Single-Family REITs and Local Housing Markets

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August 14, 2024

Abstract

Institutional investors in single-family housing markets are often represented as worsening household well-being. We document the growth of single-family REITs (SFRs) and their (non-)effects on housing markets by constructing a novel dataset of SFRs' underlying properties. SFRs purchase properties in neighborhoods encircling city centers, where housing supply is more elastic and with populations facing homeownership barriers. Using a spatial differences empirical strategy, SFR growth relates to increased housing supply, lower mortgage approval rates, and modest price increases. These findings likely capture SFRs' selection of neighborhoods rather than causal effects. SFR asset returns mirror representative housing portfolios despite their concentrated holdings.

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1 Introduction

Barriers to homeownership have increased significantly since the 2008 Great Recession. Home prices have more than doubled between 2010 and 2022.[1] Inventory has not kept pace with demand with some estimates suggesting that the U.S. has at least a one million unit shortfall.[2] More home buyers find it difficult to obtain a mortgage (see e.g., D'Acunto and Rossi, 2022). Policymakers and the popular press frequently suggest that institutional investors (i.e., "Wall Street") are a leading contributor to the "affordability crisis" by crowding out individual family purchasers.[3] After all, a growing body of research shows that institutional investors can negatively affect households through many channels.[4] Institutional and small-scale investors can also affect household well-being by shaping housing markets, for example, through their effects on rents and home prices (see e.g., Garriga et al., 2023; Gurun et al., 2023). Nonetheless, more literature is needed to comprehensively document the growth of institutional ownership of homes and its effects on individuals who seek housing.

In this paper, we explore the growth of single-family real estate investment trusts (SFRs), their effects on local housing markets, and their characteristics as a new publicly traded asset accessible to households and investors. We view the growth of SFRs as a "shock" to a housing segment that has not previously faced competition from institutional investors. Institutional investors have historically operated mostly in multi-family housing where they have a comparative advantage of scale. Yet recently, SFRs' entry into the single-family residential neighborhoods can potentially

[1] See e.g., the S&P CoreLogic Case-Shiller U.S. National Home Price Index.

[2] See e.g., Moody's Analytics article (click here for the link).

[3] See e.g., the "Stop Predatory Investing Act" proposed by the U.S. Senate and numerous articles in major media (click here for the link).

[4] For example, research shows negative effects on individuals' employment, healthcare, and consumption (see, e.g., Flynn and Ghent, 2022; Chodorow-Reich et al., 2021; Gupta et al., 2024; Fracassi et al., 2022).

affect market characteristics such as prices and housing accessibility. Moreover, because a significant fraction of SFRs' inventory comes from purchasing existing single-family residences, SFRs' location choices and ability to be nimble home purchasers can significantly affect both their rental yields and the capital appreciation of their assets.

To benchmark our analysis, the marginal household should be indifferent between owning and occupying housing or renting from landlords. Moreover, homeowners and renters can hedge differences between their asset returns and their exposure to idiosyncratic shocks by purchasing equity in real estate investment trusts (REITs). As such, the price and allocation of housing should be determined by its best economic use. Ownership composition should not affect market outcomes such as prices, supply, liquidity, and credit access.

Realistically, however, SFRs' home purchasing and ownership might shape local housing market outcomes because of housing market frictions and the fundamental differences between institutional and household buyers. First, household buyers cannot raise equity and are subject to collateral constraints whereas SFRs obtain financing at the fund level through capital markets. Effectively, SFRs are less constrained when buying any single property which might disadvantage competing household buyers. Second, institutional buyers treat properties as financial assets whereas household buyers often derive consumption utility from ownership.[5] Therefore, the effects of the premium for ownership might be larger when household buyers compete with SFRs. Finally, regulations mandate that SFRs are long-term holders of local housing stock, which could (a) reduce the for-purchase liquidity of local housing markets and/or (b) have positive spillover effects by encouraging neighborhood stability and agglomeration.

[5]For evidence on the consumption value of homeownership, see for example, Engelhardt et al. (2010), Hausman et al. (2022), and Sodini et al. (2023).

Our study contributes to the literature on the effects of institutional real estate investors by constructing a novel dataset that identifies and tracks the specific properties held by individual SFRs. Our dataset construction is based on the locations named in SFRs' financial statements, which focuses on 16 states that comprise nearly all SFR property holdings in the U.S. Then, we use these data to measure SFR holdings at the ZIP code level between 2010 and 2022. SFRs frequently acquire properties through satellite entities making it difficult for researchers to construct data sets such as ours (see the description of our methodology in Appendix A1).

Our empirical analysis has three sections. First, we explore the expansion of SFRs' property holdings, specifically the locations that SFRs have chosen for growth. We track the three largest SFRs—Invitation Homes (INVH), American Homes 4 Rent (AMH), and Tricon—which constitute roughly 90% of the market, as well as a broader set of SFRs. Second, we study the relationship between SFRs' local market share of property holdings and the change in housing market characteristics in those ZIP codes since the early 2010s. Third, because households can purchase shares in these REITs in conjunction with their own housing decisions, we study SFRs as an investment vehicle. We assess the extent to which SFRs improve the investment opportunity set available to investors and their portfolio of property holdings track the behavior of the broader housing market.

We find that SFRs' property holdings increased from near zero in 2010 to roughly 170,000 units in 2022. Their overall property holdings constitute 0.4% of the U.S. single-family housing stock. We find that SFRs expanded to new locations until around 2016 and 2017. After 2017, SFRs—especially INVH and AMH—tended to expand within existing ZIP codes. We also document that each SFR began operations in mostly different ZIP codes. However, over time, individual SFRs came to compete within the same ZIP codes. Today, the majority of the properties held by

the three largest SFRs are held in ZIP codes where they all own properties. This suggests that local competition from other SFRs may limit the market power of each SFR.

Next, we explore the characteristics of the locations that SFRs choose to locate and expand their property holdings. We document that SFRs' holdings form a "donut" around the central business district without extending far into the suburbs in most of the metropolitan statistical areas (MSAs) in our sample. Within MSAs, SFRs are located where the housing supply is more elastic, consistent with SFRs targeting locations with fewer barriers to entry. Moreover, SFRs have greater ownership in areas with younger populations, populations that have less income, and a larger minority population. These demographic groups tend to face greater barriers to homeownership, which implies that SFRs are meeting the demand of non-homeowners.

Secondly, we study the relationship between SFR property growth and ZIP code-level housing market outcomes. To estimate the relationship, we augment the long-differences regression approach employed by Acemoglu and Restrepo (2020), which the literature frequently uses to estimate the effects of gradual processes. The independent variable of interest is the ZIP-code level change in the SFR share of the housing stock between 2012 and 2021. Owing to the ZIP-code level granularity, the regressions include MSA fixed effects. As such, the regressions are identified from spatial differences between neighborhoods with SFR properties benchmarked against neighborhoods without them but are part of the same MSA. Therefore, the regressions confidently rule out confounding shocks that affect the economic region (see e.g., Brown et al., 2017). The regressions also control for ZIP code-level characteristics to account for further economic differences. We run our analysis on both our full data set and a version that excludes outlier ZIP codes because the distribution of SFR holdings is positively skewed.

Moreover, we develop an empirical approach that further disentangles the empirical estimates of SFRs' effects on local market outcomes from their selection of specific ZIP codes within an MSA. Intuitively, the effect on local housing markets should be greater when SFRs hold a larger share of the housing stock. On the other hand, estimates derived from the presence of any SFR properties, independent of the magnitude, likely capture the average differences in the ZIP codes where SFRs chose to operate. Thus, our modified regression framework includes separate coefficients, a dummy variable for a positive SFR share, and an interaction between the dummy variable and the growth in SFR share. The effects of SFRs are more likely driven by selection effects if the estimates load on the dummy coefficient rather than the interaction term (see the graphical example in Figure 7).

Using this empirical design, we assess claims about SFRs' role in reducing housing accessibility in local markets. We start with housing supply, which we measure as the stock of single-family residences in a ZIP code. Next, we study direct measures of households' constraints on purchasing, which we measure as borrower creditworthiness (FICO scores), borrower leverage (LTV ratio), and access to financing (loan approval rates). Finally, we examine affordability by testing for effects on home prices and sale prices relative to listing prices.

Firstly, we find that SFR property holdings are associated with a larger increase in the stock of single-family residences in a ZIP code. Though the result is consistent with SFRs boosting housing supply, our tests suggest that the finding is likely caused by SFRs selecting more elastic housing locations that experienced large growth since the Great Recession. We find similar effects on the share of individually owned single-family residences. These results show that SFR penetration in local housing markets does not negatively reduce supply, contrary to claims about SFRs crowding out individual homeowners.

Secondly, we find scant evidence that SFRs have increased borrowing constraints for local individual home buyers. Specifically, ZIP codes with SFR property holdings have not experienced differential changes in borrower FICO scores and loan-to-value ratios. This finding suggests that borrower characteristics have changed similarly over the sample period regardless of whether SFRs own local properties. However, loan approval rates decreased in ZIP codes with a larger SFR share. As evidence that the effect pertains to competition in the housing market, the effect on approval rates is confined to new home purchases and not mortgage refinancing. Though this result suggests that SFRs have made new home purchasing more difficult, the estimates are marginally statistically significant and depend on our sample choice.

Lastly, we find mixed evidence of SFRs' effect on housing affordability through a pricing mechanism. Specifically, we find a positive relationship between SFR property holdings and home price growth. We find that a one standard deviation increase in the share of SFRs translates into 0.24% higher annual price growth, over a sample period in which US house prices grew by 6.7% on average per year. However, there is no evidence that the price increase is the result of increased competition among buyers or reduced liquidity. To the former, we find that the sales price-to-list price ratio is negatively related to the SFR share, consistent with greater inventory and less competition from other buyers. Moreover, our previous tests find that SFRs are positively associated with measures of the housing stock. Instead, the positive relation to home prices might be consistent with SFRs having complementary effects on neighborhood quality (see e.g., Gurun et al. 2023). Seeing as SFRs purchased properties in areas where buyers are more likely to have been constrained, our evidence segues with findings that SFRs helped with neighborhood recoveries post-crisis (see, among many others, Molloy and Zarutskie 2013; Mills et al. 2019; and Lambie-Hanson et al. 2022).

Our final set of tests explores the role of SFRs as a public equity investment available to households. We do not find significant evidence that they provide a distinct diversification opportunity relative to the existing set of residential REITs. Nonetheless, these results are based on the relatively short time frame that SFRs have been publicly traded and experienced returns.

Next, we study the returns of the portfolio of real estate holdings owned by the three largest SFRs. Our return calculations are based on imputing the price appreciation and rental yields from local indices because SFR yields are not directly observable and they infrequently sell their properties. We find that the portfolio average of the ZIP code-level returns earned by the major REITs behaves similarly to a representative index of the single-family market in the 16 states covered by our data. Hence, we find no evidence that the SFRs in our sample outperform in terms of selecting locations to invest shareholder equity.

1.1 Related Literature

Our research is part of a new wave of studies focusing on the rise of long-term institutional investors in housing markets after the Great Recession, with our focus on single-family residential housing markets (Ihlanfeldt and Yang, 2021; Francke et al., 2023; Gurun et al., 2023; Coven, 2023; Gorback et al., 2024).[6] Prior to these recent studies, the literature focused on short-term and medium-term housing speculation, which played a significant role in the housing boom before the 2008 Great Recession (Chinco and Mayer, 2016; Bayer et al., 2021; Nathanson and Zwick, 2018; Gao et al., 2020; Bayer et al., 2020).

The aftermath of the housing crisis created a favorable environment for institutional investors to capitalize on economies of scale. Foreclosures around the country resulted in a sub-

[6]See United States Government Accounting Office (2024) for a comprehensive literature review.

stantial number of properties being auctioned within short periods. Government initiatives, such as Fannie Mae's REO-to-Rental program, also benefited these investors. As such, the immediate post-foreclosure sales period spurred a significant body of research focusing on the role of non-individual investors in preventing local house prices from collapsing and highlighted their crucial role in stabilizing these markets (Immergluck and Law, 2014; Raymond et al., 2016; Mills et al., 2019; Lambie-Hanson et al., 2022; Garriga et al., 2023). Our paper builds on these studies by including in our analysis recent years when home prices have surged, and by showcasing the role of long-term investors in the single-family residential market. The policy implications of our study are different from those of earlier research on the housing recovery. In particular, housing affordability has become a prominent concern in policy-making. For example, the *Stop Predatory Investing Act (S.2224)* seeks the removal of tax deductions on interest payments and depreciation for any taxpaying entity that owns at least 50 single-family properties.

The housing crisis also increased barriers to entry in residential housing markets. Banks tightened their lending standards, which especially affected households that defaulted or experienced a foreclosure. Numerous papers show that these increased barriers to individual homeownership gave rise to institutional investors in housing markets (see e.g., Favara and Imbs, 2015; Gete and Reher, 2018; Smith and Liu, 2020; Ganduri et al., 2023). Our paper complements this literature by exploring demand-side competition from long-term investors in the home-buying market and how it might create additional barriers to entry into homeownership.

Finally, our paper is connected to the extensive literature on real estate investments. While there is work studying returns to housing and individual real estate assets (Jorda et al., 2019; Chambers et al., 2021; Sagi, 2021; Giacoletti, 2021; Demers and Eisfeldt, 2022), and to commer-

cial REITs (Cotter et al., 2018; Ling et al., 2019, 2018; Van Nieuwerburgh, 2019), there is limited evidence specifically on single-family REITs, due to their relatively short history.

2 Institutional Details and Data on SFRs

2.1 Institutional Details on SFRs

A real estate investment trust (REIT) is a corporation that acquires, manages, and develops real estate properties, or owns related mortgage investments. REITs often function as large-scale landlords of commercial and residential properties, and their main source of revenue comes from rent from tenants. REITs attract a wide range of investors including individual households and institutional investors such as pension funds, endowments, foundations, insurance companies, and banks. Many REITs are public companies listed on stock exchanges. As a result, REITs usually have greater liquidity than direct real estate investors and therefore have greater ability to scale operations including through purchases of existing property.

Moreover, REITs offer tax advantages that set them apart from typical corporations. First, they avoid the double taxation of dividends. Unlike most corporations, REITs do not pay corporate taxes on their earnings. Instead, they distribute their untaxed income to shareholders who are then taxed at the individual level. Another relatively new tax advantage of REITs is their ability to pass through deductions under the Tax Cuts and Jobs Act of 2017. REIT dividends may qualify for a deduction of up to 20% of pass-through income.

To qualify for these tax advantages, REITs must adhere to requirements set forth by the Securities and Exchange Commission (SEC).[7] First, REITs are not allowed to generate much revenue

[7] See the *2011 SEC Bulletin* for an overview.

through property re-sales (i.e., property flipping). This "investment term" rule ensures that REITs are long-term real estate investors rather than short-term speculators (see Schneider et al., 2022). The SEC enforces this rule by requiring that REIT properties produce rental income and remain in the REIT for at least two years, and that the REIT does not sell more than seven properties in a year ("safe harbour rule"). REITs that fail these tests must pay corporate taxes and penalties of up to 100% of capital gains on properties they resell.

Second, the SEC requires REITs to invest at least 75 percent of its total assets in real estate. Also, REITs must derive at least 75 percent of their gross income from real estate–related activities such as rental income and proceeds from property sales. Third, the SEC mandates that REITs distribute at least 90 percent of their taxable income to shareholders annually via dividends.

To meet these requirements, and thus maintain their advantageous tax status, REITs typically hold onto their real estate properties for long horizons. They focus on long-term asset management and rental income generation rather than opportunistic property flips. Nonetheless, REITs select where to purchase and hold properties, which suggests that the price appreciation of their real estate holdings is not inconsequential to their value as an investment.

Our analysis focuses on single-family REITs (SFRs), which like other REITs, collect rent from tenants and distribute rental income to their investors. The key distinction from other REITs is that SFRs are in essence large-scale landlords for single-family homes, as their name suggests. SFRs are perhaps uniquely interesting to study because they operate in a market in which they directly compete with household property buyers, both those that own and occupy their residences and those that generate rental income from their property. Single family housing has historically been the domain of the individual household whereas multifamily housing, such as apartment complexes, are typically financed and often owned and rented out by an enterprise, such as medium

scale landlords or REITs. However, SFRs have been the dominant pathway for corporate entities to enter single family housing markets as we describe in the following sections.

2.2 Data Construction

We identify SFRs' ownership of single-family homes using CoreLogic Tax assessment data. These data, collected by CoreLogic, are compiled from county public records. The data include the location of the assessed property, the owner's name and owner mailing address, and the assessed value of the property. We restrict our analysis to the sample of single-family homes.

Because developing our data set of SFR ownership is resource intensive, we focus on geographic locations specifically mentioned in the SFRs' 10-K filings. Thus, our data collection comprises 16 U.S. states: Arizona, California, Colorado, Florida, Georgia, Illinois, Indiana, Minnesota, Nevada, North Carolina, Ohio, South Carolina, Tennessee, Texas, Utah, and Washington.

We focus on identifying SFRs' ownership for the largest SFRs.[8] The largest SFRs are Invitation Homes, American Homes 4 Rent, and Tricon. Our sample also includes smaller SFRs, namely Starwood, Colony American, and Altisource/Yard.

To identify ownership by specific SFRs, we start by conducting a keyword search for the owners' names. For example, to identify single-family homes owned by Invitation Homes, we use the keywords "INVITATION" and "IH BORROWER." Highlighting the challenges of data construction, this simple keyword search yields few matches. SFRs often set up limited liability corporations (LLCs) as subsidiaries that acquire and manage properties under completely different names and do not use their main corporation name as the owner name on a deed.

[8] Our approach follows previous work in the literature including, among others, Mills et al. (2019) and Lambie-Hanson et al. (2018).

Next, we improve the match rate by compiling a list of buyers' mailing addresses from the SFR properties we identified in the previous keyword search (see also Ganduri et al., 2023).[9] We then use this list of buyers' mailing addresses to identify SFR ownership for the full sample of property tax records in CoreLogic regardless of the name of the property owner. We iterate over this procedure multiple times in order to get a more complete list of SFR owners. The details of these steps are discussed in Appendix A1. In addition to the steps described above, we conduct manual checks to ensure the accuracy of our approach to identifying SFRs' property holdings.

We find that our procedures for the data construction do a good job of identifying SFR ownership. For example, Table 1 shows the number of properties owned by INVH and AMH in each state in 2021. The table compares the number of properties identified by our matching procedure and the total given in their company 10-K filings.[10] The table shows that the geographical distribution of property holdings in our constructed data set mirrors the geographic distribution in 10-K filings. The total number of matched properties is approximately equal to 90% of that reported by Invitation Homes in its 10-K public filings. We assign slightly more properties to AMH than are listed in its 10-K. Combined, these suggest that errors in our procedures for assigning SFR property holdings are random and likely uncorrelated with outcomes of interest in our subsequent statistical analysis.

3 The Growth of Single-Family REIT Property Holdings

This section describes the growth of SFRs' property holdings throughout the U.S. First, we describe the economic conditions that fostered the growth of REIT investment in single-family hous-

[9] Specifically, we use the buyer mailing address variable from the CoreLogic data set.

[10] The SFRs do not always list the number of properties in a state in their 10-K filings but our matching approach still locates these properties (see e.g., AMH holdings in Seattle, WA).

ing. Then, we catalog the growth of SFR property holdings over time and their geographic footprint. The findings and discussion in this section are potentially crucial to understanding how SFRs may affect local housing markets.

3.1 Housing Market Conditions Fostering the Growth of SFRs

SFRs entered U.S. housing markets in the aftermath of the Great Recession and the housing crisis. The following factors are among the leading contributors to the growth of SFRs in the post-crisis period.

First, the demand for rental housing increased after the Great Recession. The crisis resulted in tighter credit standards for many households. After the Great Recession, households had less wealth on average and faced financing constraints that made it more difficult to purchase homes (D'Acunto and Rossi, 2022). Household risk aversion could have also increased after experiencing the housing crisis (see e.g., Goodman and Mayer, 2018; Fritsch and Heimer, 2020). These factors combined to increase demand for rental properties, including single-family homes. According to a report by Hoya Capital, the share of single-family rentals increased from 14 percent to close to 19 percent between 2008 and 2017.[11]

Second, low interest rates and depressed house prices forged a pathway for institutional investment in single-family rental properties. Specifically, residential house prices dropped by approximately 25% from peak to trough, and the market did not show significant signs of recovery until the mid-2010s. The reduction in home prices coincided with a substantial increase in foreclosures (Mian et al., 2015). Moreover, the Federal Reserve lowered the Federal Funds Rate to close to zero for a prolonged period of time. As such, institutional investors, with increased access

[11] See https://seekingalpha.com/article/4592114-single-family-rental-reits-renting-american-dream.

to capital through low interest rates, saw an opportunity given bargain prices to earn high rental yields and earn long-term capital gains.

Lastly, but not exhaustively, advancements in information technology played a role in the rise of SFRs. Such advancements have made it easier for the management of SFR operations to set rental prices and manage payments, as well as schedule and address maintenance.[12] Property management would have been less economical for SFRs because single-family homes are diverse and dispersed. Therefore, pricing and operations would have required more localized expertise giving a comparative advantage to local ownership.

3.2 The Growth of SFR Property Holdings

This section first describes the locations that SFRs have chosen to operate. Several patterns emerge from observing the geographic property holdings presented in Table 1. First, SFR properties are not uniformly spread around the country. Instead, they are located in a handful of states and metropolitan areas. The decision to cluster in certain locations is likely due to economies of scale, or, as we discuss in the following sections, the fact that SFRs seek specific locations and demographic groups.[13] Second, the two large SFRs own 135,000 properties. As such, SFR property holdings, though significant, still constitute a small share of the total single-family housing stock.

Next, we catalog the time series of SFR property ownership. Panel (a) of Figure 1 plots the number of properties owned by SFRs for each year between 2010 and 2021. The blue solid line shows the total number of properties owned by top 3 SFRs—INVH, AMH, and the Canadian owned REIT Tricon.[14] The red dashed line shows the holdings for an extended list of SFRs. SFRs

[12] See https://www.npr.org/transcripts/1197961038 for an example of rental pricing algorithms.

[13] Yu (2023) describes the benefits of economies of scale for REITs.

[14] As of January 2024, Tricon has been acquired by Blackstone and taken private. However, for the entire sample period of our study Tricon was a publicly traded REIT.

own almost no properties at all in 2010. SFRs quickly expand in the following years. The top 3 SFRs own approximately 125,000 properties and our expanded list owns 150,000 in 2016. SFRs' growth slowed substantially since 2016. SFRs added just around 30,000 units in total between 2016 and 2021. Panel (b) shows the holdings of SFRs as a share of all single-family homes. Though the share grew quickly during the sample period, it leveled off in the latter years at approximately 0.3% of the total housing stock.[15]

Figure 2(a), compares the growth rates of the three largest SFRs to both one another and to our expanded set of SFRs. AMH and INVH grew the fastest out of the gate. Tricon only began expanding its portfolio in 2014-2015. Meanwhile, other SFRs grew sharply until 2014. After 2014, other SFRs reduced their property holdings suggesting an increase in market concentration among the largest SFRs.

Figure 2 also presents changes in the spatial distribution of SFRs holdings over time. The three largest REITs increase the average number of properties owned in a given ZIP code (panel a). Furthermore, INVH and AMH increase the total number of ZIP codes in which they operate until 2016-2017. They have stopped expanding geographically by the end of the sample. INVH is present in approximately 2,000 ZIP codes in 2021-2022 and AMH is present in 1,500. On the other hand, Tricon began increasing its portfolio later in the sample and is still increasing the number of ZIP codes where it operates.

Finally, we find that SFRs have a persistent presence in the ZIP codes where they operate (Figure 2, panel (b)). Starting in 2013, we select all ZIP codes where an SFR has holdings, and calculate the share of ZIP codes in which the same SFR had holdings three years prior. The shares

[15]Figure A1 in the Appendix presents the analogous figure for the share of SFRs units out of all absentee units. Similarly to all housing units, SFRs grew significantly as a share of the housing stock before leveling off at approximately 2%.

steadily increase over the sample period, and for INVH and AMH they are above 95% starting in 2019. The share is slightly lower for Tricon but still equal to 80% in the last two years of the sample.

In summary, SFRs have steadily increased their presence within and across ZIP codes, especially between 2010 and 2016-2017. In the latter part of the sample, the growth of the two largest SFRs leveled off. They operate within a stable set of ZIP codes and have focused on increasing their property holdings in the ZIP codes where they already operate. Tricon, which began operations more recently, is still expanding its geographic presence in the latter years of the sample.

4 Single-Family REITs Penetration and Local Housing Markets

This section explores SFRs' penetration in local housing markets. First, we document the characteristics of the neighborhoods that SFRs have chosen to operate in. We show the extent to which SFRs compete with each other in a given local market. Then we study the potential effects of SFR ownership in a neighborhood on local housing market outcomes.

4.1 SFR Market Concentration and Local Market Characteristics

The previous section shows that SFRs have persistent ownership within a ZIP code and they expand mostly within existing ZIP codes rather than to new ZIP codes. We follow this analysis by exploring the extent of competition between SFRs in a given neighborhood. Figure 3 shows the extent to which the three major SFRs overlap in the same ZIP code. In the early years of the sample, the different SFRs operate in distinct and separate locations around the country. Many ZIP codes have properties owned by a single SFR, usually either AMH or Tricon. Following 2018, the

majority of properties owned by the three major SFRs are in ZIP codes where other SFRs—both the three major SFRs and smaller SFRs—all operate. Overall, SFRs started operations in separate locations before converging in the same neighborhoods, suggesting high levels of competition in the sector.

Next, we study where SFRs choose to operate to fuel their growth of property ownership. The maps in Figure 4 present the share of SFR properties by ZIP code in a given MSA in 2021.[16] SFR properties tend to concentrate in a "donut" of neighborhoods surrounding the city center. SFRs own fewer SFR properties in the inner city and outer suburbs.

Figure 5, panel (a), shows that the share of single-family residences owned by SFRs in 2021 is positively associated with the share of foreclosures in 2010. This finding is consistent with SFRs taking advantage of the fire-sale conditions post-crisis to expand in residential housing markets (as described in Section 3). Panel (b) shows that SFR properties are associated positively with local supply elasticity. This suggests that SFRs have focused on neighborhoods where they can expand and scale up operations. The result complements our findings that SFRs have grown the most by expanding within locations where they already operate. We also find that SFRs operate in neighborhoods that experienced more overall population growth and increases in rental prices (panels c and d). SFRs may have anticipated increased demand for their rental properties in these neighborhoods.

To gain insight into the consumer groups that might have demand for single-family rentals operated by SFRs, we explore the demographic characteristics of neighborhoods where SFRs own a significant fraction of the housing stock. Figure 6 shows a negative association with income per

[16]The MSAs are Atlanta (GA), Charlotte (NC), Dallas (TX), Houston (TX), Indianapolis (IN), Jacksonville (FL), Miami (FL), Nashville (TN), Phoenix (AZ), Raleigh (NC), and Tampa (FL).

capita (panel a), and a positive association with the share of young people and minorities (panels b and c) both in 2013 and the latter years of our sample (2021). The relation with the share of college graduates is less clear, but the largest shares of SFR properties are in ZIP codes with a low share of college graduates (panel d).

Overall, the evidence points to the fact that SFRs have focused on less affluent mid-city markets. These neighborhoods have high supply elasticity within their metropolitan area and were more strongly affected by the housing bust. These markets are populated by lower income, younger, and more racially diverse households. Moreover, these neighborhoods experienced more population growth and larger increases in rental prices.

In the next sections, we study how SFR property growth might affect the housing market conditions in these neighborhoods.

4.2 SFRs Penetration and Market Outcomes: Estimation Approach

We use a long-differences regression approach to estimate the relationship between SFR property growth and local market outcomes. The literature often employs long-differences to estimate the effects of gradual processes such as long-run technological shocks (see e.g., Acemoglu and Restrepo, 2020).[17] We augment the estimation procedure by incorporating spatial difference-in-differences to mitigate the effects of contemporaneous economic shocks on the regression estimates (see e.g., Brown et al., 2017). Intuitively, the spatial differences help the regression model isolate effects in specific locations by bench-marking changes in neighborhoods that experienced SFR growth against other neighborhoods that did not. This helps rule out the confounding effects of economic conditions across an integrated geographic region.

[17] Similar regression specifications have been used to study the heterogeneous effects of the US housing boom and bust (see Mian and Sufi, 2009 and Mian and Sufi, 2011).

Specifically, our regressions estimate the following equation:

$$\Delta y_{z,12:21} = \beta \Delta SFR_{z,12:21} + BX_z + \alpha_{Metro} + e_z, \quad (1)$$

where $\Delta y_{z,12:21}$ is the 2012 to 2021 change in an outcome of interest in ZIP code z. The main independent variable is the change in the share of single-family residences owned by SFRs ($\Delta SFR_{z,2012:2021}$). MSA fixed effects are denoted α_{Metro}.

Though the regression model suppresses the effects of economic trends at an MSA level, we are cautious to interpret causality to the estimates of β. Differences in economic trajectories across ZIP codes within an MSA can also drive differences in estimates. To the extent that we can rule out such confounds, equation 1 also includes a vector of ZIP code level controls (X_z) that includes personal income and the ages, gender, and racial composition of the population.

Moreover, SFRs' decision to operate in certain ZIP codes within an MSA could explain their relation to market outcomes (i.e., through a selection channel). As such, within-MSA heterogeneity and the possibility that different neighborhoods have had different trajectories since 2010 can affect β estimates. For instance, SFRs might have targeted neighborhoods that they expected to grow rather than SFRs being the cause of such growth.

To separate the treatment effects of SFRs from average differences in their selection of neighborhoods, we posit that the magnitude of SFRs' growth in a neighborhood should relate to whether their presence has measurable effects on neighborhood outcomes (similar in spirit to the "tipping point" mechanism in housing choice described in papers such as Card et al., 2008). For instance, SFRs likely shape a neighborhood if they own a substantial share of the housing stock. Yet an SFR

is likely to have merely explored operations in a given neighborhood if they purchase at least one property but few more. Such limited operations are unlikely to affect market outcomes.

Therefore, we design an alternative regression specification to make progress in isolating the effects of SFRs' neighborhood selection. Specifically, we also estimate:

$$\begin{aligned}\Delta y_{z,12:21} = \gamma_0 I_{\Delta SFR_{z,12:21}>0} + \gamma_1 \left(\Delta SFR_{z,12:21} \times I_{\Delta SFR_{z,12:21}>0}\right) \\ + GX_z + \delta_{Metro} + u_z,\end{aligned} \tag{2}$$

where $I_{\Delta SFR_{z,12:21}>0}$ is an indicator variable that equals one if the share of SFR properties in the ZIP code increases between 2012 and 2021. The coefficient γ_0 captures the association between *any* increase in SFR ownership and ZIP code outcomes. The coefficient γ_1 captures the effects associated with incremental increases in the share of the housing stock owned by SFRs. Essentially, specification 2 is similar to a regression discontinuity at zero, which is a popular empirical strategy in the finance literature (see e.g., Ben-David and Hirshleifer, 2012). When interpreting the regression results, coefficient magnitudes that increase with increases in SFRs ownership are more likely to be driven by SFRs penetration on the local market (measured by a positive coefficient on γ_1) whereas estimates due to the simple presence of SFRs are more likely to be driven by selection of SFRs into a given neighborhood (captured by γ_0). Figure 7 provides a graphical depiction of the two cases: γ_0 is negligible, and γ_1 is positive, and the opposite, γ_0 is positive and γ_1 is negligible.

We also insulate our estimates from the effects of outliers in SFR penetration across ZIP codes. Specifically, the distribution of $\Delta SFR_{z,12:21}$ is highly skewed, which might allow outlier ZIP codes to drive average effects. The mean of $\Delta SFR_{z,12:21}$ is 0.11% and its standard deviation is 0.40%. The median value is 0, the 75th percentile is 0.34% and the 95th percentile is 0.74%. We

estimate equation (1) both in the full sample and in a subsample restricted to values of $\Delta SFR_{z,12:21}$ smaller than or equal to the 95th percentile (0.74%).

Finally, we augment equation (1) with interaction terms between ZIP code characteristics and $\Delta SFR_{z,2012:2021}$. These interaction terms present the heterogeneity of effects across ZIP codes and potentially speak to causal channels. Specifically, we include interactions with ZIP code level housing supply elasticity, personal incomes in 2012, and foreclosure rates in 2012. These variables are associated with SFRs' market entry at the start of our sample.

Importantly, our estimates capture the aggregate effects of SFR penetration on a given ZIP code. An alternative empirical approach is to study the effects of spillovers from one individual SFR property to its immediate surroundings (as in Billings and Soliman, 2023). Testing for effects property-by-property can offer stronger claims to identification because of precision; however, coefficient estimates might be subject to the "reflection problem" in which it becomes challenging to rule out reverse causality (Manski, 1993). Since different levels of aggregation have benefits and drawbacks, we feel that our choice of using ZIP code level observations is supported empirically by the local clustering of SFR properties (see Figure 2) and the approach is well-suited to estimate aggregate effects across integrated housing markets.

4.3 Effects on Housing Supply

In this section, we analyze the relationship between the growth of SFRs and the supply of single-family residences. The potential impact of SFRs on housing supply is twofold. On one hand, SFR growth could stimulate neighborhood investment by developers and individual homeowners, thereby increasing housing production. On the other hand, SFRs might reduce supply by acquiring properties that would otherwise be sold to owner-occupants. Understanding this dynamic is es-

sential to assess whether SFRs complement or crowd out potential homeowners in local markets. Also, the following analysis efforts to disentangle the effects of SFRs' selection into a neighborhood from their effects on the neighborhood.

Table 2 presents the results of our long-differences regression that estimates the relationship between changes in SFR property holdings and housing supply growth. The baseline specification, shown in column (1), includes no additional controls or fixed effects. Here, we observe a positive coefficient of 2.17, suggesting that a one standard deviation increase in SFR share growth (0.4%) is associated with a 0.86% larger annual growth in housing supply. Column (2) introduces controls for ZIP code characteristics and metropolitan area fixed effects. The inclusion of these controls reduces the estimated coefficient to 1.32, indicating that part of the observed relationship is driven by underlying differences across ZIP codes. To further mitigate the influence of outliers, column (3) restricts the sample to ZIP codes with SFR share growth below the 95th percentile. This results in a stronger estimated effect, with a coefficient of 4.57.

To isolate the effects of SFRs from their selection into specific neighborhoods, we employ a modified regression specification as outlined in equation (2). This approach includes both a dummy variable indicating any positive change in SFR share and an interaction term capturing the magnitude of SFR growth. The results, presented in column (4) of Table 2, reveal a significant positive coefficient for the dummy variable (0.63%), while the interaction term is not statistically significant. This pattern suggests that the observed relationship between SFR growth and housing supply is primarily driven by the presence of SFRs rather than the extent of their growth.

Furthermore, we explore the heterogeneity of these effects by interacting the change in SFR share with key ZIP code characteristics, namely housing supply elasticity (column 5) and foreclosure rates in 2012 (column 6). The interaction with supply elasticity is statistically insignificant.

The interaction with the foreclosure rate is significant and negative, indicating that the positive association between SFR growth and housing supply is weaker in areas with higher initial foreclosure rates. Finally, in columns (7) and (8), interactions with the minority share and incomes of the ZIP code are not statistically different from zero.

In addition to examining overall housing supply, we analyze changes in the composition of single-family residence ownership. Table 3 focuses on the share of residences owned by individuals, while Table 4 examines ownership by non-REIT legal entities.

We find inconclusive evidence on the effects of SFRs on housing owned by individuals. When considering the full sample, the relationship between SFR growth and the share of individual ownership is negative in the full sample (column 2). However, this effect becomes positive when outliers are excluded (column 3). The modified regression specification reveals that ZIP codes with any increase in SFR share see a significant increase in individual ownership share (0.87%), while the interaction term remains insignificant (column 4). We also find that the interactions with housing supply and foreclosures are negative (columns 5 and 6). Overall, the results do not provide strong evidence that the individual housing stock is crowded out by SFR ownership.

We find results similar to individual-owned housing when we test for SFRs' effects on housing owned by legal entities excluding REITs (Table 4). The results depend on whether we use the full sample or exclude ZIP codes with the largest SFR growth. Moreover, the estimated effects appear driven by neighborhood selection as opposed to SFRs' concentration of ownership.

Overall, our analysis shows that SFR growth is associated with increased housing supply and shifts in ownership composition. These findings counter the narrative that SFRs have crowded out individuals in the housing market. Nonetheless, despite the positive relation, we are reluctant to

say that SFRs have positively affected housing supply and instead suggest that SFRs have chosen to operate in growing neighborhoods.

4.4 Effects on Home-Purchase Mortgages

In this section, we explore the relationship between SFR penetration and the issuance of home-purchase mortgages to local buyers. One potential consequence of SFRs home buying is increased competition for new purchases. This could cause individual home buyers (that are less able to use cash offers) to bid more aggressively and use more leverage. This could further affect mortgage approval rates and the characteristics of borrowers who ultimately secure homes.

To investigate potential effects on individual home buyers, we analyze the association between ZIP code-level changes in the share of SFR holdings and changes in mortgage approval ratios (the ratio of approved mortgage applications to the total number of approved and denied applications). For originated mortgages, we also examine changes in average loan-to-value (LTV) ratios and FICO scores.

Table 5 presents our findings on approval rates for new home purchase loans. In the full sample of ZIP codes, we observe no significant effects. However, a marginally significant (at the 10% level) negative coefficient emerges when we exclude ZIP codes with the largest SFR growth (column 3). Despite the noise in this estimate, it suggests that a one standard deviation increase in SFR share corresponds to a 1.4% decrease in the odds of approval. Column 4 provides further estimates using Equation 2, indicating that the observed effects are driven by the linear term for positive increases in SFR share, rather than the dummy variable for positive changes. The point estimate in column 4 suggests a more pronounced effect, with a one standard deviation increase in SFR share leading to a 1.8% decrease in approval rates. Overall, our results are consistent with

SFRs driving lower approval rates. However, the statistical evidence is not strong and depends on our choice of sample.[18]

Tables 6 and 7 focus on LTV ratios and FICO scores for new home purchase loans, respectively. In both cases, the estimated coefficients are noisy and economically small. We find no significant effects, except when examining interactions between changes in SFR share and a dummy variable for high-income ZIP codes. Here, a higher SFR share correlates with slightly higher LTV ratios in ZIP codes with below-median income, though the magnitude of this effect is economically minor (a one standard deviation increase in SFR share results in a 0.16% increase in LTV ratio).[19]

4.5 Effects on House Prices and Market Liquidity

Finally, we examine the relationship between SFR growth and house prices, and SFR growth and liquidity. A key policy question is whether the presence of SFRs leads to higher house prices, lower affordability, and reduced access to housing.

Table 8 tests for SFRs' effects on house price growth. We measure house price growth as the annualized percentage change in the average house price in ZIP codes from 2012 to 2021. A one standard deviation increase in SFR share corresponds to a 0.14% higher annualized price growth from 2012 to 2021 (column 2). This estimate is roughly unchanged when we exclude ZIP codes with outlier increases in the share of SFRs (column 3). Moreover, the effects are driven by the linear term rather than the dummy variable for positive changes, which has an insignificant

[18] We repeat this analysis for approval rates of mortgage refinancing applications in Table A1 in the Appendix. These tests are potentially helpful to rule out confounding effects of marketwide credit conditions because mortgage refinancing does not coincide with competition for purchasing a home. We find no effects on refinancing suggesting that any effects on new purchase mortgages are specific to the process of buying a new property.

[19] The Appendix Tables A2 and A3 repeat this analysis with data on refinancing mortgages. Higher levels of SFR growth associates with lower LTV ratios and FICO scores, albeit with economically small effects (a one standard deviation increase in SFR share leads to a 0.8% decrease in LTV ratio and a 1.5-point decrease in FICO score).

coefficient (column 4). Based on these estimates, a one standard deviation increase in the SFRs share is associated with a 0.24% higher annualized price growth. When we introduce interaction terms to study variations across ZIP codes, we find that the effects are significant only in areas with above-median minority shares and below-median incomes, disappearing in ZIP codes with low minority shares and high incomes.

Despite their statistical significance, the economic magnitude of these price effects is relatively small. The S&P U.S. National Case-Shiller Index grew by 6.7% annually between 2012 and 2021. A 0.24% difference in annualized price growth represents a 3.5% variation relative to the mean. Additionally, the distribution of SFRs share growth rates is skewed, with a one standard deviation difference almost equating to the gap between zero growth and the 90th percentile.

To further explore whether SFRs' presence creates price pressure, we examine the sale-to-list price ratio. In theory, if SFRs exert price pressure, sellers should command higher prices relative to their listing prices. Conversely, SFRs might lower prices if sellers are willing to accept discounts for cash purchases (Reher and Valkanov, 2023; Han and Hong, 2023). The gap between listing prices and final sales prices serves as a proxy for the bargaining power of sellers versus buyers. Table 9 sets the dependent variable as the change in the average sale-to-list price (in percentage) between 2012 and 2021. Notably, we find that a one standard deviation increase in SFR share reduces the sale-to-list ratio by approximately 0.46% (column 4). This result is contrary to expectations if SFRs were creating price pressure and increasing sellers' bargaining power.

Lastly, we assess the impact of SFRs on market liquidity by examining time on the market. Concerns arise that increased SFR properties might reduce liquidity, given that regulations limit the frequency of SFR home sales. Our results indicate a positive effect on days on the market when excluding the largest SFR ZIP codes (column 2). However, the linear term in equation (2) is noisy,

and the effect is driven by the dummy for a positive change in SFRs share (column 4). Thus, there is a significant negative relationship with liquidity, though this effect is likely driven by selection rather than the intensity of SFRs penetration.

4.6 Summary of Findings on Housing Market Conditions

Though several of our tests yield null results, we do find significant relationships between changes in the SFRs' share of local single-family residences and changes in various housing market outcomes between 2012 and 2021. In this section, we summarize these results to develop a holistic view of SFRs' effects on individuals in local housing markets. Our findings indicate:

1. **Increase in Local Housing Supply:** An increase in the share of SFRs is associated with a rise in the local supply of single-family residences. However, this effect does not depend on the magnitude of the increase in the SFRs share but rather on the occurrence of any increase. This pattern suggests that the observed relationship may be driven by the selection of SFRs into high-growth neighborhoods rather than a direct causal impact on housing supply.

2. **Decrease in Mortgage Approval Rates:** We observe a decline in mortgage approval rates in ZIP codes with a higher SFR share. Although these estimates are noisy, they appear specific to new home purchase mortgages and not refinancing loans, which indicates that the effect likely relates to competition in the housing market rather than broader credit conditions. Moreover, borrower leverage and borrower quality are unaffected suggesting that the reduced approval rates are not the result of changes in borrower composition.

3. **Increased Home Prices and Inconclusive Evidence on Market Liquidity** Increased SFR property holdings are positively correlated with home price growth. However, in contrast to

the notion that SFRs have made housing markets less liquid and more competitive, SFRs are negatively associated with the sale-to-list price ratio and time on the market. The effects of SFRs on home prices are also relatively small in magnitude.

Overall, our strongest finding is that SFRs increase home prices. Yet this increase in home prices does not appear to have stressed housing markets or individual purchasers in other meaningful ways. As such, our findings leave open the possibility that SFRs have helped neighborhoods recover from the housing market downturn post-crisis, consistent with prior literature.

In the following section, we explore the characteristics of SFRs as an investment vehicle. We do so because any negative effects of SFRs on individuals in local housing markets could be offset by their benefits to households that invest in SFRs. For instance, SFRs might improve household well-being by offering households exposure to the broader housing market in ways that are not feasible in the existing asset space.

5 Conclusion

Single-family REITs have grown significantly since the Great Recession and they have garnered significant attention from policy-makers for their potential effects on local housing markets. Though SFRs own a small share of the single family housing stock in the U.S., their rapid growth, particularly in certain locations, has raised concern that they affect rates of homeownership and affordability. These concerns arise because SFRs often purchase the same properties that might otherwise be sold to individual home buyers.

This paper studies the emergence of SFRs, their effects on local markets, and their characteristics as an investment asset. First, we show that SFRs invest in specific neighborhoods within a

metropolitan area. They choose ZIP codes located within urban belts between the central business district and the far suburbs, neighborhoods with elastic housing supply, and that have populations facing barriers to homeownership (e.g., less income, younger, and more likely to be minorities).

Second, we study the relationship between increased SFR property holdings and local market outcomes. We employ a spatial difference-in-differences empirical strategy that isolates the effects of neighborhood-level SFR penetration from broader changes in economic activity in a given MSA. Our main results are the following: 1) SFR property holdings are positively correlated with increased local housing stock but the effect is likely caused by SFRs choosing to operate in high-growth neighborhoods. 2) We find no evidence that SFRs lead to tighter average lending standards, but some evidence that approval rates on mortgage applications decline. 3) SFR property holdings are positively associated with house price growth but the economic magnitude is small. The relationship to increased prices is unlikely to be caused by sellers having greater bargaining power because sale-to-list price ratios decline.

Finally, we study the performance of SFRs as investment assets available to households. We test whether SFRs deliver superior performance, or improve the investment frontier relative to other residential REITs. We find insignificant or weak evidence that they broaden investors' opportunity set. We then show that the performance of the asset portfolios held by SFRs mirrors the broader single-family market suggesting that SFRs do not have an edge when selecting where to purchase property.

Overall, our results suggest that, rather than disrupting housing markets, SFRs are specialized investors that operate in specific locations and populations. More research is needed to assess whether they affect household well-being in other ways, such as employment and consumption.

References

Acemoglu, D., Restrepo, P., 2020. Robots and jobs: Evidence from U.S. labor markets. Journal of Political Economy 128, 2188–2244.

Bayer, P., Geissler, C., Mangum, K., Roberts, J. W., 2020. Speculators and middlemen: The strategy and performance of investors in the housing market. Review of Financial Studies 33(11).

Bayer, P., Mangum, K., Roberts, J., 2021. Speculative fever: Investor contagion in the housing bubble. American Economic Review 111, 609–651.

Ben-David, I., Hirshleifer, D., 2012. Are investors really reluctant to realize their losses? Trading responses to past returns and the disposition effect. Review of Financial Studies 25, 2485–2532.

Billings, S. B., Soliman, A., 2023. The erosion of homeownership and minority wealth. Available at SSRN 4649479 .

Brown, J. R., Cookson, J. A., Heimer, R. Z., 2017. Law and finance matter: Lessons from externally imposed courts. Review of Financial Studies 30, 1019–1051.

Card, D., Mas, A., Rothstein, J., 2008. Tipping and the dynamics of segregation. Quarterly Journal of Economics 123, 177–218.

Chambers, D., Spaenjers, C., Steiner, E., 2021. The rate of return on real estate: Long-run micro evidence. Review of Financial Studies Forthcoming.

Chinco, A., Mayer, C., 2016. Misinformed speculators and mispricing in the housing market. Review of Financial Studies 29, 486–522.

Chodorow-Reich, G., Nenov, P. T., Simsek, A., 2021. Stock market wealth and the real economy: A local labor market approach. American Economic Review 111, 1613–1657.

Cotter, J., Gabriel, S., Roll, R., 2018. Nowhere to run, nowhere to hide: Asset diversification in a flat world, Working Paper.

Coven, J., 2023. The impact of institutional investors on homeownership and neighborhood access, Working Paper.

Demers, A., Eisfeldt, A. L., 2022. Total returns to single-family rentals. Real Estate Economics 50, 7–32.

D'Acunto, F., Rossi, A. G., 2022. Regressive mortgage credit redistribution in the post-crisis era. Review of Financial Studies 35, 482–525.

Engelhardt, G. V., Eriksen, M. D., Gale, W. G., Mills, G. B., 2010. What are the social benefits of homeownership? Experimental evidence for low income households. Journal of Urban Economics 67(3), 249–258.

Favara, G., Imbs, J., 2015. Credit supply and the price of housing. American Economic Review 105, 958–992.

Flynn, S. J., Ghent, A., 2022. Does Main Street benefit from what benefits Wall Street? Journal of Financial and Quantitative Analysis pp. 1–37.

Fracassi, C., Previtero, A., Sheen, A., 2022. Barbarians at the store? Private equity, products, and consumers. Journal of Finance 77, 1439–1488.

Francke, M., Hans, L., Korevaar, M., van Bekkum, S., 2023. Buy-to-live vs. buy-to-let: The impact of real estate investors on housing costs and neighborhoods. SSRN Working Paper .

Fritsch, N., Heimer, R. Z., 2020. Intergenerational homeownership and mortgage distress. Economic Commentary .

Ganduri, R., Xiao, S. C., Xiao, S. W., 2023. Tracing the source of liquidity for distressed housing markets. Real Estate Economics 51, 408–440.

Gao, Z., Sockin, M., Xiong, W., 2020. Economic consequences of housing speculation. Review of Financial Studies 33, 5248–5287.

Garriga, C., Gete, P., Tsouderou, A., 2023. The economic effects of real estate investors. Real Estate Economics 51, 655–685.

Gete, P., Reher, M., 2018. Mortgage supply and housing rents. Review of Financial Studies 31, 4884–4911.

Giacoletti, M., 2021. Idiosyncratic risk in housing markets. Review of Financial Studies 34, 3695–3741.

Goodman, L. S., Mayer, C., 2018. Homeownership and the American dream. Journal of Economic Perspectives 32, 31–58.

Gorback, C. S., Qian, F., Zhu, Z., 2024. Impact of institutional owners on housing markets, Working Paper.

Gupta, A., Howell, S. T., Yannelis, C., Gupta, A., 2024. Owner incentives and performance in healthcare: Private equity investment in nursing homes. Review of Financial Studies 37, 1029–1077.

Gurun, U. G., Wu, J., Xiao, S. C., Xiao, S. W., 2023. Do Wall Street landlords undermine renters' welfare? Review of Financial Studies 36, 70–121.

Han, L., Baum-Snow, N., 2023. The microgeography of housing supply. Journal of Political Economy Forthcoming.

Han, L., Hong, S.-H., 2023. Cash is king? understanding financing risk in housing markets. Review of Finance Forthcoming.

Hausman, N., Ramot-Nyska, T., Zussman, N., 2022. Homeownership, labour supply, and neighborhood quality. American Economic Journal: Economic Policy 14(2), 193–230.

Ihlanfeldt, K., Yang, C. F., 2021. Single-family rentals and neighborhood racial integration. Journal of Housing Economics 53, 101780.

Immergluck, D., Law, J., 2014. Investing in crisis: The methods, strategies, and expectations of investors in single-family foreclosed homes in distressed neighborhoods. Housing Policy Debate 24, 568–593.

Jorda, O., Knoll, K., Kuvshinov, D., Schularick, M., Taylor, A. M., 2019. The rate of return on everything, 1870–2015. Quarterly Journal of Economics 134(3), 1225–1298.

Lambie-Hanson, L., Li, W., Slonkosky, M., 2018. Investing in Elm Street: What happens when firms buy up houses? Economic Insights, Federal Reserve Bank of Philadelphia pp. 9–14.

Lambie-Hanson, L., Li, W., Slonkosky, M., 2022. Real estate investors and the U.S. housing recovery. Real Estate Economics 50, 1425–1461.

Ling, D. C., Naranjo, A., Scheick, B., 2018. Geographic allocations, property selection, and performance attribution in public and private real estate markets. Real Estate Economics 46(2), 404–448.

Ling, D. C., Ooi, J. T. L., Xu, R., 2019. Asset growth and stock performance: Evidence from REITs. Real Estate Economics 47(3), 884–927.

Manski, C. F., 1993. Identification of endogenous social effects: The reflection problem. Review of Economic Studies 60, 531–542.

Mian, A., Sufi, A., 2009. The consequences of mortgage credit expansion: Evidence from the U.S. mortgage default crisis. Quarterly Journal of Economics 124(4), 1449–1496.

Mian, A., Sufi, A., 2011. House prices, home equity–based borrowing, and the U.S. household leverage crisis. American Economic Review 101(5), 2132—-2156.

Mian, A., Sufi, A., Trebbi, F., 2015. Foreclosures, house prices, and the real economy. Journal of Finance 70, 2587–2634.

Mills, J., Molloy, R., Zarutskie, R., 2019. Large-scale buy-to-rent investors in the single-family housing market: The emergence of a new asset class. Real Estate Economics 47, 399–430.

Molloy, R., Zarutskie, R., 2013. Business investor activity in the single-family housing market. FED Notes .

Nathanson, C. G., Zwick, E., 2018. Arrested development: Theory and evidence of supply-side speculation in the housing market. Journal of Finance 73, 2587–2633.

Raymond, E. L., Duckworth, R., Miller, B., Lucas, M., Pokharel, S., 2016. Corporate landlords, institutional investors, and displacement: Eviction rates in single-family rentals. Federal Reserve Bank of Atlanta community and economic development discussion paper .

Reher, M., Valkanov, R. I., 2023. The mortgage-cash premium puzzle. Journal of Finance Forthcoming.

Sagi, J. S., 2021. Asset-level risk and return in real estate investments. Review of Financial Studies 34, 3647–3694.

Schneider, S., Uffner, J., Snow, M., Altman, K., 2022. REITs 101: A guide to Real Estate Investment Trusts. Tax Management Real Estate Journal 38.

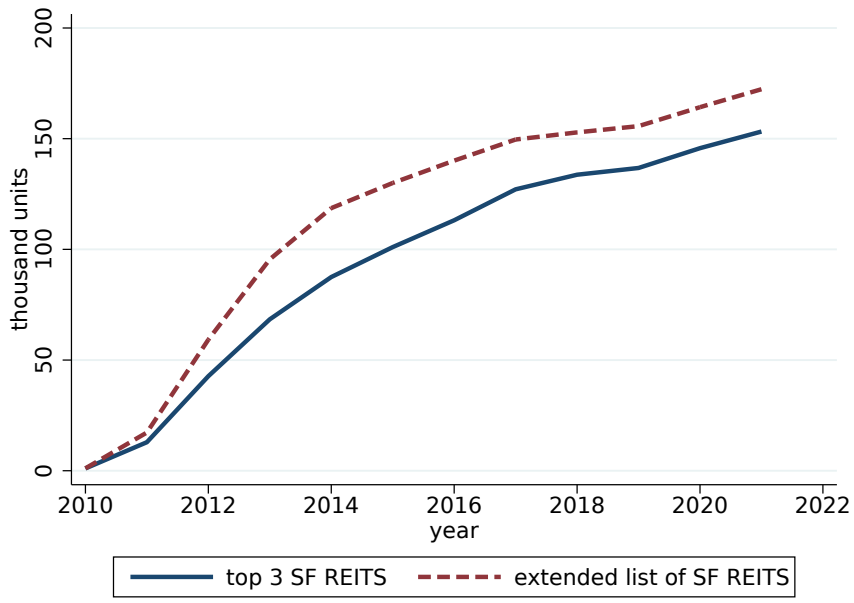
Smith, P. S., Liu, C. H., 2020. Institutional investment, asset illiquidity and post-crash housing market dynamics. Real Estate Economics 48, 673–709.

Sodini, P., Van Nieuwerburgh, S., Vestman, R., von Lilienfeld-Toal, U., 2023. Identifying the benefits from homeownership: A Swedish experiment. American Economic Review 113(12), 3173–3212.

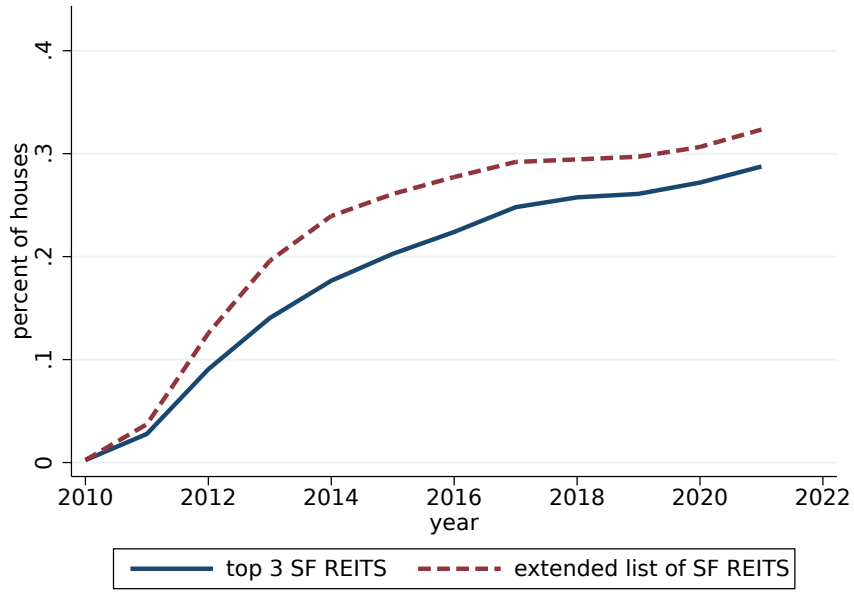
United States Government Accounting Office, 2024. Rental housing: Information on institutional investment in single-family homes. https://www.gao.gov/assets/gao-24-106643.pdf.

Van Nieuwerburgh, S., 2019. Why are REITs currently so expensive? Real Estate Economics 47(1), 18–65.

Yu, E., 2023. The rise of the single-family REIT. Economic Insights Q3.

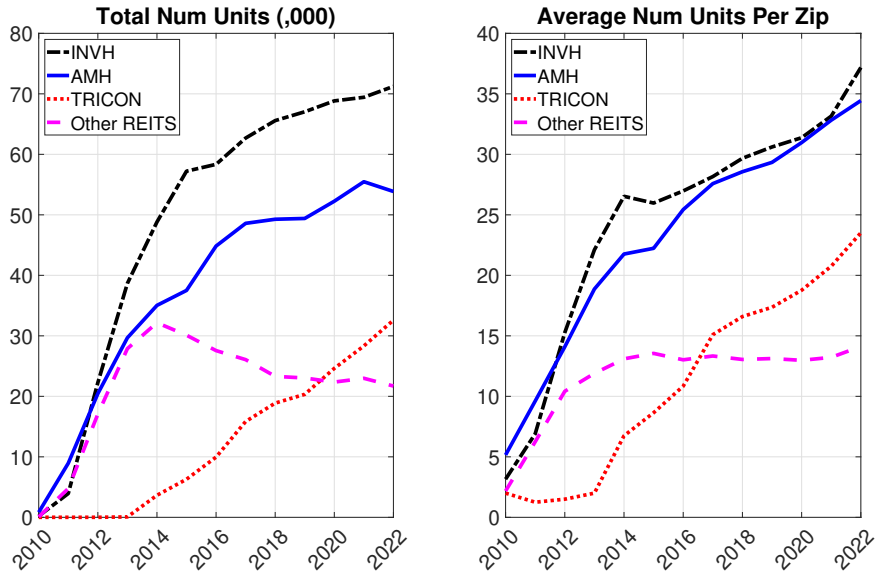


(a) Total SFR Units

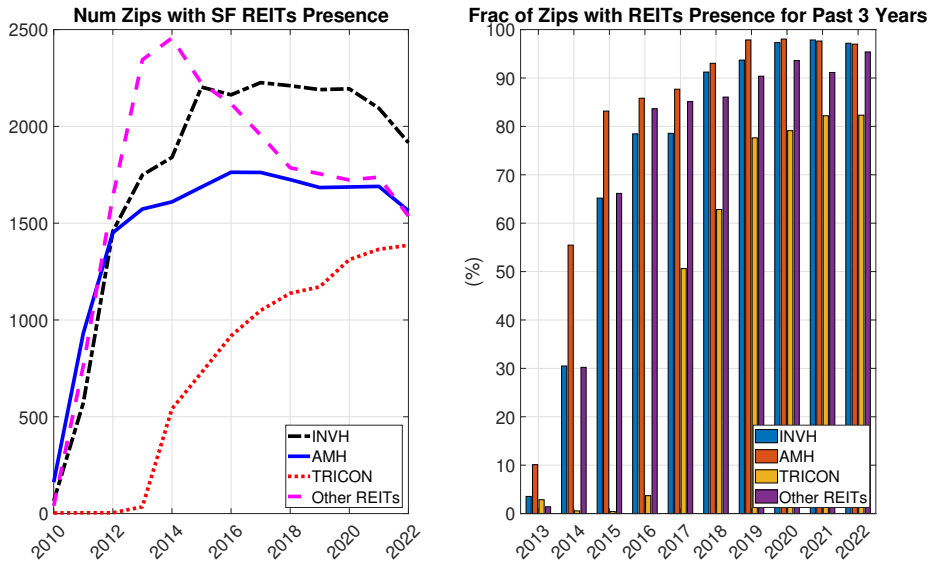


(b) Share of All SFR Units

Figure 1: This figure plots the evolution of total SFR holdings over time. Panel (a) shows the number of units owned by SFRs between 2010 and 2021. Panel (b) shows the share of single-family homes owned by SFRs between 2010 and 2021. We show results separately for the top three SFRs (INVH, AMH and TRICON) and for all SFRs. The data are from CoreLogic.



(a) Holdings across Zip Codes



(b) Market (Zip Code-Level) Penetration

Figure 2: Panel (a) of the figure shows: on the left, the total number of housing units owned by INVH, AMH, TRICON, and the other main SFRs active in the US; on the right, the average number of housing unit per ZIP code, for ZIP codes in which SFRs own at least one housing unit. Panel (b) plots: on the left, the number of ZIP codes with at least one housing unit owned by either INVH, AMH, TRICON, or the other SFRs active in the US; on the right, bars showing, out of all ZIP codes with units owned by INVH, AMH, TRICON, or other SFRs in a certain year, the fraction of ZIP codes in which the same SFRs were already present 3 years before (for example for INVH and 2013, the figure reports, out of all ZIP codes in which INVH is invested in 2013, the fraction of ZIP codes in which the REIT was already present in 2010). The data cover the sample from 2010 to 2022, and are available from CoreLogic.

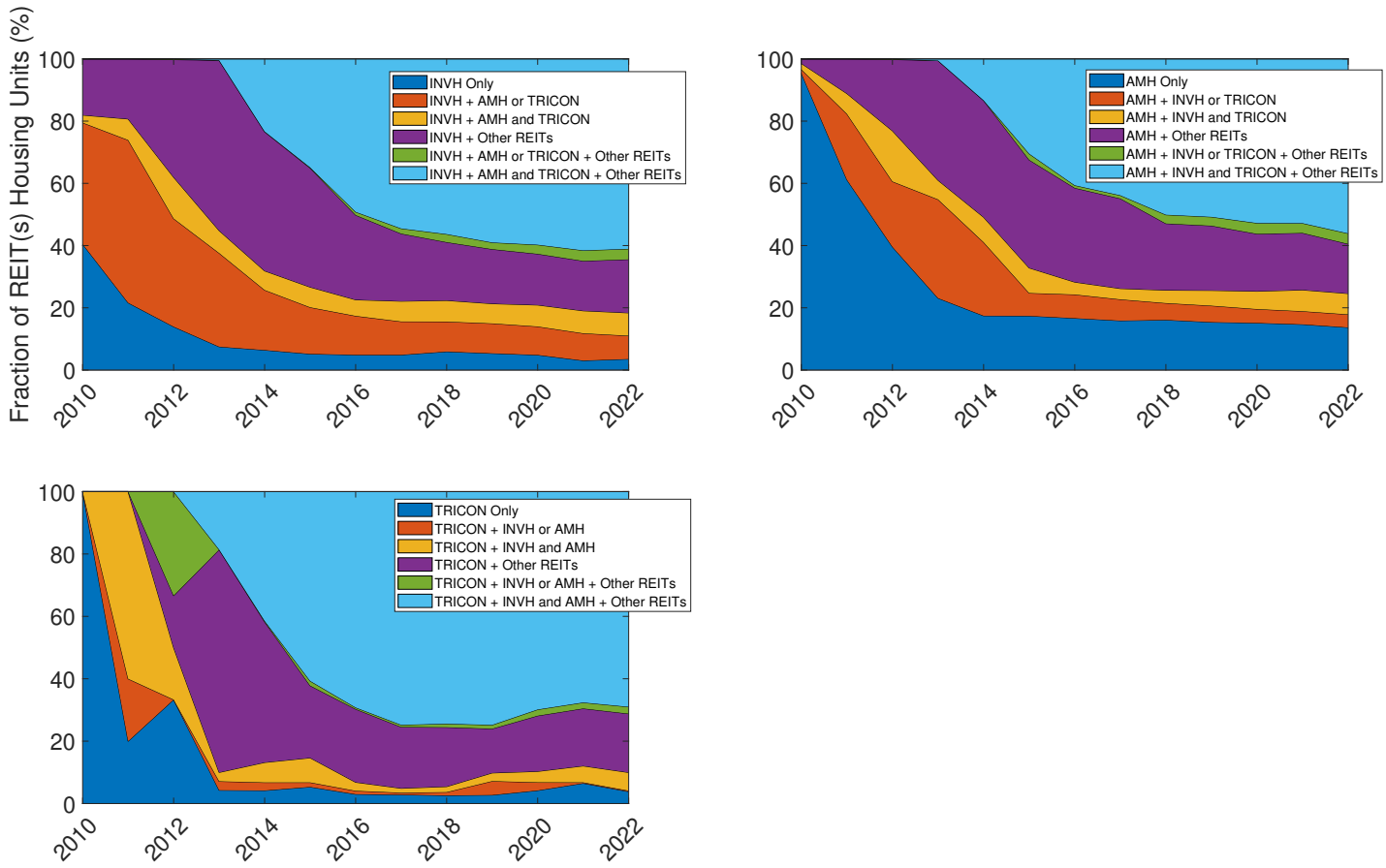


Figure 3: The figure plots the degree of overlap in the distribution of SFR assets across ZIP codes. We display 3 panels, one for each of the three largest SFRs active in the US: INVH, AMH, and TRICON. In each year, we calculate the fraction of each SFRs assets that were in ZIP codes in which it was the only REIT present, in which only the REIT and one of the other two main competitors were present, in which only the REIT and the other two main competitors were present, and so on. The data cover the sample from 2010 to 2022, and are available from CoreLogic.

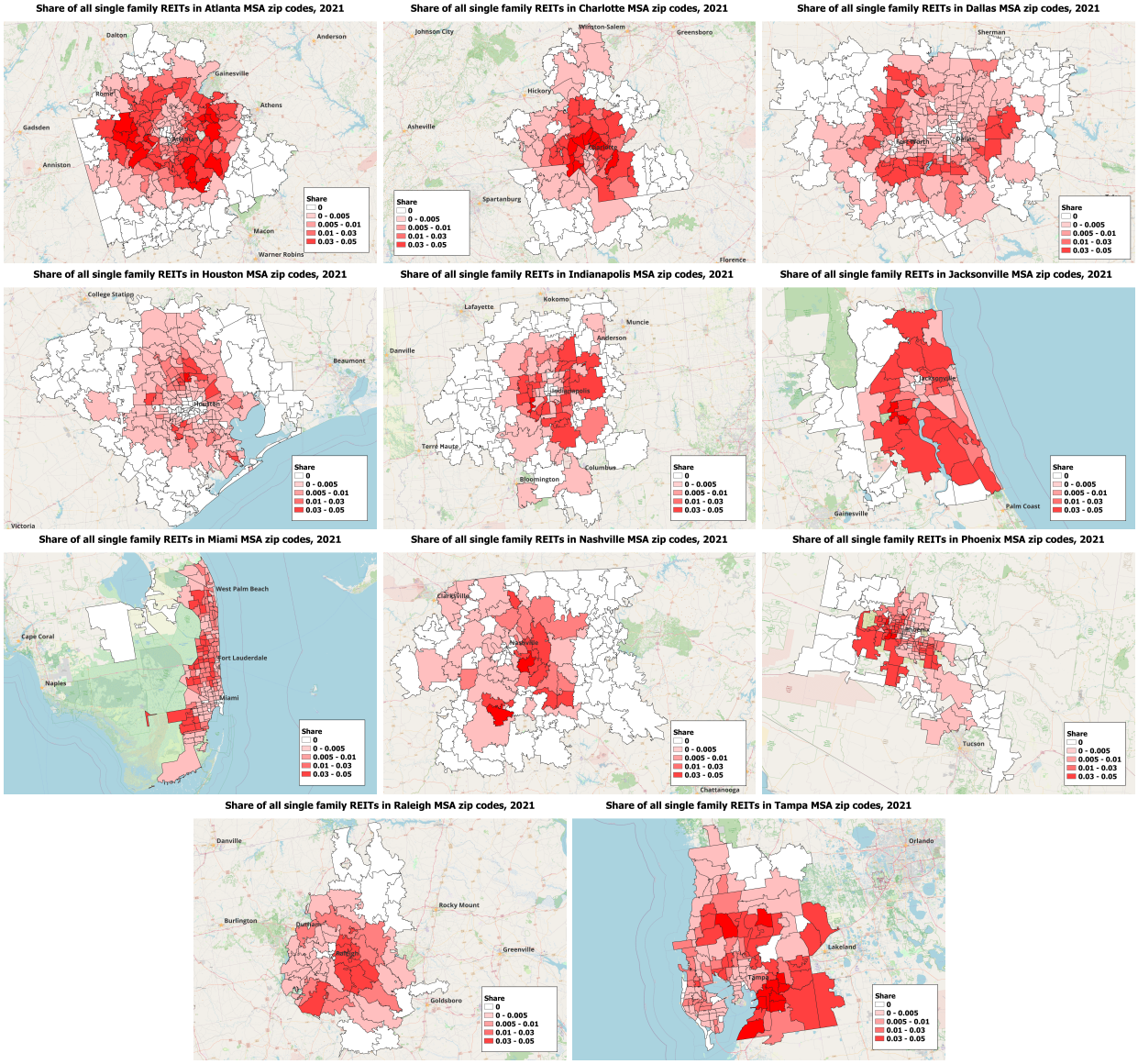
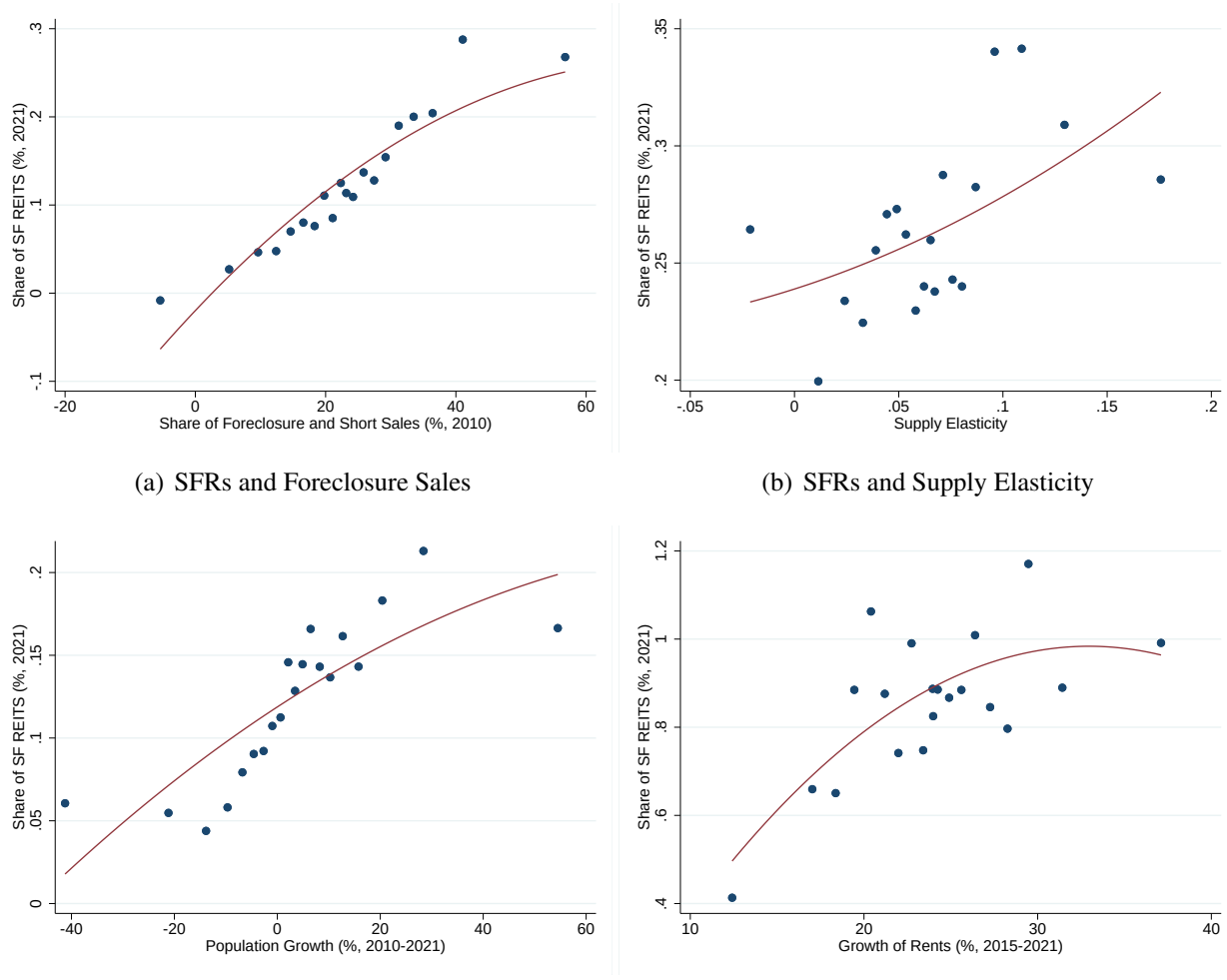


Figure 4: This figure shows ZIP code-level heatmaps of the share of single-family residences owned by SFRs in 2021, for Atlanta (GA), Charlotte (NC), Dallas (TX), Houston (TX), Indianapolis (IN), Jacksonville (FL), Miami (FL), Nashville (TN), Phoenix (AZ), Raleigh (NC), and Tampa (FL). The data are from CoreLogic.



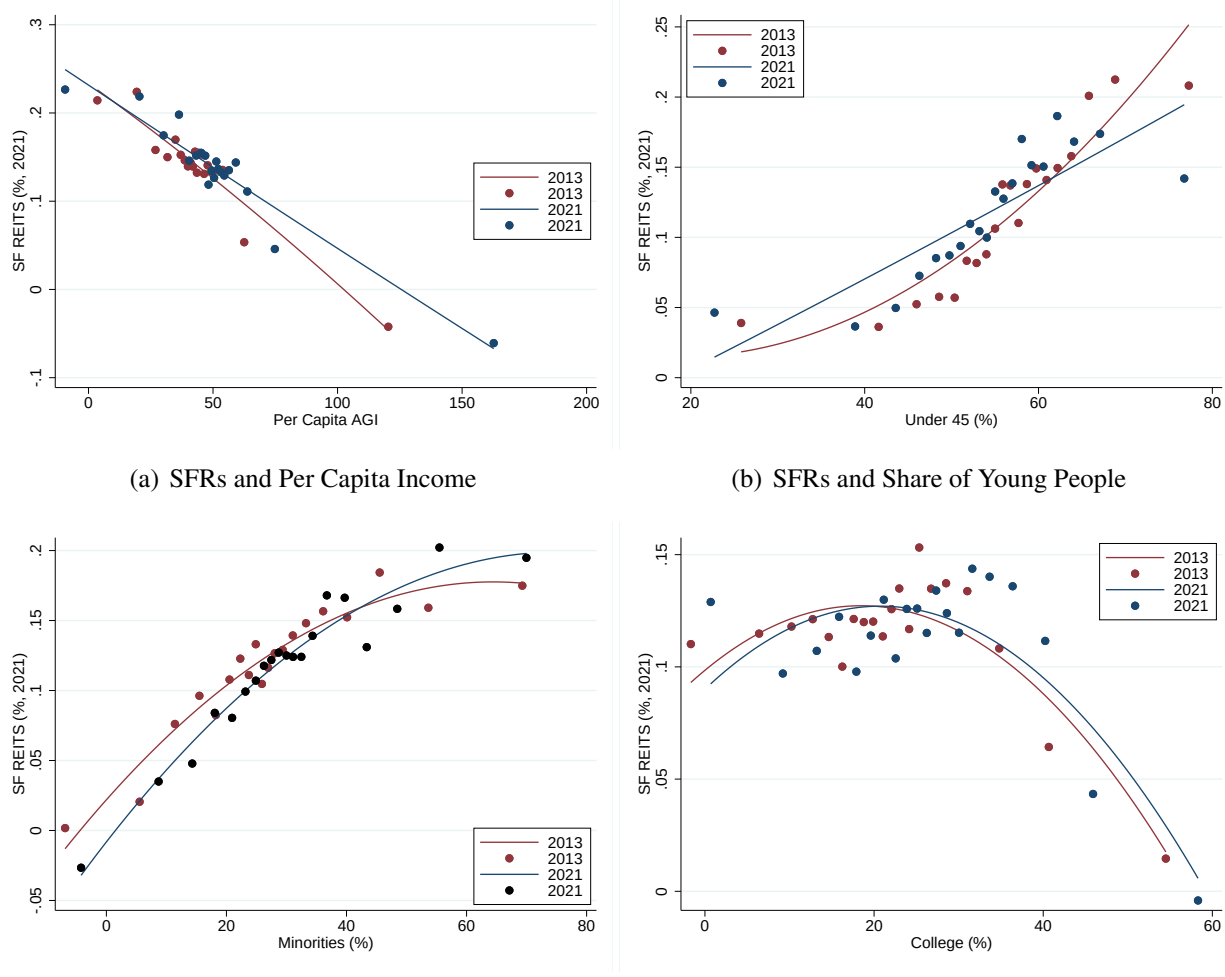
(a) SFRs and Foreclosure Sales

(b) SFRs and Supply Elasticity

(c) SFRs and Population Growth

(d) SFRs and Rent Growth

Figure 5: This figure provides bin-scatter plots of shares of single-family residences held by all SFRs at the ZIP code level in 2021 against the ZIP code level-share of single-family house foreclosure sales in 2010, supply elasticity (based on the measure developed by Han and Baum-Snow, 2023, which uses data from 2000-2010), growth in population between 2010 and 2021, and growth in rents between 2010 and 2021, respectively. County fixed effects are absorbed. The data are from CoreLogic and the Census.



(a) SFRs and Per Capita Income

(b) SFRs and Share of Young People

(c) SFRs and Share of Minority

(d) SFRs and Share of College Graduates

Figure 6: This figure provides bin-scatter plots of shares of single-family residences held by SFRs at the ZIP code level in 2021 against per capita income, the share of young individuals (under age 45), the share of minorities, and the share of population with a college degree or above. County fixed affects are absorbed. The data are from CoreLogic.

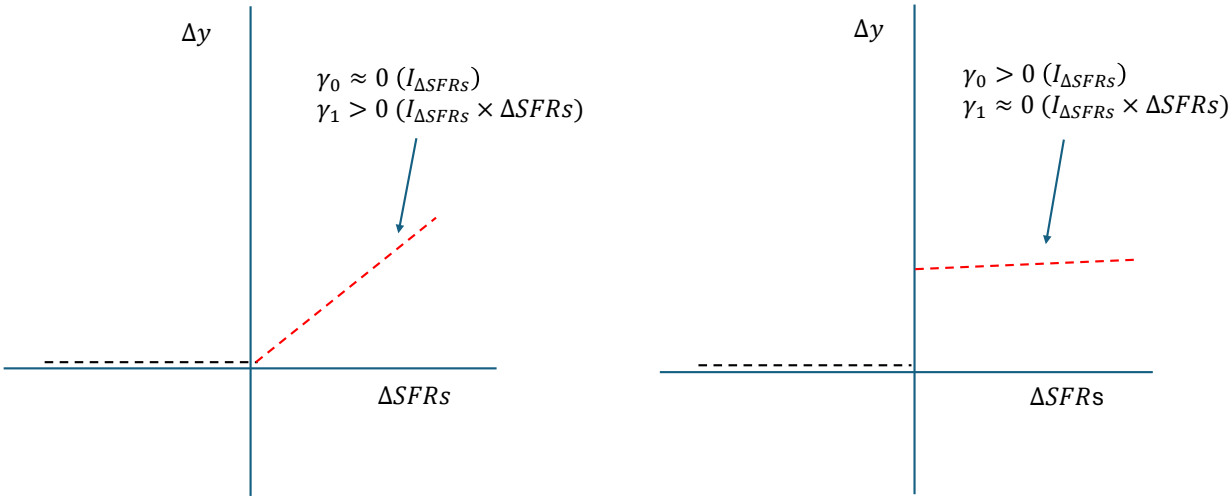


Figure 7: The figure shows two extreme cases of estimates of the coefficients γ_0 and γ_1 from equation (2). On the left, γ_0 is small and γ_1 is positive. The co-movement between an increase in the share of SFRs holdings and the outcome y grows proportionally with the increase of the SFRs share. On the left, γ_0 is positive, and γ_1 is negligible. There is a difference in the change in y, depending on whether the SFRs share increases or not. However, this effect does not depend on how large the change in the SFR share is.

Reported on 10-K (2021 year-end)			Matched Data (2021 assessed year)		
Cities and States	INVH	AMH	States	INVH	AMH
Phoenix, AZ	8,172	3,147	AZ	7,440	3,886
CA	12,198	n.a.	CA	9,646	329
Denver, CO	2,348	831	CO	2,311	1,090
Large Cities of FL	24,601	6,631	FL	22,559	7,893
Atlanta, GA	12,555	4,977	GA	10,213	6,312
Chicago, IL and IN	2,630	4,543	IL, IN	718	4,319
Minneapolis, MN	1,126	n.a.	MN	1,054	1
NC, SC	4,934	8,084	NC, SC	4,758	9,784
Las Vegas, NV	3,006	1,127	NV	3,294	1,589
Columbus and Cincinnati, OH	n.a.	4,044	OH	19	3,746
Nashville, TN	16	2,907	TN	4	4,214
Large Cities of TX	4,922	8,230	TX	3,478	9,261
Salt Lake City, UT	n.a.	1,595	UT	2	1,815
Seattle, WA	3,669	n.a.	WA	3,936	1,234
Other	n.a.	6,757			
Total	80,177	52,873	Total	69,432	55,473

Table 1: This Table shows SFR holdings based on 2021 fiscal year SEC filings and on our data set, for Invitation Homes (INVH) and American Homes 4 Rent (AMH). The SEC filings report holdings by metropolitan area, while for our sample we report holdings by state. The comparison is still valid, since SFRs concentrate their holdings within major metropolitan areas. The public filings are obtained from SEC's public database EDGAR, while our data set is constructed using data from CoreLogic.

	Change in Housing Units (2012:2021)							
	Full Sample	Full Sample	$< Q95$ $\Delta SFRs$	$< Q95$ $\Delta SFRs$	Full Sample	Full Sample	Full Sample	Full Sample
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
$\Delta SFRs_{12:21}$	2.17***	1.32***	4.57***		1.49*	3.95***	0.70	1.07**
	(0.32)	(0.35)	(0.87)		(0.81)	(1.47)	(0.93)	(0.45)
$\Delta SFRs_{12:21} \times I_{\Delta SFRs_{12:21}>0}$				0.94				
				(1.16)				
$I_{\Delta SFRs_{12:21}>0}$				0.63*				
				(0.37)				
$\Delta SFRs_{12:21} \times I_{H,SupEl}$					-0.74			
					(0.93)			
$I_{H,SupEl}$					1.01**			
					(0.45)			
$\Delta SFRs_{12:21} \times I_{H,Forec}$						-2.81*		
						(1.48)		
$I_{H,Forec}$						0.66**		
						(0.31)		
$\Delta SFRs_{12:21} \times I_{H,Min}$							0.72	
							(0.97)	
$I_{H,Min}$							-0.35	
							(0.37)	
$\Delta SFRs_{12:21} \times I_{H,Inc}$								0.43
								(0.59)
$I_{H,Inc}$								0.68*
								(0.35)
Controls	NO	YES	YES	YES	YES	YES	YES	YES
MSA FE	NO	YES	YES	YES	YES	YES	YES	YES
N	8156	7137	6734	6734	3687	7137	7137	7137
R-sq	0.005	0.363	0.383	0.381	0.342	0.364	0.363	0.364

Table 2: The table reports estimates of the ZIP code-level association between the increase in the share of properties owned by single-family REITs ($\Delta SFRs_{12:21}$) and the change in local housing units (housing stock), between 2012 and 2021 (see equations 1 and 2). $I_{H,SupEl}$ is a dummy equal to one for ZIP codes with supply elasticity (based on the measure developed by Han and Baum-Snow, 2023) above median. $I_{H,Forec}$ is a dummy equal to one for ZIP codes that experienced above median level of foreclosures in 2012 $I_{H,Min}$ and $I_{H,Inc}$ are dummies equal to one for ZIP codes that had above median share of minorities and adjusted gross income in 2012. The controls are log ZIP code income, the share of individuals of age below 25, below 45, and below 65, the share of individuals who are male, White, and Black. Results are based on data from CoreLogic.

	Change in the Share of Housing Units Owned by Individuals (2012:2021)							
	Full Sample	Full Sample	$< Q95$ $\Delta SFRs$	$< Q95$ $\Delta SFRs$	Full Sample	Full Sample	Full Sample	Full Sample
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
$\Delta SFRs_{12:21}$	-1.42***	-0.93***	2.20***		0.61	3.45***	-0.65	-1.19***
	(0.24)	(0.19)	(0.51)		(0.47)	(0.81)	(0.52)	(0.25)
$\Delta SFRs_{12:21} \times I_{\Delta SFRs_{12:21}>0}$				-0.57				
				(0.67)				
$I_{\Delta SFRs_{12:21}>0}$				0.87***				
				(0.22)				
$\Delta SFRs_{12:21} \times I_{H,SupEl}$					-1.90***			
					(0.54)			
$I_{H,SupEl}$					0.91***			
					(0.26)			
$\Delta SFRs_{12:21} \times I_{H,Forec}$						-4.60***		
						(0.82)		
$I_{H,Forec}$						0.51***		
						(0.17)		
$\Delta SFRs_{12:21} \times I_{H,Min}$							-0.29	
							(0.54)	
$I_{H,Min}$							-0.27	
							(0.21)	
$\Delta SFRs_{12:21} \times I_{H,Inc}$								0.50
								(0.33)
$I_{H,Inc}$								0.36*
								(0.20)
Controls	NO	YES	YES	YES	YES	YES	YES	YES
MSA FE	NO	YES	YES	YES	YES	YES	YES	YES
N	8156	7137	6734	6734	3687	7137	7137	7137
R-sq	0.004	0.124	0.108	0.108	0.133	0.129	0.125	0.125

Table 3: The table reports estimates of the ZIP code-level association between the increase in the share of properties owned by single-family REITs ($\Delta SFRs_{12:21}$) and the change in the share of homes owned by individuals, between 2012 and 2021 (see equations 1 and 2). $I_{H,SupEl}$ is a dummy equal to one for ZIP codes with supply elasticity (based on the measure developed by Han and Baum-Snow, 2023) above median. $I_{H,Forec}$ is a dummy equal to one for ZIP codes that experienced above median level of foreclosures in 2012 $I_{H,Min}$ and $I_{H,Inc}$ are dummies equal to one for ZIP codes that had above median share of minorities and adjusted gross income in 2012. The controls are log ZIP code income, the share of individuals of age below 25, below 45, and below 65, the share of individuals who are male, White, and Black. Results are based on data from CoreLogic.

	Change in the Share of Housing Units Owned by Legal Entities, Excluding REITs (2012:2021)							
	Full Sample	Full Sample	$< Q95$ $\Delta SFRs$	$< Q95$ $\Delta SFRs$	Full Sample	Full Sample	Full Sample	Full Sample
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
$\Delta SFRs_{12:21}$	0.42*	-0.072	-3.20***		-1.61***	-4.45***	-0.35	0.19
	(0.24)	(0.19)	(0.51)		(0.47)	(0.81)	(0.52)	(0.25)
$\Delta SFRs_{12:21} \times I_{\Delta SFRs_{12:21}>0}$				-0.44				
				(0.67)				
$I_{\Delta SFRs_{12:21}>0}$				-0.89***				
				(0.22)				
$\Delta SFRs_{12:21} \times I_{H,SupEl}$					1.90***			
					(0.54)			
$I_{H,SupEl}$					-0.91***			
					(0.26)			
$\Delta SFRs_{12:21} \times I_{H,Forec}$						4.60***		
						(0.82)		
$I_{H,Forec}$						-0.51***		
						(0.17)		
$\Delta SFRs_{12:21} \times I_{H,Min}$							0.29	
							(0.54)	
$I_{H,Min}$							0.27	
							(0.21)	
$\Delta SFRs_{12:21} \times I_{H,Inc}$								-0.50
								(0.33)
$I_{H,Inc}$								-0.36*
								(0.20)
Controls	NO	YES	YES	YES	YES	YES	YES	YES
MSA FE	NO	YES	YES	YES	YES	YES	YES	YES
N	8156	7137	6734	6734	3687	7137	7137	7137
R-sq	0.000	0.113	0.108	0.107	0.124	0.117	0.113	0.114

Table 4: The table reports estimates of the ZIP code-level association between the increase in the share of properties owned by single-family REITs ($\Delta SFRs_{12:21}$) and the change in the share of homes owned by legal entities that are not REITs, between 2012 and 2021 (see equations 1 and 2). $I_{H,SupEl}$ is a dummy equal to one for ZIP codes with supply elasticity (based on the measure developed by Han and Baum-Snow, 2023) above median. $I_{H,Forec}$ is a dummy equal to one for ZIP codes that experienced above median level of foreclosures in 2012 $I_{H,Min}$ and $I_{H,Inc}$ are dummies equal to one for ZIP codes that had above median share of minorities and adjusted gross income in 2012. The controls are log ZIP code income, the share of individuals of age below 25, below 45, and below 65, the share of individuals who are male, White, and Black. Results are based on data from CoreLogic.

	Change in Home Purchase Mortgage Approval Rate (2012:2021)							
	Full Sample	Full Sample	$< Q95$ $\Delta SFRs$	$< Q95$ $\Delta SFRs$	Full Sample	Full Sample	Full Sample	Full Sample
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
$\Delta SFRs_{12:21}$	0.89	-0.38	-3.48*		0.68	2.41	-1.19	-0.56
	(0.64)	(0.74)	(2.01)		(1.34)	(3.58)	(2.48)	(0.95)
$\Delta SFRs_{12:21} \times I_{\Delta SFRs_{12:21}>0}$				-4.55*				
				(2.50)				
$I_{\Delta SFRs_{12:21}>0}$				0.12				
				(0.84)				
$\Delta SFRs_{12:21} \times I_{H,SupEl}$					-1.20			
					(1.52)			
$I_{H,SupEl}$					0.97			
					(0.72)			
$\Delta SFRs_{12:21} \times I_{H,Forec}$						-2.96		
						(3.59)		
$I_{H,Forec}$						0.85		
						(0.67)		
$\Delta SFRs_{12:21} \times I_{H,Min}$							0.68	
							(2.51)	
$I_{H,Min}$							1.52**	
							(0.71)	
$\Delta SFRs_{12:21} \times I_{H,Inc}$								0.43
								(1.25)
$I_{H,Inc}$								-1.77***
								(0.61)
Controls	NO	YES	YES	YES	YES	YES	YES	YES
MSA FE	NO	YES	YES	YES	YES	YES	YES	YES
N	5856	5784	5397	5397	3561	5779	5778	5749
R-sq	0.000	0.084	0.084	0.085	0.112	0.083	0.083	0.085

Table 5: The table reports estimates of the ZIP code-level association between the increase in the share of properties owned by single-family REITs ($\Delta SFRs_{12:21}$) and the change in the approval rate of home purchase mortgage applications, between 2012 and 2021 (see equations 1 and 2). $I_{H,SupEl}$ is a dummy equal to one for ZIP codes with supply elasticity (based on the measure developed by Han and Baum-Snow, 2023) above median. $I_{H,Forec}$ is a dummy equal to one for ZIP codes that experienced above median level of foreclosures in 2012 $I_{H,Min}$ and $I_{H,Inc}$ are dummies equal to one for ZIP codes that had above median share of minorities and adjusted gross income in 2012. The controls are the change in mortgage applicants log income and log loan amount between 2012 and 2021, and changes in the share of conforming, primary residence, and conventional loans between 2012 and 2021. Results are based on data from CoreLogic and HMDA.

	Change in LTV for Originated Home Purchase Mortgages (2012:2021)							
	Full Sample	Full Sample	$< Q95$ $\Delta SFRs$	$< Q95$ $\Delta SFRs$	Full Sample	Full Sample	Full Sample	Full Sample
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
$\Delta SFRs_{12:21}$	-0.15	-0.27	-0.17		-0.48**	-1.11	-0.43	0.088
	(0.18)	(0.16)	(0.45)		(0.24)	(0.75)	(0.44)	(0.20)
$\Delta SFRs_{12:21} \times I_{\Delta SFRs_{12:21}>0}$				-0.22				
				(0.57)				
$I_{\Delta SFRs_{12:21}>0}$				-0.016				
				(0.19)				
$\Delta SFRs_{12:21} \times I_{H,SupEl}$					0.20			
					(0.27)			
$I_{H,SupEl}$					-0.25*			
					(0.13)			
$\Delta SFRs_{12:21} \times I_{H,Forec}$						0.92		
						(0.76)		
$I_{H,Forec}$						-0.46***		
						(0.15)		
$\Delta SFRs_{12:21} \times I_{H,Min}$							0.14	
							(0.46)	
$I_{H,Min}$							0.41***	
							(0.15)	
$\Delta SFRs_{12:21} \times I_{H,Inc}$								-0.58**
								(0.27)
$I_{H,Inc}$								-0.042
								(0.13)
Controls	NO	YES	YES	YES	YES	YES	YES	YES
MSA FE	NO	YES	YES	YES	YES	YES	YES	YES
N	7073	6735	6331	6331	3637	6727	6725	6559
R-sq	0.000	0.328	0.325	0.325	0.481	0.330	0.330	0.338

Table 6: The table reports estimates of the ZIP code-level association between the increase in the share of properties owned by single-family REITs ($\Delta SFRs_{12:21}$) and the change in the loan to value ratio of originated home purchase mortgages, between 2012 and 2021 (see equations 1 and 2). $I_{H,SupEl}$ is a dummy equal to one for ZIP codes with supply elasticity (based on the measure developed by Han and Baum-Snow, 2023) above median. $I_{H,Forec}$ is a dummy equal to one for ZIP codes that experienced above median level of foreclosures in 2012 $I_{H,Min}$ and $I_{H,Inc}$ are dummies equal to one for ZIP codes that had above median share of minorities and adjusted gross income in 2012. The controls are the change in average FICO, log loan amount, and DTI between 2012 and 2021, and changes in the share of primary residence, conventional, and jumbo loans between 2012 and 2021. Results are based on data from CoreLogic and HMDA.

	Change in FICO for Originated Home Purchase Mortgages (2012:2021)							
	Full Sample	Full Sample	$< Q95$ $\Delta SFRs$	$< Q95$ $\Delta SFRs$	Full Sample	Full Sample	Full Sample	Full Sample
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
$\Delta SFRs_{12:21}$	2.04***	-0.82	-0.49		-0.42	1.57	0.80	-0.54
	(0.71)	(0.61)	(1.69)		(0.91)	(2.81)	(1.63)	(0.76)
$\Delta SFRs_{12:21} \times I_{\Delta SFRs_{12:21}>0}$				-1.17				
				(2.13)				
$I_{\Delta SFRs_{12:21}>0}$				0.27				
				(0.69)				
$\Delta SFRs_{12:21} \times I_{H,SupEl}$					-0.71			
					(1.03)			
$I_{H,SupEl}$					0.028			
					(0.49)			
$\Delta SFRs_{12:21} \times I_{H,Forec}$						-2.43		
						(2.83)		
$I_{H,Forec}$						0.014		
						(0.55)		
$\Delta SFRs_{12:21} \times I_{H,Min}$							-1.71	
							(1.70)	
$I_{H,Min}$							-0.43	
							(0.56)	
$\Delta SFRs_{12:21} \times I_{H,Inc}$								-0.84
								(1.00)
$I_{H,Inc}$								0.39
								(0.50)
Controls	NO	YES	YES	YES	YES	YES	YES	YES
MSA FE	NO	YES	YES	YES	YES	YES	YES	YES
N	7150	6735	6331	6331	3637	6727	6725	6559
R-sq	0.001	0.271	0.268	0.269	0.373	0.272	0.272	0.283

Table 7: The table reports estimates of the ZIP code-level association between the increase in the share of properties owned by single-family REITs ($\Delta SFRs_{12:21}$) and the change in the FICO score of originated home purchase mortgages, between 2012 and 2021 (see equations 1 and 2). $I_{H,SupEl}$ is a dummy equal to one for ZIP codes with supply elasticity (based on the measure developed by Han and Baum-Snow, 2023) above median. $I_{H,Forec}$ is a dummy equal to one for ZIP codes that experienced above median level of foreclosures in 2012 $I_{H,Min}$ and $I_{H,Inc}$ are dummies equal to one for ZIP codes that had above median share of minorities and adjusted gross income in 2012. The controls are the change in average loan to value, loan amount, and DTI between 2012 and 2021, and changes in the share of primary residence, conventional, and jumbo loans between 2012 and 2021. Results are based on data from CoreLogic and HMDA.

	Change in House Prices (2012:2021)							
	Full Sample	Full Sample	$< Q95$ $\Delta SFRs$	$< Q95$ $\Delta SFRs$	Full Sample	Full Sample	Full Sample	Full Sample
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
$\Delta SFRs_{12:21}$	1.35***	0.34***	0.40***		0.49***	0.068	0.034	0.48***
	(0.072)	(0.048)	(0.13)		(0.097)	(0.22)	(0.16)	(0.061)
$\Delta SFRs_{12:21} \times I_{\Delta SFRs_{12:21}>0}$				0.58***				
				(0.16)				
$I_{\Delta SFRs_{12:21}>0}$				0.086				
				(0.057)				
$\Delta SFRs_{12:21} \times I_{H,SupEl}$					-0.17			
					(0.11)			
$I_{H,SupEl}$					0.15***			
					(0.056)			
$\Delta SFRs_{12:21} \times I_{H,Forec}$						0.24		
						(0.22)		
$I_{H,Forec}$						0.32***		
						(0.055)		
$\Delta SFRs_{12:21} \times I_{H,Min}$							0.32**	
							(0.16)	
$I_{H,Min}$							0.054	
							(0.059)	
$\Delta SFRs_{12:21} \times I_{H,Inc}$								-0.28***
								(0.079)
$I_{H,Inc}$								-0.32***
								(0.060)
Controls	NO	YES	YES	YES	YES	YES	YES	YES
MSA FE	NO	YES	YES	YES	YES	YES	YES	YES
N	4423	4395	4001	4001	3206	4395	4395	4395
R-sq	0.074	0.748	0.743	0.744	0.751	0.750	0.748	0.752

Table 8: The table reports estimates of the ZIP code-level association between the increase in the share of properties owned by single-family REITs ($\Delta SFRs_{2012:2021}$) and the change in house prices, between 2012 and 2021 (see equations 1 and 2). $I_{H,SupEl}$ is a dummy equal to one for ZIP codes with supply elasticity (based on the measure developed by Han and Baum-Snow, 2023) above median. $I_{H,Forec}$ is a dummy equal to one for ZIP codes that experienced above median level of foreclosures in 2012 $I_{H,Min}$ and $I_{H,Inc}$ are dummies equal to one for ZIP codes that had above median share of minorities and adjusted gross income in 2012. The controls are log ZIP code income, the share of individuals of age below 25, below 45, and below 65, the share of individuals who are male, White, and Black. Results are based on data from CoreLogic.

	Change in Sale-to-List Price Ratio (2012:2021)							
	Full Sample	Full Sample	$< Q95$ $\Delta SFRs$	$< Q95$ $\Delta SFRs$	Full Sample	Full Sample	Full Sample	Full Sample
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
$\Delta SFRs_{12:21}$	-1.03***	-0.48***	-0.56		-0.56*	-0.86	-0.86**	-0.56***
	(0.16)	(0.17)	(0.44)		(0.30)	(0.85)	(0.43)	(0.22)
$\Delta SFRs_{12:21} \times I_{\Delta SFRs_{12:21}>0}$				-1.16**				
				(0.56)				
$I_{\Delta SFRs_{12:21}>0}$				0.082				
				(0.18)				
$\Delta SFRs_{12:21} \times I_{H,SupEl}$					0.22			
					(0.35)			
$I_{H,SupEl}$					-0.23			
					(0.16)			
$\Delta SFRs_{12:21} \times I_{H,Forec}$						0.46		
						(0.85)		
$I_{H,Forec}$						-0.60***		
						(0.16)		
$\Delta SFRs_{12:21} \times I_{H,Min}$							0.44	
							(0.45)	
$I_{H,Min}$							-0.14	
							(0.18)	
$\Delta SFRs_{12:21} \times I_{H,Inc}$								0.15
								(0.28)
$I_{H,Inc}$								0.087
								(0.18)
Controls	NO	YES	YES	YES	YES	YES	YES	YES
MSA FE	NO	YES	YES	YES	YES	YES	YES	YES
N	5416	5284	4934	4934	3096	5284	5284	5284
R-sq	0.008	0.197	0.188	0.188	0.308	0.199	0.197	0.197

Table 9: The table reports estimates of the ZIP code-level association between the increase in the share of properties owned by single-family REITs ($\Delta SFRs_{2012:2021}$) and the change in the percentage gap between sales prices and listing prices, between 2012 and 2021 (see equations 1 and 2). $I_{H,SupEl}$ is a dummy equal to one for ZIP codes with supply elasticity (based on the measure developed by Han and Baum-Snow, 2023) above median. $I_{H,Forec}$ is a dummy equal to one for ZIP codes that experienced above median level of foreclosures in 2012 $I_{H,Min}$ and $I_{H,Inc}$ are dummies equal to one for ZIP codes that had above median share of minorities and adjusted gross income in 2012. The controls are log ZIP code income, the share of individuals of age below 25, below 45, and below 65, the share of individuals who are male, White, and Black. Results are based on data from CoreLogic and Redfin.

	Change in Days on the Market (2012:2021)							
	Full Sample	Full Sample	$< Q95$ $\Delta SFRs$	$< Q95$ $\Delta SFRs$	Full Sample	Full Sample	Full Sample	Full Sample
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
$\Delta SFRs_{12:21}$	7.16	3.53	22.4*		-0.72	18.9	12.4	5.71
	(4.74)	(4.80)	(12.9)		(5.54)	(24.2)	(12.2)	(6.27)
$\Delta SFRs_{12:21} \times I_{\Delta SFRs_{12:21}>0}$				4.46				
				(16.5)				
$I_{\Delta SFRs_{12:21}>0}$				18.0***				
				(5.25)				
$\Delta SFRs_{12:21} \times I_{H,SupEl}$					1.29			
					(6.23)			
$I_{H,SupEl}$					-5.91**			
					(2.75)			
$\Delta SFRs_{12:21} \times I_{H,Forec}$						-17.0		
						(24.4)		
$I_{H,Forec}$						11.3**		
						(4.72)		
$\Delta SFRs_{12:21} \times I_{H,Min}$							-10.5	
							(12.8)	
$I_{H,Min}$							9.03*	
							(5.29)	
$\Delta SFRs_{12:21} \times I_{H,Inc}$								-4.10
								(8.21)
$I_{H,Inc}$								-3.07
								(5.30)
Controls	NO	YES	YES	YES	YES	YES	YES	YES
MSA FE	NO	YES	YES	YES	YES	YES	YES	YES
N	5229	5100	4761	4761	2960	5100	5100	5100
R-sq	0.000	0.212	0.211	0.213	0.383	0.213	0.212	0.212

Table 10: The table reports estimates of the ZIP code-level association between the increase in the share of properties owned by single-family REITs ($\Delta SFRs_{2012:2021}$) and the change in days on the market for sales listings, between 2012 and 2021 (see equations 1 and 2). $I_{H,SupEl}$ is a dummy equal to one for ZIP codes with supply elasticity (based on the measure developed by Han and Baum-Snow, 2023) above median. $I_{H,Forec}$ is a dummy equal to one for ZIP codes that experienced above median level of foreclosures in 2012 $I_{H,Min}$ and $I_{H,Inc}$ are dummies equal to one for ZIP codes that had above median share of minorities and adjusted gross income in 2012. The controls are log ZIP code income, the share of individuals of age below 25, below 45, and below 65, the share of individuals who are male, White, and Black. Results are based on data from CoreLogic and Redfin.

Appendix:

A1 Identifying Single-Family REITs Ownership

We follow the steps below to identify single-family REITs ownership using data from CoreLogic:

1. Using keywords to identify each company through the owner's names on the tax records from CoreLogic ($owner_1_full_name$, $owner_2_full_name$, $owner_3_full_name$, $owner_4_full_name$, and $owner_care_of_name$). For example, "AMERICAN HOME 4 RENT' is one of the keywords used to identify AMH owned properties.

2. Using the matches from step 1, use the mailing address reported on the tax records to form mailing address books for each company with the filtering below:

   (a) Mailing addresses for properties in foreclosure procedure are not used.

   (b) A mailing address is used only if at least 10 properties use that address in a state. This is to rule out some idiosyncrasy.

   (c) We manually checked each of the remaining mailing addresses and make sure they are tied to the REIT company under consideration.

3. Update the keywords for the REITs' names to capture observations of whose mailing addresses are excluded in step 2.

4. Using both keywords of owner's names and property mailing addresses to identify properties owned by each REIT company.

A2 Additional Figures and Tables

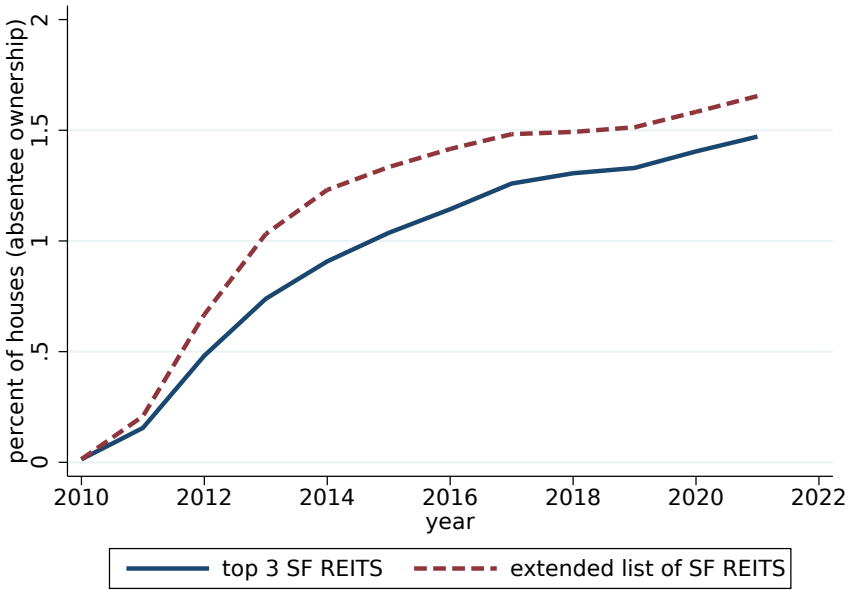


Figure A1: This Figure shows the share of single-family homes owned by SFRs between 2010 and 2021, out of all absentee owned single-family residences. We show results separately for the top three SFRs (INVH, AMH, and TRICON) and for all SFRs. The data is from CoreLogic.

	Change in Mortgage Refinancing Approval Rate (2012:2021)							
	Full Sample	Full Sample	$< Q95$ $\Delta SFRs$	$< Q95$ $\Delta SFRs$	Full Sample	Full Sample	Full Sample	Full Sample
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
$\Delta SFRs_{12:21}$	-1.06*	-0.78	-1.31		-0.016	-1.35	-2.44	-1.22
	(0.56)	(0.65)	(1.71)		(1.12)	(2.86)	(2.19)	(0.84)
$\Delta SFRs_{12:21} \times I_{\Delta SFRs_{12:21}>0}$				-2.49				
				(2.21)				
$I_{\Delta SFRs_{12:21}>0}$				0.84				
				(0.73)				
$\Delta SFRs_{12:21} \times I_{H,SupEl}$					-1.36			
					(1.29)			
$I_{H,SupEl}$					-0.28			
					(0.62)			
$\Delta SFRs_{12:21} \times I_{H,Forec}$						0.19		
						(2.89)		
$I_{H,Forec}$						1.98***		
						(0.57)		
$\Delta SFRs_{12:21} \times I_{H,Min}$							1.60	
							(2.22)	
$I_{H,Min}$							0.91	
							(0.61)	
$\Delta SFRs_{12:21} \times I_{H,Inc}$								0.50
								(1.10)
$I_{H,Inc}$								-2.16***
								(0.52)
Controls	NO	YES	YES	YES	YES	YES	YES	YES
MSA FE	NO	YES	YES	YES	YES	YES	YES	YES
N	6000	5936	5547	5547	3592	5930	5929	5893
R-sq	0.001	0.078	0.078	0.079	0.100	0.080	0.078	0.079

Table A1: The table reports estimates of the ZIP code-level association between the increase in the share of properties owned by single-family REITs ($\Delta SFRs_{12:21}$) and the change in the approval rate of mortgage refinancing applications, between 2012 and 2021 (see equations 1 and 2). $I_{H,SupEl}$ is a dummy equal to one for ZIP codes with supply elasticity (based on the measure developed by Han and Baum-Snow, 2023) above median. $I_{H,Forec}$ is a dummy equal to one for ZIP codes that experienced above median level of foreclosures in 2012 $I_{H,Min}$ and $I_{H,Inc}$ are dummies equal to one for ZIP codes that had above median share of minorities and adjusted gross income in 2012. The controls are the change in mortgage applicants log income and log loan amount between 2012 and 2021, and changes in the share of conforming, primary residence, and conventional loans between 2012 and 2021. Results are based on data from CoreLogic and HMDA.

	Change in LTV Ratio for Originated Refinancing Mortgages (2012:2021)							
	Full Sample	Full Sample	$< Q95$ $\Delta SFRs$	$< Q95$ $\Delta SFRs$	Full Sample	Full Sample	Full Sample	Full Sample
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
$\Delta SFRs_{12:21}$	-3.31***	-1.41***	-2.27***		-1.47***	-1.55*	-1.18**	-1.06***
	(0.22)	(0.18)	(0.49)		(0.29)	(0.82)	(0.48)	(0.21)
$\Delta SFRs_{12:21} \times I_{\Delta SFRs_{12:21}>0}$				-1.80***				
				(0.62)				
$I_{\Delta SFRs_{12:21}>0}$				-0.52***				
				(0.20)				
$\Delta SFRs_{12:21} \times I_{H,SupEl}$					-0.19			
					(0.33)			
$I_{H,SupEl}$					0.30**			
					(0.15)			
$\Delta SFRs_{12:21} \times I_{H,Forec}$						0.44		
						(0.82)		
$I_{H,Forec}$						-1.94***		
						(0.15)		
$\Delta SFRs_{12:21} \times I_{H,Min}$							-0.0071	
							(0.50)	
$I_{H,Min}$							-1.74***	
							(0.16)	
$\Delta SFRs_{12:21} \times I_{H,Inc}$								-0.57**
								(0.28)
$I_{H,Inc}$								2.20***
								(0.13)
Controls	NO	YES	YES	YES	YES	YES	YES	YES
MSA FE	NO	YES	YES	YES	YES	YES	YES	YES
N	7344	7045	6641	6641	3644	7025	7021	6797
R-sq	0.030	0.447	0.428	0.429	0.555	0.455	0.451	0.482

Table A2: The table reports estimates of the ZIP code-level association between the increase in the share of properties owned by single-family REITs ($\Delta SFRs_{12:21}$) and the change in the loan to value ratio of originated mortgage refinancings, between 2012 and 2021 (see equations 1 and 2). $I_{H,SupEl}$ is a dummy equal to one for ZIP codes with supply elasticity (based on the measure developed by Han and Baum-Snow, 2023) above median. $I_{H,Forec}$ is a dummy equal to one for ZIP codes that experienced above median level of foreclosures in 2012 $I_{H,Min}$ and $I_{H,Inc}$ are dummies equal to one for ZIP codes that had above median share of minorities and adjusted gross income in 2012. The controls are the change in average FICO, log loan amount, and DTI between 2012 and 2021, and changes in the share of primary residence, conventional, and jumbo loans between 2012 and 2021. Results are based on data from CoreLogic and HMDA.

	Change in FICO Score for Originated Refinancing Mortgages (2012:2021)							
	Full Sample	Full Sample	$< Q95$ $\Delta SFRs$	$< Q95$ $\Delta SFRs$	Full Sample	Full Sample	Full Sample	Full Sample
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
$\Delta SFRs_{12:21}$	-2.44***	-2.71***	-4.09**		-3.39***	2.68	-0.21	-3.44***
	(0.76)	(0.68)	(1.86)		(0.84)	(3.11)	(1.81)	(0.81)
$\Delta SFRs_{12:21} \times I_{\Delta SFRs_{12:21}>0}$				-3.47				
				(2.38)				
$I_{\Delta SFRs_{12:21}>0}$				-0.76				
				(0.76)				
$\Delta SFRs_{12:21} \times I_{H,SupEl}$					-0.49			
					(0.96)			
$I_{H,SupEl}$					-0.50			
					(0.45)			
$\Delta SFRs_{12:21} \times I_{H,Forec}$						-5.41*		
						(3.13)		
$I_{H,Forec}$						-1.10*		
						(0.58)		
$\Delta SFRs_{12:21} \times I_{H,Min}$							-2.91	
							(1.88)	
$I_{H,Min}$							0.50	
							(0.60)	
$\Delta SFRs_{12:21} \times I_{H,Inc}$								0.85
								(1.07)
$I_{H,Inc}$								0.79
								(0.51)
Controls	NO	YES	YES	YES	YES	YES	YES	YES
MSA FE	NO	YES	YES	YES	YES	YES	YES	YES
N	7367	7045	6641	6641	3644	7025	7021	6797
R-sq	0.001	0.194	0.190	0.190	0.352	0.196	0.196	0.219

Table A3: The table reports estimates of the ZIP code-level association between the increase in the share of properties owned by single-family REITs ($\Delta SFRs_{12:21}$) and the change in the FICO score of originated mortgage refinancings, between 2012 and 2021 (see equations 1 and 2). $I_{H,SupEl}$ is a dummy equal to one for ZIP codes with supply elasticity (based on the measure developed by Han and Baum-Snow, 2023) above median. $I_{H,Forec}$ is a dummy equal to one for ZIP codes that experienced above median level of foreclosures in 2012 $I_{H,Min}$ and $I_{H,Inc}$ are dummies equal to one for ZIP codes that had above median share of minorities and adjusted gross income in 2012. The controls are the change in average loan to value, loan amount, and DTI between 2012 and 2021, and changes in the share of primary residence, conventional, and jumbo loans between 2012 and 2021. Results are based on data from CoreLogic and HMDA.