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RESIDENTIAL CONTEXT AND WELL-BEING:
AN EXPERIMENTAL STUDY OF AFFORDABLE HOUSING IN NEW YORK CITY

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In honor of Tom Waters

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¹ Ironically, because I have probably only been in a Starbucks four or five times over this period of time.

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ABSTRACT

Affordable housing represents a large and growing, yet understudied, form of subsidized housing that serves low-income households in both low- and high-poverty neighborhoods. In contrast to public housing or vouchers, it creates housing for incrementally higher-income households that are better off than the urban poor but nonetheless struggle to make ends meet, earning too much to qualify for most forms of public assistance. Affordable housing addresses this unmet need, but the nature of the intervention varies by neighborhood location: when located in higher-income communities, it provides access to neighborhoods that may otherwise be out of reach to those with limited purchasing power; when located in low-income communities, the population served becomes part of a broader intervention that seeks to maintain, or increase, the socioeconomic diversity of the receiving neighborhood.

This dissertation evaluates the short-term impact of such policies on recipients' housing, neighborhood, and social context in New York City using data from a multi-site randomized control trial that followed applicants to newly constructed affordable rental developments, including those who were offered housing ("treatment") as well as those who were eligible but not offered housing because demand exceeded supply ("control"). By leveraging the variation in where study sites are located, I compare the impacts of affordable housing located in low- and higher-poverty neighborhoods.

The findings show that affordable housing leads to meaningful differences in the housing and neighborhood conditions, but no difference in the social context of recipient households. Those who were offered affordable housing report significantly better housing quality and lower prevalence of crowding, but no substantial difference in housing cost or affordability. Those who were offered housing in a low-poverty neighborhood experience less structural disadvantage,

while those who were offered housing in a high-poverty neighborhood experience more disadvantage. Measures of neighborhood social cohesion and neighbor networks are similar regardless of the offer of housing or the type of neighborhood to which they applied. These latter findings suggest that residential context may take on a different meaning for this low-income working population and/or that the standard measures of neighborhood (dis)advantage do not capture the lived experience of these households in the same way they do for the urban poor.

CHAPTER ONE INTRODUCTION

Several years ago, a colleague and I conducted a structured face-to-face interview with a woman who lives with her extended family in New York City.¹ Let us refer to her as Sonya.²

Sonya is in her mid-forties and has lived her entire life in this neighborhood. In fact, she lives in the same apartment where she grew up. She currently lives with her mother, her sister, her daughter, her daughter's son, and a young man who may or may not be her grandson's father. I met Sonya because she had applied to move to an affordable housing unit located in a different neighborhood five years earlier. Based on the documentation they were required to provide as part of the application process, their family did not income-qualify.

Sonya's story paints a bleak, albeit familiar, portrait of life in a poor neighborhood. Sonya lives in a high-rise public housing development. The census tract in which her public housing project is located has an overall poverty rate of nearly 45 percent; the share of children in poverty is almost 60 percent.³ More than half of the households in this tract receive food assistance through the Supplemental Nutritional Assistance Program (SNAP).⁴ About half of the

¹ This interview was conducted as part of a HUD-funded social network study of affordable housing applicants conducted by the New York City Department of Housing Preservation and Development (HPD), PI Gaumer. Although baseline and follow-up interview data are referenced here, the case study as presented is largely based on my own observations as an interviewer. The content presented here, as well as the interpretation, was verified with my co-interviewer for this case.

² Sonya is a pseudonym. Her name and certain details about her life have been redacted to protect her identity; other aspects of her living situation have been generalized to ensure against accidental disclosure.

³ All tract-level estimates here come from the American Community Survey (ACS) 5-year file (2008-2012), the time period during which I interviewed Sonya. The poverty rate is from Table S1701.

⁴ ACS 2008-2012: Table S2201.

families are female-headed without a husband present.⁵ Sonya works full-time in a blue-collar job, but she is among the minority in this tract. Forty-five percent of the population age sixteen and older is not in the labor force; an additional 15 percent is unemployed.⁶ Sonya completed some college, but a full 35 percent of her neighbors have no high school diploma or GED.⁷ This particular tract covers about 1,600 households and 3,700 persons. In total, more than 90 percent of the residential units in this tract are public housing.⁸

Sonya reported her neighborhood as unsafe at night, as she had during our baseline assessment five years prior.⁹ She rated the overall quality of local stores or shops in her neighborhood that sold groceries as poor. Her perceived exposure to physical and social disorder, at least in the formal way researchers typically measure these conditions,¹⁰ was moderate but across multiple dimensions. People selling or using drugs in public, groups of teenagers hanging out, and people arguing in public were all “somewhat of a problem,” as were litter, graffiti, crumbling sidewalks, and poor street lighting. As part of the baseline assessment, Sonya indicated that these problems were “a big part of the reason” she was seeking to move.¹¹

⁵ ACS 2008-2012: Table B11003.

⁶ ACS 2008-2012: Table DP03.

⁷ ACS 2008-2012: Table S1501.

⁸ One low-equity cooperative building is located nearby and makes up the remainder of the residential units in the tract.

⁹ The baseline assessment included a self-administered questionnaire that was completed prior to final determination of eligibility.

¹⁰ Several disorder items were replicated from the PHDCN; others, such as poor street lighting, were added. For each item, we asked whether this was a “big problem, somewhat of a problem, or not a problem?” In addition, we offered a fourth choice of “I do not see this in my neighborhood.”

¹¹ As part of a self-administered questionnaire administered at the time of application for housing, we asked each of the above physical and social disorder items. We then asked “Are any of these problems part of your decision to apply for housing at [Site Name]?” with four categorical answer choices: Yes, these problems are a big part of why I am looking to move; Yes, these problems are a small part of why I am looking to move; No, these problems did not

On her application for affordable housing, Sonya did not check the box labeled “neighborhood conditions” as the reason for seeking to move. Instead, she checked “poor housing conditions” as the primary reason and wrote into the “other” category, “want a safe and decent place to live.” During our follow-up interview, Sonya reported having each of the five maintenance deficiencies in her home about which we asked: having no heat for at least six hours during the past winter, having no hot water for at least six hours during the past year, having seen rodents in her building in the last three months, seeing one to five cockroaches in her home on a typical day during the past month, and currently having mold or mildew in her apartment. These were issues she had been living with for a long time. During the baseline assessment five years earlier, she had indicated having a recent heating breakdown, lack of hot water, and mice or rats in her building.

Sonya’s story shows the complications of distinguishing between housing and neighborhood context. When we asked her to draw the boundaries of her current neighborhood, she drew a rectangle, labeling the sides with the names of the streets that surround her building. Sonya has few social ties outside of her household, but what contacts she does have are all connected to where she lives. All but one of the social ties she named during our interview lived in her building. She classified most of her ties as being “worse off” than her. The one person close to Sonya who did not live nearby was a former neighbor who had managed to buy a home and move elsewhere. She rated this person as “better off” and spoke of her several times during the interview as a model for what Sonya would like to achieve for herself and her family. All of the people she named were African American women, like Sonya. She talked with most of her

make me want to move; or No, I have not experienced these issues or do not consider them to be problems in my neighborhood (emphasis in original questionnaire formatting).

network every day or at least a few times a week. The two women she saw most frequently knew and interacted regularly with one another as well as with Sonya's sister and daughter. She named no other family outside of her household, nor any other friends, acquaintances, or colleagues with whom she discussed important personal matters, asked small favors, or sought advice or information.

Sonya is clearly someone others come to when they need help or assistance. She agreed that others "would have a hard time getting by without the help or assistance [she] provided" and strongly agreed that she provided "resources or information to [her] neighbors that they otherwise wouldn't have." Sonya has accrued obligations from others: her network came to her to discuss important personal matters; she has given them advice about work or finding a job; she has loaned them money. These factors enabled her to mobilize resources if, and when, she needs them. Although Sonya's network enabled her to draw on others' resources when necessary, Sonya's ties had less to offer because of their life circumstances. Her neighbors provided instrumental support (each of the women she named in her building has done small favors for her, including watching her grandson), but she relied on them for little else. They did not facilitate access to outside information or resources; so, while they may have helped her to get by, they were unable to help her get ahead. Sonya provided more assistance than she received and it weighed on her; she strongly agreed that "sometimes [she felt] overwhelmed by the help or assistance [she] provided to [her] neighbors."

At the end of our interview, we asked if Sonya had applied to other affordable housing developments. We knew of two brand new buildings located just a few blocks from her current home that had just recently ended their application period. Sonya and her family would likely meet the income requirements for these developments and would have received a community

resident preference that would increase their chances of getting housing. No, though she spoke at length about wanting to move she had not heard about either of these opportunities and did not speak concretely about any housing search activities. Sonya was socially connected within her disadvantaged community, but socially isolated from the world outside it.

Sonya's story also shows the complexities of life in the "ghetto" that are often missed in both popular and academic accounts. Sonya is not poor. While her household is defined a low-income according to official federal guidelines, they are doing better off financially than the majority of her neighbors. At least three of the adults in her home are working for pay and together have a combined annual household income of about \$75,000, including about \$35,000 that is not officially counted toward the calculations that determine their monthly rental costs.¹² Sonya and her family did not qualify for affordable housing because they earn *too much*. If they had been offered affordable housing, they would have moved to a smaller two-bedroom unit that cost about 10 percent more each month. Moreover, the rent would no longer be tied to their family's income in the future—it would continue to follow standard increases even if they lost some (or all) of their income down the road. This was a trade-off Sonya would have happily made.

The statistics I gave earlier follow the common practice of using census tract as a proxy for residential neighborhood. If we were to instead define Sonya's neighborhood context using an alternative geographic boundary, different characteristics emerge. This public housing complex borders a neighborhood that has been rapidly gentrifying over the last several years. A major highway creates a physical barrier to the southwest and to the east is a major industrial

¹² One or more of the working adults in the household is likely not on the lease and therefore his/her income is not part of their annual certification.

complex sited behind closed gates. To the north, where the next nearest census tract begins some 200 feet from Sonya’s building, public housing towers give way to older brick loft buildings and smaller multi-family structures and townhouses. To the northwest, the street grid continues fluidly around and under the span of the Manhattan and Brooklyn bridges. Table 1.1 compares various measures of neighborhood disadvantage using two alternative geographic definitions of where Sonya lives, as well as the statistics for Sonya’s own tract, and the next closest tract.

Table 1.1: Varying Definitions of Neighborhood

Characteristic	Sonya's Census Tract	Next Nearest Census Tract¹	Neighborhood Tabulation Area²	Community District³
Poverty rate				
All persons	44%	5%	21%	18%
All children	59%	0%	28%	26%
Households receiving SNAP	63%	0%	20%	12%
Labor force participation				
Not in labor force ^a	45%	15%	46%	31%
Unemployed ^{a,b}	16%	2%	6%	3%
Average household income ^a	\$29,871	\$245,002	\$109,205	\$115,143
Female-headed family household ^b	52%	3%	12%	12%
Less than high school education	35%	6%	16%	11%
Total population	3,693	3,384	34,501	95,032
Total households	1,602	1,452	15,085	44,191

Source: American Community Survey (ACS), 5-year file (2008-2012)

1 Nearest tract is about 200 feet from Sonya's building

2 Neighborhood tabulation areas are combinations of census tracts designed by the New York City Department of City Planning.

3 Community Districts are administrative and political areas designed by New York City.

They do not align with other Census geographies; therefore, tracts were aggregated to closely approximate the Community District boundary

a Employment rates relative to the population age 16 and older

b Unemployed rate limited to civilian labor force

c Measures as income in last 12 months, shown in 2012 real dollars

In the next nearest tract, multi-million-dollar condominiums are dotted throughout the area with the core development corridor located only a few blocks from Sonya. Many of the non-residential lots here are large brick buildings that house artist studios and live-work lofts. Small shops are located along many of the secondary streets between Sonya’s building and the waterfront. A green market operates each weekend in a local park during spring and summer

months. Substantial public investments are being made nearby, including several new affordable housing complexes to the south and east of Sonya's building and a dramatic redesign of a major public park along the waterfront just a short walk away. A major subway line stops two blocks from her front door.

In some ways, Sonya's public housing complex represents what many municipalities across the country strive to achieve. It is located in an area that is surrounded by amenities. It is accessible to public transportation. It is in an area that has benefitted from public investments, with additional funds already obligated for future projects. Yet, the residents are unable to connect to the surrounding community. This building is an island in the midst of affluence. The physical quality of the building continues to deteriorate, posing direct risks to the health and well-being of residents. Working households like Sonya's, who represent the potential for a more socioeconomically-integrated community, may act as a resource but quickly become overwhelmed by the needs of their neighbors.

For more than 10 years, I have been conducting research on housing and neighborhoods on behalf of the City of New York. In my role, I conduct various research projects—some large, some small, almost all designed for one primary audience: my colleagues who set policy and design programs intended to improve the lives of New Yorkers. I have learned a lot about how policies are made, how programs are implemented, and what information decision-makers do and do not have in mind when they do their jobs. I have also learned a lot about the population that affordable housing serves. Most of that information has come first-hand through my own field work and interviews with New Yorkers and their children or second-hand from my team and their work in the field.

I am not a qualitative researcher but I have listened to our survey participants and they have taught me a great deal about their lived realities, their aspirations, and how they get by. More than anything, they have taught me that Sonya is not an anomaly. These low-income working households struggle to make ends meet, to find an adequate place to live, and to navigate the challenges of subsidized housing. They make rational decisions based on their needs, but all too often this requires real compromises in their daily lives, including trade-offs among affordability, housing quality, and neighborhood location. Their housing is often their entire community—sometimes literally representing the boundaries of their neighborhood, as Sonya did. Social scientists have not focused much on this population—they earn too much to be poor, but not enough to be comfortably middle class. And while New York City has produced more affordable housing than any other city in the country with the vast majority of units targeted to this low-income working population, policymakers don't understand much more about this population than their academic counterparts.

This dissertation draws on a unique study conducted over my time at the City of New York. It is an experimental study designed to evaluate the impact of affordable housing on the well-being of these low-income households. It offers new knowledge not only about this important and ubiquitous form of subsidized housing, but also about the lives of this population, the decisions they make, and the consequences that follow from public investments intended to support them. The findings here raise questions about the relative importance of housing and neighborhood, how much residential context shapes the social lives of residents, and the kinds of mobility that modern housing policies produce. More than anything, this work shows how very far we still have to go in order to understand the complex associations between people and place.

CHAPTER TWO THE CONTINUED MEANING OF PLACE-BASED SUBSIDIZED HOUSING

Over the last several decades, housing policy has increasingly focused on developing strategies to deconcentrate poverty, including the demolition of public housing and the use of tenant-based vouchers that offer mobility to higher-income neighborhoods. This shift is partly in response to the large evidence-base on neighborhood effects (see empirical and theoretical reviews by Brooks-Gunn et al. 1997; Sampson 2011; Sampson et al. 2002; Sharkey and Faber 2014) and partly in recognition that government housing programs—particularly public housing—has contributed to the creation and reproduction of concentrated poverty (Massey and Kanaiaupuni 1993; Popkin et al. 2004; The National Commission on Severely Distressed Public Housing 1992). Many now accept as fact that all forms of subsidized housing should disperse low-income households and move them to “opportunity” neighborhoods whenever possible (Bergman et al. 2019; Rosen 2020). Yet, large-scale investment in place-based subsidized housing continues in the form of what is referred to here as “affordable housing,” serving low-income households not only in more affluent neighborhoods, but also—even mostly—in low-income communities.

This is not a failure of implementation, but rather a deliberate use of subsidized housing as a set of complementary strategies: *both* to promote mobility to lower-poverty neighborhoods *and* as a tool in community revitalization. This “balanced approach” was codified in the recent debate over fair housing as a central tenet of modern housing policy (Bodaken and Hoffman 2019; Dillman et al. 2017; Khadduri 2013; O’Regan and Zimmerman 2019). Affordable housing is a key component of this strategy, yet we know little about the population served, how siting practices convey risk or opportunity to residents, or its impact on various dimensions of recipients’ well-being over time.

Affordable housing is both similar to, and different from, other forms of subsidized housing. Although public housing and affordable housing are both place-based strategies that are developed specifically to house income-eligible households, affordable housing is not owned or maintained by the public entity that helped to create it. Like tenant-based vouchers, it follows the general turn in housing policy away from public ownership and toward the belief in, and reliance on, the private market. The use of vouchers and affordable housing programs continues to expand throughout the country, while the stock of public housing declines as it is demolished or converted to private management. In contrast to both public housing and vouchers which serve the lowest-income households, affordable housing is targeted to a slightly higher-income population that is less reliant on other forms of public assistance and is generally employed in low-wage or service sector work. These low-income households, by definition, earn more than those typically served by public housing or vouchers, yet they often struggle to find adequate housing in the private market (Edin and Lein 1997; Holupka and Newman 2011). Affordable housing addresses this unmet need, but the nature of the intervention varies by neighborhood location. When affordable housing is located in higher-income communities, it provides access to neighborhoods that may otherwise be out of reach to those with limited purchasing power. When located in low-income communities, the population served becomes part of a broader intervention that seeks to maintain, or increase, the socioeconomic diversity of the receiving neighborhood.

By investing in both low-income and more affluent communities, affordable housing reveals the inherent tension between other subsidized housing programs designed to serve either people or place (Galster 2017). On the one hand, there is substantial evidence of the deleterious consequences of living in concentrated poverty (Sampson 2011; Wilson 1987) and the promise

of moving to "opportunity" (Briggs et al. 2010; Orr et al. 2003; Sanbonmatsu et al. 2011) that supports the use of housing subsidies of various forms to promote mobility "out and up." Taken to its natural conclusion, this strategy would increasingly rely on tenant-based vouchers that combine incentives with geographic restrictions to ensure moves to opportunity (Bergman et al. 2019; DeLuca and Dayton 2009; Edin et al. 2012) and site any place-based investments in higher-income areas as a means of increasing supply and thereby accelerating the mobility pipeline (Khadduri 2013). But the use of housing subsidies *only* in higher-income communities would withdraw the largest source of public resources from the poorest communities (Goetz 2018), placing remaining residents at even greater risk through further deterioration or by opening up such neighborhoods to gentrification and the subsequent displacement of legacy residents (Fullilove and Fullilove 2000).

On the other hand, government-financed housing may be used as a place-based strategy in low-income communities, infusing new resources into neighborhoods that previously faced disinvestment and deconcentrating poverty by providing housing for incrementally higher-income households that are willing to compromise neighborhood location in exchange for new housing (Bostic et al. 2020; Joseph et al. 2007). This approach rejects the implicit judgment that low-income neighborhoods—largely communities of color—are places of last resort where only those with no other choice live (Goetz 2019) and acknowledges the legacy of past policies that created a pernicious cycle of segregation by race and income, accepting government's responsibility to intervene where it previously failed (Cestero 2019; Fullilove 2005; The National Commission on Severely Distressed Public Housing 1992). These investments may have a positive impact on neighborhoods at scale and over time, but achieving any meaningful level of deconcentration would require the relocation of legacy residents and/or the in-migration of new

residents. The former has been shown to have substantial and long-lasting negative impacts on public housing residents displaced as a result of the demolition of severely distressed public housing (Keene and Geronimus 2011). The latter, which necessarily means moving individuals to more disadvantaged neighborhoods, may have negative consequences for relatively higher-income, but still vulnerable, households through a range of mechanisms—even if that neighborhood is undergoing change.

Of course, there is a third approach: affordable housing may serve low-income households without the intent of producing a change in neighborhood *or* neighborhood change (Cestero 2019). Under this scenario, affordable housing serves a specific purpose: providing higher quality housing for those in low-income communities where the existing stock is limited or deteriorating and low-cost housing for those in higher-income neighborhoods who may be priced out of other options within their community. However, to the extent that affordable housing serves only current residents or those making lateral moves from similar communities, any benefits for recipients will be confined to those conveyed by improvements in the immediate housing environment and any downstream consequences that follow from this “localized” intervention. Because this approach spurs population churn rather than change, it is unlikely to alter existing patterns of economic and racial segregation (Orfield and Stancil 2017); thus, any benefits to the neighborhoods in which it is located would accrue over time through its impact on the supply and condition of the housing stock—something that would require investment at a level that may extend beyond the availability of public resources and tenure of elected officials making such commitments.

In this dissertation, I examine the impact of recent investments in place-based subsidized

housing on the well-being of low-income households in New York City.¹ Affordable housing rivals public housing and tenant-based vouchers in terms of dollars invested and the number of households served, yet we know little about affordable housing’s impact on the residents who it is intended to benefit—or if, and how, its effect varies by the type of neighborhood in which it is located. Of particular importance is understanding whether affordable housing located in low-poverty neighborhoods offers more durable moves to opportunity than tenant-based vouchers (Edin et al. 2012) and whether mobility for this population conveys similar benefits to those seen in prior research on extremely low-income households moving out of concentrated disadvantage (Chetty et al. 2016; Orr et al. 2003; Sanbonmatsu et al. 2011). It also considers the theoretical benefits of remaining in a low-income neighborhood and the assumption that the burden of mobility should always lie with low-income households. These questions are important in their own right as we continue to refine our understanding of how and for whom neighborhoods matter (Sharkey and Faber 2014), but the answers also have important policy implications for where affordable housing should be built and its value for the long-term health of both people and place.

I investigate these questions using a unique study of affordable housing in New York City conducted over the last decade. The New York City Housing and Neighborhood Study (NYCHANS) is a multi-site randomized control trial that followed applicants to newly constructed affordable rental developments, including those who were offered housing as well as those who were eligible but not offered housing because demand exceeded supply. These data

¹ Although affordable housing serves various income levels and comprises a wide range of housing—owner and renter, rehab and new construction, large multi-family complexes and 1-4 family homes—the focus here is on large-scale, newly constructed buildings that provide subsidized rental units to a low-income, working population.

allow me to describe the population served and evaluate the short-term impact on recipients' housing and neighborhood conditions as well as the changes in social context that result. It also affords the opportunity to compare between affordable housing located in low-poverty and higher poverty neighborhoods through the variation in where study sites are located. This is critical for assessing whether these different strategies serve a similar population and if they convey equivalent benefits to individual recipients. It is also a starting point for understanding the ways that affordable housing may impact its receiving neighborhoods—unit by unit and building by building.

NEIGHBORHOOD DISADVANTAGE AS A SOURCE OF RISK

Research shows that living in a neighborhood of concentrated poverty is associated with greater risk across a wide range of negative outcomes, net of individual characteristics. Neighborhood disadvantage has been linked to unhealthy weight gain among infants (Klevanov et al. 2014), poor educational readiness among young children (Leventhal and Brooks-Gunn 2000); higher rates of recidivism (Kubrin and Stewart 2006); greater likelihood of homicide and accidental death (Almgren et al. 1998); and higher prevalence of depression (Galea et al. 2005), among others.

Poor neighborhoods are theorized to amplify the effects of individual-level socioeconomic disadvantage and inequality through multiple pathways that compound over time. Neighborhoods may directly influence well-being by exposing residents to toxins and pollutants (Evans and Kantrowitz 2002) or to violence (Friedson and Sharkey 2015); and indirectly by limiting accessibility to healthy foods, well-kept green spaces, and/or local health care facilities (Mujahid et al. 2008). High prevalences of physical and social disorder may contribute to chronic strain and poor mental health (Galea and Vlahov 2005; Ross et al. 2001). These same processes

may also negatively affect physical health through stress-response mechanisms that increase susceptibility to acute sources of stress, decrease immune functioning, and generally tax the body in ways that make it more prone to disease (Browning et al. 2012; Geronimus et al. 2006; Hill et al. 2005; McEwan 1998, 2000).

Children and young adolescents may be particularly influenced by their neighborhood environment, given that they spend a large proportion of their time in their home neighborhood where the accessibility and quality of local amenities and institutions matter and because they are influenced by their parents' responses to residential location (Brooks-Gunn et al. 1997; Shonkoff et al. 2000). Moreover, evidence suggests that children who grow up in a disadvantaged neighborhood are more likely to live in similarly disadvantaged and segregated communities later in life, such that exposure may perpetuate over the life course and across generations (Sharkey 2012).

Disadvantaged neighborhoods often lack the supply of vital resources that are necessary to encourage and sustain diverse commercial activity, demand effective municipal services, support quality public institutions, and ensure maintenance and upkeep of the built environment (Jargowsky 1998). High rates of joblessness and reliance on public assistance as the primary source of income influence social norms, attitudes and expectations, and social networks that potentially shape long-term disparities in educational attainment, labor force participation, and family formation (Wilson 1987). Disadvantaged neighborhoods often experience more aggressive policing practices that alter community reputation and the frames used by residents to make sense of their surroundings (Bell 2020). These factors contribute to economic and social isolation, further attenuating a community's ability to form and sustain the kinds of social organization, such as collective efficacy, that help to mediate between disadvantage and the

deleterious consequences that follow (Browning and Cagney 2003; Klinenberg 2002; Sampson et al. 1997).

THE PROMISE OF OPPORTUNITY NEIGHBORHOODS

There is growing evidence that healthy neighborhoods are characterized by more than the absence of risks (Taylor and Repetti 1997). Indeed, evidence suggests that it may be the lack of affluent residents more than the presence of poor neighbors that has the greatest consequences for individual outcomes (Brooks-Gunn et al. 1993; Wen et al. 2003). Supportive residential environments may reduce disparities and promote well-being by encouraging effective coping strategies and adaptive behaviors that mediate susceptibility to various hazards and increase resilience. They enable access to local amenities that promote physical activity (Diez Roux et al. 2007), facilitate ties to organizations that act as brokers to outside resources (Small and McDermott 2006), foster social integration and enforcement of norms that encourage health-enhancing behaviors (Cagney et al. 2005), and strengthen opportunities for developing human and social capital (Joseph et al. 2007; Stewart et al. 2007).

Moving to Opportunity (MTO), an experimental study conducted in five cities over fifteen years, showed that moving from public housing in a high-poverty neighborhood to a low-poverty neighborhood with the use of a voucher can produce measurable gains in some domains, most notably physical and mental health (Orr et al. 2003; Sanbonmatsu et al. 2012). Overall, the MTO intervention improved the neighborhood conditions for experimental movers relative to controls assigned to remain in public housing, including lower rates of neighborhood poverty and disadvantage (Ludwig 2012). At the MTO interim evaluation, conducted approximately four to seven years after randomization, experimental movers were significantly more likely to report

living in a safe neighborhood, less likely to have been victimized, and experienced lower rates of obesity, diabetes, and mental distress relative to the control group (Orr et al. 2003). In the final evaluation, completed ten to fifteen years after random assignment, experimental movers showed significantly lower rates of extreme obesity and substantially lower prevalence of diabetes; these latter findings were generally in the order of magnitude that would be expected from behavioral and drug interventions (Ludwig et al. 2011). Subsequent analysis shows the cumulative impacts of moving to a low-poverty neighborhood at a young age leads to higher rates of graduation and college attendance and higher earnings in early adulthood (Chetty et al. 2016).

MTO's findings provide evidence that this form of mobility (for this specific population) can yield large and sustained effects on some dimensions of well-being. However, there were no significant differences on many of the outcomes where impacts were anticipated, such as householder employment and earnings or self-sufficiency (Sanbonmatsu et al. 2012). Further, gender differences in youth outcomes (whereby girls fared better and boys worse on certain measures) persisted across the interim and final evaluations (Kling et al. 2004; Popkin et al. 2008). Neighborhood differences (e.g., poverty rate, safety) were significant, but the size of the difference attenuated over time—largely due to improved conditions in control neighborhoods (Ludwig et al. 2011).

Moreover, some argue that MTO's treatment did not result in changes to other critical dimensions of neighborhood, such as segregation, and that the mobility induced by MTO was essentially to similar types of communities (Sampson 2008, 2011). Though some interpret MTO's findings as conclusive evidence that neighborhoods do not matter in many of the ways previously thought (Clampet-Lundquist and Massey 2008), others argue that MTO's findings are consistent with a more nuanced perspective—neighborhoods matter, but they matter more for

some residents than others or only under certain circumstances (Burdick-Will et al. 2011; Sharkey and Faber 2014).

THE ROLE OF PLACE-BASED SUBSIDIZED HOUSING, PAST AND PRESENT

The location and density of public housing contributed in key ways to the concentration of poverty. While early public housing served a working population that represented a greater diversity of racial/ethnic groups, policy changes in the 1960s and 1970s led to declining incomes and increasing racial segregation within the housing complexes (Freeman 2019; Rothstein 2017). New developments built high-density buildings based on the concept of “towers in the park;” in practice, it created buildings that differed in mass and scale and were physically isolated from the surrounding streetscape (Mumford 1995; Plunz 1990). The design often included larger “family units” to meet the needs of those with more children, but this reduced the proportion of working-age adults and shifted the age distribution in ways that promoted delinquency and disorganization (Cagney 2006; Venkatesh 2000). Successive waves of welfare reform exacerbated conditions and led to a continued decline in the resources of public housing residents all living under the same roof (Edin and Lein 1997). Residents adapted to these conditions by reducing their life space diameter (Rosenblatt and DeLuca 2012) and avoiding social ties that drained limited resources (Curley 2009), further isolating those already at risk.

Massey and Kanaiaupuni’s (1993) research on the emergence of extreme concentration of poverty in Chicago in the 1980s shows the sequence of factors that link public housing to structural disadvantage and inequality throughout many US cities. Public housing built in the 1950s through 1970s was more likely to be constructed in low-income, minority areas (Freeman 2019; Rothstein 2017). Once constructed, eligibility criteria ensured that those who were housed in such complexes were almost uniformly poor (Popkin et al. 2004). In turn, the presence of

public housing lead to secondary migration, producing a net increase of poor residents in neighborhoods where public housing was located (Massey and Kanaiaupuni 1993). Research on other US cities shows similarly strong associations between the presence of public housing and neighborhood poverty; tracts with public housing have poverty rates ranging from 10 (Holloway et al. 1998) to 20 percentage points (Carter et al. 1998) higher than those without public housing.

Although federal law prohibited the net increase of public housing beginning the early 1980s (Bratt 1989), conditions continued to deteriorate in many existing complexes. Between 1981 and 1991, the share of public housing residents earning less than 10 percent of the median income increased from less than 5 percent to 20 percent (Popkin et al. 2004). Crime rates were disproportionately high and continued to increase even as most American cities became safer (Dunworth and Saiger 1994; Friedson and Sharkey 2015; Sampson 1990). The final report of the National Commission on Severely Distressed Public Housing (1992) reported that some 86,000 units of public housing met their criteria for severe distress and warned that “unless corrective actions are taken immediately, the number of units that meet this definition for severe distress will increase” (p. 2).

Deconcentrating poverty in low-income neighborhoods

The Commission’s report ultimately led to the authorization of Housing Opportunities for People Everywhere (HOPE VI), which demolished at least 149,000 units of public housing, nationwide (Sard and Straub 2008). In some cases, HOPE VI grants from the US Department of Housing and Urban Development (HUD) were used to replace public housing with lower-density, mixed-income developments; an additional subset of former tenants were relocated to public housing elsewhere or received tenant-based vouchers to find housing in the private market. Under the HOPE VI model, the revitalization of disadvantaged neighborhoods required

the exodus of a large number of legacy residents. After redevelopment, communities generally improved in safety and socioeconomic mix (Popkin et al. 2004) and some former residents—particularly young children—have experienced substantial gains (Chyn 2018; Haltiwanger et al. 2020), but many view these transformations as exacting too high a price—largely paid by former public housing residents who often struggled to find adequate housing elsewhere (Goetz 2013; Keene and Geronimus 2011).

Today, the most common approach to rehabilitating dilapidated public housing is through the Rental Assistance Demonstration (RAD) program, which converts public housing to project-based vouchers and transfers ownership to private for-profit or not-for-profit developers (Aratani et al. 2019; Hanlon 2017). While RAD focuses on improving conditions within public housing projects, community revitalization efforts—particularly those that focus on deconcentrating poverty—have shifted away from demolition and toward construction, particularly in the form of newly constructed affordable housing developments.

Although there has been no systematic examination of the association between affordable housing and the (de)concentration of poverty, more limited evidence suggests that this newer form of place-based subsidized housing is likely to lower poverty rates in receiving neighborhoods through a combination of eligibility criteria and positive spill-over effects (Ellen et al. 2016). For example, research on the siting of affordable housing projects financed through the Low Income Housing Tax Credit (LIHTC)—the largest federal source of funding for affordable housing—shows that such developments are located across a range of neighborhoods, with one in five located in a tract with a poverty rate of 30 percent or higher (Ellen et al. 2016). Income eligibility for LIHTC is generally well above the federal poverty line, which means that even in high-poverty tracts, the development is likely to house higher-income households with a

different sociodemographic composition than surrounding properties (Scally et al. 2018).

LIHTC has been shown to have a modest negative impact on poverty rates (Ellen et al. 2009) and racial segregation (Horn and O'Regan 2011) when located in high-poverty areas. Moreover, research suggests that there is a positive effect on the property values of surrounding properties (Diamond and McQuade 2017; Ellen and Voicu 2006; Schwartz et al. 2006). Together, this suggests that affordable housing developments may act to deconcentrate poverty (in moderation) when placed in high-poverty areas and are unlikely to have substantial financial or social effects when dispersed throughout higher-value neighborhoods (Briggs 1998).

While affordable housing developments may help to deconcentrate poverty when located in low-income neighborhoods, there is scant research of the impact on the incrementally higher-income households who occupy such units. Although there is tremendous variation by state (Khadduri et al. 2006), research shows that affordable housing financed through LIHTC is more likely to place residents in underperforming school districts and in neighborhoods with weak labor markets and higher levels of pollution (Ellen et al. 2018; Pfeiffer 2009) and they are more likely to live in areas with higher crime rates (Lens et al. 2011). Each of these factors may negatively influence the well-being of those who move to such neighborhoods by limiting access to quality local institutions, placing them further away from jobs, and exposing them to higher rates of toxins and risk of victimization.

Promoting moves to low-poverty neighborhoods

Housing subsidies ease, but do not eliminate, the difficult trade-offs that low-income households face in finding housing, particularly in low-poverty neighborhoods. Structural constraints in the housing market limit low-income households' ability to find adequate housing in low-poverty areas, even with the support of programs designed to achieve this end. Perhaps

MTO's most salient finding was the difficulty low-income households experienced in finding and retaining residence in a low-poverty neighborhood with tenant-based vouchers. Fewer than half of the MTO experimental movers successfully relocated to low-poverty tracts and many made secondary moves back to high-poverty areas (Orr et al. 2003). This was particularly true of sites in cities with high rental costs, including Boston and New York City (Comey et al. 2008). Qualitative work points to supply-side constraints, including the limited number of units that fell within the proscribed rent levels and frequent unwillingness of landlords to accept vouchers (Edin et al. 2012). These factors were particularly acute during the study period, when housing prices continued to increase across most markets (Ludwig 2012). Secondary moves were common among MTO as well as HOPE VI study participants and were often driven by housing considerations, such as poor quality and/or maintenance deficiencies and displacement as a result of buildings being sold or no longer accepting vouchers after initial lease-up (Edin et al. 2012; Venkatesh 2004). These findings were consistent with those of Gautreaux Two (Boyd et al. 2010) and underscore the importance of housing for both attaining and retaining residence in opportunity areas.

More recent efforts to implement mobility counseling have met with some success, suggesting that it is not individual preference but rather the intersection of limited knowledge, financial barriers to moving, and limited landlord participation that prevents mobility to opportunity neighborhoods (Bergman et al. 2019). But, structural factors such as the limited supply of available housing that meets payment standards (Collinson et al. 2015), tenant selection and placement practices (Desmond and Withers 2019; Rosen 2017), and discrimination in the rental market (Massey and Denton 1993), act as barriers above and beyond the individual-level decision-making of tenants and landlords, resulting in persistence residential segregation by

income and, often, race.

Affordable housing that is sited in low-poverty areas may provide more durable moves to opportunity relative to tenant-based vouchers. By definition, landlords that sponsor such projects are already working within government housing programs. They do not have discretion in tenant screening or the ability to deny lease renewals as a means of getting out of their obligation to house low-income renters. The production of affordable housing in low-poverty neighborhoods ensures a known supply of available units that is within financial reach of the target population. The reliance on mixed-income developments is likely to ensure maintenance practices and the quality of services that benefit both lower- and higher-income tenants of the same complex (Joseph et al. 2007).

Of course, other neighborhood conditions may offset the proposed benefits of living in a low-poverty neighborhood. These areas may be undergoing development and as such may lack commercial activity or access to transportation. More affluent neighbors may send their children to private schools or have the ability to enter into charter schools further away and therefore local schools may be lower quality than what would otherwise be expected. Low-income residents may feel stigmatized as minority members of a more affluent community following the “ethnic fishbowl” effect wherein low-income movers are only partially integrated into the day-to-day life of their more affluent neighborhood (Briggs 1998).

HOUSING AS A SOURCE OF RISK OR OPPORTUNITY

Much of the seminal work on neighborhood effects has remained silent on the role of place-based subsidized housing in the concentration of poverty and neighborhood disadvantage. As Massey and Kanaiaupuni (1993) write, “Although Wilson and Massey both offered structural explanations for rising poverty concentration, neither theorist considered how public housing

policies might have contributed to the trends” (p 110). Quillian and Knudsen (2015) write,

In the demographic literature on neighborhood poverty, public housing projects are conspicuous mostly for their absence. The statistical analyses in Wilson’s *The Truly Disadvantaged* (1987), the book that initiated the modern era of statistical studies of urban poverty, never distinguish tracts with public housing projects and other tracts. The most comprehensive statistical analysis of the problems of urban poverty, Jargowsky’s *Poverty and Place* (1998), says almost nothing about the role of public housing or housing assistance in high-poverty neighborhoods. Although these sources refer to ethnographies of public housing in discussing their analyses, the statistical analyses that are at the heart of the work never distinguish public from private housing (p 2).

Indeed, subsequent research on neighborhood effects has also largely overlooked housing as an important set of mechanisms, either treating housing characteristics as a proxy for neighborhood conditions (e.g., Galea et al. 2005; Krause 1998) or omitting housing altogether (e.g., Sampson et al. 2002). In other cases, public housing developments are treated as poor neighborhoods (e.g., Small 2004). Most of the recent research in the field that does address housing focuses either singularly on how it affects a household’s ability to obtain (and retain) residence in a higher opportunity area (e.g., Bergman et al. 2019; Rosen 2017) or on features of housing developments themselves as disconnected from the broader neighborhood in which they are sited (e.g., Chaskin 2011; Tach 2009). Nearly all of the neighborhood effects literature has overlooked the potential impact of housing itself, including its affordability, quality, age, and size—all factors that may shape individual well-being independent of its location (Acevedo-Garcia et al. 2004; Harkness and Newman 2005; Hernandez 2016; Lubell et al. 2007; Swope and Hernandez 2019). To the extent that affordable housing improves the immediate living conditions of individuals and their families, it may improve well-being even when located in neighborhoods that themselves do not confer advantage.

MTO, like all experimental studies, evaluates the impact of being offered the intervention on one or more outcomes of interest by measuring the average differences that result from the

entire bundle of changes that come with the offer of treatment. For MTO and other housing mobility studies, this includes various changes that result from moving from one neighborhood to another. But other aspects of the residential environment are altered as well, including changes that come with moving to a new home such as a different landlord, new neighbors down the hall, and different housing quality and maintenance practices, among others.

Some of these changes to housing may directly influence individual outcomes (e.g., lower exposure to dangerous housing conditions), while others guide how the new residents will experience the broader neighborhood (e.g., forming social ties within the new building that yield beneficial information on selecting a school or daycare provider). For MTO, specifically, it also means a change in the type of rental assistance, from public housing to a voucher and, with it, the differences in how the program works for (or fails) participant families. Yet, MTO can only measure the average effect of all these factors operating in tandem. The secondary changes that result from the move to new housing and the shift from one rental subsidy to another are part of MTO's overall impact estimates and, therefore, are slices of the causal pie that links mobility to a non-poor neighborhood with improved physical and mental health, among other benefits. Improvements in housing quality that result from the intervention may be one possible root source of improvement in well-being, particularly physical health. At the same time, increases in housing cost that result from the shift from public housing to a tenant-based voucher² may lead to material hardship that offsets some of the gains that would otherwise be realized by moving to a better neighborhood.

² Vouchers typically allow a household to pay a higher portion toward rent for a unit that is above the maximum Fair Market Rent or equivalent rent structure and generally does not include a utility allowance whereas public housing rents are generally set at 30 percent of pre-tax income and utilities are included in the rent.

Recent studies show that neighborhood mobility yields both improvements in housing quality as well as higher housing cost burden, yet these factors are rarely discussed as drivers of well-being. In the final evaluation, MTO experimental movers showed significantly better unit quality than controls, including respondents' rating of the quality of the home and lower prevalence of specific maintenance deficiencies including peeling paint, broken plumbing, broken windows, and pest infestation (Comey et al. 2012). Participants of the HOPE VI Panel Study who were able to move with a voucher experienced similar improvement in housing quality (Popkin 2010). Although there were no significant differences in housing cost or affordability as measured by the MTO research team,³ experimental movers were more likely to have delayed utility payments than controls (Sanbonmatsu et al. 2011). This finding of material hardship was generally consistent with research on HOPE VI, where movers were more likely to have had difficulty paying for utilities and to have experienced food insecurity at follow-up (Boyd et al. 2010; Popkin 2010).

What these mobility studies are not able to consider is the impact of providing rental subsidy to first time recipients or how housing and neighborhood mobility impact those who do not receive any subsidy. Both MTO and research on HOPE VI relocated residents, by definition, received rental assistance both prior to, and at the time of, enrollment into the study. In contrast, observational studies that examine neighborhood effects across a representative sample of community-dwelling residents include both households that receive rental assistance and those

³ MTO's measurement of rent burden used contract rent, rather than gross rent. Contract rent is generally defined as the out-of-pocket costs included in the lease and paid to the landlord, while gross rent factors in all housing costs, including utilities when they are not part of the contract or asking rent. Gross rent is preferable not only because it offers a more complete picture of housing costs, but also because it provides an apple-to-apple comparison with units where some or all of the utilities are included with the rent (such as most public housing developments).

that do not, though most studies fail to control for this factor (e.g., Sampson et al. 1997) or draw comparisons between these populations (Coley et al. 2013). For these reasons, the existing literature on neighborhood effects cannot speak to the impact of housing on well-being, net of neighborhood conditions (and vice versa). Addressing this gap is important for analytic clarity, but it is also essential for understanding if, and how, residential context influences the lives of residents who do not receive governmental assistance and how public investments should be targeted moving forward. Specifically, research that disentangles the effects of housing versus neighborhood can help to guide the targeting and scale of policies that seek to spur residential mobility to better neighborhoods or to improving housing conditions in low-income communities.

THE APPROACH

Although many academic disciplines contribute insights to the central questions guiding this dissertation, the framing here remains first and foremost a sociological one. This lends itself to focusing on the structural features that promote or constrain access to different forms of housing and neighborhoods and how, in turn, this residential context shapes the short- and long-term outcomes of individuals. The present work seeks to examine how housing policies derive from and, in turn, guide structural features of place, how individuals experience and navigate these constraints, and what this means for the future of neighborhoods and the urban landscape.

What follows is a series of analyses that use affordable housing in New York City as a backdrop to explore the links among housing, neighborhood, and individual well-being. The shift from public housing or vouchers to affordable housing and from other cities (particularly Chicago) to New York provides an opportunity to expand our knowledge of how different forms

of housing and neighborhoods shape well-being. Affordable housing represents an important, yet understudied, type of supply-side subsidized housing that serves millions of households across the country and represents billions of dollars of public investment. It is often used as a tool in the development of mixed-income housing and the rehabilitation of disadvantaged neighborhoods, yet we know very little about if, and how, it impacts individuals.

Because affordable housing serves a slightly higher income population than other types of rental assistance, it also presents an opportunity for evaluating whether housing and neighborhoods impact this low-income working population in ways that are similar or different from those previously documented among more the urban poor. Perhaps most important, studying affordable housing enables me to examine the impact of receiving housing assistance for the first time, rather than changing from one form of rental assistance to another. Understanding the impact of mobility from the private market to government assisted housing (and the corresponding changes to housing and neighborhood it induces) is a critical policy question that has yet to be adequately addressed.

Although New York City is different in many ways from other U.S. cities, it presents the opportunity for studying certain questions that would not be possible elsewhere. New York's long-standing policy of allocating affordable housing through a lottery system provides an opportunity for a natural experiment across a large sample of households. The scale of supply-side housing development in New York is many times that in other municipalities. For example, the most recently completed housing plan in New York City constructed or preserved more than 160,000 units of affordable housing compared to Chicago's *Plan for Transformation* which built or preserved 20,000 units of housing over the same time period. New York City has a poverty rate of about 20 percent and is a racially- and economically-stratified city; however, it does not

have the type of extreme concentrated poverty found in Baltimore or Chicago and many high-poverty tracts in New York abut very affluent tracts. New York City has continued to expand its supply of government assisted housing, with little or no loss of public housing over the last three decades. For these reasons, neighborhood effects theory that was developed largely on the experiences and patterns of other cities may or may not hold true for New York. Yet, if the next phase of neighborhood effects research is to understand heterogeneity across people and outcomes (Sharkey and Faber 2014), then testing housing and neighborhood effects in New York City is an important contribution specifically *because* it is so different from other locales.

Chapter 3 provides background on affordable housing, including how it differs from public housing and tenant-based vouchers in both concept and practice. Chapter 4 provides an overview of NYCHANS and the data and methods employed throughout the remainder of this dissertation. Chapter 5 evaluates the impact of affordable housing on the immediate living conditions, including housing cost and quality, and tests whether the provision of housing is equivalent across neighborhoods. Chapter 6 examines the impact of being offered affordable housing on locational attainment—that is, if affordable housing helps individuals move to different types of neighborhoods or if it results only in lateral moves relative to if they had not been offered affordable housing. Chapter 7 examines the social network and access to neighborhood-based support that local relationships provide, testing explicitly whether the offer of affordable housing in different types of neighborhoods alter this type of social context. Lastly, I discuss the implications of these findings for subsequent research and policy.

CHAPTER THREE

AFFORDABLE HOUSING AS INTERVENTION

Affordable housing represents a large share of the subsidized stock that is now equal to, or larger than, the number of public housing units or tenant-based vouchers in many locales. Since its inception in 1987, the Low-Income Housing Tax Credit (LIHTC) program, which represents only one type of affordable housing, has financed more than 2.5 million low-income units. In comparison, there were just under 1 million public housing units and about 2.5 million tenant-based vouchers in 2019, nationwide.¹

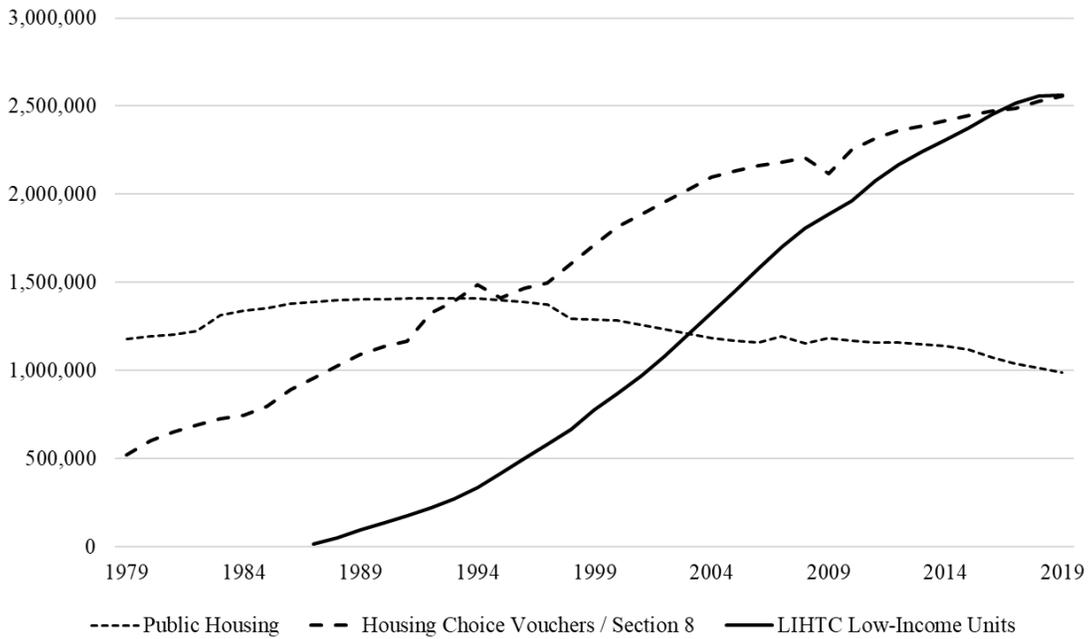
The federal Public Housing program was initially authorized by the Housing Act of 1937² and continued to expand its stock throughout the 1960s and 1970s; however, a moratorium issued by Nixon halted construction of new units by the 1980s (Bratt 1989). Beginning in the 1990s, the demolition of public housing through Housing for People Everywhere (HOPE VI) (Popkin et al. 2004), and more recently through conversion as part of the Rental Assistance Demonstration (RAD) program (Hanlon 2017), led to a steady decline in the stock. In 2019, public housing dipped below 1 million units for the first time since the 1970s (Olsen 2001). As public housing units were demolished, a portion of tenants were re-housed through the creation of affordable housing, largely mixed-income developments financed by LIHTC, while others (though not all) received a tenant-based voucher to find private housing. Though a substantial amount of research has been done on HOPE VI (Popkin et al. 2004) and on the mixed-income developments constructed in place of former public housing projects (Chaskin and Joseph 2010,

¹ Current estimates of voucher and public housing are from US Department of Housing and Urban Development (HUD)'s Picture of Subsidized Housing; LIHTC totals are from HUD's Low-Income Housing Tax Credit (LIHTC) Database.

² New York City created the first public housing in 1934, which served as a model for the federal program.

2011), this represents a small subset of both the use of tenant-based vouchers and the development of affordable housing. Figure 3.1 shows the historical trend in these three major housing subsidy programs over the past 40 years.

Figure 3.1: Subsidized Housing Units in the United States by Type, 1979-2019³



Section 8 tenant-based vouchers, later rebranded the Housing Choice Voucher, has increased steadily since the 1970s and is often cited as the largest housing assistance program in the country (Ellen 2020; Rosen 2020). Meanwhile, the creation of LIHTC as part of the tax

³ Adapted from Vale and Freemark (2012) and Rosen (2020). Sources: Public housing and voucher totals for 1979 through 1998 are from Olsen (2001), Tables 5 and 6; public housing and vouchers for the years 2000 and 2004 through 2019 are from US Department of Housing and Urban Development (HUD)’s Picture of Subsidized Housing; Data for missing years (1999, 2001-2003) are estimated by interpolating the annual change between known totals. LIHTC totals are from HUD’s Low-Income Housing Tax Credit (LIHTC) Database, which were aggregated by year placed in service and shown as the cumulative running total as a proxy for prevalence in any given year. This may overstate LIHTC units, as projects may expire or be refinanced again at a later time through LIHTC. Vouchers and LIHTC units may overlap, as vouchers can be used in LIHTC units.

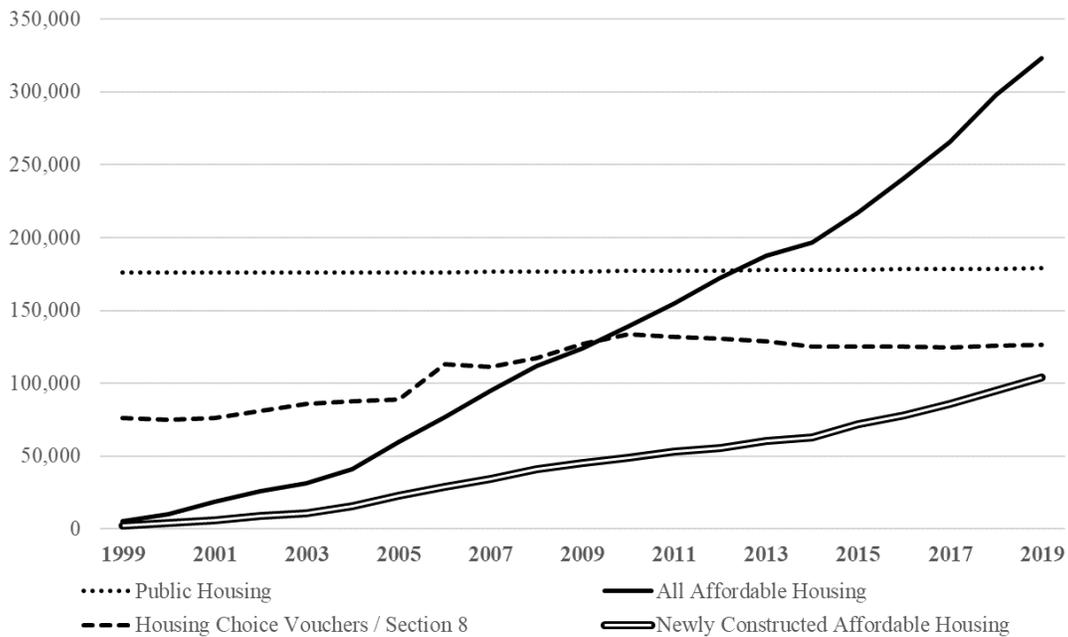
reform act of 1986 provided a new means of financing place-based subsidized housing, both to rehabilitate existing units and create new housing. It has grown even more rapidly than vouchers. By 2017, LIHTC had placed more units of low-income housing into service than households currently served through the Housing Choice Voucher program.⁴

The scale and use of these major housing subsidy programs vary widely from one city to the next. In New York City, there are about 180,000 public housing units and 130,000 Housing Choice Vouchers. The stock of affordable housing includes about 130,000 low-income LIHTC units, of which about 45,000 were newly constructed.⁵ But this represents only one source of financing for affordable housing in the city and accounts for less than half of the production since LIHTC was first authorized. In the last twenty years, New York City has supported a total of more than 325,000 units of affordable housing, of which more than 100,000 were newly constructed. This is not unique, as most LIHTC projects receive secondary sources of subsidy, including local tax abatements, development grants, or low-interest construction loans (Bostic et al. 2020; Olsen 2001). Figure 3.2 shows the historical trend in these types of subsidized housing over the last 20 years in New York City, including public housing, tenant-based vouchers, and affordable housing units financed. It also shows the subset of affordable housing that is newly constructed.

⁴ Authors own calculations, based on the number of low-income households served by Housing Choice Vouchers and the cumulative number of low-income units placed in service through LIHTC since its inception in 1986.

⁵ Approximate unit counts for New York City based on HUD data filtered by project “city,” including New York City, New York, Bronx, Brooklyn, Queens, and Staten Island.

Figure 3.2: Subsidized Housing Units in New York City by Type, 1999-2019⁶



New York City is unusual in several ways. First, it is a city of renters with two out of every three households renting their home which is roughly inverse to the rest of the U.S. where two out of every three households own their home (United States Census Bureau 2019). This provides a different context within which housing subsidies operate, ranging from zoning and density restrictions that are more conducive to multi-family construction to the number and

⁶ Sources: New York City Housing Authority (NYCHA) Development Data Book (2020); Vouchers and Affordable Housing are estimated based on New York City Mayor’s Management Report (MMR)s for 1999 through 2019. Voucher totals are the sum of available data for NYC’s two PHAs: The Department of Housing Preservation and Development and NYCHA; a small additional number of vouchers (not shown) are managed by the State’s housing agency, the Division of Homes and Community Renewal (HCR). Public housing totals represent total number of units in projects aggregated by year constructed and presented as a cumulative total in each year; vouchers are the sum of households using vouchers aggregated across PHAs within each year; affordable housing is the count of units started in any given year and presented as a cumulative total beginning in 1999. Affordable housing created prior to this date are excluded, but likely total an additional 100,000 units, though a smaller share were newly constructed during this era. As with Figure 2.1, vouchers may be used in affordable housing and may double-count households that are served. Preserved affordable housing may also over-state the number of units financed as projects may receive more than one round of financing.

sophistication of developers and management companies focused on rental properties. It also ensures a wider socioeconomic composition of the renter population that reduces stigma and assures the accumulation, and use, of political capital by both tenants and landlords (Lawson 1986).

Second, New York City has utilized housing assistance programs in ways that differ from other large cities. It has retained nearly all of its public housing stock, though recent developments suggest that this may change in the near future (Ferré-Sadurní 2018). Despite having the largest Public Housing Authority and managing the largest number of Housing Choice Vouchers in the country, it has fewer vouchers per capita than many US cities.⁷ Most important, it has produced many times the scale of affordable housing, and done so steadily for several decades. In the last 15 years, New York City has launched the nation's two largest housing plans in succession—the New Housing Marketplace Plan (NHMP), which created or preserved more than 160,000 units of affordable housing from 2003 through 2014 (NYC Department of Housing Preservation and Development 2010), and Housing New York (HNY), which is scoped to create or preserve 300,000 units by 2026 (Deputy Mayor for Housing and Economic Development 2017).⁸

In total, these housing plans will produce an estimated 170,000 new units of affordable housing—more than the total count of vouchers in the city and nearly as much as the stock

⁷ New York City has about 130,000 vouchers and a population of about 8.4 million people. This is equivalent to about 15 vouchers per 1,000 residents whereas Chicago averages about 17 vouchers per 1,000 residents and Baltimore averages about 20 vouchers per 1,000 residents.

⁸ This excludes the previous housing plan conducted in the 1980s under Ed Koch. That housing plan was the first of its kind and preserved or created 100,000 units of housing (Soffer 2010), preceding the creation of LIHTC. Only those units that returned for additional financing after 1998 are counted here. It also excludes other forms of housing assistance funded by local and state sources, such as Mitchell Lama housing, vouchers for formerly homeless (City FHEPS), and rental assistance for older adults (SCRIE) and disabled individuals (DRIE), among others.

currently managed by the New York City Housing Authority (NYCHA), the country's oldest and largest Public Housing Authority. Moreover, unlike public housing units and vouchers, which have remained relatively fixed in number,⁹ the stock of affordable housing continues to grow each year at a current pace of about 25,000 units per annum, including 8,000 newly constructed units.¹⁰ It is the newly constructed affordable rental units targeted to low-income households and financed under these housing plans that are the focus of this dissertation.

While the scale of affordable housing investments in New York City outpaces every other American city many times over, it is important to note that there is no comprehensive source of information on affordable housing production. Unlike LIHTC or other federal sources of financing, affordable housing is a broader form of subsidized housing rather than a singular source of funding; thus, there are no uniform eligibility criteria or procedures for administering or tracking it. It supports a wide range of housing types and incomes—from mixed buildings with both market and affordable units and those that comprise only subsidized units, housing those with the lowest incomes, including individuals moving from shelter, and those well above the median income. Individual funding streams, from federal, state, and/or local sources, determine requirements for the units or projects financed. Funding is often combined such that a given project may be subject to multiple requirements that apply to some or all of the affordable units therein.

This is perhaps the central difference between affordable housing and other major housing subsidy programs—it is *local* in the sense that municipal and state authorities guide the design and implementation of place-based policies and programs, oversee allocation of federal

⁹ While the number of vouchers overall has increased steadily nationwide, New York City has had between 87,000 and 140,000 federal tenant-based vouchers for at least the last twenty years.

¹⁰ Based on the annual production over the last seven years (FY14 through FY20).

funds, select private real estate development partners, and supplement financing in a variety of ways. For example, San Francisco’s 2016-2020 Strategic Plan included the commitment of \$1.2 billion to finance the construction or preservation of 6,000 affordable housing units (Mayor’s Office of Housing and Community Development 2016). Boston’s housing plan commits to producing 8,000 low-income units of housing by 2030 (Mayor’s Office 2014). Such a listing could be done for nearly every large city in the country, and many regions as well. Only a portion of these units will be financed through LIHTC; others are supported through private funding, city tax programs, the creation of Inclusionary Housing programs, and other varied sources that cannot be tracked nationally. It is thus possible that affordable housing has already far surpassed the number of households served through tenant-based vouchers and that the new units created through place-based strategies outnumber the remaining stock of public housing.

HOW AFFORDABLE HOUSING PROGRAMS WORK¹¹

Despite the steady growth in the population served by housing subsidies, it has not kept pace with need. Current estimates suggest that only one in five households in need of housing assistance receive it (Kingsley 2017), down from one in three just twenty years ago (Olsen 2001). This has put substantial pressure on federal, state, and local government to increase supply, resulting in new models and the corresponding benefits and costs they embody. In an optimal world, housing subsidies should eliminate all, or at least some, of the housing challenges low-income households face in their search by providing access to affordable, quality housing in neighborhoods where recipients can prosper. In practice, different forms of housing subsidies

¹¹ Although affordable housing comprises both new construction and “preservation” (rehabilitation of existing stock in exchange for affordable rents), the description provided here is limited to new housing created through affordable housing programs and the first occupants of those units. Preservation follows some, though not all, of these same general program guidelines.

have produced varying levels of success or failure on one or more of these dimensions. This is partly explained by the shifting constraints and opportunities that guide implementation, but it also reveals the ways that housing policy itself prioritizes certain objectives, even if at the expense of others. How various programs address the competing goals of affordability, housing quality, and neighborhood location helps to articulate the differences among them and explain their meaning for individual recipients.

Rental Costs and Affordability

Federal standards suggest that a household should pay no more than one third of gross income toward housing costs.¹² Anyone who pays more is considered cost burdened; those who spend half or more of income on housing are considered severely burdened. Over time, housing costs have increased steadily while incomes have largely stagnated (Furman Center 2015b). Housing affordability is now considered to be a widespread challenge across the United States (Rohe 2017) and many consider the provision of low-cost housing to be the primary purpose of housing subsidies. Yet, the costs and corresponding affordability vary substantially by program.

Under means-tested housing programs, rent levels are adjusted up or down over time based on the tenant's current income. While both public housing and vouchers are means-tested, affordable housing is not. Instead, affordable housing rents are determined in advance of lease-up and are set at a level that ensures that the building's income is sufficient to cover basic maintenance and operating expenses for the property; such rents are affordable to households earning a certain income range, usually based on criteria determined by the financing

¹² Over time, this benchmark has increased. In the 1970s it was set at 25 percent of household income; now it is 30 percent but is often rounded up to be "one third" without factoring in the additional costs of utilities. Recently, there has been a push to increase this further, to 40 percent or more (Riccio and Deitch 2019).

mechanisms, subsidy source, and/or applicable regulations. Tenants are selected based on qualifying income levels that ensure that the resident will not pay more than about one third of income toward housing costs at initial lease-up. Depending on final tenant selection, rent burdens at move-in may range from about 25 percent of a household's gross monthly income to about 35 percent, sometimes varying even within the same building.

In affordable housing, rent increases after initial lease-up are determined independent of the residents' current income. In New York City, most affordable housing relies on a secondary system of price controls as part of the rent regulation system to determine rent increases. Annual rent increases are determined for all rent stabilized units citywide by the Rent Guidelines Board (typically slightly more than inflation). Thus, if a tenant's income increases, the rent burden may be less; if income decreases (or remains constant), the rent burden may be more.

The resulting cost burden for recipient households is stark. Although there are no representative data on the housing costs or rent burden of affordable housing residents, research on sampled LIHTC properties shows that a substantial portion of tenants in LIHTC units pay more than a third of income toward rent and are thus rent burdened. Findings show the prevalence of rent burdened households range from 43 percent (U.S. General Accounting Office (GAO) 1999) to 66 percent (Williamson 2011) and vary based on tenant income as well as whether the households rent a LIHTC unit with a secondary form of rental assistance, such as a Housing Choice Voucher (Furman Center 2012).

Vouchers enable a household to rent a privately-owned unit, with the tenant paying a 30 percent contribution toward rent and the voucher covering the remainder, up to a certain payment standard. Tenant contributions vary as income changes but guidelines enable a household to rent a unit that is above the maximum allowable rent covered by the voucher; in these cases, the

voucher household is responsible for the additional rent due, leading to higher levels of rent burden.¹³ Research on the rent burden of Housing Choice Voucher recipients suggests that they fare better than those in LIHTC, but only slightly. Between 2003 and 2015, more than one in three voucher holders paid more than 30 percent of income toward rent, with some years increasing to more than one in two (Dawkins and Jeon 2017). In contrast, federal law requires that public housing residents pay no more than 30 percent of income toward rent and utilities, ensuring no cost burden for its tenants. Of the three largest housing subsidy programs, this makes public housing by far the most affordable for tenants.

Edin and Lein's (1997) ethnography comparing the experiences of welfare- and wage-reliant single mothers showed the substantial gaps in income to expenses that both groups face and the differential impact of housing subsidies for making ends meet. Although receipt of subsidized housing lessened the gap between income and expenses, particularly for wage-reliant mothers who experience higher costs of living that come from labor force participation (e.g., child care, transportation to/from work), its financial value varied. Among wage-reliant mothers, those in public housing came closest to covering monthly expenses, followed by those who doubled up with family or friends. Those who lived independently in the private market (either with a voucher or without assistance) reported similarly large shortfalls in meeting household expenses; however, those without assistance paid significantly more on housing costs and were severely rent burdened (paying an average of more than 50 percent of gross income from their main job toward rent, compared to 40 percent for those with vouchers, and 35 and 30 percent for those in shared or public housing, respectively).¹⁴

¹³ When a voucher holder first leases a unit, rent burdens are usually capped at 40 percent (Ellen 2020; US Department of Housing and Urban Development n.d.).

¹⁴ Based on author's own calculation of rent burden.

Housing Quality

Despite its affordability, public housing has become notorious for poor housing conditions that endanger its residents (Popkin et al. 2002, 2004; The National Commission on Severely Distressed Public Housing 1992; Venkatesh 2000). While the conditions vary from one Public Housing Authority to another as well as from one development to another, there is general consensus that in the face of insufficient federal funding most public housing suffered from years of disrepair, deferred maintenance, and failure to invest in systemic upgrades. New York City remains unique in that it has retained nearly all of its public housing in contrast to other locales that have demolished most, or all, of their stock through programs such as HOPE VI, but recent evidence suggests that public housing in New York City has likewise suffered from years of disinvestment and mismanagement (Ferré-Sadurní 2018; Goldberg 2018).

Public housing's poor housing conditions took years—even decades—to manifest. When first constructed, it was heralded for being high quality and a lifeline for families in need (Freeman 2019; Rothstein 2017). Many have argued that the public housing model itself inevitably led to the set of problems that have unfolded over time. Its requirement to charge no more than 30 percent of income for rent and utilities coupled with the low-income population that it serves, results in limited rent rolls that are insufficient to cover operating costs, let alone capital needs. The inability of such buildings to be self-sufficient means that they must rely on funds from outside sources—largely, federal funding—to close the gap between income and expenses. Over time, public housing increasingly became a kind of “last resort” housing for the lowest-income households that couldn't secure shelter elsewhere, further suppressing rent rolls and increasing the need for federal funding. At the same time, the stock of public housing—largely built in the 1940s through 1960s—aged rapidly. Major systems (e.g., boilers, roofs)

outlived their useful life and the lack of regular upkeep resulted in the need for wholesale replacement. As the reliance on federal funding increased, the allocation of funds continued to shrink (Bardin and Doulis 2015).

The voucher model presents different challenges for housing quality. Tenant-based vouchers are designed to offset the costs of housing for low-income tenants who lease units in the private market. In contrast to public housing or affordable housing, this means that vouchers are ‘scattered’ across multiple buildings and landlords and therefore the quality across units or buildings may vary tremendously.¹⁵ All units must undergo an inspection prior to lease-up to ensure habitability and minimum Housing Quality Standards (HQS), with annual inspections thereafter. Despite these protections, reports show that HQS inspections can be unreliable and that PHAs vary in the level of rigor with which they enforce requirements (U.S. General Accounting Office (GAO) 2000). Some independent analysis found that units where vouchers are used are of similar quality to public housing units and unassisted rental units of equal cost (Newman and Holupka 2018). Although this finding shows that voucher holders do not live in *lower*-quality housing, it does suggest that voucher holders are unlikely to secure higher-quality units given the generally poor conditions in public and lower-cost private housing.

Newly constructed affordable housing’s financing model is intended to eliminate any gap between rents and maintenance costs. It develops each project such that the subsidy, if one is provided, is invested up front to reduce construction costs and related fees. Rents increase independently of tenant incomes so the rent roll is predictable and assured to continue to cover costs over time along with appropriate reserves in place to cover larger costs. As a result, the

¹⁵ Project-based vouchers follow a different model and are beyond the scope of the present discussion.

quality of buildings should be higher and residents should benefit from safe and habitable homes, now and in the future.

That said, most affordable housing financing assumes that properties will “return” for a second round of financing at a later date, at which time an additional public subsidy may help to finance major capital improvements and the rents may be adjusted to ensure continued coverage of maintenance and operating costs should any imbalance emerge. This secondary financing “preserves” the affordable housing for another set period of time into the future.¹⁶ At refinancing, residents who are carrying a high rent burden and meet certain criteria may be awarded a voucher to protect the individual tenant while ensuring the building remains financially strong. In many cases, if no further financing is available or if an owner declines to accept further subsidies, the project converts to market rate housing at the end of the initial regulatory period with unsubsidized residents replacing the original population as vacancies occur.

Alternative models for affordable housing do not rely on public subsidies; instead, they rely on market rents to cross-subsidize lower-cost affordable housing units that represent only a share of the building or complex.¹⁷ Under this inclusionary housing model, the affordable rents are considered part of the cost of doing business and are absorbed by the higher-cost units in the complex and/or through zoning exceptions that allow more market units than would otherwise be possible according to standard restrictions. Some programs are voluntary and enable owners to opt-in, incentivizing participation through the potential to increase profit and/or reduce tax

¹⁶ Preservation is not limited to buildings that were previously financed as new construction. A large share of preservation funds is allocated to existing, private market buildings that have not previously had a regulatory agreement. This type of affordable housing is beyond the scope of this dissertation.

¹⁷ In some cases, affordable housing units are located in a separate building or complex, generally within a maximum distance of the market-rate building.

burden while other programs are mandatory and require inclusion of affordable housing in order to build residential buildings in certain areas (Hickey et al. 2014). Inclusionary housing, either voluntary or mandatory, is an increasingly popular strategy that has been enacted in multiple cities in the last few years and represents a new source of affordable housing that does not require public financing (Furman Center 2015a).

What these financing strategies mean for the quality of affordable housing is unclear. On the one hand, developments are less likely to fall into disrepair through the same mechanisms as public housing, since financing ensures that properties are relatively self-sufficient after construction. On the other hand, a large share of the affordable housing stock requires future public funding if it is to remain part of the affordable housing stock. In high-rent neighborhoods, buildings may be more likely to opt-out of a second round of regulation or refinancing. In low-rent neighborhoods, buildings may be more reliant on continued government support; if such continued funding is unavailable, these buildings may fall into disrepair or be lost due to disinvestment. Buildings that rely on the income of market-rate units (often luxury rentals) do not rely on future funding, but they nonetheless assume that the market value is, and will continue to be, sufficient to cover the continued cost of affordable units.

In New York City, affordable housing production increased substantially in the early 2000s and production continues to boom to this day. It is therefore unclear what would happen should the City stop financing such a large amount of affordable housing in the future, particularly if funds for preservation become unavailable. Voluntary inclusionary zoning began in the mid-2000s and Mandatory Inclusionary Housing (MIH) began in the mid-2010s when New York City's housing market was at an all-time peak and luxury developments were being

built even in what had historically been lower-cost neighborhoods (Chen 2020). How these buildings will weather a downturn in the housing market remains to be seen.

AFFORDABLE TO WHOM?

In addition to the key operational differences among these major housing subsidy programs, they also serve different populations. Most housing policies and programs utilize a federally-defined measure of income known as HUD Income Limits (HUDIL) or “Area Median Income (AMI)” as it is sometimes referred to colloquially.¹⁸ HUD Income Limits are updated annually and are specific to a given geography and household size.¹⁹ This measure therefore differs from the federal poverty threshold, which is not specific to a given geography and uses size and household composition alone to determine poverty status.²⁰ Households are categorized according to a percent of HUD Income Limits, calculated by taking the household income and dividing it by 100 percent of the location-specific HUD Income Limits for that particular household’s size. The population is typically categorized into several buckets, including Extremely Low Income (ELI), Very Low Income (VLI), Low Income (LI), Moderate Income, and Middle Income (Scally et al. 2018). Table 3.1 below shows the breakdown of HUD Income

¹⁸ Although HUD Income Limits are often referred to as Area Median Income or AMI, this is a misnomer as HUDIL is only loosely based on the actual median income of a given locale. In New York City, for example, 100% of HUD Income Limits for a family of three was \$93,900 in FY2018, but the median household income in New York City (as measured by the 2017 New York City Housing and Vacancy Survey) was \$57,500 (\$47,200 among renters). For details on methodology used by HUD, see <https://www.huduser.gov/portal/datasets/il.html>.

¹⁹ The applicable Fair Market Rent area comprises the five counties of New York City, Westchester, Rockland, and Putnam counties.

²⁰ Federal poverty thresholds are used by the Census Bureau and are based on household size and ages of members. This differs from the federal poverty guidelines used by the Department of Health and Human Services, which is based solely on number of members. See <http://www.census.gov/hhes/www/poverty/about/overview/measure.html> for details.

Limits for these categories as well as the equivalent dollar value for New York City in Fiscal Year 2020.

Table 3.1: HUD Income Limit Categories and Equivalent Values for New York City

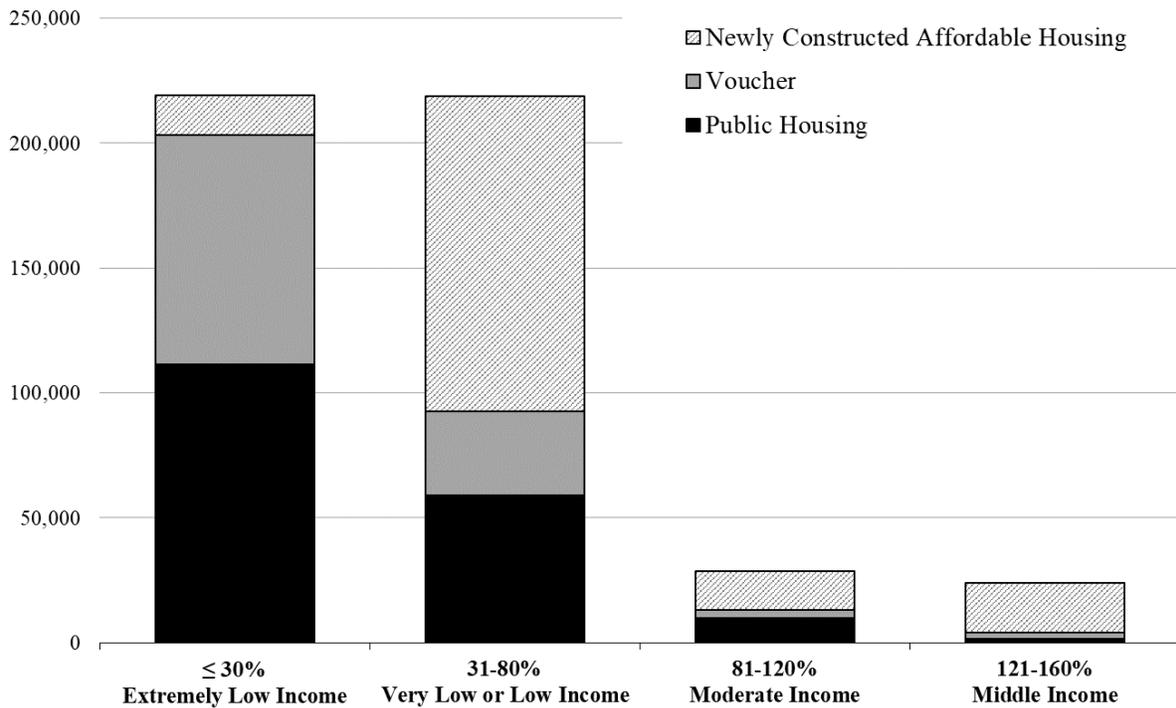
Income category	HUD Income Limits range	New York City, Fiscal Year 2020			
		2-person household		4-person household	
		Min	Max	Min	Max
Extremely Low Income (ELI)	30% and below	\$0	\$27,300	\$0	\$34,110
Very Low Income (VLI)	31-50%	\$27,301	\$45,500	\$34,111	\$56,850
Low Income (LI)	51-80%	\$45,501	\$72,800	\$56,851	\$90,960
Moderate Income	81-120%	\$72,801	\$109,200	\$90,961	\$136,440
Middle Income	121-165%	\$109,201	\$150,150	\$136,441	\$187,605

Figure 3.3 shows the distribution of households served across these income groups for each of the major housing subsidy programs in New York City, including new construction affordable housing, past (2004 through 2020) and planned (2021 through 2026). Although federal regulation requires that at least 40 percent of public housing and 75 percent of newly awarded tenant-based vouchers serve ELI households (National Center for Health Statistics; Office of Analysis and Epidemiology 2019), the population actually served by these programs is skewed even lower. In New York City, approximately 60 percent of public housing units and 70 percent of vouchers²¹ serve households below 30 percent of HUD Income Limits. In contrast, affordable housing serves a higher-income, working population with 80 percent of units targeted to households earning up to 80 percent of HUD Income Limits, including only about 10 percent targeted to ELI households. Although some households also use vouchers in affordable housing

²¹ The lower prevalence of ELI households served by vouchers in New York City may be the result of households earning more after entry into the program or it may be the result of differences in how income is measured by the HCV program and the data collected via self-report, which is used to calculate the estimates presented here.

developments, thus allowing for “deeper affordability,” the prevalence of vouchers in affordable housing in New York City remains low.²²

Figure 3.3: Incomes Served by Various Housing Subsidy Programs in New York City²³



This difference in the incomes served has implications for the neighborhoods in which different housing subsidies are used and helps to explain how both public housing and vouchers have led to the concentration of poverty in communities where they are used en masse (Massey and Kanaiaupuni 1993; Rosen 2020). Affordable housing, on the other hand, is less likely to

²² In the NYCHANS study, about 15 percent of affordable housing residents have a secondary form of rental assistance.

²³ Source for public housing, vouchers, and other housing subsidy programs is 2017 New York City Housing and Vacancy Survey (NYCHVS); current residents are categorized using self-report household income and household size against FY2017 HUD Income Limits for New York City and summed according to the type of unit in which they reside. Newly constructed affordable housing is estimated using reported targets for NHMP and HNY, respectively.

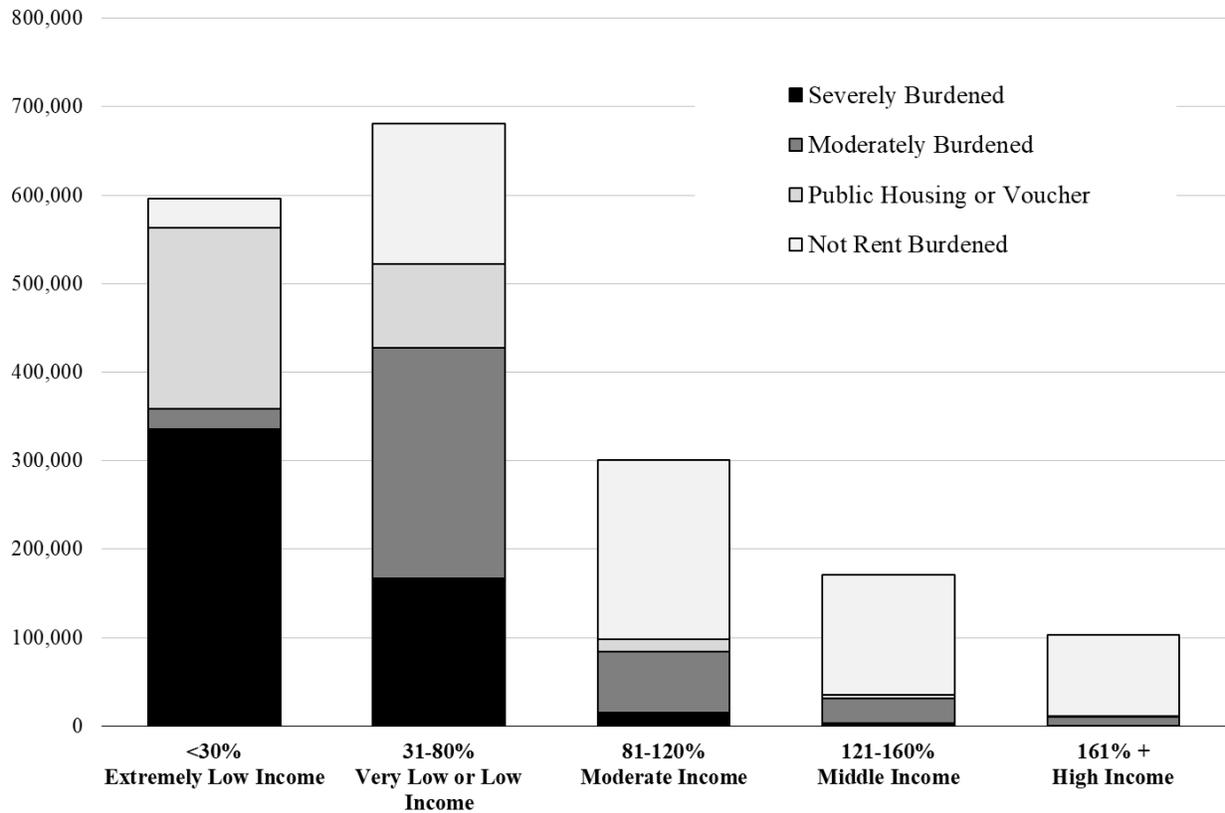
concentrate the lowest-income households even when it is located in poor communities (Ellen et al. 2009, 2016).

One may ask why these incrementally higher-income households would seek affordable housing, since they have financial resources that those in public housing or with vouchers lack. In reality, this segment of the population often struggles to make ends meet. Alternative poverty measures such as those adopted by the US Census and New York City's own poverty measure (both of which largely following the National Academy of Sciences (1995) recommendations) redefines many currently poor households that live in public housing or receive a housing voucher as above the revised poverty threshold, while a large share of currently near-poor (such as those studied in this dissertation) would be re-categorized as living in poverty (NYC Center for Economic Opportunity 2010). This population generally earns too much to qualify for most forms of the social safety net, including rental assistance, yet do not earn enough to pay for adequate housing in the private market.

Data from the American Housing Survey shows that this income group is more likely than their lower-income counterparts to delay rental payments and face eviction (Gaumer and Brooks-Gunn 2019). They also experience higher prevalence of rent burden, as shown in Figure 3.4. Among those in the lowest income stratum (those that would be defined by HUD as earning less than 30 percent of HUD Income Limits), 43 percent of renter households (n=266,000) are rent burdened. But among the next stratum (those earning 30 to 80 percent of HUD Income Limits), 63 percent (n=383,000 households) are rent burdened. This somewhat counterintuitive pattern, whereby fewer of the lowest income households are rent burdened than those with slightly higher incomes, is both proof of the value of public housing and vouchers and the substantial unmet need among higher-income households. Moreover, these low-income but not

poor households may be fairly sensitive to even small changes in housing costs that would enable them to purchase more/better housing, or do so in a better neighborhood.

Figure 3.4: Rent Burden in New York City, by Income Level²⁴



Other characteristics of the population served by affordable housing remain unknown as there is no comprehensive source of information on tenants living in these units. In New York

²⁴ Data source: NYC Housing and Vacancy Survey (2017). Moderate rent burden defined as households paying more than 30% of gross household income toward gross rent (includes utilities); severe rent burden defined as households paying more than 50% of gross household income toward gross rent (including those with negative or zero income and paying any cash rent). Not burdened or living in means tested housing include those in Public Housing and/or receiving a Section 8 Voucher or anyone not paying cash rent. Cases where rent burden could not be computed because of top-coded income or rent data are excluded. Households earning >200% of HUDIL and those with households with eight or more persons are excluded. HUD Income Limits is for Fiscal Year 2017 and represents the proportion of 100% HUDIL for a given household size without further adjustments. Graph may over-estimate the level of rent burden at the lowest income strata due to other rental assistance programs not captured in the HVS.

City, the sponsoring agencies have put information about affordable housing investments into open data sources; however, these data are at a project-level and contain little or no information on the residents of these developments. Although there has been a recent push to create a representative dataset on the socio-demographics of affordable housing residents, budgetary constraints have resulted in unknown delays in gathering such information at a citywide level.

Despite the lack of data, it is possible to draw some conclusions based on differences in the housing stock of each type of housing assistance program. Public housing generally comprises larger units that house families with multiple children and/or multi-generational households. This is not unique to New York City. In Chicago, prior to the demolition of most of its public housing stock, many of the developments likewise contained larger units that housed larger families. Venkatesh's (2000) ethnography of the Robert Taylor Homes portrayed the stark compositional differences: public housing units had an average household size of 6.3 persons, including 4.3 minors, compared to 1.2 minors per household for Chicago overall; at initial lease-up, 20,000 of the 27,000 residents of the Robert Taylor Homes were under age 18.

In contrast, affordable housing is developed in such a way so as to mirror the housing stock of the broader neighborhood. Term sheets offer guidance on the design of newly constructed buildings and suggest that only half of the affordable units should be two- and three-bedrooms (with the remainder comprising smaller units) and in reality, the distribution tends to skew even smaller (Rippetoe 2019). In mixed-income housing with market and affordable units, the affordable units generally follow the same distribution as market units in the building (NYC Department of Housing Preservation and Development 2020). Thus, if the market units are all one- and two-bedrooms, so too must the affordable units. This was intended to ensure that affordable housing residents benefited similarly to market-rate tenants and were not

stigmatized;²⁵ however, it also often means that few larger families are able to live in the subsidized units within mixed market-affordable developments. This also means that families with young children are limited in the opportunities to move to the highest income neighborhoods where mixed-income/inclusionary housing is often the only affordable housing stock being developed.

DISCUSSION

Affordable housing production has expanded dramatically over the past three decades and is now a commonplace strategy for addressing the needs of low-income households in most US cities. While it shares certain characteristics with public housing and tenant-based voucher programs, it also differs in important ways. Rent levels are fixed to ensure that developments have sufficient income to cover maintenance and operating costs, rather than adjusted to accommodate changes in tenant income. While this may ensure better quality over time than public housing, it also means that affordable housing residents may experience higher levels of rent burden—particularly if they face income volatility. Like vouchers, affordable housing relies on the participation of private for-profit or non-profit owners to house low-income tenants; however, affordable housing ensures compliance on a building-wide basis through the use of regulatory agreements, zoning rules, and/or tax benefit programs.

Perhaps most important, affordable housing serves an incrementally higher-income population that is less dependent upon other forms of public assistance. When developments are located in higher-poverty areas, such investments may help to deconcentrate poverty by inducing

²⁵ It is also easier (and less expensive to private developers) to build such buildings since the design of buildings does not have to be altered to accommodate larger units than would have otherwise been planned in an entirely market-rate development.

compositional change. However, it also may mean that the population served through affordable housing is less in need than those in the lowest income strata. In the chapters that follow, I evaluate how affordable housing impacts the low-income, working households on various dimensions of housing and neighborhood compared to a comparable group of households who do not benefit from affordable housing.

CHAPTER FOUR. THE NEW YORK CITY HOUSING AND NEIGHBORHOOD STUDY

The New York City Housing and Neighborhood Study (NYCHANS) is a multi-site randomized control trial (RCT) that evaluates the impact of newly constructed affordable housing units on the health and well-being of low-income recipients. It is a natural experiment that leveraged the City’s existing housing lottery system to identify two comparable groups: those who were offered housing (“treatment”) and those who were eligible but not offered housing because demand exceeds supply (“control”). NYCHANS was designed to estimate the average differences that result from being offered affordable housing on a range of key outcomes including physical health, mental health, health behaviors, housing conditions, financial stability, social networks, and neighborhood context. For the subset of households that applied to live with one or more child, it also assessed caregiver, family, and child outcomes. Study sites were selected to facilitate pooled analysis across sites as well as subgroup analysis along three dimensions: income-mix, building design, and neighborhood poverty level.

In this chapter, I describe my approach to measurement and inference. Although it has become standard practice to develop a pre-analysis plan and register social experiments, NYCHANS began in 2008 before the adoption of these norms. Nonetheless, the main outcomes, hypotheses, and general analytic strategy were documented in the original grant proposals, which were submitted (and funded) prior to the start of follow-up data collection.¹ In what follows, I provide details on random assignment, the central feature that ensures the study’s internal validity, including a description of the housing lottery and its use in NYCHANS to identify

¹ See NIH R01 HD065142 (PI: Brooks-Gunn), NIH R01 HD066223 (PI: Brooks-Gunn), MacArthur How Housing Matters Grant HHM-96281 (PI: Gaumer), Doris Duke Charitable Foundation 2012143 (PI: Brooks-Gunn), and HUD H-21613CA (PI: Gaumer).

treatment and control groups and balance checks to assess any differences between groups at baseline. I also detail data sources and field procedures at baseline and follow-up, sample attrition, the handling of missing data, and my analytic approach to experimental comparisons and subgroup analyses, including adjustments to address the threat of type I error that arises from multiple testing.

THE HOUSING LOTTERY

Since the 1980s, New York City has allocated newly constructed affordable housing through a lottery.² The lottery process remained the same from at least the early 2000s through July of 2020. This process, which was used to allocate housing at the NYCHANS study sites, is detailed below.

Interested households applied to a particular site using a standardized application that was submitted by the published deadline. Each application was assigned a random number shortly after the deadline, which determined the queue for being offered housing later on in the process. Applicant households underwent a two-stage eligibility screening process. First, households were assessed based on the self-reported information provided on the housing application. Second, households were invited for a face-to-face screening interview where they submitted required documentation, such as tax returns or pay stubs, that proved eligibility.³ Rejected applicants could appeal the decision; if accepted, the household re-entered the queue without penalty (i.e.,

² Through 2011, the housing lottery was based on paper applications; from 2012 on, the lottery was done electronically, with applications submitted via a web portal. The underlying process remained essentially unchanged. For additional details on the lottery process, please visit: <https://www1.nyc.gov/assets/hpd/downloads/pdfs/services/marketing-handbook.pdf>.

³ Eligibility requirements and corresponding documentation varied from one site to the next, but were uniformly applied to all lottery applicants at a given site.

they retained their original placement in the queue). Each developer or its agent conducted the screening and allocation of housing, but all followed a prescribed process that was overseen by the housing agency.⁴ As part of this oversight process, no applicant was offered housing prior to review and approval by the agency.

Generally, only a small fraction of households that passed the first screening were invited for the face-to-face interview, as this was a burdensome process for both applicant and developer. The exact number of households invited for the second screening interview varied according to developer resources, timing, and share of applicants that were expected to pass the second screening; however, the allocation of housing was limited to eligible households (those that had successfully passed both screenings) and the offer of housing was sequenced according to the order determined by the lottery number assigned at the beginning of the process; thus, random assignment did not vary based on the efficiency of the interview process.⁵ For NYCHANS, every applicant who passed the first and second screening for the affordable units in the study was classified as eligible for housing and their assignment to treatment or control group was independent of how large the lottery-turn out, how many applicants passed the screening process, or the length of time it took to complete the lottery and lease-up.

Each site prioritized a share of available units for certain types of applicants. Seven percent of units were set-aside for those with a disability—five percent for mobility, and two percent for visual and/or hearing. Half of the units were prioritized for eligible applicants who

⁴ Individual developments/lotteries were overseen by either the NYC Department of Housing Preservation or the Housing Development Corporation, both of which follow the same lottery and lease-up process.

⁵ The fact that some developers assessed households further down the queue than others resulted in a differential ratio of treatment to controls across sites.

resided in the same community⁶ where the development was located and five percent were prioritized for municipal employees. Priority for all units was given to current New York City residents.⁷ All remaining eligible applicants who were not offered housing through a set-aside or a community or municipal employee “preference” were considered for the remaining units.⁸

Eligible applicant households were sorted along two dimensions: according to unit-types for which they qualified based on household size and income criteria⁹ and according to the set-aside and preference(s) for which they qualified. Eligible households were offered housing based on the random number assigned, from the lowest to highest number, first among those that were eligible for set-asides and then among those eligible for one or more preference until such priorities were filled. The remaining units were then allocated within unit-types, again based on the random number assigned, until all units had been filled. Eligible households that were not offered housing were “next in line” for housing, at initial lease-up as well as later on if any

⁶ The community preference is based on residence in the same Community District, an administrative boundary that is closely approximated by Census Bureau Public Use Microdata Areas (PUMAs). There are 59 Community Districts in New York City and 55 PUMAs.

⁷ Although non-New York City residents may be eligible for housing, the large number of city residents that apply to the lottery means that it is rare for anyone outside of New York City to be awarded housing through this process. Everyone identified as treatment and control at the thirteen NYCHANS sites was a New York City resident at the time of application for housing.

⁸ Any eligible applicants that qualified for a set-aside and/or preference that was not offered one of these units were considered for the remaining units along with those that did not qualify for the set aside and preferences.

⁹ Individual units at a given site have specific eligibility criteria, including minimum and maximum household sizes and incomes ranges. This varies by site, but is published as part of the public notice soliciting applications to the lottery. In cases where the applicant has a voucher, they may qualify for an affordable housing unit that would otherwise be designated for a higher-income household. In these cases, a tenant pays the required 30 percent of income toward the rent and the voucher covers the remainder of the subsidized rent required as part of the regulatory agreement.

household moved out of the select affordable housing unit.¹⁰

Figure 4.1 shows a schematic of the lottery and lease-up process using a simple example of a 10-unit building with only one priority type of up to 50 percent of available units (applicants who are eligible for this priority are indicated by a black circle). In this example, the lottery produced 20 eligible applicants (8 of whom were eligible for the priority and 12 of whom were not). For simplicity, it is assumed that all 20 applicants passed the first and second screening and were therefore eligible for housing and assigned to treatment or control at the conclusion of the lease-up process. In practice, some applicants would be deemed ineligible and their lottery numbers would be removed from the queue. For example, if Number 3 were deemed ineligible, the sorted number list in Stage 2 would be sequenced as 1, 2, 4, and so on.

The lease-up or allocation of units occurs after the lottery (Stages 3 through 7). In Stage 3, applicants are sorted in numeric order along two dimensions: by the unit-type for which they qualify (A, B, or C) and priority status (black or white circles). In Stage 4, priority applicants are offered housing first, based on the queue, up to the maximum number of units specified for a given set-aside or preference category in that building. In this example, there is a 50 percent priority, or 5 units, so the first 5 priority applicants are offered units in sequence (here, applicants 3, 8, 11, 12, and 16 in that order). If there were not enough applicants to fill the priority, all remaining units would be filled in Stage 6. Here, if there were only four applicants, then only 4 units would be filled with a priority; or, if all eight priority applicants were only eligible for Type A units, then only 3 units would be filled with the priority.

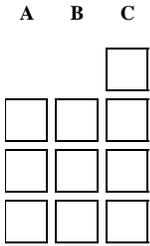
¹⁰ Eligible households that are not offered housing during the initial lease-up may remain on a waiting list for future vacancies; however, the household is generally required to express continued interest and must re-qualify prior to lease-up.

Figure 4.1: Lottery and Lease-Up Process

LOTTERY

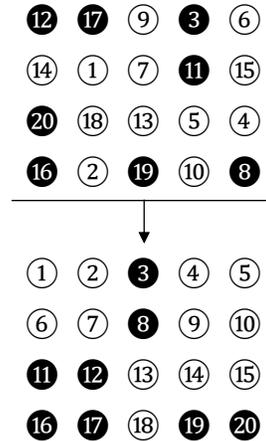
1.

A lottery is held for a building with 10 affordable units. The building has 3 unit types: A, B, and C.



2.

The lottery results in 20 applicants (here, all are eligible): 8 priority (in black); 12 non-priority (in white). Each applicant is assigned a random number.

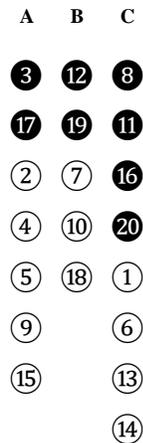


Applicants are sorted in random number order to form the queue (i.e., 1-20).

LEASE-UP / ALLOCATION

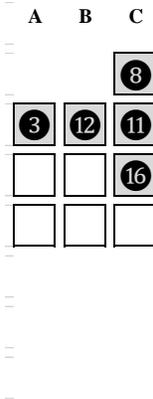
3.

Applicants are sorted by unit-type and random number; priority comes first, followed by non-priority.



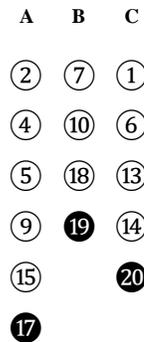
4.

Priority applicants are offered units in order of their random number up to maximum preference (here, 50% or 5 units).



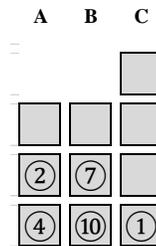
5.

Remaining applicants are re-sorted by random number and unit-type (regardless of priority).



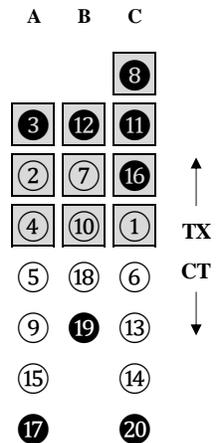
6.

Remaining units are offered in order of their random number.



7.

Final housing allocation and identification of "treatment" and "control."



In Stage 5, the queue is re-sorted so that all remaining applicants are ordered according to the random number assigned by the lottery. Any applicants who were eligible for a priority group

but were not offered a unit are considered for the remaining units along with all applicants who did not qualify for a priority. In this example, applicant 17 was eligible for a priority and was originally 2nd in line for a Type A unit in Stage 3; however, the priority was filled before 17's number was reached; therefore, they continue in the process but are now lower down in the queue for Type A units. In Stage 6, all remaining units are offered to applicants that qualified for that unit-type based on the queue defined in Stage 5. Here, applicants 2 and 4 are offered Type A units, applicants 7 and 10 are offered Type B units, and applicant 1 is offered the last remaining Type C unit. If applicant 1 declines the offer of housing, then applicant 6 who is next in line would be offered that unit.

SAMPLING FRAME

NYCHANS includes thirteen affordable housing developments (“study sites”). The research team followed the lottery for each of these sites, but did not alter the lottery or housing allocation process in any way. Identification of treatment and control households relied on information from the housing developers that was obtained only after the lease-up of the site was completed. The experience at the NYCHANS sites is typical for affordable housing lotteries in New York City, where demand far exceeds supply and where eligible households represent a small fraction of the initial applicant pool (lottery turn-out).¹¹

At each study site, the research team compiled a list of all households that were eligible for the affordable housing units allocated through the housing lottery (n=3,945 households).¹²

¹¹ Across the thirteen study sites, a total of 176,129 applied for housing. Of these, 94,847 (54%) passed the first screening and only 3,945 (2%) passed the second screening and were deemed eligible for housing.

¹² At some study sites, additional units were leased without the use of a housing lottery, such as those for formerly homeless households or market rate units within the same development. These are excluded from NYCHANS.

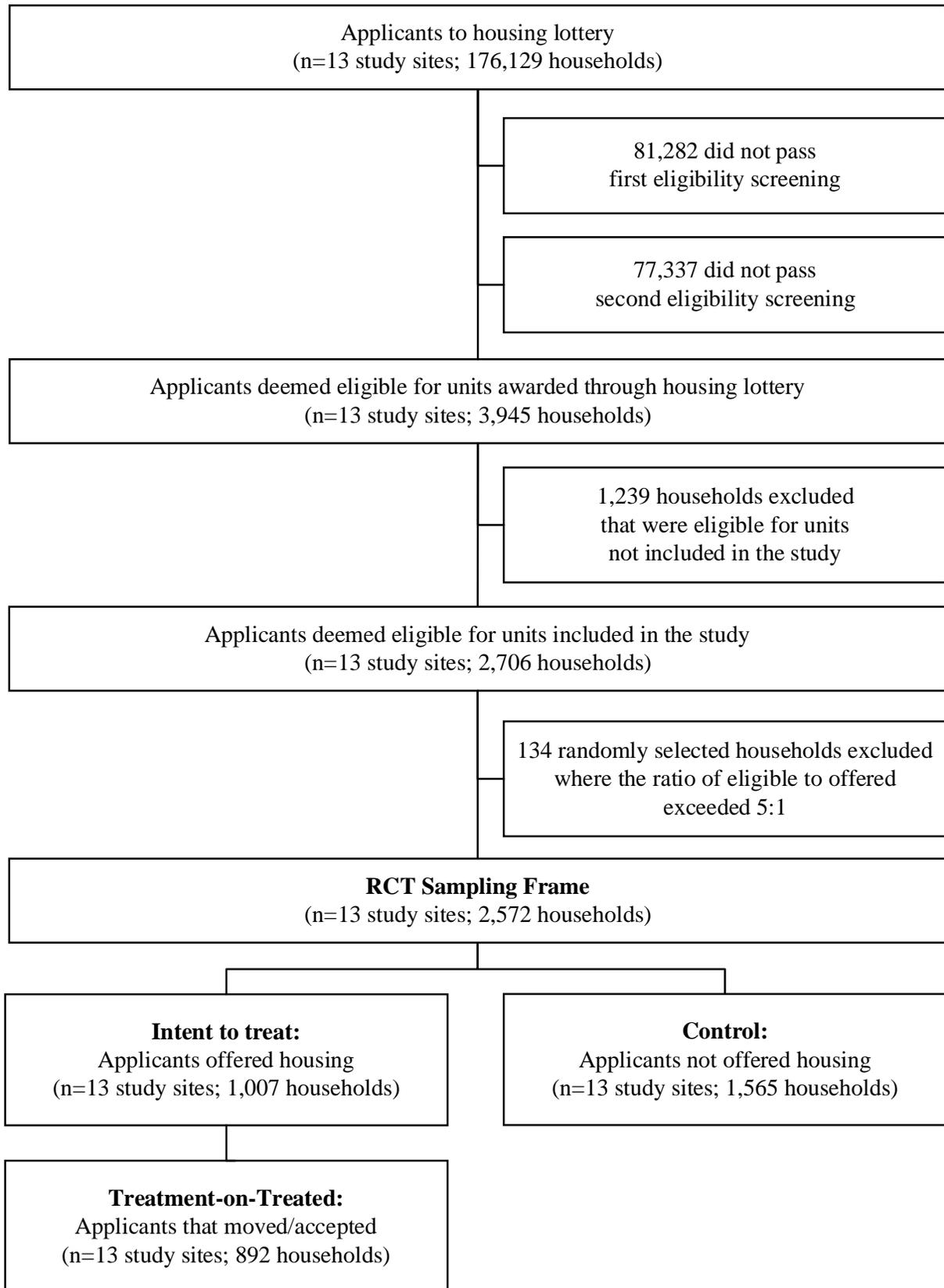
Several types of units at these sites were outside the scope of NYCHANS, including affordable housing units targeted to higher-income households (those earning above 80 percent of HUD Income Limits) and certain sized units at specific study sites. Larger units at one study site and smaller units at three study sites were excluded to achieve a more consistent mix of unit types across sites.¹³ All households deemed eligible for these units (whether or not they were offered a unit) were excluded from the NYCHANS frame (n=1,239 households), narrowing the full list of households to only those that were eligible for the low-income units included in the study (n=2,706 eligible households). Figure 4.2 shows the inclusion and exclusion criteria used to define the NYCHANS sampling frame, by group assignment.

All households that were offered one of the units in the study were designated as treatment, regardless of whether the households accepted the offer or moved into the unit. This follows a standard intent-to-treat approach, although the research team also identified treatment households that accepted the offer of housing for treatment-on-treated analyses. At most sites, all households that were eligible for those same units but not offered housing were designated as controls. At two sites, the lottery produced a disproportionate number of eligible households for a given unit type (in some cases more than 25 controls for each available unit/treatment household). At these sites, a subset of eligible households that were not offered housing was selected as controls, excluding a total of 134 cases.¹⁴

¹³ Three-bedrooms at one of the moderate-poverty sites were excluded due to the number of larger units already enrolled in other study sites in similar neighborhoods. Studios and one-bedrooms were excluded at three low-poverty sites due to the number of smaller units already enrolled in other study sites in similar neighborhoods. These exclusions were operationalized based on the household size of eligible applicants that would render them eligible only for these unit-sizes.

¹⁴ Households were selected for inclusion or exclusion based on the original lottery number used to determine the queue for housing. For each unit type, households with the lower lottery number were retained in the sampling frame and those with the highest number were excluded.

Figure 4.2: Identification of Treatment and Control Households



This was done to reduce operational costs related to contact tracing and data collection. A total of 2,572 households comprise the sampling frame for the RCT across the 13 sites, including 1,565 control households and 1,007 treatment households. Of the 1,007 that were offered housing, 892 (88.6 percent) accepted the offer.

WEIGHTING

Conceptually, there are at least two estimands of interest: one that estimates the average treatment effect of being offered an affordable housing *unit* at the individual- or household-level and one that estimates the average treatment effect of affordable housing *developments* of various types or locations. The first is most appropriate for understanding how housing conditions affects downstream *individual* outcomes, such as asthma, or *household* outcomes, such as financial stability. The latter may be appropriate for understanding if certain policy decisions that are applied at a building- or project-level, such as siting practices or design standards, produce a differential treatment effect. NYCHANS data include two sets of weights to facilitate either approach. Both weights are based solely on sampling frame data and are independent of any participation rates at follow-up.

The *household weight* adjusts for the group assignment ratio within sites and ensures that treatment and controls contribute equally to the group means. Overall, the group assignment ratio was about 1.6 controls for each treatment household; however, this varied by site and ranged from as few as 0.8:1 to as many as 5:1 across study sites. Because this is a natural experiment, the group assignment ratio was not controlled by the research team. Instead, individual lotteries produced differential ratios based on a combination of factors, including lottery turn-out and the target ratios used by different housing developers to screen housing applicants. To account for

this variation, data are weighted to ensure that the ratio of treatment and control cases is the same (1:1) within each site. This was operationalized by weighting the controls such that they equaled the number of treatment cases within each site.

The *site weight* incorporates the household weight and also adjusts for differences in the number of affordable housing units across study sites. Sites varied in the number of available affordable rental units, from as few as 25 to more than 150. In order to ensure that no one site is given more leverage than others, data are weighted to ensure that the proportion of cases is the same across all study sites. This was operationalized by multiplying the number of cases at a given site by $1/(\text{total sample}/13)$. This ensures that each of the thirteen study sites contribute equally to the group means, rather than large and small sites contributing disproportionately.

Although each study site held one housing lottery, the selection of applicants to receive housing is implemented according to lottery / randomization process described above. To account for this randomization method, a set of dummy variables were created for each applicant household that indicates whether or not they were eligible for each unit type that was available at the study site to which they applied (e.g., A, B, or C in Figure 3.1) as well as whether the household was eligible for a set-aside or preference (e.g., black versus white circles in Figure 3.1). Although voucher-holders do not receive priority in the lottery, they are not subject to the same minimum income levels when assessing eligibility; therefore, additional dummy variables were created for voucher-holders based on alternative minimum income requirements. These variables are included in all experimental models to adjust for the probability of random assignment by type of applicant household.

STUDY SITE SELECTION

NYCHANS's thirteen study sites are located in six neighborhoods in Manhattan, Brooklyn, and the Bronx. These study sites were newly constructed rental developments built between 2007 and 2013.¹⁵ This includes about 900 low-income units ranging in size from studios to three-bedrooms; income eligibility ranged from 40 to 80 percent of HUD Income Limits.¹⁶

Study sites received a combination of city subsidy, low-cost acquisition and construction financing, LIHTC, city tax benefits, zoning bonuses, and/or city-owned land in exchange for creating units that were priced at a level that would be affordable to households within prescribed income levels. In exchange, developers typically entered into a regulatory agreement that lasts a variable amount of time, depending on the financing received and the affordability level (i.e., the target income group) of the units. The regulatory period for the study sites included here range from 15 years to a “permanent affordability” requirement that lasts 50 years. In some cases, affordable units were developed without subsidy through such programs as Inclusionary Zoning or tax incentive programs. In these cases, developers are not always subject to a regulatory agreement, but instead gained the ability to build more market-rate units than otherwise would have been allowed without the creation of affordable units. Depending on the financing or program requirements, affordable rental units serve different income levels and they may make up the entirety of the units within a given building or be integrated along with market-rate units.

¹⁵ Based on the deadline for the housing lottery to the study sites. Actual construction began prior to the lotteries and generally completed within a year of the lottery deadline.

¹⁶ In Fiscal Year 2020, this is equivalent to between \$37,560 and \$75,120 for a family of three; however, a household with a voucher may earn less than the minimum income to qualify for a unit. Actual income eligibility criteria were determined based on the year of the housing lottery for that development.

The NYCHANS study sites are not exhaustive in the sense that not every development or lottery within the timeframe of the study was included, nor are they representative of all affordable housing developments since sites were not selected systematically from all possible projects. Nonetheless, the sites selected are generally similar to other affordable housing developments of their kind in terms of financing, income mix, and unit size distribution, are located in the same geographic areas where other affordable developments have been built, and are sponsored by large, professional affordable housing developers that have built multiple sites throughout the City over time.

Study sites were selected based on the timing and size of the lottery pool as well as individual features of the building.¹⁷ The research team began by identifying all sites with a lottery during the initial NYCHANS enrollment period (2007 through 2013). Only sites with a sufficient lottery turn-out¹⁸ and those with a developer that was willing to participate in the study¹⁹ were considered for inclusion. While the primary purpose of NYCHANS is to estimate the average impact of being offered affordable housing, it also sought to identify subgroup variation by type and location of affordable housing developments. For this reason, the final selection of study sites was based on a combination of three characteristics: location, income-

¹⁷ Different funding streams supported the inclusion of certain types of housing. For example, a grant from the Doris Duke Charitable Foundation (PI: Brooks-Gunn) supported the inclusion of sites with co-located childcare centers and financed the Child Supplement sites. A grant from the MacArthur Foundation (PI: Gaumer) and a NIH supplement through OBSSR (PI: Brooks-Gunn) supported the inclusion of study sites designed to support healthy living.

¹⁸ Generally, NYCHANS required a lottery turn-out of at least 100 applicants for each available unit. Some additional sites were recruited into NYCHANS that later were excluded because the lottery, while large, failed to produce a sufficient number of control households.

¹⁹ Developers were recruited to participate because NYCHANS required access to administrative records retained by the developer (i.e., from the lottery and screening process). Some developers declined to participate due to the additional staff time and costs associated with participation. Developers and their agents were not compensated for participation.

mix, and health-focused design features.²⁰

Study site classifications are not mutually-exclusive; therefore, the study design assumes that sites will be pooled according to the specific analysis being performed (e.g., mixed- versus low-income *or* low- versus moderate-poverty sites, and so on). Table 4.1 shows the number of study sites and units in each of these categories as well as number of households assigned to treatment or control within these sites.

Table 4.1. NYCHANS Study Sites, by Subgroup²¹

Study Site Typologies	Study Sites	Units	Sampling Frame		
			ITT	Control	Total
Neighborhood poverty level					
Low (<15%)	6	459	487	647	1,134
Moderate (15-40%)	7	433	520	918	1,438
Income-mix					
Mixed-Income	6	355	401	691	1,092
Exclusively low-income	7	537	606	874	1,480
Design Features					
LEED-certified / active design	6	404	450	642	1,092
Standard design features	7	488	557	923	1,480
Total	13	892	1,007	1,565	2,572

Neighborhood Location

Study sites were selected to represent a range of neighborhoods, including those with higher-and lower-poverty rates. Wherever possible, at least two sites were selected in each Community District. Sites are intended to be pooled into two neighborhood types for subgroup analysis: those in low-poverty tracts (defined as being in a tract with a poverty rate of less than 15 percent at baseline) and those in moderate-poverty tracts (in tracts with a poverty rate of 15

²⁰ Separate funding supported a study of affordable housing developments with co-located childcare centers; however, these are not part of the RCT.

²¹ Unit counts reflect the total count of units included in the study. All counts presented here are unweighted.

percent or higher).²² Table 4.2 shows the neighborhood characteristics of NYCHANS sites at baseline.

Table 4.2: Baseline Census Tract Characteristics of NYCHANS Study Sites

Tract Characteristics of Study Sites at Baseline	Baseline Poverty Rate		All
	<15%	15-40%	
Total population in tract	2,120	3,685	2,928
Total number of households in tract	988	1,308	1,153
Racial/ethnic composition			
Share of tract that is White, non-Hispanic	33%	9%	21%
Share of tract that is Black, non-Hispanic	23%	40%	32%
Share of tract that is Hispanic	28%	46%	38%
Share of tract that is Asian, non-Hispanic	12%	3%	8%
Share of tract that is an Other race, non-Hispanic	4%	1%	3%
Share of tract that is minority	67%	91%	79%
Tract poverty rate	13%	38%	26%
Share in tract with <10% poverty	6%	0%	3%
Share in tract with 40%+ poverty	0%	59%	30%
Tract median household income	\$67,917	\$28,274	\$47,446
Share of tract receiving cash assistance and/or SNAP	12%	34%	23%
Share of tract that is unemployed	5%	5%	5%
Share of tract that is female-headed with minor child(ren)	17%	35%	26%
Index of Concentration at the Extremes (ICE)			
Average ICE score: Race and Income	0.04	-0.38	-0.18
Average ICE score: Income	0.07	-0.39	-0.17

Source: American Community Survey 2009-2013

Data are weighted based on the number of cases in a given study site/tract.

Income-Mix

The thirteen NYCHANS sites include both mixed-income and exclusively low-income developments. For the purposes of the study, mixed-income was defined as having low-income affordable units targeted to households under 80 percent of HUDIL (those included in the study) along with other units in the same building that were either market-rate (no income restrictions)

²² Estimates on tract-level characteristics are averaged across study sites. Tract-level data are not shown for individual sites due to disclosure avoidance requirements of NYCHANS, as tract-level information for a single development may lead to identification of specific buildings enrolled in the study.

or income-limited units targeted to those about 80 percent of HUD Income Limits.

Developments categorized as exclusively low-income were buildings that entirely served households below 80 percent of HUD Income Limits; in cases where there were multiple income groups, all had to be targeted to those earning less than 80 percent (e.g., a combination of 40 percent and 60 percent units).

Health-focused Design Features

To assess any differential impact of affordable housing that incorporates design features and facilities intended to improve health of its residents, NYCHANS recruited both LEED-certified buildings as well as those without any specifically health-promoting elements. LEED is a certification program governed by the United States Green Building Council. It includes several levels of rating, from ‘LEED-certified’ through ‘Platinum.’ All LEED buildings utilize environmentally sustainable building practices and must meet a minimum set of qualifications or points. Over time, LEED has expanded beyond ‘green’ buildings to also focus on healthy living. Points are awarded for a range of design features and amenities that promote healthy living, such as the emphasis on stair utilization over elevator use, incorporation of common green space with supports for active and passive recreation, building bike rooms, and/or smoke-free facilities.

Select NYCHANS sites are certified LEED-Gold or higher and include a variety of these features, such as co-located gyms (free as well as membership-based), community gardens, and ventilation systems meant to improve indoor air quality, reduce energy use, and increase natural sunlight. Although New York City now has minimum sustainability requirements for all newly constructed affordable housing, NYCHANS recruited sites prior to the implementation of these standards. Study sites that are not LEED-certified represent standard building and design practices and are not certified as sustainable or ‘green.’

DATA SOURCES

NYCHANS utilizes various data sources, including administrative records, a baseline survey administered at select study sites, and follow-up interviews with members of participating households conducted four to seven years after random assignment. These data are supplemented with census data merged to the residential address of treatment and control households at baseline and follow-up.

Administrative Data Capture

Information from the original housing application and screening process was obtained by the researchers from two sources: the housing application and the screening file compiled by the housing developer that oversaw the lottery and tenant selection. Select data were keyed from the paper application and screening files by the NYCHANS team at the New York City Department of Housing Preservation and Development (HPD). For the subset of study sites that conducted online applications, housing application data were obtained from the HPD marketing database, Housing Connect. Data include the original household size and self-reported income, the self-reported eligibility for the set-asides and preferences, voucher status at time of application for housing, household composition, and originating address. It also included data on which households had been offered a unit and which had accepted the offer as well as eligibility for various follow up data collection components (especially whether the applicant applied to live with one or more child). Data are available for the entire sample ²³ and were used to identify group assignment.

²³ Group assignment data were available for 100 percent of cases. A small number of application files could not be located at the developers' offices (n=X). These cases were rendered out-of-scope for the follow-up data collection that required cases to be stratified by presence of one or more child at time of application for housing. See details in Follow-Up Data Collection Procedures for details.

NYCHANS Baseline Survey

A baseline survey was administered at select study sites to assess the conditions of households applying to affordable housing and to test balance of treatment and control groups on secondary dimensions of household composition, financial stability, housing, neighborhood, social support, and health. The survey was administered at eight study sites as a paper-and-pencil self-administered questionnaire (SAQ).²⁴ These data were collected separately from the more limited battery of information obtained from the housing application and developer's eligibility screening of applicant households discussed above.

Baseline survey data were collected just prior to the screening interview at developers' offices in English and Spanish and in large-format text for those with low vision. Written informed consent was obtained for one adult from each applicant household and were later limited only to those respondents who were the primary applicant²⁵ on the original housing application.²⁶ Recruitment was by researchers at HPD and every effort was made to clearly delineate the researchers and survey from the screening interview for which the households were waiting to complete. No information from the surveys (including whether a household participated or not) was shared with the housing developer or their agents. Surveys and consents were sealed in separate envelopes, one for each participant, until after the lease-up of the affordable housing site was completed. Data were then opened and processed, including double keying of survey responses. Baseline data collection protocols were approved by the Institutional Review Board at Teachers College and the legal division at HPD.

²⁴ The SAQ was administered at an additional 5 sites that were not included as part of the RCT.

²⁵ The primary applicant was the individual who completed the housing application; this person is treated as a proxy for head of household.

²⁶ This was operationalized by comparing the name on the consent form with the name on the initial housing application.

At the time of the baseline survey, it was not yet known which household would be deemed eligible for housing.²⁷ This survey was therefore administered to all households that appeared for an interview (n~16,000); data presented here are only for the subset of participants later identified as treatment or control (n=2,019). At the RCT study sites where the baseline survey was administered, this represents a response rate of 77.6 percent (79.8 percent among treatment households and 75.3 percent among controls). Response rates for treatment and control groups were not statistically different (p=0.65).

NYCHANS Follow-Up Interviews

Follow-up interviews were conducted approximately four to seven years after group assignment to evaluate various household- and individual-level outcomes of interest. One adult from each household that did *not* apply to live with a child was recruited to participate in a 60-minute face-to-face interview (“Householder Interview”). Interviews were conducted primarily at respondent’s homes, but could be completed in another private setting at the request of the participant. Questions were administered by a combination of Computer-Assisted Personal Interview (CAPI) and both interviewer- and self-administered cards to capture data that were complex (e.g., residential history of addresses and household compositions), sensitive (e.g., mental health), or visual in nature (e.g., respondent drawings of their neighborhood boundaries).

²⁷ Information on eligibility and final disposition of the housing applicants remained unknown by the research team until after lease-up was completed. This was done to ensure the researchers remained blinded and did not influence the outcome of the housing lottery in any way. All baseline surveys remained sealed until certification of lease-up was obtained and an affidavit by the HPD project lead (Gaumer) was signed; this process was overseen directly by HPD’s General Counsel. After certification, surveys were data entered and processed, including confirmation that the adult who provided informed consent for the baseline survey matched the name of the primary applicant for the housing lottery. Surveys that did not match were set aside and excluded from analysis.

For households that applied to live with one or more child, NYCHANS recruited a primary caregiver for a 90-minute face-to-face interview (“Caregiver Interview”). To reduce interview time, caregivers were randomly assigned²⁸ to one of two paths; each path contained a subset of questions from the Householder Interview that were divided between the two paths. Additional questions about caregiving, children, and family life were asked of all caregivers, regardless of path. Caregiver Interviews were administered at the project’s offices at HPD or, in a small number of cases, at the participant’s home. Those caregivers who completed the interview in the project’s offices had height, weight, and blood pressure measurements taken.

Caregivers who were unable to complete the full 90-minute interview were offered a short-form version of the questionnaire that captured key outcomes only. The short-form interview took about 25-minutes to complete and was administered as a computer-assisted self-interview (CASI) using a tablet interface. This could be completed at any location, but primarily was administered at the respondent’s home. All participating caregivers were separately administered written informed consent to access select administrative data from New York City Department of Education public school records and to recruit eligible children in the household.²⁹

NYCHANS also recruited up to two children per household³⁰ that were ages eight to eighteen at the time of follow-up interview. Children ages eight to thirteen were asked to participate in a 30-minute interview (“Child Interview”); teens ages thirteen to eighteen were

²⁸ Assignment to interview path was determined in advance of data collection such that the timing or sequence of interviews did not alter the likelihood of being assigned to one path or the other.

²⁹ The sub-study linking to Department of Education records was funded separately (PI: Ingrid Gould Ellen).

³⁰ Only children that were listed on the original application were eligible to participate. For households with more than two children, NYCHANS gave priority to the oldest child. In cases where the household’s oldest children were triplets, participants were selected based on order of birth beginning with the first born.

asked to participate in a 45-minute interview (“Teen Interview”). Children and teens were only interviewed if the caregiver completed an interview at the project’s offices, as all children were required to be interviewed at the office while a parent or legal guardian was present.³¹

Children/teens for whom the caregiver gave consent were asked to assent to be interviewed.

Caregivers and teens were separately asked to consent/assent to an actigraphy supplement where they were asked to wear a consumer actigraphy device for a period of seven days immediately following their interview to gather data on physical activity and sleep (see Gaumer et al. (2019) for details). Caregivers who completed the short-form interview were not eligible for the actigraphy supplement, nor were their teens.

Data collection was conducted by researchers at HPD and all protocols were approved by the Teachers College Institutional Review Board and HPD’s legal department. All interviews were offered in English, Spanish, Mandarin, Polish, and Russian. All participants received an incentive for participation (householders, caregivers, children, and teens); incentives varied by type of interview and ranged from \$60 to \$120; a separate incentive was provided for completing the actigraphy supplement (\$120). (See Waickman et al. (2019) for additional details on field procedures.)

As this is a natural experiment, study participants knew whether they had been offered affordable housing or not, which may have produced response bias at follow-up. The interview staff also knew the status of participants at follow-up, as recruitment (and in many cases, interviews) were conducted in respondent’s homes and their homes were either at a treatment site

³¹ These procedures were put in place to ensure the safety of minors. Interviews at the project offices allowed for the presence of a senior staff member who served as a mandated reporter. It also allowed for additional privacy protections for child participants, as the interview rooms were secure areas that could be viewed by the parent or legal guardian through glass, but not heard.

or not. The investigator team took care to shield the interview team from any knowledge of the hypothesized mechanisms or anticipated outcomes from the interview team. They also created recruitment scripts that were used with both treatment and control groups, focusing on the invitation to participate in a study about affordable housing, their eligibility because they had applied at some point in the past, and the use value of the study findings for generally improving the City’s policies and programs related to affordable housing. At no time were participants told that they were part of an RCT or that they were acting as “treatment” or “control” to assess the impact of housing as part of an experimental study.

Response Rates

Table 4.3 shows the household-level response rates at follow-up, by group assignment. Overall, 71 percent of all adult households participated (72 percent among treatment and 71 percent among controls); these rates did not differ statistically (p=0.72).

Table 4.3: Response Rates for 4-7 Year Follow-Up

Final Disposition	Households (n=13 sites)		
	Tx	Ct	All
Completed Interview	652	936	1,588
Refused	216	342	558
Out-of-scope	104	245	349
Not located	35	42	77
Total	1,007	1,565	2,572
Response rate	72.2%	70.9%	71.4%

Households were deemed out-of-scope for follow-up interviews if all of the adults on the initial housing applications were deceased, incapacitated or ill such that they could not provide informed consent, did not speak one of the five languages in which interviews were conducted (English, Spanish, Mandarin, Polish, or Russian), or had moved a distance of more than 50 miles outside of New York City. Households were also deemed out of scope if administrative data

from baseline were unavailable or lost by the housing developer, as these households could not be screened for the type of unit for which they were eligible or whether there was one or more child on the housing application.

Compliance, Contamination, and Interference

As shown in Figure 4.2, approximately 90 percent of households offered affordable housing accepted the offer. At the time of follow-up interview, 95 percent of these were still living in affordable housing.³² Very few of the control households had applied to and been accepted for housing at another study site (n=7 households) and few later moved to affordable housing where they had been too low in the lottery queue to initially be offered housing (n=2 households).

GENERAL ANALYTIC STRATEGY

The main analyses estimate the average difference between treatment and control groups using a standard intent-to-treat approach, which takes the following general form:

$$\hat{Y} = \alpha + \beta_1 W + \beta_i X_i + \varepsilon$$

where Y is the outcome of interest, W is a dummy for being offered affordable housing or not, and X is a set of baseline covariates that is included to increase precision. Baseline controls include the set of lottery variables described above to account for probability of selection for housing by unit type and set-aside/preference categories. All data are weighted to account for differences in group assignment ratio and size of study sites. To test any heterogeneity in

³² Based on address at time of recruitment for follow-up interview. An additional 41 treatment households were not located; thus, using the most conservative estimate, a total of more than 90 percent were still living at the study site at follow-up.

treatment effects by sub-group, the general form of the model is modified to include a dummy for subgroup membership (e.g., applied to a low-poverty site or not) and an interaction of the subgroup variable and treatment status. To aid interpretation and facilitate visualization of the findings, marginal predicted values are calculated to show the moderating effect of subgroup membership.

Baseline balance tests regress group assignment on baseline characteristics to test whether treatment and control means are statistically the same. An omnibus F-test for joint significance assesses whether the coefficients for the set of baseline characteristics are zero. Alternative balance tests are conducted by stratifying the sample according to subgroups (e.g., low-poverty versus higher-poverty sites) and then comparing treatment and control groups in the same manner. To preserve the sample size for the F-tests, missing values are recoded such that they are assigned a unique value and a dummy for missingness on each variable is included in the model.

The main experimental analyses at follow-up utilize a complete-case approach which excludes any household without valid data for the outcomes of interest (baseline controls have no missing data as they are obtained from the sampling frame) Although response rates for treatment and control group were similar and generally item non-response was low, this may introduce bias into the intent-to-treat models. For this reason, additional tests for sensitivity to attrition and item non-response use multiple imputation. These models are compared to those that utilize a complete-case approach to assess whether the findings are similar in direction and magnitude.

Multiple Testing

RCTs generally include many outcomes that follow from the hypothesized treatment effects, making it likely that some portion of outcomes will show a treatment effect due to chance alone. Although there are many possible responses to the risks of small samples sizes and multiple outcomes (Anderson 2008), these are not feasible in the context of NYCHANS. This study is a first-of-its-kind evaluation of affordable housing and therefore the benefits of its findings are to explore the various ways that this intervention shapes well-being, across multiple dimensions. Its primary contribution is to establish first order findings that may guide future research and refinement of policy and programming. For this reason, limiting the number of outcomes by creating index scores or summary outcomes or utilizing a Familywise Error Rate (FWER) adjustment that limits power and therefore the number of tests that may be performed would reduce the use value of NYCHANS. Instead, the approach used here is to include a secondary test that adjusts for the False Detection Rate (FDR) in all follow-up analyses (Benjamini and Hochberg 1995). This approach reduces the risk of Type I error while preserving the ability to test a wide set of outcomes across various domains (Anderson 2008).

BASELINE CHARACTERISTICS AND BALANCE TESTS

Baseline data (prior to random assignment) come from two sources: administrative data from the housing application and information obtained from a baseline survey administered to applicant households at eight of the thirteen study sites. Here, I present balance tests and descriptives of the socio-demographics of applicant households prior to random assignment for the pooled data (n=13 sites) and stratified by the poverty level of study sites. Additional baseline characteristics and balance tests are presented throughout the remaining chapters.

Table 4.4 presents sociodemographic information on applicant households and primary applicants.³³ Applicants to affordable housing are below the median household income in New York City, earning about \$30,000 in 2013 dollars. They tend to be small households with an average of two persons and less than half applied to live with one or more child. About 15 percent applied with a secondary form of rental assistance.

Table 4.4: Baseline Characteristics, by Group Assignment

	At time of application for housing			
	Ct Mean	Tx Mean	p-value	n
Household characteristics (A)				
Household income	\$29,744	\$30,591	0.498	2,565
Household size	2.1	2.0	0.972	2,572
Applied with voucher	15%	15%	0.379	2,572
Applied with 1+ child	39%	41%	0.005 **	2,572
Socio-demographics of primary applicant (SR)				
Race/ethnicity				
White, non-Hispanic	11%	11%	0.928	1,385
Black, non-Hispanic	42%	44%	0.751	1,385
Hispanic	35%	36%	0.939	1,412
Asian, non-Hispanic	9%	6%	0.948	1,385
Other race, non-Hispanic	3%	3%	0.661	1,385
Female	69%	67%	0.479	1,438
Age at application	37.3	36.9	0.253	1,352
Highest level of school completed				
Less than high school	7%	6%	0.653	1,428
4-year college or more	33%	35%	0.410	1,428
	F-statistic	p-value	n	
	1.05	0.404	2,572	

[^] $p < .10$ * $p < .05$ ** $p < .01$ *** $p < .001$

Sources: (A) Administrative data; (SR) NYCHANS Baseline Survey

Data are weighted to account for differential group assignment ratio within each site. Differences between treatment and control means were estimated with OLS models that regressed each variable on group assignment, controlling for a set of dummies indicating eligibility by unit type and set-aside/preference in the housing lottery (randomization blocks). The F-statistic was calculated to evaluate the joint significance of all variables shown in the table, controlling for randomization blocks; to address participation rates and item non-response in the baseline survey, missing values were recoded and models included a set of dummies for missing variables.

The vast majority of primary applicants identified as Black or Hispanic. Two out of every three applicant households were headed by a female and the average age was about 37. This is a highly educated population, with one in three having a 4-year college degree or higher and less

³³ The primary housing applicant is the individual that filled out the original housing application; this acts as a proxy for head of household or “householder.”

than 10 percent reporting less than a high school education. Table 4.5 also presents p-values and significance levels for differences between treatment and control group means on each socio-demographic variable. Baseline characteristics are generally balanced, with only the share that applied to live with one or more child showing a significant difference at a level greater than 0.10. Although the difference is significant ($p < 0.01$), the means are substantively similar at 39 percent for controls and 41 percent for treatment. An omnibus test of joint significance for all variables shown in the table fails to reject the null hypothesis that all coefficients are equal to zero ($F = 1.05$, $p = 0.40$).

Table 4.5 shows these same baseline characteristics stratified by applicants that applied to live at an affordable housing site in a low-poverty neighborhood and those that applied to a site in a higher-poverty neighborhood. Although applicants to each type of site are similar in terms of average household income and size, a larger share that applied to live in a low-poverty site applied with a voucher. They were also less likely to have applied to live with one or more child.

There are also stark demographic differences between those that applied to live in affordable housing located in different neighborhoods. A larger share of those that applied to live in low-poverty is White, non-Hispanic, a smaller share is headed by a female, they are slightly older, on average, and a larger share completed college or beyond.

Although there are substantive differences in the population that applied for affordable housing of different kinds, treatment and control groups are reasonably balanced within each subgroup. Treatment households that applied to a low-poverty site are more likely to have a secondary form of assistance ($p = 0.004$) and more likely to have applied with children ($p = 0.024$).

Table 4.5: Baseline Characteristics, by Group Assignment and Poverty Rate

	At time of application for housing					
	Applied to Low-poverty Site (<15%)			Applied to Mod-Poverty Site (15%+)		
	Ct	Tx	n	Ct	Tx	n
Household characteristics (A)						
Household income	\$29,599	\$30,490	1,131	\$29,881	\$30,686	1,434
Household size	2.0	2.0	1,134	2.1	2.0	1,438
Applied with voucher	20%	26%	** 1,134	10%	4%	1,438
Applied with 1+ child	34%	37%	* 1,134	45%	44%	1,438
Socio-demographics of primary applicant						
Race/ethnicity						
White, non-Hispanic	19%	22%	667	3%	1%	718
Black, non-Hispanic	36%	36%	667	49%	51%	718
Hispanic	31%	29%	684	39%	43%	728
Asian, non-Hispanic	12%	10%	667	4%	2%	718
Other race, non-Hispanic	2%	3%	667	5%	2%	718
Female	64%	63%	697	76%	70%	741
Age at application	39.0	39.3	647	35.4	34.5	705
Highest level of school completed						
Less than high school	7%	8%	693	7%	5%	735
4-year college or more	36%	39%	693	29%	31%	735
	F-statistic	p-value	n	F-statistic	p-value	n
	0.71	0.776	1,134	1.46	0.112	1,438

[^] $p < .10$ * $p < .05$ ** $p < .01$ *** $p < .001$

Sources: (A) Administrative data, including originating address matched to ACS 5-year tract-data (2009-2013); (SR) NYCHANS Baseline Survey Data are weighted to account for differential group assignment ratio within each site. Differences between treatment and control means were estimated with OLS models that regressed each variable on group assignment, controlling for a set of dummies indicating eligibility by unit type and set-aside/preference in the housing lottery (randomization blocks). The F-statistic was calculated to evaluate the joint significance of all variables shown in the table, controlling for randomization blocks; to address participation rates and item non-response in the baseline survey, missing values were recoded and models included a set of dummies for missing variables.

Treatment households that applied to a moderate-poverty site are marginally less likely to be headed by someone who identified as Asian, non-Hispanic ($p=0.085$) and marginally less likely to be headed by a female ($p=0.087$). Omnibus F-tests show no differences between treatment and control within each group: among applicants to low-poverty sites the p-value was 0.776 and among applicants to moderate-poverty sites it was 0.112.

DISCUSSION

The internal validity of randomized control trials, such as NYCHANS, depends on randomization to achieve two equivalent groups. While this is relatively straight-forward in a laboratory-controlled setting or when the research team controls randomization in a field experiment, natural experiments rely on a “found” method of identifying treatment and control groups. In the case of NYCHANS, the study relied on the existing housing lottery used by the City of New York. In this chapter, I detailed the use of the housing lottery and presented balance tests that show the validity of randomization both across study sites and within study sites located in low- and higher-poverty tracts.

One of the strengths of NYCHANS is that may be more generalizable than most RCTs because it is a natural experiment that relies on the same housing lottery system used to allocate thousands of units of affordable housing. The high take-up rate (90 percent accepted the offer of housing) and compliance (95 percent remained in affordable housing for the duration of the study period) offer more easily interpretable findings and reduce the effects of differential exposure or dose-effects that are common in social experiments.

Although there is continued debate over the value of randomized control trials, they remain an essential tool for producing unbiased estimates of the average effect of an

intervention—here, the offer of affordable housing. NYCHANS findings remain limited to the population being studied, the affordable housing sites enrolled in the study, and the time period in which data were collected. Like other RCTs, its purpose is to describe the effect of the intervention rather than the mechanisms that explain the effect—that is, the “what” and not “why.” In this sense, NYCHANS is an exploratory study of the impact of affordable housing that will require future research on the underlying mechanisms and replication of the study findings across different populations and periods. In the spirit of exploratory analysis, I do not limit the number of outcomes to reduce the risk of Type I error; instead, I implement a strategy to reduce the threat of multiple testing while preserving the breadth of outcomes that facilitate this first evaluation of the impact of affordable housing on the well-being of the low-income population it serves.

CHAPTER FIVE HOUSING AFFORDABILITY AND QUALITY

While there has been a sustained focus on whether various forms of housing assistance promote access to better neighborhoods (Ellen et al. 2016, 2018; Lens et al. 2011) and the barriers to such mobility (Bergman et al. 2019; Rosen 2017), less attention has been paid to whether such programs improve the immediate housing conditions of recipients. These factors shape health and well-being in various ways, independent of the community in which it is located (Acevedo-Garcia et al. 2004; Hernandez 2016; Lubell et al. 2007) and merit attention in their own right as a key goal of housing assistance (O'Regan 2017).

Poorly maintained housing can increase exposure to environmental hazards and unsafe conditions (Acevedo-Garcia et al. 2004). High rental costs can deplete limited economic resources and reduce spending in other critical domains (Newman and Holupka 2012). The layout of hallways, stairwells, and mail rooms, coupled with disinterested or absent management, can provide space and opportunity for illicit behavior to occur unchecked (Venkatesh 2000). The socio-demographics of residents shapes the likelihood, frequency, and quality of social interaction of a residential building or development and make it a primary site for transmitting broader neighborhood effects (Tienda 1991). Low-income households experience disproportionately high levels of rent burden, crowding, and poor housing conditions relative to higher-income renters (Coley et al. 2013; Holupka and Newman 2011). Affordable housing may reduce or eliminate these disparities by providing quality housing at a lower cost than would otherwise be accessible to this population in the private market without assistance (Lubell and Brennan 2007).

The benefits of affordable housing should be independent of location, but it is possible that its impact varies based on the type of neighborhood where it is sited. In low-income

communities where housing costs are typically low, it is possible that affordable housing may produce housing that is similar in price to the private market, but offer higher quality housing than would otherwise be available. In higher-income communities where private investment ensures the maintenance and upkeep of the residential stock, affordable housing may produce housing that is of similar quality, but at a lower price that is within reach of low-income households who otherwise could not afford to live there. Despite these potential benefits, we know little about if, and how, affordable housing alters the living conditions of low-income households and whether this varies by location.

In this chapter, I evaluate the impact of newly constructed affordable rental housing on the cost, size, and quality of housing using data from the New York City Housing and Neighborhood Study (NYCHANS), a multi-site randomized control trial that collected data both on those that were offered newly constructed affordable housing (“Treatment”) and those that were eligible, but not offered housing because demand far exceeds supply (“Control”). This design enables me to assess the impact of affordable housing on the population served by comparing the average outcomes for these two groups. This unique dataset also enables me to compare the impact of affordable housing in low-poverty and higher-poverty neighborhoods to assess whether the benefits conveyed are equivalent across locations.

HOW DOES HOUSING MATTER?

Based on federal and local guidelines, a household should pay no more than one third of pre-tax income toward housing costs. Yet in 2017, nearly half of all renter households nationwide were cost-burdened or paying more than 30 percent of household income on rent; this is equivalent to more than 20 million households who paid a disproportionate share of income

toward housing costs (Joint Center for Housing Studies 2019). Half of these, or more than 10 million households, were severely burdened or paying more than half of income on rent (Ibid). The prevalence of rent burden is similar in New York City, where more than half of all renter households are burdened and one third are severely burdened in 2017, regardless of income (Gaumer 2018). Rent burden is particularly acute for low-income working households that rarely qualify for public housing or vouchers and who must compete for the limited number of private units that are within financial reach (Collinson et al. 2015).

Excessive housing cost burden further constrains low-income households' already limited discretionary income. Utility costs, such as electricity and gas, also vary widely and represent a unique source of burden for low-income households (Hernandez and Bird 2010). At the extreme, "housing-induced poverty" reduces the availability of resources that can be allocated to non-housing expenditures to less than the minimum subsistence level (Stone 2006). According to the Joint Center for Housing Studies (2014), severely housing-cost-burdened households in the lowest income quartile spent, on average, 39 percent less on food and 65 percent less on healthcare compared with otherwise similar households living in housing that was affordable to them. Meltzer and Schwartz (2016) find that higher levels of rent burden are associated with delay of healthcare for financial reasons. Newman and Holupka (2012) find that lack of affordable housing reduces investment in children's enrichment activities. Struggling to make ends meet may drive individuals to work multiple jobs or more hours, reducing time spent with young children and the negative consequences that follow (Kalil et al. 2014). Housing cost burden may also be a source of chronic stress, which results in negative downstream outcomes through various pathways. Chronic strain has been shown to exact a physiological cost by increasing allostatic load—the "wear and tear" that accumulates over time in response to stress—

that can accelerate disease processes (McEwan 2000), impair mental health, and increase harsh parenting (Barajas-Gonzalez and Brooks-Gunn 2014).

Though high housing cost burden may pose a risk by increasing material hardship, reducing parental time and availability, and contributing to chronic stress (Holupka and Newman 2011), research suggests that paying more for housing is not always detrimental. Newman and Holupka (2014) find an inverted u-shape association between the share of income paid toward housing costs and children's cognitive achievement. They posit that at the lowest levels of rent burden, low-income households are more likely to achieve greater affordability by purchasing less housing or accepting substandard conditions. These factors, in turn, contribute to socioemotional and health sequelae that manifest in low cognitive achievement. As the share of income spent on rent increases, low-income households purchase higher quality housing and/or housing located in better neighborhoods. At the highest levels of rent burden, however, cognitive achievement is lower, supporting the idea that above a certain threshold there are diminishing returns for making such strategic trade-offs. The "optimal" level of rent burden identified by Newman and Holupka (2014) is at about 30 percent, providing further evidence that this definition of being "rent burdened" is meaningful for understanding how housing conditions shape well-being.

Low-income households that are able to secure low-cost housing that is within their means often do so by reducing either the quantity or quality of housing consumed, both of which pose short- and long-term threats to well-being. Doubling-up to reduce housing costs may increase the incidence of respiratory infections and decreased air quality (Ahrentzen 2003), while the strain of shared housing and frequent unwanted social interaction that it may cause have been shown to weaken social ties and lead to withdrawal or aggressive behavior (Evans et al. 1989;

Regoeczi 2008) and lower motivation for solving complex problems (Evans et al. 2001). Solari and Mare (2012) find that children who grew up in crowded conditions have lower academic achievement, exhibit higher rates of externalizing behavior, and report poor physical health.

Perhaps the greatest risk comes when households inhabit lower-cost, but poor-quality housing. Those living in substandard conditions face substantial and long-lasting effects on health as a result of exposure to hazards such as mold, lead paint, asbestos, or conditions that otherwise lead to injury or illness (Acevedo-Garcia et al. 2004; Lubell et al. 2007). Differential environmental exposure may account for the high blood lead levels among urban-dwelling minority children (Lanphear, Weitzman, and Eberly 1996), which has been shown to impair development trajectories in young children (Dietrich et al. 1987), and may lead to decreased cognitive performance, particularly visual-spatial and visual-motor integration skills, even among those with sub-clinical levels of lead exposure (Bellinger et al. 1991). Indoor ambient hazards, such as dust and mold, are recognized triggers of asthma (Platts-Mills and Carter 1997) and are found in disproportionate concentrations in dilapidated housing. Exposure to allergens, such as rodent droppings and cockroach infestation, may exacerbate asthma symptoms, increase the prevalence of asthma-related morbidity for city residents (Arbes et al. 2004; Morgan et al. 2004), and lead to the onset of asthma in children with atopic reactions to allergens (Sporik et al. 1990). Though many poor housing conditions are modifiable health risks, low-income residents—particularly renters—may lack the political and social capital to advocate for necessary repairs and/or systemic upgrades (Saegert and Winkel 1998). And, of course, low-income households have fewer financial resources to dedicate to investing in repairs themselves that would improve both overall housing quality and diminish acute risk.

Coley et al. (2013) examined the relative contributions of cost, quality, stability, and type of housing on child and adolescent well-being. They found that housing quality is consistently associated with better emotional and behavioral functioning of both younger and older children, controlling for other factors. They found no substantial association for housing cost burden when other housing characteristics were considered, but note that this may indicate the trade-off low-income households face in choosing between affordability and quality.

Housing cost and quality have implications for the sorting of low-income households into neighborhoods. Recent research on housing search behavior suggests that households rely on limited information, working from a “consideration set” of neighborhoods within which they then filter based on housing characteristics, such as cost, size, and quality (Krysan and Crowder 2017). This decision-making process results in people sorting into geographies that reproduce segregation by income and race. How this process differs for those who rely on rental assistance or who are searching for subsidized housing is less clear. Research has identified substantial barriers that limit low-income households’ ability to move to low-poverty neighborhood, many of these factors are tied to the housing market itself. The limited number of units available that are within financial reach (Collinson et al. 2015) and landlords’ unwillingness to accept tenants with rental assistance (Edin et al. 2012; Rosen 2020) represent structural constraints that limit access. At the same time, low-income tenants who remain in high-poverty neighborhoods justify their choice to remain by focusing on their immediate housing conditions, prizing the value of home over neighborhood (Rosen 2017; Rosenblatt and DeLuca 2012). These realities both reinforce the importance of creating additional opportunities for mobility, but also suggest that the provision of lower-cost, quality housing may be most meaningful for those living in higher-poverty communities where one’s immediate living conditions are even more important.

THE PROMISE OF AFFORDABLE HOUSING

Newly constructed affordable housing increases the supply of low-cost housing, matching households to available units through eligibility criteria and screening guidelines. Rents are set to be affordable to recipient households; occupancy standards preclude overcrowding; new building systems and finishes ensure habitability and eliminate the need for major capital improvements or replacement for many years. The combination of these factors should result in improved housing conditions for low-income households that may not be possible in the private market without assistance.

Whether these benefits materialize, and for how long, remains largely unknown. Although program guidelines ensure that housing costs at initial lease-up are affordable to those served, it is unclear whether receipt of affordable housing results in substantially lower rents than what applicant households are already paying. Moreover, since future rents are generally set according to standard formulae rather than adjustments based on current household income, it is possible that rent burdens may increase over time if rent increases outpace earnings or if households experience income loss.

Guidelines used to allocate affordable housing ensure that recipient households are “optimally” housed at move-in, meaning that they cannot be overcrowded (or over-housed). Yet, households are not static (Bachtell et al. 2012; Desmond and Perkins 2016). Over time, families may grow through the birth of a child, formation of a new partnership, or multiple generations coming together to share housing; others may shrink as a result of death or disability, the dissolution of relationships, or older children moving to form independent households. Such changes over the life course may result in either over- or under-consumption of affordable housing for those who remain in place or else propel future moves back to the private market.

The first residents of newly constructed buildings are unlikely to experience poor housing conditions; however, the quality of building materials and maintenance practices may vary. Although the affordable housing finance model is designed to ensure that the rent roll covers necessary maintenance and operating costs, it is important to understand how the conditions in affordable housing evolve and to assess changes in quality over time. This is essential given the experience with deteriorating public housing developments that suffered years of deferred upkeep and resulted in widespread displacement of legacy residents (Popkin et al. 2004).

To date, there has been no systematic evaluation of whether affordable housing leads to lower rent burden or less crowding, or whether it results in access to higher quality or safer housing. Coley et al.'s (2013) evaluation of a representative sample of low-income households is unique in that it included both those in subsidized housing as well as those living in the private market without assistance. They found that subsidized housing had limited benefits on children's well-being, though it was associated with lower rates of internalizing behavior in young children and greater math skills for adolescents. Although they considered the relative contributions of housing quality and cost the authors did not assess if, or how, these conditions varied between subsidized and private housing.

Other research limited to a subset of affordable housing financed through the Low-Income Housing Tax Credit (LIHTC) is largely descriptive in nature, focusing on housing costs (GAO 1999, Williamson 2011), neighborhood location (Ellen et al. 2016, 2018), or social-mix (Chaskin and Joseph 2010; Joseph et al. 2007). Some research has compared the cost burden of tenants in LIHTC to the overall population that is income-eligible (Furman Center 2012), but this does not provide evidence of the changes subsidized housing provides to its recipients, since the population served may differ in both observable and unobservable ways from the broader

population of households at the same income level. Understanding the direct benefits of affordable housing is especially important given that eligibility for affordable housing does not consider ‘need’ at time of application. Thus, it is possible that the population that applies to affordable housing already lives in lower-cost housing, larger apartments, and/or homes in well-maintained buildings or is otherwise able to find such housing through other means.

DATA AND METHODS

This analysis utilizes data from the New York City Housing and Neighborhood Study (NYCHANS), a multi-site experimental study that followed applicants to newly constructed affordable housing at thirteen study sites. These data include information on households that were offered housing (treatment) and those that were eligible but not offered housing because demand exceeds supply (control). Data come from three sources: the housing application/lottery, a baseline survey administered to study participants at eight of the thirteen study sites, and data from in-person interviews on treatment and control households completed four to seven years after random assignment at all thirteen study sites.

Measures

Housing costs are based on self-reported information obtained from respondents at baseline and follow-up, respectively. The baseline measure for housing costs is a measure of contract rent or what is paid to the owner or landlord, whether it includes utility costs or not. All baseline values are reported in 2013 dollars. At follow-up, respondents were asked about contract rent and utility costs separately. Utilities are measured as the monthly cost paid separately from rent by the respondent’s household, including costs of electricity, gas, heat, and water. Respondents were asked to report these costs for a typical winter and summer month. An

average monthly cost was estimated by multiplying the winter costs by nine months and summer costs by three months and dividing by twelve months. Because summer utility costs are generally higher due to air conditioning costs, this method should be considered a conservative estimate of utilities paid by the tenant household. ‘Gross’ rent is the sum of contract rent and utilities that are not included in the rent and provides a more holistic picture of total housing costs that a household must meet. All dollar values at follow-up are reported in 2018 dollars.

Rent burden is the share of monthly pre-tax income spent on housing costs. At baseline, household income was reported on the housing application. At follow-up, household income was computed by taking the sum of all reported annual income for each individual in the household (wages, social security, unemployment benefits, government programs, informal services, or another source). Rent burden is the monthly contract rent divided by one-twelfth of the computed income for each respective time period. This continuous value was used to create two dichotomous indicators: whether the household paid more than 30 percent of gross monthly income toward rent or not (‘rent burdened’) and whether the household paid 50 percent or more of gross monthly income toward rent or not (‘severely burdened’). These thresholds represent common definitions for rent burden and severe rent burden (Hulchanski 2013). Any household that did not report household income and rent are considered missing.

Overcrowding is measured using a combination of unit size and household size. No data were collected on crowding at baseline. For follow-up, my definition of crowding relies on New York City housing allocation guidelines that specify that there should be no fewer than one person and no more than two persons per bedroom; studio (efficiency) units may house up to two people even though there are zero bedrooms. An alternative measure commonly used is whether the household has two or more persons per *room*; this provides a more extreme measure of

crowding as the ratio of rooms to bedrooms is generally greater than one. Data on the number of bedrooms and rooms in the housing unit as well as the number of people in the household, as reported by the respondent at the follow-up interview, are used to calculate the ratio of persons to bedrooms or rooms, respectively. Households are coded as living in crowded conditions if this ratio is more than two or if there are more than two people in a studio apartment/one room apartment. Any household that did not report household size and unit size are considered missing.

Housing quality is measured by the presence or absence of maintenance deficiencies in the home, as reported by the respondent in the baseline survey and in the follow-up interview. NYCHANS replicated several standard measures that are tracked at a citywide level. At baseline, these included (1) whether there was no hot water for six hours or more this winter, (2) whether water has leaked into the home in the last year, and (3) whether there have been any signs of mice or rats in the building in the last three months. In the follow-up interview, four additional items were asked: (4) whether the respondent reported seeing six or more roaches on a typical day in the last month, (5) whether there was any mold or mildew in the home, (6) whether there was a heating breakdown for six hours or more this winter, and (7) whether there was any broken plaster or peeling paint in the home. Each of these is reported separately and summed (none to three or none to seven for baseline and follow-up, respectively). For follow-up, an additional item was coded according to whether the respondent reported three or more items versus two or fewer. Any respondent with one or more missing individual item is classified as missing in the summary measure(s).

I begin by presenting data on the baseline conditions for housing applicants. This serves as a measure of housing need as well as a balance test to ensure the use of the housing lottery in

identifying two equivalent groups prior to the intervention—here, the offer of affordable housing. I then present comparisons of treatment and control groups at follow-up across all study sites, regardless of location. This serves as an assessment of the average effect of being offered affordable housing using a standard intent-to-treat (ITT) approach as described in Chapter 3. I then examine the moderating effect of the location of the affordable housing site to which the household applied, including study sites located in low-poverty tracts (defined as less than 15 percent poverty at baseline) and those in higher-poverty tracts (15 percent or higher).

The findings presented throughout follow the same structure. Group means are weighted to account for differential group assignment across study sites, but are otherwise unadjusted; differences between treatment and control are assessed using OLS models with robust standard errors that adjust for the household’s baseline characteristics that determined their probability of selection for a unit in the lottery to which they applied. Testing multiple outcomes is likely to show some treatment effect due to chance alone. For this reason, I also present alternative q-values that adjust for the False Detection Rate (FDR) based on the full set of outcomes examined (Anderson 2008).¹ Tests of moderation present the coefficients for the main effects of treatment status and application to a low-poverty site along with the interaction term.

BASELINE CONDITIONS

Table 5.1 shows the baseline housing characteristics of the NYCHANS sample. The average rent paid by affordable housing applicants was about \$930, which was substantially lower than the citywide median of \$1,425 (Gaumer 2018); however, these data illustrate the

¹ This includes outcomes included in this chapter as well as those in later chapters. The total number of outcomes included in the FDR calculations is 210 and therefore represents a conservative measure.

challenges faced by this population. About 60 percent of applicant households were rent burdened or paying more than 30 percent of income toward rent; one in five were severely burdened or paying half of their income or more toward rent.

Table 5.1: Baseline Housing Characteristics, by Group Assignment

	At time of application for housing			
	Ct Mean	Tx Mean	p-value	n
Household characteristics (A)				
Household income	\$29,744	\$30,591	0.498	2,565
Household size	2.1	2.0	0.972	2,572
Applied with voucher	15%	15%	0.379	2,572
Applied with 1+ child	39%	41%	0.005 **	2,572
Socio-demographics of primary applicant (SR)				
Race/ethnicity				
White, non-Hispanic	11%	11%	0.928	1,385
Black, non-Hispanic	42%	44%	0.751	1,385
Hispanic	35%	36%	0.939	1,412
Asian, non-Hispanic	9%	6%	0.948	1,385
Other race, non-Hispanic	3%	3%	0.661	1,385
Female	69%	67%	0.479	1,438
Age at application	37.3	36.9	0.253	1,352
Highest level of school completed				
Less than high school	7%	6%	0.653	1,428
4-year college or more	33%	35%	0.410	1,428
Originating neighborhood characteristics (A)				
Tract poverty rate	26%	26%	0.913	2,419
Originating housing characteristics (SR)				
Contract rent (in 2013 dollars)	\$973	\$957	0.268	1,077
Rent burdened	67%	63%	0.506	1,074
Severely rent burdened	24%	20%	0.968	1,074
Maintenance Deficiencies				
No hot water in last year	40%	38%	0.416	1,413
Leaks into home	38%	38%	0.740	1,414
Mice or rats in residential building	48%	51%	0.224	1,500
	F-statistic	p-value	n	
	1.36	0.101	2,572	

[^] $p < .10$ * $p < .05$ ** $p < .01$ *** $p < .001$

Sources: (A) Administrative data, including originating address matched to ACS 5-year tract-data (2009-2013); (SR) NYCHANS Baseline Survey

Data are weighted to account for differential group assignment ratio within each site. Differences between treatment and control means were estimated with OLS models that regressed each variable on group assignment, controlling for a set of dummies indicating eligibility by unit type and set-aside/preference in the housing lottery (randomization blocks). The F-statistic was calculated to evaluate the joint significance of all variables shown in the table, controlling for randomization blocks; to address participation rates and item non-response in the baseline survey, missing values were recoded and models included a set of dummies for missing variables.

These households also reported high prevalences of various maintenance deficiencies in their homes. About 40 percent reported having no hot water for six hours or more in the previous year, about 40 percent reported having a leak into their unit in the last year, and about half reported a current rodent infestation. Treatment and control groups were balanced on socio-demographic and originating housing characteristics; an omnibus test of joint significance failed to reject the null hypothesis that all coefficients were zero ($F=1.36$, $p=0.10$) and only the share that applied to live with one or more child was significant with a p-value of less than 0.10.

Table 5.2 stratifies the study population according to whether the household applied to live at an affordable housing site located in a low-poverty tract (<15 percent) or a moderate-poverty tract (15 percent or higher). Treatment and controls within each of these groups are assessed using the same methodology used in the pooled analysis. Socio-demographic and housing characteristics are reasonably balanced. The share that applied with a voucher and the share that applied to live with one or more child is larger among treatment households that applied to live at a low-poverty site relative to controls that applied to these same sites ($p<0.05$) and a smaller share of controls that applied to live at a moderate-poverty site identified as Asian, non-Hispanic or was headed by a female ($p<0.10$); however, omnibus tests of joint significance fails to reject the null hypotheses that all coefficients are equal to zero within low-poverty and moderate-poverty study sites.

Those that that applied to an affordable housing site in a low-poverty tract are more likely to be White, non-Hispanic, are slightly older, and are more likely to have completed college. They also report a higher average rent and are more likely to be rent burdened and severely rent burdened relative to those that applied to an affordable housing located in a higher-poverty

neighborhood. However, they are less likely to report any of the three maintenance deficiencies at baseline.

Table 5.2: Baseline Housing Characteristics, by Group Assignment and Poverty Rate

	At time of application for housing								
	Applied to Low-poverty Site (<15%)				Applied to Mod-Poverty Site (15%+)				
	Ct Mean	Tx Mean	p-value	n	Ct Mean	Tx Mean	p-value	n	
Household characteristics (A)									
Household income	\$29,599	\$30,490	0.914	1,131	\$29,881	\$30,686	0.391	1,434	
Household size	2.0	2.0	0.776	1,134	2.1	2.0	0.183	1,438	
Applied with voucher	20%	26%	0.004 **	1,134	10%	4%	0.890	1,438	
Applied with 1+ child	34%	37%	0.024 *	1,134	45%	44%	0.204	1,438	
Socio-demographics of primary applicant									
Race/ethnicity									
White, non-Hispanic	19%	22%	0.828	667	3%	1%	0.729	718	
Black, non-Hispanic	36%	36%	0.464	667	49%	51%	0.834	718	
Hispanic	31%	29%	0.614	684	39%	43%	0.467	728	
Asian, non-Hispanic	12%	10%	0.364	667	4%	2%	0.087 ^	718	
Other race, non-Hispanic	2%	3%	0.238	667	5%	2%	0.580	718	
Female	64%	63%	0.636	697	76%	70%	0.085 ^	741	
Age at application	39.0	39.3	0.494	647	35.4	34.5	0.308	705	
Highest level of school completed									
Less than high school	7%	8%	0.954	693	7%	5%	0.369	735	
4-year college or more	36%	39%	0.317	693	29%	31%	0.605	735	
Originating neighborhood characteristics									
Tract poverty rate	22%	22%	0.247	1,046	30%	30%	0.178	1,373	
Originating housing characteristics									
Contract rent (in 2013 dollars)	\$1,011	\$1,019	0.707	459	\$939	\$913	0.137	618	
Rent burdened	72%	69%	0.996	458	62%	59%	0.388	616	
Severely rent burdened	28%	24%	0.496	458	20%	16%	0.433	616	
Maintenance Deficiencies									
No hot water in last year	35%	33%	0.604	689	45%	44%	0.396	724	
Leaks into home	36%	35%	0.803	692	41%	40%	0.710	722	
Mice or rats in residential building	44%	49%	0.388	777	52%	54%	0.360	723	
	F-statistic			p-value	n	F-statistic		p-value	n
	1.09			0.341	1,134	1.27		0.158	1,438

^ $p < .10$ * $p < .05$ ** $p < .01$ *** $p < .001$

Sources: (A) Administrative data, including originating address matched to ACS 5-year tract-data (2009-2013); (SR) NYCHANS Baseline Survey Data are weighted to account for differential group assignment ratio within each site. Differences between treatment and control means were estimated with OLS models that regressed each variable on group assignment, controlling for a set of dummies indicating eligibility by unit type and set-aside/preference in the housing lottery (randomization blocks). The F-statistic was calculated to evaluate the joint significance of all variables shown in the table, controlling for randomization blocks; to address participation rates and item non-response in the baseline survey, missing values were recoded and models included a set of dummies for missing variables.

While the quality and rent-levels of affordable housing should be the same regardless of location, its impact is contingent upon the living conditions that would be experienced by applicant households but for the offer of treatment. If control households continue to experience similar

conditions relative to baseline, then the impact of affordable housing may vary based on its location, offering lower rent burdens in low-poverty neighborhoods and higher housing quality in higher-poverty neighborhoods.

FINDINGS AT FOLLOW-UP

At follow-up, an expanded set of measures examine the average effect of affordable housing on cost and affordability, crowding, and quality. Table 5.3 shows the results approximately four to seven years after randomization across all thirteen study sites, by group assignment.

Treatment and control groups report similar household incomes of about \$37,000; however, the treatment group has a lower average rent and also pays less in utilities—notably during winter months. On average, treatment households pay about \$50 less per month in rent ($p=0.018$; $q=0.069$) and about \$30 less per month on utilities during the winter months ($p=0.000$; $q=0.001$). There were no meaningful differences in summer utilities, which were higher than those reported for winter months, likely due to air conditioning costs that are generally paid by the tenant. These relatively small differences in housing costs produce no measurable differences in the prevalence of rent burden or severe burden.

Treatment households are significantly smaller, with an average household size of 2.3 persons compared to 2.7 among controls ($p<0.001$; $q<0.01$). They also live in significantly smaller units, with an average of 2.8 rooms and 1.4 bedrooms compared to 3.5 rooms and 1.8 bedrooms among controls ($p<0.001$; $q<0.01$), respectively. On average, there are no differences in the average ratio of persons per room or bedroom; however, a significantly smaller share of treatment households lives in overcrowded conditions, defined as having more than two people

per bedroom (or in a studio unit). Overall, 8 percent of treatment households are overcrowded compared to 15 percent of controls ($p < 0.001$; $q < 0.01$).

Table 5.3: Housing Conditions at Follow-Up, by Group Assignment

	4 to 7 years after random assignment				
	Ct Mean	Tx Mean	p-value	FDR q-value	n
Housing Costs					
Household income	\$37,800	\$36,846	0.534	0.761	1,418
Contract rent	\$917	\$861	0.018 *	0.072 ^	1,432
Monthly utility cost per month (summer)	\$149	\$139	0.078 ^	0.223	1,393
Monthly utility cost per month (winter)	\$107	\$79	0.000 ***	0.001 **	1,397
Average rent to income ratio	36%	35%	0.296	0.570	1,304
Rent burdened	47%	44%	0.337	0.632	1,304
Severely burdened	18%	15%	0.085 ^	0.237	1,304
Overcrowding					
Household size	2.7	2.3	0.000 ***	0.001 **	1,572
Number of rooms in home	3.5	2.8	0.000 ***	0.001 **	1,575
Persons per room	0.8	0.9	0.057 ^	0.183	1,558
Number of bedrooms in home	1.8	1.4	0.000 ***	0.001 **	1,576
Persons per bedroom	1.6	1.5	0.022 *	0.084 ^	1,559
Overcrowded (>2 persons per room)	2%	1%	0.740	0.894	1,558
Overcrowded (>2 persons per bedroom)	15%	8%	0.001 ***	0.006 **	1,559
Housing Quality					
No heat during last winter	28%	11%	0.000 ***	0.001 **	1,404
No hot water in last year	26%	11%	0.000 ***	0.001 **	1,388
Peeling paint or broken plaster	27%	11%	0.000 ***	0.001 **	1,425
Leaks into home	29%	11%	0.000 ***	0.001 **	1,411
Mold or musty smells in home	13%	5%	0.000 ***	0.001 **	1,458
More than 6 roaches per day	7%	2%	0.000 ***	0.001 **	1,518
Mice or rats in residential building	10%	2%	0.000 ***	0.001 **	1,407
Average number of maintenance deficiencies	1.6	0.6	0.000 ***	0.001 **	1,136
3+ maintenance deficiencies reported	29%	7%	0.000 ***	0.001 **	1,136

^ $p < .10$ * $p < .05$ ** $p < .01$ *** $p < .001$

Source: NYCHANS Follow-Up Interviews

Data are weighted to account for differential group assignment ratio within each site. Differences between treatment and control means were estimated with OLS models that regressed each variable on group assignment, controlling for a set of dummies indicating eligibility by unit type and set-aside/preference in the housing lottery at baseline (randomization blocks).

Perhaps the most robust finding is that treatment households have higher quality housing, with treatment households reporting a significantly lower prevalence of each of seven specific maintenance deficiencies. Overall, treatment households reported an average of 0.6 problems compared to 1.6 among controls ($p < 0.001$; $q < 0.01$). The prevalence of those reporting three or more problems was dramatically lower, at 7 percent compared to 29 percent among controls

($p < 0.001$; $q < 0.01$). All differences in housing quality remain significant even after controlling for multiple testing ($q < 0.01$).

THE MODERATING EFFECT OF NEIGHBORHOOD LOCATION

The baseline analysis shows that the housing characteristics vary according to whether households applied to affordable housing located in a low-poverty or higher-poverty neighborhood. These factors may act as moderators of the treatment effect—that is, help to explain which households benefit more or less from the receipt of affordable housing. Table 5.4 presents a set of OLS models that include an interaction with study site poverty for three main outcomes—the share that is rent burdened (paying more than 30 percent of income toward rent), overcrowded (more than two persons per bedroom), and living in poor housing conditions (three or more maintenance deficiencies reported). Corresponding models estimating the main effect of treatment across all sites are also included for reference.

Table 5.4: Treatment Effects on Key Housing Outcomes, by Site Location

	Rent Burdened		Overcrowded		Poor Quality	
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Treatment	-0.0321 (0.0334)	-0.0302 (0.0435)	-0.0623 *** (0.0182)	-0.0769 ** (0.0238)	-0.219 *** (0.0268)	-0.220 *** (0.0386)
Low-Poverty Site		-0.158 (0.333)		0.0105 (0.157)		0.0746 (0.154)
Treatment x Low-Poverty Site		-0.00446 (0.0664)		0.0310 (0.0367)		0.00216 (0.0538)
Observations	1,304	1,304	1,559	1,559	1,136	1,136

[^] $p < .10$ * $p < .05$ ** $p < .01$ *** $p < .001$

Source: NYCHANS Follow-Up Interviews

Data are weighted to account for differential group assignment ratio within each site. Coefficients for baseline controls (variables indicating eligibility by unit type and set-aside/preference -- i.e., randomization blocks) not shown.

There is no evidence that the benefits of affordable housing differ based on whether it is located in a low-poverty or a higher-poverty tract. There is no significant main effect of having applied to live in affordable housing located in a low-poverty site, nor is the interaction

significant for any of the three outcomes. Moreover, the main treatment effect remains similar in magnitude and significance.

DISCUSSION

The offer of affordable housing did produce measurably lower rates of crowding and exposure to poor housing conditions. Treatment households grew very little, on average from 2.0 to 2.3, while control households increased in size to an average of 2.7 persons. Although control households were living in larger units than treatment households, the rate of overcrowding was nearly twice as high as among treatment households. Housing deficits were common among control households, while the treatment group experienced very few maintenance deficiencies. This is important to consider in its own right, as poor housing quality is a source of risk for the health and well-being of residents. But it also underscores the fact affordable housing recipients are purchasing substantially better housing quality relative to price.

Despite its provision of lower rents and lower utility costs, affordable housing did not result in lower rates of rent burden for the population served. This is largely explained by the fact that both treatment and control groups experienced a decline in the share of income paid toward rent relative to baseline. While we would expect the treatment group to experience lower rates of rent burden, it is surprising that control households were able to achieve greater housing affordability. This could be a result of doubling up to save on rent relative to the number of wage-earners, moving to low-rent housing outside of the housing lottery, or increased household income in combination with stable (or declining) rent levels. It is possible that some combination of all three materialized. For many years prior to the NYCHANS study, rents rose steadily while incomes stagnated (Furman Center 2015b); however, during the study period these trends changed (Office of the Mayor 2019). The median household income rose in New York City and

poverty decreased; annual rent increases, which are set by a citywide system for the half of all rental units citywide that are subject to rent stabilization, experienced historically low increases—including two years of zero percent increases (Gonzalez 2020). These factors likely impacted low-income, working households in New York City in ways that helped to reduce rent burden even without housing assistance. Whether this same pattern would hold in periods when rents again begin to rise and/or incomes stagnate is unclear, but it is possible that affordable housing would be protective under such conditions.

There was no differential effect on any of the major outcomes by neighborhood location. This is validation of the policies that govern affordable housing, which establish eligibility requirements and terms at a citywide level to ensure equivalent benefits regardless of housing developer, building, or location. Given that applicants to affordable housing would receive similar quality, size, and price in both low-poverty and higher-poverty neighborhoods, the evidence provided by NYCHANS points away from the notion that low-income households are selecting neighborhoods based on their ability to achieve lower rents and/or better housing conditions. This may lend support for Krysan and Crowder's (2017) theory that neighborhood choice and housing selection are decoupled steps in the housing search process.

Taken together, these findings support the conclusion that affordable housing helps to reduce disparities in housing consumption for low-income households. Although it does not produce lower rates of rent burden, it nonetheless enables households to purchase *better* housing while holding the cost constant. At scale, these benefits may support long-term improvements in population health, as overcrowding has been linked to the incidence of disease and exposure to poor housing conditions poses various short- and long-term risks to well-being that reinforce and widen socioeconomic inequalities.

CHAPTER SIX LOCATIONAL ATTAINMENT

For low-income households, where one lives is not only, or even primarily, the result of preference. Rather, it is structured by the supply of available units, the strength of residential building codes and zoning ordinances, the provision of tenant rights, the enforcement of fair housing laws, and the design of housing subsidy programs. In the face of these constraints, low-income households are often forced to make strategic trade-offs among housing quality, affordability, and neighborhood location (Holupka and Newman 2011). Households navigate available choices within the bounds of limited information (Krysan and Crowder 2017) using various adaptive strategies (Rosenblatt and DeLuca 2012). The process is continuous and applies not only to where one moves, but also when one stays (Rosen 2017). In aggregate, these compromises result in disparities in living conditions that both reflect, and reinforce, broader patterns of inequality (Swope and Hernandez 2019).

Newly constructed affordable housing may reduce barriers to mobility by increasing the supply of low-cost housing and connecting eligible households to developments that are owned and operated by private for-profit and non-profit developers that willingly partner with public agencies to provide low-income housing. By constructing affordable housing in more affluent neighborhoods, these programs may facilitate new, and potentially more durable, moves for low-income households out of concentrated disadvantage than are often possible with the use of tenant-based vouchers. However, such buildings may only be constructed in low-poverty areas that are in decline or exhibit other dimensions of disadvantage, such as limited access to parks or shopping, absent or ineffective local institutions, minimal interaction among neighbors, or low levels of trust among strangers and an unwillingness to intervene for the common good (the

dimensions that comprise collective efficacy)—mechanisms by which neighborhoods convey risk or opportunity (Sampson et al. 2002). If true, low-income households moving to these areas may experience what Sampson (2011) characterized as “differences by degree, rather than kind.”

On the other hand, affordable housing that is constructed in poor neighborhoods as part of a community revitalization strategy may offer low-income households an opportunity to live in communities that offer a range of supports, from social services to stores that sell goods at a lower cost to the everyday support of local family, friends, and organizations that act as brokers (Small and Stark 2005). Affordable housing that ensures access to neighborhoods that offer these benefits but are also becoming safer, more accessible, and/or attracting a growing, socio-economically diverse resident population may provide opportunities that will accrue over time (Freeman 2006). Coupled with protections that safeguard against the risk of displacement as these neighborhood experience change, affordable housing may promote residential stability of a kind that supports well-being for current and future generations of residents.

Little is known about the locational attainment of households that apply to affordable housing or how destination neighborhoods compare to those where low-income households would otherwise live without assistance. This information is critical for assessing whether affordable housing helps low-income households move to opportunity, on what dimensions, and for how long. In this chapter, I examine these questions using New York City as a case study. I evaluate whether the offer of newly constructed affordable rental housing improves the neighborhood conditions of the low-income population served compared to where a comparable group of households who were not offered affordable housing are living. By leveraging the variation in the baseline neighborhood characteristics where study sites were built, I examine how this differs for applicants to affordable housing in low- versus moderate-poverty areas. I

also evaluate how these destination neighborhoods have changed to assess their long-term viability for low-income residents.

SUBSIDIZED HOUSING AND MOVES TO OPPORTUNITY

For decades, the primary form of subsidized housing was public housing—developments owned and operated by a Public Housing Authority. These developments are mostly sited in low-income, segregated areas where the density of public housing led to a further concentration of poverty over time (Massey and Kanaiaupuni 1993). In contrast, tenant-based vouchers are not tied to place since they are designed to offset the costs of renting a unit in the private market that could be located anywhere. Although vouchers offer the *ability* to move low-income households to a range of neighborhoods, structural barriers result in most vouchers being utilized in low-income communities that offer only somewhat greater opportunity than public housing (Ellen et al. 2018; Lens et al. 2011).

In affluent communities, only a small number of units fall within the maximum payment standards allowed by vouchers (Collinson et al. 2015). Many landlords do not participate in voucher programs at all, while others apply standard requirements that are difficult or impossible for voucher-holders to meet, such as credit worthiness or security deposits. In the Moving to Opportunity Demonstration Project (MTO), less than half of those randomly assigned to receive a voucher to move to a low-poverty neighborhood succeeded and among those that *were* able to secure mobility to opportunity neighborhoods many soon made secondary moves back to low-income areas (Orr et al. 2003; Sanbonmatsu et al. 2012). The reasons for secondary moves varied and included poor housing conditions, landlords opting out of the program, and the desire to live closer to family and friends who provided everyday assistance (Edin et al. 2012).

Some have argued that even among those that succeed in moving, the low-poverty neighborhoods that voucher holders can access continue to exhibit other signs of disadvantage. Experimental movers in MTO experienced lower rates of poverty at follow-up both in the interim- and final-evaluations, but did not differ from controls in terms of neighborhood racial/ethnic composition—most lived in highly segregated, minority communities (Orr et al. 2003; Sanbonmatsu et al. 2011). Re-analysis by Sampson (2011) shows that experimental movers and control households experienced similar levels of disadvantage along various social and cultural dimensions, including collective efficacy, intergenerational closure, legal cynicism, reciprocal exchange among neighbors, perceived violence, and disorder, among others. Sampson also explored the rate of change in destination neighborhoods and found that the areas where experimental movers successfully moved were improving at a slower rate than those of the control group. Much of the attenuation of differences between treatment and control groups over time can be attributed to improvements in control neighborhoods, rather than secondary moves among treatment households (Ludwig 2012).

Newer forms of place-based subsidized housing, such as those placed in service through the Low-Income Housing Tax Credit (LIHTC), increase the supply of units that are within reach of low-income households. When sited in low-poverty areas, such housing represents a critical supply of housing that may facilitate more moves to opportunity than would be possible with vouchers alone (Khadduri 2013). Although some have argued that LIHTC incentivizes construction in higher-poverty neighborhoods,¹ research shows that about a third of LIHTC units

¹ The amount of tax credits awarded to a project varies based on the type of project and its location. Those located in Qualified Census Tracts (QCTs) receive a bonus, as do those located in Difficult to Develop Areas (DDAs). QCTs are generally higher poverty tracts, while DDAs are generally higher-income areas. Until 2017, all of New York City was designated either a QCT or a DDA and therefore there was no differential incentive based on the location of the

nationwide are located in low-poverty tracts (defined as less than 10 percent poverty) (Ellen et al. 2009). But poverty rate alone does not capture the neighborhood characteristics that define opportunity. More recent research suggests that LIHTC units are, on average, located in areas with lower performing schools, higher rates of environmental pollution, and weaker labor markets, though they are closer to public transit than the locations where other income-eligible renter households live (Ellen et al. 2016); they are also located in areas with higher average crime rates than where voucher-holders live (Lens et al. 2011).

The initial siting of place-based units is only one factor that determines the neighborhood conditions of residents. LIHTC developments are often part of a broader community revitalization plan, replacing demolished public housing units or adding new supply to communities that has previously faced disinvestment (Bostic et al. 2020). Because LIHTC serves a higher-income population than most public housing or tenant-based vouchers, it may result in compositional changes in low-income neighborhoods. LIHTC has been shown to be associated with a modest decline in poverty rates (Ellen et al. 2016) and lower levels of segregation (Horn and O'Regan 2011). Research also shows that LIHTC is associated with positive spill-over effects on surrounding property values (Ellen et al. 2001, 2009; Schwartz et al. 2006). By helping to increase the socioeconomic diversity of a neighborhood, such investments attract financial resources and political capital that supports—and advocates—for improvements that may not otherwise materialize (Joseph et al. 2007). Taken together, this evidence suggests that this form of place-based subsidized housing investment is associated with neighborhoods that are likely improving along these dimensions. Because affordable housing provides tenant

project based on these criteria. After 2017, only certain areas no longer qualified as a DDA, including largely low-density areas of Queens.

protections, low-income households that secure such housing in such areas may benefit from this specific form of gentrification without the commensurate risk of displacement that often follows neighborhood change (Cestero 2019; Hyra 2015). For households that are able to obtain or retain residence in neighborhoods that are experiencing dramatic change (regardless of whether that neighborhood is affluent or poor), residents may nonetheless face political and cultural displacement (Hyra 2016) and the psycho-social sequelae that follow.

None of these factors, however, speak to the social fabric of community or how the siting of LIHTC affects the integration of low-income households. Tienda (1991) argues that the primary means by which neighborhoods influence individuals is through the social interaction of residents. Indeed, research shows that the level of neighborhood social organization—emergent phenomena such as social cohesion, informal control, or intergenerational closure—serve as protective factors even in the face of structural disadvantage, including neighborhood poverty (Sampson et al. 1997; Sampson 2011).

Evidence on the social benefits of neighborhood mobility is not encouraging. In Chicago, Sampson found that the low-poverty neighborhoods that MTO experimental movers were able to access had similar levels of social organization to those of the control group. Research on the mixed-income LIHTC developments that replaced demolished public housing in Chicago's South Side provided minimal opportunities for social interaction between poor and more affluent residents (Chaskin and Joseph 2010, 2011). The relative status of low-income households in an affluent community may bring stigma that precludes social integration and amplifies, rather than reduces, the sense of difference between rich and poor (Briggs 1998; McCormick et al. 2012). To the extent that the geographic proximity of social ties is negatively associated with social class and income (Stack 1974), it is less likely that lower-income and more affluent neighbors will

establish meaningful social relations; if such ties are formed, more affluent neighbors are less likely to provide ongoing support that helps low-income residents get by (Venkatesh 2006a). In these and other ways, neighborhood mobility may further isolate already vulnerable households. Such isolation is harmful in many ways, but it may be particularly damaging in the face of disasters (Klinenberg 2002; Venkatesh 2006b), including the current COVID-19 pandemic (Gauthier et al. forthcoming).

Little is known about the overall supply of affordable housing, including where it is located or how it supports moves to opportunity. While LIHTC is the largest source of federal funding for affordable housing, it represents only one source of financing. Because affordable housing generally relies on a combination of funding sources including local subsidy and tax incentives (Olsen 2001), there is no single source of information on how many units have been created or where they are located. In New York City, the low-income units placed in service through LIHTC represent about 40 percent of the affordable housing production and about 45 percent of newly constructed affordable housing units.²

The present analysis extends the existing literature in several ways. First, the analysis of affordable housing enables me to examine the residential context of low-income working or near-poor households. This population may experience different neighborhood conditions as a result of greater levels of human, social, and—indeed—economic capital compared to the poor, yet we know little about their residential context or how it influences various dimensions of well-being. Second, most existing research on affordable housing to date has focused on the supply of housing, describing the characteristics of the neighborhoods where developments are built (Ellen

² See Chapter 3 for details on affordable housing production over time for both the US and New York City.

et al. 2016, 2018). Here, I utilize experimental data to examine the locational attainment of the households that are offered affordable housing compared to a comparable group that was not offered housing. This allows me to assess whether affordable housing facilitates moves to better neighborhoods than would have been experienced without the offer of housing. Lastly, most analyses treat neighborhoods as static, with characteristics measured at a single point of time; yet as Sampson (2011) points out, neighborhoods have trajectories, too. Here, I assess both point in time differences in neighborhoods conditions several years after the offer of affordable housing as well as how these neighborhoods have changed since the developments were built. The latter is valuable for understanding if low-income households are able to secure access to neighborhoods that are improving or on the decline, but it also offers insights into how the neighborhoods where affordable housing is constructed support recipient households and the broader resident population over time.

DATA AND METHODS

This analysis utilizes data from the New York City Housing and Neighborhood Study (NYCHANS), a multi-site experimental study that followed applicants to newly constructed affordable housing at thirteen study sites. These data include information on households that were offered housing (treatment) and those that were eligible but not offered housing because demand exceeds supply (control). Data come from three sources: census data linked to originating address prior to random assignment, census data linked to residential address at follow-up, approximately four to seven years after randomization, and data from in-person interviews with participating treatment and control households completed at follow-up.

NYCHANS identified treatment and control households at each of thirteen study sites. Randomization was implemented separately for each study site following the procedures described in Chapter 3. Study sites were classified according to whether they were sited in a low-poverty tract (defined as a poverty rate of less than 15 percent at baseline) or a moderate-poverty tract (15 percent or higher at baseline). Although I present information on the neighborhoods where study sites are located, at initial construction as well as four- to seven-years later, the primary focus here is on locational attainment of recipient households—that is, where households are living several years after being offered affordable housing.

Baseline addresses were taken from the original housing application; follow-up addresses came from one of two sources: information provided in the follow-up interview as part of a residential history module or paradata collected during follow-up fieldwork. The latter were obtained through in-person recruitment, from returned mail that contained a change of address, or information obtained as part of contact tracing. To reduce attrition in the follow-up analysis, a combination of these sources was used with self-report interview data considered the most reliable; other addresses were filled in with secondary sources wherever possible. For each participating household, residential addresses at baseline and follow-up were geo-coded to its census tract using Geosupport Desktop Edition™, release 20B (NYC Department of City Planning). At baseline, the match rate was 94.0 percent (95.6 percent for treatment and 93.0 percent for controls); at follow-up, it was 87.5 (91.4 percent for treatment and 85.0 for controls).

Geo-coded addresses were matched to two vintages of the American Community Survey (ACS) 5-year data tables. The 2009-2013 ACS tables were used for baseline analysis; 2014-2018 ACS tables were used for follow-up. These vintages generally correspond with the years in which randomization took place (2008 through 2012) and when follow-up interviews were

conducted (2014 through 2018). Census data were matched to the geo-coded census tracts; all addresses that were successfully geo-coded were matched to ACS data (n= X tracts at baseline and Y tracts at follow-up). Specific measures on neighborhood composition were derived from the tract-level data obtained in tabular form, as described below. Other measures were obtained from in-person, structured interviews with respondents four- to seven-years after random assignment.

Neighborhood Composition

Compositional characteristics include tract-level socio-demographics as well as key measures of income and employment obtained from census data. All estimates represent the share of households or persons that meet the select criterion out of the total universe of households or people for whom the measure could be calculated, as determined by Census procedures, except where specifically noted. Household-level measures include poverty rate (Table B17017), households receiving cash assistance and/or benefits through the Supplemental Nutritional Assistance Program (SNAP) (Table B19058), families with minor-aged children headed by a female (Table B11003), and median household income (Table B19013). Population-based measures include the unemployment rate (Table S2301), and the share that identified as White, non-Hispanic, Black, non-Hispanic, Hispanic, Asian, non-Hispanic, or another, non-Hispanic race (including those that indicated two or more races) (Table B03002). The sum of the population that identified as anything other than White, non-Hispanic represents the share of the population classified as a racial/ethnic minority.

To assess the degree of socio-economic segregation, two variations of the Index of Concentration at the Extremes (ICE) were calculated—one for income only and one for income

by race/ethnicity. This approach differs from standard measures of racial/ethnic segregation, such as the Dissimilarity Index, which generally consider only two groups—commonly, White, non-Hispanics and Black, non-Hispanics—and do not adequately account for the diversity of racial/ethnic groups seen in places such as New York City (Reardon and Firebaugh 2002). It also refocuses the discussion on socio-economic dimensions of neighborhood composition, which lies at the heart of neighborhood (dis)advantage, as opposed to treating communities of color themselves as a proxy for concentrated disadvantage or majority white neighborhoods as places of opportunity (Goetz 2019). Most measures of income inequality, such as the Gini coefficient, typically treat both concentration of low- and high-income households equally. From a policy perspective, income inequality at either end of the spectrum poses risks to low-income households (e.g., concentrated disadvantage at the low end, stigma and isolation at the high end); however, to the extent that more affluent communities are associated with a broader range of commercial activity, better performing schools, and greater political capital that secures public resources, it is valuable to distinguish between these forms of income inequality.

The ICE is measured as $\frac{A_i - P_i}{T_i}$, where A is the number of affluent residents i , P is the number of poor residents i , and T is the total number of residents i in each tract (Sampson et al. 2015). The ICE ranges from -1.0 where all residents are poor to 1.0 where all residents are affluent, with estimates at 0 representing either mixed-neighborhoods with a balance of rich and poor residents or middle-income neighborhoods where neither rich nor poor live. Following Krieger (2016), affluent is defined as households with incomes in the top 20 percent of the income distribution ($\$150,000$ or more in 2018) and poor is defined as households in the bottom 20 percent of the distribution (less than $\$20,000$), citywide. These cut-points were determined using data for New York City (Table B19001). A variation was calculated following Krieger

(2016) by calculating A as the number of white, non-Hispanic residents in the top income quintile and P as the number of minority residents with incomes in the bottom quintile.³

Social Organization

Perceptions of neighborhood social organization were captured at follow-up during the in-person interviews with householders or primary caregivers of treatment and control households. These include items used to produce measures of collective efficacy, neighborhood disorder, local amenities, and perceived safety. Although collective efficacy and neighborhood disorder scales were designed to be a neighborhood-level measures aggregated from multiple responses in a given geography (Echeverría et al. 2004; Sampson and Raudenbush 1999), there are no recent representative data measuring these dimensions in New York City. NYCHANS respondents are distributed across multiple neighborhoods, but there are too few responses and these households are not representative of all residents; therefore, these data cannot be used to generate meaningful ecological measures. Some argue that because perceptions of order or trust vary in systematic ways *within* neighborhoods, the standard approach of averaging responses across individuals to estimate the overall level of one or more neighborhood conditions is flawed, washing over important differences among sub-groups that may guide individual behavior (Hipp 2016; Hipp et al. 2018). Here, I utilize individual responses to represent the perceived conditions in respondent's own neighborhoods. This approach has been used in prior work to assess the association between perceived neighborhood conditions and individual outcomes (Rosenbaum 2008; Ross et al. 2001).

³ Krieger et al. 2016 operationalized this by computing the number of White, non-Hispanic residents in the top income quintile compared to Black, non-Hispanics in the bottom quintile. Here, using all non-white residents as opposed to only Black, non-Hispanics factors in the greater racial/ethnic diversity of New York City.

Neighborhood collective efficacy was measured using two sub-scales, one for social cohesion and one for informal social control, following standard practice (Sampson et al. 1997). Social cohesion items asked respondents how strongly they agreed with each of the following using a bi-polar 5-item Likert response scale ranging from strongly agree to strongly disagree: (1) "People around here are willing to help their neighbors;" (2) "This is a close-knit neighborhood;" (3) "People in this neighborhood can be trusted;" (4) "People in this neighborhood generally don't get along with each other;" and (5) "People in this neighborhood do not share the same values." Items 4 and 5 were reverse coded such that higher scores represent more social cohesion. Informal social control items asked respondents how likely it was that their neighbors would intervene under each of the following scenarios using a 5-item Likert response categories ranging from very likely to very unlikely: (6) "If a group of neighborhood children were skipping school and hanging out on a street corner, how likely is it that your neighbors would do something about it?" (7) "If some children were spray-painting graffiti on a local building, how likely is it that your neighbors would do something about it?" (8) "If a child was showing disrespect to an adult, how likely is it that people in your neighborhood would scold that child?" (9) "If there was a fight in front of your house and someone was being beaten or threatened, how likely is it that your neighbors would break it up?" and (10) "Suppose that because of budget cuts the fire station closest to your home was going to be closed down by the city. How likely is it that neighborhood residents would organize to try to do something to keep the fire station open?" Higher scores represent more social control. The responses for each sub-scale were averaged to form a single index score for each and an overall score for collective efficacy averaged all ten responses. Cronbach's alpha for the full collective efficacy scale was 0.77 (alpha for Social Cohesion was 0.63; alpha for

informal social control was 0.75). These alpha scores are consistent with a representative survey of New York City neighborhoods conducted fifteen years ago (Ahern and Galea 2011).

Neighborhood disorder was measured using the same general approach as collective efficacy, relying on individual responses rather than aggregation across multiple respondents in a given area. Disorder comprises two sub-scales: one for physical disorder and one for social disorder following standard practice.⁴ For each item, respondents were asked how big a problem each item was in their neighborhood where they live now—“a big problem,” “somewhat of a problem” or “not a problem.” Based on pre-testing, a fourth answer option was added for NYCHANS, “I do not see this in my neighborhood,” which lowered item non-response and allowed for greater flexibility in scoring. Here, both “not a problem” and “I do not see this in my neighborhood” were scored as a 0, “somewhat of a problem” was scored as 1, and “a big problem” was scored as 2 such that a higher score indicated higher levels of disorder.

The physical disorder sub-scale consists of six items: (1) litter, broken glass or trash on the sidewalks and streets; (2) graffiti on buildings and walls; (3) vacant or deserted houses; (4) empty storefronts; (5) crumbling sidewalks; and (6) poor street lighting. The social disorder scale includes five items: (7) prostitution in your neighborhood; (8) drinking in public; (9) people selling or using drugs; (10) groups of teenagers or adults hanging out in the neighborhood and causing trouble; and (11) different social groups who do not get along with

⁴ The Project on Human Development in Chicago Neighborhoods (PHDCN) is credited with the development of items that are often replicated in other surveys, including collective efficacy and disorder. The original PHDCN items included in the Community Survey (CS) did not distinguish between physical and social disorder subscales, but a substantial body of work following in the tradition has considered these to be separate, complementary forms of disorder. For information on the development of alternative disorder measures see Ross and Mirowsky (1999). For details on the PHDCN CS scales see: <https://www.icpsr.umich.edu/web/pages/NACJD/guides/phdcn/community-survey.html>.

each other. As with collective efficacy, the average score for each sub-scale and for all items were used to generate summary scores for each respondent. The Cronbach's alpha for the full neighborhood disorder scale was 0.87 (alpha for physical disorder was 0.75; alpha for social disorder was 0.84).

Neighborhood Safety

Perceptions of safety were measured in two ways. First, respondents were asked how safe the streets around their home were at night, with a 5-point bi-polar response category ranging from "very safe" to "very unsafe." This was coded as a dichotomous outcome with 1 indicating those that reported the neighborhood as "very safe" and 0 for all other responses. To capture fear of crime, a second item asked, "How worried are you about you or someone else in your household being a victim of a crime at home or elsewhere in your neighborhood?" with a 5-point unipolar response option ranging from "not at all worried" to "extremely worried." This was coded as a dichotomous outcome with 1 indicating those that reported being extremely or very worried and 0 indicating all other responses.

Neighborhood Amenities

The last dimension of neighborhood quality assessed here is the availability and quality of various local amenities. These data were captured as part of the follow-up interview, with respondents asked to indicate on a scale from 1 to 10 how strongly they agreed with the following statements: (1) "There are enough places in my neighborhood where I can buy groceries and basic supplies;" (2) "The grocery stores around here are close to my home;" (3) "The grocery stores around here are too expensive for me to regularly shop there;" (4) "The grocery stores around here sell fruits and vegetables that are fresh and high quality;" (5) "The

only restaurants in my neighborhood are fast food chains;” (6) “There is a park or green space that is close to my home;” (7) “The park or green space nearest to my home is clean and safe;” (8) “There are stores in my neighborhood that are open all times of day and night;” (9) “There are not enough local banks to serve the people who live in my community adequately;” (10) “There are a lot of check cashing establishments, places to get a pay day loan, or pawn shops in my neighborhood;” (11) “There are local organizations that have a strong presence in the neighborhood and contribute to the overall sense of community;” and (12) “ There are local organizations in my neighborhood that I would go to if I need help or assistance.”

Those with co-resident children were asked three additional items: (13) “There are adequate places for children to play in my neighborhood;” (14) “The playground nearest to my home is clean and safe;” and (15) “There are adequate childcare options in my neighborhood for families like mine.” Items 3, 5, 9, and 10 were reverse coded such that the higher the score, the more amenities (and fewer disamenities). As with the other scales, the responses were averaged to create a single index score. The Cronbach’s alpha for the neighborhood amenities scale was 0.75.

BASELINE CONDITIONS

Table 6.1 shows the neighborhood characteristics where the NYCHANS study sites were built. Sites located in low-poverty neighborhoods (those with a tract poverty rate of less than 15 percent) had a smaller overall population and fewer occupied housing units compare to those located in moderate-poverty areas. They also had a smaller share of racial/ethnic minorities, households receiving public assistance, and female-headed households, and a higher median tract-level household income.

The two Indices of Concentration at the Extremes (ICE) show substantial differences in income concentration—affordable housing located in low-poverty tracts was slightly positive, indicating relative balance between those earning the highest and lowest income quintiles, with slightly more high-earners. In contrast, affordable housing located in higher-poverty tracts showed high levels of income segregation with ICE indicating concentration among the lowest earners.

Table 6.1: Baseline Neighborhood Characteristics of NYCHANS Study Sites

Tract Characteristics of Study Sites at Baseline	Baseline Poverty Rate		All
	< 15%	15% +	
Total population in tract	2,120	3,685	2,928
Total number of households in tract	988	1,308	1,153
Racial/ethnic composition			
Share of tract that is White, non-Hispanic	33%	9%	21%
Share of tract that is Black, non-Hispanic	23%	40%	32%
Share of tract that is Hispanic	28%	46%	38%
Share of tract that is Asian, non-Hispanic	12%	3%	8%
Share of tract that is an Other race, non-Hispanic	4%	1%	3%
Share of tract that is minority	67%	91%	79%
Tract poverty rate	13%	38%	26%
Tract median household income	\$67,917	\$28,274	\$47,446
Share of tract receiving cash assistance and/or SNAP	12%	34%	23%
Share of tract that is unemployed	5%	5%	5%
Share of tract that is female-headed with minor child(ren)	17%	35%	26%
Index of Concentration at the Extremes (ICE)			
Average ICE score: Race and Income	0.04	-0.38	-0.18
Average ICE score: Income	0.07	-0.39	-0.17

Source: American Community Survey 2009-2013

Data are weighted based on the number of cases in a given study site/tract.

Table 6.2 shows the baseline characteristics of the NYCHANS sample, including the compositional characteristics of the originating neighborhoods (where they lived at the time of application for affordable housing). The data are stratified by the type of affordable housing site to which they applied—those that applied to housing in a low-poverty tract and those that applied to housing in a moderate-poverty tract. Within each, treatment and control groups are

reasonably balanced, showing similar average household income and size. A slightly higher share of treatment households applied with one or more child relative to controls that applied to live in a low-poverty site ($p < 0.05$) and they were more likely to have originated from a tract with a poverty rate above 40 percent ($p < 0.10$).

Treatment households that applied to live in a moderate-poverty tract were more likely to have originated in a neighborhood with a population that had a slightly higher share of White, non-Hispanics ($p < 0.05$) and a slightly lower tract-level median household income ($p < 0.10$) than controls that applied to these same sites. However, omnibus tests of joint significance fail to reject the null hypotheses that all coefficients are equal to zero within low-poverty and moderate-poverty study sites.

There are important differences in the originating neighborhoods of those that applied to live in a low- versus a moderate-poverty site. Those that applied to affordable housing located in a low-poverty neighborhood were living in areas with a higher proportion of White, non-Hispanics and a lower share of minorities (about 30 percent compared to about 15 percent among those that applied to live in a higher-poverty neighborhood). They also applied from areas with a lower share of female-headed households, a lower average poverty rate, a lower share of households receiving public benefits, and a higher tract-level median income. Households that applied to affordable housing in a low-poverty tract originated from neighborhood that exhibited less structural disadvantage than those that applied to move to affordable housing in a higher-poverty tract. Moreover, in comparison to Table 6.1, households that applied to move to affordable housing in a low-poverty tract would move to an area that, on average, exhibited still less disadvantage. On average, they applied to tracts with a smaller minority population, higher median household income, and less income segregation than where they originated.

Table 6.2: Originating Neighborhoods, by Group Assignment and Poverty Rate

	At time of application for housing							
	Applied to Low-poverty Site (<15%)			Applied to Mod-Poverty Site (15%+)				
	Ct	Mean	Tx	Mean	Tx	Mean		
		p-value	n		p-value	n		
Household characteristics (A)								
Household income	\$29,599	\$30,490	0.914	1,131	\$29,881	\$30,686	0.391	1,434
Household size	2.0	2.0	0.776	1,134	2.1	2.0	0.183	1,438
Applied with 1+ child	33.9%	36.8%	0.024 *	1,134	44.5%	44.0%	0.204	1,438
Originating Neighborhood Characteristics (A)								
Home address could not be geo-coded	7.7%	4.7%	0.199	1,134	4.9%	4.0%	0.983	1,438
Socio-demographics								
Share of tract that is White, non-Hispanic	30.4%	33.2%	0.917	1,046	13.5%	14.2%	0.047 *	1,373
Share of tract that is Black, non-Hispanic	26.8%	26.0%	0.794	1,046	34.7%	33.8%	0.080 ^	1,373
Share of tract that is Hispanic	28.1%	26.9%	0.725	1,046	44.2%	44.5%	0.843	1,373
Share of tract that is Asian, non-Hispanic	12.3%	11.2%	0.896	1,046	5.5%	5.3%	0.641	1,373
Share of tract that is an Other race, non-Hispanic	2.4%	2.7%	0.902	1,046	2.2%	2.2%	0.401	1,373
Share of tract that is female-headed with minor child(ren)	17.1%	16.0%	0.407	1,046	25.8%	26.0%	0.168	1,373
Income and Employment								
Tract median household income	\$54,129	\$55,748	0.232	1,046	\$37,307	\$36,567	0.065 ^	1,373
Tract poverty rate	21.7%	21.7%	0.247	1,046	29.9%	30.1%	0.178	1,373
Share living in low poverty (<10%) tract	37.0%	42.9%	0.515	1,046	13.0%	10.6%	0.660	1,373
Share living in high poverty (>40%) tract	10.5%	15.3%	0.077 ^	1,046	23.4%	22.4%	0.392	1,373
Share of tract receiving cash assistance and/or SNAP	24.0%	23.7%	0.487	1,046	35.2%	34.0%	0.307	1,373
Index of Concentration at the Extremes (ICE)								
Income	4.9%	5.0%	0.873	1,046	5.7%	5.5%	0.162	1,373
Income and race/ethnicity	-0.13	-0.11	0.749	1,046	-0.28	-0.29	0.187	1,373
	-0.14	-0.12	0.407	1,046	-0.28	-0.29	0.144	1,373
	F-statistic	p-value	n	F-statistic	p-value	n	F-statistic	p-value
	1.04	0.416	1,134	1.08	0.367	1,438		

^ $p < .10$ * $p < .05$ ** $p < .01$ *** $p < .001$

Sources: (A) Administrative data, including originating address matched to ACS 5-year tract-data (2009-2013); (SR) NYCHANS Baseline Survey

Data are weighted to account for differential group assignment ratio within each site. Differences between treatment and control means were estimated with OLS models that regressed each variable on group assignment, controlling for a set of dummies indicating eligibility by unit type and set-aside/preference in the housing lottery (randomization blocks). The F-statistic was calculated to evaluate the joint significance of all variables shown in the table, controlling for randomization blocks; to address participation rates and item non-response in the baseline survey, missing values were recoded and models included a set of dummies for missing variables.

Those that applied to move to affordable housing in a moderate-poverty tract, on the other hand, were in neighborhoods that exhibited higher levels of disadvantage to begin with but applied to move to *still more* disadvantaged areas than where they originated. On average, they applied to sites in neighborhoods with still higher income segregation, fewer economic resources, and a larger share of racial/ethnic minorities. It is possible that these households have a limited choice in the location of affordable housing that is near to their originating area—both in terms of spatial and social distance. Rather, this may represent a specific form of consideration set whereby affordable housing is primarily located either in very affluent areas where subsidized housing is built as part of a mixed-income (subsidized/market) complex or in high-poverty areas where development and land costs are lower and/or where there is less opposition to creating subsidized housing. In deciding between these options, low-income households may opt to take the relatively more disadvantaged location in exchange for better housing even if it means accepting a downward neighborhood trajectory.

FINDINGS AT FOLLOW-UP

Table 6.3 shows the neighborhood characteristics of treatment and control households approximately four to seven years after randomization, stratified by the baseline poverty status of the affordable housing sites to which they applied. The neighborhoods of treatment households that were offered affordable housing in a low-poverty tract have a significantly lower share of Black, non-Hispanic population ($p < 0.001$, $q = 0.001$), households receiving public assistance ($p < 0.001$, $q = 0.001$), and a higher median tract-level household income ($p < 0.001$, $q = 0.001$). They also live in areas with a lower average poverty rate ($p < 0.001$, $q = 0.001$). The measures of ICE show that those offered affordable housing in a low-poverty tract experience a similar level of

income segregation as controls that applied to these same study sites, but in the opposite direction—slight concentration among higher earners for treatment households compared to slight concentration among low-earners for controls ($p < 0.001$, $q = 0.001$). Treatment households that were offered affordable housing in a higher-poverty tract have a significantly higher share of Black, non-Hispanic neighbors ($p < .001$, $q = 0.001$), households receiving public assistance ($p < .001$, $q = 0.001$), and a lower median tract-level household income ($p = 0.004$, $q = 0.021$). There is no meaningful difference in poverty rate between treatment and control households at follow-up; however, treatment households experience marginally higher levels of income segregation ($p = 0.032$, $q = 0.113$) and to a greater degree by race and income ($p < 0.001$, $q = .001$).

Table 6.4 examines NYCHANS study participants' perceptions of their neighborhoods where they were living at follow-up. There are no significant differences between treatment and control groups on collective efficacy, either social cohesion or informal social control. There are, however, differences in exposure to both physical and social neighborhood disorder. Treatment households that were offered affordable housing in a low-poverty neighborhood show significantly lower average scores on all three scales ($p < .01$, $q < .01$ on all three measures) while treatment households that were offered housing in a higher-poverty area reported significantly higher average scores on social disorder ($p < 0.001$, $q = 0.001$) and overall disorder ($p = 0.008$, $q = 0.034$). There was no measurable treatment effect in either perceptions of safety or worry about crime, however, those that applied to housing in a low-poverty neighborhood reported feeling safer than those that applied to housing in a higher-poverty area. There was a significant treatment effect on the availability and quality of local amenities, with those offered housing in a low-poverty neighborhood reporting better amenities and those offered housing in a higher-poverty area reporting, on average, worse amenities.

Table 6.3: Neighborhoods at Follow-Up, by Group Assignment and Poverty Rate

Neighborhood Composition	4 to 7 years after random assignment								
	Low Poverty Study Site			Moderate Poverty Study Site					
	Ct Mean	Tx Mean	p-value	FDR q-value	Ct Mean	Tx Mean	p-value	FDR q-value	
Socio-demographics									
Share of tract that is minority	70%	68%	0.429	0.638	87%	89%	0.048	*	0.162
White, non-Hispanic	30%	32%	0.429	0.638	14%	12%	0.05	*	0.16
Black, non-Hispanic	28%	19%	0.000	***	33%	40%	0.000	***	0.001
Hispanic	27%	29%	0.065	^	45%	43%	0.119		0.308
Asian, non-Hispanic	13%	17%	0.000	***	6%	4%	0.001	**	0.007
Other race, non-Hispanic	3%	2%	0.006	**	2%	2%	0.000	***	0.001
Female-headed with minor child(ren)	15%	10%	0.000	***	23%	29%	0.000	***	0.001
Income and Employment									
Tract poverty rate	21%	15%	0.000	***	29%	30%	0.059	^	0.185
Share living in high poverty (>40%) tract	12%	1%	0.000	***	20%	4%	0.000	***	0.001
Share living in low poverty (<10%) tract	19%	13%	0.001	***	7%	2%	0.000	***	0.001
Change in poverty rate (Baseline to Follow-up)	-1%	-6%	0.000	***	-1%	0%	0.004	**	0.021
Receiving cash assistance and/or SNAP	24%	15%	0.000	***	34%	29%	0.000	***	0.001
Unemployed	4%	3%	0.000	***	5%	4%	0.009	**	0.038
Tract median household income	\$65,673	\$93,853	0.000	***	\$44,496	\$39,614	0.004	**	0.021
Index of Concentration at the Extremes (ICE) score									
Average ICE score: Income	-0.06	0.09	0.000	***	-0.22	-0.25	0.032	*	0.113
Average ICE score: Race and Income	-0.08	0.04	0.000	***	-0.25	-0.29	0.000	***	0.001

^ $p < .10$ * $p < .05$ ** $p < .01$ *** $p < .001$

Source: 2014-2018 American Community Survey (ACS)

Data are weighted to account for differential group assignment ratio within each site. Differences between treatment and control means were estimated with OLS models that regressed each variable on group assignment, controlling for study site and a set of dummies indicating eligibility by unit type and set-aside/preference.

Table 6.4: Local Social Context at Follow-Up, by Group Assignment and Poverty Rate

Neighborhood Social Organization	4 to 7 years after random assignment							
	Low Poverty Study Site				Moderate Poverty Study Site			
	Ct Mean	Tx Mean	p-value	FDR q-value	Ct Mean	Tx Mean	p-value	FDR q-value
Collective Efficacy scale	3.15	3.19	0.293	0.492	3.14	3.06	0.404	0.669
Social Cohesion scale	3.14	3.22	0.146	0.332	3.08	3.01	0.442	0.696
Informal Social Control scale	3.16	3.16	0.653	0.790	3.19	3.13	0.488	0.720
Neighborhood Disorder scale	0.55	0.42	0.000 ***	0.001 **	0.72	0.82	0.008 **	0.034 *
Physical Disorder scale	0.53	0.41	0.001 **	0.007 **	0.62	0.68	0.187	0.417
Social Disorder scale	0.58	0.42	0.000 ***	0.001 **	0.83	0.98	0.000 ***	0.001 **
Safety								
Streets are very safe at night	17%	22%	0.278	0.476	10%	8%	0.184	0.414
Extremely or very worried about crime	14%	9%	0.072 ^	0.193	23%	24%	0.228	0.463
Neighborhood Amenities scale	5.68	6.04	0.003 **	0.016 *	5.38	5.03	0.001 ***	0.007 **

^ $p < .10$ * $p < .05$ ** $p < .01$ *** $p < .001$

Source: NYCHANS Follow-Up Interviews

Data are weighted to account for differential group assignment ratio within each site. Differences between treatment and control means were estimated with OLS models that regressed each variable on group assignment, controlling for study site and a set of dummies indicating eligibility by unit type and set-aside/preference.

NEIGHBORHOOD CHANGE

Table 6.5 shows the neighborhood characteristics where study sites are located at follow-up as well as the change from 2013 (baseline). Overall, there are stark differences in the compositional characteristics of the neighborhoods where affordable housing sites were built, and this persists over time. Areas that were low-poverty when the study sites were built continue to have a smaller average population and fewer occupied housing units, exhibit more racial/ethnic diversity and lower rates of public assistance and female-headed households. They also continue to have lower poverty rates and significantly higher median tract-level household incomes. Income segregation in the low-poverty neighborhoods is low, but tends toward slight concentration among higher earners compared to substantial income segregation in destination neighborhoods that had higher poverty rates at baseline.

Table 6.5: Neighborhood Characteristics of NYCHANS Study Sites at Follow-Up

Tract Characteristics of Study Sites at Follow-Up	Conditions in 2018			Absolute Change from 2013		
	Baseline			Baseline		
	Poverty Rate			Poverty Rate		
	< 15%	15%+	All Sites	< 15%	15%+	All Sites
Total population in tract	3,371	4,562	3,986	1,252	877	1,058
Total number of households in tract	1,612	1,711	1,663	623	403	510
Racial/ethnic composition						
Share of tract that is White, non-Hispanic	34%	10%	22%	1%	1%	1%
Share of tract that is Black, non-Hispanic	18%	41%	30%	-5%	1%	-2%
Share of tract that is Hispanic	28%	44%	36%	0%	-2%	-1%
Share of tract that is minority	66%	90%	78%	-1%	-1%	-1%
Tract poverty rate	14%	31%	23%	1%	-6%	-3%
Tract median household income	\$101,024	\$36,892	\$67,907	\$28,662	\$6,767	\$17,356
Share of tract receiving cash assistance and/or SNAP	13%	30%	22%	1%	-4%	-2%
Share of tract that is unemployed	3%	4%	4%	-1%	-1%	-1%
Share of tract that is female-headed with minor child(ren)	9%	31%	20%	-8%	-4%	-6%
Index of Concentration at the Extremes (ICE)						
Average ICE score: Race and Income	0.07	-0.32	-0.13	0.03	0.07	0.05
Average ICE score: Income	0.13	-0.27	-0.08	0.06	0.12	0.09

Source: American Community Survey (ACS) 5-year file: 2014-2018; Tract-level difference between ACS 2009-2013 and ACS 2014-20. Data are weighted based on the number of cases in a given study site/tract. Household income shown in 2018 dollars

The right side of Table 6.5 examines the average tract-level change in neighborhoods where study sites were built. Overall, there were only small changes in the racial/ethnic composition over this five-year period, with small reductions in the concentration of racial/ethnic minorities in moderate-poverty tracts. The median income of both types of neighborhoods increased; however, the income in tracts that were low-poverty at baseline experienced dramatic increases, whereas neighborhoods that were higher-poverty at baseline experienced a smaller increase. Moderate-poverty tracts experienced a 6-point decline in average poverty rate and substantial increases in both ICE measures that brought them closer to 0, indicating less concentration among low earners relative to baseline.

DISCUSSION

This analysis goes beyond past research on affordable housing by examining the neighborhood conditions of residents compared to where a comparable group of households is living without the offer of housing. It is possible that the population served is able to access better neighborhoods without government assistance, as they have more financial resources than their counterparts living in public housing or with tenant-based vouchers. Yet, the data show clearly that there are substantial differences between treatment and control groups in terms of neighborhood composition and, to a lesser extent, residential context and social organization.

The impact of affordable housing on neighborhood conditions varies substantially based on where it is located. In low-poverty neighborhoods, it provides access to socioeconomically and racially integrated areas that are becoming more affluent over time. In contrast, affordable housing that is located in higher-poverty communities exhibits relatively high levels of segregation by race and income and is embedded in neighborhoods that are characterized by

various dimensions of structural disadvantage. Moreover, while these areas have shown some improvement in the form of lower average poverty rate and median tract-level household income, the neighborhood change is less dramatic than in the more affluent communities where affordable housing has been built.

Although there are large differences in neighborhood safety between the populations that applied to affordable housing located in low- versus higher-poverty tracts, there were no significant differences between those assigned to the treatment group relative to controls that applied to those same study sites. More surprising, there were no differences in collective efficacy among treatment and control groups or between those who applied to live in low- or moderate-poverty areas. It is possible that the use of individual- rather than neighborhood-level measures is driving this finding of no effect. Additional data on the social organizational characteristics of New York City neighborhoods are necessary to test this hypothesis. The findings here show that affordable housing produces large changes in neighborhood conditions for recipient households, moving them to the extremes of advantage or disadvantage. While the disadvantaged neighborhoods where affordable housing is sited are, on average, experiencing positive neighborhood change in the form of less segregation by income and race, such changes are slow and may be tenuous. On the other hand, low-income households that realize mobility to low-poverty areas are experiencing rapid change in their neighborhoods. This may bring with it certain benefits, but the lived experience of these households as they become ever-more disadvantaged relative to their affluent neighbors may lead to social isolation and limited access to goods and services that are within financial reach. I turn to some of these questions in the next chapter where I examine the structure, composition, and use value of these households' social relationships in their neighborhoods.

CHAPTER SEVEN

SOCIAL NETWORKS AND THE MOBILIZATION OF NEIGHBORLY TIES¹

The social networks of low-income individuals tend to be small, homogenous, locally-based, and dense (Campbell and Lee 1992; Fisher 1982; Stack 1974). Relationships with similarly situated kin and neighbors may help individuals get by (Venkatesh 2006a), but they are less likely to help them get ahead because of the limited resources of members and the lack of bridges to outside ties that could confer advantage (Briggs 1997; Burt 2001). Local networks can foster the conditions that generate community cohesion by engendering trust, a sense of shared identity, and a structured system of mutual obligations and expectations that govern interactions now and in the future (Sampson 2011). But they can also inhibit social control if relationships are strong enough to overlook the illicit behavior of family or friends (Patillo 1998), create a downward leveling of norms and expectations among community members (Portes 1998), reinforce negative or harmful behaviors that are common to, or accepted among, network members (Christakis and Fowler 2007), and drain limited resources when neighbors repeatedly require support or assistance (Curley 2009). Reliance on local networks may partly explain the persistence of socioeconomic segregation (Krysan and Crowder 2017; Rosen 2017) and the intergenerational transfer of spatial inequality (Sharkey 2013).

A central motivation for the ongoing efforts to deconcentrate poverty through the redevelopment of public housing, the creation of mixed-income communities, and mobility to low-poverty neighborhoods is the potential for low-income households to accumulate social capital through their residential location (Joseph et al. 2007). This relies on the ability of low-income residents to form meaningful relationships with better-off neighbors. In disadvantaged

¹ Sections of this chapter were previously published in Gaumer et al. (2014).

neighborhoods, higher-income neighbors are often residents of affordable housing—individuals who generally earn too much to qualify for most forms of public assistance but still struggle to find adequate housing in the private market. Less is known about the social life of the population served by affordable housing and whether their networks are similar to their lower-income counterparts in terms of the number or geographic proximity of relationships. These questions are critical not only for understanding the impact of affordable housing on the well-being of the population served, but also for assessing how neighbor networks are formed and sustained across socioeconomic strata.

In this chapter, I evaluate the impact of affordable housing on the personal networks of low-income households using a unique experimental study conducted in New York City. I focus on two dimensions: (1) the structure of social networks (e.g., size, composition, geographic proximity, and relative status of members) and (2) the content of local relationships—specifically, the extent to which neighbors exchange different kinds of support or resources. I also examine whether the location of affordable housing, either in low-poverty or higher-poverty neighborhoods, has a differential effect on local networks. This is a first step toward understanding the personal networks of the population served by affordable housing and the ways that these housing programs shape the social lives of both recipients and nearby neighbors.

BACKGROUND

Access to social resources is determined in part by the composition of one's social network and the properties of the network as a whole, including the range of the network, strength of ties, level of reciprocity, and density of the network (Lin 2000). The structure of networks facilitates some opportunities and behaviors while constraining others. Dense networks

(wherein most of the individuals know one another and few others outside the group) generally comprise similar individuals and are characterized by high levels of trust and mutual obligation that foster the sharing of available resources and effective social control (Briggs 1998; Coleman 1988). The kind of interdependence that is typical of dense, bonding networks, however, can produce negative consequences for its members. Individuals can be overburdened by the demands of their obligations to others even when favors are likely to be returned, particularly in a setting where individuals are frequently in need of support because of precarious finances or personal instability. Curley (2009) reported that relocated public housing residents are less likely to form relationships with new neighbors to preserve precious resources and avoid potentially “draining” ties. Solidarity among group members who bond over shared adversity may face a downward leveling of norms, whereby individual successes are viewed as unlikely or impossible (Portes 1998). Perhaps most important, dense networks are likely to convey redundant information and lack bridges to outside resources (Burt 1992) such that advice and assistance lead to the reproduction, rather than the improvement, of life circumstances (Granovetter 1995).

In contrast, wide-ranging networks comprising weak ties are more likely to serve individuals by broadening knowledge and access to information, facilitating connections to other resources through brokered ties, and generally increasing one’s competitive edge (Burt 2001; Granovetter 1973). Strong and weak ties serve individuals and families in different ways, but it has been suggested that the presence of these bridging ties is particularly critical for low-income residents’ upward mobility (Briggs 1998). Although weak ties have been identified as beneficial for securing work and job advancement (Granovetter 1973), these types of relationships are less likely to provide sustained support to individuals, who thus may require a larger network to achieve the same levels of engagement provided by fewer strong ties. Larger networks require

maintenance and may be less likely to fulfill obligations, making them costly for individuals to acquire and sustain (Burt 1992).

Whereas network structure defines the extent of available resources (opportunity) and propensity for certain relations to be engaged, relationship content focuses on activated ties and the prevalence of use for specific instrumental action (Hurlbert et al. 2001). In this chapter, I examine three types of support, each of which may benefit low-income residents in different ways. Emotional or “expressive support” includes those actions related to general caring, empathy, or sharing between trusted individuals or confidants. The presence or absence of this type of support has been shown to have both direct and indirect effects on well-being (Berkman 1995; J. House et al. 1988; J. S. House et al. 1988) and may be particularly salient for helping low-income households cope with both acute and chronic stress (Thoits 1982). “Instrumental support” is the provision of practical assistance, either in the form of small favors or more substantial commitment of resources. This form of assistance may convey critical resources to low-income residents who lack financial resources and frequently live at the margin, enabling individuals to acquire services or goods not otherwise attainable because of limited means (Edin and Lein 1997; Venkatesh 2006a). “Informational” support is the provision of knowledge or advice that enables people to help themselves. Obtaining knowledge through one’s network may be less costly than acquiring it on one’s own (Coleman 1988); however, for low-income households, the value of this type of support is likely contingent on whether it provides new information not otherwise available (Hurlbert et al. 2006) and on the extent to which it affords opportunities or advantages (Granovetter 1995; Henley et al. 2005).

Residential Context and Social Networks

The networks of low-income individuals reflect and, in turn, reinforce the neighborhood conditions in which they live. Residents of disadvantaged neighborhoods tend to have smaller networks (Tigges et al. 1998; York and Behler 2015) and fewer connections to those with higher levels of educational attainment or stable employment (Fernandez and Harris 1992; Rankin and Quane 2002). Research shows that racial disparities in network size and composition are largely explained by differences in where people live—particularly the poverty rate—rather than the characteristics of individuals themselves (Small 2007).

Where one lives can promote relationships with some and constrain others—particularly in dense urban environments where more people frequent the same shops, walk as often as drive, and live in multi-family buildings. Neighbors who live close by may be more likely to see one another regularly by chance, they may share a similar daily round while running errands or dropping children off at school, and they share at least some aspects of a common identity—the same residential neighborhood—even if they differ in other ways. But who one encounters, with what frequency, and in what context differs from one community to the next. Residential neighborhoods structure social relationships by shaping the set of individuals one is likely to encounter, the opportunity to form certain bonds, and the likelihood that these relationships will be activated for specific ends.

Low-income residents may have less time or resources to engage in social life or to maintain a wide range of relationships as a result of managing everyday stresses and struggling to make ends meet. These conditions make it even more important that the relationships one does invest in not only provide direct forms of support, but that they can be relied upon when in need. For many low-income families, the assistance provided by family and friends is vital to one's

survival, including economic assistance, help with childcare, housing, and more (Edin and Lein 1997; Venkatesh 2006a).

Disadvantaged neighborhoods may structure local networks in other ways, including the institutional context in which residents live. Local institutions present opportunities for social interaction and may serve as brokers to other resources (Small 2009), but the type of institutions and population served is not uniformly distributed across space. For example, in New York City poor neighborhoods are more likely to have publicly-funded childcare centers rather than private ones (Small and Stark 2005). While caregivers are likely to meet one another and share information about their children at all facilities, the likelihood of meeting primarily those who qualify for subsidized care in a poor neighborhood is much greater. Small and McDermott (2006) found that poor neighborhoods in general have more establishments than higher-income neighborhoods, but these are more likely to be small businesses or institutions with fewer than 20 employees. This may result in residents of low-income neighborhoods engaging with fewer people on a regular basis as neighborhood residents visit a wider number of small barbershops or salons, grocery stores, or other local establishments.

Changes in social context that result from residential mobility may alter the personal networks of individuals and families in various ways. Moving out of poor neighborhoods may disrupt existing neighbor networks that are damaging to individuals (Curley 2009) and offer the chance to establish new relationships with better off neighbors (Joseph et al. 2007). Yet, evidence suggests that former public housing residents face substantial barriers to establishing meaningful relationships with more affluent neighbors (Chaskin and Joseph 2010; McCormick et al. 2012). Rasinski et al. (2010), however, showed that residents engage with new neighbors in a variety of activities related to help and advice and most of the long-term residents studied by

Tach (2009) reported instrumental support exchanges with neighborhood-based networks. Kleit (2010) found substantially lower rates of neighboring after relocation off site but reported little change in access to social support among those without a language barrier. Reliance on family and friends for everyday assistance may induce secondary moves back to low-income communities that offer necessary social supports or preempt moves to higher-opportunity neighborhoods in the first place (Boyd et al. 2010; Edin et al. 2012; Rosenbaum et al. 2003).

Unlike public housing or tenant-based vouchers, affordable housing serves a higher-income population than public housing or vouchers, targeting low-income, working households that often earn too much to qualify for other forms of public assistance, but still struggle to find adequate housing in the private market. Those in affordable-housing residents may be less socially isolated than the lowest-income residents who qualify for public housing or vouchers, given the positive correlation between income and social network size (Marsden 1987; Moore et al. 2011). Higher rates of labor force participation may provide opportunities for a wider range of relationships, including those with coworkers and employers. These same factors may also make it less likely that affordable-housing residents' networks are locally bound—many or even most of their relationships may be with individuals who live in other parts of the city or country. If so, moving to affordable housing may not alter their relationships in any significant way. On the other hand, residents who share the experience of applying for affordable housing, move to a newly constructed building (and sometimes also a new neighborhood) within a few months of one another, and live in close proximity under the same roof may share common experiences that foster relationships with one another.

Establishing relationships with neighbors may benefit affordable-housing residents even if they do not exhibit the kind of social isolation often associated with the most disadvantaged

households. Forming local ties may generally increase residents' sense of belonging and ease the transition to life in a new building and, in many cases, a new neighborhood. Ties to other low-income working neighbors who face similar challenges may facilitate the sharing of strategies and resources that help individuals and families to buffer stress and manage everyday challenges. Weak ties to neighbors, particularly with those who are better off, may augment existing relationships and thereby provide access to additional resources or new information that creates opportunities and promotes upward mobility over time.

DATA AND METHODS

This analysis utilizes data from the New York City Housing and Neighborhood Study (NYCHANS), a multi-site experimental study that followed applicants to newly constructed affordable housing at thirteen study sites. These data include information on households that were offered housing (treatment) and those that were eligible but not offered housing because demand exceeds supply (control). This analysis focuses on the social network module administered during the in-person follow-up interviews, which were conducted four- to seven-years after random assignment, for the householder or primary caregiver from treatment and control households.

NYCHANS captured various data on the social relationships and network characteristics of the respondent (“ego”) as part of the follow-up interview. This module was developed specifically to solicit information on relationships (“ties”) with individuals (“alters”) who live in the same residential neighborhood, including so-called “weak” ties or less formal relationships, and how these connections have been mobilized for specific uses (Jacobowitz and Gaumer 2016). These data were used to describe two complementary networks: the “core” network of the respondent—primary relationships that the respondent relies on in everyday life regardless of

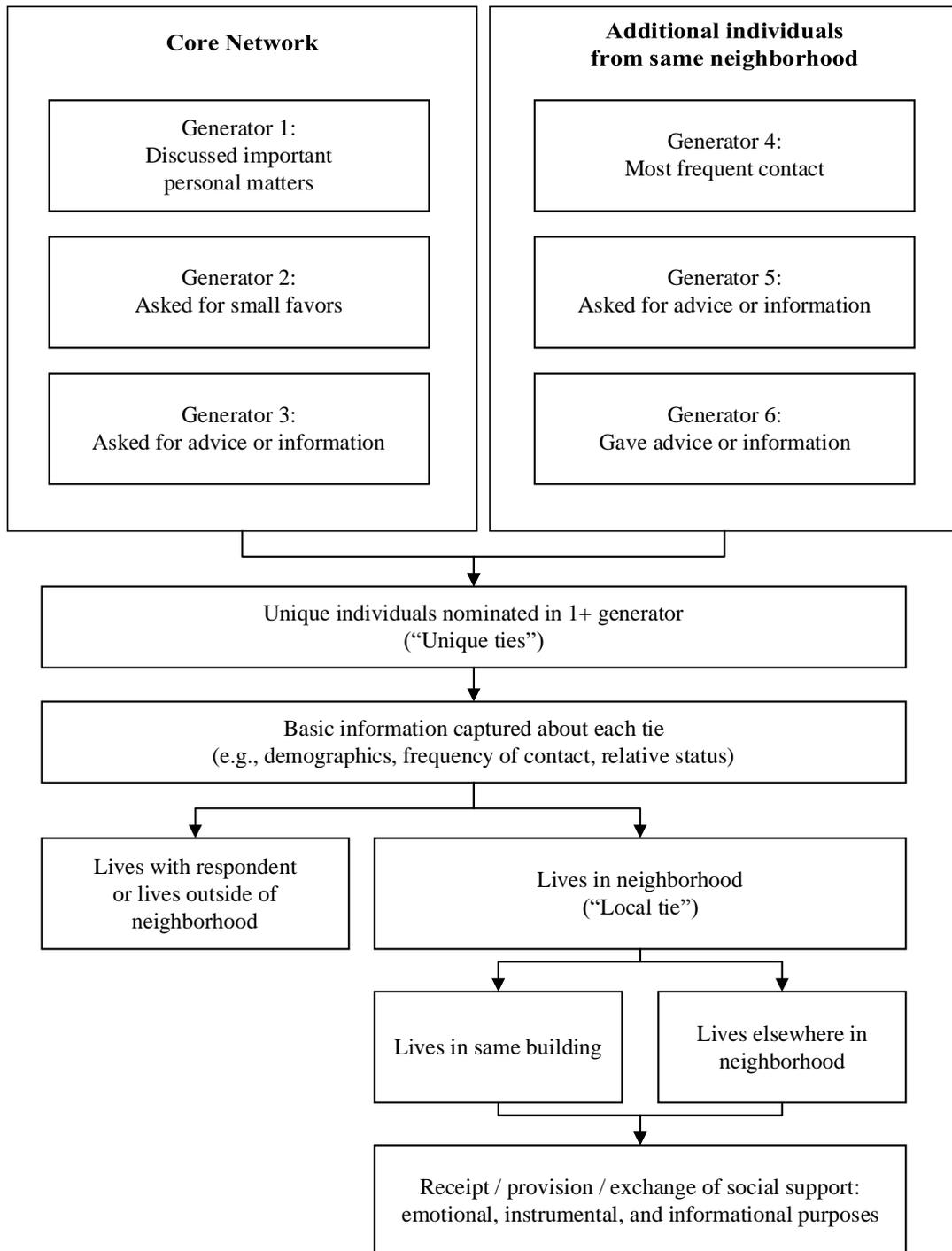
where the tie lives—and the “local” network comprising ties to those that live in the same neighborhood (as defined by the respondent). The latter solicited additional relationships to individuals who were not named as part of the core network and aimed to identify additional proximate ties that the respondent may not typically think of as sources of everyday support. Figure 7.1 shows the overall structure and flow of the social network interview module.

Six name generators enabled respondents to nominate a maximum of 18 individuals.² Up to 3 names³ were captured for each of the following: (1) “From time to time, most people discuss important matters with other people. Looking back over the last six months—that would be back to last [current month - six]—who are the people with whom you discussed an important personal matter?” (2) “Sometimes people might ask each other for help with small favors, such as running errands, borrowing household tools or kitchen supplies, or taking care of plants or pets. In the last 12 months, who are the people you have asked for small favors like these?” and (3) “From time to time, we seek out people for advice or information about a question or an issue. In the last 12 months, who are the people you have gone to for advice or information?”

² NYCHANS participants that completed the caregiver interview were asked two additional name generators and could therefore name up to 24 ties. The information obtained from these supplemental generators and any additional unique ties that were nominated are excluded from the present analysis. For details on the administration of the module for the caregiver interview, please see Goldstein et al. (2019).

³ For the first three generators (the core network), respondents were able to name as many individuals as they chose, but only the first three were captured for each generator. For the final three generators (those limited to people on the same block), the respondent was specifically asked to name up to three individuals for each generator.

Figure 7.1: Flow of NYCHANS Social Network Module



Respondents were also asked to nominate up to 3 individuals who lived in the same neighborhood for each of the following: (4) “Tell me the three neighbors with whom you have the most frequent contact,” (5) “In the last 12 months, have you asked for help or advice from

anyone else who lives on your block that you haven't already named?" and (6) "Have you helped or given advice to anyone else who lives on your block in the last 12 months that you haven't already named?" This approach resulted in additional local ties that were not necessarily nominated as part of the core network and therefore includes what might be defined as "weak" ties to neighbors. Respondents were able to nominate the same individual more than once across any of the six name generators (i.e., in both the core and local networks). Co-resident household members are included in the core network, but excluded from my definition of "local" ties. This is done to increase the analytic precision of what it means to have social relationships with those in one's neighborhood.

Respondents were asked about the characteristics of each unique tie in a series of name interpreters. This included whether the tie lived with them, was related to the respondent, lived in the same neighborhood, and (if so) lived in the same building. The respondent was also asked which of the nominated ties was female, the same race/ethnicity as the respondent, foreign-born, and which had one or more child under age 18. The respondent was asked how often they interacted with each tie on a 6-point Likert-type response scale from "Every day" to "About once a year or less." Lastly, the respondent was asked to rate whether each tie was generally better off, worse off, or about the same as them. These were coded as three dichotomous measures to indicate relative status.

Information on the activation of each relationship for a specific purpose was captured for all ties that lived in the same neighborhood (regardless of whether they were nominated as part of the core network or in later name generators). Content and activation were measured by asking 7 pairs of items with one item asking about the respondent receiving a specific type of support and the other asking about providing that type of support. These were implemented as 14

true-or-false statements such as “I have loaned money to _____” and “_____ has loaned money to me.” These items were looped through each unique local tie.

Each interaction was coded as falling into one of six categories: emotional or expressive, instrumental, or informational / advice and the direction of the interaction—provided or received by the respondent. Figure 7.2 lists each of these items and their corresponding category.

Figure 7.2: Activation Measures Asked of Each Local Tie

	Received by Respondent / Ego	Provided by Respondent / Ego
Emotional / expressive support		
A	1 [Name] has come to me to talk about important personal matters.	2 I have gone to [Name] to talk about important personal matters.
B	3 [Name] has invited me into his or her home.	4 I have invited [Name] into my home.
Instrumental support		
C	5 I have helped [Name] by doing small favors.	6 [Name] has helped me by doing small favors.
D	7 [Name] has loaned money to me.	8 I have loaned money to [Name].
Informational support		
E	9 I have asked [Name] for advice or information.	10 [Name] has asked me for advice or information.
F	11 [Name] has given me advice about my job, work, or finding a new job.	12 I have given [Name] advice about his or her job, work, or finding a new job.
G	13 [Name] has given me advice about finding or applying to housing in New York City.	14 I have given [Name] advice about finding or applying to housing in New York City.

For analytic purposes, each local tie was classified as having 1) *exchanged* support of a specific type if there was one or more “true” response in each column, 2) *received* support of a given type if there was one or more “true” response in the left panel of Figure 7.2, but only “false” answers in the right column, and 3) *provided* support of a given type if there was one or more “true” response in the right panel of Figure 7.2, but only “false” answers in the left column.

Network-level characteristics of the respondent were derived by aggregating the information gathered on individual ties nominated in the module. This was done separately for the core network, the local network (all non-coresident ties in the neighborhood), and ties from the same building. Characteristics include the total number of unique ties named, the share of ties with certain sociodemographic features (e.g., same gender, same race/ethnicity, nativity, kin status, having one or more child), the average frequency of contact, and relative status of ties in the network. For local ties, summary measures were derived for share of ties for whom the respondent received (only), provided (only), or exchanged each type of support and reported as the share of local ties that was mobilized for one or more use. Respondents that did not name any ties were excluded from summary measures.

Data from the follow-up survey provided additional outcomes on building ties that supplement the formal ego-centric network data. These include the size and strength of their network in the same building and the degree of dependence among proximate neighbors.

Size and strength of building network. The respondent was asked to provide the number of people from the same building who the respondent: (1) would recognize if they saw them on the street, (2) knows on a first-name basis, (3) talks with regularly, (4) has visited in their home or invited into their own home, and (5) considers a close friend. Although these numbers may vary based on the size of the building, these outcomes are reported as the continuous count of neighbors to indicate the overall number of building ties rather than as a share of available neighbors because I am interested in the number and type of relationships the individual can access, rather than the share of neighbors with whom they interact in various ways.

Dependence on proximate ties. The respondent was also asked to indicate on a 5-point Likert-type scale how strongly they agreed with each of the following statements: (1) “I would have a hard time getting by without the help or assistance my neighbors provide,” (2) “I rely on the people I know in my building a lot,” (3) “My neighbors help me access resources or information that I wouldn't otherwise have,” (4) “My neighbors would have a hard time getting by without the help or assistance I provide to them,” (5) “I provide resources or information to my neighbors that they otherwise wouldn't have,” (6) “Sometimes I feel overwhelmed by the help or assistance I provide to my neighbors,” and (7) “I enjoy being able to help my neighbors when I can.” Each of these is reported separately and coded such that a higher score indicates greater reliance on proximate neighbors from the same building. A summary scale is also presented that averages the score across items; the Chronbach Alpha for the dependence scale is 0.88.

As with previous chapters, I rely on intent-to-treat analyses that compare the average characteristics of treatment and control households. Here, these models compare aspects of the network structure, composition, and share of local ties that were activated for specific ends. Secondary analysis stratifies the study population into two categories—those who applied to live in affordable housing that was located in a low-poverty tract (those with a poverty rate at baseline of less than 15 percent) and those who applied to live in a site located in a higher-poverty tract (those with a poverty rate of 15 percent or more).

FINDINGS

I begin by assessing respondents' perception of their interactions with their most proximate neighbors—those who live in the same residential building. Table 7.1 shows the

number of building neighbors with whom respondents shared varying levels of closeness, from recognizing them on the street to considering them close friends. The bottom panel presents respondents' perceived level of reliance or interdependence.

Table 7.1: Self-Reported Social Engagement at Follow-Up, by Group Assignment

	4 to 7 years after random assignment				
	Ct Mean	Tx Mean	p-value	FDR q-value	n
Number of building neighbors that R...					
...Recognizes on the street	35.1	37.4	0.773	0.978	1,442
...Knows on a first-name basis	9.4	6.5	0.067 [^]	0.325	1,444
...Talks to regularly	4.7	6.4	0.804	0.978	1,442
...Visits in their home or R's	2.1	2.1	0.808	0.978	1,441
...Considers close friends	1.0	0.9	0.142	0.508	1,442
Reliance on building neighbors					
Reliance scale (from 1-5)	2.2	2.1	0.428	0.837	1,436
Hard time getting by without them	2.0	2.0	0.443	0.839	1,430
Rely on neighbors a lot	1.9	1.8	0.422	0.835	1,429
Give info/help R wouldn't otherwise have	2.0	2.0	0.901	0.985	1,431
Neighbors wouldn't get by w/o R	1.9	1.9	0.291	0.722	1,425
R provides info/help neighbors wouldn't have	2.2	2.1	0.483	0.855	1,426
R feel overwhelmed by info/help to neighbors	1.8	1.7	0.413	0.835	1,427
R enjoys being able to help neighbors	3.6	3.5	0.751	0.972	1,430

[^] $p < .10$ * $p < .05$ ** $p < .01$ *** $p < .001$

Source: NYCHANS Follow-Up Interviews

Data are weighted to account for differential group assignment ratio within each site. Differences between treatment and control means were estimated with OLS models that regressed each variable on group assignment, controlling for study site and a set of dummies indicating eligibility by unit type and set-aside/preference at baseline (time of application for housing).

On average, respondents in both treatment and control groups reported being able to recognize a large number of building neighbors if they saw them on the street (about 35 people), but they reported interacting with only a small fraction of these neighbors in any meaningful way. On average, respondents in both treatment and control groups reported only one close friend in the building. Most respondents did not perceive that they and their neighbors relied upon one another. Five of the seven statements posed had an average rating that fell between “(1) strongly disagree” and “(2) disagree.” One additional statement had an average rating that fell between “(2) disagree” and “(3) neither agree nor disagree.” The only item of the seven that had

an average rating that was positive was “I like helping my neighbors when I can.” There were no meaningful differences between treatment and controls on any of these measures.

Respondents’ perceptions are an important set of measures, but they may or may not reflect specific dimensions of their social networks. Table 7.2 shows the dimensions of respondents’ core network—relationships that the respondent identified without any additional prompt to nominate neighbors. These formal measures include the average size and characteristics of the network, including the proximity of ties, the degree of sameness (homophily), and the frequency of contact. On average, respondents identified about five people with whom they had discussed important matters, asked for small favors, or received advice or information. The core network, defined as unique individuals nominated through one or more of these generators, had an average of about 3.3 people. Only a small number reported no social ties. There were no significant differences in the number of people named or the size of the core network for treatment compared to controls. The majority of ties lived outside of the neighborhood, with those in the treatment group reporting an even larger share living elsewhere (74 percent compared to 68 percent, $p < .001$; $q < .001$). A substantial share of the average network comprised kin, with treatment reporting an even larger share than controls (41 percent compared to 34 percent, $p < 0.000$; $q < 0.001$). A small share of ties lived somewhere in the neighborhood, either in the same building or elsewhere. Both treatment and control groups reported core networks that were composed largely of individuals who were similar to them along various sociodemographic dimensions, including race/ethnicity, gender, and nativity; however, only 28 percent of ties were to those with one or more child under age 18. Even among respondents with young children, fewer than half of ties also had one or more child at home.

Table 7.2: Core Network Characteristics at Follow-Up, by Group Assignment

	4 to 7 years after random assignment				
	Ct Mean	Tx Mean	p-value	FDR q-value	n
Size of Core Network					
No core ties reported	4%	5%	0.573	0.908	1,442
Average number of people nominated 1+ times	5.2	5.3	0.338	0.748	1,442
Average number of unique ties in core network	3.2	3.3	0.851	0.983	1,378
Geographic Proximity of Core Network¹					
In same household	16%	8%	0.000 ***	0.001 **	1,378
Outside of neighborhood	68%	74%	0.000 ***	0.001 **	1,378
Non-coresident ties from the neighborhood	17%	19%	0.737	0.972	1,378
In building	7%	5%	0.072 ^	0.345	1,378
Elsewhere in neighborhood	10%	14%	0.307	0.722	1,378
Core Network Characteristics¹					
Non-coresident family member	34%	41%	0.000 ***	0.001 **	1,378
Same race/eth as R	81%	78%	0.130	0.490	1,378
If respondent is...					
White, non-Hispanic	82%	74%	0.098 ^	0.404	145
Black, non-Hispanic	85%	85%	0.964	0.997	572
Hispanic	78%	76%	0.840	0.983	530
Same gender as R	63%	64%	0.446	0.839	1,378
If R is female	69%	69%	0.434	0.837	985
Foreign-born	30%	30%	0.243	0.660	1,378
If R is foreign-born	68%	69%	0.469	0.843	409
Has 1+ Child under age 18	28%	28%	0.939	0.997	1,378
If R has 1+ child	39%	39%	0.998	1.000	479
Relative Status of Core Network¹					
Better off than R	39%	39%	0.650	0.932	1,378
Similar to R	50%	48%	0.873	0.983	1,378
Worse off than R	10%	12%	0.221	0.642	1,378
Frequency of Contact with Core Ties¹					
Daily	53%	49%	0.527 ^	0.319	1,378
Several times per week	25%	28%	0.251	0.476	1,378
About once a week	14%	14%	0.138	0.932	1,378
About once a month	6%	6%	0.059	0.835	1,378
A few times a year	2%	2%	0.017	0.839	1,378
Once a year or less	1%	0%	0.006	0.722	1,378

^ $p < .10$ * $p < .05$ ** $p < .01$ *** $p < .001$

Source: NYCHANS Follow-Up Interviews

¹ Excludes those who reported no social ties. Percentages may not total to 100% due to rounding

Data are weighted to account for differential group assignment ratio within each site. Differences between treatment and control means were estimated with OLS models that regressed each variable on group assignment, controlling for study site and a set of dummies indicating eligibility by unit type and set-aside/preference at baseline (time of application for housing).

Respondents were asked to rate each named tie's relative status by indicating if each person was "better off," "worse off," or "about the same" as them. Half of ties were "about the same" with about 40 percent rated as "better off" and about 10 percent rated "worse off." On average, respondents interacted with the majority of their core network daily or several times a week. There were no meaningful differences between treatment and controls in the degree or type of homophily or the frequency of contact with core network members.

To investigate whether low-income households interact regularly with neighbors beyond their core networks, NYCHANS also asked respondents to nominate others they had not already named who lived in their residential neighborhood. These individuals, along with any core network member the respondent identified as living in the neighborhood (but not in the same household), were defined as the "local network" of neighbors with whom they interacted regularly. Table 7.3 shows the average number of local ties named, the characteristics of these ties, and the frequency of contact with neighbors.

Although a substantial share of respondents reported no contact or interaction with neighbors (about 20 percent), the vast majority reported regularly interacting with their neighbors. On average, respondents reported 2.6 local ties—about two individuals beyond the core network members who lived in the neighborhood. As in the core network, most local ties shared similar sociodemographic characteristics with the respondent. There were no significant differences between treatment and control in terms of the number of neighbors named or their characteristics. Respondents in the treatment group did report, on average, a slightly larger share of local ties with young children but this may be an artifact of multiple testing, as suggested by the q-value of the False Detection Rate (34 compared to 30 percent, $p < 0.05$; $q > 0.10$).

Table 7.3: Local Network Characteristics at Follow-Up, by Group Assignment

	4 to 7 years after random assignment				
	Ct Mean	Tx Mean	p-value	FDR q-value	n
Size of Local Network					
No local ties reported	21%	20%	0.529	0.881	1,442
Average number of local ties in core network	0.5	0.7	0.867	0.983	1,378
Average number of local ties	2.6	2.6	0.973	0.997	1,146
Non-coresident family member	10%	12%	0.880	0.983	1,146
Same race/eth as R	63%	60%	0.137	0.508	1,146
Same gender as R	65%	70%	0.191	0.610	1,146
Foreign-born	29%	24%	0.477	0.853	1,146
Has 1+ Child under age 18	30%	34%	0.012 *	0.158	1,146
Relative Status of Local Network¹					
Better off than R	28%	27%	0.596	0.922	1,146
Similar to R	56%	58%	0.314	0.722	1,146
Worse off than R	13%	12%	0.462	0.839	1,146
Frequency of Contact¹					
Daily	16%	17%	0.918	0.988	1,146
Several times per week	26%	20%	0.004 **	0.071 ^	1,146
About once a week	26%	24%	0.643	0.932	1,146
About once a month	24%	29%	0.064 ^	0.320	1,146
A few times a year	7%	9%	0.060 ^	0.319	1,146
Once a year or less	3%	1%	0.015 *	0.184	1,146

^ $p < .10$ * $p < .05$ ** $p < .01$ *** $p < .001$

Source: NYCHANS Follow-Up Interviews

¹ Excludes those who reported no local ties. Percentages may not total to 100% due to rounding

Data are weighted to account for differential group assignment ratio within each site. Differences between treatment and control means were estimated with OLS models that regressed each variable on group assignment, controlling for study site and a set of dummies indicating eligibility by unit type and set-aside/preference at baseline (time of application for housing).

More than half of the ties named were “about the same” as the respondent, with about 28 percent rated as “better off” and about 13 percent rated “worse off” with no treatment effect on the relative status of local network members. Respondents reported interacting with neighbors less frequently than they did their core network and those in the treatment group interacted with their neighbors even less often than controls (seeing 20 percent of neighbors several times a week compared to 26 percent among controls, $p < 0.01$; $q < 0.10$).

Table 7.4 shows the share of local ties with whom the respondent exchanged, provided, or received emotional support, instrumental support, or information/advice. Contrary to what all other evidence would suggest, respondents did regularly interact with local ties in meaningful ways.

Table 7.4: Activation of Local Network at Follow-Up, by Group Assignment

	4 to 7 years after random assignment				
	Ct Mean	Tx Mean	p-value	FDR q-value	n
Emotional / expressive support					
Exchanged	58%	58%	0.811	0.974	1,146
Received only	12%	11%	0.748	0.961	1,146
Provided only	21%	20%	0.498	0.844	1,146
Instrumental support					
Exchanged	48%	48%	0.951	0.987	1,146
Received only	13%	12%	0.527	0.855	1,146
Provided only	17%	15%	0.145	0.474	1,146
Information / advice					
Exchanged	44%	49%	0.117	0.436	1,146
Received only	20%	18%	0.205	0.589	1,146
Provided only	28%	30%	0.435	0.812	1,146

[^] $p < .10$ * $p < .05$ ** $p < .01$ *** $p < .001$

Source: NYCHANS Follow-Up Interviews

Data are weighted to account for differential group assignment ratio within each site. Differences between treatment and control means were estimated with OLS models that regressed each variable on group assignment, controlling for study site and a set of dummies indicating eligibility by unit type and set-aside/preference at baseline (time of application for housing).

Respondents in both treatment and control groups exchanged emotional support with the majority of their local network (58 percent) and either received or provided emotional support from an additional 33 percent of those named. Although slightly more muted, the same general pattern emerges for the exchange of small favors where respondents reported instrumental support of one or more kinds with 48 percent of local ties and either received or provided favors from an additional 30 percent of those named. Lastly, respondents reported exchanging, receiving, or providing information or advice with over 90 percent of local ties named. There

were no treatment effects in the prevalence of ties that were activated in any of these ways, nor the direction of assistance.

The Moderating Effect of Neighborhood

There were few, if any, meaningful main effects of affordable housing on the social networks of low-income households. Given past evidence on the association between neighborhood conditions and network characteristics, it is possible that affordable housing does impact network size, composition, and/or utility in ways that are conditional on the neighborhood location of the affordable housing. If true, these countervailing treatment effects may wash each other out in the pooled analysis examined above.

Table 7.5 shows the same models as Table 7.3 but stratifies respondents based on the poverty level of the affordable housing site to which they applied. As with the analysis in earlier chapters, this stratified analysis compares treatment and control groups that applied to a site with a baseline poverty rate of less than 15 percent and treatment and control groups that applied to a site with a baseline poverty rate of 15 percent or higher. I find no evidence that the effect of affordable housing on social networks varied by the neighborhood characteristics where it was built. There are no meaningful differences between treatment and control on any measure in either low-poverty or moderate-poverty sites. Table 7.6 assesses whether the use value of local networks varied by the neighborhood in which the affordable housing sites are located, similar to Table 7.4 above. I also find no neighborhood differences in the activation of local ties for specific ends. Additional tests of core network and perceived reliance on neighbors (not shown) supports a similar conclusion—affordable housing has no measurable effect on the social network dimensions measured by NYCHANS, regardless of the neighborhood.

Table 7.5: Local Network at Follow-Up, by Group Assignment and Poverty Rate

Follow-Up	4 to 7 years after random assignment									
	Low Poverty Study Sites (<15%)					Moderate Poverty Study Sites (15%+)				
	Ct Mean	Tx Mean	p-value	FDR q-value	n	Ct Mean	Tx Mean	p-value	FDR q-value	n
Size of Local Network										
No ties in neighborhood	18%	20%	0.36	0.986	598	24%	20%	0.92	0.966	844
Average number of local ties in control	0.6	0.7	0.98	0.996	577	0.5	0.6	0.69	0.900	801
Average number of local ties	2.6	2.9	0.21	0.963	487	2.5	2.5	0.22	0.517	659
Non-coresident family member	9%	9%	0.40	0.986	487	11%	14%	0.74	0.927	659
Same race/eth as R	60%	57%	0.34	0.963	487	66%	63%	0.27	0.574	659
Same gender as R	63%	66%	0.72	0.990	487	66%	73%	0.18	0.445	659
Foreign-born	29%	26%	0.96	0.996	487	28%	23%	0.25	0.545	659
Has 1+ Child under age 18	27%	29%	0.34	0.963	487	32%	38%	0.02 *	0.109	659
Relative Status of Local Network										
Better off than R	31%	31%	0.79	0.990	487	26%	24%	0.28	0.574	659
Similar to R	55%	57%	0.33	0.963	487	58%	59%	0.63	0.877	659
Worse off than R	13%	10%	0.05 *	0.773	487	13%	14%	0.48	0.753	659
Frequency of Contact with Local Network Members										
Daily	11%	13%	0.51	0.990	487	20%	21%	0.79	0.937	659
Several times per week	27%	21%	0.17	0.963	487	25%	19%	0.01 **	0.074 ^	659
About once a week	25%	27%	0.40	0.986	487	26%	22%	0.85	0.941	659
About once a month	27%	28%	0.47	0.990	487	22%	29%	0.09 ^	0.294	659
A few times a year	8%	10%	0.34	0.963	487	5%	8%	0.06 ^	0.232	659
Once a year or less	2%	1%	0.16	0.963	487	3%	1%	0.05 *	0.210	659

^ $p < .10$ * $p < .05$ ** $p < .01$ *** $p < .001$

Source: NYCHANS Follow-Up Interviews

Data are weighted to account for differential group assignment ratio within each site. Differences between treatment and control means were estimated with OLS models that regressed each variable on group assignment, controlling for study site and a set of dummies indicating eligibility by unit type and set-aside/preference.

Table 7.6: Activation of Local Ties at Follow-Up, by Group Assignment and Poverty Rate

	Low Poverty				Moderate Poverty					
	Ct Mean	Tx Mean	p-value	FDR q-value	n	Ct Mean	Tx Mean	p-value	FDR q-value	n
Emotional / expressive support										
Exchanged	57%	60%	0.246	0.963	487	59%	58%	0.137	0.387	659
Received only	13%	11%	0.233	0.963	487	11%	12%	0.076 ^	0.277	659
Provided only	20%	20%	0.542	0.990	487	21%	20%	0.841	0.941	659
Instrumental support										
Exchanged	48%	48%	0.790	0.990	487	48%	48%	0.710	0.915	659
Received only	12%	13%	0.824	0.990	487	14%	12%	0.397	0.684	659
Provided only	16%	13%	0.473	0.990	487	18%	16%	0.228	0.527	659
Information / advice										
Exchanged	41%	48%	0.014 *	0.347	487	47%	49%	0.998	0.998	659
Received only	18%	18%	0.963	0.996	487	22%	17%	0.068 ^	0.256	659
Provided only	28%	27%	0.961	0.996	487	28%	33%	0.204	0.481	659

^ $p < .10$ * $p < .05$ ** $p < .01$ *** $p < .001$

Data are weighted to account for differential group assignment ratio within each site. Differences between treatment and control means were estimated with OLS models that regressed each variable on group assignment, controlling for study site and a set of dummies indicating eligibility by unit type and set-aside/preference.

DISCUSSION

Respondents did not perceive any substantial interdependence with their most proximate neighbors—those in the same residential building. Despite reporting that they knew many of their neighbors, they did not have many friends nearby nor did they report relying on their neighbors for help or assistance. Both treatment and control groups reported a similar level of independence, with no significant differences on any of the individual measures or the overall building reliance scale. On its own, this may suggest that these individuals are socially isolated; however, the formal social network analysis shows otherwise.

Respondents in both treatment and control groups have core networks that comprise strong ties to similar individuals with whom they speak with often—daily or several times a week for the majority of core ties. These networks were small, with just over 5 people listed in the three core network name generators; the average number of unique ties was just over 3 people. Listing the same people more than once is an indication that these individuals serve multiple purposes—they are the same people with whom the respondent discussed important matters, asked for help with small favors, and/or sought information or advice. Although NYCHANS did not directly ask the strength of the tie, the combination of frequency of contact and relationships that serve multiple purposes suggests that these core networks comprise strong ties to a small group of others with whom they feel close.

Unlike the urban poor, very few core network members live in the same residential neighborhood and a substantial share of ties (about 40 percent) are perceived to be “better off.” This population is not locally-bound, nor are they socially embedded among others who are similarly-situated. Although their core networks are small, they provide opportunities outside of the immediate surroundings in both geographic and social dimensions. Taken together, these factors—the perception of independence from one’s neighbors and the presence of a core

network that is small, but nonetheless connects these individuals to others outside the neighborhood including to those who are better-off—suggests that this low-income, working population has little need for social interactions with neighbors. Affordable housing does not alter their social networks because their social capital derives from elsewhere.

However, when asked explicitly to name individuals from the neighborhood with whom they interact regularly, a different story emerges. These low-income, working households interact with a range of individuals in their neighborhood (and even building), despite not naming them as members of their core network and not perceiving them to be critical resources. They interact with these neighbors less frequently, but they report high prevalences of reciprocal support of various kinds ranging from discussing important personal matters to borrowing money to sharing information about work and housing. These individuals may not perceive that they are reliant on these relationships, but the social network data indicate these relationships are not casual, either. Rather, these relationships to neighbors appear to be weak ties that can be activated if, and when, they are needed.

Weak ties among neighbors are mutually beneficial. Each is able to assist the other when needed, but they are also able to draw upon each other's social resources that are conferred through their respective core networks. The presence of weak ties among neighbors may augment existing strong ties in important ways, including the infusion of new information that would not otherwise be available from small, close networks of strong ties that likely circulate the same resources among them. These weak neighbor ties may also represent relationships that could be activated if one's core network is unavailable or is too far away to help—particularly in an emergency (Elliot et al. 2010; Klinenberg 2002; Lalone 2012). These may serve low-income households directly, but the so-called “strength of weak ties” comes not from the relationship

itself but when the relationship serves as a conduit to and from more distal ties. The exchange, provision, or receipt of information or advice among 90 percent of local ties may be useful not only because it represents a novel source who may have a different or better option than one's family or close friends, but because this provides access to that individuals' network of information and the experts or knowledgeable individuals that person knows.

Despite a clear pattern of neighboring behavior, there were no differences between treatment and control groups and I found no evidence of variation by the neighborhood location of the affordable housing to which households applied. These findings suggest that the social networks of low-income individuals vary little as a result of being offered affordable housing. This is somewhat surprising, given the large and significant differences in both housing and neighborhood conditions found in Chapters 5 and 6 and past research that shows consistent correlations between residential conditions and social networks. At the same time, because these low-income individuals primarily rely on networks of others who live elsewhere, they are not locally bound. For this reason, it makes sense that their housing or neighborhood conditions would not alter either their core networks or the ways they interact with neighbors near and far. Instead, the findings here suggest that low-income, working households neighbor similarly no matter where they live. Whether this holds for the broader population of affordable housing applicants or to those outside of New York City is unknown, but additional research is needed to better understand how these patterns of social interaction could be supported and even leveraged.

The findings here also have implications for the broader research agenda. Qualitative research on the neighboring behavior of low-income residents and more affluent neighbors by definition relies on in-depth interviews to understand the experience on the ground. But such ethnographic work often relies on understanding and decomposing the *perceptions* and reported

behaviors of those being interviewed, rather than any outside assessment of the content of these relationships. Given what was found here, it is possible that the existing body of literature that shows only minimal social interaction across class and racial groups may be missing more meaningful interactions that are not perceived as central, but nonetheless provide exchange across various dimensions. This is particularly important, given that the goal of policies intended to increase social capital among the lowest-income residents is *not* to establish close friendships but rather to promote weak ties that support upward mobility for the poorest residents.

Examination of the core network alone is insufficient to identify weak ties to others or understand if and how such relationships are used for specific ends. NYCHANS modified the standard instrument for gathering ego-centric network data specifically so as to capture weaker ties to neighbors. Most research continues to rely only on core network measures or even more narrowly to “core discussion group”—those who would be identified by the first name generator only. Others have also criticized this standard approach and shown that individuals interact with a range of people outside their core network, either mobilizing ties that are most appropriate for a given situation (such as asking a doctor questions about one’s health) or opportunistically talking with anyone who is available (such as talking with a colleague who is nearby when one receives bad news) (Small 2013). The neighboring behavior found in this analysis may represent the latter, with individuals engaging with neighbors out of convenience and opportunity. But once established, such relationships may be drawn upon in a more deliberate way when needed, representing a reflective rather than incidental or spontaneous process (Small and Sukhu 2016). Future research should examine how such weak ties to neighbors are initially formed and the patterns of activation that follow.

CHAPTER EIGHT CONCLUSION

Although affordable housing is a major form of subsidized housing that is equal to, or larger than, the number of public housing units or tenant-based vouchers in many locales throughout the US, we know little about its impact on the housing and neighborhood conditions of those served. This is important in its own right as the scale of development continues to increase, housing millions of households in communities across the country. But affordable housing is often employed to achieve a broader set of goals—to improve the quality of available housing and diversify the resident population in low-income communities as part of community revitalization plans and to increase the supply of low-cost housing to stabilize residents at risk of displacement and increase opportunities for mobility in more affluent neighborhoods. For this reason, the present study is not only an evaluation of the impact of affordable housing on the population served, but also a first step toward understanding how these investments may or may not shape the communities in which they are located.

This dissertation examined the impact of newly constructed affordable housing on the housing and neighborhood conditions of low-income working households in New York City. The findings are mixed. While affordable housing leads to better quality housing and lower rates of crowding, it does little to reduce housing costs or ensure affordability. These results are robust to where the affordable housing is located, providing equivalent benefits for those offered housing in low-poverty as well as higher-poverty neighborhoods. Despite providing housing of similar cost, quality, and size, the location of study sites matters in other ways. Those who were already living in less disadvantaged neighborhoods were more likely to apply to live in housing that is located in low-poverty neighborhoods, while those who were living in more

disadvantaged neighborhoods were more likely to apply to affordable housing in a higher-poverty neighborhood. At follow-up, the impact on locational attainment was stark—affordable housing further stratified low-income households' neighborhood conditions, providing yet more opportunity for those offered housing in a more affluent setting and exacerbating structural disadvantage for those offered housing in a low-income community. Although both types of neighborhoods improved over the study period, low-poverty neighborhoods improved across more dimensions and at a faster pace.

Despite the differences in neighborhood composition, I find remarkably little variation in the social context of study participants. In this study, affordable housing had no effect on the social networks of study participants. It did not produce any differences in individuals' core network, the number or quality of relationships to neighbors, or the use value of these social resources for specific ends. Moreover, there were no meaningful differences for those who had applied to live in low-poverty or higher-poverty study sites. Based on past research (Edin et al. 2012; Skobba and Goetz 2013), it seemed plausible that differences in social connections, near or far, could help to explain why low-income working households applied to live in certain types of neighborhoods. The data do not support this theory. The low-income households studied here have similar social resources that comprise a mix of proximate and more distal ties and include a substantial share of individuals who are perceived to be better-off, regardless of where they applied to live or whether they were offered housing. Although study participants reported having few social connections in their community and relative independence from those who live nearby, more objective measures of exchange showed that low-income households regularly provide and receive various types of support and engage in meaningful ways with neighbors. This also did not vary according to whether they were offered affordable housing or the type of

neighborhood where they applied to live. Others have discussed the limitations of the core discussion network and standard practices for measuring social networks (Small 2013; Small and Sukhu 2016). The findings here also suggest that alternative measures of social connection reveal different aspects of residents' social lives. Qualitative work expands our knowledge, but only in specific ways that rely on perceptions rather than objective measures. More work on how to effectively measure informal relationships, particularly between neighbors, is essential to understanding how housing and neighborhoods shape social context and the downstream consequences for individuals.

This study suggests that affordable housing has a limited, but potentially important, impact on the lives of those served. Perhaps the most salient finding is that affordable housing provided access to high-quality housing. This is not only a robust finding that held across multiple measures, but also showed large differences in the prevalence of nearly every item about which people were asked. Given the evidence on the importance of housing conditions for physical health (Acevedo-Garcia et al. 2004; Lubell et al. 2007), the provision of quality housing may help to reduce health disparities and generally improve population health in various ways that matter in both the short- and long-term. Examining the impact of affordable housing on health is an important next step.

Although the rate of crowding was significantly lower among those offered affordable housing compared to controls, nearly 10 percent of treatment households were living in overcrowded conditions. This average treatment effect likely obscures the variation in living conditions, ranging from smaller households who have a good deal of extra space to those with many family members living in tight quarters. That many affordable housing residents would end up living in housing that is either too large or too small for their current needs is a natural

extension of the housing allocation process studied here. Households are awarded the “right size” unit for their household *at the time of application for housing*. But households are dynamic, growing or shrinking over time. There is currently no clear policy for how affordable housing residents can change apartments once they are awarded housing, but establishing such policies would meet the dual goal of ensuring households remain optimally housed over time while ensuring residential stability within the same complex or neighborhood. The difference in crowding rates found here was largely explained by increases in the household size of controls. Whether this growth is due to natural fertility or households “doubling up” to make ends meet is unknown. Future research should investigate changes in household composition over time to assess the implications for housing policies intended to support this population and to understand the implications for the residential stability or mobility of low-income individuals across the life course.

The fact that affordable housing has little effect on the rent burden of recipients is not surprising, given the way that this form of subsidized housing establishes rent levels and governs increases over time. Affordable housing ensures that the unit is affordable to the recipient household at move-in, after which the rent is adjusted based on citywide guidelines that apply to all rent stabilized units. Low-income households are particularly susceptible to income volatility (Hannigan and Murdoch 2015) and tend to have limited savings that may act as a buffer during hard times (NYC Department of Consumer and Worker Protection 2020). This places them in a precarious financial position when rents are set to increase in a consistent way while incomes may stagnate or even decline in real terms over time. Developing a clearer understanding of the financial conditions such households face may suggest alternative rent-setting policies that would better support this population’s economic well-being in the near-term.

At the same time, previous research shows that households who live in units that utilize this type of rent increase policy experience larger “discounts” over time, relative to market-rate rentals (Roistacher 2010). It is possible that households that remain in affordable housing for longer periods of time would likewise see a larger difference in rent levels show corresponding differences in rent burden. The present study is only able to assess the impact at four- to seven-years after randomization. Following these same households over a longer time period may produce different findings.

The findings here regarding who applies to live in affordable housing located in low- or higher-poverty neighborhoods underscores the need to understand how these low-income, working households make residential decisions. Krysan and Crowder (2017) have shown that households generally start from a “consideration set” of neighborhoods that are familiar to them based on their everyday activities or through the knowledge of family and friends. Whether this same strategy applies to those with housing subsidies is unknown, but it is possible that of the housing lotteries available to any given household at a particular time, the applicant household narrows the selection to those neighborhoods that are familiar to them or those that are closest—defined either by geographic proximity or other social indicators such as racial/ethnic or income composition. It is also possible that the type of affordable housing units offered in different types of neighborhoods guide the selection still further. Larger, family-sized apartments are generally more common in low-income neighborhoods and smaller units for single-person or two-person households are more common in affluent areas, mimicking the typology of market-rate units that are produced in such communities. The way applicants read their chance of “winning” a unit in the lottery may play a part in their decision to apply or complete the process (NYC Department of Housing Preservation and Development 2017).

Research on the barriers that low-income households face in using tenant-based vouchers in lower-poverty communities makes it clear that the combination of limited information, availability of low-cost units, and tenant selection by landlords all contribute to the sorting of subsidized households into certain neighborhoods (Bergman et al. 2019; Rosen 2020). Though affordable housing ensures a supply of housing without the need for individuals to search in the private market, other barriers may persist across subsidy types and income levels. New efforts are already underway to increase the awareness of all available buildings to affordable housing applicants. Whether this is successful in spurring new forms of mobility is unclear, but regardless there should be a concerted effort to understand how affordable housing applicants perceive available options, how they assess the viability of various options based on their own needs, and what corresponding set of policies should be employed to reduce or eliminate barriers to mobility.

That said, the importance of affordable housing in lower-income communities should not be forgotten. Such developments represent an important tool for deconcentrating poverty and ensuring greater socioeconomic diversity in these communities. Quality housing in these neighborhoods may represent an important value to recipient households as well as the broader neighborhood. Providing housing for incrementally higher-income households is critical for achieving the broader aims of community revitalization; their presence is a necessary, but insufficient condition for promoting greater social integration and economic resources in these communities.

But what does this mean for those higher-earning households who move to more disadvantaged neighborhoods? The evidence here suggests that affordable housing does provide housing for incrementally higher-income households in low-income neighborhoods. But the

analysis presented in this dissertation found that these households experienced increased levels of structural disadvantage: at follow-up, they were living in tracts which, on average, had a higher share of Black, non-Hispanic neighbors, households receiving public assistance, a lower median household income, similar poverty rate, and marginally higher levels of income segregation concentrated among the lowest-earners. They also experienced, on average, lower quality neighborhood amenities and higher prevalence of disorder. Does mobility to these neighborhood conditions result in negative consequences to their well-being or is this segment of the population resilient to these structural conditions? The present analysis does not consider the impact on physical or mental health or other individual outcomes, such as health behaviors or financial stability. Understanding whether there are negative effects on these or other outcomes remains a priority to understand the ethical challenges of these policies.

The study participants here were willing to make clear trade-offs; many applied to move to “worse” neighborhoods in exchange for “better” housing of similar cost. Past research shows that the lowest-income residents often focus more on the internal conditions of their immediate environment than the broader neighborhood conditions that surround them (Rosenblatt and DeLuca 2012). Researchers have interpreted this form of “telescoping” as an adaptive response to external neighborhood conditions, expressed in the narrative framing that residents use to make sense of their surroundings and tell the story that connects past, present, and future (Rosen 2017). It is possible that housing search behavior of the study participants here is influenced by past experiences of housing and neighborhood conditions. Future analysis should consider the neighborhood trajectories of this low-income working population as well as qualitative work on the perceptions of residents and how individuals frame their residential histories. It is also possible that home is more meaningful in some ways than neighborhood. One’s home can be a

status symbol and an expression of one's identity (Rybczynski 1986); it is also a place where one exerts a substantial amount of control. Given that neighborhood effects research has rarely integrated housing as a set of controls (let alone mechanisms) it is unclear what the appropriate level of analysis should be for understanding residential context and well-being.

Past research has focused on housing as a means to an end—namely, the ability (or failure) of housing subsidies to move households to better neighborhood environments and the downstream consequences for individual well-being (Bergman et al. 2019; Chetty et al. 2016; Rosen 2020; Sanbonmatsu et al. 2012). In contrast, this study considers the importance of *both* housing *and* neighborhood as a source of risk or opportunity. Low-income households must often make strategic trade-offs among housing cost, quality, and neighborhood location. Although housing subsidies should ease or eliminate these compromises, it is clear from this study that affordable housing residents must continue to balance these competing factors.

New York City's scale of affordable housing development and use of housing lotteries to award units presents a rare opportunity to explore these issues using an experimental study that compares the outcomes of those who were offered housing against a comparable group of eligible applicants who were not offered housing because demand far exceeds supply. The strength of this randomized control trial is that it enables me to produce relatively unbiased estimates of the average effect of the intervention. Its limitations mean that I am less able to identify the specific mechanisms that lead to any observable differences or if, and how, these findings may apply to a different study population, set of study sites, or time period. This study is therefore exploratory, intended to refine the key questions that future research should address.

Most of the policy implications of this work require bold thinking about the goals of subsidized housing and its intended benefits. Throughout this concluding chapter, I have noted

areas for future research. Some of these topics can be investigated through the NYCHANS data. The impact on financial security, changes in household composition, physical and mental health, health behaviors, and neighborhood definition are all areas covered by NYCHANS. These data also facilitate other potential moderating factors, such as families versus households without children. The findings here should be tested in other affordable housing developments, in other neighborhoods, and in other cities and time periods.

The most obvious use of an RCT is its estimation of treatment effects where the utility of the control group is as counterfactual. However, the control group here provides a rich description of low-income households and how they get by without the offer of government assistance. The vast majority live in New York City without any form of public benefits, housing or otherwise. Although this population is less studied than the urban poor, research shows that this particular segment of the population struggles to make ends meet and too often fails to find adequate housing in the private market (Edin and Lein 1997; Harkness and Newman 2005; Newman and Chen 2007). In this study, there is evidence of that same struggle—particularly when it comes to finding safe, quality housing. But they succeed on their own in other ways. They have a similar level of rent burden to affordable housing residents. They pay a similar rent and utility cost. A substantial share lives in crowded conditions, but not all. And they live in a variety of neighborhoods, including some very affluent enclaves.

By definition every household in NYCHANS was conducting a search for new housing, but among those who were not offered housing the vast majority remained in their same home some four- to seven-years later. This is partly a testament to how hard it is to find new housing in New York City, regardless of income, but it also reinforces the fact that this segment of the population somehow manages to get by with little or no government intervention. They are a

diverse group, comprising every racial and ethnic group, foreign- and native-born, various levels of educational attainment (most with at least a high school education), they work in a variety of sectors but are concentrated in service sector work or low-wage white collar work. Most are employed full time, many work multiple jobs at least some of the time, often they carry a substantial amount of debt relative to income and just make ends meet. These are the households that would be defined as poor using alternate poverty definitions that account for the cash value of public assistance programs (National Research Council 1995; Office of the Mayor 2019). In a different era, these households may have been referred to as the lower-middle class.

In this dissertation I showed some of the ways that affordable housing can support this population, but I also showed the ways that it has little or no effect. Above all, these low-income households show a remarkably durable perception of their social context. They report similar levels of social cohesion and informal social control in their neighborhoods, regardless of whether they were offered affordable housing or not and regardless of whether they applied to housing in a low-poverty or higher-poverty neighborhood. They show remarkably similar social networks and neighboring behavior, regardless of housing or neighborhood conditions. And they perceive a level of independence and self-sufficiency from their neighbors that sets them apart from their lower-income counterparts (Fisher 1982; Stack 1974; Venkatesh 2006a). If the large amount of affordable housing being produced in New York City and beyond is to adequately serve this population, work must begin by better understanding their needs. Moreover, since much of the affordable housing production is intended to not only benefit the individual recipients but also those surrounding neighbors who are worse-off financially, it is imperative to understand how this population can be leveraged to support community revitalization through meaningful social interactions and a shared sense of identity and investment.

One of the central contributions of this work is its exploration of these issues in New York City, a place that differs in many ways from other cities where most neighborhood effects research has been conducted. Although it has a high poverty rate and is a racially- and economically-segregated city, the lowest-income neighborhoods have access to public transit, have low crime rates, and offer both private and public amenities. Many poor neighborhoods abut very affluent areas, such as we saw in Chapter 1. Moreover, NYCHANS was conducted during a time of decreasing poverty, historically high real estate values, and widespread concern about gentrification. Perceptions of neighborhood conditions did not differ as dramatically as other structural features of place between high- and low-poverty study sites. This may signal that these markers of disadvantage, such as poverty rate, reliance on public assistance, or median income—measures commonly used in neighborhood effects research—are far more decoupled from the lived experience of residents in New York. It also may signal that neighborhoods here do not matter as much, or in the same ways, as elsewhere in the country.

Although much of the work presented in this analysis adopts the common practice of describing neighborhoods based on tract-level measures and doing so based largely on compositional characteristics, such as poverty rate or reliance on public assistance, it is important to note that this is not the only way to measure neighborhood opportunity or disadvantage, and it is likely flawed in key ways. Even though there are clear differences in neighborhood conditions when study sites are stratified by baseline poverty rate, other aspects of community show little variation, including perceptions of collective efficacy and neighbor networks. Remember back to Sonya in the introductory chapter. Her tract exhibited all the markers of a disadvantaged neighborhood, yet when one examined the characteristics of the adjacent tract or pulled back to consider the broader geography in which she lived, another picture emerged that showed

significant resources and income-mixing. Moreover, Sonya's own definition of her neighborhood was even smaller than the tract that comprised her public housing tower. There is a large body of work that focuses on how to define neighborhoods in both theory and practice (see Coulton 2012; Coulton et al. 2001; Grannis 1998; Tienda 1991, among others), but all too often researchers default to statistical definitions of neighborhood. To better understand the moderating effect of neighborhood requires additional analysis using alternative geographies. Ideally, it should go beyond sensitivity testing using different administrative boundaries and instead examine the self-defined neighborhoods of the people studied as well as the trajectories from originating to receiving neighborhoods. These alternate perspectives may provide a better basis to examine the social processes through which community primarily operates (Tienda 1991). Above all, research on neighborhood effects should continue to refine both theory and evidence related to when, how, and for whom neighborhoods matter and how housing creates and sustains supportive residential environments for all.

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