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ABSTRACT

We study neighborhood choice using a novel research design that contrasts the move rate of homeowners who receive a new different-race neighbor immediately next-door versus slightly further away on the same block. This approach isolates a component of household preferences directly attributable to their neighbors' identities. Both Black and White homeowners are more likely to move after receiving a new different-race neighbor. Results are robust to additional controls (e.g., income) and alternative research designs. We find evidence of heterogeneity in responses associated with income, density, and region, which has implications for understanding contemporary neighborhood racial change and the prospects for maintaining stable, integrated neighborhoods.

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1 Introduction

Two decades into the 21st century, US neighborhoods remain racially stratified. This phenomenon is well-documented, yet there remains little consensus on how the identities of neighbors themselves drive racial sorting and persistent stratification in modern housing markets. At issue is whether the attributes of individual neighbors directly enter household residential choices. Conventional tipping theories since Schelling (1971) emphasize preferences over the racial composition of the neighborhood as a principal catalyst for neighborhood turnover. This widely accepted understanding of the relationship between race and neighborhood transition has been complicated by recent work noting that neighborhood composition changes are often strongly bundled with gentrification and related processes where individual racial preferences may be unimportant.[1] These observations coupled with an ostensible expansion in progressive public–facing racial attitudes have led some observers to argue that in contemporary housing markets, a neighbor's race may be of secondary or almost no importance in individual household neighborhood choices despite the persistence of racial stratification. Krysan and Crowder (2017), for example, discusses how seemingly race-neutral neighborhood search processes can result in maintaining stratified neighborhoods while Gould Ellen (2000) notes the absence of traditional White flight behavior in response to Black entry in contemporary housing markets.[2] Understanding the source of the dynamics maintaining stratification is no idle concern. A broad literature establishes that neighborhoods, and who lives in them, matter for a wide range of economic, social, and health outcomes (Chetty et al., 2016, 2022a,b; Chyn and Katz, 2021).

Credibly distinguishing whether households respond directly to the attributes of their neighbors or factors coincidental with new neighborhood entrants has proven difficult. Two fundamental challenges confound identification of preferences over the identities of new neighbors. First, neighborhood demographic change is typically accompanied by shifts among a wide range of other neighborhood amenities, including public goods (e.g. schooling and safety) and private goods and services (e.g. shops and restaurants). Many important amenities are both likely to be unobserved and to respond endogenously to a change in neighborhood racial composition. Second, household location decisions are naturally affected by both current conditions and future expectations. Some current residents may perceive new entrants of a different race negatively because of concerns about future

[1] Couture et al. (2019) and Baum-Snow and Hartley (2020) document, for example, the sharp rise in demand for center-city neighborhoods by high income households since 1990, while Almagro and Dominguez-Iino (2020) highlights how both neighborhood demographic composition *and* nearby amenities change endogenously in response to the rapid expansion of AirBnB in major cities in recent years.

[2] Instead Gould Ellen (2000) attributes the persistent stratification primarily to avoidance of Black neighborhoods on the part of White households.

entry by others of that group (see e.g., Gould Ellen (2000) and Casey (2020)). Together these factors make it difficult to determine empirically whether households are reacting to the *identities* of their neighbors directly or instead using information about neighborhood composition to form expectations about the future evolution of the neighborhood.

Evidence from surveys that attempt to directly measure preferences by providing "neighborhood cards" describing different configurations of racial integration introduced in Farley et al. (1978) and subsequent followup work (e.g., Farley and Frey (1994); Logan et al. (2004)) for the Detroit area notes that although White tolerance for Black neighbors has increased, surveyed households voiced discomfort with the prospect of a majority Black neighborhood.[3] While useful, this hypothetical evidence provides limited insight into how such stated preferences play out in reality, as surveys necessarily have to abstract from other features of the neighborhood and respondents may find it difficult to "hold all else equal". In recognition of the need of better estimates of preferences, several recent papers propose research designs aimed at distinguishing preferences for neighborhood composition from other neighborhood attributes/amenities including Almagro et al. (2021), Caetano and Maheshri (2021), Davis et al. (2021), and Li (2021).

In this paper, we study how incumbent residents respond to the receipt of new different-race neighbors to better understand the nature of these responses and how they may shape the character of neighborhood racial change in contemporary housing markets. To do so, we propose a novel approach that exploits highly localized variation in exposure to new neighbors on a residential block. Our primary research design contrasts the propensity to move in response to receiving a new neighbor of a different race immediately next door versus slightly further away on the same side of street on the same block.[4]

We motivate this approach with a dynamic model of neighborhood choice presented in Section 2. We use the model to highlight several fundamental challenges to identifying preferences for neighbors' race. We formally introduce our "nearest neighbor" research design in Section 3 and show how,

[3] By contrast, Black respondents were fine with a broader array of neighborhoods, though they did express distaste for nearly all-White contexts. Charles (2000), extending this approach to Los Angeles to measure preferences for integration in a multiracial context, finds that all groups express a preference for living in neighborhoods with some degree of integration. However, Whites and non-Black groups admitted discomfort at the prospect of living in neighborhoods with higher shares of Black neighbors.

[4] McCartney et al. (2024) use a closely-related research design based on contrasting the move decisions of households within the same census block group who receive a new Democratic or Republican neighbor to study political polarization. We explore a similar approach. Bayer et al. (2008), Bayer et al. (2021), and McCartney and Shah (2022) use a related research design based on contrasts between households on the same block versus a block or two away to study the role of neighborhood social interactions on job referrals, household finance, and investment activity. In these papers, the thinness of the owner-occupied housing market provides the primary basis for the argument that the assignment of neighbors at such fine geographic scales is essentially random.

under reasonable identifying assumptions, it overcomes these identification challenges to isolate a component of move propensities attributable to preferences for the neighbors' race. In the empirical analysis that follows, we provide supporting evidence that these identifying assumptions do, in fact, hold in our sample.

We implement our strategy in neighborhoods drawn from a national set of MSAs using data that combine detailed housing transactions with demographic information on households available in home mortgage loan application registry (LAR) files collected as required by the Home Mortgage Disclosure Act (HMDA).[5] The housing transactions data provide information about the housing unit as well as the exact timing of home sales. The HMDA files provide important demographic details on buyers including race of the applicant and/or co-applicant, income, and key loan-related information. We match these data to construct a house-level panel dataset that allows us to observe racial transition dynamics across neighborhoods for a national set of counties. We focus specifically on the well-documented, historically salient, and stubborn Black-White neighborhood stratification.[6] Moreover, the places we study using our research design are among those with the highest potential to foster stable, integrated neighborhoods.[7]

Our baseline results reveal that both Black and White homeowners have a higher propensity to move in response to receiving a new different-race neighbor immediately next door versus just two to three doors away. The magnitude and statistical significance of these results are essentially unaffected by the inclusion of a broad set of building, homeowner, and mortgage characteristics. For Black households, the implied effect size corresponds to a roughly five percent higher move propensity, while the corresponding estimate represents a three percent increase for White households. Importantly, these estimates isolate only the incremental response of incumbent homeowners residing right next to the new neighbor relative to other homeowners a few doors further away. The latter homeowners may, of course, also react to the new different-race neighbor and, as a result, our estimate naturally provides a lower bound on the magnitude of the full response to the receipt of a new different-race next-door neighbor.

Next, we estimate an alternative set of models that expand the set of homes considered beyond

[5] To combat redlining and mortgage discrimination, the Home Mortgage Disclosure Act, enacted originally in 1975 and expanded several times since, requires financial institutions to collect and disclose information on mortgage applicants and borrowers.

[6] The continued salience of Black-White stratification and its significance in governing the dynamics of modern housing markets remains a topic of active research. See, e.g., Lewis et al. (2011), Hwang and Sampson (2014), or Christensen and Timmins (2022).

[7] To ensure a meaningful number of within-block cross-racial purchases, we focus on a set of MSAs that are both relatively large and possess representative-sized Black populations.

the same side of the immediate block. We examine responses to receiving a new nearest neighbor of a different race among the 10 nearest parcels by distance within the same census block group. These parcels potentially include homes down the block, across the street, and behind the home of interest. Similar to our baseline strategy, we find evidence consistent with a hyper localized response. In particular, both Black and White incumbent households receiving a new different race neighbor within the 1 or 2 closest parcels are statistically more likely to leave than if the new different-race neighbor arrived among the 3rd, 4th, or 5th closest parcels. The magnitude of these results are similar to the baseline within-block results and, together, the estimates imply that both Black and White residents have an increased response to receiving a different race neighbor in immediate proximity to their home.

There are several potential challenges to the interpretation of these reactions as a response to the race of a new neighbor. We address four major concerns in our analysis. First, there might be non-random selection in where the new neighbor arrives on a block, even at the fine geographic scale that we use for these empirical contrasts. Using a set of observable homeowner and housing characteristics, we show that the arrival of a new neighbor one versus two to three doors away appears to be as good as randomly assigned. A second potential concern is that the move responses we identify might somehow be driven by within-block changes in amenities that vary even at the fine geographic scale we study. To test for this possibility, we examine how the receipt of a different race neighbor one versus two to three doors down affects subsequent resale housing prices. This analysis results in a precisely-estimated null effect for both Black and White current residents, providing empirical support for the claim that our baseline results are not capturing changes in highly localized variation in unobserved aspects of housing or neighborhood quality.

A third potential concern with the interpretation of our baseline estimates is the possibility that incumbent residents may be responding to the general disruption arising from the receipt of any new next-door neighbor, regardless of the neighbor's race. To study this possibility, we present results from an alternative estimation approach that compares current residents who received a different-race neighbor with those who received a same-race neighbor, in the same Census block group and quarter. For both Black and White incumbent households, we again find evidence of differential move responses among those receiving a new different race neighbor immediately next door versus a few doors away. These estimates are statistically significant with magnitudes similar to our baseline estimates. In contrast, the estimated differential response of both Black and White households to receiving a new same-race neighbor immediately next door is small in magnitude and statistically

insignificant.

A final potential major concern about our baseline results is that the estimated response to receiving a new neighbor of a different race may not be capturing a racial response per sé, but instead reflect household preferences for other attributes of their neighbors, such as income, which are correlated with race. To address this concern, we are able to leverage the income measures provided in the HMDA data. Adding income as a control to the specifications described in the previous paragraph reveals a strong income response - incumbent move propensities are inversely related to the income of their new next-door neighbor - but, remarkably, has no effect on the estimated response to the race of the new neighbor. That controlling for income does not affect the estimated racial response is directly attributable to the extremely fine geographic contrast at the heart of our research design. That is, despite the strong correlation of income and race at the population level, income is essentially randomly assigned among new different-race neighbors one versus two to three doors away in the same Census block group. The robustness of our result to income greatly strengthens the likelihood that the differential responses we estimate to the receipt of new different-race neighbors do, in fact, represent responses to neighbors' race rather than some other correlated attribute.

We close the paper by studying heterogeneity in the racial responses estimated in our baseline results. The main goal of this final section is to provide a sense of the places in American society where neighborhood race-based preferences remain strong drivers of stratification versus those spaces where such preferences are weaker and, therefore, may be more amenable to stable racial integration. To this end, we study heterogeneity along dimensions related to income, housing density, and region. For income, we are able explore how the estimated racial responses vary with the income of the (i) incumbent resident, (ii) new neighbor, and (iii) neighborhood. The results paint an interesting and consistent picture for Black and White households. On the one hand, the response of Black households to the receipt of a new White next-door neighbor appears to be quite broad based - i.e., of a similar magnitude regardless of income, as captured by each of these dimensions. The response of White households, on the other hand, varies systematically by income, and in the same way generally for all three dimensions. In particular, the response of White incumbents to the receipt of a new Black next door neighbor is especially great when the new neighbor's income level is relatively low.[8] In contrast, White racial responses are much closer to zero at higher levels of income along each of these dimensions.

[8]The same pattern holds qualitatively for the incumbent homeowner's and neighborhood income, although these estimates are less precise.

The results also point to strong racial responses, particularly for White households, in dense areas where houses are close together. In contrast, the racial responses in areas with suburban and exurban density are much weaker due, perhaps, to fewer or less intense interactions among neighbors in these spaces. Together, the results for income and density are largely consistent with recent descriptive evidence that show declining racial segregation and increases in racial tipping points in suburban areas of many American cities (Bartik and Mast, 2021). Finally, we estimate stronger racial responses by White homeowners in Northern versus Southern states. These results are in line with the especially high levels of racial segregation, historically and currently, in Northern cities (Boustan, 2010; Derenoncourt, 2012), as well as increased racial integration in the suburbs of Sunbelt cities.

Our paper makes several broad contributions to the existing literature. First, the empirical results provide new evidence that race remains an independent force shaping household sorting decisions in contemporary housing markets. This result has important implications for racial inequality in current and future generations, since (i) racial sorting drives enormous differences in neighborhood quality for Black and White households with identical levels of household income and wealth (Aliprantis et al., 2022; Bayer and McMillan, 2005) and (ii) differences in neighborhood quality have substantial causal effects on many social and economic outcomes, especially for children (Bayer et al., 2008; Chetty and Hendren, 2018; Chetty et al., 2016; Chyn, 2018; Chyn and Katz, 2021). Putting these two effects together, Chetty et al. (2020) shows that neighborhood differences have an independent effect, over and above parental differences, on the Black-White gap in absolute intergenerational mobility. Likewise, Chetty et al. (2022a) and Chetty et al. (2022b) demonstrate the importance of social connectedness within neighborhoods for upward mobility outcomes.

Our results also imply that immediate responses to the racial identity of neighbors – which may be compounded, in turn, by accompanying changes in amenities, prices, and expectations – contribute to the dynamic patterns of racial tipping, "White flight", and neighborhood racial transition (documented in, for example, Blair (2017); Boustan (2010); Card et al. (2011); Casey (2020); Derenoncourt (2012); Gould Ellen (2000)), making it difficult to sustain racially integrated neighborhoods. An extensive literature in economics has documented the causal benefits of racial integration (Billings et al., 2022; Johnson, 2011, 2019; Reber, 2011; Tuttle, 2019) and costs of residential segregation (Ananat, 2011; Andrews et al., 2017; Chyn et al., 2022; Cox et al., 2022; Lutz, 2011), for both Black and White children. In addition, recognition of the potential benefits of racial integration has spurred the passage of a number of public policies aimed at broadening access to better neighborhoods and

fostering stable neighborhood integration and these results suggest nuance in interpreting the efficacy of such policies in modern housing markets.[9] We discuss the implications of our findings for the sustainability of racially integrated neighborhoods further in the concluding section of the paper.

A final empirical implication of our paper is that social interactions that occur at the level of one's immediate neighbors remain important in a modern context. Interactions at this hyper-local level have motivated identification strategies for estimating social interactions and local spillovers in Bayer et al. (2008), Anenberg and Kung (2014), Bayer et al. (2021), and McCartney and Shah (2022) and the neighbor-based segregation index developed by Logan and Parman (2017).

Our paper also makes a methodological contribution to the literature that has attempted to distinguish the role of racial preferences in neighborhood sorting. In Section 3, we discuss in detail how our research design works to solve the problem of separately identifying direct preferences for the attributes or identities of one's neighbors from associated changes in neighborhood amenities and expectations about the future evolution of the neighborhood. This issue is well known in the literature on neighborhood sorting and many papers – e.g., Bayer et al. (2007) – simply acknowledge the inability to distinguish these components as a limitation of the analysis.

Another issue that naturally arises in the neighborhood sorting literature is how to distinguish the role of preferences in household location choices from various forms of housing discrimination.[10] Bayer et al. (2007) and Krysan and Crowder (2017) discuss the conceptual difficulty of differentiating whether observed neighborhood choices are driven by preferences of households for neighborhood composition versus discriminatory constraints that effectively restrict the options available to certain households.[11] By focusing on the exit decision of existing homeowners in response to changes in the demographic characteristics of their neighbors, our methodological approach avoids the difficulty of trying to identify whether neighborhood entry choices are driven by preferences or constraints.

[9] These interventions broadly include anti-discrimination legislation such as the Fair Housing Act of 1968, housing vouchers, scatter site housing, and related policies. See Galster (1992) and Massey and Denton (1993) for additional discussion.

[10] An extensive literature has documented housing discrimination through many channels including differential willingness to rent/sell to Black renters/buyers and neighborhood steering by real estate agents (Bayer et al., 2017; Christensen and Timmins, 2021b, 2022; Hanson and Hawley, 2011; Ondrich et al., 2003; Page, 1995; Yinger, 1986).

[11] Christensen and Timmins (2021a) uses a novel combination of an audit study and choice date to estimate a model that simultaneously captures both racial preferences and housing discrimination. Li (2021) uses detailed historical data to separately identify the role of preferences versus constraints in driving segregation in Northern cities during the Great Migration.

2 A Conceptual Framework

In this short section, we introduce a theoretical model of an existing homeowner's decision to remain in their neighborhood or move, as their neighborhood evolves. We assume this decision is inherently dynamic insofar as the homeowner bases their decision on both current neighborhood conditions and their expectations about how the relevant factors will evolve going forward. We use the homeowner's dynamic decision problem to highlight two fundamental identification issues facing researchers seeking to study whether the neighbors' identities directly affect residential location decisions. We formally introduce our nearest neighbor research design in the next section of the paper, explaining there how it helps to overcome these important identification issues.

We characterize the dynamic problem of a homeowner deciding whether to stay in their existing residence or move in each period. Households are forward-looking with preferences defined over the characteristics of their neighborhood, including the composition of their neighbors. Households also understand that neighborhoods are constantly evolving and form expectations about how their neighborhood is likely to change going forward given its current state.

We model the decision of an existing homeowner i with observable attributes Z_i to stay or leave their current residence in neighborhood j as a dynamic binary choice model in discrete time. We characterize the per-period utility, U that i receives from their current neighborhood at time t as:

$$U_{i,j,t} = f(Z_i, p_{i,j,t}, X_{i,j,t}, \xi_{i,j,t}, \alpha) + \sum_k g(Z_i, Z_{k,t}, D_{i,k}, \beta) + \epsilon_{i,j,t} \tag{1}$$

where:

- $f(\cdot)$ captures utility from neighborhood amenities, both observed $X_{i,j,t}$ and unobserved $\xi_{i,j,t}$, as well as the value of household i's home, $p_{i,j,t}$,
- $g(\cdot)$ captures utility associated with the attributes of each neighbor k, located a distance $D_{i,k}$ away,
- $\epsilon_{i,j,t}$ captures the idiosyncratic taste of household i for living in their current residence.

This general formulation of the per-period utility function allows homeowners to have preferences over both neighborhood amenities and the identities/attributes of their neighbors, and to potentially care more about their immediate neighbors than those a bit further away. The flexible form of $f(\cdot)$ also permits homeowners to care about the value of their home both as a measure of the cost of living in this location and because they benefit from any appreciation that occurs over time.

The Unobserved Amenity Problem. Inspection of the components of the static utility function illustrate a principal reason why it is challenging to separately identify and isolate independent causes of household move decisions. Since many neighborhood amenities are likely to be unobserved in any data set, distinguishing preferences for the identities/attributes of one's neighbors – captured in $g(\cdot)$ – from tastes for unobserved neighborhood amenities in ξ is difficult. Are households responding directly to the changing identity of their neighbors or to other aspects of the neighborhood – e.g., schools, shops, restaurants, churches – that may be changing at the same time? Answering this question is made all the more difficult by the fact that many of these amenities may evolve *endogenously* in response to changes in the neighborhood demographic and socioeconomic composition. Such endogenous amenities include public goods like school quality and public safety as well as any private goods and services that respond to local demand such as local restaurants, shops, and churches that may be highly correlated with neighborhood demographics.

The Neighborhood Expectations Problem. Given the characterization of static utility above, we can recursively define the household's present discounted value of remaining in their current residence $V_{i,j,t}$ using the Bellman equation:

$$V_{i,j,t} = f(Z_i, p_{i,j,t}, X_{i,j,t}, \xi_{i,j,t}, \alpha) + \sum_k g(Z_i, Z_{k,t}, D_{i,k}, \beta) + \delta EMax(V_{i,j,t+1}, 0) + \epsilon_{i,j,t} \tag{2}$$

where δ is the discount rate and for simplicity, and without loss of generality, we normalize the value of moving away to zero.

The right hand side of the Bellman equation highlights a second challenging identification problem related to the dynamic nature of the decision problem. In particular, the continuation value term $EMax(V_{i,j,t+1}, 0)$ in equation 2 captures expectations about the future evolution of the neighborhood along a number of dimensions, including household i's house price p. The inclusion of this term in the homeowner's decision problem makes it difficult to ascertain whether households respond to changes in neighborhood amenities and demographic composition because of the direct effect on their own utility or because they provide new information about the future evolution of the neighborhood. In the context of racial tipping, for example, this forward-looking behavior makes it difficult to distinguish whether households care directly about the race of their neighbors or are motivated instead by what neighborhood demographic change might signal about the future evolution of the neighborhood. In many historical contexts, in particular, fears about future price depreciation have been put forth as a primary explanation/justification for "White flight" in reaction to the initial entry of Black

residents on a block.

These fundamental identification problems are the primary reason the question of what fundamentally drives neighborhood racial change remains an open academic and policy question more than half a century after realtors openly practiced blockbusting in many American cities and Schelling (1971) formalized a dynamic model of neighborhood tipping. No existing paper has been able to fully separate the independent contribution of the identity of one's neighbors from the associated simultaneous (and potentially endogenous) changes in local amenities and what those identities might signal about the future evolution of the neighborhood.

3 Nearest Neighbor Research Design

The research design we use in this study is based on an empirical contrast between the behavior of existing homeowners who reside on the same residential block. Specifically, we compare how households of the same race react to receiving a new neighbor of a different race depending on whether the new different-race neighbor moves in immediately next-door versus slightly further away on the same side of the street on the same block. In practice, our main empirical results focus on comparing the reaction of current residents to receiving new next-door neighbors to those receiving a new neighbor just two to three doors away.[12] Intuitively, this fine geographic contrast directly addresses the fundamental identification challenges discussed above. First, because these homeowners live so close to one another, any differences in the neighborhood amenities they experience are likely to be very small and idiosyncratic. And, second, the arrival of the new neighbor should provide nearby existing homeowners with the same new information about how the neighborhood is likely to evolve over the coming years, regardless of whether they move in one versus two to three doors away. As a result, any systematic differences in move propensities in response to the arrival of the new neighbor can plausibly be attributed to differences in preferences related to proximity to the new neighbor.

3.1 A Potential Outcomes Framework

We introduce the nearest neighbor research design using a potential outcomes framework. Our main goal is to characterize the identified causal effect and the key identifying assumptions underpinning the design in a concise way. We discuss the implications of slightly weaker assumptions for the interpretation of the identified effect and foreshadow some empirical tests of these identifying

[12] In some specifications, we expand this contrast to within 2 parcels away relative to 3, 4, or 5 parcels away.

assumptions that we implement later in the paper.

Consider existing homeowners i of race r who reside on block j with neighboring homes d doors away. We model each incumbent household's move propensity, Y, in response to the arrival of a new neighbor of a different race r' arriving d doors away as:

$$Y_i(d) = \Phi(d) + \beta_i W(d) + \nu_i + \omega_j \tag{3}$$

where the four factors on the right hand side of equation 3 capture the impact on move propensities due to:

- preferences for living near a different-race neighbor d doors away: $\Phi(d)$,
- *within-block* differences in future amenities or housing prices related to the arrival of the different-race neighbor d doors away: $\beta_i W(d)$,
- idiosyncratic factors affecting household i's move propensity: ν_i, and
- factors affecting block j as a whole, ω_j, including any expected future changes to amenities, composition, and housing prices at the block level related to the arrival of the new neighbor.

The nearest neighbor research design aims to estimate the component of move propensities due to preferences for living near a different race neighbor, $\Phi(d)$, by contrasting the move responses of incumbent households immediately next door, $d = 1$, versus those a few doors away, to the arrival of a new neighbor of race r'. We are specifically interested in identifying $\Phi(1)$, which requires three assumptions:

Assumption 1: Quasi-Random Arrival Location within the Block ($d \perp\!\!\!\perp \nu$). The first key assumption underlying the nearest neighbor design is that $d \perp\!\!\!\perp \nu$ - i.e., the location of the newly-arrived neighbor of race r' is quasi-randomly assigned to existing owners residing a few houses from the new neighbor on the same block.[13] Our empirical focus on owner-occupied single family homes is motivated by this requirement. Two aspects of the market for single family homes help make this a reasonable assumption empirically. First, while the size, age, and quality of single family homes vary greatly across a city, homes are much more homogeneous on a given residential block. Second, the market for single family homes is typically quite thin, with only a small fraction listed for sale at a given moment in time. As a result, while a household might have a preference for a particular type of home in a particular neighborhood, the exact home they wind up buying within a block is largely a function of homes listed for sale at the time of their search.

[13]The independence assumption also implicitly requires all incumbent households to observe the arrival of the new neighbor, so that they can update beliefs about the expected future evolution of the neighborhood accordingly.

This assumption is testable on observable household and housing attributes, although obviously not on unobserved factors. As we show in the empirical analysis below, there are no systematic differences in the observable attributes of incumbent households one versus two to three doors away from a new neighbor of a different race on the same block in our large sample.

Assumption 2: Limited Geographic Scope ($\Phi(d) = 0 \ \forall \ d > 1$). This strong version of the limited geographic scope assumption requires that only close next-door neighbors are directly affected by the racial identity of the newly-arrived neighbor, over and above any impact on the future amenities, composition, and price of the block j as a whole. This assumption ensures that the component of move propensities due directly to preferences over the racial identity of the new neighbor can be identified by comparing the responses of immediate next-door neighbors, $d = 1$, and those just a few houses away - e.g., $d \in (2,3)$.

A weaker, and more reasonable, version of this assumption is that the preferences of neighbors two to three doors down are affected by the new neighbor in a qualitatively identical but quantitatively weaker way, $\Phi(1) > \Phi(d) \ \forall \ d > 1$.[14] In this case, our estimated effect provides a *lower bound* on the true strength of the move response to a new next-door neighbor due directly to preferences over their racial identity.

Assumption 3: No Effect of Arrival Location on Future Amenities or House Prices ($W(d) = 0 \ \forall \ d$). This final identifying assumption ensures that all households on block j within a few homes of the newly-arrived neighbor of race r' experience the same (block-level) impact on future amenities and house prices captured in ω. We use the term amenities broadly here to include anything that affects the value households receive from their residential location besides that due directly to the identities/composition of their neighbors. For most local public and private goods this is likely to be a reasonable assumption empirically, given the fine geographic scale of the analysis - i.e., differences in distances to shops, churches, transportation, and employment opportunities will generally be quite small between same-block neighbors living just a few doors apart from one another. All homes on the same side of a residential block are also almost always assigned to the same local schools and the likelihood of crime victimization is unlikely to vary much within a residential block.

While we do not observe measures of neighborhood amenities that vary within blocks, we are able to examine whether proximity to the newly arriving neighbor, d, is correlated with future home

[14] This statement of the assumption implicitly assumes that $\Phi(d) > 0 \ \forall \ d$.

sales price in the empirical analysis below. Housing price is an especially attractive variable because it serves as a meaningful summary statistic for the combination of all neighborhood amenities and housing attributes. We find negligible effects in our analysis, suggesting that there is essentially no correlation between localized neighborhood amenities and d. This result also suggests that the racial identity of the newly-arrived neighbor does not have a meaningful impact on future housing prices of immediate next-door neighbors versus those a few doors away, which helps rule out any concern that incumbents are potentially responding to any (positive or negative) changes to the neighbors' home or property rather than their racial identity.

3.2 Implementing the Nearest Neighbor Design.

The most straightforward implementation of our nearest neighbor research design would be to observe J blocks, each of which contain exactly two incumbent homeowners, a and b, of race r, living $d = 1$ and $d = 2$ doors away, respectively, from a newly-arriving neighbor of race r'. We refer to the next-door neighbor a as being "treated" and the slightly more distant neighbor b as a "control". Differencing the move propensities of the treated and control households yields:

$$\big(Y_a(1) - Y_b(2)\big) = \big(\Phi(1) - \Phi(2)\big) + \big(\beta_a W(1) - \beta_b W(2))\big) + \big(\nu_a - \nu_b\big) + \big(\omega_j - \omega_j\big) \tag{4}$$

Assumption 2 reduces the first term on the right hand of this equation to $\Phi(1)$. Assumption 3 eliminates the second term. The fourth term drops out, leaving:

$$Y_a(1) - Y_b(2) = \Phi(1) + \big(\nu_a - \nu_b\big) \tag{5}$$

Assumption 1 implies that $\big(\nu_a - \nu_b\big) \perp\!\!\!\perp \Phi(1)$. Thus, averaging over the J blocks provides the estimated treatment effect, $\overline{Y(1) - Y(2)}$, which converges to $\Phi(1)$ as the number of blocks goes to infinity.

Our empirical approach approximates this direct implementation. Specifically, we estimate the following equation:

$$M_{i,j,t} = \phi_1 I(d = 1)_{ijt} + \phi_2 I(d = 2/3)_{ijt} + \lambda Z_{i,j,t} + \omega_{j,t} + \nu_{i,j,t} \tag{6}$$

where:

- $M_{i,j,t}$ is an indicator ($\times 100$) for whether household i moves within a given time period following the receipt of a new neighbor.

- $I(d = 1)_{ijt}$ is an indicator for whether the new different-race neighbor moves in immediately next door from household i, on the same side of the street within block j.
- $I(d = 2/3)_{ijt}$ is an indicator for whether the new different-race neighbor moves in 2 to 3 doors away from household i, on the same side of the street within block j.
- $Z_{i,j,t}$ are any other time-varying observable factors at the household or block level that might affect the likelihood of moving.
- $\omega_{j,t}$ are block-by-quarter fixed effects.

Our parameter of interest is $\phi_1 - \phi_2$, which characterizes the additional propensity to move in response to receiving a new different-race neighbor immediately next door versus two to three doors away. The inclusion of block-by-quarter fixed effects ensures that this parameter is identified only by comparisons of households residing on the same block during the same time period. All of the tests of the identifying assumptions mentioned above and shown below are conducted using the same structure for the right hand side of this equation.[15]

Race Versus Other Household Covariates. A final issue worth noting in the context of laying out our research design: the interpretation of the estimated response to a neighbor's identity as a reaction to the neighbor's race, per sé. It is important to recognize that we observe only a small set of observable attributes for the homeowners in our sample. Thus, it will be impossible, in general, to rule out that any reactions we detect are instead related to other unobserved neighbor characteristics correlated with race. That said, we do observe a measure of household income at the time of entry into the neighborhood. And, strikingly, controlling separately for income in the analysis below has no effect on estimated racial responses. This happens because, despite the strong correlation of income and race in the population, there is no systematic relationship between income and proximity to the newly arriving different-race neighbor, d, at the finely differentiated distances we study. To the extent this holds for other household attributes, our analysis will, in fact, isolate a response to new different-race neighbors that is indeed attributable to race itself.

3.3 The Strengths and Limitations of the Nearest Neighbor Design

In our view, the great advantage of the nearest neighbor approach is that it can be used to isolate a component of the move response to the receipt of a new different-race neighbor that can be attributed

[15] Note that including control variables Z is not required for identification but can be used and to improve the precision of the estimates, as well as an implicit test of the random arrival location assumption. It is also worth noting that when treatment effects are heterogeneous the regression coefficient recovers a convex average of treatment effects, with weights that depend on the conditioning variables, including the fixed effects (see, for example, Angrist (1998) and Borusyak and Hull (2023)).

to preferences for the neighbors' racial identity under a set of assumptions that are both reasonable and can be tested/refuted in the data. Identification of such responses in a manner that holds constant changes in neighborhood amenities and prices (both current and expected future) has proven extraordinarily difficult in the literature to date.

That said, there are several limitations of the nearest neighbors approach that are important to emphasize. First, as mentioned above, under the weaker, and more reasonable, version of the Limited Geographic Scope assumption, the estimated causal effect provides a lower bound on the strength of preference-related response to the receipt of new next-door neighbor of a different race. Second, the mapping between value functions in Section 2 and the move probabilities in equation 3 will generally be a function of the variance of ϵ and all of the other components of the value function. Without estimating a fully-specified dynamic model, it is impossible to translate differences in move probabilities back to structural preference parameters, or to convert them to dollar values or other meaningful units for assessing differences in welfare. Researchers and policy makers may also be interested in other measures of the response to a new different-race neighbor - e.g., a total response rather than the component due only to direct preferences over the neighbors' racial identity. Our focus lies in trying to isolate the latter response, while other papers may seek to identify a different "estimand".

Finally, in the presence of heterogeneous treatment effects, the estimated causal effect will be a weighted average of the treatment effects for incumbent households living on blocks where experiments occur (see, e.g., Angrist (1998) and Borusyak and Hull (2023)). As we show below, and not surprisingly, more racially integrated neighborhoods are over represented in the sample of experiments, which raises the obvious possibility that the set of treated households are more racially "tolerant" and may have weaker responses to the receipt of a new different-race next-door neighbor than, for example, households residing in very segregated neighborhoods. Other aspects of the experimental design may push in the other direction, however, if, for example, the blocks where experiments occur have more churn and, as a result, incumbent households are generally closer to the margin of moving relative to the typical household.

4 Data

4.1 Data Sources

The data we use to study household moves and neighborhood dynamics are drawn primarily from two sources. The first consists of detailed housing transactions collected and made available by CoreLogic Real Estate Solutions. These data feature the near-universe of housing transactions for the MSAs under study and include substantial information on homes including: actual transaction prices, transaction closing date, structural characteristics such as square footage and year built as well as each home's precise location. Importantly, each home is assigned a unique identifier that allows observation of a home and any change in ownership over time.

We match these data to information available in publicly-available loan application registry (LAR) archives collected as required by the Home Mortgage Disclosure Act of 1975 (HMDA). The HMDA files focus particularly on mortgage applicant data relevant to monitoring potential redlining and mortgage discrimination behavior by lenders including race, ethnicity, gender, and household income of all applicants and co-applicants. Additional house and financial variables such as the transaction date, the census tract of the home, and characteristics of the loan originated are reported as well and help facilitate the match with the transactions data.

The CoreLogic and HMDA match uses a multi-step algorithm that exploits several key variables including the census tract of the home, the loan amount, transaction closing date, and name of the lender who originated the home.[16] The procedure initially matches the LAR files from HMDA with the lender information in the transactions data, then the two datasets are joined using the matching keys.[17] Overall, the match procedure is generally successful with nearly 50 percent of all mortgages in our CoreLogic sample matched to a mortgage application in the HMDA data. Some homeowners remain unmatched due to either having no unique match in the HMDA data or no transaction to match to, as happens in the case of cash purchases. These omissions reduce our sample size but do not threaten our strategy for identifying differential move responses since our empirical analysis focuses only on circumstances in which both incumbent homeowners and newly arriving neighbors have successful HMDA matches, which are necessary for characterizing the homeowner's race and household income.

[16] A number of papers in the literature use matched HMDA-transactions data. See, e.g., Bayer et al. (2018, 2016).

[17] We provide additional details on the match in Online Appendix A.

4.2 Identifying Nearest Neighbors

Our empirical strategy depends on correctly defining nearby neighbors. To properly assign neighbors in our estimation sample, our primary approach uses an algorithm that exploits the availability of exact addresses for each home. The algorithm first uses sequential numbering within a block to assign homes on the same side of the street as 1 door away, 2 doors away, 3 doors away, and beyond. To deal with cases of imperfect sequential numbering among the street addresses and other nonstandard configurations, the algorithm imposes additional restrictions using euclidean distances between properties.[18]

We also use an alternative approach of assigning nearby neighbors that explicitly uses distance, "as the crow flies," relative to each home in the sample. Specifically, we characterize the 40 nearest parcels by distance on the same block group as the home. This approach allows for something close to a 360-degree approach to determining the relevant set of neighbors over which to study current resident exits.

Figure 1 illustrates these two approaches to assigning nearby neighbors. The figure features a common configuration of a set of blocks within a neighborhood in many areas within the US and is typical of many of the neighborhoods where our experiments occur. The unnumbered black house is our house of interest. Our primary approach defines the "nearest" neighbor as homes next door and on the same side of the street. This definition corresponds to the homes shaded in dark gray in the figure. The homes shaded in light gray are defined as the homes two or three doors down and thus would serve as control comparisons in the context of our house of interest receiving the treatment of a different-race neighbor next door.

[FIGURE 1 HERE]

The alternative approach we use can be illustrated by considering instead the numbered homes in the figure. The number corresponds to the distance away from the house shaded black, i.e., the house numbered 1 is the closest house and the house numbered 7 is the 7th closest house. In this case, and in most cases in the data, the two closest homes are also the two homes next-door. However, this definition allows us to consider other nearby homes that are not on the same side of the street; in this case, the across the street houses numbered 5, 7, and 10 as well as homes 6, 8, and 9 which are located behind the home of interest.

[18] We provide additional details on the algorithm that identifies nearest neighbors in Online Appendix B.

4.3 Estimation Sample

Our primary sample is drawn from a national selection of counties using the following ex-ante selection criteria: (1) counties in metropolitan statistical areas with at least 200k residents and (2) counties in which the Black share is at least as large as the Black share in the US population, 12 percent, during the study period. Intuitively, these selection criteria focus our analysis on locations where meaningful Black-White racial integration could potentially be achieved. In contrast, most other locations in the US mechanically have little potential for integration, and would contribute relatively few "experiments" to our analysis, because the Black share of the population is too small.

Figure 2 presents a national map showing the counties that satisfy these selection criteria. Most of the counties that appear in our sample are located in the eastern half of US, primarily in the Northeast, Midwest, and Sunbelt regions.

[FIGURE 2 HERE]

We make several further refinements to the transactions data to arrive at the estimation sample used in our main analysis. We focus on "arms-length" transactions that took place in our candidate counties between 2005 and 2019. We exclude any land-only sales and further trim negative and $0 prices. We drop all homes initially built before 1900 or with building square feet over 6,001 to avoid comparisons between homes vastly different in size or age. For similar reasons, we also drop households with incomes under $10,000 or greater than $2,000,000. To ensure that the experiments studied are especially likely to satisfy the identifying assumptions, we further require: (i) that the share of parcels on the census block that are single family residences is at least 90 percent, (ii) the interquartile range of age of the block's homes is less than 30 years, (iii) the population of the block is at least 50 as per the 2010 census, (iv) the number of housing units is between 20 and 500 as per the 2010 census, and (v) the population density is between 500 and 10,000 persons per square mile as per the 2010 census. Together, these requirements allow us to appropriately classify nearest neighbors and to focus primarily on blocks consisting primarily of single family homes.

The high-frequency nature of these data across both space and time allows us to characterize local neighborhood dynamics at the level of a residential block and year-quarter. Our principal outcome measures whether an existing homeowner moves within 2 years of receiving a new different-race neighbor nearby on their block. We assign treatment and control status on the basis of race and the timing of when the home transacts. A household is classified as being "treated" if it receives a new next-door neighbor of a different race in a particular year-quarter and does not move in the same

quarter that the new neighbor arrived or the subsequent quarter.[19] Corresponding "control" households for a treated household are those of the same race on the same block. We further delineate control households by the distance to the new neighbor, focusing most of our analysis on a control group of incumbent homeowners located two to three houses away from the new different-race neighbor on the same side of the street on the same block.

We restrict our analysis to Black and White households. This choice is driven by several considerations. First, there is a longstanding and well-studied historical aversion and hostility to Black entry in predominantly White neighborhoods. In addition, this focus avoids some of the difficulties that arise in classifying Hispanic homeowners racially, as many are phenotypically similar to, and may be perceived as, White homeowners, especially in wealthier neighborhoods. We also drop Asian households from the analysis, due primarily to the relatively small number of experiments that would be present in the sample.

For a visual representation of where our experiments of interest are located within a typical metropolitan county, the second panel in Figure 2 presents a block-level map of Charlotte and the surrounding areas of Mecklenburg County. The dark gray areas map the census blocks where at least one experiment occurs over the sample observation period. The spatial distribution of these locations highlights the fact that although these experiments take place all over the county, the majority are in the periphery of the county. This is consistent with recent descriptive research that demonstrates a substantial increase in Black suburbanization in many metropolitan areas Bartik and Mast (2021).

4.4 Summary Statistics: Where Different-Race Neighbor Experiments Occur

Table 1 presents summary statistics, in separate panels for Black and White homeowners in the sample. The first column in each panel presents statistics for the full set of CoreLogic-HMDA matched homeowners in the sample counties. An observation is available for any year-quarter in which a homeowner is observed and, thus, at risk of receiving a new next-door neighbor. The second column shows analogous statistics for those homeowner-by-quarter observations where the homeowner is treated by the receipt of a new next-door neighbor of a different race. As we discuss in detail below, a comparison of these columns highlights the kinds of homes, homeowners, blocks, and neighborhoods where experiments are more likely to occur within the study area.

[19] This restriction on the timing of moves for treatment assignment helps to ensure we do not capture moves that happen to be coincidental with the arrival of new different-race neighbors, as home transactions are often formally recorded several weeks/months after a deal is reached.

[TABLE 1 HERE]

Comparing the first two columns of Table 1 highlights the differences between Black homeowners that are treated relative to the full set of Black homeowners in the sample. A first item to note is how rare it is for an existing Black homeowner to receive a new White next-door neighbor in our sample. Out of approximately 64 million quarters in which an existing Black homeowner is at risk of receiving a new next-door neighbor, there are only about 86,000 treated Black household-quarters. The first row of the table highlights a second interesting statistic: treated Black households are much more likely to move over the next two years than homeowners in the full Black sample, 5.95 vs. 4.27 percentage points. In addition to any direct response to the receipt of a new White neighbor, this raw difference could, of course, also be due to selection, changing neighborhood amenities, and many other confounding factors. Dealing with these potential confounders is exactly what motivates our nearest neighbor research design.

Comparing the first two columns for the remaining rows of Table 1 reveals that treated Black households tend to live in larger and more recently built homes, with an average year built of 1992 and square footage of over 2,600 feet, compared to 1976 and 2,255 square feet for Black-owned homes as a whole. Interestingly, treated Black households also tend to be around 7 percentage points more likely to have co-applicants and have higher household incomes, $79,000 vs. $71,000, than the full sample of Black homeowners.

The neighborhoods where treated Black homeowners reside also differ from the sample as a whole. Reflective of increased Black suburbanization in recent decades and greater racial integration with White households in the suburbs, the blocks where treated Black households reside tend to be much less dense and have a lower Black and higher White population shares than those for Black homeowners as a whole. In addition, treated Black households tend to live in neighborhoods with higher median household incomes, 74,000 dollars, as compared to the overall average of 61,500 dollars.

The contrast between treated White households and the overall sample of White homeowners also exhibits several striking differences. Out of the roughly 338 million observations in the data, only 95,834 White household-quarters are treated, an arrival rate for new different-race next door neighbors that is even lower than for Black homeowners. Like treated Black households, treated White households are much more likely to move, live in newer houses, and on blocks that are less dense compared to the overall White homeowner population. In contrast to their Black counterparts, however, treated White households have lower incomes, 83,500 versus approximately 101,500 dol-

lars, and tend to live in neighborhoods that have lower average incomes compared to the full sample of White homeowners.

Perhaps the most noteworthy feature of Table 1 is that *treated* Black and White homeowners are quite similar to one another along almost every dimension: household income, the age and size of their homes, neighborhood racial composition and income, and population density. This suggests that the places where experiments occur for Black and White homeowners are quite similar and that these happen most often in middle-income, newer, suburban-density neighborhoods with a meaningful amount of racial integration.

4.5 Balance Tests

In reporting the results for our main analysis below, we focus on the main parameter of interest $\phi_1 - \phi_2$ from equation 6. This parameter captures the incremental difference in move propensities for treated households located immediately next door to a new different-race neighbor relative to control households of the same race located two to three houses away, on the same side of the street on the same block in the same quarter. Before showing the main results, we first formally test "balance" between the treatment and control groups associated with this fine geographic contrast for observable characteristics, reporting these results in Table 2. These specifications use an estimating equation that is identical to one used in our main analysis but replace the left hand side variable with a housing or household attribute:

$$X_{i,j,t} = \phi_1 I(d = 1)_{ijt} + \phi_2 I(d = 2/3)_{ijt} + \omega_{j,t} + \nu_{i,j,t} \tag{7}$$

where X is an observable attribute. The first six columns of Table 2 present the results of separate regressions for house square footage, year built, presence of a mortgage co-applicant, household income, whether the mortgage is financed by a bank, and whether the loan is a conventional mortgage.

The final column reports results for an index of these six housing and household variables. The weights for this index are the estimated coefficients of a regression model that predicts exit over the next two years as a function of these observable household and housing variables. This index not only collapses the information in the observable variables into a single variable, but the resulting magnitude of the coefficient shown in column (7) can be interpreted as the incremental likelihood that treated households would move in the next two years compared to control households two to three doors away, as predicted by the full set of observable characteristics.

[TABLE 2 HERE]

Turning first to Panel A, which reports results for Black incumbent homeowners, we find negligible differences between the treatment and control households for all six variables. In fact, the coefficients amount to precise null estimates in all cases. The estimate reported in column (1), for example, implies a difference of about two square feet in homes that receive a new different-race neighbor immediately next door versus two to three doors away. Corresponding differences in year built and income amount to only 10 *days* and 38 dollars. All of the implied t-stats for these tests are small, implying that, in addition to little economic significance, the estimates are also statistically indistinguishable from zero. The final column of Panel A reports the differences between treatment and control for the index of observable attributes. The estimate of -0.005 means that treated households are 0.005 percentage points less likely to move over the next two years than the control households, as predicted by these observable characteristics. This number is less than $1/1000th$ the mean, implying no meaningful difference in expected exit behavior of treated and control households on the basis of observed attributes.

Panel B presents analogous results for White current residents. The estimates again imply negligible differences in covariates for treated and control White incumbents. We find a difference of about one square foot in the size of their homes, 18 days in the age of the home, and roughly 48 dollars in income, on average, across the treatment and control groups. Examining the joint predictive power of these attributes using the index, we again find tiny differences between treatment and control groups: 0.008 percentage points on a mean of 9.37 percentage points. Although the difference is statistically significant, the predicted power of observable characteristics is again on the order of $1/1000th$ the mean exit rate for White homeowners.

Taken as a whole, the estimates reported in Table 2 strongly suggest that the arrival of a new different-race neighbor one versus two to three doors down on the same side of the street on the same block is as good as randomly assigned. For both Black and White current residents, observable differences in predicted move rates based on income, home size and age, and mortgage information between treatment and control households represent a tiny fraction of the mean.

5 Main Results

Table 3 reports the estimated effect of receiving a new different-race next-door neighbor on the decision to move within two years. The sample includes only treatment and control homeowners on

the same residential block. The table reports our main parameter of interest, $\phi_1 - \phi_2$ from equation 6, which again can be interpreted as the incremental move response of incumbent homeowners who receive a new different-race neighbor immediately next door relative to same race homeowners two or three doors away, on the same side of the street on the same block within the same quarter. Each specification includes block-by-quarter fixed effects. Column (1) includes no additional control variables; Column (2) adds property attributes (square footage and year built); Column (3) adds household attributes (income and presence of a co-applicant); Column (4) includes both property and household attributes, and adds mortgage characteristics.[20]

[TABLE 3 HERE]

Looking first at the results for Black current residents in Panel A, column (1) presents the estimate from a baseline model excluding house and homeowner controls. The estimate indicates a positive and statistically significant increase in move propensity of 0.263. Adding controls for household, property, and loan attributes as we move across columns (2) through (4) has little impact on the estimates. In the specification that includes the full set of controls presented in column (4), the coefficient for those receiving a new White neighbor next door is only slightly higher at 0.268. Notice that the difference between the estimate reported in column (4) and the one shown in column (1) is equal to the estimate for the predicted index in Table 2. As mentioned above, this difference is less than $1/1000th$ of the mean move propensity or less than $1/50th$ of the main effect size shown in Table 3.

Panel B presents estimates from analogous models for White current residents. Column (1) again presents the estimate from our baseline model with no additional controls, yielding a statistically significant increase in the relative move propensity of 0.265. Similar to the results for Black current residents, including additional controls in columns (2), (3), and (4) has virtually no effect on the estimates. In column (4), conditional on the full set of controls, the estimated coefficient is only marginally smaller than the model with no controls at 0.257.

Overall, the incremental responses of both Black and White homeowners to receiving a new different-race neighbor immediately next door are similar in magnitude. Both are also statistically significant at conventional levels. Another way to view the size of these coefficients is to compare them to the mean of the dependent variable, reported in a lower row of each panel. The average

[20]The standard errors reported in [Table 3] and throughout the analyses presented in the paper are adjusted for clustering at the tract-year level. [Appendix Table C5] reports results for a wide variety of alternative choices for the level clustering. The statistical significance of the main results at conventional levels is robust to this choice.

move rates over the next two years are 5.50 percent and 9.37 percent for Black and White households, respectively, which means these estimates translate into roughly 5 and 3 percent increases in exit rates relative to households two or three doors away.

The robust responses estimated here are consistent with a model in which households have preferences directly over the race of their neighbors. Such preferences might be driven by a desire to live near neighbors of the same race and/or to explicitly avoid neighbors of another race.[21] Notice also that a desire to move away from new different-race neighbors could result from an incumbent household's own racism or as a reaction to the racism of the newly arriving neighbor. An especially racist homeowner, for example, might flee their existing neighborhood quickly upon receiving a new different-race neighbor and create a hostile relationship upon their arrival as a new neighbor. In this way, the symmetry of the responses of Black and White incumbent households that we estimate here may, in part, reflect the fact that the basis for the response *in both cases* is a new neighbor cross-race relationship subject to the potential racism of one party.

The main advantage of the nearest neighbor design applied at the fine geographic scale we use here is that it credibly attributes this incremental component of neighborhood choice directly to household preferences for the identities of their neighbors. As discussed more fully in Section 3, a limitation of our approach, however, is that these estimated effects capture only the incremental response of homeowners living immediately next door to the newly-arrived neighbor over and above the response of those just a two to three doors further away. As a result, these estimates naturally serve as lower bounds on the full direct response to the receipt of a new different-race neighbor, to the extent that the receipt of a new different-race neighbor may also directly enter the preferences of households two to three doors away.

5.1 Alternative Measurement of Nearest Neighbors

To examine the robustness of our main results to alternative ways of constructing fine geographic contrasts among close neighbors, we expand the set of comparisons beyond the immediate block by studying move responses to new different-race neighbors within the 40 nearest parcels based on distance. In contrast to our baseline research design, this set of homes can include homes on surrounding census blocks (but always in the same census block group), such as those across the street. We focus particularly on moves as a response to receiving a new different-race neighbor

[21] These are isomorphic in observational data. As such, the results are consistent with recent work suggesting homophily as one of several key drivers of sorting responses (Aliprantis et al., 2022; Bruch and Mare, 2006).

among the two nearest parcels in comparison to responses to a new-different race neighbor within the 3, 4, or 5 closest parcels. All models include block group-by-quarter fixed effects.

Before discussing these results, we first present balance tests for this design, analogous to those presented in Table 2 above. Appendix Table C2 presents these estimates for the treated households that receive a new different-race neighbor within the two closest parcels relative to those 3, 4, or 5 closest parcels away. We again find small differences between the two groups – e.g., for Black incumbent homeowners, we find a difference of just over 3 square feet in the size of the homes, no difference in year built, no difference in the likelihood of having a co-applicant, and less than 500 dollars in annual income. For White incumbent homeowners, we again find generally small differences for these observables: less than 5 square feet, about 0.26 of a year, virtually no difference in share of co-applicants on mortgage, and 190 dollars of income.

The first column of each panel of Table 4 reports balance results for the index of all six observable attributes. For Black incumbent homeowners, this coefficient is 0.002, again suggesting no systematic selection on the basis of observables in this alternate design. For White current residents, the index is slightly larger and statistically significant, but at 0.016 remains small in economic terms. Overall, we interpret the balance tests as highly supportive of this alternative research design, but do note that the balance tests were slightly better for our main analysis presented above. As a result, we treat that approach as our main analysis.

[TABLE 4 HERE]

In the second column of each panel of Table 4, we present the results for this alternative research design for Black and White current residents, respectively. In each case, the estimates suggest the presence of a highly localized differential move response. The estimated coefficients for receiving a different race in the two closest parcels is positive and statistically significant at the ten percent level for Black and White current residents, with similar magnitudes of 0.185 and 0.222 percentage points, respectively. These estimates are slightly smaller but of the same order as those reported above for the main analysis. This may be due to the fact that the race of neighbors residing in "control" homes right behind or across the street is more salient for existing homeowners compared to homes two or three doors away on the same side of the street. In general, however, the main findings are robust to the exact set of neighbors used as the closest controls.

6 Testing Identifying Assumptions and Alternative Explanations

In this section, we provide results from additional empirical analyses designed to test features of the identifying assumptions described in Section 3 and examine alternative explanations for the main results presented in Table 3 above.

The estimates reported for the balance tests in Table 2 provide evidence in support of Assumption 1 - i.e., quasi-random arrival location within the block. In particular, the negligible effects reported there imply the proximity to a new different-race neighbor at the very fine geographic scale that we study (next door vs. two to three houses away) appears to be as good as randomly assigned, to the extent this can be tested on key observable attributes such as income, home size, and age.

Assumption 3 requires that proximity to the newly-arrived neighbor has no impact on future amenities or house prices within the block. While we do not observe neighborhood amenities at this fine of a geographic scale, we can observe the price of any home that sells during our sample period. Examining future sales prices allows us to (i) directly assess whether the receipt of a new different-race neighbor immediately next door versus two or three doors further away has any direct effect on housing prices and (ii) to test for the presence of any highly localized amenities that would be significant enough to affect housing prices.

Table 5 reports results for a series of specifications that compare house prices for homes that sell in the same quarter. The successive columns add finer geographic controls so that comparisons are restricted to the same tract and quarter in column (1), same block group and quarter in column (2), and, most finely, same block and quarter in column (3). The estimated parameter returns the incremental effect on housing prices for houses that recently received a new different-race neighbor immediately next door compared to others two to three doors away from a new different-race neighbor in the same geographic area and quarter.

The sample for each column includes all treated and control observations two to three doors away for which a home sells following the receipt of a new different-race neighbor plus all other homes that sold within the same geographic area and quarter. All three columns of each panel include controls for property characteristics, Z, and the estimating equation can be written:

$$lnp_{i,j,t} = \phi_1 I(d=1)_{ijt} + \phi_2 I(d=2/3)_{ijt} + \lambda Z_{i,j,t} + \omega_{j,t} + \nu_{i,j,t} \tag{8}$$

where our parameter of interest is again $\phi_1 - \phi_2$ and j indicates the level of geography for the given specifications: (1) tract, (2) block group, and (3) block.

We turn first to the results for Black current residents shown in column (1) of Panel A, which conditions on tract-by-quarter fixed effects. The difference between treated and control homes is 0.007 which implies that the receipt of a new White neighbor next door versus two to three doors away has little impact on subsequent sales prices among Black homeowners in the same tract. Restricting geography further to the block group barely alters the point estimate, now at -0.011. The standard errors on the estimates for the tract and block group results are 0.010 and 0.012, respectively, implying fairly precise null estimates. The results in column (3), which include block-by-quarter effects are of a similar magnitude as the previous estimates, but due to the much smaller sample of homes selling within the same block and quarter, the standard errors are slightly larger. Overall, there is no evidence of any systematic correlation between the receipt of a new White neighbor immediately next door versus two to three doors away and future housing prices for Black homeowners within the same geographic neighborhood.

[TABLE 5 HERE]

For White homeowners, restricting the neighborhood geography to the tract, block group, or block, results in a point estimate that is less than or equal to 0.002 in magnitude in each case. The standard errors are even smaller for the White sample, 0.005 at both the tract and block group levels. For White households, the block-by-quarter fixed effects specification shown in column (4) has a point estimate of 0.001 and a standard error of 0.007, again implying a fairly precise null effect on future resale prices.

Taken together, the results presented in Table 5 suggest that sales prices are not affected much by the receipt of a new different-race neighbor immediately next door versus two to three doors away within the same neighborhood. These results help diminish concerns about (i) highly localized variation in current or future amenities that might be correlated with the receipt of a new different-race next door neighbor and (ii) that the presence of the new neighbor might affect future sales prices at this fine geographic scale.

6.1 An Alternative Empirical Approach

In Section 1, we discussed two additional potential concerns that naturally arise in interpreting the effects from our main analysis as a response to the race of the newly arriving neighbor. First, households might respond more generally to the disruption resulting from the receipt of a new neighbor,

regardless of the new neighbor's race. And, second, households might respond to other attributes of their neighbors, such as income, which are highly correlated with race at the population level.

To address these concerns directly, we consider an alternative empirical approach that complements our main analysis. In this case, we compare the responses of households who receive new different-race neighbors to those who receive new same-race neighbors, immediately next door versus two to three doors away, within the same Census block group in the same year-quarter. To do so, we first restrict the sample to those homeowners who received new different- or same-race neighbors within three doors on the same block on the same side of the street at some time during the sample. We then include block group-by-quarter fixed effects in the analysis to ensure that all comparisons of move propensities are made among households who received either different- or same-race neighbors within three houses in the same block group and quarter. Our baseline specification for this research design can be written:

$$M_{i,j,t} = \alpha_1 I(Diff1door)_{ijt} + \alpha_2 I(Diff2/3door)_{ijt} + \alpha_3 I(Same1door)_{ijt} + \lambda z_{i,j,t} + \theta_{j,t} + \nu_{i,j,t} \tag{9}$$

where $\theta_{j,t}$ are block group-by-quarter fixed effects, $I(Diff1door)_{ijt}$ and $I(Diff2/3door)_{ijt}$ are indicators for whether a new different-race neighbor moves in next door and two to three doors away, respectively, and $I(Same1door)_{ijt}$ is an indicator for whether a new same-race neighbor moves in next door. All three measures apply to houses on the same side of the same street and the omitted category includes homeowners who receive a new same-race neighbor two to three doors away.

The parameters reported in Table 6 are $\alpha_1 - \alpha_2$, which measures the incremental effect of receiving a new different-race neighbor immediately next door versus two to three houses away, and α_3, which measures the incremental effect of receiving a new same-race neighbor immediately next door versus two to three houses away. All specifications include the full set of property and homeowner control variables used in our main analysis.

6.1.1 Different- Vs. Same-Race Neighbors

Column (1) in each panel of Table 6 highlights the difference in responses to different- versus same-race next door neighbors. Turning first to the results for incumbent Black homeowners shown in Panel A, the estimate of the impact of receiving a new White neighbor immediately next door are positive, similar in magnitude to those reported in our main analysis (0.331 here versus 0.268 in Table 3), and statistically significant at conventional levels. In contrast, the estimates for Black current residents receiving new Black neighbors next door versus two or three doors away are negligible, slightly negative, and statistically insignificant. These latter results suggest little in the way of a

systematic general response to the receipt of a new next door neighbor.

[TABLE 6 HERE]

The results for White incumbent homeowners paint a similar picture. Looking at the estimates reported in column (1) of Panel B, the response of White current residents to the receipt of a new Black neighbor immediately next door versus two to three doors away is 0.266, which is again very close to that reported in our main analysis, 0.257. Like for Black homeowners, the estimated response of White homeowners to the receipt of a new same-race neighbor next door versus two to three doors away is much more muted and statistically insignificant. In this case, the estimate is 0.052. Thus, for both Black and White residents the response to receiving a new different-race neighbor appears to be substantially greater than any general response to the receipt of a next door neighbor.

6.1.2 Adding Controls for Income

A key advantage of this alternative research design, compared to our main approach, is that it permits the simultaneous consideration of both the race and income of the new neighbor. This is attractive for several reasons. First, it allows us to explore whether the estimated responses to the receipt of a new different-race neighbor might not be a response to the neighbor's race, per sé, but instead reflect a response to other attributes that are correlated with race in the population, of which income serves as a prime example. Second, including income as a control in the analysis provides a complementary estimate of how homeowners respond directly to the income of their neighbors, which is of independent interest in the residential sorting literature. And, finally, we can broaden the analysis to consider various measures of how a new neighbor's income compares to either the neighborhood or the incumbent homeowner to gain a richer understanding of what might be motivating incumbent homeowners' reactions.

Returning to Table 6, columns (2) through (4) report estimates of specifications that are analogous to the specification reported in column (1) but also include control for the incomes of new neighbors in several ways. The specification reported in column (2) includes five bins for income of the new neighbors. The estimates for the direct role of income are shown in Appendix Table C4. These point estimates imply that both Black and White incumbent homeowners have a strong inverse response to the income of their new neighbors. Compared to the receipt of a new neighbor with less than $\$50k$ in income, for example, Black homeowners have 0.366 and 0.450 percentage point decreased rates of

moving over the next two years in response to a new neighbor with $\$100k - \$150k$ and over $\$150k$ in income, respectively. The comparable numbers are similar for White incumbent homeowners at a 0.280 and 0.601 percentage point decreased rate of moving. In this way, both Black and White homeowners systematically prefer to have close neighbors with higher incomes, and this relationship appears to be monotonic in income.

Remarkably, given the substantial preferences estimated for the new neighbor's income, the inclusion of these income controls has almost no impact on the estimated responses to the race of new neighbors. That is, there is no change in the estimated coefficients related to race in moving from column (1) to column (2). At first glance, this result might seem surprising given the correlation between race and income in the general population. But it is actually just another implication of the very fine geographic scale of the comparisons made in applying our nearest neighbor research design. In particular, that controlling for neighbor income has no effect on the race coefficients (despite having a strong direct effect) implies that there is essentially no correlation between income and proximity of new neighbors at this geographic scale – i.e., a new different-race neighbor's income is not correlated with whether they arrive one versus two to three doors away.

In this way, the estimates reported in column (2) confirm that the estimated responses to the neighbor's race in our analysis is not an income effect. The orthogonality of an important attribute like income to race at these fine geographic scales is suggestive that other household attributes are also likely to have little correlation with race within the context of our preferred research design. As such, this finding lends greater credence to the interpretation of our main results as a response to race itself, rather than potential correlates of race.

Instead of direct controls for the income of the new neighbor, the remaining columns of Table 6 include different income measures. The specification shown in column (3), for example, includes bins for the difference between the new neighbor's income and the block group median household income. Column (4) instead includes bins capturing the difference between the current resident and new neighbor's income. The first thing to notice about these specifications is that the inclusion of these alternative measures also has no impact on the estimate coefficients related to race. The expanded results presented in Appendix Table C4 also point to some interesting heterogeneity, suggesting that high income incumbent residents (both Black and White) may have the strongest reactions to the income of their new neighbors.

7 Heterogeneity in the Racial Response

We conclude the discussion our of main results by examining heterogeneity in the estimated response to a new neighbor's race. Rather than just an interesting elaboration, exploring heterogeneity in these responses has important real-world consequences in that it can help distinguish contexts where race-based preferences remain strong drivers of neighborhood stratification from those where such preferences likely have a smaller role. The latter may help distinguish places in American society that have become more amenable to stable racial integration in recent decades.

7.1 Income Heterogeneity

We begin by examining heterogeneity along three dimensions of income, focusing on income of the (i) neighborhood, (ii) incumbent resident, and (iii) new neighbor. The columns of Table 7 report the results for expanded specifications of our main analysis that interact the race response with an indicator for whether the corresponding income measure is above or below the median.[22]

Panel A reports the results for the responses of incumbent Black homeowners who receive a White neighbor next door versus two to three houses away. The results paint a consistent picture for the racial response of Black households across each of these dimensions of income heterogeneity. In particular, the response of Black households to the receipt of a new White next-door neighbor appears to be quite broad-based – i.e., of a similar magnitude regardless of income, as captured by each of these dimensions.

[TABLE 7 HERE]

The racial response of White households, on the other hand, appears to show some systematic heterogeneity by income. The point estimates in each column vary in the same way for all three dimensions of income heterogeneity, again painting a consistent picture. In this case, the move response of White incumbents to the receipt of a new Black next door neighbor is especially great when the new neighbor's income level is less than the median. In contrast, White racial responses are much smaller and indistinguishable from zero when the new neighbor's income is above the median. The same pattern holds for block group and incumbent homeowner income, but the estimated differences are a bit smaller and not statistically significant in these cases. These estimates of weaker

[22] The third column includes slightly fewer observations because we restrict the sample to block-quarters that receive exactly one new different-race neighbor so that income can be cleanly categorized.

racial responses by White households in high income spaces is consistent with recent evidence showing declining racial segregation and increases in racial tipping points in suburban areas of many American cities (Bartik and Mast, 2021). Taken as a whole, these results suggest that race-based preferences may have weakened as a principal driver of racial stratification in higher income segments of American metro areas.

7.2 Heterogeneity in Distance to Neighbors

Table 8 reports a set of results that examine heterogeneity in the racial response as a function of distance between neighboring houses. Intuitively, when this distance is small, neighbors are forced to live closer to one another and may interact more often or more intensely. With greater distance between homes in suburban and exurban settings, neighbors may be able to come and go without interacting much at all.

[TABLE 8 HERE]

Aspects of this intuition are present in the results reported in Table 8. For White incumbent homeowners, in particular, the strength of the racial responses is especially great when neighboring homes are very close together and declines sharply with distance. In particular, the point estimates for White households fall from 0.58 at zero meters to 0.00 at 50 meters. Overall, the heterogeneity in responses estimated in Table 8 is consistent with decreased racial responses in neighborhoods with more suburban versus urban densities.

7.3 Regional Heterogeneity in Responses to Race

We close the paper with an exploration of regional heterogeneity in estimated racial responses. To that end, Table 9 reports the results of specifications report the results for specifications of our main analysis that split the sample in the Southern versus Northern states.[23]

[TABLE 9 HERE]

The number of observations shown in each column of the table make clear that the majority of our sample for both Black and White homeowners comes from the Southern states. As a result, it is not terribly surprising that the results for the South are similar to the main results presented in

[23] We classify the Southern states as Virginia, North Carolina, South Carolina, Georgia, Texas, Florida, Alabama, Mississippi, Tennessee, Arkansas, West Virginia, and Kentucky. All other states except Nevada are included in the Northern sample.

Table 3. Overall, these results suggest a similarly-sized racial response on the part of both Black and White homeowners.

In contrast, the results for Black and White homeowners in Northern states move in opposite directions. Most strikingly, Northern White homeowners have significantly stronger responses to receiving new different-race neighbors than either their White counterparts in the South or Black homeowners in the North. Northern Black homeowners, on the other hand, have the weakest estimated racial response of the four groups. An especially strong racial response by White homeowners in Northern cities is in line with the history of White flight in response to the in-migration of Black residents during the Great Migration (Boustan (2010), Boustan (2017), Derenoncourt (2012)) and the accompanying legal and extra-legal efforts to confine Black households to highly segregated neighborhoods in these cities. That White racial responses remain stronger in these Northern cities into the $21st$ Century is also consistent with the fact that residential racial segregation remains significantly higher in these cities than elsewhere in the country.

8 Conclusion

Racial stratification remains a defining feature of every major city in the United States. Even as individual neighborhoods evolve, the overall segregated structure of American cities has been continuously renewed and reinforced by the ways that households create neighborhood change by both pushing into new neighborhoods or by moving away. Social scientists have documented the kinds of dynamic patterns – neighborhood tipping, white flight, gentrification, and aversive sorting – that help maintain and reinforce racial segregation (Boustan, 2010; Caetano and Maheshri, 2017; Card et al., 2008; Casey, 2020; Gould Ellen, 2000; Guerrieri et al., 2013; Krysan and Crowder, 2017). But a long-standing question in this literature has remained open for decades: to what extent are households responding to the identities of their new neighbors versus the kinds of endogenous (current and future) changes to the neighborhood that accompany them? In the days of blockbusting, for example, realtors would stoke white fears about what Black in-migration would mean for their future home values (Boustan, 2017). And it is often the rapid changes in local businesses (e.g., a new Starbucks or Whole Foods), reacting to increased local (high-income) demand, that serve as the most obvious markers of modern gentrifying neighborhoods (Couture and Handbury, 2020; Glaeser et al., 2018).

The main contribution of this paper is the development and application of a new nearest neighbor research design that seeks to separately identify a component of neighborhood racial change at-

tributable directly to neighbors' identities rather than any associated neighborhood amenity changes, current or future. Our approach bases these estimates on an empirical contrast between the out-migration decisions of two single-family homeowners of the same race on the same residential block – one immediately nearby, one a bit further away – in reaction to receiving a new neighbor of a different race. The core identifying assumption is that where the new neighbor arrives on the block is as good as randomly assigned and has the same implications for current and future neighborhood changes, including for house prices.

Our findings indicate strong, statistically significant responses of both Black and White homeowners to receiving a new neighbor of a different race.[24] For both Black and White homeowners, the estimates are driven by experiments in the data that are especially likely to occur in more newly built, middle-income, suburban-density neighborhoods in Southern states. We demonstrate robustness of these findings across a number of dimensions. The magnitude and qualitative implications of these results remain when we consider different definitions of nearest neighbors, use alternative research designs, and control directly for the income of new different-race neighbors.

These findings have implications for the potential sustainability of racially integrated neighborhoods over long periods of time. If neighborhood racial change were fully attributable to broader changes in neighborhood amenities and house prices, policy responses, such as anti-discrimination enforcement, affordable housing initiatives, and efforts to maintain access to existing public and private goods and services, might be enough to effectively foster and maintain racially integrated neighborhoods. If, as the evidence indicates, direct responses to neighbors' identities have a significant role in the decision to move away then, if integrated neighborhoods are to be sustained, it suggests that many of the routine, daily social interactions among neighbors require the attention of activists and policy makers. Given the responses estimated in this paper, public policies that aim to foster positive social interactions, especially among new neighbors, are likely critical to maintaining racially integrated neighborhoods in many settings.

Finally, the estimated racial responses exhibit heterogeneity by income, density, and region that has implications for contexts in which racial preferences continue to harden historical segregation patterns as well as places in modern American society with greater potential for racial integration. In particular, the estimated racial responses for White homeowners reveal stronger responses to new Black neighbors in the Northern states, in particularly dense areas, and in relatively low income set-

[24]The examination of neighborhood racial change in both directions distinguishes our paper from most of the literature, which, for historical reasons, has generally focused on White responses to Black in-migration. For more discussion in the context of tipping, see, e.g., Card et al. (2011).

tings. In contrast, White racial responses are much more muted in high-income, suburban-density spaces and in the Southern states. Taken as a whole, these results suggest that emergent neighborhoods with substantial racial integration in higher-income suburban regions of Southern cities is likely much more sustainable than in previous generations.

References

ALIPRANTIS, D., CARROLL, D., AND YOUNG, E. 2022. What explains neighborhood sorting by income and race? *Federal Reserve Bank of Cleveland Working Paper* .

ALMAGRO, M., CHYN, E., AND STUART, B. 2021. The effects of urban renewal programs on gentrification and inequality: Evidence from chicago public housing demolitions. *U of Chicago Working Paper* .

ALMAGRO, M. AND DOMINGUEZ-IINO 2020. Location sorting and endogenous amenities: Evidence from amsterdam. *U of Chicago Working Paper* .

ANANAT, E. 2011. The wrong side (s) of the tracks: The causal effects of racial segregation on urban poverty and inequality. *American Economic Journal: Applied Economics* 3:34–66.

ANDREWS, R., CASEY, M., HARDY, B. L., AND LOGAN, T. D. 2017. Location matters: Historical racial segregation and intergenerational mobility. *Economics Letters* 158:67–72.

ANENBERG, E. AND KUNG, E. 2014. Estimates of the size and source of price declines due to nearby foreclosures. *American Economic Review* 104:2527–2551.

ANGRIST, J. D. 1998. Estimating the labor market impact of voluntary military service using social security data on military applicants. *Econometrica* 66:249 –288.

BARTIK, A. AND MAST, E. 2021. Black suburbanization and neighborhood inequality. *University of Illinois Working Paper* .

BAUM-SNOW, N. AND HARTLEY, D. 2020. Accounting for central neighborhood change. *Journal of Urban Economics* 117:103 – 228.

BAYER, P., CASEY, M., FERREIRA, F., AND MCMILLAN, R. 2017. Racial and ethnic price differentials in the housing market. *Journal of Urban Economics* 102:91–105.

BAYER, P., FERREIRA, F., AND MCMILLAN, R. 2007. A unified framework for measuring preferences for schools and neighborhoods. *Journal of political economy* 115:588–638.

BAYER, P., FERREIRA, F., AND ROSS, S. L. 2018. What drives racial and ethnic differences in high-cost mortgages? the role of high-risk lenders. *The Review of Financial Studies* 31:175–205.

BAYER, P., MANGUM, K., AND ROBERTS, J. 2021. Speculative fever: Investor contagion in the housing bubble. *American Economic Review* 111:609–651.

BAYER, P. AND MCMILLAN, R. 2005. Racial sorting and neighborhood quality. *National Bureau of Economic Research Working Paper 11813* .

BAYER, P., MCMILLAN, R., MURPHY, A., AND TIMMINS, C. 2016. A dynamic model of demand for houses and neighborhoods. *Econometrica* 84:893–942.

BAYER, P., ROSS, S., AND TOPA, G. 2008. Place of work and place of residence: Informal hiring networks and labor market outcomes. *Journal of Political Economy* 116:1150–1196.

BILLINGS, S., CHYN, E., AND HAGGAG, K. 2022. The long-run effects of school racial diversity on political identity. *American Economic Review: Insights* 3:267–284.

BLAIR, P. 2017. Outside options (now) more important than race in explaining tipping points in US neighborhoods. *Harvard University Working Paper* .

BORUSYAK, K. AND HULL, P. 2023. Negative weights are no concern in design-based specifications. *AEA Papers and Proceedings* forthcoming.

BOUSTAN, L. P. 2010. Was postwar suburbanization "white flight"? evidence from the black migration. *The Quarterly Journal of Economics* 125:417–443.

BOUSTAN, L. P. 2017. Competition in the Promised Land: Black Migrants in Northern Cities and Labor Markets. National Bureau of Economic Research Publications.

BRUCH, E. E. AND MARE, R. D. 2006. Neighborhood choice and neighborhood change. *American Journal of Sociology* 112:667 – 709.

CAETANO, G. AND MAHESHRI, V. 2017. School segregation and the identification of tipping behavior. *Journal of Public Economics* 148:115–135.

CAETANO, G. AND MAHESHRI, V. 2021. A unified empirical framework to study segregation. *University of Georgia working paper* .

CARD, D., MAS, A., AND ROTHSTEIN, J. 2008. Tipping and the dynamics of segregation. *The Quarterly Journal of Economics* 123:177–218.

CARD, D., MAS, A., AND ROTHSTEIN, J. 2011. Are Mixed Neighborhoods Always Ustable. *In* H. Newburger, E. Birch, and S. Wachter (eds.), Neighborhood and Life Chances: How Place Matters in Modern America. Philadelphia: University of Pennsylvania Press.

CASEY, M. 2020. The Microdynamics of Neighborhood Transition. *U. of Illinois-Chicago Working Paper* .

CHARLES, C. Z. 2000. Neighborhood racial-composition preferences: Evidence from a multiethnic metropolis. *Social problems* 47:379–407.

CHETTY, R. AND HENDREN, N. 2018. The impacts of neighborhoods on intergenerational mobility i: Childhood exposure effects. *The Quarterly Journal of Economics* 133:1107–1162.

CHETTY, R., HENDREN, N., JONES, M. R., AND PORTER, S. R. 2020. Race and economic opportunity in the united states: An intergenerational perspective. *The Quarterly Journal of Economics* 135:711–783.

CHETTY, R., HENDREN, N., AND KATZ, L. F. 2016. The effects of exposure to better neighborhoods on children: New evidence from the moving to opportunity experiment. *American Economic Review* 106:855–902.

CHETTY, R., JACKSON, M. O., KUCHLER, T., AND ET AL. 2022a. Social capital i: measurement and associations with economic mobility. *Nature* 608:108–121.

CHETTY, R., JACKSON, M. O., KUCHLER, T., AND ET AL. 2022b. Social capital ii: determinants of economic connectedness. *Nature* 608:122 – 134.

CHRISTENSEN, P. AND TIMMINS, C. 2021a. The damages and distortions from discrimination in the rental housing market. Technical report, National Bureau of Economic Research.

CHRISTENSEN, P. AND TIMMINS, C. 2021b. Racial discrimination and housing outcomes in the united states rental market. *NBER Working Paper 29516* .

CHRISTENSEN, P. AND TIMMINS, C. 2022. Sorting or steering: Experimental evidence on the economic effects of housing discrimination. *Journal of Political Economy* .

CHYN, E. 2018. Moved to opportunity: The long-run effect of public housing demolition on labor market outcomes of children. *American Economic Review* .

CHYN, E., HAGGAG, K., AND STUART, B. 2022. The effects of racial segregation on intergenerational mobility: Evidence from historical railroad placement. *Dartmouth University Working Paper* .

CHYN, E. AND KATZ, L. 2021. Neighborhoods matter: Assessing the evidence for place effects. *Journal of Economic Perspectives* 35:197–222.

COUTURE, V., GAUBERT, C., HANDBURY, J., AND HURST, E. 2019. Income growth and the distributional effects of urban spatial sorting. *NBER Working Paper* .

COUTURE, V. AND HANDBURY, J. 2020. Urban revival in america. *Journal of Urban Economics* 119.

COX, R., CUNNINGHAM, J., ORTEGA, A., AND WHALEY, K. 2022. Black lives: The high cost of segregation. *University of Southern California Working Paper* .

DAVIS, M., GREGORY, J., AND HARTLEY, D. 2021. The long-run effects of low-income housing on neighborhood composition. *Rutgers University working paper* .

DERENONCOURT, E. 2012. Can you move to opportunity? evidence from the great migration. *American Economic Review* pp. 369–408.

FARLEY, R. AND FREY, W. H. 1994. Changes in the segregation of whites from blacks during the 1980s: Small steps toward a more integrated society. *American sociological review* pp. 23–45.

FARLEY, R., SCHUMAN, H., BIANCHI, S., COLASANTO, D., AND HATCHETT, S. 1978. "chocolate city, vanilla suburbs:" will the trend toward racially separate communities continue? *Social Science Research* 7:319–344.

GALSTER, G. C. 1992. The case for racial integration. *In* G. C. Galster and E. W. Hill (eds.), The Metropolis in Black and White: Place, Power, and Polarization. Routledge.

GLAESER, E. L., KIM, H., AND LUCA, M. 2018. Measuring gentrification: Using yelp data to quantify neighborhood change. *NBER Working Paper 24952* .

GOULD ELLEN, I. 2000. Sharing America's Neighborhoods: The Prospects for Stable Racial Integration. Havard University Press.

GUERRIERI, V., HARTLEY, D., AND HURST, E. 2013. Endogenous gentrification and housing price dynamics. *Journal of Public Economics* 100:45–60.

HANSON, A. AND HAWLEY, Z. 2011. Do landlords discriminate in the rental housing market? evidence from an internet field experiment in us cities. *Journal of Urban Economics* 70:99–114.

HWANG, J. AND SAMPSON, R. J. 2014. Divergent pathways of gentrification: Racial inequality and the social order of renewal in chicago neighborhoods. *American Sociological Review* 79:726 – 751.

JOHNSON, R. 2011. Long-run impacts of school desegregation school quality on adult attainments. *NBER Working Paper 16664* .

JOHNSON, R. 2019. Children of the dream: Why school integration works. Basic Books.

KRYSAN, M. AND CROWDER, K. 2017. Cycle of Segregation: Social Processes and Residential Stratification. Russell Sage Foundation.

LEWIS, V. A., EMERSON, M. O., AND KLINEBERG, S. L. 2011. Who we'll live with: Neighborhood composition choices of whites, blacks and latinos. *Social Forces* 89:1385–1407.

LI, N. 2021. Housing market channels of segregation. *Consumer Financial Protection Bureau working paper* .

LOGAN, J. R., STULTS, B. J., AND FARLEY, R. 2004. Segregation of minorities in the metropolis: Two decades of change. *Demography* 41:1–22.

LOGAN, T. D. AND PARMAN, J. M. 2017. The national rise in residential segregation. *The Journal of Economic History* 77:127–170.

LUTZ, B. 2011. The end of court-ordered desegregation. *American Economic Journal: Economic Policy* 3:130–168.

MASSEY, D. AND DENTON, N. 1993. American Apartheid: Segregation and the Making of the Underclass. Harvard University Press.

MCCARTNEY, W. B., ORELLANA-LI, J., AND ZHANG, C. 2024. Political polarization affects households' financial decisions: Evidence from home sales. *Journal of Finance* 79:795–841.

MCCARTNEY, W. B. AND SHAH, A. M. 2022. Household mortgage refinancing decisions are neighbor influenced, especially along racial lines. *Journal of Urban Economics* 128:103409.

ONDRICH, J., ROSS, S., AND YINGER, J. 2003. Now you see it, now you don't: why do real estate agents withhold available houses from black customers? *Review of Economics and Statistics* 85:854–873.

PAGE, M. 1995. Racial and ethnic discrimination in urban housing markets: Evidence from a recent audit study. *Journal of Urban Economics* 38:183–206.

REBER, S. 2011. School desegregation and educational attainment for blacks. *Journal of Human Resources* 45:893–914.

SCHELLING, T. C. 1971. Dynamic models of segregation. *Journal of Mathematical Sociology* 1:143–186.

TUTTLE, C. 2019. The long-run economic effects of school desegregation. *University of Maryland Working Paper* .

YINGER, J. 1986. Measuring racial discrimination with fair housing audits: Caught in the act. *The American Economic Review* pp. 881—-893.

Figure 1: Defining Nearest Neighbors

Notes: This figure visualizes how we define a household's nearest neighbors. Homes and roads are outlined in light gray. Census block borders are thick lines shaded light-gray and often overlapping with streets. We consider a sample household shaded black. Our first definition of nearby neighbors uses a street address algorithm to define adjacent parcels. This household has two next-door neighbors (shaded in dark gray) and four two- or three-doors down neighbors (shaded in light gray). Our second methodology for defining a household's nearest neighbors uses an as-the-crow-flies distance measure. Specifically, we measure the geodistance between each parcel and all other parcels and then identify the one that is closest, the one that is second closest, and so on. The ten homes closest to the given, black-shaded home are marked with a number corresponding to how close they are.

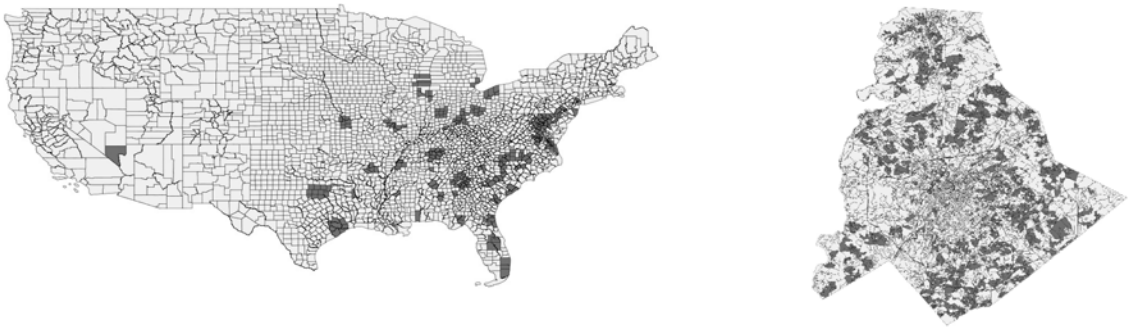

Figure 2: Geographic Coverage of the Sample

Notes: The left panel of this figure shades in dark gray the US counties where at least one "experiment" occurs at some point in the sample described in Table 1. And the right panel shades in dark gray the census blocks in Mecklenburg County (Charlotte) where at least one "experiment" occurs at some point. Higher resolution figures can be found in the Appendix, see Figure C1 and Figure C2.

Table 1: Summary Stats

	Black Current Residents		*White Current Residents*	
	All	*New 1-Door White Nbr*	*All*	*New 1-Door Black Nbr*
Dependent Variable				
Sell within 2 Years (0-100)	4.27	5.95	6.43	9.32
New Nbrs				
New Nbr Different Race 1 Door	0.01	1.00	0.00	1.00
Property Characteristics				
Year Built	1976	1992	1978	1990
Building Sq Ft	2,255	2,636	2,679	2,588
Resident Characteristics				
Has Co-Applicant	0.30	0.37	0.52	0.48
Owner Income	$71,231	$79,225	$101,475	$83,500
Loan Characteristics				
Bank Lender	0.48	0.49	0.58	0.54
Conventional Loan	0.59	0.63	0.64	0.73
Neighborhood Characteristics				
Census Block Group Median Income	$61,542	$73,892	$80,086	$75,092
Census Block Population Density	6,723	3,910	4,504	3,970
Census Block Group Black Share	0.49	0.25	0.09	0.21
Census Block Group White Share	0.36	0.59	0.77	0.63
Observations	64,347,301	86,128	338,150,227	95,429

Notes: This table describes the sample of current resident-by-quarter observations where the current resident and, if applicable, new neighbor exists in the merged CoreLogic Solutions Real Estate and Home Mortgage Disclosure Act (HMDA) data set. Column (1) describes the sample of all Black homeowner-by-quarter observations. Column (3) describes the sample of all white homeowner-by-quarter observations. To ensure a valid experiment we restrict the universe of properties and neighborhoods as follows. We (i) require that the share of parcels on the census block that are single family residences is at least 90%, (ii) the interquartile range of age of the block's homes is less than 30 years, (iii) the population of the block is at least 50 as per the 2010 census, (iv) the number of housing units is between 20 and 500 as per the 2010 census, and (v) the population density is between 500 and 10,000 persons per square mile as per the 2010 census. We further restrict the sample by (i) dropping homes with building square feet over 6,001, (ii) dropping homes built before 1901, (iii) dropping homeowner spells that end in either the same quarter or quarter immediately following the new neighbor's arrival, and (iv) households with incomes under $10,000 and greater than $2,000,000. In column (2), we describe the subsample of Black household-by-quarter observations where the Black resident was involved in a valid experiment and received a new White neighbor right next-door. Column (4) does likewise for White current resident-by-quarter observations. Sell within two years is a dummy equal to 100 if the current resident has sold their home within 2 years of the given quarter. New neighbor different race is a dummy equal to 1 if the current resident-by-quarter gets a new different-race neighbor. Property age and property size come from CoreLogic Solutions. Whether the loan has a co-applicant or not (=1) and owner income at time of mortgage application come from HMDA. Median black group income come from the Census Bureau's 2010 American Community Survey. Population density is defined as the population per square mile; population measures comes from the 2010 census. Black share is the share that is either Hispanic or non-Hispanic Black. White share is the share that is non-Hispanic White.

Table 2: Balance Tests

Panel A. Black Current Residents

	Bldg Sqft	Year Built	Co-Applicant	Income	Bank	Conventional	Index
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
New 1-Door White Nbr	2.234	0.027	0.002	-38	0.003	-0.000	-0.005
	(2.686)	(0.028)	(0.002)	(212)	(0.002)	(0.002)	(0.003)
Controls	X	X	X	X	X	X	
Fixed Effects							
Block × Quarter	X	X	X	X	X	X	X
Counts							
N	1,632,522	1,632,522	1,632,522	1,632,522	1,632,522	1,632,522	1,632,522
Fixed Effect Cells	162,674	162,674	162,674	162,674	162,674	162,674	162,674
Sample Means							
Dependent Variable Mean	2681.79	1995.50	0.36	76,799	0.48	0.59	5.50
New 1-Door White Nbr	0.0528	0.0528	0.0528	0.0528	0.0528	0.0528	0.0528

Panel B. White Current Residents

	Bldg Sqft	Year Built	Co-Applicant	Income	Bank	Conventional	Index
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
New 1-Door Black Nbr	1.415	0.050*	-0.003	-48	-0.003	-0.002	0.008**
	(2.337)	(0.025)	(0.002)	(206)	(0.002)	(0.002)	(0.003)
Controls	X	X	X	X	X	X	
Fixed Effects							
Block × Quarter	X	X	X	X	X	X	X
Counts							
N	3,644,595	3,644,595	3,644,595	3,644,595	3,644,595	3,644,595	3,644,595
Fixed Effect Cells	147,331	147,331	147,331	147,331	147,331	147,331	147,331
Sample Means							
Dependent Variable Mean	2725.91	1994.19	0.51	87,655	0.55	0.72	9.37
New 1-Door Black Nbr	0.0262	0.0262	0.0262	0.0262	0.0262	0.0262	0.0262

Notes: This table estimates the "effect" of a new different-race neighbor on current residents' properties, personal characteristics, and mortgages. The sample includes all current residents who received a new different-race neighbor either next-door or two-/three-doors down. We further include all other current residents on the same block and say that they received a new different-race neighbor elsewhere on the block. Current residents in this sample can receive a new different-race neighbor in up to three non-mutually exclusive distances away: next-door, one-/three-doors down, and/or elsewhere on the same block. The estimated effects of receiving a new different-race neighbor one-/three-doors down or elsewhere on the same block are repressed from the table below for readability. Control variables include four square feet bins, four year built bins, a dummy indicating a co-applicant, five income bins, a dummy for bank lender, and a categorical variable for loan type (Conventional, FHA, VA, and FSA/RHS). Just to create column (6), we simplify loan type to a dummy for conventional loan. To calculate the index, we first regress sell-next-two-years on these six control variables and block-by-quarter fixed effects. We then regress the predicted values from that regression on our treatment arms and block-by-quarter fixed effects. The number of fixed effect cells is the number of unique block-by-quarter cells in the estimation sample. Standard errors, adjusted for clustering at the tract-year level, are reported in parentheses. *, **, and *** denote statistical significance at the 10%, 5%, and 1% level, respectively.

Table 3: New Different-Race Nearby Neighbors Cause Current Resident Move-Outs

Panel A. Black Current Residents

Dependent Variable:	Current Resident Sold within 2 Years (=100)			
	(1)	(2)	(3)	(4)
New 1-Door White Nbr	0.263**	0.265**	0.266**	0.268**
	(0.112)	(0.112)	(0.112)	(0.112)
Controls				
Building		X	X	X
Resident			X	X
Loan				X
Fixed Effects				
Block × Quarter	X	X	X	X
Counts				
N	1,632,522	1,632,522	1,632,522	1,632,522
Fixed Effect Cells	162,674	162,674	162,674	162,674
Sample Means				
Dependent Variable	5.50	5.50	5.50	5.50
New 1-Door White Nbr	0.0528	0.0528	0.0528	0.0528

Panel B. White Current Residents

Dependent Variable:	Current Resident Sold within 2 Years (=100)			
	(1)	(2)	(3)	(4)
New 1-Door Black Nbr	0.265**	0.262**	0.259**	0.257**
	(0.126)	(0.126)	(0.126)	(0.126)
Controls				
Building		X	X	X
Resident			X	X
Loan				X
Fixed Effects				
Block × Quarter	X	X	X	X
Counts				
N	3,644,595	3,644,595	3,644,595	3,644,595
Fixed Effect Cells	147,331	147,331	147,331	147,331
Sample Means				
Dependent Variable	9.37	9.37	9.37	9.37
New 1-Door Black Nbr	0.0262	0.0262	0.0262	0.0262

Notes: This table estimates the effect of a new different-race neighbor on current residents' likelihood of selling their homes within the next two years. The sample includes all current residents who received a new different-race neighbor either next-door or two-/three-doors down. We further include all other current residents on the same block and say that they received a new different-race neighbor elsewhere on the block. Current residents can receive a new different-race neighbor in up to three non-mutually exclusive distances away: next-door, one-/three-doors down, and/or elsewhere on the same block. The estimated effects of receiving a new different-race neighbor one-/three-doors down or elsewhere on the same block are repressed from the table below for readability. Building control variables include four square feet bins and four year built bins. Resident control variables include a dummy indicating a co-applicant and five income bins. Loan control variables include a dummy for bank lender and categorical variable for loan type (Conventional, FHA, VA, and FSA/RHS). The number of fixed effect cells is the number of unique block-by-quarter cells in the estimation sample. The full set of coefficient estimates is reported in Online Appendix Table C1. Standard errors, adjusted for clustering at the tract-year level, are reported in parentheses. *, **, and *** denote statistical significance at the 10%, 5%, and 1% level, respectively.

Table 4: Parcels 1-40, Results

Sample:	Black Current Residents		White Current Residents	
Dependent Variable:	Index	Sold within 2 Years	Index	Sold within 2 Years
	(1)	(2)	(3)	(4)
New 1 or 2 Closest Parcels Diff-Race Nbr	0.002	0.185*	0.016***	0.222*
	(0.003)	(0.100)	(0.003)	(0.116)
Controls		X		X
Fixed Effects				
Group × Quarter	X	X	X	X
Counts				
N	1,713,866	1,713,866	2,078,975	2,078,975
Fixed Effect Cells	269,223	269,223	212,789	212,789
Sample Means				
Dependent Variable Mean	5.70	5.70	9.05	9.05
New 1- or 2-Closest Parcels Diff-Race Nbr	0.0637	0.0637	0.0535	0.0535

Notes: This table estimates the effect of a new different-race neighbor on current residents' likelihood of selling their homes within the next two years. The sample is current residents who received at least one new different-race neighbor in one of the 40 parcels nearest to them. Current residents can receive a new different-race neighbor in one of the two closest parcels, one of the five closest parcels, one of the parcels between six and ten parcels away, and/or one of the parcels between 11 and 40 parcels away, all subject to those parcels being on the same census block group as the current resident. Control variables include four square feet bins, four year built bins, a dummy indicating a co-applicant, five income bins, a dummy for bank lender, and a categorical variable for loan type (Conventional, FHA, VA, and FSA/RHS). The full set of coefficient estimates for columns (2) and (4) is reported in Online Appendix Table C3. To calculate the index, we first regress sell-next-two-years on the six control variables – four square feet bins, four year built bins, a dummy indicating a co-applicant, five income bins, a dummy for bank lender, and a categorical variable for loan type (Conventional, FHA, VA, and FSA/RHS) – and block group-by-quarter fixed effects. We then regress the predicted values from that regression on our treatment arms and block group-by-quarter fixed effects. The number of fixed effect cells is the number of unique block group-by-quarter cells in the estimation sample. Standard errors, adjusted for clustering at the tract-year level, are reported in parentheses. *, **, and *** denote statistical significance at the 10%, 5%, and 1% level, respectively.

Table 5: Price Effects

Panel A. Black Current Residents Who Sell

Sample:	Current Residents Who Sold Their Homes		
Dependent Variable:	Log Sale Price		
	(1)	(2)	(3)
Recent New White 1-Door Nbr	-0.007	-0.011	-0.004
	(0.010)	(0.012)	(0.023)
Controls	X	X	X
Fixed Effects			
Tract × Quarter	X		
Group × Quarter		X	
Block × Quarter			X
Counts			
N	51,113	33,429	9,715
Fixed Effect Cells	19,688	14,206	4,577
Sample Means			
Dependent Variable	12.00	12.04	12.10
Recent New White 1-Door Nbr	0.05	0.05	0.04

Panel B. White Current Residents Who Sell

Sample:	Current Residents Who Sold Their Homes		
Dependent Variable:	Log Sale Price		
	(1)	(2)	(3)
Recent New Black 1-Door Nbr	0.001	-0.002	0.001
	(0.005)	(0.005)	(0.007)
Controls	X	X	X
Fixed Effects			
Tract × Quarter	X		
Group × Quarter		X	
Block × Quarter			X
Counts			
N	738,148	598,887	235,423
Fixed Effect Cells	175,485	188,478	101,083
Sample Means			
Dependent Variable Mean	12.34	12.36	12.40
Recent New Black 1-Door Nbr	0.01	0.01	0.01

Notes: To create this table, we start with the sample of house sales. We then classify sales as one of three non-mutually exclusive types: those that received a new next-door neighbor of a different race within the last two years, those that received a new 1- to 3-doors down neighbors of a different race within the last two years, and all other sales that occurred in the same quarter and within the same tract, group, or block. Sales might be in this other category because the current residents got no new nearby neighbors recently, because they did, but the new neighbor was of the same race, or because they did, but the new neighbor's race is missing. The control variables in all specifications include the property characteristics home age and square feet. Standard errors, adjusted for clustering at the tract-year level, are reported in parentheses. *, **, and *** denote statistical significance at the 10%, 5%, and 1% level, respectively.

Table 6: Restrictive Control Group – Nbrs and Parcels

Panel A. Black Current Residents

Dependent Variable:	Current Resident Sold within 2 Years (=100)			
	(1)	(2)	(3)	(4)
New 1-Door White Nbr	0.331**	0.331**	0.337**	0.330**
	(0.143)	(0.143)	(0.143)	(0.143)
New 1-Door Black Nbr	-0.018	-0.017	0.005	-0.012
	(0.119)	(0.119)	(0.119)	(0.119)
Controls				
Building	X	X	X	X
Resident	X	X	X	X
Loan	X	X	X	X
Nbr Income Bin		X		
Block Group Income Diff Bin			X	
Self Income Diff Bin				X
Fixed Effects				
Group × Quarter	X	X	X	X
Counts				
N	322,919	322,919	321,666	322,431
Fixed Effect Cells	94,033	94,033	93,633	93,921
Sample Means				
Dependent Variable Mean	5.45	5.45	5.44	5.44
New 1-Door White Nbr	.1914	.1914	.1914	.1913
New 1-Door Black Nbr	.2136	.2136	.2135	.2136

Panel B. White Current Residents

Dependent Variable:	Current Resident Sold within 2 Years (=100)			
	(1)	(2)	(3)	(4)
New 1-Door Black Nbr	0.266*	0.266*	0.275*	0.264*
	(0.143)	(0.143)	(0.145)	(0.143)
New 1-Door White Nbr	0.052	0.053	0.057	0.051
	(0.040)	(0.040)	(0.040)	(0.040)
Controls				
Building	X	X	X	X
Resident	X	X	X	X
Loan	X	X	X	X
Nbr Income Bin		X		
Block Group Income Diff Bin			X	
Self Income Diff Bin				X
Fixed Effects				
Group × Quarter	X	X	X	X
Counts				
N	2,612,608	2,612,608	2,536,592	2,609,137
Fixed Effect Cells	486,677	486,677	479,380	486,251
Sample Means				
Dependent Variable Mean	8.88	8.88	8.87	8.88
New 1-Door Black Nbr	.0318	.0318	.0321	.0318
New 1-Door White Nbr	.3794	.3794	.3733	.3794

Notes: To create this table, we use the sample of current residents who received a new neighbor, either same-race or different-race, within three doors. We drop current residents who received different-race and same-race neighbors within three doors in the same quarter. To estimate the effect of receiving new neighbors of a different race we proceed as follows. We include as independent variables in our regression specification two mutually exclusive effects: a dummy for receiving a new same-race neighbor within three doors (omitted group) and a dummy for receiving a new different-race neighbor within three doors (repressed for readability). We simultaneously estimate (and report) the out-sized effect of the new different-race or same-race neighbor being immediately next-door. Control variables include building square feet and year built, borrower income and presence of a co-applicant, and a dummy for bank lender and categorical variable for loan type (Conventional, FHA, VA). Column (2) further controls for five new neighbor income bins. Column (3) controls for six bins for the difference between the new neighbor's income and the block group median income (as measured in the 2010 or 2015 ACS, depending on the quarter of the new neighbor's arrival). In column (4), we include six bins for the difference between the new neighbor's income and the current resident's income. In the event that a current resident received multiple new neighbors, we use the income of the nearest one when calculating new neighbor income. A more complete set of coefficient estimates is reported in Online Appendix Table C4. Standard errors, adjusted for clustering at the tract-year level, are reported in parentheses. *, **, and *** denote statistical significance at the 10%, 5%, and 1% level, respectively.

Table 7: Interacting Treatment Effects with Neighbor Income and Current Resident Income

Dependent Variable:	Current Resident Sold within 2 Years (=100)					
Sample:	Black Current Residents			White Current Residents		
Income Measure:	Block Group	Resident's	New Neighbor's	Block Group	Resident's	New Neighbor's
	(1)	(2)	(3)	(4)	(5)	(6)
New 1-Door Diff-Race Nbr × Above Median Income	0.318*	0.267	0.339*	0.131	0.159	0.069
	(0.163)	(0.166)	(0.182)	(0.191)	(0.190)	(0.204)
New 1-Door Diff-Race Nbr × Below Median Income	0.219	0.268*	0.276	0.357**	0.342**	0.378**
	(0.155)	(0.154)	(0.175)	(0.168)	(0.169)	(0.183)
Controls	X	X	X	X	X	X
Fixed Effects						
Block × Quarter	X	X	X	X	X	X
Counts						
N	1,632,522	1,632,522	1,342,025	3,644,595	3,644,595	3,124,724
Fixed Effect Cells	162,674	162,674	146,282	147,331	147,331	134,457
Sample Means						
Dependent Variable	5.50	5.50	5.44	9.37	9.37	9.22

Notes: In this table, we investigate how the effect of receiving a new different-race neighbor varies with three different income measures. Our first income measure is the median income of all residents of the block group as per the 2010 American Community Survey. Our second measure is the current resident's income. And our third is the income of the new neighbor. To create this table, we first begin with the same sample used to create column (4) of Table 3. We then create two dummy variables, above and below median, for each of the three measures and interact these dummy variables with a dummy for receiving a new different-race neighbor immediately next-door. We also include a dummy for receiving a new different-race neighbor within 3 doors, and a dummy for receiving a new different-race neighbor elsewhere on the block. Columns (1) and (4) therefore compare the treatment effect in high income vs low income neighborhoods. Columns (2) and (5) compare the treatment effect between high income and low income current residents. And columns (3) and (6) compare the treatment effect between current residents who receive a high income versus low income new neighbor. Note that to unambiguously define the income of the new neighbor, we further restrict the sample that created column (4) of Table 3 to just those block-quarters that received exactly one new different-race neighbor. Standard errors, adjusted for clustering at the tract-year level, are reported in parentheses. *, **, and *** denote statistical significance at the 10%, 5%, and 1% level, respectively.

Table 8: Heterogeneity as a Function of Distance Between Neighbors

Dependent Variable:	Current Resident Sold within 2 Years (=100)	
Sample:	Black Current Residents	White Current Residents
	(1)	(2)
New 1-Door Diff-Race Nbr	0.381**	0.577***
	(0.149)	(0.188)
New 1-Door Diff-Race Nbr × Distance	-0.0421	-0.1164**
	(0.0353)	(0.0482)
Controls	X	X
Fixed Effects		
Block × Quarter	X	X
Counts		
N	1,632,522	3,644,595
Fixed Effect Cells	162,674	147,331
Sample Means		
Dependent Variable	5.50	9.37
New 1-Door Nbr Distance (Decameters)	2.741	2.805
New 1-Door Diff-Race Nbr	0.0528	0.0262

Notes: This table estimates the effect of a new different-race neighbor on current residents' likelihood of selling their homes within the next two years as in column (4) of Table 3. The effect is allowed to vary as a function of the distance (measured in decameters) between the current resident and their new next-door neighbor. Standard errors, adjusted for clustering at the tract-year level, are reported in parentheses. *, **, and *** denote statistical significance at the 10%, 5%, and 1% level, respectively.

Table 9: Regional Heterogeneity

Panel A. Black Current Residents

Dependent Variable:	Current Resident Sold within 2 Years (=100)	
Sample:	South	North
	(1)	(2)
New 1-Door White Nbr	0.351***	-0.101
	(0.123)	(0.291)
Controls	X	X
Fixed Effects:		
Block × Quarter	X	X
Counts		
N	1,416,173	188,927
Fixed Effect Cells	131,478	26,489
Sample Means		
Dependent Variable	5.45	5.47
New 1-Door White Nbr	0.05	0.07

Panel B. White Current Residents

Dependent Variable:	Current Resident Sold within 2 Years (=100)	
Sample:	South	North
	(1)	(2)
New 1-Door Black Nbr	0.222	0.610**
	(0.144)	(0.272)
Controls	X	X
Fixed Effects:		
Block × Quarter	X	X
Counts		
N	2,884,337	648,035
Fixed Effect Cells	114,194	28,952
Sample Means		
Dependent Variable	9.39	8.98
New 1-Door Black Nbr	0.03	0.03

Notes: This table estimates the effect of a new different-race neighbor on current residents' likelihood of selling their homes within the next two years as in column (4) of Table 3. The sample is split into groups based on the state of the residents. Standard errors, adjusted for clustering at the tract-year level, are reported in parentheses. *, **, and *** denote statistical significance at the 10%, 5%, and 1% level, respectively.

Distinguishing Causes of Neighborhood Racial Change: A Nearest Neighbor Design

Pat Bayer, Marcus Casey, Ben McCartney, John Orellana-Li, and Calvin Zhang

Online Appendix

A Describing the CoreLogic - HMDA Match

Our crosswalk between CoreLogic and the publicly available HMDA data is constructed as follows.

First, we clean and standardize the following variables in both data sets: census tract (being careful to use either the 2000 on 2010 tract definitions as appropriate), year of mortgage application, loan purpose (purchase or refinance), loan type (conventional, FHA, VA, or FSA/RHS), presence of a coapplicant/coborrower, mortgage amount, and lender name. For matching purposes the first of these six variables are numeric. To compare lender names in CoreLogic and HMDA we calculate the string difference in the cleaned lender names using the Stata command strdist and then divide that distance by the length of the lender's name in CoreLogic. We say that the lender names match if this lender comparison variable is less than 0.5. All together, there are seven variables along which a CoreLogic mortgage and HMDA mortgage can match.

Second, we join the CoreLogic and HMDA datasets in seven rounds. In our first round, we require matches on all seven variables. If loans match one-to-one we remove those loans from the CoreLogic and HMDA lists of loans and then attempt to rematch. In our second round, we join the unmatched loans again on all seven variables except presence of a coapplicant. Our third requires a match on all seven variables except loan type. Our fourth round requires a match on all seven variables except presence of a coapplicant and loan type. In our fifth round, we match on all six of the numeric variables and require that the lender name sound is the same (using the Stata command soundex). Round six is the same as round five but without the requirement of same presence of coapplicant and loan type. Our seventh and final attempt and finding a match uses all of the seven matching variables except loan amount and then declares a match successful if there is a unique loan with a loan amount less than $2,000 different.

Relative to some CoreLogic - HMDA crosswalks, we take a very conservative approach to ensure the fidelity of our measure of race for households in our sample. Our overall match rate, mortgages in CoreLogic for which we find a unique match in HMDA, is 22,996,450 out of 48,517,826 mortgages, or 47.4%. Of these 22,996,450 matches, 78% are matched in phase 1 (that requires exact matching on all seven matching variables) and a further 16% are matched in phase 2 (that relaxes the requirement of a matching presence of coapplicant).

B Describing the Neighbor Identifying Algorithm

The algorithm we designed to identify property's nearest neighbors proceeds as follows.

First, we begin with the cross-section of all single family residences in our CoreLogic sample. We assign street blocks by relying on the convention that homes on the same street, but on different street blocks, have house numbers with different 100s digits (e.g. 1203 is on a different block than 1153). We thus denote street blocks through a variable that takes the floor of the house number divided by 100.

Second, we perform a many-to-many merge (what Stata calls a joinby) of this set of properties with a copy of itself by street name (excluding house number), Census tract, and the above created street block variable. This results in an expanded dataset where every property is matched pairwise to every other property on the same street block (i.e. neighbors). We drop observations where the property matches to itself. As constructed, neighboring properties on the same street block can be either on the same side of the street, or across the street.

Third, for each property, we tag street block neighbors as residing on the same side of the street (as opposed to across the street) if their street numbers are both odd (or both even). We keep only property-neighbor pairs on the same side of the street.

Fourth, we tag nearest neighbors by difference in street numbers. We compute the difference in street numbers for each property-neighbor pair and create a dummy indicating if this difference is negative or positive. For each property, we deem all neighbors with a positive difference as "right-side" neighbors, and those with a negative difference as "left-side" neighbors. Then, for each street side, we denote the neighboring property with the smallest (absolute) difference in street numbers as "next-door", second smallest difference as two-door-down, third smallest difference as three-doors-down, etc., for up to five neighbors on each street side. Thus, every property is assigned up to ten same street side neighbors, five on the left, and five on the right.

Fifth, we drop homes with neighbors that are "misordered" in terms of Euclidean distance. That is, we require (i) that a neighbor we define as three-doors down is not closer in distance than either of the neighbors one- or two-doors down in the same direction and (ii) that a neighbor we say is two-doors-down is not closer than the next-door neighbor in the same direction. Note, these neighbors and their position (e.g. next-door, three-doors-down) are defined by the universe of CoreLogic properties,

prior to our merge with HMDA data.

C Supplemental Figures and Tables

Figure C1: Counties in the Sample

This figure shades in dark gray the US counties where at least one "experiment" occurs at some point in the sample described in Table 1.

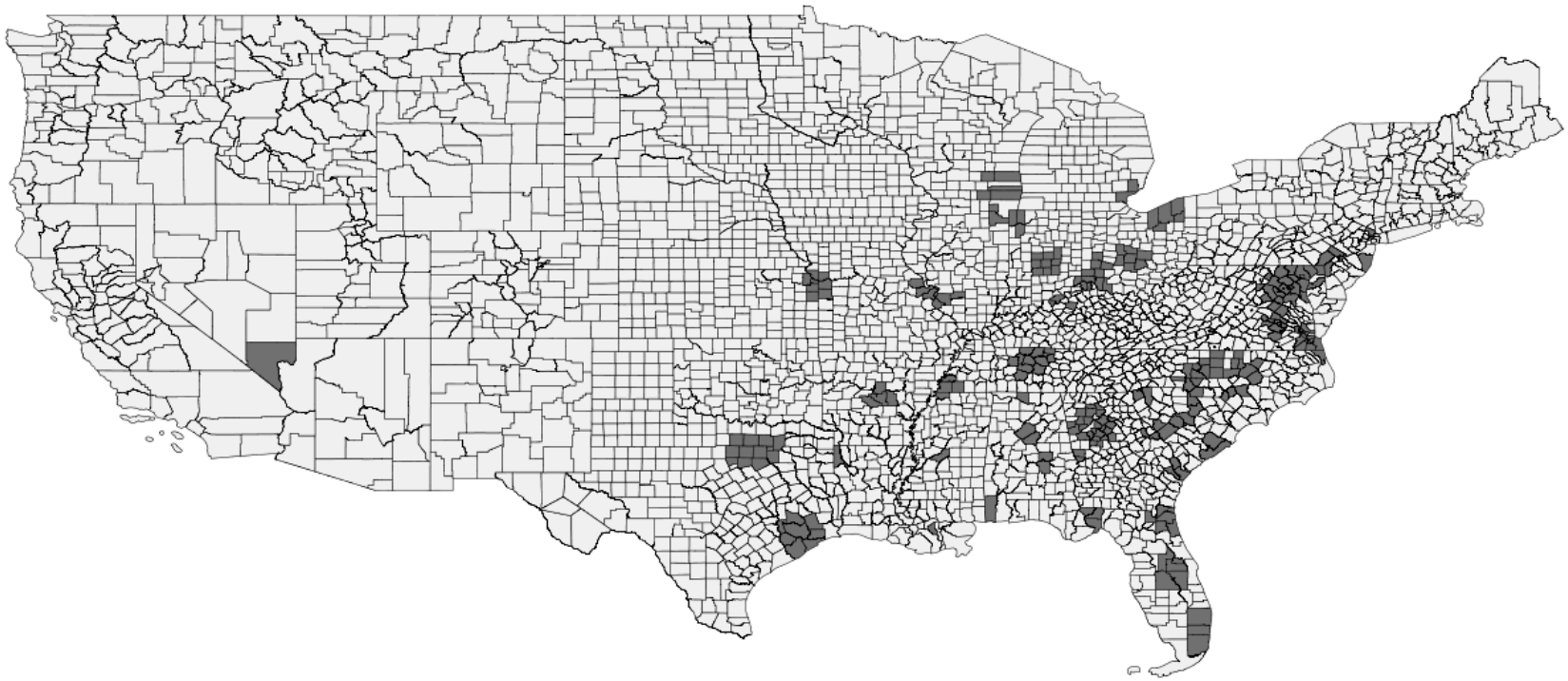

Figure C2: Tracts in the Sample (Charlotte, NC)

This figure shades in dark gray the census blocks in Mecklenburg County (Charlotte) where at least one "experiment" occurs at some point in the sample described in Table 1.

Table C1: Complete Set of Estimated Coefficients for Table 3

Panel A. Black Current Residents

Dependent Variable:	Current Resident Sold within 2 Years (=100)			
	(1)	(2)	(3)	(4)
New 1-Door White Nbr	0.263**	0.265**	0.266**	0.268**
	(0.112)	(0.112)	(0.112)	(0.112)
New 1-/3-Door White Nbr	-0.079	-0.089	-0.091	-0.089
	(0.153)	(0.153)	(0.153)	(0.153)
New Elsewhere-on-Block White Nbr	-0.149	-0.154	-0.151	-0.148
	(0.159)	(0.159)	(0.159)	(0.159)
Building Controls				
Bldg Sq Ft: Less than 1,250 (omitted)				
Bldg Sq Ft: 1,250 to 1,999		0.185	0.107	0.118
		(0.141)	(0.141)	(0.141)
Bldg Sq Ft: 2,000 to 2,999		-0.005	-0.218	-0.208
		(0.152)	(0.153)	(0.153)
Bldg Sq Ft: 3,000 or more		-0.318*	-0.734***	-0.737***
		(0.163)	(0.165)	(0.165)
Year Built: Before 1960 (omitted)				
Year Built: 1960 to 1979		0.289	0.283	0.287
		(0.208)	(0.208)	(0.208)
Year Built: 1980 to 1999		0.523**	0.394*	0.417*
		(0.220)	(0.220)	(0.220)
Year Built: 2000 or later		0.945***	0.755***	0.825***
		(0.228)	(0.229)	(0.229)

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Resident Controls				
Coapplicant (=1)			-0.813***	-0.786***
			(0.057)	(0.057)
Resident Income: $50,000 or less (omitted)				
Resident Income: $50,001 to $75,000			0.755***	0.729***
			(0.064)	(0.064)
Resident Income: $75,001 to $100,000			1.141***	1.084***
			(0.081)	(0.081)
Resident Income: $100,001 to $150,000			1.641***	1.573***
			(0.096)	(0.097)
Resident Income: $150,001 or more			2.429***	2.339***
			(0.145)	(0.145)
Loan Controls				
Bank Lender (=1)				-0.523***
				(0.051)
Conventional Loan (omitted)				
FHA Loan				-0.584***
				(0.061)
VA Loan				-0.596***
				(0.089)
FSA/RHS Loan				-1.027***
				(0.256)
Fixed Effects				
Block × Quarter	X	X	X	X
Counts				
N	1,632,522	1,632,522	1,632,522	1,632,522
Fixed Effect Cells	162,674	162,674	162,674	162,674
Sample Means				
Dependent Variable	5.50	5.50	5.50	5.50
New 1-Door White Nbr	0.0528	0.0528	0.0528	0.0528

Panel B. White Current Residents

Dependent Variable:	Current Resident Sold within 2 Years (=100)			
	(1)	(2)	(3)	(4)
New 1-Door Black Nbr	0.265**	0.262**	0.259**	0.257**
	(0.126)	(0.126)	(0.126)	(0.126)
New 1-/3-Door Black Nbr	-0.048	-0.133	-0.136	-0.154
	(0.200)	(0.200)	(0.200)	(0.200)
New Elsewhere-on-Block Black Nbr	-0.305	-0.339*	-0.344*	-0.357*
	(0.204)	(0.204)	(0.204)	(0.204)
Building Controls				
Bldg Sq Ft: Less than 1,250 (omitted)				
Bldg Sq Ft: 1,250 to 1,999		0.351***	0.298***	0.311***
		(0.115)	(0.116)	(0.115)
Bldg Sq Ft: 2,000 to 2,999		0.334***	0.177	0.208*
		(0.123)	(0.124)	(0.124)
Bldg Sq Ft: 3,000 or more		-0.053	-0.365***	-0.293**
		(0.131)	(0.133)	(0.133)
Year Built: Before 1960 (omitted)				
Year Built: 1960 to 1979		0.458***	0.450***	0.435***
		(0.147)	(0.147)	(0.147)
Year Built: 1980 to 1999		1.669***	1.587***	1.565***
		(0.153)	(0.153)	(0.153)
Year Built: 2000 or later		2.740***	2.605***	2.531***
		(0.161)	(0.162)	(0.162)

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Resident Controls				
Coapplicant (=1)			-0.870***	-0.857***
			(0.042)	(0.042)
Resident Income: $50,000 or less (omitted)				
Resident Income: $50,001 to $75,000			0.675***	0.676***
			(0.056)	(0.056)
Resident Income: $75,001 to $100,000			1.120***	1.164***
			(0.065)	(0.065)
Resident Income: $100,001 to $150,000			1.247***	1.327***
			(0.069)	(0.069)
Resident Income: $150,001 or more			1.928***	2.042***
			(0.089)	(0.090)
Loan Controls				
Bank Lender (=1)				-0.161***
				(0.039)
Conventional Loan (omitted)				
FHA Loan				0.926***
				(0.055)
VA Loan				0.997***
				(0.088)
FSA/RHS Loan				1.252***
				(0.233)
Fixed Effects				
Block × Quarter	X	X	X	X
Counts				
N	3,644,595	3,644,595	3,644,595	3,644,595
Fixed Effect Cells	147,331	147,331	147,331	147,331
Sample Means				
Dependent Variable	9.37	9.37	9.37	9.37
New 1-Door Black Nbr	0.0262	0.0262	0.0262	0.0262

Table C2: Parcels 1-40, Balance

This table estimates the effect of receiving a new different-race neighbor on current residents' properties, personal characteristics, and mortgages. The sample is current residents who received at least one new different-race neighbor in one of the 40 parcels nearest to them. Current residents can receive a new different-race neighbor in one of the two closest parcels, one of the five closest parcels, one of the parcels between six and ten parcels away, and/or one of the parcels between 11 and 40 parcels away, all subject to those parcels being on the same census block group as the current resident. Control variables include four square feet bins, four year built bins, a dummy indicating a co-applicant, five income bins, a dummy for bank lender, and a categorical variable for loan type (Conventional, FHA, VA, and FSA/RHS). To create column (6), we simplify loan type to a dummy for conventional loan. To calculate the index, we first regress sell-next-two-years on these six control variables and block group-by-quarter fixed effects. We then regress the predicted values from that regression on our treatment arms and block group-by-quarter fixed effects. The number of fixed effect cells is the number of unique block group-by-quarter cells in the estimation sample. Standard errors, adjusted for clustering at the tract-year level, are reported in parentheses. *, **, and *** denote statistical significance at the 10%, 5%, and 1% level, respectively.

Panel A. Black Current Residents

Dependent Variable:	Bldg Sqft	Year Built	Co-Applicant	Income	Bank	Conventional	Index
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
New 1 or 2 Closest Parcels White Nbr	-3.615	-0.003	-0.001	-429**	0.001	0.002	0.002
	(2.586)	(0.029)	(0.002)	(188)	(0.002)	(0.002)	(0.003)
Controls	X	X	X	X	X	X	
Fixed Effects							
Group × Quarter	X	X	X	X	X	X	X
Counts							
N	1,713,866	1,713,866	1,713,866	1,713,866	1,713,866	1,713,866	1,713,866
Fixed Effect Cells	269,223	269,223	269,223	269,223	269,223	269,223	269,223
Sample Means							
Dependent Variable	2642.60	1991.57	0.38	78,837	0.49	0.64	5.70
New 1- or 2-Closest Parcels White Nbr	0.06	0.06	0.06	0.06	0.06	0.06	0.06

Panel B. White Current Residents

Dependent Variable:	Bldg Sqft	Year Built	Co-Applicant	Income	Bank	Conventional	Index
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
New 1 or 2 Closest Parcels Black Nbr	4.781**	0.259***	-0.002	-190	-0.002	-0.002	0.016***
	(2.263)	(0.027)	(0.002)	(195)	(0.002)	(0.002)	(0.003)
Controls	X	X	X	X	X	X	
Fixed Effects							
Group × Quarter	X	X	X	X	X	X	X
Counts							
N	2,078,975	2,078,975	2,078,975	2,078,975	2,078,975	2,078,975	2,078,975
Fixed Effect Cells	212,789	212,789	212,789	212,789	212,789	212,789	212,789
Sample Means							
Dependent Variable	2604.09	1989.89	0.49	84,331	0.55	0.74	9.05
New 1- or 2-Closest Parcels Black Nbr	0.05	0.05	0.05	0.05	0.05	0.05	0.05

Table C3: Complete Set of Estimated Coefficients for Table 4

Dependent Variable:	Current Resident Sold within 2 Years (=100)	
Sample:	Black Current Residents	White Current Residents
	(1)	(2)
New 1 or 2 Closest Parcels Diff-Race Nbr	0.185*	0.222*
	(0.100)	(0.116)
New 1 to 5 Closest Parcels Diff-Race Nbr	-0.136	-0.109
	(0.092)	(0.158)
New 6 to 10 Closest Parcels Diff-Race Nbr	-0.134	-0.175
	(0.087)	(0.154)
New 11 or Greater Closest Parcels Diff-Race Nbr	-0.222**	-0.133
	(0.089)	(0.154)
Building Controls		
Bldg Sq Ft: Less than 1,250 (omitted)		
Bldg Sq Ft: 1,250 to 1,999	-0.123	0.259**
	(0.133)	(0.128)
Bldg Sq Ft: 2,000 to 2,999	-0.385***	0.279**
	(0.141)	(0.139)
Bldg Sq Ft: 3,000 or more	-0.960***	-0.183
	(0.153)	(0.152)
Year Built: Before 1960 (omitted)		
Year Built: 1960 to 1979	0.093	0.029
	(0.171)	(0.156)
Year Built: 1980 to 1999	-0.002	1.060***
	(0.184)	(0.170)
Year Built: 2000 or later	0.637***	2.137***
	(0.191)	(0.181)

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Resident Controls		
Coapplicant (=1)	-1.018***	-0.867***
	(0.053)	(0.050)
Resident Income: $50,000 or less (omitted)		
Resident Income: $50,001 to $75,000	0.734***	0.652***
	(0.062)	(0.065)
Resident Income: $75,001 to $100,000	1.184***	1.107***
	(0.076)	(0.076)
Resident Income: $100,001 to $150,000	1.652***	1.319***
	(0.090)	(0.084)
Resident Income: $150,001 or more	2.512***	2.100***
	(0.130)	(0.112)
Resident Controls		
Bank Lender (=1)	-0.683***	-0.338***
	(0.048)	(0.047)
Conventional Loan (omitted)		
FHA Loan	-0.514***	0.961***
	(0.058)	(0.066)
VA Loan	-0.692***	1.064***
	(0.086)	(0.110)
FSA/RHS Loan	-0.677**	0.783**
	(0.274)	(0.307)
Fixed Effects		
Group × Quarter	X	X
Counts		
N	1,713,866	2,078,975
Fixed Effect Cells	269,223	212,789
Sample Means		
Dependent Variable Mean	5.70	9.05
New 1- or 2-Closest Parcels Diff-Race Nbr	0.0637	0.0535

Table C4: Complete Set of Estimated Coefficients for Table 6

Panel A. Black Current Residents

Dependent Variable:	Current Resident Sold within 2 Years (=100)			
	(1)	(2)	(3)	(4)
New 1-Door White Nbr	0.331**	0.331**	0.337**	0.330**
	(0.143)	(0.143)	(0.143)	(0.143)
New 1-Door Black Nbr	-0.018	-0.017	0.005	-0.012
	(0.119)	(0.119)	(0.119)	(0.119)
New 1/3-Door White Nbr	-0.037	-0.025	-0.056	-0.019
	(0.157)	(0.157)	(0.157)	(0.157)
New 1/3-Door Black Nbr (omitted)				
New Neighbor Income				
New Nbr Income: $50,000 or less (omitted)				
New Nbr Income: $50,001 to $75,000		-0.167		
		(0.148)		
New Nbr Income: $75,001 to $100,000		-0.173		
		(0.184)		
New Nbr Income: $100,001 to $150,000		-0.366*		
		(0.211)		
New Nbr Income: $150,001 or more		-0.450		
		(0.313)		
New Neighbor's Income - Block Group Median Income				
Difference: -$50,001 or less (omitted)				
Difference: -$50,000 to -$20,001			0.247	
			(0.324)	
Difference: -$20,000 to -$1			0.039	
			(0.335)	
Difference: $0 to $19,999			0.083	
			(0.343)	
Difference: $20,000 to $49,999			-0.028	
			(0.354)	
Difference: $50,000 or more			0.028	
			(0.384)	

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New Neighbor's Income - Current Resident's Income				
Difference: -$50,001 or less (omitted)				
Difference: -$50,000 to -$20,001				-0.064
				(0.228)
Difference: -$20,000 to -$1				-0.248
				(0.242)
Difference: $0 to $19,999				-0.435*
				(0.254)
Difference: $20,000 to $49,999				-0.570**
				(0.271)
Difference: $50,000 or more				-0.705**
				(0.305)
Controls				
Building	X	X	X	X
Resident	X	X	X	X
Loan	X	X	X	X
Fixed Effects				
Group × Quarter	X	X	X	X
Counts				
N	322,919	322,919	321,666	322,431
Fixed Effect Cells	94,033	94,033	93,633	93,921
Sample Means				
Dependent Variable Mean	5.45	5.45	5.45	5.44
New 1-Door White Nbr	.1914	.1914	.1914	.1913
New 1-Door Black Nbr	.2136	.2136	.2135	.2136

Panel B. White Current Residents

Dependent Variable:	Current Resident Sold within 2 Years (=100)			
	(1)	(2)	(3)	(4)
New 1-Door Black Nbr	0.266*	0.266*	0.275*	0.264*
	(0.143)	(0.143)	(0.145)	(0.143)
New 1-Door White Nbr	0.052	0.053	0.057	0.051
	(0.040)	(0.040)	(0.040)	(0.040)
New 1/3-Door Black Nbr	-0.088	-0.100	-0.092	-0.097
	(0.113)	(0.113)	(0.114)	(0.113)
New 1/3-Door White Nbr (omitted)				
New Neighbor Income				
New Nbr Income: $50,000 or less (omitted)				
New Nbr Income: $50,001 to $75,000		-0.022		
		(0.071)		
New Nbr Income: $75,001 to $100,000		-0.106		
		(0.079)		
New Nbr Income: $100,001 to $150,000		-0.280***		
		(0.082)		
New Nbr Income: $150,001 or more		-0.601***		
		(0.099)		
New Neighbor's Income - Block Group Median Income				
Difference: -$50,001 or less (omitted) (omitted)				
Difference: -$50,000 to -$20,001			-0.175	
			(0.107)	
Difference: -$20,000 to -$1			-0.224**	
			(0.111)	
Difference: $0 to $19,999			-0.210*	
			(0.115)	
Difference: $20,000 to $49,999			-0.370***	
			(0.118)	
Difference: $50,000 or more			-0.657***	
			(0.120)	

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New Neighbor's Income - Current Resident's Income				
Difference: -$50,001 or less (omitted)				
Difference: -$50,000 to -$20,001				-0.580***
				(0.080)
Difference: -$20,000 to -$1				-0.620***
				(0.084)
Difference: $0 to $19,999				-0.771***
				(0.088)
Difference: $20,000 to $49,999				-0.832***
				(0.092)
Difference: $50,000 or more				-0.943***
				(0.098)
Controls				
Building	X	X	X	X
Resident	X	X	X	X
Loan	X	X	X	X
Fixed Effects				
Group × Quarter	X	X	X	X
Counts				
N	2,612,608	2,612,608	2,536,592	2,609,137
Fixed Effect Cells	486,677	486,677	479,380	486,251
Sample Means				
Dependent Variable Mean	8.88	8.88	8.87	8.88
New 1-Door Black Nbr	.0318	.0318	.0321	.0318
New 1-Door White Nbr	.3794	.3794	.3733	.3794

Table C5: Clustering

This table presents the results of estimating column (4) of Table 3 under different clustering regimes. *, **, and *** denote statistical significance at the 10%, 5%, and 1% level, respectively.

Panel A. Black Current Residents

Dependent Variable:	Current Resident Sold within 2 Years (=100)							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
New 1-Door White Nbr	0.268**	0.268**	0.268**	0.268**	0.268**	0.268**	0.268**	0.268**
	(0.112)	(0.114)	(0.112)	(0.112)	(0.101)	(0.113)	(0.101)	(0.111)
Controls	X	X	X	X	X	X	X	X
Fixed Effects:								
Block × Quarter	X	X	X	X	X	X	X	X
Cluster Level	Single	Single	Single	Single	Single	Single	Double	Double
Cluster Detail								
Tract × Year	X							
Block × Quarter		X						
Tract			X				X	
Block				X				X
Year					X		X	
Quarter						X		X
Counts								
N	1,632,522	1,632,522	1,632,522	1,632,522	1,632,522	1,632,522	1,632,522	1,632,522
Fixed Effect Cells	162,674	162,674	162,674	162,674	162,674	162,674	162,674	162,674
Sample Means								
Dependent Variable	5.50	5.50	5.50	5.50	5.50	5.50	5.50	5.50
New 1-Door White Nbr	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05

Panel B. White Current Residents

Dependent Variable:	Current Resident Sold within 2 Years (=100)							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
New 1-Door Black Nbr	0.257**	0.257**	0.257**	0.257**	0.257**	0.257**	0.257**	0.257**
	(0.126)	(0.126)	(0.124)	(0.125)	(0.102)	(0.127)	(0.100)	(0.125)
Controls	X	X	X	X	X	X	X	X
Fixed Effects:								
Block × Quarter	X	X	X	X	X	X	X	X
Cluster Level	Single	Single	Single	Single	Single	Single	Double	Double
Cluster Detail								
Tract × Year	X							
Block × Quarter		X						
Tract			X				X	
Block				X				X
Year					X		X	
Quarter						X		X
Counts								
N	3,644,595	3,644,595	3,644,595	3,644,595	3,644,595	3,644,595	3,644,595	3,644,595
Fixed Effect Cells	147,331	147,331	147,331	147,331	147,331	147,331	147,331	147,331
Sample Means								
Dependent Variable	9.37	9.37	9.37	9.37	9.37	9.37	9.37	9.37
New 1-Door Black Nbr	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03