

## **The Effects of Gentrification on Household Finance and Mobility**

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### **Abstract:**

Over the past two decades, young, college-educated workers have flocked to city centers, transforming formerly lower-income neighborhoods in the process. Whether longtime residents have shared in their neighborhoods' economic gains, however, remains to be seen. This paper uses twenty years of individual-level credit bureau records to estimate the impact of gentrification on incumbents. Specifically, we compare mobility, housing, and credit outcomes for existing residents from census tracts that later gentrified to observably similar individuals in nearby tracts that did not. Our results paint a nuanced picture of gentrification's effects on existing residents: out-migration rises, but effects on credit and housing outcomes are modestly positive on average. Gentrification raises the likelihood of moving away from the original tract, particularly among households with stronger neighborhood attachment, such as homeowners or those with longer neighborhood tenure. Surprisingly, the mobility and financial effects of gentrification depend most profoundly not an incumbent's homeownership status, but on their initial neighborhood's housing supply elasticity. Out-migration effects are driven almost entirely by inelastic supply tracts. In these neighborhoods, incumbent homeowners are more likely to extract home equity, while renters are more likely fall behind on loan payments. In contrast, renters in elastically supplied neighborhoods are less likely to move or experience delinquency. This suggests increasing new construction through more permissive land use policies could mitigate gentrification-related displacement and improve credit outcomes for incumbent renters.

\* Analysis here does not reflect the views of the Board of Governors or the Federal Reserve System. All errors are our own.

## 1. Introduction

Over the past two decades, young, college-educated workers have flocked to city centers, transforming formerly lower-income neighborhoods in the process. Between 2000 and 2019 in Washington, DC, for example, the share of college-educated adults in the average low-income tract increased by 91 percent while median tract-level house values nearly doubled.<sup>1</sup> Over this same period, median real rent in these neighborhoods increased by 50 percent (by \$500/month) and the combined Black and Hispanic population share declined by 15 percent. Neighborhood change of this nature—the influx of high-socioeconomic status individuals accompanied by cost of living increases and the departure of incumbent residents—has made gentrification a complex socioeconomic issue for policymakers and academics alike.

Recent work has documented neighborhood change and examined the causes of gentrification (Couture & Handbury, 2020; Baum-Snow & Hartley, 2020; Guerreri et al., 2013). Much of this existing literature focuses on the causes and consequences of gentrification on *places*, but less is known about the effect of neighborhood transformation on incumbent residents themselves.<sup>2</sup> The conventional wisdom is that gentrification is a disruptive force for existing residents: the influx of high-income households into formerly low-income areas raises the cost of living, either displacing existing residents or squeezing their finances. On the other hand, increases in home values may be a boon to long-time owners in gentrifying neighborhoods, and financial institutions may expand credit access into these fast-growing, but historically underserved areas. In this paper, we explore the relative importance of each of these forces on incumbent households and how these effects may vary across neighborhoods and households' initial conditions.

In particular, we use nearly two decades of individual-level credit bureau records from the FRBNY/Equifax Consumer Credit Panel (CCP) linked to neighborhood characteristics from various sources to explore how gentrification impacts the mobility and financial outcomes of

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<sup>1</sup> According to the authors' calculations: In 2000 Census data, the average low-income census tract (below CBSA median income) had a college share of 22% and a median house value of \$194,000 (in 2019 dollars). In the 2015-2019 American Community Survey (ACS), those same census tracts had a college share of 42% (a 91 percent increase) and a median house value of \$385,000 (a 99 percent increase).

<sup>2</sup> A notable exception are Brummet and Reed (2021), who use confidential decennial census microdata track incumbents' location choices, housing, and labor market outcomes. Our work builds on this paper by constructing a dynamic quarterly panel of individuals' location, consumer behavior, and household finances.

incumbent populations across the 100 largest US metropolitan areas. Following Brummet & Reed (2021), we define gentrification as the net inflow of college-educated individuals moving into formerly low-income, center-city neighborhoods. We then ask how the influx of the college educated affects incumbent households' mobility, housing, and consumer finance outcomes relative to similar incumbents from nearby, observational-equivalent neighborhoods. Our data allows us to estimate the impacts of gentrification across various individual and neighborhood initial conditions, providing insight into how and why households may be impacted—both positively and negatively.

Our findings suggest that while gentrification drastically transforms neighborhood characteristics and composition, its impacts on incumbent populations are more nuanced. Gentrification differentially raises out-mobility, particularly for households with the highest neighborhood attachment, such as those who own homes and have lived in the area longer. Yet, despite higher rates of out-migration, incumbents do not appear worse off along many other metrics on average: they do not move to observably worse neighborhoods, they transition to homeownership at the same rate, and they see increased credit balances and slightly better credit performance.

We also find that the average effects mask considerable heterogeneity in responses across housing tenure and, even more profoundly, the initial neighborhood's housing supply elasticity. The interaction between gentrification and local housing supply elasticity, as measured by new tract-level estimates from Baum-Snow & Han (2021), has large impacts on incumbent migration and financial behavior. As college-educated entrants move into a gentrifying neighborhood, the price impact of that demand shock depends crucially on local housing supply: in elastic-supply neighborhoods, new construction would keep home values and rents in check whereas inelastic-supply areas would see little construction and larger increases in housing costs and home values. The effect of these changes on incumbent households would vary by housing tenure, with rent increases likely squeezing the budgets of renters while incumbent homeowners enjoy capital gains as house prices rise. Both these effects would be more muted in elastic-supply areas where rents and prices rise less sharply.

Consistent with this framework, we find that out-migration effects from gentrification are most pronounced in neighborhoods where housing is inelastically supplied, suggesting

construction facilitated by more permissive land use policy may mitigate displacement. Indeed, we find that over the first 9 years of our sample period (2001-2009), gentrification's effect on differential out-migration is driven entirely by incumbents who initially lived in inelastically supplied census tracts. Gentrification appears to raise delinquency rates among renters living in inelastic tracts, whereas renters in gentrifying areas with more elastic supply see no significant deterioration in credit performance. We see a similar divergence between owners across neighborhoods differing in supply elasticity. For owners in inelastic supply tracts, gentrification leads to higher rates of equity extractions for those remaining in place, and increasing mortgage balances for movers; homeowners in elastic-supply tracts see little effect on mortgage balances due to gentrification. These results suggest capital gains facilitate "moving up" in the housing ladder. Overall, housing costs appear to be a central driving force for how neighborhood change impacts incumbent households, and policies impacting local housing supply elasticity may serve as a useful lever to control how gentrification affects displacement and financial health of incumbents.

Altogether, our data and approach allow us to extend the current understanding of the economic impacts of gentrification in three ways. First, we show that gentrification disproportionately impacts longer-term incumbent residents. Consistent with results from existing work by Brummet & Reed (2021), we find gentrification modestly raises out-mobility relative to the already-high level of mobility for the average households in center-city, low-income neighborhoods. However, we also show the composition of out-movers is significantly altered by gentrification, with many more long-term residents and owners moving than non-gentrifying areas. The dynamic nature of the CCP is a key improvement over decennial census or other survey data. Tracing out individuals' economic trajectories at a quarterly frequency over 20 years allows us to distinguish long-term from short-term incumbent residents, multiple moves, and dynamics in housing tenure, credit balances, and Equifax Risk Scores.

Second, to our knowledge, we are the first to document how gentrification affects incumbent households' financial health, credit, and housing decisions in addition to migration in a large number of metro areas. Our ability to do this hinges on the fact that our data set provides longitudinal credit histories with long-term nationwide coverage. The main data sample consists of 0.5% of all credit records for the country's 100 largest CBAs. Our results build on existing

work which has focused more on how gentrification impacts children’s educational outcomes (Brummet & Reed, 2021; Baum-Snow, Hartley, & Lee, 2019).

Finally, we contribute to the literature by exploring how housing supply may interact with neighborhood change to mitigate or exacerbate impacts on incumbents. Our results highlight the role of housing costs as a driving mechanism for how gentrification affects both mobility and credit outcomes. We also show that housing supply elasticity plays an important role in determining how housing costs change in response to gentrification, suggesting that land-use and urban development policies affecting the ease of new construction may play an important role. Broadly, our results help paint a more complete picture of who is impacted by gentrification and in what manner.

## **2. Data**

### *2.1 Defining Gentrification*

The terms “gentrification” and “neighborhood change” take on numerous meanings in both the academic and popular literature. Many of these definitions are closely related, but tend to capture a transformation of urban, center-city, historically lower-income neighborhoods as predominantly young and white, college-educated workers earning higher wages move in. Such shifts in population often bring with them changes in housing costs and quality, local amenities, and urban form.

In this paper, we adopt a definition of gentrification based on the net inflow of college-educated workers into previously low-income, center-city neighborhoods.<sup>3</sup> Specifically, following Brummet & Reed (2021), we consider Census tracts in the US’s 100 largest CBSAs within 10 miles of the central business district that have below-median household income in the

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<sup>3</sup> We choose to use a education-based definition since college status is a good predictor of permanent income and relatively fixed over the life-cycle. Young, college-educated workers may have low current earnings reported in the Census, but have higher earnings potential than non-college incumbents. In addition, local incomes may change even without population change, whereas a large change in college share is more likely to reflect in-migration. As we show, our college-based definition is highly correlated with income. We tend to think of the changes in local outcomes (e.g. housing costs and quality, amenities, and urban form) as a result of changes in populations. In this way, changes in housing costs and amenities is a reflection of gentrification, as opposed to the gentrification itself.

2000 Census. This provides a sample of low-income, center-city neighborhoods that are “gentrifiable”. We then define a gentrification index for each neighborhood  $\ell$  as:

$$gent_{\ell} = \frac{pop.college_{\ell}^{2010} - pop.college_{\ell}^{2000}}{pop.adult_{\ell}^{2000}}$$

where  $pop.college_{\ell}^t$  is the population in tract  $\ell$  in year  $t$  holding a bachelor’s degree or higher, and  $pop.adult_{\ell}^t$  is the population over 25 years of age. The index provides a measure of the net inflow of college-educated individuals between 2000 and 2010 relative to the 2000 adult population. That is, a gentrification index value of 0.25 means a tract gained 25 college-educated individuals per 100 initial adult residents. Notably, our definition does not take a stand on whether the initial residents are displaced by the inflow, which we consider as an outcome variable.

Figure 1 below shows the distribution of the  $gent_i$  across center-city, low-income neighborhoods in our sample. Gentrification appears highly skewed, with the top deciles of tracts experiencing a net inflow of a college worker for every 3-4 incumbent residents, with most tracts experiencing very little. To put the figure in context, the share of all Americans with a college degree increased by 4.35 percentage points (from 25.6% to 29.9%) between 2000 and 2010, according to US Census data. The large inflow is consistent with results from the literature that document a shift of young, college-educated workers into center-city neighborhoods (Couture & Handbury, 2020; Baum-Snow & Hartley, 2020).

Figure 1. Net College Entrants by Gentrification Index Quintile

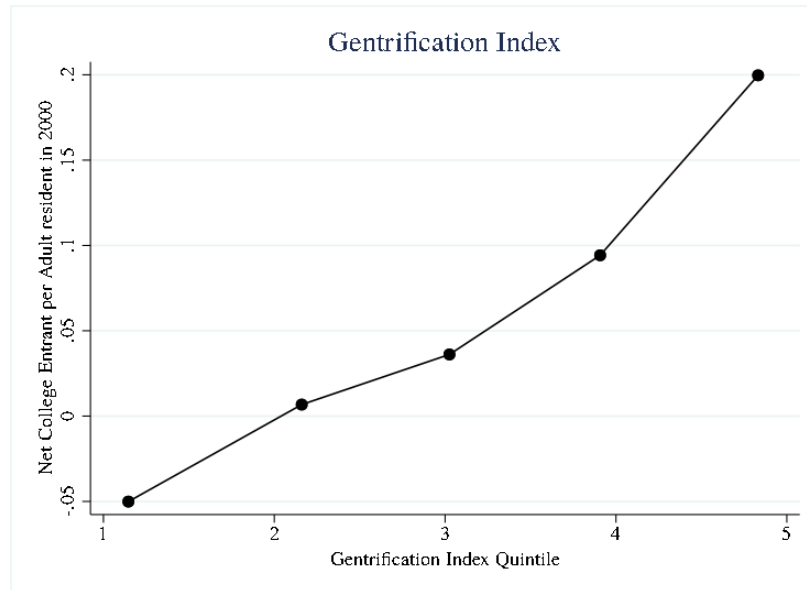
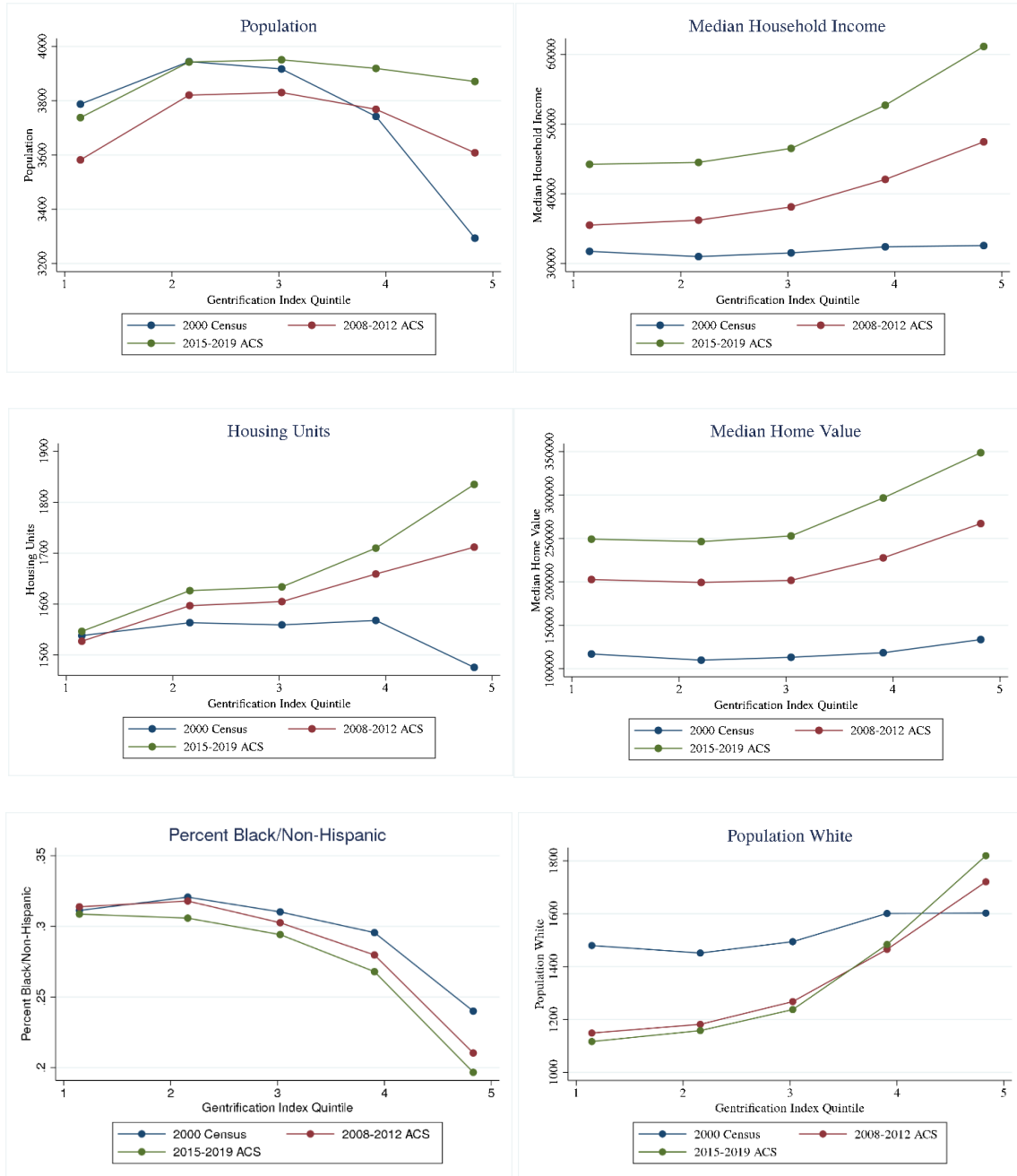


Figure 2 shows how various population and neighborhood characteristics changed in neighborhoods experiencing different sized inflows of college workers. As we see in the top panels, highly gentrifying areas experienced a large increase in population, which unsurprisingly is dominated by college workers. The inflow of college-educated workers raises the median income levels in gentrifying neighborhoods, since college-educated workers tend to earn higher wages.<sup>4</sup>

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<sup>4</sup> There may also be indirect effects as entering college workers demand local services, improving local labor demand. Wages may also rise as housing costs in the city rise.

Figure 2. Neighborhood Change by Level of Gentrification, 2000 to 2019



On average, these areas also saw a large increase in the number of housing units (middle-left panel), suggesting that construction likely absorbed some of the entering population.

Nonetheless, entering college-workers also have a higher willingness to pay for housing, and



new construction appears to not fully absorb the entrants, pushing up house prices on average.<sup>5</sup> Rising house prices may displace incumbents, though incumbent owners may also benefit from capital gains. Notably, neighborhoods vary considerably in how new construction responds to shocks, leading to heterogeneity in house price growth and the effects therein. We return to this point later in the paper.

Finally, the bottom panels show entry of college workers also shifts neighborhood demographics. The fraction of black households falls in more in highly gentrifying areas. The drop in minority share is notable as it highlights a common alternative definition of gentrification as predominantly higher-income, white households moving into formerly lower-income, minority neighborhoods. The bottom right panel shows white population levels (not shares). After 2000, white population levels increase in gentrifying tracts, but decline in all others. Although we do not adopt a race-based definition, it is important to note that our definition is highly correlated with this popular alternative.

## *2.2 Panel of Credit Bureau Records*

Given our definition of gentrification, we then ask how gentrification impacts incumbent residents' mobility patterns and housing and consumer credit outcomes in the short and long run. We tackle this question using credit bureau records from the FRBNY/Equifax Consumer Credit Panel (CCP). These data provide us to follow households' location choice, mortgage and other credit balances, credit line limits, delinquencies, and Equifax Risk Scores at a quarterly frequency from 2001 to 2019.<sup>6</sup> In particular, the data allow us to follow households initially

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<sup>5</sup> We cannot rule out the possibility that the median housing unit is of a higher quality/size or value of local amenities has risen. Even so, the data shows that the median housing unit is a higher-cost unit than previously.

<sup>6</sup> The original geographic identifier in the underlying credit bureau records are billing addresses, including zipcodes, that are reported by financial institutions to Equifax. These addresses are matched to Census geographies by a third party. The CCP data scramble the address fields, but provide the original zipcode along with the matched Census geographies. Through the paper, we utilize 2010 Census tracts as the location identifier, and use "location" and tract interchangeably. All 2000 Census geographies reported in the early part of the CCP are cross-walked to 2010 definitions at the block level using a Census-provided crosswalk. The data also contain some noise in reported locations as a subset of institutions may be slow in providing updated billing addresses. In order to reduce reporting errors of this sort following moves, we carry forward a new tract identifier after a new address is recorded, overwriting any reports of prior addresses or tracts. For example, if a sequence of locations is reported as [A,A,B,A,B,B], we recode this as [A,A,B,B,B,B] assuming a move to location B occurred in the third period.

residing in “gentrifying” tracts—areas that subsequently saw large inflows of college-educated workers—and compare their outcomes to those initially residing in other center-city, low-income neighborhoods within the same CBSAs. Doing so allows us to difference out common factors and city-specific trends, letting us isolate the effect of gentrification on observably similar incumbent households.

Our main analysis utilizes a 1 percent subsample of the primary sample individuals in the CCP data (which itself is a 5 percent sample of US individuals with credit histories). We restrict to primary-sample individuals residing in “gentrifiable” tracts at some point between 2001 and 2019 between ages of 25 and 80. We also drop observations that are likely real estate investors holding several large balance mortgages or lines of credit.<sup>7</sup>

Our data allow us to extend existing results on the impacts of gentrification in three ways. First, our data is a large administrative panel, which has been selected to construct a representative sample of individuals with credit records.<sup>8</sup> While administrative measures still contain measurement error, our data provides relatively precise measurement of credit histories and locations for a very large sample of the population. While the sample itself may miss the young or unbanked, it provides a clear view of consumer credit outcomes for a nearly comprehensive, and well-studied sample of individuals.

Second, the dynamic nature of our data allow us to estimate the *speed* at which households respond to gentrification. Brummet & Reed (2021) estimate effects of gentrification by linking households between the 2000 Census and the 2010-2014 5-year ACS, providing important results on the long-run effects of gentrification on mobility, education, and labor market outcomes. The CCP allows us to extend these results, showing renters move out one or two

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<sup>7</sup> We define investors as credit records with 3 or more mortgage accounts or with two or more HELOCs or with two similarly sized large closed-end mortgages. Such observations likely own multiple properties, often for short-term investment or home-flipping. The overall count of these are small in the data.

<sup>8</sup> The full CCP sample covers 5 percent of individuals with credit histories (“primary sample”) along with all other individuals residing at the same address. This version of the paper utilizes a 1 percent subsample of the primary CCP sample drawn at random, and therefore covers .05 percent of the population of individuals with credit histories. See Lee, Donghoon, and Wilbert Van der Klaauw. “An Introduction to the FRBNY Consumer Credit Panel FRB of New York Staff Report No. 479.” (2010).

years sooner than they otherwise would have, but owners and longer-term residents who were quite likely to stay over a longer-run are most impacted.

Finally, the CCP provides a view into how gentrification impacts housing and consumer credit outcomes. To our knowledge, we are the first to study the mobility and consumer finance effects of gentrification using a nationwide sample of cities. (Ding, Hwang, and Divringi (2016) study gentrification, residential mobility and credit outcomes in Philadelphia).

### 3. Methodology

To estimate the impact of gentrification on incumbent households, we compare people residing in gentrifying neighborhoods in 2001 with comparable households initially residing in center-city, low-income Census tracts in the same CBSA that did not see substantial inflows of college workers. Because college workers are likely attracted to certain neighborhoods which may have been on different trajectories even without gentrification, we include a number of neighborhood-level controls to absorb potential confounding factors that may jointly influence gentrification and outcomes for incumbents.

To operationalize this approach, we estimate the following regression model for outcome  $y$  for individual  $i$  initially residing in neighborhood  $\ell(i)$  in 2001:

$$y_{it} = \sum_s \beta_s 1(t = s) * gent_{\ell(i)} + \gamma_0 gent_{\ell(i)} + \gamma_1 X_{it} + \delta_t + \delta_{cbsa(i)} + \varepsilon_{it}$$

where  $gent_{\ell(i)}$  is the gentrification index of the 2001q1 neighborhood  $\ell(i)$ ,  $X_{it}$  is a set of individual and tract-level controls, and the remaining terms are a time effect, CBSA fixed effect, and idiosyncratic error. The coefficients on the time-gentrification interaction  $\beta_s$  give us the time-varying effect of gentrification on the outcomes of interest.

Our baseline controls include an age polynomial to absorb life-cycle effects. We also include the origin tract's distance to the central business district, homeownership rate in 2000, and median income in 2000. Along with the CBSA fixed effect, these absorb location-specific factors that may be correlated with both the origin location's propensity to gentrify and the incumbent population's mobility or credit outcomes. Finally, the time fixed effects absorb aggregate movements in the outcome of interest.

Concretely, consider the possibility that locations with better access to jobs or higher baseline incomes and ownership rates may have attracted college workers, hence gentrifying more rapidly than neighborhoods further away from the city center or with even lower income populations. These areas may also have had residents with more stable housing or better access to credit, thereby driving a spurious unconditional correlation between gentrification and mobility or credit outcomes. Our controls absorb such variation, avoiding this bias.

Our fixed-effects specification is closely related to a difference-in-difference setup that compares individuals from an origin tract with high values of gentrification index to those coming from areas that saw less gentrification. The inclusion of CBSA fixed effects and tract controls ensures this comparison is to individuals originally from the same CBSA with similar homeownership and income levels. The coefficients  $\beta_s$  recover the difference between these incumbents at various horizons relative to the base period of 2001. Put differently, these coefficients provide an estimate of the difference between areas with different treatment intensity (gentrification index) relative to the base period. Under the assumption that these areas had similar trends in mobility and credit outcomes, our approach recovers the causal impact of gentrification.

## **4. Results and Discussion**

### **4.1. Mobility Results**

#### **4.1.1. Marginal effect of gentrification on full population**

Our data suggest that populations in all neighborhoods in our sample are extremely transient in nature. Overall, about 35% of initial residents in low-income, center-city tracts (i.e. potentially “gentrifiable” neighborhoods) moved to a different neighborhood within 5 years, and over 45% of initial residents were living somewhere else after 10 years.

Gentrification appears to increase out-migration in these already transient neighborhoods. Large increases in new construction in gentrifying areas—along with slightly higher vacancy rates ex ante—likely absorbs some of the in-migrants and mitigates even greater incumbent out-migration. Overall, gentrification raises outflows of incumbent households from the neighborhood, but the magnitude of the increase in moves out of the neighborhood is small

compared to the overall out-migration rate among households living in low-income, center-city neighborhoods, generally.

Figure 3 below shows the effect of gentrification on mobility from incumbents' origin tract. The left panel plots the predicted share of individuals moving away from their origin tract in locations receiving zero net inflows of college educated workers between 2000 and 2010 (blue line) compared to those receiving 25 college-educated workers per 100 initial adult residents (red line, where 0.25 is roughly the mean of the top quintile of our gentrification measure).<sup>9</sup> Out migration rates are high for both gentrifying and non-gentrifying neighborhoods, with about 35 percent of individuals leaving their origin tract within 5 years. The effect is differentially larger in gentrifying areas, as highlighted in the right panel which plots the differential effect of gentrification (the difference between the blue and red lines in the first figure, and the coefficients  $\beta_t$  from our baseline regression model). Relative to locations with zero gentrification, incumbents living in neighborhoods receiving 25 college-educated workers per 100 initial adult residents were 3 percentage points more likely to have moved to a different neighborhood within 5 years. This differential mobility effect is especially pronounced in earlier years, before dissipating slightly over two decades as most initial residents of non-gentrifying areas have move out as well (see left panel).

Not only is gentrification associated with moving out of the origin tract in the short run, but it is also associated with additional subsequent moves. The below Figure 4 plots the effect of gentrification on a household's cumulative number of moves since we first observe them in the data in 2001Q1. On average in our sample, households in non-gentrifying tracts move for the first time within 6 years (by 2007) and for the second time within 15 (by 2016). Households initially living in gentrifying areas make about 0.05 more moves within 5 years and 0.1 more moves within 10 years, an effect that remains persistent throughout the sample period. The result

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<sup>9</sup> Specifically, the top panel shows the conditional mean probability of having moved away from the origin tract for incumbents evaluated at both  $gent = 0$  and  $gent = 0.25$ . Conditional means are computed using the regression model specification evaluated at the global mean values for controls. The bottom panel shows the marginal effect of gentrification at various time horizons as given by estimates of  $\hat{\beta}_t$  scaled by  $gent = 0.25$ , which is the difference in conditional means displayed by the lines in the top panel. Standard errors in both panels are clustered at the CBSA level.

suggests gentrification can lead households to have more turbulent housing outcomes and worse matches to housing after their initial move.

Figure 3. The Effect of Gentrification on Incumbent Outmigration

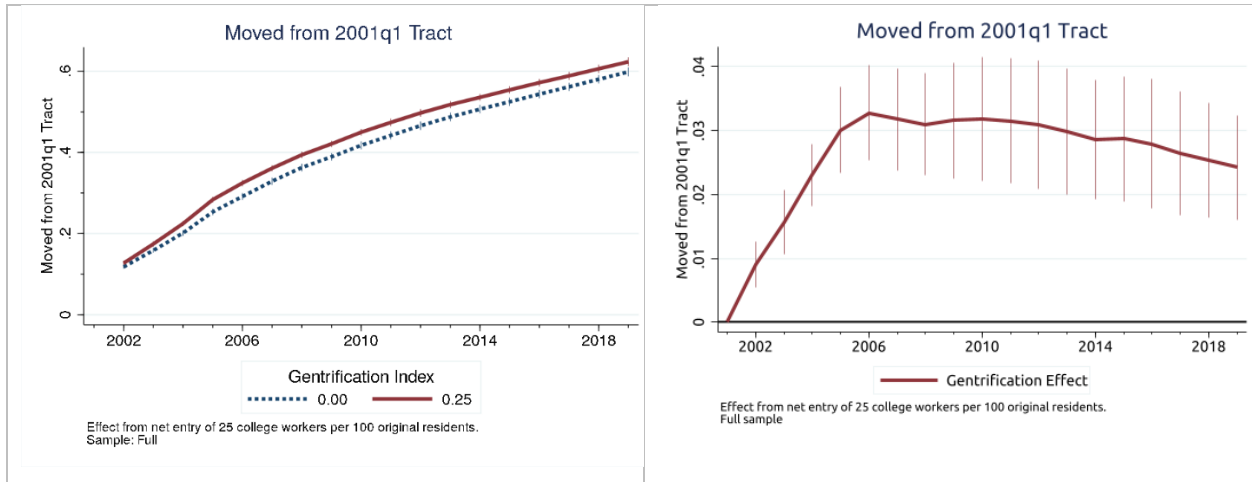
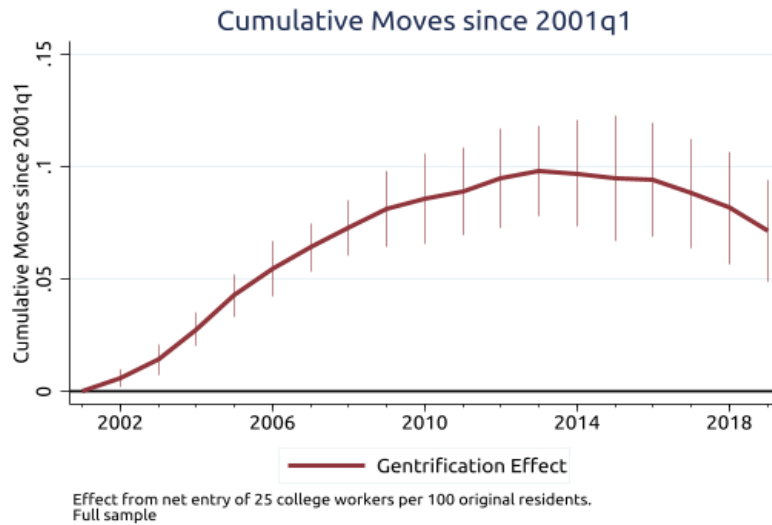


Figure 4. Cumulative Household Moves



4.1.2. Effects vary by homeownership and neighborhood attachment

Even though average effects of gentrification on mobility may be modest relative to the baseline churn, gentrification impacts certain subpopulations differently. Put differently, gentrification

shifts the composition of out-migrants. To explore this idea, we estimate migration effects across two measures of neighborhood attachment: home ownership and long-term residency. Indeed, we find that out-migration effects are most acute for those who are observably *more* attached to their neighborhood ex ante.

We first examine out-migration for owners versus renters (two panels of Figure 5 below).<sup>10</sup> Not surprisingly, average out-migration rates are always higher for renters compared to owners, as shown by both sets of blue lines (renters in high- and low-gentrifying areas) compared with the red lines (owners in high- and low-gentrifying areas).

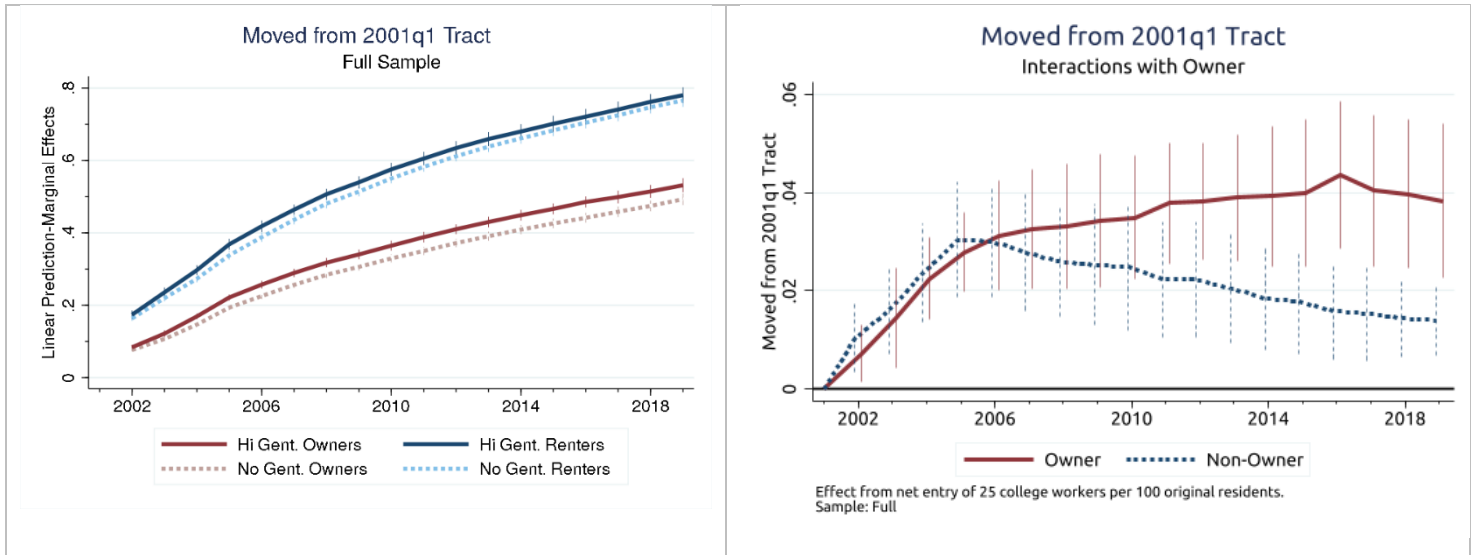
However, as we see in the blue line in the right panel, the marginal effect of gentrification is positive on renters in the short-run, but tails off thereafter. Renters in highly-gentrifying areas move away slightly faster than those in non-gentrifying areas for the first few years, amid rapidly rising rental costs. However, the difference between high- and non-gentrifying areas reduces somewhat, as all renters – regardless of initial neighborhood – tend to move out within 5 to 7 years.

Effects for owners, on the other hand, are nearly twice as large (reaching nearly 4 percentage points versus 2) and more persistent. In other words, homeowners in gentrifying areas are significantly more likely to have moved than their counterparts in non-gentrifying neighborhoods, and this gap persists even over longer horizons. Even as rising house prices provide capital gains, the out-migration of owners suggests rising tax burdens or a change in the amenity value of the neighborhood may lead them to choose another neighborhood. There is also the possibility that this capital gain, which homeowners in non-gentrifying tracts do not realize, allows incumbent homeowners to be more mobile; the wealth effect widens their neighborhood choice set and they move away at higher rates.

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<sup>10</sup> The CCP data does not provide a direct measure of home ownership, but does provide details on mortgage holding. We define owners as individuals who have ever held a non-zero mortgage balance at their current address. We further restrict the sample in owner-interaction regressions to include only those that are 60 years old as of 2001. This reduces the likelihood that we mistakenly classify an outright owner as a renter. This risk is lower in later years, as we observe a longer history of mortgage holdings. Our measure is highly correlated at a tract level with ownership from the Census and ACS.

Figure 5. Outmigration by Homeownership



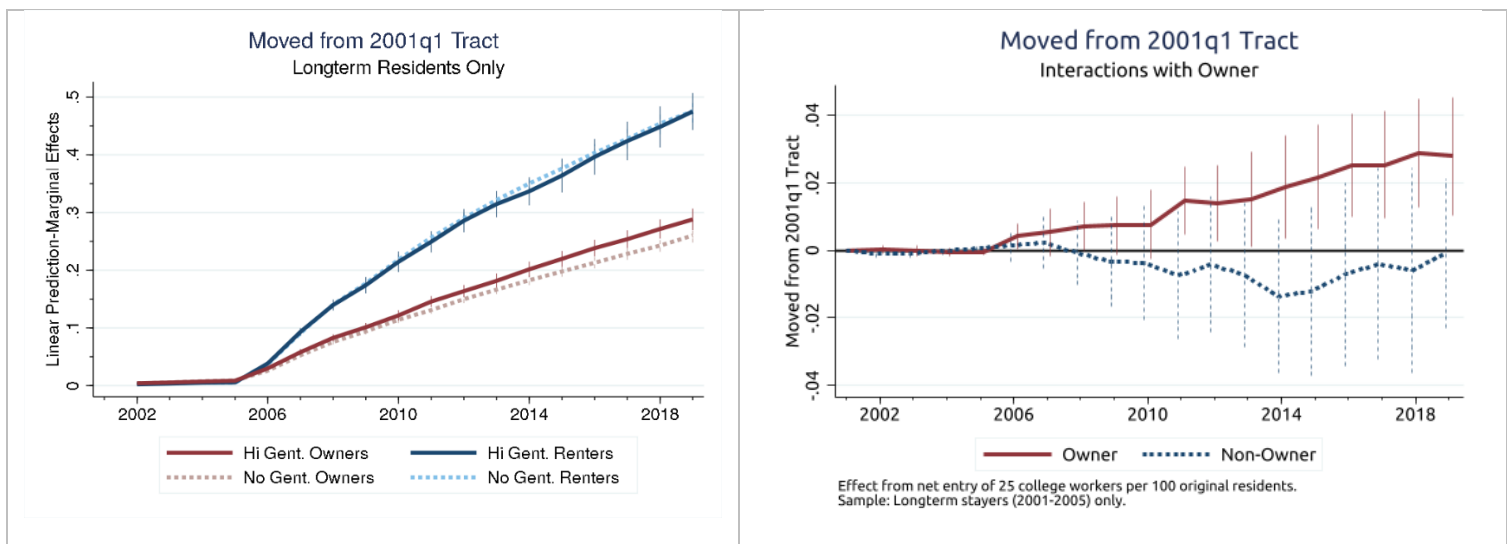
It is important to acknowledge here that gentrifiable tracts in our sample are majority renter. According to Census data, the homeownership rate in 2000 for tracts that would later gentrify is only about 40%. Because most incumbents are renters and renters are generally more mobile, the median out-migrant in response to gentrification is likely to be a renter, at least at short horizons. Our results show, however, that gentrification has a larger marginal out-migration effect on initial homeowners, changing the composition of migration from the neighborhood.

In addition to home ownership, we also separately examine how gentrification affects long-term residents (incumbents of 5+ years, from 2001 through at least 2005). This specific group is worth our focus for several reasons. By revealed preference, they were most attached to their original neighborhood and thus may have the most to gain or lose from its transformation. Given the high level of churn even in non-gentrifying areas, gentrification may be inframarginal to mobility decisions for many households; that is, they are likely to move regardless of gentrification and may not be exposed to gentrification for long. On the other hand, households with stronger attachment to the neighborhood may be more exposed to the shock. Furthermore, because of their longevity, they will have had prolonged exposure to gentrification and neighborhood change. Finally, because of their attachment, this group is likely who policymakers and the public are most concerned about.



Examining long-term residents reveals a few facts the dynamics of mobility and the composition of who moves and when. Again, the differential gentrification effect on outmigration is largest for those more attached to the neighborhood. While this group of longterm residents has much lower out-migration than the full sample (left panel below), the differential effect of gentrification raises out-migration by 2 percent in the long run for owners, who are likely the most attached to the neighborhood (right panel below). Effects for renters who remain for 5 years are nonexistent, although this group itself is somewhat small given renters tend to move away rather quickly. Although long-term renters always move out at higher rates than long-term homeowners (the blue lines are always above the red lines in the left panel below), the gentrification effect is only present for longtime homeowners.

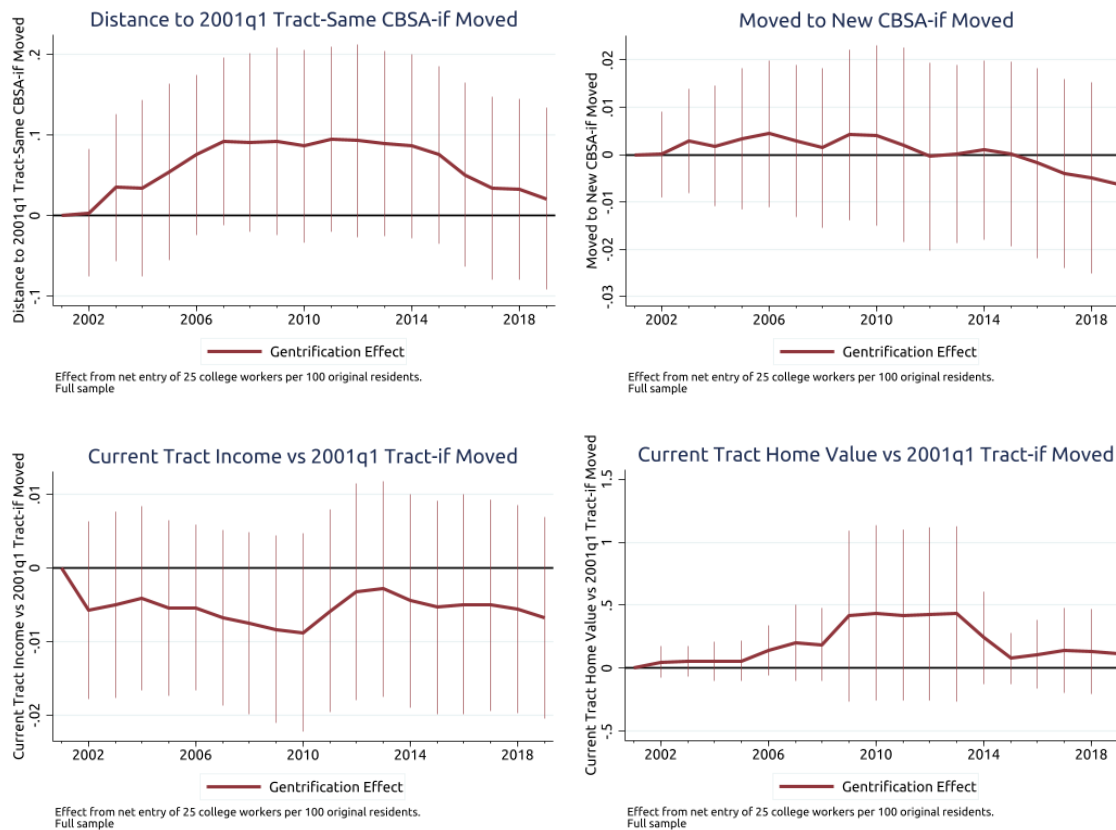
Figure 6. Outmigration for Long-Term Incumbents



Next, we ask a simpler question: where do people move? On average, we find that out-migrants from gentrifying tracts move to observably similar places to those that move from non-gentrifying, low-income, center-city tracts. As we show in Figure 7 below, conditional on moving, movers from gentrifying tracts end up moving about the same distance away from their home tract within the city and are about as likely to move out of the CBSA as observably similar households from non-gentrifying tracts. The tracts to which they move also look similar in terms of income and house value to the destination tracts of movers from non-gentrifying areas. Overall, the main difference between the groups is at the extensive margin of having moved at

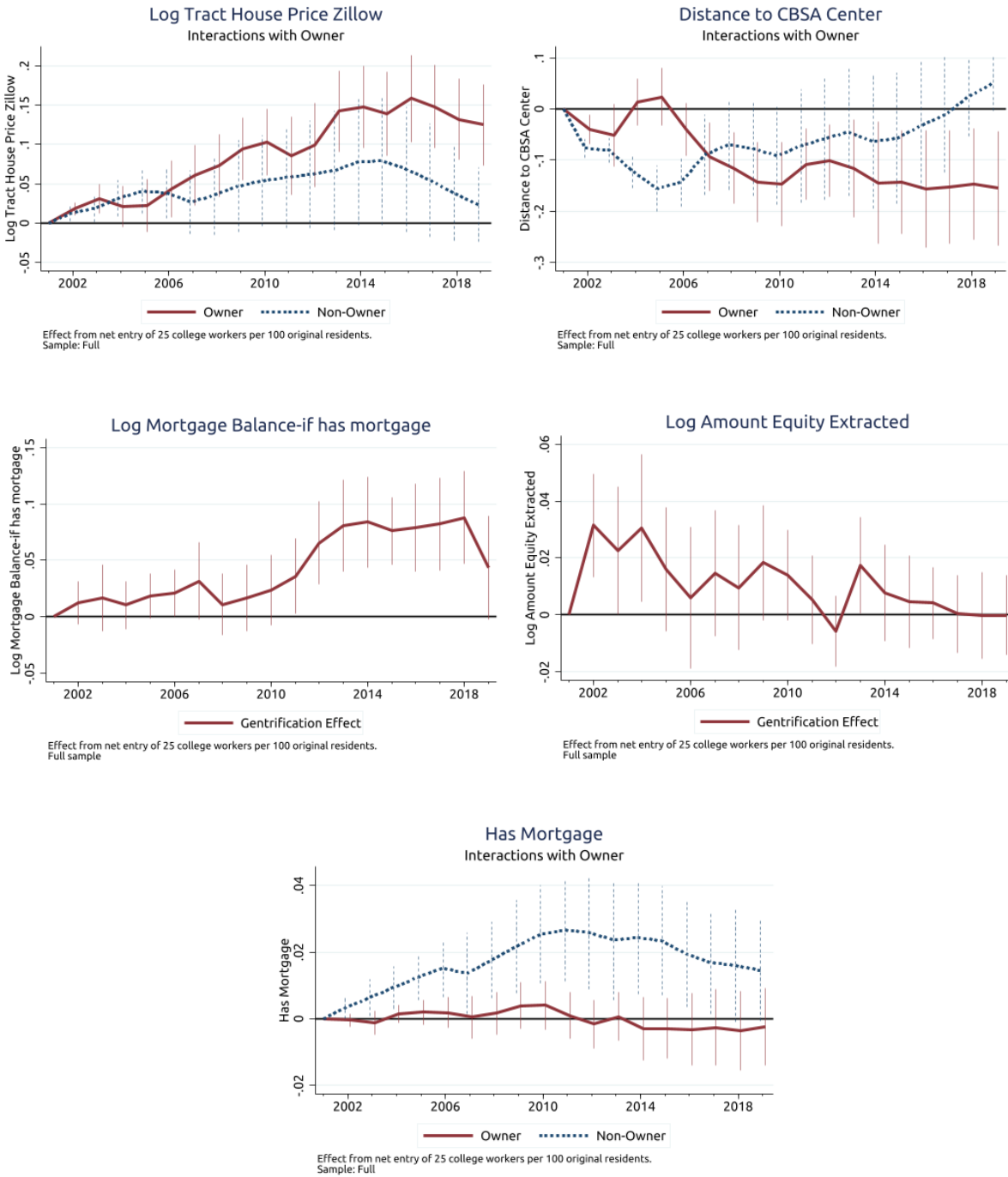
all. Destination tracts certainly do not appear observably worse for incumbents moving out of gentrifying areas compared with the non-gentrifying control group. This is true for original owners and renters alike (results not shown). We find no evidence, for example, that renters leaving gentrifying tracts move farther or to observably worse neighborhoods than counterfactual renters who leave non-gentrifying tracts.

Figure 7. Comparing Origin and Destination Neighborhoods



Looking by tenure, homeowners tend to move to higher-priced neighborhoods and neighborhoods closer to the city center (see panels of Figure 8 below). This likely reflects trading up to more expensive housing or desirable locations after home appreciation in their origin tract. Conditional on having a positive mortgage balance, gentrification is associated with rising mortgage size over time (middle left panel). We interpret this as the combined effect of homeowners cashing in on home equity gains through various channels: some owners sold their homes and moved to more expensive areas, taking out larger mortgages in the process; others extracted home equity (middle right panel).

**Figure 8. The Effect of Gentrification on Housing and Mortgage Outcomes**



Despite rising rents, it appears renters in highly gentrifying areas actually transition to homeownership somewhat faster than counterparts in non-gentrifying areas (blue dotted line in bottom panel). This may reflect timing of moves: renters are priced out of their neighborhoods sooner and may be incentivized to purchase homes. This may also reflect improved access to credit, as bank branches enter gentrifying neighborhoods somewhat faster than in non-gentrifying, low-income, center-city areas.

#### 4.2. Gentrification and Local Housing Supply

An important driver of how gentrification impacts incumbent residents is the degree to which local housing construction responds to the inflow of college workers. As neighborhoods gentrify, rising demand for housing in the neighborhood raises home prices and rents. Increasing supply through new construction dampens housing cost increases (Asquith, Mast, and Reed, 2021; Pennington, 2021, Mast, 2021). Areas where housing is more inelastically supplied are less equipped to absorb gentrification-related demand shocks, and, as a result, experience more out-migration.

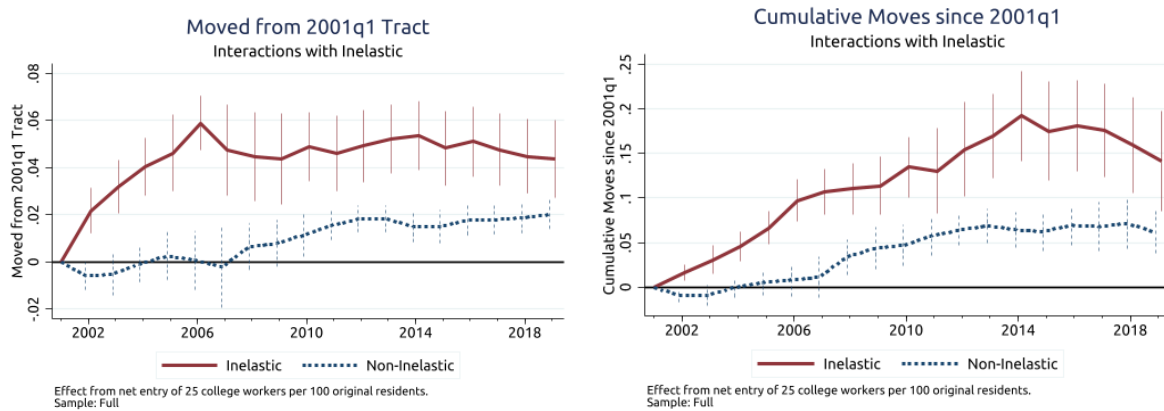
We also use new measures of local housing supply elasticity at the tract level (Baum-Snow and Han, 2021) to compare gentrification effects in elastic vs. inelastic neighborhoods *within the same metro area*. We find gentrification raises out-migration (Figure 9, left panel) and number of moves (Figure 9, right panel) much more sharply incumbents initially living in housing inelastic census tracts.<sup>11</sup> In fact, the differential increase in out-migration is driven almost entirely by gentrifying neighborhoods with inelastic local housing supply (red lines below). Elastically supplied gentrifying tracts (blue lines below) show no more out-migration than elastically supplied non-gentrifying tracts, suggesting that new construction absorbs incoming residents and prevents displacement of incumbents.<sup>12</sup>

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<sup>11</sup> Among long-term incumbents (not shown), displacement effects in inelastic housing supply neighborhoods are also strong, with negligible effects on incumbents from elastic supply neighborhoods.

<sup>12</sup> Appendix Table A.1 shows the increase in housing units by gentrification index for census tracts with inelastic housing supply vs those with elastic housing supply (using Baum-Snow & Han's (2021) measure we split tracts into terciles and plot the lowest and highest terciles). In 2000, elastic and inelastic tracts that would later gentrify *by the same high level* each have around 1500 housing units. By 2010, elastically

**Figure 9. Gentrification and Incumbent Outmigration: Local Housing Supply Elasticity Matters**

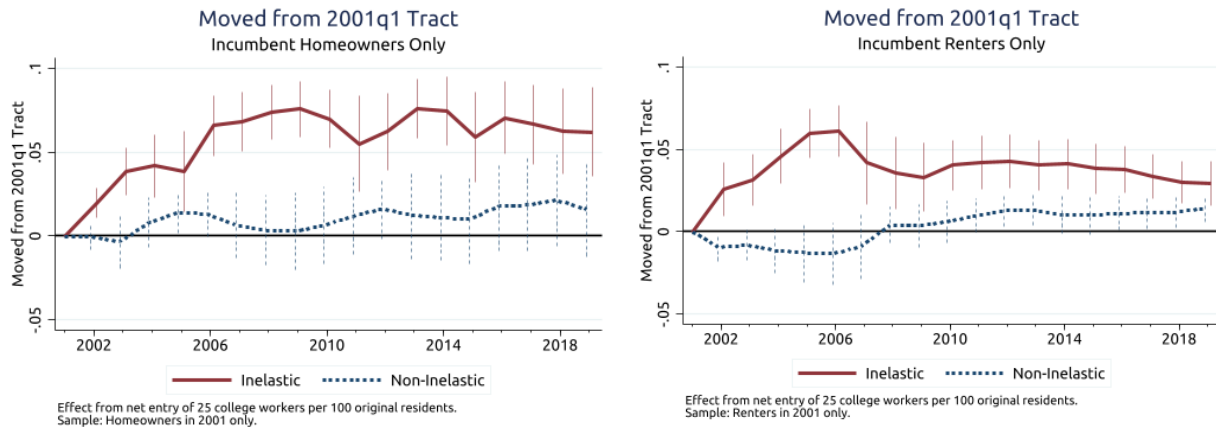


The panels below provide estimates interacting gentrification with tract supply elasticity separately for owners (Figure 10, left panel) and renters (right panel). The figure highlights the considerable heterogeneity in the average effects on owners and renters we showed earlier. Gentrification has a persistent positive impact on out-migration of owners, but only in inelastic-supply tracts. The effect is considerably larger in these areas than the average effect we showed earlier, with owners are 5 to 7 percent more likely to move out of their initial tracts than similar owners in inelastic housing supply, non-gentrifying tracts. Effects are negligible in elastic tracts where new building absorbs in-migrants. Similarly, renters are more likely to move away, and do so sooner, in inelastically supplied, gentrifying tracts. As with owners in elastic-supply areas, effects on mobility are negligible for renters living in elastic supply tracts.

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supplied tracts have around 2025 (an increase of 35%); inelastically supplied highly-gentrifying tracts have around 1725 housing units on average (an increase of just 15%).

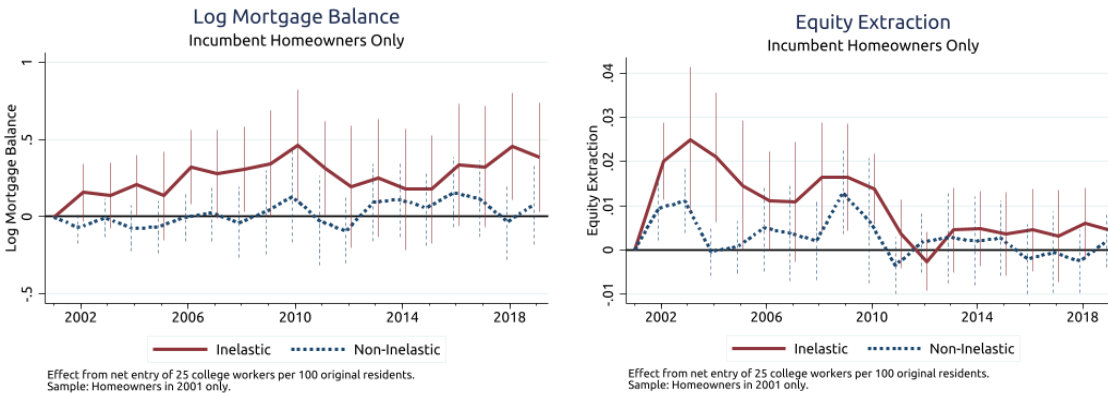
Figure 10. Outmigration and Inelasticity, by Initial Owners (L) vs. Renters (R)



Local housing supply elasticity seems to tell the full story of gentrification's effect on incumbent outmigration. Recall these regressions and corresponding figures include CBSA fixed effects, so the identifying differential variation is coming from similarly gentrifying neighborhoods in the same metro area with different housing supply elasticities. Importantly, we find highly *locally inelastic* tracts in traditionally housing supply elastic metro areas (like Dallas, Houston, and Atlanta) and many *locally elastic* neighborhoods in inelastic metros (like Boston, Washington, DC, and New York City).

In inelastically supplied neighborhoods, owners and renters experience gentrification very differently. Whereas renters are more likely to out-migrate quickly given rising housing costs, incumbent owners of supply inelastic neighborhoods may enjoy considerable capital gains. As a result, homeowners in gentrifying, inelastic-supply tracts are more likely to have larger mortgage balances (left panel below) as their neighborhood gentrifies. This is due to a combination of factors: incumbents who move out may be more likely to move to higher house price areas, while incumbent homeowners who remain are more likely to extract equity from their homes. Among incumbents in inelastically supplied tracts, those living in gentrifying tracts are much more likely to extract equity from their homes (right panel, red line) as their home values increase. The blue lines show there is little to no 'gentrification effect' for mortgage balances or equity extractions for incumbents of neighborhoods where housing is more elastically supplied.

Figure 11. Mortgage Outcomes by Local Housing Supply Elasticity



#### 4.3. Consumer Finance Outcomes

Finally, we turn to the effect of gentrification on other financial behavior, including non-mortgage debt and other indicators of household spending. While one may expect rising housing costs to weigh on delinquencies trigger other forms of financial distress, we find little evidence that financial outcomes are worse for incumbents of gentrifying areas. In fact, we find that gentrification can improve incumbent finances, though this is typically true for incumbent homeowners rather than the population as a whole.

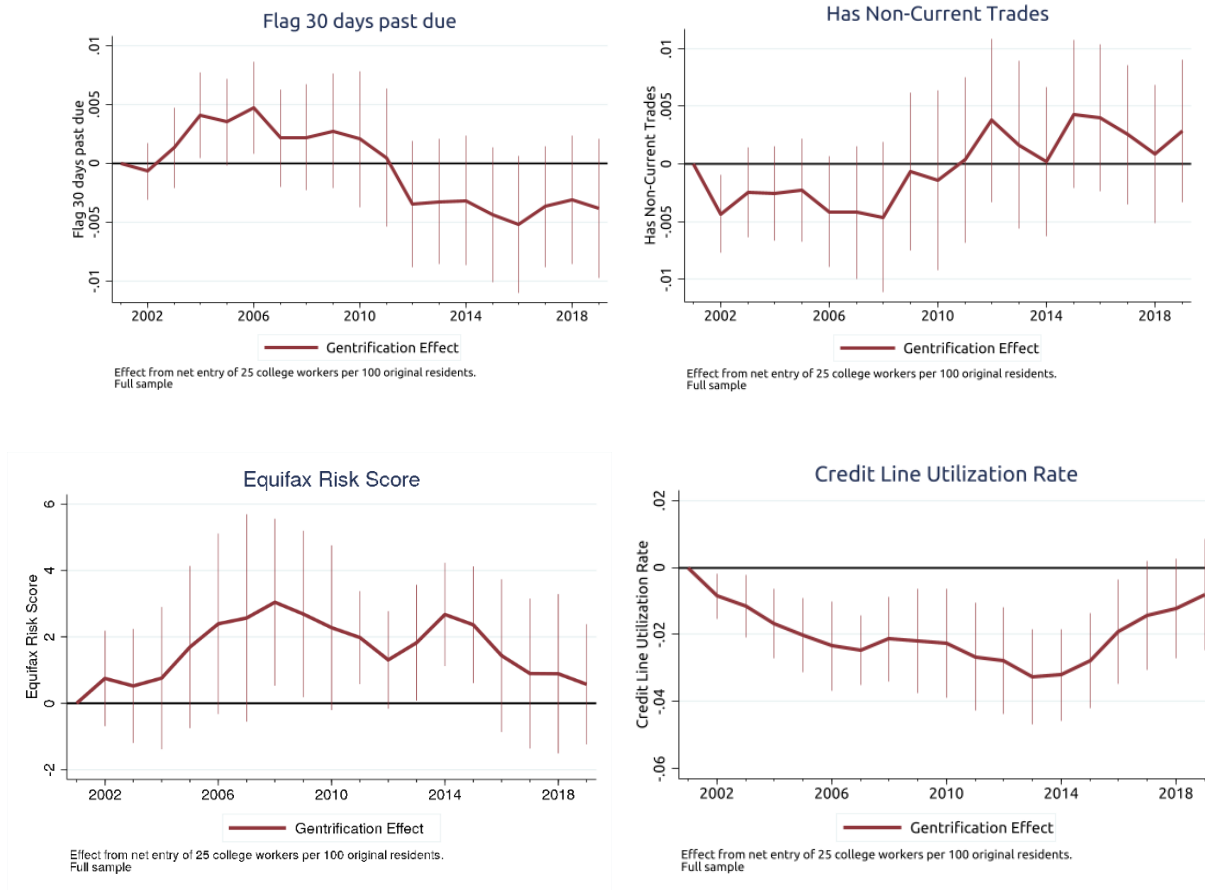
For the full sample, gentrification seems to have a little effect on measures of delinquency (Figure 12, top-left panel, likelihood of having a payment 30 days past due; top-right right panel fraction of tradelines non-current). In fact, we do find a marginally significant *positive* impact on Equifax Risk Scores of incumbents from gentrifying areas (Figure 12, bottom left). Certainly, we do not find evidence that gentrification leads to any measurable financial distress.<sup>13</sup> In fact, we also find credit line utilization falls in the long-run for households of gentrifying tracts, largely due to increases in available credit lines (bottom-right panel). This could be consistent with expanding credit supply to these households.<sup>14</sup> Increased credit among incumbents is consistent with both increased collateral value for homeowners and spillover

<sup>13</sup> This is true both for the sample as a whole and for initial renters.

<sup>14</sup> We do find in results not shown that bank card limits increase substantially for incumbents of inelastically supplied tracts. These areas experiencing the highest house price gains might also see differentially larger increases in locally supplied credit.

effects such as the observed entry of bank branches as college-educated workers enter the neighborhood.

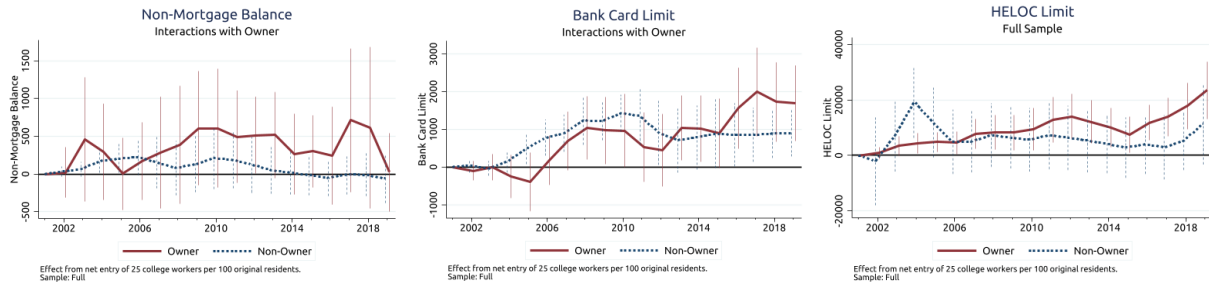
**Figure 12. Effect of Gentrification on Incumbents' Credit Outcomes**



Comparing incumbent homeowners to renters, we find positive gentrification effects on homeowners' non-mortgage balances and credit limits—both on HELOCs against their increased home value and uncollateralized bank card limits (Figure 13, middle and right panels). Effects on renters' finances appear smaller, but still positive—not negative as one may expect. Again, these small effects on renters may reflect improved access to credit or jobs resulting from gentrification. We find the absence of negative effects of gentrification on renters' credit outcomes to be especially important, as renters face the most ex ante risk of financial distress due to rising rents and local goods/services prices.

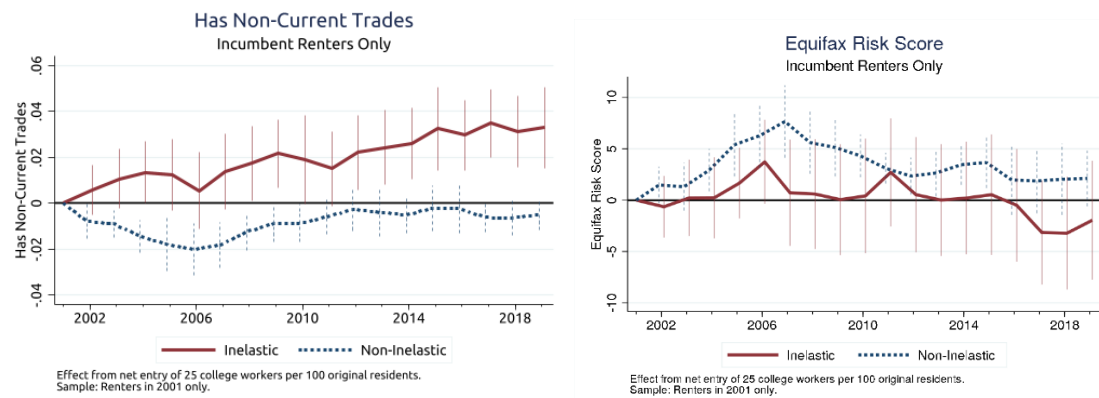


Figure 13. Credit Outcomes for Owners vs. Renters



Comparing effects across neighborhoods that differ in supply elasticity suggests effects differ considerably based on whether prices rise, particularly for renters. Naturally, we should expect detrimental impacts on finances to be most pronounced when incumbents’ housing costs rise and squeeze budgets. Indeed, in Figure 13, we see considerable heterogeneity with renters in inelastic markets showing higher rates of having non-current balances (red line, left panel) while loan performance appears somewhat positively affected for renters in elastic supply markets (blue line). These divergent fortunes show that gentrification effects can be not only heterogeneous but also contradictory; there is potential for negative consequences of gentrification-related displacement and the positive consequences of gentrification-related spillovers. Equifax Risk Scores show a similar divergence, with improvements only in elastic supply markets (right panel). Together, the results suggest renters in elastic supply markets—who are more likely to stay in their neighborhoods—may benefit from improved access to jobs or credit in the gentrifying neighborhoods, while those facing rising housing costs suffer worse financial outcomes.

Figure 14. Effect of Gentrification on Renters by Local Elasticity



## 5. Conclusion

Overall, these results paint a nuanced picture of gentrification and local housing supply. On one hand, policies promoting new home construction (i.e. less restrictive residential land use) could mitigate incumbent resident displacement. On the other hand, it is not clear that those who move out of inelastically-supplied neighborhoods are made differentially worse off.

This is the first paper to our knowledge to estimate the dynamic mobility and household finance effects of gentrification on individuals in metro areas nationwide. Our paper is most similar to Brummet & Reed (2021), who use longitudinal census data to study the effect of gentrification on incumbent migration, homeownership, and employment. They find gentrification increases incumbent out-migration, rents, and house values, but does not impact employment or wages. We view our study and results as highly complementary to theirs. Gentrification is a highly dynamic process that could affect the financial behavior and health of long-time residents much differently than more transient newcomers. We bring rich, high frequency location and financial data to better characterize incumbent residents and track them on a greater number of dimensions. Other work studying the effects of gentrification on individuals include Baum-Snow, Hartley, and Lee (2019), who study the effect of gentrification on incumbent children, and Ding, Hwang, and Divringi (2016), who examine the relationship between gentrification and residential mobility in Philadelphia.

**Addendum:** This is preliminary work, please do not cite or circulate results. Looking ahead, we are working to improve identification through an instrumental variables approach: a spatial IV based on a gentrifiable census tract's proximity to high-income, highly-educated neighborhoods. Relatedly, we plan to improve estimates of local employment multipliers as college-educated workers in gentrifying areas may demand local services. Doing so will also allow us to disentangle the "pull" of improved access to jobs for incumbent residents from the "push" of rising housing costs.

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## Appendix Figures:

A1. Increase in Housing Units by Tract Housing Supply Elasticity