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Understanding neighborhood change: An approach to assessing displacement risk among NYC residents

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Reinvestment Fund, a community development financial institution, has used its Displacement Risk Ratio (DRR) in several cities to gauge the gap between neighborhood residents' incomes and housing costs. This paper applies the same approach to New York City but also considers its applicability to renter-occupied housing. Data on home sales and rent values are aggregated to the Neighborhood Tabulation Area (NTA), a proxy for neighborhood created by the NYC Department of City Planning.

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Understanding neighborhood change: An approach to assessing displacement risk among NYC residents

Abstract

The SIAP research team has sought to develop methods to assess the complexity of rapid neighborhood change in New York and other U.S. cities. Reinvestment Fund developed an approach to identify locations in New York City where the housing market has changed in a way that residents who have been in a community for several years cannot likely be replaced by people of similar economic means. This paper discusses their method—called Displacement Risk Ratio (DRR)—for identifying areas at risk of displacement (or the inability to replace a resident population over time) based on the gap between housing costs and household income. The paper identifies six patterns in neighborhoods with significant DRR Sales increases as a preliminary typology of change: 1) transitioned from majority black or Hispanic to racially/ethnically diverse; 2) remained predominantly black or Hispanic; 3) remained predominantly white; 4) Asian immigrant neighborhoods; 5) remained diverse; and 6) high residential development areas. The conclusion reviews the potential for use of the DRR method to assess neighborhood change in New York City.

Disciplines

Public Policy | Social Welfare | Urban Studies and Planning

Comments

Reinvestment Fund, a community development financial institution, has used its Displacement Risk Ratio (DRR) in several cities to gauge the gap between neighborhood residents' incomes and housing costs. This paper applies the same approach to New York City but also considers its applicability to renter-occupied housing. Data on home sales and rent values are aggregated to the Neighborhood Tabulation Area (NTA), a proxy for neighborhood created by the NYC Department of City Planning.

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REINVESTMENT
FUND

Understanding neighborhood change: An approach to assessing
displacement risk among NYC residents

Ira Goldstein, Emily Dowdall, and Colin Weidig
Reinvestment Fund

July 2017
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Prepared with support by the Surdna Foundation. The views expressed are solely those
of the authors.

DO NOT CITE OR QUOTE WITHOUT AUTHORS' PERMISSION.

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Preface

SIAP was fortunate to have the Policy Solutions team at Reinvestment Fund as partners on our *Social Wellbeing, Neighborhood Transformation, and the Arts* project, funded by the Surdna Foundation and the New York Community Trust.

Reinvestment Fund has been using the displacement risk ratio (DRR) as a means of gauging the gap between neighborhood residents' incomes and housing costs in several cities. We asked them to apply the same approach in New York City, with one addition. Because of the centrality of renter-occupied housing in New York, we encouraged them to consider if the same approach could be used for this population. This paper, written by Ira Goldstein, Emily Dowdall, and Colin Weidig, reports their findings.

Reinvestment Fund's use of DRR to assess New Yorkers' displacement risk complements SIAP's use of census data to calculate geographic mobility in New York City (discussed in a companion paper). As part of our study of social wellbeing and the arts in New York City, the team has worked to develop methods that allow us to predict, assess, and better understand the complexity of rapid neighborhood change in New York and other U.S. cities.

Mark J. Stern and Susan Seifert

Philadelphia

October 2017

Reinvestment Fund’s Policy Solutions Group (Reinvestment Fund), in partnership with the University of Pennsylvania’s Social Impact of the Arts Project (SIAP), has created an approach to identifying locations in New York City where the housing market has changed in a way that residents who have been in a community for several years cannot likely be replaced by people who are of similar economic means. Stated differently: If a community several years ago could serve as home to residents of a given income level, can it continue to serve similar residents over time? In this report, we discuss this method—which we call Displacement Risk Ratio (DRR)—for identifying areas at risk of displacement (or the inability to replace a resident population over time).

Displacement Risk Ratio—Summary of Approach, Data and Methods:

To determine whether a group of residents can effectively avoid displacement or could be replaced by residents of a similar economic profile, we begin by establishing the economic profile of households at a particular moment in time. In this instance, we use Census median household income as reported in 2000 (1999 income) for each Census tract in the city of New York as that initial moment. We then create annual income estimates by inflating that 1999 Census income by the Consumer Price Index (CPI). Next, for each Census tract we compute the ratios of both 1) the median home sale price to inflated median household income and 2) the median gross rent to inflated median household income. We make this computation for each Census tract, combining (rolling) two years of home sales together to smooth out volatility in the median sales price sometimes associated with a small number of residential transactions. This ratio of home sale price to income is computed for each rolling two-year period between 2003 and 2016. The ratio of gross rent is computed for each five-year American Community Survey (ACS) period from 2006-2010 to 2011-2015. We call these ratios the Displacement Risk Ratio, or DRR. After calculating DRRs at the Census tract level, we aggregate them to the Neighborhood Tabulation Area (NTA), a proxy for neighborhood created by the New York City Department of City Planning and provided to Reinvestment Fund by SIAP.¹

DRRs can be plotted over time to understand the nature of change in a community. If, for example, home prices rose at a level commensurate with CPI-inflated income (corrected for the overall change across the five boroughs), the DRR for home sales trend line would be flat. If, however, at some point during the period under study prices began to rise faster than inflation-adjusted income, there should be an inflection point (upward) in the trend line.² That inflection point indicates the moment when displacement may be occurring and/or existing residents cannot likely be replaced and/or supplemented by new residents of a similar economic level. The importance of not using contemporary snapshots of income is that those new income estimates (e.g., recent ACS data) would include new residents, thereby

¹ Neighborhood Tabulation Areas (NTAs) created by NYC Department of City Planning use whole census tracts from the 2010 Census as building blocks. These aggregations of census tracts are subsets of New York City’s 55 Public Use Microdata Areas (PUMAs).

² The period of 2003 through 2016 has been one of extraordinary economic change, reflected powerfully in the city’s housing and labor markets. An unprecedented bubble in housing prices occurred between approximately 2005 and 2008 (See Figure 1) and although not every neighborhood in New York experienced the bubble to the same extent, that bubble most certainly affected the overall residential real estate market. Accordingly, we adjust each neighborhood for the overall trend.

impairing our ability to discern the potential for displacement. Each DRR is adjusted for the citywide ratio, again, to remove the impact of the housing bubble.

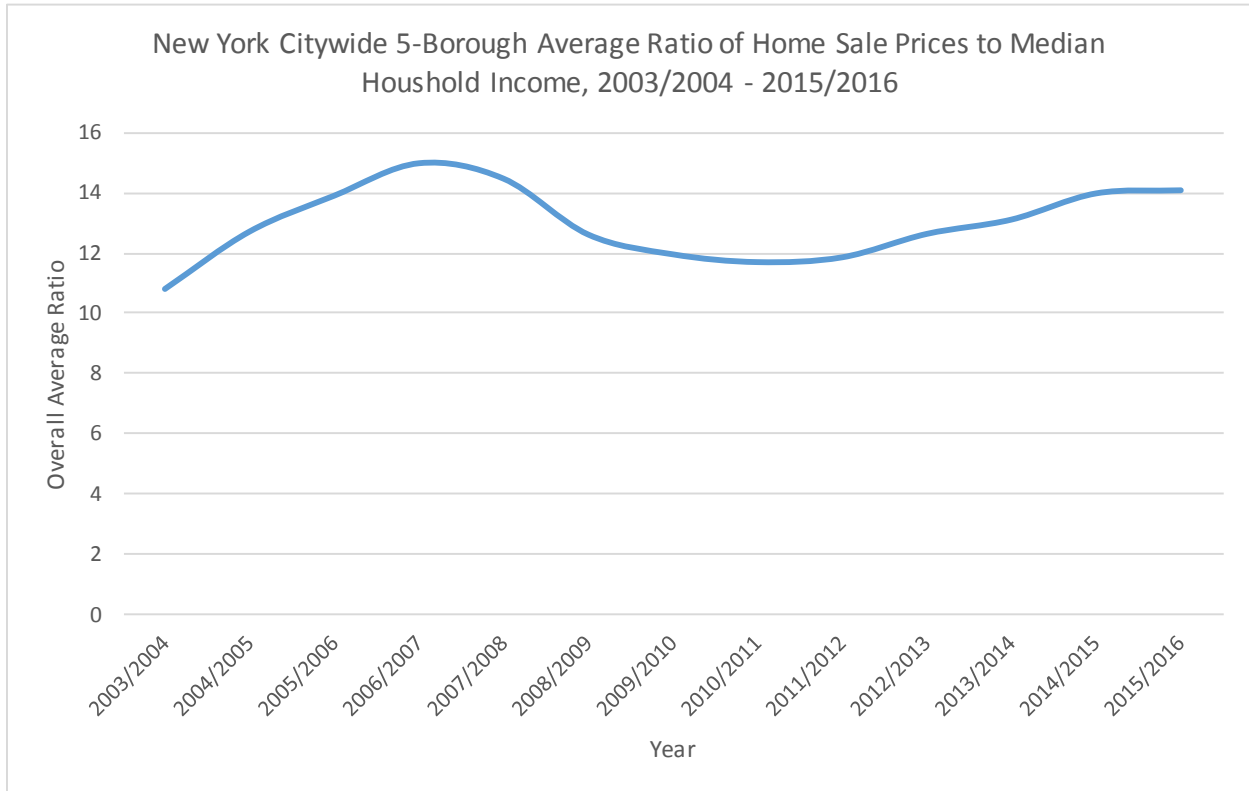


Figure 1: Average Citywide Ratio of Home Sale Prices to Income

Data used for this analysis come from the following sources:

- a) **Census, Summary File 3 (2000):** SF3 data serve as the basic measure of income in 1999.
- b) **New York City, Department of Finance’s Annualized Sales Update:** New York City makes parcel level real estate transaction data available from 2003 – present. These data are online at: <http://www1.nyc.gov/site/finance/taxes/property-annualized-sales-update.page>
- c) **American Community Survey:** Five-year estimates of gross rent (i.e., the amount of rent plus other costs like utilities) are produced at the block group level based on five-year increments of the ACS from 2006-2010 to 2011-2015.

For the DRR representative of home sales activity (DRR Sales), each home sale was joined to a parcel file containing the spatial location of the sold real estate and placed within its proper Census 2010 tract. Sales were filtered to include only those officially categorized as residential. They were further filtered so that sales under \$1,000 were eliminated (as non-arm’s length) and over \$5,000,000 (as likely errors in the database).

For the DRR representative of rents (DRR Rent), the ratio was calculated as the percentage of household

income³ spent on gross rent (i.e., including utilities) by Census tract. By calculating the ratio this way, DRR Rent can be compared to thresholds for cost burden (generally 30%) and extreme cost burden (generally 50%). As noted above, both DRR Sales and DRR Rent are adjusted for the five-borough average ratio.

Citywide Findings

DRR Sales

From 2003/2004 to 2015/2016, New York City NTAs with high displacement pressure (defined as a DRR value of 3.5 or above) had grown both in number and in the amount of pressure they were experiencing. At the beginning of the study period (2003/2004), over 70% of NTAs had DRR values below the city average (see Table 1). Only about one NTA in eight had a DRR value well above that average.

	DRR 2003/2004 Below -3.5	DRR 2003/2004 -3.5 to 0	DRR 2003/2004 0 to 3.5	DRR 2003/2004 Above 3.5
Number of NTAs	69	60	30	21
Percentage of NTAs	38%	33%	17%	12%

Table 1: The Distribution of NTA DRR values across New York City in 2003/2004 (5-Borough Average = 0)

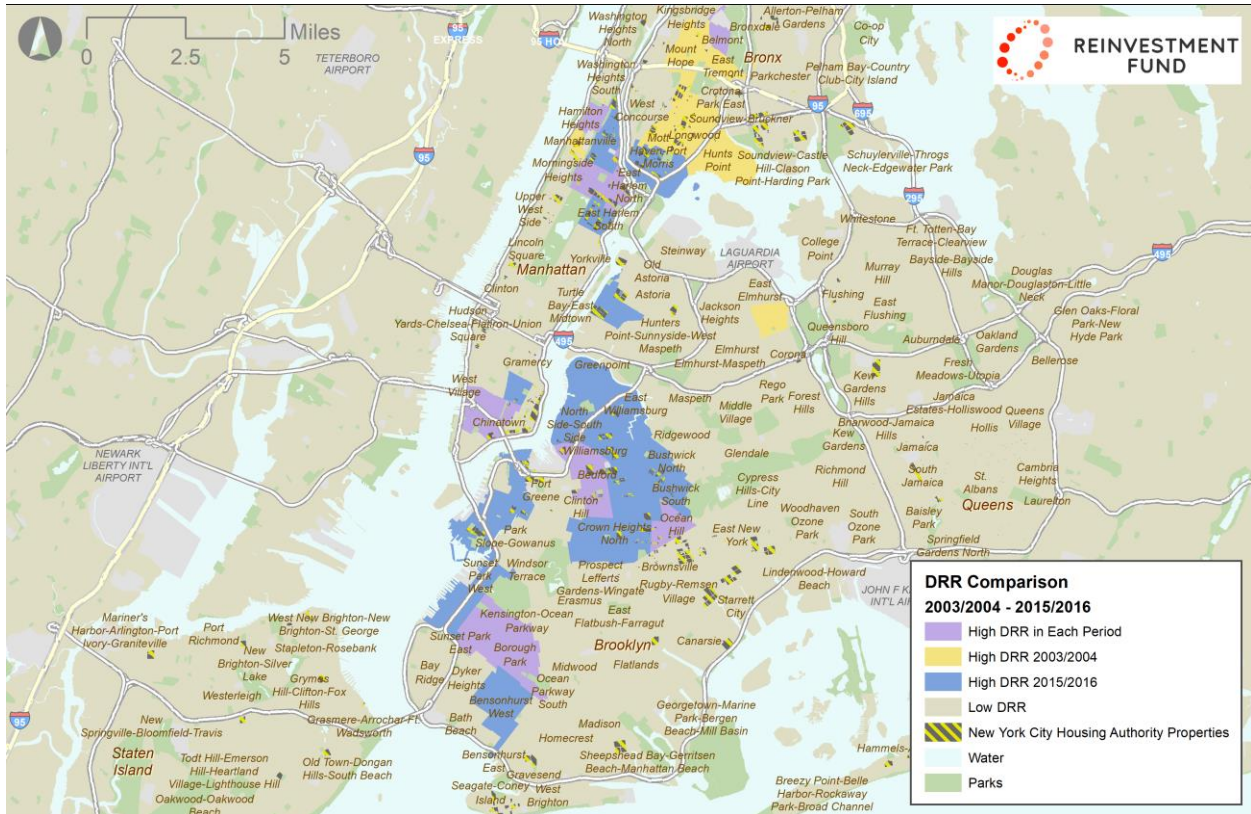
By 2015/2016, seven more NTAs were experiencing high displacement pressure (see Table 2). This additional localized market pressure is over and above the *general* increase in market pressure throughout New York City (see *supra* Figure 1 for the citywide trend in DRR from 2003/2004 through 2015/2016).

	DRR 2015/2016 Below -3.5	DRR 2015/2016 -3.5 to 0	DRR 2015/2016 0 to 3.5	DRR 2015/2016 Above 3.5
Number of NTAs	97	40	15	28
Percentage of NTAs	54%	22%	8%	16%

Table 2: The Distribution of NTA DRR values across New York City in 2015/2016 (5-Borough Average = 0)

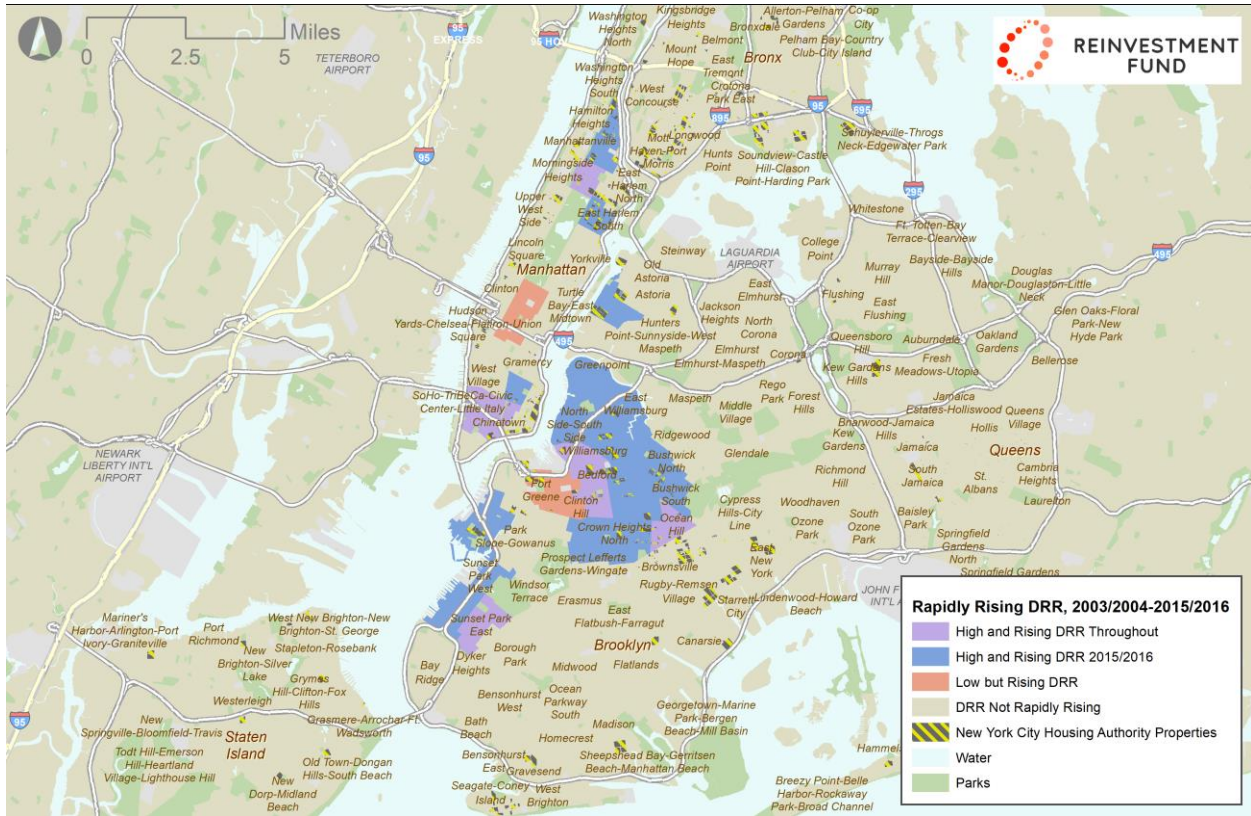
The location of the NTAs experiencing market pressure changed from 2003/2004 to 2015/2016. Map 1 below shows which NTAs had high DRR values in 2003/2004 but did not in 2015/2016 (those shaded yellow), which had low DRR in 2003/2004 and rose to high DRR by 2015/2016 (those in blue), and which NTAs were high DRR in both periods (those in purple). Many NTAs in the Bronx had high market pressure in the first period examined but by 2015/2016 had not kept up with the generally increasing sales prices throughout the city. In Brooklyn and northern Manhattan, many NTAs that did not have high DRR in 2003/2004 experienced rising market pressure and were high DRR by 2015/2016.

³ Income is inflated by CPI for DRR Rent similarly to DRR Sales.



Map 1: The location of NTAs with High DRR Pressure, a comparison of DRR Sales 2003/2004 and 2015/2016

The increasing market pressure in parts of Brooklyn and Manhattan can also be seen when viewing NTAs that have rapidly increased in DRR (defined as an increase in DRR of 3.5 or more from 2003/2004 to 2015/2016). Map 2 below shows NTAs that had high DRR values in both periods and rapidly increasing DRR between periods (shaded purple), high DRR in 2015/2016 after DRR rapidly increased (in blue), and NTAs with rapidly increasing DRR that have not yet met the threshold for high DRR (in red). The NTAs in blue are mostly consistent between Maps 1 and 2, indicating that rapid market changes in these NTAs since 2003/2004 have placed long-term residents under acute market pressure to remain in their neighborhoods.



Map 2: The location of NTAs with High DRR Pressure, DRR Sales rising rapidly between 2003/2004 and 2015/2016

DRR Rent

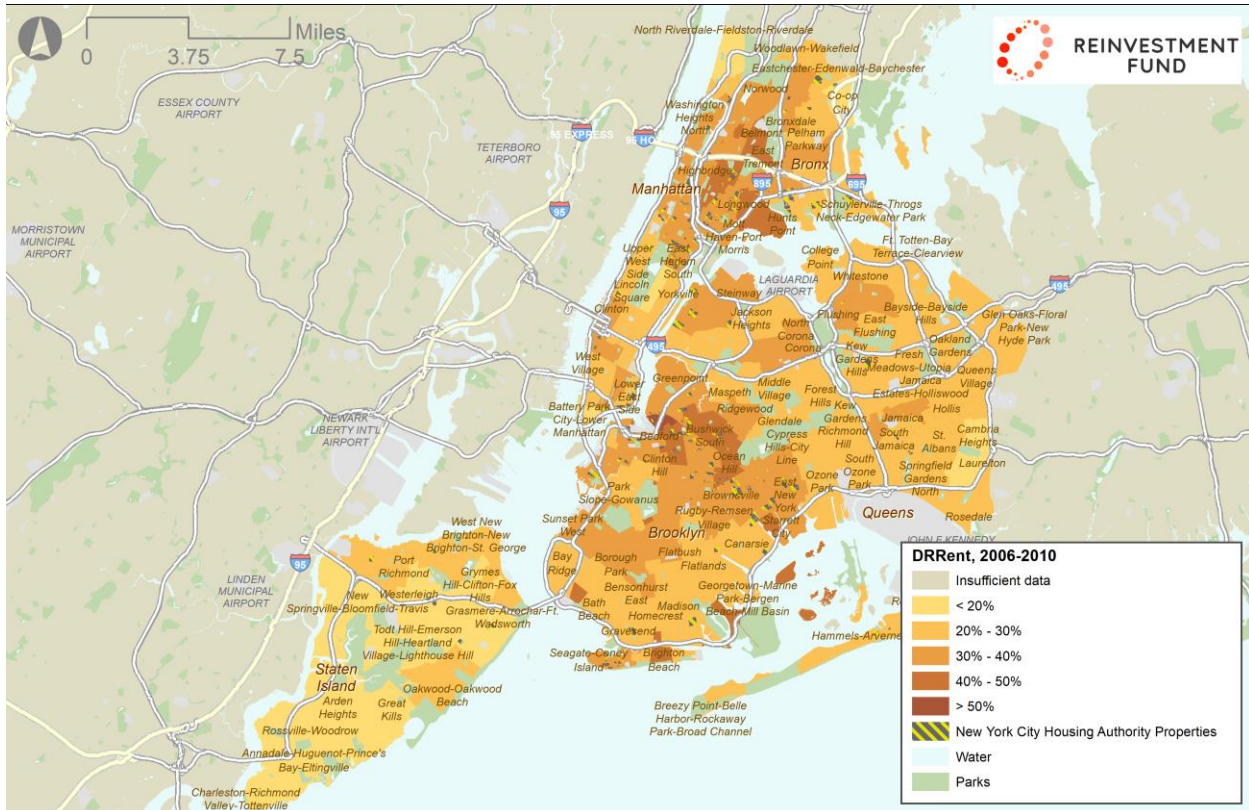
Like DRR Sales, the number of NTAs experiencing rental market pressure increased from the first time-period (here, the 2006-2010 ACS [2010]) to the final time-period (2011-2015 ACS [2015]). In 2010, 80 NTAs citywide (44%) had DRR Rent ratios that indicated cost burden and one had a ratio that indicated extreme cost burden. By 2015, 94 NTAs citywide (54%) had DRR Rent ratios that indicated cost burden for the median household; five had a ratio that indicated extreme cost burden.

	DRR Rent 2010 Below 20%	DRR Rent 2010 Between 20% - 30%	DRR Rent 2010 Between 30% - 40%	DRR Rent 2010 Between 40% - 50%	DRR Rent 2010 Above 50%
Number of NTAs	15	87	66	14	1
Percentage of NTAs	8%	48%	36%	8%	1%

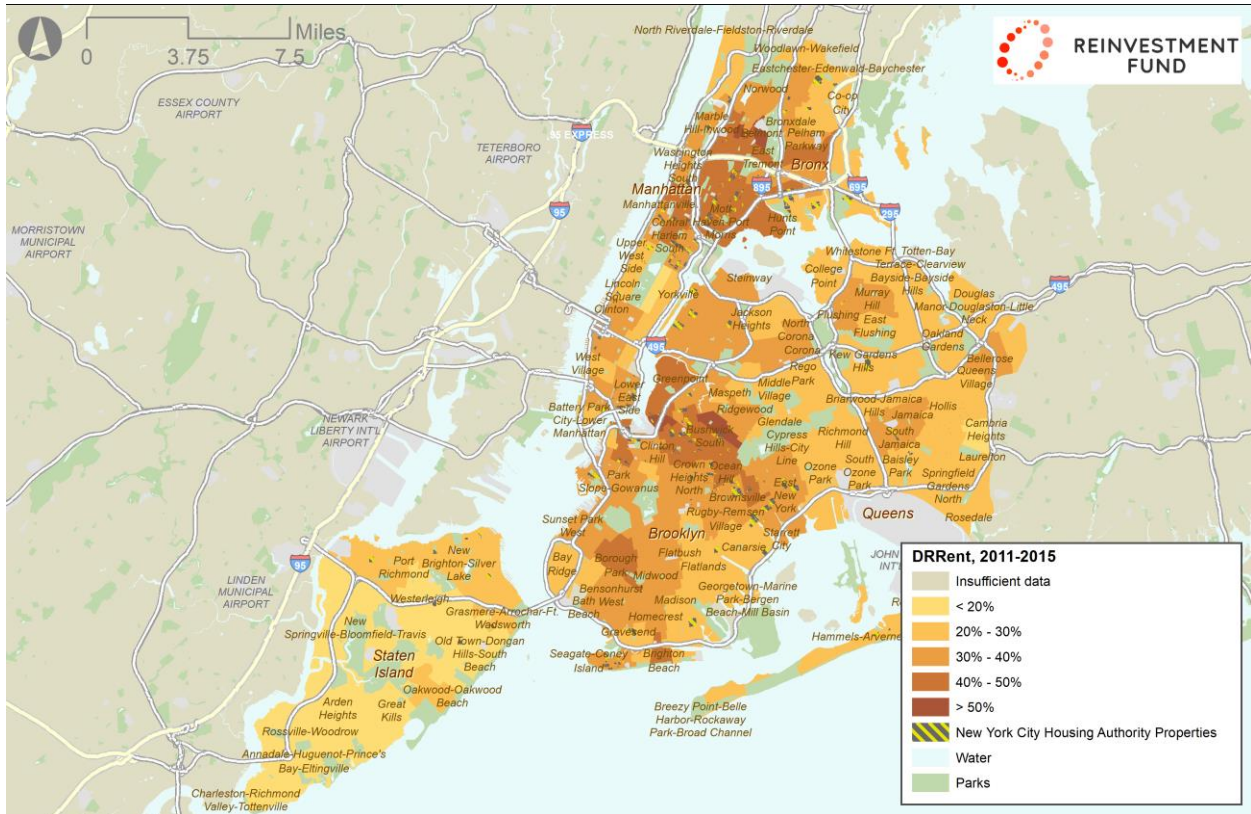
Table 3: The Distribution of NTA DRR Rent values across New York City in 2006-2010 ACS

	DRR Rent 2015 Below 20%	DRR Rent 2015 Between 20% - 30%	DRR Rent 2015 Between 30% - 40%	DRR Rent 2015 Between 40% - 50%	DRR Rent 2015 Above 50%
Number of NTAs	10	74	66	28	5
Percentage of NTAs	5%	40%	36%	15%	3%

Table 4: The Distribution of NTA DRR Rent values across New York City in 2011-2015 ACS



Map 3: DRR Rent values as percent of income by NTA, ACS 2006-2010



Map 4: DRR Rent values as percent of income by NTA, ACS 2011-2015

Borough profiles

DRR Sales

The shift of market pressure for residential real estate sales from the Bronx to Brooklyn (discussed in *Citywide Findings – DRR Sales*) above is clear when looking at the patterns of DRR over time by borough. The average NTA in the Bronx, Brooklyn, and Manhattan each were slightly below the city average for DRR in 2003/2004 (see Table 5). By 2015/2016, the average NTA in Brooklyn and Manhattan had a DRR value over two, while DRR for the average NTA in the Bronx fell to three below the city average. The average NTA in Queens and Staten Island were each well below the city average in 2003/2004 and falling further away by 2015/2016.

Borough	Average DRR 2003/2004	Average DRR 2015/2016	Average Change in DRR 03/04 - 15/16
Bronx	-0.2	-3.1	-2.9
Brooklyn	-0.2	2.1	2.3
Manhattan	-0.5	1.9	2.4
Queens	-3.6	-6.0	-2.5
Staten Island	-4.9	-8.5	-3.6

Table 5: Average NTA DRR for 2003/2004 and 2015/2016 by Borough (5-Borough Average = 0)

In 2003/2004, a quarter of Bronx NTAs had DRR values of 3.5 or greater. Those NTAs were primarily in the southern and central parts of the Bronx (see Map 5). A large share of Manhattan NTAs had DRR values of 3.5 or greater (22%), compared to a handful of Brooklyn NTAs (5 or 10%), only 1 Queens NTA (2%), and no Staten Island NTAs.

	DRR 2003/2004 Below -3.5	DRR 2003/2004 -3.5 to 0	DRR 2003/2004 0 to 3.5	DRR 2003/2004 Above 3.5
Bronx NTAs	10	10	7	9
% Bronx NTAs	28%	28%	19%	25%
Brooklyn NTAs	10	18	16	5
% Brooklyn NTAs	20%	37%	33%	10%
Manhattan NTAs	7	9	5	6
% Manhattan NTAs	26%	33%	19%	22%
Queens NTAs	29	22	2	1
% Queens NTAs	54%	41%	4%	2%
Staten Island NTAs	13	1	0	0
% Staten Island NTAs	93%	7%	0%	0%

Table 6: The Distribution of NTA DRR values by Borough in 2003/2004 (5-Borough Average = 0)

By 2015/2016, Brooklyn had surpassed the other four boroughs in NTAs with DRR values of 3.5 or greater (17 or 35%). The number of NTAs with DRR values of 3.5 or greater increased to 8 (30%) in Manhattan. In the Bronx, only 2 NTAs (6%) remained with DRR values of 3.5 or greater, while Queens continued to have a single NTA with DRR values of 3.5 or greater, and Staten Island had none.

	DRR 2015/2016 Below -3.5	DRR 2015/2016 -3.5 to 0	DRR 2015/2016 0 to 3.5	DRR 2015/2016 Above 3.5
Bronx NTAs	20	9	5	2
% Bronx NTAs	56%	25%	14%	6%
Brooklyn NTAs	10	15	7	17
% Brooklyn NTAs	20%	31%	14%	35%
Manhattan NTAs	8	9	2	8
% Manhattan NTAs	30%	33%	7%	30%
Queens NTAs	45	7	1	1
% Queens NTAs	83%	13%	2%	2%
Staten Island NTAs	14	0	0	0
% Staten Island NTAs	100%	0%	0%	0%

Table 7: The Distribution of NTA DRR values by Borough in 2015/2016 (5-Borough Average = 0)

NTAs in Brooklyn were the most likely to experience a rise in DRR of 3.5 or greater (15 or 31% of all Brooklyn NTAs). Over a quarter of Manhattan NTAs (7 or 26%) also experienced rapid increases in

market pressure from 2003/2004 – 2015/2016. In Queens one NTA had an increase in DRR value of 3.5 or greater (Queensbridge-Ravenswood-Long Island City). No NTAs in either the Bronx or Staten Island experienced this level of increase in residential real estate sales market pressure. (See Table 8.)

	DRR Change Below -3.5	DRR Change -3.5 to 0	DRR Change 0 to 3.5	DRR Change Above 3.5
Bronx NTAs	11	24	1	0
% Bronx NTAs	31%	67%	3%	0%
Brooklyn NTAs	1	18	15	15
% Brooklyn NTAs	2%	37%	31%	31%
Manhattan NTAs	3	6	11	7
% Manhattan NTAs	11%	22%	41%	26%
Queens NTAs	6	45	2	1
% Queens NTAs	11%	83%	4%	2%
Staten Island NTAs	7	7	0	0
% Staten Island NTAs	50%	50%	0%	0%

Table 8: Distribution of NTA DRR value change by Borough (5-Borough Average = 0)⁴

DRR Rent

Unlike for DRR Sales, the average NTA DRR Rent was highest in the Bronx in both 2010 and 2015. Manhattan and Brooklyn experienced the largest increases in average DRR Rent from 2010 – 2015. Staten Island was the only borough with a decline in average DRR Rent from 2010 to 2015. (See Table 9.)

Borough	DRR Rent 2010	DRR Rent 2015	Change in DRR Rent
Bronx	34.5%	36.7%	2.2%
Brooklyn	32.7%	36.2%	3.5%
Manhattan	28.5%	32.7%	4.2%
Queens	27.0%	28.4%	1.5%
Staten Island	21.0%	20.9%	-0.1%

Table 9: Average NTA DRR Rent for 2006-2010 and 2011-2015 by Borough (5-Borough Average = 0)

Although the average DRR Rent increase in the Bronx is lower than Brooklyn or Manhattan, the number of NTAs in the Bronx with DRR Rent values over 40% of income increased from 8 to 15 (from 22% to 41%), and the number of extreme cost burdened NTAs increased from 0 to 2. In Brooklyn, the number of NTAs with DRR Rent values over 40% increased from 6 to 10 (from 12% to 20%), and the number of extreme cost burdened NTAs increased from 1 to 3. In Manhattan, the number of NTAs with DRR Rent over 40% increased from 0 to 3 and in Queens from 0 to 5. (See Tables 10 and 11.)

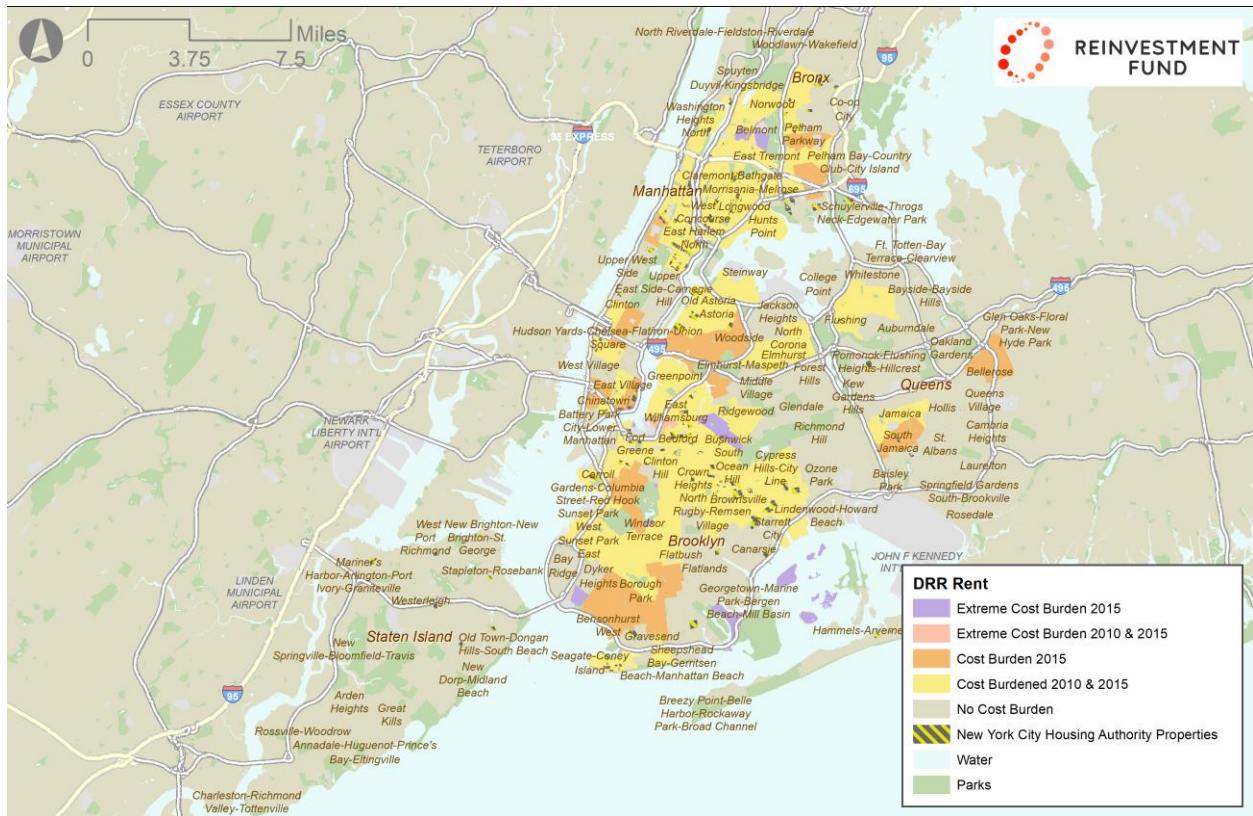
⁴ Tables 6 and 7 represent the number of NTAs at each DRR level in the given period. Table 8 represents a tabulation, by borough, of the NTA-level DRR change.

Borough	DRR Rent 2010 Below 20%	DRR Rent 2010 Between 20% - 30%	DRR Rent 2010 Between 30% - 40%	DRR Rent 2010 Between 40% - 50%	DRR Rent 2010 Above 50%
Bronx NTAs	3	10	16	8	0
% Bronx NTAs	8%	27%	43%	22%	0%
Brooklyn NTAs	0	19	24	6	1
% Brooklyn NTAs	0%	38%	48%	12%	2%
Manhattan NTAs	3	12	13	0	0
% Manhattan NTAs	11%	43%	46%	0%	0%
Queens NTAs	2	39	13	0	0
% Queens NTAs	4%	72%	24%	0%	0%
Staten Island NTAs	7	7	0	0	0
% Staten Island NTAs	50%	50%	0%	0%	0%

Table 10: The Distribution of NTA DRR Rent values by Borough in 2006-2010 (5-Borough Average = 0)

Borough	DRR Rent 2015 Below 20%	DRR Rent 2015 Between 20% - 30%	DRR Rent 2015 Between 30% - 40%	DRR Rent 2015 Between 40% - 50%	DRR Rent 2015 Above 50%
Bronx NTAs	1	9	10	15	2
% Bronx NTAs	3%	24%	27%	41%	5%
Brooklyn NTAs	0	12	25	10	3
% Brooklyn NTAs	0%	24%	50%	20%	6%
Manhattan NTAs	2	9	14	3	0
% Manhattan NTAs	7%	32%	50%	11%	0%
Queens NTAs	1	36	17	5	0
% Queens NTAs	2%	61%	29%	8%	0%
Staten Island NTAs	6	8	0	0	0
% Staten Island NTAs	43%	57%	0%	0%	0%

Table 11: The Distribution of NTA DRR Rent values by Borough in 2011-2015 (5-Borough Average = 0)



Map 5: NTAs with DRR Rent values that show Cost Burden (30% of income or more) or Extreme Cost Burden (above 50% of income) in 2010, 2015, or both

Rapidly Increasing DRR Sales Neighborhoods

In New York City, a variety of neighborhoods have undergone significant DRR Sales increases from 2000 (the decennial Census year that serves as the base year for DRR) to 2015/2016. The NTAs profiled in this section of this report experienced an increase in DRR value of 3.5 or greater from 2003/2004 to 2015/2016. While DRR in the average New York City NTA declined 0.7 over this time-period, DRR in the NTAs in this study increased by anywhere from 3.5 to 14.6 (and on average, by 8.6).

These neighborhoods are:

Neighborhood Tabulation Area	Borough
Bedford	Brooklyn
Bushwick North	Brooklyn
Bushwick South	Brooklyn
Carroll Gardens-Columbia Street-Red Hook	Brooklyn
Clinton Hill	Brooklyn
Crown Heights North	Brooklyn
Crown Heights South	Brooklyn
East Williamsburg	Brooklyn
Fort Greene	Brooklyn
Greenpoint	Brooklyn
North Side-South Side	Brooklyn
Ocean Hill	Brooklyn
Stuyvesant Heights	Brooklyn
Sunset Park East	Brooklyn
Sunset Park West	Brooklyn
Williamsburg	Brooklyn
Central Harlem North-Polo Grounds	Manhattan
Central Harlem South	Manhattan
Chinatown	Manhattan
East Harlem South	Manhattan
East Village	Manhattan
Midtown-Midtown South	Manhattan
SoHo-TriBeCa-Civic Center-Little Italy	Manhattan
Queensbridge-Ravenswood-Long Island City	Queens

Table 12: NTAs with Large Increases in DRR Sales from 2003/2004 - 2015/2016

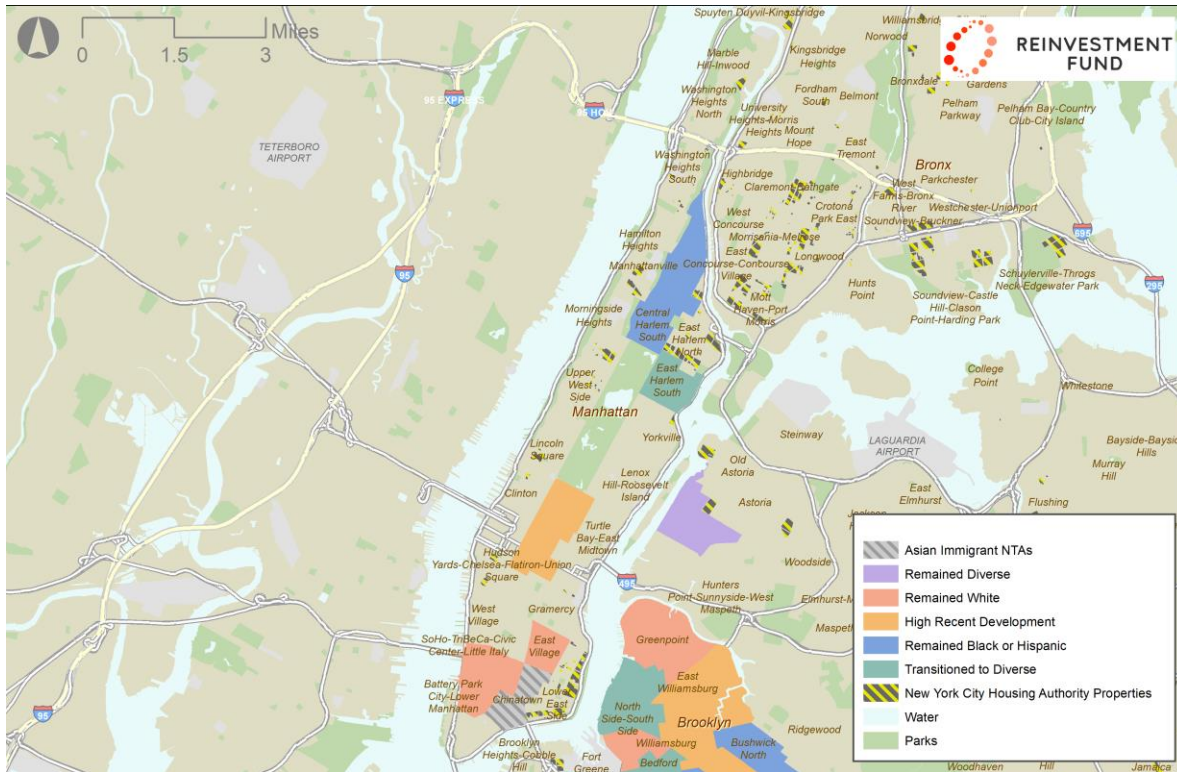
Maps 6 – 9 below show the location of these 24 rapidly increasing DRR NTAs by borough. The four maps also delineate these DRR neighborhoods by type according to the proposed typology discussed in the following and final section of the report.



Map 6: Location and Type of Rapidly Increasing DRR NTAs (2003/2004 and 2015/2016) by Race / Ethnicity (2000 Census and 2011-2015 ACS), New York City



Map 7: Location and Type of Rapidly Increasing DRR NTAs (2003/2004 and 2015/2016) by Race / Ethnicity (2000 Census and 2011-2015 ACS) in Brooklyn



Map 8: Location and Type of Rapidly Increasing DRR NTAs (2003/2004 and 2015/2016) by Race / Ethnicity (2000 Census and 2011-2015 ACS) in Manhattan



Map 9: Location and Type of Rapidly Increasing DRR NTA (2003/2004 and 2015/2016) by Race / Ethnicity (2000 Census and 2011-2015 ACS) in Queens

New York City DRR Sales – Initial Typology

The 24 rapidly increasing DRR Sales neighborhoods identified above differed across a number of dimensions in 2000. However, this initial data review will focus on changes in racial and ethnic composition and share of recent residential construction, which appear to set groups of NTAs apart from one another. We identify six different patterns of neighborhood trends in NTAs with significant DRR Sales increases as a preliminary typology of change. Those six patterns are:

- Transitioned from Majority Black or Hispanic to Racially/Ethnically Diverse
- Remained Predominantly Black or Hispanic
- Remained Predominantly White
- Asian Immigrant Neighborhoods
- Remained Diverse
- High Residential Development Areas

Transitioned from Majority Black or Hispanic to Racially/Ethnically Diverse

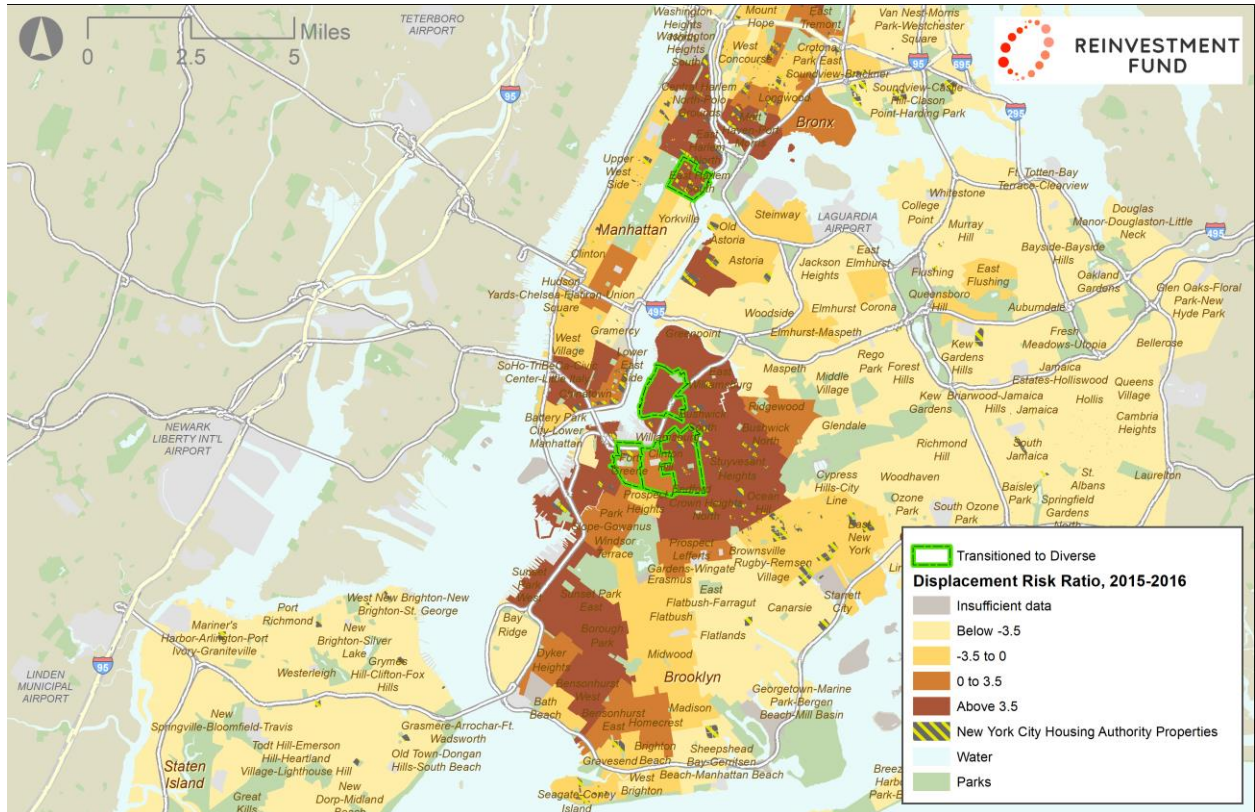
Five NTAs transitioned from majority Black or Hispanic in 2000 to Black or Hispanic being the largest racial or ethnic group, but not necessarily more than half of the population—or in one case, to majority Non-Hispanic White—by the 2011-2015 ACS. Four of these were located in Brooklyn; one in Manhattan. In Brooklyn, these NTAs are located either next to or very close to each other in central Brooklyn (*see* Map 10). In all five cases, the neighborhoods are located between predominantly Black or Hispanic NTAs and predominantly White NTAs.

The change in population shares has made these NTAs more diverse as of the 2011/2015 ACS. Only one of the NTAs (North Side – South Side Williamsburg) has a majority racial or ethnic group, with 53% of residents identifying as White; in 2000 that area was 57% Hispanic. Three of the other four NTAs have no group with higher than a 40% population share. Although these NTAs are now more diverse than they were in 2000, the increase in DRR suggests these NTAs could become homogenous again as higher income households replace lower income households who cannot afford to remain in the neighborhood. In the NTAs that had a majority of Black residents in 2000, the average decrease in Black population share was 22%; while in the two formerly Hispanic NTAs, the Hispanic share declined on average by 19%. In each of these NTAs, the share of White population increased by at least 10% from 2000 to 2011/2015, with an average increase of 19%.

Despite the large changes in population shares, these NTAs had the second lowest average increase in DRR in the study period. That is to say, market pressure in these NTAs increased substantially, but not as much as most of the other groups identified in this report.

Neighborhood Tabulation Area	% Population Change	% Black 2000	% Black 2011/2015	% Change Black Population	% Hispanic 2000	% Hispanic 2011/2015	% Change Hispanic Population	% White 2000	% White 2011/2015	% Change White Population
East Harlem South	12%	25%	22%	-3%	53%	39%	-14%	14%	24%	10%
Bedford	32%	72%	48%	-24%	19%	14%	-5%	5%	33%	28%
North Side-South Side	5%	2%	3%	1%	57%	34%	-23%	34%	53%	19%
Clinton Hill	18%	60%	38%	-22%	15%	13%	-2%	16%	38%	22%
Fort Greene	5%	55%	35%	-20%	19%	20%	1%	17%	33%	16%

Table 13: Racial and Ethnic Population in Transitioning NTAs



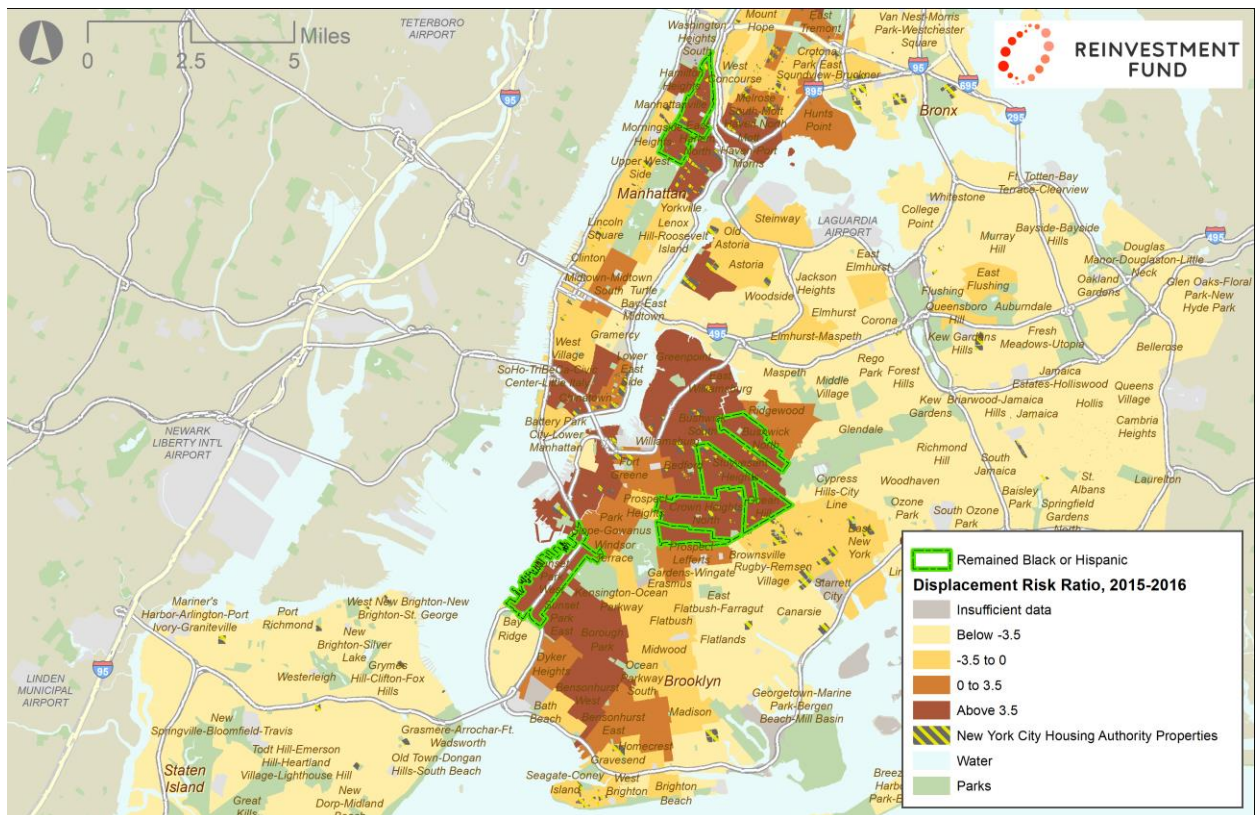
Map 10: NTAs that Transitioned from Majority Black or Hispanic to Racially/Ethnically Diverse between 2000 and 2011/2015

Remained Predominantly Black or Hispanic

Eight NTAs that are experiencing sharp increases in DRR remained predominantly Black or Hispanic from 2000 to 2011/2015. Although these NTAs experienced some declines in the share of the predominant racial or ethnic group and some increase in the share of White population, those changes were much smaller than in the transitioning group. In the six NTAs that had a majority Black population in 2000, the average decrease in Black population share was 13%, but the Black population still comprised at least 60% of the total population in all but one of these neighborhoods in 2011/2015. In the two predominantly Hispanic NTAs, the Hispanic share declined on average by only 6% and remained above 65%. The White population share increased by an average of 8% in these NTAs.

Neighborhood Tabulation Area	% Population Change	% Black 2000	% Black 2011/2015	% Change Black Population	% Hispanic 2000	% Hispanic 2011/2015	% Change Hispanic Population	% White 2000	% White 2011/2015	% Change White Population
Central Harlem North-Polo Grounds	17%	82%	63%	-19%	13%	22%	9%	1%	9%	8%
Central Harlem - South	22%	71%	54%	-17%	20%	20%	0%	4%	19%	15%
Bushwick North	11%	10%	9%	-1%	78%	69%	-9%	4%	14%	10%
Crown Heights South	0%	70%	60%	-10%	8%	9%	1%	17%	27%	10%
Crown Heights North	1%	84%	70%	-14%	9%	13%	4%	4%	12%	8%
Ocean Hill	9%	77%	75%	-2%	18%	19%	1%	1%	3%	2%
Stuyvesant Heights	8%	82%	69%	-13%	14%	18%	4%	1%	8%	7%
Sunset Park West	10%	3%	2%	-1%	69%	66%	-3%	14%	16%	2%

Table 14: Racial and Ethnic Population in NTAs that Remained Predominantly Black or Hispanic



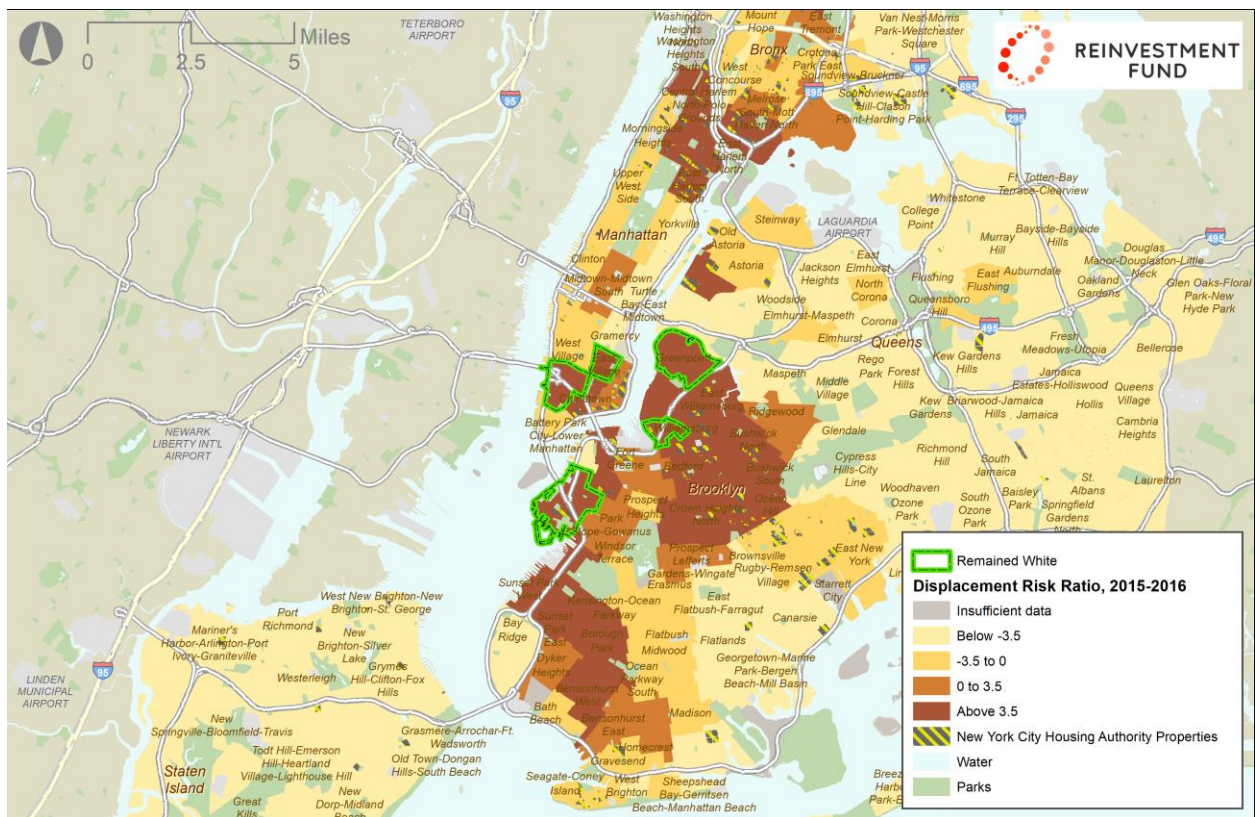
Map 11: NTAs that Remained Predominantly Black or Hispanic from 2000 to 2011-2015

Remained Predominantly White

Five NTAs experiencing quick rises in DRR were predominantly White at the time of the 2000 Census and became more so by the 2011/2015 ACS. These NTAs are located in southern Manhattan and in northwestern Brooklyn. On average, they had a 69% share of Non-Hispanic White population in 2000 (compared to 35% citywide). That population increased in each NTA from 2000 to 2011/2015 by an average of 6%. The Black and Hispanic populations of these NTAs have generally declined since 2000.

Neighborhood Tabulation Area	% Population Change	% Black 2000	% Black 2011/2015	% Change Black Population	% Hispanic 2000	% Hispanic 2011/2015	% Change Hispanic Population	% White 2000	% White 2011/2015	% Change White Population
SoHo-TriBeCa-Civic Center-Little Italy	15%	2%	2%	0%	6%	6%	0%	58%	64%	6%
East Village	3%	5%	5%	0%	13%	11%	-2%	65%	68%	3%
Greenpoint	-13%	13%	1%	-12%	20%	12%	-8%	71%	78%	7%
Williamsburg	12%	0%	2%	2%	8%	4%	-4%	81%	93%	12%
Carroll Gardens-Columbia Street-Red Hook	9%	5%	3%	-2%	16%	13%	-3%	70%	74%	4%

Table 15: Racial and Ethnic Population in NTAs that Remained Predominantly White



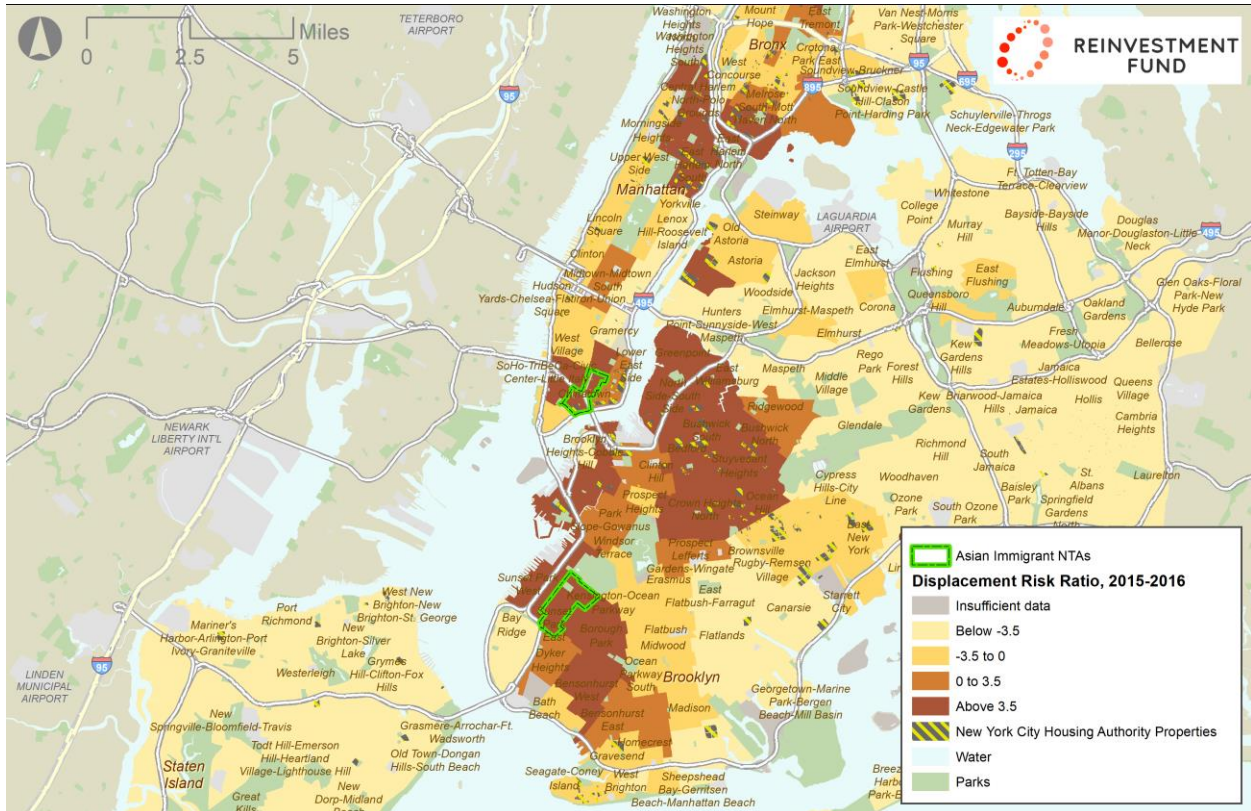
Map 12: NTAs that Remained Predominantly White from 2000 to 2011-2015

Asian Immigrant Neighborhoods

Two NTAs had majority foreign-born populations, including large Asian populations, in both 2000 and 2011/2015. In Sunset Park East, Brooklyn, the foreign-born population increased slightly (3%) in that time and the Asian population increased 17%. Chinatown in southern Manhattan lost 11% of its foreign-born population share from 2000 to 2011/2015 and 10% of its Asian population. These two NTAs averaged the second highest change in DRR from 2003/2004 to 2015/2016.

Neighborhood Tabulation Area	% Population Change	% Asian 2000	% Asian 2011/2015	% Black 2000	% Black 2011/2015	% Hispanic 2000	% Hispanic 2011/2015	% White 2000	% White 2011/2015
Sunset Park East	9%	35%	52%	2%	2%	42%	32%	18%	13%
Chinatown	-15%	72%	62%	3%	4%	12%	11%	12%	19%

Table 16: Racial and Ethnic Population in Asian Immigrant NTAs



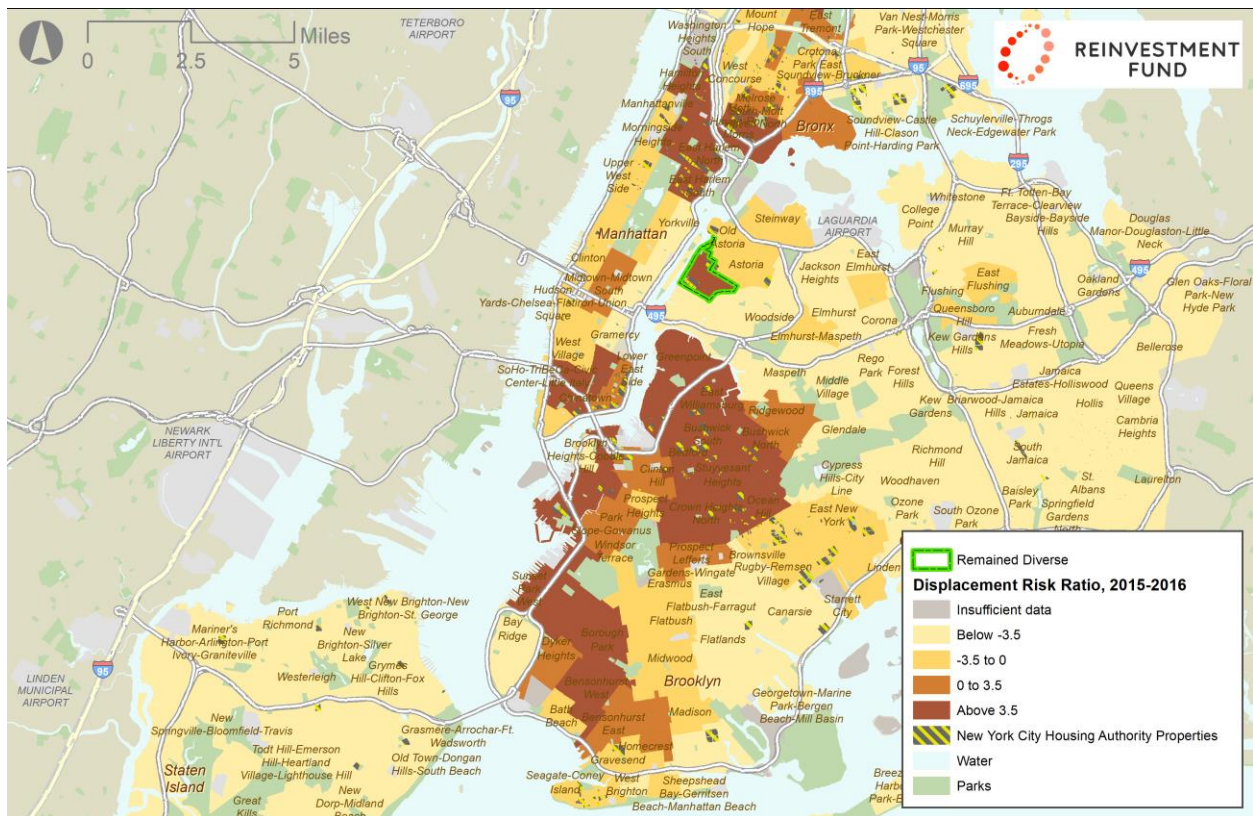
Map 13: Asian Immigrant NTAs in 2000 and 2011-2015

Remained Diverse

The sole NTA in Queens that experienced rapidly rising DRR in the study period is Queensbridge-Ravenswood-Long Island City. This area had a mixture of Hispanic, Asian, White, and Black populations in 2000 and continued to have reasonably similar shares of those populations by 2011/2015. This NTA had the smallest increase in DRR of the NTAs featured in this section of the report.

Neighborhood Tabulation Area	% Population Change	% Asian 2000	% Asian 2011/2015	% Black 2000	% Black 2011/2015	% Hispanic 2000	% Hispanic 2011/2015	% White 2000	% White 2011/2015
Queensbridge-Ravenswood-Long Island City	-15%	23%	20%	14%	10%	39%	43%	19%	21%

Table 17: Racial and Ethnic Population in the NTA that Remained Diverse



Map 14: NTA that Remained Diverse from 2000 to 2011-2015

High Residential Development Areas

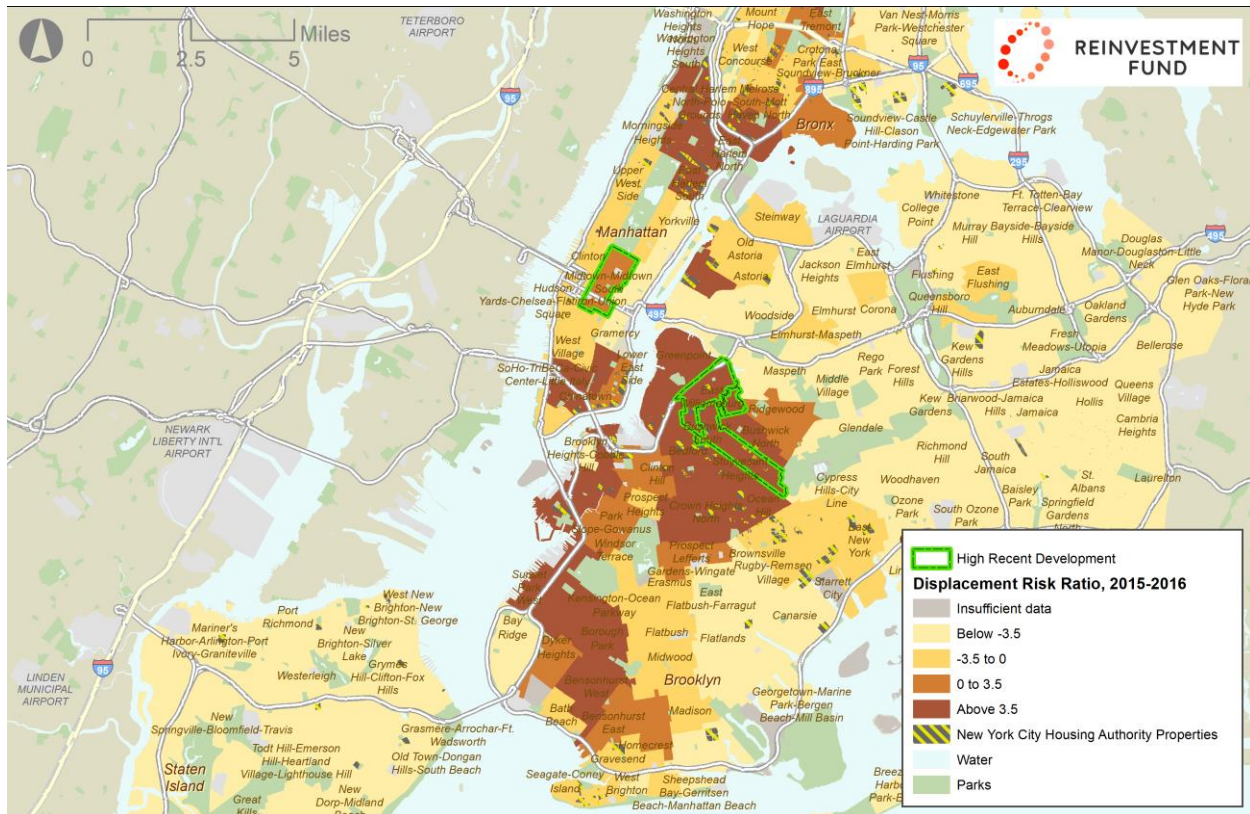
Three of the NTAs with rapid increases in DRR during the study period did not have remarkable racial/ethnic shifts, but they have experienced notably larger shares of recent construction than New York City as a whole (defined as half a standard deviation or more recent construction than the City average). In these areas, about a fifth or more of the housing units were built since 1990 (compared to about a tenth of housing units in New York City as a whole). These NTAs also have a higher share of older housing: all three have more housing units built before 1940 than the city as a whole. These NTAs had the highest average change in DRR of any of the groups featured in this report.

Neighborhood Tabulation Area	Percent built before 1940	Percent built since 1990
Bushwick South	55%	20%
East Williamsburg	43%	19%
Midtown-Midtown South	42%	27%
<i>New York City</i>	<i>41%</i>	<i>11%</i>

Table 18: Age of Housing Units in NTAs with High Level of Residential Construction since 1990

Neighborhood Tabulation Area	% Population Change	% Black 2000	% Black 2011/2015	% Change Black Population	% Hispanic 2000	% Hispanic 2011/2015	% Change Hispanic Population	% White 2000	% White 2011/2015	% Change White Population
Bushwick South	15%	35%	25%	-10%	59%	57%	-2%	2%	13%	11%
East Williamsburg	10%	9%	6%	-3%	46%	29%	-17%	33%	48%	15%
Midtown-Midtown South	9%	5%	4%	-1%	7%	8%	1%	70%	65%	-5%

Table 19: Racial and Ethnic Population in NTAs with High Level of Residential Construction since 1990



Map 15: NTAs with High Residential Development Since 1990

Conclusion

The DRR method for identifying residential real estate pressure has here identified a set of NTAs that have undergone rapid change since 2003/2004. The patterns of those changes are varied, but often racial and ethnic change and rapid expansion of housing stock coincide with displacement pressure.

From the perspective of crafting policy and interventions it is advantageous that DRRs can be calculated as quickly as sales data can be collected and aggregated. The contemporary nature of the DRRs can serve as an ‘early warning’ signal for market change. DRRs based on rent are less reflective of quick changes in the market because they rely on ACS data which are both 5-year snapshots and less contemporary than administrative sales data.

The typology created in this report shows that there are many additional concerns that coincide with market pressure (such as changes in the composition of the population). However, these often cannot be measured until well after the fact, when demographic, education, income, or other data are available to more fully understand high DRR NTAs and to discover patterns of rapid neighborhood change beyond the real estate market. Besides race, ethnicity, and building stock, many other characteristics of high DRR and other New York neighborhoods likely have changed during the time-period discussed herein. A wider lens focused with rigorously collected data about these neighborhoods would further understanding of places experiencing rapid change.