is taking place, but these changes may also reflect replacement. In other words, the demographic changes these reports document may reflect the typical moving rates among lower-SES residents (regardless of gentrification), along with the in-migration of higher-SES residents moving into new housing or the housing left by lower-SES residents. Other analyses of individuals' moving patterns in different metropolitan areas and nationally confirm this trend.

Examining the extent to which residents move is important. We also want to learn more about where displaced residents are going, especially since growing evidence shows that disadvantaged neighborhoods negatively affect individuals' life chances (Sharkey and Faber 2014). Knowing where movers end up sheds more light on the consequences of gentrification on residential displacement. Indeed, some residents move due to gentrification under constrained circumstances, while others do not. For example, low-SES residents may move to high-opportunity neighborhoods if they are able, such as when long-term homeowners cash in on the increased value of their home. At the same time, residents of color may disproportionately face disadvantages in the housing market due

to such practices as landlord discrimination, racial steering, and the targeting of subprime loans (Charles 2003; Hwang, Hankinson, and Brown 2015). To our knowledge, no studies examine whether individuals are moving out of the Bay Area at unprecedented rates due to gentrification as the affordable housing crisis worsens; we also know of no studies that provide a detailed picture of where individuals who remain in the Bay Area are moving.

Most existing studies on gentrification and displacement that have used individual-level data over time compare the extent to which residents move, either in general or involuntarily, from gentrifying neighborhoods or from low-income neighborhoods that are not gentrifying. Only a handful of studies have examined where residents move, how far they move, or whether they move into crowded housing. Studies find that disadvantaged residents in gentrifying neighborhoods do not move—either in general or involuntarily—out of their neighborhoods at significantly higher rates than similar residents in neighborhoods that are not gentrifying (e.g., Ding et al. 2016; Ellen and O’Regan 2011; Freeman 2005; McKinnish et al. 2010; Martin and Beck 2018). This suggests that gentrification is not leading to widespread displacement. Although these studies do not focus on the Bay Area and most do not span the recent and growing affordable housing crisis, they generally conclude that most of the neighborhood-level demographic changes reflect the influx of higher-SES residents more than the exit of low-SES residents.

Several factors explain why studies have found similar or lower moving rates among low-SES residents in gentrifying neighborhoods, compared with those in nongentrifying neighborhoods. Low-SES residents often experience high levels of residential instability, regardless of gentrification (Desmond 2016), and some low-SES residents stay in gentrifying neighborhoods by using strategies such as increasing the number of people living in a housing unit or cutting expenses in other domains (Newman and Wyly 2006). In places with strong tenant protection policies, which includes several Bay Area municipalities, low-SES renters are not subject to exorbitant rent increases. And in California, where property taxes do not increase with rising values, homeowners do not face rising property taxes that come with gentrification. Such protections may mitigate the extent to which lower-SES residents in gentrifying neighborhoods move. However, most places do not have tenant protections, and where they do exist, their strength and enforcement vary significantly. Further, in a tight housing market like the Bay Area, displacement of low-SES residents may exist in neighborhoods that are not yet gentrifying. This may occur when landlords or developers engage in speculative behavior by displacing low-SES residents, hoping that gentrification will soon spread to their neighborhood and that high-SES residents will be willing to pay higher prices. The tight housing market may also affect moderate- and middle-SES residents in similar ways.

Studies examining the destinations of movers report mixed findings but vary substantially in geographic location, geographic units, and time intervals. Ding et al. (2016) found that in Philadelphia from 2002 to 2014, low-SES movers, regardless of whether their neighborhood was gentrifying, tended to move to neighborhoods with similar income

compositions. But those moving from gentrifying neighborhoods were more likely than those moving from nongentrifying neighborhoods to move to lower-income neighborhoods compared with where they started. In an extension of this study, Hwang and Ding (2020) found that low-SES movers from historically Black gentrifying neighborhoods tended to move to more socioeconomically disadvantaged neighborhoods, while those from other gentrifying neighborhoods tended to move upward to neighborhoods with lower crime rates, higher test scores, and higher-SES residents. Brummet and Reed's (2019) national study found that low-SES residents who moved from gentrifying neighborhoods did not experience declines in neighborhood quality 10 years after they moved. A recent report by the Urban Displacement Project and the California Housing Partnership (2019) examined destinations for large geographies of residents living in the Bay Area in 2015. It found that a large share of low-income residents, especially from San Francisco and San Mateo counties, moved to the region's outer edges or out of the region altogether.

E. Hypotheses

In the Bay Area, where the housing market is characterized by widespread gentrification with an increasingly limited housing supply and rapidly rising housing prices, we expect to find increased moving rates, increased moves out of the Bay Area, increased moves to crowded housing, increased distances of moves, and increased moves to lower-cost but lower-opportunity and more segregated neighborhoods over time among low-SES residents. We also expect to find that low-SES residents move more than other residents and at similar rates across neighborhoods, regardless of whether their neighborhood is gentrifying, as previous literature has shown. As an alternative hypothesis, we expect that low-SES residents may move more from neighborhoods showing early signs of gentrification compared with gentrifying neighborhoods. This may reflect speculative behavior by landlords and developers to price out lower-SES residents with the expectation that higher-SES residents are willing to pay higher prices. On the other hand, the availability of tenant protections and policies and the lack of affordable housing options may lower the overall moving rates among the lowest-SES residents.

Given the Bay Area's profitable housing market and limited housing supply, we also expect gentrification to affect moderate- and middle-SES residents. In gentrifying neighborhoods, we expect these residents to move more than similar residents in other neighborhoods. Among movers, we expect that gentrification will be associated with moves to more affordable—yet lower-quality and more racially segregated—neighborhoods that are further from jobs than residents' origin neighborhoods. In terms of crowded housing and residential destinations, we also expect the trend among moderate- and middle-SES movers to be similar to that for low-SES movers. However, we expect the outcomes to be worse for low-SES residents. Finally, we expect these trends to worsen over time as the housing market tightens and affordable housing increasingly moves out of reach for many.

II. Data and Measures

The Appendix contains detailed information on the data and analysis. Our main data source was the Federal Reserve Bank of New York Consumer Credit Panel/Equifax Data (CCP). The CCP is a nationally representative 5% anonymized random sample of adult consumers with Social Security numbers and a credit history, which includes any public record of collection or closed or authorized user accounts. These data, collected quarterly by the credit bureau Equifax, enable us to examine where residents live and move, their financial health, and credit information, including Equifax Risk Scores (a type of credit score). We analyzed Bay Area residents, aged 25–84 years,⁵ from 2002 to 2018.⁶ There are approximately 240,000 adult residents in the Bay Area in our sample each year. For each year (beginning on June 1st of one year and ending on June 1st of the following year), we examined whether residents moved from their census block group (an average of 39 blocks and about 600–3,000 people) and where they moved if they did.⁷ Residents may certainly move within these block groups, but our data do not capture these short-distance moves. To examine longer-term trends among residents in the post-Recession era leading up to the affordable housing crisis, we also followed all residents who lived in the Bay Area in 2009 for 10 years.

We examined whether residents moved to a different city or town, whether they moved outside of the Bay Area, the distance of the move from their origin neighborhood, characteristics of the neighborhoods they moved to, and changes in adult household size compared with where they moved from. Moves to new cities or towns or out of the Bay Area involve larger life changes, such as in school districts, municipal services, and access to local communities, networks, and amenities. Moves to households with more adults reflect efforts to reduce housing costs. To examine where residents moved, we first assessed proximity to the nearest major central-city downtown area (San Francisco and San Jose). These downtown areas proxy the location of major employment centers, and the distance from them reflects anticipated commute times⁸. We also used the California Department of Public Health Healthy Places Index,⁹ which reflects neighborhood conditions with regard to life expectancy at birth; median home values (to assess if moves were driven by affordability); and poverty rates and racial and ethnic composition (to assess the extent to which gentrification is re-segregating residents by class or race).¹⁰ Our aim in assessing moves was to shed more light on movers' constraints but these data did not tell us why residents moved.

⁵ Residents younger than 25 years are underrepresented in the data and can have inaccurate address reporting due to moving related to higher education during this period; residents older than 84 years are overrepresented in the data, most likely due to a lag in registered deaths in the data.

⁶ We do not include 2004 Bay Area residents in our analysis because the geographic data are inconsistent across that particular year due to changes in the geocoding procedures by the data vendor in that year.

⁷ We rely on annual changes because although locations are reported quarterly, there is variation in reporting, particularly due to lags when an individual moves.

⁸ These measures are based on geographic data constructed from commuting patterns.
Source: <https://robertmanduca.com/publications/>.

⁹ Source: <https://healthyplacesindex.org/>.

¹⁰ The measures are based on the 2012–2016 ACS five-year estimates.

Definitions and Measures

Credit Scores as a Dimension of SES

- **SES** categories are defined using Equifax Risk Scores. These proprietary credit scores estimate the likelihood that an individual will pay their debts without defaulting. They are a proxy of financial stability and reflect a distinct dimension of SES from typical measures, such as income or wealth. These credit scores are particularly relevant to the housing market. Landlords often use them to screen tenants, and lenders use them to distribute mortgage products and make lending decisions.
- We define the SES categories in the following way by their Equifax Risk Scores, which range from 280 to 850:
 - **Low-SES:** < 580 or no score (too few accounts or new credit)
 - **Moderate-SES:** 580–649
 - **Middle-SES:** 650–749
 - **High-SES:** 750 or higher

Housing Cycles

- We separate our sample by four economic **housing periods** based on market trends for the Bay Area (years represent the initial year of each annual sample):
 - **Boom:** 2002–2006
 - **Bust:** 2007–2009
 - **Recovery:** 2010–2014
 - **Post-recovery:** 2015–2017

Subregions account for the variation in housing affordability dynamics across the Bay Area. We define them in the following way:

- **East Bay:** Alameda and Contra Costa Counties
- **North Bay:** Marin, Napa, Solano, and Sonoma Counties
- **San Francisco:** San Francisco County
- **South Bay:** San Mateo and Santa Clara Counties

* See the Methodological Appendix for more details on definitions and measures.

Definitions and Measures (continued)

Gentrification Categories

Our analysis groups neighborhoods into the following categories based on their socioeconomic and housing price changes from 2000 to 2016:

- **Nongentrifiable:** Median household income in 2000 is **greater than** the subregion's median household income.
- **Gentrifiable:** Median household income in 2000 is **less than** the subregion's median household income.
 - **Gentrifying:** The neighborhood's percent increase in median rents or home values is greater than the subregion's 50th percentile (median) of percentage increases in either median rents or home values, **and** a neighborhood's percent increase in college-educated residents or median household incomes is **greater than** the subregion's 50th percentile (median) of percentage increases in either college-educated residents or median household incomes.
 - **Early Gentrification:** The neighborhood is not categorized as gentrifying, but its percent increase in median rents or home values is **greater than** the subregion's 25th percentile of percentage increases in either median rents or home values, or a 2% increase in college-educated residents or median household incomes is **greater than** the subregion's 25th percentile of percentage increases in either college-educated residents or median household incomes.
 - **Nongentrifying:** Does not meet any of the criteria for gentrifying or early gentrification.

We also analyzed more detailed gentrification categories to examine differences across neighborhoods based on the **intensity** of gentrification. We mention notable differences throughout the report, and relevant results are available in the Supplemental Appendix.

We use **census tracts as proxies for neighborhoods**. Census tracts are geographic units containing an average of 4,000 residents. They are the smallest spatial aggregations for which data with standardized boundaries over time are available.

We also analyzed trends for the three largest cities--Oakland, San Francisco, and San Jose--separately to see if there were distinct trends between cities and other suburbs and towns.

* See the Methodological Appendix for more details on definitions and measures and maps.

Table 1 describes the CCP sample by housing cycle period. The share of high-SES residents in our data increased over time, while the shares of low- and moderate-SES residents decreased, especially in the post-recovery period (from 27–28% to 22.8 %). By the end of the period, about half (50.3%) of Bay Area residents in our sample were in the high-SES category. The share of residents in households with delinquent accounts also declined significantly during the post-recovery period. Lastly, the share of residents in households with a mortgage declined from over 61% to just below 52%. This is consistent with national trends for declining homeownership since the Recession. It also indicates that homeownership is increasingly out of sight for many Bay Area residents.

Table 1. Shares of lower-SES residents and homeownership declined over time.

Descriptive statistics of CCP sample over four housing periods

	Boom (2002-2006)	Bust (2007-2009)	Recovery (2010-2014)	Post-Recovery (2015-2017)
SES				
% Low-SES	15.9%	16.3%	14.9%	13.2%
% Moderate-SES	11.4%	11.1%	12.8%	9.6%
% Middle-SES	27.3%	23.4%	24.8%	27.0%
% High-SES	45.4%	49.2%	47.6%	50.3%
% in Households with Delinquency	28.9%	31.9%	29.2%	24.0%
% in Households with Mortgage	61.3%	60.2%	55.9%	51.9%
Median Age	46	47	48	49
Subregion (origin)				
North Bay (%)	17.2%	17.1%	17.0%	16.7%
South Bay (%)	34.8%	35.1%	35.1%	35.2%
San Francisco (%)	12.3%	12.3%	12.3%	12.3%
East Bay (%)	35.6%	35.5%	35.6%	35.8%
N (person-years)	902,304	687,322	1,196,618	777,171

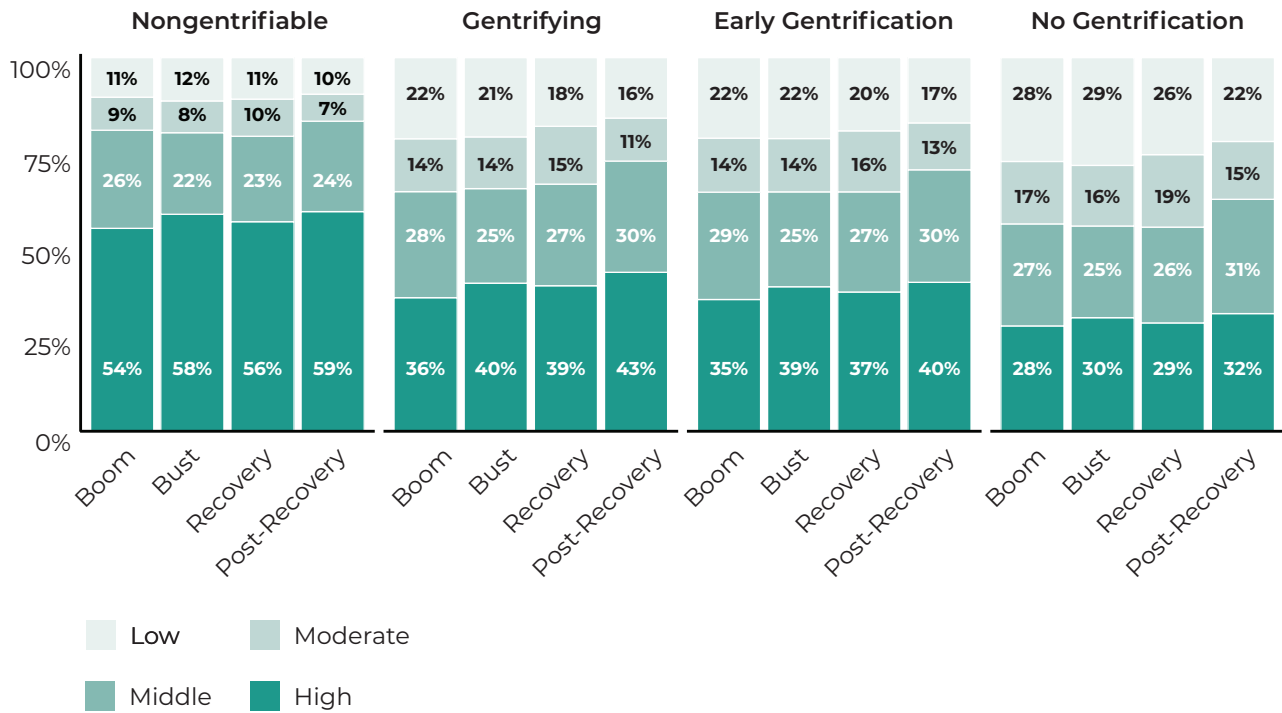
Source: FRBNY Consumer Credit Panel/Equifax Data. 2004 data are excluded. SES Ranges by Equifax Risk Scores: Low = missing or <580, Moderate = 580-649, Middle = 650-749, High = 750+

Figure 1 shows the SES distribution of residents in the CCP data across the gentrification categories and over time to illustrate the kinds of neighborhoods in which people in our sample are living. As expected, most residents in nongentrifiable neighborhoods are in the high-SES category. There are far fewer high-SES residents in gentrifiable neighborhoods. Over time, the share of high-SES residents increased the most in gentrifying neighborhoods, from 36% in the housing boom period to 43% in the post-recovery period. Conversely, the share of low- and moderate-SES residents decreased over time in all neighborhoods, and this decline was greatest in the post-recovery period. Gentrifying neighborhoods saw a decline of low-SES residents from 22% to 16%, and those showing early signs of gentrification saw a decline from 22% to 17% from the housing boom period to the post-recovery period. Although nongentrifying tracts experienced a smaller increase in high-SES residents, there was still a large growth in the share of middle-SES residents and a large decline in moderate- and low-SES residents.¹¹

¹¹ In the three major cities, nongentrifying tracts had larger increases in high-SES residents, though this was less pronounced than other gentrifiable tracts. There are also some notable differences within gentrifying neighborhoods. Intensely gentrifying neighborhoods had more low-SES residents at the beginning of the period than other gentrifying neighborhoods and the lowest share at the end of the period. Increases in high- and middle-SES residents overall in neighborhoods categorized as “weak” and “price” gentrification did not occur until the post-recovery period. This suggests that the influx of higher-SES residents into these neighborhoods occurred later in the period. See the Online Appendix for results for the three largest cities and detailed gentrification categories based on intensity of gentrification.

Figure 1. Shares of low- and moderate-SES residents decreased over time in all neighborhoods.

SES composition of residents by gentrification category over four housing periods



Source: FRBNY Consumer Credit Panel/Equifax Data, 2000 Census, and 2012–2016 American Community Survey Five-Year Estimates. Socioeconomic status approximated by Equifax Risk Score: Low=missing or <580, Moderate=580-649, Middle=650-749, High=750+

III. How Is Gentrification Affecting Moving Patterns of Bay Area Residents?

A. Who Is Moving in the Bay Area?

i. Moving Rates by SES

We first examine if moving rates among lower-SES residents in the Bay Area increased over time amid rising housing prices due to the spread of gentrification and an increasingly limited housing supply. Figure 2 shows the moving rates (the percentage of residents who moved out of their census block group in each year) by SES and housing period over time. The plot shows that **the period before and during the Recession was a critical time of residential movement in the Bay Area**. Counter to our hypothesis, moving rates steeply declined over time across SES categories—from an average of 14.7% during the housing boom years to 11.5% in the post-recovery period. This decline follows national trends, though the moving rates are slightly higher than national rates.¹² The high moving rates during these years underscore the potential role of the housing boom, and the subsequent housing market collapse, in shaping the extent to which lower-SES residents moved during the 2000s. During the housing boom, greater availability of credit—often in the form of riskier loan products (e.g., subprime loans) and loosely regulated lending to developers and investors—may have spurred more development, leading to gentrification and more displacement. And, during the housing bust, the collapse of the housing market may have led many residents into foreclosure and financial insecurity, resulting in more moves. Following the Recession, high-SES residents may have replaced these residents at relatively low costs as the housing market began to recover.¹³

The figure also illustrates that, **except for high-SES residents, residents in the Bay Area moved at or above national levels**. But moving rates varied substantially across SES categories. Although we predicted that low-SES residents would move more than others, moderate- and middle-SES residents moved substantially more than both low- and high-SES residents in the Bay Area across the period. High-SES residents moved the least, with moving rates lower than 10% for most of the period. Moving rates increased slightly in the post-recovery period for most SES categories, but they continued to decline among low-SES residents. The lower rates among low-SES residents may reflect the effectiveness of tenant protections, such as rent control and just cause for evictions in various Bay Area locations, the lack of affordable options to move elsewhere, or increasing shifts to homelessness that we cannot detect in the data.¹⁴

¹² Source: <https://www.census.gov/library/visualizations/time-series/demo/historic.html>.

¹³ The trends are similar when we examine only residents in households without mortgages and residents in the three major cities. This suggests that the housing boom and bust was associated with increased moves for both likely renters and homeowners and across cities and suburbs.

¹⁴ Among households without mortgages, which includes both likely renters and long-term homeowners without mortgages, moving rates are slightly lower than for the overall population (see Online Appendix). Low-SES residents without mortgages have slightly lower moving rates in cities or towns that currently have rent control or just cause for eviction policies, compared with those that do not. Further research that examines the timing of the passage of tenant protection policies is needed to understand the extent to which these policies explain these trends.

ii. SES Composition of Movers and Moving Patterns

In this section, we assess if residents are moving and if they are moving out of their cities and towns or the Bay Area altogether at disproportionate rates by their SES. The first two bars in each panel of Figure 3 show the SES composition of residents, compared with the SES composition of movers over time. Across all four periods, a substantially higher percentage of movers were moderate- and middle-SES, compared with the share of residents who were moderate- and middle-SES. A substantially lower percentage of movers were high-SES, compared with the share of residents who were high-SES. In other words, moderate- and middle-SES residents moved disproportionately more, while high-SES residents moved disproportionately less throughout the period. High-SES residents comprised 50% of the population in the post-recovery period but accounted for only 38% of movers. Moderate- and middle-SES residents comprised 10% and 27% of the population, respectively, but 14% and 36% of movers. Low-SES residents moved only slightly disproportionately more during the housing bust and recovery.¹⁵

Although low-SES residents moved less than moderate- and middle-SES residents, low-SES movers disproportionately left the Bay Area after the Recession. Figure 3 also allows us to examine if residents are leaving their cities and the Bay Area at disproportionate rates by their SES. Comparing the composition of movers (second bar of each panel in Figure 3) to the composition of movers who move out of their cities and out of the Bay Area (third and fourth bars, respectively, of each panel in Figure 3) low-SES residents disproportionately moved out of the Bay Area in the last two periods. In these periods, low-SES residents comprised 16% and 12% of movers, respectively, but 21% and 16% of movers who left the Bay Area. These trends support our hypothesis that low-SES residents increasingly moved out of the Bay Area over time as their choices became more constrained amid an increasingly limited housing supply and rising prices. For those who stayed in the Bay Area, no SES groups were significantly under- or over-represented in moving to different cities.

iii. Who Can Stay?

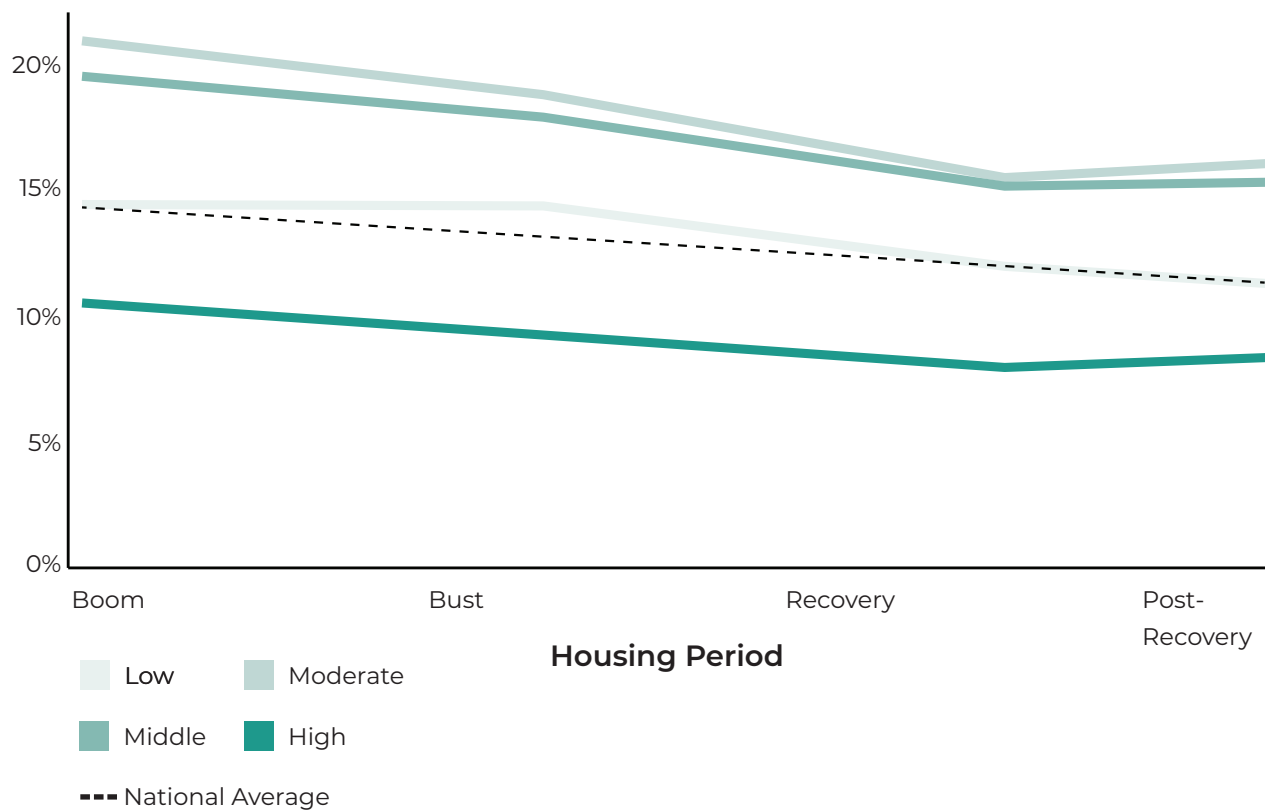
Next, we assess who can stay in the Bay Area and their neighborhood by tracking Bay Area residents over a decade, beginning in 2009 (after the Recession). The first panel of Figure 4 shows the percentage of residents by SES who lived in the Bay Area in 2009 and were still living in the Bay Area through 2018; the second panel shows the percentage of Bay Area residents by SES who remained in their 2009 neighborhood over time. The plot shows that lower shares of low-, moderate-, and middle-SES residents remained in the Bay Area or in their neighborhood than high-SES residents; moderate-SES residents had the lowest share remaining. Only about 81.7% of moderate-SES residents remained in the Bay Area by 2018, while over 90% of high-SES residents did. Only 83.2% of low-SES residents and 84.7% of middle-SES residents remained in the Bay Area by 2018.

¹⁵ Low-SES residents without mortgages and low-SES residents in the three major cities also moved disproportionately more during the housing boom.

Fewer than half of low-, moderate-, and middle-SES residents remained in their neighborhood by 2018, while over two-thirds of high-SES residents did. Notably, during the housing recovery period, middle- and moderate-SES residents remained in the Bay Area and in their neighborhoods at similar rates, and these rates were lower than for low-SES residents. However these trends changed as the housing market recovered, and middle-SES residents were more likely to remain than either low- or moderate-SES residents.¹⁶

Figure 2. People moved the most during the housing boom and bust. Low-, moderate- and middle-SES residents moved at rates above national averages, while moderate- and middle-SES residents moved the most.

Percentage of residents moving by SES over four housing periods

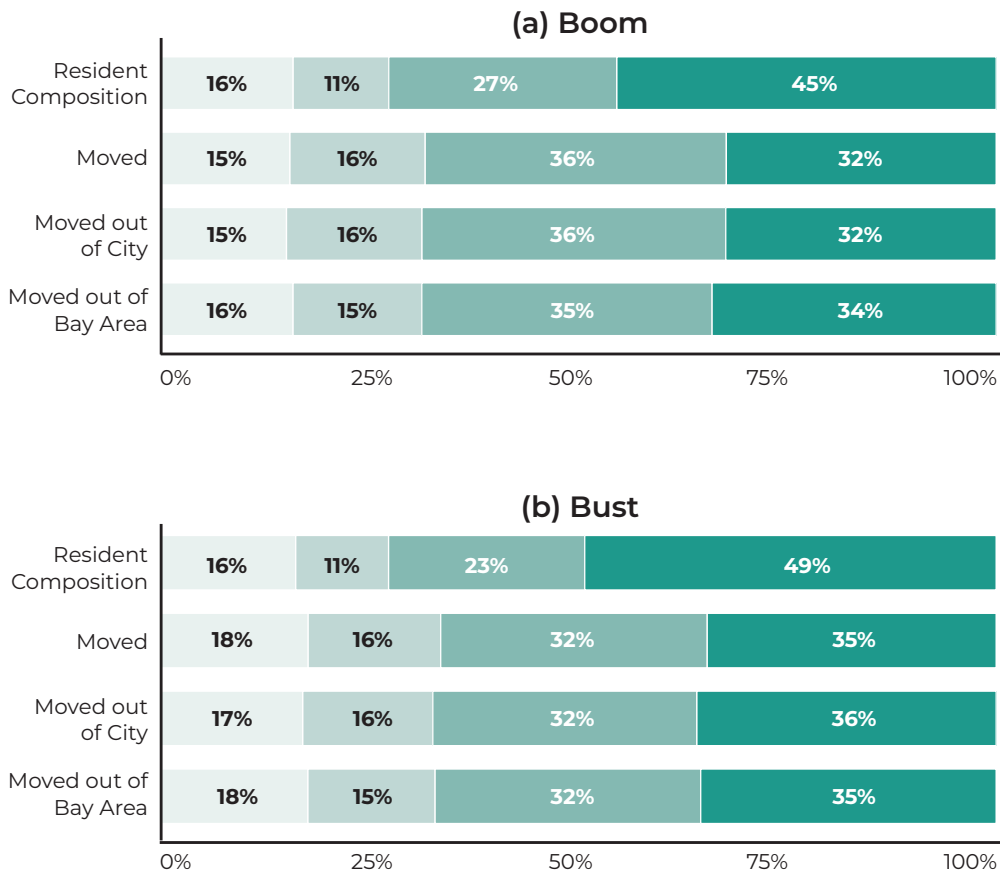


Source: FRBNY Consumer Credit Panel/Equifax Data, 2000 Census, and 2012–2016 American Community Survey Five-Year Estimates. Socioeconomic status approximated by Equifax Risk Score: Low=missing or <580, Moderate=580-649, Middle=650-749, High=750+

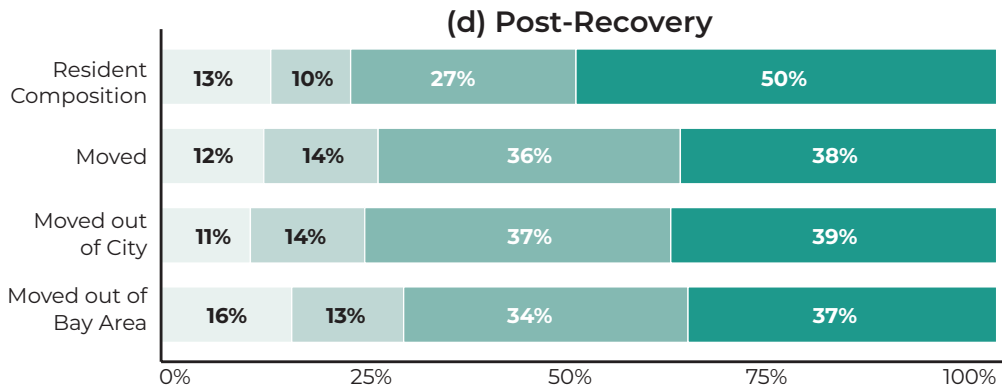
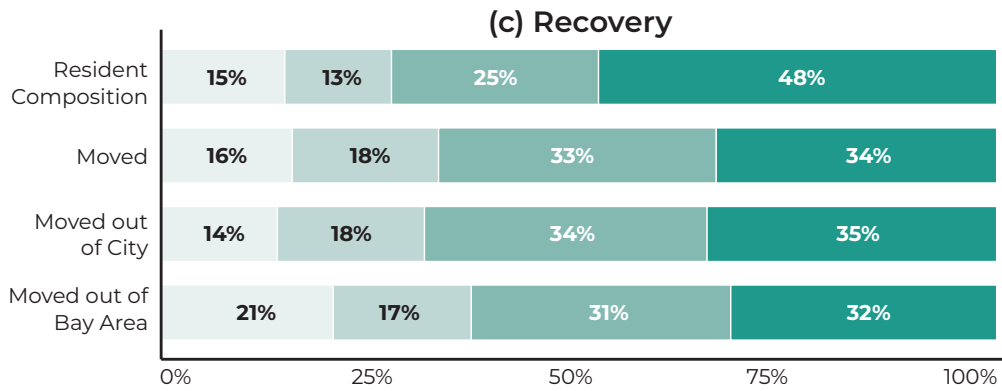
¹⁶ Among renters, middle-SES residents were even more likely than moderate-SES residents to move out of their neighborhoods during the housing recovery. Such trends could reflect transitions to homeownership for this group when prices were low.

Figure 3. Although moderate- and middle-SES residents moved disproportionately more than others, low-SES residents disproportionately left the Bay Area after the Recession.

SES composition of residents, movers, movers who move to different cities/towns within the Bay Area, and movers who move out of the Bay Area over four housing periods



Source: FRBNY Consumer Credit Panel/Equifax Data, 2000 Census, and 2012–2016 American Community Survey Five-Year Estimates. Socioeconomic status approximated by Equifax Risk Score: Low=missing or <580, Moderate=580-649, Middle=650-749, High=750+



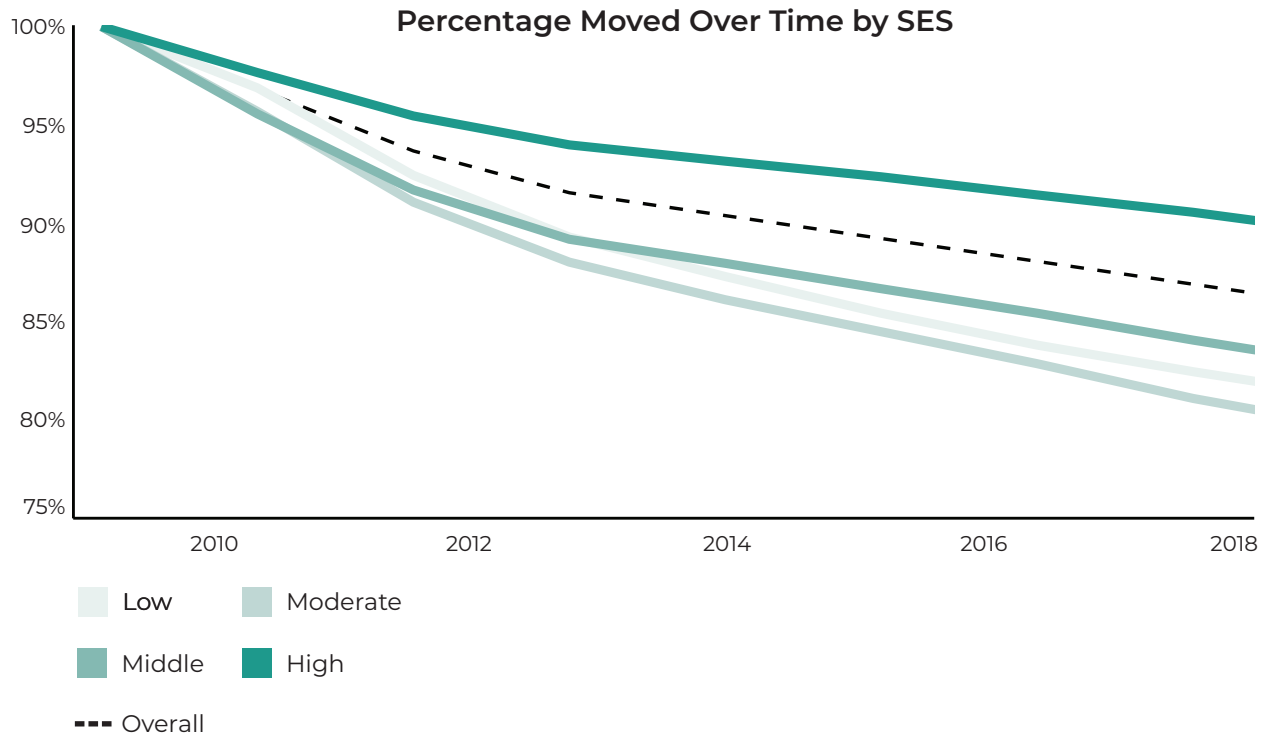
Low
 Moderate
 Middle
 High

Source: FRBNY Consumer Credit Panel/Equifax Data, 2000 Census, and 2012–2016 American Community Survey Five-Year Estimates. Socioeconomic status approximated by Equifax Risk Score: Low=missing or <580, Moderate=580-649, Middle=650-749, High=750+

Figure 4. High-SES residents were much more likely than others to remain in the Bay Area and in their neighborhood.

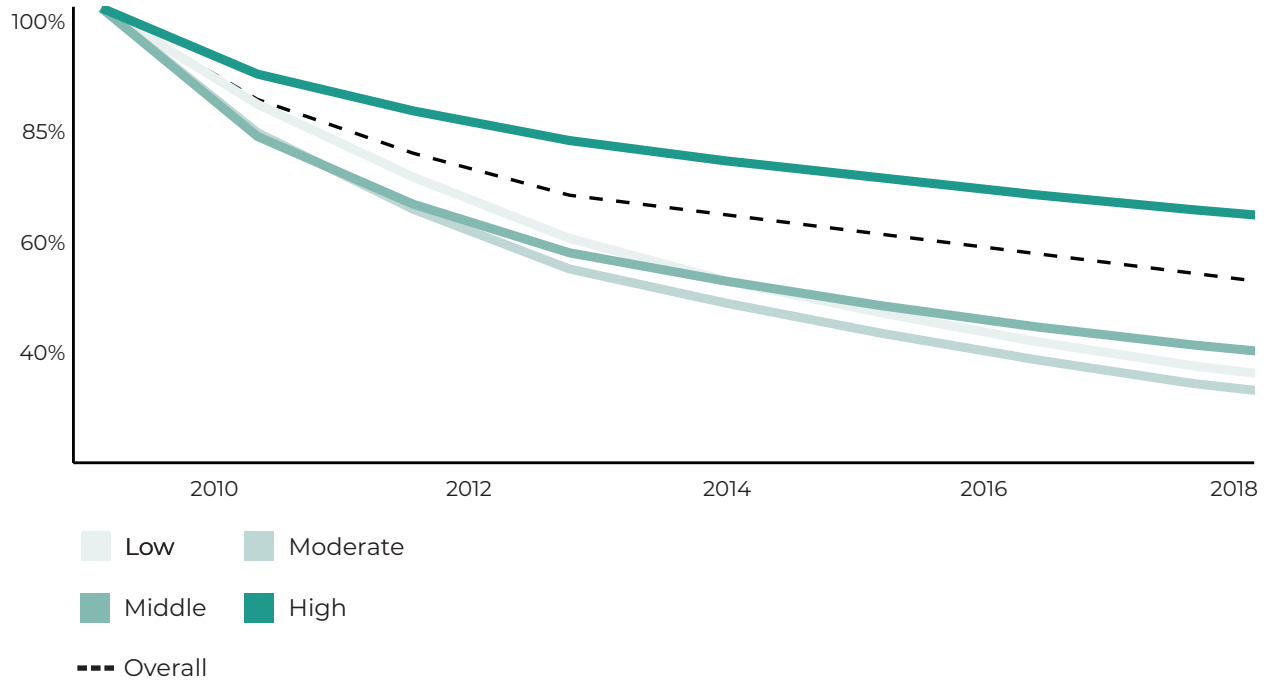
Percentage of 2009 Bay Area residents remaining (a) in the Bay Area and (b) in their neighborhood, by SES over time

(a) Bay Area



Source: FRBNY Consumer Credit Panel/Equifax Data, 2000 Census, and 2012–2016 American Community Survey Five-Year Estimates. Socioeconomic status approximated by Equifax Risk Score: Low=missing or <580, Moderate=580-649, Middle=650-749, High=750+

(b) Neighborhood



Source: FRBNY Consumer Credit Panel/Equifax Data, 2000 Census, and 2012–2016 American Community Survey Five-Year Estimates. Socioeconomic status approximated by Equifax Risk Score: Low=missing or <580, Moderate=580-649, Middle=650-749, High=750+

B. Where Are Bay Area Residents Moving From?

i. Moving Among Low- and Moderate-SES Residents

First, we examine where low- and moderate-SES residents are moving from the most. Table 2 lists the cities and towns with the highest moving rates of low- and moderate-SES residents over time. Although the top 10 places change over time, **low- and moderate-SES residents moved the most from higher-SES places in the Bay Area—wealthy, suburban areas** on the outskirts of the Bay Area. Figure 5 maps the moving rates of low- and moderate-SES residents by neighborhood over time. The quartiles are based on the distribution of moves throughout the entire analysis period for the Bay Area. Neighborhoods in the first quartile had moving rates below 11.7%; neighborhoods in the second quartile had moving rates between 11.7% and 14.5%; neighborhoods in the third quartile had moving rates between 14.5% and 17.9%; and neighborhoods in the fourth quartile had moving rates above 17.9%.

In Figure 5, the lighter shades in the later housing periods reaffirm the previous finding that moving rates of low- and moderate-SES residents were highest during the housing boom and bust. The darker areas shifted over time. High moving rates during the housing boom were particularly widespread throughout the major cities but also in less dense areas throughout the region and the suburban areas of the South Bay. During the housing bust, these rates slowed but were generally still concentrated in similar areas. Following the housing bust, higher moving rates shifted farther to outer areas of the region. This is especially apparent within each subregion. In San Francisco, for example, most of the moves out of neighborhoods in the post-recovery period occurred in nongentrifiable tracts and in areas adjacent to where moving rates were higher in the earlier periods. These trends suggest that displacement of low- and moderate-SES residents occurred in higher-income tracts, especially those that are adjacent to gentrifying areas.

ii. Moving Rates and Gentrification

Next, we assess whether gentrification in neighborhoods affects residents' chance of moving and we look for patterns by SES. In Figure 6, we compare the moving rates over time by SES in neighborhoods that were gentrifying ("intense" or "moderate"), neighborhoods that were showing early signs of gentrification ("weak," "people," or "price"), and neighborhoods that showed no signs of gentrification ("nongentrifying") based on our measures. We break down results by detailed gentrification categories when relevant and present them in the Online Appendix.

The figure shows that gentrification was associated with higher moving rates for middle- and high-SES residents across most periods and for moderate-SES residents in the post-recovery period. Gentrification had no effect on low-SES residents' probability of moving. However, low-SES residents moved at relatively high rates from neighborhoods in the early phases of gentrification rather than neighborhoods where gentrification was fully underway or neighborhoods that showed no signs of gentrification.

In the recovery period, higher shares of low-SES residents moved out of neighborhoods that showed no signs of gentrification. In the post-recovery period, slightly higher shares moved out of neighborhoods showing early signs of gentrification. Analysis of more specific gentrification categories (see Online Appendix) shows that this trend in the post-recovery period was largely driven by neighborhoods undergoing “people” gentrification—neighborhoods that experienced an influx of high-SES residents but not necessarily an increase in prices from 2000 to 2016. Moderate-SES residents in this period and low-SES residents during the housing bust also moved out of these neighborhoods at high rates. Consistent with our alternative hypothesis, the displacement of low-SES residents in the tightening Bay Area housing market was occurring before neighborhoods were gentrifying, based on standard measures. This supports some anecdotal evidence that residents are displaced when landlords or developers speculate that they will be able to earn more profit eventually. Even analysis of only the three major cities—all of which have some form of rent control and/or just cause for eviction policies—shows that low-SES residents generally moved more often out of neighborhoods showing early signs of gentrification in the post-recovery period.

On the other hand, moderate-SES residents moved more in the later stages of gentrification. In the post-recovery period, moderate-SES residents in gentrifying neighborhoods had slightly higher moving rates (17%) than those in other gentrifiable neighborhoods (16%), consistent with our hypothesis. Notably, unlike higher SES categories, moderate-SES residents moved at similarly high rates out of nongentrifiable and gentrifying neighborhoods. Nongentrifiable neighborhoods include those that have gentrified in earlier periods and may have continued to experience rising housing prices, as well as those that have long been higher-income neighborhoods that continue to increase in price.

Moves by middle- and high-SES residents drove most of the differences in moving rates between gentrifying and nongentrifying neighborhoods, which include those showing early signs of gentrification. Although these trends are counterintuitive, it is important to note that whether individuals move does not capture the motivations or constraints of moves. In some cases, long-term homeowners may cash in on the increased value of their homes, or tenants may receive cash offers to leave their neighborhoods; others experience eviction and are forced to move suddenly. But as housing prices continue to rise throughout the Bay Area, even cashing out does not necessarily enhance individuals' outcomes. Examining characteristics of people's moves can help us better understand how gentrification affects residential instability.

Table 2. Low- and moderate-SES residents moved the most from wealthy, suburban areas.

Top 10 places by percentage that low- and moderate-SES residents moved from over four housing periods

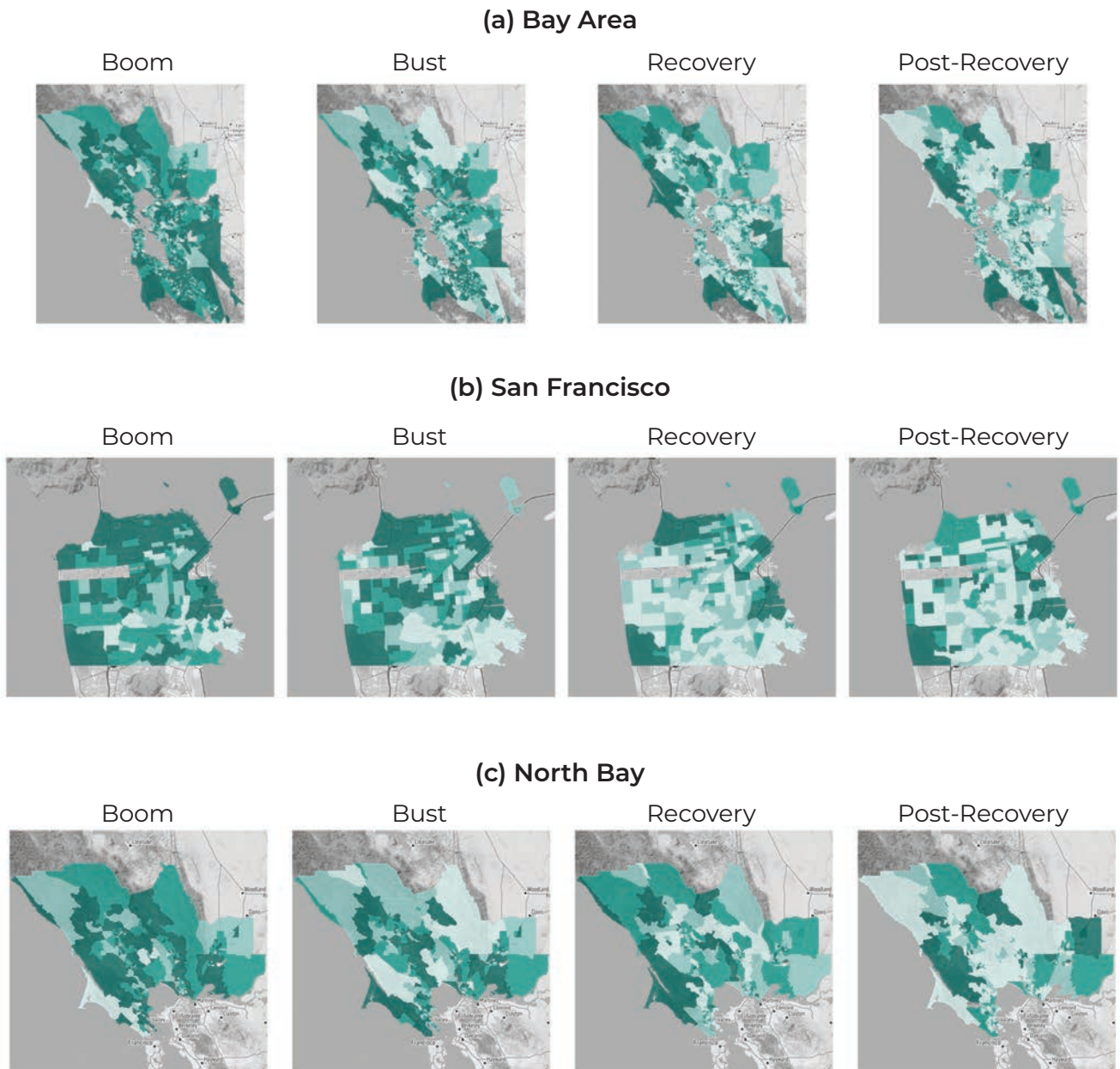
Boom			Bust		
Place	Country	% Moved	Place	Country	% Moved
Monte Sereno	Santa Clara	27.6%	Emeryville	Alameda	24.4%
Sonoma	Sonoma	23.6%	Cotati	Sonoma	22.4%
Los Gatos	Santa Clara	22.6%	Portola Valley	San Mateo	22.2%
Atherton	San Mateo	22.6%	Sausalito	Marin	22.1%
Suisun City	Solano	22.1%	Dublin	Alameda	21.1%
Corte Madera	Marin	22.0%	Lafayette	Contra Costa	20.8%
Campbell	Santa Clara	21.9%	Atherton	San Mateo	20.4%
Larkspur	Marin	21.8%	Morgan Hill	Santa Clara	20.2%
San Ramon	Contra Costa	21.8%	Healdsburg	Sonoma	20.1%
Dublin	Alameda	21.5%	Campell	Santa Clara	19.8%

Recovery			Post-Recovery		
Place	Country	% Moved	Place	Country	% Moved
Colma	San Mateo	22.1%	St. Helena	Napa	19.3%
Brisbane	San Mateo	18.9%	San Ramon	Contra Costa	18.8%
San Ramon	Contra Costa	18.1%	Dublin	Alameda	18.8%
Sonoma	Sonoma	17.8%	Brisbane	San Mateo	18.7%
Pleasant Hill	Contra Costa	17.7%	Emeryville	Alameda	18.7%
Dublin	Alameda	17.5%	Rio Vista	Solano	18.6%
Yountville	Napa	17.4%	Cotati	Sonoma	18.3%
Emeryville	Alameda	17.3%	Lafayette	Contra Costa	17.1%
Cotati	Sonoma	17.0%	Walnut Creek	Contra Costa	17.0%
Sausalito	Marin	16.9%	Burlingame	San Mateo	17.0%

Source: FRBNY Consumer Credit Panel/Equifax Data.

Figure 5. *By the post-recovery period, areas where low- and moderate-SES residents moved at high rates were concentrated in the outer areas of the region.*

Maps of moving rates for low- and moderate-SES residents in (a) the Bay Area, (b) San Francisco, (c) North Bay, (d) East Bay, and (e) South Bay



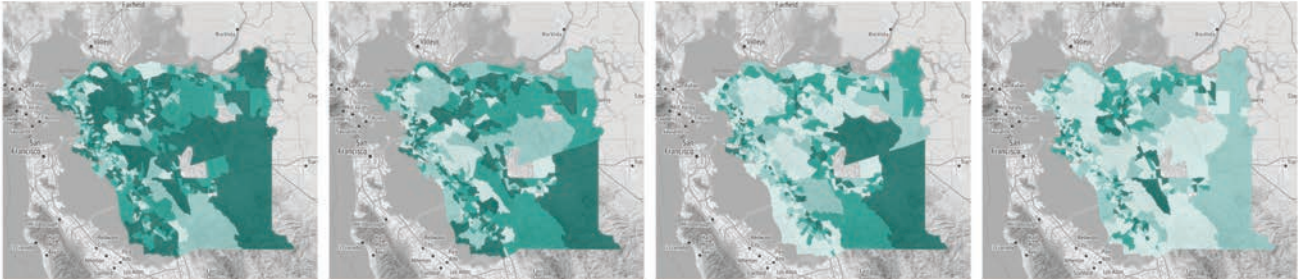
(d) East Bay

Boom

Bust

Recovery

Post-Recovery



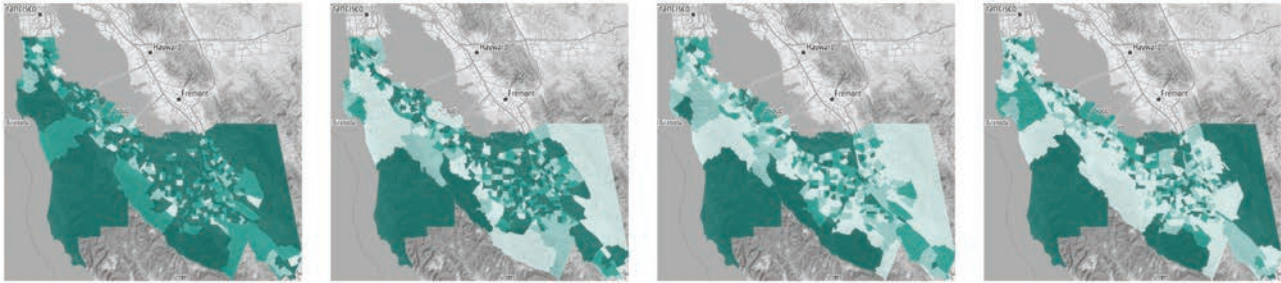
(e) South Bay

Boom

Bust

Recovery

Post-Recovery



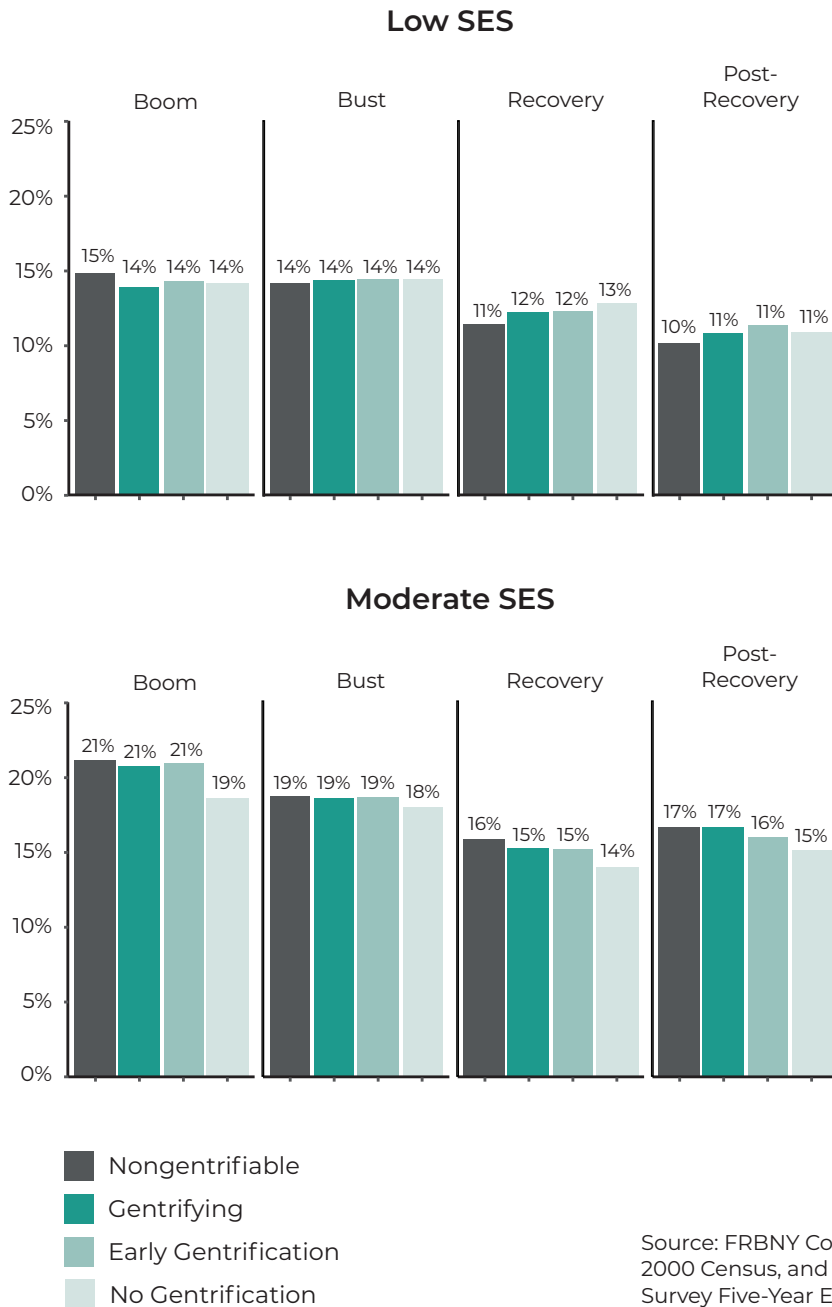
1st Quartile 2nd Quartile 3rd Quartile 4th Quartile

Housing Period Ranges: Boom = 2002-2006, Bust = 2007-2009, Recovery = 2010-2014, Post-Recovery = 2015-2017

Source: FRBNY Consumer Credit Panel/Equifax Data.

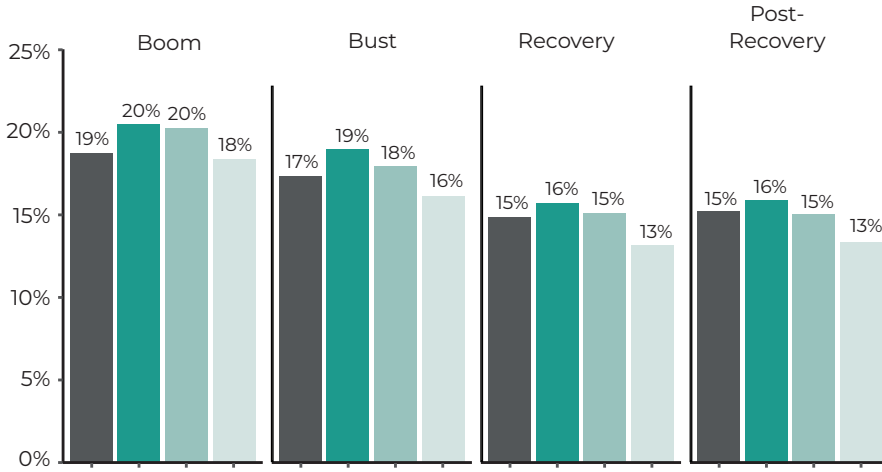
Figure 6. Gentrification was associated with higher moving rates for middle- and high-SES residents across most periods and for moderate-SES residents in the post-recovery period.

Percentage of residents moving by SES and gentrification category over four housing periods

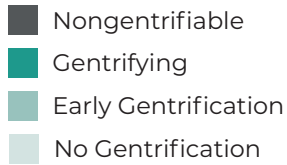
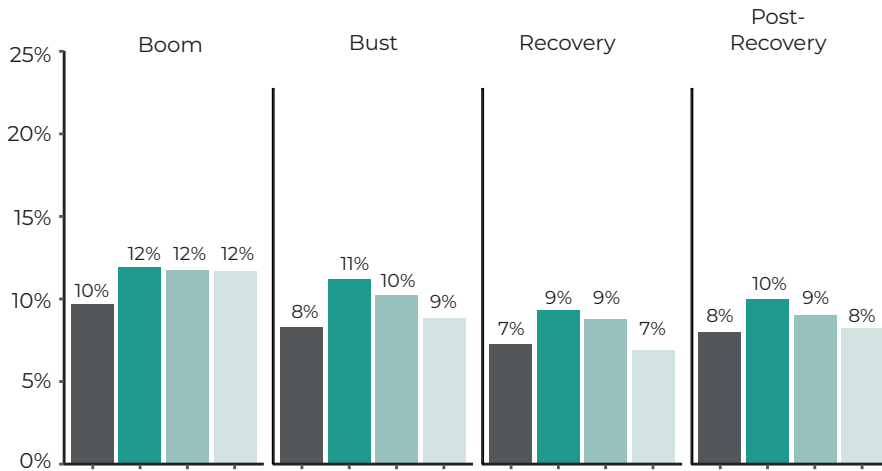


Source: FRBNY Consumer Credit Panel/Equifax Data, 2000 Census, and 2012–2016 American Community Survey Five-Year Estimates. Socioeconomic status approximated by Equifax Risk Score: Low=missing or <580, Moderate=580-649, Middle=650-749, High=750+

Middle SES



High SES



Source: FRBNY Consumer Credit Panel/Equifax Data, 2000 Census, and 2012–2016 American Community Survey Five-Year Estimates. Socioeconomic status approximated by Equifax Risk Score: Low=missing or <580, Moderate=580-649, Middle=650-749, High=750+

C. Where Are Bay Area Movers Going—How Far and to What Conditions?

To understand the consequences of gentrification beyond whether residents move, we examine how gentrification is associated with moves that reflect constraints. In this section, we explore the extent to which gentrification and SES are associated with residents' moves out of cities and the Bay Area, moves to more crowded housing, the distance of the moves, and the characteristics of the movers' destinations. We hypothesized that low-SES residents made more constrained moves from gentrifying neighborhoods and that these trends worsened over time as the housing market became increasingly limited. Although we expected outcomes to be worse among low-SES movers, we expected similar patterns among moderate- and middle-SES residents. Overall, we found that **low- and moderate-SES residents who moved from gentrifying neighborhoods made more constrained moves than others in the post-Recession periods.**

i. Moving Patterns and Gentrification

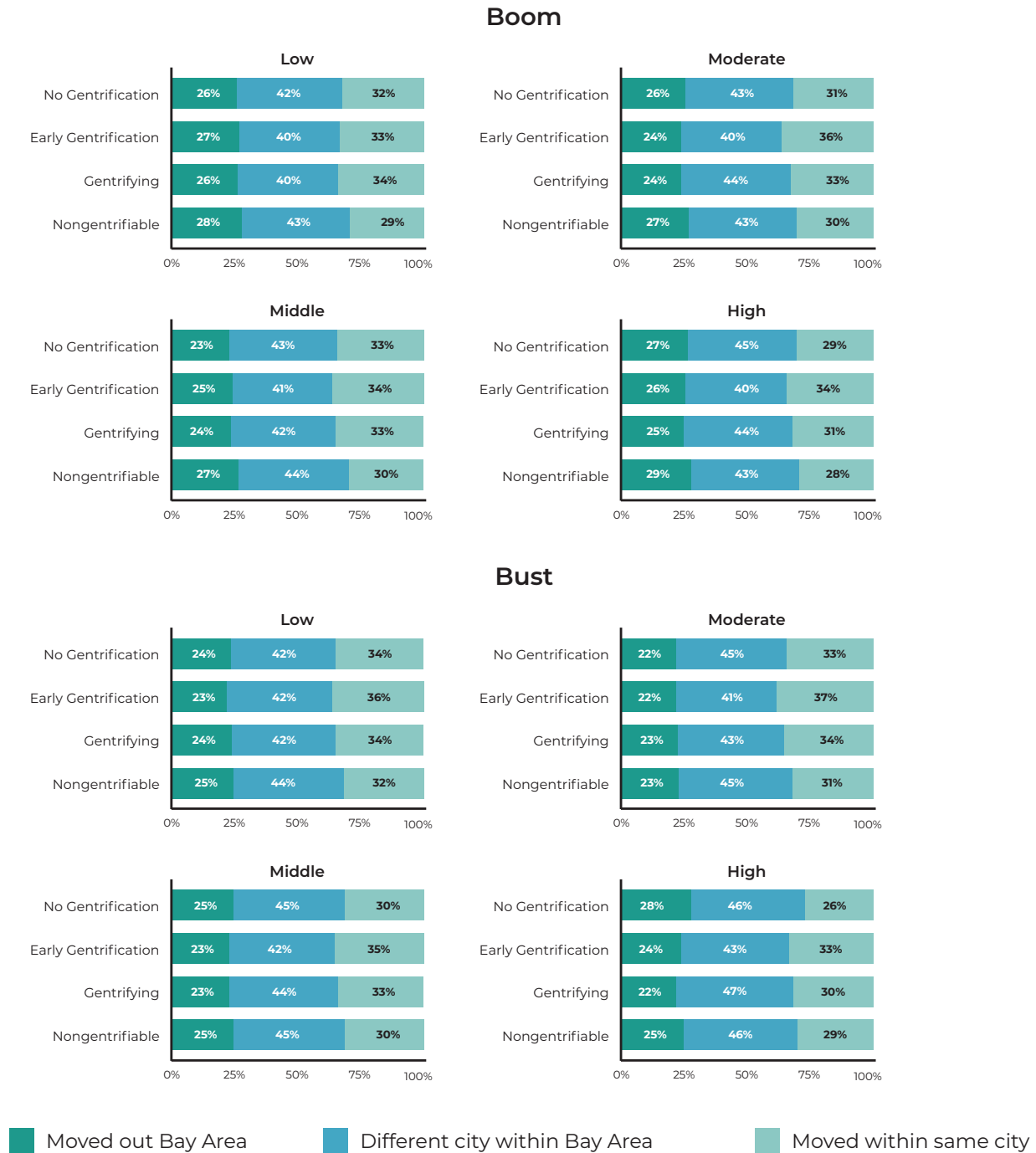
First, we examine whether gentrification is associated with higher levels of moving out of one's city or the Bay Area altogether by SES. Figure 7 shows the share of movers—separated by each gentrification category for each SES over time—who move out of the Bay Area, to a different city or town within the Bay Area, or within the same city or town. Although low-SES residents moved less, the bar plots show that when they moved, lower shares of low-SES residents from gentrifying neighborhoods remained in the same cities and slightly higher shares moved out of the Bay Area during the recovery and post-recovery periods compared with low-SES residents who moved from other gentrifiable neighborhoods.

The share of moderate-SES residents who moved out of the Bay Area from gentrifying neighborhoods (22%) was slightly higher than other gentrifiable neighborhoods (19% in neighborhoods showing early signs of gentrification and 20% in nongentrifying ones) during the recovery period. However, in the post-recovery period, the share was much higher in nongentrifying neighborhoods (31%) than other neighborhoods. In the post-recovery period, higher shares of high-SES residents in gentrifying neighborhoods (26%) moved out of the Bay Area, and lower shares moved within the same city (29%), compared with other gentrifiable neighborhoods. Nonetheless, about 75% of moderate-, middle-, and high-SES movers from gentrifying neighborhoods remained in the Bay Area, compared with low-SES movers (65%).¹⁸

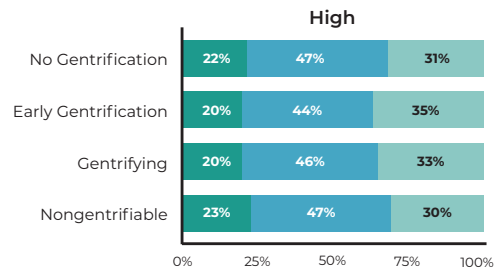
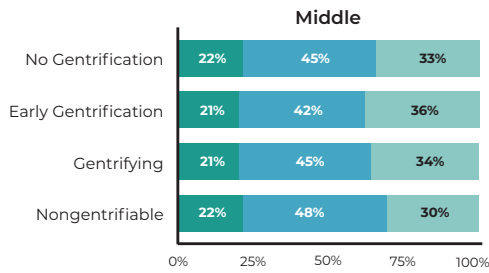
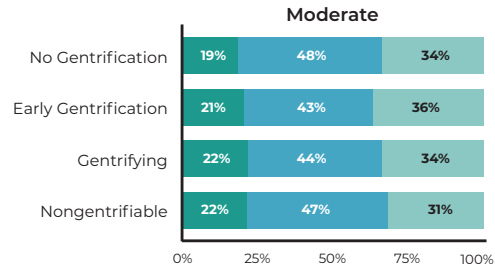
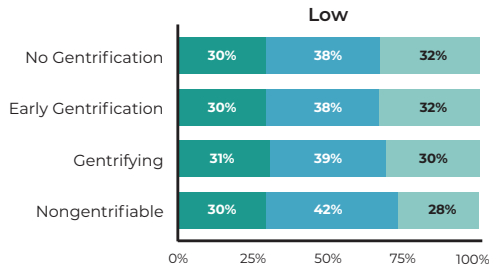
¹⁸ Analysis of moving patterns by specific gentrification categories (see Online Appendix) shows that across SES categories, those who moved from neighborhoods undergoing “people” gentrification were substantially less likely than others to move out of the Bay Area or out of their city. When we isolated the analysis to residents in the three major cities, low- and moderate-SES residents moved out of the Bay Area at much higher rates (nearly double) from nongentrifying neighborhoods in the post-recovery period. This suggests that moves are more constrained for lower-SES residents in major cities.

Figure 7. Low-SES movers from gentrifying neighborhoods moved out of the Bay Area most after the housing bust, compared with all other movers.

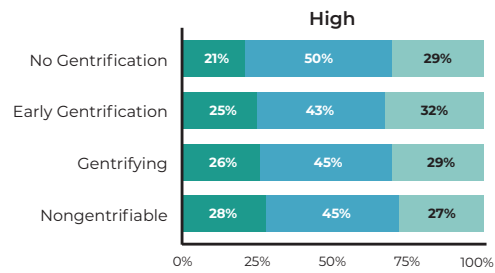
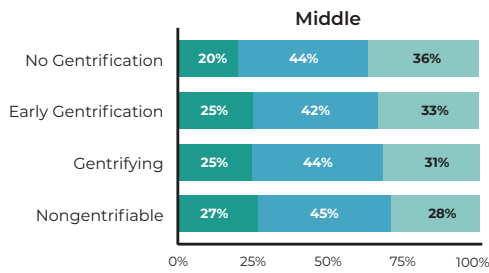
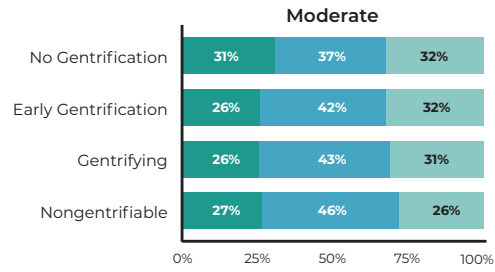
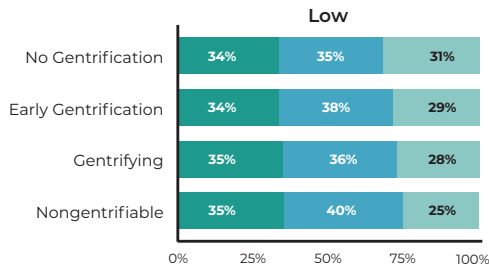
Percentage of movers leaving their cities/towns and the Bay Area by SES and gentrification category over four housing periods



Recovery



Post-Recovery



Moved out Bay Area
 Different city within Bay Area
 Moved within same city

Source: FRBNY Consumer Credit Panel/Equifax Data, 2000 Census, and 2012–2016 American Community Survey Five-Year Estimates.

ii. Moving to Crowded Housing

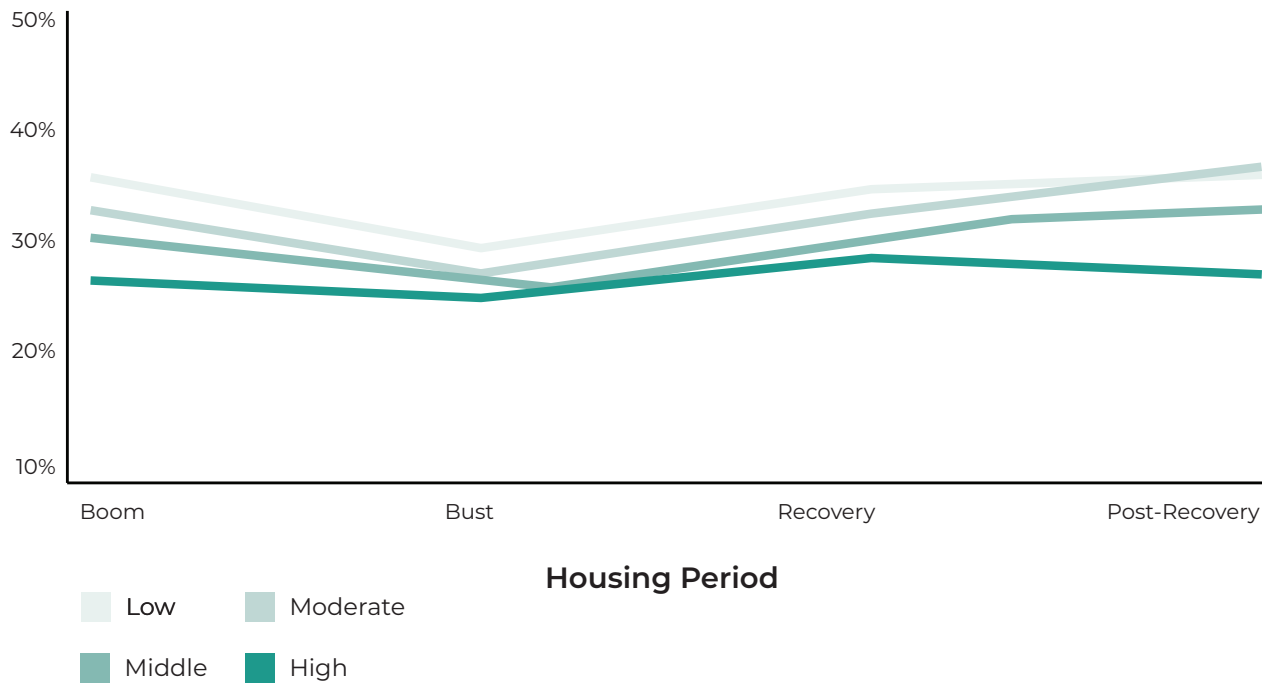
Next, we examine whether higher shares of residents are moving into crowded housing over time amid widespread gentrification and limited housing options. Figure 8 displays the share of movers who moved from households with one to two adults to households with four or more adults by SES over time for movers who stay within the Bay Area. The plot shows that **lower-SES movers moved into crowded households more than higher-SES groups; except for high-SES residents, residents in the Bay Area moved into crowded households at increasing rates since the Recession.**¹⁹ Low-SES residents moved from households with one to two adults to households with four or more adults more than other SES groups for most of the period. But during the post-recovery period, the share of moderate-SES residents who moved into crowded households surpassed the share of low-SES residents who did. Still, both groups continued to move into crowded households at high rates.

In Figure 9, we examine if these trends vary across gentrification categories for lower-SES residents. The graph displays the shares of low- and moderate-SES movers from households with one to two adults who moved into households with four or more adults by gentrification category. During the post-recovery period, higher shares of low- and moderate-SES movers from gentrifying neighborhoods (38.0%) and neighborhoods showing early signs of gentrification (38.6%) moved into crowded housing, compared with those in nongentrifying (35.6%) and nongentrifiable (33.5%) neighborhoods. During the housing boom, more low- and moderate-SES residents in nongentrifying (37.6%) neighborhoods moved into crowded housing than low- and moderate-SES residents in other neighborhoods. This pattern reversed during the housing bust, and shares were relatively even during the recovery period. These trends suggest that lower-SES movers from gentrifying neighborhoods were more constrained during the post-recovery period than before.

¹⁹ To capture moves to nearby family members, this analysis considers a mover to be anyone who changes census blocks, rather than block groups. When we consider only moves to different census block groups, low-SES shares are slightly higher than moderate-SES shares in the post-recovery period. High-SES shares trend upward but are still lower than others.

Figure 8. Since the Recession, increasing shares of Bay Area movers in households with one to two adults moved into crowded households, except for high-SES movers.

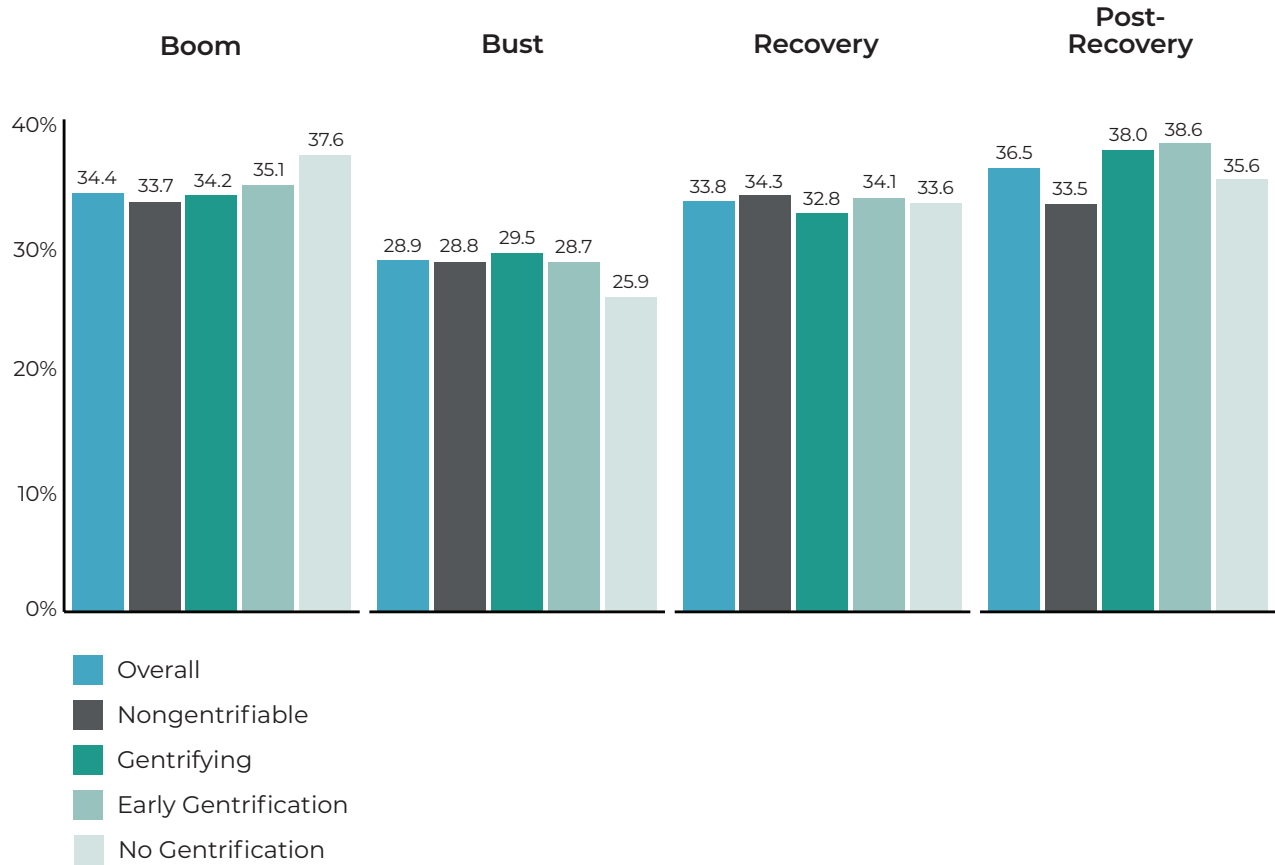
Share of movers in one- to two-person households moving into households with four or more adults by SES over four housing periods



Source: FRBNY Consumer Credit Panel/Equifax Data, 2000 Census, and 2012–2016 American Community Survey Five-Year Estimates. Socioeconomic status approximated by Equifax Risk Score: Low=missing or <580, Moderate=580-649, Middle=650-749, High=750+

Figure 9. In the bust and post-recovery periods, a greater share of lower-SES movers from gentrifying and early gentrifying neighborhoods moved into crowded housing than from other neighborhoods.

Share of low- and moderate-SES movers in one- to two-person households moving into households with four or more adults by SES over four housing periods



Source: FRBNY Consumer Credit Panel/Equifax Data, 2000 Census, and 2012–2016 American Community Survey Five-Year Estimates. Socioeconomic status approximated by Equifax Risk Score: Low=missing or <580, Moderate=580-649, Middle=650-749, High=750+

iii. Destination Proximity

Here, we examine proximity characteristics of residents' moves for those who stay in the Bay Area. Specifically, we focus on the distance of moves and the distance of movers' destinations from the major downtown areas in the region to assess proximity to economic centers.²⁰ Consistent with previous findings, **low- and moderate-SES residents who moved from gentrifying neighborhoods made more constrained moves than others, and their moves appeared increasingly constrained over time in the post-Recession period.** We found less evidence of constrained moves by middle-SES residents.

Distance of Move

Figure 10 illustrates the median distances of moves by SES and gentrification category of residents' origin neighborhood. The bar graph shows that among gentrifiable neighborhoods, low-SES movers from gentrifying neighborhoods tended to move farther. This suggests that gentrification constrained moves more for low-SES movers. This trend was stronger among residents in households without mortgages, though not apparent among residents in the three major Bay Area cities (see Online Appendix). These longer moves tended to occur in gentrifying neighborhoods undergoing "intense" gentrification rather than "moderate" gentrification (see Online Appendix). Moderate-SES movers from all gentrifiable neighborhoods tended to move similar distances, but the median distance was slightly higher for those moving from gentrifying neighborhoods. Middle- and high-SES residents in gentrifying neighborhoods, however, did not tend to move farther than those in other neighborhoods.²¹ Middle-SES residents had similar distributions across gentrification categories, while high-SES movers from nongentrifying neighborhoods moved significantly farther than those moving from other neighborhoods. Across all but the highest SES groups, movers from nongentrifiable neighborhoods tended to move the farthest. This most likely reflects the fact that nongentrifiable neighborhoods are in less dense areas of the region; thus, moves out of these areas tend to be farther distances to other less dense areas nearby.

We examine if moves became increasingly constrained over time among lower-SES residents in Figure 11. The graph plots the median distances of the first moves of low- and moderate-SES residents who were living in the Bay Area in 2009. After the Recession, in both gentrifying neighborhoods and those showing early signs of gentrification, low- and moderate-SES residents moved increasingly longer distances over time. Although there is substantial variation in neighborhoods showing no signs of gentrification, there is a clear upward pattern across all other neighborhoods.

²⁰ We also examined central business districts based on commuting patterns that identify any employment centers, rather than the main ones for the metropolitan area. We did not find noticeable differences across SES or gentrification categories, largely because this definition of central business districts encompassed many parts of the Bay Area.

²¹ In major cities, middle- and high-SES residents in gentrifying neighborhoods moved farther than movers from other gentrifiable neighborhoods (see Online Appendix).

Distance of Destination from Downtowns

Figure 12 displays the median distance of Bay Area movers' destinations from the nearest major downtown area (first panel) by SES and gentrification category. It also shows the median change in the distance from downtown areas between the origin and destination neighborhoods (second panel) by SES and gentrification category. The top panel shows that across gentrification categories, low- and moderate-SES residents ended up in neighborhoods that were farther from a major downtown area, compared with middle- and high-SES movers. Movers from nongentrifying neighborhoods ended up farthest away across all SES groups.²² We found that gentrification may be more acutely affecting those moving from the Bay Area's major cities. Low- and moderate-SES movers from gentrifying neighborhoods in the three major cities ended up the farthest from downtown areas, compared with similar residents in other gentrification categories and compared with middle- and high-SES residents in these neighborhoods (See Online Appendix).

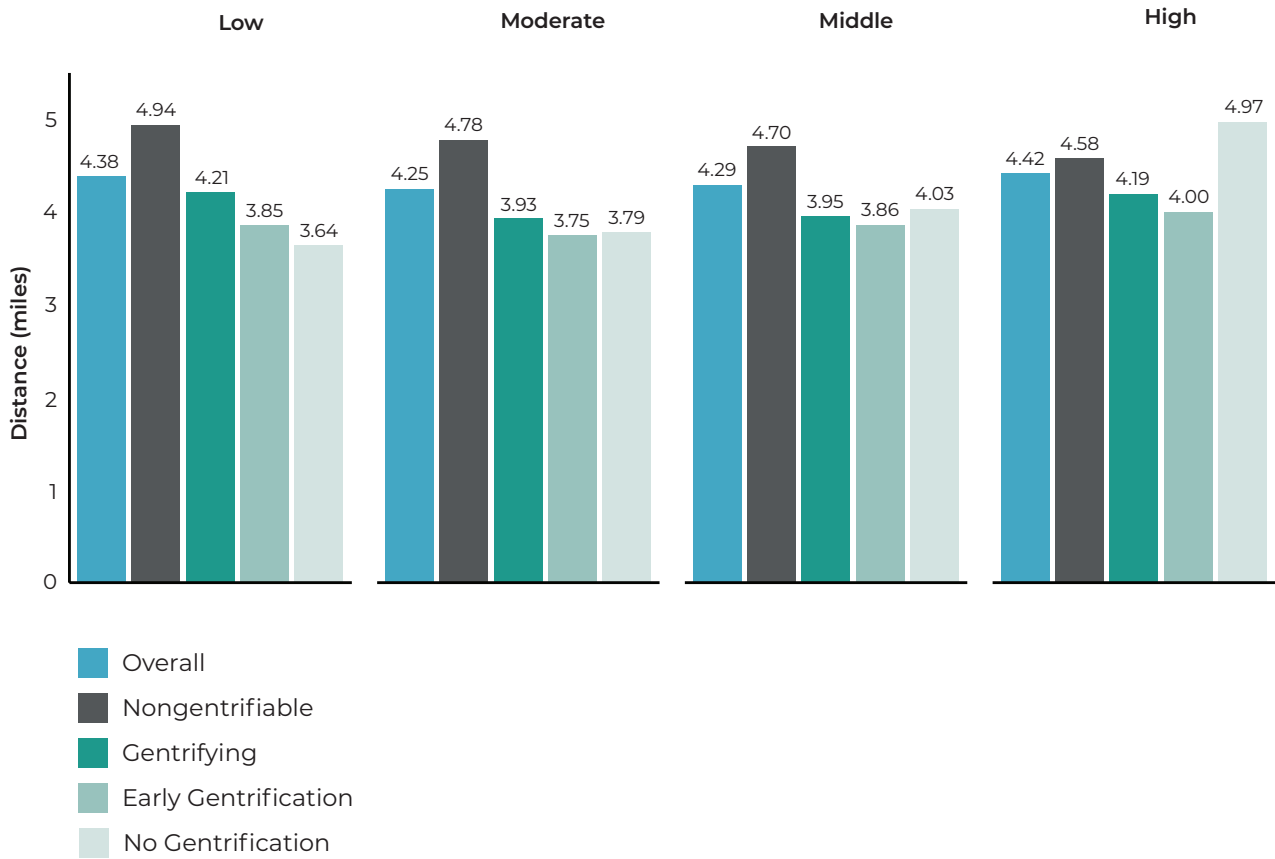
The second panel of Figure 12 assesses the change in the distance between major downtowns and the origin and destination neighborhoods to take into account the preexisting spatial distribution of different neighborhood categories. Across all SES categories, movers from gentrifying neighborhoods tended to have the largest increases in their distance from major downtowns, compared with movers from early gentrifying and nongentrifying neighborhoods. These longer-distance moves from gentrifying neighborhoods could reflect residents' cashing out and moving to high-opportunity areas; these moves may also imply forced moves and the lack of affordable options nearby. In the next section, we examine additional characteristics of movers' destinations by SES to help further distinguish these moves.

Lastly, to examine if such moves became more constrained over time, Figure 13 plots the median change in movers' distance from major downtowns over time for low- and moderate-SES Bay Area residents whom we followed for 10 years, starting in 2009. The figure demonstrates that low- and moderate-SES residents moved increasingly farther away from major cities over time as the housing market tightened. Those in gentrifying neighborhoods moved the farthest from major downtowns by the end of the period, followed by those in early gentrifying tracts.

²² When we further broke down the gentrification categories, movers from neighborhoods undergoing "price" gentrification also tended to move farther from major downtowns. This may reflect that more of these neighborhoods are already far from major cities to begin with (See Online Appendix).

Figure 10. Low-SES movers from gentrifying neighborhoods tended to move farther than those moving from other gentrifiable neighborhoods.

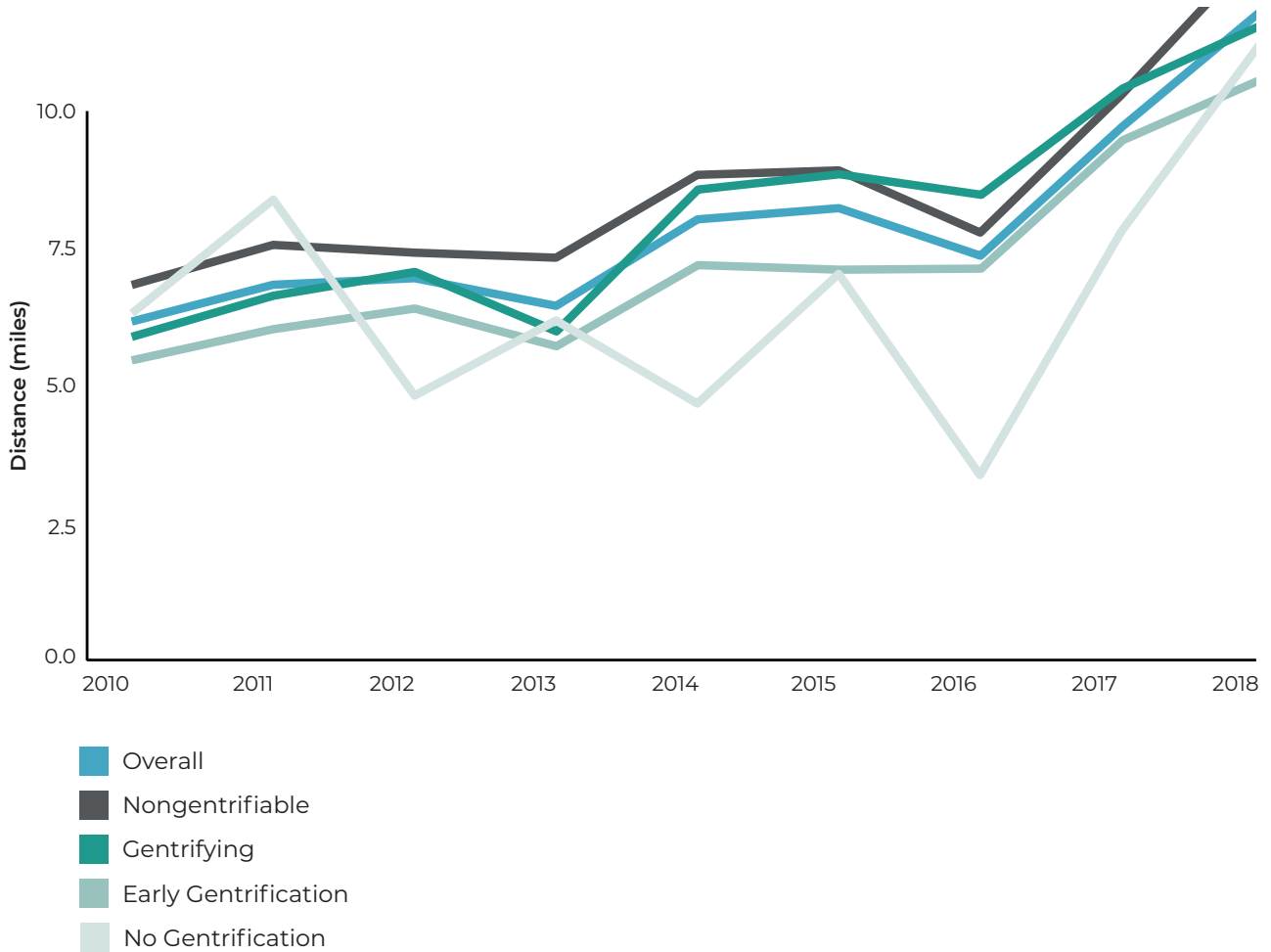
Median move distance (in miles) for Bay Area movers by SES and gentrification category



Source: FRBNY Consumer Credit Panel/Equifax Data, 2000 Census, and 2012–2016 American Community Survey Five-Year Estimates. Socioeconomic status approximated by Equifax Risk Score: Low=missing or <580, Moderate=580-649, Middle=650-749, High=750+

Figure 11. Low- and moderate-SES residents in gentrifying and early gentrifying neighborhoods moved increasingly farther distances over time.

Distance of first move by gentrification category of low- and moderate-SES 2009 Bay Area residents

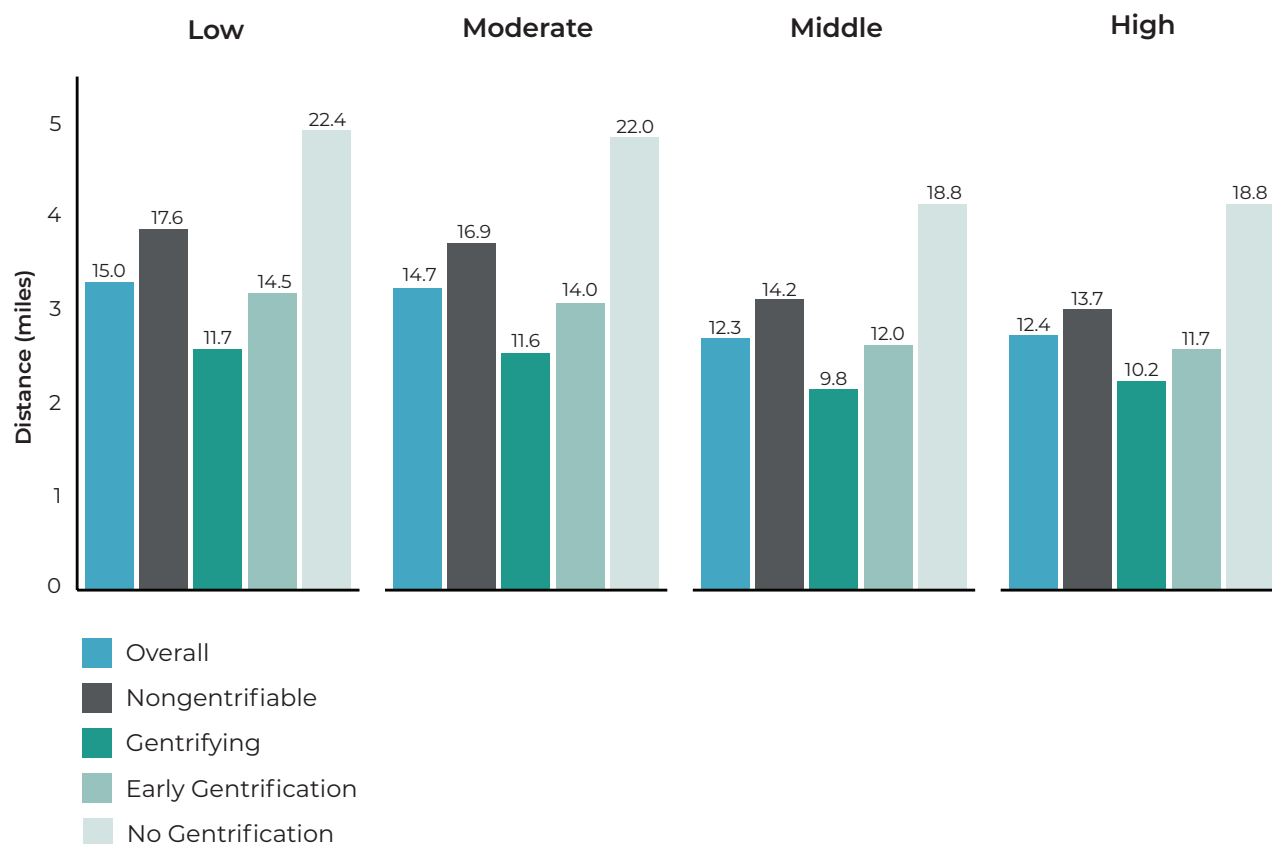


Source: FRBNY Consumer Credit Panel/Equifax Data, 2000 Census, and 2012–2016 American Community Survey Five-Year Estimates. Socioeconomic status approximated by Equifax Risk Score: Low=missing or <580, Moderate=580-649, Middle=650-749, High=750+

Figure 12. Low- and moderate-SES movers from gentrifying neighborhoods ended up farther from major city downtowns than higher-SES movers and made farther moves away from major city downtowns, compared with lower-SES movers from other neighborhoods.

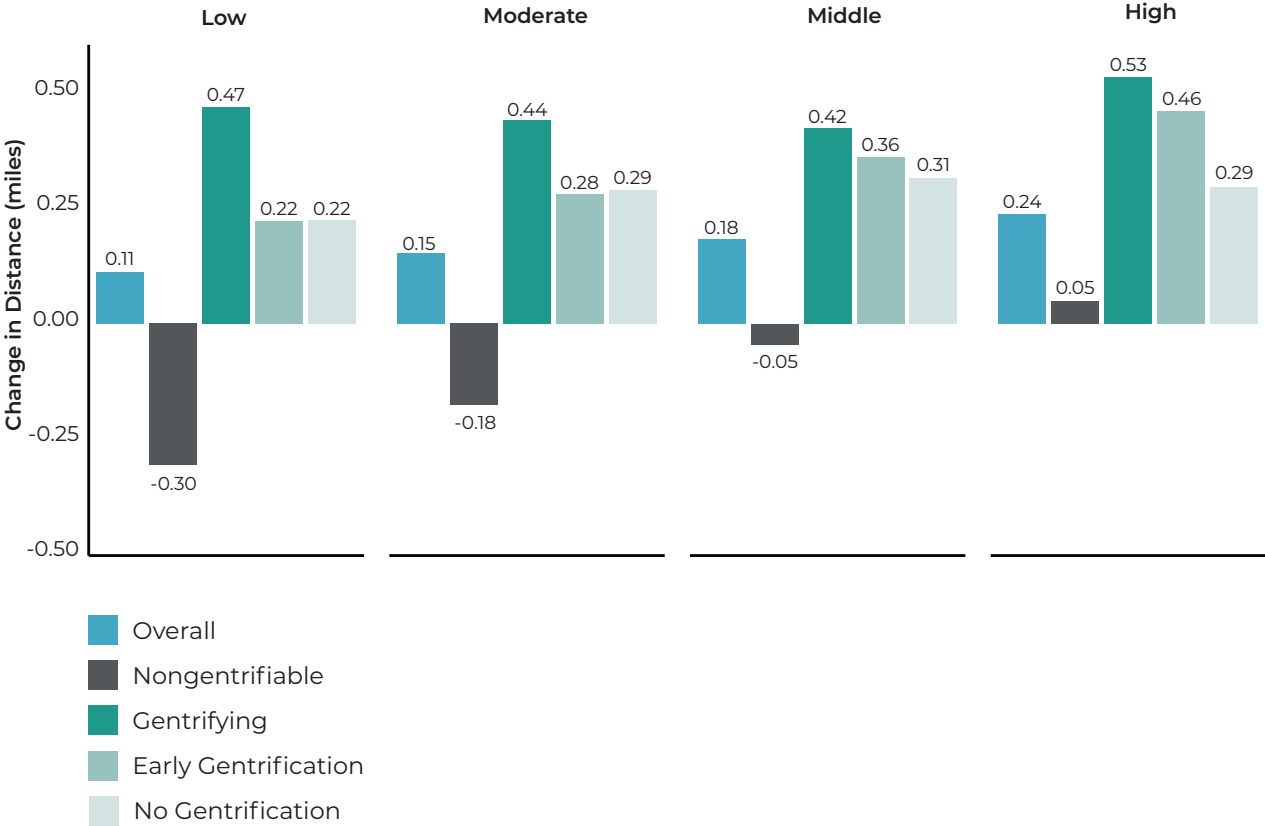
Destination median (a) distance and (b) change from major city downtown for Bay Area movers by gentrification category

(a) Median Distance from Major City Downtown



Source: FRBNY Consumer Credit Panel/Equifax Data, 2000 Census, and 2012–2016 American Community Survey Five-Year Estimates. Socioeconomic status approximated by Equifax Risk Score: Low=missing or <580, Moderate=580-649, Middle=650-749, High=750+

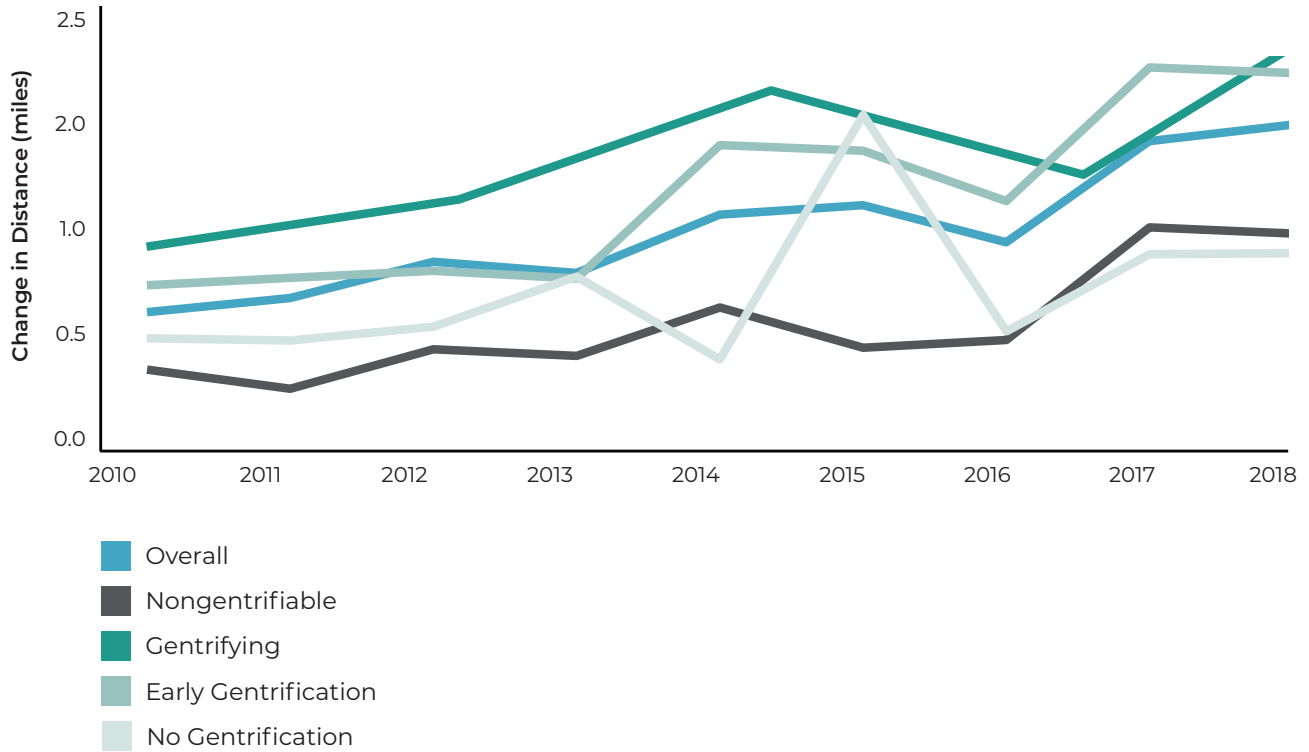
(b) Median Change in Distance from Major City Downtown



Source: FRBNY Consumer Credit Panel/Equifax Data, 2000 Census, and 2012–2016 American Community Survey Five-Year Estimates. Socioeconomic status approximated by Equifax Risk Score: Low=missing or <580, Moderate=580-649, Middle=650-749, High=750+

Figure 13. Low- and moderate-SES residents moved increasingly farther distances from major city downtowns over time, especially from gentrifying neighborhoods

Median change in distance from major city downtown of first move by gentrification category for low- and moderate-SES 2009 Bay Area residents



Source: FRBNY Consumer Credit Panel/Equifax Data, 2000 Census, and 2012–2016 American Community Survey Five-Year Estimates. Socioeconomic status approximated by Equifax Risk Score: Low=missing or <580, Moderate=580-649, Middle=650-749, High=750+

iv. Destination Characteristics and Gentrification

To further understand moves, in this section we examine additional characteristics of Bay Area movers' destinations by SES and gentrification category. We compare movers' origin and destination neighborhoods by looking at median home values, poverty rates, health scores, and racial composition. We show that **low- and moderate-SES residents who moved from gentrifying neighborhoods increasingly moved to more affordable neighborhoods over time. Residents from nongentrifying neighborhoods and middle- and high-SES movers ended up in more expensive ones.** Low- and moderate-SES residents tended to move to neighborhoods with only slightly lower poverty rates and slightly higher health scores. Middle- and high-SES residents and those in other gentrifiable neighborhoods experienced much larger improvements. We also show that there is a **persistent hierarchy of movers' destinations by SES, which suggests that re-segregation is occurring.** Lower-SES movers from gentrifying areas tended to move to neighborhoods with substantially higher poverty rates, lower health scores, and lower shares of white residents, compared with where higher-SES residents ended up.

Median Home Values

Figure 14 shows the median home values of movers' destinations (top panel) and changes between their origin and destination (second panel) by SES and gentrification category. The neighborhoods' median home values are based on the 2012--2016 ACS estimates. The top panel shows that across gentrification categories, there is a clear hierarchy by SES in the median home values of movers' destinations. Low-SES movers ended up in neighborhoods with the lowest median home values, and high-SES movers ended up in neighborhoods with the highest median home values. There is also a hierarchy between gentrification categories. Movers from higher-value neighborhoods (e.g., nongentrifiable and gentrifying) ended up in neighborhoods with higher values than movers from lower-value neighborhoods (e.g., early gentrification and nongentrifying).

The second panel, which compares the change in median home values from the origin to destination of movers, shows that low- and moderate-SES movers from gentrifying neighborhoods tended to move to neighborhoods with home values similar to where they moved from. On the other hand, middle- and high-SES residents from gentrifying neighborhoods moved to neighborhoods with higher home values. This suggests that these movers were cashing out or moving with fewer constraints. Across all SES categories, movers from neighborhoods showing early signs of gentrification and no gentrification moved to higher-value neighborhoods than where they started.

We examine if such moves became more constrained over time for lower-SES residents in Figure 15, which plots changes in the median home values for low- and moderate-SES 2009 Bay Area residents followed over time. The plot shows that in the post-Recession period, low- and moderate-SES residents moved to increasingly lower-value neighborhoods over time. Movers from gentrifying neighborhoods tended to move to lower-value neighborhoods, and the decline became larger in the post-recovery period as the housing market tightened. In neighborhoods showing early signs of gentrification, movers initially

moved to higher-value neighborhoods. But they increasingly moved to similar-value neighborhoods—except in 2017, when their home values showed larger declines.

Poverty Rates and Healthy Places Index Scores

Figure 16 and Figure 17 present poverty rate data. The top panel of Figure 16 shows that, like for median home values, there was a clear hierarchy by SES within each category. Lower-SES residents ended up in neighborhoods with higher poverty levels. The second panel of Figure 16 shows that low- and moderate-SES movers from gentrifying neighborhoods tended to move to neighborhoods with slightly lower poverty rates than their origin neighborhood. Those from early gentrifying tracts and middle- and high-SES residents experienced greater decreases. Across all SES categories, movers from nongentrifying neighborhoods experienced significant declines in their neighborhood poverty rates (−9.31% [low SES], −8.79% [moderate SES], −9.86% [middle SES], −9.68% [high SES]). The poverty rates of low- and moderate-SES Bay Area residents whom we followed during the post-Recession period (Figure 17) declined very slightly among those moving from gentrifying and early gentrifying neighborhoods. Declines were large for those moving from nongentrifying neighborhoods, and we did not observe significant changes over time across neighborhood categories.

Figure 18 and Figure 19 display results based on the Healthy Places Index score for movers' destinations, where trends are nearly identical to those for poverty rates. Overall, low- and moderate-SES movers from gentrifying neighborhoods increasingly ended up in more affordable neighborhoods over time. However, they ended up in neighborhoods with slightly higher poverty rates and health scores than where they started. The improvements were much greater for residents moving from other gentrifiable neighborhoods and for higher-SES residents. Lower-SES residents ended up in significantly more disadvantaged neighborhoods than higher-SES residents.

Racial and Ethnic Composition

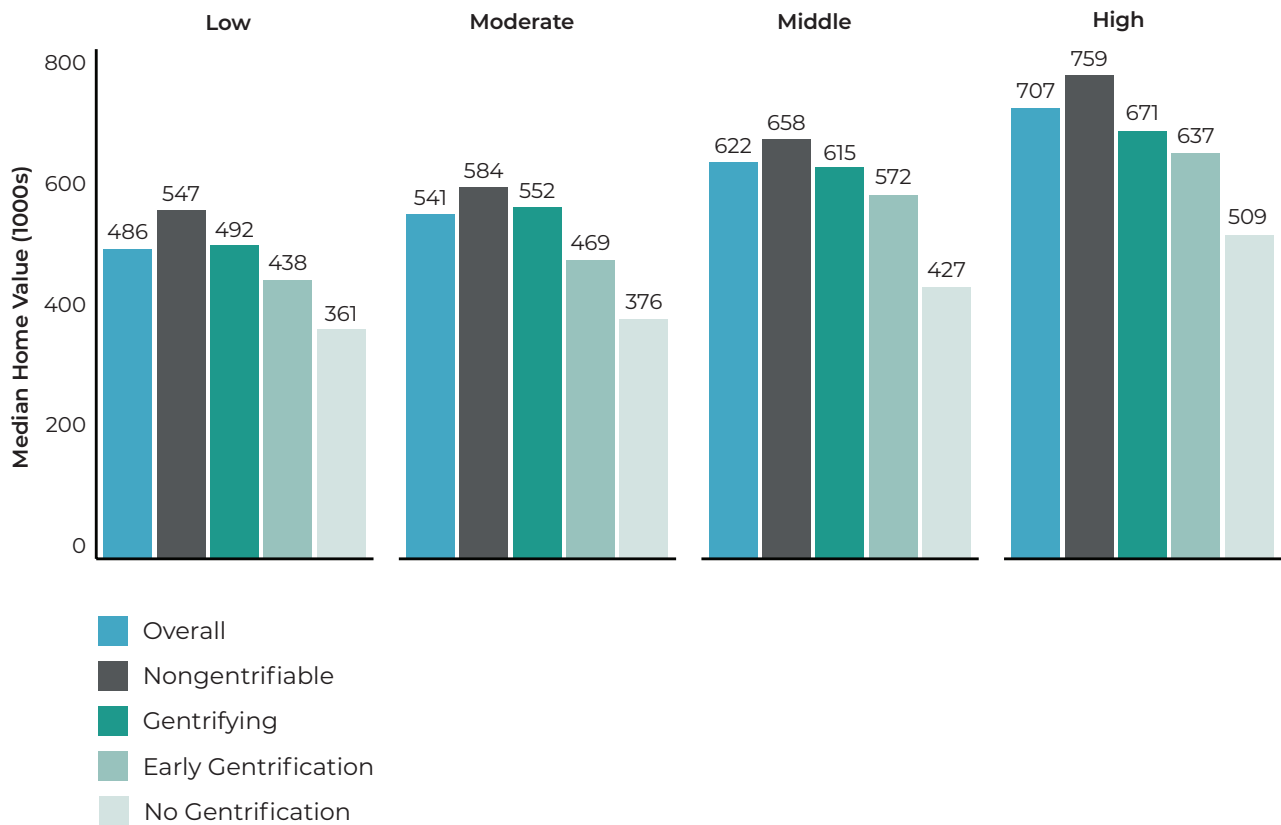
Table 3 displays the average racial and ethnic compositions across movers' destinations and changes in the composition of movers' origin and destination neighborhoods by SES and gentrification category. The table shows that lower-SES residents across gentrification categories tended to move to neighborhoods with higher shares of Black and Latinx residents, compared with higher-SES residents moving from similar neighborhoods. Across SES categories, residents moving from nongentrifiable neighborhoods tended to move to neighborhoods with significantly lower shares of Black and Latinx residents, compared with where low- and moderate-SES residents from gentrifiable neighborhoods ended up. However, the average changes in racial composition suggest that movers from all gentrifiable neighborhoods and across SES categories tended to move to neighborhoods with fewer Black and Latinx residents. Declines in Latinx neighbors were lowest for lower-SES residents from gentrifying neighborhoods.²³

²³ Separate analyses by specific gentrification categories show that lower-SES movers from neighborhoods undergoing “people” and “price” gentrification and nongentrifying neighborhoods experienced the largest increases in neighborhood shares of white residents, compared with lower-SES movers from gentrifying neighborhoods (See Online Appendix).

Figure 14. Lower-SES movers from gentrifying neighborhoods moved to lower-value neighborhoods than others and moved to neighborhoods with similar values as where they moved from, while others in gentrifiable neighborhoods tended to move to more expensive neighborhoods.

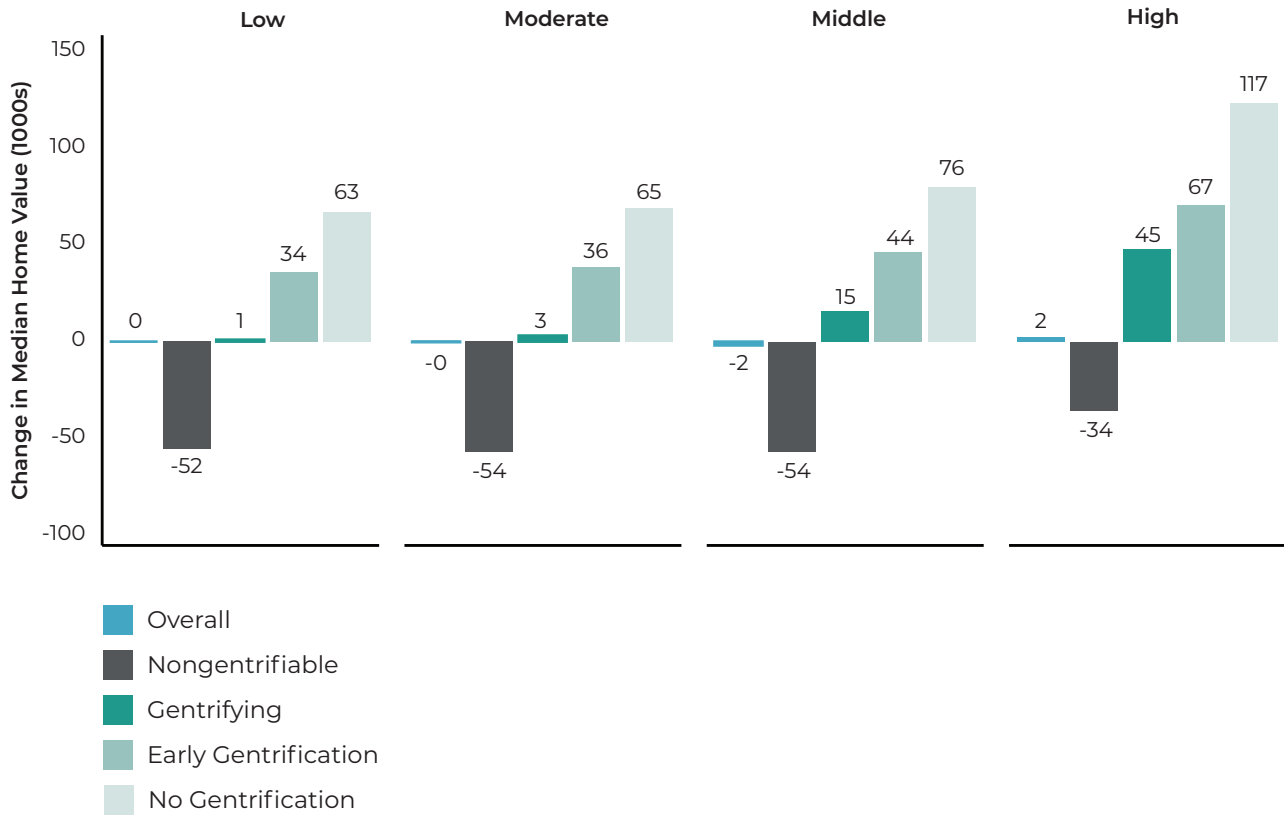
Destination (a) median home value and (b) change for Bay Area movers

(a) Median Home Value



Source: FRBNY Consumer Credit Panel/Equifax Data, 2000 Census, and 2012–2016 American Community Survey Five-Year Estimates. Socioeconomic status approximated by Equifax Risk Score: Low=missing or <580, Moderate=580-649, Middle=650-749, High=750+

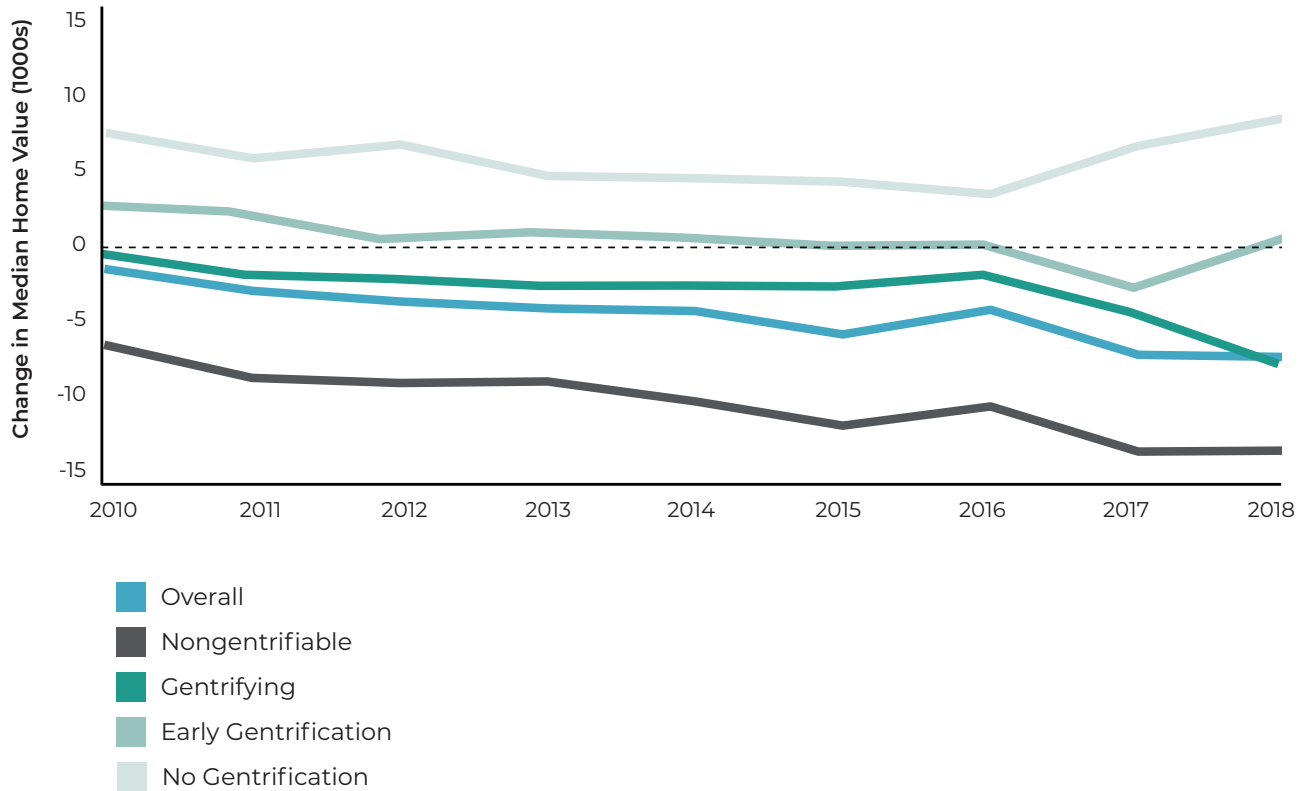
(b) Median Change in Median Home Value



Source: FRBNY Consumer Credit Panel/Equifax Data, 2000 Census, and 2012–2016 American Community Survey Five-Year Estimates. Socioeconomic status approximated by Equifax Risk Score: Low=missing or <580, Moderate=580-649, Middle=650-749, High=750+

Figure 15. Low- and moderate-SES movers from gentrifying neighborhoods increasingly moved to lower-value neighborhoods over time, while movers from other gentrifiable neighborhoods tended to move to higher-value neighborhoods.

Median change in median home value of first move by gentrification category for low- and moderate-SES 2009 Bay Area residents

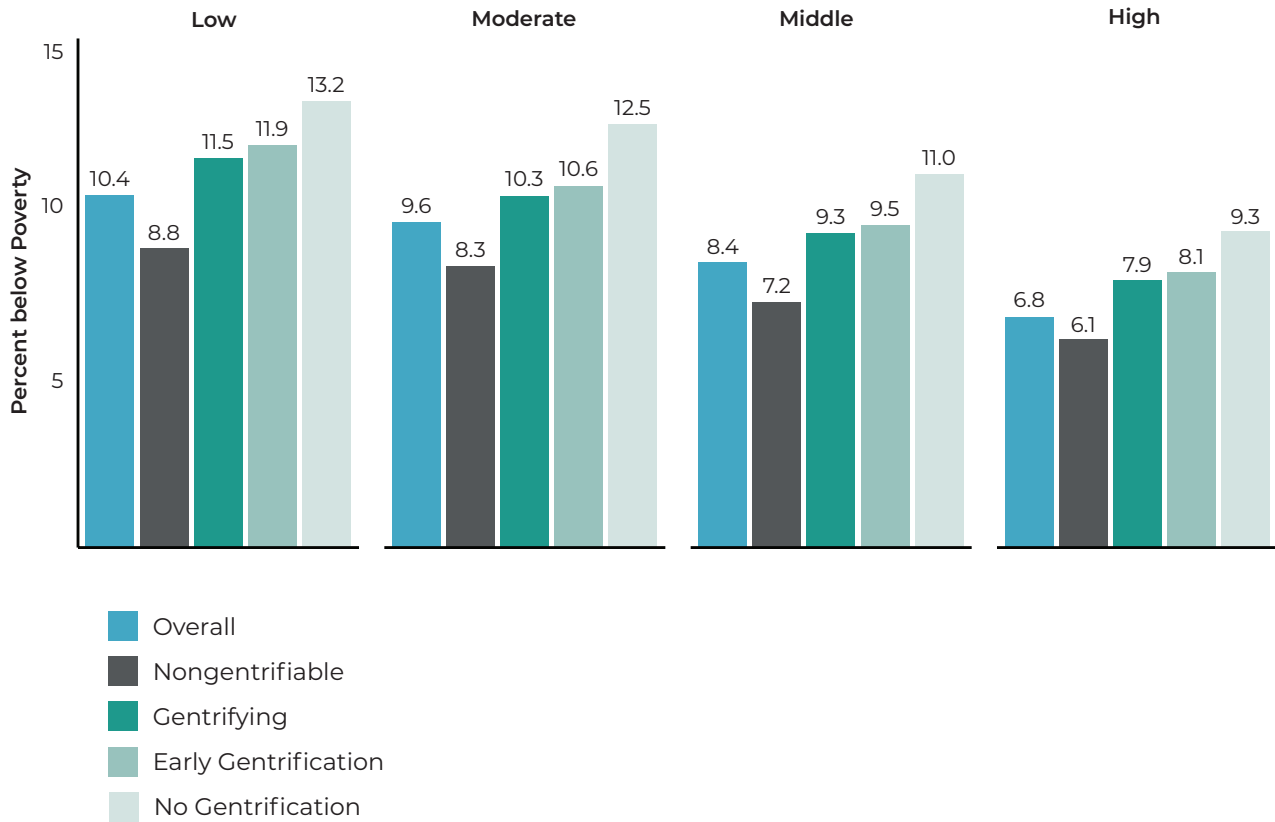


Source: FRBNY Consumer Credit Panel/Equifax Data, 2000 Census, and 2012–2016 American Community Survey Five-Year Estimates. Socioeconomic status approximated by Equifax Risk Score: Low=missing or <580, Moderate=580-649, Middle=650-749, High=750+

Figure 16. Lower-SES residents moved to higher-poverty neighborhoods compared to others, and lower-SES movers from gentrifying neighborhoods had relatively small reductions in poverty rates.

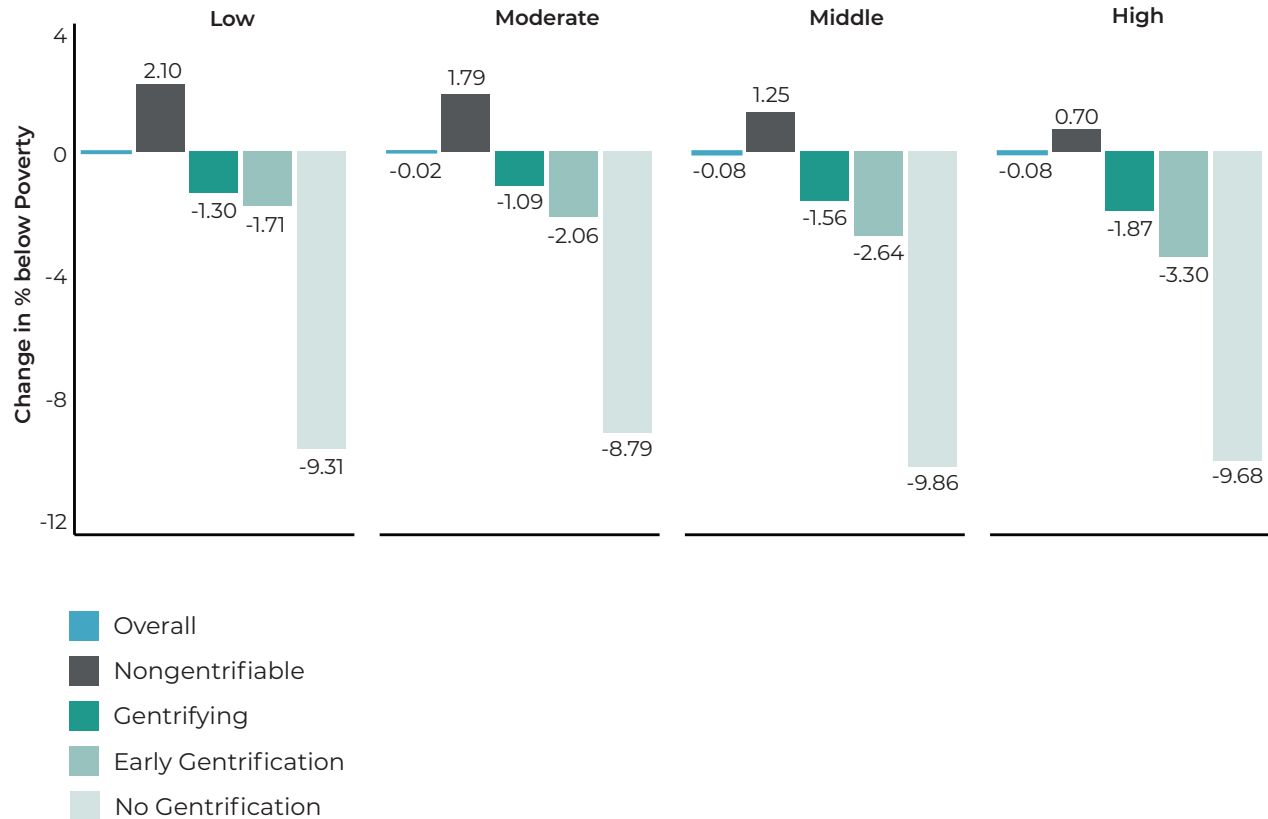
Destination (a) poverty rate and (b) change for Bay Area movers

(a) Median Poverty Rate



Source: FRBNY Consumer Credit Panel/Equifax Data, 2000 Census, and 2012–2016 American Community Survey Five-Year Estimates. Socioeconomic status approximated by Equifax Risk Score: Low=missing or <580, Moderate=580-649, Middle=650-749, High=750+

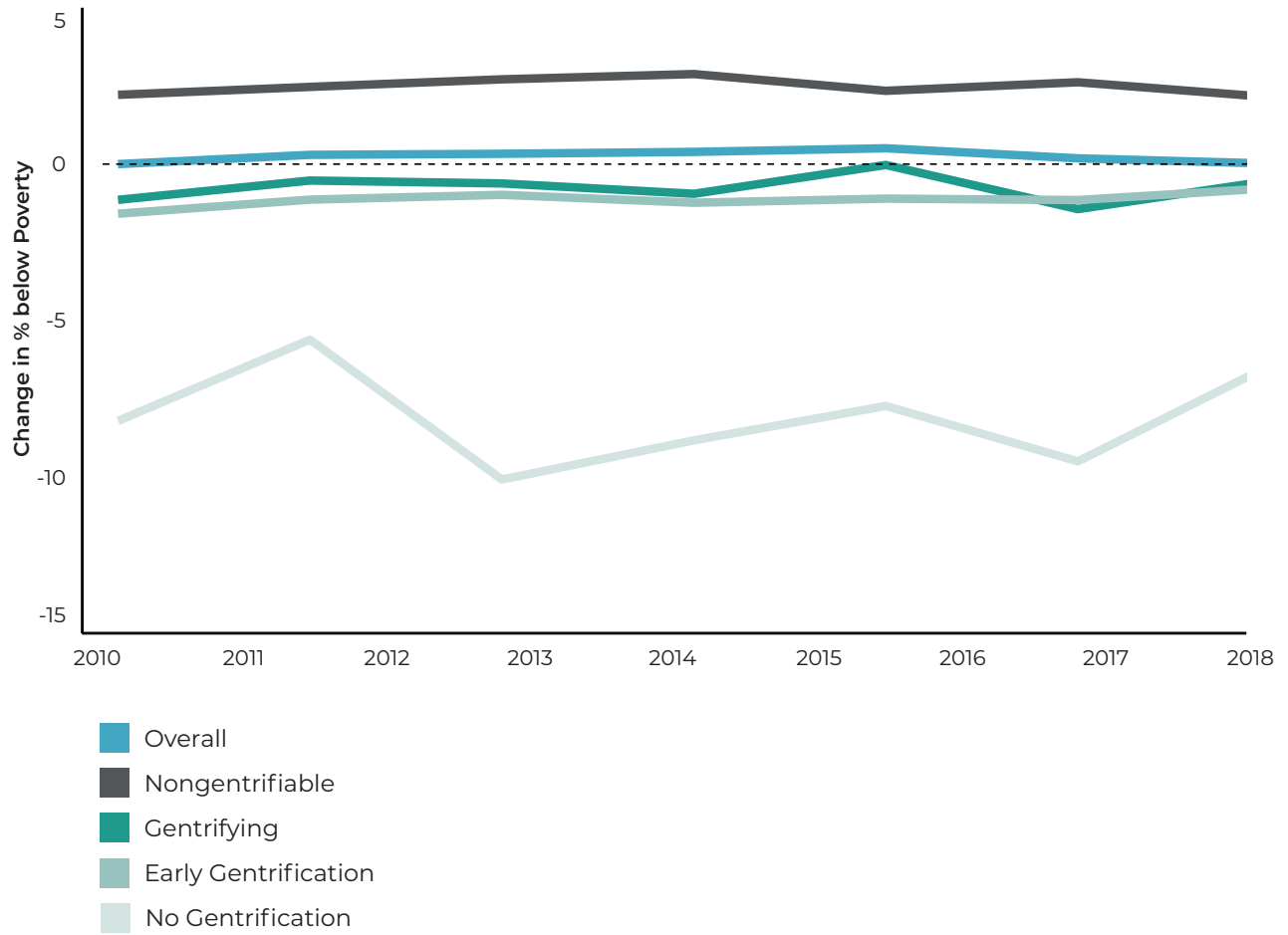
(b) Median Change in Poverty Rate



Source: FRBNY Consumer Credit Panel/Equifax Data, 2000 Census, and 2012–2016 American Community Survey Five-Year Estimates. Socioeconomic status approximated by Equifax Risk Score: Low=missing or <580, Moderate=580-649, Middle=650-749, High=750+

Figure 17. Low- and moderate-SES movers from gentrifying and early gentrifying neighborhoods moved to neighborhoods with slightly lower poverty rates than from where they moved.

Median change in poverty rate of first move by gentrification category for low- and moderate-SES 2009 Bay Area residents

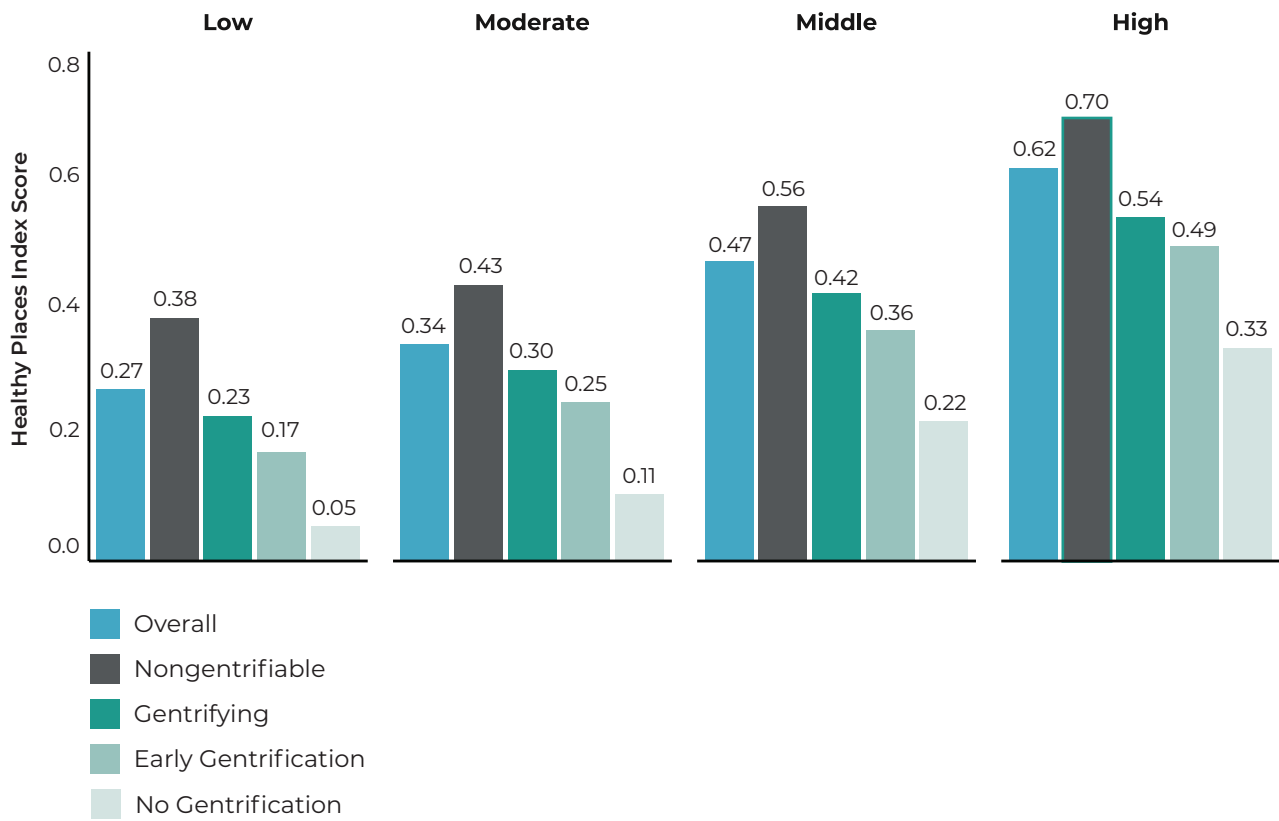


Source: FRBNY Consumer Credit Panel/Equifax Data, 2000 Census, and 2012–2016 American Community Survey Five-Year Estimates. Socioeconomic status approximated by Equifax Risk Score: Low=missing or <580, Moderate=580-649, Middle=650-749, High=750+

Figure 18. Lower-SES residents moved to less healthy neighborhoods compared to others, and lower-SES movers from gentrifying neighborhoods had relatively small increases in the Healthy Places Index.

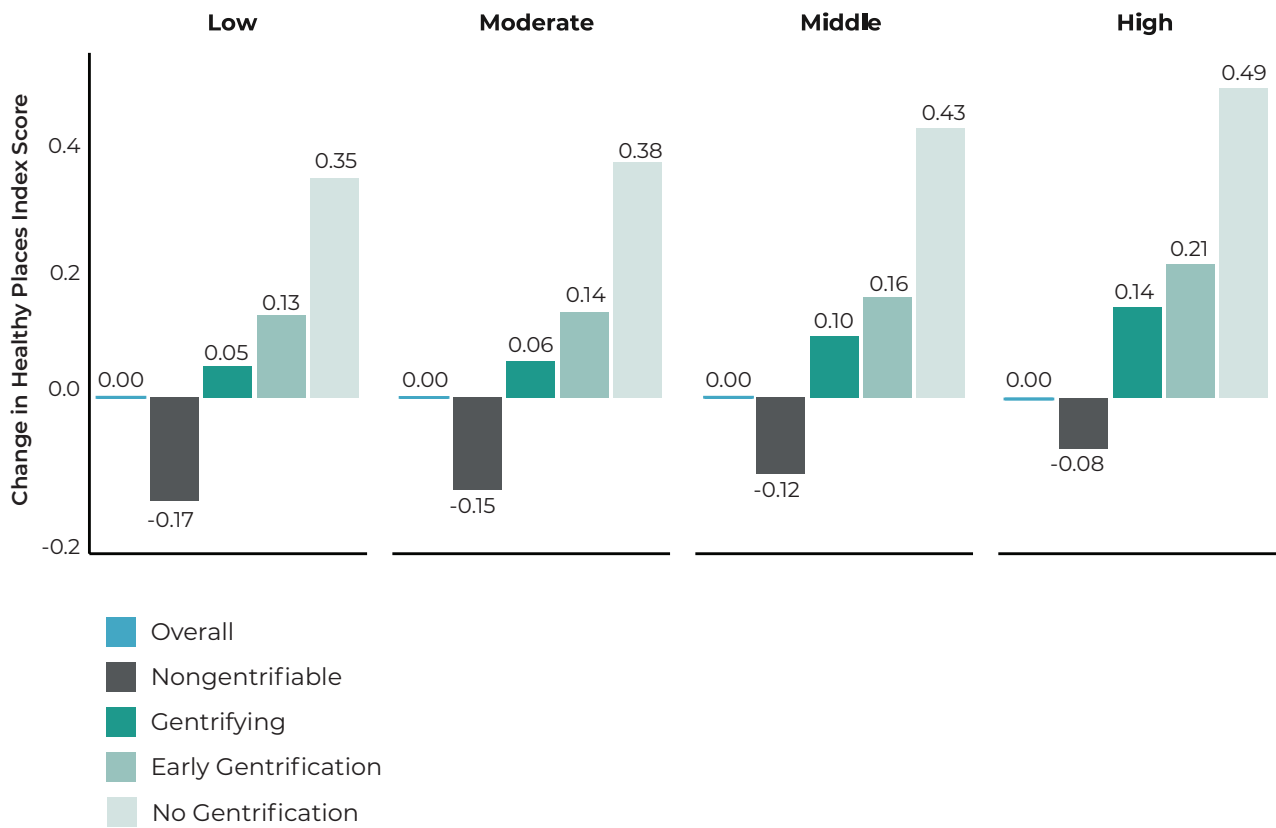
Destination (a) Healthy Places Index and (b) change for Bay Area movers

(a) Median Healthy Places Index Score



Source: FRBNY Consumer Credit Panel/Equifax Data, 2000 Census, and 2012–2016 American Community Survey Five-Year Estimates. Socioeconomic status approximated by Equifax Risk Score: Low=missing or <580, Moderate=580-649, Middle=650-749, High=750+

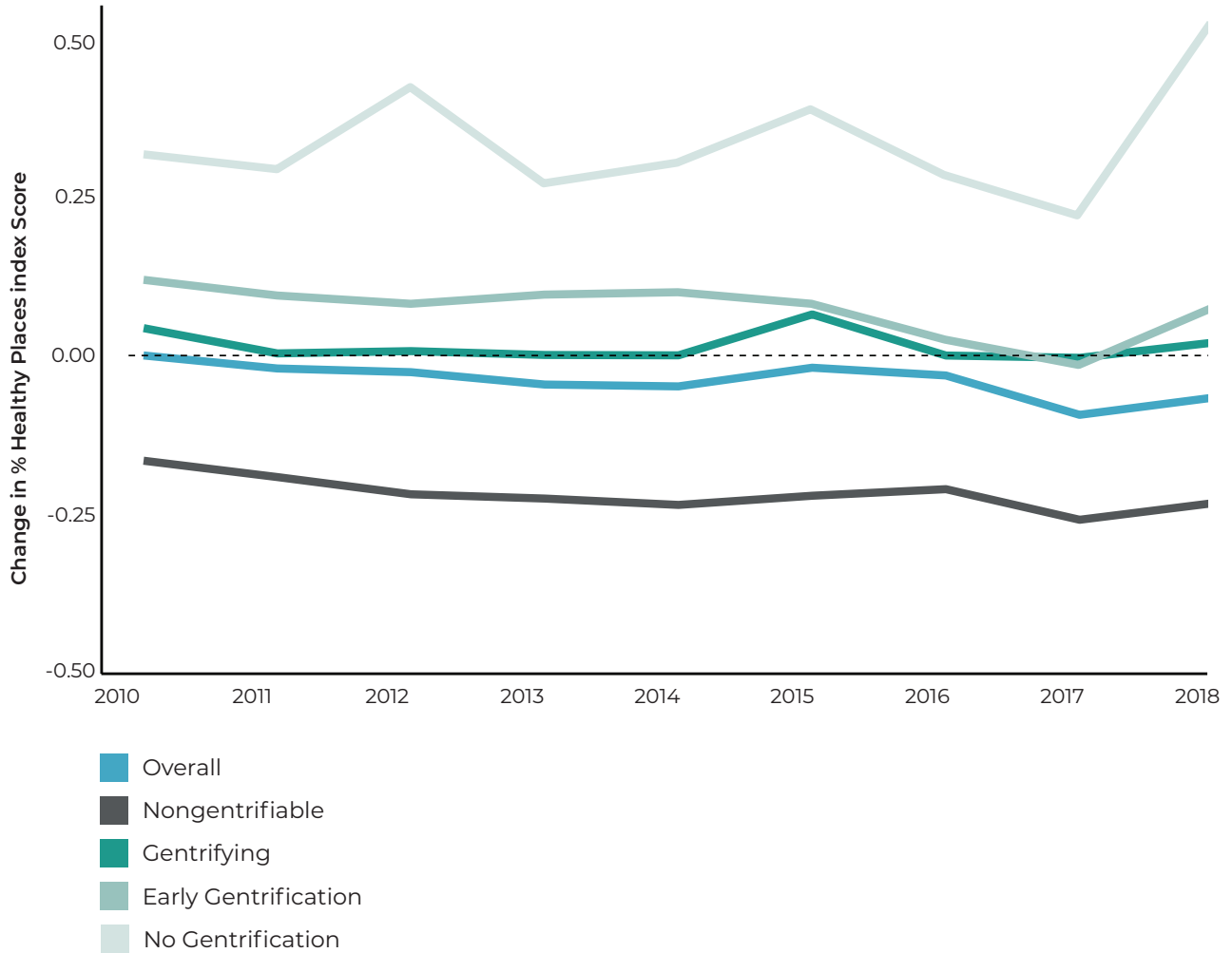
(b) Median Change in Healthy Places Index Score



Source: FRBNY Consumer Credit Panel/Equifax Data, 2000 Census, and 2012–2016 American Community Survey Five-Year Estimates. Socioeconomic status approximated by Equifax Risk Score: Low=missing or <580, Moderate=580-649, Middle=650-749, High=750+

Figure 19. Low- and moderate-SES movers from gentrifying neighborhoods moved to neighborhoods with similar Healthy Places Index scores to where they moved from.

Median change in Healthy Places Index of first move by gentrification category for low- and moderate-SES 2009 Bay Area residents



Source: FRBNY Consumer Credit Panel/Equifax Data, 2000 Census, and 2012–2016 American Community Survey Five-Year Estimates. Socioeconomic status approximated by Equifax Risk Score: Low=missing or <580, Moderate=580-649, Middle=650-749, High=750+

Table 3. Lower-SES movers from gentrifiable neighborhoods moved to neighborhoods with higher shares of Black and Latinx residents and had relatively small decreases in Black and Latinx neighbors, compared with other movers from gentrifiable neighborhoods.

Mean racial and ethnic composition and change for Bay Area movers' destinations by SES and gentrification category of origin neighborhood

SES	Gentrification Category	% Black	Δ Black	% white
Low-SES	Overall	8.83	-0.06	35.08
	Nongentrifiable	6.77	1.37	39.43
	Gentrifying	10.49	-1.33	32.56
	Early Gentrification	9.53	-0.38	32.48
	No Gentrification	11.25	-2.02	31.76
Moderate-SES	Overall	7.26	0.01	37.77
	Nongentrifiable	5.90	1.11	41.69
	Gentrifying	8.52	-0.94	35.21
	Early Gentrification	7.83	-0.38	34.92
	No Gentrification	9.49	-2.63	34.26
Middle-SES	Overall	5.71	0.11	41.35
	Nongentrifiable	4.73	1.05	44.52
	Gentrifying	6.83	-0.89	38.81
	Early Gentrification	6.35	-0.32	38.17
	No Gentrification	7.61	-3.36	37.19
High-SES	Overall	4.29	-0.06	46.95
	Nongentrifiable	3.59	0.65	49.19
	Gentrifying	5.35	-1.14	44.47
	Early Gentrification	5.00	-0.54	43.65
	No Gentrification	6.02	-3.32	42.75

Source: FRBNY Consumer Credit Panel/Equifax Data, 2000 Census, and 2012–2016 American Community Survey Five-Year Estimates. Socioeconomic status approximated by Equifax Risk Score: Low=missing or <580, Moderate=580-649, Middle=650-749, High=750+.

SES	Gentrification Category	Δ % white	% Latinx	Δ % Latinx	% Asian	Δ % Asian
Low-SES	Overall	0.29	28.36	-0.02	23.17	-0.24
	Nongentrifiable	-4.72	24.62	6.27	24.56	-2.85
	Gentrifying	2.12	29.24	-1.91	23.18	1.04
	Early Gentrification	3.42	31.56	-4.93	21.97	1.77
	No Gentrification	7.95	33.63	-8.22	18.74	2.32
Moderate-SES	Overall	0.37	26.45	0.01	24.02	-0.41
	Nongentrifiable	-4.15	22.97	5.76	24.88	-2.64
	Gentrifying	2.49	27.84	-2.49	23.99	0.86
	Early Gentrification	3.77	29.77	-5.10	23.05	1.55
	No Gentrification	7.58	31.82	-8.33	19.74	3.46
Middle-SES	Overall	0.41	22.26	0.19	26.19	-0.74
	Nongentrifiable	-3.53	19.36	4.78	26.89	-2.32
	Gentrifying	3.18	23.89	-2.84	25.98	0.55
	Early Gentrification	3.90	25.87	-5.02	25.13	1.28
	No Gentrification	8.40	29.66	-8.83	21.06	3.91
High-SES	Overall	1.36	18.03	-0.14	26.24	-1.19
	Nongentrifiable	-2.10	16.04	3.47	26.71	-2.02
	Gentrifying	5.43	20.06	-4.12	25.58	-0.17
	Early Gentrification	5.34	21.28	-5.69	25.54	0.69
	No Gentrification	9.73	24.85	-11.43	21.95	5.57

Source: FRBNY Consumer Credit Panel/Equifax Data, 2000 Census, and 2012–2016 American Community Survey Five-Year Estimates. Socioeconomic status approximated by Equifax Risk Score: Low=missing or <580, Moderate=580-649, Middle=650-749, High=750+

v. Destinations of Low- and Moderate-SES Residents Within the Bay Area

In this section, we examine where low- and moderate-SES residents moved over time to better understand the changing geography of affordability for lower-SES residents. Table 4 displays the top 10 destinations for low- and moderate-SES residents by housing period, which did not change substantially across periods. **Most lower-SES residents moving within the Bay Area moved to the three major cities and dense suburban areas accessible by public transit**, including Vallejo, Fremont, Hayward, Concord, Richmond, and Antioch. Many residents also moved to Fairfield and Santa Rosa—both the county seats of their respective counties.

To visualize the spatial patterns of where residents moved over time, Figure 20 maps low- and moderate-SES residents' moves at the neighborhood level. The quartiles in the maps are estimates of the number of low- and moderate-SES residents moving into these neighborhoods. Neighborhoods in the first quartile had fewer than 180 low- and moderate-SES adult residents moving in; neighborhoods in the second quartile had 180–320 residents moving in; neighborhoods in the third quartile had 320–520 residents moving in; and neighborhoods in the fourth quartile had over 520 residents moving in.

The maps show that the geography of where lower-SES residents moved changed over time. As San Francisco and the South Bay became increasingly unaffordable and inaccessible to low- and moderate-SES residents, the in-migration of these residents shifted outward to more parts of Oakland and broad swaths of the East Bay. During the housing boom and recovery, low- and moderate-SES residents' destinations within the Bay Area were far more widespread. More people moved during the housing boom and bust in general, but there is a stark difference between these two periods. The set of places to which low- and moderate-SES residents moved during the housing bust was more limited. After the Recession, the places to which these residents moved during the recovery period were generally widespread, as the housing market collapse made them more affordable. The outward geographic spread of these residents' destinations in the post-recovery period is consistent with growing anecdotal evidence of the long commutes that the working poor must endure as affordable housing options disappear. Even though San Francisco remains one of the top destinations for low- and moderate-SES residents, the neighborhoods to which they moved decreased over time. When we accounted for the different migration levels in each housing period (see Online Appendix), there were far fewer neighborhoods to which lower-SES residents moved in the post-recovery period, compared with the housing boom in San Francisco. A greater number of low- and moderate-SES residents moved to more parts of Oakland and the East Bay than in earlier periods.

Table 4. Low- and moderate-SES residents mostly moved to major cities and dense suburban areas accessible by public transit.

Top 10 destinations by low- and moderate-SES Bay Area movers over time

Boom		Bust	
Place	County	Place	County
San Jose	Santa Clara	San Jose	Santa Clara
San Francisco	San Francisco	San Francisco	San Francisco
Oakland	Alameda	Oakland	Alameda
Vallejo	Solano	Vallejo	Solano
Fremont	Alameda	Hayward	Alameda
Hayward	Alameda	Santa Rosa	Sonoma
Santa Rosa	Sonoma	Fremont	Alameda
Fairfield	Solano	Fairfield	Solano
Concord	Contra Costa	Concord	Contra Costa
Richmond	Contra Costa	Antioch	Contra Costa

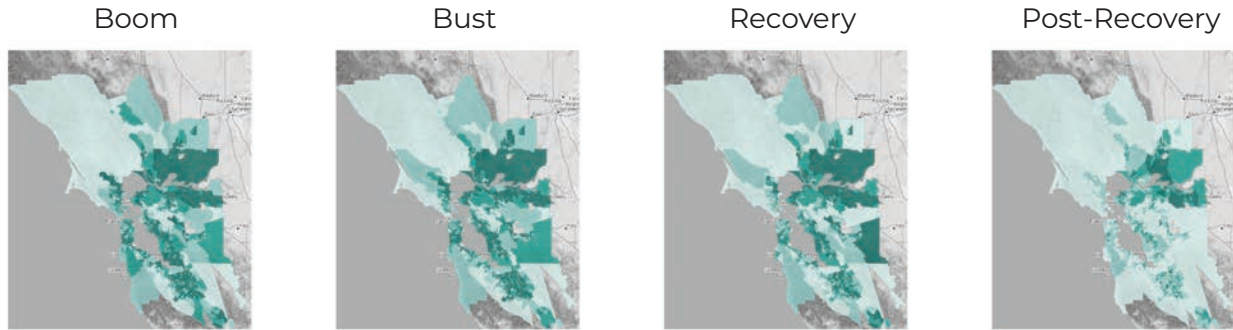
Recovery		Post-Recovery	
Place	County	Place	County
San Jose	Santa Clara	San Jose	Santa Clara
San Francisco	San Francisco	San Francisco	San Francisco
Oakland	Alameda	Oakland	Alameda
Vallejo	Solano	Vallejo	Solano
Hayward	Alameda	Antioch	Contra Costa
Santa Rosa	Sonoma	Santa Rosa	Sonoma
Antioch	Contra Costa	Hayward	Alameda
Fairfield	Solano	Fairfield	Solano
Fremont	Alameda	Fremont	Alameda
Concord	Contra Costa	Concord	Contra Costa

Source: FRBNY Consumer Credit Panel/Equifax Data.

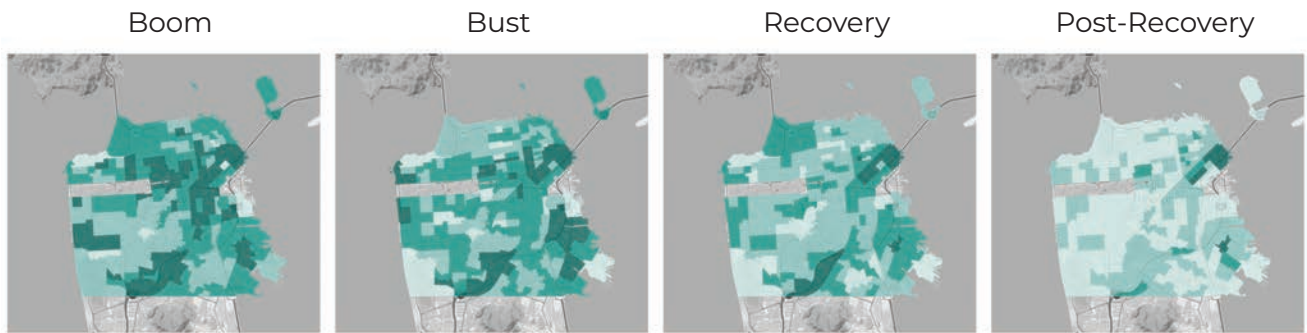
Figure 20. Low- and moderate-SES residents increasingly concentrated in fewer parts of the Bay Area, in particular parts of Oakland and broad swaths of the East Bay.

Destinations of low- and moderate-SES residents in (a) the Bay Area, (b) San Francisco, (c) North Bay, (d) East Bay, and (e) South Bay

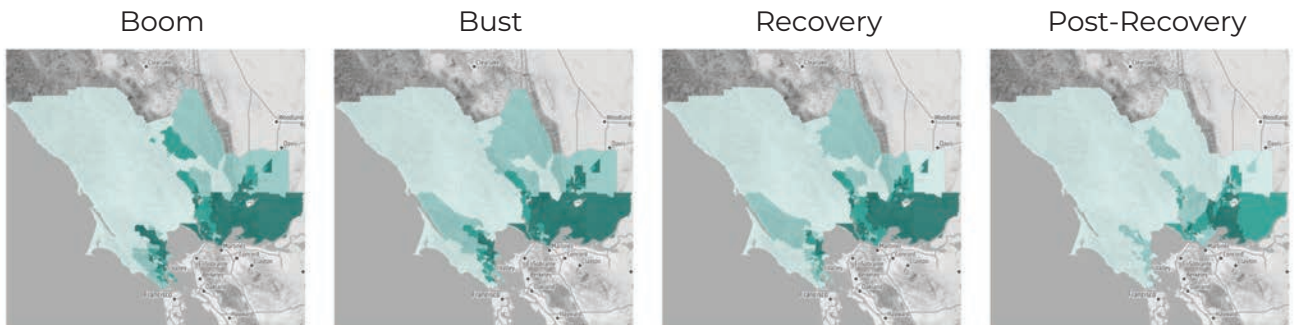
(a) Bay Area



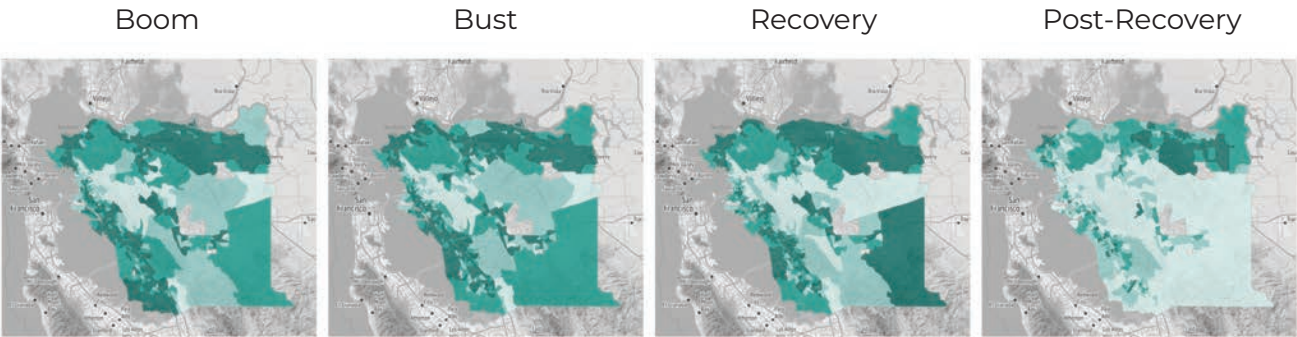
(b) San Francisco



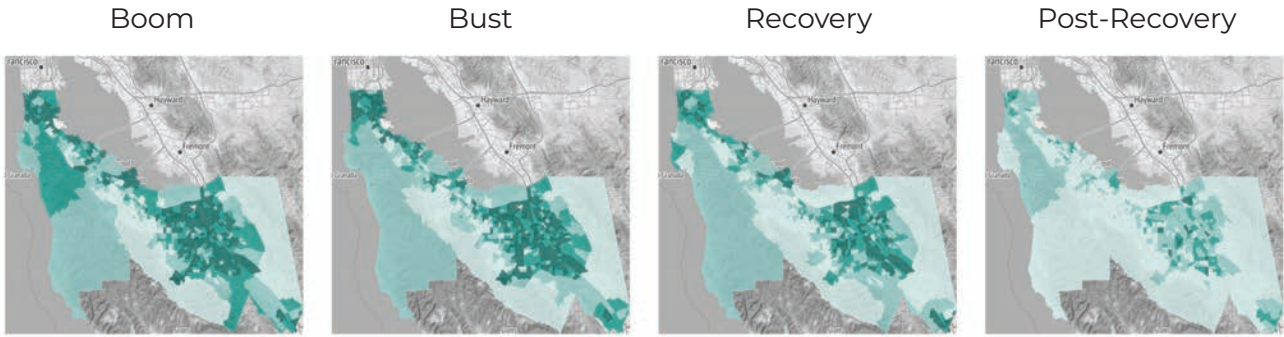
(c) North Bay



(d) East Bay



(e) South Bay



1st Quartile 2nd Quartile 3rd Quartile 4th Quartile

Housing Period Ranges: Boom = 2002-2006, Bust = 2007-2009, Recovery = 2010-2014, Post-Recovery = 2015-2017

Source: FRBNY Consumer Credit Panel/Equifax Data.

IV. Implications for Policy and Practice

Our findings support that Bay Area residents, particularly those with lower SES, experienced growing constraints on their moves over time. Although we found that moving rates were relatively high for low-, moderate-, and middle-SES residents, people across SES categories moved less after the Recession. These patterns suggest that post-Recession moves became increasingly constrained as gentrification intensified and spread in the region. Over time, lower-SES residents who moved were increasingly more likely to move farther distances, move farther away from major city downtown areas, move out of the Bay Area, and, if they stayed in the Bay Area, move into more crowded households. Higher-SES residents were more likely to move to more expensive and higher-opportunity neighborhoods. This suggests that although they moved less frequently over time, they moved under less constrained circumstances than lower-SES movers.

The housing market has been shaped by public- and private-sector actors who have played a role in the historic and current patterns of housing production, zoning, and financing. Findings from this study have several implications for policy and practice, suggesting ways in which these actors can help alleviate the housing challenges of the Bay Area.

First, our findings suggest the need for more expansive production of affordable housing. Over time, the places to which low-SES movers could move within the Bay Area grew increasingly limited. Affordable housing production and preservation throughout the Bay Area—especially in high-opportunity neighborhoods and near downtown areas and transit—could allow lower-SES residents to remain in their neighborhoods and give them more choices about where they can move. Moving patterns suggest that residents are re-segregating, perpetuating trends of neighborhood inequities by race and class. Although our study does not explicitly examine race and ethnicity, we found that low-SES movers were more likely than higher-SES movers to move to neighborhoods with higher poverty rates, poorer health outcomes, and more Black and Latinx residents. These findings further support the case for more affluent municipalities to enable affordable housing production, especially because these patterns became more pronounced over time as affordable places to live in the region became scarce.

Second, our findings suggest the need for stronger tenant protection policies, which most places in the Bay Area have not had. We found especially high outmigration rates of lower-SES residents in wealthy, suburban, and nongentrifiable areas. However, the persistence of high outmigration rates—even in the three major cities, where many residents did have some tenant protections—suggests that protection policies on their own may not be enough.

Our findings support the need for taking a proactive approach to better protect low-SES residents. We found that low-SES residents tended to move out of neighborhoods showing early signs of gentrification, even before substantial price increases were evident.

Ideally, protection policies and efforts should target low-SES neighborhoods that are in the early phases of gentrification or not yet gentrifying, rather than waiting to implement policies after gentrification is occurring. In addition, wealthy nongentrifiable neighborhoods could also benefit from protection efforts, as outmigration rates were highest among low-SES residents in these areas.

Third, developing regional networks of services and support are important steps to ensuring that low-SES residents can thrive in the outer-ring suburbs and exurbs. The increasingly limited number of affordable places in the Bay Area are experiencing large influxes of lower-SES residents. These places should provide resources and opportunities to accommodate the needs of their changing demographics.

Lastly, our findings from the Recession suggest that an economic downturn may lead to high outmigration rates, especially by lower-SES residents, and subsequently high replacement rates by high-SES residents. Although the short- and long-term effects of the COVID-19 pandemic have yet to be seen, these trends suggest that lower-SES residents will experience increased outmigration under severely constrained circumstances without effective and sustained interventions. Further, in the context of COVID-19, gentrification may become even more widespread if housing costs decline. By the same token, developers will also be able to take advantage of potentially lower costs to aid in the production and preservation of affordable housing. Tenant and homeowner protections may be especially important as the crisis places financial strain on many residents. Given the long recovery from the last Recession, such protections will be vital for achieving an equitable recovery, particularly for Black and Latinx residents. These findings may also provide lessons for other regions that are in the early phases of gentrification and residential instability.

V. Conclusion

Our results highlight the importance of studying different aspects of residential instability when attempting to understand the consequences of gentrification and housing unaffordability. We examined not just whether individuals moved, but also the constraints they may have faced when moving. We assessed where residents moved and how far they moved; we also considered heterogeneity across the gentrification life cycle and broad patterns of residential concentration. Our goal in doing all of these things was to add nuance to the tradeoffs and constraints residents faced and to provide further evidence for policy and practice.

As the San Francisco Bay Area faces the economic and health crisis caused by the COVID-19 pandemic, the importance of residential stability cannot be understated. Supporting housing that enables opportunity and good health for all Bay Area residents is important in ensuring equity and prosperity in the region.

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METHODOLOGICAL APPENDIX

Federal Reserve Bank of New York Consumer Credit Panel/Equifax Data (CCP)

The CCP data consist of an anonymized 5% random sample of consumers over 18 years old with Social Security numbers and a credit history, collected quarterly by the credit bureau Equifax. The sample is intended to be a nationally representative sample of consumers in a given quarter. About 1–3% of consumers are dropped from, and a similar share are added to, the panel each quarter to maintain this representativeness. Thus, younger people and new immigrants who become consumers are added, and consumers who die, move out of the United States, or have a prolonged period of inactivity are dropped. The sample includes consumers with at least one credit account or collection/public record (such as bankruptcy or foreclosure), as well as those with closed or authorized user accounts (Lee and van der Klaauw 2010). Although 45 million U.S. adults do not have credit scores (Wherry et al. 2019), nearly half of them have a credit history and are represented in our data. The CCP data include information on individuals' age, credit information (including an Equifax Risk Score, which is a credit score), census block group of address, and payment activity of mortgages and other credit accounts. Similar information is provided for all other adult consumers in the same household, based on their residential address. The CCP data exclude individuals who lack credit or a credit history, which may underrepresent younger individuals, noncitizens or undocumented immigrants, and very low-SES individuals; the data may overrepresent older individuals and include those who are deceased. Further, our ability to assess moves among homeless individuals and those who are severely residentially unstable is limited because their residential data are likely to be misreported.

Equifax Risk Scores

The Equifax Risk Score is a proprietary credit score that estimates the likelihood that an individual will pay his or her debts without defaulting. A variety of factors that relate to loan performance contribute to credit scores, including previous payment history, outstanding debts, length of credit history, new accounts opened, and types of credit used (Federal Reserve Board 2007; Fair Isaac Corporation 2015); delinquency, large increases in one's debt, and events of public record (e.g., bankruptcy or foreclosure) often lead to low credit scores (Anderson 2007). The scores range from 280 to 850, with higher scores representing greater financial health and advantage.²⁴ Having no score indicates that the consumer has a “thin” file—too few accounts or new credit, such that there is too little information to estimate a score (Brevoort et al. 2016). Because the CCP data contain individuals who have a public record for collection, thin files are disproportionately lower-income, but younger consumers are also more likely to have thin files (Brevoort et al. 2016). Credit bureaus do not consider income when calculating credit scores, though credit scores correlate highly with income levels; however, credit scores can reflect individuals across the income and wealth distributions (Bostic, Calem, and Wachter 2005; Brevoort, Grimm, and Kambara 2016).

²⁴ Transunion and Experian, the other two major credit bureaus, produce scores with similar scoring models but slightly different scales.

Housing Cycles

The housing cycle periods are based on the Standard & Poor Case-Schiller Home Price Indices²⁵ for the San Francisco Bay Area. The housing bust period captures when home prices were falling, while the recovery period captures when home prices began rising again; in 2015, the home price index reached the same levels as the housing boom peak and has continued to rise since then. Although the housing boom of the early 2000s that occurred across the United States also occurred in the Bay Area, the degree of housing price changes in the Bay Area during this time was lower than pre-2000 periods and the recovery period following the Recession.²⁶ Most of the change in terms of housing prices and affordability occurred after the Recession.

Gentrification Measures

The gentrification measures rely on 2000 U.S. Census, the 2012–2016 American Community Survey (ACS) five-year estimates harmonized to the 2010 Census tract boundaries. We use population and areal weighting techniques employed by Brown University's Longitudinal Tract Data Base. Census variables rely on a one-in-six sample, and ACS variables rely on samples that are pooled across five years and are half as large as the Census samples. Thus, sampling variation in the estimates that we rely on can introduce error and is higher in the ACS, especially when it comes to reporting dollar values (e.g., income and home values). Although there is no systematic bias in the measures, our measures about individual tracts are subject to error and should be interpreted with caution, particularly those with smaller populations.

We build on measures used in prior research that conceptualize gentrification as the socioeconomic transformation of a previously low-income neighborhood characterized by an influx of residents with relatively higher SES and an increase in housing prices (Hwang 2019; Ding, Hwang, and Divringi 2016). We adapt prior measures to accommodate the complexities of the Bay Area housing market. First, we consider areas beyond central cities—suburbs and small towns—as eligible to gentrify. Second, among neighborhoods that do not meet standard criteria used in previous studies, we distinguish neighborhoods showing some evidence of early signs of gentrification, such as rising prices or increases in higher-SES residents or relatively smaller increases in both. Typically, a neighborhood is categorized as gentrifying if there are substantial increases in both housing prices and higher-SES residents moving in. In addition, among neighborhoods that meet standard criteria used in previous studies, we distinguish neighborhoods by the intensity of their changes. These distinctions allow us to examine movement related to

²⁵ Source: <https://fred.stlouisfed.org/series/SFXRSA>.

²⁶ Source: Bay Area Market Reports. "Bay Area Real Estate Cycles." (<https://www.bayareamarketreports.com/trend/bay-area-real-estate-cycles>). Retrieved October 19, 2018.

different stages and paces of gentrification to test our hypotheses about speculation and displacement. Third, we establish thresholds based on subregions within the Bay Area rather than applying the same thresholds across the entire metropolitan area.

To identify gentrification, we examine neighborhoods, proxied by census tracts, that are gentrifiable (i.e., relatively low-income tracts at the beginning of the period that can undergo gentrification) and then examine the extent to which they experience increases in residents' SES and increases in value over the analysis period.²⁷ Table A1 presents the gentrification typology and the criteria used to identify them. We exclude census tracts with fewer than 100 residents or 50 housing units during both analysis periods. For the entire Bay Area, the median income in the year 2000 was \$90,408, but there was variation across the subregions: \$84,749 for San Francisco, \$80,737 for North Bay, \$106,409 for South Bay, and \$83,206 for East Bay. All dollar values presented in this report are adjusted for inflation to 2016 real dollars. The measure categorizes neighborhoods to be gentrifying if they undergo both substantial socioeconomic increases among residents in a neighborhood, proxied by either median household incomes or education levels, and substantial increases in the value of a neighborhood, proxied by either median home values or median rents.²⁸ Among these gentrifying neighborhoods, the typology distinguishes between intense gentrification and moderate gentrification, based on the degree of socioeconomic change in a neighborhood over the period.

Among neighborhoods that do not meet the criteria to be classified as gentrifying, the typology distinguishes among neighborhoods showing early signs of gentrification and those that do not. Neighborhoods that experience increases in residents' SES and in values but do not meet standard thresholds for substantial changes are categorized as weak gentrification. Because the standard thresholds are based on median changes in the Bay Area, which are very high, neighborhoods undergoing "weak" gentrification may also be changing considerably. Neighborhoods that do not experience substantial increases in both higher-SES residents and housing prices but increases in just one domain are categorized as price gentrification and people gentrification, respectively. Neighborhoods that exhibit none of these early signs of gentrification are categorized as nongentrifying.²⁹

²⁷ Although the continuing gentrification of higher-income neighborhoods is important for understanding the expansion of displacement pressures to higher-SES residents, we focus primarily on residents living in relatively lower-income neighborhoods in this analysis.

²⁸ Other approaches to measuring gentrification consider only influxes of highly educated residents to better capture class transformation (e.g., Freeman 2005; Ding et al. 2016), and some consider only changes in income (e.g., Ellen and O'Regan 2011). Others consider some flexible combination of the two (e.g., Chapple et al. 2017; Hwang 2019).

²⁹ Our binary measures of gentrification are generally consistent with UC-Berkeley's Urban Displacement Project measures.

Based on our measures, nearly half of the Bay Area's 785 gentrifiable tracts were gentrifying from 2000 to 2016, with about 10.6% of all Bay Area tracts undergoing "intense" gentrification and 13.8% undergoing "moderate" gentrification. Only 42 neighborhoods (2.7%) in the Bay Area did not show any signs of gentrification. Of the remaining tracts that would typically be categorized as having no gentrification, nearly half of them were categorized as "weak" gentrification, experiencing some increases in both their prices and the socioeconomic status of their residents. Figure A1 presents maps of the gentrification categories across each subregion. In San Francisco, most gentrifiable tracts were gentrifying, especially in the Hunter's Point/Bayview section, the Mission, and the Richmond areas. Many neighborhoods in both the downtown area and outer areas of the city were also experiencing "weak," "people," and "price" gentrification. In the North Bay, gentrifying tracts were generally located in larger cities (e.g., Santa Rosa and Vallejo), while many areas scattered throughout the region also exhibited early signs of gentrification. Gentrification was especially widespread in the East Bay, particularly around Oakland, Berkeley, and Hayward, with some pockets of "people" gentrification between Oakland and Hayward and pockets of "price" gentrification around Concord. Most of the nongentrifying tracts were dispersed in outer regions of the East Bay and North Bay. Lastly, gentrification was spread throughout the South Bay, especially in Daly City, San Mateo, Redwood City, East Palo Alto, and San Jose; many areas throughout the South Bay showed early signs of gentrification.

Table A2 shows average neighborhood characteristics and displays their changes for each gentrification category. In line with the construction of the typology, education, rent, and home values increased by greater amounts for neighborhoods that experienced more intense levels of gentrification, and median incomes increased only in gentrifying neighborhoods. Notably, tracts undergoing "intense" gentrification had a higher percentage of Black residents than other gentrifiable tracts, as well as significantly lower rents and incomes. From 2000 to 2016, the percentage of Black residents and white residents declined across all gentrification categories.

However, in tracts undergoing "intense" gentrification, the share of Black residents declined the most, while the share of white residents declined the least. By contrast, the share of Latinx residents increased across the board, but mostly in tracts categorized as nongentrifying or "price" gentrification. The share of Asian residents increased in most categories but declined slightly in nongentrifying tracts.

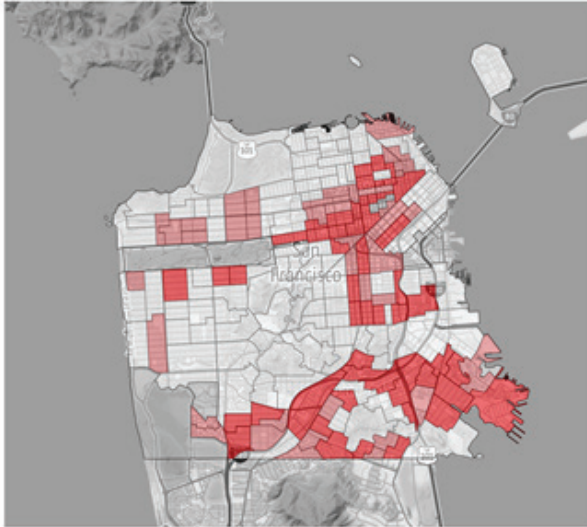
Table A1. Gentrification Categories in the Bay Area

Gentrification Category	Description	# of Census Tracts	% of Census Tracts
Nongentrifiable	Median household income in 2000 > subregion's median household income.	756	49.1%
Gentrifiable	Median household income in 2000 < subregion's median household income.	785	50.9%
Gentrifying	<p>Intense</p> <ul style="list-style-type: none"> · % increase in either median rent or home value > subregion's 75th percentile of % increases in either median rent or home values. · % increase in either the population of college-educated residents or median household incomes > subregion's 75th percentile of % increases in either the population of college-educated residents or median household incomes. 	164	10.6%
	<p>Moderate</p> <ul style="list-style-type: none"> · % increase in either median rent or home value > subregion's 50th percentile of % increase in either median rent or home values. · % increase in either the population of college-educated residents or median household incomes > subregion's 50th percentile of % increases in either the population of college-educated residents or median household incomes. · Does not qualify as intense gentrification. 	212	13.8%
	<p>Weak</p> <ul style="list-style-type: none"> · % increase in either median rent or home value > subregion's 25th percentile of % increase in either median rent or home values. · % increase in either the population of college-educated residents or median household incomes > subregion's 25th percentile of % increases in either the population of college-educated residents or median household incomes. · Does not qualify as intense or moderate gentrification. 	164	10.6%
Early Gentrification	<ul style="list-style-type: none"> · % increase in either the population of college-educated residents or median household incomes > subregion's 25th percentile of % increases in either the population of college-educated residents or median household incomes. · Does not qualify as intense or moderate gentrification. 	164	10.6%

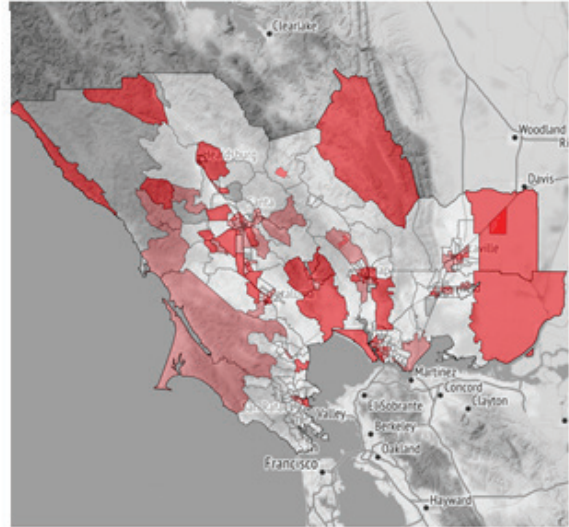
Gentrification Category	Description	# of Census Tracts	% of Census Tracts
Early Gentrification	<p>People</p> <ul style="list-style-type: none"> · % increase in either median rent or home value < subregion's 25th percentile of % increase in either median rent or home values. · % increase in either the population of college-educated residents or median household incomes > subregion's 25th percentile of % increases in either the population of college-educated residents or median household incomes. 	67	4.3%
	<p>Price</p> <ul style="list-style-type: none"> · % increase in either median rent or home value > subregion's 25th percentile of % increase in either median rent or home values. · % increase in either the population of college-educated residents or median household incomes < subregion's 25th percentile of % increases in either the population of college-educated residents or median household incomes. 	104	6.7%
Non-Gentrifying	<ul style="list-style-type: none"> · % increase in either median rent or home value < subregion's 25th percentile of % increase in either median rent or home values. · % increase in either the population of college-educated residents or median household incomes < subregion's 25th percentile of % increases in either the population of college-educated residents or median household incomes. 	42	2.7%

Figure A1. Maps of Gentrification in (a) San Francisco, (b) North Bay, (c) East Bay, and (d) South Bay from 2000 to 2016

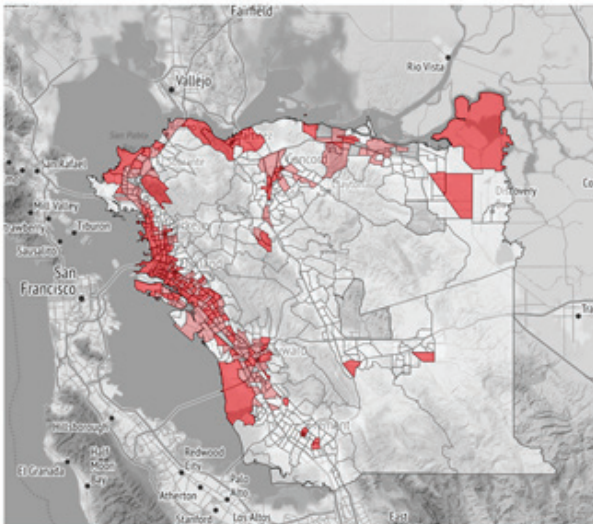
(a) San Francisco



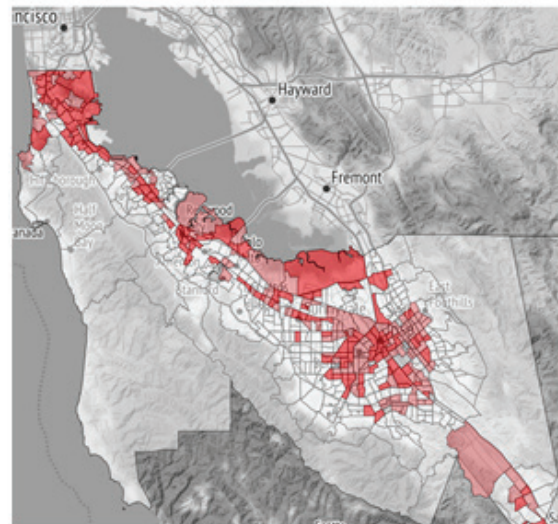
(b) North Bay



(c) East Bay



(d) South Bay



Gentrifying
 Early Gentrification
 Nongentrifying
 Nongentrifiable

Source: 2000 Census and 2012–2016 American Community Survey Five-Year Estimates.

Table A2. Neighborhood Characteristics by Gentrification Category

	Non-gentrifiable		Gentrifying		Early Gentrification		Nongentrifying	
	2000	2000 -2016	2000	2000 -2016	2000	2000 -2016	2000	2000 -2016
Population	4,406	11.02%	4,029	13.9%	4,562	5.8%	4,531	3.2%
% white	61.84	-10.80	39.25	-4.04	41.49	-8.45	40.19	-10.73
% Black	4.13	-0.61	14.42	-4.90	10.49	-2.53	13.18	-2.32
% Latinx	11.07	3.49	25.63	2.85	25.63	6.70	28.06	10.99
% Asian	21.44	4.88	18.86	3.51	20.52	1.82	16.44	-0.57
% foreign-born	22.87	3.93	30.37	1.35	30.65	2.35	29.72	3.38
Median household income	123,627	-3.3%	67,705	6.4%	72,338	-10.9%	62,907	-29.0%
% below poverty	4.76	1.35	13.42	1.03	11.99	3.08	14.86	9.05
% bachelor's degree	47.13	7.61	27.14	12.01	27.27	5.32	22.01	-1.83
% homeownership	72.49	-2.61	44.67	-1.27	46.92	-3.66	42.57	-7.59
Median home value	667,420	28.5%	399,366	41.1%	400,935	25.8%	356,178	-3.8%
Median rent	1.731	10.3%	1.160	21.4%	1.236	8.7%	1.137	-4.3%
% vacancies	2.78	1.99	4.35	1.72	3.37	2.39	5.14	2.21
% buildings < 20 years old	28.83	-10.71	17.78	1.46	19.53	-4.77	27.21	-10.02
N	757		373		369		42	

Notes: 2000 estimates for median household income, rent, and home value adjusted for inflation to 2016 dollars.

Neighborhoods with <500 residents (n=39) or <100 housing units (n=9) were excluded.

Source: 2000 Census and 2012-2016 American Community Survey 5-year Estimates.



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