Mortgage Policies and their Effects on Racial Segregation and Upward Mobility

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ABSTRACT

Decades of housing policies have aimed at increasing homeownership and reducing disparities, but their success has been limited. We argue that endogenous sorting of residents in response to these policies and deteriorating place-based factors had unintended adverse consequences. In the context of the the 1992 GSE Act, we show that, while the targeted support of specific neighborhoods mildly increased Black homeownership, a large fraction of white families moved out these neighborhoods, especially when mortgage financing became more accessible in the surrounding areas. As a result, racial segregation increased and upward mobility deteriorated both among low-income Black families and among those low-income white families who remained. We identify declining house prices, reduced education spending, and lower school quality in targeted areas as plausible channels.

JEL Codes: D14, J15, R21, R23, R31

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1 Introduction

Increasing homeownership has been a major policy goal of the U.S. for over a century. The policy efforts range from the Homestead Act of 1862, the establishment of the Federal Housing Administration (FHA) in 1934, and the Housing and Urban Development Act of 1968 (Taylor, 2019) to the Community Reinvestment Act (CRA) Act of 1977, the Federal Housing Enterprise Safety and Soundness Act ("GSE Act") of 1992, and the American Dream Downpayment Initiative in 2003. Underlying all of these legislative acts is the view of homeownership as a stepping stone towards upward mobility as it allows families to build wealth, providing financial security, and thus achieve the American Dream (Goodman and Mayer, 2018).[1]

In recent decades, homeownership policies have included an emphasis on underserved minority groups. That is, federal housing policy since the 1990s has focused on the dual goals of increasing aggregate homeownership rates and narrowing the socio-economic and racial gap in homeownership (Gabriel and Rosenthal, 2008). The dual objective has enjoyed strong political support across the aisle. For example, both President Clinton's administration in the 1990s,[2] and President Bush's administration in the early 2000s[3] set the explicit goal to overcome the homeownership gap among minority and low-income families. Concurrently, policymakers and economists have argued that reducing the racial disparity in homeowning will help address the racial disparity in economic outcomes (Collins and Margo, 2011).

Yet, the estimated effects of these policies have often been disappointing. For example, Gabriel and Rosenthal (2008) have estimated the impact on the 1977 CRA Act and the 1992 GSE Act on homeownership to be limited or non-existent, which is, as they note, "striking given the extensive level of government intervention directed through these programs." In particular, the persistent racial disparity in homeownership has remained an unsolved issue.[4] For example, while Black

[1] Cf. also Dietz and Haurin (2003); Sodini et al. (2016b). Others link homeownership to higher educational attainment and fewer teenage pregnancies among their children (Green and White, 1997), as well as positive externalities for the surrounding neighborhood (DiPasquale and Glaeser, 1999). While some researchers attribute the positive effects to selection into who becomes a homeowner (Barker and Miller, 2009; Holupka and Newman, 2012), more recent work provides causal evidence from quasi-random experimental variation in homeownership (Sodini et al., 2016a).

[2] See www.huduser.gov/publications/txt/hdbrf2.txt.

[3] See www.whitehouse.gov/news/releases/2002/06/20020618-1.html.

[4] For example, the "Biden plan for investing in our communities through housing" from January 2021 states that "Communities of color are disproportionately impacted by the failures in our housing markets, with homeownership

ownership increased by 46 percentage points from 1870–2007, relative to 20 pp for white ownership in the same period (Collins and Margo, 2011), it turns out that 25 pp of this 26 pp change are attributable to the early part of the sample period between 1870 to 1910. In recent decades, instead, the racial gap in homeownership has barely changed, despite policies aimed at increasing minority and low income ownership.

In this paper, we shed light on the underlying economic forces that have hindered greater change. We argue that endogenous sorting of households in response to these policies and deteriorating place-based factors had unintended adverse consequences. Empirically, we utilize census-tract level variation in policies aimed at increasing homeownership in the 1990s to document not only the heterogeneous effects on homeownership and upward mobility, but also point to an explanation. We document that, while Black homeownership increased slightly in geographically targeted neighborhoods, these areas witnessed a significant outflow of white homeowners, especially if the surrounding tracts in the same city (commuting zone) also benefited from improved access to mortgage financing. As a result, segregation increased and upward mobility deteriorated among low-income Black as well as white families who remained in the target. In other words, while individual-level encouragement of homeownership, via eased access to financing, might be beneficial to a household, targeting a whole census tract with similar incentives might produce less positive, or even negative effects on household mobility.

Our analysis focuses on a housing-policy that targets low homeownership rates in historically disadvantaged neighborhoods, the Federal Housing Enterprise Safety and Soundness Act of 1992, also referred to as the 1992 GSE Act. The Act formalizes the GSEs' responsibility for assisting low- and moderate-income families as well as underserved neighborhoods. It mandates that the GSEs devote a percentage of their business to underserved groups and to target underserved census tracts (neighborhoods) under the "Underserved Area Goals" (UAG),[5] namely, census tracts with a tract-to-MSA median-income ratio of 0.9 or less[6] and tracts with a minority share weakly larger

rates for Black and Latino individuals falling far below the rate for white individuals. Because home ownership is how many families save and build wealth, these racial disparities in home ownership contribute to the racial wealth gap."

[5]Prior to the 1992 GSE Act, the Department for Housing and Urban Development (HUD) established affordable housing goals in 1978 for Fannie Mae that targeted borrowers based on the price of the house they were purchasing and whether they lived anywhere in a central city but were largely ineffective (Moulton, 2008; Wallison, 2001).

[6]The 0.9 ratio applies to all metropolitan areas. For non-metropolitan areas this ratio is the tract median family

than 0.3 (and a tract-to-MSA median-income ratio of 1.2 or less).

In analyzing the response to the increase in financing supply, we account for variation in the access to mortgage financing within cities (commuting zones or CZs) due to changes in the conforming loan limit (CLL). The CLL limits the origination balance of loans eligible to be purchased by the GSEs. Since conforming-loan mortgages are easier to obtain for borrowers, CLL increases improve access to mortgage financing. For each tract, we calculate the fraction of houses in the *remaining* tracts (within the same CZ) that become eligible to be financed by GSE-conforming loans due to the (nationwide) change in CLL between 1990–2000. This measure captures tract-level variation in the access to mortgage financing in surrounding tracts within a CZ. Its interaction with tract-level targeting will help to shed light on sorting out of GSE-targeted tracts, separately for Black and white families.

Our main sources of data are the 1990 and 2000 Census and the upward-mobility data provided by Chetty et al. (2020). The tract-level upward-mobility measures are constructed primarily using federal income tax returns data. This is then linked to de-identified data from the 2000 and 2010 decennial Censuses and the 2005–2015 American Community Surveys to obtain information on income, race, parental characteristics, and other variables. The children are from the 1978–1983 birth cohorts who were born in the U.S. or are authorized immigrants who came to the U.S. in childhood, adding up to 20.5 million children in the sample (approximately 96.2% of children in the 1978–1983 birth cohorts). The upward mobility measure is the income percentile rank of the children relative to that of their parents. We focus on families at the 25^{th} percentile.

We merge the upward-mobility data with 1990 and 2000 Census data, which provides information on homeownership. For the census-tract level analyses, we combine the merged data with classification of census tract as underserved or targeted provided by the Department of Housing and Urban Development (HUD).

We start by showing that the 1992 GSE Act differentially affected homeownership patterns between 1990–2000 among Black and white families. First, we document that targeted tracts saw a 16.135 pp decline in homeowners (relative to the total homeowners and renters in 1990), despite

income to state-level non-metropolitan area median income less than 0.95.

the intended policy goal of improving homeownership in these tracts. Strikingly, the decline in homeownership is driven by an outflow of white homeowner (16.533 pp decline), whereas the number of Black homeowners increased in targeted tracts (0.378 pp increase). Second, we show that the outflow of white homeowners in targeted census tracts is strongest when the ease of mortgage access in the remaining census tracts (in the same CZ) increased due to CLL changes. For every 1 SD increase in the access to mortgage financing in other census tracts in the same CZ, we observe an additional 6.04 pp decline in white homeowners in the targeted census tract. We interpret this latter result as an indication that easier access to mortgage financing in other tracts in a CZ allowed white homeowners to move out of targeted neighborhoods. In fact, the total number of occupied housing units in these census tracts goes down by 14.394 pp, with the number of white homeowners declining by 16.135 pp compared to the number of white renters decline of 3.4 pp. The larger effect on homeowners compared to renters could be due to homeowners' pecuniary incentive to sell their homes and avoid losses in the house price values (possibly triggered by the household sorting), whereas renters bear no such asset risk (Dorn, 2010). However, household's racial preferences imply that the effect of sorting on white renters is non-zero. Since we also find that there is no similar outflow of Black homeowners the housing policy resulted in an increase in racial segregation. Targeted census tracts see a 0.378 pp increase in Black households with renters also showing a similar 0.636 pp increase. Note, we might be interested in the effect on homeownership rates, a metric that policy has often focused on. We find that homeownership rates declined by 0.310 pp in targeted tracts, driven by the 0.40 pp decline in homeownership rate for white households. However, we find no statistically significant decline in homeownership rate when the surrounding tracts in the CZ witness an increase in ease of mortgage financing. This is not surprising considering that we see a decline in both homeowners and renters, biasing us against finding an effect in homeownership rate, even if there was a flight out of certain tracts. As a result, in all our baseline analysis we normalize the variable of interest (such as change in homeownership or occupied units) by the total number of households (specifically, Black and white households). To further pin down the sorting, we examine patterns in homeowners and renters that moved post 1990. Although we do not have the break-up by race for this data, there are some

striking patterns. Overall, the number of owners who moved post-1990 (normalized by number of households in 1990) was lower by 19.507 pp compared to a similar *increase* in renters of 19.960 pp post 1990. The sorting patterns too similarly reflect that while the number of owners who moved post-1990 was 0.142 pp lower when the remaining tracts in the CZ saw a 1 percentile increase in ease of mortgage financing, the number of renters increased by 0.455 pp. In addition, we find that the number of housing units built post-1990 in targeted tracts was lower by 11.2 pp, though we see no differential effect when the ease of mortgage financing in the remaining tracts in the CZ declines. As we documented above, targeted tracts also saw an increase in renters consistent with previous literature that has highlighted that that with age homes transition from owner-occupied to rental properties Rosenthal (2014). —> how to use this fact? (???Basically, even if no affordable homes were built, the process of filtering means that these older homes are the ones determining supply of low-income housing.: Rosenthal (2014) also highlight how highlighted filtering — the dynamic process by which homes built for higher income families slowly deteriorate and filter down to lower income households — is the primary mechanism determining supply of low-income housing.)

As a placebo test, we replicate the analysis using the previous decade (1980–1990) and show that there is no similar sorting pattern among Black or white homeowners.

Finally, we document that the composition of people living in targeted census tracts changes more broadly, with the number of white population and the percentage of high school educated population declining. The share of poor increased and the share of older population (age $>$ 50 years) declined. The fraction of single-family detached homes remaining strikingly the same. We also document that the number of occupied units (normalized by the number of households in 1990) declined by 9.2 pp in targeted, especially when the remaining tracts in the CZ saw an increase in the ease of mortgage financing. Correspondingly, the number of vacant units increased in targeted tracts. In particular, the increase was concentrated in the vacant-for-sale units, with no statistically significant increase for the vacant-for-rent units in targeted tracts. Targeted tracts that see an increase in ease in mortgage financing in remaining tracts in the CZ also see an increase in the vacant-for-sale units.

In the next step of the analysis, we show that the mortgage policies of the 1990s resulted in worsening low-income children's upward mobility, both among low-income Black families and among those low-income white families who remained in targeted tracts. As in the analysis of homeownership changes, we also find that the decline in upward mobility in the targeted tracts is strongest when accompanied by an increase in access to mortgage financing in the surrounding tracts in the CZ. While targeted tracts see a 0.803 SD decline in children's overall upward mobility, this effect is 0.386 SD, that is, nearly, 48% higher if the remaining tracts in the CZ see a 1 SD increase in ease of mortgage financing. In supplementary analyses, we show that the impact on low-income children is not offset with a corresponding increase in upward mobility of high-income children. That is, the increase in racial segregation is detrimental to all.

Importantly, the adverse mobility effects extend to *both* Black and white children in these targeted tracts, with the sorting component affecting the remaining white families, if anything, slightly more: Black children in these tracts see a 0.097 SD lower upward mobility whereas white children see a 0.290 SD lower upward mobility in targeted areas that see a 1 SD increase in ease of mortgage financing in the remaining tracts in the CZ. The latter result points to a possible role for place-based, rather than (only) family-based factors, in explaining the decline in upward mobility.

We assess several channels for possible place-based changes resulting from the housing policies. We first document that targeted tracts experience a decline in the valuation of their housing stock. House prices in targeted tracts decline by 0.2% when the surrounding tracts experience a 1 percentile increase in ease of mortgage financing. Lower house prices, in turn, affect school revenue from local sources, either directly through lower property values (e. g., property taxes) or indirectly through the local economy (e. g., sales and other local taxes; cf. Mian and Sufi (2014)). We show that school revenues from local sources decline significantly in targeted tracts, and the effect is strongest when the remaining tracts in the CZ see an increase in the ease of mortgage financing. We also show that the lower education spending is accompanied by poorer quality schools, as measured by a higher student-per-teacher ratio in targeted tracts.

Overall, our results point to importance of considering endogenous sorting responses when implementing housing policies, and to anticipate adverse effects on place-based determinants of

upward mobility. A policy intervention that eases the access to mortgage financing might be beneficial on an individual level, but could have less positive, or even adverse effects on household mobility when applied to a broader geographic area such as a whole census tract.

Our argument mirrors the small-scale versus large-scale differences in findings in the literature on the "movement to opportunities." On the one hand, Chetty et al. (2016) document that children's outcomes improved when families in high-poverty housing projects were randomly moved to lower-poverty neighborhoods in the Moving to Opportunity (MTO) experiment. On the other hand, Derenoncourt (2019) shows that large-scale movement to opportunity in the context of the 1940-1970 Great Migration did not produce similar effects. Instead, the large-scale movement to opportunity locations radically changed the racial composition of Northern cities and altered place-based effects, turning opportunity locations into opportunity desserts. Our analysis shows that larger-scale targeting of minorities based on geographic areas (census tracts) can lead to endogenous sorting—in our case sorting of the non-minorities out of those targeted areas—, and induce a deterioration of the place-based determinants of upward mobility.

Related Literature. Our paper straddles several distinct strands of literature. First, prior research has examined the impact of homeownership on economic outcomes, particularly on children's outcomes. An earlier literature links homeownership to better educational outcomes as well as fewer teenage pregnancies (Green and White, 1997). While policy makers cite these findings as a rationale for increasing homeownership, later literature attributes the positive outcomes to selection in who becomes a homeowner (Barker and Miller, 2009; Holupka and Newman, 2012). Newer work and instrumental-variable approaches show that homeownership causes households to move up the housing ladder (i. e, from owning more affordable houses to more expensive houses), work harder, and save more (Sodini et al., 2016a). The literature has also hypothesized positive externalities of homeowners as they are more likely to invest in the surrounding neighborhood (DiPasquale and Glaeser, 1999; Glaeser and Shapiro, 2003). Our paper uses the homeownership policies of the 1990s to generate variation in access to mortgage financing and instrument for homeownership. Differently from prior literature, we identify negative externalities that arise from homeownership policies that target specific neighborhoods due to residential sorting.

Second, prior literature has studied the Affordable Housing Goals and specifically the UAG goals on homeownership and mortgage access. Ambrose and Thibodeau (2004) find only a small positive increase in mortgage credit. Moulton (2008) relates the GSE Act's affordable housing goals to foreclosures, vacancies, or other housing outcomes in the 2000s and finds no discernible effect, suggesting that the GSE affordable housing goals had a negligible effect on the housing crisis of 2007–2008. An et al. (2007) examine the pass-through of GSE activity on mortgage supply, and find that while vacancies and home values increase, homeownership rates do not change. However, using a regression-discontinuity design, Bhutta (2009) finds that bank mortgage origination volume is almost 4% higher in targeted UAG tracts in 1994–1996. We, too, find an impact on homeownership, but distinct from previous literature, we find strong sorting within CZs.

Other related work has tested whether the homeownership policies since the 1990s has decreased the overall racial gap in homeownership (Gabriel and Rosenthal, 2008), and found limited effects (Bostic and Gabriel, 2006). We also find that the housing policies did not ameliorate the homeownership gap. While both Black and white homeownership increased (at the CZ level), white homeownership increased considerably more than Black homeownership. Additionally, we highlight that the increase in homeownership for Black families is concentrated in underserved neighborhoods, where white homeownership decreases.

Our paper is also related to literature that examines racial differences in economic outcomes. Prior literature has found that racial disparities in the U.S. are persistent (Myrdal, 1996; Duncan, 1968; Margo, 2016) and perpetuate across generations (Chetty et al., 2019). Possible reasons and mechanisms include residential segregation (Wilson, 2012; Massey and Denton, 1993); discrimination (Bertrand and Mullainathan, 2004), and differences in family structure (McAdoo, 2002; Autor et al., 2019). We focus on the homeownership policies of the 1990s that inadvertently increased residential sorting by targeting disadvantaged neighborhoods and simultaneously increasing mortgage access at the CZ-level. Relatedly, Ouazad and Rancière (2016) have also documented an outflow of white households from Black and racially mixed neighborhoods after 2000–2006 credit boom. We document similar effects in the 1990s and link this residential sorting to declines in children's upward mobility. Cutler et al. (1999) also differentiate between the segregation result-

ing from “collective action" pre-1970, which arose as white households kept Black households out through policy instruments such as explicit racial zoning or restrictive covenants prohibiting selling homes to Black households, or through illegal means such as threatening violence. Post-1970s, Cutler et al. (1999) note that these legal barriers that essentially enforced racism were replaced with a more “decentralized racism" as white households paid more to live in predominantly white areas.

Finally, our paper is relevant to prior literature on GSE activity in the secondary mortgage market, particularly the CLL changes, and its influence on housing markets. Adelino et al. (2013) relate CLL changes to increasing house prices. DeFusco and Paciorek (2017) examine the interest-rate elasticity of mortgage demand using the CLL threshold, whereas Kaufman (2014) examine the impact on mortgage cost and contract structure. Loutskina and Strahan (2015) interact the CLL with regional constraints to document effects on house prices and on local economic activity. Grundl and Kim (2021) exploit the increased geographic variation in CLL post-2008[7] across border-counties and establish a substantial effect on house prices, house sales, and construction activity, though no effect on homeownership. In contrast to the focus on overall homeownership patterns in these prior papers, we show significant within-CZ sorting of homeowners and differential effects on Black and white homeowners.

Our paper is organized as follows. Section 2 provides institutional background of residential mortgage markets and homeownership policies. Section 3 describes the data as well as the construction of the homeownership, segregation, and upward mobility measures. After introducing our main empirical strategy in Section 4, we analyze the effect of housing policies on homeownership between 1990–2000 in Section 5, and on upward mobility in Sections 6. Section 7 explores possible mechanisms. Section 8 concludes.

2 Institutional details

We briefly discuss the institutional details of the residential mortgage market and the homeownership policies of the GSEs in the 1990s.

[7]While the CLL has changed at the national level (barring Hawaii and Alaska, where it was 50% higher), post-2008 the CLL increases were larger in counties with higher median house prices.

Two milestones in implementing homeownership policy goals in the US were the creation of the Government Sponsored Enterprises (GSEs) Fannie Mae in 1938 and Freddie Mac in 1970, which became the two largest sources of housing finance in the secondary mortgage market. Their policies largely determine who gets access to credit in the residential mortgage market and eventually becomes a homeowner. Their congressionally conferred charters prohibit them from directly lending to borrowers. Instead, they support the secondary mortgage market by (i) acting as a conduit and issuing mortgage-backed securities that can in turn be sold to investors in the capital markets, and (ii) holding these mortgages and mortgage-backed securities in their on-balance-sheet retained mortgage portfolios (Jaffee and Quigley, 2007). For example, the Federal National Mortgage Association Charter Act, which established Fannie Mae as a GSE in 1968[8], states that Fannie Mae's primary mission is to provide secondary market facilities and ongoing assistance for residential mortgages, especially for low- and moderate-income families and in underserved areas.

In 1992, Congress enacted the "Federal Housing Enterprise Safety and Soundness Act," also referred to as the 1992 GSE Act, to better implement the GSEs' mission of promoting access to mortgage financing for lower-income households and address the historical discrimination in mortgage access of minority borrowers. Historically, discrimination had been explicitly sanctioned by the government. For example, the government-sponsored Home Owners' Loan Corporation (HOLC, established in 1933 to refinance home mortgages in default) introduced a practice known as redlining. It divided all metropolitan areas into four categories, ranging from 'best' to 'hazardous.' Hazardous neighborhoods, 'red zones,' were those with 'detrimental influences' and 'undesirable populations,' namely, Black, brown or Jewish households. Similar practices of the Federal Housing Administration (FHA, established in 1934 to provide insurance on mortgages made by private lenders) essentially allowed only white households to become homeowners. Explicit racial policies of the FHA included appraisers giving higher ratings to mortgage applications only if they were in racially homogeneous neighborhoods, stymieing homeownership growth among Black communities (Rothstein, 2017). Even up until the 1960s, the Federal

[8]See SEC. 301, www.sec.gov/Archives/edgar/data/310522/000031052215000179/fanniemaecharteractexhibit.htm.

Housing Administration (FHA) denied mortgage insurance in certain high-minority or predominantly Black neighborhoods. The Fair Housing Act under Title VIII of the Civil Rights Act of 1968 put an end to legal discrimination in the sale, rental, and financing of homes (Shertzer et al., 2016, 2018; Been, 2018; Elmendorf, 2019; Fischel, 2004), but discrimination against minority borrowers continued well into the 1970s and 1980.[9]

The 'Underserved Area Goals' of the GSE Act were designed to overcome these long-lasting reverberations of past discriminatory practices and and address the geographic disparity in homeowning (Jaffee and Quigley, 2007).

The GSE Act specifies three goals for the specific mandates of the GSEs[10]: (1) The low- and moderate-income goal states that a HUD-determined proportion of mortgages purchased by the GSEs should finance properties that are either owned or rented by households with incomes less than or equal to the median income of the (metropolitan or defined non-metropolitan) area in which the property is located. (2) The geographically targeted or underserved areas goal asks that a HUD-determined proportion of mortgages purchased by the GSEs should be mortgaged by households located in (a) low-income areas, defined as metropolitan-area census tracts with a median family income less than or equal to 90% of the area median, or (b) high-minority neighborhoods, defined as metropolitan-area census tracts with minority population of at least 30% and with a median income less than or equal to 120% of the area median.[11] (3) The special affordable goals require mortgages with household income less than or equal to 60% of the area median or less than or equal to 80% of the area median and located in low-income areas, defined as in (2) above. A single loan can count towards multiple goal categories above.

The GSE Act also authorized HUD to monitor whether the GSEs are meeting these policy goals. Moreover, after a two-year transition period, HUD could establish annual affordable housing goals. In 1996, the numerical goal (1) for low- and moderate-income households was at 40%;

[9] In the 1980s, these discriminatory policies received significant press attention as the Atlanta Constitution published a four part series, "The Color of Money," and the Detroit Free Press published a similar series in July 1988 (Gabriel and Rosenthal, 2008).

[10] See Subpart B and Sec. 1331, Sec. 1332, Sec. 1333, and Sec. 1334 in the original 1992 GSE Act in https://www.govtrack.us/congress/bills/102/hr5334/text

[11] The criteria for non-metropolitan areas varies slightly, with eligible counties required to have median family income less than 95% of the greater of the state or national non-metropolitan area median income.

(2) for "underserved areas" at 21%; and (3) for the "special affordable" goals at 12% (Gabriel and Rosenthal, 2005).

Our main source of variation relies on the classification of census tracts as "targeted" or underserved, i. e., criteria (2.a) and (2.b) under the geographically targeted or underserved areas goal, in the analysis of neighborhood-level (census tract) variation of homeownership and upward mobility. Our emphasis on criterion (2) is motivated by prior research documenting strongest (though overall muted) effects of the underserved areas goals compared to other mandates of the GSEs (Bhutta, 2009, 2008). Since the special affordable goals also rely on the low-income area classification, we capture households targeted by these goals as well.

We note that the classification of tracts as targeted overlaps with a similar mandate under the 1977 Community Reinvestment Act (CRA), which instructs federal banking regulators to encourage federally-insured banking institutions meet the credit needs of their local communities, including low- and moderate-income neighborhoods. Under the CRA, a lower-income neighborhood is defined as a census tract with median family income below 0.8 of the median family income for either the MSA or the non-metropolitan areas of the state. Since this threshold is lower than 0.9 (0.95 for non-metropolitan areas), all tracts targeted by the GSE Act are also targeted by the CRA. However, the implementation of the CRA appears to have been weak. For example, when HUD attempted to make progress by proposing, in 1978, that a fixed portion of bank lending should be directed towards tracts targeted under the CRA. They became mandatory only after the passage of the Financial Institutions Reform, Recovery, and Enforcement Act (FIRREA) of 1989 (Moulton, 2008; Jaffee and Quigley, 2007) as Congress amended the CRA requiring the public release of evaluations by regulators and the release of CRA performance ratings (Avery et al., 2022). The FIRREA also asked HUD to set affordable housing goals for GSEs. But before HUD could complete promulgating the goals, the 1992 GSE Act formalized the GSE responsibility for assisting low- and moderate-income families and underserved geographic regions. Thus, though the CRA Act predates the 1992 Act, its effectivene implementation falls in the 1990s, the period of our analysis. We can thus interpret the source of variation as the joint effect of both the CRA and the GSE Act in the 1990s.

Our analysis also accounts for variation in the conforming loan limit (CLL) and their heterogeneous effect on affordability in different geographic areas. The CLL is the threshold in loan size above which a loan is not "conforming," and hence not eligible to be held or guaranteed by the GSEs. The CLL is designed to ensure that the GSEs satisfy their mission of promoting access to mortgage credit for low- and middle-income households, who likely invest in smaller value homes and apply for smaller-sized loans. It reflects the national average change in single-family house prices during the prior year, assuming the standard loan-to-value of 80%. In 1990, the GSEs could only purchase or securitize loans below $187,450 for loans secured by single-family homes ($360,150 for four-family homes). In 2000 this limit increased to $252,700 (and $ 485,800 for four family homes).

The CLL can be used to determine houses or areas that can be purchased with GSE-conforming loans and are thus "cheap" to finance. (Adelino et al., 2013; Loutskina and Strahan, 2015). Our analysis of targeted census tracts will account for variation in the increase in affordability of the surrounding tracts (in the same CZ) due to CLL changes.

3 Data

3.1 Mortgages, homeownership, and house prices

Our first source of data are the 1980, 1990, and 2000 Census waves. We extract tract-level and county-level data on tenure (homeowners and renters), both in total and by race, for occupied housing units. Our goal is to identify increases in the fraction of homeowners in a geographic area (typically a census tract ct), both due to existing residents buying a house for the first time and due to new residents moving into the area and purchasing a home. We define the change in homeownership in area a during the 1990s as:

$$\text{Change in homeownership}_{a,1990-2020} = \frac{\text{Homeowners}_{a,2000} - \text{Homeowners}_{a,1990}}{\text{Homeowners}_{a,1990} + \text{Renters}_{a,1990}} \tag{1}$$

We calculate this variable both for all residents and separately by race (Black and white householders). In the latter case, we replace the numerator with the change in Black (white) homeowners, while the denominator remains the same. Note that, by holding the denominator fixed at 1990 lev-

els, we capture the in- or outflow of homeowners, with the denominator merely normalizing this count. A measure using different denominators, instead, such as the difference in homeownership *rates*, i, e., $\frac{\text{Homeowners}_{a,2000}}{\text{Homeowners}_{a,2000}+\text{Renters}_{a,2000}} - \frac{\text{Homeowners}_{a,1990}}{\text{Homeowners}_{a,1990}+\text{Renters}_{a,1990}}$, would fail to account for changes in the population and confounds homeownership and selection effects. For example, if a targeted tract sees an outflow of Black renters and no change in Black homeowners, the difference in rates would indicate an increase in Black homeownership. It is thus less well-suited to capture the economic phenomenon we are trying to analyze, namely, the impact of tract-specific housing policies on households' ability to become homeowners and on their differential sorting into homeownership within and across neighborhoods. (Nevertheless, in Section 6, we will show that our baseline results are robust to this alternate definition.)

A second set of variables from the Census is data on house values for specified owner-occupied housing units, which we use measure changes in the ease of mortgage financing in surrounding tracts in the same commuting zone (*CZ*) as a given census tract. The Census provides the number of houses in different house-price ranges in each census tract based on the Census respondents' estimates of how much their property would sell for, if it were for sale. Our measure, $\Delta\text{Ease of mortgage financing}_{-ct,1990-2000}$, is the percentile of the fraction of houses that become GSE-eligible due to the change in the CLL between 1990–2000 in the remaining CZ, that is in the tracts other than *ct*. Exploiting the change in CLL from \$187,450 in 1990 to \$252,700 in 2000 for single-family homes and assuming a loan-to-value of 80%, this change in CLL corresponds to houses price values between \$234,312 to \$315,872. We use the closest \$200,0000–\$400,000 bucket from the 1990 Census to calculate the fraction of houses at the CZ-level that can be financed fully by GSE-eligible loans after the increase in CLL (but not in 1990). To aggregate the data to the CZ-level, we use the county-to-CZ crosswalk from Chetty et al. (2015).

Our main tract-level instrument exploits the classification of census tracts as targeted. We obtain the information on whether a given tract is underserved from the Housing and Urban Department. The classification is at the tract-level for 99.78% of the data, but varies within-tract for 130 tracts (less than 1%) as they straddle one or more metropolitan/non-metropolitan areas. In such cases, we classify the entire tract as targeted if any of the sub-tract regions is classified as

underserved. We use data as of 1996 (earliest available on the website) as eligibility status is based on the 1990 Census data and reflects the targeted status under the 1992 GSE Act for our period of interest between 1990–2000.

Finally, control variables in our analysis include house prices in 1990, house price growth between 1980–1990, fraction of high school graduates among Black households and white households in 1990 in a CZ. For weighting the data, we use the total number of housing units in each CZ from the Census 1990. In supplementary analysis, we also use the Census data to calculate the fraction of homeowners (or renters) that moved into their current residence between 1990–2000 and the change in the fraction of owners-occupied housing units with mortgages.

3.2 Upward mobility measures

We use the tract-level upward mobility measures from Chetty et al. (2020). The measures are constructed from federal income tax returns data, which is then linked to de-identified data from the 2000 and 2010 decennial Censuses and the 2005–2015 American Community Surveys to obtain information on income, race, parental characteristics, and other variables. The children are from the 1978–1983 birth cohorts who were born in the U.S. or are authorized immigrants who came to the U.S. in childhood. A child's parent is defined as the person who first claims the child as a dependent (between 1994-2015). The sample includes 20.5 million children, approximately 96.2% of children in the 1978–1983 birth cohorts. Chetty et al. (2019) (Appendix B and Appendix Tables II-IV) shows that sample accurately captures the income distributions and demographic characteristics in the American Community Survey data.

A child i's income percentile rank in the national distribution of incomes is defined relative to all others in the child's cohort when the child is adult (between ages 31-37 in the baseline sample). Similarly, the parents' percentile rank is based on their position in the national distribution of parental income for child i's birth cohort. The definition of the ranks is held fixed based on the positions in the national income distribution, even for the gender or race specific estimates.

The objective is to estimate the children's expected outcomes given the parents' income percentile p, racial and ethnic group r, and gender g, conditional on growing up in a Census tract c

from birth.

$$\bar{y}_{cprg} = E[y_i|c(i) = c, p(i) = p, r)i) = r, g(i) = g] \tag{2}$$

These estimates characterize how the neighborhoods in which children grow up affect their outcomes (we focus on income in our analysis). The focus on the effect of childhood neighborhoods is motivated by the authors' prior evidence that upward mobility depends the neighborhoods where children grow up rather than where they live as adults (Chetty and Hendren, 2018a,a,b).

The main empirical challenge in estimating the conditional mean $\bar{y}_{cprg}$ is the insufficient number of observations to non-parametrically estimate in each tract-race-gender cell the rank-rank relationship between parents' and children's income. To address this challenge, Chetty et al. estimate for each tract-by-gender-by-race cell, the conditional expectation of children's income given their parents' household income using a univariate regression whose functional form is chosen based on the relationship between parental income and children's income at the *national* level to account for potential non-linearities in this relationship.

Specififcally, Chetty et al. regress children's outcomes on a tract-invariant transformation of parental income rank, $f_{rg}(p_i)$ using:

$$y_i = \alpha_{crg} + \beta_{crg} \times f_{rg}(p_i) + \epsilon_i \tag{3}$$

where $f_{rg}(p_i)$ is estimated using a lowess regression of y_{prg} on p in each race by gender subgroup at the it national level. Intuitively, a lowess regression is fit to the non-parametric conditional expectation functions to find a transformation of parental income rank $f_{rg}(p_i)$ that renders the relationship between y_i and $f_{rg}(p_i)$ linear at the national level.[12] Chetty et al. then run a linear regression of the outcome on the transformed parental income in each tract-race-gender cell as in equation 3 and use the predicted values of this regression at each percentile p as the estimate of y_{prg}. [13]

[12]The underlying assumption is that the shape of the conditional expectation of the outcome given parental income at the national level is preserved in each tract up to an affine transformation. Chetty et al. (2020) confirm robustness of this assumption by showing that the estimates are not sensitive to adding a quadratic term to (3 and by showing that the non-parametrical estimates in large CZs and counties are approximated by an affine transformation of the national relationship.

[13]Our analysis uses the baseline estimates that also include children who move across tracts during childhood. While this could potentially bias the upward mobility estimates, Chetty et al. (2020) show that such bias is small in practice because even children who move spend the majority of their childhood in one tract or tend to move to very similar

Finally, the publicly available data in Chetty et al. (2020) at the tract-level suppresses estimates if a tract-race-gender cell has with fewer than 20 children to protect privacy. Chetty et al. (2020) add a noise component to the estimates that is inversely proportional to sample size to protect privacy based on methods developed in Chetty and Friedman (2019); **?**); Abowd and I. M. (2015) .

In our analysis, we use the the upward mobility of children with parents at the 25th percentile. In addition, we also focus on the upward mobility measures for Black and white children.[14]

3.3 Measures of school quality

Our analyses of the different possible mechanisms use several additional sources of data.

To analyze the sources of educational spending, we utilize data on school spending and revenues from the National Center for Education Statistics' Common Core of Data for public schools. We calculate the school revenues that come from local sources per 1000 students from the school-district data for the 1996–1997 fiscal year (as it is representative of the sample period of 1990–2000). We map from school-district level to the tract level by weighting in proportion to the land area covered by a given school district in a tract.

The NCES Common Core of Data also provides a proxy for school quality. We use an output-based measure of school quality based on test scores. Following Chetty et al. (2020), we collect district-level 3rd-grade math test scores from the Stanford Education Data Archive. However, reliable data is available only in 2013, and we therefore use the output-based measure of school quality only in supplementary analysis. For the mapping from the district-level to the tract level Chetty et al. (2020) use school-catchment areas (attendance boundaries) from 2017, weighting by the proportion of land area covered by a given school-district in a tract.

tracts.

[14] If the rank-rank relationship between children's income (when adult) and parental income is linear, the 25th percentile corresponds to the average upward mobility of all children with below-median income in the national distribution. Chetty et al. (2015) estimate this relationship to be almost linear at the national level when children across all genders and races are considered. However, when they examine this relationship by race, while the functional form for the rank-rank relationship is closer to linear for white households, the relationship is non-linear especially at high parental income ranks for Black households (see Figure Ia in Chetty et al. (2020) which plots the mean household income rank of children within each percentile bin of the parents' income distribution for white, Black, and Hispanic households).

3.4 Summary statistics

In combining all of the above data sources, the main sample limitation is imposed by the number of CZs (551) for which the childhood-exposure measure of upward mobility from Chetty and Hendren (2018a) is available. At the tract-level, the sample further decreases when the upward mobility measures for both Black and white children from low-income families are missing in Chetty et al. (2020). The resulting sample consists of 36,056 census tracts, out of which 18,484 have data available for Black children's upward mobility. We winsorize all tract-level variables (except the upward mobility measures) at the 1% level to account for the influence of outliers.

Table 1, Panel A shows the corresponding tract-level statistics of the main variables used in our analyses and Panel B provides the CZ-level summary statistics. Panel C shows the summary statistics for additional demographic characteristics and housing variables.

At the CZ-level, the change in homeownership between 1990–2000 is on average 10.50% with a larger proportion attributable to the change in white homeownership (9.51%), about tenfold the change in Black homeownership (0.99%). At the tract-level, on average, the change in homeownership is a much higher 37.28%, and here too, most of it is attributable to the change in white homeownership (34.54% compared to 2.50% for Black homeownership). The median changes in overall, white and Black homeownership are, instead, close the CZ-level medians, reflecting that the underlying distribution is highly skewed, with tracts in the higher end of the distribution exhibiting much higher white homeownership changes, e. g., a 28.77% change for tracts at the 75^{th} percentile. Another pattern that stands out is the negative change in homeownership for tracts at the 25^{th} percentile of the distribution, -0.72% overall and -0.88% among white households, especially compared to no decline in Black homeownership.

We use two sources of variation for our analysis. The first, $\Delta\text{Ease of mortgage financing}_{-ct,1990-2000}$, is the share of properties in 1990 in the remaining tracts of the CZ that become eligible to be fully financed by GSE-conforming loans due to CLL changes between 1990–2000. It has an average value of 9.84%, and its percentile-transformation amounts to an average change of 48.31 (with a standard deviation of 28.84). These average values are higher than those of the CZ-level instrument, reflecting that the CZ-level instrument is not a weighted average of the the tract-level instrument.

In fact, if we calculate the average of the CZ-level instrument across all tracts, we get an average of 9.95%, close to the tract-level instrument mean.

Our second source of tract-level variation is the classification of tracts as targeted under the UAG. Nearly 51% of tracts become classified as targeted post the 1992 GSE Act. The percentage of targeted tracts is similar when we consider all tracts (as opposed to the tracts in the 551 CZs used in our analysis), where nearly 48.39% of the tracts are classified as targeted.

Our segregation measures are standardized (mean = 0, SD = 1), and display similar interquartile ranges, from -0.75 SD to 0.61 SD for racial segregation, from -0.83 SD to 0.66 SD for income segregation, and from -0.77 SD to 0.72 SD for our new measure of homeownership segregation that captures how segregated homeowners are from renters. Finally, urban sprawl, which measures segregation based on time spent commuting to work (fraction of households spending more than 15 minutes commuting) ranges from -0.61 SD to 0.70 SD.

Panels A and B also show several statistics describing the upward mobility of children in our sample. Average upward mobility of low-income children corresponds to the upward mobility of children from families at the 25^{th} income percentile (given the linear rank-rank relationship between children and their parents' income). At the CZ-level, this average upward mobility was 45.67, and at the tract-level it was 40.32. For comparison, it is higher, 59.30 at the CZ-level and 55.12 at the tract-level, for children with high-income parents (at the 75^{th} percentile of the income distribution). That is, on average across CZs, the children of low-income parents had (when adult) an income rank 13.63 (59.30-45.67) percentiles below the income rank of children from high-income parents. Across tracts, the corresponding difference in income rank is 14.80 (55.12-40.32).

The childhood exposure measure is the income rank of the children in percentiles — relative to the mean across all CZs — per year a child spends in a CZ. Here, the data from Chetty and Hendren (2018a) is available only at the CZ-level. Panel A shows that, for a child with parents at the 25^{th} percentile of the national income distribution, spending 1 year of childhood in a one SD better CZ (population-weighted) increases household income at age 26 by 0.55 percentile points. To interpret the magnitude of these effects, note that Chetty and Hendren (2018a) and Chetty and Hendren (2018b) calculaute that a 1 percentile increase in income translates, on average, to an

additional $818 at age 26. Given a mean income of $26,091 among children with parents at the 25th rank, a 0.55 percentile increase corresponds to a 1.72% increase in annual income per year the child spends in a CZ. For a child with parents at the 75^{th} percentile, spending an additional year in a one SD better CZ increases household income by 0.64 percentiles, equivalent to 2% increase in income suggesting that neighborhood effects matter for both poor and rich families.

The summary statistics also reveal strong racial differences in upward mobility. At the CZ-level, upward mobility for the children of low-income Black families is a 34.14 percentile income rank when adult, implying a 10.72 percentile racegap to their counterparts from low-income white families (at 44.86). At the 75th percentile of parents' income distribution, Black children have a higher 46.41 percentile income rank when adult, and the corresponding income rank for white children is again higher, 60.16, corresponding to a racegap of 13.75

The same pattern holds at the tract-level, where the upward mobility children from low-income Black and white families (33.60 and 44.31 percentile income ranks) and those from high-income Black and white families (44.04 and 57.79) amount to virtually the same racegaps as calculated on the CZ level. At both CZ and tract-level, the upward mobility of high-income Black children in almost equal to the upward mobility of low-income white children.

Our baseline analysis focuses on low-income families, which are targeted by the housing policies. Figure 1 shows the spatial variation of upward mobility of Black children from low-income families in Panel A, and for children of low-income white families in Panel B. We see a high degree of correlation between the children of Black and white families. Thus, the improvement in the outcomes of the Black families in regions with high upward mobility is not coming at the expense of white children. However, there is also some variation in upward mobility of white and Black children. For example, in the northeast Black children have higher upward mobility compared to white children.

Panel C shows additional housing and demographic statistics for our sample. As discussed in Section 3.1, an alternative measure of homeownership changes is the difference in homeownership rates, $\frac{\text{Homeowners}_{CZ,2000}}{\text{Homeowners}_{CZ,2000}+\text{Renters}_{CZ,2000}} - \frac{\text{Homeowners}_{CZ,1990}}{\text{Homeowners}_{CZ,1990}+\text{Renters}_{CZ,1990}}$. On average, the homeownership rate increased 1.91% change in between 1990–2000, reflecting an increase of 2.18% in white home-

ownership rates, but a *decrease* by 0.48% among Black households. In Section 6 we will show that our baseline results are robust to this alternate definition of change in homeownership, though, as discussed in Section 3.1, changes in the denominator (in 2000) make it less well-suited to analyze the phenomenon of interest, the differential sorting into homeownership within and across neighborhoods.[15]

Among the other housing variables in Panel C, we show that, across the CZs in our data, median house prices stood at $75,197 in 1990 and grew by 70.24% between 1980–1990, closely matching the 68% nationwide increase in median house prices, from $47,200 in 1980 to $79,100 in 1990. The share of Black households in a CZ was 13.37% on average, and the share of households below the poverty line nearly 12%. Share of single-headed households with children was 21.29% on average across CZs.

Panel C also shows the summary statistics for an alternate measure of (educational) upward mobility, similar to Derenoncourt (2019) and Card et al. (2018). It is defined as the fraction of 19-22 year-old children in a CZ (in 1990) with more than 13 years of education, who belong to households where the parents have between 12–13 years of education. We use the 5% sample from 1990 American Community Survey. Contrary to Derenoncourt (2019) who uses the complete count censuses from 1920 and 1930 to get the pre-1940 measures of educational upward mobility, we only have access to the 5% sample from American Community Survey for 1990 and hence we have the educational mobility measure for only 195 CZs. The educational mobility measures by race is even more sparse and hence not included in Panel C. We use the fraction of Black (white) people with a high school diploma [the median level of education in 1990] as an imperfect proxy for upward mobility in 1990. Panel C shows that in our sample the percentage of white high-school graduates was 44.97% and Black high-school graduates was a lower 34.79%.

Log of the median value of house prices in 2000 has an average value of 11.28 at the CZ-level and 11.54 at the tract-level. To measure school quality we use the student to teacher ratio.

[15] These issues are even starker at the tract-level. Consider, for example, a targeted tract that sees an outflow of white renters. The difference in rates would indicate an increase in white homeownership despite no actual increase in white homeowners. The same holds if renters move out at faster rates than white homeowners (say, due to lock-in effects of homeowning). By holding the denominator fixed at 1990 levels we capture how the improved ease of mortgage financing affected households' ability to become homeowners; the denominator in the baseline (homeowners plus renters in 1990) merely normalizes this count.

At the CZ-level, the mean is 17.15 students per teacher with a standard deviation of 2.08. The corresponding tract-level average was 18.34, with a slightly higher standard deviation of 3.23. School revenues from local sources per 1000 students was at 2.28 (SD=1.12) at the CZ-level and 2.79 (SD=1.72) at the tract-level.

4 Empirical Strategy

Our empirical strategy exploits two separate sources of variation that capture how the GSE policies affect households' access to mortgage financing and determine mortgage access, homeownership, and upward mobility.

4.1 Identifying Variation

Our main tract-level variation comes from the classification of census tracts as "targeted" or underserved under the UAG goals of the 1992 GSE Act, i. e., as detailed in Section 2, tracts with median family income $\leq$ 90% of the MSA median or alternatively $\leq$ 95% of the median family income of non-metropolitan areas in the state; or median family income $\leq$ 120% of the MSA median and minority share $\geq$ 30%. The GSEs are required to devote a percentage of their business to underserved groups, and the Department of Housing and Urban Development (HUD) monitors whether the GSEs are meeting these policy goals.

The classification of targeted tracts allows the GSEs to influence mortgage originations through their secondary mortgage market operations. Lenders are more likely to approve loans in targeted neighborhoods as they can sell these loans to the GSEs. Indeed, the proportion of loan purchases by the GSEs from targeted populations increased after the enactment of the 1992 GSE Act (Bunce et al., 1996; Bunce, 2002; Manchester et al., 1998).[16] The GSEs also increased their product offerings in the secondary mortgage markets that allowed for riskier underwriting standards in the primary market to facilitate their purchases from targeted communities (Listokin and Wyly, 2000; Temkin et al., 2000). The GSE presence also allows lenders to generate information, making future transactions in these otherwise thin markets less risky for prospective lenders. While high-minority and low-income communities often had low transaction volumes, post the 1992 GSE Act, GSE

[16] Case et al. (2002), however, compare the distribution of GSE purchases to the distribution of mortgage originations and find that the GSEs are less likely to purchase loans to borrowers in lower-income neighborhoods.

purchases helped reduce adverse informational externalities and increased primary-market acceptance rates in these historically underserved neighborhoods (Harrison et al., 2002).

Our second source of variation exploits the regulatory cutoff in the size of loans (CLL), above which the GSEs cannot purchase or guarantee loans. The underlying principle of the CLL is to ensure that the GSEs satisfy the goal of promoting mortgage financing for low- and moderate-income households who likely invest in smaller-value homes. The loan limit is updated every year and, until 2007, was uniform at the national level. The CLL changes reflect the national average change in house prices in the prior year. We combine these changes with the other important threshold for GSE-conforming mortgages, the 80% loan-to-value ratio (Adelino et al., 2013; Loutskina and Strahan, 2009),[17] and identify properties below 125% of the CLL that can be financed by GSE-conforming loans. We exploit increases in the ease of mortgage financing due to CLL changes in the *remaining* tracts in a CZ, excluding the tract itself.

The CLL based exposure exploits the fact that both the availability and the cost of mortgage financing are significantly improved for GSE-conforming mortgages. On the extensive margin, availability improves since originators, such as banks, can more easily securitize loans below the CLL limit, either by selling them to the GSEs (in which case the loan issuing bank retains no stake in the mortgage) or by purchasing credit protection from the GSEs (in which case the banks bear the interest rate risk but can sell it off as mortgage backed securities). In contrast, mortgages above the CLL limit (jumbo mortgages) are either held by the original lender or sold to private securitizers, especially starting in the early 2000s (Adelino et al., 2013; Loutskina and Strahan, 2009; DeFusco and Paciorek, 2017). Even if securitized, the required capital for jumbo loans is much larger than the capital required for non-jumbo loans (Loutskina and Strahan, 2009). Further, because of the reduced liquidity of jumbo loans, the jumbo to non-jumbo mortgage rate spread is higher for financially constrained banks (Loutskina and Strahan, 2009). The latter directly feeds into the cost differences, i. e., the intensive margin. The Federal charters of the GSEs confer significant benefits on them, such as lower funding costs due to their agency status. Hence, GSE-conforming loans that can be purchased by the GSEs enjoy lower interest rates than jumbo loans (Adelino et al.,

[17] Mortgages above 80% loan-to-value require private mortgage insurance to qualify as GSE-eligible.

2015).

Given our interest in sorting into and out of specific tracts, we construct ΔEase in mortgage financing$_{-ct,1990-2000}$, in order to capture how easy it became for households to *move out* of a given tract because properties in nearby tracts became easier to finance fully through GSE-eligible loans between 1990–2000. It thus helps predict the effect on the homeownership patterns in tract ct due to increases in the ease of mortgage financing in the remaining tracts of a given CZ, $-ct$, induced by CLL changes.

In 1990, the GSEs could only purchase or securitize loans below $187,450 ($360,150 for four-family homes) for loans secured by single-family homes. In 2000, this limit increased to $252,700 (and $485,800 for four-family homes). Since homeownership is closely tied to single-family homes, we focus on this cutoff as the baseline and consider the multi-family home cutoffs in robustness checks. With a loan-to-value of 80%, this change in CLL between 1990–2000 corresponds to house price values between $234,312 to $315,872. We use the closest $200,0000–$400,000 bucket from the 1990 Census to calculate a proxy for the fraction of houses in the remaining tracts in the CZ (excluding the tract itself) that became eligible for GSE-conforming mortgages between 1990–2000. (We measure house prices as of 1990 to avoid confounds from possible house price increases due to higher credit supply arising from CLL increases.)

Finally, we percentile-transform the resulting measure of the changes in the ease of mortgage financing since its distribution is highly right-skewed.[18] The percentile-transformed variable, ΔEase of mortgage financing$_{-ct,1990-2000}$, is the instrument we use in our analysis. Panel A in Figure 2 illustrates the variation that we exploit when using this transformed variable in our within-CZ analyses, in relation to the underlying (raw) changes in percent. The figure plots the residuals from regressing the percentile transformed tract-level measure on CZ fixed-effects on the y-axis and the original non-transformed variable on the x-axis.

The figure highlights the variation captured by our analysis: the increase in the ease of mortgage financing in surrounding tracts varies between -2.33 and 2.66 for New York, and between -4.33 and 0.667 for Cedar Rapids.

[18] See Derenoncourt (2019) and Sequeira et al. (2020) for a similar scaling of right-skewed variables.

In our sorting analyses, we exploit the interaction between both tract-level instruments, i. e., the classification as targeted under UAG and the increase in the ease of mortgage financing in the remaining tracts of the same CZ.

4.2 Empirical specifications

Homeownership. On the tract-level level, the baseline model estimates:

$$\text{Change in homeownership}_{ct,1990-2000} = \alpha_{CZ} + \eta \times \text{Targeted tract}_{ct} + \epsilon_{ct}, \tag{4}$$

for census tract ct in state s and commuting zone CZ, and α_{CZ} is the CZ-level fixed effect. The dependent variable is the homeownership change (overall, and separately for Black and white families) between 1990–2000. A CZ is classified as targeted based on the 192 GSE Act. The coefficient η measures the average of the dependent variable in the targeted census tracts. This regression allows us to examine how overall, and specifically for Black and white families, homeownership patterns changed within CZs in targeted census between 1990–2000.

We then estimate the effect of tract-specific variation in access to mortgage financing in the remaining CZ and examine the within-CZ sorting of homeowners across census tract data, using the specification:

$$\begin{aligned}\text{Change in homeownership}_{ct,1990-2000} = {} & \alpha_{CZ} + \eta \times \text{Targeted tract}_{ct} \\ & + \gamma \times \text{Targeted tract}_{ct} \times \Delta\text{Ease of mortgage financing}_{-ct,1990-2000} + \epsilon_{ct},\end{aligned} \tag{5}$$

where ct is a census tract in state s and commuting zone CZ, and α_{CZ} are CZ-level fixed effects. The coefficient η measures the average of the dependent variable in the targeted census tracts. And the coefficient γ measures the impact of a 1 percentile higher ease of mortgage financing in the rest of the CZ, relative to a targeted census tract in the CZ, on the dependent variable. Note, we do not need to include the term for ΔEase of mortgage financing$_{-ct,1990-2000}$ as it is not independently identified. This regression allows us to examine how overall, and specifically for Black and white families, homeownership patterns changed within CZs in targeted census tracts when the remaining tracts in the CZ witness improvements in the ease of mortgage financing between 1990–2000.

A challenge in attributing the sorting due to the classification of tracts as targeted under the

1992 GSE, is that it could reflect general trends in preferences of white households to move away from disadvantaged neighborhoods in the 1990s. Instead, we exploit a source of plausibly random variation that influenced whether a tract was classified as targeted. As detailed in Section 2, targeted tracts have median family income $\leq$ 90% of the MSA median or alternatively $\leq$ 95% of the median family income of non-metropolitan areas in the state. We exploit this cutoff of 90% for MSAs and 95% for non-MSAs in a regression discontinuity (RD) design.

Upward Mobility In the next step, we examine the impact of the change in homeownership between 1990–2000 on children's upward mobility.

We primarily use two different measures of upward mobility: Average upward mobility is the expected mean household income rank for individuals with parents at the 25$^{\text{th}}$ of the parent income distribution. The CZ-level data is from Chetty and Hendren (2018a) and the tract-level data from Chetty et al. (2020). We use a similar measure of upward mobility of the children of Black and white households at the 25^{th} percentile of the income distribution, which is provided by Chetty et al. (2019) and Chetty et al. (2020). For relative comparisons, we also use the racegap variable, defined as the difference in upward mobility between white and Black children. For ease of interpretation we standardize the upward mobility measures, which allows comparisons of Black and white children.

In the tract-level analysis of upward-mobility effects, the empirical specification is analogous to the tract-level analysis of homeownership using the same specifications as in equations (4)-(5) with the dependent variable now replaced by the upward mobility of the children of the families with income distribution at the 25^{th} percentile. The specification analogous to equations (4)-(5) are as follows:

$$Y_{ct} = \alpha_{CZ} + \eta \times \text{Targeted tract}_{ct} + \epsilon_{ct}, \tag{6}$$

$$Y_{ct} = \alpha_{CZ} + \eta \times \text{Targeted tract}_{ct} + \gamma \times \text{Targeted tract}_{ct} \times \Delta\text{Ease of mortgage financing}_{-ct,1990-2000} + \epsilon_{ct}. \tag{7}$$

At the tract-level, we use two different measures of upward mobility Y_{ct}, average upward mobility and upward mobility by race, both for children from low-income families, as provided by

Chetty et al. (2019) and Chetty et al. (2020) and again standardized (z-scored). Alternatively, we directly use the racegap in upward mobility as dependent variable, defined as the difference in upward mobility between white and Black children. The coefficient η measures the average of the dependent variable in the targeted census tracts. And the coefficient γ measures the impact of a 1 percentile higher ease of mortgage financing in the rest of the CZ, relative to a targeted census tract in the CZ, on the dependent variable. These regressions allow us to examine how overall, and specifically for Black versus white families, upward mobility changed within CZs in targeted census tracts when the remaining tracts in the CZ witness improvements in the ease of mortgage financing between 1990–2000.

5 Impact on Homeownership

We start from analyzing the relationship between change in the ease of mortgage access and the change in homeownership between 1990–2000. In particular, we highlight the distinct patterns in the change in Black and white homeownership and the within-CZ sorting during the period.

5.1 Impact on tract-level homeownership changes

We start by analyzing the within-CZ variation in homeownership changes using the models (4)-(5). This estimation assesses the impact of a tract being classified as targeted and the ease of mortgage access in the surrounding tracts on tract-level homeownership.

The results are in Table 2. In column 1, the coefficient of Targeted tract$_{ct}$ indicates a 16.135 pp decline in homeownership between 1990-2000 in targeted tracts. This estimate is broadly consistent with prior literature (Bostic and Gabriel, 2006), that finds only a limited (and even negative) impact of the UAG on homeownership, but it is counter to the intended goal of the UAG, which was specifically aimed at reducing the geographic disparity in homeownership.

Our other estimates help explain why: In column 3 we see that there is a 0.399 pp increase in Black homeownership, but this is accompanied by a 16.533 pp *decline* in homeownership of white households in targeted tracts.

To examine why there is a decline of white homeowners, we introduce the instrument, ΔEase of mortgage financing$_{-ct,1990-2000}$ in column 2. Column 2 reveals an interesting interaction between targeted

tracts when mortgage financing eases in the CZ's remaining tracts. First, as before there is a significant 8.808 pp decline in homeownership in targeted tracts. Second, the coefficient of the interaction term, ΔEase of mortgage financing$_{-ct,1990-2000} \times$ Targeted tract$_{ct}$, reveals that the sorting is particularly pronounced in targeted tracts. A 1 percentile increase in the ease of mortgage access in the remaining census tracts in a CZ yields an additional 0.136 pp decline in homeownership in the targeted tracts.

The patterns for Black homeownership in column 4, are in striking contrast to the overall pattern. First, there is a 0.821 pp *increase*, rather than a decrease, in Black homeowners in targeted tracts. Thus, consistent with the UAG goals, targeting of historically disadvantaged neighborhoods did increase homeownership for Black homeowners. Second, an increase in the ease of mortgage availability in remaining tracts has no significant effect on Black homeownership in targeted tracts.

Column 6 shows that the decline in homeowners in column 1 is entirely driven by the white households. Average white homeownership declined by 9.794 pp in targeted tracts. Importantly, targeted tracts witness an additional 0.124 pp decline in white homeowners between 1990–2000 when the ease of mortgage financing increases by 1 percentile rank. Thus, white homeowners move out when greater ease of mortgage financing in the surrounding neighborhoods allows them to, particularly in targeted neighborhoods, whereas Black homeowners show the opposite pattern and see an increase in homeownership in these tracts.

The CLL-based measure targets properties in the remaining CZ that are at the cusp of jumbo and non-jumbo loans, that is, higher priced properties for relatively wealthy households. As a result, the measure differentially affects Black- and white-owned properties. This differential impact is at the core of our research question: what happens to targeted tracts when possibly wealthier borrowers have easier access to mortgage access? Table 2 illustrates while an increase in the ease of mortgage financing in remaining tracts in the CZ (Ease of mortgage financing$_{-ct,1990-2000}$) is associated with a decline in homeownership, especially for white households. On the other hand, Black homeownership does not see a similar decline in homeownership due to an increase in the ease of mortgage financing in the remaining CZ.

5.2 Additional Results:

The CLL-based measure targets, by construction, tracts with a higher proportion of properties "at the cusp" of jumbo and non-jumbo loans, and hence with relatively high house prices. Thus the tracts with high values capture the effect on wealthier households, and by extension white households. Indeed, nearly 2.46% of white households had houses between 200K to 400K in 1990 compared to 0.46% of Black households.[19] As the focus of our analysis is the long-term consequences for low-income and minority families, it is important to "zoom in" and examine the sorting within CZs. The differential effect on Black versus white owned properties is at the core of our research question. Our analysis captures how the 1990–2000 CLL changes not only increased ease of mortgage access differentially to wealthier households, but also allowed these households to move out of tracts that see homeownership access of poor households' increase between 1990–2000.

We explore this idea further: did access to mortgage financing for wealthier households increase the sorting behaviour? Additionally, where did the households from targeted tracts move? To examine this question we construct additional measures of the increase in the mortgage financing, separately for the most expensive tracts and for the cheapest tracts in each CZ. We calculate these proxies as the fraction of properties that become eligible to be financed by GSE-conforming loans in the top 2 or the bottom 2 deciles of a CZ (in terms of median house prices). The idea is to capture different segments of the targeted population that move out, and it will later be useful in pinning down the mechanism in Section 6.

Table A.5 shows that in both cases the pattern of decline in homeownership in targeted tracts remains unchanged. We observe that the interaction effects remain unchanged. That is, whether we look at increased ease of financing in the most expensive or least expensive tracts, white households tend to leave targeted tracts when outside options become available.

To get the full picture on racial patterns of households', we next examine the impact on renters in Table A.1. The total number of renters in targeted census tracts goes down by 2.697 pp, with the number of white households declining by 3.4 pp compared to the number of black renters which increase by 0.636 pp. The larger effect on white homeowners (16.53 pp in column 5, Table 2)

[19] Based on data from U.S. Census Bureau's 1991 American Housing Survey metropolitan and national samples.

compared to renters (3.4 pp) could be due to homeowners' pecuniary incentive to sell their homes and avoid losses in the house price values (possibly triggered by the household sorting), whereas renters bear no such asset risk (Dorn, 2010). However, household's racial preferences imply that the effect of sorting on white renters is non-zero.

We might be interested in the effect on homeownership rates, a metric that policy has often focused on. We find that homeownership rates declined by 0.310 pp in targeted tracts, driven by the 0.40 pp decline in homeownership rate for white households. However, we find no statistically significant decline in homeownership rate when the surrounding tracts in the CZ witness an increase in ease of mortgage financing. This is not surprising considering that we see a decline in both homeowners (Table 2) and renters (Table A.1) in targeted tracts due to the ease of mortgage mortgage financing, biasing us against finding an effect in homeownership rate, even if there was a flight out of certain tracts. As a result, in all our baseline analysis we normalize the variable of interest (such as change in homeownership or occupied units) by the total number of households (specifically, Black and white households).

To further pin down the sorting, we examine patterns in homeowners and renters that moved post 1990. Although we do not have the break-up by race for this data, there are some striking patterns in homeowners and renters who move in Table A.3. Overall, the number of owners who moved post-1990 (normalized by number of households in 1990) was lower by 19.507 pp compared to a similar *increase* in renters of 19.960 pp post 1990 (columns 1 and 5). The sorting patterns in columns 2 and 4 too similarly reflect that while the number of owners who moved post-1990 was 0.169 pp lower when the remaining tracts in the CZ saw a 1 percentile increase in ease of mortgage financing, the number of renters increased by 0.474 pp.

To get a sense of what explains the large effects on homeowners (Table 2) and renters (Table A.1), we examine the number of housing units built post-1990 in targeted tracts was lower by 11.2 pp, though we see no differential effect when the ease of mortgage financing in the remaining tracts in the CZ declines. As we document in columns 5–6, targeted tracts also saw an increase in renters who moved post-1990 consistent with previous literature that has highlighted that that with age homes transition from owner-occupied to rental properties Rosenthal (2014). Rosenthal

(2014) also highlight how highlighted filtering — the dynamic process by which homes built for higher income families slowly deteriorate and filter down to lower income households — is the primary mechanism determining supply of low-income housing.

Finally in Table A.4, we also document that the number of occupied units (normalized by the number of households in 1990) declined by 14.394 pp (column 1). When we examine the within CZ sorting, while the baseline effect is 9.8 pp in targeted tracts (column 2), there is a 0.085 pp increase when the remaining tracts in the CZ see an increase in the ease of mortgage financing. Correspondingly, the number of vacant units increased in targeted tracts. In columns 3–8, we examine the impact on vacant units. We see that while the vacant units in targeted tracts increased (column 1), they counter-intuitively declined when the ease in mortgage financing increased in surrounding tracts. However, when we zero-in on the vacant for sale units, the interaction term indicates that the vacant for sale units increased when the ease of mortgage financing in surrounding tracts increased.

As a placebo test, we replicate the analysis using the previous decade (1980–1990) and show that there is no similar sorting pattern among Black or white homeowners.

6 Impact on upward mobility

What was the impact of these changes on the upward mobility of children growing up in the affected households? In this section, we estimate the effects on children from low-income families, overall and separately for Black and white families.

6.1 Average upward mobility

Table 3 shows the results of the tract-level analysis. Columns 1 shows the results of the specification in equation (6). Targeted tracts have a 0.803 SD lower upward mobility for children from low income families. This is striking considering the UAG goals were meant to address the geographic disparity in homeowning across neighbourhoods. Column 2 presents estimates from model (7). These estimates directly point to within-CZ sorting across tracts. Targeted tracts see on average a 0.354 SD decline in upward mobility of children from low-income families. Finally, the coefficient estimate of the interacted term indicates that a 1 percentile increase in the ease of

mortgage financing is associated with an additional 0.008 percentile decline in upward mobility of low-income children in targeted tracts. That is, the interquartile range of the instrument measure corresponds to an additional decline in upward mobility of children from low-income families in targeted tracts by 0.408 [=-0.008*(74-23)] SD. These patterns are consistent with the trends in Table 2 where we see that there is significant sorting of (especially white) homeowners away from targeted tracts that witness increases in the ease of mortgage access in the surrounding tracts in the CZ; these same targeted tracts also witness a decline in upward mobility of children.

Given the historical context preceding the 1992 GSE Act and its dual focus on increasing homeownership and decreasing the racial disparity in homeowning, we now examine the impact on race-specific upward mobility for Black and white children from low-income families. we turn to the tract-level analysis and compare the impact on upward mobility of white children relative to the Black children from low-income families residing in the *same* tract. Table **??** shows in column 3 using the specification in equation (6). The upward mobility of Black children is 0.445 SD lower in targeted tracts. Column 4 establishes the sorting pattern. Upward mobility of Black children is 0.311 SD lower in targeted tracts. In addition, the interaction term indicates that when the ease of mortgage financing increases by 1 pp in the remaining CZ, Black children in targeted tracts suffer an additional 0.002 SD decline in upward mobility. Similarly, when we look at the upward mobility of white children from low-income families, in column 6, we see that a 1 percentile increase in the ease of mortgage financing in the remaining CZs is also associated with a decline in upward mobility (0.006 SD). Moreover, this is an average the decline of 0.323 SD in targeted tracts, similar to the the Black children in column 4. Further a 1 percentile increase in the ease of mortgage financing in the remaining CZ leads to a 0.006 SD decline in upward mobility in targeted tracts. Taking the lower of the two interaction estimates, moving from the 25^{th} to the 75^{th} percentile of the instrument measure, upward mobility of children from low-income families is 0.102 SD lower in the targeted tracts.

The similar effects on upward mobility of Black and white children in targeted tracts combined with the overall results in COLUMNS 1–2, suggests that while white households sorting differentially out of targeted tract, those who remain suffer the same adverse effect on their up-

ward mobility. These adverse effects, in turn, could be due to changes in the characteristics of the neighborhoods or alternatively due to changes in the characteristics of the average family that resides in these neighborhoods. Given the similar effects on white and Black children, plausibly place-based effects are driving the results.

As with the homeownership patterns, we next explore whether the effect is driven by the ease of mortgage financing in the cheap or expensive tracts in Table A.8. The coefficients on the interaction terms in Panels A and B indicate that targeted tracts see a similar additional decline in upward mobility of 0.006–0.008 SD, in line with the baseline estimate of 0.007 in column 1 in Panel B in Table 3. Thus, irrespective of whether it was the cheaper or more expensive tracts in the remaining tracts that see eased mortgage financing, children in targeted tracts suffer an additional decline in upward mobility. Similarly, the coefficient on targeted indicates that, again, upward mobility is lower for children in these tracts, consistent with the baseline in Table 3. There is a subsequent cascading effect on remaining tracts due to ease of mortgage finances in more expensive tracts but not due to the cheaper tracts. That is, households (especially white households) move out of targeted tracts irrespective of whether cheap or expensive areas have increases in ease of mortgage financing. However, it is the easing of mortgage finance in richer neighborhoods that drives subsequent sorting.

7 Mechanisms: House prices, local public finance spending, and school quality

Our findings so far attribute the observed lower upward mobility of children in targeted neighborhoods to place-based factors. But what exactly are these factors, and how do they change in response to housing policies? We start by examining the impact on local government spending in different categories to narrow down possible mechanisms that can explain the decline in children's upward mobility. Of particular interest are categories of expenditures over which local governments have greater discretion. We then examine the impact of the housing policies on house prices as they can affect local public finance through property taxes, which depend on property value assessments and local house prices, or sales tax revenues, which depend on effects on

local consumption and employment (Mian and Sufi, 2014; Mian et al., 2020).

House prices. We start by examining the impact on house prices. In columns 1–2 in Table 4, we look at the impact of on house prices. We use log of median house prices in 2000 as the dependent variable and re-estimate the specifications from equations (6)-(7). The reduced-form estimates in column 1 shows that targeted tracts have 0.424% lower median house price values in 2000. In column 2, we see that Targeted tracts have 30% lower house prices. Further, targeted census tracts see an additional 0.2% decline in house prices when the ease of mortgage financing in the surrounding tracts in the CZ increases by 1 percentile, as the interaction term indicates. That is, the tract-level analysis reveals significant within-CZ differences in house price effects.

As we documented in Table 3, targeted tracts saw declines in homeownership, especially when the ease of mortgage financing in other tracts in the same CZ increased and consistent with the declining house prices in these neighborhoods and the house price patterns are consistent with this broad pattern.

School revenue from local sources. We now investigate whether house price declines can be linked to lower shares of public finance through declines in local revenues for schools. We hypothesize that house price declines in targeted tracts can lead to a decline in local school revenues either through the direct impact of lower house prices (e.g. property taxes) or through an indirect impact on the local economy (Mian and Sufi, 2014) that affects sales and other local tax revenue. Prior literature has shown that house prices declines can have a direct effect on housing net worth that reduces consumer demand either through wealth effects (Mian et al., 2013) or through tighter borrowing constraints (due to the fall in property values that are usually used as collateral) that can in turn affect the local economy and employment.

We obtain data on school revenue from local sources from the National Center for Education Statistics' Common Core of Data data for public schools and calculate revenue from local sources per student from the school-district data for the 1996-1997 fiscal year (as it is closest to our baseline period of 1990–2000).[20] We map this data to the tract-level and look at the impact on average rev-

[20]Specifically, the school local revenues include property taxes, general sales taxes, public utility taxes, individual and corporate income taxes, other taxes, revenue from other school systems, cities and counties, tuition fees from pupils and parents, school lunch, textbook sales and rentals, student activity receipts, student fees, other sales services, interest

enue from local sources per student in columns 3–4 of Table 4, corresponding to the specifications in equations equations (6)-(7). The dependent variable is z-scored. Column 3 shows that targeted tracts have a 0.315 SD lower local school revenue per student. Column 4 suggests that targeted tracts see on average a 0.005 SD decline in school revenue from local sources per student for a 1 percentile increase in the ease of mortgage financing between 1990–2000 in remaining tracts in the CZ. Almost all of the decline in school revenue in targeted tracts is driven by the increase in mortgage financing of the remaining tracts in the CZ, closely tying our finding to the Black and white household sorting in Table 3.

School Quality. We now examine whether the lower school revenue from local sources are reflected in school quality. As before, the regression specifications correspond to equations equations (6)-(7), with the dependent variable replaced by our measure of school quality.

To measure school quality, we use a proxy for mean class size and map it to CZ-level student-to-teacher ratios. This is an input-based measure of school quality and higher values correspond to larger class sizes or poorer quality schools. The measure is suitable for our purposes since our analysis requires granular data at the tract level. We use the mean class sizes based on data from the National Center for Education Statistics (NCES) for the 1996-97 school year, closest to the period of 1990–2000 that we are interested in. Data is provided at the school-level with an identification of the zip code. We then map the zip codes to the census tracts to get the average student-to-teacher ratio. We follow Chetty et al. (2015) in using the CZ-level student-to-teacher ratio to measure school quality. We use the standardized (z-scored) measure of the student-to-teacher ratio so that the estimates in columns 5–6 in Table 4 can be interpreted in standard deviations. While there is no impact on average on targeted tracts (in column 6), the interaction between the two reveals significant heterogeneity. Column 6 shows that school quality is lower in targeted census tracts when the ease of mortgage financing increases in remaining tracts in the CZ. That is, a 1 percentile increase in the ease of mortgage financing in the surrounding tracts in a CZ is associated with a 0.004 SD increase in the student-to-teacher ratio (poorer quality schools).

To sum, we find the evidence of lower house prices, lower school revenue from local sources,

earnings, and miscellaneous.

and poorer quality schools in targeted tracts that witness an increase in the ease of mortgage financing in the the remaining tracts in the CZ. These tract-level trends mirror the within-CZ differences in homeownership changes and the sorting of Black and white homeowners.

8 Conclusion

In this paper we relate the homeownership policies of the 1990s that increased homeowners' ease of mortgage financing to segregation and children's upward mobility. While policy has focused on increasing homeownership rates for decades, especially in low-income areas, the benefits of these policies and of the ensuing homeownership changes have been difficult to determine. We use the increase in the ease of mortgage financing and classification of disadvantaged neighborhoods as targeted under UAG in the 1992 GSE Act to show that Black homeownership increased, whereas white homeownership decreased, in targeted neighborhoods, especially when the ease of mortgage financing increased in the remaining tracts in the CZ. Importantly, segregation, as measured by racial, income, homeownership segregation and urban sprawl increased. Upward mobility deteriorated among both Black and white children in targeted tracts, especially when the remaining tracts in the CZ saw an increase in mortgage availability. The adverse consequences on children's upward mobility arise from the sorting and deteriorating place-based factors. We find evidence for a potential channel operating through declining house prices, lower school revenues from local sources (which include property taxes and other taxes) and poorer school quality. Our paper highlights how geographically targeted homeownership policies can inadvertently increase geographic disparity in homeownership within CZs, worsening children's upward mobility.

The results in this paper challenges, to some extent, the promotion of homeownership in low-income census tracts as sorting effects and deteriorating place-based factors appear to overwhelm any positive implications. Perhaps alternate policies that encourage investment in human capital and "moving out" to better neighborhoods have higher marginal value in achieving the "American Dream" in the sense of opportunity for children, their education, and their careers. The analysis suggests that bans on exclusionary zoning are necessary and perhaps even the introduction of inclusionary zoning requirements, such as those implemented in New Jersey and Mas-

sachusetts would be more beneficial for improving children's outcomes. Additionally, as Rothstein (2017) suggests, homeownership policies should explicitly subsidize homeownership in the suburbs from which they were historically banned.

Note that our findings do not imply that policy should not target low homeownership among Black households. Instead such policies ought to be coupled with the necessary investment in infrastructure and public finance, particularly in education. Indeed, preliminary evidence from the creation of "Opportunity Zones" from the "Tax Cuts and Jobs Act of 2017" that created tax advantages for investing in business or real estate targeted low-income census tracts have shown promising results on employment (Arefeva et al., 2020). Such concurrent investment in underserved neighborhoods could diminish the adverse effects of geographically targeted homeownership policies on children's upward mobility that we observe.

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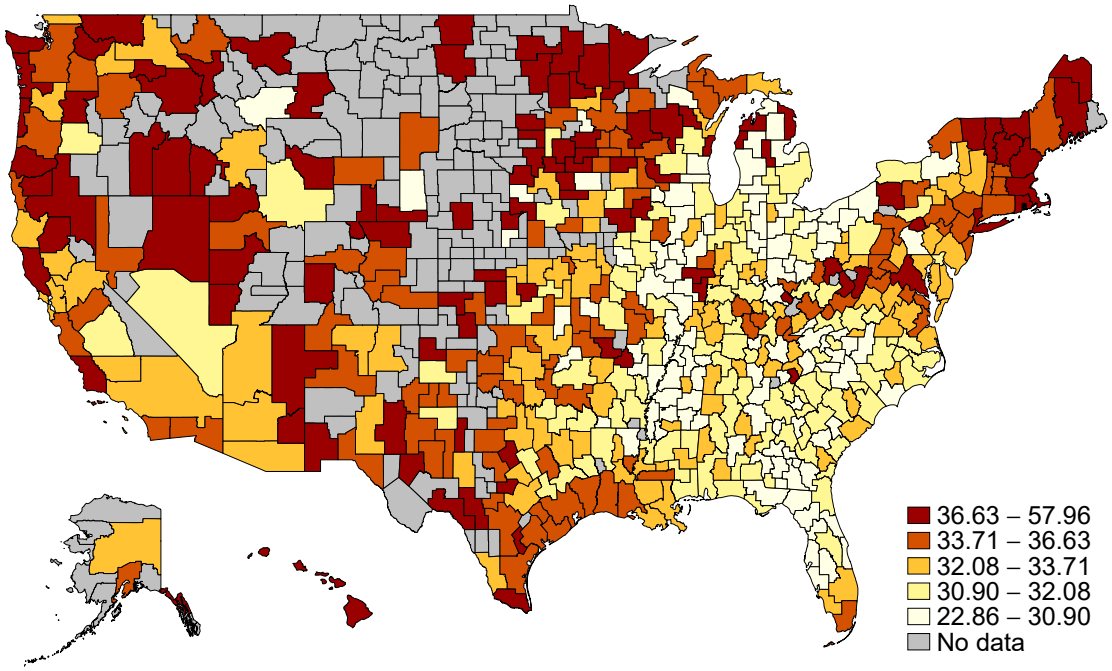
Figure 1
Map of Upward Mobility

This figure shows the heat maps for the average upward mobility for Black (Panel A) and white (Panel B) households at the CZ level. Data are divided into 5 quintiles for each racial group as shown. Average upward mobility for Black (white) children is the expected mean household income rank for households with parents' income at the 25th percentile of the parent income distribution. Data on average upward mobility by Black and white children is at the CZ-level from Chetty et al. (2019) and measures income from IRS tax returns for cohorts and parents of cohorts, for cohorts born between 1978 and 1983. Cohort earnings are measured using mean incomes in 2014-2015, and parents' incomes are measured using mean income over five years: 1994, 1995, and 1998-2000.

Panel A: Black Households



Panel B: White Households

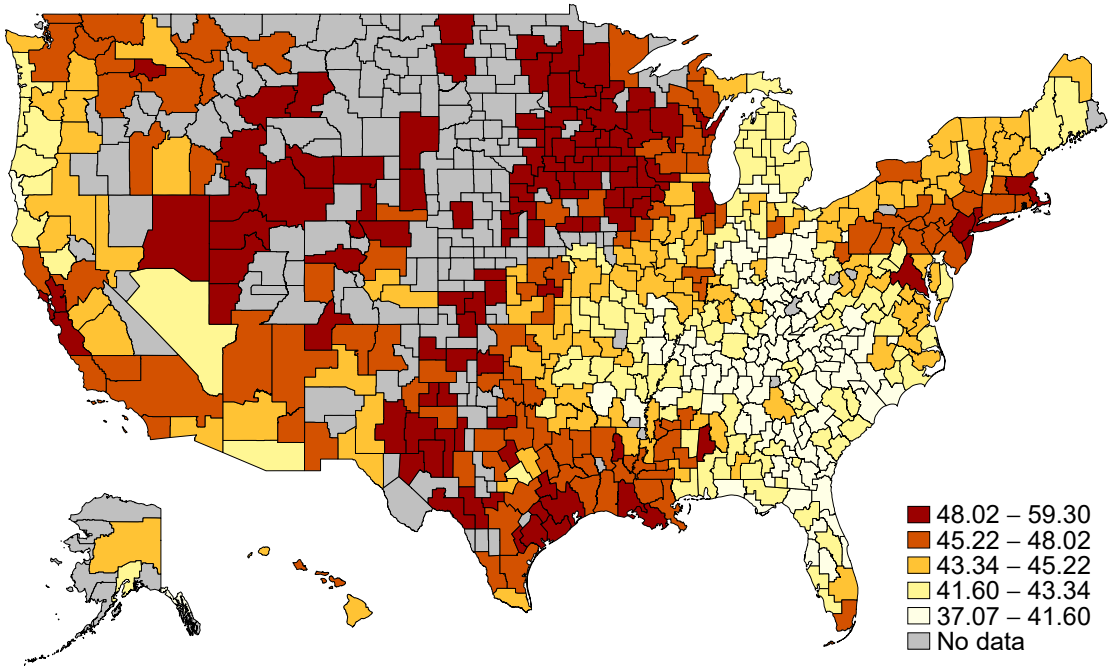


Figure 2
Within-CZ Tract-level variation: Percentiles of ease of mortgage financing variable

This figure shows the quantile function of of the increase in the ease of mortgage financing between 1990–2000 at the tract-level, after controlling for CZ-fixed effects. ΔEase of mortgage financing$_{-ct,1990-2000}$ is plotted in % on the x-axis. ΔEase of mortgage financing$_{-ct,1990-2000}$ is the fraction of houses that become eligible to be financed by GSE-conforming loans due to the change in the CLL between 1990–2000 in the remaining tracts in a CZ excluding the census tract being measured. The percentile rank of ΔEase of mortgage financing$_{-ct,1990-2000}$ is regressed against CZ-level fixed effects, and its residuals are plotted on the y-axis. Data is based on Census 1990.

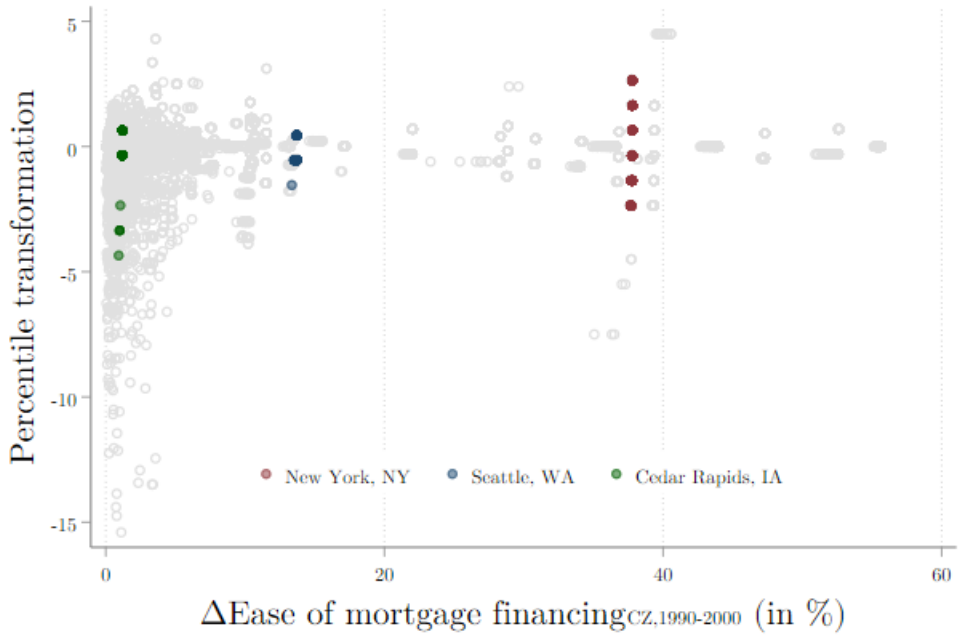


Table 1
Descriptive Statistics

Panels A and B show the summary statistics for select variables in our analyses on the census-tract and on the CZ level, respectively. Panel C shows additional statistics on demographic characteristics, housing, and other variables. Change in homeownership between 1990–2000 is the change in the number of homeowners from 1990 to 2000 relative to the total number of renters and homeowners in 1990 at the tract-level in Panel A and CZ-level in Panel B. Change in Black (white) homeownership is the change in the number of Black (white) homeowners from 1990 to 2000 relative to the total number of renters and homeowners in 1990 at the tract-level in Panel A and CZ-level in Panel B. ΔEase of mortgage financing$_{-ct,1990-2000}$ at the census tract level is the percentile of the fraction of houses that become eligible to be financed by GSE-conforming loans due to the change in the CLL between 1990–2000 in the remaining tracts in a CZ excluding the census tract being measured. ΔEase of mortgage financing$_{CZ,1990-2000}$ is the fraction of houses (shown both as % and as percentile rank) that become eligible to be financed by GSE-conforming loans due to the change in the conforming loan limit (CLL) between 1990–2000. Targeted tract in Panel A takes a value of 1 for tracts classified as being under the "Underserved Areas Goal" based on Housing and Urban (HUD) classification in 1996. Average upward mobility at the 25th and the 75th percentile is the expected mean household income rank for individuals with parents at the 25th and the 75th percentile of the parents' income distribution, respectively. Data on average upward mobility at the tract-level(Panel A) and at the CZ-level(Panel B), is from Chetty and Hendren (2018a) and Chetty et al. (2020), respectively. Average upward mobility at the 25th and the 75th percentile for Black and white children at the tract-level in Panel A and at the CZ-level in Panel B is calculated as the expected mean household income rank for households with parents' income at the 25th and the 75th percentile of the parents' income distribution. Data for the CZ-level and tract-level respectively is from Chetty et al. (2019) and Chetty et al. (2020) Data from Chetty et al. (2019) and Chetty et al. (2020) is for cohorts born between 1978 and 1983. Cohort earnings are measured using mean incomes in 2014-2015, and parents' incomes are measured using mean income over five years: 1994, 1995, and 1998-2000. Data from Chetty and Hendren (2018a) is for cohorts born between 1980 and 1986. Parents' income is measured as of 1996–2000. All income data for cohorts and parents of cohorts are from IRS tax records. Log of the median house price value is for all owner-occupied houses and from the 2000 Census. The student-to-teacher ratio and school revenues from local sources per 1000 students are calculated using National Center for Education Statistics' Common Core of Data for the fiscal year 1996–97. Remaining data is from the 1990 and 2000 Census. All tract-level data excluding the upward mobility measures are winsorized at the 1% level. ΔHomeownership Rate$_{CZ,1990-2000}$ in Panel C is the change in the homeownership rate in 2000 (homeowners to renters plus homeowners in 2000) minus the homeownership rate in 1990 (analogously defined). For Black households this is the change in the Black homeownership rate in 2000 (Black homeowners to Black renters plus Black homeowners in 2000) minus the Black homeownership rate in 1990 (analogously defined). Change in white homeownership rate between 1990–2000 is analogously defined. School quality measured using mean of district-level 3rd-grade math test scores from the Stanford Education Data Archive (in 2013). following Chetty et al. (2020). Following Chetty et al. (2020), we map from the district-level to tract-level, using school-catchment areas (attendance boundaries) from 2017, weighting by the proportion of land area covered by a given school-district in a tract.

Panel A: Summary Statistics at the tract level

	N	Mean	SD	p25	p50	p75
Change in homeownership$_{ct,1990-2000}$ (in %)	36054	37.28	96.57	-0.72	7.57	32.01
Change in Black homeownership$_{ct,1990-2000}$ (in %)	36054	2.50	8.41	0.00	0.23	1.33
Change in white homeownership$_{ct,1990-2000}$ (in %)	36054	34.54	91.80	-0.88	6.46	28.77
ΔEase of mortgage financing$_{-ct,1990-2000}$ (in %)	36338	9.84	13.98	1.26	3.00	10.72
ΔEase of mortgage financing$_{-ct,1990-2000}$ (in percentile rank)	36338	48.31	28.84	23.00	44.00	74.00
Targeted tract$_{ct}$ (indicator)	36338	0.51	0.50	0	1	1
Average Upward mobility (25th percentile)	36338	40.32	5.64	36.39	39.98	44.01
Average Upward mobility (75th percentile)	36338	55.12	5.69	52.07	55.73	58.96
Black Upward mobility (25th percentile)	18484	33.60	5.79	30.02	32.89	36.33
Black Upward mobility (75th percentile)18484	44.04	9.83	38.52	43.70	49.11	
White Upward mobility (25th percentile)	34719	44.31	6.02	40.34	43.94	47.98
White Upward mobility (75th percentile)	34719	57.79	6.02	54.97	58.25	61.30
Log (House prices$_{2000}$)	35748	11.54	0.62	11.13	11.46	11.90
School revenues from local sources per student (in '000s)	34551	2.79	1.72	1.59	2.40	3.32
Mean test ratio	32845	51.93	13.56	43.50	53.31	61.00
Housing units in 1990	36054	1,697	975	1098	1569	2140

Table 1
Descriptive Statistics (continued)

Panel B: Summary Statistics at the CZ level

	N	Mean	SD	p25	p50	p75
Change in homeownership$_{CZ,1990-2000}$ (in %)	551	10.50	8.06	5.15	9.52	14.19
Change in Black homeownership$_{CZ,1990-2000}$ (in %)	551	0.99	1.75	0.02	0.17	1.17
Change in white homeownership$_{CZ,1990-2000}$ (in %)	551	9.51	7.92	4.46	8.08	13.19
Average Upward mobility (25th percentile)	551	45.67	4.85	42.36	45.42	48.26
Average Upward mobility (75th percentile)	551	59.30	3.32	56.89	59.05	61.40
Childhood Exposure effect (25th percentile)	551	0.14	0.55	-0.17	0.05	0.36
Childhood Exposure effect (75th percentile)	551	0.10	0.64	-0.19	0.05	0.34
Black Upward mobility (25th percentile	551	34.14	4.53	31.23	32.86	35.62
Black Upward mobility (75th percentile)	551	46.41	6.32	42.88	45.14	48.76
White Upward mobility (25th percentile)	551	44.86	3.94	42.04	44.06	47.20
White Upward mobility (75th percentile	551	60.16	3.07	57.97	59.81	62.02
Housing units in 1990	551	164,584	382,079	28,059	56,450	138,379

Panel C: Demographic characteristics, housing and other variables

	N	Mean	SD	p25	p50	p75
ΔHomeownership Rate$_{CZ,1990-2000}$	551	1.91	1.63	0.89	1.82	2.86
ΔHomeownership Rate$_{CZ,1990-2000}$: Black	551	-0.48	10.26	-3.46	-0.09	2.91
ΔHomeownership Rate$_{CZ,1990-2000}$: White	551	2.18	1.65	1.13	2.09	3.16
House price growth 1980-1990	70.24	47.76	551	43.17	61.11	74.81
Median House prices, 1990 (in $)	551	75197	48717	48833	58675	72957
Median Household Income, 1990 (in $)	551	32489	6430	26563	32505	37181
Share Black, 1990 (in%)	551	13.37	8.50	6.76	10.28	19.59
Share Below Poverty Line, 1990 (in%)	551	12.44	4.41	8.93	11.75	14.74
Share of Single-Headed Households with Children 1990	551	21.29	2.31	20.03	21.12	22.67
Educational mobility, 1990*	551	41.79	5.88	38.30	41.69	44.93
% high-school graduates: white, 1990	551	44.97	5.11	41.95	44.78	46.71
% high-school graduates: Black, 1990	551	34.79	10.44	29.17	33.62	38.46

*Only available for 195 CZs

Panel D: Targeted and non-targeted

	1990			2000		
	(1)	(2)	(3)	(1)	(2)	(3)
	Coefficient	R^2	N	Coefficient	R^2	N
%White	-0.197^{***}	0.470	35988	-0.210^{***}	0.531	35988
%<School educ.	0.153^{***}	0.492	35963	0.147^{***}	0.471	35982
% SF detached	-0.156^{***}	0.286	35988	-0.156^{***}	0.280	35977
%Poor	0.099^{***}	0.439	35959	0.108^{***}	0.405	35976
%> 50 years	-0.009^{*}	0.221	35988	-0.029^{***}	0.238	35988

*Only available for 195 CZs

Table 2
Impact on change in homeownership between 1990–2000

This table presents the impact of the increase in the ease of mortgage financing on change in homeownership between 1990–2000 at tract-level. The dependent variable in columns 1–2 is the change in the number of homeowners from 1990 to 2000 relative to the total number of renters and homeowners in 1990. In columns 2–3 (4–5) the dependent variable is the change in homeownership of Black (white) households from 1990 to 2000 relative to the total number of renters and homeowners. ΔEase of mortgage financing$_{-ct,1990-2000}$ at the census tract level is the percentile of the fraction of houses that become eligible to be financed by GSE-conforming loans due to the change in the conforming loan limit (CLL) between 1990–2000 in the remaining tracts in a CZ excluding the census tract being measured. Targeted tract is 1 if the tract is classified as being under the "Underserved Areas Goal" based on Housing and Urban (HUD) classification in 1996. Control variables included are the house prices in 1990, median house price growth between 1980–1990, fraction of high school graduates among Black households and white households separately in 1990 in a CZ. All columns include CZ-fixed effects. Observations are weighted by the total number of housing units as of 1990. The dependent variables for the regressions are winsorized at the 1% level. Standard errors are clustered at the CZ-level.

	(1)	(2)	(3)	(4)	(5)	(6)
	Change in Homeownership 1990–2000					
	Total		Black		White	
Targeted tract$_{ct}$	-16.135***	-8.808***	0.378*	0.821***	-16.533***	-9.794***
	(0.939)	(1.541)	(0.200)	(0.300)	(0.837)	(1.539)
Δ Ease in mortgage financing$_{1990-2000,-ct}$ $\times$ Targeted tract$_{ct}$		-0.136***		-0.008		-0.125***
		(0.023)		(0.007)		(0.025)
R^2	0.108	0.110	0.164	0.165	0.117	0.118
CZ FE	Y	Y	Y	Y	Y	Y
N	35943	35943	35943	35943	35943	35943

Standard errors in parentheses; * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 3
Impact on upward mobility of low-income households

This table presents the results on the average low-income household income rank. The dependent variable in column 1 and 2 is the average upward mobility measure. In columns 2–3 (4–5) the dependent variable is the average upward mobility measure of Black (white) households. ΔEase of mortgage financing$_{-ct,1990-2000}$ at the census tract level is the percentile of the fraction of houses that become eligible to be financed by GSE-conforming loans due to the change in the conforming loan limit (CLL) between 1990–2000 in the remaining tracts in a CZ, excluding the census tract being measured. Targeted tract is 1 if the tract is classified as being under the "Underserved Areas Goal" based on Housing and Urban (HUD) classification in 1996. The dependent variable in all columns is the average low-income household income rank. Average upward mobility at the 25th percentile is the expected mean household income rank for individuals with parents at the 25th percentile of the parents' income distribution, respectively. Data on average upward mobility at the tract-level is from Chetty et al. (2020), for cohorts born between 1978 and 1983. Cohort earnings are measured using mean incomes in 2014-2015 and parents' income is measured using mean income over five years: 1994, 1995, and 1998–2000. Dependent variables have been standardized (z-scored). CZ-level fixed effects are included. Observations are weighted by the total number of housing units in 1990. Standard errors are clustered at the CZ level.

	(1)	(2)	(3)	(4)	(5)	(6)
	Upward mobility					
	Total		Black		White	
Targeted tract$_{ct}$	-0.803***	-0.354***	-0.445***	-0.311***	-0.627***	-0.323***
	(0.066)	(0.078)	(0.026)	(0.056)	(0.036)	(0.047)
Δ Ease in mortgage financing$_{1990-2000,-ct}$ $\times$ Targeted tract$_{ct}$		-0.008***		-0.002***		-0.006***
		(0.002)		(0.001)		(0.001)
R^2	0.477	0.491	0.198	0.199	0.440	0.447
CZ FE	Y	Y	Y	Y	Y	Y
Controls	Y	Y	Y	Y	Y	Y
N	35943	35943	18215	18215	34358	34358

Table 4
Channel: House prices, school quality, and school revenue from local sources

This table presents the tract-level estimates of the impact of the change in homeownership between 1990–2000 on house prices (columns 1–2), local school revenue per student (columns 3–4) and school quality (columns 5–6). Log of the median house price value is for all owner-occupied houses and from the 2000 Census. The student-to-teacher ratio and school revenues from local sources per 1000 students are calculated using National Center for Education Statistics' Common Core of Data for the fiscal year 1996–97.The dependent variable in column 6 is school quality measured using mean of district-level 3rd-grade math test scores from the Stanford Education Data Archive (in 2013). following Chetty et al. (2020). Following Chetty et al. (2020), we map from the district-level to tract-level, using school-catchment areas (attendance boundaries) from 2017, weighting by the proportion of land area covered by a given school-district in a tract. Dependent variables in columns 1–2 and 5–6 have been standardized (z-scored). Fixed effects and control variables are included as indicated. Control variables included are the house prices in 1990, house price growth between 1980–1990, fraction of high school graduates among Black households and white households separately in 1990 in a CZ. Observations are weighted by the total number of housing units in 1990. Standard errors are clustered at the CZ level. Remaining variables and details on the empirical specification are as described in Table 3.

	(1)	(2)	(3)	(4)	(5)	(6)
	Log (House prices)$_{2000}$		Local school revenue per student (in SD)		School quality: Student-teacher ratio	
Targeted tract$_{ct}$	-0.424***	-0.303***	-0.315***	-0.026	-0.004	-0.235***
	(0.017)	(0.021)	(0.068)	(0.083)	(0.036)	(0.039)
Δ Ease in mortgage financing$_{1990-2000,-ct}$ $\times$ Targeted tract$_{ct}$		-0.002***		-0.005**		0.004***
		(0.000)		(0.003)		(0.001)
R^2	0.702	0.705	0.668	0.674	0.780	0.784
CZ FE	Y	Y	Y	Y	Y	Y
Controls	Y	Y	Y	Y	Y	Y
N	35664	35664	34438	34438	32740	32740

Standard errors in parentheses; * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Mortgage Policies and their Effects on Racial Segregation and Upward Mobility

Online Appendix

Table A.1
Impact on change in renters between 1990–2000

This table presents the impact of the increase in the ease of mortgage financing on change in renters between 1990–2000 at tract-level. The dependent variable in columns 1–2 is the change in the number of homeowners from 1990 to 2000 relative to the total number of renters and homeowners in 1990. In column 3–4 (5–6) the dependent variable is the change in renters of Black (white) households from 1990 to 2000 relative to the total number of renters and homeowners. ΔEase of mortgage financing$_{-ct,1990-2000}$ at the census tract level is the percentile of the fraction of houses that become eligible to be financed by GSE-conforming loans due to the change in the conforming loan limit (CLL) between 1990–2000 in the remaining tracts in a CZ excluding the census tract being measured. Targeted tract is 1 if the tract is classified as being under the "Underserved Areas Goal" based on Housing and Urban (HUD) classification in 1996. Control variables included are the house prices in 1990, median house price growth between 1980–1990, fraction of high school graduates among Black households and white households separately in 1990 in a CZ. All columns include CZ-fixed effects. Observations are weighted by the total number of housing units as of 1990. The dependent variables for the regressions are winsorized at the 1% level. Standard errors are clustered at the CZ-level.

	(1)	(2)	(3)	(4)	(5)	(6)
	Change in Homeownership 1990–2000					
	Total		Black		White	
Targeted tract$_{ct}$	-2.697***	-0.342	0.636***	0.799**	-3.400***	-1.280**
	(0.623)	(0.785)	(0.215)	(0.317)	(0.446)	(0.546)
Δ Ease in mortgage financing$_{1990-2000,-ct}$ $\times$ Targeted tract$_{ct}$		-0.044**		-0.003		-0.039***
		(0.019)		(0.008)		(0.011)
R^2	0.085	0.086	0.090	0.090	0.103	0.104
CZ FE	Y	Y	Y	Y	Y	Y
N	35943	35943	35943	35943	35943	35943

Standard errors in parentheses; * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table A.2
Impact on change in homeownership rate between 1990–2000

This table presents the impact of the increase in the ease of mortgage financing on change in homeownership rate between 1990–2000 at tract-level. The dependent variable in columns 1–2 is the change in the homeownership rate from 1990 to 2000. In column 3–4 (5–6) the dependent variable is the change in Black (white) homeownership rate from 1990 to 2000. ΔEase of mortgage financing$_{-ct,1990-2000}$ at the census tract level is the percentile of the fraction of houses that become eligible to be financed by GSE-conforming loans due to the change in the conforming loan limit (CLL) between 1990–2000 in the remaining tracts in a CZ excluding the census tract being measured. Targeted tract is 1 if the tract is classified as being under the "Underserved Areas Goal" based on Housing and Urban (HUD) classification in 1996. Control variables included are the house prices in 1990, median house price growth between 1980–1990, fraction of high school graduates among Black households and white households separately in 1990 in a CZ. All columns include CZ-fixed effects. Observations are weighted by the total number of housing units as of 1990. The dependent variables for the regressions are winsorized at the 1% level. Standard errors are clustered at the CZ-level.

	(1)	(2)	(3)	(4)	(5)	(6)
	Delta Homeownership Rate 1990–2000					
	Total		Black		White	
Targeted tract$_{ct}$	-0.310***	-0.139	0.761*	1.480**	-0.402***	-0.089
	(0.112)	(0.162)	(0.424)	(0.722)	(0.123)	(0.170)
Δ Ease in mortgage financing$_{1990-2000,-ct}$ $\times$ Targeted tract$_{ct}$		-0.003		-0.013		-0.006
		(0.004)		(0.014)		(0.004)
R^2	0.075	0.075	0.048	0.049	0.056	0.056
CZ FE	Y	Y	Y	Y	Y	Y
N	35942	35942	31504	31504	35880	35880

Standard errors in parentheses; * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table A.3
Impact on post-1990 units built and households (owners and renters) that moved

This table presents the impact of the increase in the ease of mortgage financing on units built post-1990, owners who moved post-1990, and renters who moved post-1990 as of 2000 at tract-level. The dependent variable in column 1 and 4 is the number of units built post 1990 (as of 2000) relative to the total households in 1990. In columns 2 and 5 (3 and 6) the dependent variable is the number of owner-occupied (renter-occupied) units where the household moved post-1990 as of 2000 relative to the total number of households in 1990. ΔEase of mortgage financing$_{-ct,1990-2000}$ at the census tract level is the percentile of the fraction of houses that become eligible to be financed by GSE-conforming loans due to the change in the conforming loan limit (CLL) between 1990–2000 in the remaining tracts in a CZ excluding the census tract being measured. Targeted tract is 1 if the tract is classified as being under the "Underserved Areas Goal" based on Housing and Urban (HUD) classification in 1996. Control variables included are the house prices in 1990, median house price growth between 1980–1990, fraction of high school graduates among Black households and white households separately in 1990 in a CZ. All columns include CZ-fixed effects. Observations are weighted by the total number of housing units as of 1990. The dependent variables for the regressions are winsorized at the 1% level. Standard errors are clustered at the CZ-level.

	(1)	(2)	(3)	(4)	(5)	(6)
	Owners who moved post-1990		Renters who moved post-1990		Units built post-1990	
Targeted tract$_{ct}$	-19.507***	-10.394***	19.960***	-5.661***	-11.195***	-11.273***
	(1.100)	(1.522)	(2.862)	(1.790)	(1.005)	(1.552)
Δ Ease in mortgage financing$_{1990-2000,-ct}$ $\times$ Targeted tract$_{ct}$		-0.169***		0.474***		0.001
		(0.027)		(0.041)		(0.030)
R^2	0.184	0.186	0.234	0.260	0.202	0.202
CZ FE	Y	Y	Y	Y	Y	Y
N	35943	35943	35943	35943	35943	35943

Standard errors in parentheses; * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table A.4
Impact on change in occupied and vacant units between 1990–2000

This table presents the impact of the increase in the ease of mortgage financing on change in occupied and vacant units between 1990–2000 at tract-level. The dependent variable in column 1 and 5 is the change in the number of occupied units from 1990 to 2000 relative to the total number of renters and homeowners in 1990. In columns 2 and 6 the dependent variable is the change in the number of vacant units from 1990 to 2000 relative to the total number of renters and homeowners in 1990. In columns 3 (4) and 7 (8) the dependent variable is the change in the number of vacant-for-sale (vacant-for-rent) units from 1990 to 2000 relative to the total number of renters and homeowners in 1990. ΔEase of mortgage financing$_{-ct,1990-2000}$ at the census tract level is the percentile of the fraction of houses that become eligible to be financed by GSE-conforming loans due to the change in the conforming loan limit (CLL) between 1990–2000 in the remaining tracts in a CZ excluding the census tract being measured. Targeted tract is 1 if the tract is classified as being under the "Underserved Areas Goal" based on Housing and Urban (HUD) classification in 1996. Control variables included are the house prices in 1990, median house price growth between 1980–1990, fraction of high school graduates among Black households and white households separately in 1990 in a CZ. All columns include CZ-fixed effects. Observations are weighted by the total number of housing units as of 1990. The dependent variables for the regressions are winsorized at the 1% level. Standard errors are clustered at the CZ-level.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Change in units between 1990–2000							
	Occupied		Vacant					
			All		For Sale		For Rent	
Targeted tract$_{ct}$	-14.394***	-9.814***	0.740**	1.739***	0.198***	-0.251***	-0.215	-0.002
	(1.380)	(2.057)	(0.316)	(0.514)	(0.073)	(0.072)	(0.142)	(0.185)
Δ Ease in mortgage financing$_{1990-2000,-ct}$		-0.085**		-0.018**		0.008***		-0.004
$\times$ Targeted tract$_{ct}$		(0.035)		(0.009)		(0.002)		(0.005)
R^2	0.123	0.123	0.167	0.167	0.155	0.159	0.151	0.152
CZ FE	Y	Y	Y	Y	Y	Y	Y	Y
N	35943	35943	35943	35943	35943	35943	35943	35943

Standard errors in parentheses; * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table A.5
Using tract-level variation based on CLL cutoffs of expensive and inexpensive tracts: Homeownership

This table presents the impact of the increase in the ease of mortgage financing in the most inexpensive tracts in a CZ in Panel A and most expensive tracts in a CZ in Panel B on change in homeownership between 1990–2000.The dependent variable in column 1 is the change in homeownership between 1990–2000 defined as the number of homeowners in 2000 minus the number of homeowners in 1990 relative to the total number of renters and homeowners in 1990. In columns 2 and 3 the dependent variable is the change in homeownership of black (white) households from 1990 to 2000 relative to the total number of renters and homeowners in both Panel A and B. Change in homeownership between 1990–2000 is instrumented with ΔEase of mortgage financing$^{Inexpensive}_{-ct,1990-2000}$. ΔEase of mortgage financing$^{Inexpensive}_{-ct,1990-2000}$ is the percentile of the fraction of houses that become eligible to be financed by GSE-conforming loans due to the change in the CLL between 1990–2000 (excluding the census tract being measured) in the bottom 2 quintiles of tract-level median house prices in a CZ, in both panels. Targeted tract is 1 if the tract is classified as being under the "Underserved Areas Goal" based on Housing and Urban (HUD) classification as of 1996. Control variables included are the house prices in 1990, house price growth between 1980–1990, fraction of high school graduates among Black households and white households in 1990 in a CZ. All columns include CZ-fixed effects and observations are weighted by the total number of housing units in 1990. The dependent variables are winsorized at the 1% level. Standard errors are clustered at the CZ-level.

Panel A : Inexpensive tracts

	(1)	(2)	(3)
	Change in Homeownership 1990–2000		
	Total	Black	White
Targeted tract$_{ct}$	-9.354***	0.809**	-10.304***
	(1.654)	(0.313)	(1.606)
Δ Ease in mortgage financing$_{1990-2000,-ct}$ $\times$ Targeted tract$_{ct}$	-0.124***	-0.008	-0.114***
	(0.024)	(0.007)	(0.024)
R^2	0.110	0.165	0.118
CZ FE	Y	Y	Y
N	35670	35670	35670

Panel B: Expensive tracts

	(1)	(2)	(3)
	Change in Homeownership 1990–2000		
	Total	Black	White
Targeted tract$_{ct}$	-8.898***	0.813***	-9.879***
	(1.521)	(0.296)	(1.519)
Δ Ease in mortgage financing$_{1990-2000,-ct}$ $\times$ Targeted tract$_{ct}$	-0.134***	-0.008	-0.124***
	(0.023)	(0.007)	(0.025)
R^2	0.110	0.165	0.118
CZ FE	Y	Y	Y
N	35670	35670	35670

Table A.6
Cascading effect using tract-level variation based on CLL cutoffs of expensive and inexpensive tracts: Homeownership

This table presents the impact of the increase in the ease of mortgage financing in the most inexpensive tracts in a CZ in Panel A and most expensive tracts in a CZ in Panel B on change in homeownership between 1990–2000.The dependent variable in column 1 is the change in homeownership between 1990–2000 defined as the number of homeowners in 2000 minus the number of homeowners in 1990 relative to the total number of renters and homeowners in 1990. In columns 2 and 3 the dependent variable is the change in homeownership of black (white) households from 1990 to 2000 relative to the total number of renters and homeowners in both Panel A and B. Change in homeownership between 1990–2000 is instrumented with ΔEase of mortgage financing$^{Inexpensive}_{-ct,1990-2000}$. ΔEase of mortgage financing$^{Inexpensive}_{-ct,1990-2000}$ is the percentile of the fraction of houses that become eligible to be financed by GSE-conforming loans due to the change in the CLL between 1990–2000 (excluding the census tract being measured) in the bottom 2 quintiles of tract-level median house prices in a CZ, in both panels. Targeted tract is 1 if the tract is classified as being under the "Underserved Areas Goal" based on Housing and Urban (HUD) classification as of 1996. Control variables included are the house prices in 1990, house price growth between 1980–1990, fraction of high school graduates among Black households and white households in 1990 in a CZ. All columns include CZ-fixed effects and observations are weighted by the total number of housing units in 1990. The dependent variables are winsorized at the 1% level. Standard errors are clustered at the CZ-level.

Panel A : Inexpensive tracts

	(1)	(2)	(3)
	Change in Homeownership 1990–2000		
	Total	Black	White
Δ Ease in mortgage financing$_{1990-2000,-ct}$	0.056	-0.032	0.079
	(0.276)	(0.052)	(0.269)
R^2	0.091	0.164	0.098
CZ FE	Y	Y	Y
N	35670	35670	35670

Panel B: Expensive tracts

	(1)	(2)	(3)
	Change in Homeownership 1990–2000		
	Total	Black	White
Δ Ease in mortgage financing$_{1990-2000,-ct}$	-4.677***	0.175*	-4.841***
	(0.470)	(0.090)	(0.490)
R^2	0.097	0.164	0.104
CZ FE	Y	Y	Y
N	35670	35670	35670

Table A.7
Placebo: Examining homeownership changes between 1980-1990

This table presents the impact of the increase in the ease of mortgage financing on change in homeownership between 1980–1990 at tract-level. The dependent variable in column 1 is the change in the number of homeowners from 1980 to 1990 relative to the total number of renters and homeowners in 1980. In column 2 (3) the dependent variable is the change in homeownership of Black (white) households from 1980 to 1990 relative to the total number of renters and homeowners. ΔEase of mortgage financing$_{-ct,1990-2000}$ at the census tract level is the percentile of the fraction of houses that become eligible to be financed by GSE-conforming loans due to the change in the conforming loan limit (CLL) between 1990–2000 in the remaining tracts in a CZ excluding the census tract being measured. Targeted tract is 1 if the tract is classified as being under the "Underserved Areas Goal" based on Housing and Urban (HUD) classification in 1996. Control variables included are the house prices in 1990, median house price growth between 1980–1990, fraction of high school graduates among Black households and white households separately in 1990 in a CZ. All columns include CZ-fixed effects. Observations are weighted by the total number of housing units as of 1990. The dependent variables for the regressions are winsorized at the 1% level. Standard errors are clustered at the CZ-level.

	(1)	(2)	(3)
	Change in homeownership 1980–1990		
	Total	Black	White
Δ Ease in mortgage financing$_{-ct,1990-2000}$ $\times$ Targeted tract$_{ct}$	-0.116	-0.089	0.017
	(0.135)	(0.117)	(0.024)
Targeted tract$_{ct}$	-19.860**	-19.539***	-0.073
	(7.770)	(7.172)	(1.399)
ΔEase in mortgage financing$_{-ct,1990-2000}$	7.125	1.964	1.147
	(11.166)	(6.562)	(0.934)
R^2	0.005	0.005	0.051
CZ FE	Y	Y	Y
N	22516	22516	22516

Table A.8
Using tract-level variation based on CLL cutoffs of expensive and inexpensive tracts: Upward Mobility

This table presents the impact of the increase in the ease of mortgage financing in the most expensive and inexpensive tracts in a CZ on average upward mobility, at the tract-level. The result presented are the reduced form (RF) estimates. The dependent variable is average upward mobility at the 25th measured as the expected mean household income rank for individuals with parents at the 25th percentile of the parents' income distribution. Data on average upward mobility is from Chetty et al. (2020). Data from Chetty et al. (2020) is for cohorts born between 1978 and 1983. Cohort earnings are measured using mean incomes in 2014-2015, and parents' incomes are measured using mean income over five years: 1994, 1995, and 1998-2000. Change in homeownership between 1990–2000 is instrumented with ΔEase of mortgage financing$^{Expensive}_{-ct,1990-2000}$ in column 1 and ΔEase of mortgage financing$^{Inexpensive}_{-ct,1990-2000}$ in column 2.ΔEase of mortgage financing$^{Inexpensive/expensive}_{-ct,1990-2000}$ is at the census tract level is the percentile of the fraction of houses that become eligible to be financed by GSE-conforming loans due to the change in the CLL between 1990–2000 (excluding the census tract being measured) in the bottom and top 2 quintiles of tract-level median house prices in a CZ respectively. Targeted tract is 1 if the tract is classified as being under the "Underserved Areas Goal" based on Housing and Urban (HUD) classification as of 1996. All columns include CZ-fixed effects and observations are weighted by the total number of housing units in 1990. The dependent variables are winsorized at the 1% level. Standard errors are clustered at the CZ-level.

Panel A : Inexpensive tracts

	(1)	(2)	(3)
		Upward mobility	
	Total	Black	White
Targeted tract$_{ct}$	-0.455***	-0.364***	-0.397***
	(0.091)	(0.063)	(0.057)
Δ Ease in mortgage financing$_{1990-2000,-ct}$ $\times$ Targeted tract$_{ct}$	-0.006***	-0.001	-0.004***
	(0.002)	(0.001)	(0.001)
R^2	0.486	0.199	0.444
CZ FE	Y	Y	Y
Controls	Y	Y	Y
N	35672	18217	34359

Panel B: Expensive tracts

	(1)	(2)	(3)
		Upward mobility	
	Total	Black	White
Targeted tract$_{ct}$	-0.351***	-0.311***	-0.321***
	(0.078)	(0.056)	(0.047)
Δ Ease in mortgage financing$_{1990-2000,-ct}$ $\times$ Targeted tract$_{ct}$	-0.008***	-0.002***	-0.006***
	(0.002)	(0.001)	(0.001)
R^2	0.492	0.199	0.447
CZ FE	Y	Y	Y
Controls	Y	Y	Y
N	35672	18217	34359