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The Impact of Supportive Housing on Surrounding Neighborhoods

Abstract

Communities across New York City and around the nation commonly oppose proposals to open supportive housing in their neighborhoods because of fear that the housing will decrease the quality of life in the neighborhood, and lead to reductions in property values. This study aims to give supportive housing providers and local government officials objective, credible information to guide policy decisions and to respond to opponents' fears and arguments. Using a difference-in-difference regression model to isolate the effect of supportive housing from more general macro and micro market trends and neighborhood variations, this paper examines the impact that almost 7,500 units of supportive housing created in New York City over the past twenty years have had on their host neighborhoods over time.

Keywords: Supportive housing, neighborhoods

1. Introduction

On November 3, 2005, Mayor Bloomberg and Governor Pataki signed the "New York/New York III Agreement," providing funding to create 6,250 units of supportive housing in congregate facilities for homeless and at-risk individuals and families in New York City over the next ten years. The agreement was widely hailed as a major step forward in ensuring that homeless New Yorkers living with mental illness and other disabilities can obtain affordable housing linked to appropriate support services. As non-profit providers of supportive housing begin to implement the agreement, however, they are encountering two related and significant obstacles: New York City has a serious shortage of land suitable for building such developments; and community opposition to hosting supportive housing further limits the sites on which supportive housing can be built.

Communities asked to host supportive housing offer a number of reasons for their opposition: they believe that their neighborhoods are being asked to house an unfair share of supportive housing units or other social service facilities; they are concerned that supportive housing deprives their community of an opportunity to attract other, more broadly beneficial land uses to the site (such as market rate housing or affordable housing for individuals and families who do not qualify for supportive housing); and most critically, they fear that the housing will have a negative impact on the neighborhood. Neighbors are concerned, for example, that the supportive housing will increase crime, drain the neighborhoods' services and infrastructure, bring people to the community whose personal appearance or behavior will make residents and visitors uncomfortable, and otherwise decrease the quality of life in the neighborhood. Most of all, perhaps, they fear that supportive housing will depress the value of housing in the neighborhood, thereby depriving them of potential returns on their investment, and potentially triggering a spiral of deterioration.

While some who oppose supportive housing will do so regardless of the facts, objective, credible research about the experiences other neighborhoods have had with supportive housing should help to inform discussions over proposed developments, both by addressing legitimate concerns communities may have about supportive housing, and by helping providers to make their residences serve as assets for the neighborhood.[1] Although many researchers have studied the effect that group homes[2] have on the surrounding community, few have looked specifically at the impacts of supportive housing. Moreover, earlier studies of the effects of group homes are severely limited by methodological and data constraints, including small sample sizes and limited time frames. Recent studies use more sophisticated econometric techniques, but reach mixed results. Since existing studies examine effects in low-density neighborhoods, it is also difficult to generalize their results to denser urban settings. Consequently, the existing literature does little to answer neighbors' question and fears.

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[1] Supportive housing is defined as permanent, affordable housing with on-site social services for formerly homeless, disabled and at-risk individuals or families. Residents in supportive housing developments, unlike those in temporary or transitional housing options, sign a lease or make some other long-term agreement; developments provide a range of services to residents, which can include case management, job training, and mental health or substance abuse counseling. The prototype of the supportive housing model was developed in the late 1970s and early 1980s. The residence at St. Francis of Assisi Church, which opened in Manhattan in 1981, is generally considered the first example of what we now consider to be supportive housing -- permanent congregate care with on-site social services.

[2] In this paper, we use the term "group homes" to describe all types of institutional housing that pre-date the supportive housing model, including homes for the mentally ill and disabled.

This study aims to fill this gap with a rigorous, large-scale examination of the effect supportive housing has on the value of surrounding properties. Using difference-in-difference regression analysis to isolate the effect of supportive housing from more general macro and micro market trends and neighborhood variations, this paper examines the impacts that nearly 7,500 units of supportive housing created in New York City over the past twenty years have had on their host neighborhoods over time. We extend the methodology we've developed in earlier studies to measure the impact supportive housing has on host neighborhoods (Ellen and Voicu 2006; Been and Voicu 2008).

While housing prices are just one measure of neighborhood conditions, they should capture broader changes in a neighborhood. As the quality of a neighborhood improves (deteriorates), the neighborhood becomes a more (less) attractive place to live, and landlords and home sellers in the neighborhood are able to command more (less) for their properties. Accordingly, rents and housing prices are a good proxy for improvements or declines in the quality of neighborhoods. The impact that supportive housing has on housing prices is therefore a reflection of how supportive housing affects the quality of host neighborhoods.

This study will give supportive housing providers and local government officials the objective, credible information they need to respond to opponents' fears and arguments. It also will guide supportive housing providers and local government officials about how to minimize any negative impacts supportive housing could have on the surrounding neighborhood, and help those providers design housing developments that serve as good neighbors.

2. What we know and do not know about the impact of supportive housing

While supportive housing is increasingly viewed as an effective and cost efficient way to provide permanent, affordable housing for populations at risk of homelessness (Lipton et. al. 2000; Culhane et al. 2002), community opposition to the developments can be fierce. Community residents advance many arguments for resisting supportive housing, but key among them are that the housing might lead to reductions in property values and increases in crime (National Law Center on Homelessness and Poverty 1997; Rocha and Dear 1989; Takahashi and Dear 1997). Early studies attempted to address such objections by examining the neighborhood impact of institutional housing that pre-dates the supportive housing model. These studies have looked at the impact of group homes (Ryan and Coyne, 1985), homes for the mentally disabled (Dolan and Wolpert, 1982), and homes for the mentally ill (Boydell, Trainor and Pierri, 1989). Results from the majority of these early studies suggested that such housing does not negatively affect the values of surrounding homes. (See, e.g., Dear 1977; Dolan and Wolpert 1982; Farber 1986; Lauber 1986; Ryan and Coyne 1985). The early work suffers from serious methodological limitations, however.

One strategy many of the early researchers used involved comparing housing prices and price trends in neighborhoods with group homes (or other housing that pre-dates the supportive housing model) to prices and trends in neighborhoods that are otherwise comparable but do not host these residences. (See, e.g., Boeckh, Dear, and Taylor 1980; Boydell, Trainor and Pierri 1989; Dear 1977; Iglhaut 1988; Lauber 1986; Wolpert 1978). Although the researchers using such cross-sectional techniques took care to choose "control" neighborhoods that seem as much like the "treatment" areas as possible, the possibility remains that the neighborhoods were different in important respects that the researcher did not observe. The lack of difference in property values between the test and control neighborhoods accordingly may not mean that

group homes had no impact on neighborhoods, but could instead mean that other factors were counteracting or masking the impact. Further, the treatment versus control methodology was unable to pinpoint the direction of causality: it is possible that group homes had no detrimental impact on neighboring properties, but it is also possible that group homes were systematically placed in neighborhoods chosen for their stability, upward trajectory, or some other quality, and those characteristics counteract any negative effect the group homes might otherwise have.

The second strategy used by the early studies was to compare housing values or trends in housing prices before a group home opened to those in the same area after the housing opened. (See, e.g., Arthur Andersen LLP 1999; Farber, 1986; Lindauer, Tung, and O'Donnell 1980; Ryan and Coyne 1985). Again, without more sophisticated tools, the pre/post approach doesn't rule out the possibility that other factors, such as broader market trends, are masking impacts the supportive housing has on their host neighborhoods.

Recent work employs more sophisticated strategies for identifying property value impacts, but reaches mixed results. Galster and Williams (1994) used data on 695 single family home sales in Mt. Vernon, Ohio and 1,570 such sales in Newark, Ohio to estimate the impact of homes for severely disabled adults on neighboring single family home sales. They found that four rehabilitated one- or two-family houses and three small, new apartment complexes used as group homes had no impact on the value of neighboring properties. But single family homes within two blocks of two other small, new apartment complexes sold for 40 percent less than comparable properties in the nine months after the supportive housing opened. One of the two complexes that had the negative impact was used for "problem" tenants; the other was sited in an above-average value neighborhood. These factors may explain their substantial effect on the neighborhood.

Colwell, Dehring and Lash (2000) used data from 641 residential sales in Dupage County, Illinois to evaluate the impact that seven homes for the mentally ill that opened between 1987 and 1994 had on prices in 1,500-foot rings around the homes, relative to prices in seven control neighborhoods. The authors examined sales six years before and six years after the announcement that a group home would be sited in a neighborhood, regressing the sales prices on property characteristics, neighborhood dummy variables, and whether the house was within sight of the group home. They found that following the announcement that a group home would open, prices fell 10.5 percent for properties within sight of the group home. In a model substituting proximity of 200 feet or less to the group home for the "sight" variable, property value decreases of 24 percent were observed for those properties near the group home. Both findings were statistically significant.

Neither Galster and Williams nor Colwell, Dehring and Lash controlled for trends in prices before the group homes opened. Consequently, it is possible that the property value decreases they find were the continuation of the neighborhood's general decline, and would have happened even if group homes had never been sited in the community.

Galster, Tatian and Pettit (2004) provide the most rigorous existing study, using a sophisticated difference-in-difference methodology similar to ours to control for trends in prices. They examine 2,000-foot rings around eleven small supportive housing developments that received zoning approval in Denver between 1989 and 1995. The study's findings revealed that property values in neighborhoods that would become hosts to supportive housing were six percent lower on average than comparable homes outside the ring but within the same census tracts. Once the supportive housing received zoning approval (and presumably opened soon thereafter), prices within 1,001 to 2,000 feet of the developments reversed the negative slide

evident before the approval, and property values increased by 3.5 percent over where they would have been had those trends continued.[3] No property value impacts were found, however, for properties within 1,000 feet of the developments. The authors theorized that negative and positive externalities at that distance cancelled each other out, while further out, negative externalities from noise and resident behavior attenuated and the positive externalities of the building's design and upkeep predominated.

The primary limitation on each of these more recent and methodologically rigorous studies is the small number of group homes or supportive housing developments studied. Colwell, Dehring and Lash examined just seven homes; Galster, Tatian and Pettit examined eleven. Given the small numbers of units studied, the extent to which the results can be generalized is limited. The effect of supportive housing might vary, for example, depending upon the concentration of supportive housing buildings -- there might be some threshold number of developments sited near each other that may begin to negatively affect surrounding property values. Studies of small numbers of developments would not capture those threshold effects.

Further, the recent studies focused on relatively lower density neighborhoods and small scale developments (single or two-family houses or apartments housing only a few families). Consequently, they may say little about supportive housing located in denser urban environments, or about how larger supportive housing developments may impact their host neighborhoods. Also, the existing literature has paid little, if any, attention to qualitative differences among the housing developments studied, to differences in characteristics of the surrounding neighborhoods that might affect the impacts of the housing, and to the ways in which concentrations of this housing might affect the impact on host neighborhoods. We investigate many of these questions in this paper.

3. Supportive Housing in New York City

We examine the impacts of all the supportive housing developments that opened in New York City between 1985 and 2003 and that were either newly constructed or created through the gut rehabilitation of vacant buildings.[4] In total, this amounts to 7,500 units of supportive housing, spread throughout 123 supportive housing developments.[5] We obtained a list of supportive housing developments from the New York City Department of Housing Preservation and Development (HPD) and New York State Office of Mental Health (OMH), and the two consortiums of supportive housing providers in New York City – the Supportive Housing

[3] Similarly, Galster, et al. (2002) have conducted the most methodologically rigorous study of the impact that supportive housing has on crime in the surrounding neighborhood. They find that for the sample of all 14 developments studied, the opening of supportive housing was not associated with statistically significant increases in reported crime, but that larger developments are associated with significant increases in crime within a 1,000-foot radius of the housing.

[4] Because we are interested in the impacts new developments have on a neighborhood, our data on supportive housing developments only include new construction or projects that involved the complete, physical rehabilitation of a formerly vacant building. We did not include instances where an occupied building received cosmetic rehabilitation or was converted into a supportive housing development without undergoing substantial renovation.

[5] To be considered supportive housing, a particular site must meet the following conditions: i) residents sign a lease or have a similar long-term agreement, and ii) social services are provided for residents on-site. As such, our research examines only single-site, congregate care supportive housing; we do not look at the effects of so called scattered-site supportive housing units, which are dispersed within non-supportive housing buildings.

Network of New York (SHNNY) and the Corporation for Supportive Housing (CSH).[6] For each supportive housing development, this dataset indicates its address, the year construction was completed, the number of units,[7] the number of units reserved for families (vs. individuals), and the number reserved for members of the local community.

Table 1 describes the characteristics of the supportive housing. Panel A shows that although developments are spread across all five boroughs of New York City, they are highly concentrated in Manhattan, the Bronx and Brooklyn, which are host to 49 percent, 25 percent and 23 percent of the city's supportive housing developments, respectively. Three developments are located in Queens, and only one in Staten Island.

As for the characteristics of the units, panel B shows that 95 percent are designed to house single individuals, while five percent are family units. In total, 20 percent of units are designated for community residents; these units are set aside for existing members of the community, and although they may include individuals with special needs, they are not specifically targeted to special needs populations. Panel C shows the distribution of supportive housing developments by size. Most of the supportive housing developments in New York are relatively small. Citywide, the median size of the developments we study is 48 units. As seen in Figure 1, these developments were built throughout the past two decades, with a big building boom following the 1990 NY/NY agreement.

Table 2 describes the neighborhoods in which supportive housing was built in New York City. In 1990, before most supportive housing was sited, tracts that now have supportive housing tended to have higher poverty rates, lower homeownership rates and higher proportions of minorities than tracts that do not.

4. Data

In addition to information on supportive housing built in New York City, we rely on data from three other sources. First, we obtained a database from the New York City Department of Finance that includes information on sales price, sale date and property address for all apartment buildings, condominium apartments and single-family homes that sold in the city between 1974 and 2005.[8] Our final sample includes 310,892 property sales, spread across 1,216 census tracts.[9]

Second, we obtained data on the characteristics of all buildings in the New York City, collected for the purposes of computing property tax assessments, from the Real Property Assessment Data (RPAD) file. The RPAD data contains little information about the

[6] The raw data included 188 developments totaling about 12,500 units, opening between 1981 and 2005. Out of these, we eliminated 9 developments (totaling about 600 units) which could not be geocoded. We also eliminated those that involved conversion of occupied buildings to supportive housing and those that were completed after 2003. (By including only the developments built before 2003, we ensure that we have at least two years of post-completion property sales data for every development in our sample.) We also excluded one building that had more than 600 units, since it was simply too much of an outlier in terms of size. Our final estimation sample includes 123 sites, opening between 1985 and 2003. Note that we control for proximity to the 23 developments which opened in 2004 or 2005 in order to obtain accurate impact estimates for the developments on which we focus.

[7] Includes both special needs population and any units inhabited by non-special needs residents (e.g., units set aside for members of the surrounding community).

[8] Note that sales of cooperative apartments are excluded from the data set since they are not considered to be sales of real property.

[9] We limited the analysis to properties that are located within the 37 community districts (of the total 59) that contain at least one sale within 1,000 feet of an existing supportive housing development or one that would be built within the next five years.

characteristics of individual units in apartment buildings (except in the case of condominiums), but judging from the goodness of fit of our regression estimates, these building characteristics explain variations in prices quite well.[10]

Third, we supplemented these data with information on other subsidized housing investments in the city. We secured address-specific data on all other types of federally and city-subsidized housing developments in New York City from HUD User, the New York City Housing Authority (NYCHA), and New York City's Department of Housing Preservation and Development (HPD).[11]

Identifying whether properties are in the vicinity of supportive housing sites is critical to our analyses. We used GIS techniques to measure the distance from each sale in our database to all supportive housing sites. From these distance measures, we identified properties that were located within 1,000 feet of an existing or future supportive housing site. We also created variables that distinguish between developments with different characteristics (e.g., size of the development, share of units reserved for families or community members). Additionally, we created a parallel set of variables to identify properties within 1,000 feet of federally and city-subsidized housing developments.

Table 3 provides summary statistics for the almost 311,000 sales in our sample. As expected, the majority of property sales are in Brooklyn and Queens, boroughs that have a greater number of small buildings, which sell more often. Note that of our transacting properties, 60 percent are one and two-family homes, while another 17 percent are condominiums. The properties are relatively old, with 79 percent built prior to World War II. Finally, 5.5 percent of sales (17,000) were within 1,000 feet of an existing supportive housing development or one that would be built within the next five years; and 1.3 percent (4,000) of sales were within 500 feet of an existing supportive housing development or a site that would have a supportive housing development within the next five years.

5. Methodology

The key challenge in identifying the neighborhood impacts of supportive housing is that supportive housing developments are not located in a random set of neighborhoods. Developers of supportive housing might, for example, be more likely to build the housing on undesirable sites in neighborhoods with very low property values, because more city-owned sites are available in such neighborhoods,[12] because community opposition may be lower in these neighborhoods, or because developers can only afford to build in neighborhoods with the lowest property values. If we fail to account for such baseline differences in value between neighborhoods with and without supportive housing, we run the risk of mistakenly interpreting them as actual impacts of supportive housing. And indeed, as Table 2 shows, we do find evidence that supportive housing was sited in relatively distressed neighborhoods.

We address this problem of selection bias by controlling for the difference between the prices of properties very near to a supportive housing site and the prices of comparable

[10] We use RPAD data from 1984 to 2005.

[11] See Ellen, Schill, Schwartz and Voicu (2006) for a detailed description of these datasets.

[12] City-owned sites usually meant derelict properties that had been abandoned by their previous owner and vested in an *in rem* proceeding for delinquent property taxes. Since private owners were much less likely to have abandoned properties in more promising areas, the city's stock of abandoned properties was overwhelmingly concentrated in its poorest neighborhoods,

properties in the same neighborhood but further away from supportive housing, before the supportive housing is constructed. We then test what happens to this difference after the supportive housing is built. More specifically, we use hedonic regression analysis to compare the sales prices of properties that are within 500 and 1,000 feet of the supportive housing development, before and after it is built, with a comparable group of properties more than 1,000 feet from the site but still located in the same general neighborhood (defined here as the same census tract).[13] Because impacts might be felt as soon as people learn that a supportive housing development is going to be built, and because construction of any building may bring noise, truck traffic, and other problems, we exclude from our "before supportive housing" price estimates the construction period, which is assumed to be the two years before the development opens.[14] Note that we also exclude prices of properties that sold more than five year prior to beyond five years because it is highly unlikely that price levels or trends more than five years prior to the opening of supportive housing will be an important predictor of prices after the supportive housing opens.

Our methodology is illustrated in Figure 2. We draw two rings around each supportive housing development, at 500 and 1,000 feet, and compare sales prices in each of the rings with prices for comparable properties outside the 1,000-foot ring, but still in the same census tract.[15] We then examine whether the magnitude of price differences has changed over time, and if so, whether the change is associated with the construction of a supportive housing development. Essentially, we assume that in the absence of supportive housing, prices in the "rings" of supportive housing would have maintained their same relative level (relative to the prices of similar properties beyond 1,000 feet but in the same census tract) as in the two to five years before supportive housing was completed in the ring.

Our approach has important strengths. The difference-in-difference (pre/post, test/control) methodology accounts for any systematic differences between the sites used for supportive housing and other land in the neighborhood. The approach thus helps to resolve questions about the direction of causality – yielding an estimate that shows how supportive housing affects neighboring properties, rather than reflecting how neighborhood conditions affect a site's propensity to be used for supportive housing. The approach also helps to disentangle the specific effects of supportive housing from other contemporaneous changes

[13] 1,000 feet is approximately the length of four North/South streets in Manhattan, and across the city, on average, 1,000 feet is about the length of two blocks. While previous studies have looked at larger rings surrounding supportive housing developments, it is unlikely that the relatively small developments we study would have an effect on property values many blocks away in the fairly dense Manhattan, Bronx and Brooklyn neighborhoods in which they are concentrated.

[14] Our data indicates the year when construction ended for each supportive housing development; residents typically move in to supportive housing within days or weeks of the completion of construction. Unfortunately, we do not know the exact opening date within the year. We estimate opening date to be June 30 of the year when construction was completed. As for the construction period, discussions with local supportive housing providers revealed that ground breaking typically occurs about 24 months before supportive housing opens. Thus, we assume that construction began exactly two years prior to our estimated opening date.

[15] We find relatively little overlap between supportive housing rings. Of the more than 17,000 sales that are within 1,000 feet of at least one existing or future supportive housing development, less than 16 percent are within 1,000 feet of multiple supportive housing developments. Of the more than 4,000 sales that are within 500 feet of at least one existing or future supportive housing development, less than 6 percent are within 500 feet of multiple supportive housing developments. In instances where a property is located within 1,000 feet of multiple developments, we attribute the full impact of all supportive housing to the development that opened earliest. (The supportive housing providers and advocates we spoke with were not surprised by the low level of concentration, noting that community opposition often prevents the siting of multiple supportive housing developments in close proximity.)

occurring in the city.[16] Our approach also allows us to examine whether impacts vary with distance from the supportive housing development, because the impact on a property within 500 feet of a development might very well differ from impacts on properties still affected but further out in the 1,000-foot ring.

Baseline Model

Our analysis centers on a hedonic regression model that explains the sales price of a property as a function of its structural characteristics (such as lot size and age of the building) and its neighborhood surroundings. Specifically, we estimate the following hedonic model of sales prices:

$$\ln P_{icdt} = \alpha + \beta X_{it} + \gamma^{SH} R_{it}^{SH} + \gamma^{O} R_{it}^{O} + \theta_c W_c + \rho_{dt} I_{dt} + \varepsilon_{it} \qquad (1)$$

where $\ln P_{icdt}$ is the log of the sales price per unit of property i in census tract c, in community district d, and in quarter t, X_{it} is a vector of property-related characteristics, including age and structural characteristics, R_{it} are vectors of ring variables (described below), W_c are a series of census tract fixed effects, which help control for unobserved, time-invariant features of different neighborhoods, and I_{dt} are a series of dummy variables indicating the quarter and community district of the sale, which allow for distinct time trends for each of the 37 community districts used in the analysis.[17] The coefficients to be estimated are α, β, γ, θ and ρ, and ε is an error term.[18] Since housing prices are entered as logarithms, the coefficients are interpreted as the percentage change in price resulting from an additional unit of the independent variable. In the case of a dummy variable, the coefficient can be understood as the percentage difference in price between properties that have the attribute and those that do not.[19]

Our key variables of interest are the ring variables R_{it}^{SH}, which capture the impact of proximity to supportive housing units.[20] For each of these ring variables, we construct two versions of the variable, one for properties within 0-500 feet of supportive housing, and another

[16] The assumption underlying this assertion is that there are few other neighborhood influences that shaped the value of properties very near to the supportive housing sites around the time of project completion but that do not also influence property values in the general neighborhood.

[17] Community districts are political boundaries unique to New York City. The city is divided into a total of 59 community districts, each of which has a Community Board whose members are appointed by the Borough President, with half nominated by the City Council members who represent the district. The Community Boards review applications for zoning changes and make recommendations for budget priorities. Previous research examining the impacts of various forms of subsidized housing has typically assumed that trends in housing prices are constant across a city or metropolitan area, but this seems particularly inappropriate in a city as large and diverse as New York. Schwartz, Susin and Voicu (2003)**,** for instance, find considerable variation in price trends across community districts in New York City.

[18] Note that there might be spatial autocorrelation in the errors. Unfortunately, to our knowledge, there is no publicly-available statistical software that can effectively perform tests and corrections for spatial autocorrelation for sample sizes as large as ours. However, our use of census tract fixed effects alleviates this problem, by removing potential spatial correlation between properties located in different tracts.

[19] More precisely, the coefficient on a dummy variable should be interpreted as the difference in log price between properties that have the attribute and those that do not. The difference in log price, however, closely approximates the percentage difference in price when the differences are small, as they are in our analysis.

[20] We also include similar sets of ring variables (R_{it}^{O}) that control for proximity to other types of subsidized housing since it is possible that the location of these other types of units is correlated with that of the supportive housing units that we focus on. These include housing created or rehabilitated through other federal and city-subsidized programs, as well as supportive housing that opened in 2004 and 2005.

for properties within 500-1,000 feet[21] -- this enables our impact estimates to vary by distance to supportive housing.[22] The first variable is "In Ring," a dummy variable that takes a value of one if the property is located within 0-500 feet (500-1,000 feet) of either an existing supportive housing development or one that would be built within the next five years.[23] "In Ring" captures baseline differences in sales prices between properties located near to supportive housing and those beyond 1,000 feet, covering the period two to five years prior to opening of supportive housing. Second, we interact "In Ring" with a binary variable that is set to one for sales where there are at least 100 units of supportive housing units in the ring by the end of the study period.[24] Third, we create "Const Ring" by interacting "In Ring" with an indicator variable that is set to one when the sale occurs during the construction period, which includes the two years preceding the opening of supportive housing in the ring.

In addition, we include four variables that capture the impact of supportive housing. A "Post Ring" dummy variable takes a value of one if the sale is within the ring of some number of *completed* supportive housing units; its coefficient provides the simplest impact estimate. We also include the number of completed units within the ring of the sale (and its square), to estimate the marginal effects of additional units.[25] Finally, to allow the impact to vary over time, we include "T Post," a post-completion, linear trend variable.[26] Specifically, for properties sold after the completion of supportive housing in the ring, "T Post" equals the number of years between the date of sale and the completion date; for all other properties, "T Post" is set to zero.[27] The coefficient on "T Post" can be interpreted as the difference between the price appreciation that occurred in the ring after the completion of the supportive housing and the price appreciation that occurred in the larger neighborhood.

Heterogeneity of impacts across different types of supportive housing

The baseline model helps us examine whether supportive housing developments affect surrounding property values and whether their impacts vary for developments of different sizes. However, supportive housing also varies along other important dimensions, such as (1) whether

[21] Since our counterfactual does not include relative prices earlier than five years before supportive housing opens, we do not consider a property to be within proximity to supportive housing if the sale occurred more than five years before the first supportive housing opened in the ring. In other words, all of the following variables are set to zero for any sale that occurs more than five years before supportive housing opens in the ring: In Ring, Post Ring, T Post, Units, Units-squared.

[22] Note that we also estimated models in which we interacted a continuous distance from supportive housing variable with the ring variables and obtained very similar results.

[23] On average, city blocks in New York City are about 500 feet long. Thus, the 1,000-foot ring allows for impacts extending up to roughly two blocks away from the housing investment.

[24] This variable was added to account for the fact that large supportive housing developments tend to be sited in neighborhoods with higher prices compared to smaller supportive housing developments.

[25] If a sale is in proximity to more than one supportive housing development, our methodology attributes all units that are ever opened in the ring to the supportive housing that is completed earliest.

[26] In preliminary research, we tried a more flexible T Post specification (a second degree polynomial) but we couldn't reject the hypothesis that the trend is linear.

[27] To be clear, T Post equals one if a sale is located within the ring and occurs exactly one year after supportive housing opens; it equals 1.5 if the sale occurs exactly 18 months after the designation; and so on. For property sales we use the date of sale. However, for supportive housing developments we only have access to the year of opening. As noted above, we use June 30th of the opening year to approximate the actual opening date. For example, a supportive housing development opening in 2000 would be assigned an opening date of June 30, 2000. A sale occurring on July 15, 2000 within 1,000 feet of this supportive housing site would be considered to have occurred 15 days after the supportive housing opened; the value of T Post for this sale would be 15/365 (about .041).

housing units are targeted to families or individuals, (2) whether housing units are set aside for community residents, and (3) whether the supportive housing development opened as a newly constructed building or resulted from a gut renovation.[28]

We tested whether the impacts of supportive housing vary with these characteristics by extending our baseline model to include the proportion of the completed units within the ring of the sale that fall into the categories described above.[29] We did not find that impacts varied significantly along any of these dimensions, and thus, for the sake of brevity, we do not show these extended results here.[30]

Heterogeneity of impacts across different types of neighborhoods

To explore whether supportive housing has different impacts in low- versus high-density neighborhoods, we estimated a fully interacted model in which all the variables in our model (except dummy variables for quarter and community district) are interacted with a dummy variable indicating whether the sale occurs in a community district that is below the median population density for community districts in the sample.[31] Using 1990 Decennial Census data, we determined that the median density for the 37 community districts in our sample was 6.0 households per 1,000 square meters. We use this threshold to distinguish the low- and high-density submarkets.

6. Results

Table 4 reports the estimated regression coefficients for the ring variables and their standard errors for the baseline model.[32] Although not shown, the structural variables generally have the expected signs. Overall, the model explains roughly 86 percent of the variation in log sales prices.

Notice first that the coefficient on the In Ring dummy variable for 0-500 feet is negative and statistically significant. Specifically, two to five years before a supportive housing development opens, properties within 500 feet of the site sell for almost four percent less than properties in the comparison group (which, again, is composed of similar properties more than 1,000 feet away but still in the same general neighborhood). In contrast, the In Ring coefficient for 500-1,000 feet is positive and statistically significant. These findings suggest that supportive housing developments have tended to be built near the center of relatively blighted micro-neighborhoods (0-500-foot ring) that are surrounded by a "donut" of somewhat higher priced properties (500-1,000-foot ring).

Turning to impact estimates for 0-500 feet, the coefficients on Const Ring and on Post Ring are not statistically different from zero, suggesting that supportive housing developments generated little initial property value impacts in their micro-neighborhoods upon starting or completing construction. The coefficients on Units and Units-squared are both statistically insignificant as well, which indicates that in the 0-500-foot ring initial effects are negligible for

[28] There are of course many more dimensions than those mentioned here. However, we limit the list to those for which data is available.
[29] Specifically, we included the share of completed units set aside for families, the share set aside for community residents, and the share that resulted from new construction.
[30] Results are available from the authors upon request.
[31] In earlier models, an F-test rejected the hypothesis that the coefficients on property characteristics are similar across neighborhoods.
[32] Full results, which include coefficients on structural variables, are available from the authors upon request.

both small and large supportive housing developments. The coefficient on T Post, however, is positive and statistically significant, indicating that, on average, prices in the 0-500-foot ring increase relative to other comparable properties in the same general neighborhood in the years following the opening of supportive housing.

Figure 3 simulates the impact of a median-sized development (48 units) on properties within 500 feet of supportive housing, based on coefficients from the baseline model for 0-500 feet. Specifically, this figure shows the percentage difference between house prices in the 500-foot ring and those outside 1,000 feet (but still located in the same census tract), by the year relative to project completion date. Two to five years prior to the opening of supportive housing, property values in the 0-500-foot ring are depressed by almost 4 percent relative to comparable properties beyond 1,000 feet. The dashed horizontal line extends the price levels that existed two to five years prior to the opening of supportive housing through the period after supportive housing opens, providing a visual representation of the counterfactual, or our best estimate of what would have happened to prices in the ring if supportive housing had not opened there. The vertical axis marks the date supportive housing opens, and the vertical line at -2 years represents the start of construction of supportive housing in the ring. The continuous line to the right of the vertical axis plots the average change in prices after supportive housing opened, based on estimated coefficients from the Post Ring, T Post, Units and Units-squared variables. The vertical distance between the solid line and the dashed counterfactual line shows the impact of supportive housing completion at a particular point in time.

Figure 3 indicates that there is a slight increase in the value of nearby properties when construction of supportive housing begins in the ring, but this difference is not statistically significant. The marginal effect of the opening of supportive housing is slightly negative, but again, this difference is not significantly different from zero. The total initial impact of supportive housing on property values within 500 feet (which includes both the impact of construction and the marginal impact of opening), is not statistically significant either. After the supportive housing opens, however, the values of these nearby properties rise relative to property values in the comparison group. As a result, the four percent discount that neighboring properties experienced before the supportive housing was built narrows over time. In fact, our estimates suggest that by the third year after supportive housing is constructed, the discount disappears entirely. Put simply, in the 0-500-foot ring, we find no evidence to support neighbors' fears that supportive housing developments will reduce the price of surrounding properties.

Turning to impacts farther away, in the 500-1,000-foot ring, we find a somewhat different story. In this distance band, we find that the coefficient on Post Ring is negative and significant (Table 4). This indicates that the average property located 500 to 1,000 feet from supportive housing experiences an immediate drop in value (compared to prices more than 1,000 feet from the development but within the same census tract) of approximately five percent following the construction of supportive housing. As Figure 4 illustrates, relative prices within 500 to 1,000 feet of a median size supportive housing development decline when construction begins; relative prices drop further when the supportive housing opens two years later.[33] As in the 0-500-foot

[33] For properties within 500 to 1000 feet of supportive housing, the relative price decline at the start of the construction period is statistically significant at the 1 percent level, as indicated in Table 4. The marginal impact of supportive housing opening is statistically significant at the 10 percent level for a median size supportive housing development (48 units). The total initial impact (which includes both the impact of construction and the marginal

ring, we find that the coefficient on T Post is positive and statistically significant, indicating that the initial drop in prices within 500 to 1,000 feet is followed by a steady relative gain in the years after supportive housing opens. That pattern might suggest that after the supportive housing developments are completed and occupied, fears about the developments begin to dissipate. Coefficients on Units and Units-squared are insignificant, indicating that impacts for properties 500 to 1,000 feet from supportive housing do not differ for developments of different sizes.

The difference in initial impacts in the 500-foot ring and the 500-1,000-foot ring is quite striking and somewhat surprising, since we expected impacts in the more distant ring to be more muted. We suspect that the properties that are within 500 feet of the new supportive housing developments benefit from the new construction (and the removal of the vacant building or vacant lot that previously occupied the site), which outweighs any initial worries about the supportive housing. Properties further away do not get the same benefit from the physical improvement, but homebuyers considering properties in this 500-1,000-foot band may feel the same anxiety about proximity to the supportive housing.

Somewhat surprisingly, we find no evidence that the impact of building new supportive housing developments differs in high- and low-density neighborhoods.[34] This lack of difference is important from a policy perspective, since it suggests that our results are not unique to the high-density environment of New York City.

In sum, our research reveals that the prices of properties closest to supportive housing are unchanged when supportive housing developments are completed, and then appreciate more rapidly in the years after the supportive housing opens, relative to similar properties in the neighborhood that are further from the supportive housing. Prices of properties 500 to 1,000 feet from the supportive housing fall somewhat, both when construction begins and when the developments are completed, due likely to fears about the new neighbors. Notably, however, once supportive housing developments are completed and occupied, properties that are within 500 to 1000 feet of them appreciate more rapidly than comparable properties that are further away from the supportive housing but still in the same neighborhood.

7. Conclusion

Homeless advocates have come to see supportive housing as a highly promising model for providing long-term shelter and care to at-risk populations. Yet as noted above, proposals for new supportive housing developments are often met with fierce opposition from neighboring residents. Using the example of New York City, we find that the typical supportive housing development has no initial impact on properties within 500 feet, and indeed, in the years following completion, prices of properties within 500-feet of supportive housing actually experience an increase relative to comparable properties. We observe more negative initial impacts for properties that are somewhat further away (500-1,000 feet), but prices of properties in this distance band also appreciate more rapidly than comparable properties in the years following completion, perhaps because the fears associated with supportive housing are not realized.

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impact of opening) of a median size supportive housing development on property values within 500 to 1,000 feet is negative and significant at the 1 percent level.

[34] Results from the specification that distinguishes between high- and low-density neighborhoods are available from the authors upon request.

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Table 1
Characteristics of Supportive Housing Included in Estimation Sample

A. Distribution of Supportive Housing Across Boroughs

Borough	Developments		Units		Average Size	Median Size
	Number	%	Number	%		
Manhattan	60	49%	4,111	54%	68.52	50
Bronx	31	25%	1,733	23%	55.90	40
Brooklyn	28	23%	1,523	20%	54.39	52
Queens	3	2%	163	2%	54.33	71
Staten Island	1	1%	36	0%	36.00	36
Citywide Sample	**123**	**100%**	**7,566**	**100%**	**61.51**	**48**

B. Distribution of Supportive Housing Units by Type (N=7,566)

	Percent of All Units
Individual Units	95.1%
Family Units	4.9%
Units reserved for members of surrounding community	20.3%

C. Distribution of Supportive Housing Developments by Size (N=123)

	Number of Units
Maximum size	416
75th percentile	70
Median size	48
25th percentile	32
Minimum size	8

Table 2
Demographics (as of 1990) for Census Tracts with and without Supportive Housing

Indicator[1] (as of 1990)	All Tracts in NYC	Tracts that Now Have Supportive Housing[2]	Tracts without Supportive Housing
Number of tracts	2,217	102	2,115
Poverty rate	19.3%	31.4%	18.4%
Homeownership rate	28.6%	10.9%	30.5%
Race/ethnicity			
% white (non-Hispanic)	43.6%	22.4%	44.9%
% black (non-Hispanic)	25.7%	35.2%	24.9%
% Hispanic	23.8%	37.6%	22.7%

Source: 1990 Decennial Census information from the Neighborhood Change Database (from GeoLytics, Inc. and the Urban Institute)

Notes

[1] All reported numbers represent the mean value across census tracts, weighted by population.

[2] Tracts with supportive housing are those that are host to the 123 supportive housing developments in our study.

Table 3
Characteristics of Residential Properties Sold

	Percentage of all Property Sales
Borough	
Manhattan	19.7%
Bronx	13.9%
Brooklyn	25.1%
Queens	31.7%
Staten Island	9.6%
Building Class	
Single-family detached	20.7%
Single-family attached	10.0%
Two-family	29.2%
Walk-up apartments	19.4%
Elevator apartments	1.3%
Loft buildings	0.2%
Condominiums	16.5%
Mixed-use, primarily residential (includes store or office plus residential units)	2.0%
Other Structural Characteristics	
Built pre-World War II	78.9%
Garage	27.2%
Corner location	8.4%
Major alteration prior to sale	1.9%
Sales in proximity to existing or future supportive housing [1]	
Within 1,000 feet	5.53%
Within 500 feet	1.32%
N	310,892

Notes

Universe=all sales in community districts with at least one sale occurring within 1,000 feet of either an existing supportive housing development or a supportive housing development that would open within five years

[1] Excludes sales occurring more than 5 years prior to supportive housing opening in ring.

Table 4
Regression Results for Baseline Model

Independent Variable	Estimated Coefficient		Standard Error
0-500-Foot Ring			
In Ring	-0.03624	**	0.01500
In Ring*(Total Units>=100)	0.02286		0.02157
Const Ring	0.02847		0.02204
Post Ring	-0.00883		0.02548
Units	0.00061		0.00042
Units-squared	-1.1E-06		1.2E-06
T Post	0.00531	***	0.00179
500-1000-Foot Ring			
In Ring	0.04409	***	0.00852
In Ring*(Total Units>=100)	-0.00685		0.01367
Const Ring	-0.02758	**	0.01245
Post Ring	-0.05966	***	0.01421
Units	0.00018		0.00022
Units-squared	3.4E-07		5.3E-07
T Post	0.00357	***	0.00102
R^2	0.861004		
N	310,892		

Notes
Regression includes census tract and community district*quarter dummies,
ring variables for other types of subsidized housing and the full set of building controls.
*** denotes 1% significance level; ** denotes 5% significance level.

Figure 1
Supportive Housing Developments Completed Annually (N=123)

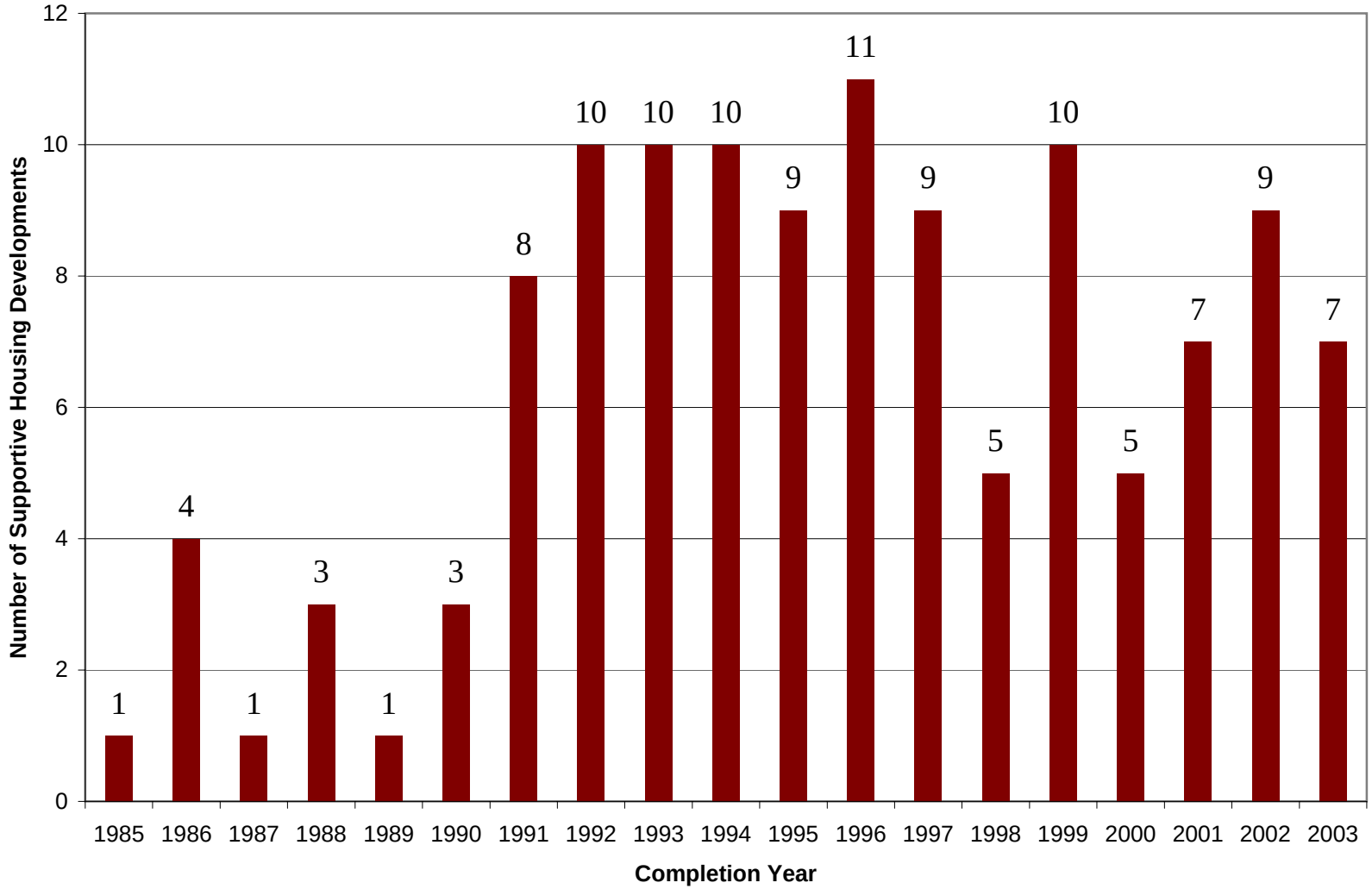

Figure 2
Methodology
Supportive housing development is represented by the X. We compare prices of properties within 500 and 1,000 feet of the development to similar properties in the same census tract but more than 1,000 feet away.

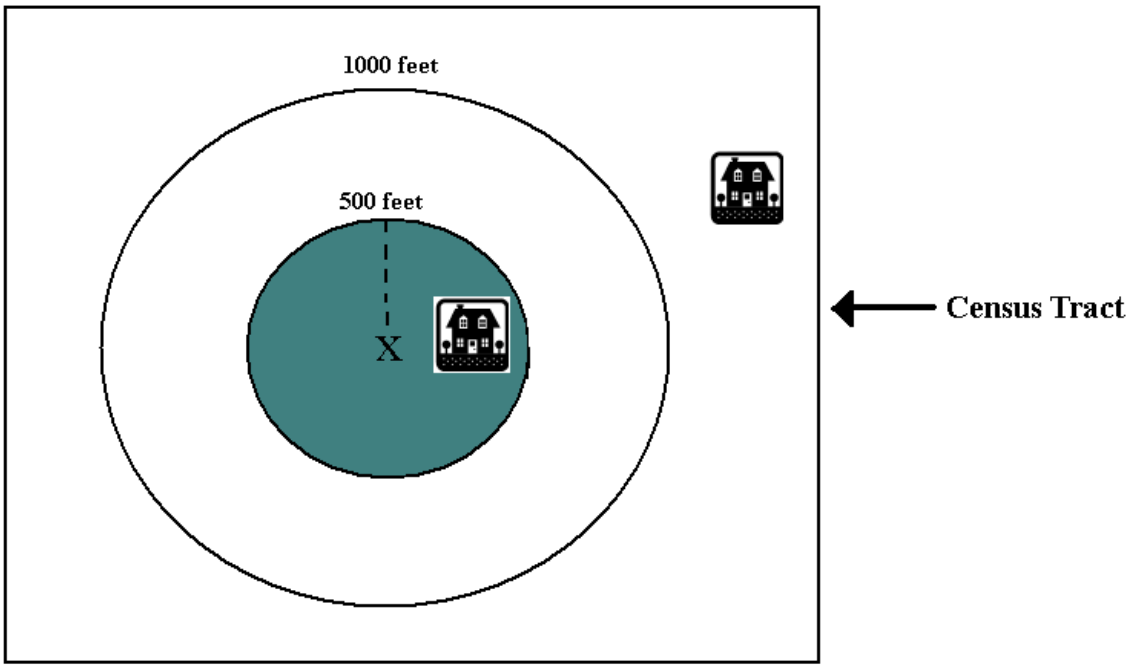

Figure 3
Sales Prices of Properties within 500 Feet of Supportive Housing Relative to Comparison Group, by Year Relative to Completion, For Median Size Development (48 Units)

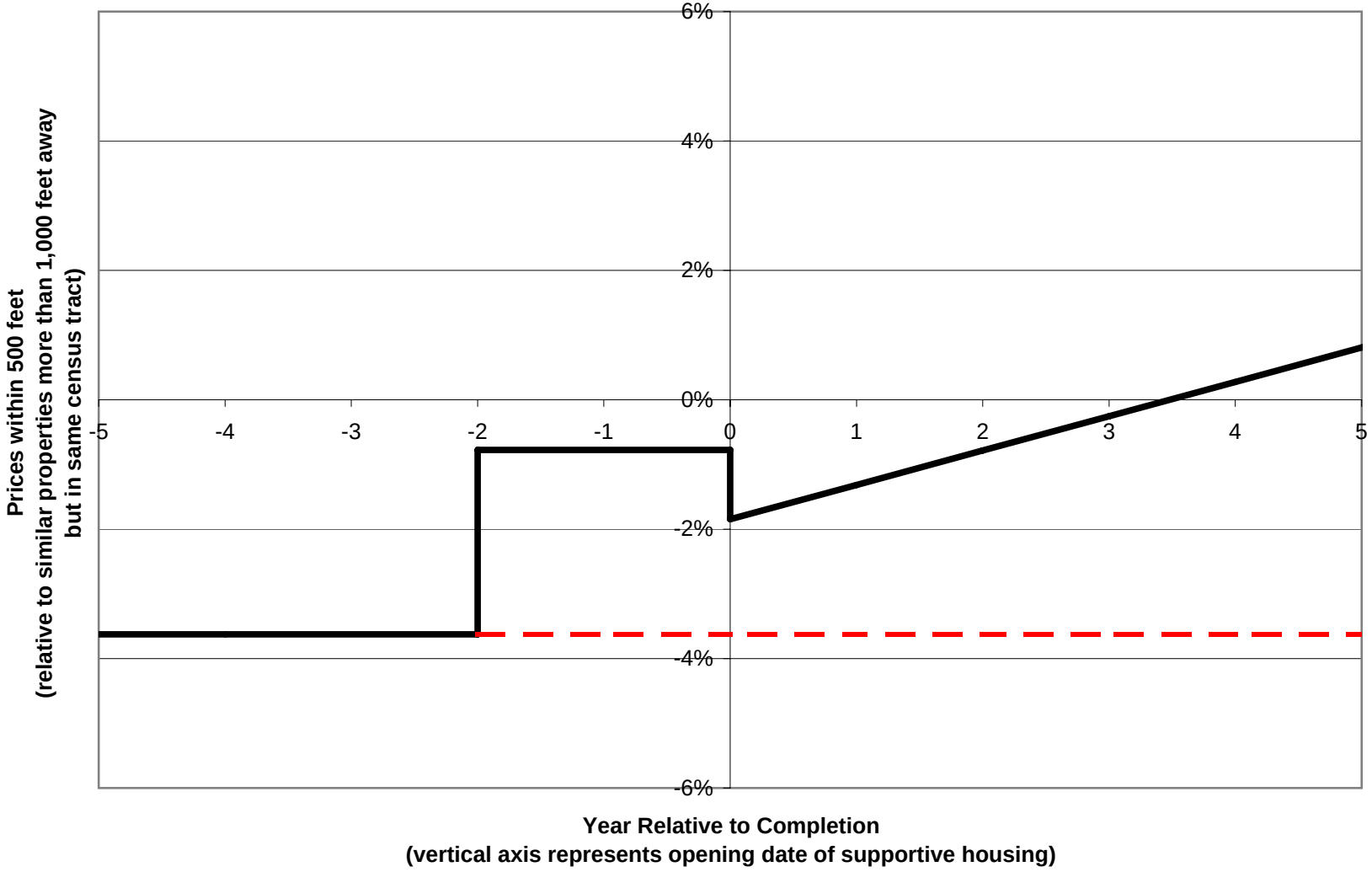

Figure 4
Sales Prices of Properties between 500 and 1,000 Feet from Supportive Housing Relative to Comparison Group, by Year Relative to Completion, For Median Size Development (48 Units)