



INNER RING

Residential Parking Study

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The City of New York
Mayor Michael R. Bloomberg

Department of City Planning
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NYC Department of City Planning

The Department of City Planning approaches parking policy as a part of its efforts to plan for the sustainable growth and development of the City, while maintaining and improving mobility and accessibility. Over the past decade, the Department rezoned more than 38 percent of the City, steering growth toward denser, transit-served areas and away from low-density areas dependent on cars for travel. This strategy has been successful: since 2007, 88 percent of new housing units have been located within one half-mile of transit. While the automobile remains an important element of the City's transportation system, recent trends indicate a shift toward public transit. The Department's 2011 *Manhattan Core Public Parking Study* documents that a greater proportion of travelers into the Manhattan Central Business District use mass transit rather than automobiles, and the Department of Transportation's 2010 *Sustainable Streets Index* documents a more than 2 percent decline in citywide traffic volumes since 2000.

This study examines key issues that are relevant when determining the amount of required off-street parking for various neighborhoods. To promote the City's environmental and quality of life goals, zoning regulations for off-street parking must be balanced, with attention to the specific needs of individual communities. Providing parking can be costly, particularly at higher densities which require structured parking, and excessive parking requirements could hinder housing production, making housing less affordable. Households in dense, transit-rich neighborhoods own fewer cars and drive them less, so it makes sense to have lower parking requirements in these neighborhoods. This also means that achieving transit-oriented growth in these neighborhoods contributes to an overall reduction in vehicle ownership and driving, which is beneficial to the environment. To further this sustainable growth and continue to attract and retain residents, however, the quality of life in these communities must remain high. This requires not only fostering mixed-use neighborhoods with pedestrian-friendly streets and access to shopping, services, and employment, but also maintaining an adequate supply of residential parking for people who choose to own a vehicle, even if they use it infrequently.

As the noted parking scholar Donald Shoup observed in his book *The High Cost of Free Parking*, there is no intrinsically "correct" amount of parking that should be required for a new development. Demand for parking is a product of numerous factors, including the price charged for parking, which is in turn shaped by the supply of parking in the area. This evaluation of parking requirements in the City's "Inner Ring" neighborhoods therefore examines not only the requirements themselves, but also the interactions between off-street parking regulations and the marketplace – the developments that provide parking and the people who use it.

Residential Parking and the Inner Ring

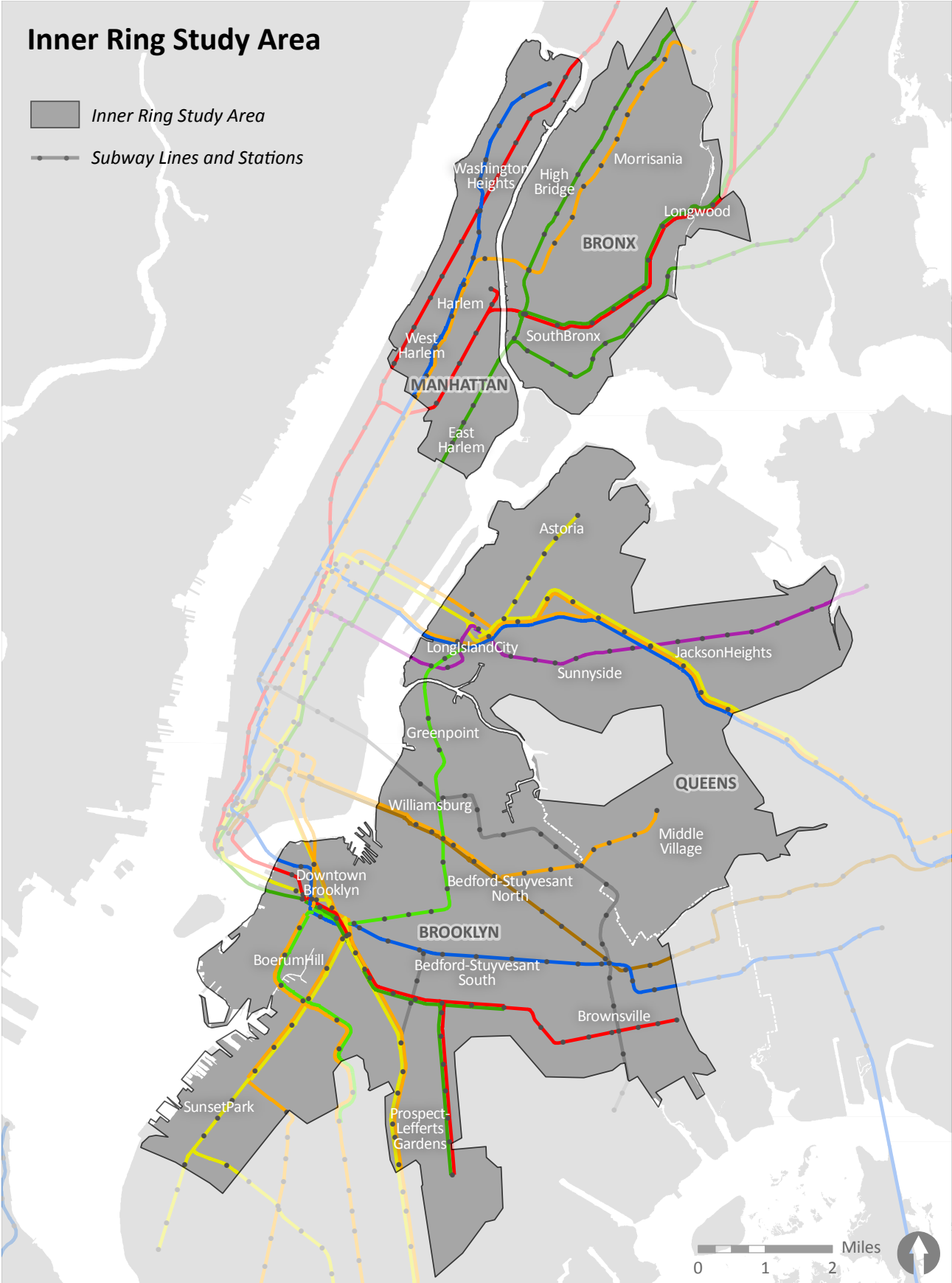
Today, except in the Manhattan Core (Community Districts 1 through 8) and a portion of Long Island City in Queens, New York City’s Zoning Resolution requires that new residential buildings provide accessory parking for a percentage of residential units. Each zoning district specifies a minimum requirement: the highest requirements are in lower-density districts, which are concentrated in areas that are less well served by transit, and the lowest requirements are in higher-density districts, which are generally close to transit. The amount of parking required can be reduced for affordable housing, and in medium- or high-density districts, parking can be waived for smaller buildings and sites.

This study focuses on a geography identified as “the Inner Ring,” encompassing neighborhoods in Upper Manhattan, the South Bronx, western Queens, and northern and central Brooklyn (see map on previous page). The Inner Ring was selected for study because, of the areas where zoning requires residential parking, it offers the greatest potential to reduce parking requirements and improve other transportation options that can contribute to reduced auto ownership. Though physically, demographically and socioeconomically diverse, neighborhoods in the Inner Ring share several characteristics important to transit-oriented development: they are dense, mixed-use communities close to subway lines, where many residents can frequently reach destinations by transit, on foot, or otherwise without the need for a private car. They also have relatively low rates of automobile ownership and commutation by car.

As the first analysis to combine building-level data on motor vehicle registrations, new housing, and zoning requirements, along with a household travel survey and data from the U.S. Census Bureau, this study seeks to understand how parking requirements factor into developers’ decisions about providing parking spaces for new housing; how off-street parking affects the choices residents make about owning, using, and parking vehicles; and how the cost of providing parking may affect the development of both affordable and market-rate housing.

Inner Ring Study Area

- Inner Ring Study Area
- Subway Lines and Stations



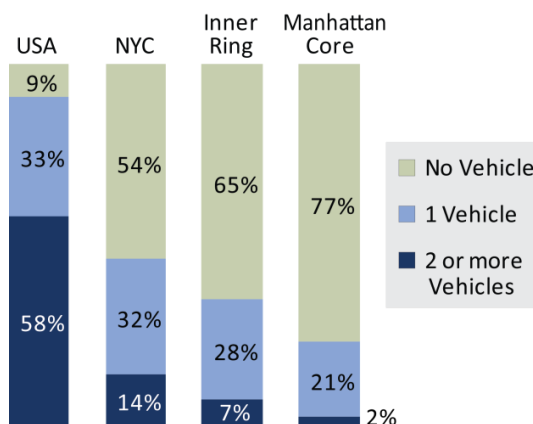
Key Findings

The *Inner Ring Residential Parking Study* produced the following key findings:

- Overall, car ownership rates for the Inner Ring are lower than those for the City as a whole and far lower than those for the nation.** Within the Inner Ring study area, only 35 percent of households own a vehicle, compared to 46 percent in New York City as a whole and 91 percent throughout the United States. Multiple car households are far less common in the Inner Ring (7 percent) than nationwide (58 percent).

Household Car Ownership

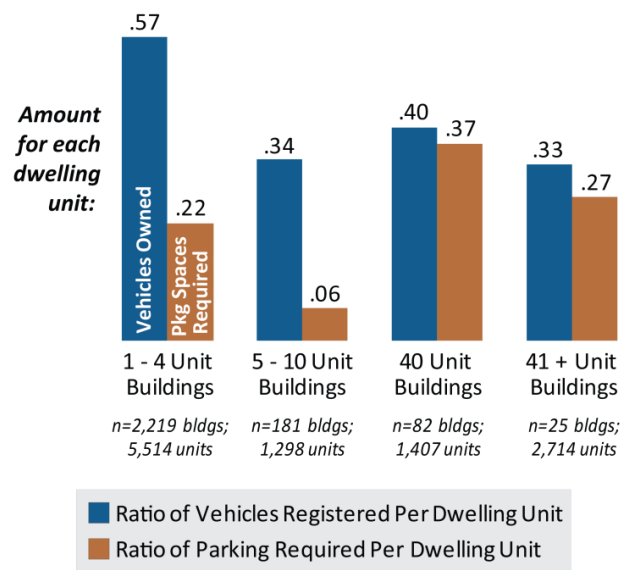
Source: 2005-2009 ACS



- Within the Inner Ring, car ownership varies according to factors including geography, household characteristics and building size, but not the amount of parking required by zoning.** Vehicle ownership rates vary by borough, size of building, and income level, and even among similarly sized buildings in the same borough, reflecting that the decision to own a vehicle results from a range of factors. Research revealed that within the Inner Ring, vehicle ownership rates do not have a direct correlation with the amount of parking required by zoning: the smallest buildings (of one to four units), which had the lowest effective parking requirements because of waivers available under zoning, had the highest rates of ownership.

Car Ownership and Effective Amount of Required Parking for New* Non-Publicly Subsidized Residential Buildings

Sources: MapPLUTO 2009, NYC DOB, NYC HPD, NYS DMV 2008



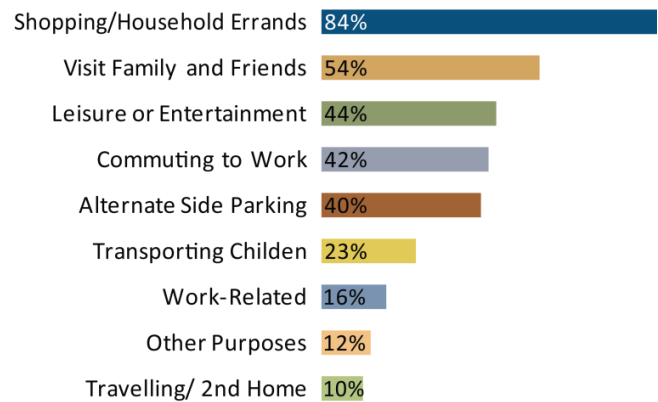
* Built between 1998 and 2004

- Vehicle ownership varies from building to building, making shared parking resources important.** For buildings of five or more units, on average, the number of parking spaces required, the number of parking spaces provided, and the number of vehicles owned were similar. However, the average rate of vehicle ownership masks substantial variation from building to building in the number of vehicles owned per household – some buildings have higher ownership, while some buildings have lower ownership. As a result, for any given building, any amount of required parking is unlikely to match exactly the number of vehicles owned by residents of that building. This highlights the importance of providing more flexibility for residents to park their cars throughout the neighborhood.

- Households in the Inner Ring that own cars use them for a variety of purposes.** Surveyed car owners were twice as likely to use their cars for shopping or household errands as for commuting to work. Only 42 percent of respondents stated that they had used their cars within the previous week to commute to work. Other trip purposes more commonly cited than work were visits to family and friends, leisure, and entertainment. This indicates that, while transit and other non-car options meet the commuting needs of most Inner Ring residents, many Inner Ring residents own cars for other purposes.

For the past seven days, did you use your vehicle for any of these types of trips. Check all that apply.

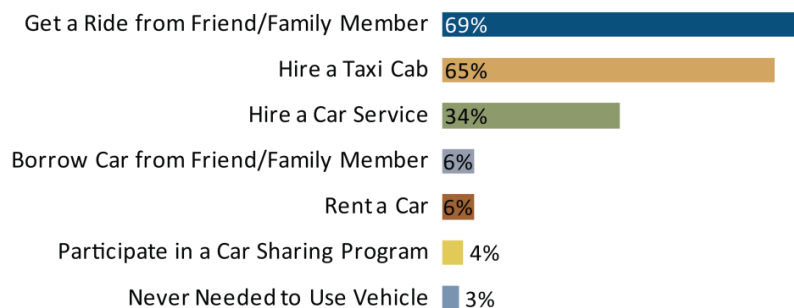
Source: DCP Household Travel Survey (n=604)



- Non-car-owning households also make regular use of hired or shared vehicles.** Ninety-seven percent of non-car-owning residents reported using a car, such as a family member or friend’s car, taxi or car service, rental or car-share vehicle, in the past month.

By what means have you traveled by car in the last month? Check all that apply. *(For residents who do not own a car, n=534)*

Source: DCP Household Travel Survey

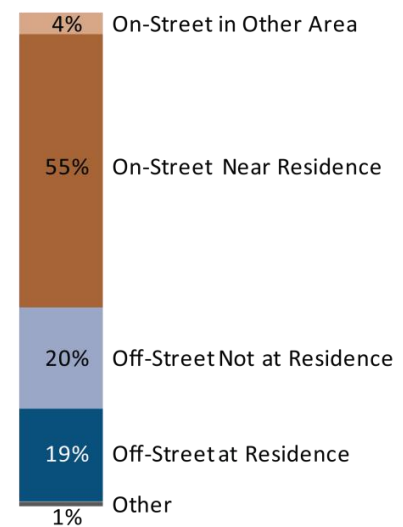


- In the zoning districts commonly mapped within the Inner Ring, required parking can be waived for smaller buildings and sites, substantially lowering the effective parking requirement.** Zoning districts in the Inner Ring require parking for between 40 and 85 percent of dwelling units, with lower percentages required in higher-density districts. However, in most Inner Ring zoning districts, because it is often difficult to configure parking for smaller buildings, these buildings may waive or reduce parking requirements. For example, in an R6 or R7-1 district, required parking is waived for buildings where five or fewer spaces would be required; in higher-density districts, buildings where 15 or fewer spaces would be required are eligible for the waiver. Affordable housing developments also have lower parking requirements. After accounting for these permitted reductions in the amount of required parking, the effective parking requirement for all residential developments (publicly subsidized and non-subsidized) built in the Inner Ring between 1998 and 2008 was one space for 22 percent of units. This reflects the large proportion of small buildings and subsidized housing constructed during this period. When waivers for accessory residential parking were available, they were often, but not always, used. About half of non-subsidized waiver-eligible buildings with 10 or fewer units chose to provide parking, as did about a third of waiver-eligible buildings with more than 10 units.

- Car-owning households in the Inner Ring make decisions about where to park based on the options available in their neighborhood, not just in their building.** Surveyed households that owned cars were most likely to park them on-street, and next most likely to park off-street at a location other than their residence. Over half of surveyed vehicle owners parked their cars on the street, and less than one-fifth parked off-street at their own residence, while just over one-fifth parked off-street at a different location. This can likely be explained by the fact that on-street parking, where available, is generally free, while off-street parking is not, and that many vehicle owners do not live in buildings with parking. In addition, many new large residential developments in the Inner Ring operate their garages as public parking (with a license from the Department of Consumer Affairs), so this parking effectively serves as a shared neighborhood resource, rather than a building-specific amenity.

Where is the vehicle you drive most typically parked at home?

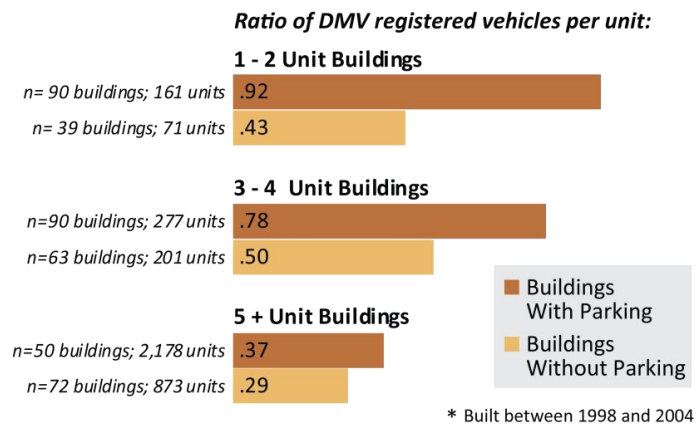
Source: DCP Household Travel Survey (n=648)



- In larger buildings, the presence of parking on site has only a small effect on the likelihood that residents will own cars.** Inner Ring residents are accustomed to parking off-site, and generally do not consider on-site parking as a precondition for owning a car. Forty-two percent of surveyed vehicle owners lived in a building without off-street parking, and 43 percent of non-vehicle owners lived in a building with parking. In new buildings of one to four units, the presence of off-street parking correlates with substantially higher vehicle ownership rates. (As described above, parking is generally not required for these buildings in the Inner Ring, but in some instances has been provided nonetheless.) However, for new buildings with five or more units, the presence or absence of on-site parking does not have a large effect on the number of vehicles owned by the building’s residents. This likely reflects that parking for small buildings is generally reserved for building residents, while as noted above, parking in larger buildings is often used by residents from throughout the neighborhood, and not just by building residents.

Vehicle Ownership by Building Size and Presence of Off-Street Parking for Surveyed New* Non-Publicly Subsidized Buildings

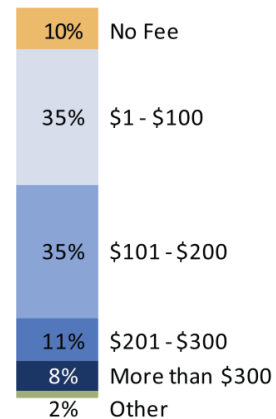
Sources: MapPLUTO 2009, NYC DOB, NYC HPD, NYS DMV 2008, DCP Survey



- Inner Ring residents generally pay a fee for off-street parking, though the amount they pay varies.** Economic theory dictates that including parking for free with the price of housing, also known as “bundling” of parking, encourages auto ownership and increases the cost of housing. This study found that residential parking in the Inner Ring is generally “unbundled” – paid for by residents separately from housing. This means that scarce parking spaces are allocated to people who choose to pay for them, though they do not necessarily pay the full cost of building parking spaces. Ninety percent of surveyed households that parked off-street reported paying for parking, and more than half paid at least \$100 per month. However, 80 percent paid \$200 or less per month, which is unlikely to cover the cost of building new structured parking. Parking prices vary in different Inner Ring neighborhoods, as does the supply of off-street parking. Free on-street parking, which is heavily utilized, serves as an alternative to paid off-street parking.

How much is the monthly fee per space at your off-street parking location?

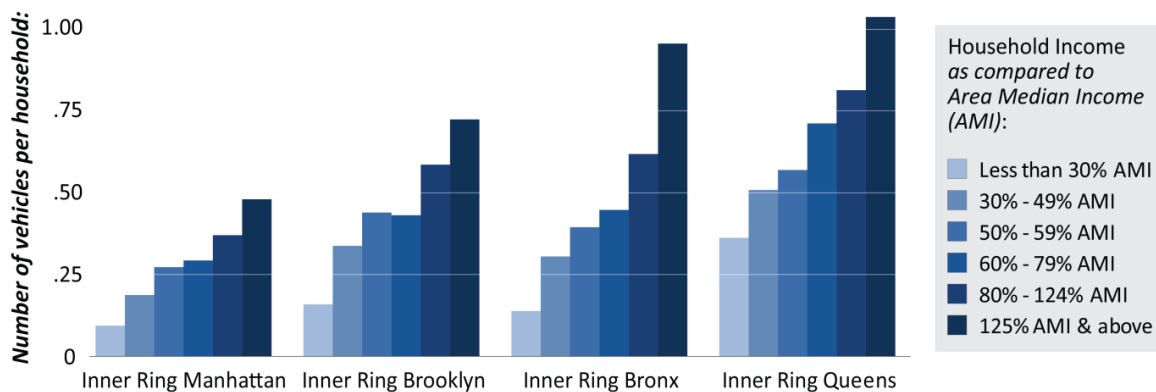
Source: DCP Household Travel Survey (n=177)



- The often substantial costs of providing parking and the revenues generated by parking are important factors in developers’ decisions about whether to build parking.** Whether a building is eligible to waive required parking or must provide a specified number of spaces, a developer may elect to provide parking beyond what is required. The size of the building has an effect on the likelihood that the developer will provide additional parking. Smaller buildings can often provide surface parking at a low cost, and as described above, many smaller buildings provided some parking despite the ability to waive the zoning requirement. Larger buildings were less likely than smaller buildings to provide more parking than required. This can be explained in part by the fact that these buildings typically require structured parking, which is expensive to provide, and the prices most Inner Ring residents pay for off-street parking appear to be insufficient to recover fully the costs of building new structured parking. This produces a financial disincentive to provide parking voluntarily. In addition, current parking requirements were established based on the amount of parking that fits on a single level; exceeding this amount by more than a few spaces would require a second level of parking and substantial additional cost – another disincentive to the voluntary provision of parking. Developers also consider factors other than direct revenues from parking, such as the importance of parking to prospective residents. This can lead to different amounts of parking provided even for buildings of the same size within the same neighborhood.

- Affordable housing is more susceptible than market-rate housing to the cost implications of requiring accessory parking, and its residents own fewer vehicles.** Affordable housing subsidy programs often cannot cover the costs of structured parking, and the costs of parking cannot be recouped by charging residents, who are less able to pay for parking than residents of market-rate housing. For recent developments with five or more units, affordable housing averages many more units per building than market-rate housing, making it more difficult to use parking waivers. Vehicle ownership rates decline as household income decreases, and there is extremely low vehicle ownership in special needs housing such as low-income housing for the elderly.

Vehicle Ownership by Household Income in Inner Ring Borough Sub-Areas *Source: 2007-2009 ACS*



Principles for Off-Street Parking Policy in the Inner Ring

Based on the findings of this study, several principles are identified to guide parking policies and to inform future discussion with communities, elected officials, and other stakeholders about opportunities to reduce parking requirements in Inner Ring neighborhoods:

- **Recognize that accessory residential parking facilities in the Inner Ring often provide parking for residents throughout the neighborhood, and are often operated as public parking.** Most Inner Ring car owners already use “shared” parking, keeping their cars either on-street or at other garages or lots in their neighborhood. Many new large residential developments in the Inner Ring operate their garages as public parking rather than as a building-specific amenity, despite zoning regulations which anticipate that parking will be used primarily by building residents. Allowing public parking more broadly could have multiple benefits. Shared parking facilities reduce the total number of parking spaces needed to serve a neighborhood. In addition, enabling garages to rent spaces more flexibly would increase revenue, making it more likely that parking revenues cover the costs of constructing a garage, and reducing the need for housing prices to cover these costs.
- **Evaluate off-street parking requirements on a neighborhood-by-neighborhood basis.** While this study identified overall patterns in vehicle ownership across the Inner Ring, vehicle ownership rates varied significantly from borough to borough and among neighborhoods in the Inner Ring. The parking supply that is most important to residents is the local supply, since they generally seek to park close to their homes. It is therefore important to look at parking policy at a neighborhood level. Taking into consideration the balance between the costs of providing off-street parking and the need for new parking to support development, modifications can be considered to better match parking regulations to neighborhood characteristics. In areas where parking requirements are higher than necessary, requirements can be reduced. Engagement with community stakeholders and elected officials would be a key component of any process to amend parking regulations.
- **Update the parking requirements for affordable housing to reflect current programs and vehicle ownership rates.** While the parking requirements for affordable housing developments have not been substantially changed in 25 years, the nature of affordable housing development has shifted in recent years toward larger buildings which are more likely to require costly structured parking. Affordable housing developments are less able to support the costs of providing off-street parking than market-rate housing developments, and their residents are less likely to use it. Updating requirements for affordable housing to better match the needs of its residents can reduce construction costs and enable more affordable units to be built with the same amount of public subsidy.
- **Continue to expand the availability of transportation options in the Inner Ring.** The low auto usage and ownership in the Inner Ring is a reflection of its dense, mixed-use neighborhoods with good access to transit. Surveyed Inner Ring residents who did not own cars reported frequently using shared or hired vehicles, indicating that the availability of such choices made it easier for them to choose not to own a car. Improving the range of transportation options available in these neighborhoods, including street-hail taxi service, car sharing, bike sharing, bus service, and ferry service, along with cultivating walkable destinations for shopping and services, can enable the continued growth of these neighborhoods and support a high quality of life for their residents while minimizing the number of automobiles that need to be parked.

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NYC Department of City Planning

Parking Policy in Context

The study of residential parking regulations is conducted as part of Department of City Planning's (DCP) efforts to promote the sustainable growth and development of New York City's neighborhoods, while maintaining and improving mobility and accessibility. Previous studies, including DCP's *Peripheral Travel Study* (see below), have found that when people live in dense, mixed-use neighborhoods with strong transit access, they can often get where they want to go by transit or on foot without the need to use a car. This not only helps reduce congestion, pollution, and greenhouse gas emissions, but it also means that fewer cars need to be stored, which contributes to the efficient use of urban space, a more pedestrian-friendly environment and lower housing costs.

The Department of City Planning approaches parking policy as a part of its efforts to plan for the sustainable growth and development of the City, while maintaining and improving mobility and accessibility. For over a decade, DCP's policy, consistent with PlaNYC goals for sustainable growth and development, has been to shift housing growth toward denser, transit-served areas, where residents own fewer cars, and away from areas where residents have fewer alternatives to the automobile, where car ownership is higher, and parking requirements are correspondingly higher. With households that live in dense, transit-rich neighborhoods owning fewer cars, and driving them less, it makes sense to have lower parking requirements in these neighborhoods. This also means that achieving transit-oriented growth in these neighborhoods contributes to an overall reduction in vehicle ownership and driving, which is beneficial to the environment. To sustain this kind of growth and continue to attract and retain residents, though, the quality of life in these communities must remain high. This requires not only fostering mixed-use neighborhoods with pedestrian-friendly streets and access to shopping, services, and employment, but also maintaining an adequate supply of residential parking for people who choose to own a vehicle, even if they use it infrequently.

This approach to land use regulation has been successful: since 2007, 87 percent of new housing units have been located within a half-mile of a subway stop. While the automobile remains an important element of the City's transportation system, recent trends indicate a shift toward public transit. The Department's 2011 *Manhattan Core Public Parking Study* documents that New York City has seen a greater proportion of travelers into the Manhattan Central Business District use mass transit rather than automobiles, and the Department of Transportation's 2011 *Sustainable Streets Index* documents a 1.5 percent decline in citywide traffic volumes since 2000.

New York City's zoning policies for off-street parking have long recognized that there are costs to providing parking, particularly structured parking in a dense environment, and that these can increase the cost of building housing, with implications for housing production and affordability. At the same time, DCP is sensitive to the legitimate concerns of communities who see new development without sufficient parking as introducing competition for a limited supply of on-street parking spaces.

As described in PlaNYC 2030, New York City needs new housing both to support a growing population and to improve living conditions. In order for communities to accept new housing and the zoning that allows it, there must be confidence that new development will not place undue stress on existing parking resources. The balance between these objectives – preventing community impacts and facilitating housing creation – has long been part of the City's consideration of parking regulations. This study is intended to inform the review of residential parking regulations in the Inner Ring with this balance in mind. Off-street parking is infrastructure used by the resident population that owns cars and visitors who drive to the city for business or leisure. While the city and regional public transportation network is vast and popular, many city residents and visitors still choose to own or travel by personal

car for some share of their trips. Therefore, cars and parking need to be considered as part of the greater transportation network, in addition to subways, trains, ferries, taxis, bicycles, and walking.

Noted parking scholar Donald Shoup observed in his book, *The High Cost of Free Parking*, that there is no intrinsically “correct” amount of parking to require for a new development. Demand for parking is a product of numerous factors, including the price charged for parking, which is in turn shaped by the supply of parking in the area. A thorough evaluation of parking requirements will therefore examine not only the requirements themselves, but also the interactions between off-street parking regulations and the marketplace – the developments that provide parking and the people who use it. Recognizing this, the Inner Ring Residential Parking Study seeks to clarify the relationships among the zoning requirements for off-street residential parking, the decisions developers make about providing parking spaces in conjunction with new buildings, and the decisions residents make about owning, using, and parking vehicles.

Off-Street Residential Parking Regulations and the Inner Ring

The history of parking requirements in New York City provides a useful background for understanding the relationship between parking requirements and vehicle ownership. Requirements for off-street parking emerged after dramatic growth in automobile ownership, rather than before it. Off-street parking requirements for residences were first imposed in New York City in 1950, when there were already about one million passenger vehicles registered in the city. Following a decade when another 500,000 passenger vehicles added were added, the 1961 Zoning Resolution increased parking requirements. In the 50 years since these requirements went into effect, the number of registered passenger vehicles has continued to increase, albeit at a much slower rate than that of the 1950s, reaching 1.77 million in 2010.¹ (A comparison with recent U.S. Census data indicates that vehicle availability is somewhat higher than the number of vehicles registered at addresses in New York City.)

Except in the Manhattan Core (Community Districts 1 through 8) and a portion of Long Island City in Queens, New York City’s Zoning Resolution requires new residential buildings to provide accessory parking for a percentage of residential units. Each zoning district specifies a minimum requirement, with the highest requirements in lower-density districts, which are concentrated in areas that are less well served by transit, and the lowest requirements in higher-density districts, which are generally close to transit. The amount of parking required can be reduced for affordable housing, and in medium- or high-density districts, parking can be waived for smaller buildings and sites.

The *Inner Ring Residential Parking Study* focuses on the neighborhoods outside but close to the Manhattan Core, in Upper Manhattan, the southern Bronx, western Queens, and northern and central Brooklyn. These neighborhoods, described here as the “Inner Ring,” were selected for study because, of the areas where zoning requires parking, it offers the greatest potential to reduce parking requirements and improve other transportation options that can contribute to reduced auto ownership. Though physically, demographically and socioeconomically diverse, these neighborhoods have strong access to transit, relatively high densities, and relatively low levels of automobile ownership and auto commutation. Parking requirements in these neighborhoods are generally low in comparison to requirements in other neighborhoods (and other jurisdictions).

¹ New York State Department of Motor Vehicles – <http://www.dmv.ny.gov/Statistics/regin10.htm>

The *Inner Ring Residential Parking Study* investigates car ownership rates, parking requirements and other factors affecting the decisions of market-rate and affordable housing developers, and vehicle ownership and use patterns among residents in these neighborhoods. These observations are used to generate principles that will guide potential modifications to residential parking regulations.

Previous Studies

The *Inner Ring Residential Parking Study* builds on several recent DCP studies of parking and transportation issues. Relevant findings from each of these reports, as well as from other studies, are summarized briefly below.

- ***Residential Parking Study (2009)***

The *Residential Parking Study* analyzed parking requirements for new housing and car-ownership data for residents living in such housing. Household car-ownership trends were analyzed by building type, location in the city, and socioeconomic and demographic factors to determine if current parking regulations reflect demand for parking. A major finding from the study is that car ownership in New York City is strongly correlated with factors such as household income, family status, and housing type, while parking requirements are not a strong determinant of vehicle ownership. In addition, the study found that household car-ownership increases as distance from the Manhattan Core increases.

- ***Peripheral Travel Study (2010)***

This study analyzed Census data on journey to work for workers who live and/or work in the boroughs outside of Manhattan. While the subway and commuter rail systems focus primarily on delivering commuters to the Manhattan Central Business District (CBD), the *Peripheral Travel Study* found that New Yorkers residing outside Manhattan are more likely to work in their own borough than to commute to Manhattan or any other location. In addition, this study found that in the denser neighborhoods closest to the Manhattan Core, residents were far more likely to use public transportation, walk, or use modes other than a private car to get to work.

- ***Manhattan Core Parking Study (2011)***

As described above, since 1982, zoning regulations have limited the amount of new parking permitted in the Manhattan Core. The *Manhattan Core Public Parking Study* surveyed 110 public parking facilities in Manhattan Community Districts 1 through 8 to understand utilization patterns and the decisions of those parking in these facilities, and analyzed demographic and transportation trends. Two key findings from this study were that most new parking facilities in the Manhattan Core function as public parking and serve as a shared parking resource, accommodating a range of users even when zoning regulations required that spaces be reserved for building residents or workers in the building; and that public parking facilities serve as important neighborhood parking resources, with a substantial share of spaces occupied by neighborhood residents. These findings were used to inform modifications to the Manhattan Core parking regulations, approved in May, 2013, that enhanced Special Permit findings for building accessory parking that exceeds the allowed as-of-right maximum number of spaces, and that allow accessory parking facilities to operate as public parking.

- ***Parking Best Practices (2011)***

This study reviewed parking policies and regulations in ten other U.S. cities and London, identifying innovative strategies to provide an appropriate amount of spaces for cars while promoting walkable communities and encouraging the use of alternative modes of transportation. Revising parking regulations is one method used by cities to encourage sustainable development in their communities. Until recently, requiring a minimum number of parking spaces for a particular use was standard practice. Today, several municipalities employ regulations similar to those of the Manhattan Core for managing parking in central areas. Other strategies include lowering minimum parking requirements, allowing shared parking that serves more than one use, and requiring fewer parking spaces for uses located along transit corridors.

- ***Downtown Brooklyn (2012)***

A review of the underuse of required parking in Downtown Brooklyn led to amendments to the zoning that lowered the parking requirements for market-rate residential development, eliminated the parking requirements for affordable housing and permitted public parking in accessory garages in the small area of Downtown Brooklyn where this was not previously permitted.

- **Other Studies**

In recent years, private policy and advocacy organizations have released studies that make observations and recommendation about parking regulations in New York City.

- *Minimum Parking Requirements, Transit Proximity, and Development in New York City* (2011), by Simon McDonnell, Josiah Madar, and Vicki Been of the Furman Center for Real Estate and Urban Policy at New York University, estimates average required parking, taking into account waivers available under zoning, for potentially developable sites in New York City. This study found that net parking requirements tend to be lower near transit, because of the lower requirements and waiver provisions available in the higher-density districts commonly mapped near transit, but that even this proportionally lower amount of parking entails costs and requires the dedication of substantial space. Based on a sample of buildings with 20 or more units, the study also found that developers of these multifamily generally build at or near the minimum parking requirement, and suggested that they might elect to build less parking if permitted to do so.

- *Suburbanizing the City: How New York City Parking Requirements Lead to More Driving* (2008) by Rachel Weinberger, Mark Seaman, and Carolyn Johnson prepared for Transportation Alternatives, summarizes off-street residential parking requirements within the five boroughs (though does not account for permitted waivers or reductions). The study also projects future increases in Vehicle Miles Traveled (VMT) and carbon emissions based on assumptions about the net increase of parking spaces and an increase in vehicle ownership attributed to these spaces, and notes a lack of available data on the supply of parking. Also prepared for Transportation Alternatives, *Guaranteed Parking – Guaranteed Driving: Comparing Jackson Heights, Queens and Park Slope, Brooklyn* (2008) by Rachel Weinberger, Mark Seaman, Carolyn Johnson, and John Kaehny, compares Census data and parking supply for these two neighborhoods, and suggests that the greater availability of off-street parking at home encourages residents to drive into the Manhattan Core for work.

Research Goals and Methodology

The *Inner Ring Residential Parking Study* uses a variety of data sources, including real property data, address-matched data on motor vehicle registrations, and resident survey data to describe the relationships among parking regulations, developer decisions, and vehicle ownership and use among residents in Inner Ring neighborhoods. These data sources make possible a more nuanced description of the interaction of many factors in determining how off-street parking is created and used, and how households within these neighborhoods make travel decisions.

STUDY AREA DEFINITION

The idea of an Inner Ring in New York City was first suggested in the citywide *Residential Parking Study*. The geography was updated for the *Inner Ring Parking Study* to more precisely encompass neighborhoods with good transit access, relatively low auto-ownership rates, medium to high housing density, and journey-to-work travel patterns that more closely resemble the patterns of the Manhattan Core than those in lower-density areas of the Bronx, Brooklyn and Queens. In order to define the Inner Ring Study Area, an index was developed using the 2000 Census to weight block groups based on proximity to subway lines, population density, percentage of transit commuters, and average commute times. The Inner Ring still has significantly higher auto-ownership rates than the Manhattan Core and a significant proportion of on-street street space is used for parking.

ORGANIZATION OF THE INNER RING RESIDENTIAL PARKING STUDY

The *Inner Ring Residential Parking Study* consists of five parts. The following chapters include a description of methodology and key findings from each component of the study:

- ***Chapter 1: Study Area Characteristics***
This chapter describes how building size, household vehicle ownership, and commutation patterns vary across the Inner Ring, among boroughs and neighborhoods. Although Inner Ring neighborhoods share physical characteristics such as distance from the Manhattan Core and proximity to subway stations, significant differences in demographics and land use exist as well. The purpose of this section is to illustrate the commonalities and the variations among Inner Ring neighborhoods using real property data and data from the Census and American Community Survey.
- ***Chapter 2: Zoning Requirements and Market Conditions for Off-Street Parking***
The second chapter discusses zoning requirements for accessory off-street residential parking, and the market-based decisions made by developers. Ultimately, car-owning households will decide between paying for off-site parking or seeking free on-street parking. Residents must consider whether to have a personal vehicle at their disposal given their transportation needs, the financial costs of off-street parking and the prospective time and inconvenience of on-street parking and would be residents must consider how the availability and costs of parking influence their choice of where to live. In order to maximize profits and build housing units that can be rented or sold, developers must consider the local market for off-street parking along with the cost of building parking. Since developers are often given an option to “waive out” of parking requirements for small buildings and small lots, these considerations can determine whether or not a new development includes accessory parking.

- ***Chapter 3: The Inner Ring Household Travel Survey***
The Household Travel Survey asked over 1,300 households living within the Inner Ring about their household travel patterns as well as the presence of parking at their residence. Both car-owning and non-car-owning households were asked questions about how they travel for various purposes. The purpose of this section is to better understand car usage among all households and to learn how households coordinate decisions about vehicle ownership, housing, parking, and travel.
- ***Chapter 4: Built Parking Survey and DMV Registration Analysis***
This chapter analyzes the relationship between zoning requirements, built parking, and household car-ownership data in recently constructed residential buildings, taking into account that smaller buildings can often reduce or waive the parking requirements. The analysis assesses patterns by building size, borough, and proximity to transit.
- ***Chapter 5: Parking Requirements and Affordable Housing in the Inner Ring***
Similar to the previous chapter, *Affordable Housing* discusses zoning requirements, built parking, and vehicle ownership trends for new publicly subsidized developments in the Inner Ring. Additionally, this section considers the effect of parking requirements on the development of affordable housing and includes anecdotal information gathered from the affordable housing development community.

Findings from each of these components of the Inner Ring Residential Parking study provide new information about the interaction among zoning regulations, developer decisions, and household decisions about vehicle ownership and use. These findings are used to generate parking policy principles that can be used to address specific conditions that exist within individual Inner Ring neighborhoods.

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Chapter 6: Summary of Findings and Policy Goals

Appendix 1: Neighborhood Profiles

Appendix 2: Built Parking and Affordable Housing Technical Appendix

Appendix 3: Household Travel Survey Technical Appendix

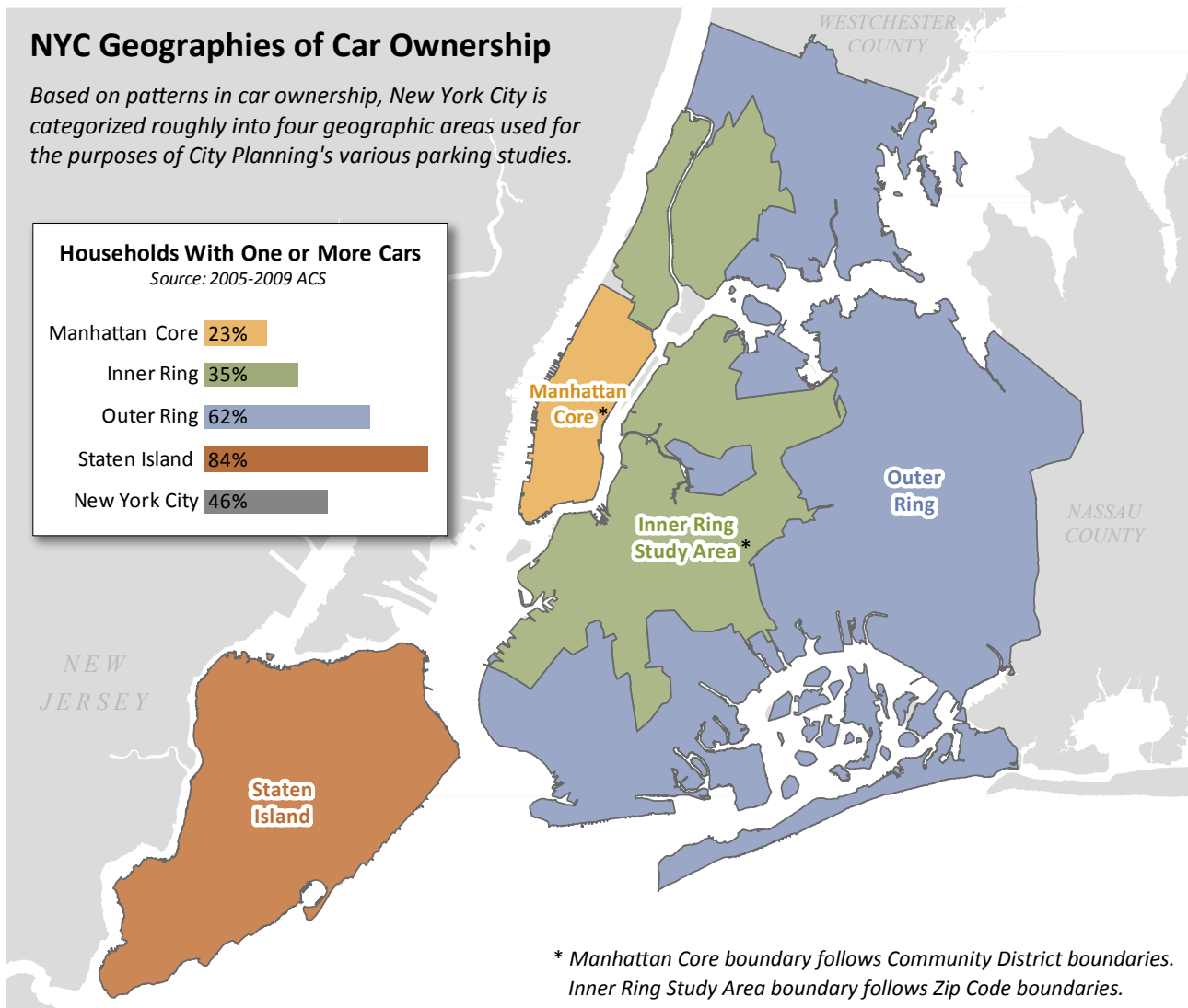
INNER RING

Residential Parking Study

NYC Department of City Planning

Introduction

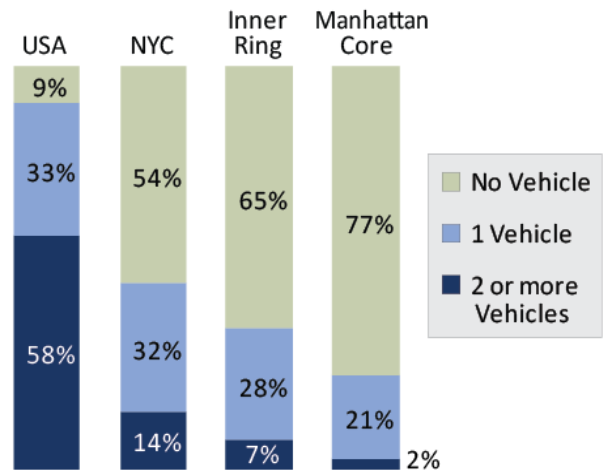
Based on the geographic patterns in car ownership identified in the *Residential Parking Study* (2009), New York City can be categorized roughly into four geographic areas: the Manhattan Core, the Inner Ring, the Outer Ring, and Staten Island. The Manhattan Core contains the City's primary central business district and includes neighborhoods south of 96th street on the East Side and neighborhoods south of 110th Street on the West Side. This study identified an Inner Ring, a collection of transit-rich neighborhoods in Upper Manhattan, the Bronx, Western Queens and Brooklyn. Inner Ring neighborhoods range from high-density neighborhoods such as Downtown Brooklyn to relatively low-density neighborhoods such as Glendale in Queens. While lifestyles of households within these neighborhoods vary, all Inner Ring neighborhoods are close to transit, located within one half mile of a subway station. Beyond the Inner Ring lie neighborhoods in the Bronx, Queens, Brooklyn, and Staten Island that are generally lower-density and often distant from subway stations, with transit service limited or inconvenient for many trips, and with higher household car ownership than other areas of the City.



Within New York City, only 46 percent of households own one or more vehicles, which is significantly lower than the vehicle ownership rate for the entire United States, where 91 percent of households own cars.² The City’s extensive public transportation system; taxi, livery and car share availability; extensive bicycle network; and concentration of pedestrian-friendly streets give residents of many neighborhoods numerous options to get around and often make it possible to not own a car.

Household Car Ownership

Source: 2005-2009 ACS



The distribution of these beneficial characteristics varies throughout the City’s communities and is reflected in car ownership patterns. American Community Survey data for the Manhattan Core, Inner Ring, Outer Ring, and Staten Island show that household car ownership increases as transit accessibility to the Manhattan Core decreases. Within the Inner Ring study area, only 35 percent of households own a vehicle, compared to 46 percent in New York City as a whole. Multiple car households are far less common in the Inner Ring (7 percent) than citywide (14 percent) and nationwide (58 percent).³

To better understand car ownership and other characteristics of the Inner Ring at the local level, “Neighborhood Profiles” research was conducted as part of the Inner Ring Residential Parking Study. This research identified 23 “neighborhood profile areas,” shown on the following map, which are clusters of ZIP codes within the Inner Ring. These neighborhood profile areas are referenced on the map by one of the neighborhoods contained within the profile area. (For this report, neighborhood names have been used for general orientation purposes only, and their boundaries may differ from the publicly perceived boundaries of the neighborhoods themselves.) The results of the Neighborhood Profiles research, which contain information about land use and zoning regulations as well as additional data on housing options, household car ownership, and journey to work modal splits for all the Inner Ring’s 23 neighborhood subareas, can be found in *Appendix 1: Neighborhood Profiles*.

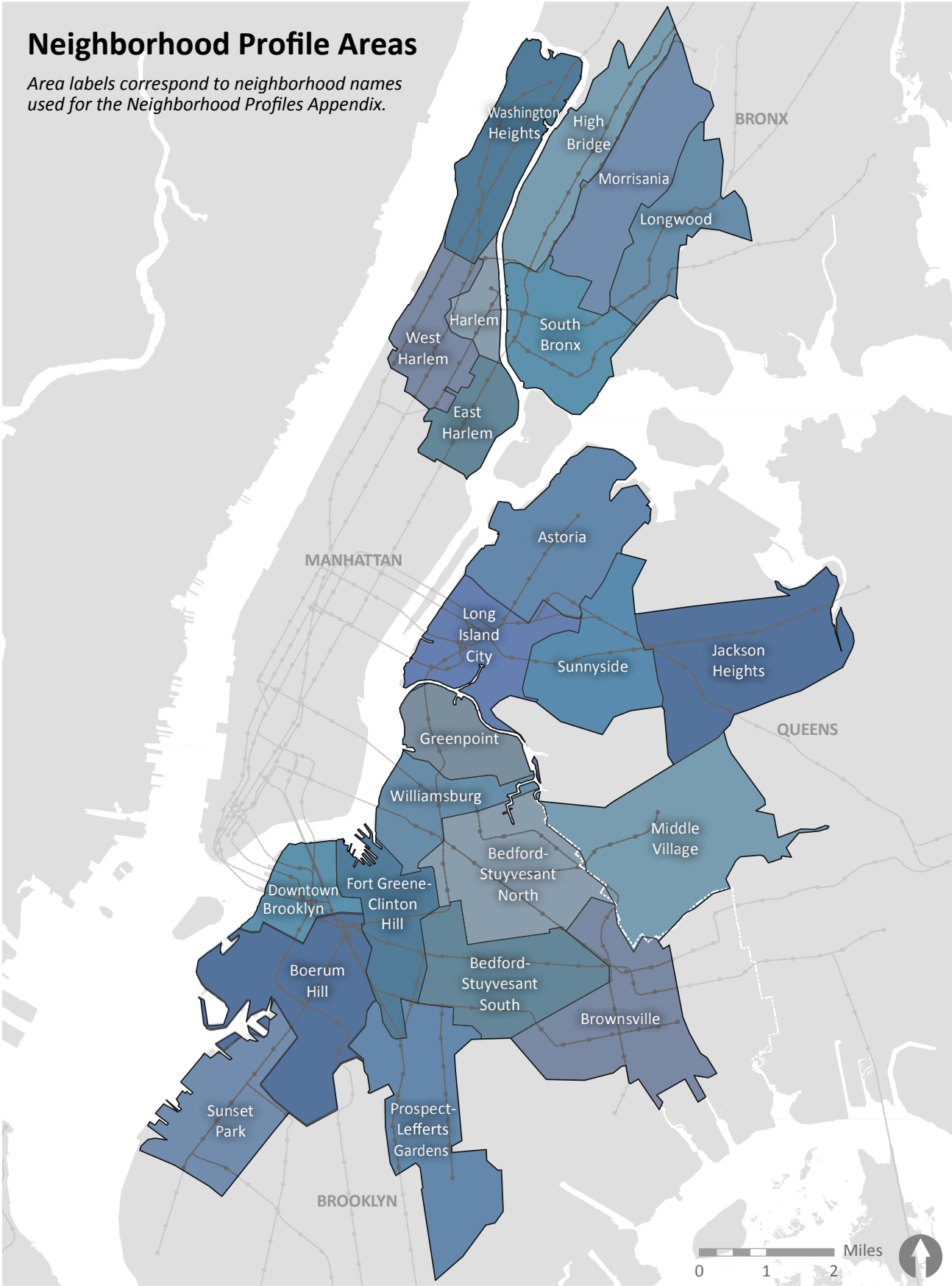
The *Neighborhood Profiles* appendix describes how Inner Ring neighborhoods share certain characteristics including proximity to transit, but that population densities, commutation patterns, and auto ownership and use patterns differ among neighborhoods, as do land use, residential building types, and residents’ lifestyles. This chapter highlights those differences by borough, and contrasts among four sample neighborhood profile areas: East Harlem in Manhattan, the South Bronx, Downtown Brooklyn, and Sunnyside/Woodside in Queens.

² U.S. Census Bureau; American Community Survey, 2005-2009.

³ Ibid.

Neighborhood Profile Areas

Area labels correspond to neighborhood names used for the Neighborhood Profiles Appendix.



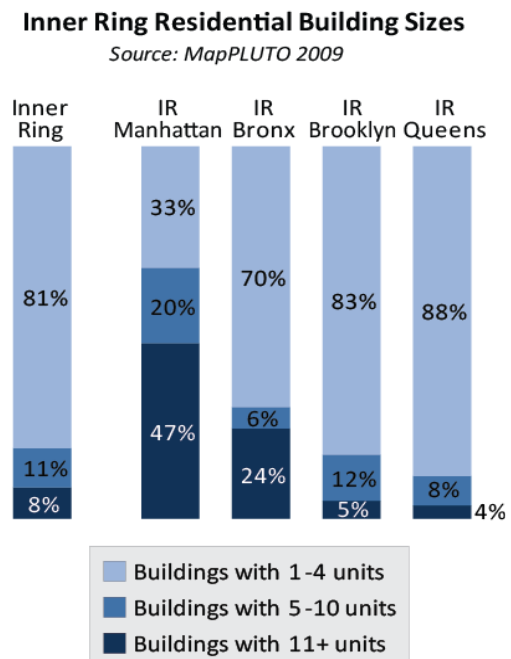
Data Sources and Methodology

Social, economic, and transportation data from several sources informed the definition of the Inner Ring study area. At the time the study began in 2009, the 2000 Census was the best source for data on population density, commuting patterns, and car ownership at the tract level. Since then, the U.S. Census Bureau has released new data via the American Community Survey (ACS), making it possible to conduct tract-level analysis using multi-year estimates. This chapter of the report compares household car ownership and journey to work data using both the 2000 Census and the 2005-2009 ACS, giving a sense of trends between these time periods. Data about building types comes from NYC DCP's MapPLUTO.

Residential Building Size

Housing options in the Inner Ring range in size from one-family homes to large apartment buildings with more than 100 units. As much as 80 percent of residential buildings are small, with one to four dwelling units. The Queens and Brooklyn portions of the Inner Ring study area have the highest proportion of one- to four-unit buildings, with these buildings making up 88 and 83 percent of residential buildings, respectively. In contrast, nearly half of all residential buildings in Upper Manhattan have eleven or more units. The chart below shows this wide spectrum of housing found in the Inner Ring.

Residential building size can vary significantly from one neighborhood to the next, similar to differences found among boroughs. In the East Harlem, the South Bronx, and Downtown Brooklyn neighborhood profile areas, residential buildings with eleven or more units make up 35, 20, and 12 percent of residential buildings, respectively. Elsewhere in the Inner Ring, there is less variety in residential building sizes: For example, in the Sunnyside neighborhood profile area of Queens, 5 percent of residential buildings have eleven or more units and 88 percent have four or fewer units.



Car Ownership

On average in the Inner Ring, 35 percent of households own a vehicle.⁴ However, there is substantial variation in car ownership patterns within the Inner Ring study area by borough and by neighborhood. For example, the Manhattan portion of the Inner Ring has the smallest share of households that own a car (23 percent), while Queens has the highest (48 percent).

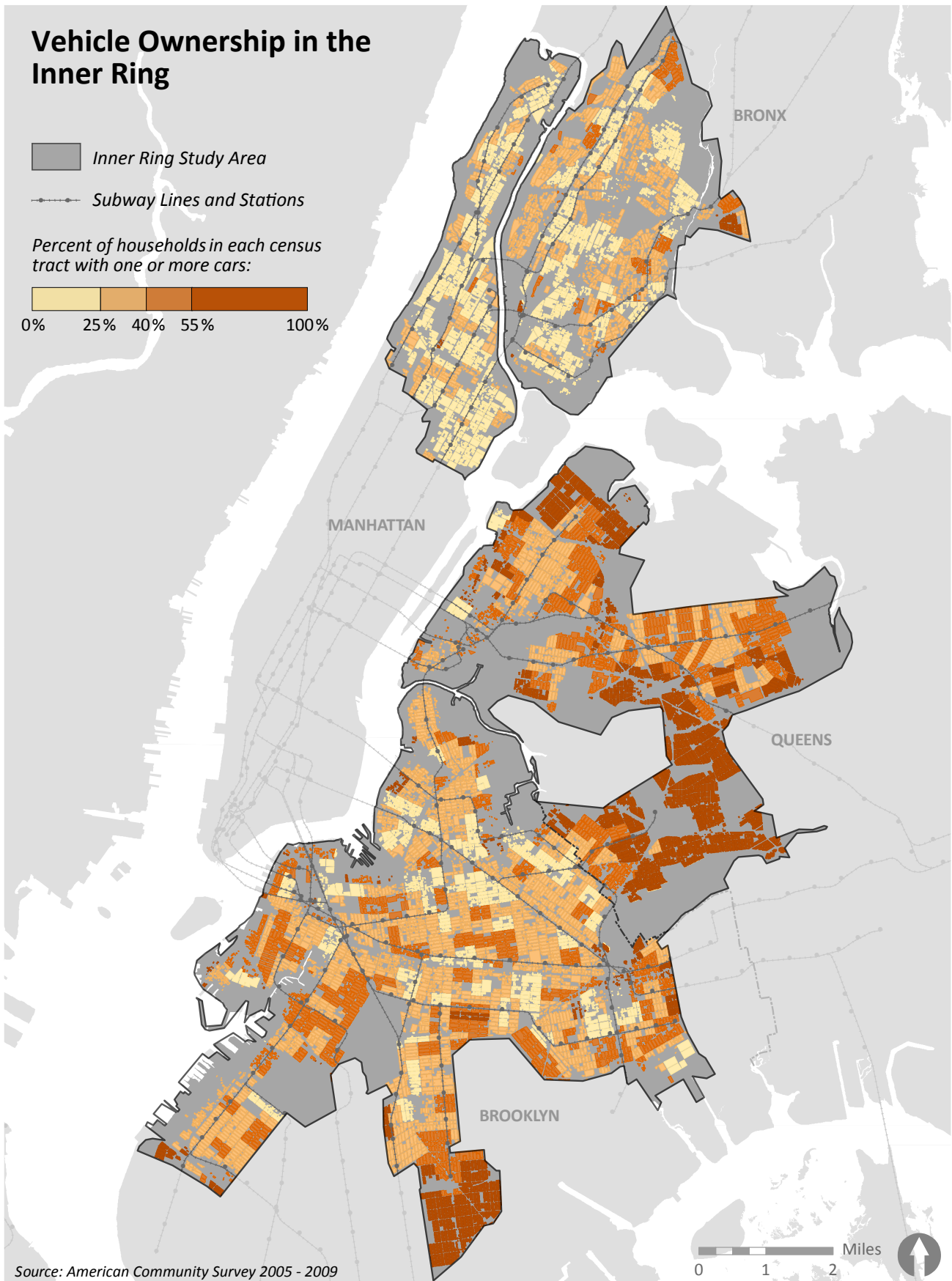
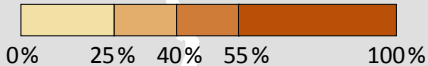
⁴ U.S. Census Bureau; American Community Survey, 2005-2009.

Vehicle Ownership in the Inner Ring

Inner Ring Study Area

Subway Lines and Stations

Percent of households in each census tract with one or more cars:



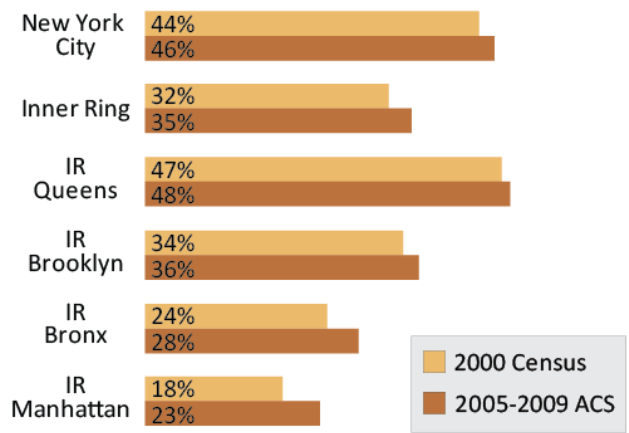
A comparison of 2000 Census and 2005-2009 ACS data shows a slight increase in the percentage of households living in the Inner Ring that own one or more cars, with the greatest change occurring in the Bronx and Manhattan.

In the East Harlem and South Bronx neighborhood profile areas, at least 80 percent of households do not own a car. In comparison, in the Sunnyside/Woodside area in Queens, 55 percent of households do not own a car.⁵ The rate of car ownership in the Downtown Brooklyn area, which encompasses a larger area than the area subject to the 2012 Downtown Brooklyn zoning text amendment on parking, is similar to car ownership rates for the entire Inner Ring, with 67 percent of households not owning a car.⁶

Households make decisions whether or not to own a car based on a variety of considerations. DCP’s *Residential Parking Study* identified correlations between vehicle ownership and factors such as household income, family status, and housing type. While these data do not point to the precise reasons why car ownership patterns vary by neighborhood, it is consistent with the *Residential Parking Study*’s findings that neighborhoods with different prevailing income levels, family status, and housing types exhibit differing levels of auto ownership.

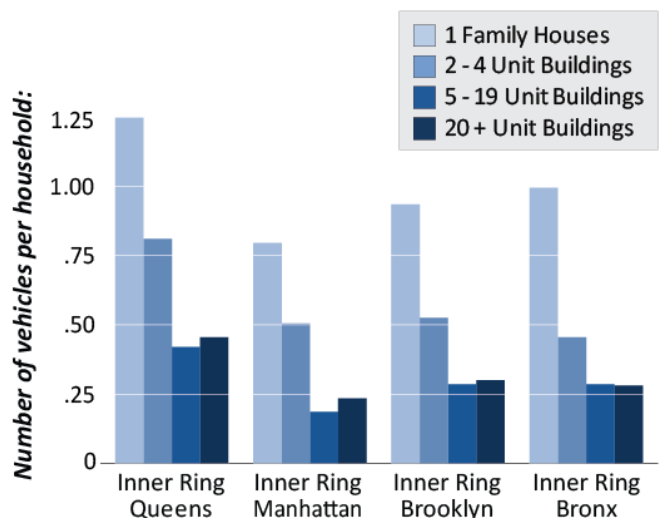
Percent of Households with One or More Cars

Sources: 2000 Census and 2005-2009 ACS



Vehicle Ownership by Building Size in Inner Ring Borough Sub-Areas

Source: 2007-2009 ACS



⁵ U.S. Census Bureau; Decennial Census, 2000.

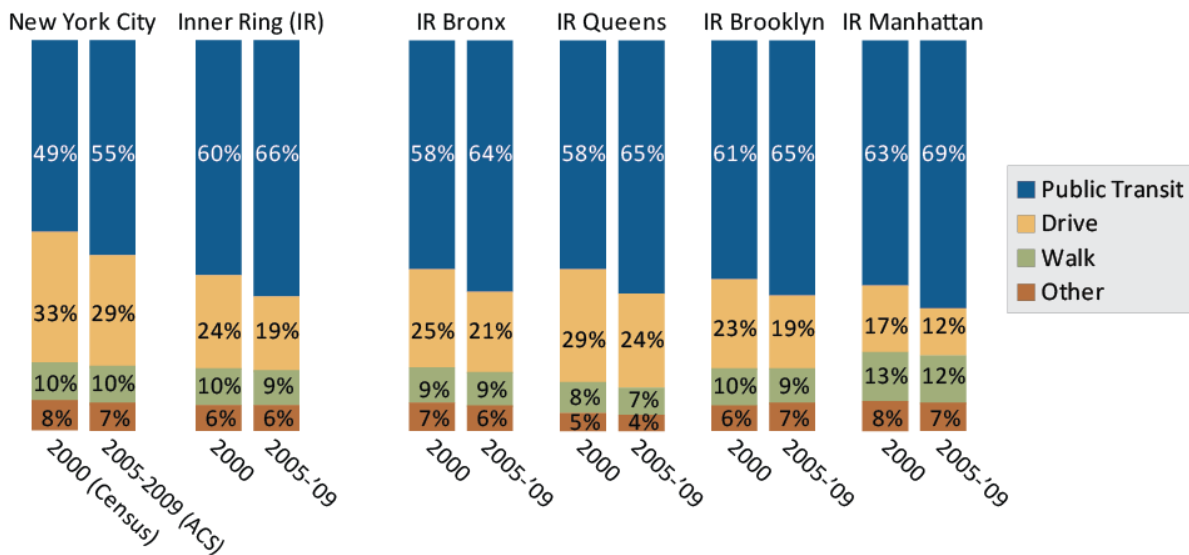
⁶ Ibid.

Journey to Work Commutation Patterns

A recent report by DCP, the *Peripheral Travel Study* (2010), found that New York City residents tend to work in the borough where they live, and workers living in neighborhoods closer to the Manhattan Core are less likely to drive to work.⁷ Seventy-one percent of workers living in New York City do not use a private car to get to work.⁸ Workers residing in the Inner Ring are even less likely to drive to work – 81 percent do not use a private car to travel to work.⁹

Mode Used for Journey to Work

Sources: 2000 Census and 2005-2009 ACS



A comparison of 2000 Census and 2005-2009 ACS data shows a decrease in commuting by automobile within the Inner Ring of 5 percentage points, a decrease that registered in all four boroughs. Along with the decline of auto commuting between 2000 and 2009, there was also a 6 percentage point increase in the transit mode share throughout the Inner Ring. As discussed above, for the same time period, there was an increase in the number of households that own one or more vehicles by 3 percentage points within the Inner Ring study area. Taken together, these statistics point to a trend throughout the Inner Ring where more workers are commuting to work by public transportation or by other means than a car. They also suggest that auto ownership does not itself necessarily promote auto commutation to work, and that some Inner Ring residents choose to own cars for trips other than the journey to work.

⁷ *Peripheral Travel Study*, NYC Department of City Planning, 2010.

⁸ U.S. Census Bureau; American Community Survey, 2005-2009. This percentage includes those that “worked at home” and taxi commuters.

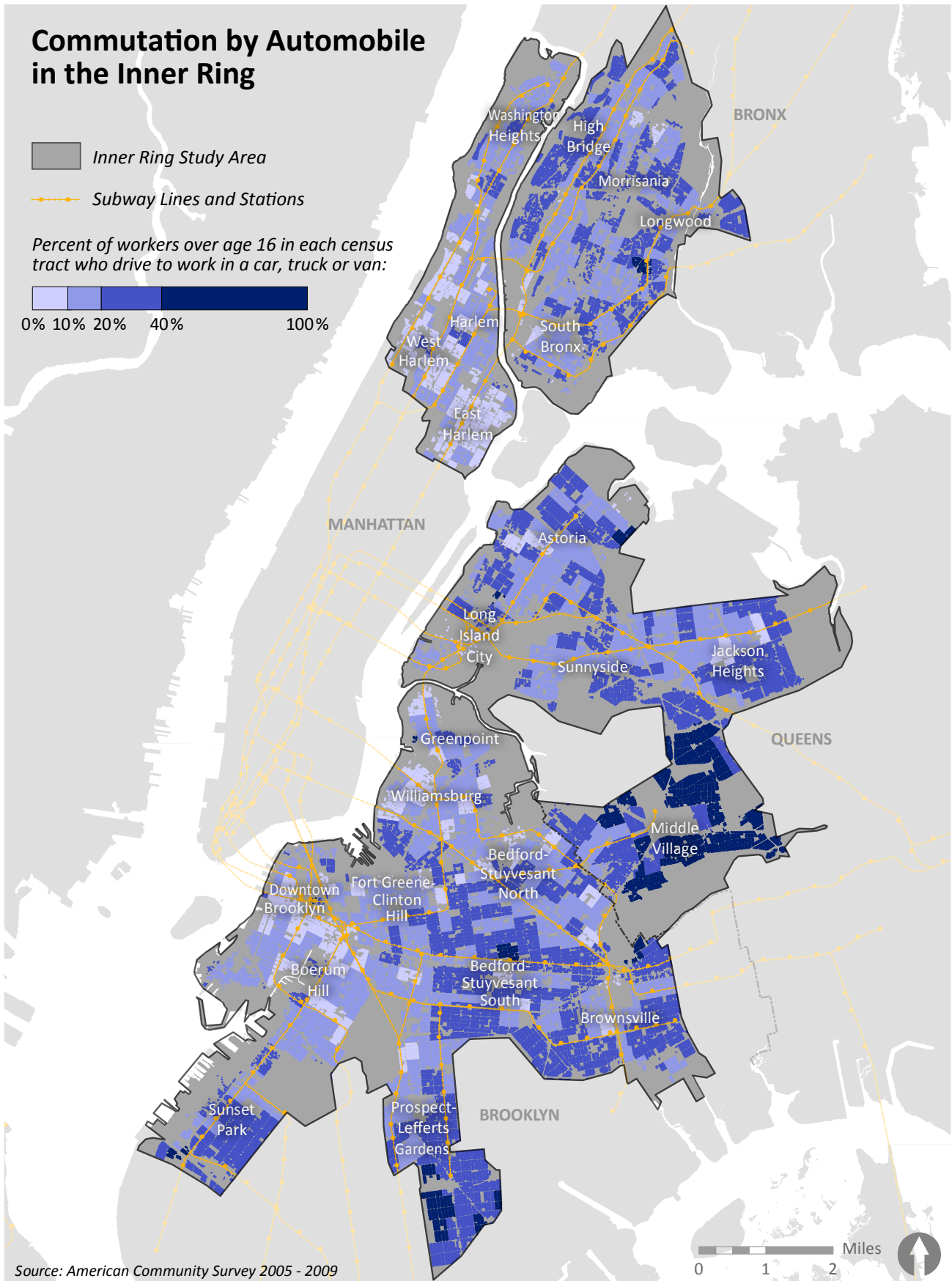
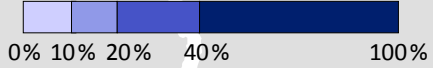
⁹ U.S. Census Bureau; American Community Survey, 2005-2009.

Commutation by Automobile in the Inner Ring

 Inner Ring Study Area

 Subway Lines and Stations

Percent of workers over age 16 in each census tract who drive to work in a car, truck or van:



Source: American Community Survey 2005 - 2009

Throughout the Inner Ring, 19 percent of households drive to work. There is a substantial variation in commuting by vehicle within the Inner Ring study area by borough and by neighborhood. For example, the Manhattan portion of the Inner Ring has the smallest share of households that commute by car (12 percent), while Queens has the highest (24 percent).¹⁰

Distance from the Manhattan Core, combined with low subway access, tends to correlate with increased commutation by automobile, as shown in map above. Neighborhood Profile Areas that are both close to and served by direct transit access into the Core, such as East Harlem and Downtown Brooklyn, have very low rates of workers commuting to work by car – 12 percent and 10 percent, respectively. Neighborhoods further from the Manhattan Core and with less access to subway lines tend to have higher rates of workers who commute by car. Within the Longwood area of the Bronx, 22 percent of workers commute by car, and in the Middle Village area of Queens, 45 percent of workers commute by car.¹¹

Summary of Findings

The Inner Ring study area was selected based on its accessibility to transit, proximity to the Manhattan Core, and threshold level of population density, and relatively low levels of vehicle ownership and auto commutation. Inner Ring households have a lower vehicle ownership rate than all city residents, with only 35 percent of households owning at least one car, compared to 46 percent in New York City as a whole. Multiple car households are far less common in the Inner Ring (7 percent) than nationwide (58 percent). Low vehicle ownership and auto commutation rates likely reflect accessibility to the Manhattan Core and other destinations, but variation in these rates from neighborhood to neighborhood also likely reflects differences in prevailing incomes, family status, housing types, or other lifestyle factors. Inner Ring neighborhoods closest to the Manhattan Core exhibit the lowest rates of journey to work by auto. A comparison of 2000 Census and 2005-2009 American Community Survey data show a small increase in auto ownership and a decrease in auto commutation rates throughout the Inner Ring. This pattern suggests that Inner Ring residents' decisions about auto ownership and auto commutation are responsive to different considerations.

¹⁰ U.S. Census Bureau; American Community Survey, 2005-2009

¹¹ U.S. Census Bureau; Decennial Census, 2000.

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INNER RING

Residential Parking Study

NYC Department of City Planning

Introduction

The supply of off-street parking is affected by zoning regulations, decisions made by developers, and parking preferences of residents and visitors. Developers must consider the cost of constructing off-street parking as required by zoning as well as the revenues derived from parking. Residents make decisions about whether to own a vehicle and where to park based on several factors including the preference to park within close proximity to one's home, the availability of alternative parking options in the area, and the price that vehicle owners are willing to pay for parking given the available options (which often include nominally free on-street parking). This chapter outlines factors affecting the decisions of developers about how much parking to provide, and describes how these shape the parking options available to residents.



Off-Street Residential Parking Regulations in Inner Ring Zoning Districts

Residential parking requirements are based on the number of dwelling units of the building being constructed and a ratio specific to the zoning district. For example, R6 districts, a common zoning district within the Inner Ring, typically produce mid-density, multi-family apartment buildings, where off-street parking is required for between 50 and 70 percent of residential units. Additionally, the parking requirement can be waived if five spaces or fewer are required. Widely mapped residential zoning districts in the Inner Ring include R5, R6, R6B, R7-1, and R7-2. A brief description of these zoning districts and parking requirements (for market-rate housing) follows.

R5, R6B, R7-1 and R7-2 districts all have off-street parking requirements:







- R5 districts require off-street parking for a minimum of 85 percent of units. Waivers are not permitted in R5 districts. R5 zoning permits infill development, which allows low- to mid-density multi-family housing in largely developed areas. Off-street parking is required for 66 percent of residential units under R5 Infill.
- R6B districts require parking for 50 percent of units, but requirements may be waived if five spaces or fewer are required. Additionally, R6B districts prohibit curb cuts on lots narrower than 40 feet.
- The Quality Housing option in R7-1 districts requires off-street parking for 50 percent of units, or 30 percent on lots less than 10,000 square feet. Parking may be located anywhere on the lot, but cannot occupy more than half the required open space. The parking requirements may be waived if five spaces or fewer are required.
- The Quality Housing option in R7-2 districts require parking for 50 percent of units, 30 percent of units on lots less than 15,000 square feet, and parking is not required on lots less than 10,000 square feet. The parking requirements may be waived if 15 spaces or fewer are required.
- The Quality Housing Program is mandatory in contextual R6 through R10 districts and optional in non-contextual districts. It encourages development consistent with the established neighborhood character. The bulk regulations set height limits and allow high lot coverage for buildings set at, or near the street line. Quality Housing also requires amenities such as tree plantings, landscaping, and recreation space.

Residential Zoning Districts of the Inner Ring

-  Inner Ring Study Area Boundary
-  Subway Lines and Stations

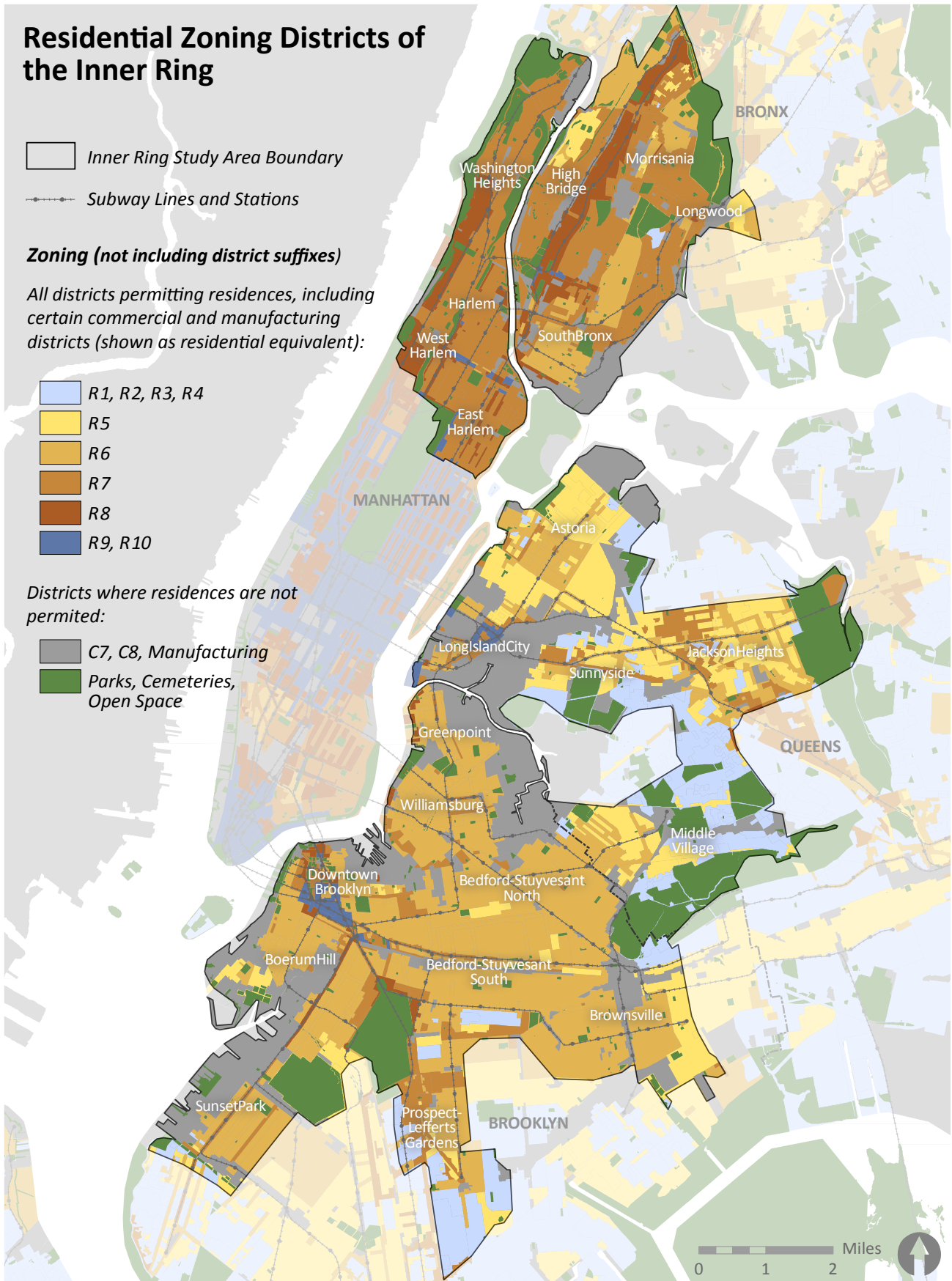
Zoning (not including district suffixes)

All districts permitting residences, including certain commercial and manufacturing districts (shown as residential equivalent):

-  R1, R2, R3, R4
-  R5
-  R6
-  R7
-  R8
-  R9, R10

Districts where residences are not permitted:

-  C7, C8, Manufacturing
-  Parks, Cemeteries, Open Space



Residential units in the Inner Ring are also permitted within commercial districts. Parking requirements for residential units in commercial zoning districts follow the residential district equivalents. Residential dwellings are typically not permitted within C8 or manufacturing districts. For this reason, there are no off-street parking provisions for residential units in manufacturing districts, except for mixed-use manufacturing-residential districts.

In mixed-use districts where an M1 district is paired with a residence district, certain manufacturing as well as residential uses are permitted. Examples of Special Purpose Mixed-Use Districts (Article XII, Chapter 3) within the Inner Ring include Greenpoint–Williamsburg in Brooklyn, Morrisania in the Bronx, and West Harlem in Manhattan. These districts include zoning designations such as M1-2/R6B, M1-1/R7-2 and M1-5/R7-2, respectively. For residences in Special Mixed-Use Districts, off-street parking requirements are provided by the underlying residential zoning. The Special Long Island City Mixed-Use District (Article XI, Chapter 7) is an exception, and a detailed analysis of its off-street parking provisions may be found in *Appendix 1: Neighborhood Profiles* and in *Appendix 2: Built Parking Affordable Housing Technical Appendix*.

Under zoning, parking that serves a use on the same zoning lot – residences, businesses, or other activities – is called “accessory parking.” In the Inner Ring, accessory residential parking is generally restricted to use by residents of the building, or weekly or monthly rental by residents of other buildings. Parking that serves a broader range of purposes, not limited to serving uses on the zoning lot, is called “public parking” under zoning. Public parking is not generally permitted in residential zoning districts.

The Price of Building Parking

Parking facilities are often expensive to construct and affect the cost of constructing residential buildings. Developers make decisions based on the cost of providing parking, the return on investment they expect from parking (whether directly or indirectly), and zoning and related regulations for parking. Some developers use waivers of parking requirements, as allowed by zoning, and do not build parking. Waivers allow developers to save on construction costs, typically when they feel that the demand for parking at a given site will not be high enough to command prices that would offset the cost of building parking. Difficulties in meeting parking requirements may also alter what developers choose to build, for example, choosing fewer and larger dwellings to lower the amount of parking. Site constraints, such as subsoil conditions, and small lot sizes or configurations that make parking layouts inefficient also provide reasons for developers to make use of parking waivers or variances, if permitted. However, sometimes developers choose to provide parking, regardless of whether it is required by zoning, because they view it as an amenity necessary to market the housing successfully.

THE COST OF CONSTRUCTING OFF-STREET PARKING

Off-street parking, provided in a surface lot or in a building, has significant costs associated with it. However, the costs arising from construction of off-street parking in a surface lot are lower than those for structured parking. While surface parking lots are inexpensive to build and easy to maintain, this option is only available when there is sufficient open space on the property. Even then, providing such parking may eliminate or reduce useable open space on the property.

In contrast to surface parking, enclosed parking in a building, or structured parking, is much more expensive to construct and maintain than a surface parking lot, with the cost per space often exceeding the cost of the price of the car parked in it. According to industry data, the median parking structure costs in New York City are \$21,000 per space or \$63 per square foot to build – the highest in the country.¹² In contrast, the national average for structured parking costs \$16,000 per space or \$48 per square foot to build.¹³ These estimates are for parking structures generally, and do not account for factors specific to accessory residential parking in a dense environment – the cost of providing underground parking, which includes excavation and is sensitive to subsurface conditions, and the structural demands of supporting a residential building above the parking facility. Anecdotal information suggests that these factors can increase the cost of constructing structured parking to as much as \$50,000 per space in higher-density areas.

THE RETURN ON INVESTMENT

Whether the development of off-street parking pays for itself with parking fees is primarily influenced by construction costs, the location of the development, and the price that vehicle owners are able or willing to pay for an off-street parking space. In the Manhattan Core, where parking rates are the highest in the nation, the hourly and monthly rates for an off-street parking space typically cover the cost of building structured parking. In 2011, the median daily rate and median monthly rate to park in public parking garage in Midtown Manhattan were \$41 and \$541, respectively.¹⁴ This condition is atypical not only for the United States, but also for New York City. To put these rates into perspective, the U.S. national average for daily and monthly garage parking was \$16 and \$155, respectively.¹⁵ In most markets, the cost of constructing structured parking cannot be recovered from the rates consumers pay to park there. For example, elsewhere in the City, fewer drivers are willing to pay high prices for off-street parking. As a result, off-street parking rates are lower, making it harder for developers to recoup the cost of building structured parking.

The price of off-street parking in the Inner Ring is less expensive than in Midtown Manhattan and varies among neighborhoods. According to data from the Inner Ring Household Travel Survey,¹⁶ 70 percent of residents living in the Inner Ring paid less than \$200 per month, and 18 percent reported paying more than \$200 per month for an off-street parking space.¹⁷ In parts of the Inner Ring, however, market demand for off-street parking commands prices that are more likely to be sufficient to cover the costs of building a parking space. Results from the Inner Ring Household Travel Survey suggest that Brooklyn had the highest percentage of survey respondents paying more than \$200 a month for off-street parking.¹⁸

¹² Rowland, Joey D., P.E. "Parking Structure Cost Outlook for 2011." Carl Walker Industry Insights (May 2011). Web. <http://www.carlwalker.com/sites/default/files/enews/may_2011_industry_insights_web_view_v2.pdf>.

¹³ Ibid.

¹⁴ Moore, Ross J. 2011 North America Central Business District Parking Rate Survey. Publication. Colliers International. Web. <<http://dsg.colliers.com/document.aspx?report=1507.pdf>>.

¹⁵ Ibid.

¹⁶ See *Appendix 3: Household Travel Survey Technical Appendix*.

¹⁷ Additionally, of the Inner Ring Households surveyed, 10% reported paying no fee and 2 percent selected 'other' in response to "How much is the monthly fee per space at your parking location."

¹⁸ The survey's sample size for Upper Manhattan was insufficient for a comparison.

Affordable housing is more sensitive than market-rate housing to the cost of constructing parking. Affordable housing developments are generally funded through public subsidy programs, which limit the subsidy per unit and are not intended to subsidize the construction of expensive structured parking. The need to incorporate parking could thereby lead to a reduced number of units, because building the parking required for the full number of units would not be supported by the funding available. A developer may choose to build only as many units as are permitted before structured parking would be required. In addition, the residents of affordable housing are typically less able to pay for off-street parking, which largely eliminates the parking revenue that would offset the cost of building parking. In many affordable developments, off-street parking spaces are underutilized because car-owning residents prefer to park on-street rather than pay for parking. Issues pertaining to affordable housing and parking requirements are discussed in more detail in Chapters 4 and 5.

DCA-LICENSED PUBLIC PARKING

Consumer protection regulations administered by the NYC Department of Consumer Affairs (DCA) require a license to be issued for a parking facility with more than five spaces where a fee is charged for parking. Parking accessory to a business or multiple dwelling is exempt from this requirement if the parking is for exclusive use of businesses or multiple dwellings and operated by the business or the residential building owner or lessee. Therefore, DCA-licensed facilities include not only public parking facilities, but also, an accessory residential parking facility operated by a parking operator who is not the owner or lessee of the residential building. As of February 2011, there were 568 DCA-licensed facilities located within the Inner Ring. About one-quarter (23 percent) of these facilities were located in large residential or mixed-use buildings.

Parking requirements are one of many factors governing the decisions developers make about providing parking. Developers may exceed the required amount of parking in situations where unstructured parking can be provided at modest cost (including the opportunity cost of other uses for ground-level space on the site), where the price residents pay for parking covers the cost of building structured parking, or where parking is seen as a necessary amenity to market units. In situations where none of these conditions exists, developers are more likely to build the minimum number of required parking spaces, or to elect not to provide parking if waivers are available.

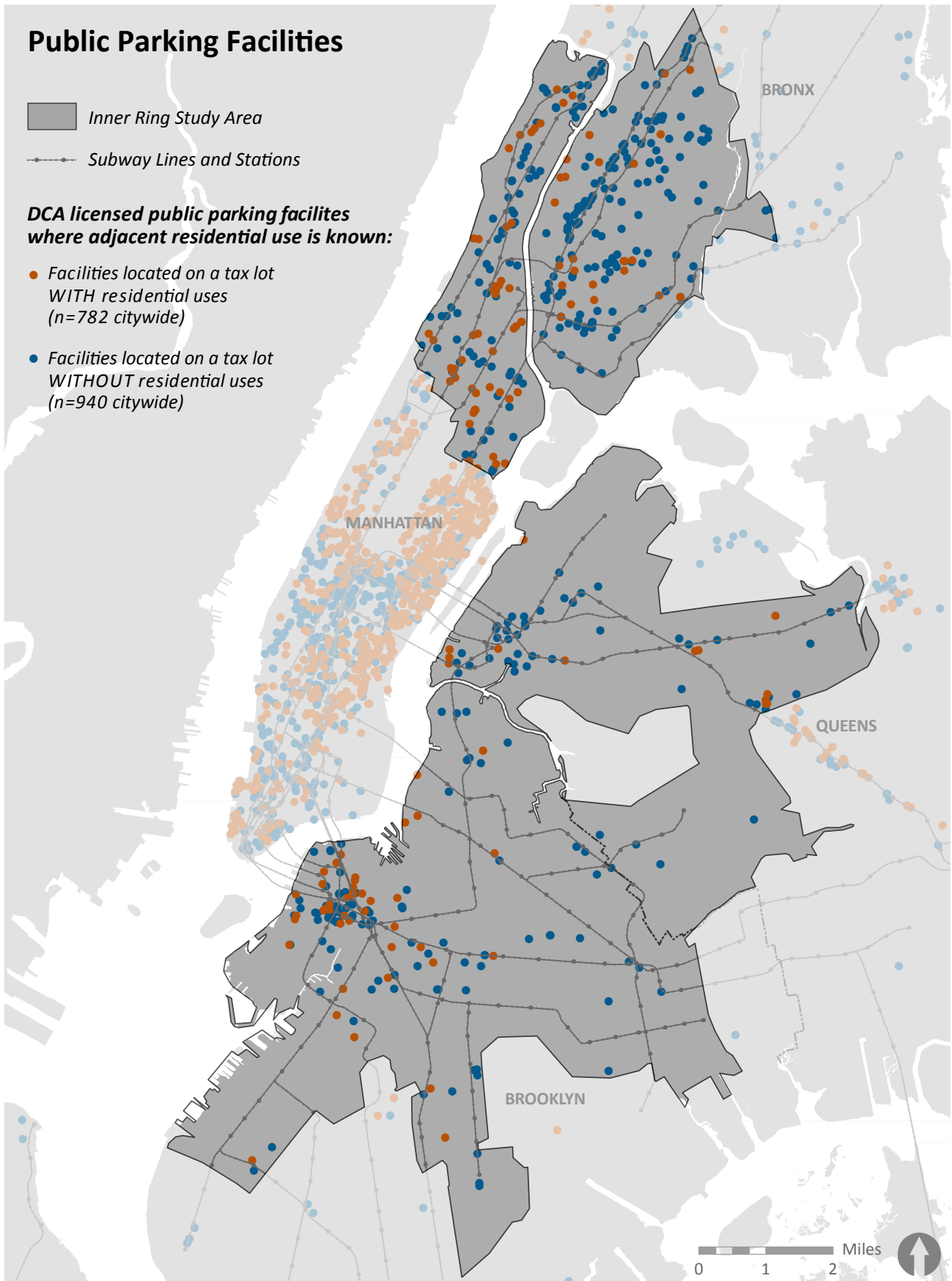
Examination of recently constructed buildings suggests that developers may make different decisions even in what appear to be similar situations. For example, there are two newly constructed developments on a block in Park Slope, both located in an R6B district. Zoning requires parking for 50 percent of dwelling units, but parking may be waived if five or fewer spaces are required. The development at one end of the street has 27 dwelling units and the developer chose to provide more parking spaces than the 14 spaces that were required. In contrast, the development at the other end of the block has 30 dwelling units, but did not provide parking. The developer chose to subdivide the lot and build three separate 10-unit buildings, effectively calculating the parking requirement for each individual building resulting in five parking spaces for each building. Thus, the developer qualified for the waiver and did not build off-street parking. This example demonstrates how developers approach off-street residential parking differently – even within the same neighborhood block and zoning district.

Public Parking Facilities

- Inner Ring Study Area
- Subway Lines and Stations

DCA licensed public parking facilities where adjacent residential use is known:

- Facilities located on a tax lot WITH residential uses (n=782 citywide)
- Facilities located on a tax lot WITHOUT residential uses (n=940 citywide)



Bundled and Unbundled Parking

Bundled parking is a practice by which the cost of off-street parking is included in the rent or purchase price of a residential unit. In many cities across the country, the cost of off-street parking is traditionally bundled into housing costs – a household buys or rents a unit, and the parking space comes with it. This practice reflects the expectation of car ownership and a designated parking space held by residents in cities and suburbs across the country. Bundling masks the cost of providing parking, particularly the high cost of structured parking, and by eliminating price signals, it reduces the ability of the market to efficiently allocate parking spaces based on demand.

Many theorists suggest that unbundling parking from the cost of housing makes housing more affordable because the renter or buyer has the ability to save money by opting not to pay for parking, and that it avoids the underpricing of parking, which tends to encourage the utilization of parking. With parking unbundled, the cost of the parking space is borne by households that choose to own a car and pay for off-street parking; the parking space is then allocated to someone who wants it more. While bundled residential parking can encourage people to own and store more cars, unbundled parking enables households to make independent decisions about housing and parking, which economic theory suggests would lead to greater efficiency in the provision and allocation of parking spaces.

In the Inner Ring neighborhoods of New York City, there is a natural tendency for developers to unbundle the cost of parking from the cost of housing for multi-family buildings, because there are typically fewer vehicles owned and fewer parking spaces provided than dwelling units built. Unbundled parking works best in areas with low vehicle ownership and required parking ratios. In New York City, the market already generally unbundles much of the cost of parking from the cost of housing: as found in the Household Travel Survey, residents generally pay a separate fee for off-street parking, and more often than not park on the street or in buildings other than their residence.

UNBUNDLED PARKING RESEARCH: THE INNER RING

As part of the Inner Ring Parking Study, interviews were conducted with housing developers and real estate professionals in order to determine how decisions regarding the development of off-street parking and pricing are made. The research revealed that while zoning requirements set a minimum number of parking spaces (often with an option to waive out of parking), the market was also a driving force in deciding how many parking spaces to provide and how to price it. For example, interviewees perceive owners of condominiums or co-op apartments as more likely to own cars and are more willing to pay for an off-street parking space than renters. This does not suggest that renters do not own cars, but rather that developers perceive apartment owners are more willing to pay for parking at their residence.

Interviews also showed that one- and two-family housing in lower-density zoning districts – where auto ownership rates and parking requirements are higher – tended to provide parking at a ratio of one parking space per residential unit. These buildings often had bundled parking, especially if there was only one residential unit and off-street parking was incorporated into the building design, as in an attached garage, or site layout, often in the form of a driveway or parking pad. In contrast, parking requirements in higher-density zoning districts – where auto ownership rates and parking requirements are lower – typically resulted in significantly fewer parking spaces than dwelling units. These buildings tended to unbundle parking, so only car owners willing to pay for it receive parking in the building.

Places to Park: Choices for Residents

Residents living within the Inner Ring typically have several parking options, which can be categorized as either on-street or off-street. Parking on-street in residential neighborhoods is free in that there is no fee charged, but there is a finite supply of these curbside spaces for which there is often much competition. Off-street parking can be found as either surface parking lots or parking garages, and these parking facilities may be located as part of a residential property or nearby commercial property. In general, residents must pay a fee for off-street parking unless they have exclusive use of a private drive or garage at their home. When discussing parking choices, it should be noted that a large percentage of residential buildings within the Inner Ring do not have off-street parking facilities.¹⁹ Vehicle owners without parking at their residence compete for on-street parking or an off-street parking space elsewhere, along with other users.

Summary of Findings

Within Inner Ring neighborhoods of New York City, zoning requires off-street parking for a percentage of dwelling units, though for smaller buildings in medium- and higher-density districts, parking requirements can be waived. A range of other factors, including the cost of providing parking spaces, the price residents are willing to pay for off-street parking, and whether on-site parking is necessary to market a new housing development to its intended purchasers or renters, all have a substantial effect on the decisions developers make about providing parking.

In many neighborhoods in the Inner Ring, the market price for off-street parking does not cover the cost of constructing structured parking. In such buildings, some of the cost of providing parking is subsumed in the sale or rental price of the housing. This is one reason why developers may elect not to provide parking if it is not required. On the other hand, in cases where inexpensive open parking can be provided, developers may elect to provide parking even if parking requirements have been waived by zoning. The costs of providing parking has a greater influence on the feasibility of affordable housing development, where the limitations of subsidy programs make it more difficult to support the cost of constructing parking, and residents' limited ability to pay for parking substantially reduces the revenues that could otherwise offset these costs.

Most housing in the Inner Ring does not come with free off-street parking. Rather, the cost of parking is usually “unbundled” from the cost of housing for multi-family residential buildings. This encourages the more efficient allocation of off-street parking at a rate users are willing to pay.

Inner Ring residents who own vehicles may park them either on-street, where parking is generally free, or off-street in a lot or garage, where a fee is generally charged for parking. Some public parking facilities in the Inner Ring are used by area residents as well as short-term users. Households' decisions about car ownership and parking will be explored further in the next chapter of the report, Chapter 3: The Inner Ring Household Travel Survey.

¹⁹ Many residential buildings were constructed prior to 1938 (before which parking was not allowed within residential buildings) or 1950 (when the first residential parking requirements took effect), or because parking was not required under post-1961 zoning.

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INNER RING

Residential Parking Study

NYC Department of City Planning

Introduction

This section of the *Inner Ring Parking Study* includes key findings from the Household Travel Survey, which asked approximately 1,300 households about their travel patterns and parking decisions based on their vehicle ownership status. Households living within the Inner Ring have low rates of car ownership as compared to other areas of New York City outside the Manhattan Core. This is due, in part, to an extensive transportation network and accessibility to a variety of destinations that makes living without a car possible for many. However, some households choose to have a car, and must decide where to park it. The survey was designed to shed light on the role that off-street parking plays in households' decisions about owning and using cars, and to compare travel patterns of households with and without cars.

The Inner Ring Household Travel Survey was comprised of 40 questions divided into three sections: questions for all households, questions only for households with cars, and questions only for households without cars. All respondents were asked general questions about their households, including the number of licensed drivers, and whether they have off-street parking where they live. The second section asked car-owning households questions about where they park, how often and for what purposes they use their car, and what they would do if their car was not available for a particular trip. The third section asked non-car-owning households for reasons why they do not own a car and how frequently they used a taxi, rental car, or other vehicles.

Key findings from the survey are highlighted here to show how off-street parking affects vehicle ownership and household travel patterns. Results for all 40 of the Inner Ring Household Travel Survey questions can be found in Appendix 3, *Household Travel Survey Technical Appendix*. To develop the stratified sample that represented both vehicle ownership and subarea geography, the Inner Ring Study Area was divided into three Subareas (A, B, and C) based on proximity to transit and other neighborhood characteristics. These Subareas and the weighting methodology are described in Appendix 3.

Data Sources and Methodology

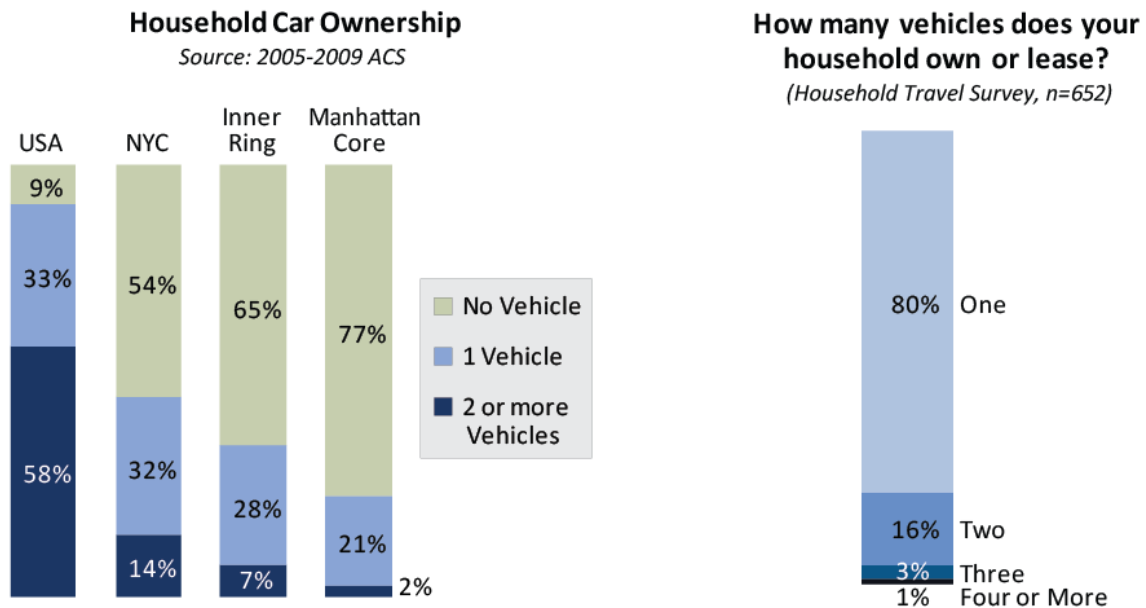
The survey sample consisted of 1,307 households (652 car-owning households and 655 non-car-owning households) living within the Inner Ring study area, which was sub-divided into eight smaller, geographic areas. Within the Inner Ring, approximately 32 percent of households owned at least one vehicle while 68 percent did not own a vehicle according to the 2000 Census.²⁰ The survey sample was comprised of a relatively equal number of car-owning and non-car-owning households even though households that did not own cars far outnumbered those that did. The survey data was then weighted to reflect the actual proportion of vehicle owning households within each Inner Ring Subarea consistent with 2000 Census data. All charts within the report describe weighted survey results, with “n” numbers reflecting the actual number of households sampled.

URS/NuStats developed the survey methodology, identified the sample of households using a stratified probability sample approach, and conducted telephone interviews with participating households. A detailed explanation of the sampling approach and methodology can be found in the complete *Household Travel Survey Technical Appendix*.

²⁰ The 2000 Census was the most accurate data source when the project started.

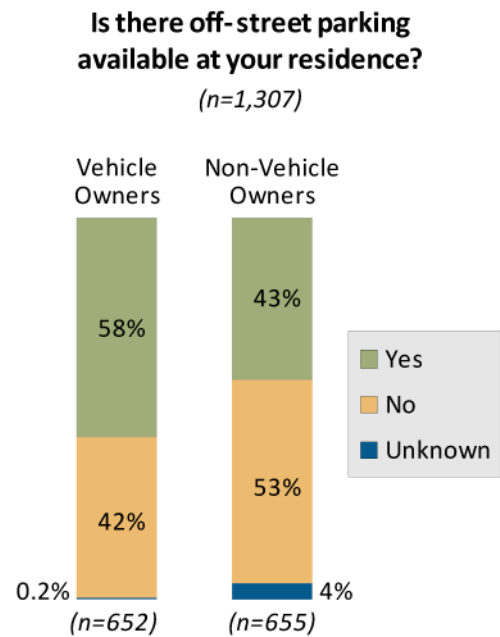
Survey Results

- Overall, car ownership rates for the Inner Ring are lower than those for the City as a whole and far lower than those for the nation.** According to data from the 2009 American Community Survey, 35 percent of households in the Inner Ring own at least one car, and of these vehicle owning households 80 percent own only one vehicle. This proportion of single vehicle households is identical to that of the survey respondents, demonstrating consistency between U.S. Census Bureau data and the survey sample. (Households Surveyed = 652.) While there are households that own cars in transit rich Inner Ring neighborhoods, these households own far fewer cars than the rest of the nation. In the rest of the United States, 91 percent of households own at least one vehicle, and 58 percent of all households own two or more vehicles. The 20 percent of auto-owning households in the Inner Ring that own more than one vehicle constitutes only 7 percent of all Inner Ring households.²¹



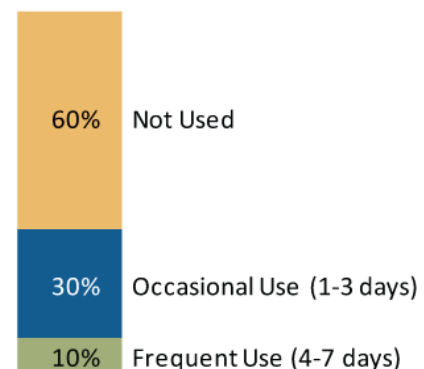
²¹ U.S. Census Bureau; American Community Survey, 2005-2009.

- In the Inner Ring, there is a weak relationship between household vehicle ownership and the presence of off-street parking at one’s residence.** Vehicle owning households were somewhat more likely to have off-street parking at their residence than non-vehicle owning households, but there is also substantial car ownership in buildings without off-street parking. Over half of the vehicle-owning respondents surveyed (58 percent) had off-street parking at their residence, as compared to 43 percent of non-vehicle owners. This chart illustrates how both car- and non-car-owning households reside in housing that has off-street parking, as well as in housing that does not. Forty-three percent of households that do not own vehicles live in a building that has off-street parking (as compared to 58 percent for vehicle-owning households), suggesting that households with vehicles are somewhat more likely to live in buildings where parking exists. However, the absence of off-street parking does not result in a building occupied by non-vehicle owners, as illustrated by the finding that 42 percent of households with vehicles live in buildings with no off-street parking.



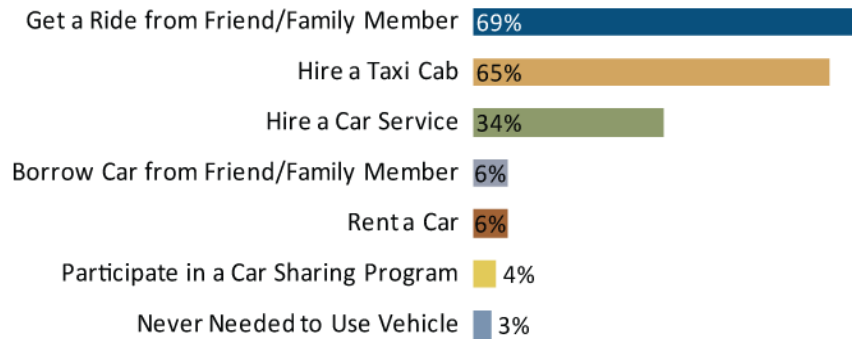
- Inner Ring residents who do not own a car often relied on a car to make some trips.** Forty percent of respondents that did not own a car reported traveling by car in the last week. This includes travel in a taxi or livery cab, vehicle owned by a friend or relative, rental car, or car share vehicle. This suggests that sometimes a car is the preferred choice for a trip, even among non-car-owning households.

How many days did you travel by car in the previous seven days?
(for residents without a car, n=655)



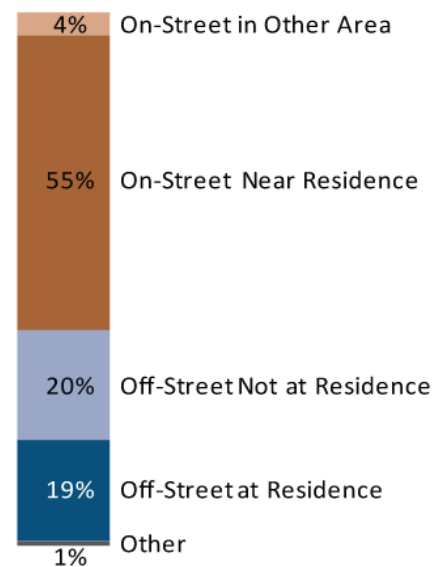
- Non-car-owning households make regular use of hired or shared vehicles.** Sixty-five percent of non-car-owning households surveyed used a taxi at least once in the past month, while 69 percent of households surveyed got a ride from a friend or family member. (Respondents could select multiple answers indicating using differing means for different trips during the month.) Taking a taxi, borrowing a car, or renting a car are just a few examples of how a non-car-owning households use cars. The survey asked households that did not own a car how many times they used a car in the past 30 days.²² Hiring a taxi or getting a ride from a friend or family member were the most commonly cited means of traveling by car among non-car-owning households surveyed. Only 3 percent of respondents reported never using a vehicle in the past month.

By what means have you traveled by car in the last month?
Check all that apply. (for residents who do not own a car, n=534)



- Car-owning households in the Inner Ring make decisions about where to park based on options available in their neighborhood, not just in their building.** In residential neighborhoods within the Inner Ring residents may have the option to park on the street for free, in an off-street garage or lot at their residential building, or at a parking facility elsewhere, generally for a fee. Most households park their vehicles on-street. Of the vehicle-owning households surveyed, over half (55 percent) parked their primary vehicle on the street, near their residence. Notably, vehicle-owning households are actually more likely to park off-street at a location other than their residence than off-street at their residence. This in part reflects the fact that a significant proportion of vehicle owners live in buildings without parking.

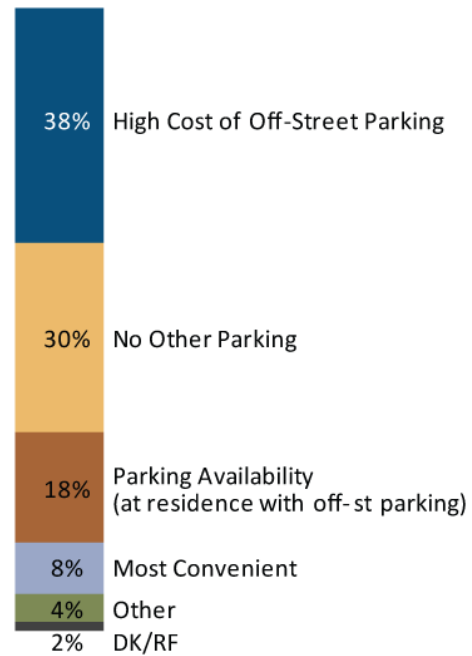
Where is the vehicle you drive most typically parked at home?
 (n=648)



²² Information about the number of times a survey respondent used a car in the past month can be found in the *Household Travel Survey Technical Appendix*.

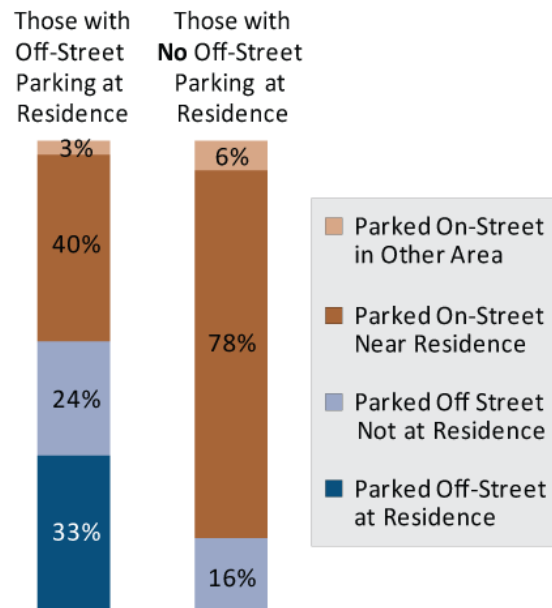
- Survey respondents who park on-street most commonly cited the price and limited availability of off-street parking as the reasons why they park on-street.** Thirty-eight percent of on-street parkers indicate that they make this decision because the price of off-street parking is high. This indicates that households are less willing to pay for an off-street parking space when on-street parking is available for free. In addition, 48 percent of survey respondents reported that other parking options were not available either at their residence or nearby. (Households surveyed = 371.)

Why do you park your vehicle on-street?
(n=371)



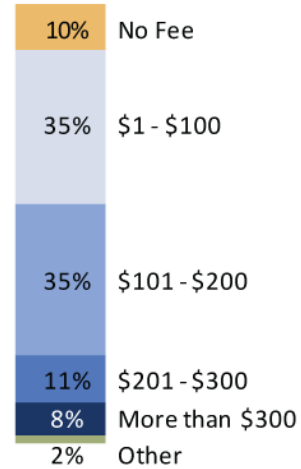
- Households often park their vehicle on the street even when there is off-street parking at their residence.** Vehicle-owning households were asked “where is the vehicle you drive most typically parked at home?” Results were analyzed by the presence of off-street parking at residence to determine the relationship between parking location and the presence of off-street parking at the residence. Even among vehicle owning households that reported having off-street parking at their residence, 40 percent of households parked their primary vehicle on-street, near their residence. Only one-third of respondents with off-street parking at their residence parked at their residence, while a quarter parked at a different off-street location. The presence of a parking facility on-site does not necessarily lead to car-owning households parking on-site.

Location of Parked Vehicle by Presence of Off-Street Parking at Residence (n=637)



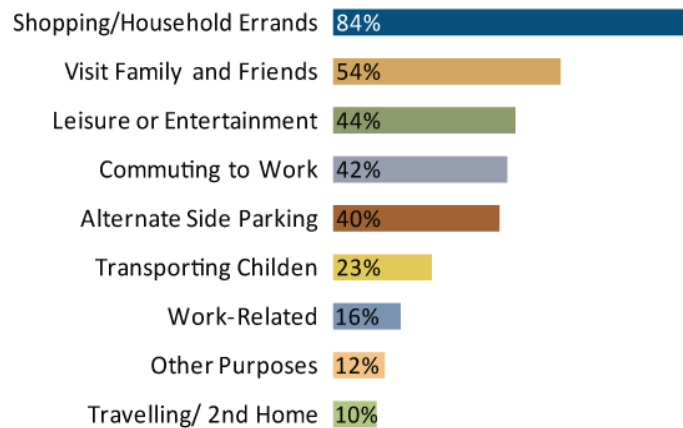
- Inner ring residents generally pay a fee for off-street parking, though the amount they pay varies.** Vehicle-owning households who reported parking their vehicle at an off-street location were asked if they rented their off-street parking space, and if so, how much they paid per month. The responses include households that park their vehicle off-street, whether at their residence or elsewhere. Ninety percent reported paying for parking, with the majority of respondents paying at least \$100 per month for a space. However, 80 percent of these respondents reported paying \$200 or less per month which is unlikely to cover the cost of building new structured parking.

How much is the monthly fee per space at your off-street parking location?
(n=177)

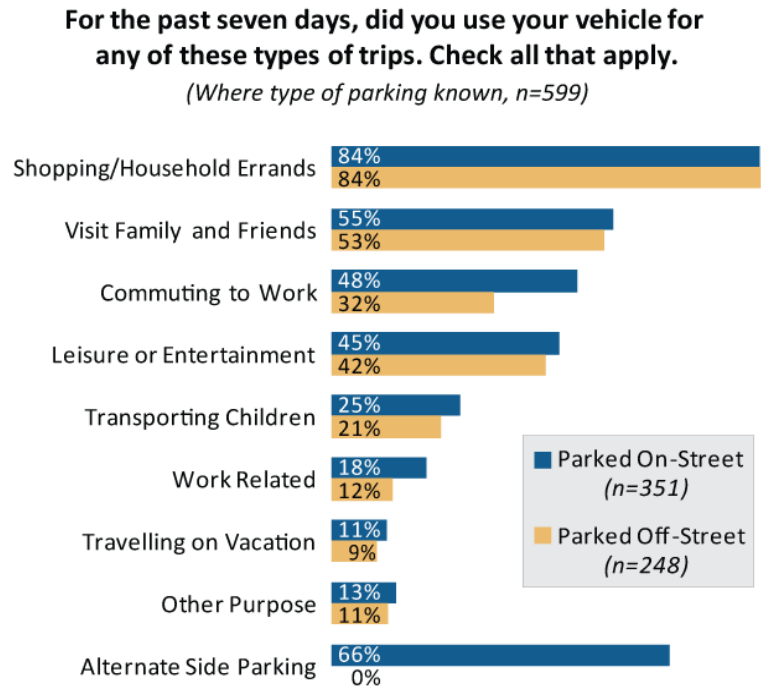


- Fewer survey respondents used their vehicles at least once in the past week for commuting to work than for shopping and household errands, or visiting family and friends.** Vehicle owners were asked if they used their car to take each of nine types of trips in the past week. The purpose of this question was to better understand utilization patterns. Work and work-related trips were not the trips most commonly selected. Shopping and household errands, visiting family and friends, and leisure and entertainment all had higher response rates than commuting to work. Like the pattern identified in Chapter 1, *Neighborhood Profiles*, showing a trend in the Inner Ring toward higher vehicle ownership but lower rates of auto commutation, this suggests that households choose to own vehicles for reasons other than the journey to work.

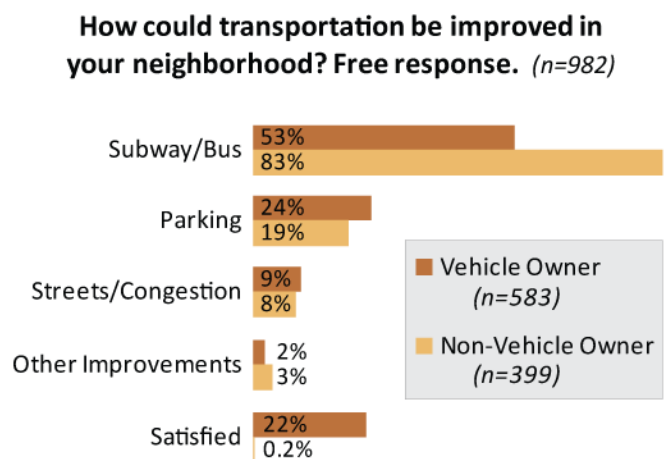
For the past seven days, did you use your vehicle for any of these types of trips. Check all that apply. (n=604)



- Respondents who parked on-street and those who parked off-street generally showed similar travel patterns, except that on-street parkers were somewhat more likely to drive to work.** This chart combines responses from two survey questions to examine the correlation between where a car is parked and how frequently the car is used for different types of trips. Weekly car usage among households who park on-street was compared to that of households who park off-street. Of course, only on-street parkers moved their cars for alternate-side parking. The only other significant difference between the vehicle usage patterns of these two groups was that work or work-related trips were 50 percent more common among households that park on-street. While the data do not explain why this is the case, these responses do not support the hypothesis that Inner Ring households with an off-street parking space use their cars more frequently for journey-to-work trips than households that park on-street.



- Respondents had similar transportation concerns, whether or not they owned a car.** When asked an open-ended question about how transportation could be improved in their neighborhoods, both groups expressed the most interest in improving subway and bus service (though non-vehicle owners were noticeably more likely to do so), followed by parking and traffic congestion. About one in five vehicle owners said they were satisfied with transportation, and did not identify any areas for improvement while satisfaction with transportation was negligible among non-vehicle owners.



Summary of Findings

While households with vehicles were somewhat more likely to live in buildings with off-street parking than are households that do not own vehicles, the presence of off-street parking was not a strong predictor of household car-ownership. Forty-three percent of surveyed non-vehicle-owning households lived in a building that has off-street parking, and 42 percent of vehicle-owning households do not have off-street parking. This supports the observation from DCP's *Residential Parking Study* that household characteristics are stronger determinants of household decisions whether or not to own a vehicle than parking regulations. Of the car-owning households surveyed, 59 percent of households parked their vehicle on-street, where parking is generally free.

Car-owning residents make decisions about where to park based on the options available in their neighborhood, not just in their building. Only 19 percent of surveyed vehicle-owning households in the Inner Ring parked off-street at their own residence. A majority of these households parked on-street, and an additional 21 percent parked off-street at another location. These results likely reflect the uneven distribution of vehicle ownership and parking spaces among buildings, and the fact that prices differ for parking at different locations, with on-street parking generally free. They also suggest that off-street parking facilities in the Inner Ring commonly serve residents of the neighborhood, rather than exclusively building residents.

Inner Ring residents generally pay a fee for off-street parking, though the amount they pay varies. Ninety percent of surveyed households that parked their vehicles off-street pay for parking, and more than half paid at least \$100 per month. However, 80 percent paid \$200 or less per month, which is unlikely to cover the cost of building structured parking in a new residential development.

According to survey results, households living within the Inner Ring often make regular use of a car regardless of whether or not they own a car. Ninety-seven percent of non-vehicles owners made use of hired or shared vehicles (e.g., taxi or car service, a friend's car) within the past month and 40 percent did so in the past week. This suggests that households without cars will take a taxi, car service, make use of a friend or family member's vehicle, or rent a car when a car is more convenient than public transportation or other available options. Surveyed Inner Ring households with cars used them for multiple purposes, most often for household errands or to visit family or friends. These car-owning households still typically used public transportation or other modes for commuting to work, albeit in significantly lower numbers than their non-car-owning counterparts. Households that parked their vehicles on-street and those that parked off-street showed generally similar travel patterns, although those who parked on-street were somewhat more likely to use their cars for work-related travel. This indicates that having access to off-street parking at home does not make Inner Ring residents more likely to drive to work.

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INNER RING

Residential Parking Study

NYC Department of City Planning

Introduction

This chapter analyzes the relationship among parking requirements, parking provision, and automobile ownership in recent developments within the Inner Ring. The study expands upon DCP’s *Residential Parking Study*, which, as mentioned earlier in the report, found that household characteristics were a stronger determinant of vehicle ownership than zoning requirements for off-street parking.

Data Sources and Methodology

The *Built Parking Survey and DMV Registration Analysis* examines off-street parking and vehicle ownership for new residential buildings constructed within the Inner Ring study area geography between 1998 and 2008.²³ In addition to NYC DCP, agencies that provided data for this study included: NYC Department of Buildings (DOB), NYC Department of Housing Preservation and Development (HPD), NYC Department for the Aging (DFTA), NYC Department of Consumer Affairs (DCA), and NYS Department of Motor Vehicles (DMV).

According to NYC DCP’s MapPLUTO and NYC DOB Certificate of Occupancy data, there were 12,486 residential buildings constructed within the Inner Ring between 1998 and 2008. A database of these buildings was used as the basis for the analysis of this report. In order to determine the number of parking spaces required under zoning, database queries were used to calculate the amount of off-street parking required for each new building, based on requirements for the zoning district.²⁴ Then DCP conducted field surveys for a sample of 2,525 new buildings (1,380 of which were non-publicly subsidized) to determine how much parking, if any, was built for each building. When field surveys were insufficient to determine the number of parking spaces that were built, NYC DOB Certificate of Occupancy data was used.

Of the 12,486 new residential buildings, approximately one-third were built through programs administered by HPD or as senior housing, and are considered “publicly subsidized” for the purposes of this study. These HPD and senior housing developments include a range of building types, target income groups, and funding sources, from one- and two-family homes to large rental apartment buildings, and from middle-income homeownership units to rentals for low-income seniors. Because information about the characteristics of these households is limited but likely to differ from those of households in market-rate housing, the *Built Parking Survey and DMV Registration Analysis* contains some basic data about publicly subsidized residential developments within the Inner Ring but does not attempt to draw conclusions about the vehicle ownership characteristics of residents of publicly subsidized buildings. A more detailed analysis of these buildings can be found in *Chapter 5: Parking Requirements and Affordable Housing in the Inner Ring*.

²³ According to the *Residential Parking Study*, DMV vehicle registrations often underrepresented vehicle ownership rates in New York City because many residents register their vehicles in locations outside of the City to reduce insurance costs.

²⁴ Portions of the study area were rezoned between 1998 and 2008. The analysis assigned to these areas assumes the current zoning designation as of 2009, the time at which the analysis was performed. The analysis may thus tend to understate (or overstate) the amount of parking required at the time of development.

The sample for this study was drawn using the methodology from the *Inner Ring Household Travel Survey*. The results were then weighted by building size and subarea, which is further detailed in the *Built Parking and Affordable Housing Technical Appendix*.

By combining an inventory of off-street parking and a zoning analysis for a large sample of new residential buildings, this study aimed to describe the relationship between the presence of off-street parking and vehicle ownership. In order to analyze vehicle ownership on a building-by-building basis, NYS DMV vehicle registration data from 2008 was geocoded to match the new residential buildings in the study.²⁵ The methodology is further documented in the *Built Parking and Affordable Housing Technical Appendix*.



Overview

Residential developments within the Inner Ring from 1998-2008 were mostly small buildings of less than five units. Over one-third (36 percent) of the new one- to four-unit buildings were publicly subsidized. Many of these buildings were built through programs that encouraged one- or two-family homes with unenclosed parking in a driveway, even though parking is generally not required for this type of development. In contrast, larger residential buildings that provide off-street parking tend to provide enclosed parking. Some of these buildings also provide public, as well as accessory, parking.













The research presented in this section shows that parking requirements and rates of vehicle ownership vary substantially in the Inner Ring by neighborhood and housing type. The data suggest that off-street parking regulations should be flexible enough to accommodate such variation.

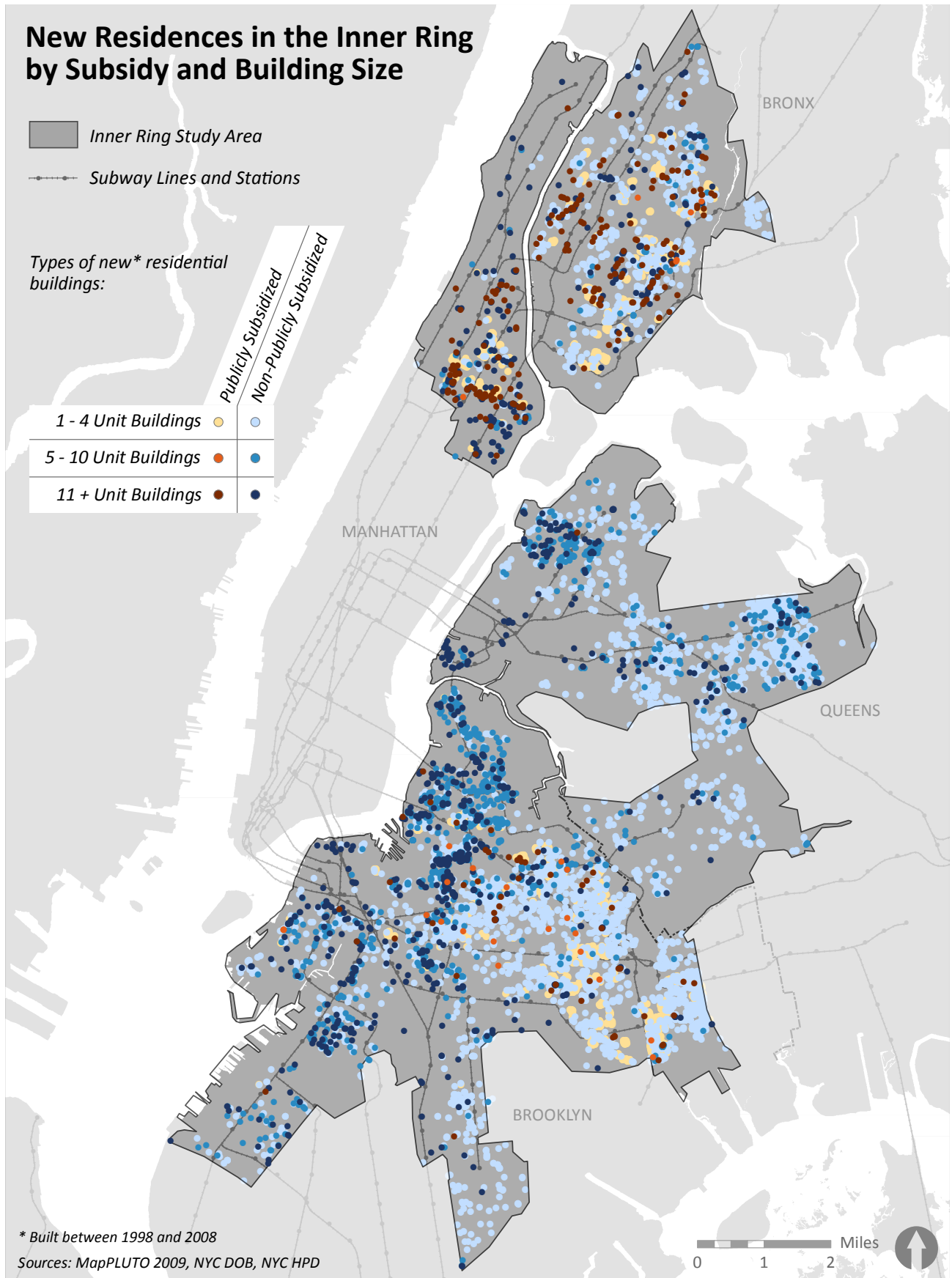
²⁵ The ratio of vehicles to unit counts only vehicles registered to new residential building site addresses, and does not account for vehicles owned by residents of these buildings but registered at another location. The prevalence of out-of-state registrations in some neighborhoods, especially parts of Brooklyn, suggests that overall registration rates are somewhat higher than reported here.

New Residences in the Inner Ring by Subsidy and Building Size

-  Inner Ring Study Area
-  Subway Lines and Stations

Types of new* residential buildings:

	Publicly Subsidized		Non-Publicly Subsidized	
1 - 4 Unit Buildings				
5 - 10 Unit Buildings				
11 + Unit Buildings				



* Built between 1998 and 2008
 Sources: MapPLUTO 2009, NYC DOB, NYC HPD

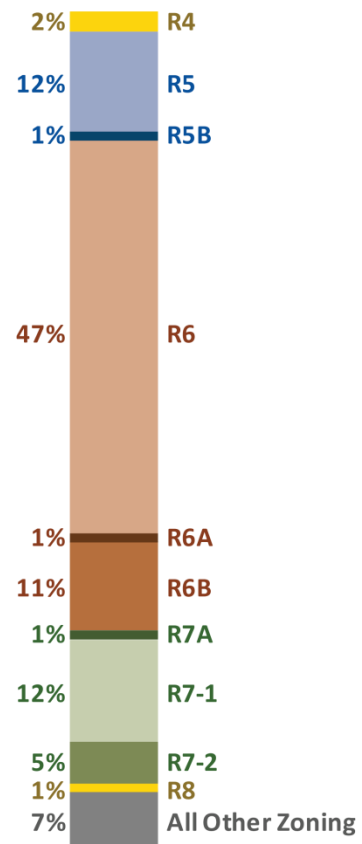
Key Findings – All New Residential Buildings

The following findings are based on the 12,486 residential developments within the Inner Ring completed between 1998 and 2008. This analysis includes both non-publicly subsidized and publicly subsidized developments.

- Most new residential developments within the Inner Ring were located within zoning districts that allow waivers of parking requirements for small buildings.** Almost half of new residential buildings in the Inner Ring are located in R6 districts. R5, R6B, R7-1, and R7-2 are the other zoning districts within the Inner Ring where new residential developments were most common. With the exception of R5 districts (primarily in Queens), these districts all permit waivers when either five or fewer, or fifteen or fewer, spaces are required,²⁶ and usually reduce or waive parking on small lots. (In R5B, R6B, R7B, and R8B districts, curb cuts are not permitted on zoning lots with less than 40 feet of street frontage, effectively prohibiting off-street parking for smaller lots.)

Residential Zoning for All New* Residential Buildings

Source: MapPLUTO 2009



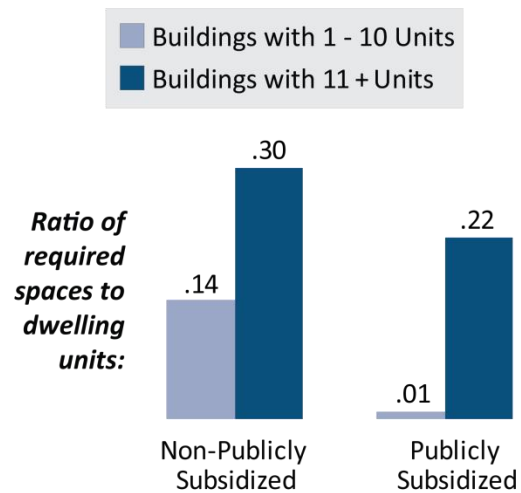
* Built between 1998 and 2008

²⁶ R7A, R7-2, R7-D, R7X, R8, R9 and R10 districts permit waivers of up to 15 spaces.

- Effective accessory parking requirements for new residential buildings in the Inner Ring were significantly reduced by waivers.** Without considering the availability of waivers, required parking ratios for residential buildings built between 1998 and 2008 ranged from .40 to .85 (with lower requirements for publicly subsidized units). However, when parking requirements were calculated considering waivers for these buildings, the effective required parking ratio for buildings with ten or fewer units was .01 for publicly subsidized buildings, and .14 for non-publicly subsidized developments.²⁷ This lower ratio reflects the concentration of recent construction in the Inner Ring within R6 and higher districts, where buildings with ten or fewer units are eligible to waive parking. For buildings of more than 10 units, the reductions and waivers available for smaller lots (e.g., for lots of less than 10,000 square feet in R7-1 and higher districts) reduced the effective parking requirements, albeit to a lesser extent than for smaller buildings. The net effective parking requirement for these buildings was 0.22 for publicly subsidized buildings and 0.30 for non-subsidized buildings. After considering waivers, the net effective parking requirement for all new residential developments in the Inner Ring was .22 spaces per unit. This calculation reflects that publicly subsidized development and small buildings constituted a significant share of buildings built between 1998 and 2008.

Parking Requirements for New* Residential Buildings by Public Subsidy and Building Size

Sources: MapPLUTO 2009, NYC DOB, NYC HPD



* Built between 1998 and 2008

- Parking provided by large residential developments in the Inner Ring is often operated as public parking.** Large buildings providing accessory residential parking often obtain a DCA license for the operation of the public parking facility. A DCA license is required when a parking facility is operated by a party other than the owner, or when parking is provided at a price to people who do not live or work in the building. Zoning generally restricts accessory parking to use by residents of the building and, if spaces are not taken by building residents, other weekly to monthly users. In practice, DCA-licensed facilities are frequently operated as public parking, typically offering spaces on a monthly, daily and hourly basis.

Within the Inner Ring, over one-quarter (29 percent) of the new residential buildings with more than 99 units had a DCA-licensed public parking facility, ranging in capacity from 33 to 828 spaces. While most of these DCA parking facilities were once concentrated in Upper Manhattan and Downtown Brooklyn, they are also appearing in other areas of the Inner Ring including Park Slope, Morrisania, and Long Island City.





²⁷ While data were not available on income levels for all publicly subsidized developments, it was assumed for the purposes of this analysis that all such units were entitled to the reduced parking requirements of Section 25-25 of the Zoning Resolution.

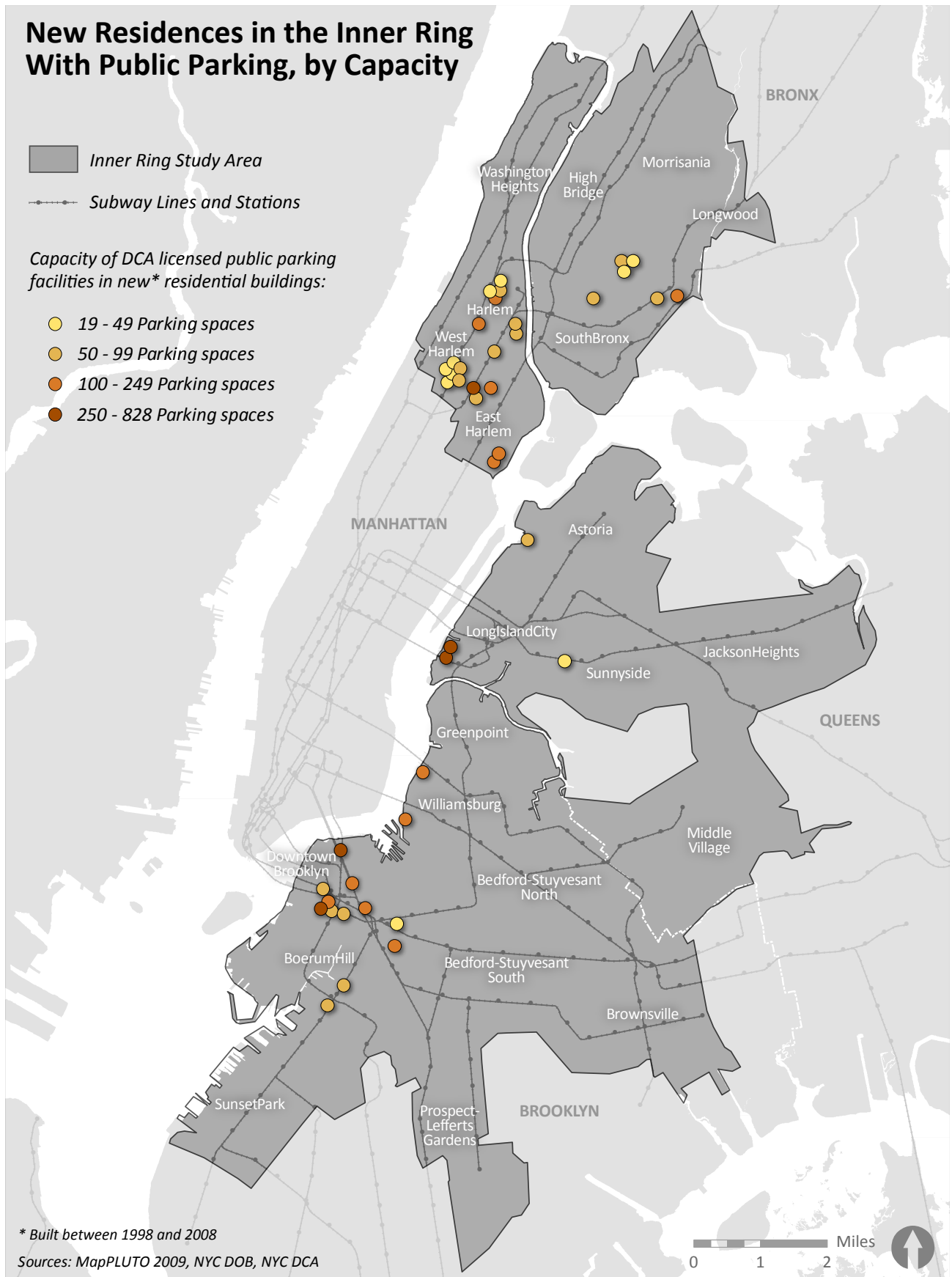
New Residences in the Inner Ring With Public Parking, by Capacity

 Inner Ring Study Area

 Subway Lines and Stations

Capacity of DCA licensed public parking facilities in new* residential buildings:

-  19 - 49 Parking spaces
-  50 - 99 Parking spaces
-  100 - 249 Parking spaces
-  250 - 828 Parking spaces



* Built between 1998 and 2008

Sources: MapPLUTO 2009, NYC DOB, NYC DCA

Key Findings – All New Non-Publicly Subsidized Residential Buildings

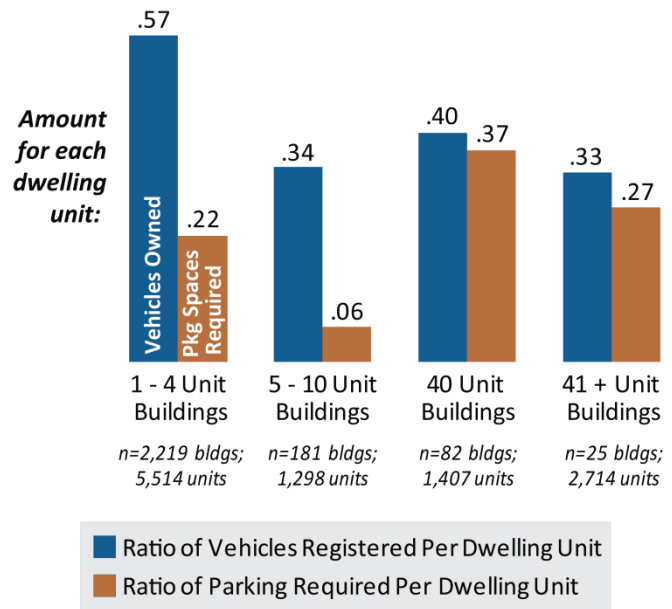
The following findings are based on new non-publicly subsidized residential buildings within the Inner Ring, which are shown in blue on the map on page 4.²⁸ Since these analyses consider vehicle ownership based on 2008 NYS DMV vehicle registrations, only buildings completed between 1998 and 2004 were included. Buildings completed after 2004 were excluded because there is often a time lag between the point when the building is completed and the point when it becomes fully occupied and new residents register their vehicles to the new address.

- There was a mismatch between the types of buildings that are required to provide parking and those that exhibit the highest rates of vehicle ownership.** For buildings with ten or fewer units, which are eligible for parking waivers in R6 and higher districts, the number of required parking spaces per unit was substantially lower than the number of vehicle registrations per-unit. For larger buildings, which typically do not qualify for waivers, there was a far smaller difference between these numbers. The ratio of registered vehicles to dwelling unit is lowest for the largest buildings and highest for one- to four-unit buildings. (Note that developments may provide more parking than the minimum required amount; see “Key Findings for Surveyed Buildings,” below). Averaged over all surveyed buildings, parking was required for approximately one-quarter of new non-publicly subsidized housing in the Inner Ring.

Understanding this mismatch is important to understanding the survey results, which describe the share of vehicle-owners who park at a location other than their residence. The *Inner Ring Household Travel Survey* found that 21 percent of vehicle-owning households parked off-street at a location other than their residence.²⁹ Many of the surveyed households with vehicles reside in buildings where parking is not required; if parking is not provided or is insufficient to meet demand from within their building, they have found parking either on street or in off-street parking facilities elsewhere.

Car Ownership and Effective Amount of Required Parking for New* Non-Publicly Subsidized Residential Buildings

Sources: MapPLUTO 2009, NYC DOB, NYC HPD, NYS DMV 2008



* Built between 1998 and 2004

²⁸ This universe does not include buildings that participated in HPD programs or senior housing, but it may include some buildings that participated in other State or Federal programs.

²⁹ See *Inner Ring Household Travel Survey* page 9.

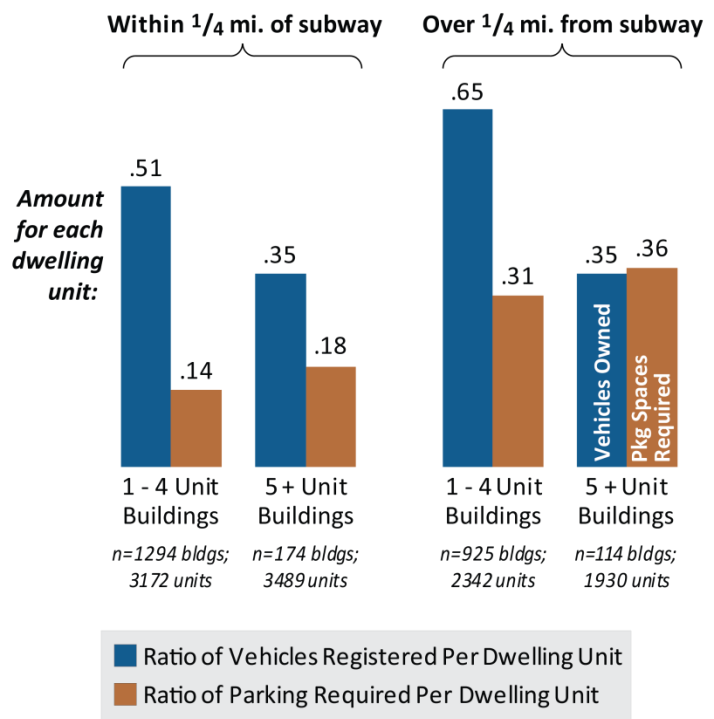
- Less parking was required for new residential buildings located closer to subway stations, and overall lower levels of vehicle registrations occurred in small buildings in these areas, but not in large buildings.** The Inner Ring study geography consists primarily of areas within a half-mile of a subway corridor, so it does not provide a basis for comparing parking requirements – within convenient walking distance to transit and further away from transit. However, within the Inner Ring, new residential developments that are closest to subway stations—within one-quarter mile—were less likely to require parking than developments further from a subway station. Overall, non-publicly subsidized buildings built within one-quarter mile of a subway station required parking for 16 percent of units, compared to 34 percent for buildings located over one-quarter mile from a subway station.

As shown in the chart below, residential buildings that did not require parking were concentrated within a quarter-mile of transit. Buildings that did require parking include larger buildings, mostly closer to transit, as well as smaller buildings in lower density districts.

Buildings located within a quarter-mile of subway stations exhibited overall vehicle registration rates 19 percent lower than those located further from transit. However, this difference was attributable entirely to differences in vehicle registration rates within one- to four-unit buildings; vehicle registration rates for buildings with five or more units were identical between the two geographies. In addition, one-to four unit buildings were more highly concentrated in neighborhoods further from the Manhattan Core, where general vehicle ownership rates tend to be higher. This finding suggests that, consistent with the findings of the *Residential Parking Study*, within the Inner Ring geography proximity to transit plays a limited role in household decisions about vehicle ownership, while other factors, including household characteristics, appear to play a more significant role.

Car Ownership and Effective Amount of Required Parking for New* Non-Publicly Subsidized Residential Buildings

Sources: MapPLUTO 2009, NYC DOB, NYC HPD, NYS DMV 2008



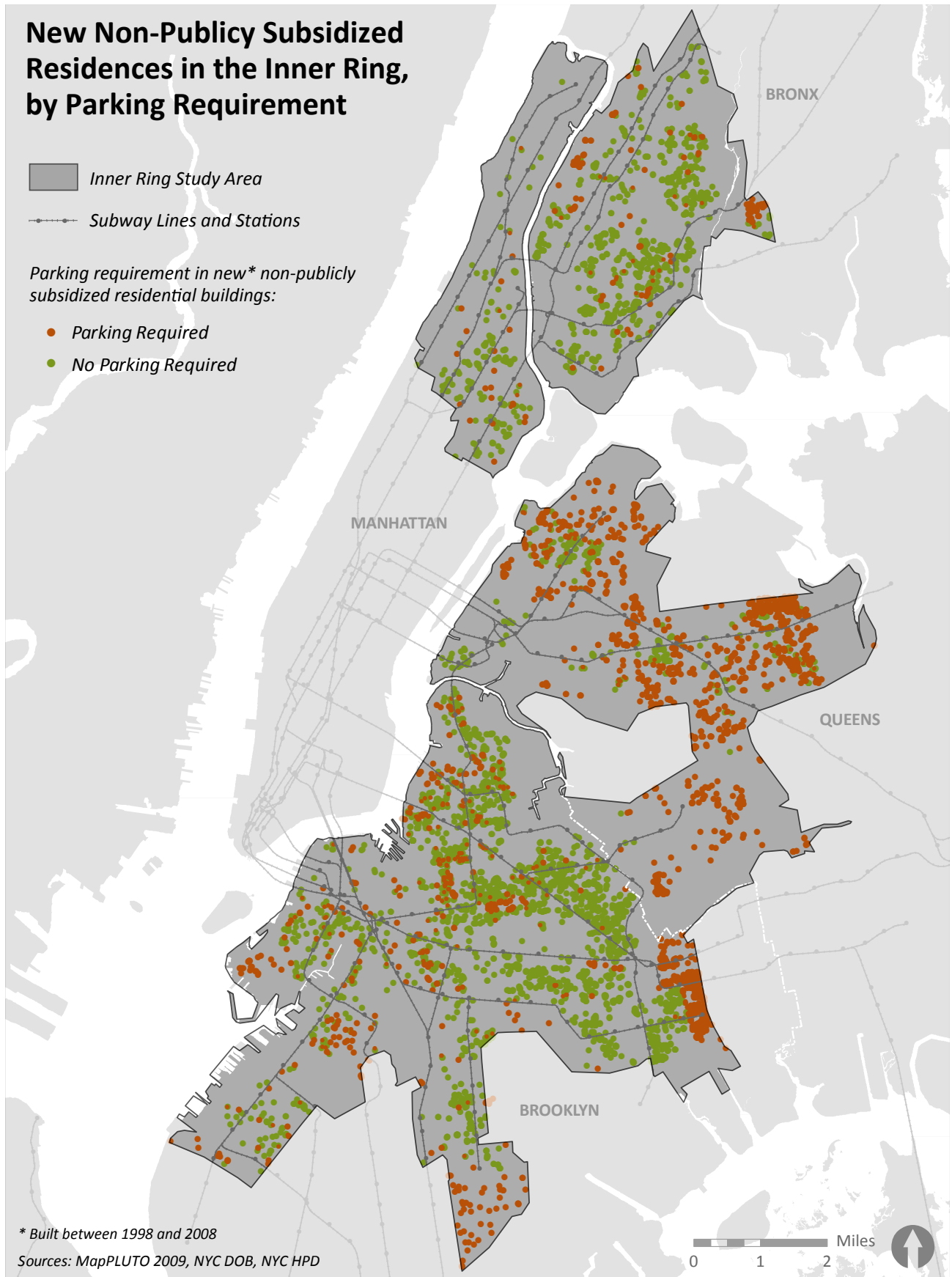
* Built between 1998 and 2004

New Non-Publicly Subsidized Residences in the Inner Ring, by Parking Requirement

- Inner Ring Study Area
- Subway Lines and Stations

Parking requirement in new* non-publicly subsidized residential buildings:

- Parking Required
- No Parking Required



* Built between 1998 and 2008

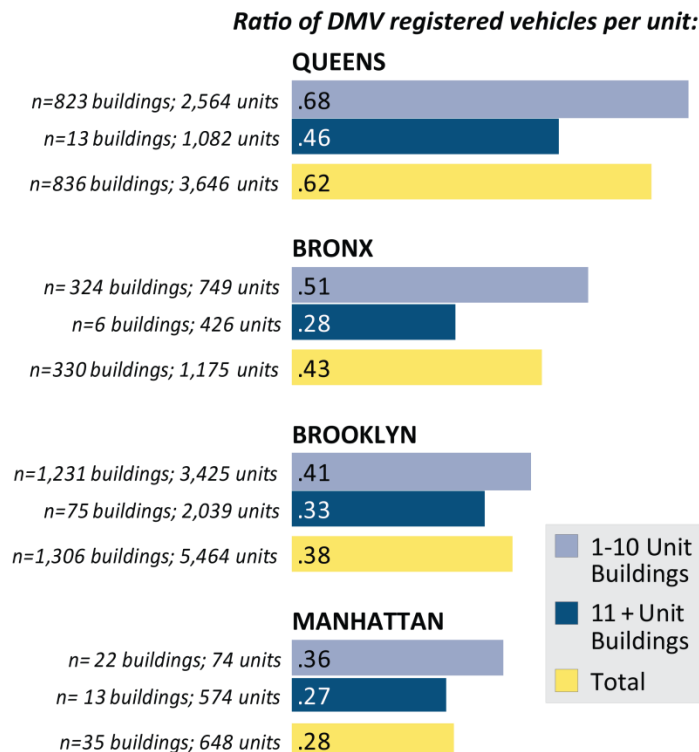
Sources: MapPLUTO 2009, NYC DOB, NYC HPD

- **In all boroughs, vehicle ownership was highest in small buildings. Among Inner Ring neighborhoods, vehicle ownership was highest in Queens and lowest in Upper Manhattan.** In each borough the ratio of vehicles per-unit was greatest in buildings with ten or fewer units. Large buildings typically generate a greater absolute number of vehicles, though a lower number per household.

The Inner Ring is made up of areas within close proximity to the Manhattan Core that have similar characteristics, such as their close proximity to transit and medium to high densities. However, vehicle ownership patterns vary significantly across the four boroughs included in this study, indicating that there are other factors that influence vehicle ownership.

Vehicle Ownership by Building Size and Borough for New* Non-Publicly Subsidized Buildings

Sources: MapPLUTO 2009, NYC DOB, NYC HPD, NYS DMV 2008





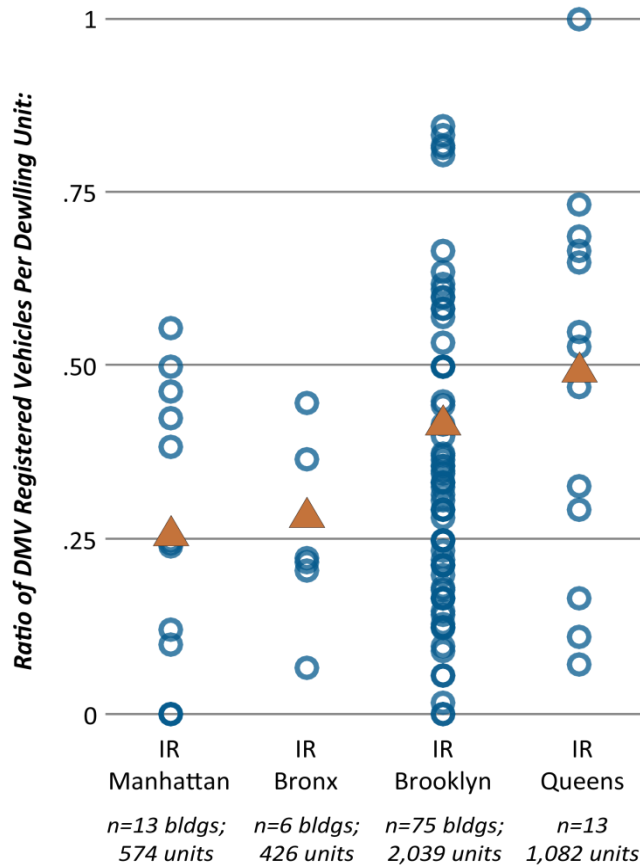
* Built between 1998 and 2004

- There is substantial variation in vehicle ownership among multi-family buildings within each borough.** The chart below shows the distribution of the ratio of vehicles per-unit³⁰ in non-publicly subsidized buildings with more than 10 units. Each building is plotted along with vertical axis to show the ratio of vehicles per unit in that given building, and grouped by borough. This illustrates that while the average number of vehicles owned per unit varies by building size and geography, as described above, there is substantial variation in vehicles registered per-unit even among buildings of similar sizes within the same borough. For example, in the Inner Ring section of Queens, vehicle ownership in individual buildings varies from 0.07 to 1.0 vehicles per household. This finding points towards the complexity of ascribing a “correct” required amount of parking to an individual building, and to the importance of shared parking resources.

Vehicle Ownership in Each New* Non-Publicly Subsidized Building with 11 or More Units

Sources: MapPLUTO 2009, NYC DOB, NYS DMV 2008

-  Each new building is represented by one blue circle.
-  The mean value of vehicles/unit for each borough is represented by the orange triangle.



* Built between 1998 and 2004

³⁰ Vehicles registered in 2008 to buildings constructed between 1998 and 2004. For the chart, the “mean” DMV ratio is the average of individual DMV ratios for buildings in the sample, as opposed to an overall DMV ratio for the group.

Key Findings – Surveyed New Non-Publicly Subsidized Residential Buildings

The following findings are based on the 1,380 new non-publicly subsidized residential buildings in the Inner Ring that were surveyed to determine the presence of off-street parking.*

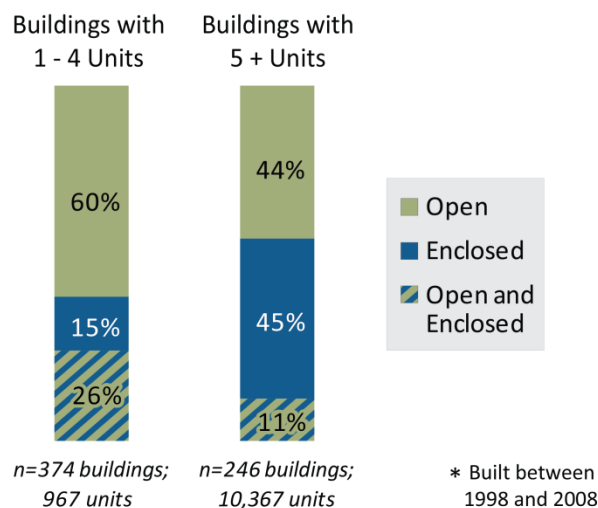
** The information contained in these charts is based upon weighted surveyed data. Buildings were weighted based on the methodology used in the Inner Ring Household Travel Survey (see Built Parking and Affordable Housing Appendix), building size, and study area geography.*

- In surveyed buildings where parking was provided, most small buildings (one- to- four units) provided open parking, while most larger buildings had enclosed parking.** The small footprint of one-to-four unit buildings allows for parking to be unenclosed, such as on a parking pad. As noted in Chapter 2, *Market Conditions for Off-Street Parking*, this parking format is likely chosen because it is inexpensive to provide. However, there are drawbacks to open parking, including the elimination of landscaped or accessible open space on site. Where such parking pads are provided for individual single- and two-family homes, it can also result in the loss of on-street parking in amounts similar to that being provided off-street.

Large buildings (defined here as those with five or more units) are generally less able to accommodate the required or desired number of parking spaces as surface parking, and tend to locate the parking within the building. For larger buildings, this tendency is even more pronounced: about two-thirds (67 percent) of surveyed buildings with over 40 units had enclosed parking. As noted in Chapter 2, enclosed parking is substantially more expensive, particularly if provided below grade.

Location of Any Off-Street Parking by Building Size, for Surveyed New* Non-Publicly Subsidized Buildings

Sources: MapPLUTO 2009, NYC DOB, NYC HPD, DCP Survey



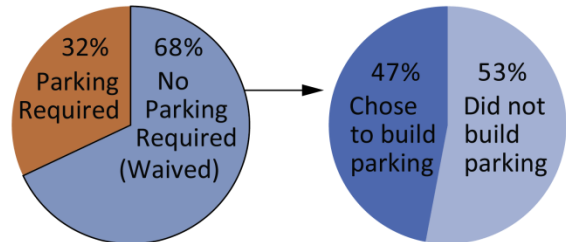
- Waivers were widely available for small buildings but often were not used.** Parking waivers for residential buildings are most widely available for buildings with 10 or fewer units. Almost three-quarters (68 percent)³¹ of the surveyed buildings with fewer than 10 units were eligible to waive the parking requirements (under the zoning in place in 2009). Survey data showed, however, that almost half of these waiver-eligible buildings still provided at least one off-street parking space. Combined with the results that showed small buildings had the highest rates of vehicle ownership, this finding suggests that developers are likely responding to perceived market demand. Small buildings also frequently provided surface parking, which costs far less than structured parking.

Buildings with 10 or more units were more likely to use a parking waiver if it was available, with only one-third choosing to provide parking that was not required. This pattern may reflect both somewhat lower vehicle ownership rates in such buildings and site constraints that often make it necessary to place parking in a costly structured facility.

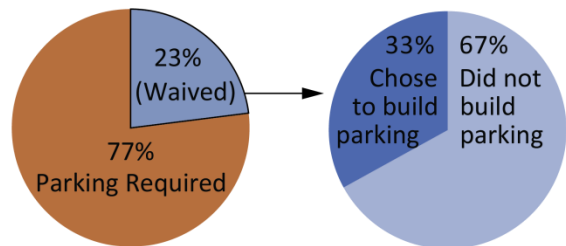
Availability and Use of Parking Waivers for Surveyed New* Non-Publicly Subsidized Residential Buildings, by Building Size

Sources: MapPLUTO 2009, NYC DOB, NYC HPD, DCP Survey

1 - 10 Unit Buildings n=928 buildings; 4,066 units



11 + Unit Buildings n=330 buildings; 15,770 units



* Built between 1998 and 2008

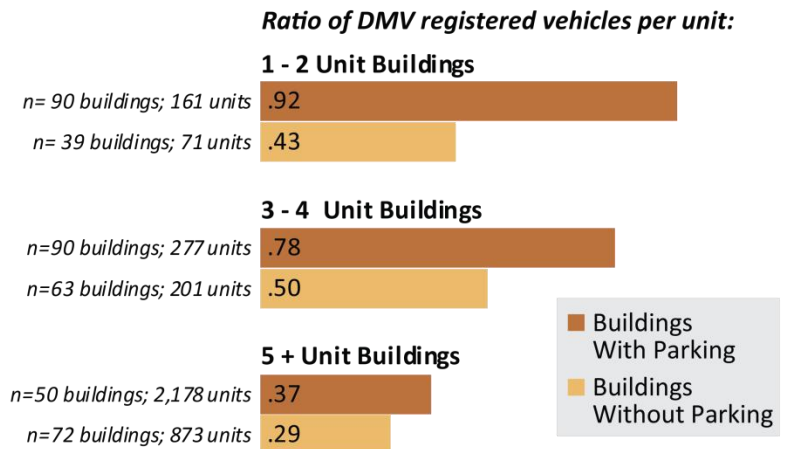
- For buildings with 1-4 units, the presence of off-street parking correlated with substantially higher vehicle ownership rates. However, for those with 5 or more units, the presence or absence of on-site parking did not have a large effect on vehicle ownership.** There was a higher ratio of registered vehicles per unit surveyed in buildings with off-street parking than in buildings without parking. This finding was particularly the case among buildings with less than five units, and most pronounced in one- and two-family homes. This information corresponds with data from the *Inner Ring Household Travel Survey* (see Chapter 3: *The Inner Ring Household Travel Survey*), that found 60 percent of vehicle owners in one- to four-unit buildings consider off-street parking to be an important factor in choosing a place to live. It also suggests that having a dedicated private parking space may be attractive to households owning cars, or may in part reflect that parking is more frequently “bundled” in one- and two-family buildings (see Chapter 2, *Market Conditions for Off-Street Parking*).

³¹ This figure does not include buildings where parking is not permitted. Ex. R5B and R6B districts where there is less than 40 feet of frontage.

In buildings with five or more units, only a modest difference in vehicle registrations existed between buildings with parking and buildings without parking. This outcome suggests that in larger buildings particularly, there are other factors at work besides the presence of off-street parking at one's residence in the decision whether to own a car.

Vehicle Ownership by Building Size and Presence of Off-Street Parking for Surveyed New* Non-Publicly Subsidized Buildings

Sources: MapPLUTO 2009, NYC DOB, NYC HPD, NYS DMV 2008, DCP Survey



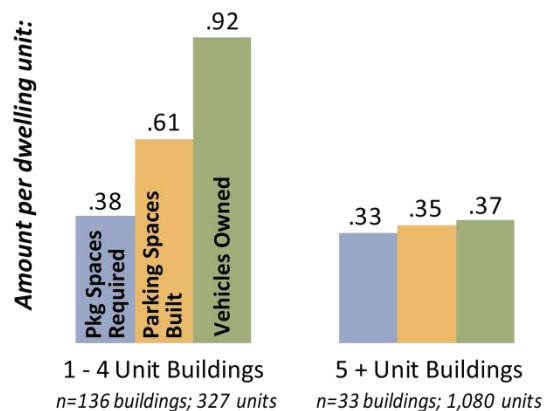
* Built between 1998 and 2004

- There were substantial differences between the ratios of required parking spaces, built parking spaces, and registered vehicles to dwelling units in small buildings, while only small differences among these figures existed for larger buildings. For surveyed buildings with fewer than five units, developers built substantially more parking than required, and the number of registered vehicles exceeded the number of parking spaces provided on a per-unit basis. The relatively low number of required parking spaces (0.38) is attributable to waivers, although the fact that this number is substantially higher than for all non-subsidized 1-4 family buildings in the Inner Ring (0.22) reflects this sample's higher proportion of buildings in lower density districts where waivers are not available. The tendency of developers to voluntarily build parking for one-to four- unit buildings may be attributable to the perceived expectations of renters or buyers, as well as the low cost of providing surface parking.

For buildings with five or more units, the numbers of spaces required per unit and the number of spaces built per unit were nearly equal, suggesting that developers generally build at or close to the parking

Effective Amount of Required Parking, Built Parking and Car Ownership for Surveyed New* Non-Publicly Subsidized Residential Buildings

Sources: MapPLUTO 2009, NYC DOB, NYC HPD, NYS DMV 2008, DCP Survey



* Built between 1998 and 2004

requirement. This likely reflects the higher cost of providing parking, usually structured, for larger buildings, and that the revenue generated by such parking is usually insufficient to make its construction profitable. The data also suggest that, on average, the number of registered vehicles per unit for such buildings does not differ greatly from the number of spaces required and provided.

It should be noted that these findings are for weighted averages for buildings in these size categories, but that the analysis of surveyed buildings identified substantial variation among buildings of similar size.

These findings are generally consistent with the findings for **all** non-publicly subsidized units built in the Inner Ring from 1998-2004, with the exception that the former show substantially higher vehicle ownership rates for one- to four-family homes.

Summary of Findings

Parking requirements in the Inner Ring cannot be evaluated without considering the availability of parking waivers or reductions for smaller buildings in the zoning districts most commonly mapped in this geography. Effective parking requirements are low for small buildings, which are most often eligible for waivers, and higher for larger buildings. While the nominal parking requirements in the Inner Ring vary from 0.40 to 0.85 spaces per unit, the number of parking spaces required for buildings constructed between 1998 and 2008, taking into consideration waivers and reductions, was 22 spaces per 100 units. This reduced range reflects that small buildings and publicly subsidized development constituted a significant share of the buildings constructed in the Inner Ring during this period.

Fewer parking spaces are required per unit in areas closest to transit because higher-density zoning districts with lower parking requirements are more frequently mapped in these areas. Within the Inner Ring geography, which is generally close to transit, closer proximity to transit (within one-quarter mile) does not appear to make a substantial difference in vehicle ownership with virtually no difference for residents of buildings with five or more units.

The ratio of registered vehicles to dwelling unit varied from borough to borough and by building size. In the Inner Ring neighborhoods, vehicle registration rates were highest in Queens and lowest in Upper Manhattan. Small buildings, which in the zoning districts mapped within the Inner Ring have the lowest effective parking requirements, generated more vehicles on a per-unit basis than large buildings, which have higher effective parking requirements. As discussed in *Chapter 3: The Inner Ring Household Travel Survey*, many vehicle-owning residents parked at off-street locations other than their residence, whether or not off-street parking spaces existed at their residence. The findings of this chapter offer one explanation for this pattern: the buildings that are required to provide parking are frequently not the same buildings in which vehicle owners live.

For buildings with one to four units, the presence of off-street parking correlated with substantially higher vehicle ownership rates. However, for those with five or more units, the presence or absence of on-site parking did not have a large effect on vehicle ownership. This finding suggests that for residents of larger buildings, the presence of parking on-site does not substantially affect their decision whether to own a vehicle.

The likelihood that a building would provide more parking than required varied by building size, which appears to reflect developers' sensitivity to the cost of providing off-street parking, as well as the likely revenues from the parking. Most small buildings for which required parking could have been waived opted to provide surface parking, presumably either because such parking was seen as important for marketing housing units or because surface parking is relatively inexpensive to build. In contrast, large buildings, where parking is often provided in a costly structure, were more likely to waive the accessory parking requirements when such an option was available. As described in Chapter 2, *Market Conditions for Off-Street Parking*, developers frequently opt not to provide parking when the revenue it generates is insufficient to support the cost of building structured parking.

An examination of DCA parking licenses shows that parking facilities provided by large residential developments in the Inner Ring are often operated as public parking, despite zoning regulations that anticipate use of spaces by building residents. This provides a shared parking facility for neighborhood residents as well as visitors and suggests that parking policies should consider allowing greater flexibility in the use of parking facilities to match parking spaces to vehicle owners.

While this chapter identified patterns in vehicle ownership based on building size, there was substantial variation in the number of registered vehicles per unit from building to building, even among buildings of similar sizes. This high degree of variance points toward the complexity of ascribing a "correct" required amount of parking to an individual building, as well as the importance of parking serving as a shared resource. It likely reflects the importance of household characteristics in determining vehicle ownership rates, and suggests that different neighborhood approaches to parking requirements may make sense based on local characteristics.

Executive Summary

Introduction

Chapter 1: Study Area Characteristics

Chapter 2: Zoning Requirements and Market Conditions for Off-Street Parking

Chapter 3: The Inner Ring Household Travel Survey

Chapter 4: Built Parking Survey and DMV Registration Analysis

Chapter 5: Parking Requirements and Affordable Housing in the Inner Ring

Chapter 6: Summary of Findings and Policy Goals

Appendix 1: Neighborhood Profiles

Appendix 2: Built Parking and Affordable Housing Technical Appendix

Appendix 3: Household Travel Survey Technical Appendix

INNER RING

Residential Parking Study

NYC Department of City Planning

Introduction

The *Parking Requirements for Affordable Housing* section of the *Inner Ring Residential Parking Study* explores the relationships among parking requirements, vehicle ownership, and parking utilization in recent publicly subsidized developments in the Inner Ring. This research expands upon findings from the *Built Parking Survey and DMV Registration* section, which identified relationships among the amount of parking that was required and built, and the number of vehicles owned in new residential developments in the Inner Ring.

History of Parking Requirements for Affordable Housing

In recognition of the unique characteristics of low-income housing, Section 25-25 of the NYC Zoning Resolution sets forth reduced parking requirements for affordable housing developments³². Requirements vary by zoning district and according to several categories of affordable housing programs. Initially, the 1961 Zoning Resolution only included reduced parking requirements for “low-rent public housing developments owned by the New York City Housing Authority (NYCHA) and receiving cash subsidies.” Section 25-25 has since been amended several times to include additional categories of affordable housing, though it has not been largely changed in the past 25 years.

In 1965, Section 25-25 was amended to include “non-profit residences for the elderly.” The City Planning Commission recognized that public housing developments, which were available only to tenants with limited incomes, had lower parking requirements and held that similar consideration should be given to nonprofit housing for the aged by charitable organizations. In 1969, parking requirements for non-profit housing for the elderly were reduced by one-third in R3 through R10 zones because according to the Commission, “the elderly own far fewer cars than other persons.”³³ The waiver available to other low-income housing was eliminated for senior housing, because the new requirements were intended to accommodate staff and visitors, as well as tenants. Subsequent amendments expanded this category to also include “dwelling units for the elderly.” The current parking requirements for affordable housing that qualify under “Non-Profit Housing for the Elderly” range from 10 percent of units in R8 districts to 16 percent of units in R6 districts.

In 1976, Section 25-25 was amended to include a category for the Federal Rent Subsidy Program to accommodate the then-new Section 8 program with parking requirements related to the probable average of tenant incomes.³⁴ The amendment established new parking requirements for Section 8 developments halfway between the parking requirements for publicly assisted housing and public housing dwelling units for low-income tenants.

The last notable amendment to Section 25-25 occurred in 1987, when the Quality Housing Program was established, reducing the parking requirements for non-publicly subsidized housing in mid-density districts to 50 percent of dwelling units. The Commission used the Special Bay Ridge

³² Section 36-35 ZR also contained parking requirements for publicly subsidized buildings located in commercial zoning districts. The text was amended in 2011 as part of the Key Terms Text Amendment. The revised text refers back to Section 25-25 to use the residential equivalent.

³³ CPC Report #20554.

³⁴ CPC Report #22952.

District as a guide to set these parking requirements, explaining that “in those areas where on-street parking is scarce and demand for off-street parking is strong, developments are likely to include higher levels of parking.”³⁵ The Quality Housing text amendment created an additional fifth category to Section 25-25, titled “Government Assisted Housing,” applicable to developments that received City or State assistance to reduce total development cost by a minimum amount, and limited maximum tenant income under a federally prescribed standard. The parking requirements for this category are slightly lower than the requirements in the original category “publicly assisted housing.”

Today, the affordable housing programs referenced in Section 25-25 are generally defunct, making their interpretation for affordable housing developments confusing, but most affordable housing developments qualify under the category of “Government Assisted Housing.” The parking requirements for government assisted housing range from 25 percent of units in R7-2 and higher districts to 70 percent of units in R5 districts. Waivers for small required amounts of parking in R6 or higher districts apply as they do for other developments, except that no waiver is allowed for non-profit housing for the elderly.

The 2011 update to PlaNYC 2030 addresses the issue of affordable housing and parking requirements, stating that the City plans to “explore whether current parking minimums applicable to affordable housing are unnecessarily adding to the construction cost of some categories of housing, and explore amending those requirements as appropriate.”

Data Sources and Methodology

Some of the data presented in this section was collected as part of the study’s *Built Parking Survey and DMV Registration Analysis* component, which examines off-street parking and vehicle ownership in all new residential developments constructed within the Inner Ring between 1998 and 2008. In addition to data collected by DCP, data were obtained from several agencies including: NYC Department of Housing Preservation and Development (HPD), NYC Department for the Aging (DFTA), NYC Department of Buildings (DOB), NYS Department of Motor Vehicles (NYS DMV), and the United States Census Bureau.

The *Built Parking Survey and DMV Registration Analysis* identified 12,486 new residential developments constructed within the Inner Ring from 1998 to 2008. A database of these buildings was used as the basis for the analysis in this report. In order to determine the number of required parking spaces under zoning and parking that was actually built, database queries were used to calculate the amount of off-street parking required for each new building, based on requirements for the zoning district³⁶ and subsidy program³⁷. Then, City Planning conducted field surveys for a sample of 2,525 all new buildings (892 publicly subsidized) to determine whether and how much parking was built.

³⁵ CPC Report #870197A.

³⁶ Portions of the study area were rezoned between 1998 and 2008. The analysis assigned to these areas assumes the current zoning designation as of 2009, the time at which the analysis was performed. The analysis may thus tend to understate (or overstate) the amount of parking required at the time of development.

³⁷ In accordance with Sections 25-25 and 36-35 of the NYC Zoning Resolution. Detailed information was not always available about income levels of residents; it was generally assumed that the building was eligible for reduced parking requirements pursuant to zoning.

The sample for the Built Parking Survey was drawn, and the analysis results were weighted, using methodology from the *Household Travel Survey*, which is further detailed in the *Household Travel Survey Technical Appendix*. In order to determine the number of parking spaces that were built (when this could not be determined through field surveys), NYC DOB Certificate of Occupancy data were used to supplement survey findings.

HPD provided DCP with data including supplemental detailed information on publicly subsidized new housing constructed between 1995 and 2011. The HPD database was then matched with DCP's database, which included new residential construction in the Inner Ring between 1998 and 2008. Combining the databases allowed for further analysis of publicly subsidized housing based on different income levels, which is included in this section. While the database provided additional information on the number of units within each income group and/or program sponsorship per building, complete information was not available for all buildings. The methodology is further documented in Chapter 4, *Built Parking Survey and DMV Registration Analysis*, and in the *Parking Requirements for Affordable Housing Analysis Technical Appendix*.

In addition to an inventory of off-street parking and a zoning analysis for new residential buildings, this study aimed to determine whether a relationship exists between the supply of parking and vehicle ownership in various income categories. To analyze vehicle ownership, NYS DMV vehicle registration data from 2008 were geocoded to match the HPD developments from 1998-2006³⁸ to analyze the relationship between income and vehicle ownership in publicly subsidized housing.³⁹ Census data from the American Community Survey (2007-2009) were also used to provide information about income and vehicle ownership for this study. Finally, in order to examine the effect of residential parking requirements on affordable housing developments, DCP interviewed several prominent developers of affordable housing in NYC.

Overview of Publicly Assisted Housing in the Inner Ring from 1998-2008

From 1998 to 2008, HPD participated in the development of new housing on 3,977 tax lots in the Inner Ring. The majority of these buildings⁴⁰ (almost 80 percent) were smaller buildings built through moderate and middle income programs such as Partnership and Nehemiah; 7 percent of buildings were targeted to low-income households; 12 percent included mixed incomes, and 2 percent of developments were housing for the formerly homeless, a low-income group.⁴¹

³⁸ For analyses that consider vehicle ownership based on 2008 NYS DMV vehicle registrations, buildings completed between 1998 and 2006 were included. Building completed after 2006 were excluded because often there is a time lag between the point when the building is completed, and when it becomes fully occupied and new residents register their vehicles to the new address. Although the analysis of non-publicly subsidized residential buildings includes only buildings constructed between 1998 and 2004, an additional two years of publicly subsidized buildings were included, because buildings at below-market prices generally become fully occupied more quickly. Thus a bigger sample size is possible for larger subsidized buildings.

³⁹ The ratio of vehicles to unit counts only vehicles registered to new residential building site addresses, and does not account for vehicles owned by residents of these buildings but registered at another location.

⁴⁰ This figure includes only a sample of buildings where detailed income and HPD program information was available. The larger sample includes buildings that were constructed because they participated in a program, but information on income levels was not readily available.

⁴¹ Other special-needs populations, including seniors, may be included in the "low-income" category.

New Publicly Subsidized Residences in the Inner Ring by Building Size

Inner Ring Study Area

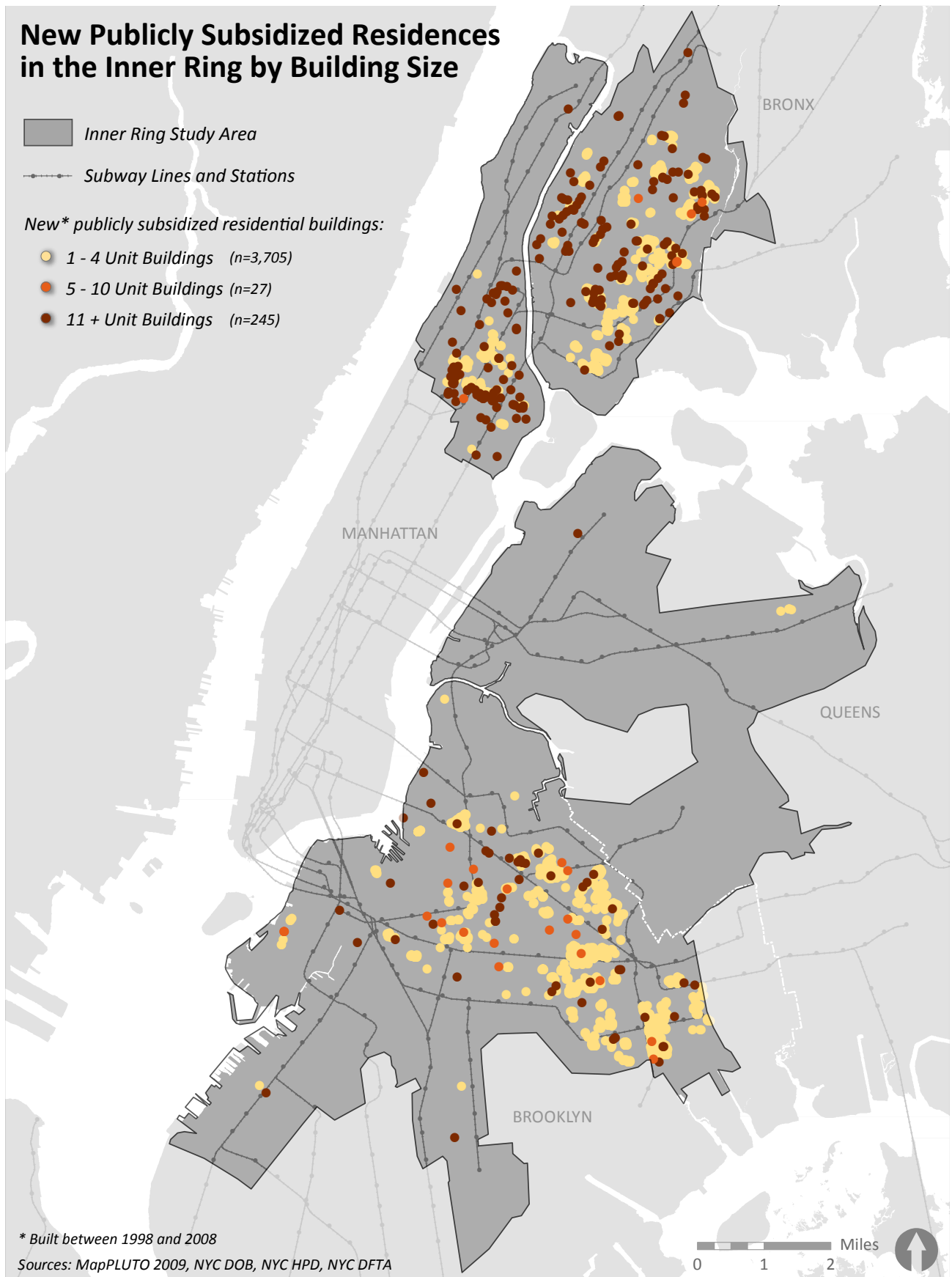
Subway Lines and Stations

New* publicly subsidized residential buildings:

1 - 4 Unit Buildings (n=3,705)

5 - 10 Unit Buildings (n=27)

11 + Unit Buildings (n=245)



* Built between 1998 and 2008

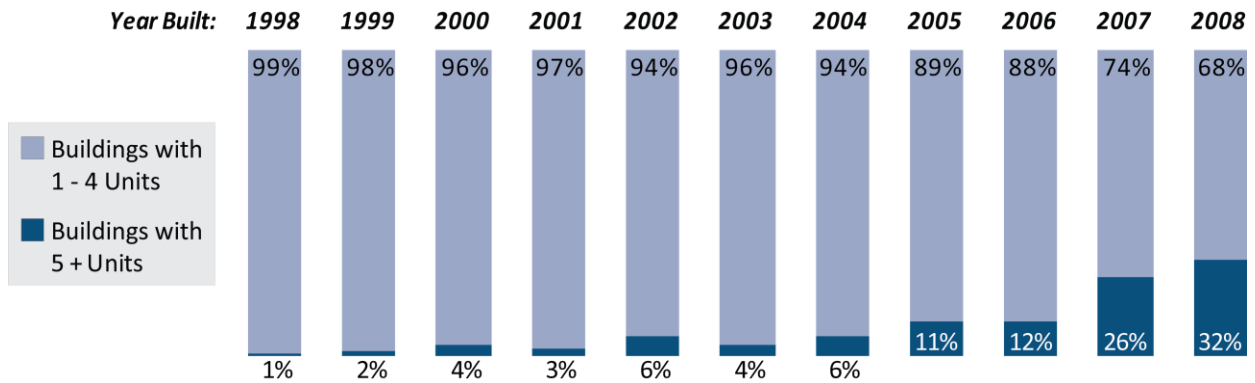
Sources: MapPLUTO 2009, NYC DOB, NYC HPD, NYC DFTA

Most of the HPD-sponsored housing developments with fewer than five units were built for home ownership. Only 7 percent of all new publicly subsidized buildings in the Inner Ring built between 1998 and 2008) were buildings with five or more units. The one- to four- unit buildings contained a total of 8,101 units, and buildings with five or more units contained 16,935 units. The average number of units in publicly subsidized buildings with five or more units was 62; the median number of units was 56. These buildings are considerably larger on average than non-publicly subsidized buildings with five or more units, where the average number of units per building was 23 and the median number of units was 10.

While the majority of recent subsidized buildings in the Inner Ring have fewer than five units, in recent years there has been a shift toward constructing larger buildings (see page 17 of the *Built Parking and Affordable Housing Technical Appendix*). By 2008, buildings with five or more units made up almost one-third of new HPD buildings, up from 1 percent in 1998. Over half of these buildings are mixed-income developments. Almost one-third (32 percent) are low-income developments.⁴²

Building Size and Year Built for Publicly Subsidized Buildings in the Inner Ring (n=3,977)

Sources: MapPLUTO 2009, NYC DOB, NYC HPD



⁴² For the sample of buildings where income levels are known.

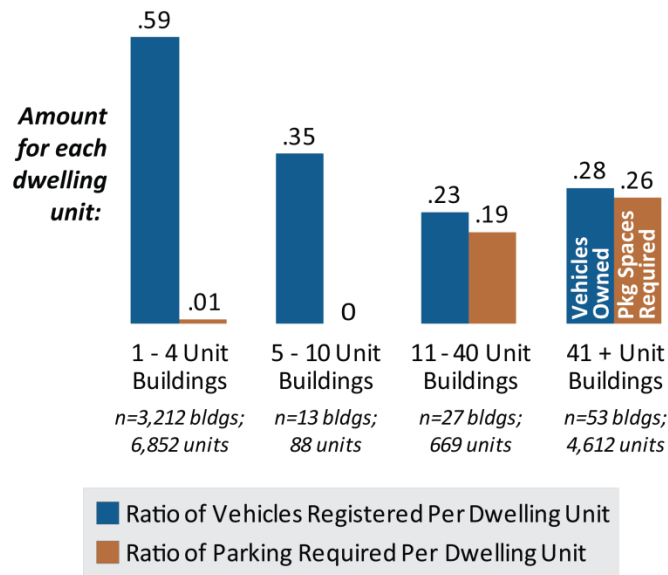
Key Findings for New Publicly Subsidized Residential Buildings

The following findings are based on publicly subsidized residential buildings constructed within the Inner Ring between 1998 and 2006. For analyses that consider vehicle ownership based on 2008 NYS DMV vehicle registrations, buildings completed after 2006 were excluded because often there is a time lag between the point when the building is completed, and when it becomes fully occupied and new residents register their vehicles to the new address. The two-year time lag allowed for publicly subsidized buildings is shorter than the four-year time lag allowed for non-subsidized buildings because buildings at below-market prices generally become fully occupied more quickly.

- Few parking spaces were required for smaller affordable developments, but larger buildings, which generated fewer vehicles per household, required substantially more spaces.** For publicly subsidized buildings with ten or fewer units, (which are eligible for parking waivers in R6 and higher districts), the number of required parking spaces per unit was substantially lower than the number of vehicle registrations per-unit. In larger buildings, there was only a small difference between these numbers. The ratio of registered vehicles to dwelling units was lowest for the largest buildings and highest for one- to four-unit buildings.⁴³

Car Ownership and Effective Amount of Required Parking for New* Publicly Subsidized Residential Buildings

Sources: MapPLUTO 2009, NYC DOB, NYC HPD, NYS DMV 2008



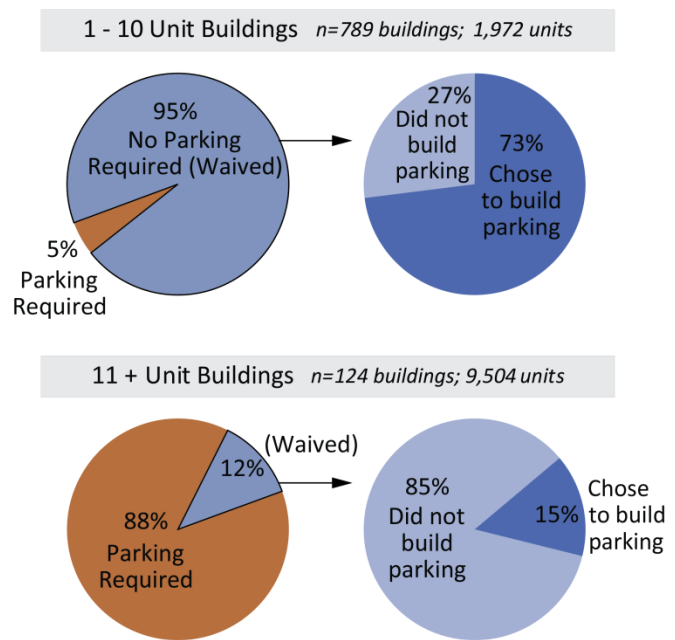
⁴³ This chart excludes non-profit housing for the elderly. See sections 25-25 and Section 36-35 “Government Assisted Housing.”

- Large publicly subsidized housing developments built between 1998 and 2008 were somewhat more likely to make use of available waivers from parking requirements than non-publicly subsidized buildings of similar size. Small publicly subsidized buildings were more likely to provide off-street parking than non-publicly assisted buildings of similar size when waivers were available.** Of the new publicly subsidized buildings with 10 or fewer units that were surveyed, a large majority (95 percent)⁴⁴ were eligible to waive the parking requirements (under the zoning in place in 2009), reflecting that most were in R6 or higher districts. Survey data showed that almost three-quarters of these buildings provided at least one off-street parking space even when the waiver was available. By comparison, a lesser share (53 percent) of non-publicly subsidized buildings with ten or fewer units provided parking when waivers were available (see Chapter 4, *Built Parking and DMV Analysis*). This finding appears to reflect the goals of certain housing programs that sought to attract moderate- and middle-income households perceived as likely to want off-street parking.

In contrast, multi-family publicly subsidized buildings with 11 or more units were more likely to use a parking waiver if it was available. Only 15 percent *chose to provide parking when it was not required*, less than half the rate among non-publicly subsidized buildings of this size, where one-third provided parking when waivers were available (see Chapter 4, *Built Parking and DMV Analysis*). This can likely be attributed to the higher cost of providing parking for larger buildings, and the lack of revenues to offset the costs of building parking for affordable housing.

Availability and Use of Parking Waivers for Surveyed New* Publicly Subsidized Residential Buildings, by Building Size

Sources: MapPLUTO 2009, NYC DOB, NYC HPD, DCP Survey



* Built between 1998 and 2008

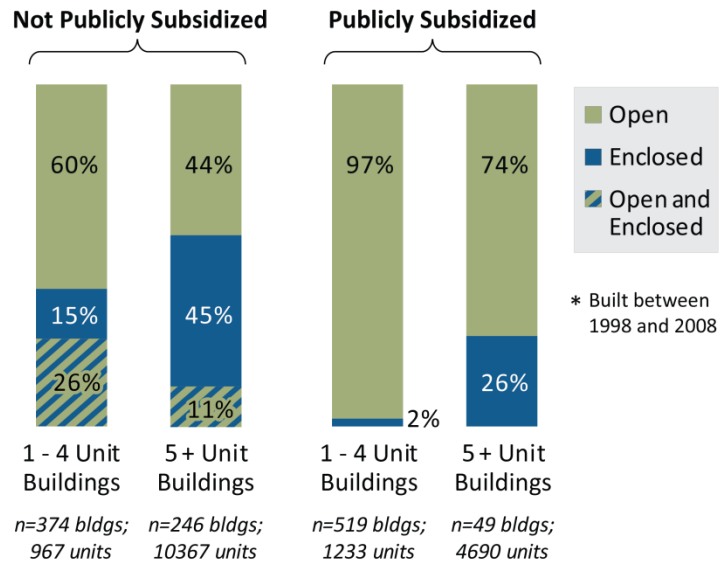
⁴⁴ This figure does not include buildings where parking is not permitted. Ex. R5B and R6B districts where there is less than 40 feet of frontage.

- Publicly subsidized buildings providing parking were far more likely to provide surface parking than non-publicly subsidized buildings. The vast majority (97 percent) of publicly subsidized one-to-four unit buildings with off-street parking provided unenclosed parking, likely because of the low cost of providing surface parking and the difficulty of building structured parking within subsidy limits (see information from interviews with affordable housing developers, page 12).

Almost three-quarters (74 percent) of publicly subsidized buildings with five or more units providing off-street parking have it in the form of surface parking, compared to only 44 percent of non-publicly subsidized buildings. This finding is consistent with the notion that publicly subsidized buildings are more sensitive to the costs of providing parking. Affordable housing developments appear more likely than market-rate developments to confront a tradeoff between providing parking or other open space amenities at grade.

Location of Any Off-Street Parking by Public Subsidy and Building Size, for Surveyed New* Buildings

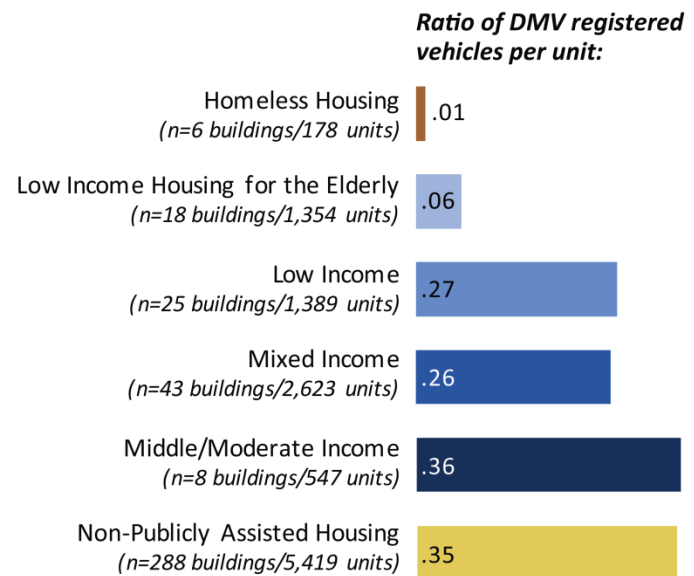
Sources: MapPLUTO 2009, NYC DOB, NYC HPD, DCP Survey



- For new residential buildings built within the Inner Ring between 1998 and 2006, vehicle registration rates were significantly lower in developments sponsored by HPD and targeted for low-income households than for non-publicly assisted developments. Special-needs populations exhibited even lower vehicle registration rates. Low-income housing developments of five or more units had an overall vehicle-to-dwelling unit ratio of .27, compared to .35 for non-publicly subsidized housing. Low-income housing for the elderly and housing for the formerly homeless had extremely low rates of auto ownership.

Vehicle Ownership by Income Level for New* Buildings with Five or More Units

Sources: MapPLUTO 2009, NYC DOB, NYC HPD, NYC DFTA, NYS DMV 2008



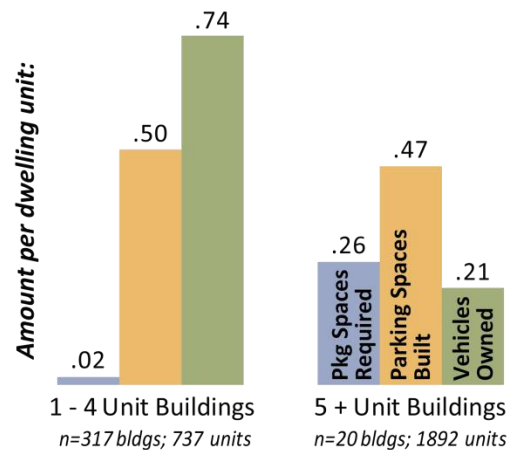
* Built between 1998 and 2006

- In small buildings, the number of vehicles owned exceeded the number of parking spaces built, and nearly no parking was required. For large buildings, the amount of parking required and built exceeded the number of vehicle registrations.** In publicly subsidized buildings that were surveyed, developers built substantially more parking than required for buildings with fewer than five units, and only slightly more parking than required for buildings with five or more units. In buildings with fewer than five units, the number of registered vehicles per unit substantially exceeded the number of parking spaces provided per unit. The results for smaller subsidized buildings can be attributed to the low cost of providing surface parking as well as that many of these units were targeted to middle- and moderate-income households. As seen in the previous chart, for larger buildings, middle and moderate income households generally had vehicle ownership rates similar to those of non-publicly subsidized housing in the Inner Ring

In publicly subsidized buildings with five or more units, the ratio of vehicles registered per-unit was less than the ratio of spaces required and built per unit⁴⁵. The sample of surveyed buildings skewed toward larger low-income buildings averaging over 100 units, with a small number of buildings (14) but a large number of total units (1,501). This tendency explains the higher parking requirements found here than for all subsidized buildings (see page 6). These results suggest that parking requirements for the largest low-income buildings exceed the number of vehicles owned in these developments. (Note that six of the 14 buildings with five or more units in this sample were mixed-use, and it is possible that some off-street parking spaces provided may serve commercial or community facilities within the building.)

Effective Amount of Required Parking, Built Parking and Car Ownership for Surveyed New* Publicly Subsidized Residential Buildings

Sources: MapPLUTO 2009, NYC DOB, NYC HPD, NYS DMV 2008, DCP Survey



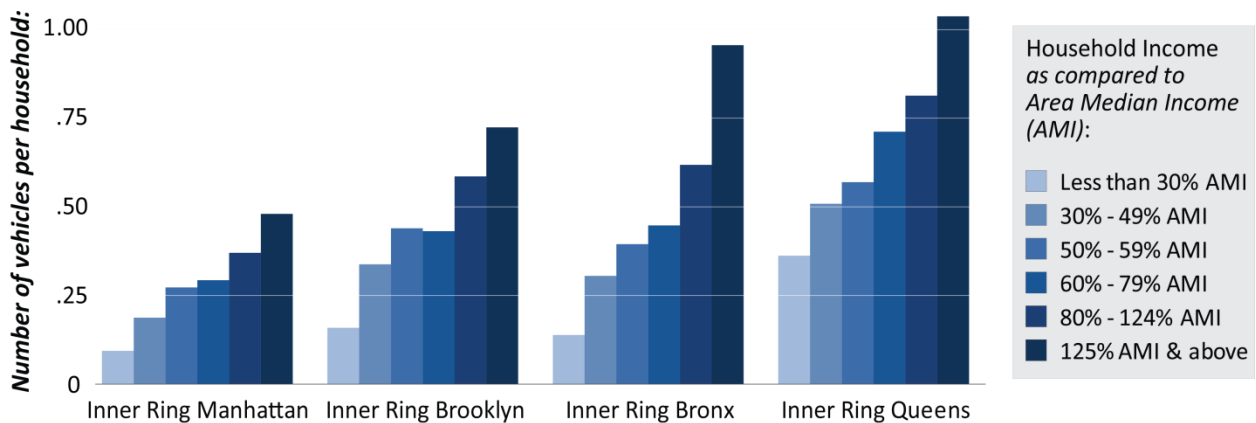
* Built between 1998 and 2006

⁴⁵ This analysis does not include housing for the elderly, because of exceptionally low rates of vehicle ownership, which would skew the study.

- Census data from the American Community Survey reveals that for all residential units within the Inner Ring, vehicle ownership declines as income levels decrease, and ownership rates vary by borough.** The ACS data for 2007-2009 show that the ratio of vehicles per household was significantly lower among lower income groups within all four Inner Ring borough study areas. Income categories were determined by a household’s income compared to the Area Median Income (AMI), a definition from the U.S. Department of Housing and Urban Renewal of median income within a locality. Though, in general, low income households within the Inner Ring owned fewer vehicles than higher income households, auto ownership levels for all income groups varied significantly by borough: The Inner Ring portion of Manhattan had the lowest vehicle ownership rates, and Queens had the highest for all income categories. Very-low income households in Queens (between 30 and 49 percent of AMI) had higher vehicle ownership rates than very high income households in Manhattan (at 125 percent of AMI or higher). In the Bronx and Brooklyn, households at or below 80 percent of AMI showed markedly lower ownership than higher-income households within these boroughs.

This data points to the importance of household income and land use patterns, including the accessibility to a range of destinations, as factors that strongly affect vehicle ownership.

Vehicle Ownership by Household Income in Inner Ring Borough Sub-Areas *Source: 2007-2009 ACS*

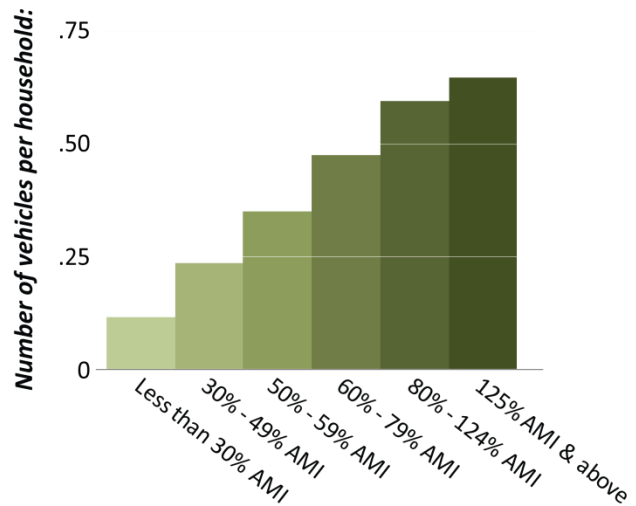


*** The data contained in the above chart uses PUMA data where the majority of the PUMAs were located within the Inner Ring study area. These households were not necessarily living in “publicly subsidized” housing, but were selected for analysis based on household income levels.*

- In the Inner Ring, small households headed by persons 65 and over owned cars at much lower rates than for all households, and ownership rates among low-income households are extremely low.** In order to approximate the characteristics of households that could reside within low-income senior housing, ACS data from 2007-2009 was analyzed for households of one or two people, headed by a person 65 or older.⁴⁶ Such households earning less than 30 percent of the AMI reported only 0.12 vehicles per household, and those in the next-lowest income category (30%-49% of AMI) reported 0.24 vehicles per household. These figures are substantially lower than even those for other low-income households in the Inner Ring.

Vehicle Ownership by Household Income for Senior-Headed Households* in the Inner Ring

Source: 2007-2009 ACS



* One or two person households headed by a person 65 or older

** The data contained in the above chart uses PUMA data where the majority of the PUMAs were located within the Inner Ring study area. These households were not necessarily living in “publicly subsidized” housing, but were selected for analysis based on household income levels.

- In interviews with affordable housing developers, they indicated that accessory residential parking requirements impose unrecoverable costs on development, and may reduce the number of units that can be built or make certain developments infeasible. In addition, affordable housing developers and parking garage operators indicated that required accessory parking spaces when provided often go unused by building residents.** Based on discussions with nine prominent affordable housing developers and three public parking garage operators⁴⁷ in 2011, the following observations were made:

 - Parking requirements can prevent developers from providing additional dwelling units or other amenities because subsidy programs for affordable housing do not account for the cost of structured parking. Even with reduced parking requirements for affordable housing, unless a development site has ample space for surface parking, developers can be forced to spend subsidy dollars on structured parking; or lose critical space on the site to allow for surface parking.
 - When possible, most developers will provide surface parking to reduce the cost of meeting the parking requirement.
 - Off-street parking often is unused or underutilized, particularly in rental housing and in cases where a separate fee is charged for parking, largely because low-income residents cannot afford to pay a significant fee for parking spaces.

⁴⁶ This category does still include some households that would be ineligible for most low-income senior housing, either because of their assets or other household members.

⁴⁷ A garage operator here refers to managers of public parking garages, which contain accessory parking on-site for publicly subsidized residential units within a building.

Summary of Findings

The amount of off-street parking provided in recent publicly subsidized residential developments in the Inner Ring varied by income level targeted, geography, and building size. The median number of units in a publicly subsidized residential building was more than five times the median for non-subsidized buildings, indicating that a typical affordable development is less likely to be able to avail itself of parking waivers than a typical market-rate development, even when reduced parking requirements are taken into account.

Affordable housing is more sensitive to the cost of providing parking than market-rate housing, because subsidy programs are unlikely to support the cost of structured parking and building residents with lower incomes are unlikely to be able to pay a significant fee for parking spaces. Vehicle ownership rates decline as household income decreases. As a result, residents of affordable housing own fewer vehicles than residents of non-subsidized housing and there is extremely low vehicle ownership in special needs housing such as low-income housing for the elderly.

Survey results showed that the majority of publicly subsidized buildings that provided off-street parking, regardless of size, provided surface parking. Larger multi-family buildings usually waived the parking requirements when such an option was available. For the largest low-income buildings, where parking waivers were not available, it appears that parking requirements exceeded vehicle ownership.

Anecdotal information from affordable housing developers suggests that where off-street parking is provided, low-income residents are unlikely to be willing or able to pay a separate fee for parking spaces. In some cases, fewer affordable units or amenities may be provided as a result of providing off-street parking.

In recent years, large buildings have comprised the majority of new affordable housing units. Such developments tend to contain more units per building than market-rate developments, so are less likely to be eligible for parking waivers. Because of the scarcity of vacant land in the City, and the need to utilize available sites to the greatest possible extent, affordable housing developments in the future are likely to continue this trend. Thus developers of affordable housing will be affected by the costs associated with providing off-street parking.

The parking requirements for affordable housing are in need of an update to reflect current programs and vehicle ownership rates. While the parking requirements for these developments have not been substantially changed in 25 years, the nature of affordable housing development has shifted in recent years toward larger buildings which are more likely to require costly structured parking. Affordable buildings are less able to support the costs of providing off-street parking than market-rate buildings and their residents are less likely to use it.

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Chapter 2: Zoning Requirements and Market Conditions for Off-Street Parking

Chapter 3: The Inner Ring Household Travel Survey

Chapter 4: Built Parking Survey and DMV Registration Analysis

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Appendix 3: Household Travel Survey Technical Appendix

INNER RING

Residential Parking Study

NYC Department of City Planning

Introduction

The *Inner Ring Residential Parking Study* analyzed data on recent residential development, vehicle ownership, and resident surveys in the Inner Ring, neighborhoods that are located outside the Manhattan Core and have good transit access, relatively high densities and generally low rates of vehicle commutation. The findings from these analyses help describe how parking requirements work, how developers respond to them, how households make vehicle ownership and travel decisions and how affordable housing shows characteristics distinct from other types of housing.

Summary of Findings

HOUSEHOLD DECISIONS ABOUT VEHICLE OWNERSHIP, PARKING, AND AUTOMOBILE USE:

- Overall, car ownership rates for the Inner Ring are lower than those for the City as a whole and far lower than those for the nation. Within the Inner Ring, only 35 percent of households own a vehicle compared with 46 percent citywide, and 7 percent of households owned more than one vehicle. This stands in stark contrast to the ownership throughout the United States, where 91 percent of households have at least one vehicle, and 58 percent of households own multiple vehicles.⁴⁸
- Vehicle ownership rates in the Inner Ring vary by borough, size of building, and income level, and even among similarly sized buildings in the same borough, reflecting that the decision to own a vehicle results from a range of factors. However, in all boroughs, average vehicle ownership was highest in small buildings and lower for larger apartment buildings.
- While vehicle ownership is highest in small buildings, these buildings had the lowest effective parking requirement, because of waivers available under zoning. However, developers of the majority of these buildings elected to provide parking even though it was not required.
- For larger buildings (five or more units), on average, the number of parking spaces required, the number of parking spaces provided, and the number of vehicles owned were similar. However, there appears to be substantial variation in vehicle ownership from building to building. As a result, for any given building, any amount of required parking is unlikely to match the number of vehicles owned by residents of the building. This highlights the importance of providing more flexibility for residents to park their cars throughout the neighborhood.
- For new large residential buildings within the study area, DMV registrations showed that the presence of parking on site has only a small effect on the likelihood that residents will own cars. In addition, 42 percent of surveyed vehicle owners lived in a building without off-street parking, and 43 percent of non-vehicle owners lived in a building with parking. These findings are consistent with the observation in DCP's *Residential Parking Study* that the presence of off-street parking is not a strong determinant of household decisions whether or not to own a vehicle.
- Inner Ring car-owning households are accustomed to parking off site, and generally do not consider on-site parking as a precondition for owning a car. In new buildings of one to four units, the

⁴⁸ U.S. Census Bureau; American Community Survey, 2005-2009.

presence of off-street parking correlates with substantially higher vehicle ownership rates. However, for buildings with five or more units, the presence or absence of on-site parking does not have a large effect on the number of vehicles owned by the building's residents. This likely reflects that parking for small buildings is generally reserved for building residents, while as noted above, parking in larger buildings is often used by residents from throughout the neighborhood, and not just by building residents.

- Vehicle owners were more likely to park somewhere other than their residence than they were to park on site. Only 19 percent of vehicle-owning households in the Inner Ring parked off-street at their own residence. A majority of these households parked on-street, and an additional 21 percent parked off-street at another location. Even in buildings that have off-street parking, only 33 percent of vehicle-owning households parked on site. Likely explanations for this pattern of decisions include the uneven distribution of vehicle ownership and parking spaces among buildings, and the fact that on-street parking is free, even if often highly utilized.
- Residential parking in the Inner Ring is generally “unbundled” – paid for by residents separately from housing. Ninety percent of households that park their vehicles off-street pay for parking separately from housing, and more than half pay at least \$100 per month. However, 80 percent pay \$200 or less per month, a price which is unlikely to cover the cost of building new structured parking in a residential development. Different Inner Ring neighborhoods have different supplies of off-street parking, and the price paid by residents for off-street parking also varied. Free on-street parking, which is heavily utilized, serves as an alternative to off-street parking.
- Households in the Inner Ring that own cars use them for a variety of purposes. For surveyed vehicle-owning households, the most commonly cited reasons for use of the car were not work-related, but rather for shopping, entertainment, or social visits. Only 42 percent of respondents reported traveling to work by car in the previous week. More than twice as many cited traveling to shop or perform household errands.
- Almost all Inner Ring Households that do not own a vehicle (97 percent) reported using one within the previous 30 days. In the course of a month, 69 percent reported riding in the car of a friend or family member; 65 percent in a taxi, and 34 percent in a car service.
- Households that parked their vehicles on-street and those that parked off-street showed similar travel patterns, although those who parked on-street were somewhat more likely to use their cars for commuting and work-related travel. This indicates that, at least in the Inner Ring, parking off-street does not encourage vehicle owners to drive to work.

Taken together, these findings indicate that in the Inner Ring, off-street parking does not exclusively serve residents of the building to which it is attached. Vehicle-owning residents rely on shared sources of parking throughout their neighborhoods, both on-street and off-street. Most vehicle owners park on street, where no fee is charged. Those parking off-street, the majority of which park at a location other than where they live, generally pay for it, though price is likely a consideration in the location of the parking space they choose.

As the Residential Parking Study found, the likelihood of a households owning a car depends on household characteristics, income, and job location, among other factors, and in general is not strongly dependent on whether off-street parking is provided at a given residence. In the Inner Ring, where most buildings do not have off-street parking, on-street parking tends to be heavily utilized.

PARKING REQUIREMENTS AND DEVELOPER DECISIONS ABOUT PROVIDING PARKING:

- Open parking is generally inexpensive to provide, but becomes more difficult to provide as density increases – it may not fit on the site, or it may occupy space that could otherwise be provided for recreation or other amenities.
- Where larger buildings provide parking, this typically necessitates structured parking. Construction of structured off-street parking spaces can be expensive, as much as \$50,000 per space.
- Zoning districts in the Inner Ring require a parking space for between 40 and 85 percent of dwelling units, with lower percentages required in higher-density districts. However, in the zoning districts commonly mapped within the Inner Ring, required parking can be waived for smaller buildings and sites, substantially lowering the effective parking requirement. Affordable housing developments also have lower parking requirements.
- After accounting for these permitted reductions in the amount of required parking, the effective parking requirement for all residential developments (publicly subsidized and non-subsidized) built in the Inner Ring between 1998 and 2008 was a space for 22 percent of units. This reflects the large proportion of small buildings and subsidized housing – which are eligible to reduce or waive parking – constructed during this period.
- Of buildings recently constructed in the Inner Ring for which residential parking was optional, smaller buildings were more likely to elect to provide parking than larger buildings. About half of non-subsidized waiver-eligible buildings with 10 or fewer units chose to provide parking, as compared to about one-third of those buildings with more than 10 units.

The costs of providing parking and the revenues generated by parking are important factors in developers' decisions about whether to build parking. This suggests that developers would be more likely to provide parking voluntarily if it is (a) possible to provide as open parking, (b) seen as an amenity that adds value to the housing or is necessary to market the housing to its intended purchasers or renters, or (c) located in a neighborhood where off-street parking commands higher prices. These conditions appear to exist more commonly for smaller buildings, where developers were more likely to provide parking even when not required to do so. In the absence of these conditions, a developer eligible to waive parking would be more likely not to provide it, and vehicle-owning residents would park their vehicles in other locations, on-street or off-street.

These factors highlight the importance of striking a balance with parking requirements: they add significant costs to constructing new housing, particularly multifamily housing with structured parking, which can adversely affect housing production and affordability. However, parking requirements can also prevent overutilization of on-street parking resources and address community concerns about neighborhood parking supply by compelling developers to contribute to the neighborhood's parking supply.

PARKING AND AFFORDABLE HOUSING:

- Zoning generally allows reduced parking for affordable housing developments, though the regulations were designed for programs that no longer exist and do not reflect all types of affordable housing built today. The obsolete language used in the parking reduction provisions creates ambiguity as to which developments qualify for each category of reduction.
- While most affordable buildings constructed since 1998 were small homes built through moderate- and middle-income programs, more recently, larger buildings targeted to lower-income households predominate. In 2008, buildings with five or more units made up almost one-third of new publicly subsidized buildings (up from 1 percent in 1998), and 92 percent of new subsidized units. The financing programs under which affordable housing is developed are generally targeted to low-income households.
- For buildings with five or more units, affordable buildings are generally larger than market-rate buildings: the median number of units in a subsidized building was 56, as compared to 10 for non-subsidized buildings.
- Vehicle ownership in affordable units drops substantially at lower household incomes, and, like vehicle ownership for all units, varies by borough.
- In new residential buildings, vehicle registration rates were lower in developments targeted to low-income households than in market-rate developments. Developments for special needs populations, including senior housing and housing for the formerly homeless, showed extremely low rates of vehicle ownership.
- The ability of affordable housing residents to pay for off-street parking is limited, making it more difficult for affordable housing than market-rate housing to recoup the costs of structured parking. Because affordable housing is produced through subsidies, an inability to cover the costs of providing parking could prevent development or reduce its size. Interviews with affordable housing developers and operators indicated that where off-street parking spaces are provided, they often go unused.
- Most publicly subsidized buildings provided surface off-street parking. Where eligible to waive parking requirements, subsidized buildings with five or more units generally did so. This likely reflects sensitivity to the costs of providing structured parking.

In recent years, large buildings have comprised the majority of new affordable housing units. Such developments tend to contain more units per building than market-rate developments, so are less likely to be eligible for parking waivers and more likely to require expensive structured parking. Because of the difficulty of acquiring building sites in the City and the need to utilize available sites to the greatest possible extent, affordable housing developments in the future are likely to continue this trend. The costs associated with providing off-street parking can make it more difficult to provide affordable housing.

Principles for Off-Street Parking Policy in the Inner Ring

The Inner Ring consists of neighborhoods that share certain characteristics – proximity to the Manhattan Core, access to transit, medium or higher density – which foster levels of vehicle ownership and auto commutation that are lower than in other parts of the City, and far lower than elsewhere in the region or the country. As part of PlaNYC, the Department of City Planning has sought to steer future growth toward transit-served areas such as these, where households can make a wide range of trips without the need to own or use a private vehicle. It is in these neighborhoods that the greatest potential exists to establish lower parking requirements and improve other transportation options that can contribute to reduced auto ownership.

As described in the Introduction to this report, the Department sees parking policy as part of its efforts to plan for the sustainable growth and development of the City while maintaining and improving mobility and accessibility. To promote the City’s environmental and quality of life goals, zoning requirements for off-street parking must strike a balance. Providing parking can be costly, particularly at higher densities which require structured parking. Excessive parking requirements could hinder housing production and make housing less affordable. Because Inner Ring households own fewer cars – generally either zero or one – than those living elsewhere, and drive them far less, it makes sense to have lower parking requirements in these neighborhoods. This also means that achieving transit-oriented growth in the Inner Ring contributes to an overall reduction in vehicle ownership and driving, which is beneficial to the environment. To sustain this kind of growth and continue to attract and retain residents, though, the quality of life in these communities must remain high. This requires not only fostering mixed-use neighborhoods with pedestrian-friendly streets and access to shopping, services, and employment, but also maintaining an adequate supply of residential parking for people who choose to own a vehicle, even if they use it infrequently.

Based on the findings of this study, several principles are identified to guide parking policies and to inform future discussion with communities, elected officials, and other stakeholders about Inner Ring neighborhoods:

- **Recognize that accessory residential parking facilities in the Inner Ring often provide parking for residents throughout the community, and are often operated as public parking.** Current regulations for off-street residential parking in the Inner Ring distinguish between “accessory” parking, which is primarily intended for building residents and often restricted to weekly-to-monthly rental periods, and “public” parking, which is available to a wide range of users for different time frames. Many Inner Ring vehicle owners live in buildings without parking, and most vehicle owners already use “shared” parking, keeping their cars either on-street or off-street at other garages or lots in their neighborhood. This study also found that a substantial number of parking facilities in large residential developments operate as public parking facilities with licenses from the Department of Consumer Affairs, without apparent negative effects on the surrounding neighborhood. Allowing public parking more broadly could have multiple benefits. Shared parking facilities reduce the total number of parking spaces needed to serve a neighborhood. In addition, enabling garages to rent spaces more flexibly would increase revenue, making it more likely that parking revenues cover the costs of constructing a garage, and reducing the need for housing prices to cover these costs.

- **Evaluate off-street parking requirements on a neighborhood-by-neighborhood basis.** While this study identified overall patterns in vehicle ownership across the Inner Ring, vehicle ownership rates varied significantly from borough to borough and among neighborhoods within the Inner Ring. The parking supply that is most important to residents is the local supply, since they generally seek to park close to their homes. It is therefore important to look at parking policy at the neighborhood level. Taking into consideration the balance between the costs of providing off-street parking and the need for new parking to support development, modifications can be considered to better match parking regulations to neighborhood characteristics. In areas where parking requirements are higher than necessary, requirements can be reduced. Engagement with community stakeholders and elected officials would be a key component of any process to amend parking regulations.
- **Update the parking requirements for affordable housing to reflect current programs and vehicle ownership characteristics.** While the parking requirements for affordable housing developments have not been substantially changed in 25 years, the nature of affordable housing development in the Inner Ring has shifted in recent years toward larger buildings, which are more likely to require costly structured parking but where residents are less likely to require or pay for off-street parking. With the lower incomes of their residents, affordable housing buildings are less able to support the costs of providing off-street parking than market-rate buildings, and their residents are less likely to use it. Among the issues examined as part of any update for affordable housing could include reducing parking requirements for larger buildings where currently required spaces would be likely to sit unused or would be infeasible to provide given available funding streams. Parking requirements for categories of housing, such as senior housing, whose residents own very few vehicles should be reviewed; and references to defunct housing programs in the Zoning Resolution could be updated with more durable definitions that apply more clearly to current and future developments. Updating requirements for affordable housing to better match the needs of its residents can reduce construction costs and enable more affordable units to be built with the same amount of public subsidy.
- **Continue to expand the availability of transportation options in the Inner Ring.** The low auto usage and ownership in the Inner Ring is a reflection of its dense, mixed-use neighborhoods with good access to transit. Surveyed Inner Ring residents who did not own cars reported frequently using shared or hired vehicles. The availability of a range of transportation options in these neighborhoods makes it easier for Inner Ring households to live without the need to own – or park – a private car. Car share, which has grown substantially in both the Manhattan Core and Inner Ring, gives residents an economical alternative to owning a car for infrequent use. In 2010, DCP’s Car Share Zoning Text Amendment was adopted, making it possible for car share vehicles to park in accessory or public parking facilities in neighborhoods throughout the City. The results of the *Inner Ring Household Travel Survey* - - which found that a significant number of non-vehicle-owners use cars only occasionally, and that the most common use of vehicles by car-owners is household errands - - suggest that there is further growth potential for car share in the Inner Ring. In addition, the regular use of taxis and car services indicate that the Five Borough Taxi Plan, which introduces street-hail service in neighborhoods outside Manhattan, will also support households who do not own a vehicle. The NYC Department of Transportation and Metropolitan Transportation Authority are expanding Select Bus Service, which provides faster and more convenient service on key lines, to include more neighborhoods. Bike share facilities and ferry service provide additional options, as does the cultivation of walkable neighborhoods with access to shopping and services. Improving the availability of all these options can enable the continued growth of these neighborhoods and support a high quality of life for their residents while minimizing the number of automobiles that need to be parked.

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