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Ownership Profile of Single-Family Residence Properties in Philadelphia

A Focus on Large Corporate Investors

COMMUNITY DEVELOPMENT & REGIONAL OUTREACH

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The growing presence of corporate investors, particularly those backed by large financial firms, in the single-family residence (SFR) rental market has drawn significant attention from the popular press and policymakers. The low housing supply and rising housing prices and rents in recent years have raised questions about the impacts on the housing market and renters in general from large corporate investors — often used interchangeably with institutional investors — defined as business investors owning a significant number of properties (Goodman et al., 2023). There are concerns that these cash-rich investors could easily outbid individual homebuyers, limiting homeownership and wealth-building opportunities for those potential homebuyers. There are also concerns that these investors, by shifting the focus of rental housing from serving local communities to being a financial asset, could harm existing and potential tenants in important ways, particularly in terms of their affordability, stability, and quality of living (HUD, 2023).

While some studies find corporate investors helped stabilize local housing markets in the post–Great Recession period (e.g., Lambie-Hanson et al., 2022), anecdotal evidence suggests large-scale corporate investors could harm the housing market and tenants in ways like increased rents or fees, declines in homeownership rates, increased evictions, and increased reliance on automated technologies to mediate interactions with tenants (“automated landlords”) (Raymond et al., 2018; Immergluck, 2018; Fields, 2022; Gomory, 2022; Gurun et al., 2023; Balzarini and Melody, 2024; Lee and Wylie, 2024; An, 2024). The evidence on the impact of corporate investors, however, is still inconclusive and often sensitive to elements such as the study period, market conditions, and the definition of corporate investors. The lack of data at a more granular level has prevented people from examining the investment activities by these investors in a particular market or neighborhood (except a few hot spots like Atlanta, Charlotte, and Phoenix).

This brief summarizes a novel parcel-level data set created by the Center for Geospatial Solutions (CGS) at the Lincoln Institute of Land Policy that identifies the ownership profile of all property parcels in Philadelphia, which could be used to identify the spatial patterns of property ownership and purchases by large corporate investors. Philadelphia had been characterized by relatively low home prices and a large stock of single-family homes intended for homeowners. However, the racial homeownership gap is still large (Whiton et al., 2021), and a significant share of 1–4 unit housing properties, especially those in more distressed neighborhoods, was sold to investors in 2020 and 2021 (Dowdall et al., 2022). But little is known about the ownership profile of the stock of SFR properties in the city and the implications of different ownership types on housing market dynamics and tenants.

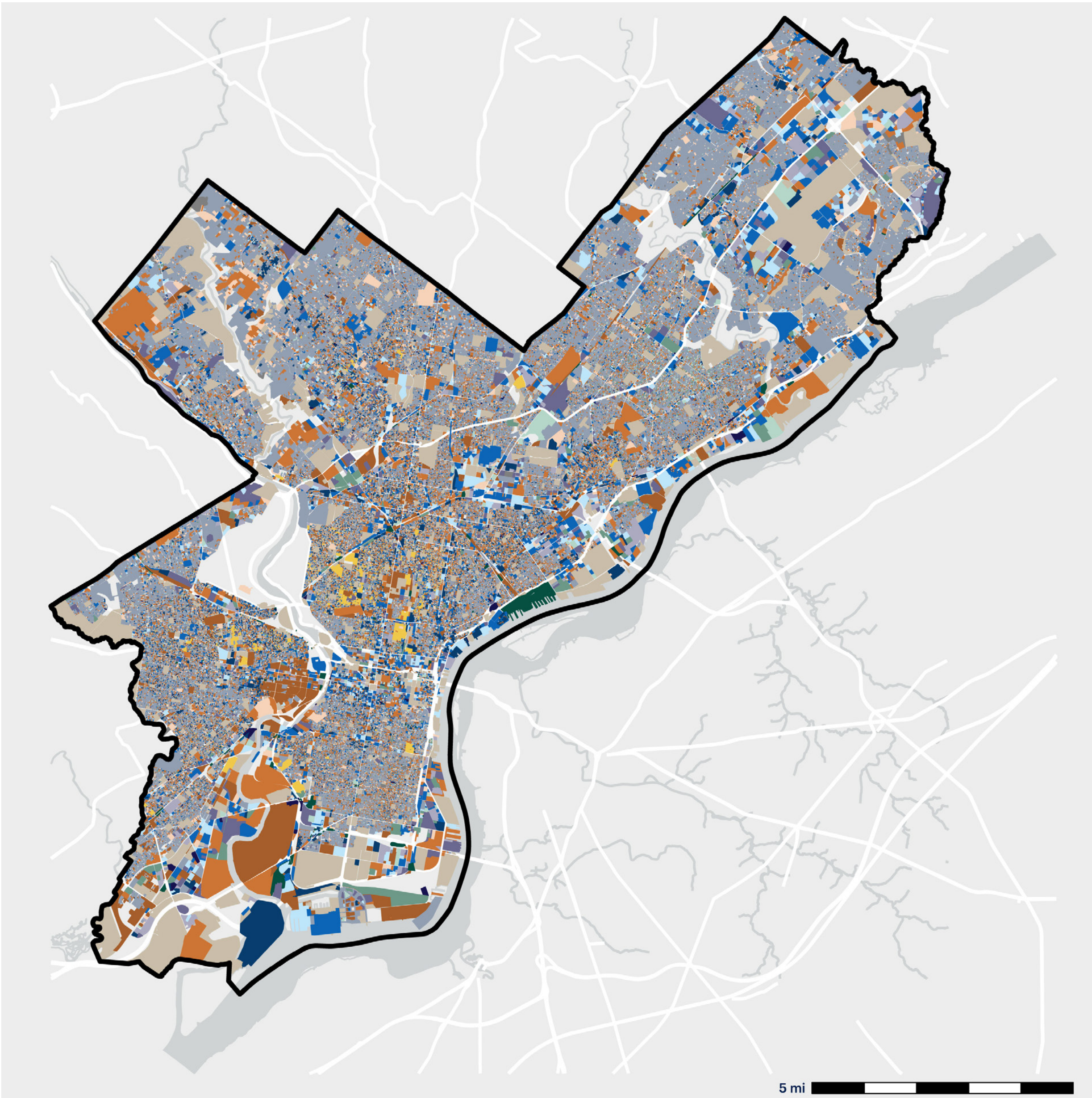
This brief examines the ownership profile of SFR parcels in 2023, as well as recently sold SFR parcels (most recently sold during 2020–2023), in Philadelphia and identifies whether neighborhoods with more concentrated large corporate investor activities are systematically different from others. Considering both the stock and flow of residential properties offers valuable insight. This brief uses a definition of large corporate investors as business entities that own a large number of properties that is based on the number of properties owned (26 or more), consistent with most early literature.[1] SFR properties are classified into four broad categories: owner-occupied, noncorporate owned (individual or mom-and-pop landlords), small corporate owned (1–25 properties in Philadelphia), and large corporate owned (26 or more).

Analyzing the overall ownership profile of SFR parcels and the neighborhood characteristics of properties owned by different types of investors yields these stylized facts.

- Large corporate owned SFRs account for a sizable share of SFR rentals (8.8 percent) in Philadelphia as of 2023, but most large corporate investors are relatively small players, and major national corporations have little presence in Philadelphia.
- Spatially, neighborhoods with the largest shares of large corporate owned SFR properties are concentrated in West and Southwest Philadelphia, in neighborhoods such as Mantua (12.5 percent), Belmont (8.6 percent), Southwest Schuylkill (8.6 percent), East Parkside (8.3 percent), Mill Creek (8.3 percent), and Haddington (7.9 percent).
- Philadelphia neighborhoods with greater concentrations of large corporate investor activities are more likely to be lower-income, have a higher share of Black residents, and be more distressed neighborhoods. About 80 percent of large corporate owned SFR properties are in low- and moderate-income (LMI) neighborhoods, although only 59.9 percent of the noncorporate owned and 44.4 percent of owner-occupied SFR properties are in these LMI neighborhoods. Their average neighborhood share of non-Hispanic Black residents is over 60 percent (the overall share is about 40 percent for the city).

[1] There has been no consensus on how to define institutional investors. Many researchers define an institutional investor as any corporate investor (e.g., LLC, LLP, Inc., etc.) with the number of SFR properties above a certain threshold, like three, 10, 15, 100, or more (see review in Goodman et al, 2023). Others use a more specific definition that only considers large financial firms that own, operate, and manage SFR rentals and are funded by rent-backed securities as institutional investors (Mills et al., 2019). The definition used in this brief centers on the key features of institutional investors, a business model that requires operating at a large scale for profitability, instead of other features like their source of funding or organizational structure.

FIGURE 1 **Ownership Profile of Property Parcels in Philadelphia, 2023**



In-State Corporate Owned
- In-State Corporate Owned
- In-State Multiproperty Corporate Owned
- In-State Large Multiproperty Corporate Owned

Out-of-State Corporate Owned
- Out-of-State Corporate Owned
- Out-of-State Multiproperty Corporate Owned
- Out-of-State Large Multiproperty Corporate Owned

In-State Noncorporate Owned
- In-State Noncorporate Owned
- In-State Multiproperty Noncorporate Owned
- In-State Large Multiproperty Noncorporate Owned

Out-of-State Noncorporate Owned
- Out-of-State Noncorporate Owned
- Out-of-State Multiproperty Noncorporate Owned
- Out-of-State Large Multiproperty Noncorporate Owned

- Government
- Housing Authority
- NEI
- Owner-Occupied or Likely Owner-Occupied

Source
Based on CGS data

- SFR properties in Philadelphia recently sold to large corporate investors are even more concentrated in lower-income and more distressed neighborhoods. About 85 percent of such recent sales are in LMI neighborhoods, with an average neighborhood share of minority residents of over 88 percent and an average neighborhood poverty rate of 33 percent.

- Zip codes in Philadelphia with a larger share of recent SFR sales to large corporate investors generally experienced a larger increase in rents during the pandemic (with a correlation coefficient of about 0.5), although the correlation itself does not necessary imply any causal relationship.

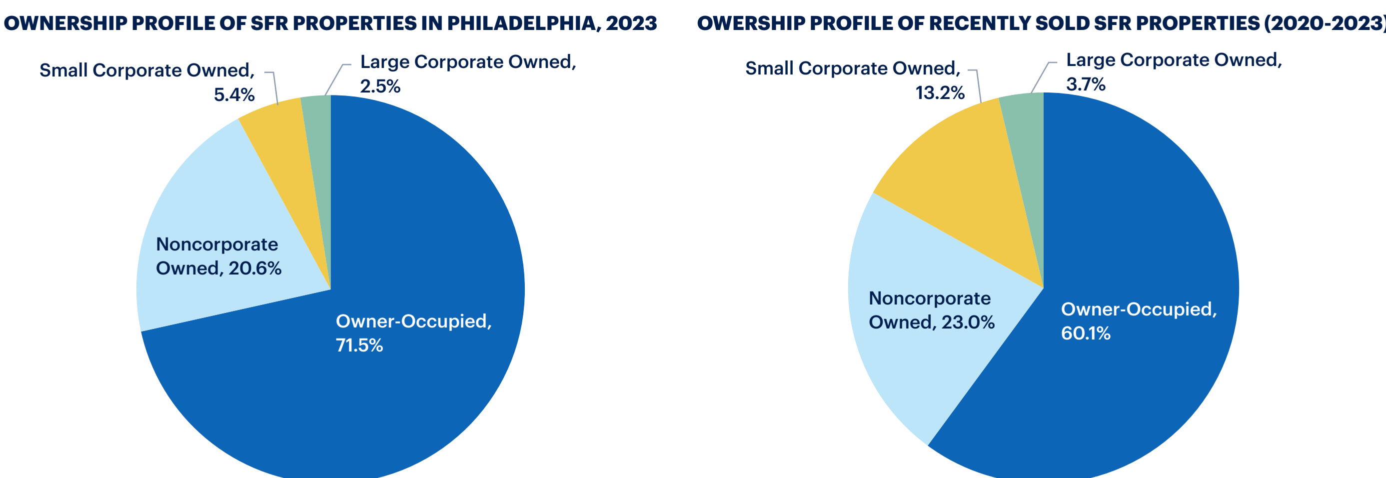
FINDING 1: Large corporate investors own a sizable share of single-family rental homes in Philadelphia, most of which are in West Philadelphia and North Philadelphia.

Large corporations own about 8.8 percent of SFR rental parcels or 2.5 percent of all SFR properties in Philadelphia in 2023 (see Figure 2). In comparison, small corporations and noncorporate investors own 5.4 percent and 20.6 percent of all SFR parcels, respectively. While there is no readily available national benchmark for the large corporate investor share, an imperfect comparison with the Goodman et al. (2023) study suggests Philadelphia's share of large corporate investor owned SFR rentals should be higher than the national average but is not among those areas with the highest level of corporate investor activities.[2]

Results also suggest the vast majority of large corporate owners in the Philadelphia SFR rental market are relatively small, based on information on owner names and mailing addresses.[3] The average large corporate investor in Philadelphia owns about 47 properties. And there are few large national institutional investors in the city. For example, the major national "buy-for-rent" investors identified in Lee and Wylie (2024) have virtually no presence (less than 0.1 percent) in the Philadelphia area.

But the share of large corporate owned properties varies significantly across neighborhoods. Figure 3 plots the share of the noncorporate owned, small corporate owned, and large corporate owned SFR parcels by neighborhood for Philadelphia; it shows that corporate investor (either large or small corporations) properties tend to be spatially clustered in neighborhoods in Lower North, West, and Southwest Philadelphia. Neighborhoods with the largest share of large corporate owned SFR properties are concentrated in West and Southwest Philadelphia, such as Mantua (12.5 percent), Belmont (8.6 percent), Southwest Schuylkill (8.6 percent), East Parkside (8.3 percent), Mill Creek (8.3 percent), and Haddington (7.9 percent). See the Appendix for parcel-level maps for select neighborhoods with the highest share of large corporate investor-owned properties, including Mantua, Haddington, Kingsessing, Southwest Schuylkill, and Paschall.

FIGURE 2 Ownership Profile of Single-Family Residence Properties in Philadelphia

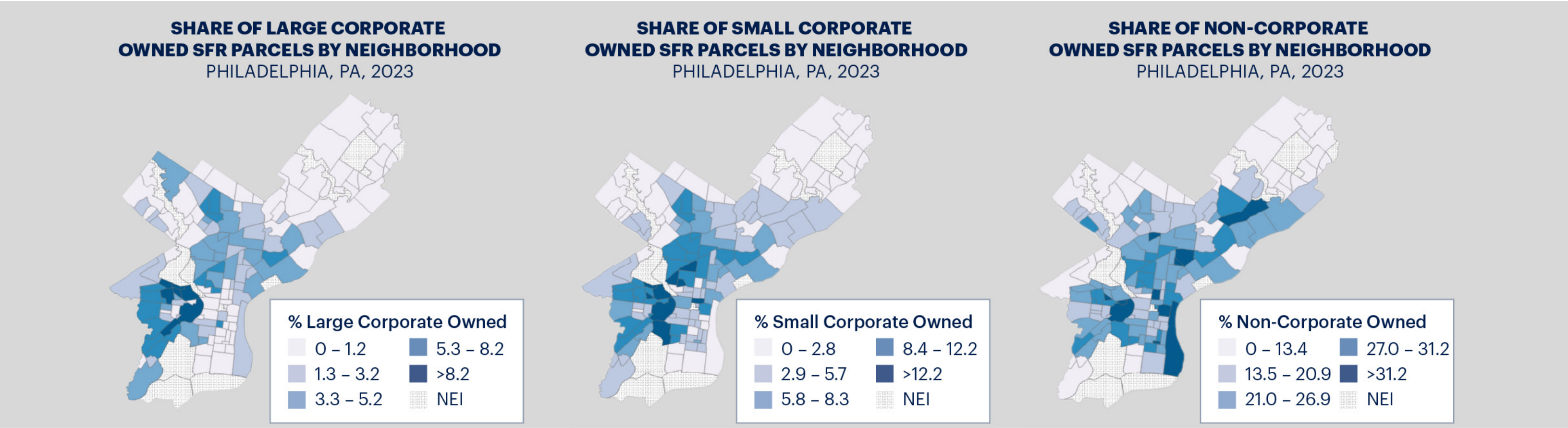


Note
Authors' calculation based on CGS data; a small number of SFR properties owned by government or housing authorities and properties with missing data on ownership are excluded

[2] Goodman et al. (2023) estimates that the institutional ownership (with 100+ units) share out of all one-unit rentals was 3.8 percent of SFR rentals in the nation. When using a similar threshold (100+), the share of large corporate investor-owned SFR rentals in Philadelphia would be about 7.0 percent, higher than the national average but not among those areas with the most concentrated institutional investor activities (the average share was about 13.3 percent for the top 20 metropolitan statistical areas with the most active institutional investor activities).

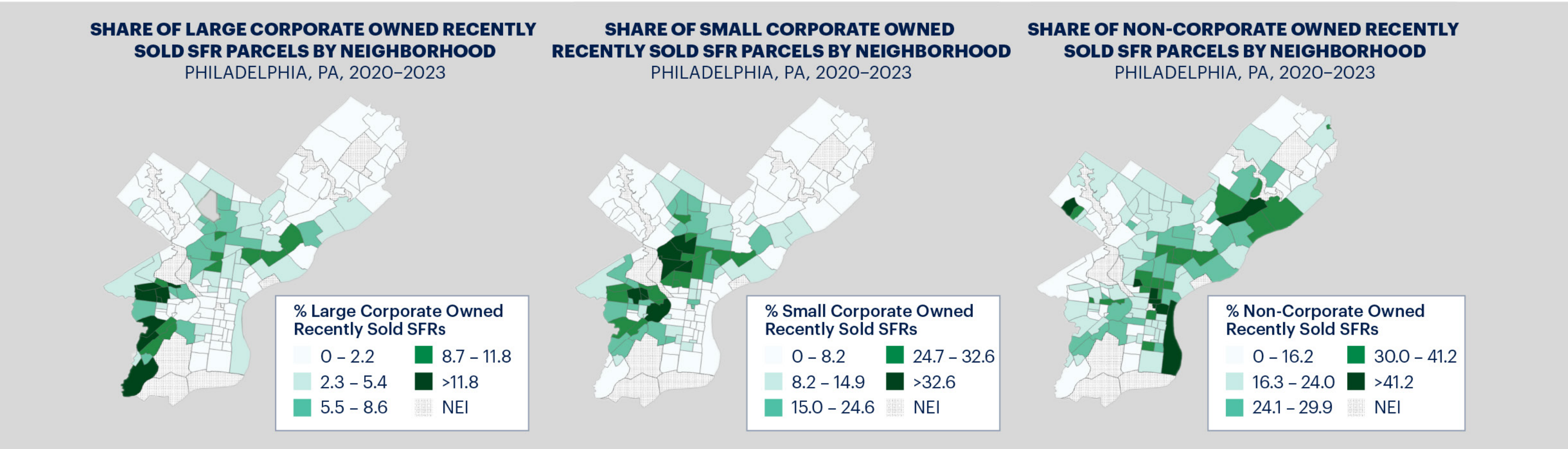
[3] It is extremely difficult to track down the precise owner of corporate investors, as business investors could use multiple legal entities, subsidiaries, or corporate holding companies as the named owner of the property, and they may be able to establish themselves under different addresses.

FIGURE 3 Neighborhood Share of SFR Parcels by Ownership Type



Note
Authors' calculation based on CGS data; a small number of SFR properties owned by government or housing authorities and properties with missing data on ownership are excluded

FIGURE 4 Neighborhood Share of Recently Sold SFR Parcels by Ownership Type



Note
Authors' calculation based on CGS data; a small number of SFR properties owned by government or housing authorities and properties with missing data on ownership are excluded

For SFR properties recently sold to large corporate investors, the pattern is similar. Out of the 81,758 parcels that were sold at least once from the beginning of 2020 to the end of 2023, 3.7 percent were most recently sold to large corporations, and 13.2 percent were sold to small corporations (See Figure 2). In West and Southwest Philadelphia neighborhoods, almost one-third of recent sales were to corporate investors, and over 10 percent went to large corporations. Neighborhoods with the largest share of large corporate purchases include Haddington (15.4 percent), Kingsessing (14.6 percent), Paschall (13.6 percent), East Germantown (13.4 percent), Mill Creek (12.3 percent), and Carroll Park (12.2 percent) (See Figure 4).

FINDING 2: Large corporate owned SFR properties are more concentrated in neighborhoods with lower-value properties, higher shares of Black residents, or higher poverty rates.

Descriptive statistics summarized in Table 1 illustrate the substantial variation in property and neighborhood characteristics across four ownership types of SFR properties.[4] Large corporate investor owned SFR properties generally have lower assessed values. The mean assessed value was about $137,000 for large corporate owned SFR properties, compared with $159,000 for small corporate owned properties, about $185,000 for noncorporate landlord owned properties, and over $226,000 for owner-occupied properties. The average assessed value of SFR properties recently sold to large corporate investors was even lower, at $109,708.

When it comes to neighborhood characteristics at the tract level, large corporate owned SFR properties are more likely to be in lower-income neighborhoods or neighborhoods with higher share of Black residents than properties owned by noncorporate and small corporate investors. About 40 percent of the population in Philadelphia is non-Hispanic Black. However, the average neighborhood share of Black residents for large corporate owned SFRs is over 60.7 percent, significantly higher than that for small corporate owned SFRs (53.5 percent), noncorporate owned SFRs (42.3 percent), and owner-occupied SFRs (39.8 percent).[5] Neighborhood income levels are a characteristic that varies greatly across different investor types as well. Large corporate owned properties are much more concentrated in lower-income neighborhoods: About 80 percent of large corporate owned SFR properties are in LMI neighborhoods, significantly higher than the shares for small corporate owned (71.1 percent), noncorporate owned (59.9 percent), and owner-occupied SFR properties (44.4 percent).

As Table 1 suggests, large corporate investors also tend to own properties in neighborhoods closer to the city center (proxied by City Hall) or neighborhoods with higher poverty rates, an older housing stock, a higher level of vacancy, or a higher level of mortgage denial than other landlords. It seems large corporate investors are more concentrated in the most distressed neighborhoods in the city, while other investors are either less interested in investing in or are being forced out of those neighborhoods. The results are more consistent with studies

TABLE 1 Group Means for Property and Tract Characteristics by SFR Ownership Type

	SFRs (2023)				Recent SFR Sales (2020–2023)			
	Owner-Occupied	Noncorporate Owned	Small Corporate Owned	Large Corporate Owned	Owner-Occupied	Noncorporate Owned	Small Corporate Owned	Large Corporate Owned
Property assessed value ($)	226,124	185,383	159,259	137,396	262,830	211,766	145,580	109,708
Tract median family income ($)	66,876	58,277	51,337	46,700	72,829	62,717	48,656	42,416
Tract is a LMI tract	44.4%	59.9%	71.1%	79.8%	37.8%	53.6%	73.7%	85.1%
Tract percent below poverty line	21.4%	26.1%	29.3%	31.0%	19.7%	24.2%	30.2%	33.0%
Tract percent non-Hispanic Black	39.8%	42.3%	53.5%	60.7%	33.6%	36.1%	55.8%	63.9%
Tract percent non-Hispanic White	34.4%	27.8%	20.9%	16.4%	40.7%	32.5%	18.7%	11.7%
Tract percent Hispanic	14.8%	18.3%	16.4%	14.9%	14.1%	18.9%	16.9%	17.3%
Tract percent minority	65.6%	72.2%	79.1%	83.6%	59.3%	67.5%	81.3%	88.3%
Tract percent vacant units	10.0%	11.8%	14.0%	15.0%	9.6%	10.7%	14.3%	15.0%
Tract distance from city center (miles)	5.8	4.9	4.3	4.2	5.6	5.3	4.3	4.4
Tract homeownership rate	59.3%	54.8%	51.9%	49.9%	59.1%	55.9%	52.1%	50.8%
Tract percent with college degree	27.8%	24.2%	21.5%	19.8%	31.8%	26.0%	19.7%	15.6%
Tract percent built 1939 or before	41.6%	46.7%	51.9%	53.4%	42.7%	42.5%	52.2%	52.8%
Tract median assessed value ($)	206,899	180,242	153,715	132,628	227,608	198,522	143,774	111,155
Tract percent mortgage denial rate	10.5%	11.6%	13.1%	14.3%	9.4%	10.6%	13.7%	15.0%
Number of parcels	302,795	87,080	22,897	10,594	49,135	18,829	10,761	3,033

Note
Authors' calculation based on CGS data, FFIEC Census data, and 2022 Home Mortgage Disclosure Act (HMDA) data; for some variables, the number of observations is slightly smaller than the number shown.

4 As the number of observations is quite large, the differences from noncorporate owned are statistically significant unless otherwise specified.

5 The differences in the share of neighborhood Hispanic population instead are much smaller across properties of different ownership types.

focusing on select central cities (e.g., Immergluck, 2018; Dowdall et al., 2022; Harrison et al., 2024) but is somewhat different from other studies using national data (e.g., Goodman et al., 2023), which do not suggest that institutional investors are disproportionately concentrated in minority or lower-income tracts.

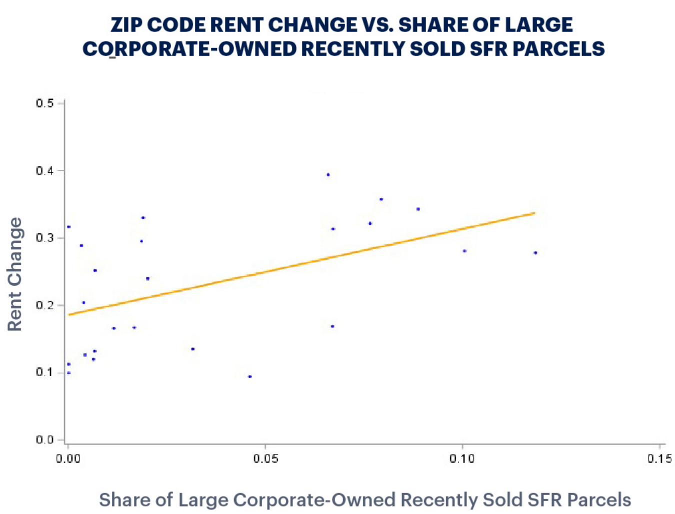
SFR properties that were recently sold to large corporate purchasers follow a similar pattern: SFR properties they purchased tend to be concentrated in neighborhoods that are lower-income, have higher Black shares, and are high-poverty, with higher vacancy rates and higher mortgage denial rates. This is consistent with early studies that find corporate investor purchases are more likely to be concentrated in more distressed areas in Philadelphia (Dowdall et al., 2022).

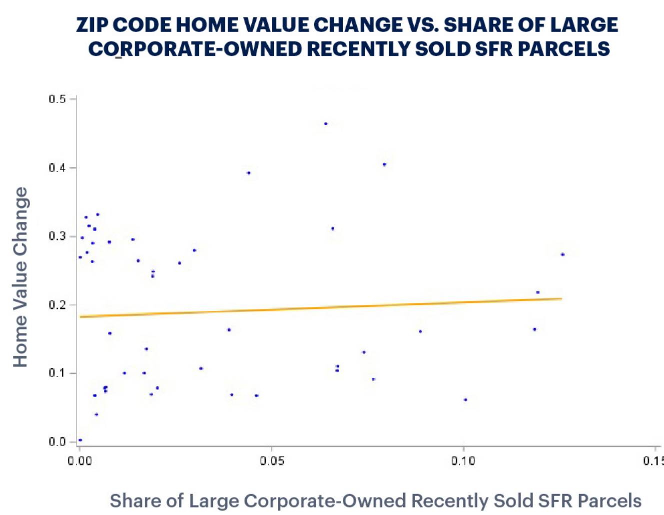
FINDING 3: Neighborhoods with concentrated large corporate activities seemed to experience larger rent increases.

Neighborhoods being targeted by large corporate investors may raise concerns: A small number of investors could have significant market power to affect home prices, rents, and options for prospective homebuyers if they own enough rental homes in a submarket. The U.S. Government Accountability Office (2024), after reviewing 74 existing studies, found that institutional investors may have contributed to an increase in home prices and rents after the Great Recession, but the effects on homeownership and tenants are less conclusive. Few studies have assessed the effect of institutional investors after 2017 or during the pandemic (exceptions include Raymond et al., 2022; Lee and Wylie, 2024).

There are signs of concern when looking at rent changes in Philadelphia neighborhoods with larger shares of large corporate purchase activities. On average, zip codes with more parcels purchased by large corporate investors during the pandemic experienced larger increases in rents from 2020 to June 2024 (with a correlation of 0.5, significant at the 0.05 level). Here, the percent rent change is calculated using Zillow Observed Rent Index.[6] The correlations between zip code rent changes and the purchase shares of noncorporate investors or small corporate investors, however, are either insignificant or negative (the correlation coefficient is 0.24 for small corporate investors and negative for noncorporate investors). The pattern is consistent with early studies that find that institutional investors raise rents significantly when first acquiring the property and pushed up rents for nearby properties (e.g., Lee and Wylie, 2024, based on nationwide data). Of course, the correlation itself does not necessarily imply a causal relationship. Contrary to some early studies using data for the post-Great Recession period, this brief does not find a positive correlation between neighborhood housing price changes and the share of large corporate activities during the pandemic.[7]

FIGURE 5 Neighborhood (Zip Code) Rent Change Versus Share of Recently Sold SFR Properties to Large Corporate Investors





Sources
Authors' calculation based on Zillow Observed Rent Index data, Zillow Home Value Index, and CGS data

[6] The Zillow Observed Rent Index allows us to calculate the rent change for about half of all zip codes, although these zip codes account for the vast majority of SFR properties.

[7] The share of small corporate owned properties is negatively associated with the zip code house price change during the pandemic. This could be explained by the likely disparate impact of the pandemic across urban areas: neighborhoods closer to urban cores, which corporate investors had historically targeted, were hit harder by the pandemic and increased work-from-home post-pandemic (Ding and Hwang, 2022); thus, the house price increases in neighborhoods with concentrated large corporate owned properties were not as large as others.

Summary

In Philadelphia, large corporate investors are more likely to own and purchase lower-value SFR properties or SFR properties in Black and lower-income neighborhoods than their smaller and noncorporate counterparts. These neighborhoods are also clustered in West and North Philadelphia. These large corporate investors may be able to help stabilize the most distressed neighborhoods in the city and improve the condition of the housing stock, but there are also concerns that these investors could drive up rents for low-cost SFRs, limit homeownership opportunities, and negatively affect the whole housing ecosystem.

This novel data set should help practitioners better identify neighborhoods and properties targeted by large corporate investors. Research based on this data set should also help shed light on rental property registration, licensing, and tenant protections for different real estate investors. With more families turning to the SFR market for housing, more research is needed to understand the continued corporatization of such housing and its potential consequences for homeowners, tenants, neighborhoods, and the local economy. A longitudinal study tracking property transaction history and listed rents would help shed light on some of the questions not answered by this brief.

Data and Methodology

The analysis of ownership profile of SFR properties in Philadelphia is based on a data set created by the Center for Geospatial Solutions (CGS) at the Lincoln Institute of Land Policy, along with various local and national data sources. CGS created ownership profiles for all property parcels in Philadelphia based on a nationwide parcel data set updated in 2023. The investor typology was created primarily based on property owners' names and mailing addresses. The ownership profile for a total of 546,933 parcels, including almost 430,000 SFR parcels, was created.

To identify the ownership profiles of parcels, the addresses and certain key terms in owner names were first cleaned, standardized, and in certain cases backfilled (such as adding missing states in mailing addresses, based on zip codes). Each parcel was then compared against a list of prepared government, housing authority, and corporate key terms to identify broad owner types. The term "corporate" is used here to refer more generally to the broad definition of nonindividual, nongovernment, and non–housing authority investors by checking the owner names against a series of business-related keywords and acronyms (e.g., LLC, LLP, Incorporated, and so on), regardless of how many homes they own.

All parcels are then classified using the owner's mailing address in relation to the property address, the owner type (government, housing authority, noncorporate, or corporate), and the size of the investor's portfolio.[8] The owner's mailing address was compared with the parcel's site addresses to identify whether the parcel is owner-occupied or investor-owned. A total of 16 ownership classifications were created (Figure 1).[9] For example, the *in-state corporate owned* category represents any corporate landlords that own only one property in Philadelphia and have an owner's mailing address in Pennsylvania. The *in-state multiproperty corporate* owned category includes any in-state corporate landlords that own 2–25 properties in Philadelphia, while the *in-state large corporate owned* category includes in-state corporate investors that own more than 25 properties in Philadelphia. Instead of examining all 16 ownership types, this brief focuses on four ownership types by combining some of the categories into noncorporate owned, small corporate owned (1–25 properties), large corporate owned (26 or more parcels in Philadelphia), and owner-occupied. As there is no consensus on the definition of "institutional investor," this brief chooses to focus on the large corporate owned definition, by combining the *in-state large corporate owned* and *out-of-state large corporate owned* categories, to distinguish large corporate investors that are more likely to be absentee landlords and are more likely to have different motivations than local mom-and-pop landlords.[10]

Recent sales of SFR parcels were identified based on the recent sale date information in the data set. A total of 81,758 SFR parcels, or almost one in five SFR parcels (19.0 percent) in Philadelphia, were sold at least once during the pandemic. Recent sales are classified by the ownership types of the parcels as of 2023. This brief focuses on the current owner of recently sold SFR parcels.

Data on neighborhood characteristics were obtained from the 2022 Federal Financial Institutions Examination Council (FFIEC) Census files, demographic data set, based on U.S. Census Bureau's 2016-2020 American Community Survey (ACS). Mortgage denial rates were calculated using the public version of Home Mortgage Disclosure Act (HMDA) data collected in 2022.

Data for the neighborhood-level (zip code) house price index and the rent index were downloaded from Zillow (the Zillow Home Value Index and the Zillow Observed Rent Index) and are as of July 2024.

8 While the owner names provide valuable information, both the address information and owner names are used to identify the number of parcels owned by the same investor (see similar approaches in Harrison et al., 2024; and Lee and Wylie, 2024).

9 In addition to government, housing authority, and owner-occupied parcels, property parcels are classified into the following categories: in-state noncorporate owned, in-state multiproperty noncorporate owned, in-state large multiproperty noncorporate owned, in-state corporate owned, in-state multiproperty corporate owned, in-state large multiproperty corporate owned, out-of-state noncorporate owned, out-of-state multiproperty noncorporate owned, out-of-state large multiproperty noncorporate owned, out-of-state corporate owned, out-of-state multiproperty corporate owned, out-of-state large multiproperty corporate owned, and NEI (not enough information).

10 Corporate investors could be a collection of investors of different business types and businesses with different motivations. Mom-and-pop landlords may also hold their properties under LLCs, and local corporations may have different business models than large national investors or institutional investors funded by real estate investment trusts or private equity firms. But overall, estimates of corporate ownership in this brief should be considered the lower bound because of the difficulty to identify the ultimate owner of the entity that owns a given parcel.

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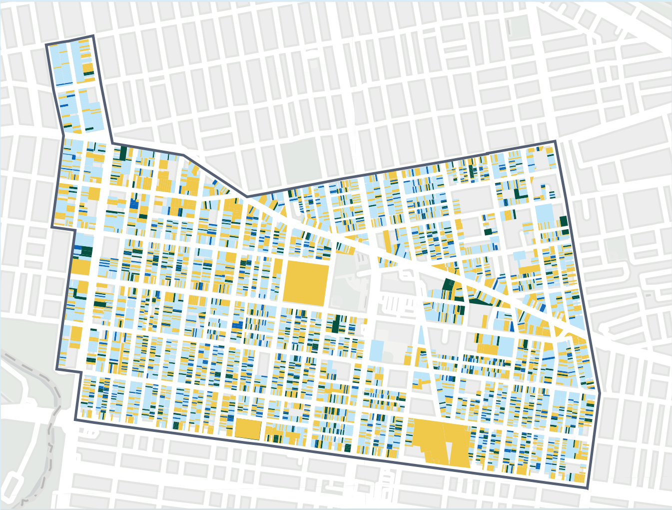
Appendix: Neighborhood Case Study Maps

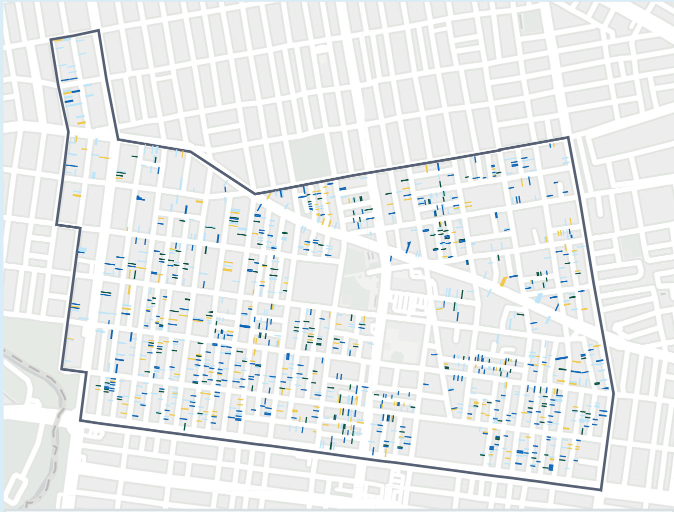
HADDINGTON

ALL SINGLE-FAMILY RESIDENCE (SFR) PARCELS



Large Corporate Owned SFR
Small Corporate Owned SFR
Noncorporate Owned SFR
Owner-Occupied SFR

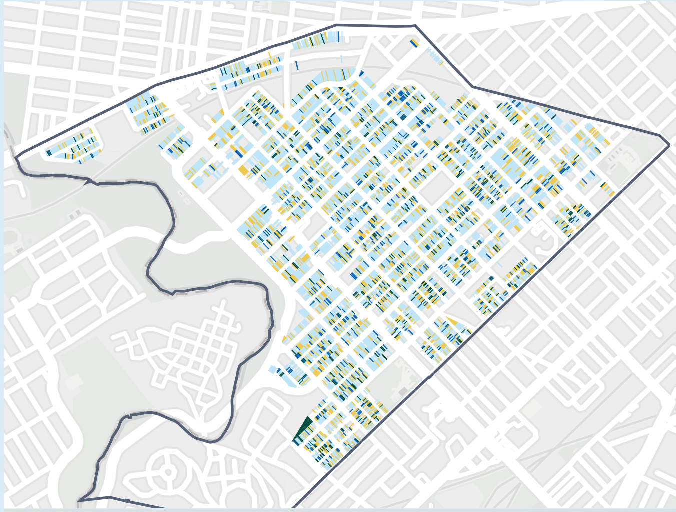
RECENTLY SOLD SFR PARCELS



Large Corporate Owned Recently Sold SFR
Small Corporate Owned Recently Sold SFR
Noncorporate Owned Recently Sold SFR
Owner-Occupied Recently Sold SFR

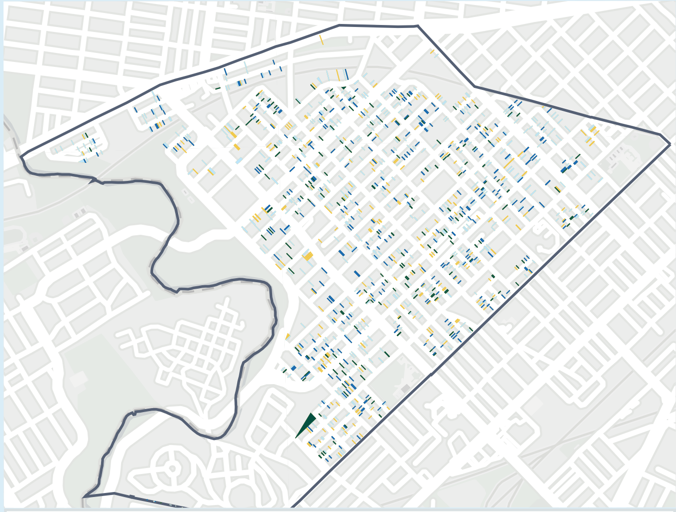
KINGSESSING

ALL SINGLE-FAMILY RESIDENCE (SFR) PARCELS



Large Corporate Owned SFR
Small Corporate Owned SFR
Noncorporate Owned SFR
Owner-Occupied SFR

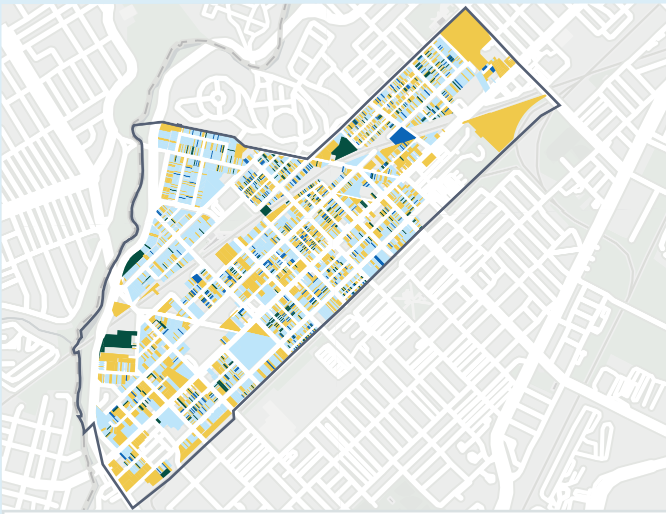
RECENTLY SOLD SFR PARCELS



Large Corporate Owned Recently Sold SFR
Small Corporate Owned Recently Sold SFR
Noncorporate Owned Recently Sold SFR
Owner-Occupied Recently Sold SFR

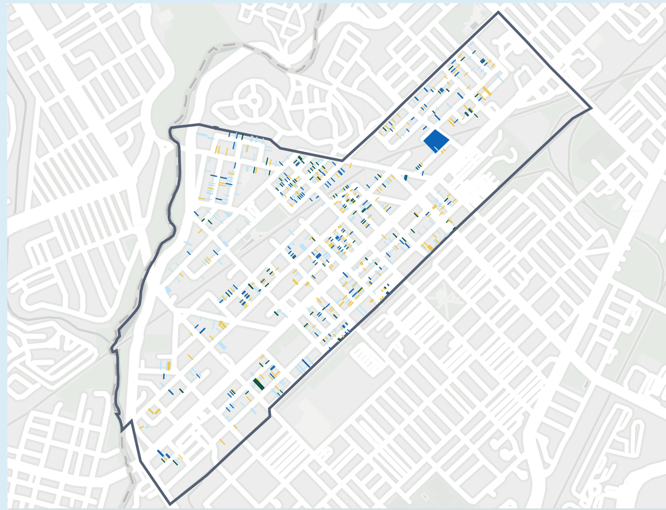
PASCHALL

ALL SINGLE-FAMILY RESIDENCE (SFR) PARCELS



- Large Corporate Owned SFR
- Small Corporate Owned SFR
- Noncorporate Owned SFR
- Owner-Occupied SFR

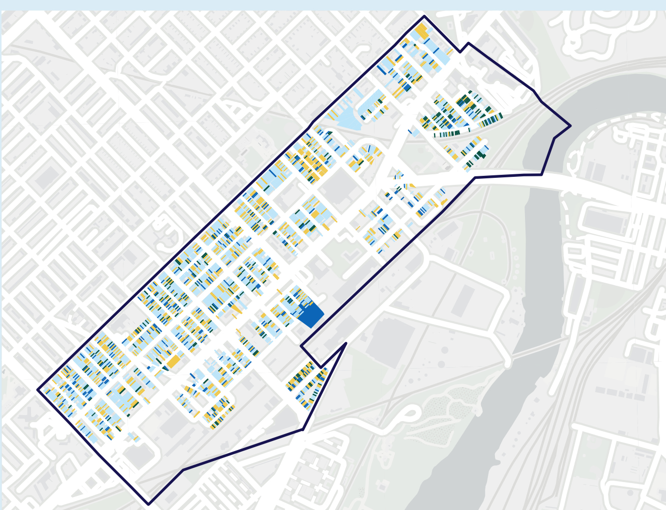
RECENTLY SOLD SFR PARCELS



- Large Corporate Owned Recently Sold SFR
- Small Corporate Owned Recently Sold SFR
- Noncorporate Owned Recently Sold SFR
- Owner-Occupied Recently Sold SFR

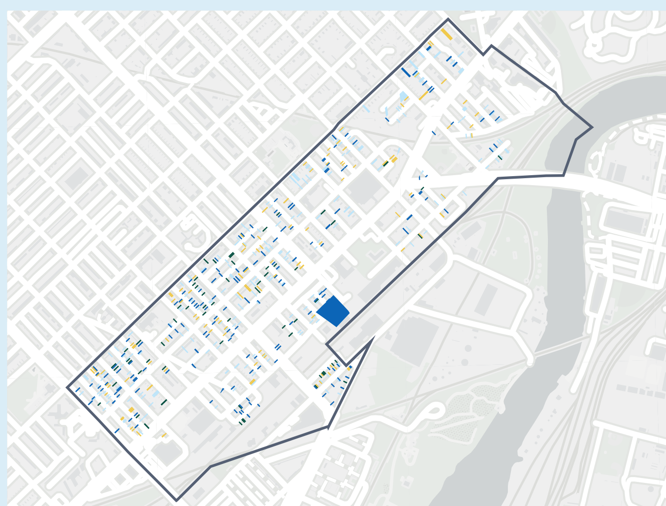
SOUTHWEST SCHUYLKILL

ALL SINGLE-FAMILY RESIDENCE (SFR) PARCELS



- Large Corporate Owned SFR
- Small Corporate Owned SFR
- Noncorporate Owned SFR
- Owner-Occupied SFR

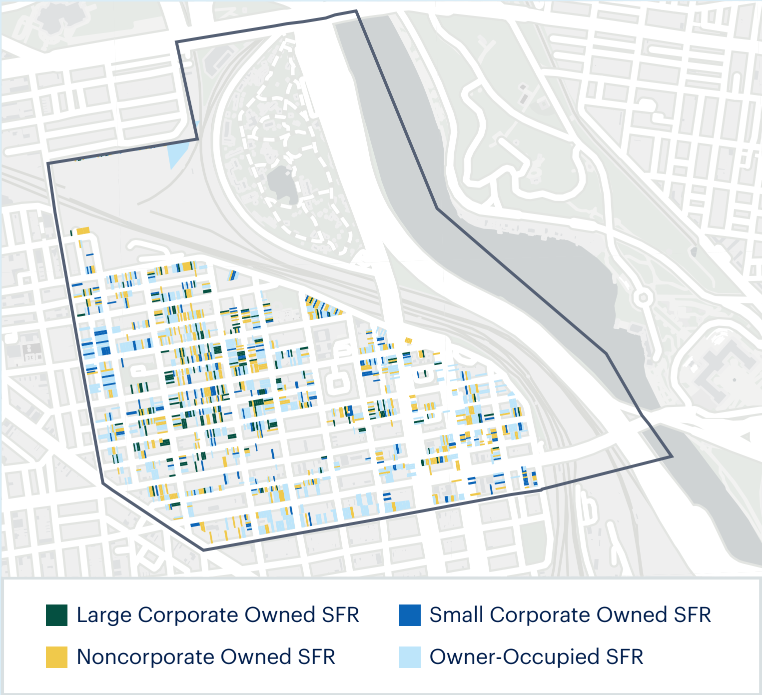
RECENTLY SOLD SFR PARCELS



- Large Corporate Owned Recently Sold SFR
- Small Corporate Owned Recently Sold SFR
- Noncorporate Owned Recently Sold SFR
- Owner-Occupied Recently Sold SFR

MANTUA

ALL SINGLE-FAMILY RESIDENCE (SFR) PARCELS



Note
All maps in the Appendix are created based on CGS data