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The Effect of Group Homes on Neighborhood Property Values

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ABSTRACT. *The majority of studies examining the impact of group homes on neighborhood property values have found that group homes do not adversely effect property values. In our study of seven group homes neighborhoods in DuPage County, Illinois, we find that properties which are proximate to group homes experience a decline in value following the announcement of a group home's pending establishment. In our analysis, observations across time and space are incorporated into a format that is similar to an event study. Our model is the first in this literature to accommodate different price levels and appreciation rates across neighborhoods.* (JEL R20)

I. INTRODUCTION

During the early 1970s, disability and mental health professionals increasingly called for the deinstitutionalization of those persons with developmental, physical, and mental disabilities but having the capacity to function in society. Since the 1970s, group homes have slowly been replacing state institutions nationwide on the grounds that the homes are more humane and cost effective. In contrast to life in institutions, group homes are designed to provide residents a more normal life in society. The homes provide living arrangements where residents share chores in addition to attending school or work during the day. Because of their focus on family-type living, group homes are purposely located in homes in residential areas. In contrast to the short term residencies that typify halfway houses, group homes are normally long-term.

The impact of group homes on communities, however, has been a highly controversial and inflammatory issue. Originally, agencies desiring to place group homes in communities had to appear at public hearings to win over local governments and reduce hostility from neighbors. Communities, fearing danger to neighborhoods and adverse impacts on property values, would frequently protest the locations of such homes. Some of the more extreme responses to group homes have included suspected arson and physical intimidation in Long Island, N.Y. (Arens 1993) and a community leader setting fire to a house targeted to become a group home. (Lauber 1990)

The passage of a 1988 amendment to the Federal Fair Housing Act, which added persons with disabilities to the list of individuals protected against housing discrimination, makes it illegal to discriminate against any buyer or renter of a dwelling on the basis of the applicant's handicap, the applicant's provision of housing for other handicapped people, or the applicant's association with handicapped people. The law has been interpreted by federal courts as outlawing local zoning laws that deny housing to persons with disabilities. In May 1995, the Supreme Court ruled in *City of Edmonds v. Oxford House, Inc.* that a restrictive definition of "family" may not be used by communities to exclude group homes from residential neighborhoods. Thus, no longer can group homes for the disabled, which include the retarded, the mentally ill, and recovering alcoholics or drug addicts, be barred or be required to ob-

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tain special permits. (Lauber 1995) As a result, many agencies currently follow a policy of not informing the community in advance. (Pelton 1994) In 1989, in accordance with the amendment to the Federal Fair Housing Act, Illinois enacted the Community Residence Location Planning Act which required each home rule community to submit a plan by July 1, 1990 to outline the measures that it has taken to assure the adequate availability of sites for group homes.

According to the Department of Justice, no longer can residents protest the establishment of group homes in their neighborhoods. (Pfleger 1995) In fact, the Department has sued residents in Bakersfield, California, Fort Worth, Texas, and New Haven, Connecticut, for protesting the establishment of group homes in their neighborhoods through distributing leaflets, contacting elected representatives, and filing lawsuits. The suits are the grounds of violations of the Fair Housing Act. Although the filing of lawsuits is usually protected under the First Amendment, the Department of Justice contends that such protection does not apply when the lawsuits are filed for illegal purposes, that is, keeping the handicapped out of neighborhoods. Recently, however, a judge ruled that three individuals who had protested the placement of a homeless facility in their Berkeley, California, neighborhood had been illegally investigated by HUD for their protesting activity. (MacDonald 1999) Thus, at the time of this writing the pendulum between the First Amendment and the Fair Housing Act may be swinging toward freer speech.

II. LITERATURE

Several studies have been conducted which examine the attitudes of communities toward group homes and other similar land uses. Survey data reveals both negative attitudes towards group homes on the part of community residents (especially the wealthier and better educated) and beliefs on the part of real estate professionals that property values decline in response to group home establishments. (Wilmoth, Silver, and Savery 1987; Robert Wood Johnson Foundation 1990; Hargreaves, Callanan, and Maskell 1998) And yet the vast majority of studies on the effects of group homes on surrounding property values suggest that group homes do not adversely affect the property values of nearby homes. (Dear 1977; Gooddale and Wickware 1979; Dolan and Wolpert 1982; Ryan and Coyne 1985; Farber 1986; Lauber 1986; Hargreaves, Callanan, and Maskell 1998)

According to Lauber (1986) there have been over 25 independent studies of the effects of group homes on communities, and there is no evidence that these homes have any adverse effects on property values, property turnover, or public safety. In his study of Illinois, Lauber focused upon the sales of 2,261 residential properties in the immediate neighborhoods surrounding 14 group homes and 14 control neighborhoods. The neighborhoods chosen represented a wide array of locations, including Chicago, suburban sites such as Glenview, Mount Prospect, and Schaumberg, two large municipalities in rural counties such as Rockford and Champaign, and a small municipality in a rural county, Jacksonville. The group homes all opened in the early 1980s. Lauber compared the mean sale price of all residential ownership property sales within a five block radius of each home for the two years before and after the home opened. Control neighborhoods were chosen which closely matched the neighborhood in which the group home was located. During the time period studied, property values rose in 79% of the neighborhoods with a group home and in 71% of the control sites. With the exception of the group home in Schaumberg, which outperformed its matched pair, there was no statistically significant difference in mean price change between the two types of neighborhoods.

Gooddale and Wickware (1979) examined the effect of group homes on property values in Ottawa by grouping observations into zones based on distance from the group home. They concluded that there was no evidence of either property values or marketability being adversely affected by the presence of group homes in residential neighborhoods. Farber (1986) looked at the

impact of group homes on residential property values in the SMSA of Shreveport-Bossier City, Louisiana. He used hedonic pricing to compare the purchase price of housing before and after a group home establishment, and to test whether distance from a group home site has a different impact on housing prices before and after such an establishment. He found no statistically significant effect of group home establishments on property values in higher priced areas, yet in depressed areas he found a statistically significant increase in housing prices from the establishment of a group home.

Hargreaves, Callanan, and Maskell (1998) conducted a study on the impact of community housing on property values in four residential neighborhoods in New Zealand. In their use of hedonic pricing, they incorporated building data as well as location variables such as distance from the community housing, and found that the impact of community housing on neighborhood property values was not statistically significant.

The only study that we are aware of which finds that group homes negatively affect neighborhood property values is that of Galster and Williams (1994).[1] They use a hedonic price model to examine property values near nine establishments occupied by mentally disabled individuals in Newark and Mt. Vernon, Ohio. Their study reveals that property values within a two-block radius of two newly constructed apartment complexes were 40% lower after the complexes opened.

III. DATA

We study seven group homes established by the DuPage County Health Department which opened in between 1987 and 1994. These were the only group homes opened during this period in DuPage County, although in 1990 four apartments in Lisle, Illinois, were rented to serve eight residents.[2]

Approximately 80% of DuPage County group homes residents suffer from schizophrenia. Those not afflicted with schizophrenia suffer from affective or mood disorders, and swing between normal moods and severe depression. Thus, mental retardation and substance abuse are not among the primary diagnoses of the group home residents. The group homes are not specialized by type of resident; that is, specific homes do not specialize in residents with a specific disability. Typically, residents of DuPage County group homes are at least 18 years of age (typically in their mid-30s) and are residents of DuPage County. Some of the group home residents have come from state hospitals or homes where elderly parents can no longer look after them. None of the DuPage County group home residents have a criminal record.

This last point is important. Normally, a major worry of communities concerns the potential threat to safety from the group home residents. (Bartels and Lisatowicz 1995) However, in a letter to Naperville residents, the DuPage County Health Department (1994) has reassured residents by stating: "In our seventeen years of providing residential services in DuPage County we have served over 1200 mentally ill persons with not one threat to public safety. . . . [W]e have made a public commitment to not serve individuals with such [violent and criminal] behavior."

We obtained a sample of 641 residential property sales across the seven different DuPage County neighborhoods which experienced the establishment of a group home between 1987 and 1994. The data was collected from the local multiple listing service and thus reflect only those transactions occurring through the MLS during this period. The seven group homes are listed in Table 1 along with other descriptive information. Where available, data were collected as far back as six years prior to the "announcement" date and as far forward as six years following the announcement date. Announcement dates represent the time at which neighbors were likely made aware that

[1] Dear and Taylor (1982) found in one instance that the location of a mental health facility had a negative and significant effect on house prices, but they interpret this result as weak and inconclusive.

[2] The first group home in DuPage County was opened in December 1979, when two adjacent single family homes in Wheaton were leased.

TABLE 1
GROUP HOMES SAMPLE

Group Home	Home Acquired	Method of Acquisition	Home Opened	Announcement Date	Number of Residents	Meetings
Glen Ellyn Woods Glen Ellyn, IL	January 1993	Purchase	May 1993	January 1993[a]	8	Yes
Bloomingdale Bloomingdale, IL	June 1990	Purchase	July 1990	June 1990[b]	5	Yes
Countryside Glen Ellyn, IL	June 1994	Lease	July 1994	June 1994[c]	5	No
Naperville Naperville, IL	September 1994	Purchase	October 1994	August 1994[d]	8	Yes
Winfield Winfield, IL	September 1990	Lease	November 1990	September 1990[e]	4	No
West Chicago West Chicago, IL	April 1987	Purchase	May 1987	April 1987[f]	5	No
Westmont Westmont, IL	April 1988	Purchase	June 1988	April 1988[g]	4	No

From: Bartels and Lisatowicz 1995.
[a] In April 1992, neighbors learn that a property in their neighborhood was on a list of possible homes to be used as a group home sight.
[b] Neighbors learn of home from local Realtor® shortly after purchase.
[c] Local and state officials notified of plan and provided information packets.
[d] Neighbors learn of group home plan from local Realtor®.
[e] Information packets distributed to neighbors.
[f] No specific information regarding when or in what manner neighbors first learn of group home.
[g] No specific information regarding when or in what manner neighbors first learn of group home.

a group home was to be established in their neighborhood. To determine announcement dates, we referenced a report by the DuPage County Board of Health (Bartels and Lisatowicz 1995) which provides a detailed timeline of events surrounding each group home's establishment. If no specific information regarding when or in what manner neighbors first learned of the group home was contained in the report, we selected the date of the group home's acquisition as the announcement date. This was the case in both the West Chicago and the Westmont neighborhoods. Residents in the Glen Ellyn Woods neighborhood learned that a property in their neighborhood was on a list of possible homes to be used as a group home sight one year prior to the group home's opening. However, we used the date that the Glen Ellyn group home was purchased as the announcement date because only at this time was the information no longer speculative. With the exception of the Naperville group home neighborhood, in which neighbors learned of plans to establish a group home in their neighborhood from a local Realtor® one month prior to the purchase of the home, the announcement date coincided with the date the group home was leased or purchased. Sales by year relative to the announcement date are listed for each group home in Table 2.

We collected information on sales price and date of sale, and on other standard building and lot features including square footage of the house, age, number of baths, lot area and lot frontage. We also have information on the geographical placement of the subject property relative to the group home, such as distance from the group home as measured by a straight line drawn between the subject property and the group home, and whether it appears the group home is visible from the subject property. This latter information was obtained by examining plat maps of the neighborhoods. Descriptive statistics for these variables can be found in Table 3.

A group home neighborhood is defined as circle of radius 1,500 feet with the group home at its center. We selected 1,500 feet as the neighborhood radius because it provided us with a sufficient data set and a large enough geographic area to allow for distinction among the distance categories mentioned above. In once instance, we felt that sales occurring on the other side of a busy four-lane road near the Glen Ellyn Woods group home were not in that "neighborhood" by definition, and so chose not to collect data on that side of this major road. For this particular group home, the radius of the neighborhood was extended to 2,000 square feet to make up for the loss in area.[3] For those used to thinking in terms of a control group, it may be useful to think of the homes on the periphery of the circle as being the "control group." Finally, we have information as to whether or not there were neighborhood meetings held about a group home's establishment.[4]

During the time period prior to the announcement date, we imagine prices increasing everywhere in the neighborhood at the same rate, although there would be a different rate for each neighborhood. Following the announcement of the group home, we hypothesize that properties which are proximate to the group home experience a decline in value.[5] Finally, we hypothesize that group homes are placed in depressions in the value surface of the neighborhood. This may be due to budget constraints faced by local government entities when selecting group home sites. We define a value depression as an identifiable, local dip in the house value sur-

[3] We also know whether railroads or natural barriers such as small lakes lie between the subject property and the group home, but we did not make any adjustments in this regard.

[4] We did not look at differences in school or other taxing districts across or within neighborhoods. If it were a fact that different neighborhoods are in different jurisdictions, this is generally controlled for by the fact that we use neighborhood dummy variables which embody all these differences that exist from place to place. The one exception is a neighborhood that is split into two school districts. What is notable about this is that the location of the districts are not associated with our proximity variables in this case. Thus, this fact is not going to bias our key results.

[5] We suspect that these price effects are an initial over reaction to the group home's establishment, and that there is a correction in subsequent periods. We did not find any evidence in this regard, but we spare the reader our crude attempts at testing for this correction phenomenon.

TABLE 2

PROPERTY SALES BY DAYS RELATIVE TO GROUP HOME ANNOUNCEMENT

Time Sold (days from announcement date)	−2160 to −1801	−1800 to −1441	−1440 to −1081	−1080 to −721	−720 to −361	−360 to −1	0 to 361	360 to 721	720 to 1081	1080 to 1441	1440 to 1801	1800 to 2161	Total
Glen Ellyn Woods Glen Ellyn, IL	5	16	15	11	9	19	17	9	6				107
Bloomingdale Bloomingdale, IL	1	3	1		1	0	5	5	10	14	19	1	60
Countryside Glen Ellyn, IL	2	3	11	8	8	9	12						53
Naperville Naperville, IL		6	15	13	14	12	3						63
Winfield Winfield, IL	19	30	13	24	18	5	17	13	17	19	12		187
West Chicago West Chicago, IL			2	7	10	11	4	11	7	15	15		82
Westmont Westmont, IL		1	4	2	21	13	15	9	13	11			89
Total	27	59	61	65	81	69	73	47	53	59	46	1	641

TABLE 3A
DESCRIPTIVE STATISTICS: ALL NEIGHBORHOODS

Variable	Mean	Standard Dev.	Minimum	Maximum
price	$135,927	$56,312	$38,500	$362,500
sqft	1,551	599	567	3,877
bath	1.804	.604	1	4.5
age	40.68	31.79	0	111
frontage	83.74	35.17	25	234
area	13,085	7,622	2,940	108,020
d	965	433	0	2,000
D_2	.094	.292	0	1
D_3	.083	.276	0	1
D_4	.098	.298	0	1
D_5	.292	.455	0	1
D_6	.128	.334	0	1
D_7	.139	.346	0	1
t	−.430	2.856	−5.670	5.330
a	.454	.498	0	1
D_2t	.237	1.060	−5.420	5.000
D_3t	−.148	.710	− 5.290	0.960
D_4t	−.208	.753	−4.570	0.810
D_5t	−.268	1.785	− 5.670	4.750
D_6t	.170	.986	−3.280	4.620
D_7t	.041	.729	−4.100	3.500
sight	.051	.221	0	1
sighta	.022	.146	0	1
N	.312	.464	0	1
$(750 - d)N$	91.894	174.691	0	750
D_{750}	.312	.464	0	1
D_{200}	.033	.178	0	1
$d_{max} - d$	575	378	0	1,500
$(750 - d)D_{750}$	99	175	0	750
$(200 - d)D_{200}$	4	24	0	200
$(d_{max} - d)a$	257	380	0	1,500
$(750 - d)D_{750}a$	39	124	0	750
$(200 - d)D_{200}a$	2	16	0	200

face, holding other things constant. Of course, the value depressions could be as large or larger than our neighborhoods—making this effect impossible to detect.

IV. EMPIRICAL MODELS

The models we develop handle discontinous transactions in both time and space, although time is handled more as an event study than it is in standard hedonics. By overlapping the observations throughout time so that the group home announcements all occur at time 0, we achieve a type of event study. Event studies have been widely used in finance, generally to measure the effect of an event, such as an earnings announcement or a debt issuance, on the securities' rates of return. The event of interest here is the announcement of the group home. We attempt to detect a shift in the price level that occurs at the time of the announcement. Within group home neighborhoods we restrict appreciation rates to be constant throughout the sample period; this corresponds to the idea that the rate of return ultimately returns to normal levels in some conventional event studies.

Each of the seven group home neighborhoods is likely to have a different price level and a different rate of price appreciation at any point in time. That is, the price level in Bloomingdale around the time of its group home announcement, 1990, is likely to be different from the price level in Naperville around the time of its group home announce-

TABLE 3B

DESCRIPTIVE STATISTICS: MEAN VALUES BY NEIGHBORHOOD

Variable	Glen Ellyn	Bloomingdale	Countryside	Naperville	Winfield	West Chicago	Westmont
price	162,020	197,586	125,111	215,173	124,660	78,396	90,015
sqft	1,570	2,044	1,273	2,567	1,473	1,212	1,105
bath	1.917	2.337	1.471	2.518	1.879	1.271	1.340
age	39.15	42.417	47.000	16.778	27.068	65.939	59.506
frontage	109.10	77.60	106.91	83.46	84.78	63.07	60.64
area	18,693	11,446	18,920	12,149	12,534	7,958	10,519
d	1,313	855	773	809	943	919.634	932.472
t	−1.521	2.537	−1.796	−2.120	−.919	1.329	.298
a	.364	.900	.226	.048	.417	.659	.573
sight	.056	.067	.094	.032	.064	.024	.022
sighta	.019	.050	.019	0	.021	.024	.022
N	.131	.417	.491	.460	.278	.354	.281
$(750 - d)N$	44.673	112.583	150.264	124.683	77.540	109.268	90.899
D_{750}	.131	.417	.491	.460	.278	.354	.281
D_{200}	.028	.033	.075	.048	.027	.024	.022
$d_{max} - d$	410.888	670.333	727.491	691.032	556.631	580.366	567.528
$(750 - d)D_{750}$	44.673	112.583	150.264	124.683	77.540	109.268	90.899
$(200 - d)D_{200}$	1.682	.500	11.887	6.746	3.316	1.707	4.494
$(d_{max} - d)a$	146.682	587.583	134.340	27.778	212.540	399.634	364.101
$(750 - d)D_{750}a$	17.757	93.833	22.547	1.905	19.465	78.232	71.292
$(200 - d)D_{200}a$	.748	.500	1.887	0	1.658	1.707	4.494

ment, 1994. Our model is the first in this literature to accommodate different price levels and appreciation rates across neighborhoods. We do this through the incorporation of neighborhood dummy variables in both the slope and the intercept terms of the regression equation.

Our central hypothesis is that those properties in close proximity to group homes will experience a decline in value following the group home announcement. We develop two different models to test this hypothesis. The first incorporates the dummy variable for sight. This model tests whether properties from which the group home is visible experience a decline in value following the announcement. The second model uses piecewise linear distance variables, and tests whether those properties within 200 feet of the group home experience a decline in value following the announcement that is related to their proximity.[6]

With a sample consisting of sales transactions from one group home neighborhood only, the first model, which utilizes the sight dummy variable, would be as follows:

$$price = Le^{\delta_1 t + \gamma_1 sighta + \gamma_2 (750-d)N}, \quad [1]$$

where

$$L = e^{\beta_0 + \beta_1 sqft + \beta_2 bath} front^{\beta_3} area^{\beta_4} (1 - age/120)^{\beta_5}. \quad [2]$$

Here, sales price is the dependent variable. The variable a is a dummy variable indicating that the property was sold after the group home announcement was made. The variables *sight* and N are dummy variables indicating whether the property was in sight of, or near the group home, respectively, where near is defined as being within 750 feet (half the radius of the neighborhood). Thus, *sighta* indicates the change in price following the announcement for those properties from which the group home is visible. The variable d is distance from the group home in feet. The coefficient δ_1 is the annual rate of appreciation in the neighborhood (the entire 1,500 foot circle). γ_1 denotes the overall percentage price level change for those properties in sight of the group home following the group home announcement. γ_2 indicates whether the group home is located in a local value depression; it reveals what is happening to prices as one approaches the group home from 750 feet away. β_1 indicates the percentage change in price from increasing the size of the property by one square foot. β_2 indicates the percentage change in price from adding one bath to the property. We leave the square foot variable untransformed following the non-parametric work of Coulson.[7] β_4 is both the lot area elasticity and the depth elasticity of value, while the frontage elasticity of value is the sum of β_3 and β_4.[8] Based on the work of Colwell and Scheu (1989), Colwell and Munneke (1997), and Thorsnes and MacMillan (1998), we hypothesize that the frontage and the lot area elasticities will be positive but less than one, indicating that price increases at a decreasing rate with an increase in either lot area or frontage, with price being more concave in the former. The age variable specification is taken from the work of Cannaday and Sunderman (1986). We predict that β_4 will be positive but less than one, indicating that price declines at an increasing rate as age increases.

Our sample, however, does not consist of sales transactions from one neighborhood only. Rather, it consists of observations taken from *seven* different neighborhoods. Clearly, at any point in time, each of the neighborhoods is likely to have a different price level and a different rate of price appreciation. Moreover, even if price levels and appreciation rates were identical across time for all neighborhoods, announcement dates are different across time. For these reasons we incorporate neighborhood dummy variables as follows:

$$price = Le^{\sum_{i=1}^{6} \alpha_i D_{1+i} + (\delta_1 + \sum_{i=2}^{7} \delta_i D_i)t + \gamma_1 sighta + \gamma_2 (750-d)N}, \quad [3]$$

where L is defined above.

[6] Properties in sight of a group home were on average 214 feet away, with distance ranging from 0 to 650 feet.

[7] Colwell (1993) has characterized Coulson's results as being dependent upon having excluded quality variables. We confess to having excluded quality variables also.

[8] β_4 is also the depth elasticity of value.

In the modified model, one neighborhood is selected as the standard. The coefficients α_1 through α_6 indicate the difference in price level around the time of the announcement between the standard neighborhood and each of the remaining six neighborhoods. The parameter δ_1 indicates price appreciation per year for the standard neighborhood. The parameters δ_2 through δ_7 reflect differences in annual price appreciation rates for the six remaining neighborhoods as compared to the standard.

The second model, which utilizes a piecewise linear distance formulation (i.e., linear in the exponent) similar to that used by Munneke and Slawson (1999), is as follows:

$$price = L \exp \left(\begin{array}{l} \sum_{i=1}^{6} \alpha_i D_{1+i} + \left(\delta_1 + \sum_{i=2}^{7} \delta_i D_i\right) t + \\ \gamma_1(d_{\max} - d) + \gamma_2(750 - d)D_{750} + \gamma_3(200 - d)D_{200} + \\ \gamma_4(d_{\max} - d)a + \gamma_5(750 - d)D_{750}a + \gamma_6(200 - d)D_{200}a \end{array} \right), \quad [4]$$

where

$$D_{750} = \left\{ \frac{1 \text{ if } d < 750}{0 \text{ otherwise}} \right. \text{ and } D_{200} = \left\{ \frac{1 \text{ if } d < 200}{0 \text{ otherwise}} \right..$$

The coefficient γ_1 is the percentage price change with respect to a unit change in distance taking place over the entire sample period between the neighborhood boundary and 750 feet from the group home. D_{750} is a dummy variable indicating whether a property is within 750 feet of a group home. The sum of γ_1 and γ_2 is the percentage price change taking place over the entire sample period between 750 feet and 200 feet from the group home. We hypothesize that γ_2 will be negative, indicating that group homes are placed in local value depressions. D_{200} is a dummy variable indicating whether a property is within 200 feet of a group home. The sum of γ_1, γ_2, and γ_3 is the percentage price change taking place over the entire sample period within 200 feet of the group home. We hypothesize that γ_1 and γ_3 will not be statistically different from zero. γ_4 is the additional percentage price change taking place after the group home announcement between the neighborhood boundary and 750 feet from the group home. The sum of γ_1 and γ_4 is the total percentage price change with respect to a unit change in distance after the announcement over this distance. γ_5 is the additional percentage price change taking place after the group home announcement between 750 feet and 200 feet from the group home. The sum of γ_1, γ_2, γ_4, and γ_5 is the total percentage price change with respect to a unit change in distance after the announcement over this distance. Finally, γ_6 is the additional percentage price change taking place after the group home announcement within 200 feet of the group home. Thus the sum of the coefficients on all the distance variables is the total percentage price change with respect to a unit change in distance after the announcement within 200 feet of the group home. We hypothesize that γ_4 and γ_5 will not be statistically different from zero, while γ_6 will be negative and significant.

Both Model 1 and Model 2 test whether group homes are placed in value depressions and whether those properties in close proximity to the group home experience a decline in value following the group home announcement. The differences between the models relate to the way *close proximity* is modeled and in what manner prices are affected. In Model 1, proximate refers to being in sight of the group home, and any price movement for these properties would be in the form of a level shift or, according to our hypothesis, a drop. That is, all properties in sight of the group home would experience a decline in value of equal proportion. In Model 2, proximate refers to being within 200 feet of the group home, and the percentage price change for these properties would vary, depending on the closeness of the group home to the subject property. According to our hypothesis, a property 150 feet away from the group home would experience a percentage decline in value less than that for a property 50 feet away.

V. ESTIMATION

To estimate the models we apply a logarithmic transformation. The regression equation for Model 1 is as follows:

$$\begin{aligned}\ln(price) = {} & \beta_0 + \beta_1 sqft + \beta_2 bath \\ & + \beta_3 \ln(frontage) + \beta_4 \ln(area) \\ & + \beta_5 \ln(1 - age/120) + \alpha_1 D_2 \\ & + \alpha_2 D_3 + \alpha_3 D_4 + \alpha_4 D_5 \\ & + \alpha_5 D_6 + \alpha_6 D_7 \\ & + \delta_1 t + \delta_2 D_2 t + \delta_3 D_3 t \\ & + \delta_4 D_4 t + \delta_5 D_5 t + \delta_6 D_6 t \\ & + \delta_7 D_7 t + \gamma_1 sighta \\ & + \gamma_2 (750 - d)N.\end{aligned} \quad [5]$$

For Model 2, the regression equation is as follows:

$$\begin{aligned}\ln(price) = {} & \beta_0 + \beta_1 sqft + \beta_2 bath \\ & + \beta_3 \ln(frontage) + \beta_4 \ln(area) \\ & + \beta_5 \ln(1 - age/120) + \alpha_1 D_2 \\ & + \alpha_2 D_3 + \alpha_3 D_4 \\ & + \alpha_4 D_5 + \alpha_5 D_6 + \alpha_6 D_7 \\ & + \delta_1 t + \delta_2 D_2 t + \delta_3 D_3 t + \delta_4 D_4 t \\ & + \delta_5 D_5 t + \delta_6 D_6 t + \delta_7 D_7 t \\ & + \gamma_1 (d_{max} - d) + \gamma_2 (750 - d) D_{750} \\ & + \gamma_3 (200 - d) D_{200} \\ & + \gamma_4 (d_{max} - d) a + \gamma_5 (750 - d) D_{750} a \\ & + \gamma_6 (200 - d) D_{200} a.\end{aligned} \quad [6]$$

Regression results for Models 1 and 2 are listed in Table 4. The Glen Ellyn Woods group home neighborhood was selected as the standard in both cases. Model 1 indicates that following the announcement of the group home, properties within sight of a group home experienced a decrease in value of 10.5% (significant at the 1% level). The data do not suggest that group homes are placed in depressions in the value surface within neighborhoods. A graphical presentation of our results from Model 1 is found in Figure 1. Model 2 indicates that following

TABLE 4

REGRESSION RESULTS: MODEL 1 AND MODEL 2 WITH ALL NEIGHBORHOODS (DEPENDENT VARIABLE = ln(*price*))

Variable	Model 1 Coefficient	Model 2 Coefficient
Constant	10.047	10.077
	(65.264)	(65.013)
sqft	.00022	.00022
	(13.560)	(13.661)
bath	.133	.133
	(8.772)	(8.772)
ln(*frontage*)	.057	.057
	(2.662)	(2.620)
ln(*area*)	.119	.116
	(6.178)	(5.982)
ln(1 − *age*/120)	.082	.084
	(5.801)	(5.850)
D_2	−.109	−.104
	(−3.201)	(−3.025)
D_3	−.079	−.072
	(−2.277)	(−2.061)
D_4	.052	.055
	(1.229)	(1.255)
D_5	−.214	−.209
	(−9.810)	(−9.342)
D_6	−.568	−.565
	(−19.230)	(−18.743)
D_7	−.371	−.364
	(−14.060)	(−13.539)
t	.045	.044
	(7.020)	(6.520)
$D_2 t$	.032	.031
	(3.173)	(3.052)
$D_3 t$	.012	.011
	(0.950)	(0.869)
$D_4 t$	.003	.004
	(0.197)	(0.233)
$D_5 t$	.011	.012
	(1.570)	(1.633)
$D_6 t$	.030	.032
	(3.312)	(3.463)
$D_7 t$	.025	.027
	(2.395)	(2.507)
sighta	−.11126	—
	(−2.563)***	
$(750 - d)N$	.000004753	—
	(1.011)	
$d_{max} - d$	—	−.000027
		(−0.741)
$(750 - d)D_{750}$	—	.000019
		(0.211)
$(200 - d)D_{200}$	—	.000474
		(1.212)
$(d_{max} - d)a$	—	−.000014
		(−0.321)
$(750 - d)D_{750}a$	—	.000099
		(.792)
$(200 - d)D_{200}a$	—	−.001206
		(−1.978)**
Adjusted R^2	.878	.877

Note: *t*-statistic in parenthesis.
* Significant at 0.050 (one-tailed test); ** significant at 0.025 (one-tailed test); *** significant at 0.010 (one-tailed test).

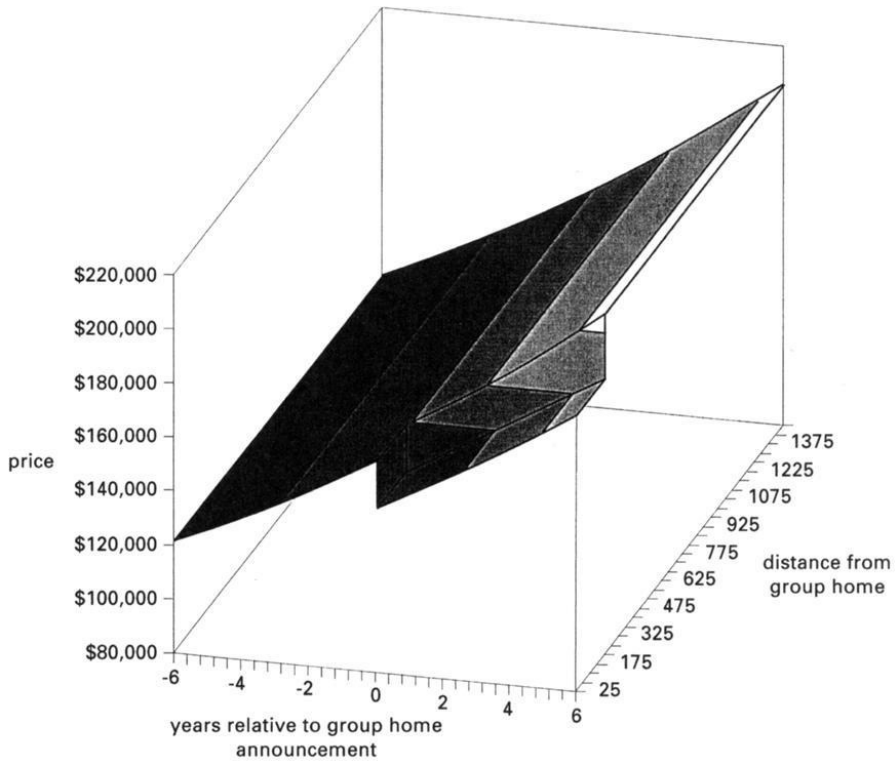

FIGURE 1
RESULTS FROM MODEL 1

the announcement of the group home, properties within 200 feet of a group home experienced a decrease in value of up to 24% (significant at the 2.5% level).[9] Here again, the data do not suggest that group homes are placed in depressions in the value surface within neighborhoods. A graphical presentation of our significant results from Model 2 is found in Figure 2. Figure 3 provides a two-dimensional interpretation of the price index at various distances after the group home announcement, although it is only the change within 200 feet which is significant.

The dummy variables α_1 through α_6 serve to raise or lower the height of the figures, reflecting the difference in price levels for the various neighborhoods around the announcement date. Similarly, the dummy variables δ_2 through δ_7 will change the steepness of the figures, reflecting the differences in appreciation rates throughout the various neighborhoods around the time of the announcement date.

Regression results for all of the property-specific variables were significant in both models. A 1% change in lot area and lot frontage increases price by approximately .12% and 0.185%, respectively. Both of these values are lower than what would be expected from other research. The percentage increase from adding one bath is approximately 13%, and the percentage increase from an additional square foot is roughly .02%. The magnitude of the coefficient on the age variable indicates that price declines at an increasing rate as age increases. Five of the group home neighborhoods had lower overall price levels than the Glen Ellyn Woods neighborhood. Prices increased at 4.5% per year in the Glen Ellyn Woods

[9] 24% is the effect on a property zero feet away from the group home. To find the effect on a property 100 feet away, multiply the antilog of the coefficient minus 1 by the distance. A property 100 feet away from the group home would have a percentage decline in value of 12%.

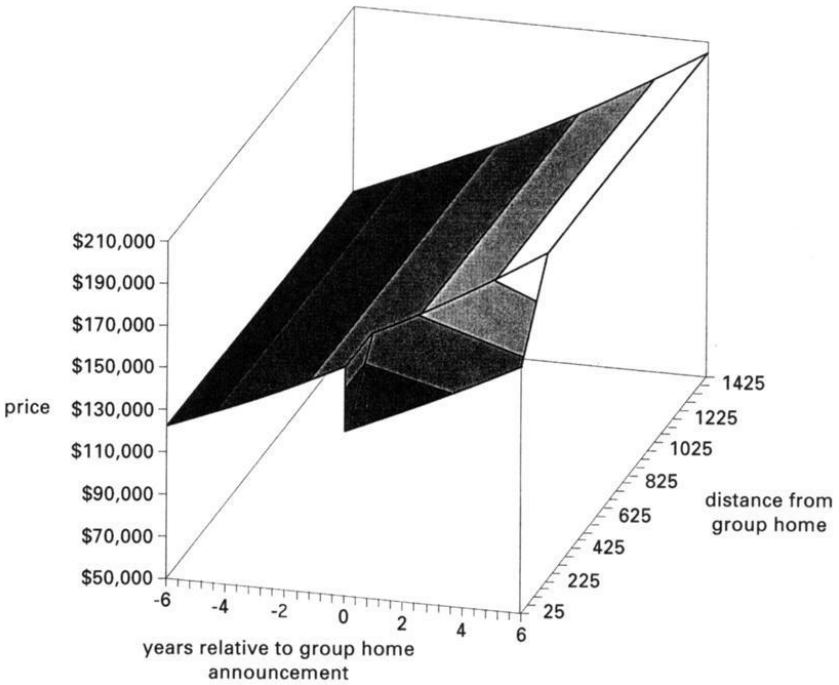

FIGURE 2
RESULTS FROM MODEL 2

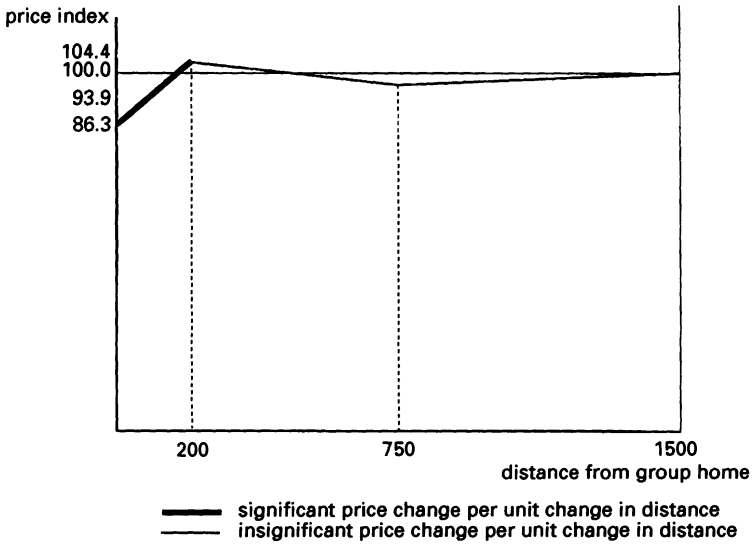

FIGURE 3
GRAPH OF POST EVENT PIECEWISE LINEAR RESULTS: BOTH SIGNIFICANT AND INSIGNIFICANT

neighborhood. This was the lowest rate of appreciation among the group home neighborhoods, although only three of the remaining six neighborhoods had rates which were significantly different from this.

To be sure that our results were not being driven by one group home in particular, we ran our standard regression seven times for both Model 1 and Model 2, each time omitting one group home. When we did this, we observed an interesting pattern. When the Bloomingdale or Winfield group home was omitted from Model 1, the coefficient on *sighta* was negative but no longer significant, at even the 5% level. Removing any of the remaining five group homes from the sample, however, did not detract from the robustness of the results in terms of significance; in fact, it sometimes enhanced both the magnitude and the significance of the sight variable. On the other hand, when the either the Naperville, West Chicago, or Westmont group homes were omitted from Model 2, the coefficient on $(200 - d)(d < 200)a$ was negative but no longer significant at the 5% level. Moreover, removing the Glen Ellyn neighborhood from this model dropped the significance of $(200 - d)(d < 200)a$ from 2.5% to 5%. Removing the Winfield and Bloomingdale group homes from Model 2, however, enhanced both the magnitude and the significance of $(200 - d)(d < 200)a$. Removing the Countryside group home did not materially affect either model. Thus, the pattern we observed is that with the exception of the Countryside neighborhood, removing a group home from the sample lessened or eliminated the significance of the proximate variable in one model or the other—but not both. We concluded that the Bloomingdale and Winfield neighborhoods, whose omission from Model 1 left the proximate variable insignificant, must lend themselves to the sight specification, while the Glen Ellyn, Naperville, West Chicago, and Westmont neighborhoods, whose omission from Model 2 lessened or eliminated the significance of the proximate variable, better lent themselves to the distance specification.

We decided to rerun the regressions using only the Bloomingdale, Winfield and Countryside[10] neighborhoods for the Model 1 specification, and only the Glen Ellyn, Naperville, West Chicago and Westmont neighborhoods for the Model 2 specification. Glen Ellyn remained the standard neighborhood in Model 1, while Naperville was the standard in Model 2. Results are presented in Table 5. We now find that following the announcement of the group home, properties within sight of a group home experienced a decrease in value of 16.2% (significant at the 1% level). Model 2 indicates that following the announcement of the group home, properties within 200 feet of a group home experienced a maximum decrease in value of 44% ($-.002195 \times 200$, significant at the 2.5% level). Model 2 also indicates that property values decline as one approaches the group home from the neighborhood periphery. This provides some support for our hypothesis that group homes are placed in value depressions.

While we cannot be certain as to why it is that certain neighborhoods better lend themselves to certain specifications, it is likely that it has to do with the availability of data in sight of or within 200 feet of the group home in each neighborhood. For example, there are no observations in sight of the group home after the announcement in Naperville. Moreover, in Naperville, West Chicago, and Westmont, there were at least as many observations within 200 feet of the group home as in sight of it for the sample period, while in all the other neighborhoods there were more observations in sight of the group home than within 200 feet.

Selection Bias

The DuPage County Health Department reports that the selection process for a group home site is similar to that undertaken by a traditional family. Preferred homes are typically within a mile or a mile-and-a-half of shopping, have ample living space, bedrooms, and bathrooms. Homes need to be structurally sound, in good repair, and have adequate septic capacity and drinkable water. The Health Department asserts that

[10] We included Countryside, which did not appear to favor either the Model 1 or Model 2 specification, with Bloomingdale and Winfield to achieve a more even distribution of neighborhoods for each model.

TABLE 5
REGRESSION RESULTS: MODEL 1 WITH GLEN ELLYN, BLOOMINGDALE, COUNTRYSIDE, AND WINFIELD MODEL 2 WITH NAPERVILLE, WEST CHICAGO, AND WESTMONT
(DEPENDENT VARIABLE = ln(*price*))

Variable	Model 1 Coefficient	Model 2 Coefficient
Constant	9.840	10.404
	(58.106)	(33.753)
sqft	.00023	.000209
	(11.556)	(7.750)
bath	.133	.155
	(8.772)	(5.003)
ln(*frontage*)	.055	.038
	(2.376)	(0.837)
ln(*area*)	.142	.102
	(6.532)	(2.699)
ln(1 − *age*/120)	.062	.102
	(3.489)	(4.361)
D_2	−.091	—
	(−2.870)	
D_3	−.094	—
	(−2.937)	
D_4	—	—
D_5	−.200	—
	(−9.797)	
D_6	—	−.639
		(−10.508)
D_7	—	−.439
		(−7.151)
t	.044	.047
	(7.351)	(2.887)
D_2t	.033	—
	(3.555)	
D_3t	.010	—
	(0.841)	
D_4t	—	—
D_5t	.125	—
	(1.930)	
D_6t	—	.0249
		(1.391)
D_7t	—	.017
		(.903)
sighta	−.17698	—
	(−3.695)***	
$(750 - d)N$	.00003	—
	(0.747)	
$d_{max} - d$	—	−.000166
		(−2.607)***
$(750 - d)D_{750}$	—	.000166
		(1.018)
$(200 - d)D_{200}$	—	.000856
		(1.102)
$(d_{max} - d)a$	—	.000019
		(0.249)
$(750 - d)D_{750}a$	—	.000288
		(1.300)
$(200 - d)D_{200}a$	—	−.002195
		(−2.131)**
Adjusted R^2	.828	.896

Note: *t*-statistic in parenthesis.
* Significant at 0.050 (one-tailed test); ** significant at 0.025 (one-tailed test); *** significant at 0.010 (one-tailed test).

no residential area in DuPage County would be ruled out as a potential community for siting a group home. (Bartels and Lisatowicz 1995)

One can imagine, however, how the predicted response by a community to a group home might affect siting decisions. If we were to have identified neighborhood selectivity bias, we would have undertaken a 3-step process. First, we would have used a reduced form probit in which neighborhoods are selected or not selected (imagine how many neighborhoods have not been selected). This would reveal the probability that a neighborhood is selected for a group home site as a function of neighborhood characteristics. Second, we would have run a regression to estimate the impact of a group home on neighborhoods. Finally, we would have run a structural probit to estimate the probability effect of value impacts. We did not pursue this direction as a result of the data difficulties.

VI. ALTERNATIVE SPECIFICATIONS

Our findings indicate that group homes do adversely affect proximate property values. Yet with the exception of Galster and Williams (1994), other studies have not found similar effects. By replicating these other studies to the best of our ability, we will have some indication of whether it is the modeling that is driving our results, or our particular sample.

Hargreaves, Callanan, and Maskell (1998) used hedonic modeling to approach the question of group homes. Using our data, we replicate the proximity to the group home portion of their regression model. Our modified regression equation is as follows:

$$\begin{aligned}\ln(price) = {} & \beta_0 + \beta_1 sqft + \beta_2 bath \\ & + \beta_3 \ln(frontage) + \beta_4 \ln(area) \\ & + \beta_5 \ln(1 - age/120) \\ & + \alpha_1 D_2 + \alpha_2 D_3 + \alpha_3 D_4 + \alpha_4 D_5 \\ & + \alpha_5 D_6 + \alpha_6 D_7 + \delta_1 t + \delta_2 D_2 t \\ & + \delta_3 D_3 t + \delta_4 D_4 t + \delta_5 D_5 t \\ & + \delta_6 D_6 t + \delta_7 D_7 t + \gamma_1 da, \end{aligned} \qquad [7]$$

TABLE 6

REGRESSION RESULTS (FOLLOWING HARGREAVES ET AL.)
(DEPENDENT VARIABLE = ln(*price*))

	Distance	1/distance	ln(distance)	Distance * a	1/distance * a	ln(distance) * a
Variable	Coeff.	Coeff.	Coeff.	Coeff.	Coeff.	Coeff.
Constant	10.056	10.097	10.079	10.096	10.092	10.105
	(62.178)	(65.620)	(53.740)	(64.683)	(65.803)	(65.284)
sqft	.0002187	.0002188	.0002189	.0002180	.0002188	.0002187
	(13.543)	13.485)	(13.482)	(13.501)	13.483)	(13.480)
bath	.135	.137	.137	.135	.137	.136
	(8.886)	(8.928)	(8.925)	(8.878)	(8.928)	(8.898)
ln(*frontage*)	.056	.056	.056	.057	.056	.056
	(2.620)	(2.595)	(2.590)	(2.626)	(2.582)	(2.592)
ln(*area*)	.117	.113	.115	.114	.114	.114
	(6.011)	(5.862)	(5.885)	(5.955)	(5.923)	(5.925)
ln(1 − *age*/120)	.084	.083	.083	.084	.083	.083
	(5.910)	(5.786)	(5.793)	(5.910)	(5.792)	(5.773)
D_2	−.105	−.111	−.109	−.111	−.110	−.110
	(− 3.016)	(−3.247)	(−3.167)	(−3.233)	(−3.231)	(−3.228)
D_3	−.071	−.077	−.075	−.077	−.076	−.078
	(−1.995)	(−2.189)	(−2.118)	(− 2.189)	(−2.166)	(−2.211)
D_4	.057	.052	.054	.049	.053	.046
	(1.307)	(1.200)	(1.236)	(1.110)	(1.242)	(1.049)
D_5	−.211	−215	−.214	−.217	−.214	−.216
	(−9.175)	(−9.769)	(−9.522)	(−9.606)	(−9.773)	(− 9.778)
D_6	−.562	−.568	−.566	−.570	−.567	−.571
	(−18.284)	(−19.160)	(−18.697)	(− 18.388)	(−19.244)	(−18.918)
D_7	−.365	−.368	−.366	−.373	−.367	−.370
	(−13.240)	(− 13.815)	(−13.514)	(−13.447)	(−13.832)	(− 13.746)

t	.044	.044	.044	.046	.044	.047
	(6.853)	(6.844)	(6.827)	(6.079)	(6.686)	(6.045)
D_2t	.032	.031	.032	.030	.031	.030
	(3.168)	(3.096)	(3.123)	(2.904)	(3.115)	(2.921)
D_3t	.012	.012	.012	.011	.012	.012
	(.896)	(.902)	(.900)	(.847)	(.883)	(.875)
D_4t	.003	.005	.005	.002	.005	.003
	(.182)	(.298)	(.287)	(.120)	(.298)	(.183)
D_5t	.011	.011	.011	.010	.012	.011
	(1.553)	(1.593)	(1.597)	(1.412)	(1.600)	(1.493)
D_6t	.031	.031	.031	.031	.031	.031
	(3.402)	(3.381)	(3.396)	(3.318)	(3.385)	(3.373)
D_7t	.025	.027	.027	.024	.027	.027
	(2.385)	(2.484)	(2.502)	(2.301)	(2.480)	(2.540)
d	.000007485	—	—	—	—	—
	(.498)					
$1/d$	—	1.891	—	—	—	—
		(.450)				
$\ln(d)$	—	—	.001	—	—	—
			(.107)			
da	—	—	—	−.000006511	—	—
				(−.398)		
$(1/d)a$	—	—	—	—	1.455	—
					(.240)	
$\ln(d)a$	—	—	—	—	—	.002
					—	(−.647)
Adjusted R^2	.877					

Note: t-statistic in parenthesis.
* Significant at 0.05 (one-tailed test); ** significant at 0.025 (one-tailed test); *** significant at 0.01 (one-tailed test).

where d is the distance to the group home in feet, and a is a dummy indicating that the sale took place after the group home announcement. We also ran the regression replacing d in the equation with $1/d$ and $\ln(d)$. In none of these cases was the coefficient on the distance variable statistically significant. In the above equation we multiplied the distance variable by a in order to detect a change in the price level after the group home announcement. Again, in none of these cases was the coefficient on the distance variable statistically significant. The results from these regressions are presented in Table 6. Apparently, this distance specification is too rigid to capture market realities.

Farber (1986) also used hedonic modeling to determine whether or not group homes effect property values. Using our data, we replicate the proximity to the group home portion of the Farber's regression model; the modified regression equation is as follows:

$$\begin{aligned}\ln(price) = {} & \beta_0 + \beta_1 sqft + \beta_2 bath \\ & + \beta_3 \ln(frontage) \\ & + \beta_4 \ln(area) \\ & + \beta_5 \ln(1 - age/120) \\ & + \gamma_1 a + \gamma_2 \ln(d) \\ & + \gamma_3 \ln(d)a + \gamma_4 ta \\ & + \delta_1 months, \end{aligned} \quad [8]$$

where d is the distance to the group home in feet, and a is a dummy indicating that the sale took place after the group home announcement, t is time relative to the announcement date, and *months* is months from the earliest observation in the sample. The results for this regression, presented in Table 7, indicate that following the group home announcement there is an increase in property values in the entire neighborhood. Moreover, while group homes are initially placed in lower-valued areas within neighborhoods, after their establishment property values *decrease* with distance from the group home. However, when we incorporate our neighborhood dummy variables into Farber's original regression equation, the only statistically significant result is that after the group home announcement prices appreciate at a lower rate than before the announcement. These results are also presented in Table 7. Thus, simply by allowing for flexibility in price levels and appreciation rates across neighborhoods, the modified Farber model indicates negative, rather than positive, price effects from group homes.

Lauber compared the change in mean sales price two years before and two years after a group home establishment between fourteen group home neighborhoods and fourteen non-group home neighborhoods using matched pairs. Lauber found the difference in the mean sales price change between the group home neighborhoods and the non-group home neighborhoods to be statistically insignificant. Using our sample, we considered those properties near, or within 750 feet of the group home, to be "group home neighborhoods," and those properties beyond 750 feet to be "non-group home neighborhoods." Thus, we effectively have seven group home neighborhoods and seven non-group home neighborhoods across which we can compare changes in mean sale price before and after a group home announcement (we use the announcement date rather than the date of the group home opening as our event date). Unfortunately, for the Bloomingdale group home, we did not have any sales occurring two years before the announcement in the non-group home neighborhoods, so we were unable to make a meaningful comparison of changes in mean sale price. Thus, our workable sample includes the remaining twelve group home and non-group home neighborhoods.

The change in mean sales price for each group home and non-group home neighborhood is presented in Table 8. The average change in mean sales price is $6,607 for neighborhoods with group homes, and is $2,438 for neighborhoods without group homes. We conduct a t-test to determine if the average change in mean sale price for group home neighborhoods is statistically different from the average change in mean sale price for non-group home neighborhoods; like Lauber, we find no statistically significant difference. To draw conclusions from comparisons of this nature is danger-

TABLE 7
REGRESSION RESULTS (FOLLOWING FARBER)
(DEPENDENT VARIABLE = ln(*price*))

Variable	Original Coefficient	Modified Coefficient
Constant	9.083	10.102
	(49.282)	(51.017)
sqft	.0002290	.0002196
	(14.626)	(13.601)
bath	.182	.134
	(11.435)	(8.782)
ln(*frontage*)	.048	.054
	(2.096)	(2.504)
ln(*area*)	.120	.111
	(6.084)	(5.713)
ln(1 − *age*/120)	.109	.069
	(7.775)	(4.635)
Months from 1/5/84	−.006	—
	(−21.469)	
D_2	—	−.075
		(−2.069)
D_3	—	−.096
		(−2.674)
D_4	—	.029
		(.651)
D_5	—	−.187
		(−7.699)
D_6	—	−.570
		(− 18.545)
D_7	—	−.372
		(−13.622)
t	—	.054
		(6.722)
D_2t	—	.041
		(3.697)
D_3t	—	.005
		(.338)
D_4t	—	−.005
		(−.285)
D_5t	—	−.018
		(2.347)
D_6t	—	−.050
		(4.476)
D_7t	—	.042
		(3.539)
a	.295	.079
	(1.890)*	(.542)
ln(d)	.037	.009
	(2.445)***	(.634)
ln(d)a	−.045	−.014
	(−1.983)**	(−.679)
ta	−.0004948	−.036
	(−.069)	(−3.093)***
Adjusted R^2	.849	.878

Note: t-statistic in parenthesis.
* Significant at 0.05 (one-tailed test); ** significant at 0.025 (one-tailed test); *** significant at 0.01 (one-tailed test).

TABLE 8
CHANGES IN MEAN SALES PRICE TWO YEARS BEFORE AND TWO YEARS AFTER GROUP HOME ANNOUNCEMENT (FOLLOWING LAUBER)

	Group Home Neighborhood		Non-Group Home Neighborhood
Glen Ellyn	$18,600		<$17,834>
Countryside	$3,750		$12,167
Naperville	<$37,496>		<$28,979>
Winfield	$1,490		$22,584
West Chicago	$31,250		$19,589
Westmont	$22,050		$7,102
Average	$6,607		$2,438
Standard deviation	$24,368		$21,045
t-stat		−.5494	

ous, however, because we have not controlled for quality. For example, if one were to find a larger difference (increase) in mean sale price near the group home it could mean that group homes improve neighborhood property values, or that it is those households inhabiting the larger, higher-priced houses which leave the neighborhood first in response to a group home announcement.

Finally, we attempt to replicate the hedonic pricing model of Galster and Williams (1994), who found for two group homes in their sample of nine that neighborhood property values declined within a two-block radius in response to the group home's establishment. They run a series of regressions which incorporate a dummy variable, *close,* which indicates whether the subject property is within two blocks of the group home. We replicate their regression equations using *near* (being within 750 feet) for the *close* variable. Results are presented in Table 9.

In the first regression, which does not include neighborhood dummies, results indicate that property values close to the group home are declining throughout the sample period. In the second regression, the distance variable *close* is multiplied by a dummy variable indicating that either the sale took place before (*pre*), or after (*post*) the group home's

TABLE 9
REGRESSION RESULTS (FOLLOWING GALSTER AND WILLIAMS)
(DEPENDENT VARIABLE = ln(*price*))

	Regression 1	Regression 2	Regression 3
Constant	9.342	9.304	9.262
	(67.243)	(66.793)	(64.679)
sqft	.0002483	.0002508	.0002504
	(16.141)	(16.359)	(15.807)
bath	.172	.172	.157
	(11.021)	(11.083)	(9.864)
ln(*frontage*)	.046	.046	.046
	(2.032)	(2.035)	(2.042)
ln(*area*)	.116	.120	.126
	(6.171)	(6.407)	(6.641)
ln(1 − *age*/20)	.130	.136	.132
	(8.359)	(8.642)	(8.437)
yr1985	.057	.060	.067
	(.939)	(1.004)	(1.125)
yr1986	.216	.221	.227
	(3.748)	(3.853)	(3.978)

TABLE 9
REGRESSION RESULTS (FOLLOWING GALSTER AND WILLIAMS)
(DEPENDENT VARIABLE = ln(*price*)) (*continued*)

	Regression 1	Regression 2	Regression 3
yr1987	.351	.353	.358
	(5.941)	(5.984)	(6.107)
yr1988	.431	.428	.422
	(7.489)	(7.454)	(7.412)
yr1989	.440	.439	.439
	(7.537)	(7.546)	(7.620)
yr1990	.515	.511	.517
	(8.896)	(8.855)	(9.048)
yr1991	.528	.521	.537
	(9.335)	(9.236)	(9.587)
yr1992	.607	.600	.618
	(10.448)	(10.368)	(10.767)
yr1993	.643	.634	.656
	(11.137)	(11.010)	(11.478)
yr1994	.794	.787	.787
	(13.561)	(13.483)	(13.591)
yr1995	.839	.829	.829
	(13.695)	(13.556)	(13.599)
close	−.030	—	—
	(−2.154)**		
closepre	—	−.056	—
		(−3.259)***	
closepost	—	−.001	—
		(−.026)	
D_1*closepre*	—	—	.029
			(.506)
D_1*closepost*	—	—	−.059
			(−.890)
D_2*closepre*	—	—	−.028
			(−.351)
D_2*closepost*	—	—	.094
			(2.529)**
D_3*closepre*	—	—	−.118
			(−3.354)***
D_3*closepost*	—	—	−.061
			(−.650)
D_4*closepre*	—	—	−.056
			(−1.658)*
D_4*closepost*	—	—	.065
			(.413)
D_5*closepre*	—	—	.010
			(.329)
D_5*closepost*	—	—	−.081
			(−1.928)*
D_6*closepre*	—	—	−.148
			(−2.943)***
D_6*closepost*	—	—	−.029
			(−.760)
D_7*closepre*	—	—	−.108
			(−1.869)*
D_7*closepost*	—	—	.026
			(.664)
Adjusted R^2	.855	.856	.860

Note: *t*-statistic in parenthesis.
* Significant at 0.05 (one-tailed test); ** significant at 0.025 (one-tailed test); *** significant at 0.01 (one-tailed test).

establishment. We find that property values are decreasing prior to the group home announcement, which suggests that group homes are placed in value depressions. In their third regression, Galster and Williams incorporate neighborhood dummies in conjunction with the variables just described. In replicating this regression we find a mixed bag of statistically significant results: values are decreasing before the announcement in Countryside, West Chicago and Westmont neighborhoods, decreasing following the announcement in the Winfield neighborhood, and increasing following the announcement in the Bloomingdale neighborhood.

The probable cause of these conflicting results in the third regression is that price levels across neighborhoods are forced to be the same across time. That is, the Galster-Williams model forces the price level of properties which are beyond 750 feet (or beyond sight) of any particular group home to be the same across time as all other sample properties which are not within 750 feet (or in sight) of a group home. It is our incorporation of neighborhood intercept and slope shifters which corrects for this problem.

Using DuPage County data, we have tried to replicate four studies, three of which concluded that group homes do not negatively affect neighborhood property values. In our replication of these studies, we find no evidence that group homes adversely affect neighborhood property values. In our replication of a fourth study which finds some evidence that group homes do affect property values, we find mixed results, which are probably driven by the fact that the model forces price levels to be the same across neighborhoods through time. Thus, the proximity variables substitute for neighborhood dummies to an extent that may swamp the effects of group homes. It seems appropriate to conclude, then, that it is our model, and not our data, that is driving our statistical results.

VII. CONCLUSION

In our regression analysis of property values in seven Du Page County, Illinois, neighborhoods which experienced the establishment of a group home, we find a decline in property values for those properties in sight, or within 200 feet of a group home at the time of the announcement. We do find some evidence that group homes are placed in depressions in the value surface within neighborhoods.

We attempt to replicate several previous studies, three of which found no evidence of neighborhood property values being affected by group homes. When testing these models with our sample, we also find no evidence of group homes affecting property values. In testing a fourth model which does find evidence that group homes negatively affect property values, we find mixed results which are likely due to the fact that the model constrains prices to be the same across neighborhoods. Thus, we conclude that it is our modeling of the effect of group home announcements on property values across space and time that is allowing the hypothesized impact of group homes to be revealed.

A contribution of this paper is the manner in which these observations across time and space are incorporated into a type of event study. Group home announcements dates, which occur over a period of years, are treated as occurring at time zero. We then incorporate dummy variables into both the intercept term and the slope. The former allows us to detect price differentials at the announcement date across neighborhoods, while the latter handles different rates of appreciation across neighborhoods.

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