A PLACE TO CALL HOME:
PATHWAYS TO HOMEOWNERSHIP PRESERVATION AND OPPORTUNITY IN NEW YORK CITY

Bronx Borough President Ruben Diaz Jr.
January 2020

Contents

Executive Summary

New York City's response to its housing affordability crisis has been wide-ranging and aggressive. Since the dawn of the 21st Century, the City has built or preserved hundreds of thousands of units through providing subsidies, tax breaks and leveraging private investment. While this approach has worked to some degree in staving off a completely out-of-control housing market, it has been almost exclusively focused on addressing the crisis from a rental housing perspective. As a result, the high demand for both market and affordable rental housing, combined with the lack of available land in New York City have contributed to the decline of homeownership in many parts of the City through the loss of homeownership housing stock, particularly in low-income and minority communities. This report finds that current zoning regulations in some districts perpetuate real estate speculation that results in the demolition of affordable homeownership opportunities in the form of one to four-family structures. By purchasing multiple adjacent lots with one to four-unit residential buildings in medium-density districts ripe for affordable development, developers merge these lots and build large, as-of-right multi-family rental structures in place of smaller residential buildings that are more likely to be owner-occupied.

Furthermore, this report concludes that the occurrence of such developments is predominantly concentrated in low-income, minority or ethnically diverse communities. Given that, it is clear that zoning and density have socioeconomic and neighborhood character implications. This means that besides contributing to the growing and heavily disparate ratio of renters to owners in the City, these development processes also exacerbate racial, socioeconomic and other disparities. By diminishing affordable homeownership opportunities and limiting homeownership to those with greater wealth, the depletion of affordable homeownership opportunities in lower-income and racial/ethnic minority neighborhoods leads to the widening of racial gaps, including wealth, health, education and political participation. This is true given that homeownership provides an opportunity to amass wealth, gives access to higher quality environments for better healthcare and nutrition, and creates stability for improved educational outcomes and community participation.

By eliminating homeownership opportunities in medium-density zoning districts for the sake of higher density residential rental development, instead of targeting underutilized sites, such as surface parking lots or one-story commercial buildings, low-income and racial minority communities are disproportionately deprived of the opportunity of becoming homeowners and benefiting from the economic and social implications of owning a home. In determining the preservation of affordable one to four-family residential buildings as an essential housing policy with considerable implications for the economic and social health of New York's communities, this report stresses the need to maintain and increase affordable homeownership opportunities throughout New York City, particularly in the form of one to four-family structures.

To illustrate the zoning conditions driving the decreasing availability of homeownership opportunities in the City, as well as to identify specific communities that have been targeted by speculative investment and to confirm that these development trends are targeting minority neighborhoods, this report analyzes publicly available data through two Geographic Information Systems techniques, each for disparate purposes. The first looks at borough-wide data for The Bronx, Brooklyn and Queens through a raster analysis that reveals which Community Districts in each borough have experienced the greatest loss of land dedicated for one to four-unit buildings. The second technique uses geometric analysis in two selected community districts of The Bronx and identifies the zoning conditions and development transformations of specific lots. These techniques confirm that the loss of one to four-family buildings is predominantly concentrated in mid-density zoning districts that encompass low-income and minority communities, and that the demolition of such structures gives way to the development of larger, higher density residential buildings.

As a consequence of this research, this report suggests a number of recommendations, including:

- Expanding small homeownership preservation programs;
- Creating incentives for homeowners to maintain their homes;
- Replacing small homes with cooperatives and condominiums, in case of demolition;
- Target rental housing development for lots on underutilized commercial corridors or with surface parking;
- Establish rules regulating how lots are merged;
- Applying contextual zoning where necessary;
- Encouraging new one to four-family homeownership opportunities in appropriate zoning districts, and;
- Providing transparency in data regarding lot mergers and subdivisions.

Introduction: Homeownership in New York

For generations, becoming a homeowner in the United States has embodied the American Dream and defined the realization of economic success. This achievement provides many Americans with the opportunity to build wealth and transfer that wealth across generations, and benefits them with financial security, better education opportunities and improved health.[1]

Unfortunately, attaining this dream and its benefits is becoming more difficult, particularly in dense, high cost cities such as New York, and especially in low-income and minority communities. In New York City, homeowners occupy only 32 percent of all residential units, half of the United States average of 64 percent.[2] Of the five boroughs, The Bronx, Manhattan and Brooklyn have among the lowest homeownership rates of all counties in the country, ranking second, third and fourth, respectively.[3]

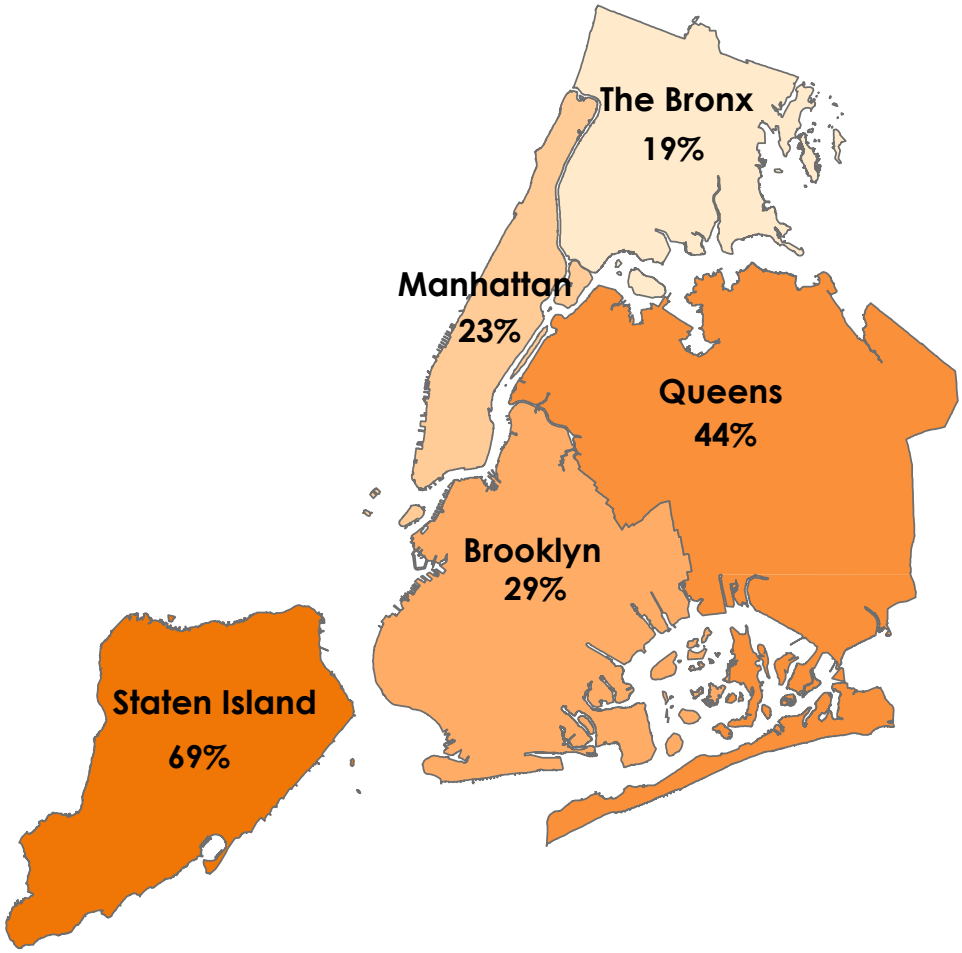


Figure 1: Percent of Borough Units that are Owner Occupied

Source ACS 5 Yr. 2016 B25032

To make matters worse, homeownership in the City is in decline. Between 2009 and 2016, the number of owner-occupied units in the City decreased by three percent, while the number of renter-occupied units increased by five percent. The Bronx, already having one of the lowest homeownership rates in the country, experienced the greatest decrease in the number of owner-occupied units in the City (figure 2).

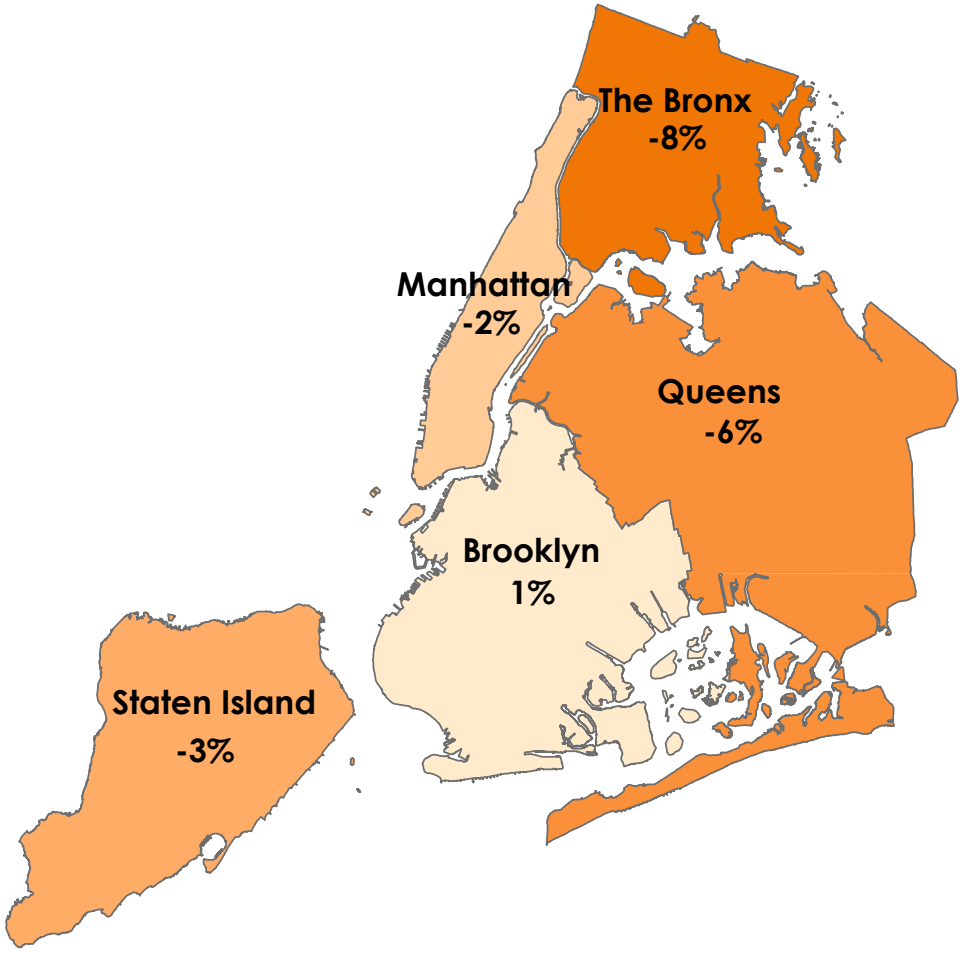


Figure 2: Percent Change of Borough Units that are Ower Occupied

Source: ACS 5 Yr. 2009, 2016 B25032

While New York City housing prices have continued to rise since the 2008 foreclosure crisis, incomes have stagnated, making it harder for first-time working and middle class homebuyers to become homeowners and more difficult for existing homeowners to maintain owning a home.[4] Consequently, access to homeownership is more and more restricted to only those with greater wealth. In fact, low-income and minority households increasingly have lower rates of homeownership when compared to white and high income households.[5] The expanding racial wealth gap and growing income inequality, sustained by income stagnation, higher cost of education and increasing cost of living restrict homeownership opportunities for low-income and minority households.

On top of this, current zoning regulations conceived of in a bygone era perpetuate real estate speculation that allows for the demolition of affordable homeownership opportunities in low-income and minority communities. Private investors regularly purchase multiple adjacent small lots with one to four-unit residential buildings, which are more likely to be owner-occupied than larger multi-unit residential buildings, in mid or high density neighborhoods. Typically, these investors then merge the lots, demolish the smaller structures, and build larger multi-family rental buildings in their place. Although these new rental buildings do add much-needed affordable rental housing to the City's stock, they nevertheless diminish available affordable homeownership options and subsequently exacerbate the growing racial wealth gap and the already heavily disparate ratio of renters to owners in the City.

While homeownership is not a viable option for all New Yorkers, and more rental units are definitely needed, this should not mean that the share of homeowners in New York should continue to decrease, or that access to homeownership opportunities should be restricted to the wealthy. This is particularly relevant in mid-density neighborhoods with

large proportions of low-income and minority populations regularly targeted for large multi-family development. The preservation of affordable one to four-family residential buildings, whenever possible, is necessary in order to provide more New Yorkers with opportunities to become homeowners and benefit from the economic and social advantages that homeownership provides.

This report highlights the need to maintain and increase affordable homeownership opportunities in New York through the preservation of existing one to four-unit structures or through the creation of affordable cooperatives or condominiums that could supplement or replace smaller homes. To explore how this can be done through potential zoning tools, this report studies the availability of homeownership in medium density neighborhoods and analyzes the risk of losing these homeownership opportunities due to pressures of a competitive rental market. This report will identify which neighborhoods face exposure of their homeownership stock and how denser residential zoning districts impact grandfathered properties.

First, the report highlights the benefits of homeownership to preface the need to maintain affordable home options for low-income communities in New York. The report then highlights the higher rates of homeownership in one to four-unit structures throughout the United States and in dense cities like New York, as a matter of establishing the need to preserve such units as homeownership opportunities. The report also provides an overview of residential zoning in New York City, as a way to then highlight the relationship between density and homeownership, and to preface its relationship to race. It then explores the connection between homeownership and wealth, and the important role that homeownership plays in closing the racial wealth gap. This is done to emphasize the significance of homeownership opportunities that are available for minority and low-income households. Finally, the report analyzes New York City MapPluto (Primary Land Use Tax Lot Output) Data from 2009 and 2016 through a raster analysis that reveals how land use has changed over time in various Community Districts in The Bronx, Brooklyn and Queens. Two Districts in The Bronx are further analyzed through geometric analysis to identify specific instances of lot mergers and subdivisions of lots with one to four-unit structures and to discover the zoning characteristics of these transformations.

The report identifies that medium density zoning districts threaten one to four-family buildings as these zoning classifications provide developers the opportunity to merge multiple lots with one to four-unit residential buildings and raise them to then build larger multi-family residential buildings. Recommendations are included at the end of this report, providing strategies that can help curb the loss of valuable homeownership opportunities for low-income and minority households, either directly through zoning interventions and programmatic compromises, or by bolstering other forms of affordable homeownership.

While this report focuses on one to four-unit structures, it must be pointed out that the intention is not to limit the development of much-needed rental housing in the City. Rather, the report seeks to highlight the necessity of accessible and affordable homeownership opportunities, particularly for potential low-income and minority homeowners, and encourage the preservation and creation of affordable homeownership—while also developing necessary new affordable rental units—as a way to provide these communities an opportunity to achieve the American Dream.

The Benefits of Homeownership

There is good reason to protect affordable homeownership opportunities, particularly in the form of one to four-unit residential structures, in low-income and minority neighborhoods of New York City. Owning a home provides economic, social, physical and health-related advantages that promise to benefit low-income and marginalized communities the most.

Most importantly, homeownership provides an opportunity for wealth accumulation.[6] One study that coincided with the recession of 2008 found that among low-to-medium income households, homeownership led to a greater increase in net worth and assets when compared to renters.[7] This is largely explained by the fact that homeownership requires considerable savings to pay a monthly mortgage, which in turn reduces debt. As others have pointed out, wealth accumulation through homeownership can also be attributed to the tax advantages afforded to homeowners and the increase in home equity over time.[8] To put it simply, while renting provides shelter, homeownership also provides the accumulation of assets and wealth.

Besides economic advantages, there are health benefits to homeownership. Homeowners live in less crowded and better quality housing, which results in lower rates of mental and emotional stress, and lower rates of illness and infectious disease when compared to renters.[9] Inherently, the greater wealth associated with homeownership provides homeowners access to higher quality environments and better healthcare and nutrition.

Homeownership also has an impact on mobility, which has added positive effects on social life. Because of the higher transaction costs associated with owning a home, homeowners have longer lengths of stable residency and neighborhood integration.[10] This in effect creates greater participation in community and political activities.[11]

Furthermore, studies have shown that homeownership has positive effects on children, including greater high school graduation rates and higher test scores, which may be explained by the residential stability that comes with homeownership.[12] Being a homeowner also increases the likelihood of children themselves becoming homeowners in the future and creates a basis for intergenerational wealth. The wealth that is attributed to owning a home benefits children as it increases the likelihood that children will have assets to use for higher education or to inherit for future wealth.[13]

In aggregate, a community with higher rates of homeownership is expected to have greater economic opportunities and a better quality of life. Subsequently they will be better educated, healthier, and more politically and socially involved. Increasing affordable homeownership opportunities in New York, where rentals are abundant, would extend these benefits to a greater share of the population. Thus, while New York City does need more housing units in general, it must not overlook the significant role that homeownership plays in the economic and social prosperity of the city as a whole.

The One to Four-Family Home Market in New York City

Throughout the country and even in dense places like New York City, homeowners prefer single-family and small multi-family homes (2-4 units)(figure 3). This is linked to the notion that owning one's home, particularly a single-family home, is symbolic of achieving the American Dream. In New York City, almost half of all 2017 home sales were one to four-unit homes, which in general account for 61 percent of owner-occupied units.[14] Overall, one to four-unit buildings have a much higher ownership rate than other building types in the City, a trend consistent with national homeownership preferences (figure 4).

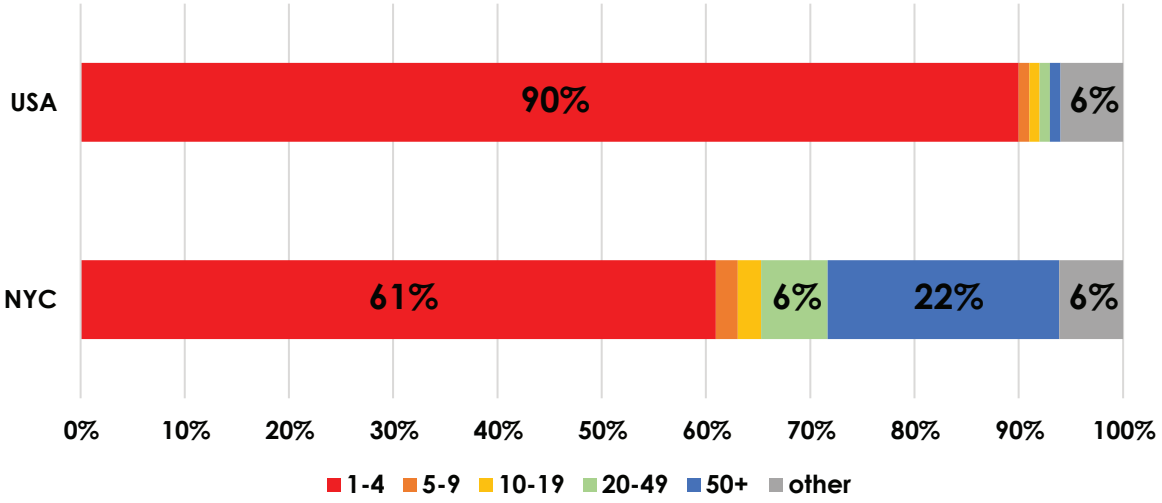


Figure 3: Percent of NYC Owner Occupied Units by Unit Type

Source: ACS 5 Yr. 2012-2016 B25032

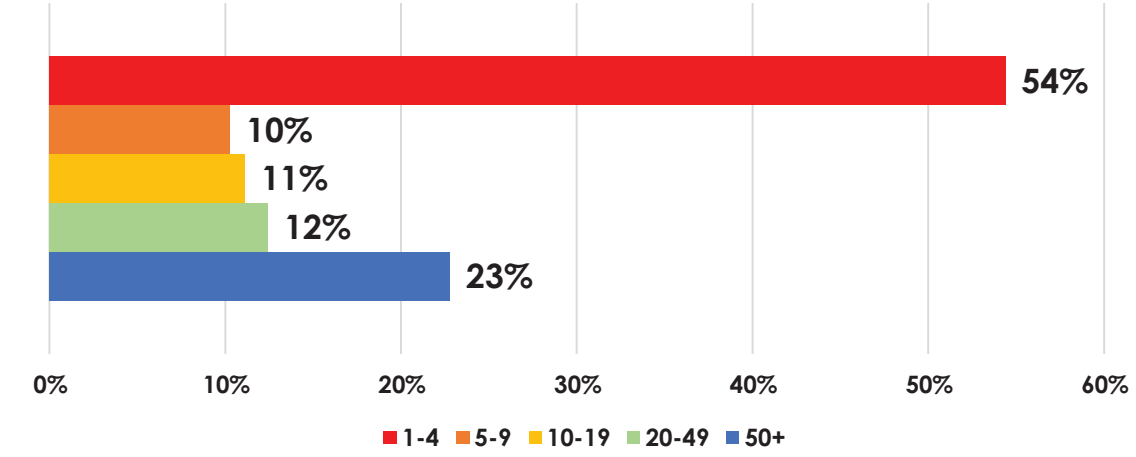


Figure 4: Percent of all NYC Units by Structure Type that are Owner-Occupied

Source: ACS 5 Yr. 2012-2016 B25032

Besides Manhattan, where the greatest proportion (65 percent) of owner-occupied units are in buildings with 50 units or more, single and small multi-family buildings are the most common owner-occupied structure type in all City boroughs (figure 5). Over 97 percent of owner-occupied units in Staten Island are in one to four-unit structures, well above the national average of 90 percent. In Brooklyn and Queens the figures are 77 percent and 79 percent respectively. Even in The Bronx, which has the lowest ownership rate of all boroughs, over 67 percent of owner-occupied units are in one to four-unit structures.

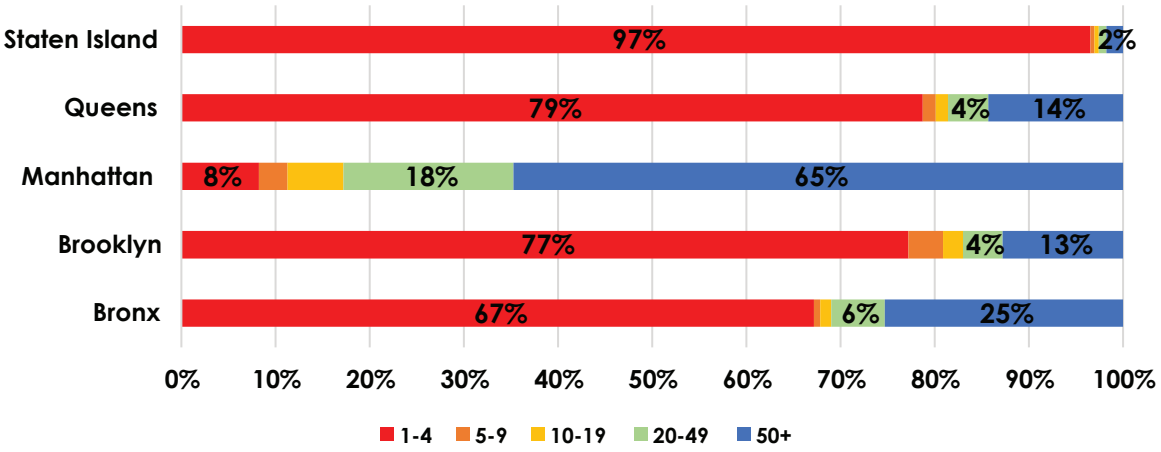


Figure 5: Share of Borough Owner-Occupied Units by Structure Type

Source: ACS 5 Yr. 2012-2016 B25032

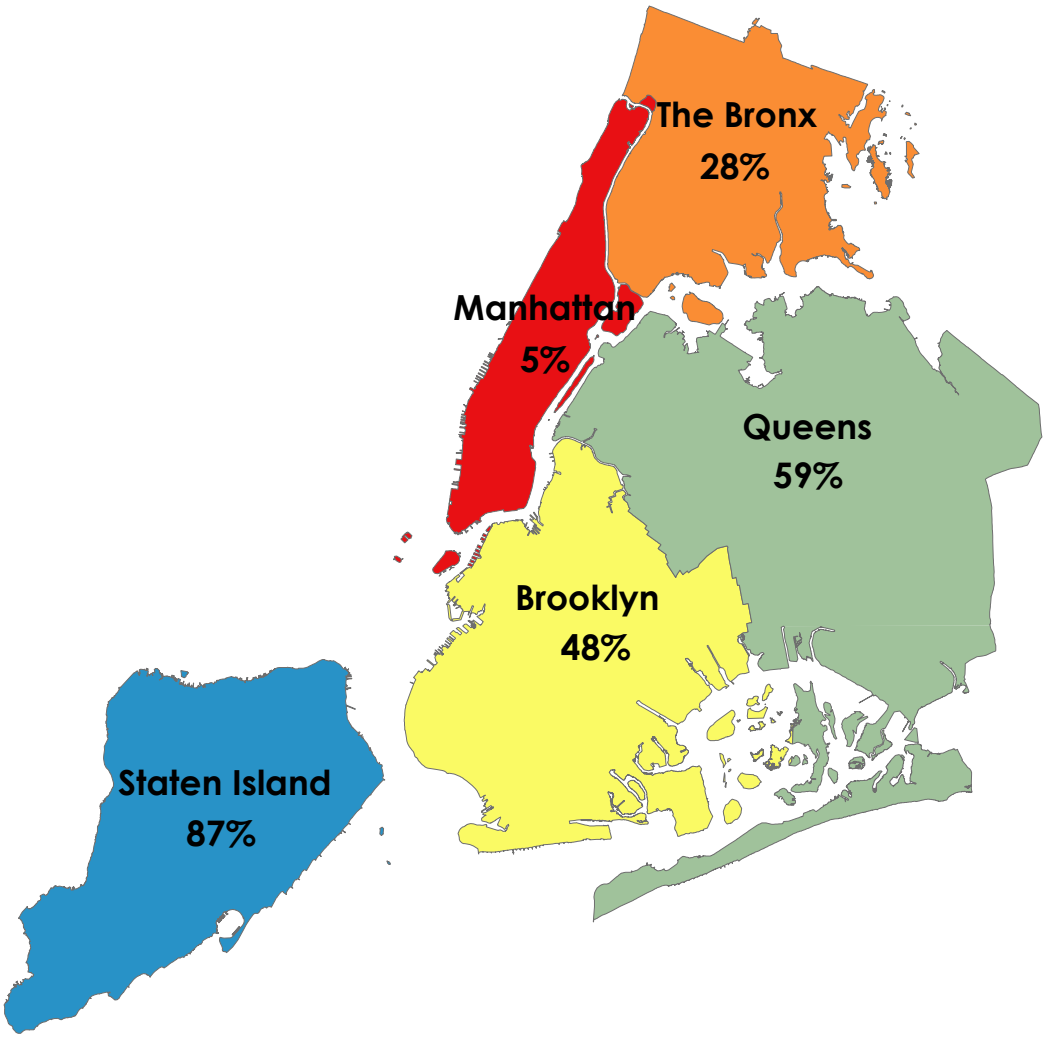


Figure 6: Percent of Borough Total Units that are in 1-4 Unit Structures

Source: ACS 5 Yr. 2012-2016 B25032

These numbers make sense when considering the housing stock of each borough (figures 5 & 6). Unsurprisingly, Staten Island's bulk of ownership in one to four-unit structures is due to its greater proportion (87 percent) of one to four-unit residential buildings. Predictably, Manhattan's low ownership rate in single and smaller multi-family buildings is due to its low share of units in one to four- unit structures (5 percent). As previously observed, Brooklyn and Queens have a comparable ratio of owner-occupied units concentrated

in one to four-unit structures, and the share of units in one to four-unit structures are not too dissimilar, at 48 percent for Brooklyn and 59 percent for Queens. The Bronx has the second lowest share of total housing stock in smaller residential buildings when compared to the other boroughs (28 percent), yet, as previously observed in figure 5, the ownership that does exist in The Bronx is concentrated in smaller residential buildings.

The preference for homeownership in such buildings, particularly in single family homes, makes sense when considering the lower cost of accessing such type of housing relative to the much more expensive condo or when considering the more rigorous selection process of co-ops. Furthermore, when it comes to small multi-family structures, ownership of such buildings proves a smart investment for owner-occupant homeowners turned landlords, as the extra residential units provide rental income that can be used to pay the home mortgage and other housing expenses.[15]

However, as previously mentioned, the rising cost of real estate and stagnant incomes prove difficult for first-time homebuyers to access the market and for existing homeowners to maintain their assets. This is affecting homeownership in one to four-family homes more than other types of structures. In New York, the homeownership rate for one to four-unit structures has decreased by four percent, more than the homeownership rate in other structure types (figure 7). Given this, it can be assumed that the negative change in homeownership in smaller residential structures is heavily affecting the overall decrease in homeownership in the City.

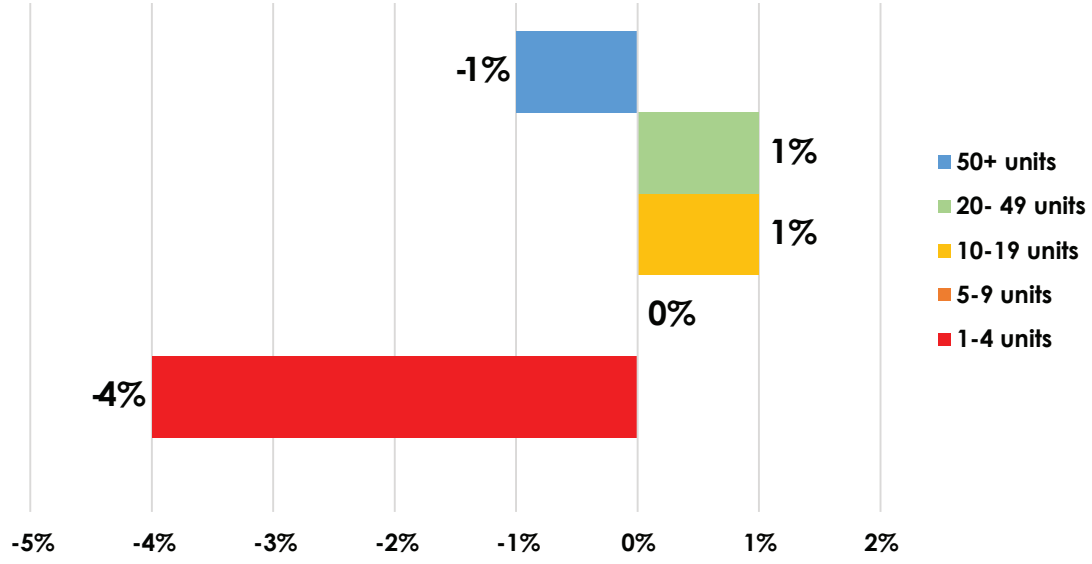


Figure 7: Change in homeownership rate by structure type

Source: ACS 5 Yr. 2009, 2016 B25032

Inspecting who is actually purchasing such buildings paints a clearer picture as to why homeownership in these unit is in decline. As the Center for NYC Neighborhoods (CNYCN) notes, private, speculative investors are big players in the one to four-family home market. These individuals or corporations outspend potential homeowner-occupants and entice current owners with their all-cash offers, purchasing one to four-unit properties to rent or flip, and, as previously assumed, to develop into larger rental structures, in the process eliminating the already limited opportunities for homeownership. In 2017, a fifth of all one to four-family home sales were sold to investors, higher than the rate of private investment in other building types.[16] Even more alarming is the fact that a fifth of one to four- unit buildings affordable to families with a median income of $60,000 were sold to investors rather than would-be live-in homeowners.[17] This may be due to investor's knowledge of homes in foreclosure, which are generally held by low-income or minority households.[18]

Furthermore, it can be speculated that these practices are disproportionately affecting communities of color particularly in The Bronx, Brooklyn and Queens where a majority of one to four-unit households are racial and ethnic minorities (figure 8). As CNYCN points out, speculative investment is most prevalent in The Bronx followed by Queens and Brooklyn, and lowest in Manhattan and Staten Island where a majority of one to four-unit households are white.[19] These trends are aided by the fact that homes in predominantly minority communities "are typically worth less and appreciate at a lower rate than those in predominantly white neighborhoods."[20] This in turn creates of minority neighborhoods perfect markets for speculative investment and explains why The Bronx, which has the lowest median sales price for one to four-unit buildings in the City, has the highest rate of sales to developer-investors.[21]

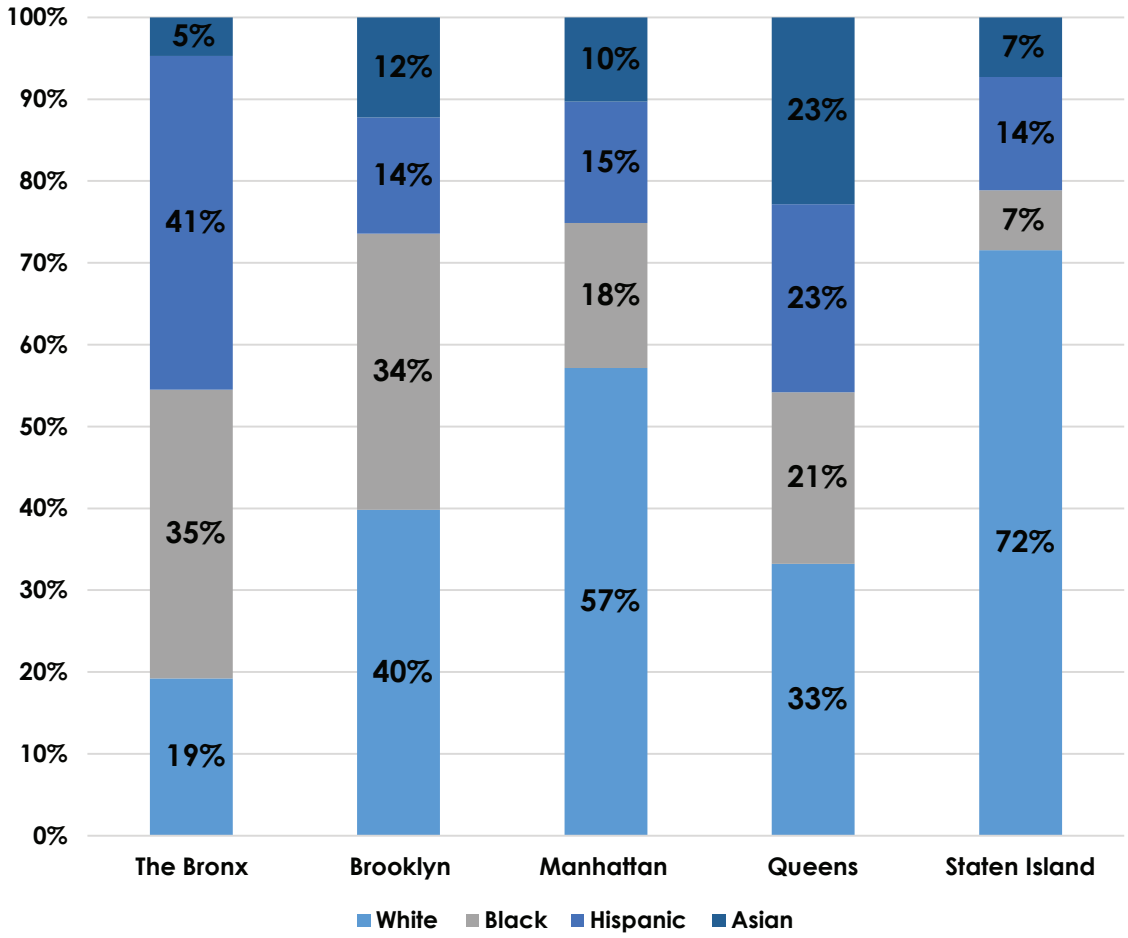


Figure 8: Total Borough One to Four-Unit Households by Race

Source: ACS 2016 5 Yr. B25032 B, D, H, I

Given this insight, it is evident that speculative development pressures that destroy one to four-family homes are affecting the capacity for homeownership within minority communities. Having acknowledged the importance of homeownership in relation to wealth as well as the higher rates of homeownership among one to four-unit structures, it becomes more apparent that it is important to maintain one to four-unit structures that do exist in the borough if homeownership rates among low-income and minority populations are to improve.

Zoning and Homeownership

While homeownership in New York City is scarce, certain residential zoning districts do have greater homeownership rates than others. The varying density allowed by different zoning districts translates to distinct neighborhood character types. Whereas some have higher homeownership rates, others are best suited for rental development.

In New York, there are ten residential zoning district types—R1 through R10—where the number references the allowed density. R1 through R5 are low density districts, R6 and R7 are considered medium density districts, and R8 through R10 are high density districts.[22] The lower density districts, which allow for detached single family homes (R1 and R2 exclusively), semi-detached single and two-family homes, and small multi-family apartment houses (R3, R4, R5) unsurprisingly have the highest homeownership rates in the City. The medium density districts, on the other hand, have the lowest rates of homeownership. R6 and R7 districts allow a variety of building types where smaller lots usually house small multi-family buildings and larger lots have tall residential buildings. The high density R8, R9 and R10 districts—which primarily make up the high income urban core (i.e. Midtown and Downtown Manhattan, Downtown Brooklyn)—have a slightly higher homeownership rate than medium density districts, but still smaller than the low density districts. In these districts residential buildings generally range from mid-size 5 to 10 story buildings to high rise residential towers, such as those being constructed on West 57th Street in Manhattan.

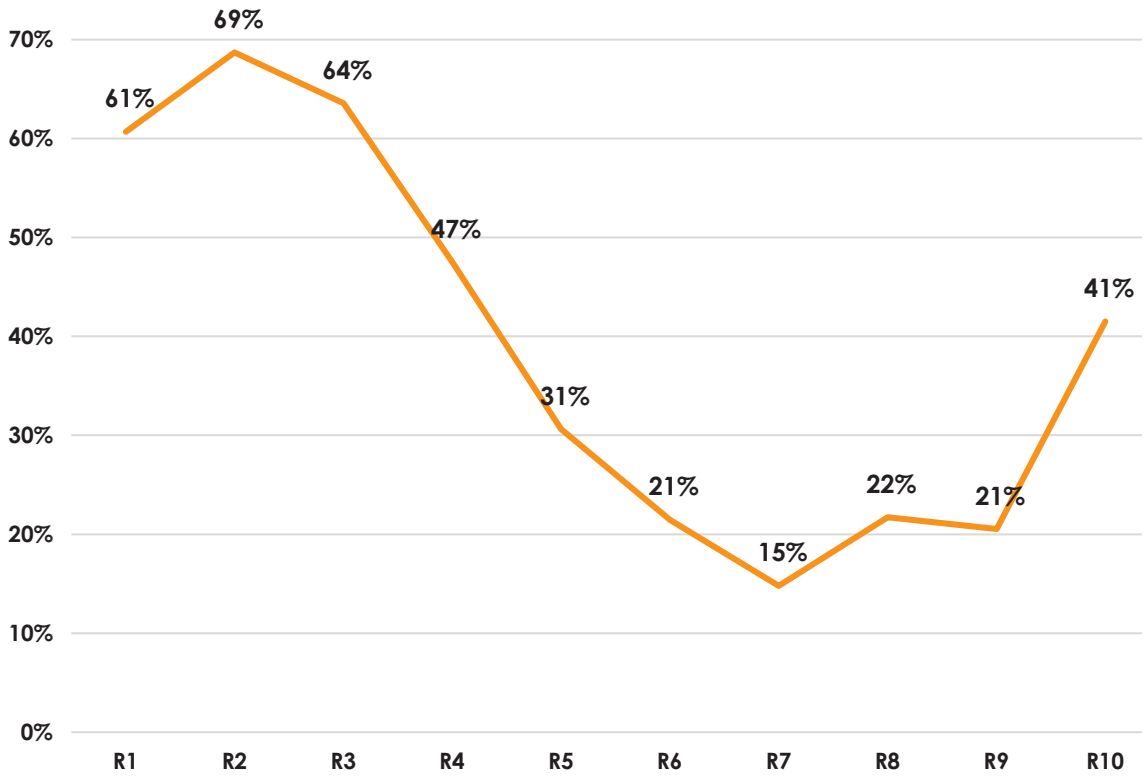


Figure 9: NYC Homeownership Rate by Residential Zoning District

Source: ACS 2016 5 Yr B25032

It is evident that medium density districts provide a unique spatial condition that greatly affects the sociodemographic and built character of neighborhoods. The higher density districts provide a greater opportunity for high-rise, luxury condo development that creates significant market competition with rental properties, and the low density district prohibits the development of medium-sized rental structures. Conversely the medium-density zoning of R6 and R7 districts creates softer markets ideal for affordable rental development.

Furthermore, to reinforce the point that development pressures disproportionately affect communities of color, it must be pointed out that in New York these targeted medium density districts are inhabited predominantly by minority communities. Today, as in the past, zoning as a tool for land use regulation upholds residential segregation. In New York, lower density districts are predominantly white and as residential density increases, the proportion of white residents decreases (figure 10). The only exception to this are the high density districts which as previously noted have a higher homeownership rate than mid-density districts, provide opportunities for high-rise, luxury condo development and as the figure below reveals are disproportionately white. This leaves mid density districts, R6 and R7, as those with the highest proportion of minority residents in the City and the lowest homeownership rates.

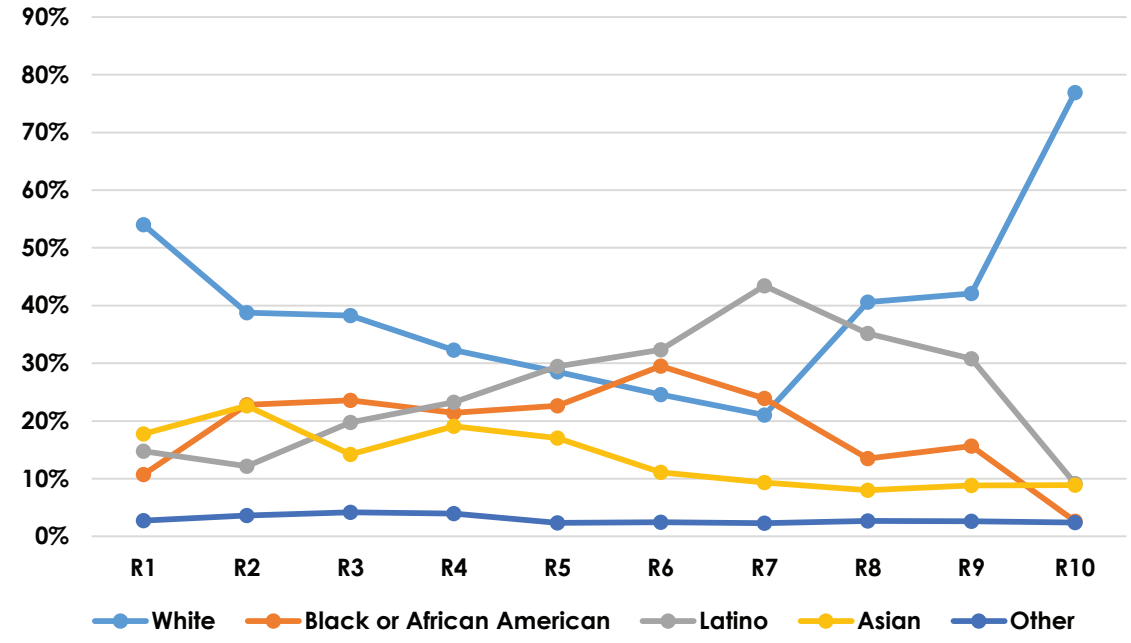


Figure 10: Racial Demographics of Residential Zoning Districts in New York

Source: ACS 2016 5 Yr B03002

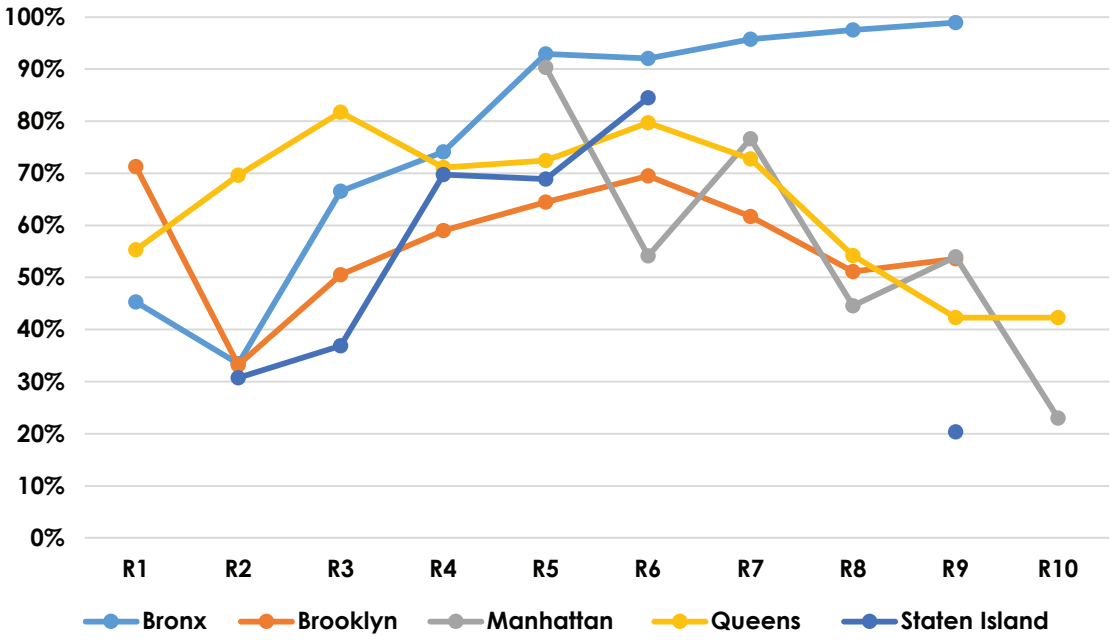


Figure11: Minority Population By Borough Zoning District [23]

Source: ACS 2016 5 Yr B03002

This trend, however, manifests itself to different degrees between the five boroughs (figure 11). In The Bronx, the relationship between density and ethnicity is strongest. Medium density districts have a high proportions of minority populations, but the high density districts have an even higher proportion. In Brooklyn, Queens, and Manhattan, medium density districts have among the highest rates of minority residents, although some low density districts have higher minority populations attributable to unique zoning and spatial conditions. In Brooklyn, for example, R1 districts have the highest proportion of minority residents, although this zoning only appear in Flatbush census tracts with a high percentage of Black or Latino residents. In Queens, R3 districts have the highest proportion of minority residents, but this zoning is common throughout the borough, and in Manhattan, R5 districts have the highest minority population, although this zoning only appears in Marble Hill, a predominantly Latino neighborhood in The Bronx portion that is technically Manhattan. Overall, in all three boroughs, the high density districts are predominantly white. This can also observed in Staten Island, where the only high density district in the borough is predominantly white and there is a general positive relationship between race and density in R1 through R6 districts.

Across the five boroughs, mid density districts have the highest percent minority populations and have the lowest homeownership rates. As rental opportunities become more prominent and homeownership less so with increased density, and because minorities are less likely to be homeowners due to lower levels of wealth and high density districts are predominantly developed for luxury real estate, mid density districts tend to have higher proportions of minority households. The previously discussed development pressures that target one to four-unit buildings in medium density residential districts thus disproportionately affect minority households and further restrict the already limited homeownership opportunities found within such neighborhoods.

Race, Homeownership and Wealth

As previously established, homeownership provides a myriad of socioeconomic advantages. Unfortunately, not all can afford to become homeowners nor benefit from the positive socioeconomic effects of owning a home. In the United States and in New York, homeownership, wealth, race and class are intrinsically linked. Data shows that minority and low-income, renter households have little to negative wealth, while white and owner-occupied households have a significant accumulation of wealth.[24]

To illustrate, according to 2015 Census data on wealth and asset ownership, home-owning households had a median net worth that was almost 8,000 percent greater than the median net worth of renter households.[25] Furthermore, the disparity in wealth was also found among racial groups. The same Census data reveals that white non-Latino households had a median net worth that is almost 1,000 percent greater than the wealth of African American households, and almost 600 percent greater than Latino households. It is no surprise, then, that throughout the country and in New York City, African American and Latino households have the lowest rates of homeownership. In New York City, the rate of homeownership for Latino households is the lowest among all racial and ethnic groups, followed by African American households. White households are more likely to be homeowners than all racial and ethnic minority groups, both in the United States and in New York City (figure 12).

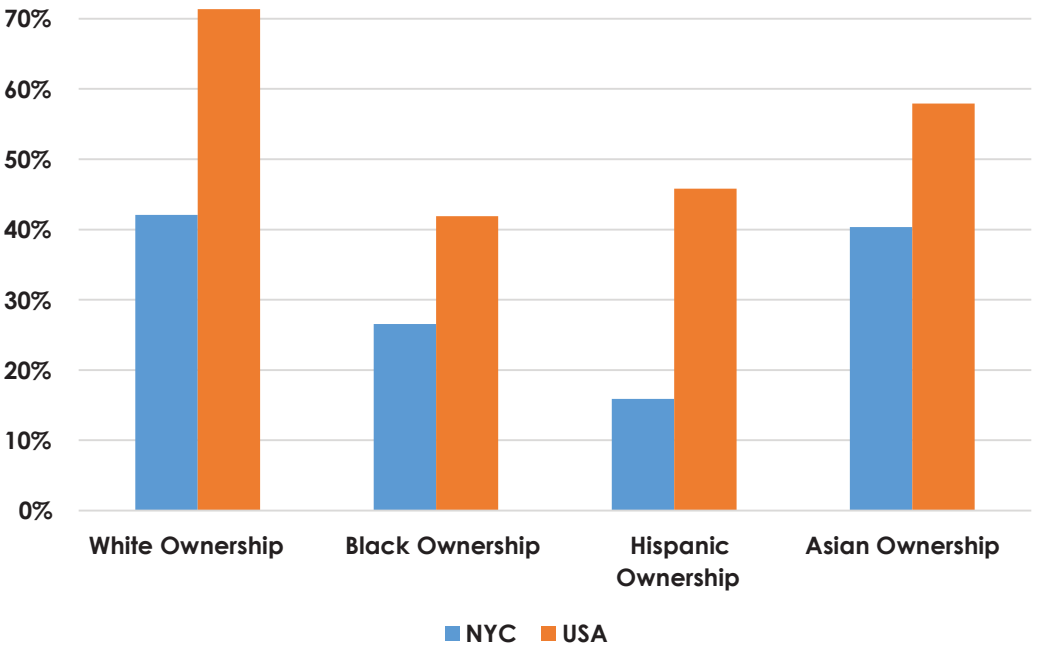


Figure 12: NYC and USA Homeownership rate by Race

Source: ACS 2016 5 Yr. B25003 B, D, H, I

Studies have found that these lower homeownership rates among Black and Latino households are strongly correlated to the racial wealth gap.[26] At the same time, the lack of wealth among minority and low-income communities significantly contributes to the persistence of unequal access to homeownership. This in turn perpetuates disparities in health, education, and quality of life between racial/ethnic groups.

Given this relationship between wealth, race and homeownership, it is no wonder why The Bronx, where over 90 percent of the population is non-white, has the lowest homeownership rate, the highest decrease in homeownership and the highest poverty rate in the City (figure 13).[27] It also explains why Staten Island, the borough with the largest proportion of white residents, has the highest homeownership rate.

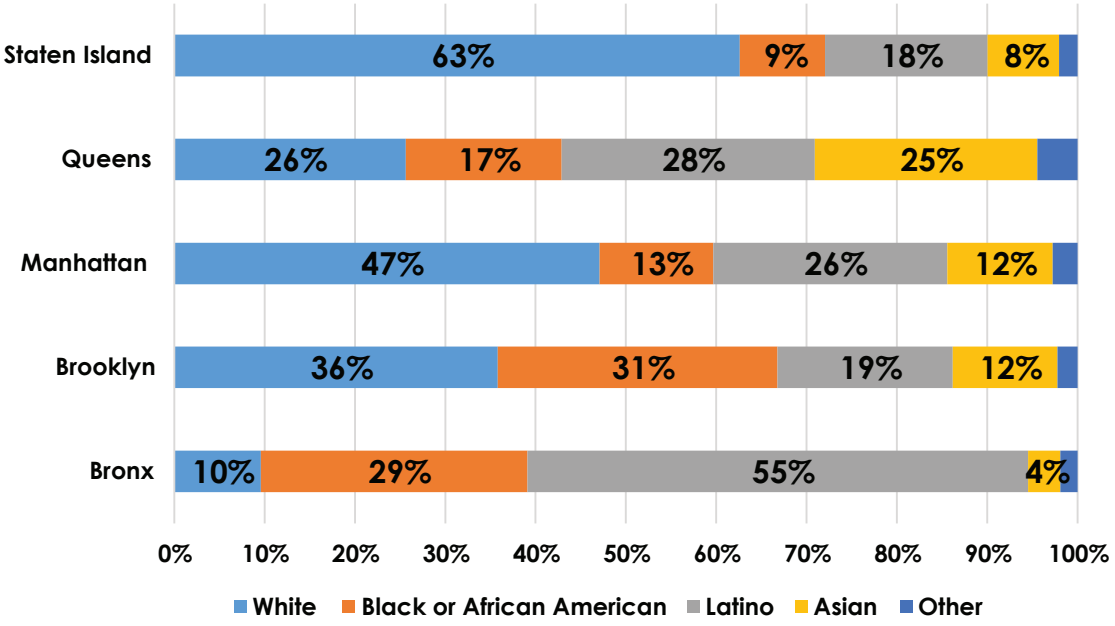


Figure 13: Racial/Ethnic Makup by Borough

Source: ACS 2016 5 Yr. B03002

Given the significant role that homeownership plays in accumulating wealth, increasing financial security and improving educational attainment, health, and quality of life, it is imperative to increase access to these options in order to decrease the racial wealth gap.[28] Affordable homeownership options, just like affordable rentals, must be preserved and created so that people of different socioeconomic backgrounds have the opportunity to benefit from the advantages of homeownership.

Methodology

To better understand the development patterns that are driving the decreasing availability of homeownership opportunities in the city, as well as to identify specific communities that have been targeted by speculative investment and to confirm that these development trends are targeting minority neighborhoods, this report makes use of publicly available data and analyzes it through a two-step approach using Geographic Information Systems. The first step looks at borough-wide data for The Bronx, Brooklyn and Queens using a raster analysis. These three boroughs were chosen for this step due to their high minority populations, their low homeownership rates, their large housing stock concentrated in one to four-unit buildings, and the high rates of speculative investment as identified by CNYCN. The second step uses geometric analysis to identify specific lots where these transformations occurred which in turn provides an opportunity to identify patterns in zoning transformations and its relation to speculative development. Only two districts in The Bronx are analyzed.

To identify the prevalence of different types of use changes, this report first explores New York City MapPluto data from 2009 (v2) and 2018 (v1) through raster analysis, a method that analyzes data stored at the pixel level of an image. Here, lots were first classified by the number of residential units (1-4, 5-9, 10-19, 20-49, 50+, vacant and non-residential), and then accordingly assigned numbers 1 through 7. A raster image was created from these feature values for both years 2009 and 2018, with an output pixel size of 1 square foot to best approximate the actual area of each lot. Each pixel retained the value of the assigned lot type.

The two images' pixel values were then compared to identify the type of change, i.e. from one to four-use to 10 to 19, or vice versa. The following equation was used to compare pixel values and create unique identification number for each type of change, where V_1 are 2009 pixel values and V_2 are 2018 pixel values:

$$ID = V_2{}^{V_1}(V_2 - V_1)$$

The resulting pixel information was then joined to community district geometry to analyze the type of change per district. The information acquired by this analysis, which identifies Community Districts in each borough as case studies, sets up the second step in the methodology.

To identify the nature of change by lot in relation to zoning district that occurred in Bronx Community Districts 5 and 7, this report compares MapPluto data through geometric analysis. First, 2009 borough-block-lot ID numbers (BBL) were matched against 2018 IDs to identify lots that had changed or were missing. Those lots that returned no match—meaning that either the lot number changed from 2009 to 2018 or the lot was incorporated into another lot—were categorized as "missing." To capture lots that matched but were either merged with others or were subdivided, the report compares 2009 and 2018 shape areas and structure types. Those lots with differing lot areas (threshold for similarity was set at one foot) or structure types were labeled "different" and either "subdivided" when lot areas decreased, or "merged" when lot areas increased. This data was then joined to 2009 shapes, and a geometric intersection with 2018 shapes was queried to identify corresponding lot numbers. The result was a dataset that provided information on what occurred to those 2009 lots that were absent from 2018 data, and how 2018 lots had changed since 2009, including zoning and structure type.

For example, in figure 14, the lot in yellow is a one to four-unit lot that was present in 2009 and 2018 datasets but whose shape area and structure type changed. The lots in red were one to four-unit structure lots that had been absent in 2018 data. The geometric query revealed that these lots were merged with the yellow lot, as well as the vacant lot

in gray, to create the larger lot represented by the blue border, which maintained the ID of the lot in yellow. This particular example highlights the type of change this report seeks to find through this analysis; in this instance a series of one to four-unit structures were destroyed and their lots merged in order to make room for a larger residential building. In this case, the new larger lot now has a residential building with 106 units.

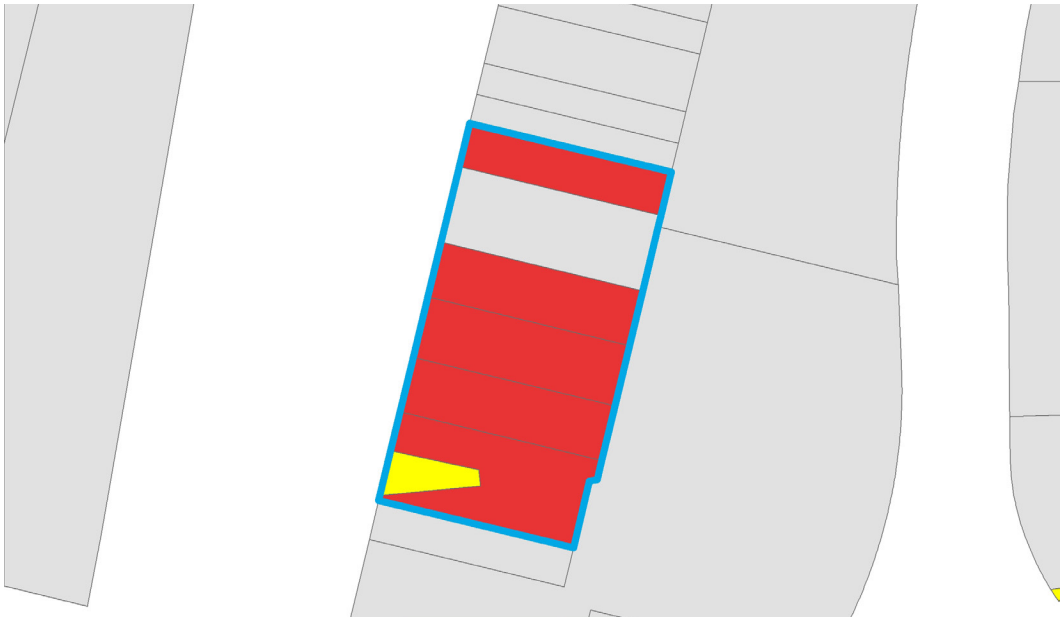


Figure 14: Methodology Example

Source: MapPLUTO v.09.2, v18.1

Raster Analysis

To further identify patterns of development and affected neighborhoods in the City, here the report utilizes the raster technique in The Bronx, Brooklyn and Queens. A raster analysis of land use change by building type utilizes data from 2009 and 2018. The resulting raster data was layered with current community and zoning district information to identify where and under which zoning conditions these lot transformations occurred.

The Bronx

A preliminary raster analysis of building type land use change between 2009 and 2018 reveals through visual inspection that the most prominent change in The Bronx was the development of vacant and non-residential lots, and that much of this activity occurred in the South and West Bronx which encompass Community Districts 1 through 8 (figure 15).[29] The transformation of this land accounted for over 43 percent of the change that occurred in the entire borough (figure 16).

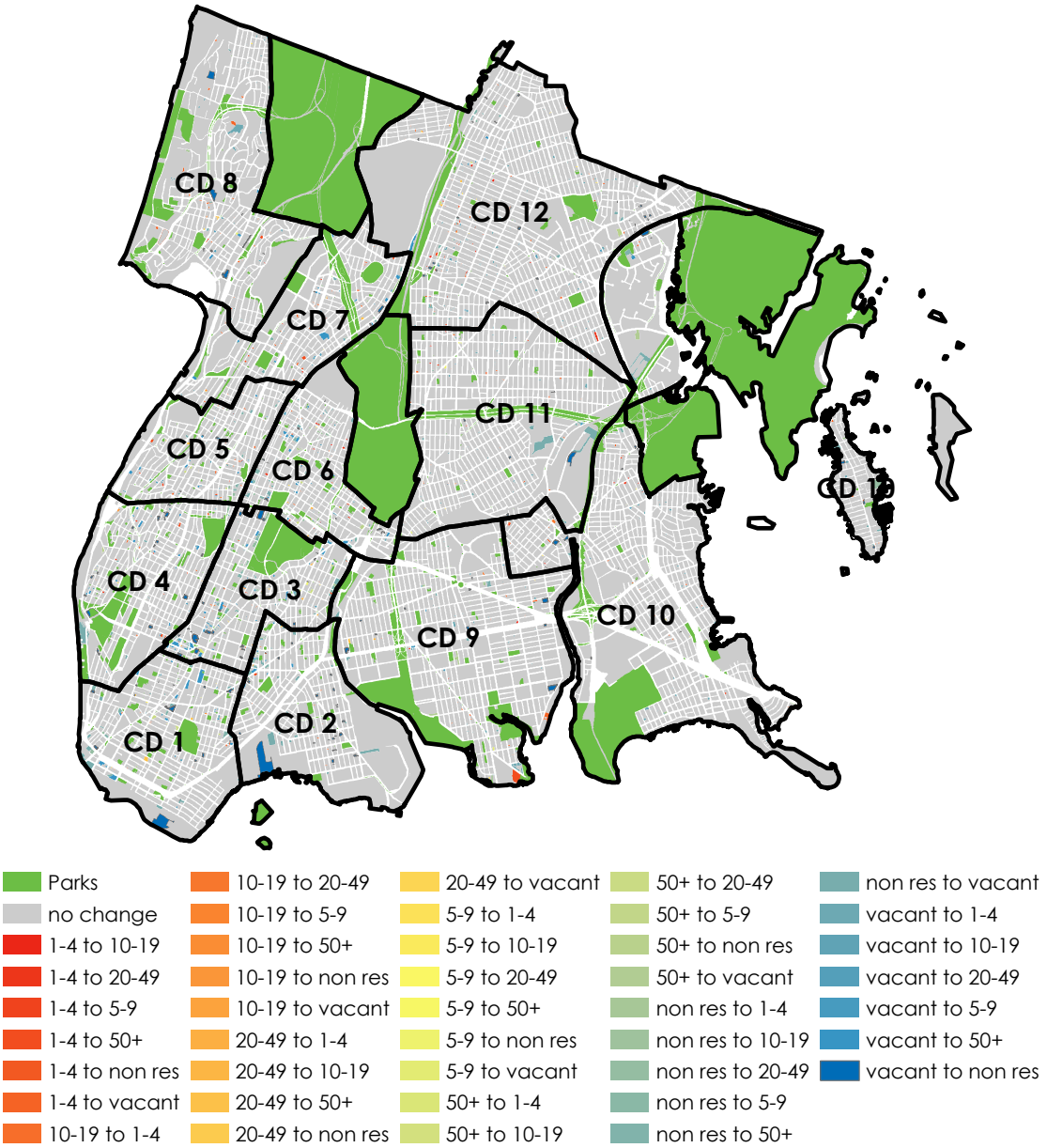


Figure 15: 2009-2018 Type of Land Use Change in The Bronx

Source: MapPLUTO v.09.2, v18.1

More importantly, vacant land that became residential was mostly developed into large multi-family buildings with 50 units or more. While a large portion of vacant land was replaced by one to four-unit buildings, this amount was smaller than the total loss of land previously occupied by such building type. Also, one of the more prominent changes was the conversion of one to four-unit lots to lots with 50 residential units or more, and from one to four-units to vacant, which indicates that these lots were in the demolition stage for what will ultimately become higher density multi-family structures. This amount combined with the amount of land converted from one to four-units residential use to other types was still greater than the total amount of land converted specifically to one to four-unit residential use (figure 17). In other words, more one to four-unit buildings were destroyed than built. A net gain was observed for all other building types, with the largest increase in land used for 50 residential units or more.

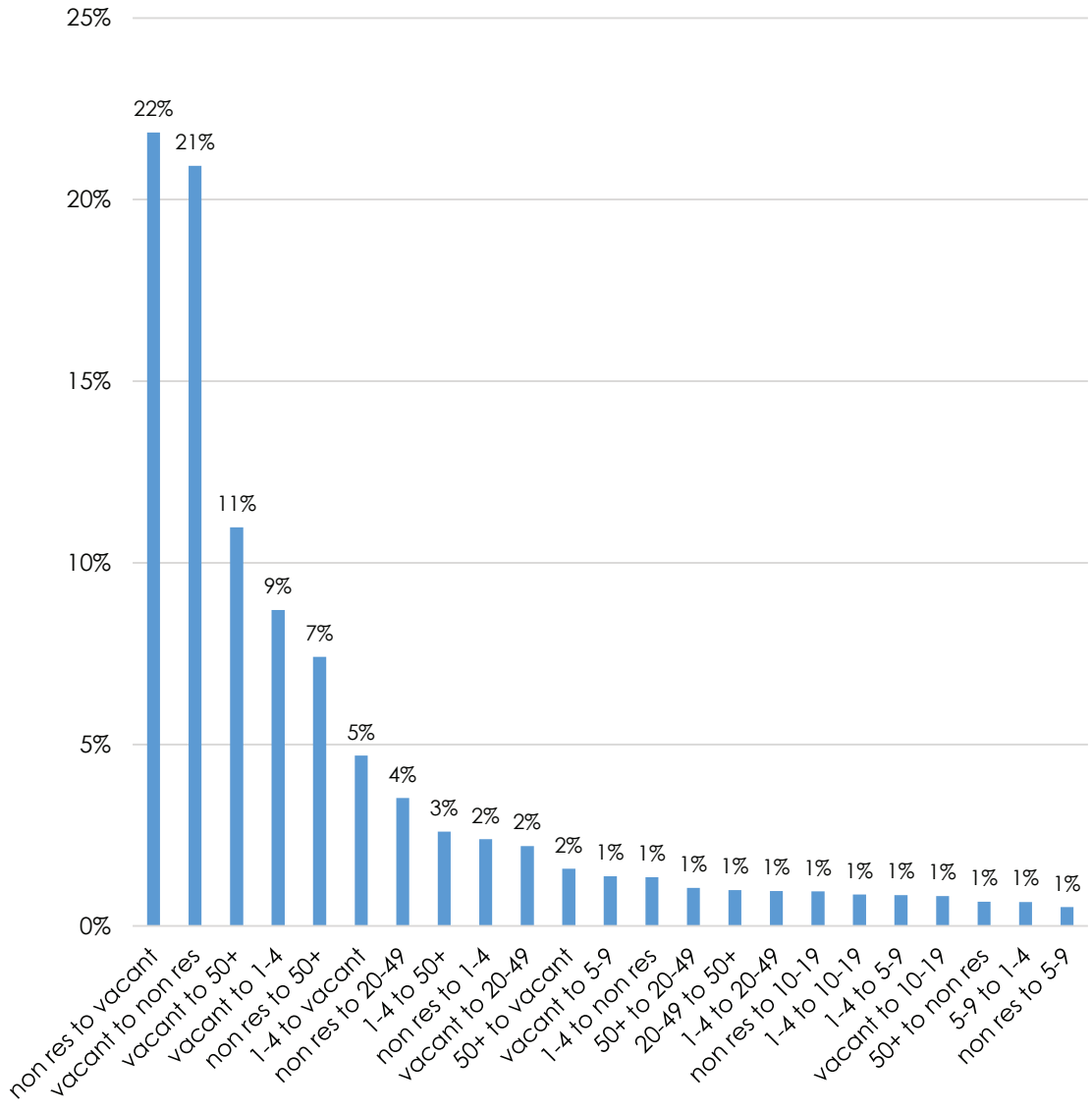


Figure 16: Percent of Land Use Change by Building Type

Source: MapPLUTO v.09.2, v18.1

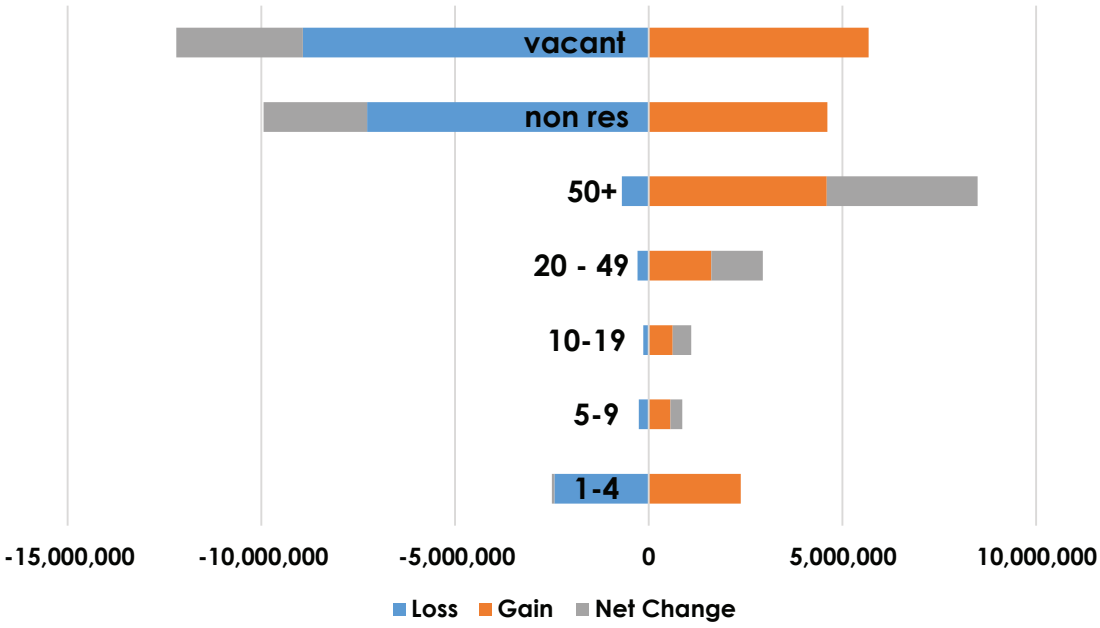


Figure 17: Bronx Change in Square Feet by Building Lot Type

Source: MapPLUTO v.09.2, v18.1

Of the square feet of land lost among lots previously dedicated to one to four-unit buildings, the largest share became vacant land, and almost 30 percent of that lost land became part of lots with 50 units or more (figure 18). This information, along with the previous revelation that one to four-unit lots were the only type of residential lot that experienced an overall decrease in the amount of square feet, illustrates that homeownership opportunities are decreasing while being replaced by larger rental structures.

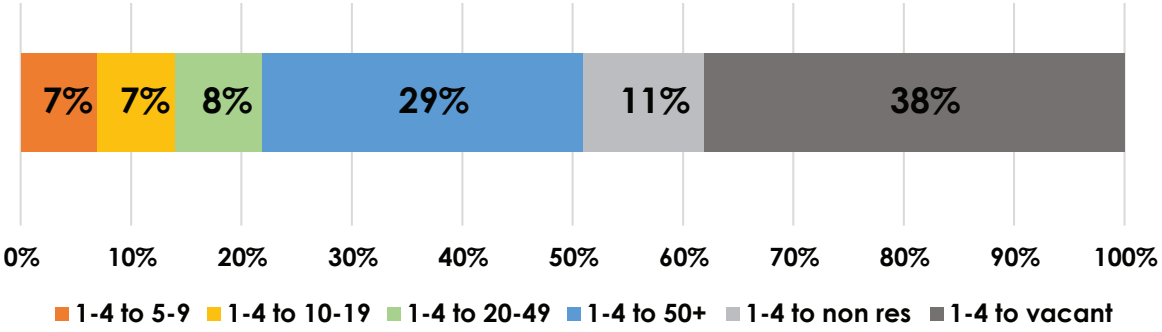


Figure 18 Change of Affected Land (SQFT) with 1 to 4 units in The Bronx

Source: MapPLUTO v.09.2, v18.1

To identify the communities where most of this phenomenon is occurring, raster data was analyzed by Community District. Looking specifically at the loss of land for small residential buildings, it appears that districts with the greatest loss of land dedicated to smaller buildings were districts 8, 9, and 12 (figure 19). However, these districts also had the greatest amount of land converted into such use. Besides District 9 in the East Bronx, all districts with a net loss of land for small residential buildings were those in the South and West Bronx. Among these, community Districts 4, 5, and 7 experienced the smallest gain to loss ratio of square feet of land with one to four-unit buildings (figure 20). In Community District 4, a majority Black and Latino district with the second poorest district in the City, the largest share of land was incorporated into lots with 50 residential units or more. In Community District 5, a predominantly Black and Latino district and the poorest district in the City, over half of one to four-unit land became vacant, and over a quarter of that land was developed for large residential structures. Community district 7, another predominantly Latino district with the highest unemployment rate of all districts in the city and among the top five districts in the City with the highest rent burden, most land became either vacant or developed into large residential buildings.

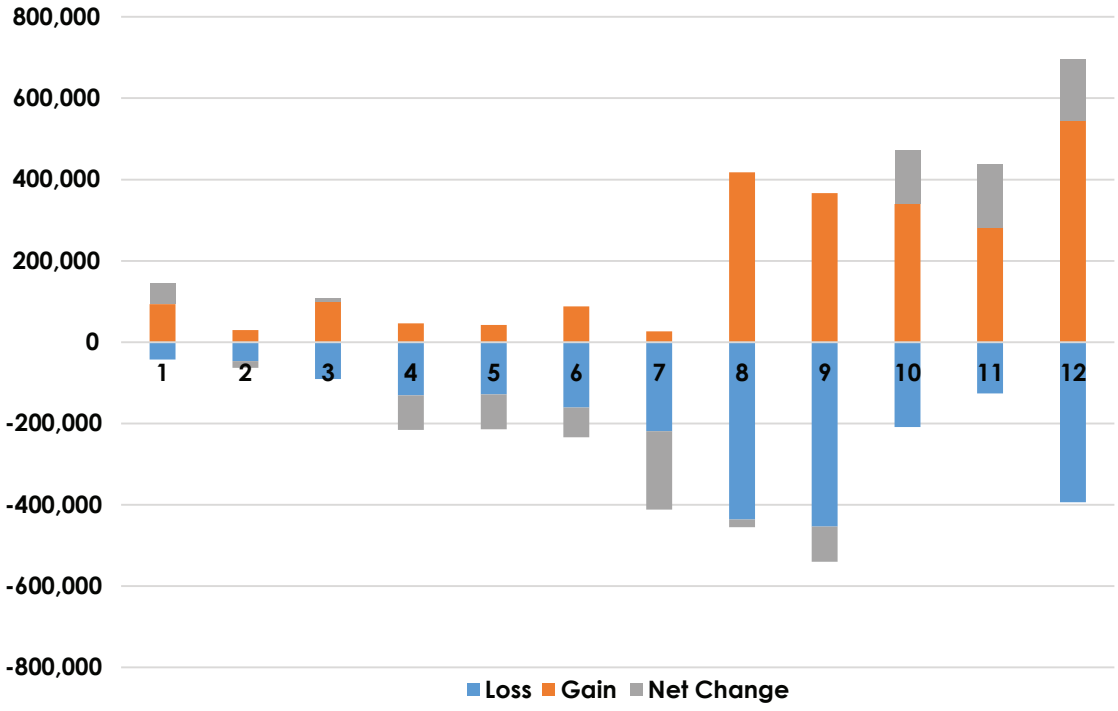


Figure 19 Gain and Loss of One to Four-Unit Use Land Sqare Feet by Bronx CD

Source: MapPLUTO v.09.2, v18.1

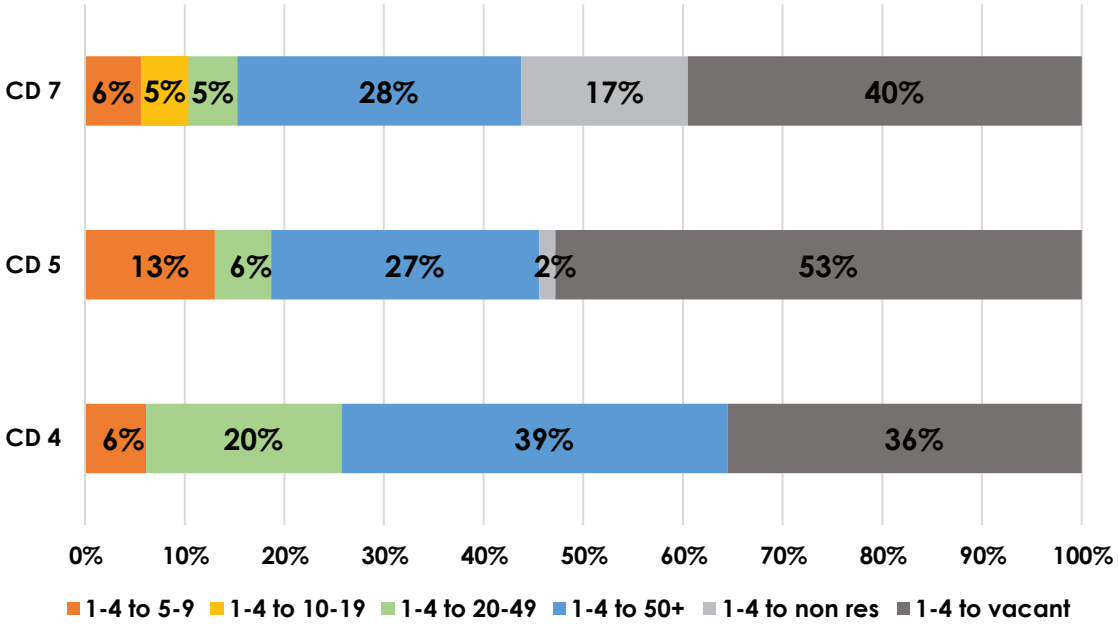


Figure 20: Use Change for 1 to 4 Unit Land (SQFT) by Bronx Community District

Source: MapPLUTO v.09.2, v18.1

Most of these changes occurred in R6, R7 or R8 districts (figure 21). Almost 90 percent of land for one to four-unit buildings in District 4 identified in this raster technique was zoned R7 or R8. Over a third of the affected land zoned R7 became vacant and another third became land for buildings with 20 to 49 residential units, while most of the land (72 percent) zoned R7 became part of lots with 50+ unit buildings. In Community District 5, the largest proportion (44 percent) of one to four-unit land was zoned R8, followed by R7 (34 percent) and R6 (19 percent). Most of the land previously zoned R7 and R8 became vacant, whereas all of the land zoned R6 in district 5 became land for large (50+units) residential buildings. In Community District 7 the most common zoning district were R7 (38 percent), and R8. Of the land zoned R7, over half became land for 50+ unit buildings and of the land zoned R8, the majority became vacant (72 percent).

Zoning District and Building Type change	Bronx CD 4	Bronx CD 5	Bronx CD 7
C4	0.00%	0.93%	2.18%
1-4 to 5-9		100.00%	0.00%
1-4 to vacant		0.00%	100.00%
C6	4.13%	0.00%	0.00%
1-4 to vacant	100.00%		
M1	0.00%	0.21%	1.12%
1-4 to vacant		100.00%	100.00%
R5	0%	2%	18%
1-4 to 50+		0%	27%
1-4 to non res		0%	54%
1-4 to vacant		100%	19%
R6	0%	19%	15%
1-4 to 10-19		0%	10%
1-4 to 50+		100%	31%
1-4 to 5-9		0%	16%
1-4 to non res		0%	15%
1-4 to vacant		0%	29%
R7	47%	34%	38%
1-4 to 10-19	0%	0%	9%
1-4 to 20-49	34%	2%	0%
1-4 to 50+	17%	0%	51%
1-4 to 5-9	13%	34%	6%
1-4 to non res	0%	5%	9%
1-4 to vacant	36%	59%	25%
R8	43%	44%	27%
1-4 to 10-19	0%	0%	0%
1-4 to 20-49	8%	11%	18%

Figure 21: Zoning District and Building Type Change in The Bronx

Source: MapPLUTO v.09.2, v18.1

Brooklyn

While Brooklyn was the only borough that experienced an increase in the number of owner-occupied units, it is still worth exploring how lots with one to four-unit buildings may have been affected given the low homeownership rate in the borough and the concentration of homeownership in small residential buildings.

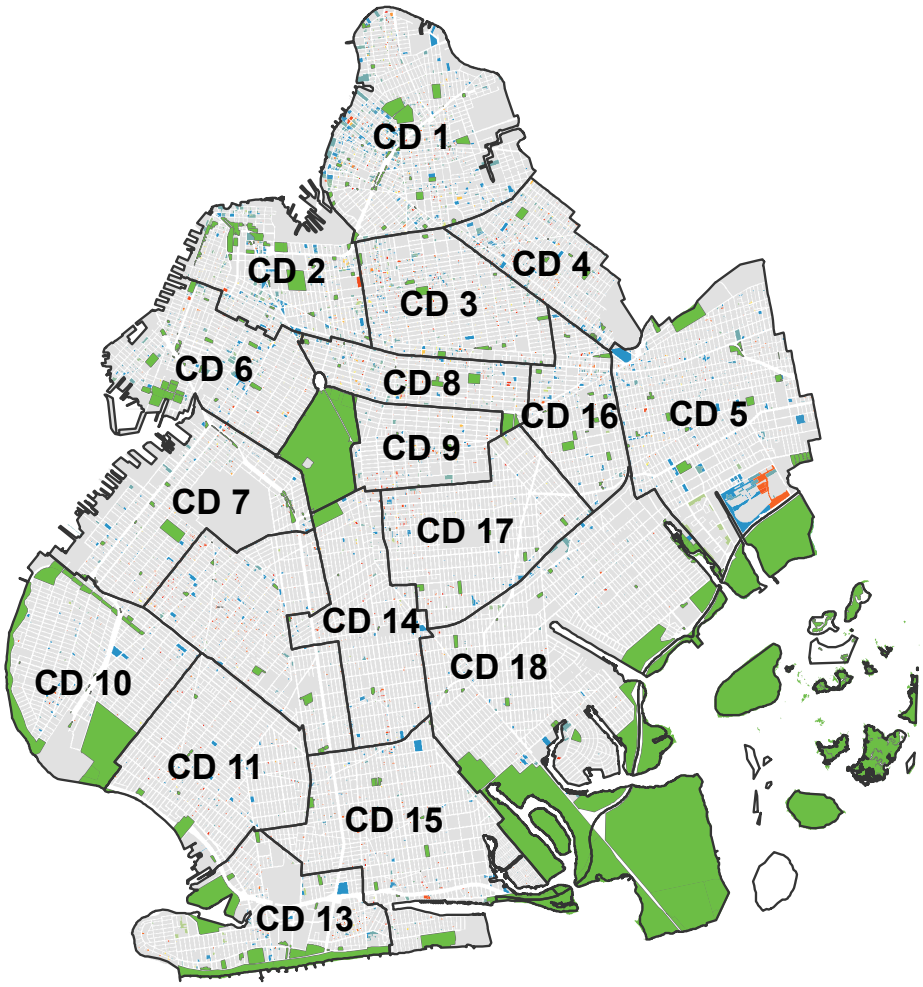


Figure 22: 2009-2018 Type of Land Use Change in Brooklyn

Source: MapPLUTO v.09.2, v18.1

The raster analysis reveals that in Brooklyn, as in The Bronx, the greatest change was the development of vacant and non-residential land, and that most vacant land was developed for non-residential use (figure 23). Most vacant land that became residential became land for buildings of 50 units or more, and while the figure above also shows that a large portion of vacant land was converted into one to four-unit lots, the net change of land with one to four-unit buildings was negative (figure 24).

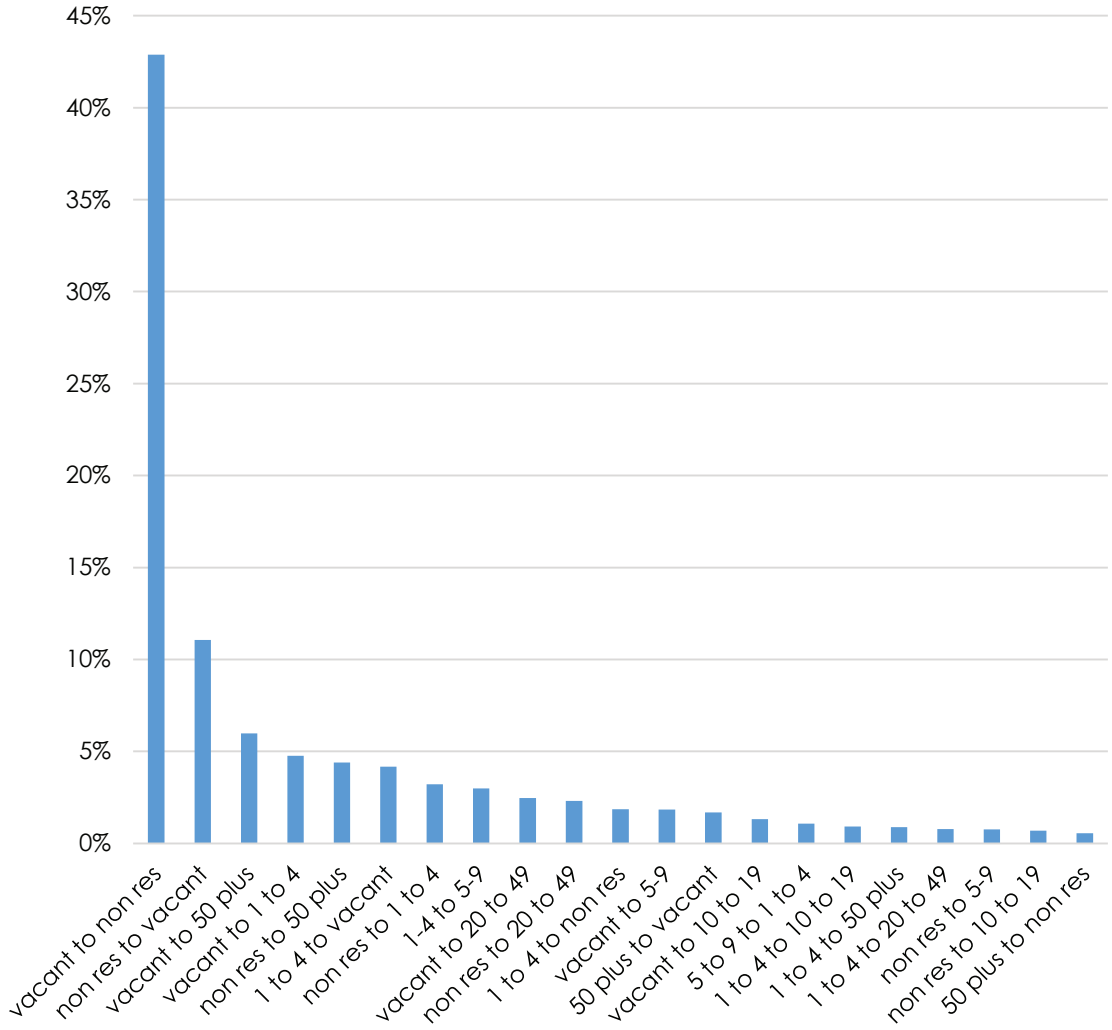


Figure 23: Brooklyn Percent of Land Use Change by Change Type

Source: MapPLUTO v.09.2, v18.1

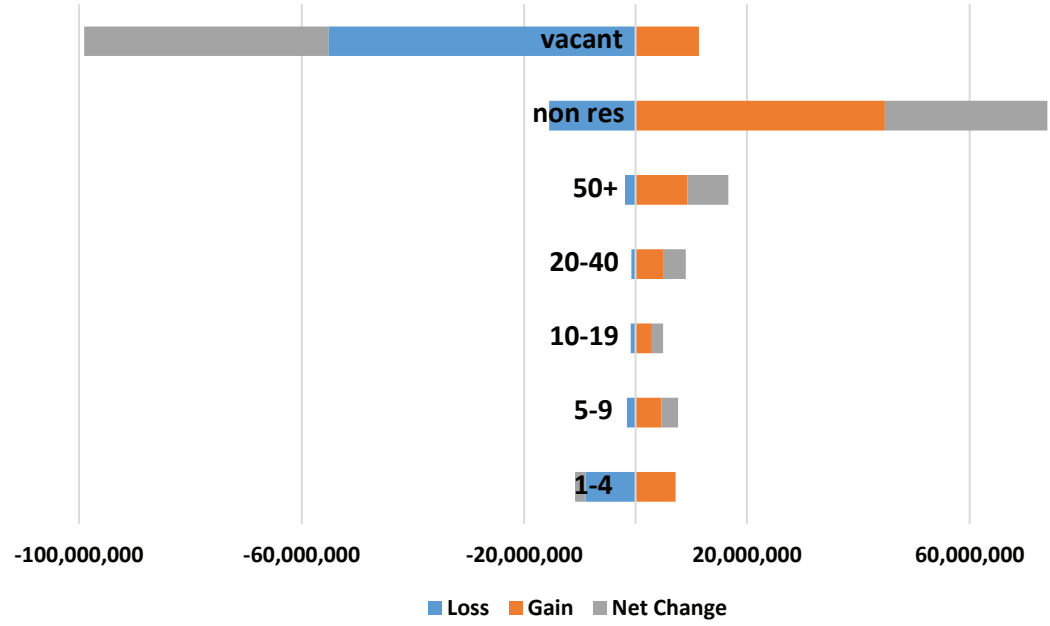


Figure 24: Brooklyn Change in Square Feet by Building Lot Type

Source: MapPLUTO v.09.2, v18.1

Similar to The Bronx, the plurality of land previously occupied by one to four-unit buildings in 2009 was vacant in 2018. The second largest share became land with 5 to 9 unit buildings, a departure of the trend identified in The Bronx where most land became part of lots with 50+ unit buildings.

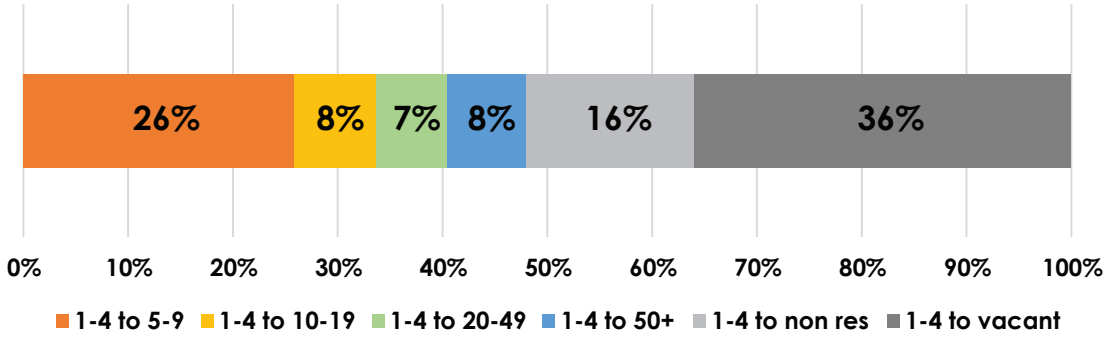


Figure 26: Change of Affected Land (SQFT) with 1 to 4 units in Brooklyn

Source: MapPLUTO v.09.2, v18.1

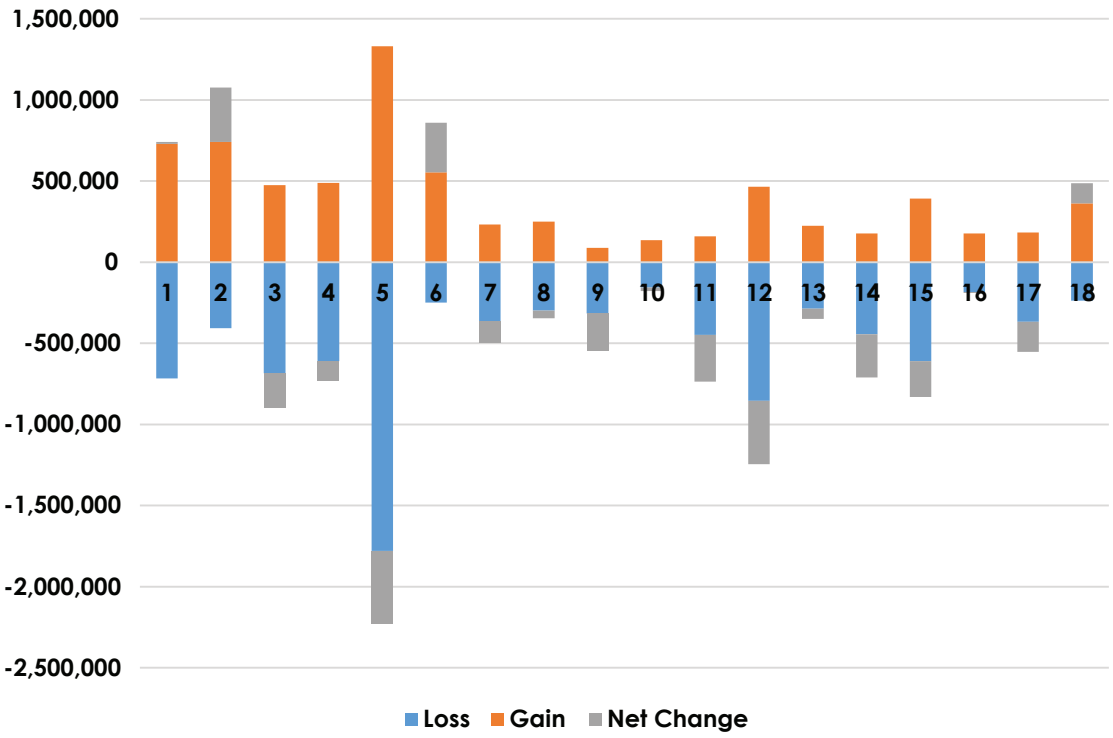


Figure 25: Change of Affected Land (SQFT) with 1 to 4 units in Brooklyn by CD

Source: MapPLUTO v.09.2, v18.1

Brooklyn Community Districts 9, 12, and 14, in that order, experienced the smallest gain to loss ratio of square feet of land with one to four-unit buildings (figure 26).[30] In Community District 9, a predominantly African-American district with one of the highest unemployment rates in the borough, over half of this land became vacant or incorporated into lots with 5 to 9 unit buildings (figure 27). In Community District 12, a predominantly Hasidic and Orthodox Jewish district and the district with the highest rent burden in the entire city, almost 70 percent of land became either vacant or incorporated into lots with 5 to 9 residential units. In Community District 14, a racially diverse neighborhood with one of the highest rent burden rates in the borough, a large proportion of this land was either vacant or developed for non-residential use.

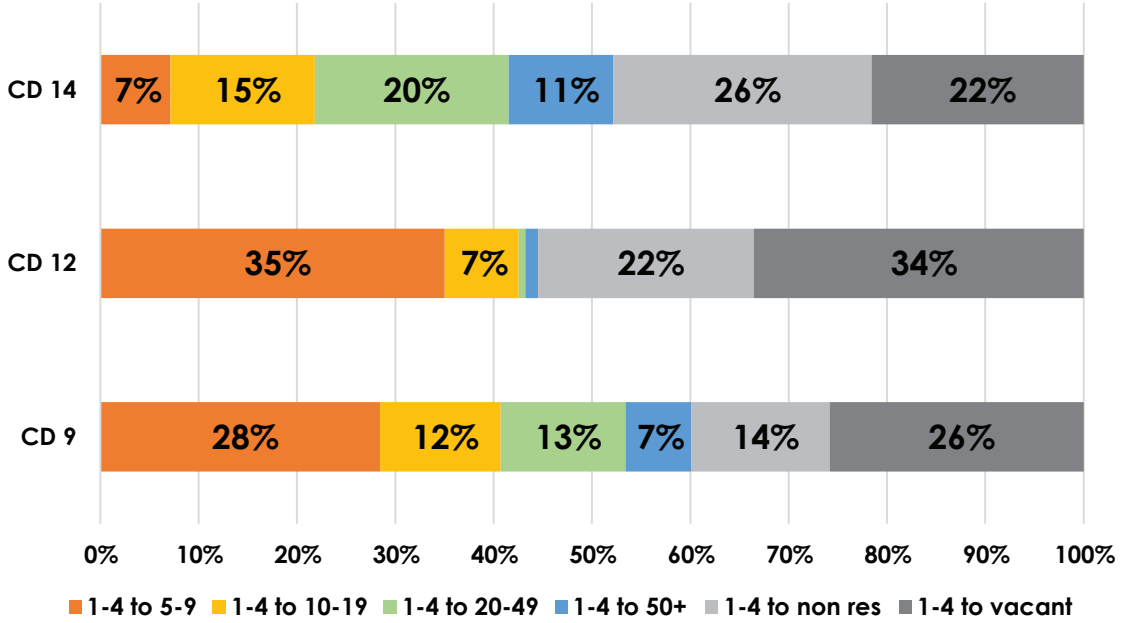


Figure 27: Use Change for 1 to 4 Unit Land (SQFT) by Brooklyn Community District

Source: MapPLUTO v.09.2, v18.1

Most of these changes occurred in R5, R6, or R7 districts (figure 28). In Community District 9, the majority (70 percent) of affected land identified was in districts zoned R6. Of this land, most (40 percent) was transformed into land for 5 to 9 unit buildings, consistent with trends identified for the entire borough. A substantial portion of the remaining affected land was zoned R7, where the most common type of lots were vacant (31 percent) and 50+ unit lots (29 percent). Similar trends were identified for community district 12. The majority (61 percent) of affected one to four-unit residential land in this district was zoned R6. Here, too, most of this land was also converted into 5 to 9 residential lots. However, the majority of the remaining land affected was zoned R5, and most of this land became vacant.

In Community District 14 the most common zoning district was R7 (53 percent), where the most common type of change for one to four-unit lots was the conversion into 20 to 49 unit lots (34 percent) followed by vacant lots (20 percent). A substantial share of land was zoned R6, where the majority of land became non-residential lots.

Zoning District and Building Type change	Brooklyn CD 9	Brooklyn CD 12	Brooklyn CD 14
C4	0%	0%	1%
1-4 to non res	100%	100%	100%
C8	0%	1%	0%
1-4 to 5-9	0%	0%	0%
1-4 to non res	100%	100%	0%
1-4 to vacant	0%	0%	100%
M1	0%	5%	0%
1-4 to 5-9		9%	100%
1-4 to non res		26%	0%
1-4 to vacant		65%	0%
R1	0%	0%	1%
1-4 to 20-49			0%
1 to 4 to vacant			100%
R2	3%	2%	7%
1-4 to 20-49	0%	0%	2%
1-4 to non res	100%	0%	78%
1-4 to vacant	0%	100%	20%
R3	0%	1%	3%
1-4 to 20-49		0%	3%
1-4 to 5-9		50%	29%
1-4 to 50+		0%	0%
1-4 to non res		0%	36%
1 to 4 to vacant		50%	32%
R4	3%	0%	3%
1-4 to 10-19	0%		0%
1-4 to 20-49	0%		0%
1-4 to 5-9	0%		0%
1-4 to non res	100%		78%
1-4 to vacant	0%		22%
R5	0%	28%	11%
1-4 to 10-19	0%	5%	8%
1-4 to 20-49	0%	0%	0%
1-4 to 5-9	0%	14%	31%
1-4 to 50+	0%	0%	6%
1-4 to non res	0%	27%	32%
1-4 to vacant	100%	54%	23%
R6	70%	61%	20%
1-4 to 10-19	14%	9%	24%
1-4 to 20-49	11%	0%	8%
1-4 to 5-9	40%	49%	11%
1-4 to 50+	0%	0%	0%
1-4 to non res	9%	20%	42%
1-4 to vacant	25%	22%	15%
R7	23%	3%	53%
1-4 to 10-19	9%	23%	17%
1-4 to 20-49	20%	19%	34%
1-4 to 5-9	2%	14%	1%
1-4 to 50+	29%	40%	19%
1-4 to non res	8%	0%	7%
1-4 to vacant	31%	4%	22%
R8	1%	0%	0%
1-4 to 50+	0%		
1-4 to vacant	100%		

Figure 28: Zoning District and Building Type Change in Brooklyn

Source: MapPLUTO v.09.2, v18.1

Queens

With a six percent decrease in the number of owner-occupied units between 2009 and 2016, Queens experienced the second largest drop in homeownership in New York City. How does this translate to the transformation of the use of land in the borough?

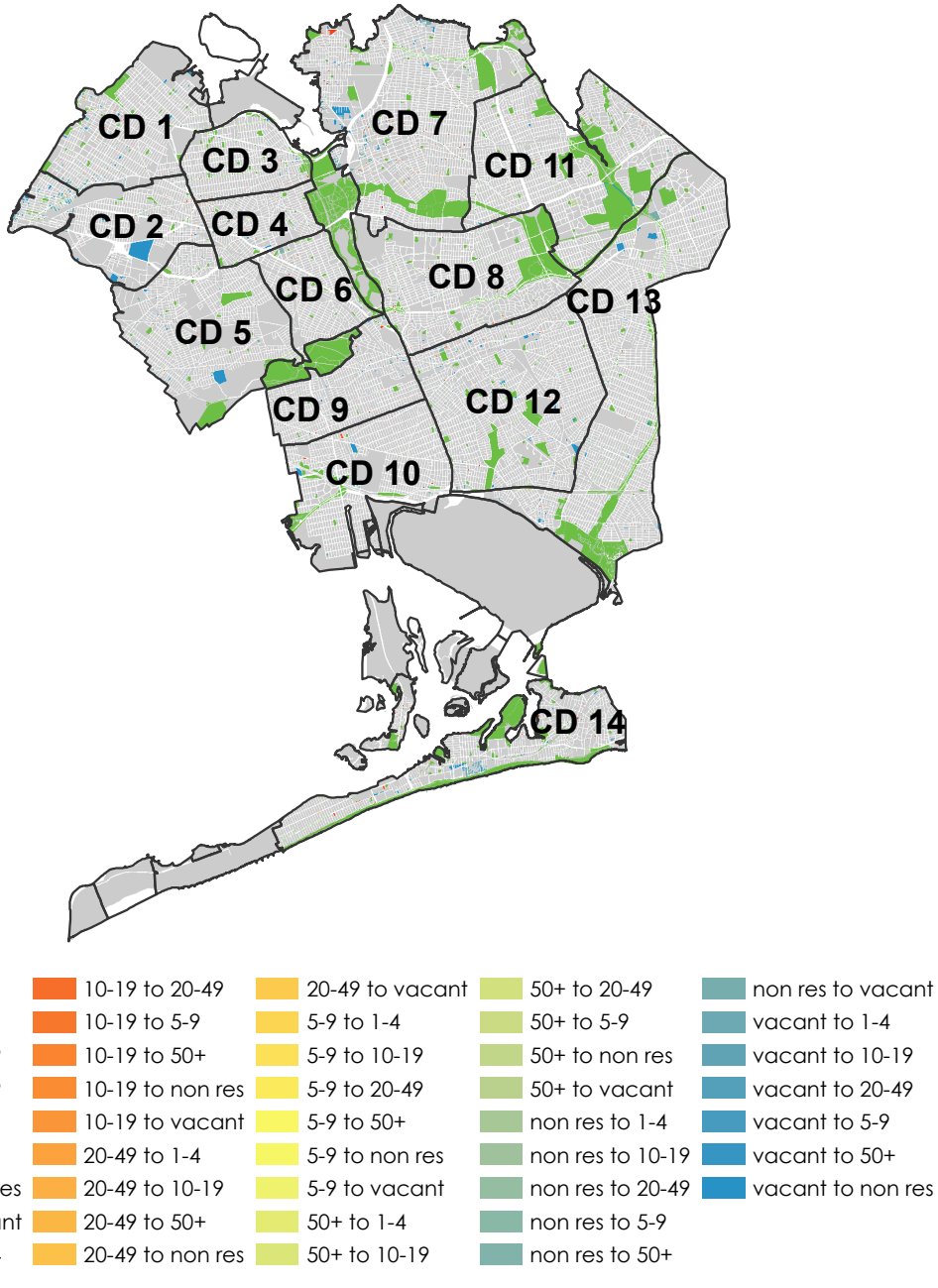


Figure 29 2009-2018 Type of Land Use Change in Queens

Source: MapPLUTO v.09.2, v18.1

As with Brooklyn and The Bronx, the greatest change in Queens was the transformation of vacant land for non-residential use (figure 30). Surprisingly, the second biggest type of change was the development of vacant land for one to four unit buildings. Overall, in Queens a majority of affected vacant land that became residential was incorporated into lots with one to four-units, which explains the positive change in the square footage of one to four-unit lots (figure 31).

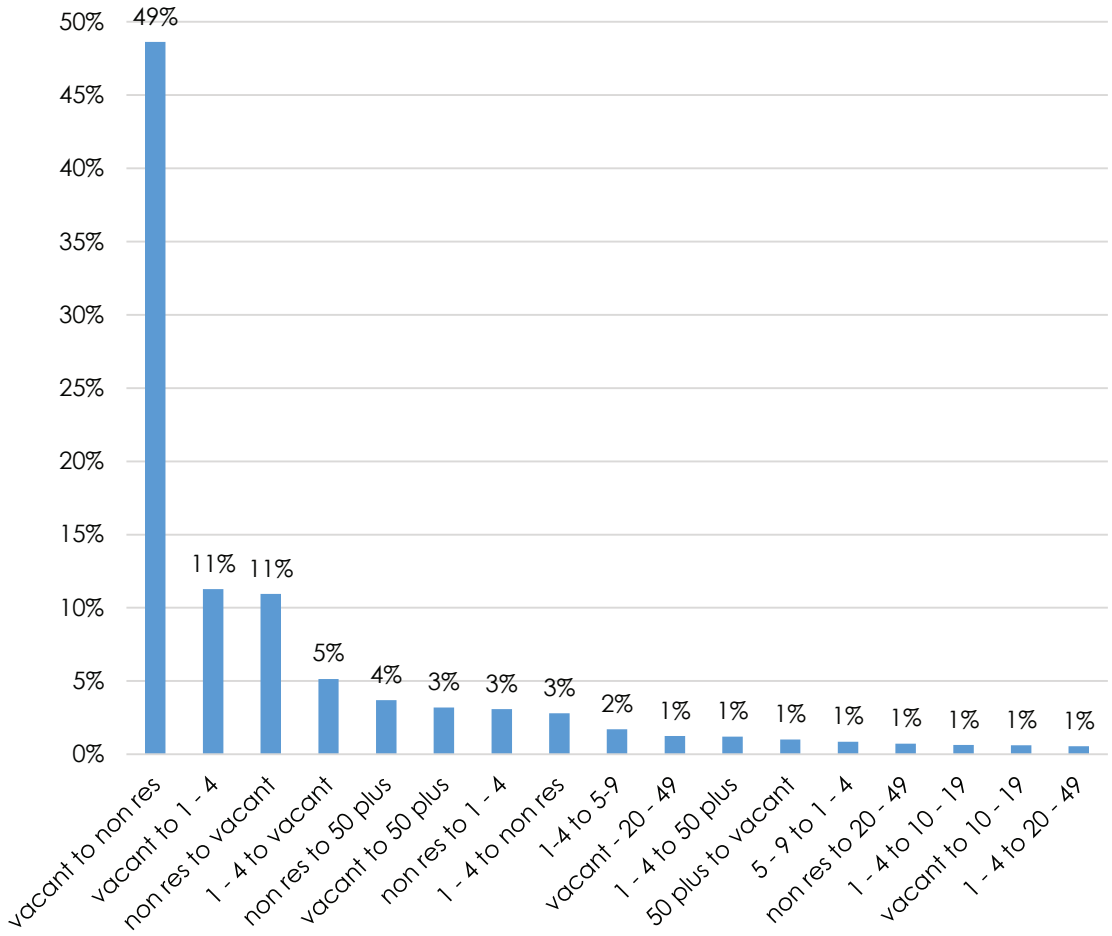


Figure 30 Queens Percent of Land Use Change by Building Type

Source: MapPLUTO v.09.2, v18.1

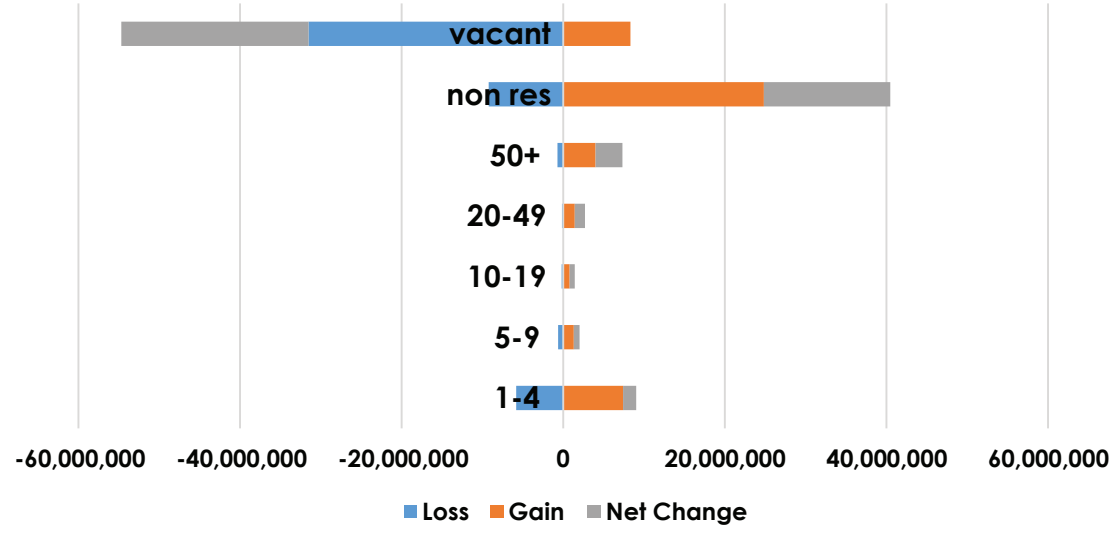


Figure 31: Queens Change in Square Feet by Building Lot Type

Source: MapPLUTO v.09.2, v18.1

Of the one to four-unit lot land that was affected by development change, a great percentage of it became vacant, similar to The Bronx and Brooklyn. The second largest portion became land used for 5 to 9 unit buildings, mirroring the trend identified in Brooklyn (figure 32).

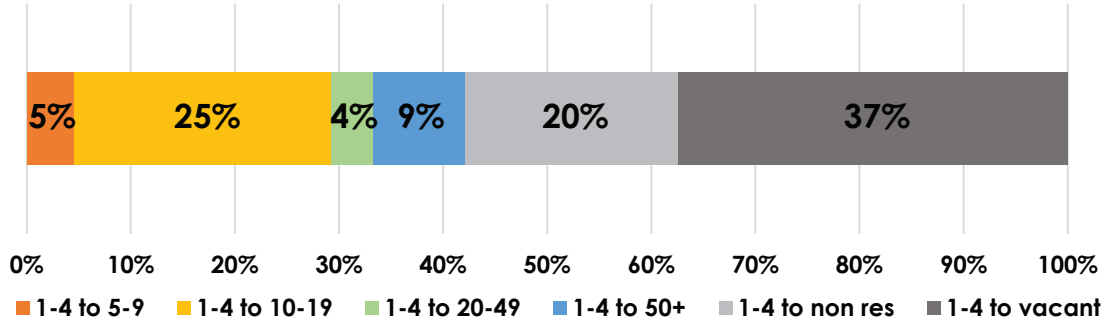


Figure 32: Change of Affected Land (SQFT) with One to Four units in Queens

Source: MapPLUTO v.09.2, v18.1

Community Districts 2, 7 and 8 were the only districts in Queens that experienced a negative change in the amount of one to four-unit lot square footage (figure 33). Tying this to the decrease in homeownership, and the higher rates of homeownership in such buildings, this suggests that the change found in these districts affected the overall rate of homeownership in Queens.

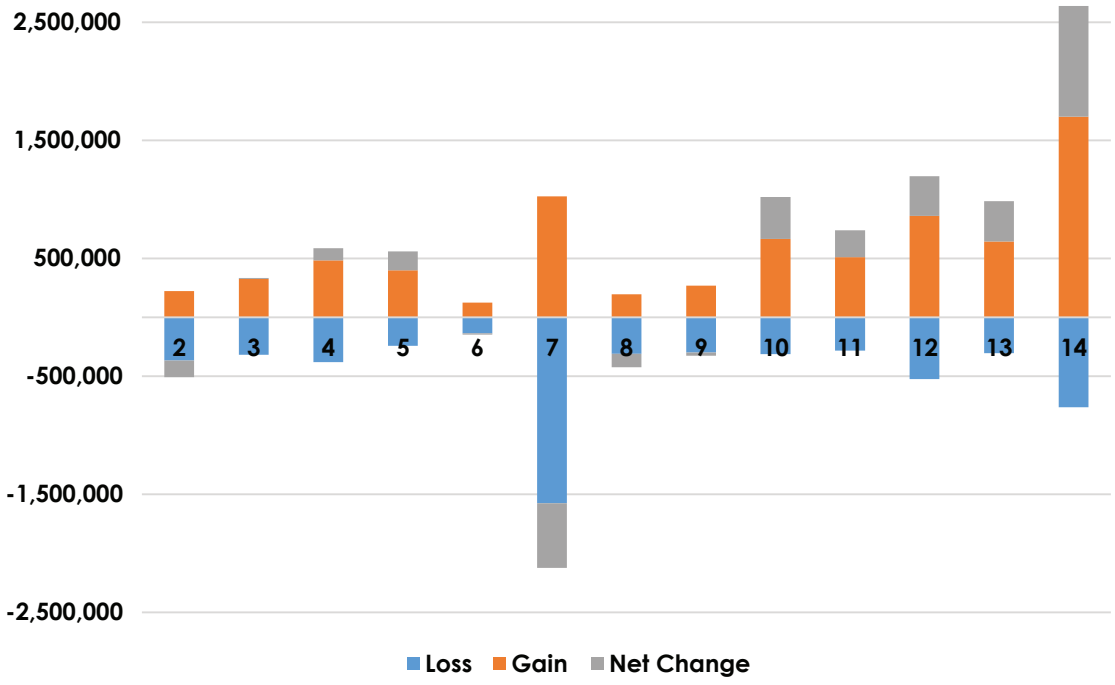


Figure 33: Queens CD gain loss of SF for One to Four Unit Land

Source: MapPLUTO v.09.2, v18.1

The transformation of one to four-unit lots mirrors much of the change that occurred in The Bronx (figure 34). In Queens Community District 2, an ethnically diverse district with a large foreign born population, nearly a third of the square feet of developed lots previously used for one to four-unit residential buildings became part of lots with 50+ unit buildings. The second largest portion became vacant. In Community District 7, a predominantly Asian district with the third highest rent burden rate in the city and the highest percentage of limited English proficient populations of all City districts, almost 40 percent of this type of land became vacant, with the second largest proportion developed for non-residential use. Almost a fifth of land affected was incorporated into lots with buildings of 50 units or more. In ethnically diverse Community District 8, over 77 percent of land became vacant or non-residential, the rest being converted, in similar proportions, into land for larger residential buildings.

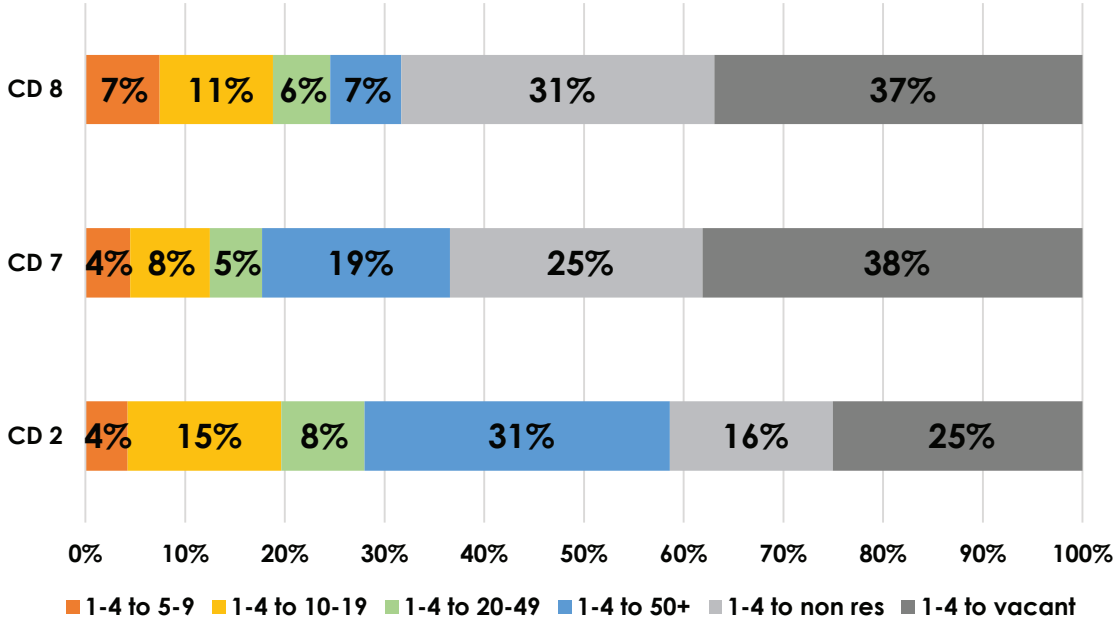


Figure 34: Use Change for 1 to 4 Unit Land (SQFT) by Queens Community District

Source: MapPLUTO v.09.2, v18.1

The zoning districts in which these transformations occurred overlap those identified in Brooklyn and The Bronx (figure 35). In Community District 2, most of this change occurred in R5, R6, R7 and R8 districts. In R5 districts, the most common transformation was that into use for 5 to 9 unit buildings. Over half of the land in R6 districts and over a third in R7 districts was converted into use for large 50+ unit residential structures. All land identified and zoned R8 was incorporated into lots with 50 units or more.

In Community District 7, over a third of the affected land identified was in R4 zoning districts. Of the land identified here, the majority became either vacant or used for large 50+ unit buildings. Community District had less variability than Community Districts 2 and 7. Here, similar proportions of affected land were in district R1 (15 percent), R2 (18 percent), R4 (20 percent), R5 (17 percent), and R6 (16 percent). In all of these districts, the most common transformation, as previously identified, was that into either vacant or non residential use.

Community District 8 also had much variety in terms of zoning classification of affected one to four-unit land. The largest proportion was zoned R4, followed by R2, R5, R6 and R7. Conversion into non residential use was most common in R4 districts. In R5 and R6 districts the largest share of land was found to be vacant, and in R7 districts, most of the square feet of land previously part of lots with one to four-unit buildings became part of lots with buildings of 50 units or more.

Zoning District and Building Type Change	Queens CD 2	Queens CD 7	Queens CD 8
C3	0%	1%	0%
1-4 to vacant		100%	
C4	0%	0%	4%
1-4 to non res	100%	66%	80%
1-4 to vacant	0%	34%	20%
M1	20%	5%	0%
1-4 to 5-9	8%	0%	
1-4 to 10-19	3%	4%	
1-4 to 20-49	7%	0%	
1-4 to 50+	24%	0%	
1-4 to non res	36%	36%	
1-4 to vacant	23%	60%	
M2	4%	2%	0%
1-4 to non res	0%	29%	
1-4 to vacant	100%	71%	
R1	0%	6%	15%
1-4 to 10-19		0%	22%
1-4 to non res		8%	26%
1-4 to vacant		92%	52%
R2	0%	14%	18%
1-4 to 5-9		10%	0%
1-4 to 10-19		0%	11%
1-4 to non res		83%	41%
1-4 to vacant		7%	48%
R3	0%	11%	0%
1-4 to 5-9		10%	0%
1-4 to 50+		0%	100%
1-4 to non res		35%	0%
1-4 to vacant		55%	0%
R4	2%	34%	20%
1-4 to 5-9	59%	3%	16%
1-4 to 10-19	0%	2%	0%
1-4 to 50+	0%	46%	0%
1-4 to non res	0%	7%	61%
1-4 to vacant	41%	42%	23%
R5	23%	10%	17%
1-4 to 5-9	36%	21%	25%
1-4 to 10-19	4%	13%	25%
1-4 to 20-49	17%	0%	0%
1-4 to non res	17%	32%	4%
1-4 to vacant	26%	33%	46%
R6	26%	11%	16%
1-4 to 5-9	14%	22%	28%
1-4 to 10-19	3%	18%	0%
1-4 to 20-49	0%	36%	23%
1-4 to 50+	56%	0%	11%
1-4 to non res	12%	4%	4%
1-4 to vacant	15%	21%	34%
R7	10%	4%	10%
1-4 to 5-9	5%	0%	0%
1-4 to 10-19	9%	24%	0%
1-4 to 20-49	36%	28%	13%
1-4 to 50+	36%	29%	44%
1-4 to non res	0%	8%	10%
1-4 to vacant	13%	11%	32%
R8	14%	0%	0%
1-4 to 50+	100%		

Figure 35: Zoning District and Building Type Change in Queens

Source: MapPLUTO v.09.2, v18.1

The insight gathered from analyzing change in The Bronx, Brooklyn and Queens reveals that the transformation of one to four-unit lots varies by borough, and that the zoning under which this occurs also changes between boroughs. While in Queens and The Bronx one to four-unit lots were most commonly targeted for conversion into lots with large 50+ unit residential buildings, in Brooklyn one to four-unit land was most commonly developed into buildings with 5 to 9 units. In Brooklyn and The Bronx, these changes occurred in the medium and high density districts, whereas in Queens, development of one to four-unit lots was observed both in low and medium density districts, with variation between Community Districts.

Furthermore, the analysis both strengthens and complicates the demographic assumptions of affected communities. In The Bronx, all three districts identified as having the largest losses of one to four-unit land are predominantly Black or Latino. While one of the Community Districts identified in Brooklyn (Community District 9) is predominantly Black, a second district is predominantly Hasidic and Orthodox Jewish (Community District 12) and the third (Community District 14) is racially diverse. In Queens, both Community Districts 2 and 8 are diverse, while Community District 7 is predominantly Asian. This suggests that while it is true that ethnic communities are usually targeted for development of small one to four-unit lots, in the case of ethnically diverse and religious minority communities, other factors may be at play. It is also possible that in communities with similar proportions of White and racial minority residents, it is possible that the latter are more affected by development. Further analysis that takes into account changes in neighborhood demographic compositions is required to better understand why such communities are also affected, and to understand the socio-demographic changes driven by various types of land transformations.

Geometric Analysis

As previously established, The Bronx has the lowest homeownership rate in New York City, which is in fact the second lowest homeownership rate of any county in the United States. Relatedly, The Bronx also has the highest low-income and minority population of all boroughs in the City, and is experiencing the greatest decrease in homeownership of all City boroughs. Because of these realities, districts in The Bronx were chosen for further analysis using geometric techniques that provide insight into the nature of the transformations of lots affected by previously observed development patterns. Due to the complex nature of spatial relations, only two districts were selected for this analysis. These were Community Districts 5 and 7. Over the last decade, these two districts lost 116 homes, 56 in the last year alone, and had the highest loss ratio of one to four-unit residential land in The Bronx.[31] Additionally, these two districts match the profile of identified affected communities: these are predominantly low income minority communities that are zoned largely for medium density.

The resulting dataset from the geometric analysis shows that between 2009 and 2018, 322 lots in Community Districts 5 and 7 were consolidated into 246 lots.[32] More than half of lots identified were merged, and only a small portion were subdivided (figure 36). This consolidation of lots strengthens previous observations as to the nature of development occurring in low income, medium density communities.

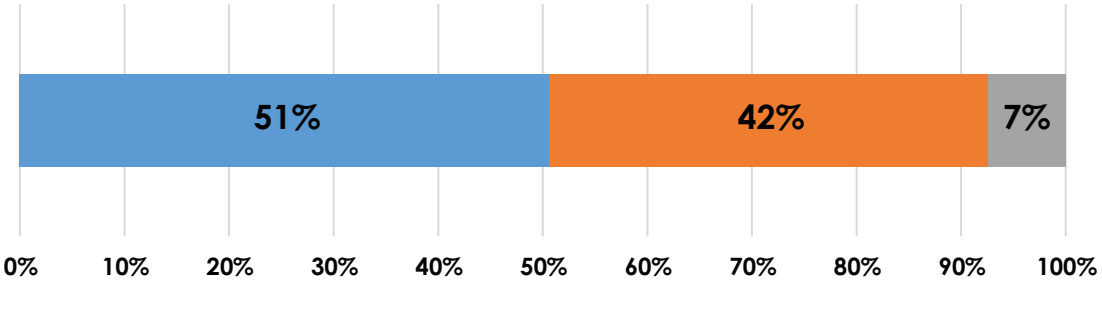


Figure 36: Type of Change of All Lots Identified

Source: MapPLUTO v.09.2, v18.1

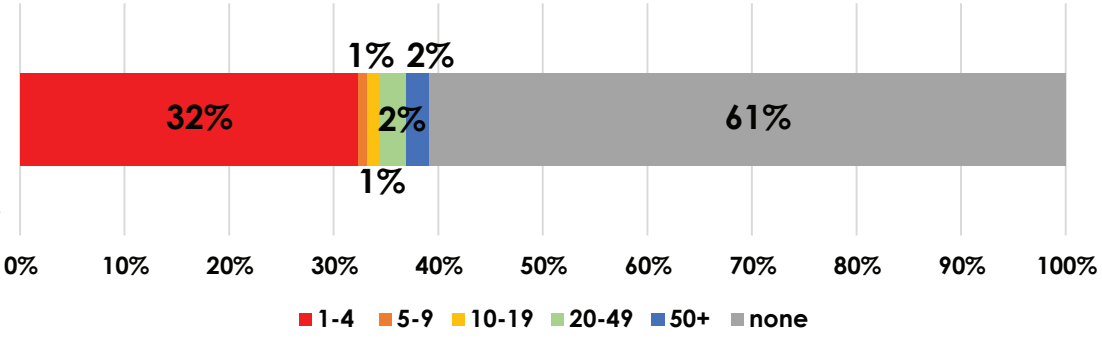


Figure 37: Changed Lots by Structure Type

Source: MapPLUTO v.09.2, v18.1

Furthermore, 32 percent of the 322 lots identified through this selection process were lots with one to four-unit structures, while the larger share of lots (61 percent) were vacant or had no residential use. Only a small percentage of lots with larger residential structures were affected by development change. This information supports the conclusions gathered from the raster analysis which showed that the most affected type of lots were vacant or non-residential, followed by land used originally for one to four-unit buildings.

The raster analysis is further supported by the corresponding data for lots in 2018, which reveals that the share of larger-structure lots increased dramatically (figure 38). Of the lots identified, 18 percent were lots with structures of 50 units or more, compared to 2 percent in 2009. At the same time, the number of one to four-unit lots also decreased, as did the number of vacant lots. Again, this information suggests that smaller residential buildings, along with vacant lots, were replaced by larger ones.

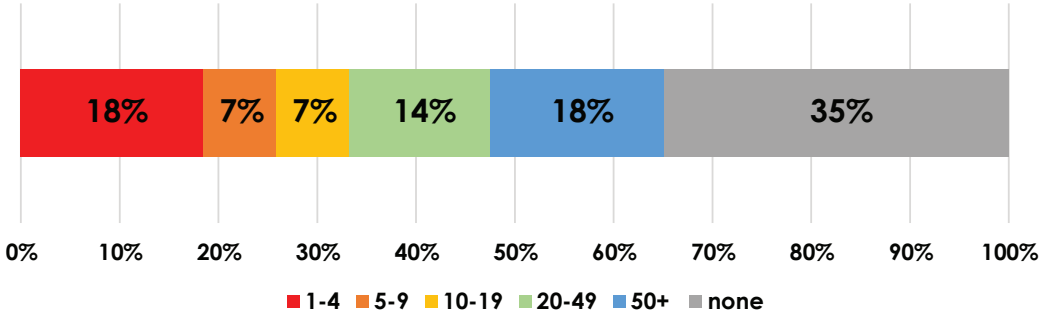


Figure 38: Changed Lots by Structure Type 2018

Source: MapPLUTO v18.1

To illustrate how these lots changed between 2009 and 2018, the following table tracks the use of individual lots between the two periods (figure 39). The raw numbers reveal that of these lots, the largest share started as and remained non-residential or vacant (35 percent), and the second largest share became lots with structures of 50 units or more. Some vacant or non-residential lots were converted to one to four-unit residential lots (13 percent), but the majority were converted to lots with larger buildings or remained non-residential.

The table also reveals that one to four-unit lots were the second largest original lot type identified through this geometric analysis. Of these, the largest portion became vacant lots, potentially in preparation for conversion into larger structures. A smaller share of these types of lots were converted into lots with larger residential buildings, and a similar proportion remained one to four-unit lots. This information suggest that those one to four-unit building lots that became vacant are most likely to be converted into larger buildings in the future, if the transformation of vacant lots identified here is any guidance.

Count of Lots							
		2018					
		1-4 units	5-9 units	10-19 units	20-49 units	50+ units	non-res
2009	1-4 units	23	10	4	4	18	56
	5-9 units	1	2	0	0	1	0
	10-19 units	0	0	0	2	2	0
	20-49 units	1	0	0	4	2	2
	50+ units	0	0	0	3	4	0
	non-res	29	6	19	33	64	69

Figure 39

Source: MapPLUTO v.09.2, v18.1

Focusing on only those 2009 lots with one to four-unit structures that had no match in 2018 data, as opposed to those that changed use or size, reveals the nature of development of merged lots. The largest share of these lots were incorporated into lots with 50 units or more. Only 39 percent remained one to four-unit building lots and almost a fifth were vacant or had no residential use (figure 40).

Figure 40: 2018 Type of Structure of 2009 Missing Lots

Source: MapPLUTO v.09.2, v18.1

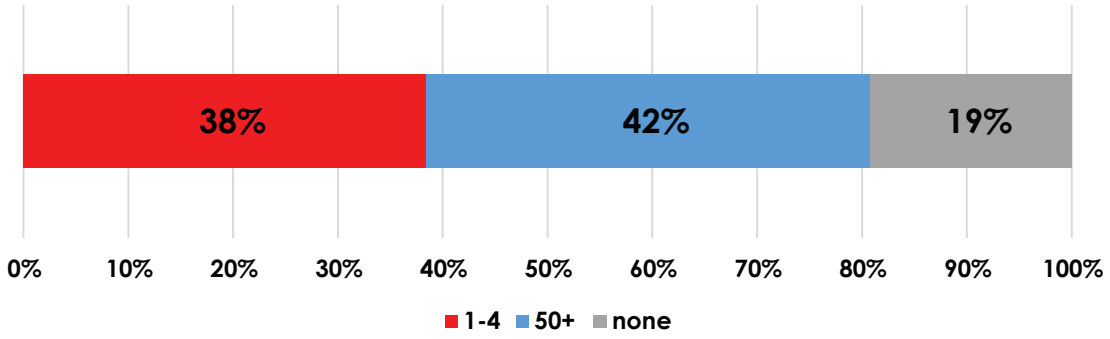
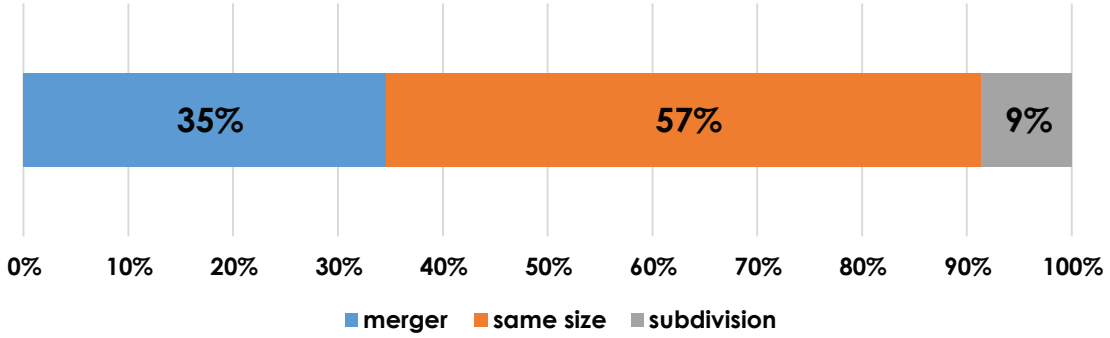


Figure 41: Type of Change of 2009 one to four-Unit Lots

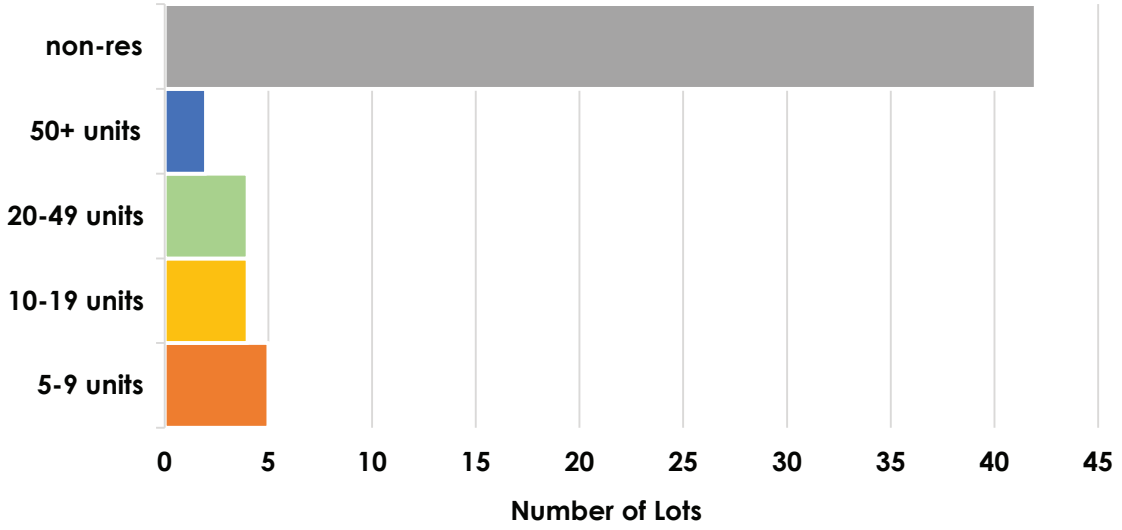
Source: MapPLUTO v.09.2, v18.1



Of the one to four-unit lots that were identified overall, the majority maintained their 2009 size in 2018, and over a third of them were merged with other lots. A smaller portion were subdivided into smaller lots (figure 41). Most of those lots that maintained their size were vacant or had no residential use in 2018 (figure 42).

Figure 42: 2018 Use of 2009 One to Four-Unit Lots With No Lot Size Change

Source: MapPLUTO v.09.2, v18.1



This reveals that while vacant lots are most targeted for development, lots with built one to four-unit structures are also more frequently targeted by developers compared to other lots with larger structures. While most of the one to four-unit lots that are merged together become lots with structures of 50 units or more, others that maintain their lot size are nonetheless also vacated, most likely to be developed into larger structures.

To identify how zoning plays a role in this development process, the Sankey Diagram below follows the zoning districts of one to four-unit lots in Community Districts 5 and 7 that either changed size or use, or were merged or subdivided into other lots in 2018 (figure 43). It represents a full join between 2009 and 2018 datasets, which reveals the condition of 2009 lots absent in the 2018 data, and the origins of new 2018 lots identified. As a full join dataset, it is counting lots more than once in the case of mergers and subdivisions, illustrating, for example, how one lot from 2009 corresponds to two lots in 2018 (a subdivision). The 2009 lot would also appear twice in this data.

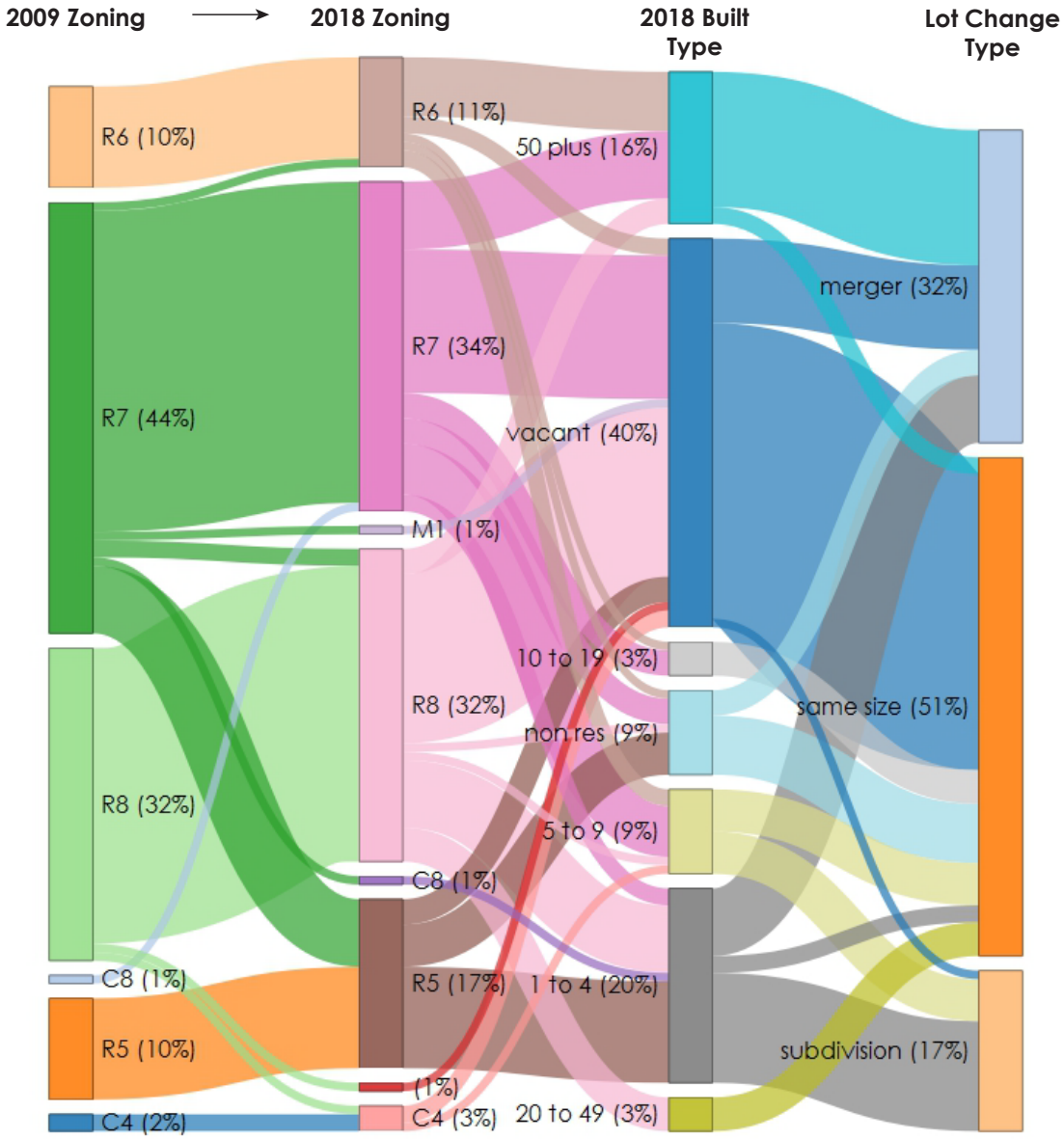


Figure 43: Land Use, Building and Chante Type of Identified 1 to Four Unit Lots

Source: MapPLUTO v.09.2, v18.1

The diagram reveals that a plurality of these lots were zoned R7 both in 2009 and 2018. Most of these lots became vacant in 2018, and a substantial amount were converted to use by 50+ unit buildings. A large percentage of these lots that were zoned R8 in 2009 and 2018 similarly became vacant. In fact, the largest share of one to four-unit lots affected and identified in this process were vacant in 2018 (40 percent). The majority of these lots were in R7 (37 percent) or R8 (43 percent) districts, and most of them (76 percent) maintained their 2009 size, although they might be merged in the future for larger development.

While the second highest portion of lots retained their one to four-unit use (20 percent), over a third of them were zoned R8 in 2018, and a substantial portion of them (35 percent) were merged. Given the higher zoning of some of these one to four-unit lots, this could mean that the merging was done in preparation for demolition and future development.

Conversion of one to four-unit lots to 50 units or more accounted for 16 percent of lot changes, which was higher than the conversion to other medium and high density building types. Most of these lots were zoned R6 (38 percent) or R7 (44 percent), with a smaller share zoned R8 (17 percent). Almost 90 percent of these lots were merged before being developed to higher density buildings. Counting only those one to four-unit lots that disappeared from 2018 data, all R6 one to four-unit lots were incorporated into lots with 50+ units. Similarly, while the greatest number of one to four-unit lots that disappeared were originally R7 (35 percent) and remained R7, over half of those lots became lots with 50+ units.

To summarize, in Community Districts 5 and 7, lots that had one to four-unit buildings in 2009 and experienced either use or lot size change were mostly vacant in 2018. Those that became large residential buildings of 50 units or more were mostly zoned R6 and R7, and more than 90 percent of these lots were first merged. All R6 lots that originally had one to four-unit buildings and merged with other lots became structures of 50 units or more. A majority of R8 lots became vacant, and while a substantial portion of them maintained their one to four-unit use, many of these were merged with other lots, likely in preparation for further development. This information points to a particular consequence of this type of zoning for one to four-unit buildings. As-of-right development is allowing the conversion of lower density lots to medium density residential use. While most of these lots were found to be vacant in 2018, we can speculate the future use of such lots as medium density residential buildings.

Current Developments

To illustrate these transformations, the following projects highlight the development patterns observed in the previous analysis, and confirm the estimations regarding the transformations of lots with one to four unit buildings. These examples are current developments that have yet to appear on changes to PLUTO data or the Department of Finance Digital Tax Map and were thus not identified through the raster and geometric analysis. To see additional examples identified by the analysis of this report, refer to the appendix.

BEDFORD PARK

One area targeted for higher density development is Bedford Park in Community District 7, a predominantly Latino community. One development in this neighborhood is 261 East 202 Street, an 11-story, 163-unit, 141,000 square foot affordable housing development (ELLA, OTDA, HHAP) in Community District 7. The project merges seven lots, three of which are vacant and the others having a single family home, a two-family building, a three-unit building, and a four-unit building. All lots are zoned for R8. The project, located near the B and D Bedford Park subway station, is set to be complete in December of 2021.

Figure 44: 261 East 202 Street

Source: Google Maps

The same developer has another project in the same block facing 203rd Street. 270 East 203rd Street is a similar 11-story, 160-unit, 140,000 square foot affordable housing development that also merges seven lots, one having a single-family home, another a two-family home, and the rest having three-unit residential buildings.

Figure 45: 270 East 203 Street

Source: Google Maps

The image below shows the two projects highlighted in red in the context of the neighborhood, where the areas highlighted in yellow represent potential lots for development zoned for R7 or R8 with vacant and one to four family buildings (figure 46). It is evident that there are many lots of land in the area that could be similarly developed.

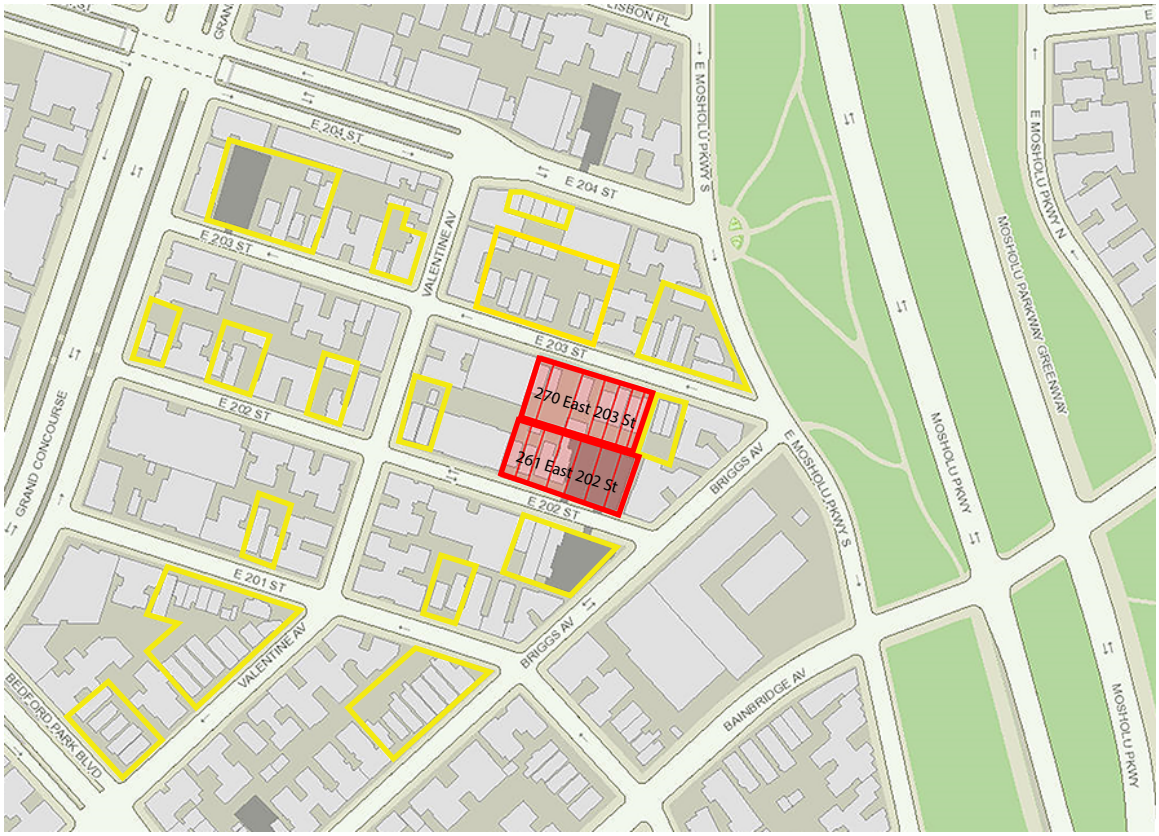


Figure 46: Bedford Park Aerial

Source: NYC Department of Information Technology and Telecommunications

RYER AVENUE

Another area targeted for higher density development is Ryer Avenue in Fordham Heights/Mount Hope in Community District 5. Located near the B/D Tremont Avenue and 183rd Street subway stations and the 4 line Burnside Avenue subway station, Ryer Avenue is dotted with one to four unit buildings, especially between Burnside Avenue and East 181st Street. One project in this street that was identified through the analysis used in this report was 2051 Ryer Avenue. While the project in 2018 was found to maintain 2 two-unit buildings after merging them with a third vacant lot, since then the structures in the merged R8 lots were destroyed. A 13-foot, 66,615 square foot, 86-unit rental building will stand in their place.

Figure 47: 2047 and 2051 Ryer Ave

Source: Google Maps

Adjacent to this project will stand another large multi-family residential building. 2047 Ryer Avenue was not identified by the analysis of this report, as the development has yet to be reflected in PLUTO data. However, documents filed with The Bronx Bureau of Topography reveal that the existing three unit building will be replaced by a 13-story, 68,000 square-foot, 91-unit apartment building. The project is slated to be completed in May of 2020. Similarly, down the street from these two projects is 2065-2067 Ryer Avenue, which will be a 12-story, 101,000 square foot, 134-unit building.[33] The project merges four R8 lots, one vacant, one having a single-family building, and two having two-unit buildings.

Figure 48: 2065-2067 Ryer Avenue

Source: Google Maps

Before these three projects in Ryer Avenue broke ground, the majority of lots in the street, on both sides, were small 25-foot wide lots with one to four-unit buildings (figure 49). However, these lots are zoned for much higher density, with R8 zoning for lots on the western side of the street, and R7 on the eastern side of the street. Given the timeliness of the development, it is evident that developers have taken advantage of the rezoning of Jerome Avenue only a few blocks away and the comparatively low cost of land in Community District 7, and begun to transform the low density character of the neighborhood with high density rental structures that tower over the surrounding buildings. Many lots in Ryer Avenue, as in Bedford Park, are in danger of similar transformations, and it is likely that it will occur. It can be speculated that once the character of the neighborhood begins to transform into higher density, other developers will be more inclined to invest in similar developments, in turn increasing the value and the land, and making it more lucrative for current owners to sell. While these sellers, the majority being minority individuals and not entities, will benefit from this transformation, other potential homeowners will lose the option of buying such properties and becoming homeowners themselves.

As the number of such lots are merged and converted to high density rental buildings, the decreasing stock of one to four unit buildings will mean higher prices for those that do remain, making homeownership in such buildings less accessible than before. Only those who already have access to homeownership profit from these community changes. Those who wish to become homeowners have a higher economic standard to reach before they can consider buying, meaning that many minority and low-income households are priced out from owning property in their own and other neighborhoods.

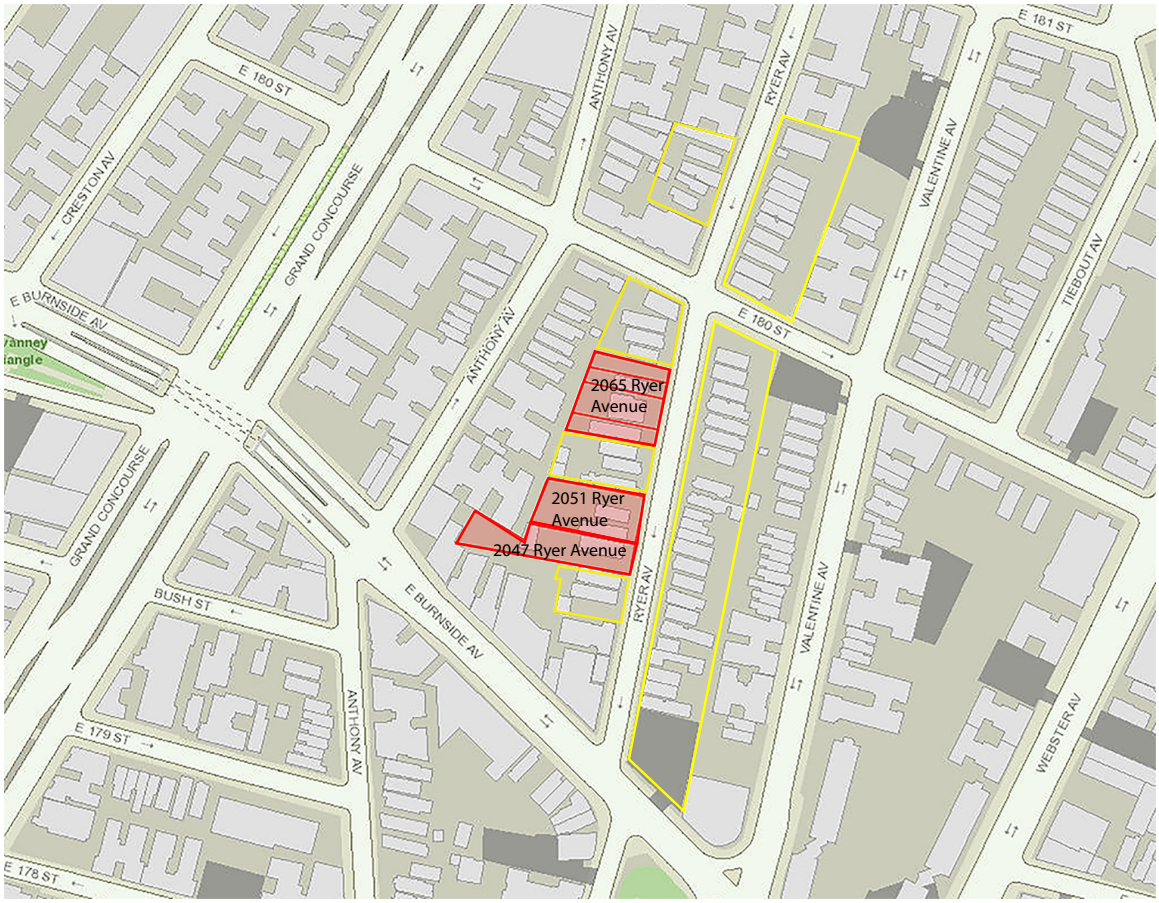


Figure 49: Ryer Ave Aerial

Source: NYC Department of Information Technology and Telecommunications

Recommendations and Conclusions

As studied throughout this report, homeownership, which provides socioeconomic advantages to those who can afford it, is most common in one to four-family buildings. Unfortunately, these types of structures are most at-risk in a robust real estate market that fosters concerns about affordability. As housing affordability dwindles, addressing it in New York City over the last 20 years has meant sacrificing homeownership opportunities in favor of denser rental housing. Real estate speculation, aided by current zoning conditions, has led to the provision of more rental opportunities and the elimination of buildings with live-in homeownership potential.

This issue is particularly pervasive in The Bronx, the county with the second lowest homeownership rate in the country and the highest decrease in homeownership in New York City. Here, medium density residential zoning allows developers to destroy affordable homeownership opportunities for communities of color buildings in order to make way for larger rental structures.

In order to create a healthy economy for New Yorkers, one in which land ownership is diversified rather than concentrated in the hands of large, for-profit corporations, homeownership opportunities in the form of small multi-family and single family buildings must be maintained. And while current zoning practices pose a challenge to preserving such structures, amendments to the zoning code could be incorporated in order to protect them.

It must be recognized that there is historical precedence where planning tools have been misused to keep racial and ethnic minorities from becoming homeowners, meaning that they play a significant role in widening and maintaining the existing and perpetual racial wealth gap. Of course, this gap will not be resolved by changing zoning practice alone, but acknowledging the precedence of zoning misapplication on affordable homeownership may give way to strategies that can preserve affordable opportunities from disappearing in the first place.

The following recommendations aim to preserve affordable homeownership opportunities through preservation, new construction of homeownership, zoning tools and financial programs aimed at low-to-moderate income existing and potential homeowners.

EXPAND SMALL HOMEOWNERSHIP PRESERVATION PROGRAMS

Given that many of the sales of one to four-family buildings were to private developers who target foreclosed properties likely held by low-income and minority households, a key strategy in maintaining homeownership in medium density areas would be to prevent these properties from being foreclosed in the first place. Financial assistance, rehabilitation and foreclosure prevention programs such as Neighborhood Homes, SCHAP, and the recently launched HomeFix program should be expanded to help diversify land ownership and prevent speculation from further eliminating homeownership opportunities.

CREATE INCENTIVES FOR HOMEOWNERS TO MAINTAIN THEIR HOMES

Of course, most of these issues would not exist if homeowners would not find the necessity to sell. To help homeowners from selling their homes, funding opportunities should be made available to them that would commit them to maintain their property for a fixed minimum length of time. These could include funding for home repairs or financing for mortgages. The City should partner with lending institutions to expand opportunities to offer reduced interest loans that will allow homeowners of modest means to conduct necessary repairs, and not fall into debt or be subject to future fines due to dilapidated conditions.

IF SMALL HOMES ARE TO BE DEMOLISHED, REPLACE THEM WITH COOPERATIVES OR CONDOMINIUMS

If one to four-family unit structures are demolished in favor of higher density multi-family structures, these structures should offer homeownership opportunities to replace what they destroyed. This can be done through organizations such as Housing Partnership Development Corporation (HPDC) which has a history of funding homeownership, or government programs, such as HPD's Open Door Program, which funds the construction of new homeownership opportunities in the form of cooperatives, condominiums and one-to-three family homes. This program and others like it could be expanded to provide homeownership opportunities in higher density districts. Legislation could also help preserve homeownership opportunities by providing tools that allow developers to build and sell ownership of units in high density multi-family buildings. It should be recognized that there are other forms of homeownership opportunities in different types of building structures, as Manhattan provides, and that these forms of homeownership ought to be further explored.

TARGET RENTAL HOUSING DEVELOPMENT FOR LOTS ON UNDERUTILIZED COMMERCIAL CORRIDORS OR WITH SURFACE PARKING

Many neighborhoods throughout New York City are characterized by one-story "taxpayer" commercial buildings. These buildings provide needed community and retail amenities that help form neighborhood cores. As the demand for rental housing, particularly affordable rental housing, increases, these lots present an opportunity for denser, mixed-use development that would address the need for affordable rental housing, while retaining the commercial core. Guiding development to these corridors would divert addressing this demand away from tearing down one to four-family homes, particularly in medium and high-density districts. Adopting this policy would afford the opportunity to preserve existing homeownership through zoning and financial means.

APPLY CONTEXTUAL ZONING WHERE NECESSARY

Another zoning tool that can be used and which is supported by this report is the downzoning of lots already built for lower density. In Community Districts 5 and 7, those lots that were downzoned from R7 to R5 were more likely to maintain their one to four-unit building use when compared to other zoning districts. These lots were also more likely to be subdivided into even smaller lots, which provide even more homeownership opportunities in the same amount of land.

Alternatively, another option would be to upzone such lots to higher density; while this seems counterintuitive, this research did identify that higher density zoning districts have higher homeownership rates than medium density districts. Higher density zoning could provide opportunities to build larger buildings that are less likely to be rentals, such as cooperatives or condominiums. Higher density could also provide opportunities for a mix of homeownership and rentals, rather than solely encouraging rentals, as in medium density districts. However, this move would require programs to subsidize the cost of such units. One such example is 2069 Bruckner Boulevard in Bronx Community Board 9, where an approved ULURP from R5 to R7A/C2-4 facilitated the opportunity for a 65-unit subsidized cooperative to be constructed along with a 265-unit subsidized rental building. While containing significantly more rental units, the economics to develop the homeownership units would not have been possible without the rezoning.

ESTABLISH RULES REGULATING HOW LOTS ARE MERGED

Another strategy is to amend current zoning in order to limit the number of one to four-unit buildings destroyed to make way for larger developments in higher density districts. This can be done by limiting the size of mergers. Currently, the zoning code contains a minimum lot width for residential districts but there is no maximum lot width. There are maximum perimeter or street wall lengths for lower density districts but none for medium and high density districts. This means that there is no limit to the number of lots that can

be merged, and the only limit to a building's street wall length is the length of the block itself. The lack of this type of restriction incentivizes developers to buy and merge as many higher density zoned lots as they can to build as-of-right larger buildings.

ENCOURAGE NEW 1-4 FAMILY HOMEOWNERSHIP OPPORTUNITIES IN APPROPRIATE ZONING DISTRICTS

The research conducted in this report identified numerous vacant or underutilized lots within one to four-family clusters that were merged with adjacent lots to make way for larger buildings. Rather than using vacant lots in such form, this report encourages the development of additional one to four-family homes on those properties. This would prevent the destruction of homeownership opportunities while maintaining the character of the neighborhood. Existing programs, like those offered by HPDC, which was responsible for many of the one to four-family homes built throughout vacant portions of The Bronx during the 1990s and early 2000s, could be utilized. Also, programs such as Nehemiah Homes, which offered both one to four-family and small condominium opportunities, could serve as models for these vacant lots within small multi-family clusters.

MOVING FORWARD

Beyond these recommendations, this report also calls for transparency in data regarding lot mergers and subdivisions. Currently, it is possible to view changes to a block's lots through the Department of Finance's digital tax map library, at a block-by block basis. This, however, hinders the opportunity to study the trends occurring throughout the city at a larger scale, or the conditions under which these trends transpire. The research carried out in this report required the use of a methodological approach through GIS, SQL, and R scripts that analyzed available block-lot data to identify how lots had changed. This type of research would be facilitated by the availability of an open source database that tracks lot changes, including the change type, lots affected, and descriptive information about the lots. Given that this data is already collected by the Department of Finance, the only hurdle to making it more accessible is the willingness and the work required to compile the information into a single database.

FINAL THOUGHTS

The overall policy objective proposed by this report is to protect and expand homeownership opportunities in New York, particularly in denser neighborhoods comprised by low-income and racial/ethnic minority communities. As explored at the beginning of this report, homeownership in these neighborhoods is threatened by current economic and development patterns, and aided by existing zoning conditions which encourage concentrated development of large rental structures that only extract wealth from the poor. While some may argue that those low-income and minority households who seek homeownership can look for it in other neighborhoods, it must be pointed out that such opportunities are limited as they are financially largely inaccessible to these populations. Furthermore, this approach would not solve the problems the lack of homeownership creates in low-income communities. The concentration of poverty and low levels of education in the South and West Bronx can be attributed partly to low homeownership rates and limited opportunities for homeownership. Thus, in order to alleviate these communities from the issues stemming from the lack of wealth, homeownership opportunities must be maintained, protected and expanded. Zoning must play a role in reversing the physical and economic conditions that have upheld predatory and speculative development patterns in low-income and minority communities for decades. With a few added words to the zoning text, along with monies appropriated for the encouragement of preservation and creation of affordable homes, low-income and minority communities will have increased opportunities to build wealth and be that much closer to achieving the American Dream.

Key Terms

Affordable homeownership is homeownership that is financially accessible for working and middle class families, and that is sustainable over time.

Gain Loss Ratio compares the size of gains or profit to the size of losses, normally used in a financial context.

Geometric Analysis is a process that uses geographic and related data to perform spatial analysis within and between datasets managed as layers.

Homeownership Rate is the ratio of owner-occupied housing units to all occupied housing units.

A **Raster Analysis** uses the data stored within an image or raster's cells or pixels, and can be used to analyze a single raster or two or more rasters.

Wealth is the value of all assets owned minus all debts owed.

Zoning districts are areas with particular sets of zoning regulations that govern land use, building bulk and density. There are three types of zones, including residential, commercial, and manufacturing, and each type of zone has a number districts with differing bulk and density.

BLOCK 3204 LOT 9, 2519 GRAND AVENUE

2007, single family building

2018, 57-unit building

BLOCK 3287 LOT 94, 2681 MARION AVENUE

2011, three single family buildings, one 2-unit building

2018, 100-unit building

BLOCK 3357 LOT 7501, 3160 WEBSTER AVENUE

2011, 2-unit building

2018, 60-unit building

BLOCK 2797 LOT 39 1771 MONROE AVENUE

2011, one single family building and one 3-unit building

2018, 86-unit building

BLOCK 2802 LOT 29, 250 MT HOPE PL

2011, single family

2018, 86-unit building

BLOCK 3322 LOT 35, 3185 VILLA AVENUE

2011, 3-unit building

2018, 39-unit building

BLOCK 3240 LOT 62, 2667 KINGSBRIDGE TERRACE

2014, single family

2018, 18-unit building

BLOCK 3276 LOTS 28 & 30, 364 EAST 194 STREET

2011, one single family and one 2-unit building

2018, under construction

BLOCK 3303 LOT 43, 247 BEDFORD PARK BLVD

2011, 4-unit building

2018, conversion to 17-unit building

Notes

1. Lawrence Yun, "Why Homeownership Matters," Forbes, August 12, 2016, https://www.forbes.com/sites/lawrenceyun/2016/08/12/why-homeownership-matters/#8d33005480f3

2. United States Census Bureau, "Housing Vacancies and Ownership (CPS/HSV): 2016," (2016), distributed by the United States Census Bureau, https://www.census.gov/housing/hvs/data/q216ind.html

3. NYU Furman Center, "Furman Center Center / Citi Report on Homeownership & Opportunity in New York City," (New York, August 5, 2016): 5.

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5. Brian J. McCabe, "Why Buy a Home? Race, Ethnicity and Homeownership Preferences in the United States," American Sociological Association 4, no. 4 (2018): 253.

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22. R5 districts can also be considered medium-density, and certain R5 districts can allow for tall, residential tower-in-the-park structures.

23. Missing data points in the chart are those zoning districts that are non-existent by borough.

24. Thomas P. Boehman and Alan Schlottman, "Wealth Accumulation and Homeownership: Evidence for Low-Income Households," Cityscape 10, no. 2 (2008): 250.

25. United States Census Bureau, "Wealth Asset Ownership, & Debt of Households Detailed Tables: 2015," 2015, distributed by the United States Census Bureau, https://www.census.gov/data/tables/2015/demo/wealth/wealth-asset-ownership.html

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27. United States Census Bureau, "Select Characteristics of the Native and Foreign Born Population S0501, 2016 American Community Survey 5-Year Estimates," (2016), distributed by American Factfinder Version, https://factfinder.census.gov/faces/tableservices/jsf/pages/productview.xhtml?src=bkmk

28. Thomas M. Shapiro, "Race, Homeownership and Wealth," Washington University Journal of Law and Policy 20, no. 53 (2006).

29. This does not capture the development within lots that maintained uses, ex. transformation of a 2 unit building into a 4 unit building.

30. CD 5 in Brooklyn results is skewed due to the development of the Gateway Center, which transformed the development of a large lot with two residential units for non-residential use. When eliminating this lot from consideration into the development change, the district actually experienced an increase in the development of lots for one to four-unit use.

31. NYC City Planning, "Pluto and MapPLUTO," distributed by NYC City Planning. https://www1.nyc.gov/site/planning/data-maps/open-data.page

32. Given that the data itself provides duplicate lot numbers in cases of subdivisions (ex. two unique lots in 2018 were created from one lot from 2009), only unique lot numbers are studied.

33. Andrew Nelson, "Rendering Revealed for 2065-2067 Ryer Avenue, Fordham Heights, The Bronx," New York YIMBY, April 13, 2018, https://newyorkyimby.com/2018/04/rendering-revealed-for-2065-2067-ryer-avenue-fordham-heights-the-bronx.html

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