

# Short Changing New York City

The impact of Airbnb on New York City's housing market



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For Housing Conservation Coordinators Inc.  
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# Executive Summary

The short-term rental market in New York City has swelled in recent years as a result of the emergence and rapid growth of online platforms. This expansion has created many challenges for communities throughout the City and negatively impacted the residential rental market. For decades, the residential rental vacancy rate has remained well below 5 percent, which the New York State legislature classifies as a housing emergency.<sup>1</sup> Converting residential units to short-term rentals removes units from the housing supply and exacerbates the existing housing emergency. Any pressure on supply is likely to catalyze an increase in rental prices, an issue that is deeply concerning in New York City where affordable housing is already severely limited. Moreover, short-term rental units have been found to consistently violate health, safety, building, and zoning regulations. In New York, many short-term rental units blatantly breach the Multiple Dwelling Law, which prohibits occupancy of units within residential buildings with three or more units for less than 30 days unless a permanent resident is present during the rental period.<sup>2</sup>

There are a number of players and platforms facilitating short-term rental transactions in New York City. This report focuses exclusively on Airbnb short-term rental activity because of its role as the leader in the industry and constraints in obtaining comprehensive short-term rental data from other online rental platforms. For the purposes of this report, 2015 Airdna data<sup>3</sup> on Airbnb listings was analyzed to assess the interaction between the short-term and the traditional rental market in New York City. This analysis focuses on a key subset of Airbnb listings, which BJH defines as “Impact Listings.” Impact Listings are units that are most likely to result in the reduction in the supply of residential rental units, and thus compound the challenges in the housing market related to excessively low vacancy rates and rising prices. In order to meet the definition of “Impact Listings,” an Airbnb listing must meet all of the following criteria:

1. **“Entire Apartment/Home”** defined as unique units listed on Airbnb in 2015 that allow rental of entire homes or apartments.
2. **“Regular Short-Term”** defined as unique units listed on Airbnb in 2015 that:
  - a) Are booked for rental periods of less than 30 days;
  - b) Are booked for more than one reservation in a month; and
  - c) Have at least one non-booked day in a month.
3. **“Commercial”** defined as unique units listed on Airbnb in 2015 that met one of two criteria:
  - a) Are listed for at least 3 months per year by hosts that listed more than one unit on Airbnb (“multi-listers”); or
  - b) Are listed for at least 6 months per year by hosts that listed only one unit on Airbnb (“single-listers”).

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<sup>1</sup> See, Timothy L. Collins and the Staff of the New York City Rent Guidelines Board, An Introduction to the New York City Rent Guidelines Board and the Rent Stabilization System, (February 2016): 1, 4.

<sup>2</sup> See, Office of the New York Attorney General, Airbnb in the city, (October, 2014): 2, 8.

<sup>3</sup> Airdna is a third-party firm that uses advanced artificial intelligence and machine learning technology to model Airbnb occupancy based on listings and historical Airbnb occupancy data. Airdna is the only reliable source for short-term rental data that includes occupancy rates and revenue data.

## Key Findings

### **Airbnb listings are concentrated in a few neighborhoods in Manhattan and Brooklyn.**

A disproportionate share of Airbnb listings is concentrated in the boroughs of Manhattan and Brooklyn. New York City Airdna data for calendar year 2015, (the “study period”), shows that **over 90 percent of the 51,397 Airbnb listings are concentrated in these two boroughs**, whereas less than 60 percent of the total housing supply in New York City is located in these boroughs. Within Manhattan and Brooklyn, Airbnb listings are clustered in several neighborhoods. In fact, **53 percent of all Airbnb listings are located in one of the following five “macro-neighborhoods”**

- East Village/Lower East Side (LES), Chelsea/Hell’s Kitchen, West Village/Greenwich Village/SoHo, Williamsburg/Greenpoint/Bushwick, and Bedford Stuyvesant/Crown Heights.

### **Short-term rentals continue to flout building and safety regulations.**

The New York State Multiple Dwelling Law prohibits occupancy of units within residential buildings with three or more units for less than 30 days unless a permanent resident is present during the rental period. Thus, short-term rentals that allow the tenant to book an Entire Apartment/Home in multiple dwellings violate the Multiple Dwelling Law. In New York City, during the study period, **more than 55 percent of Airbnb listings (28,765 unique units) allow the booking of an Entire Apartment/Home.**

Based on the neighborhood analysis, Entire Apartment/Home listings are more prevalent in Manhattan macro-neighborhoods, as compared to Brooklyn macro-neighborhoods. **More than 63 percent of Airbnb listings in the three Manhattan neighborhoods are Entire Apartment/Home, whereas just over 40 percent of Airbnb listings in the Brooklyn neighborhoods are classified as Entire Apartment/Home.** It should be noted that Entire Apartment/Home listings that are located in residential buildings with fewer than three units do not violate the Multiple Dwelling Law. However, it is likely that many Entire Apartment/Home listings do violate the Multiple Dwelling Law due to the predominance of multi-family housing (buildings with three or more units) in the areas with significant Airbnb activity.

### **Commercial use of Airbnb is pervasive.**

A significant number of hosts engage in commercial activity through Airbnb. In fact, 70 percent of all units listed in New York City have more than one reservation per month, and **over 30 percent of Airbnb listings in New York City are classified as Commercial** based on the number of units controlled by the host and the length of time the listing is available on Airbnb. Even more staggering, **8,058 listings (16 percent of all listings) are defined as Impact Listings**, due to regular participation in commercial activity on the Airbnb platform. **More than half of these Impact Listings were managed by hosts that control multiple Airbnb units.** In the aggregate, these Impact Listings are likely to generate \$27.6 million in average monthly revenue.

### ***Impact Listings may exacerbate already severely low vacancy rates.***

The residential rental vacancy rate in New York City is between 3.4 and 3.6 percent and has remained below 5 percent for decades.<sup>4</sup> The New York City Rent Guidelines Board has determined that rental vacancy rates below 5 percent are likely to generate market distortions that result in tenant hardships and displacement.<sup>5</sup> Moreover, the New York City Legislature has determined that a residential rental vacancy rate below 5 percent constitutes a housing emergency.<sup>6</sup>

The potential for Impact Listings to provide housing for New Yorkers is notable. **If the 8,058 units defined as Impact Listings were made available on the rental market, the number of vacant rental units citywide would increase by 10 percent and the vacancy rate would rise to 4.0 percent**, holding all else constant. However, this finding is even more salient at the macro-neighborhood level. For example, if the 687 Impact Listings identified in the West Village/Greenwich Village/SoHo were made available on the rental market, the vacancy rate for these neighborhoods would increase from 2.9 percent to 5.0 percent. Similarly, if the 1,154 Impact Listings identified in Chelsea/Hell's Kitchen were reintroduced into the rental market as vacant units, the vacancy rate for these neighborhoods would rise from 4.2 to 5.7 percent.

### ***Geographic concentration of Airbnb listings coincides with rapidly changing neighborhoods.***

The analysis finds that there is a strong correlation between Impact Listings and rental prices. In New York City on the whole, **the correlation between Airbnb listings and median asking price for residential rental units is 0.93**, an extremely strong correlation suggesting that the number of Impact Listings and asking prices are both increasing over time at a similar rate.

Additionally, the findings reveal that **average Airbnb monthly revenue is greater than median monthly asking price in all five macro-neighborhoods**. In some cases, the premium is remarkably pronounced. For example, in West Village/Greenwich Village/SoHo average monthly revenue per Airbnb listing is \$822 greater than median asking price. This premium equates to nearly \$10,000 per listing on an annual basis. In Chelsea/Hell's Kitchen, the estimated average monthly Airbnb revenue is \$678 greater than median monthly asking price, which amounts to \$8,000 per year for each listing. **These discrepancies create an incentive to participate in the short-term rental market**, which in turn may catalyze a cycle of constrained supply and increasing rents.

The New York University Furman Center (“Furman Center”) in its 2015 report, *State of New York City’s Housing and Neighborhoods in 2015*, identified three of the five macro-neighborhoods studied – East Village/Lower East Side, Williamsburg/Greenpoint/Bushwick, and Bedford Stuyvesant/Crown Heights - as “gentrifying neighborhoods” based on rapid

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<sup>4</sup> Collins and the Staff of the New York City Rent Guidelines Board, An Introduction to the New York City Rent Guidelines Board and the Rent Stabilization System: 1,4.

<sup>5</sup> Ibid: 1.

<sup>6</sup> The NYS Emergency Tenant Protection Act (1974) [ETPA]: Section 3: Local Determination of Emergency; end of Emergency. Accessed 25 May 2016. [http://tenant.net/Rent\\_Laws/ETPA/etpa-03.html](http://tenant.net/Rent_Laws/ETPA/etpa-03.html).

increases in prices between 1990 and 2014, reductions in the supply of affordable housing, and changes in neighborhood composition. The report finds that rents increased between 36 percent (for Bedford Stuyvesant) and 79 percent (for Williamsburg) between 1990 and 2014.<sup>7</sup>

Based on analysis of U.S. Census and American Communities Survey data, all neighborhoods studied experienced changes in demographic composition between 2000 and 2014. Most notably, the neighborhoods have experienced changes in the proportion of white residents and the proportion of residents over 25 years old with a Bachelor's degree or higher education, two indicators of gentrification defined by the Furman Center's report. In fact, the proportion of residents with at least a Bachelor's degree increased by greater than 12 percentage points in each of the five macro-neighborhoods. The change in racial composition was most prominent in Brooklyn neighborhoods, demonstrating an influx of white residents. The proportion of white residents increased by 10 percentage points in Williamsburg/Greenpoint/Bushwick and by 13 percentage points in Bedford Stuyvesant/Crown Heights. The Brooklyn macro-neighborhoods also experienced the sharpest decline in the poverty rate, indicating new residents moving into the communities are likely to be higher income.

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<sup>7</sup> New York University Furman Center, *State of New York City's Housing and Neighborhoods in 2015*: 6.

# 1. Introduction

## *Background on the New York City Residential Rental Market*

Quality housing that is affordable to most residents is strikingly limited in New York City. The citywide rental vacancy rate, which is currently 3.4 percent,<sup>8</sup> has consistently remained below 5 percent for decades.<sup>9</sup> According to the New York City Rent Guidelines Board, a vacancy rate below 5 percent “creates abnormal market conditions.” Additionally, the New York City Council and State legislature has identified that vacancy rates below 5 percent “cause ‘severe hardship to tenants’ and force the ‘uprooting of long-time city residents from their communities.’”<sup>10</sup> Furthermore, the New York State Emergency Tenant Protection Act established the declaration of a housing emergency if the vacancy rate for housing falls below 5 percent.<sup>11</sup>

The 2014 Housing and Vacancy Survey identified a distinct difference between vacancy rates for units that are defined as affordable and high cost rental units. The vacancy rate for units that are rent-regulated, or defined as affordable (less than \$800 in monthly rent), is below 2 percent.<sup>12</sup> The vacancy rate for units with rents between \$1,000 and \$2,000 is similarly low, ranging between 3.1 and 3.2 percent.<sup>13</sup> On the contrary, the vacancy rate for units with monthly rent above \$2,500 is greater than 7 percent and has increased in the past three years.<sup>14</sup>

Severely low vacancy rates have coincided with increases in rental prices. Since 2000, median rent has increased by 27 percent.<sup>15</sup> Household income has not kept pace with increases in rent. During the same time period, median household income in New York City declined by 5 percent.<sup>16</sup> The decline in median household income is even more dramatic for renters, who have experienced an 8 percent decline.<sup>17</sup> Thus, as housing expenses increase, families have less money to spend on housing. A 2016 report by the Community Service Society indicates that this trend is most pronounced for households with the lowest incomes. The report finds that rents have increased 30 percent faster than incomes for households ranked in the bottom quintile for median income.<sup>18</sup> This trend is measured through the increasing percent of families that are rent burdened, defined by the federal government as spending 30 percent or more of total income on housing.<sup>19</sup> In 2014, 30 percent of households in New York City were

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<sup>8</sup> See, Collins and the Staff of the New York City Rent Guidelines Board, *An Introduction to the New York City Rent Guidelines Board and the Rent Stabilization System*: 1.

<sup>9</sup> Ibid: 4.

<sup>10</sup> Ibid: 1.

<sup>11</sup> The NYS Emergency Tenant Protection Act (1974) [ETPA]: Section 3: Local Determination of Emergency; end of Emergency. Accessed 25 May 2016. [http://tenant.net/Rent\\_Laws/ETPA/etpa-03.html](http://tenant.net/Rent_Laws/ETPA/etpa-03.html).

<sup>12</sup> New York City Department of Housing Preservation and Development, Selected Initial Findings of the 2014 New York City Housing and Vacancy Survey, by Elyzabeth Gaumer, (February 2016): 18.

<sup>13</sup> Ibid.

<sup>14</sup> Ibid.

<sup>15</sup> New York University Furman Center, *State of New York City's Housing and Neighborhoods in 2015*: 66.

<sup>16</sup> Ibid: 67.

<sup>17</sup> Ibid.

<sup>18</sup> Tom Waters and Victor Back, *Making the Rent*. The Community Service Society of New York, (May 2016): 2.

<sup>19</sup> New York University Furman Center, *State of New York City's Housing and Neighborhoods in 2015*: 167.

identified as severely rent burdened, indicating they spend more than 50 percent of their income on housing, an increase from 24 percent in 2000.<sup>20</sup> Of households earning below 80 percent of area median income, almost half – 49 percent – are defined as severely rent burdened, up from 40 percent in 2000.<sup>21</sup>

## **Short-Term Rental Market**

These challenges in the housing market are influenced by a multitude of complex and interrelated issues that range from employment opportunities and migration trends to city and state housing policies to interest rates. This report is designed to explore one particular issue that has been thought to exacerbate the availability of affordable housing in New York City: the short-term rental of residential housing. Short-term rentals, housing units leased for less than 30 days, have existed in New York City for decades. In the early 2000's, several single-room occupancy (SRO) residential buildings in the Upper West Side of Manhattan were converted to short-term rentals. SRO units, which generally do not have private bathrooms or kitchen facilities and are often considered the housing of last resort for New York City's lowest income residents. However, landlords were able to secure considerably higher rates by renting these units on a nightly basis to travelers or others seeking short-term housing. In recent years, the emergence of online platforms, such as Airbnb, VRBO, Booking.com, Craigslist, Homeaway, and Roomorama, have fostered growth of the short-term rental market by expanding access for both hosts and users.

Proponents hail short-term rental platforms as economic development engines that allow peripheral neighborhoods to capture tourist revenue that was once more heavily concentrated in areas known as traditional tourist destinations.<sup>22</sup> Additionally, online short-term rental platforms have been celebrated for creating opportunities for individuals to supplement their income.<sup>23</sup> Yet, opponents of the rapidly growing short-term rental market argue that the trend negatively impacts neighborhoods and the residential rental market. First, this kind of rental activity within a neighborhood can contribute to constrained supply and increasing prices for rental housing.<sup>24</sup>

Additionally, short-term rentals have been found to consistently flout zoning and safety regulations.<sup>25</sup> Most notably, short-term rentals are likely to violate the Multiple Dwelling Law in New York State, which is designed to uphold health, safety, and fire protection standards. The

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<sup>20</sup> New York University Furman Center, *State of New York City's Housing and Neighborhoods in 2015*: 67.

<sup>21</sup> Ibid.

<sup>22</sup> See, for example, Kaplan and Nadler, "Airbnb: A Case Study in Occupancy Regulation and Taxation," *The University of Chicago Law Review Dialogue*, 103, (2015): 104-107, and the San Francisco Budget and Legislative Analyst's Office, *Re: Analysis of the Impact of Short-Term Rentals on Housing*, prepared for Supervisor Campos. May 13<sup>th</sup>, 2015: 8-10.

<sup>23</sup> Ibid.

<sup>24</sup> See, Roy Samaan, *Airbnb, Rising Rent, and the Housing Crises in Los Angeles*, (LAANE, March 2015), Dayne Lee, "How Airbnb Short-Term Rentals Exacerbate Los Angeles' Affordable Housing Crises: Analysis and Policy Recommendations," *Harvard Law Review*, Vol. 10, (2016) 229-253, Ariel Stulberg, "How Much Does Airbnb impact rents in NYC?" *The Real Deal*, October 14<sup>th</sup>, 2015. Accessed March 25<sup>th</sup>, 2016, <http://therealdeal.com/2015/10/14/how-much-does-airbnb-impact-nyc-rents/>, Office of the New York Attorney General, *Airbnb in the city*, (October, 2014), and San Francisco Budget and Legislative Analyst's Office, *Re: Analysis of the Impact of Short-Term Rentals on Housing*.

<sup>25</sup> See, Office of the New York Attorney General, *Airbnb in the city*: 2, 8.

Multiple Dwelling Law prohibits occupancy of units within residential buildings with greater than three units for less than 30 days unless a permanent resident is present during the rental period.<sup>26</sup> Additionally, New York City imposes significantly stricter fire and building regulations on commercial hotels and other transient accommodations than residential buildings that house long-term tenants.<sup>27</sup> Because many short-term rentals are located within residential properties that are designed for long-term tenants, it is highly likely that these properties violate fire and safety regulations.<sup>28</sup>

Lastly, opponents argue that the presence of short-term rentals can disrupt the security and quality of life of permanent tenants in their neighborhoods. A 2008 report by a coalition of housing advocates identified that most residential buildings designed for permanent tenants are not equipped with the proper security mechanisms to regulate many new, unfamiliar guests entering and exiting the building.<sup>29</sup> The report, which includes interviews from residents faced with short-term rental activity in their neighborhood, also argues that the introduction of many transient occupants with limited ties to a neighborhood can erode neighborhood cohesion.<sup>30</sup>

### ***The Rise of Airbnb***

While there are a number of online platforms that facilitate short-term rentals, in recent years Airbnb has emerged as the largest company focused on the short-term rental market. Founded in 2008, Airbnb is an online housing platform that aggregates individual properties available for short and long-term occupancy and facilitates booking and payment for accommodations. When a stay is booked through the platform, Airbnb collects a percentage of the entire cost of the booking as a fee. Since 2008, the company has grown and evolved rapidly, and it now facilitates booking of entire homes and apartments, private rooms or shared rooms in over 190 countries. Today, the value of Airbnb is estimated at \$25.5 billion, more than the Marriott International hotel chain.<sup>31</sup>

Research shows that there has been a rise and increasing trend toward “commercial” use of the Airbnb platform, and that a disproportionate share of revenue is generated by these hosts. While the definition of commercial use varies among researchers, many studies coalesce around a key characteristic of the term – it involves a property that is not lived in by the host, but primarily dedicated to generating revenue through short-term rentals. A 2014 memorandum by the San Francisco Budget and Legislative Analyst Office determined that, in its base case modeling scenario, 31 percent of hosts in San Francisco were commercial users: either hosts of entire homes or apartments that were booked for more than 58 nights per year,

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<sup>26</sup> Ibid: 8.

<sup>27</sup> See, Illegal Hotels Working Group, Room by Room: Illegal Hotels and the Threat to New York’s Tenants, June 2008: 28.

<sup>28</sup> Ibid: 28-29.

<sup>29</sup> Ibid: 26.

<sup>30</sup> Ibid: 26-27.

<sup>31</sup> Sara Ashely O’Brien, “‘Crazy money’- Airbnb valued at over \$25 billion,” CNN Money, June 27, 2015, accessed June 14, 2016. <http://money.cnn.com/2015/06/27/technology/airbnb-funding-valuation-update>.

or hosts of private or shared rooms within an apartment that were booked for more than 88 nights per year.<sup>32</sup>

O'Neill and Ouyang, in a 2016 article published by the Penn State School of Hospitality Management, find that Airbnb hosts that list multiple units generate 40 percent of Airbnb's revenue in 12 of its largest markets in the United States.<sup>33</sup> Furthermore, they find that the revenue generated by hosts who listed more than two units grew by 81 percent from September 2014 to September 2015.<sup>34</sup> O'Neill and Ouyang also identify 2,675 hosts that leased Airbnb units full-time (360 or more days per year) in the 12 markets they studied and calculated the average annual revenue generated by these hosts was greater than \$142,000.<sup>35</sup>

### ***Relationship Between Airbnb and Housing Supply and Prices***

Numerous studies link the use of Airbnb, and in particular, the commercial listing of entire apartments on Airbnb, to a reduction in the supply and an increase in the price of rental housing. The 2014 San Francisco Budget and Legislative Analyst's Office memorandum determined that, in its base case modeling scenario, short-term rentals listed on Airbnb removed approximately 15 percent of San Francisco's vacant rental housing from the market.<sup>36</sup> A 2016 article by Dayne Lee published in the Harvard Law Review argues that by converting long-term rentals into short-term rentals, Airbnb significantly reduces the rental housing supply in Los Angeles. Lee reports that in the Los Angeles neighborhoods with the highest Airbnb listing concentrations, Airbnb reduces the overall residential rental supply by up to 3 percent. Lee also notes that every 1 percent decrease in housing stock may lead to a 0.2 percent increase in rent. He states that rental prices in these select neighborhoods have increased 33 percent faster than rental prices citywide.<sup>37</sup>

This finding is supported by Roy Samaan's 2015 report for LAANE, which determines that average rents in Airbnb's top grossing Los Angeles neighborhoods are 20 percent higher than the citywide average.<sup>38</sup> Samaan also reports that rental prices in these neighborhoods have increased by 16 percent since 2013, more than the citywide average of 12 percent.<sup>39</sup> While Samaan's analysis does not causally link Airbnb activity to these rental premiums, he does hypothesize that the use of Airbnb contributes to increased rental prices by incentivizing profit-seeking landlords to convert their long-term rental units into short-term rental units.<sup>40</sup>

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<sup>32</sup> San Francisco Budget and Legislative Analyst's Office, *Re: Analysis of the Impact of Short-Term Rentals on Housing*: 2-3.

<sup>33</sup> See, John W. O'Neill and Yuxia Ouyang, *From Air Mattresses to Unregulated Business: An Analysis of the Other Side of Airbnb*, (Penn State School of Hospital Management, 2016): 3.

<sup>34</sup> Ibid: 4.

<sup>35</sup> Ibid: 3.

<sup>36</sup> San Francisco Budget and Legislative Analyst's Office *Re: Analysis of the Impact of Short-Term Rentals on Housing*: 14.

<sup>37</sup> Dayne Lee, "How Airbnb Short-Term Rentals Exacerbate Los Angeles' Affordable Housing Crises: Analysis and Policy Recommendations." 234-238.

<sup>38</sup> Roy Samaan, *Airbnb, Rising Rent, and the Housing Crises in Los Angeles*: 19.

<sup>39</sup> Ibid.

<sup>40</sup> Ibid: 19-20.

## *Airbnb in New York City*

### *Airbnb usage on the rise*

In 2014, a report issued by the New York Attorney General's Office (NYAG) explores the proliferation of Airbnb activity in New York City. The report focuses solely on short-term bookings of entire apartments/homes or private rooms, which it defines as "private short-term rentals." The report found that the number of "private short-term rentals" that booked stays on Airbnb's platform increased by more than 500 percent during the study period. Over the full year of 2010, 2,652 unique "private short-term rentals" were listed on the Airbnb platform. Between January and June 2014 only, more than 16,400 "private short-term rentals" were listed on Airbnb. During its study period, booking activity for "private short-term rentals" increased by more than tenfold. The report also indicates that there were approximately 20,800 bookings of "private short-term rentals" in 2010. Even more striking, during the first five months of 2014 the total number of bookings for "private short-term rentals" increased to 243,000.<sup>41</sup>

### *Violations to New York City and State laws*

The Attorney General's report determined that 72 percent of the Airbnb units studied were in violation of the New York State Multiple Dwelling Law or New York City's Administrative Code, which establishes building codes to promote health and safety.<sup>42</sup> This issue is confounded by the rapid growth of "private short-term rental" bookings documented during the study period from January 2010 to June 2014.

### *Significant commercial use*

The Attorney General's report found that 6 percent of all hosts in its data set listed more than two unique units, but that those "commercial hosts" controlled more than 20 percent of all unique, "private short-term rentals" and generated 37 percent of all revenue from those listings.<sup>43</sup> The report also found that one commercial user in New York City controlled 272 unique, "private short-term rentals" listed on Airbnb and generated 2 percent of all New York host revenue for "private short-term rentals."<sup>44</sup>

O'Neill and Ouyang's research in the New York City market supports the NYAG's report. O'Neill and Quyang found that 14 percent of all hosts in New York list multiple units, and those hosts generated 32 percent of revenue during the study period. They further determined that 3 percent of hosts in New York qualified as full-time operators and generated 24 percent of all revenue from Airbnb bookings during the study period.<sup>45</sup>

### *Impact of Airbnb on supply and pricing*

Airbnb short-term rentals have been found to impact housing supply and rental prices in New York City. The Attorney General's report finds that "private short-term rentals" booked on Airbnb removed as many as 4,600 units from New York City's permanent housing market in

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<sup>41</sup> Ibid: 6.

<sup>42</sup> Office of the New York Attorney General, *Airbnb in the city*: 2, 8.

<sup>43</sup> Ibid: 10.

<sup>44</sup> Ibid: 11.

<sup>45</sup> O'Neill and Ouyang, *From Air Mattresses to Unregulated Business: An Analysis of the Other Side of Airbnb*: 3, 6.

2013.<sup>46</sup> It also identifies several neighborhoods in Manhattan that it classifies as “rapidly gentrifying” as focal points for Airbnb activity: Lower East Side/Chinatown, Chelsea/Hell’s Kitchen, and Greenwich Village/SoHo. The report indicates that more than 40 percent of revenue from “private short-term rentals” was generated in these neighborhoods.<sup>47</sup> Additionally, Ariel Stulberg, in a 2015 article for *The Real Deal*, estimates that Airbnb listings contribute to increased rental housing prices in several neighborhoods that experience heavy Airbnb activity. For example, median rental housing prices were estimated to increase by \$37 to \$69 per month in Williamsburg and Greenpoint and by \$30 to \$57 per month in the East Village, the Lower East Side and Chinatown.<sup>48</sup>

### **Purpose and Scope of Work**

The purpose of this report is to explore the relationship between short-term rental activity and the residential rental market in New York City. The short-term rental market is comprised of a multitude of players and platforms. However, due to limitations with obtaining comprehensive data on short-term rental stays, the research for this report focuses on Airbnb activity through data obtained by Airdna. As a result, the findings presented in this report are inherently conservative since the full universe of short-term rentals has not been studied.

This analysis of the short-term rental market was conducted through two primary tasks, outlined below and explained in more detail in the following section:

1. Analyze Airbnb’s listing data for 2015 to identify trends in the type, volume, and price of Airbnb listings within the context of the New York City housing market.
2. Examine these trends in five key neighborhoods with a strong presence of Airbnb listings:
  - a) East Village/Lower East Side (“LES”)
  - b) Chelsea/Hell’s Kitchen
  - c) West Village/Greenwich Village/SoHo
  - d) Williamsburg/Greenpoint/Bushwick
  - e) Bedford Stuyvesant/Crown Heights

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<sup>46</sup> Office of the New York Attorney General, *Airbnb in the city*: 12.

<sup>47</sup> Ibid: 16.

<sup>48</sup> Ariel Stulberg, “How much does Airbnb impact rents in NYC?”

## 2. Methodology

### Data

BJH used a variety of third-party data sources to carry out the analysis for this report. The analysis of Airbnb's listings in New York City is based on Airdna monthly listings data for New York City for the period from January 2015 to December 2015. Airdna is a third-party firm that provides data and analytics on Airbnb listings and bookings. It tracks the daily performance of over 2 million listings across 5,000 cities worldwide and provides data products that include occupancy rates, seasonal demand and revenue generated by short-term rentals. Airdna is the only reliable source for short-term rental data that includes occupancy rates and revenue data.

In order to produce reliable Airbnb booking data, Airdna uses advanced artificial intelligence and machine learning technologies to identify blocks of unavailable dates observed on Airbnb's platform as either booked by a customer or blocked by the host. It should be noted that since the fourth quarter of 2015, Airbnb has altered the platform so that it is not possible to distinguish between booked units and units that are blocked by the host. Thus, occupancy data from Airdna relies on modeling and is an approximation of actual occupancy data for the study period. Airdna's ability to develop an occupancy model is based on its extensive historical dataset which captured actual booked and blocked data for 18 months prior to the changes in the platform that obscured this distinction, as well as institutional knowledge of Airbnb host behavior and smart application of modern artificial intelligence technology, which continues to extract patterns and improve its predictive capabilities as it observes more data over time.

This report is based on an analysis of Airdna's monthly data for all Airbnb listings with at least one booking in a month, from January to December 2015. BJH distilled this data into a set of unique Airbnb listings in 2015 and analyzed the following indicators:

1. Average occupancy rate
2. Average number of unique reservations per month
3. Average days reserved per month
4. Average daily revenue
5. Average monthly revenue

For data regarding residential and rental housing supply and vacancies in New York City, BJH employed publicly available data from the New York City Department of City Planning Primary Land Use Tax Lot Output database (PLUTO) and the American Community Survey (ACS), produced by the United States Census Bureau. The 2015 PLUTO dataset contains extensive land use and geographic data at the tax lot level and the ACS is an ongoing survey that provides information on a multitude of categories regarding communities in the United States, including housing supply by category and location, and vacancy rates. The ACS datasets used for this study were produced in 2014 (the most current available).

Demographic data was collected from the 2014 ACS and the 2000 U.S. Census.

Finally, the rental price data was obtained from publicly-available data from Zillow Research that aggregates monthly median asking prices for all housing advertised on Zillow or Streeteasy at the zip code level for December 2015.

## **Methodology**

In order to determine the impact of short-term rentals in New York City, this study examines Airbnb's listing data for 2015 in the context of New York City's rental market. Specifically, this study analyzes the effect of Airbnb listings on rental housing in New York City using the following methodology:

**1) Analysis of the overall residential rental market.**

The overall residential market was analyzed at three geographic levels:

- a) New York City as a whole;
- b) Borough level; and
- c) Five macro-neighborhoods, described below.

Residential market analysis focuses on the supply of housing, the vacancy rate and the median residential rental asking price in 2015.

At the macro-neighborhood level, BJH also examined changes in neighborhood composition. This analysis explores the connection between "gentrifying" neighborhoods and areas with concentrated Airbnb activity. The analysis explores changes in the following neighborhood characteristics between 2000 and 2014:

- a) Median age
- b) Proportion of white residents
- c) Median household income
- d) Poverty rate
- e) Proportion of residents with a Bachelor's degree or higher

These demographic characteristics were selected because the Furman Center's report *State of New York City's Housing and Neighborhoods in 2015* identified these measures as indicators of gentrification.

**2) Classify all Airbnb listings in New York City between January and December 2015 into three primary categories.**

BJH categorized Airbnb listings through the following classification system.

- a) "**Entire Apartment/Home**" defined as unique units listed on Airbnb in 2015 that allow rental of entire homes or apartments.
- b) "**Regular Short-Term**" defined as unique units listed on Airbnb in 2015 that meet all of the following criteria:
  - Are booked for rental periods of less than 30 days;
  - Are booked for more than one reservation in a month; and
  - Have at least one non-booked day in a month.

- c) “Commercial” defined as unique units listed on Airbnb in 2015 that met one of two criteria:
- Listed for at least 3 months in the year by hosts that listed more than one unit on Airbnb (“multi-listers”); **or**
  - Listed for at least 6 months per year by hosts that listed only one unit on Airbnb (“single-listers”).

3) **Determine which Airbnb listings are likely to have the strongest effect on the residential housing market – “Impact Listings.”**

Emphasis on Commercial Airbnb Usage in Previous Studies

There is an expanding literature that seeks to differentiate between commercial and casual Airbnb use to identify which and how many units likely contribute to the constrained supply of housing. For example, the San Francisco Budget and Legislative Analyst’s Office 2014 memorandum differentiates between the casual and the commercial use of Airbnb by defining casual users “as those who occasionally make their residences available for short-term rentals for supplemental income” and commercial users as hosts who “probably do not live or could not live in their short-term rental unit and therefore rent it out as a means of generating income.”<sup>49</sup> Its base case modeling scenario defines commercial users as hosts who rent private entire homes or apartments for more than 58 nights per year or private or shared rooms for more than 88 nights per year.<sup>50</sup>

O’Neill and Ouyang, in a 2016 article published by the Penn State School of Hospitality Management, examine two types of Airbnb users who participate in commercial activity: (1) multiple-unit operators who rent out multiple units, and (2) full-time operators who rent out units for more than 360 days per year.<sup>51</sup> Alternatively, Roy Samaan, in a 2015 article published by the Los Angeles Alliance for a New Economy (LAANE), defines two types of commercial users: (1) leasing companies who list more than two whole units; or (2) single lessors who list a single, entire home or apartment.<sup>52</sup> The New York Attorney General’s report defined commercial users as hosts who listed more than two unique units on Airbnb during its review period.<sup>53</sup>

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<sup>49</sup> San Francisco Budget and Legislative Analyst’s Office, *Re: Analysis of the impact of short-term rentals on housing*, prepared for Supervisor Campos, May 13, 2015, 2.

<sup>50</sup> Ibid: 2-3.

<sup>51</sup> O’Neill and Ouyang, *From Air Mattresses to Unregulated Business: An Analysis of the Other Side of Airbnb*: 2.

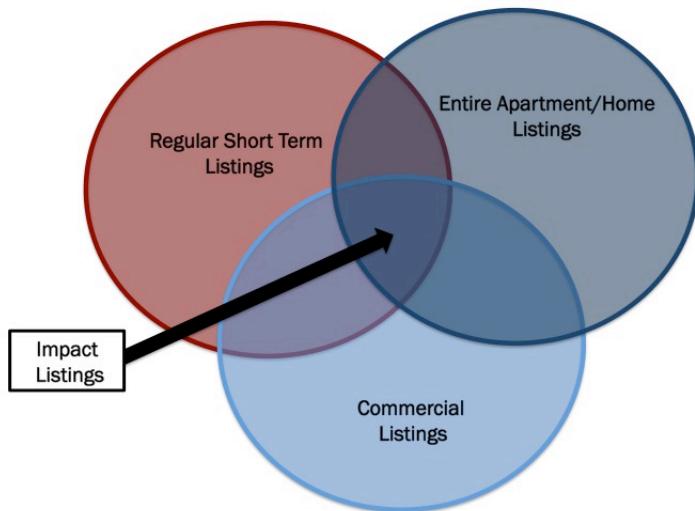
<sup>52</sup> Roy Samaan, *Airbnb, Rising Rent, and the Housing Crisis in Los Angeles*: 9-10.

<sup>53</sup> Office of the New York Attorney General, *Airbnb in the city*: 2, 10.

### Impact Listings for this Analysis

Due to the emphasis on commercial users in previous reports as well as a desire to remain conservative in its analysis and findings, BJH created a new category – “**Impact Listings**” – as the primary category of analysis for this report. Impact Listings are defined as unique units listed on Airbnb in 2015 that **meet all three of the classifications** established above (Entire Apartment/Home, Regular Short-Term and Commercial).

Figure 1: Listings Classification Structure



As noted, this classification is substantially more conservative than those used in previous studies because it uses a three-tiered classification, whereas most other studies focus analysis on one category, such as repeat short-term listings/bookings. Additionally, the definition of Regular Short-Term as used in this report requires that three distinct criteria (outlined above) are met, whereas most other studies define short-term only has having been booked for rental periods of less than 30 days. This conservative approach is further reinforced by the data set which is limited to Airbnb listings, and thus excludes other short-term rental platforms.

Impact Listings are likely to have the strongest effect on the residential market because, given the three criteria, it is extremely unlikely that hosts of Impact Listings live in the units that they rent. This implies that these units have been removed from the residential rental market.

### Correlation of Impact Listings and Median Asking Prices

Once identified, the report analyzes Impact Listings, as well as rental housing pricing and other factors, to explore the relationship between Airbnb activity and the traditional residential rental market. It should be noted that a multitude of complex factors impact the residential rental market in New York City, including City, State, and Federal policies, labor markets, interest rates, among many other issues. Additionally, the analysis is based on 12 months of data. As a result of the complexity of the housing market and data

limitations, this analysis does not attempt to causally link short-term rental activity to changes in the residential rental market. Instead, the analysis explores the correlation between short-term rental activity, namely the number of Airbnb listings, and median asking rents in New York City, as an indicator of the relationship between these two phenomenon.

**4) Identify neighborhoods with high concentration of Airbnb activity.**

BJH analyzed Airbnb listings data in 20 neighborhoods with the highest prevalence of Airbnb usage according to two measures: 1) the number of Impact Listings and 2) the ratio of Impact Listings to the sum of vacant rentals plus Impact Listings, which is an indicator of the effect that Impact Listings may have on residential supply.

Figure 2: Indicator of Impact Listing Effect on Residential Supply

$$\frac{\text{Impact Listings}}{\text{Impact Listings} + \text{Vacant Residential Units}}$$

BJH assembled 12 of the 20 neighborhoods into five “macro-neighborhoods,” which are comprised of several zip codes. The five macro-neighborhoods, identified due to their heavy concentration of Airbnb usage, are:

- a) East Village/Lower East Side (“LES”), comprised of zip codes 10002, 10003, and 10009
- b) Chelsea/Hell’s Kitchen, comprised of zip codes 10011, 10018, 10019, 10020, and 10036
- c) West Village/Greenwich Village/SoHo, comprised of zip codes 10012, 10013, and 10014
- d) Williamsburg/Greenpoint/Bushwick, comprised of zip codes 11206, 11211, 11221, 11222, and 11237
- e) Bedford Stuyvesant/Crown Heights, comprised of zip codes 11205, 11213, 11216, 11225, 11233, and 11238

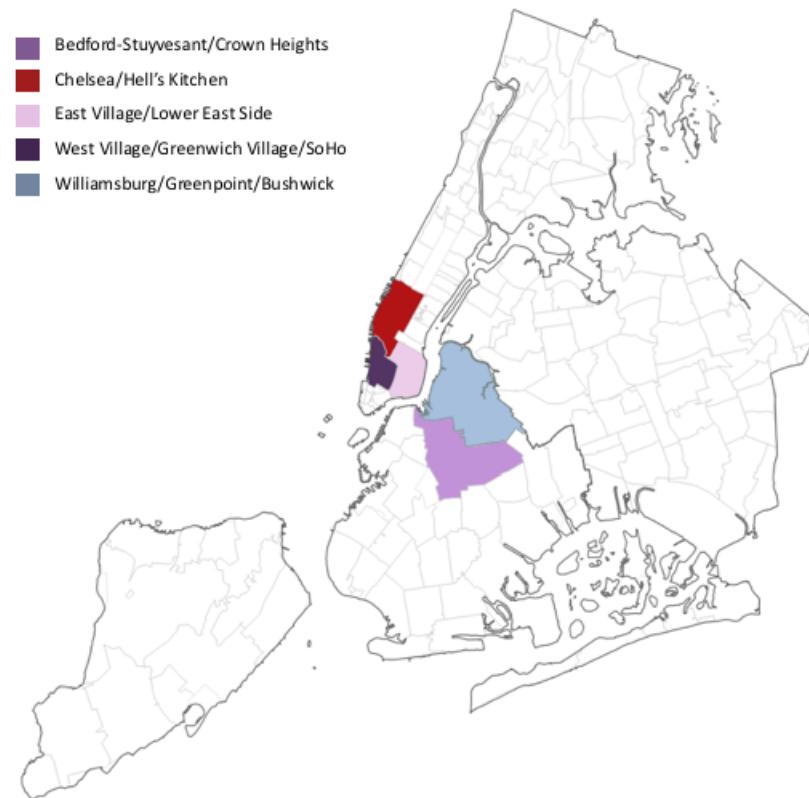
The number of impact listings, vacant rentals and the ratio of these variables for 20 New York City neighborhoods with the highest number of Airbnb listings is presented in the table below. The neighborhoods highlighted in gray are included in the five macro-neighborhoods studied in this report.

Table 1: Neighborhoods by Number of Impact Listings (2015)

Rank	Neighborhood	Impact Listings	Vacant Rentals	Ratio Impact Listings/ (Vacant Rentals + Impact Listings)
1	East Village	599	2,978	17%
2	Williamsburg	561	4,583	11%
3	Hell's Kitchen	555	2,509	18%
4	Upper East Side	476	2,361	17%
5	Bedford-Stuyvesant	460	2,874	14%
6	Upper West Side	382	2,613	13%
7	Harlem	370	2,691	12%
8	Chelsea	357	1,605	18%
9	Midtown	310	1,493	17%
10	Lower East Side	301	1,426	17%
11	West Village	296	1,309	18%
12	East Harlem	216	1,219	15%
13	Crown Heights	197	1,421	12%
14	SoHo	164	638	20%
15	Greenpoint	153	1,089	12%
16	Bushwick	148	2,062	7%
17	Greenwich Village	139	628	18%
18	Clinton Hill	108	665	14%
19	Kips Bay	107	726	13%
20	Fort Greene	105	545	16%

Source: Airdna, 2015; Pluto, 2015; ACS 2014.

Figure 3: Map of Macro-Neighborhoods



For each neighborhood, except Bushwick, the ratio of Impact Listings to Impact Listings plus vacant residential units was greater than 0.1. This ratio indicates that if all Airbnb listings were added to the rental housing supply as available vacant units, they would comprise more than 10 percent of the vacant units. In Bushwick, this ratio was 0.07, indicating that Airbnb listings would comprise 7 percent of vacant units.

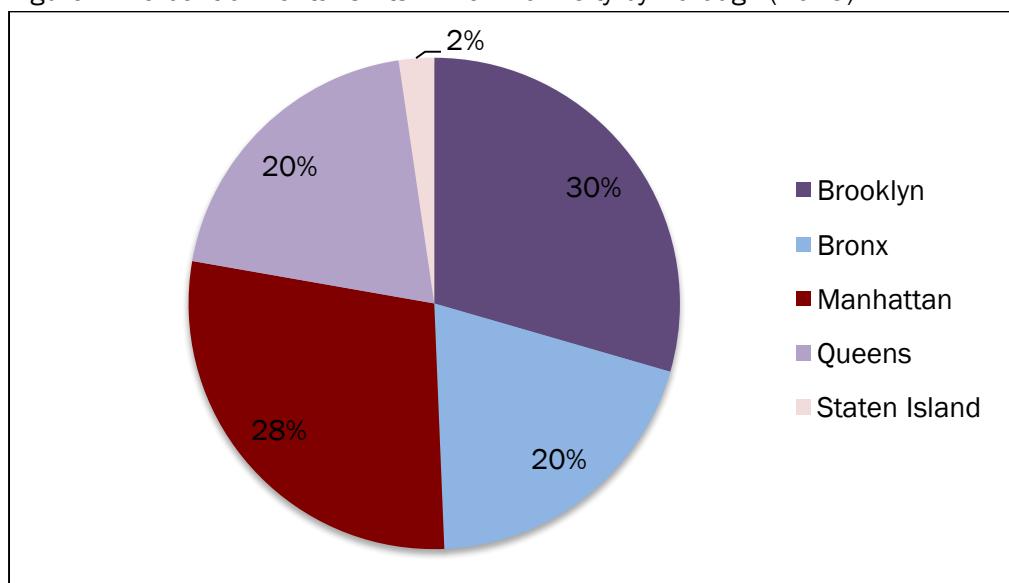
### 3. New York City Findings

#### *Residential Housing*

##### *Supply*

As of 2015, New York City's housing market consisted of 3.47 million residential units, including subsidized, rent controlled, rent stabilized and market rate rentals and ownership units.<sup>54</sup> Sixty-two percent of residential units, or 2.15 million units, are rental units. The remaining 38 percent of units are ownership units, including condominiums, cooperatives, and homes. Approximately 28 percent of rental units in New York City are located in Manhattan and 30 percent are located in Brooklyn.

Figure 4: Percent of Rental Units in New York City by Borough (2015)



Source: *Pluto 2015; ACS, 2014.*

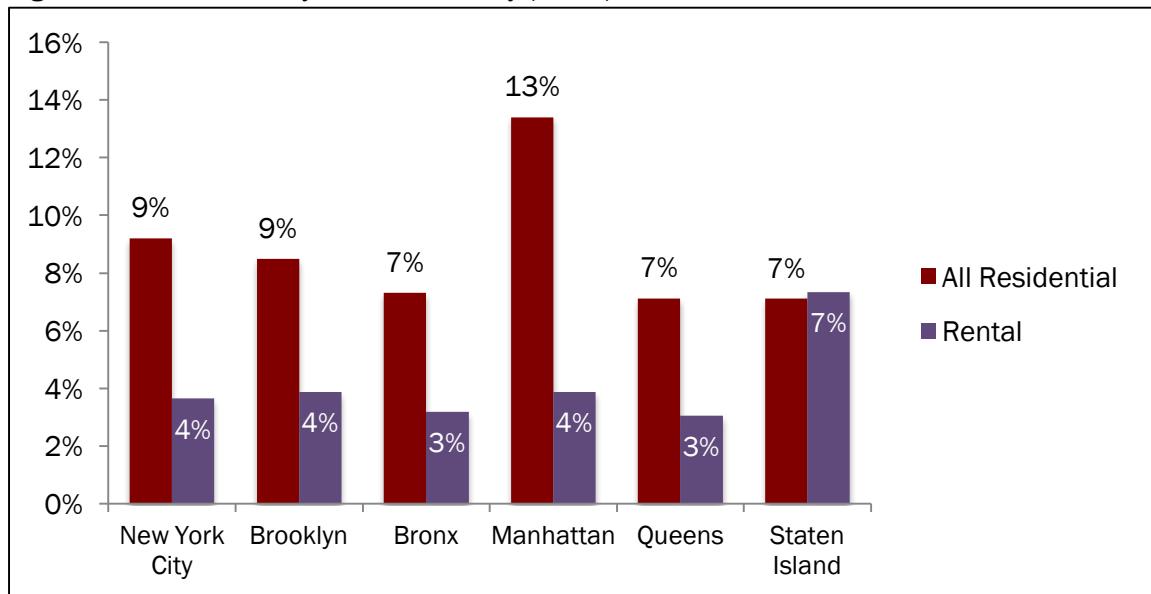
##### *Housing Vacancy*

In the study period, New York City's overall residential vacancy rate, for both rental and ownership units, is 9.2 percent. Of the five boroughs, Manhattan has the highest residential vacancy rate, 13.4 percent, with a total of 122,160 vacant residential units.

The vacancy rate for rental units is considerably lower than the vacancy rate for all residential units. In fact, based on BJH's methodology, the rental vacancy rate for New York City is 3.65 percent, nearly 10 basis points below that of the total residential market. It should be noted that the New York City Housing and Vacancy Survey found that the vacancy rate is 3.45 percent, even lower than the rate BJH determined, due to slight differences in methodology.

<sup>54</sup> Residential units in the PLUTO dataset represent the sum of residential units in all buildings on all tax lots in New York City.

Figure 5: Rental Vacancy in New York City (2015)

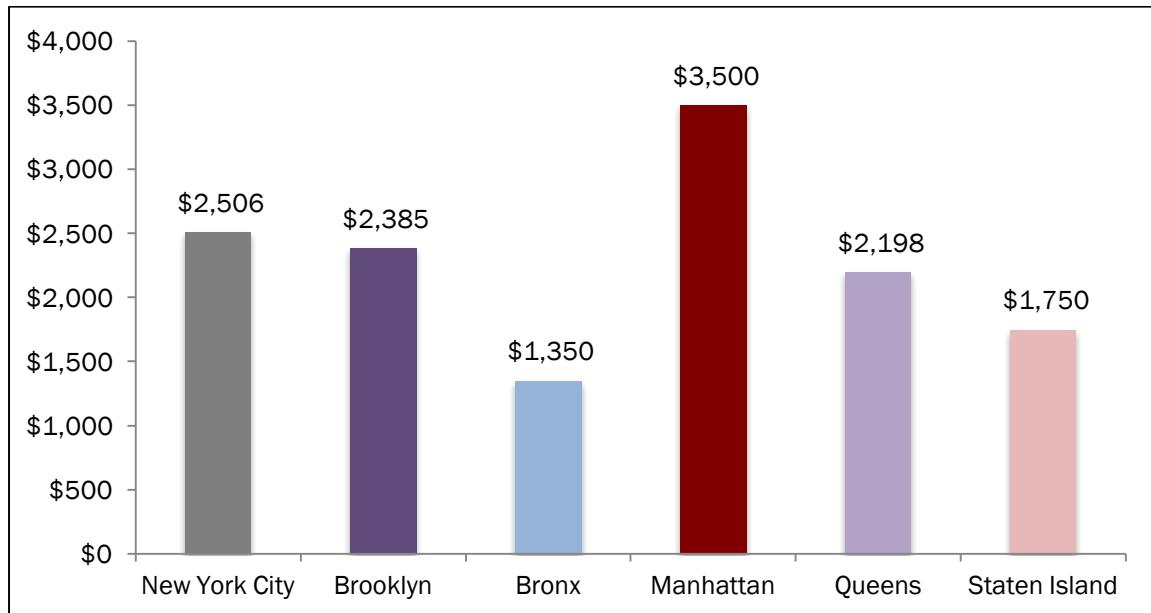


Source: *Pluto 2015; ACS, 2014.*

#### **Asking Price of Rental Housing**

In December 2015, the median monthly asking price for rental housing in New York City was \$2,506. The median asking price was highest in Manhattan at \$3,500 and lowest in the Bronx at \$1,350.<sup>55</sup>

Figure 6: Median Monthly Rental Asking Price in New York City by Borough (December 2015)



Source: *Zillow, 2015.*

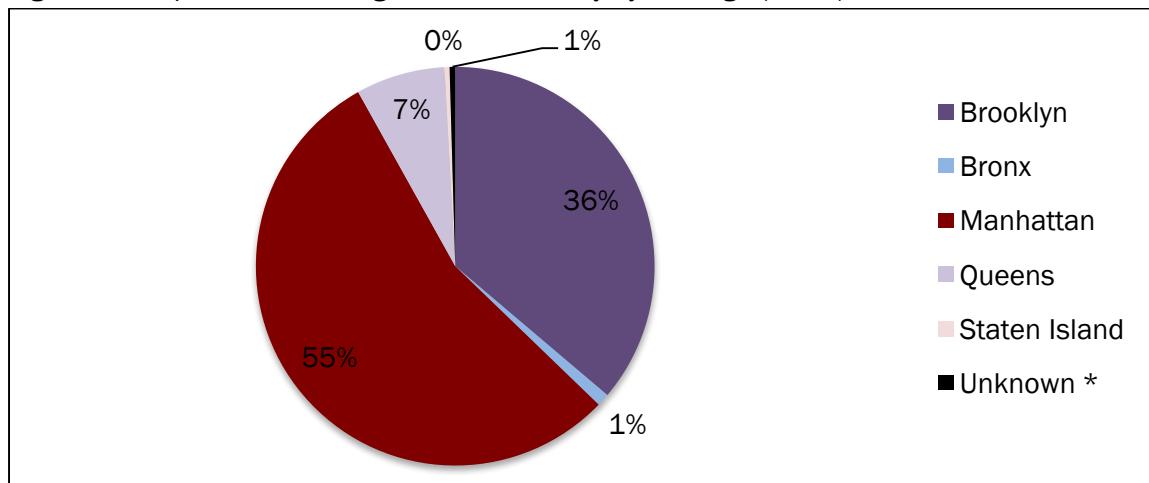
<sup>55</sup> Zillow Median Rental Price, All Homes, 2015, Accessed 2016.

Fifty-five percent of all renter households in New York City are defined as rent burdened.<sup>56</sup> Twenty-five percent of those households are considered moderately rent burdened, spending between 30 and 50 percent of the household income on rent; this statistic is consistent in Manhattan and Brooklyn.<sup>57</sup> An additional 30 percent are considered severely rent burdened, with rents exceeding 50 percent of household income.<sup>58</sup> A greater percent of households in Brooklyn (32 percent) are severely rent burdened, as compared to Manhattan (22 percent).<sup>59</sup>

## Airbnb Listings

The analysis identified 51,397 unique Airbnb listings in New York City during the study period. This figure represents continued growth in the number of total listings, as compared to the New York State Attorney General's report, which identified 16,483 unique Airbnb units that met its criteria in New York City in the first five months of 2014. The vast majority of 2015 listings are located in Manhattan (28,108 listings) and Brooklyn (18,601 listings).

Figure 7: Unique Airbnb Listings in New York City by Borough (2015)



Source: Airdna, 2015.

Note: \*Airdna does not provide borough, neighborhood or zip code identifiers for these listings.

The average occupancy rate for listings in New York City is 55 percent and each unit is rented an estimated of 11 days per month. On average, Airbnb listings in New York City rent for \$160 per night and thus have the potential to generate \$1,715 per month.

Nearly 40 percent of all listings in New York City are managed by hosts who control multiple unique units, while the remaining 60 percent are managed by hosts who control one unit. Listings that are managed by hosts with multiple listings are likely to be booked slightly more regularly, 12.6 days per month, and as a result generate higher average monthly revenues, estimated at \$1,844.

<sup>56</sup> New York University Furman Center, *State of New York City's Housing and Neighborhoods in 2015*: 66.

<sup>57</sup> Ibid: 66, 87, 109, 167.

<sup>58</sup> Ibid.

<sup>59</sup> Ibid: 87, 109.

Table 2: Airbnb Listings Summary (2015)

Airbnb Listing Indicator	All Listings
Number of unique listings	51,397
Average occupancy rate	55%
Average days reserved per month	11.25
Average daily revenue	\$160
Average monthly revenue	\$1,715

Source: Airdna, 2015.

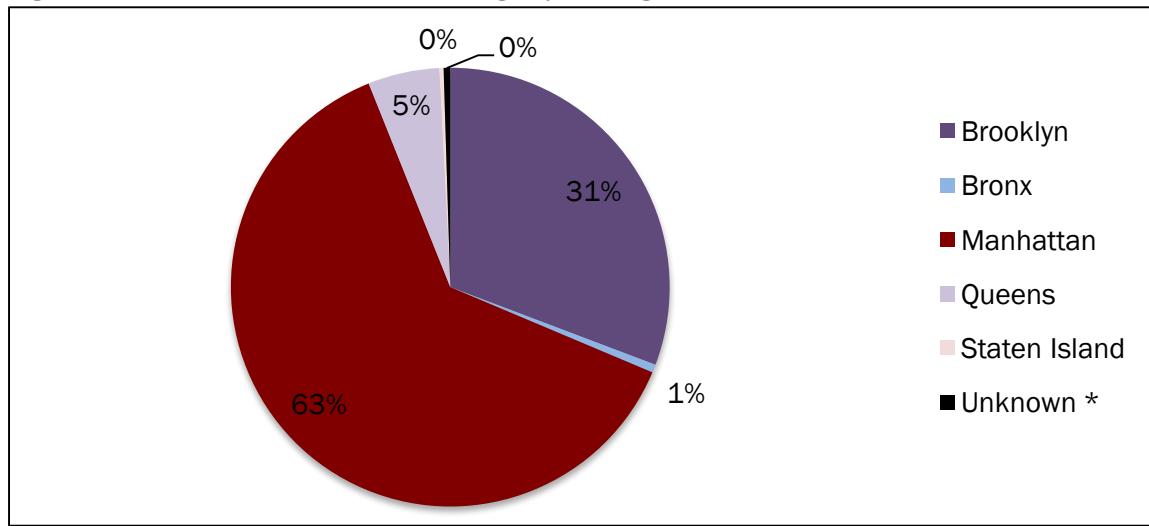
#### ***Listings by Type***

Each listing is classified as 1) Entire Apartment/Home, 2) Regular Short-Term or 3) Commercial.

1. **Entire Apartment/Home:** Fifty-six percent of all Airbnb listings in New York City are classified as Entire Apartment/Home. The geographic distribution of Entire Apartment/Home Listings is consistent to overall listings, with nearly 63 percent of the Entire Apartment/Home Listings located in Manhattan and 35 percent in Brooklyn.

The data does not distinguish if listings are located in a multi-unit residential building. Thus, it is not possible to determine which listings violate the Multiple Dwelling Law. However, because Entire Apartment/Home Listings are booked for short-term stays without the permanent tenant present, these listings are most likely to violate the Multiple Dwelling Law.

Figure 8: Entire Apartment/Home Listings by Borough (2015)



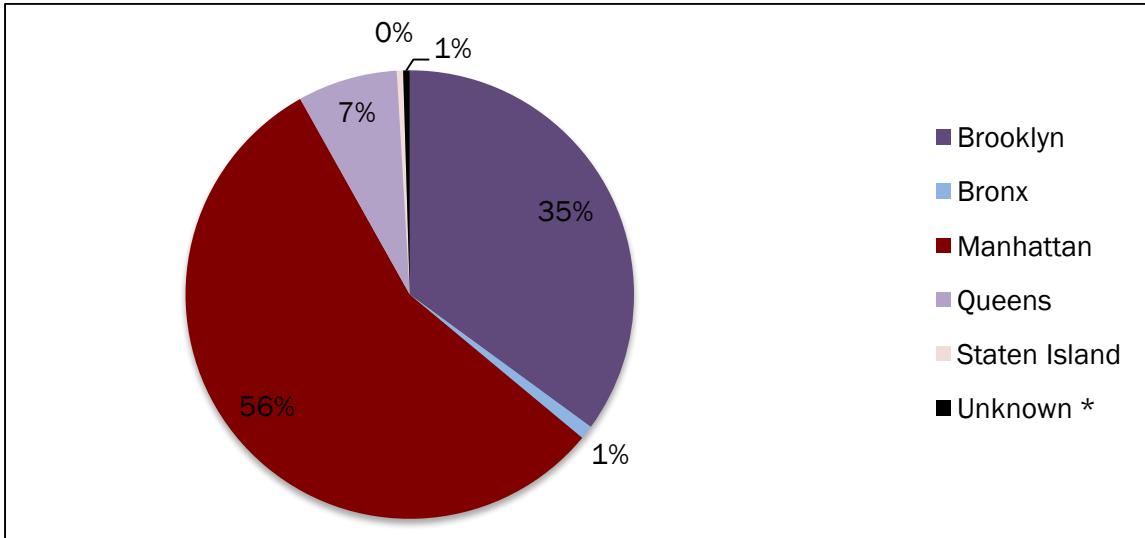
Source: Airdna, 2015.

Note: \*Airdna does not provide borough, neighborhood or zip code identifiers for these listings.

2. **Regular Short-Term:** Nearly 70 percent of all Airbnb listings are Regular Short-Term Listings, indicating these listings book more than one short-term stay per month. Manhattan and Brooklyn represent the most active markets for Regular Short-Term

Listings with 56 percent of Regular Short-Term Listings located in Manhattan and 35 percent in Brooklyn.

Figure 9: Regular Short-Term Listings by Borough (2015)

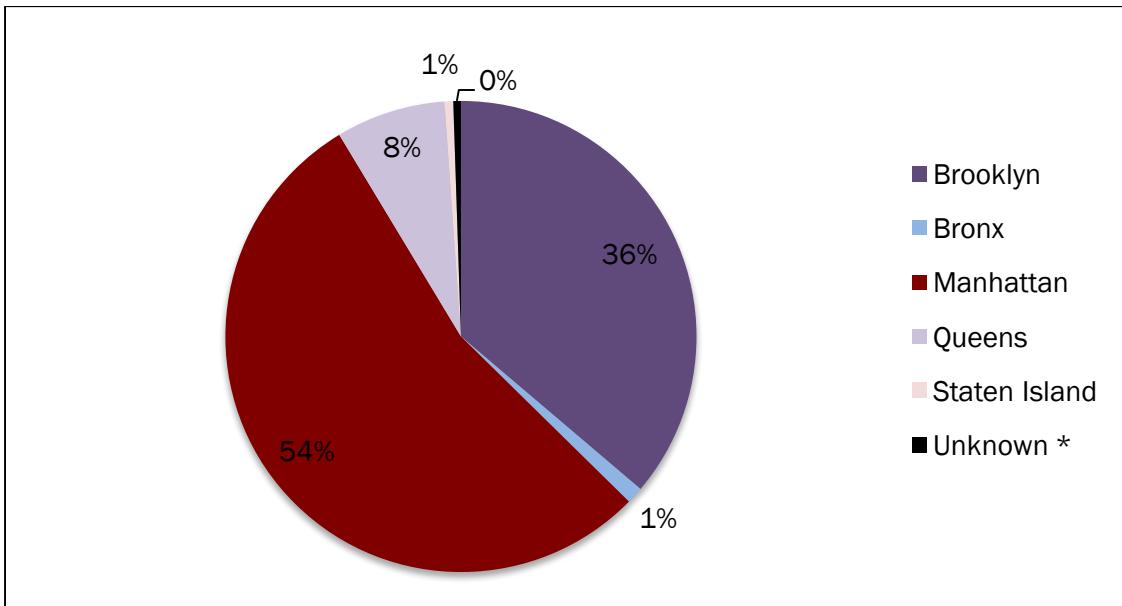


Source: Airdna, 2015.

Note: \*Airdna does not provide borough, neighborhood or zip code identifiers for these listings.

3. Commercial: During the study period, approximately 30 percent of all Airbnb listings in New York City are classified as Commercial. Ninety percent of those units are located in Manhattan or Brooklyn.

Figure 10: Commercial Listings by Borough (2015)



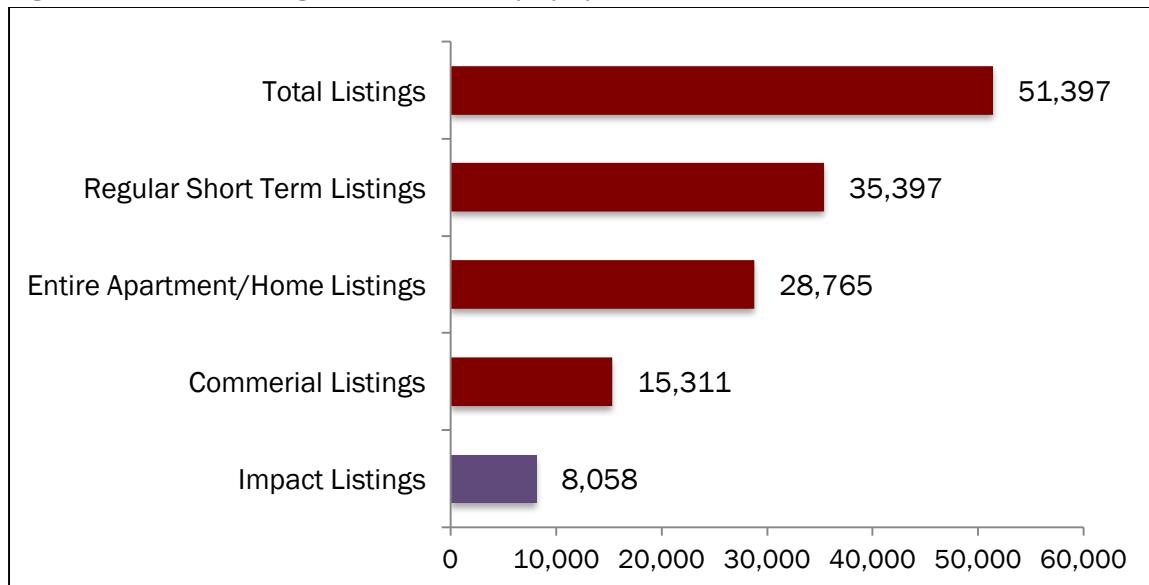
Source: Airdna, 2015.

Note: \*Airdna does not provide borough, neighborhood or zip code identifiers for these listings.

### ***Impact Listings***

Airbnb listings that meet the criteria for all three categories presented above are defined as Impact Listings because these listings are for units most likely to be removed from the residential rental market. During the study period, nearly 16 percent of all listings in New York City, 8,058 unique listings, are Impact Listings. More than half of these Impact Listings, 4,169, are linked to hosts who control multiple listings. Over 90 percent of all Impact Listings are in Manhattan or Brooklyn. Moreover, 18 percent of all listings in Manhattan and 13 percent of all listings in Brooklyn are Impact Listings.

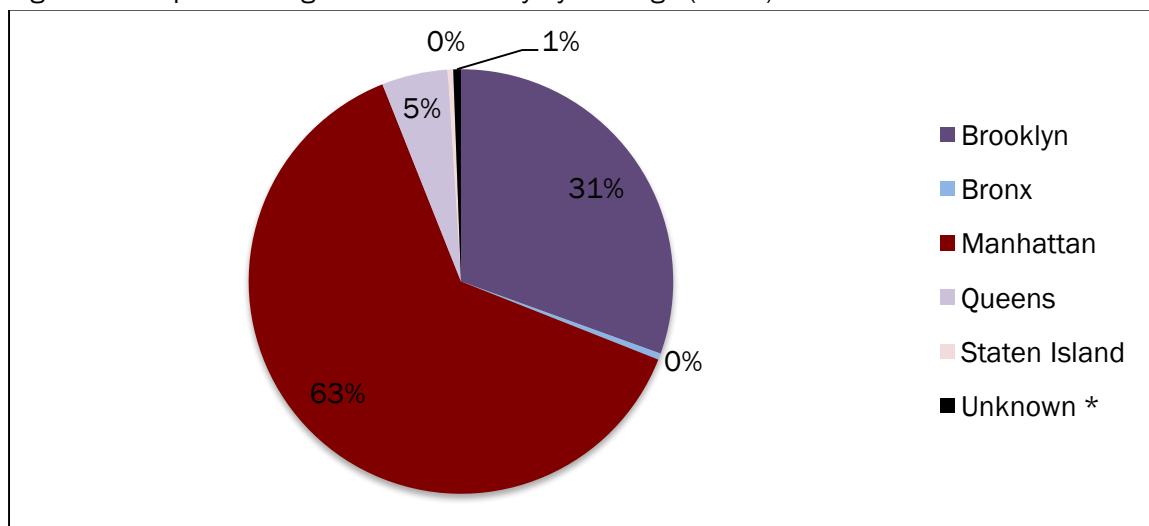
Figure 11: Airbnb Listings in New York City by Type (2015)



Source: Airdna, 2015.

While data limitations preclude analysis of year over year growth, comparisons to previous analysis clearly indicate the number of units participating in Airbnb is expanding. Data for January 2015 indicates there were 3,458 more Impact Listings than the number of “private short-term rentals” that the NYAG’s report determined had removed supply from the rental housing market in 2013. This change represents an increase of 75 percent. As the definition of “Impact Listing” is much more conservative than that of “private short-term rentals” used in the NYAG’s report, it is likely the increase of units removed from the rental market from 2013 to 2015 is understated.

Figure 12: Impact Listings in New York City by Borough (2015)



Source: Airdna, 2015.

Note: \*Airdna does not provide borough, neighborhood or zip code identifiers for these listings.

Impact Listings have higher occupancy rates and generate higher average daily revenue than Airbnb listings as a whole. Moreover, the average monthly revenue from Impact Listings is nearly twice the average monthly revenue for all listings in New York City, reinforcing the idea that these listings are focused on commercial activity. In the aggregate, monthly revenue from all Impact Listings in New York City is \$26.7 million. If each Impact Listing participates in Airbnb activity for all 12 months of the year, these listings have the potential to generate \$302.9 million in annual revenue.

Impact Listings in Manhattan generate the highest average daily revenue at nearly \$250 per day. The estimated average monthly revenue from one Impact Listing in Manhattan is \$3,770. The aggregate monthly revenue for all Impact Listings in Manhattan is more than \$19 million. In Brooklyn, each Impact Listing generates an average of \$184 per day. The estimated average monthly revenue for each Impact listing is \$2,603. In the aggregate, revenue for all Impact Listings in Brooklyn equates to \$6.4 million in monthly revenue.

Table 3: Impact Listings Detail (2015)

Airbnb Listing Indicator	All Airbnb Listings	Impact Listings		
		All	Manhattan	Brooklyn
Total number of unique listings	51,397	8,058	5,074	2,459
Average occupancy rate	55%	66%	67%	65%
Average days reserved per month	11.25	15.46	15.70	15.02
Average daily revenue	\$160	\$222	\$247	\$184
Average monthly revenue	\$1,715	\$3,319	\$3,770	\$2,603

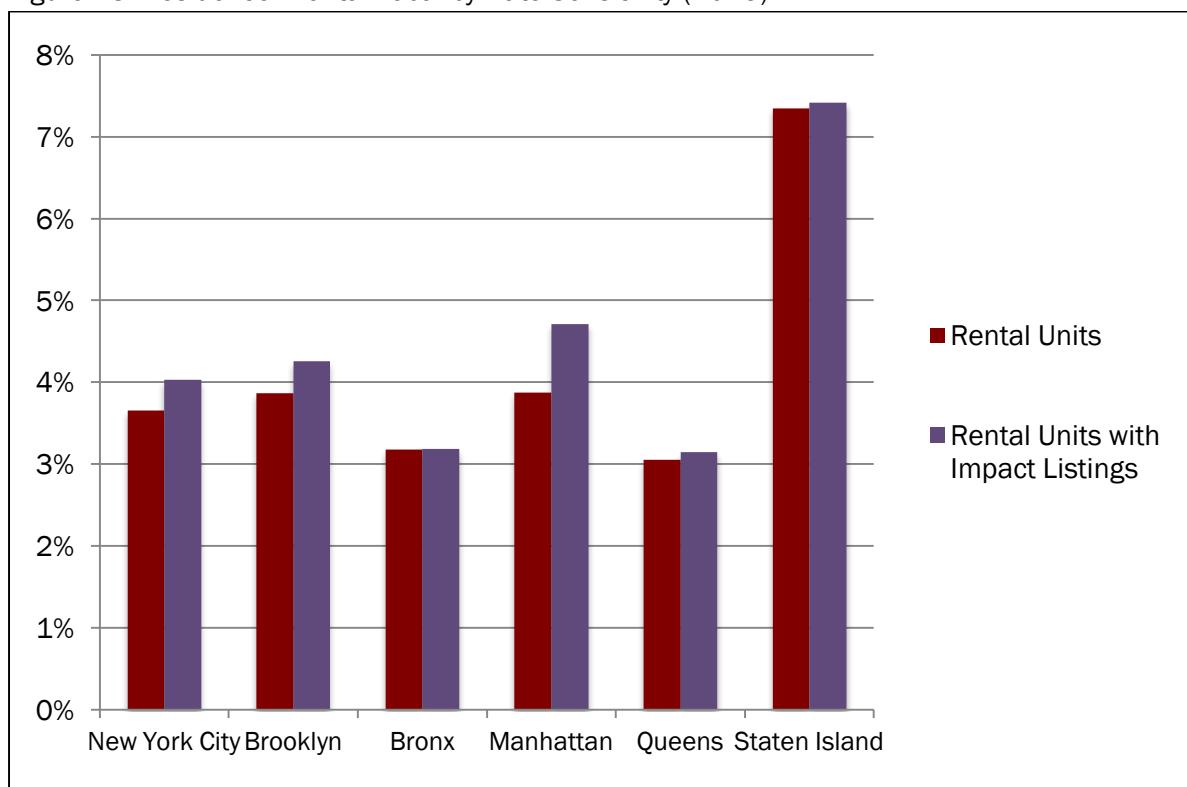
Source: Airdna, 2015.

### ***Effect of Impact Listings on Residential Rental Vacancy Rates***

If Impact Listings were available for rent as traditional apartments, the supply of residential rental units available to New Yorkers would increase. If it is assumed that all Impact Listings were added to the residential rental market as vacant units, the number of vacant rental units in New York City would increase by 10 percent, holding all else constant. Because the housing market is acutely constrained and the Airbnb market is highly active in Manhattan, the number of vacant rental units would increase by a dramatic 21 percent in Manhattan, holding all else constant.

This increase in vacant rental units could alleviate some pressure on the housing market caused by exceedingly low vacancy rates. For example, if all Impact Listings were added to the housing supply as vacant rental units, holding all else constant, the overall vacancy rate in New York City would rise from 3.6 to 4.0 percent, bringing it closer to 5 percent which the New York City Rent Guidelines Board indicates is a threshold below which results in market distortions. The impact would be most significant in Manhattan where the vacancy rate would increase by nearly a full percentage point, from 3.8 to 4.7 percent, if Impact Listings were added to the residential rental market as vacant units. In Brooklyn, the vacancy rate could increase from 3.8 to 4.3 percent if Impact Listings were added to the residential rental market as vacant units.

Figure 13: Residential Rental Vacancy Rate Sensitivity (2015)



Source: PLUTO, 2015; Airdna, 2015.

### ***Impact Listings and Rental Prices***

A strong correlation<sup>60</sup> was found between Impact Listings and median monthly rental asking prices in New York City as a whole (a correlation of 0.93) and within the boroughs (correlations ranging from 0.46 in the Bronx to 0.88 in Brooklyn). The exception is Staten Island, where the correlation is negative. Overall, the correlations found between Impact Listings and median monthly rental asking price suggest a strong association between Airbnb activity and median monthly asking prices in the traditional rental market. The table below presents the correlations by borough.

In the case of Staten Island, it should be noted that Impact Listings are not very numerous and that vacancy rates are quite high in the borough, so the effect of these listings might be easily absorbed by the slack in this borough.

Table 4: Correlation of Impact Listings and Median Rental Asking Price (2015)

Geographic Area	Impact Listings	Median Monthly Rental Asking Price	Correlation Impact Listings vs. Median Monthly Asking Price*
New York City	8,058	\$2,506	0.93
Brooklyn	2,459	\$2,385	0.88
Bronx	39	\$1,350	0.46
Manhattan	5,074	\$3,500	0.64
Queens	404	\$2,198	0.79
Staten Island	35	\$1,750	-0.09

Source: Zillow, 2015; Airdna, 2015.

\*Note: It should be noted that correlations for a subset of the population may differ in magnitude from the findings for the total population due to the number of observations and the standard deviation of the dataset.

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<sup>60</sup> Correlation, a statistical measure which falls between -1 and 1, is an indication of the interdependence of variables. A correlation of 1 means that the two variables are perfectly correlated, indicating that the two variables evolve over time at the same rate. However, it must be noted that correlation does not imply causation.

## 4. Macro-Neighborhood Findings

To better understand the impact of short-term rentals on the residential housing market, this report includes an analysis of Airbnb listings in five macro-neighborhoods with significant Airbnb presence:

1. East Village/Lower East Side (LES)
2. Chelsea/Hell's Kitchen
3. West Village/Greenwich Village/SoHo
4. Williamsburg/Greenpoint/Bushwick
5. Bedford Stuyvesant/Crown Heights

Together, these macro-neighborhoods in Manhattan and Brooklyn represent 53 percent of all Airbnb listings in New York City. Listings in these neighborhoods reveal higher occupancy rates and greater number of days reserved than in New York City as a whole. Moreover, the proportion of Impact Listings in these neighborhoods is considerably higher than in New York City as a whole, indicating that these neighborhoods may be at the highest risk for experiencing the negative impacts associated with short-term rental activity, such as constrained supply, increased rental prices, and accelerated changes to neighborhood characteristics.

Table 5: Number of Impact Listings and Vacant Residential Units by Neighborhood (2015)

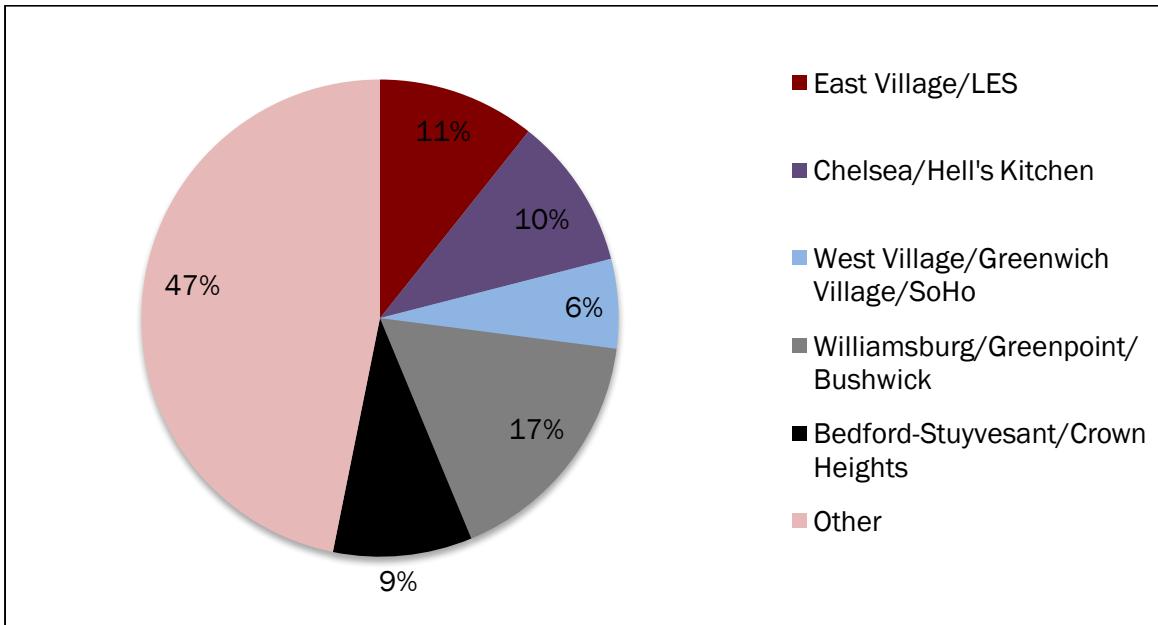
	Neighborhood	Impact Listings	Vacant Rental Units	Ratio Impact Listings/ (Vacant Rentals + Impact Listings)
1	East Village	599	2,978	17%
	Lower East Side	301	1,426	17%
2	Chelsea	357	1,605	18%
	Hell's Kitchen	555	2,509	18%
3	West Village	296	1,309	18%
	Greenwich Village	139	628	18%
	SoHo	164	638	20%
4	Williamsburg	561	4,583	11%
	Greenpoint	153	1,089	12%
	Bushwick	148	2,062	7%
5	Bedford-Stuyvesant	460	2,874	14%
	Crown Heights	197	1,421	12%

Source: Airdna, 2015; Pluto, 2015; ACS, 2014.

Additionally, three of the five macro-neighborhoods analyzed are classified as “gentrifying neighborhoods” by the Furman Center’s report *State of New York City’s Housing and Neighborhoods in 2015*. The report categorizes neighborhoods as “gentrifying” based on extreme changes in average rents and neighborhood compositions, including the percent of college graduates, young people, non-family households, and white versus non-white

residents.<sup>61</sup> The report also highlights that “gentrifying” neighborhoods presented a sharp decline from 2000 to 2014 in the share of recently available rental units affordable to low-income households.<sup>62</sup>

Figure 14: Proportion of Airbnb Listings by Macro-Neighborhood (2015)



Source: Airdna, 2015.

<sup>61</sup> New York University Furman Center, *State of New York City's Housing and Neighborhoods in 2015*: 4.

<sup>62</sup> Ibid.

## ***East Village/Lower East Side (LES)***

Figure 15: East Village/ LES Map



### ***Residential Market***

There are 77,000 rental units in the East Village/LES neighborhood and the vacancy rate is 3.45 percent. The median monthly rental asking price for an apartment in the East Village/Lower East Side is \$3,445.

Table 6: East Village/Lower East Side Residential Market Summary (2015)

Residential Market Indicators	East Village/Lower East Side
Rental Units	77,099
Vacant Rental Units	2,657
Rental Vacancy Rate	3.4%
Median Monthly Asking Price	\$3,445

Source: Zillow, 2015; PLUTO, 2015; ACS, 2014.

The Furman Center's report *State of New York City's Housing and Neighborhoods in 2015* identifies the Lower East Side as a "gentrifying neighborhood," and states that the percent change in average rent in the Lower East Side from 1990 to 2014 was greater than 50 percent.<sup>63</sup>

Furthermore, an analysis of neighborhood demographics and household income supports the finding that the area is gentrifying. From 2000 to 2014, the number of white residents in the East Village/LES increased by 10 percent. The proportion of residents over 25 years of age

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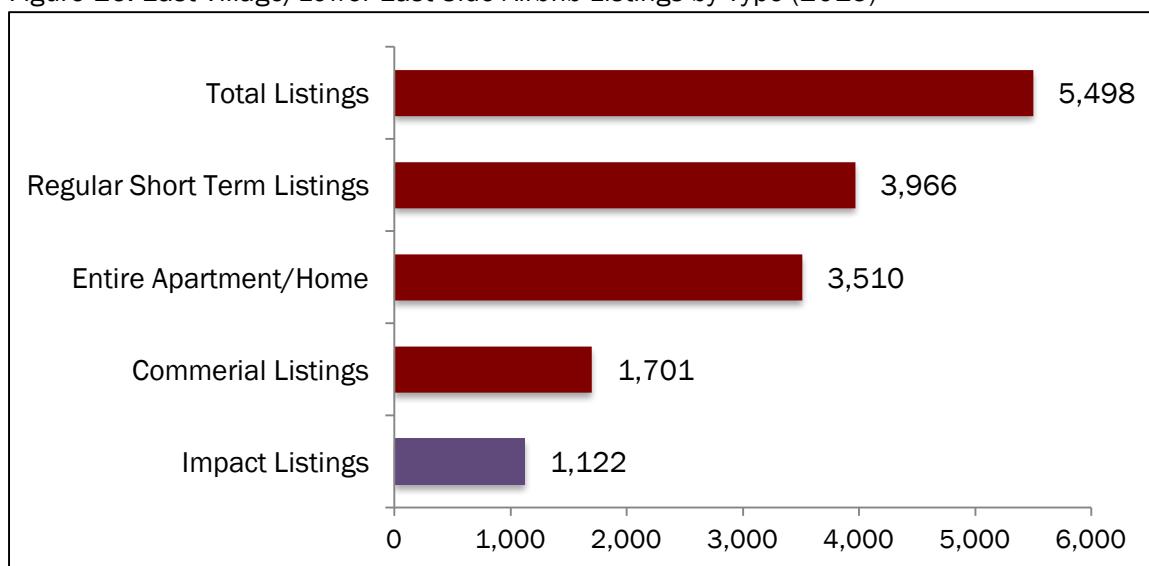
<sup>63</sup> Ibid: 6.

with a Bachelor's degree increased by 12 percentage points. In addition to changing demographics, the data shows that residents in the East Village/LES in 2014 had higher incomes than residents in 2000. The median household income increased by 11 percent from \$57,324 in 2000 to \$63,881 in 2014.

### **Airbnb Listings**

Ten percent of all Airbnb listings in New York City, 5,498 unique listings, are located in the East Village/Lower East Side. Twenty percent of Airbnb listings in the East Village/Lower East Side, 1,122 listings, are defined as Impact Listings. Moreover, these Impact Listings represent 14 percent of total Impact Listings in New York City.

Figure 16: East Village/Lower East Side Airbnb Listings by Type (2015)



Source: Airdna, 2015.

The 70 percent occupancy rate for these listings is much higher than the average occupancy rate for New York City as a whole at 55 percent. Additionally, the estimated average monthly revenue from Airbnb listings is \$3,650, more than \$200 greater than the median monthly rental asking price in the neighborhood.

Table 7: East Village/Lower East Side Airbnb Listings Summary (2015)

Airbnb Listings Indicators	East Village/ Lower East Side
Average occupancy rate	70%
Average reservations per month	3.43
Average days reserved per month	16.04
Average daily revenue	\$234
Average monthly revenue	\$3,650

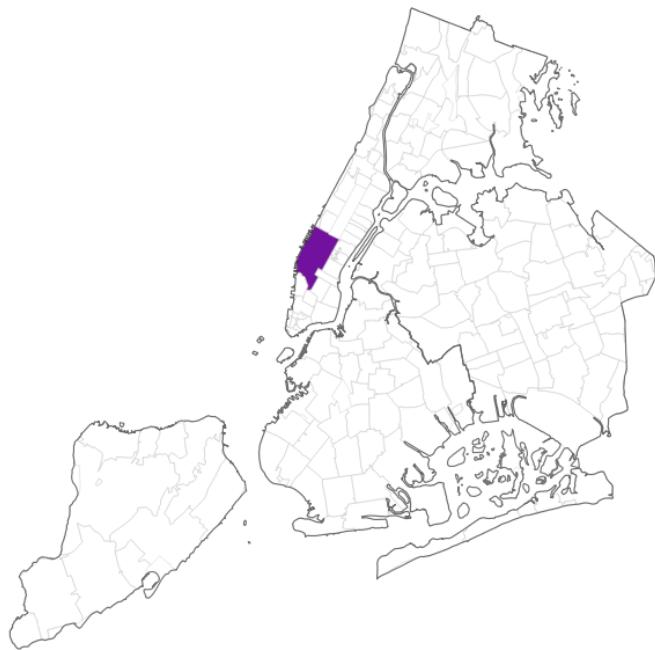
Source: Airdna, 2015.

Adding Impact Listings to the housing supply as vacant units would increase the vacancy rate from 3.4 to 4.9 percent. This finding is critical as it brings the vacancy rate within one tenth of

a percent of 5 percent, the threshold below which the New York City Rent Guidelines Board indicates can cause market distortions.

### ***Chelsea/Hell's Kitchen***

Figure 17: Chelsea/Hell's Kitchen Map



#### ***Residential Market***

There are 77,000 rental units in the Chelsea/Hell's Kitchen neighborhood. The vacancy rate is 4.2 percent and median monthly rental asking price is nearly \$3,600.

Table 8: Chelsea/ Hell's Kitchen Residential Market Summary (2015)

Residential Market Indicators	Chelsea/Hell's Kitchen
Rental Units	77,013
Vacant Rental Units	3,262
Rental Vacancy Rate	4.2%
Median Monthly Asking Price	\$3,595

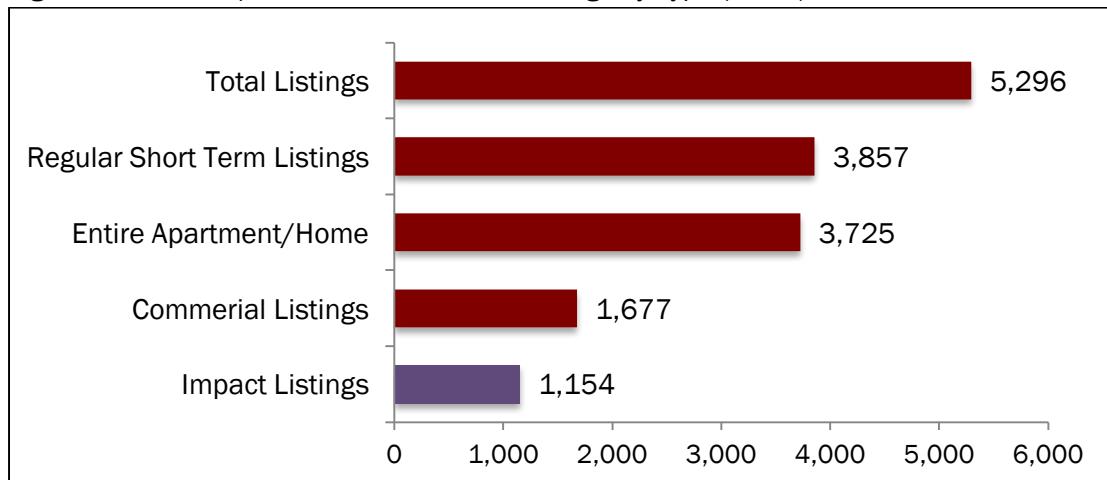
Source: Zillow, 2015; PLUTO, 2015; ACS, 2014.

A comparison of demographics in 2000 and 2014 indicates prominent changes in the neighborhood composition. First, median household income in Chelsea/Hell's Kitchen increased by 31 percent from \$68,326 in 2000 to nearly \$90,000 in 2014. The total population in Chelsea/Hell's Kitchen increased by 20 percent from 2000 to 2014, more than half of which is comprised of growth of the white population. Additionally, the percentage of residents over 25 years old with a Bachelor's degree also increased by 15 percentage points.

### **Airbnb Listings**

There are 5,296 Airbnb listings located in Chelsea/Hell's Kitchen during the study period. Over 70 percent of listings are Entire Apartment/Home and 22 percent of listings are Impact Listings.

Figure 18: Chelsea/Hell's Kitchen Airbnb Listings by Type (2015)



Source: Airdna, 2015.

Adding Impact Listings to the housing supply as vacant units would increase the vacancy rate in Chelsea/Hell's Kitchen from 4.2 to 5.7 percent, exceeding 5.0 percent, the threshold determined by the New York Rent Guidelines Board that results in market distortions.

Impact Listings in Chelsea/Hell's Kitchen are booked an average of 16 days per month, as compared to an average of 11 days for all listings across New York City. That distinction resulted in 60 more days booked over the course of the year, as compared to the average for all listings in New York City. Additionally, the estimated average monthly revenue from Airbnb listings is \$4,274, more than \$675 greater than median monthly rental asking price in the neighborhood.

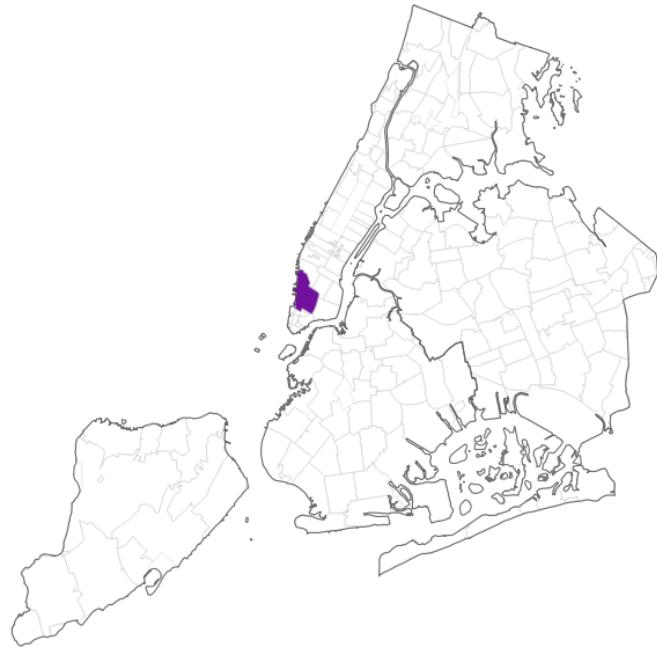
Table 9: Chelsea/Hell's Kitchen Airbnb Listings Summary (2015)

Airbnb Listings Indicators	Chelsea/Hell's Kitchen
Average occupancy rate	68%
Average reservations per month	3.65
Average days reserved per month	16.29
Average daily revenue	\$268
Average monthly revenue	\$4,274

Source: Airdna, 2015.

## *West Village/Greenwich Village/SoHo*

Figure 19: West Village/Greenwich Village/SoHo Map



### **Residential Market**

There are 32,600 rental units in the West Village/Greenwich Village/SoHo neighborhood. Its vacancy rate of 2.9 percent is among the lowest of all neighborhoods in New York City. The median monthly rental asking price is \$3,700.

Table 10: West Village/Greenwich Village/SoHo Residential Market Summary (2015)

Residential Market Indicators	West Village/Greenwich Village/SoHo
Rental Units	32,598
Vacant Rental Units	949
Rental Vacancy Rate	2.9%
Median Monthly Asking Price	\$3,700

Source: Zillow, 2015; PLUTO, 2015; ACS, 2014.

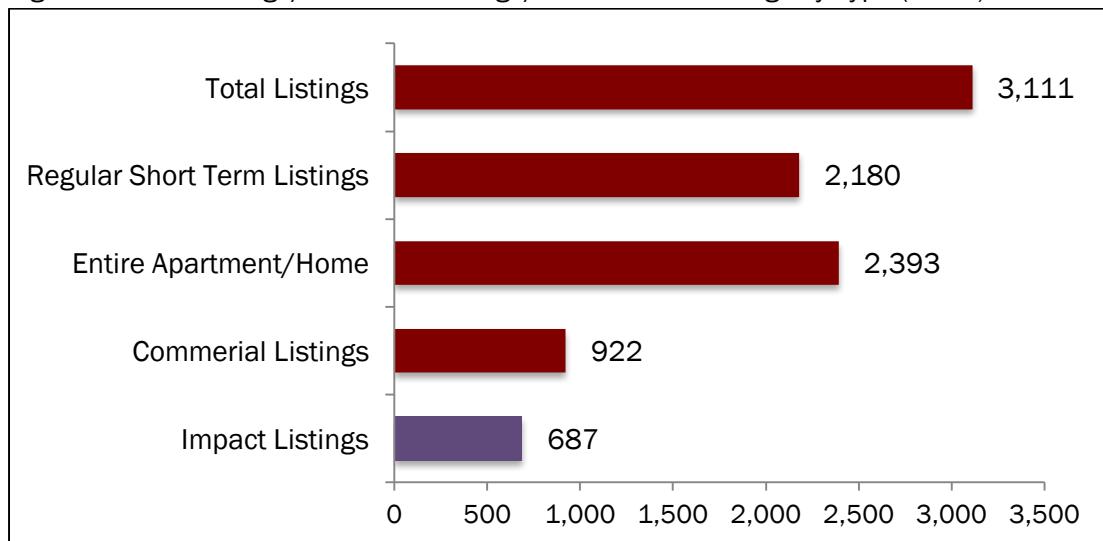
In 2000, 60 percent of residents over 25 years of age had a Bachelor's degree or higher. The median household income was nearly \$75,000. Even still, between 2000 and 2014, the neighborhood demonstrated a 35 percent increase in median income. Additionally, the proportion of residents over 25 years of age with a Bachelor's degree or higher increased by 14 percentage points during the same time period.

### **Airbnb Listings**

There are 3,111 Airbnb listings located in West Village/Greenwich Village/SoHo, which account for 10 percent of the housing stock in the neighborhood. Seventy-seven percent of

listings are classified as Entire Apartment/Home and 22 percent of listings are Impact Listings because they were classified as Regular Short-Term, Entire Apartment/Home, and Commercial.

Figure 20: West Village/Greenwich Village/Soho Airbnb Listings by Type (2015)



Source: Airdna, 2015.

If these Impact Listings were added to the housing supply as vacant rental units, the rental vacancy rate would increase by more than 2 basis points from 2.9 to 5.0 percent, which would help to alleviate the severely constrained residential rental market in the neighborhood.

Impact Listings in West Village/Greenwich Village/Soho are booked an average of 15 days per month, as compared to an average 11 days for all listings in New York City. Moreover, the average daily revenue of \$312 is nearly two times the average daily revenue for New York City on the whole. The estimated average monthly revenue from Airbnb listings in this macro-neighborhood is \$4,523, which is \$820 greater than the median monthly rental asking price in the neighborhood, indicating there is a high incentive to participate in the short-term rental market.

Table 11: West Village/Greenwich Village/Soho Airbnb Listings Summary (2015)

Airbnb Listings Indicators	West Village/Greenwich Village/Soho
Average occupancy rate	65%
Average reservations per month	3.25
Average days reserved per month	14.88
Average daily revenue	\$312
Average monthly revenue	\$4,523

Source: Airdna, 2015.

## *Williamsburg/Greenpoint/Bushwick*

Figure 21: Williamsburg/Greenpoint/Bushwick Map



### **Residential Market**

There are 97,300 rental units in the Williamsburg/Greenpoint/Bushwick neighborhood. The median monthly rental asking price is approximately \$2,800, which is considerably above the median monthly asking price for the borough of Brooklyn at \$2,400.

Table 12: Williamsburg /Greenpoint/Bushwick Residential Market Summary (2015)

Residential Market Indicators	Williamsburg/Greenpoint/Bushwick
Rental Units	97,298
Vacant Rental Units	3,659
Rental Vacancy Rate	3.7%
Median Monthly Asking Price	\$2,797

Source: Zillow, 2015; PLUTO, 2015; ACS, 2014.

The Furman Center's report *State of New York City's Housing and Neighborhoods in 2015* identified Williamsburg/Greenpoint/Bushwick as a "gentrifying neighborhood." The report indicates that average rent increased by as much as 79 percent between 1990 to 2014.<sup>64</sup>

BJH's analysis of demographic data bolsters the Furman Center's findings. The change in the neighborhood composition in Williamsburg/Greenpoint/Bushwick is pronounced. The proportion of white residents increased by 10 percentage points from 25 to 35 percent of the total population. This finding indicates that the proportion of residents of color has declined

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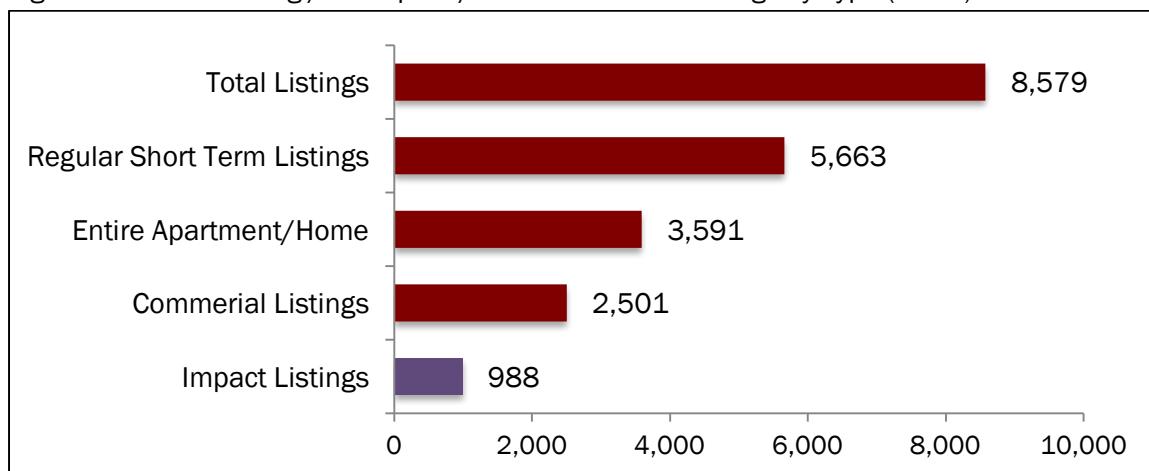
<sup>64</sup> Ibid, 6.

dramatically in Williamsburg/Greenpoint/Bushwick since 2000. The proportion of residents over 25 with a Bachelor's degree or higher has increased by 19 percentage points. It is likely that new residents are higher income earners, as the median household income has increased by 38 percent and the poverty rate declined by 7 basis points.

### **Airbnb Listings**

There are 8,580 Airbnb listings located in Williamsburg/Greenpoint/Bushwick, which account for 9 percent of the rental housing stock in the neighborhood and 17 percent of all Airbnb listings in New York City. Shared apartments are more common in Williamsburg/Greenpoint/Bushwick than the Manhattan neighborhoods analyzed above. Approximately 42 percent of the listings are for the Entire Apartment/Home category. Thus, the percent of Impact Listings is slightly lower in Williamsburg/Greenpoint/Bushwick, as compared to the Manhattan neighborhoods, with 12 percent of all Airbnb neighborhood listings classified as Impact Listings.

Figure 22: Williamsburg /Greenpoint/Bushwick Airbnb Listings by Type (2015)



Source: Airdna, 2015.

Assuming that Impact Listings may be added to the rental housing supply as vacant units, the vacancy rate would increase by 1 percentage point from 3.8 to 4.8 percent, holding all else constant.

Impact Listings are booked an average of 15 days per month, as compared to an average 11 days for all listings in New York City. The estimated average monthly revenue from Airbnb listings is \$2,814, which is only slightly above the median monthly rental asking price in the neighborhood.

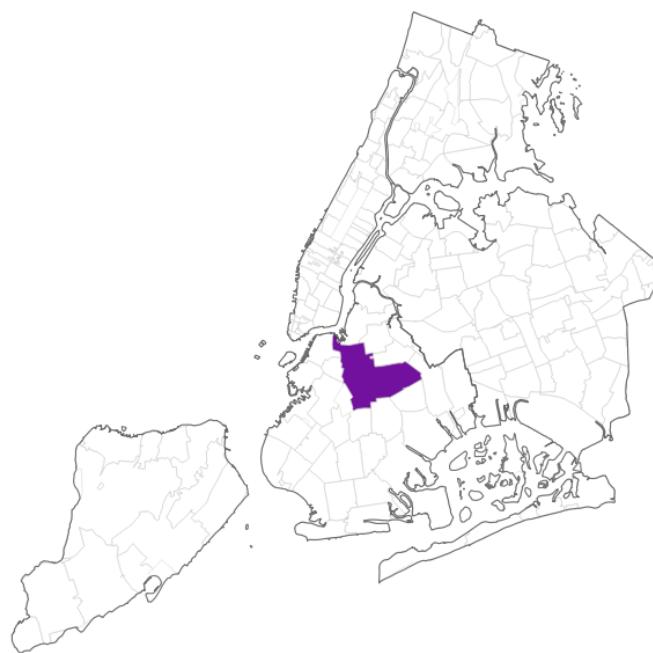
Table 13: Williamsburg/Greenpoint/Bushwick Airbnb Listings Summary (2015)

Airbnb Listings Indicators	Williamsburg/Greenpoint/Bushwick
Average occupancy rate	66%
Average reservations per month	3.23
Average days reserved per month	15.09
Average daily revenue	\$197
Average monthly revenue	\$2,814

Source: *Airdna*, 2015.

### ***Bedford Stuyvesant/Crown Heights***

Figure 23: Bedford Stuyvesant/Crown Heights Map



#### ***Residential Market***

There are 104,870 rental units in the Bedford Stuyvesant/Crown Heights neighborhood. Median monthly rental asking price is \$2,375, very similar to the median monthly asking price for the borough of Brooklyn, which is \$2,400.

Table 14: Bedford Stuyvesant/Crown Heights Residential Market Summary (2015)

Residential Market Indicators	Bedford-Stuyvesant/Crown Heights
Rental Units	104,869
Vacant Rental Units	5,272
Rental Vacancy Rate	5.0%
Median Monthly Asking Price	\$2,372

Source: *Zillow*, 2015; *PLUTO*, 2015; *ACS*, 2014.

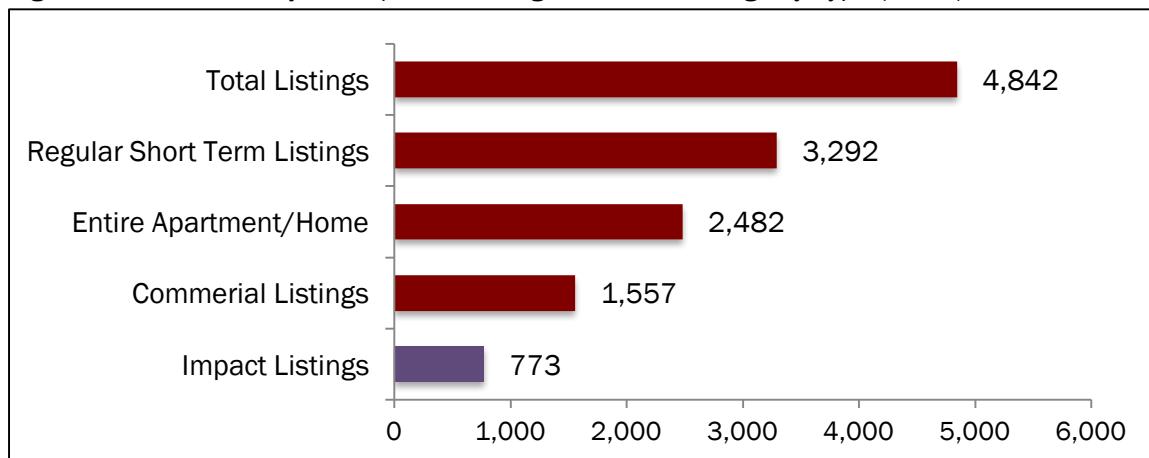
The Furman Center's report *State of New York City's Housing and Neighborhoods in 2015* identified the Bedford Stuyvesant/Crown Heights areas as "gentrifying." The report indicates that average rent increased by 18 to 36 percent between 1990 and 2014, depending on the community within the macro-neighborhood.<sup>65</sup>

A comparison of demographic and household income data from 2000 to 2014 supports the Furman Center's findings. The change in the neighborhood's racial composition is staggering. The raw number of white residents in the neighborhood more than doubled and the proportion of white residents increased by 13 percentage points. The proportion of residents over 25 with a Bachelor's degree or higher increased by 16 percentage points. Additionally, median household income increased by 16 percent and the poverty rate declined by 4 basis points.

#### ***Airbnb Listings***

There are 4,842 Airbnb listings located in Bedford Stuyvesant/Crown Heights, which account for 5 percent of the rental housing stock in the neighborhood. Similar to Williamsburg, listings in Bedford Stuyvesant/Crown Heights are more likely to be shared apartments as compared to the Manhattan neighborhoods analyzed above. Approximately half of the listings are classified as Entire Apartment/Home. As a result, the percent of Impact Listings is slightly lower in Bedford Stuyvesant/Crown Heights, as compared to Manhattan neighborhoods. Sixteen percent of all Airbnb listings in Bedford Stuyvesant/Crown Heights are classified as Impact Listings.

Figure 24: Bedford Stuyvesant/ Crown Heights Airbnb Listings by Type (2015)



Source: Airdna, 2015.

Adding Impact Listings as vacant units to the housing supply would increase the vacancy rate from 5.0 to 5.8 percent, which may alleviate some pressure on the housing market.

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<sup>65</sup> Ibid, 6.

Consistent with Williamsburg, Impact Listings are booked an average of 16 days per month. The estimated average monthly revenue from Airbnb listings is \$2,530, which is over \$150 greater than the median monthly rental asking price in the neighborhood.

Table 15: Bedford Stuyvesant/ Crown Heights Airbnb Listings by Type (2015)

Airbnb Listings Indicators	Bedford-Stuyvesant/Crown Heights
Average occupancy rate	66%
Average reservations per month	3.18
Average days reserved per month	15.81
Average daily revenue	\$171
Average monthly revenue	\$2,530

Source: Airdna, 2015.

### ***Macro-Neighborhood Comparison***

Airbnb activity is concentrated in Manhattan and Brooklyn and, within those two boroughs, there are several neighborhoods that contain the most active Airbnb markets. In many cases, these neighborhoods may be considered some of the most desirable residential neighborhoods in New York City based on demand indicators such as vacancy rates and median monthly rent. For example, the residential vacancy rate in the West Village is under 3 percent and median monthly rents are \$3,700. In all cases, the neighborhood has experienced significant market growth in recent years, evidenced through increases in rents and population. For example, the Furman Center report, *State of New York City's Housing and Neighborhoods in 2015*, indicates that the Lower East Side, Williamsburg, and Bedford Stuyvesant are areas that have experienced striking increases in average rents over the past two decades.<sup>66</sup>

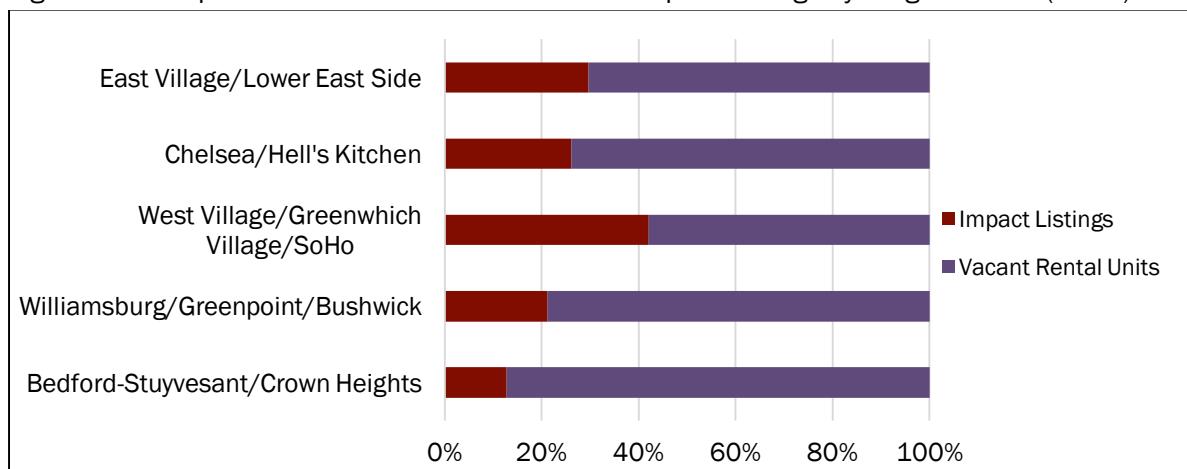
A number of market forces, policies, and neighborhood conditions impact the housing market in each neighborhood. Additionally, the intensely active short-term listing market in these neighborhoods exacerbates extremely low vacancy rates by removing rental units from the housing supply. If the Impact Listings identified in each market were returned to the residential rental supply as vacant units, each neighborhood would experience a considerable increase in the number of available units and the vacancy rate, holding all else constant.

The comparison of Impact Listings versus vacant residential units indicates that there is nearly the same number of Impact Listings as vacant residential units in the West Village/Greenwich Village/SoHo. In three of the four remaining neighborhoods, if Impact Listings were added to the housing supply as vacant units, the listings would comprise between 20 and 30 percent of all available units.

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<sup>66</sup> Ibid: 6.

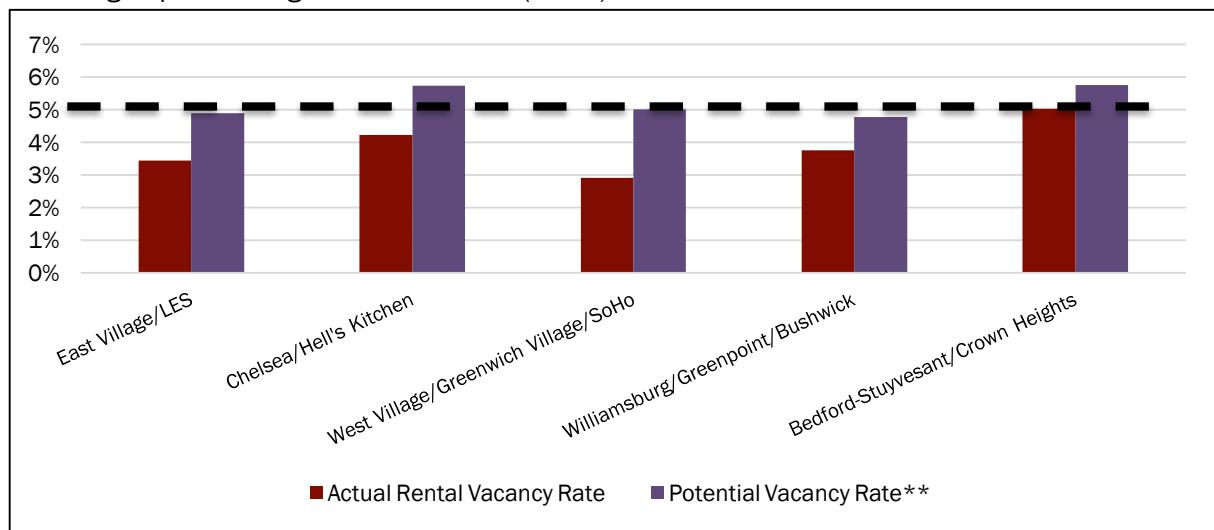
Figure 25: Comparison of Vacant Rental Units and Impact Listings by Neighborhood (2015)



Source: Airdna, 2015; PLUTO, 2015; and ACS, 2014.

The large number of Impact Listings in these neighborhoods indicate that these units are likely to have a profound impact on vacancy rates, holding all else constant. In Chelsea/Hell's Kitchen, the West Village/Greenwich Village, and Bedford Stuyvesant/Crown Heights the vacancy rate would rise above 5 percent, the threshold below which the New York Rent Guidelines Board indicates often leads to market distortions that cause tenants to be displaced and rents to increase. In the East Village/LES, the vacancy rate would increase to within one-tenth of a percent of this threshold. As vacancies are absorbed into the market, it follows that housing price pressure would lessen.

Figure 26: Actual Residential Rental Vacancy Rates and Estimated Rental Vacancy Rate Including Impact Listings as Vacant Units (2015)



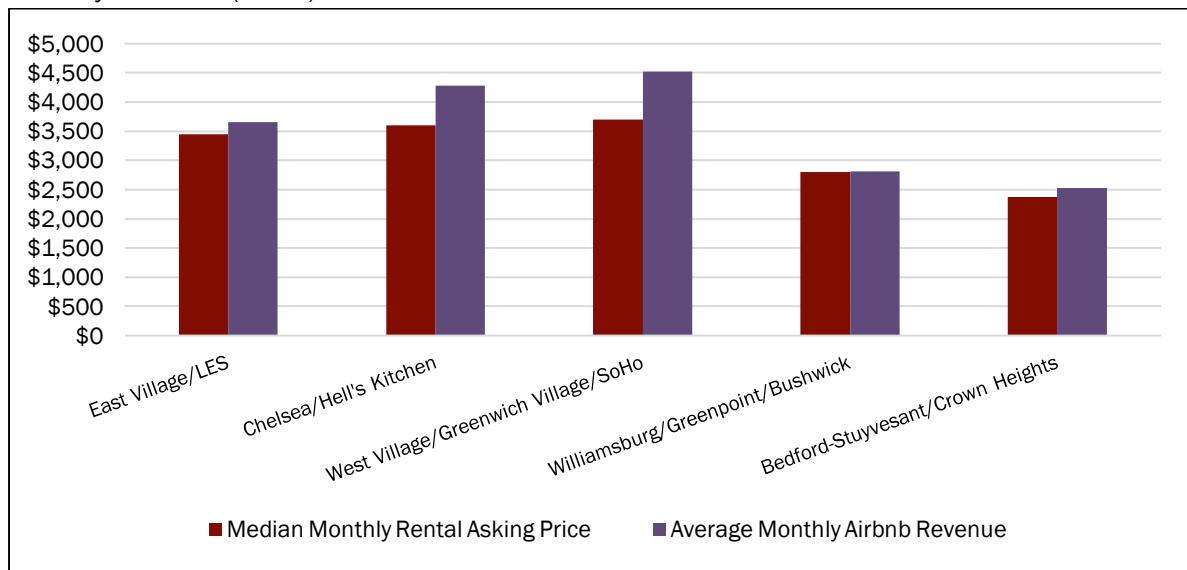
Source: Airdna, 2015; PLUTO, 2015; and ACS, 2014.

\*\*Note: The potential vacancy rate was calculated by dividing the sum of vacant residential rental units plus Impact Listings by the total residential rental units in the neighborhood. It assumes all other supply and demand forces are held constant.

Constrained supply often results in rising prices. Moreover, in each neighborhood, the estimated average monthly revenue from Impact Listings is greater than the median monthly rental asking price. In some cases, this premium is greater than \$500, potentially creating an incentive to place rental units on the short-term market. Together, these phenomena may contribute to increases in prices over time within these neighborhoods.

It should be noted that it is likely that individuals make decisions about whether or not to participate in the short-term rental market based on the comparison of monthly rent to “potential” monthly revenue from short-term rental bookings.<sup>67</sup> An individual is unlikely to have sophisticated data regarding the average occupancy rate or number of reservations per month for the short-term rental market. Thus, this “potential” revenue would be based on an estimated daily rate multiplied by the number of days in the month, a much higher figure that would exaggerate the monetary benefit associated with participating in the short-term rental market.

Figure 27: Comparison of Median Monthly Rental Asking Prices and Estimated Average Airbnb Monthly Revenue (2015)

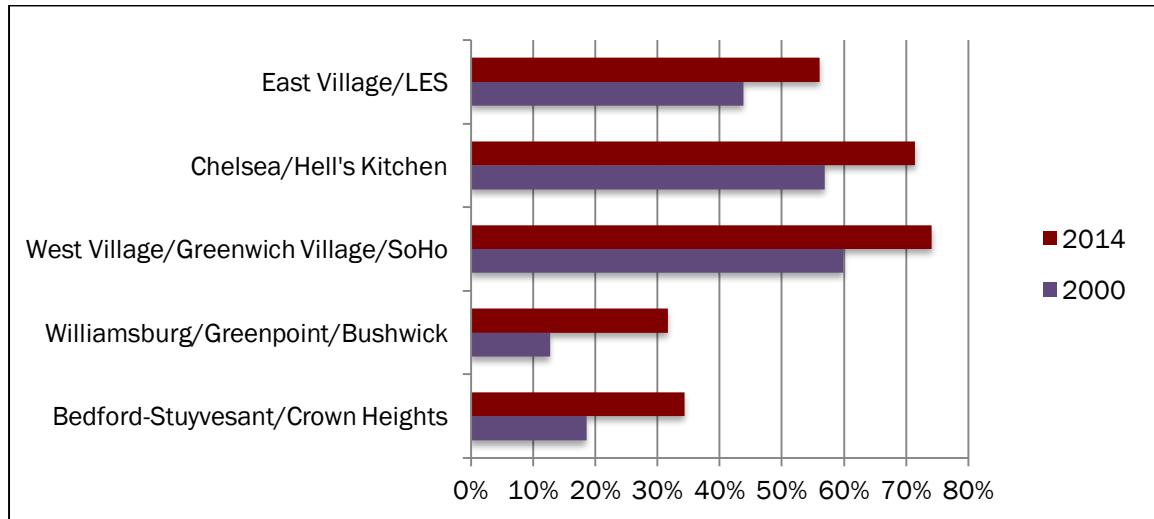


Source: Zillow, 2015; Airdna, 2015.

Increasing prices and severely low vacancy rates are often linked to changing neighborhood composition. The Furman Center identified “gentrifying neighborhoods” as those with extreme changes in median rent, as well as changes in the proportion of white residents, residents with a Bachelor’s degree, household income, and other factors. The macro-neighborhoods demonstrating concentrated Airbnb listings reveal considerable changes in these indicators. The proportion of residents with a Bachelor’s degree increased by 12 to 19 percentage points in each neighborhood.

<sup>67</sup> San Francisco Budget and Legislative Analyst's Office, Re: *Analysis of the Impact of Short-Term Rentals on Housing*: 10.

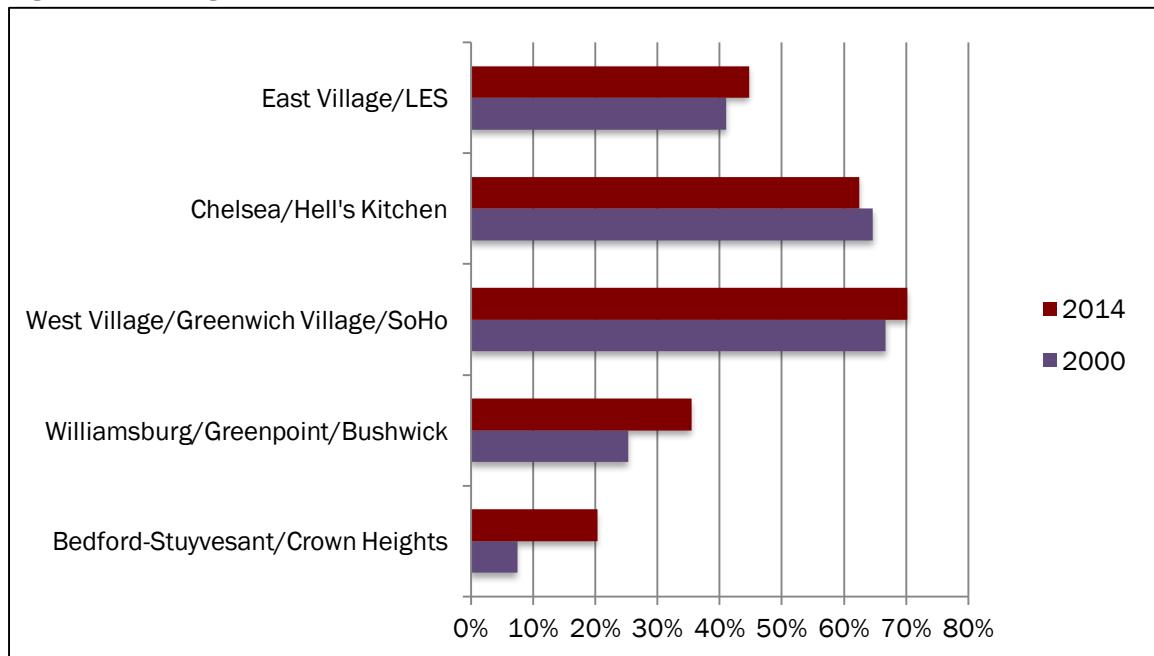
Figure 28: Change in the Proportion of Residents Over 25 Years of Age with a Bachelor's Degree or Higher (2000 – 2014)



Source: US Census, 2000; ACS, 2014.

In nearly every neighborhood, the proportion of white residents increased dramatically. This change was most apparent in the Brooklyn neighborhoods – Williamsburg/Greenpoint/Bushwick and Bedford Stuyvesant/Crown Heights – which experienced increases of 10 percentage points and 13 percentage points, respectively. This increase in the proportion of white residents coincides with a decline in the proportion of non-white residents.

Figure 29: Change in the Proportion of White Residents (2000 – 2014)



Source: US Census, 2000; ACS, 2014.

## 5. Conclusion

Short-term rental activity is increasingly creating distortions in the residential rental market in New York City. If reintroduced into the permanent housing supply, the 8,058 Impact Listings on the Airbnb platform, alone, could increase the number of vacant residential units in New York City by 10 percent. Holding all else constant, this increase in vacant units could drive the vacancy rate up nearly one percentage point, alleviating some of the challenges that extremely low vacancy rates can cause.

Moreover, neighborhoods with concentrated Airbnb activity are also marked by increasing rental asking prices and changes in neighborhood composition, showing a strong correlation between the median asking prices and the number of Airbnb listings at the neighborhood level. While this finding does not indicate that concentrated Airbnb activity causes increases in prices, it does indicate these two phenomena are increasing at a similar rate.

Additionally, neighborhoods with the greatest number of Airbnb listings have experienced significant changes in demographic characteristics that are linked to gentrification, including the proportion of white residents, the proportion of residents over 25 years old with a Bachelor's degree, and median household income. Past research prepared by the New York Attorney General's Office found that the number of Airbnb listings in New York City is rapidly increasing over time. If this trend continues to occur, sustained rises in rental prices and neighborhood displacement are likely, as well. These findings, confounded by the already limited market for rental housing that is affordable in New York City, indicate that some measures are necessary to better monitor the short-term rental market, uphold laws that are regularly violated by short-term rentals, such as the Multiple Dwelling Law, and protect neighborhoods and residents from market pressures that may cause displacement.

## Author's Note

Housing Conservation Coordinators Inc. (HCC) and MFY Legal Services Inc. (MFY) requested that BJH Advisors perform this analysis and provide this report. HCC and MFY are two New York City-based not-for-profit organizations that work to preserve affordable housing. The two organizations have studied the impact of short-term rentals for more than a decade and have witnessed firsthand the negative impact of short-term rentals on the communities that they serve.

Findings from the report are based in part on proprietary information provided by third party entities as well as from primary research and a variety of public data sources, as described in Section 2 of this report. BJH did not verify the accuracy of information provided to it by third parties. The analysis of the data, the conclusions and the report are the product of BJH Advisors.

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