

December 2019

Technical Addendum: Mapping Displacement Pressure in Chicago, 2019

Project Overview

In 2017, IHS developed an analysis and interactive, web-based mapping tool that visualizes neighborhood-level displacement risk and housing affordability pressures across the City in order to 1) support ongoing and future public investment decisions and 2) guide practical and proactive responses to preserving housing affordability in neighborhoods. The Mapping Displacement Pressure in Chicago project brings together the housing market and demographic information needed to begin an evaluation of the potential displacement risk surrounding a proposed project and to help inform conversations about lost housing affordability and displacement throughout the City.

In 2018, IHS updated its Mapping Displacement Pressure in Chicago project with 1) updated data for changing sales prices and current conditions, 2) additional tract-level data on current conditions relevant to understanding the vulnerability characteristics and housing preservation opportunities in neighborhoods, and 3) an analysis that identifies neighborhoods with emerging and intensifying displacement pressure compared to the previous study released in 2017. This paper updates this same analysis with the newest data available from the IHS Data Clearinghouse for 2019.

This technical addendum addresses methodological changes and provides new maps and tables relevant to the 2019 study. For more detail on the project purpose, supporting literature, study components, and technical features, see the full 2017 technical paper for the project: [Mapping Displacement Pressure in Chicago \(2017\)](#).

Mapping Displacement Pressure in Chicago (2018) Analysis Components

The Mapping Displacement Pressure in Chicago project includes two separate analytical layers for City of Chicago census tracts: 1) a market segmentation analysis that identifies neighborhood types with similar demographic, socioeconomic and housing stock characteristics associated with vulnerability to displacement in a rising cost environment and 2) a geospatial analysis of housing sales data for 1 to 4 unit properties that classifies neighborhoods with rising costs and the risk of declining affordability.

Given that the data used in the market segmentation analysis layer largely come from census tract-level American Community Survey (ACS) sources, the same analytical layer for defining vulnerability is used in 2019 study as was used in the 2017 and 2018 studies. This is because the ACS data reflecting the rolling 5-year period 2011 to 2015 and 2012 to 2016 is largely the same as the new ACS 5-Year period 2013 to 2017.

IHS will continually evaluate the differences between ACS samples and will reissue the market segmentation layer when significant changes in the data are identified. For more information on the method, data sources, and results of the market segmentation analysis see: Section 2 - Market Segmentation Analysis from: [Mapping Displacement Pressure in Chicago \(2017\)](#).

This technical addendum documents data sources, summary tables and maps, and methods for the updated and new components of the 2019 Mapping Displacement Pressure in Chicago project, including the Housing Market Analysis, the Displacement Risk Typology, the identification of census tracts with emerging and intensifying displacement pressure compared to the previous study, and sources and methods for deriving the contextual data features included in the [Mapping Displacement Pressure in Chicago interactive mapping tool](#).

Housing Market Analysis (2019)

Consistent with the previous two analyses, this analysis uses parcel-level data on 1 to 4 unit property sales activity and geospatial techniques to identify neighborhood-level prices in data years 2012 and 2018 relative to surrounding areas to 1) classify census tracts based on data year 2018 sales prices and 2) classify census tracts based on changes in prices between these two periods relative to the City of Chicago as a whole. The analysis also uses the same data preprocessing, normalization, kriging interpolation techniques, aggregation, and qualitative testing method as the 2018 and 2017 studies.

In 2018, IHS did alter the method for typology development to allow for comparison between the 2017 and 2018 studies. For the 2017 study, the aggregated values derived from the kriging interpolation were distributed into seven separate classes by equal intervals, where the top category represented approximately the highest 14 percent of sales values for the entire range of values in the given year, and so on. These were further consolidated into three groupings for easier visualization, known as high-cost, moderate-cost and lower-cost areas. In order to reflect the relative change in data from 2017 to 2018 given overall changes in Chicago's housing market in 2018, IHS again adjusted the two threshold values of the three housing market groups for the 2019 study (high-cost, moderate-cost, and lower-cost) by using the Z stat of data year 2016 with the mean and the standard deviation of data year 2018. Based on the inverse log of the range of values in data year 2018 multiplied by 1500, the approximate dollar value of a 1500 square foot property for each type follows:

High-cost: Greater than \$304,870

Moderate-cost: Between \$113,944 and \$304,870

Lower-cost: Less than \$113,944

The classification for declining, stable, rising, and rapidly rising sales prices did not change between the current 2019 study and the previous 2017 and 2018 studies.¹ The current study maintains the same category thresholds in order to allow for comparisons to the previous two studies.

A small group of census tracts have been observed to oscillate from category study to study. These "volatile" census tracts represent 7.1 percent of the data and analysis has found a range of conditions impacting the tendency for a census tract to jump back and forth from high, moderate, or low-cost. These reasons range from low counts of sales, small shares of the stock in 1 to 4 unit parcels, sales price levels near the threshold for one category or another, to market volatility. For example, in a transitional neighborhood experiencing a mix of both low value sales and high value flips, the composition of sales year to year can vary drastically. In the 2019 study, this phenomenon occurred in a census tract in Woodlawn where price levels were moderate cost in 2017 and lower cost in 2018. This census tract has high levels of flipping activity which has caused median sale prices to fluctuate by 40 percent between 2017 and 2018 as low cost properties are acquired, rehabbed, and resold - sale prices range from \$35,000 to \$480,000. In the Mapping Displacement Pressure mapping tool, IHS has flagged these census tracts as "volatile census tracts" and practitioners should take these factors into consideration when assessing displacement risk.

Figure 1 illustrates the results of the update housing market analysis and Figure 2 maps these results. For more information on the techniques and data sources used see: Section 3 - Housing Market Analysis and Section 5 - Technical Appendix from: [Mapping Displacement Pressure in Chicago \(2017\)](#).

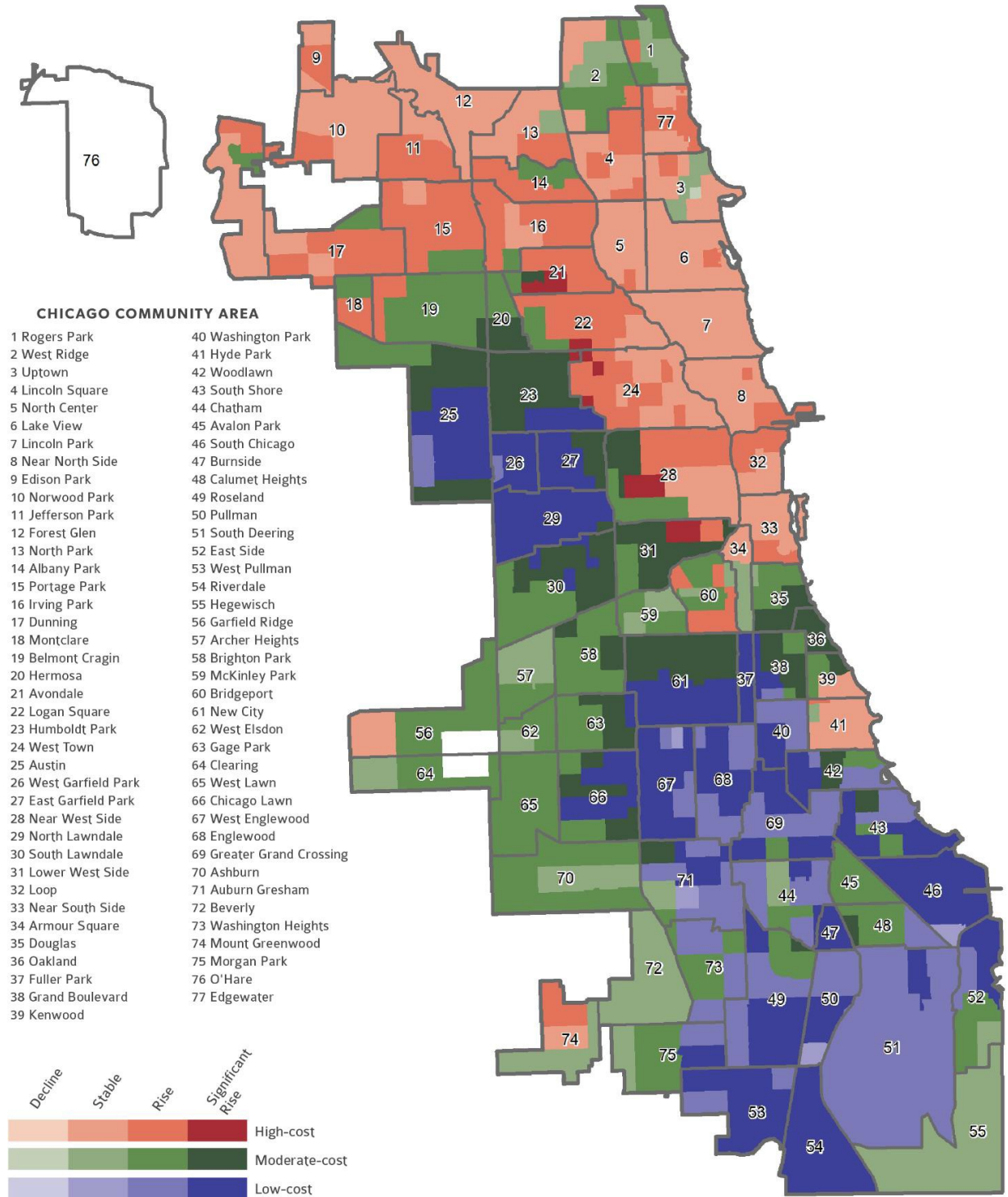
Figure 1. Results of the Housing Market Analysis for City of Chicago, 2018

Current Market Conditions in 2018	Change in Sales Price, 2012 to 2018				
	Declining (negative percent change)	Stable (less than 9.5 percent change)	Rising (9.5 to 21.6 percent change)	Significantly Rising (greater than 21.6 percent change)	Total Census Tracts
High-Cost	0	168	126	14	308
Moderate-Cost	1	47	137	85	270
Lower-Cost	0	4	56	152	212
Total Census Tracts	1	219	319	251	790

Source: IHS calculations of data from Cook County Recorder of Deeds via Property Insight, Record Information Services, Cook County Assessor

¹The category thresholds did not change to preserve continuity with the original study, but it is worth noting that the average change in sales prices between 2012 and 2017, 2018, and 2019 for the City of Chicago is different. In the 2017 study, the average change in sales prices for the City of Chicago was 11.3 percent and the median change was 9.5 percent. In the 2018 study, the average change in sales prices for the City of Chicago was 14.9 percent and the median change was 12.1 percent. In the 2019 study, the average change in sales prices for the City of Chicago was 18.3 percent and the median change was 14.8 percent.

Figure 2. Map of Results of the Housing Market Analysis for City of Chicago, 2018



Source: IHS calculations of data from Cook County Recorder of Deeds via Property Insight, Record Information Services, Cook County Assessor

Displacement Risk Typology (2019)

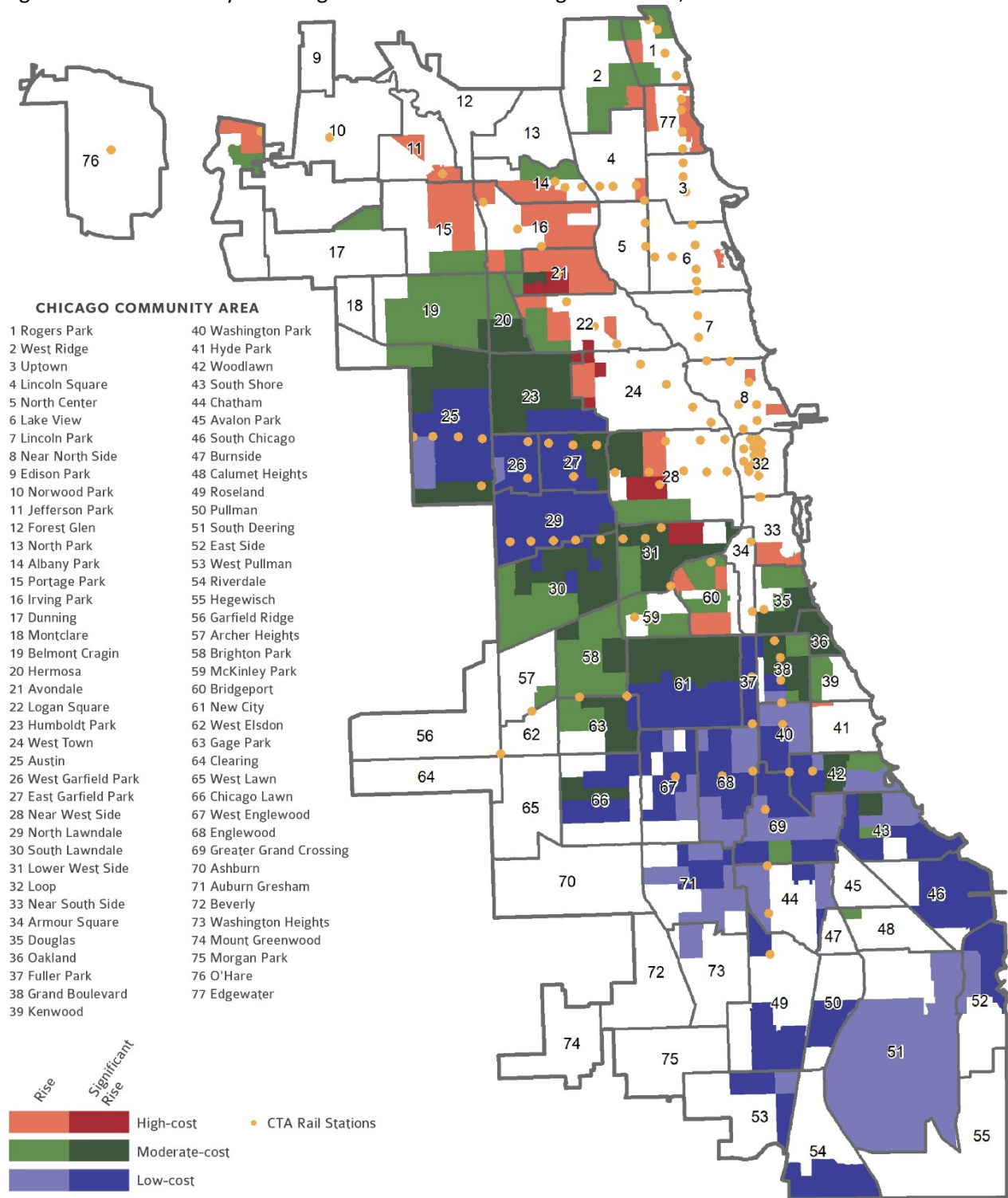
Consistent with previous Mapping Displacement Pressure in Chicago reports, this analysis combined the results of the market segmentation analysis and updated housing market analysis to identify census tracts with 1) high concentrations of population vulnerable to displacement in a rising cost environment and 2) census tracts where house prices were rising or rapidly rising between data years 2012 and 2018. Figure 3 illustrates the results of the combined segmentation study and housing market analysis, updated in 2019. Figure 4 maps these patterns.

Figure 3. Results of the Housing Market Analysis for Vulnerable City of Chicago Submarkets, 2018

		Change in Sales Price, 2012 to 2018				
	Current Market Conditions in 2018	Declining (negative percent change)	Stable (less than 9.5 percent change)	Rising (9.5 to 21.6 percent change)	Significantly Rising (greater than 21.6 percent change)	Total Census Tracts
Cluster 1	High-Cost	0.0%	41.9%	20.0%	0.0%	61.9%
	Moderate-Cost	1.0%	11.4%	15.2%	7.6%	35.2%
	Lower-Cost	0.0%	0.0%	2.9%	0.0%	2.9%
	Total Census Tracts	1.0%	53.3%	38.1%	7.6%	100.0%
Cluster 5	High-Cost	0.0%	0.5%	15.8%	6.5%	22.8%
	Moderate-Cost	0.0%	5.4%	30.4%	27.7%	63.6%
	Lower-Cost	0.0%	0.5%	1.1%	12.0%	13.6%
	Total Census Tracts	0.0%	6.5%	47.3%	46.2%	100.0%
Cluster 6	High-Cost	0.0%	0.0%	1.1%	0.6%	1.7%
	Moderate-Cost	0.0%	0.6%	3.4%	10.6%	14.5%
	Lower-Cost	0.0%	1.1%	19.6%	63.1%	83.8%
	Total Census Tracts	0.0%	1.7%	24.0%	74.3%	100.0%

Source: IHS calculations of data from Cook County Recorder of Deeds via Property Insight, Record Information Services, Cook County Assessor

Figure 4. Vulnerable City of Chicago Submarkets with Rising Sale Values, 2018



Source: IHS calculations of data from Cook County Recorder of Deeds via Property Insight, Record Information Services, Cook County Assessor

Analyzing Changes in Displacement Risk, Emerging and Intensifying Areas

As part of its 2018 Mapping Displacement Pressure in Chicago report release, IHS produced an accompanying report analyzing changes between the 2017 displacement risk map and the 2018 displacement risk map. In 2019, IHS examined changes between the 2018 study and the new 2019 study.

This analysis focuses specifically on areas where displacement pressure has intensified during the previous study period and the current study year - profiling neighborhoods that have graduated to a higher risk category or areas where displacement risk has been a recent development. IHS also observes other types of shifts including census tracts where the risk was moderated between data years 2017 and 2018 or census tracts that were price stable or experienced slight declines in prices, however. As discussed above, in order to ensure that the changes observed between data years 2017 and 2018 were a result of the shifting price levels in the census tract and not due to an overall shift in values citywide, IHS normalized the threshold values to facilitate comparison between each Mapping Displacement Pressure in Chicago study. The definitions for each type of shift follows and Figure 5 illustrates these shifts for census tracts in the City of Chicago.

Intensifying

A census tract where displacement pressure increased between data years 2017 and 2018. This is a census tract that is vulnerable to displacement with rising costs in both periods, but where the relative level of affordability (high-cost, moderate-cost, lower-cost) increased as of the 2019 report. For example, a census tract that was vulnerable to displacement with moderate prices that were rising according to the 2018 study that in the 2019 study is now defined as high-cost.

Emerging

A vulnerable census tract that had stable or declining prices according to the 2018 analysis, but where prices are now rising above the city average as of the 2019 report. These census tracts were not flagged as neighborhoods with displacement risk in the 2018 report but are flagged in the 2019 map.

Moderating

A vulnerable census tract that became relatively more affordable as of the 2019 report relative to the City as a whole and its previous classification in 2018. Slight shifts in price levels are normal, and these shifts were not significant enough that IHS would say that vulnerable households are no longer experiencing pressure.

Figure 5. Changes in Displacement Pressure Risk Typology in 2017 and 2018

	2018 Vulnerable-Rising			Total Census Tracts
	Lower-Cost	Moderate-Cost	High-Cost	
Intensifying	0	10	9	19
Emerging	18	10	15	43
Moderating	14	13	0	27
Other	143	123	41	307
Total Vulnerable-Rising Tracts	175	156	65	396

Source: IHS calculations of data from Cook County Recorder of Deeds via Property Insight, Record Information Services, Cook County Assessor

Intensifying and Emerging Areas, 2019

Most areas identified by IHS as likely experiencing some level of displacement pressure in 2017 did not see sufficient changes in prices in 2018 to either exacerbate or reduce housing affordability pressure. Of the 361 census tracts in the City with resident vulnerability and rising or rapidly rising house prices, the level of pressure did not increase or decrease between 2017 and 2018 in 85 percent of census tracts. Instead, these areas continue to have similar displacement pressure and risk for lost affordability as the previous year. Despite remaining stable, these areas should continue to be a focus for policymakers as they evaluate potential future development and plan for maintaining and increasing housing affordability amid planned investment.

Intensifying Displacement Pressure Areas

>> *High-cost areas with vulnerable populations that were previously affordable*

Neighborhoods include parts of Irving Park just west of the Kennedy Expressway and the Blue Line Addison CTA stop, the pocket of West Town just south of Humboldt Park, and census tracts near the terminus of the Brown Line in Albany Park and the 18th Street Pink Line station in Pilsen. In 2017, IHS identified these areas as moderate-cost but have recently seen accelerated prices and are now among the highest cost areas of the City. Vulnerable populations in these communities are likely undergoing increases in housing cost burdens or active displacement, and proactive planning is essential to preserving affordability and neighborhood diversity. Despite rising values, median prices in these areas are slightly lower than high-cost areas in Chicago more generally.

>> *Moderate-cost areas with vulnerable populations that were previously lower-cost*

Neighborhoods include sections of New City and Grand Boulevard served by the Orange and Green and Red Line CTA trains, and two census tracts in South Lawndale west of the California Pink Line CTA stop and proposed site of the future El Paseo trail. In last year's report, census tracts to the east of this group in South Lawndale also intensified. Moderate-cost communities with intensified displacement pressure were among the lower-cost areas of the City in IHS's 2017 report, but have recently appreciated in value to be included among the more moderate-cost neighborhoods in Chicago. While certain areas may simply be stabilizing in values, the proximity of these sites to rapid transit and to proposed future developments raises concerns about future displacement risk.

Emerging Displacement Pressure Areas

>> *High-cost areas with vulnerable populations that were previously price-stable*

High-cost areas with vulnerable populations that were previously price-stable neighborhoods include transit-accessible sections of Bridgeport and Portage Park, Jefferson Park, the Near North Side, and Edgewater and areas in Irving Park, Logan Square, and Rogers Park surrounded by neighborhoods where IHS has flagged rising prices. These communities have long been higher-cost, but have only recently seen increases in prices above the City average, which may amplify affordability challenges and displacement pressure for the vulnerable populations living in these communities.

>> *Moderate-cost areas with vulnerable populations that were previously price-stable*

Neighborhoods include parts of Rogers Park, Albany Park, and McKinley Park— well served by transit— and portions of South Shore including the Jackson Park Highlands and other census tracts near the future site of the Obama Presidential Center. Recent price appreciation and their strategic locations near stronger markets, transit, and proposed development may indicate future lost affordability and possible speculative investment activity in these neighborhoods. These areas may be candidates for more aggressive interventions to preserve affordability and community ownership.

>> *Lower-cost areas with vulnerable populations that were previously price-stable*

Neighborhoods include many parts of Englewood and West Englewood, and areas adjacent to census tracts where prices have been rising in South Shore and Greater Grand Crossing. These areas are still among the lowest-cost areas of the City and are where, recently, increasing values are a positive trend. Still, these communities are in need of continued investment in tandem with strategies to increase resident incomes and increased community ownership.

Sources and Methods for Contextual Interactive Map Tooltip Data

In response to feedback that additional context would be helpful to better understand more about the nature of affordability and displacement pressures occurring in census tracts, IHS updated its [Mapping Displacement Pressure in Chicago Interactive Map](#) in 2018 with contextual data on neighborhood rents, housing stock, and the share of the population that is non-white. These data were updated in 2019 to reflect the most current data from each source. Additional information about these data as well as the sources and methods for calculating these data follows:

Share of rental units with gross rents that are less than \$900

Data on the share of units in a particular census tract with gross rents that are below \$900 is an indicator tracked by IHS to approximate the unsubsidized or “naturally occurring” affordable housing stock. Affordable rental housing that receives no subsidy comprises the vast majority of the stock of affordable units across the United States. The source of these data is the 2017 ACS 5-Year Estimates table B25063. Census tracts with unreliable estimates, i.e. margins of error exceeding 30 percent, are flagged in the tooltip.

A gross rent level roughly at or below \$900 has been the benchmark for a unit with affordable rent used by IHS to study shifts in the County’s “affordability gap” in its annual report on the [State of Rental Housing in Cook County](#). The relationship between the number of rental households that demand affordable housing (defined as a household earning 150 percent of poverty or a household occupying a unit affordable to a household earning 150 percent of poverty) and the number of rental units affordable to these households at 30 percent of their income is the basis for IHS’s “affordability gap” calculation. In 2017, the most recent data year available, 150 percent of poverty was an income of \$37,641.00 and an affordable gross monthly rent was \$941.00. In IHS’s 2019 State of Rental Housing in Cook County report, IHS documented that the persistent affordability gap in the City of Chicago was driven not by increased demand for affordable rental by these households, but rather by a declining supply of units affordable to these households.

Share of total housing units that are in two to four unit buildings

Two to four unit buildings are a critical component of the unsubsidized affordable rental housing stock in many cities, including Chicago. According to analysis by [Enterprise Community Partners and University of Southern California](#), two to four unit buildings have the lowest rents and are more likely to serve the lowest-income renters than rental housing located in other building types. IHS research has shown that while the [largest share of Chicago's rental housing is in buildings with between two and four units](#), this critical component of the rental stock is threatened in both strong and weak housing markets. Between 2010 and 2016, [nearly 15,000 units in two to four unit buildings disappeared from the stock](#) due to conversion to single family homes, demolition, or deterioration. It is likely that the decline in the affordable supply tracked in IHS's 2018 and 2019 State of Rental Housing in Cook County report can be attributed to the disappearance of the two to four stock in Chicago neighborhoods.

The share of housing units that are in 2 to 4 unit buildings is calculated from data maintained in the IHS Data Clearinghouse of parcel level administrative data and is current as of 2018. The original source of the data is the Cook County Assessor.

Share of total housing units that are Project Based Section 8

Whereas the majority of lower-income households who live in affordable housing do not receive any subsidy, the subsidized or government-assisted rental stock makes up a substantial portion of housing units in certain neighborhoods. This indicator tracks a component of the government-assisted stock, units that have Project-Based Section 8 certifications. Unlike voucher-based assistance which is given to households, Project-Based Section 8 is tied to housing units and have affordability periods which require them to remain affordable until that term expires. As housing demand and costs increase in a neighborhood, owners of these units can be targeted to extend these affordability requirements. Additionally, a large share of units with project-based section 8 certificates may moderate the displacement risk in a community due to their affordability terms.

Information on the number of units that receive subsidy through the project-based section 8 program were identified using data from Housing and Urban Development's [A Picture of Subsidized Households](#). Data on the universe of total housing units was derived from the 2017 ACS 5-Year Estimates table B25001. Census tracts with unreliable estimates, i.e. margins of error exceeding 30 percent, are flagged in the tooltip.

Share of total population that is people of color

In order to ensure that the issue of displacement risk could be viewed through a lens of racial equity, IHS included the share of the population that is people of color as a census tract-level indicator in the Mapping Displacement Pressure in Chicago interactive map tooltip. These data are sourced from the 2017 ACS 5-Year Estimates table B03002 and includes counts of individuals in the category of 'Hispanic or Latino' and counts of individuals in the category of 'Not Hispanic or Latino' minus individuals in the 'White alone' category. Census tracts with unreliable estimates, i.e. margins of error exceeding 30 percent, are flagged in the tooltip.

IHS's market segmentation analysis, developed to identify neighborhoods with population-level vulnerability to displacement due to housing affordability pressures, did not include race or ethnicity in the clustering process. Race and ethnicity were not included in the clustering process due to the ways in which historical geographic patterns of racial segregation in the City of Chicago overwhelm the modeling algorithm and overpower other factors strongly associated with displacement risk, such as renter share, cost-burden, income, age, and etc. Post analysis included in the 2017 study highlights that most areas experiencing displacement pressure have high concentrations of people of color. For more on these results, see Section 2 - Overview of Market Segmentation Clustering Results from: [Mapping Displacement Pressure in Chicago \(2017\)](#).