

**The Impacts of Supportive Housing on
Neighborhoods and Neighbors**

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The Impacts of Supportive Housing on Neighborhoods and Neighbors in Denver

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EXECUTIVE SUMMARY

In 1997, the U.S. Department of Housing and Urban Development (HUD) requested that the Urban Institute of Washington, DC conduct an analysis of the impacts of supportive housing programs on neighborhood property values and crime rates. “Supportive housing programs” are programs that are designed to provide supportive services in conjunction with some form of housing assistance—be it small group homes, larger institutions, or apartment-based living. In commissioning this study, HUD was responding to a number of concerns that have been raised in various communities about possible negative effects of supportive housing programs. This study was designed to take an objective look at the issues that arise around supportive housing programs and to examine whether supportive housing sites do have the negative impacts that their critics contend. For the purpose of this report, we have looked at supportive housing sites in Denver, Colorado.

NATIONAL POLICY BACKGROUND

Prior to the 1980s, supportive housing for a number of groups, such as persons with physical handicaps, those with mental retardation or developmental disabilities, and the severely mentally ill, were subsidized primarily by the states or private philanthropies. At the present time, the main public sector sources of funding for supportive housing includes state supplements to the Supplementary Security Income program, two optional programs under Medicaid (Targeted Case Management and Rehabilitative Services), the Social Services Block Grant, the HUD 811 Program, and a broad range of McKinney Act programs (e.g., PATH, Shelter Plus Care).

In general, supportive housing initiatives, including those serving populations purported to generate the most negative reactions from neighbors, subscribe to one of two different approaches on how to best meet their housing needs: the “level of care” or “residential continuum” approach, and the “independent housing” or “housing as housing” approach (Newman, 1992). The concept guiding the former is to accommodate the heterogeneity of need by establishing a continuum of residential settings that varies in the level and intensity of staff supervision and program structure. By contrast, the second approach views housing as a place to live, not a place to be treated. Although most state programs have subscribed to the level of care approach in their programs, few provide a full residential continuum, and group homes remain a key component.

Opposition to Programs: Fears

The imperative for increasing the supply of housing for Americans with special needs has become clear as the effects of the AIDS epidemic, increases in homelessness, and changes in approaches to serving the mentally ill have developed in the last decade. At the same time, the public's unease with living in close proximity to individuals who are served by these types of facilities has become apparent. While community groups have become highly sophisticated in their ability to affect decisions regarding the siting of human service facilities, opposition to any one project is dependent on the type of facility to be sited. For instance, facilities such as group homes and homeless shelters are consistently rated as being unwelcome additions to any neighborhood (Takahashi and Dear, 1997).

OVERVIEW OF RESEARCH STRATEGY

To be able to judge whether the fears of neighborhood residents regarding supportive housing facilities are based on fact, our research attempts to determine the neighborhood impacts of supportive housing programs (Special Care Facilities and Community Correctional Facilities) in Denver. Specifically, we test whether the development of a such a facility by a supportive housing provider significantly reduces the sales prices of single-family homes or increases the rate of reported crimes in the vicinity.

We have undertaken a three-pronged investigative strategy, which forms the central organizational structure of this report:

- *Community and Policy Reconnaissance.* We provide in this report a profile of the economic, demographic, and political landscape; a description of the policy history, administration, and operation of supportive housing programs; a historical narrative describing the opposition to selected supportive housing sites; hypotheses about the relationship between the housing programs and neighborhood changes; and an analysis of the implications of these findings.
- *Quantitative Property Value and Crime Impact Analysis.* We performed comprehensive, pathbreaking multiple regression analyses to ascertain whether sales prices of single-family homes and crime rates were adversely affected by proximity to supportive housing sites in Denver.
- *Focus Group Analysis.* We conducted nine focus groups in a cross-section of Denver neighborhoods where supportive housing was present to collect more

qualitative information on the possible interactions between house prices, crime rates, neighborhood quality, and the location of supportive housing.

KEY FINDINGS

Community and Policy Reconnaissance

As of December 1997, the Denver Zoning Commission had 146 distinct sites registered for providing long-term supportive housing within Denver. Our analysis suggests that supportive housing in Denver is disproportionately located in more minority-occupied census tracts, while the distribution of supportive housing facilities is considerably more uniform across neighborhoods with different property values.

From the available evidence it is clear that the pace of development of supportive housing sites in Denver has intensified in the 1980s and 1990s. The most significant local event shaping the provision of supportive housing has been the *Goebel* case, in which chronically mentally ill plaintiffs sued governmental service providers for supplying inadequate care. In response to this and other controversies, the city passed the Large Residential Care Use Ordinance in 1993. Among other things, the Ordinance specified minimum separation requirements among facilities, and established a mechanism of consultation between the developer and the host neighborhood, mediated by city officials. The Ordinance gives Denver's Zoning Administrator the power to approve, approve with conditions, or deny a permit for supportive housing.

Although in principle the 1993 Large Residential Care Uses Ordinance should have allayed neighborhoods' potential concerns about the siting and operation of supportive housing, our reconnaissance in 1998 revealed significant residual issues. In light of neighborhood reactions to proposed facilities, we asked our key informants whether they had distilled from their experiences any consistent patterns that would characterize the intensity of opposition to a proposed supportive housing facility. Their responses consistently focused on four factors: neighborhood, clientele, developer, and density.

- *Neighborhood.* Respondents indicated that neighborhoods that were more wealthy, white-occupied, and dominated by single-family, owner-occupied homes erected more effective barriers to supportive housing.
- *Clientele.* There was substantial consensus among our developer respondents that certain types of supportive housing clients were less desirable to the public than others. Race or ethnicity of the clientele was not a major factor influencing a neighborhood's reaction to a supportive facility, however.

- *Developer.* Developers with good “track records” were often given the benefit of the doubt in siting a new facility, by officials and neighbors alike.
- *Density.* If neighbors perceived that an area was already “saturated” with supportive and/or subsidized housing, their opposition to further increments of such would be intensified.

Quantitative Analysis of Property Value Impacts

Overall, we found that the set of eleven supportive housing facilities we analyzed for the price impact analysis was associated with a *positive* impact on house prices in the surrounding neighborhood. In general, the area within 1,001 to 2,000 feet of *any* supportive housing analysis site experienced both an increase in general level of prices and upward trend in house prices relative to the prices of similar homes not near such facilities. This reversed a *relative decline* in house prices (compared to elsewhere in the census tract) that existed in these areas prior to the presence of the supportive housing site. We note that these results were produced by a set of small-scale, special care facilities, with no large sites, correctional facilities, or homeless shelters included.

While the *average* relationship between this set of supportive housing facilities and proximate house prices was positive, not all site/neighborhood combinations in Denver experienced the same relationship. When we disaggregated our analysis to measure impacts for different common clusters of sites/neighborhoods, we found that the set of five supportive housing sites located in low-valued, heavily minority-occupied (typically majority Black-occupied) neighborhoods consistently evinced the positive price impacts noted above. By contrast, the site in the highest-value, overwhelmingly white-occupied neighborhood apparently had a *negative* effect on house prices, as did another (poorly maintained) site in a modestly valued, high-density core neighborhood having 24 percent of its population classified as Hispanic.

Quantitative Analysis of Crime Impacts

Our analysis shows that in Denver there was no systematic tendency for our analysis sample of 15 supportive housing sites that were developed during the early 1990s to be located in areas of comparatively high crime. Regarding crime impacts during the 1990-1997 period for these facilities, there were no differences in the rates of any type of reported offenses between areas where supportive housing was developed and in other, “control” areas in Denver. We did, however, identify a strong direct relationship between the rate of disorderly conduct reports and 500 foot proximity to a supportive site. The increase in the rate of such reports was greater the larger the number of supportive housing beds in the vicinity. Our method cannot determine,

however, whether it is the behavior of residents in the facility, the behavior of neighbors to the supportive housing, or some other explanation that is responsible for these higher levels of crime reports.

Qualitative Analysis of Impacts: Focus Groups

Since the enactment of the Denver Large Residential Care Use Ordinance in 1993, presumably both the market and homeowners are made aware of the siting and characteristics of supportive units. It is quite interesting, then, that four out of our nine homeowner focus groups did not specifically mention the supportive housing facilities we knew to be operating near their homes. In other groups, unsolicited complaints were made about some supportive facilities, but other sites in the vicinity were either not mentioned or participants volunteered that these other sites were “not a problem.” This suggests that many (but not all) operators of supportive facilities have been successful, through their maintenance and tenant screening and management efforts, in blending their supportive housing into the larger community. Generalizations about “supportive housing” impacts that do not take into account site-specific operating and maintenance practices are thus risky.

Our focus groups consistently emphasized elements of neighborhood quality of life that are relevant to supportive housing developers and policy makers: the physical condition of the neighborhood, the presence of numerous or poorly-kept rental properties, social cohesion, increased traffic, and public safety. In turn, when operators of supportive facilities seem able to address many of these issues effectively, the supportive housing facility becomes virtually “invisible” to nearby homeowners as a major determinant of their neighborhood quality of life.

Conclusions and Policy Recommendations

Context matters. This theme has echoed throughout this study, from key informant interviews, literature reviews, focus groups, to our own empirical analyses. It is difficult and often misleading to refer to “the impacts of supportive housing,” simply because so much depends upon the particulars of each facility’s operator, clientele, neighborhood, and local public policy context.

In this study, we consider supportive housing in Denver during a period in which the city enacted an ordinance mandating strict controls over the siting, design, size, and public notification of supportive housing developments. Our findings suggest that the fears commonly expressed by residents faced with the prospect of a supportive housing facility being developed nearby are generally unfounded, at least in Denver. Although our personal reconnaissance, key informant interviews, and focus groups identified cases where particular supportive facilities are reputedly causing problems for a neighborhood, these cases clearly are not the typical pattern in Denver.

Nearby homeowners clearly can distinguish between well-managed and poorly managed facilities, and public opposition to development of additional facilities is likely fueled by vignettes regarding the latter. Well-managed facilities, on the other hand, apparently can become “invisible” to homeowners as potential concerns or factors contributing to neighborhood change, based on the comments from our focus group participants. Enhanced public education is implied by our findings because conventional fears about the impact of supportive housing are not, in general, justified in Denver.

As for public policy makers, our study raises interesting questions regarding the efficacy of potentially modifying Denver’s current legal requirements as they relate to notification and zoning board renewal. Our central finding—that supportive housing generally has a positive impact on neighborhoods when done at a small scale, but that poorly managed properties can be deleterious to neighborhoods—implies that public policy would do well to encourage both public education and high-quality operation in the realm of supportive housing. Our findings also strongly suggest that the public sector pay strict attention to the ongoing operation, tenant management, and physical maintenance of supportive housing facilities.

Regardless of the programmatic particulars that might be considered, the key lesson of this study should be kept in the forefront: context matters. Developers/operators and regulators of supportive housing must constantly be aware that care is required in siting, management, maintenance, community sensitivity and oversight to ensure that in each individual situation the facility’s potential for positive neighborhood impacts is maximized while potential negative impacts are minimized.

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CHAPTER 1

INTRODUCTION

In 1997, the U.S. Department of Housing and Urban Development (HUD) requested that the Urban Institute of Washington, DC conduct an analysis of the impacts of supportive housing programs on neighborhood property values and crime rates. "Supportive housing programs" are programs that are designed to provide supportive services in conjunction with some form of housing assistance—be it small group homes, larger institutions, or apartment-based living. Examples of such programs include group homes for juvenile delinquents, residential facilities for the frail elderly, physically or mentally disabled, and housing and medical services provided to persons with HIV. It is felt that these programs will have beneficial effects on the persons receiving assistance by giving them the support they need to live in ordinary, residential neighborhoods that can provide enhanced educational, social, and economic opportunities.

Such programs are not without controversy, however. In commissioning this study, HUD was responding to a number of concerns that have been raised in various communities about possible negative effects of supportive housing programs. In particular, some homeowners fear that the presence of supportive facilities in their neighborhoods will have an adverse impact on the property values of their homes, on the incidence of violent and property crimes, and on the quality of life in their communities.

These fears have sometimes manifested themselves in the form of local resident opposition to the siting of supportive housing in residential neighborhoods. For example, in Denver, Colorado, the subject area for this study, a proposed 34-unit site intended to provide health care and housing for people with physical disabilities encountered intense opposition when it was erroneously characterized in the media as a "halfway house for criminals." The controversy was further exacerbated by the fact that the site was located across from an elementary school. In another case, a single-family home converted for use by eight women with chronic mental illness and/or dual diagnosis with alcohol/substance addiction resulted in protests from a nearby Catholic school, who argued that these new group home residents would pose a threat to school children walking past their facility.

This study was designed to examine the issues that arise around supportive housing programs and to ascertain whether supportive housing sites have the negative impacts that their critics contend. We used both quantitative and qualitative techniques to examine these questions, including interviews with key informants, econometric modeling, and focus groups with homeowners. For the purpose of this report, we have looked at supportive housing sites in

Denver, Colorado.¹ The particular sorts of supportive facilities that we analyze are defined by Denver ordinances (City and County of Denver, 1998a, b). *Special Care Homes* are residential care facilities that are the primary residence of unrelated persons who live as a single housekeeping unit and receive more than 12 hours per day of on-premises treatment, supervision, custodial care or special care due to physical condition or illness, mental condition or illness, or behavioral or disciplinary problems. *Community Corrections Facilities* are structures providing residence to three or more persons who have been placed in programs requiring correctional supervision, including programs to facilitate transition to a less-structured residential arrangement.²

This introductory chapter provides an overview of the policy issues and study methodology, as well as a summary of the key research findings. The remainder of the report contains descriptions of the policy context in Denver, a detailed explanation of the research methodology and results, and a summary of our policy conclusions and recommendations.

NATIONAL POLICY BACKGROUND

Prior to the 1980s, supportive housing for a number of groups, such as persons with physical handicaps, those with mental retardation or developmental disabilities, and the severely mentally ill, were subsidized primarily by the states or private philanthropies. The one longstanding exception was housing for the frail elderly under the HUD Section 202 program initially authorized in 1954. The growth in the homeless population during the 1980s, however, led to the passage of the Stewart B. McKinney Act and, for the first time, the availability of significant federal resources for housing and services programs for homeless persons. At the present time, the main public sector sources of funding for supportive housing includes state supplements to the Supplementary Security Income program, two optional programs under Medicaid (Targeted Case Management and Rehabilitative Services), the Social Services Block

¹For those who are unfamiliar with this area, the City and County of Denver, with a population of 468,000, are coterminous jurisdictions. Throughout this report, we will refer to the City and County of Denver as simply, "Denver." The methodology and approach of this study closely parallel that of another HUD-sponsored examination of the impacts of dispersed housing programs on neighborhood property values (Galster, *et al.*, 1999). Denver was one of the study areas chosen for that analysis, and so has been included in this study as well. The second area included in the dispersed housing report was Baltimore County, Maryland. We originally intended to include this area in our analysis supportive housing programs, but were unable to obtain the data needed for estimating our econometric models. Consequently, only supportive housing in Denver is considered in this report.

²We recognize that the rubric "supportive housing" often includes other types of facilities, such as homeless shelters and homeless transitional quarters; such are not the subject of this study.

Grant, the HUD 811 Program,³ and a broad range of McKinney Act programs (e.g., PATH, Shelter Plus Care).

In general, supportive housing initiatives, including those serving populations purported to generate the most negative reactions from neighbors, subscribe to one of two different approaches on how to best meet their housing needs: the “level of care” or “residential continuum” approach, and the “independent housing” or “housing as housing” approach (Newman, 1992). The concept guiding the former is to accommodate the heterogeneity of need by establishing a continuum of residential settings that varies in the level and intensity of staff supervision and program structure. For example, in the early 1990s, New York relied on a four-level system for the mentally ill: supervised, intensive supportive, supportive, and crisis; Massachusetts used a three-level approach; and Missouri had a two-level system.

By contrast, the second approach views housing as a place to live, not a place to be treated. The Santa Clara County Clustered Apartment Project, started in the late 1980s and targeted on persons with serious mental illness, has a housing component consisting of individual rental units that are located within walking distance of one another, a service support element, which is peer-based, and a service treatment element, which is provided by the mental health system. The attempts of several cities, including Los Angeles, San Diego and New York, to reclaim, preserve and upgrade SROs is also a “housing as housing” approach.

A recent review of residential programs for the seriously mentally ill (Newman, 1992) raises two concerns. First, although most state programs have subscribed to the level of care approach in their programs, few provide a full residential continuum, and group homes remain a key component. This suggests a possible mismatch between an individual’s illness-based needs and their supportive service setting. Second, residential program staff have little or no professional training. Both of these concerns could translate into quality and effectiveness problems that could potentially spill over into negative impacts on neighborhoods.

Opposition to Programs: Fears

The imperative for increasing the supply of housing for Americans with special needs has become clear as the effects of the AIDS epidemic, increases in homelessness, and changes in approaches to serving the mentally ill have developed in the last decade (Woloch, 1997). At the same time, the public’s unease with living in close proximity to individuals who are served by these types of facilities has become apparent. In many cases, this unease has manifested itself in the form of strident community opposition to the siting of supportive housing in certain neighborhoods.

³Nonelderly handicapped individuals who previously were eligible for the Section 202 program are now separated into this program.

This opposition has become so widespread that researchers and practitioners have developed several acronyms to describe the process (Takahashi and Dear, 1997), such as NIMBY (Not in My Backyard), LULUs (Locally Unwanted Land Use), NIABYs (Not in Anybody's Back Yard), NOPEs (Not on Planet Earth) and BANANAs (Build Absolutely Nothing Anywhere Near Anyone).

While community groups have become highly sophisticated in their ability to affect decisions regarding the siting of human service facilities, opposition to any one project is dependent on the type of facility to be sited. For example, schools and day care centers generally do not engender much opposition and would likely be accepted into most communities. The types of facilities sited under HUD-funded supportive housing programs, however, often serve some of the more unacceptable populations (as perceived by incumbent neighborhoods residents). For instance, facilities such as group homes and homeless shelters are consistently rated as being unwelcome additions to any neighborhood (Takahashi and Dear, 1997).

The resistance to supportive housing facilities results from two types of processes—both economic and noneconomic (Lake, 1993). The economic reasons for opposing supportive housing relate to the alleged impact of these facilities on property values within the neighborhood. It is widely accepted that property values reflect the overall quality of life in the neighborhood as well as the mix of local amenities. Therefore, by purportedly reducing aspects of the quality of life in the neighborhood, opponents claim that supportive housing will contribute to lower property values.

For instance, any development, whether it is for supportive housing or not, can create unwanted noise and congestion. Supportive housing may represent the introduction of different racial and ethnic groups or different socio-economic class populations into a neighborhood, which can be an unwelcome change for existing residents. Another source of community opposition to supportive housing is the idea that residents are more likely to be prone to criminal activity. Indeed, many types of assisted housing, such as public housing and Section 8, are opposed by neighborhood residents who believe they will be the most likely victims of any changes to the level of criminal activity.

While the aforementioned explanations for community opposition have an economic motivation, there are also noneconomic issues that can create opposition to supportive housing facilities. For example, when it comes to supportive housing for special needs populations, community residents sometimes express very specific personal reasons for opposing such facilities. These include a fear of people with disabilities—particularly a fear of living near or coming into contact with people with mental illnesses, AIDS/HIV, or substance abuse problems. Another source of opposition is the belief that individuals who benefit from supportive housing programs are unproductive and therefore would be better housed in neighborhoods that are in marginal or nonresidential parts of a city (Takahashi and Dear, 1997).

OVERVIEW OF RESEARCH STRATEGY

To be able to judge whether the fears of neighborhood residents regarding supportive housing facilities are based on fact, our research attempts to determine the neighborhood impacts of supportive housing programs (Special Care Facilities and Community Correctional Facilities) in Denver. Specifically, we rigorously test the following hypotheses:

- The development of a property in Denver by a supportive housing provider of a Special Care Facility and its subsequent occupancy by supportive housing clients significantly reduces the sales prices of single-family homes in the vicinity.
- The development of a property in Denver by a supportive housing provider of either a Special Care Facility or a Community Correctional Facility and its subsequent occupancy by supportive housing clients significantly increases the rate of reported violent, property, and other crimes in the vicinity.

We have undertaken a three-pronged investigative strategy, which forms the central organizational structure of this report:

- *Community and Policy Reconnaissance.* Through analysis of archival and published sources and interviews with key informants, we developed a context for understanding any observed neighborhood impacts. Specifically, we provide in this report: (1) a profile of the economic, demographic, and political landscape of the neighborhoods and housing markets in Denver; (2) a description of the policy history, administration, and operation of the supportive housing programs (especially regarding site selection and community notification of siting decisions); (3) a historical narrative describing the opposition to selected supportive housing sites; (4) hypotheses about the relationship between the housing programs and neighborhood changes; and (5) an analysis of the implications of these findings for planners, developers, and policy makers.
- *Quantitative Property Value and Crime Impact Analysis.* We performed multiple regression analyses to ascertain whether sales prices of single-family homes and crime rates were adversely affected by proximity to supportive housing sites in Denver. Addresses of supportive housing sites, property sales, and reported crimes were geocoded so that we could compute the distance between each sale and any nearby supportive housing sites. Home sales prices were regressed on their structural characteristics, year/quarter time dummy variables, neighborhood dummy variables, and a unique set of variables identifying sales trends occurring

both pre- and post-occupancy by supportive clients in the vicinity of each individual site. Crime rates were regressed on their yearly time dummy variables, neighborhood dummy variables, and a unique set of variables identifying crime trends occurring both pre- and post-occupancy by supportive clients in the vicinity of each individual site. This original specification allowed us not only to control for the idiosyncratic neighborhood, local public service, and zoning characteristics of the areas surrounding the supportive sites but also to ascertain in which sorts of neighborhoods, if any, supportive housing sites affect property values and crime rates.

- *Focus Group Analysis.* We conducted nine focus groups in a cross-section of Denver neighborhoods where supportive housing was present to collect more qualitative information on the possible interactions between house prices, crime rates, neighborhood quality, and the location of supportive housing. The focus groups also allowed us to collect additional information on homeowners' perceptions of the changes taking place in their communities, their views on what makes a good neighborhood, and their opinions about the impacts of housing programs.

KEY FINDINGS

Below we provide a brief overview of the key research findings of this study. For more explanations and interpretations of these results, the reader is referred to Chapters 2, 4, and 5 of this report.

Community and Policy Reconnaissance

Denver serves as the economic, political and social center of not only the metropolitan area but also of the State of Colorado. During the 1980s, both had an aging population, increasing numbers of female-headed households, and growing minority populations—both in absolute numbers and relative to Whites. Economic polarization among Blacks, Hispanics, and Whites increased as well from 1980 to 1990, and the City of Denver, as well as the larger metropolitan area, remains highly segregated along racial and ethnic lines.⁴

According to the Denver Community Development Agency's most recent Housing Resource Directory (n.d.), 22 non-profit and for-profit organizations provided

⁴Since much of our demographic information comes from the U.S. Census, we use the 1990 Census terms of "White," "Black," and "Hispanic" as opposed to other terminology that may be more current.

"emergency/crisis/transitional" housing and another 21 provided "special needs" housing in the metropolitan area. As of December 1997, the Denver Zoning Commission had 146 distinct sites registered for providing long-term supportive housing within Denver. By examining the location of supportive housing sites throughout the city, we found that supportive housing in Denver is disproportionately located in more minority-occupied census tracts, while the distribution of supportive housing facilities is considerably more uniform across neighborhoods with different property values.

From the available evidence it is clear that the pace of development of supportive housing sites in Denver has intensified in the 1980s and 1990s. According to our key informants, the most significant local event shaping the provision of supportive housing has been the *Goebel* case, in which chronically mentally ill plaintiffs sued governmental service providers for supplying inadequate care. The trial court found for the plaintiffs in 1985 and ordered the defendants to submit a plan for delivery of appropriate community mental health services. The Community Development Agency devised a plan to use Denver funds to leverage state and other monies to contract with for-profit and non-profit developers to supply 250 units of supportive housing. In May 1998, however, a judge ruled that the city had failed to meet its obligations under *Goebel* and ordered that Denver contribute \$2.8 million to buy down the mortgages on seven facilities to render them affordable and to develop 50 additional supportive units.

At the same time, there have been other highly visible and contentious debates in Denver over affordable and supportive housing facilities scattered throughout residential areas. In response to these controversies, the city passed the Large Residential Care Use Ordinance in 1993. This law sought to ameliorate concerns related to the facilities of both supportive housing advocates and host neighborhoods (City and County of Denver, 1998a, b). Among other things, the Ordinance specified minimum separation requirements among facilities, and established a mechanism of consultation between the developer and the host neighborhood, mediated by city officials. The Ordinance gives Denver's Zoning Administrator the power to approve, approve with conditions, or deny a permit for supportive housing.⁵

Although the 1993 Large Residential Care Uses Ordinance's notification and minimal separation requirements might have reduced neighborhoods' concerns about the siting and operation of supportive housing, our reconnaissance in 1998 revealed significant residual issues. Numerous case studies of recent supportive housing siting controversies in Denver were offered as important illustrations by our key informants. In light of neighborhood reactions to proposed facilities, we asked our key informants whether they have distilled from their experiences any consistent patterns that would characterize the intensity of opposition to a proposed supportive

⁵Separation requirements such as those included in the Ordinance have been challenged legally in other jurisdictions. See Chapter 2 for more details.

housing facility. Their responses consistently focused on four factors: neighborhood, clientele, developer, and density.

- *Neighborhood.* Respondents indicated that neighborhoods that were more wealthy, white-occupied, and dominated by single-family, owner-occupied homes erected more effective barriers to supportive housing. Four informants remarked how “diverse” and “less well-off” neighborhoods were often welcoming of supportive housing.
- *Clientele.* There was substantial consensus among our developer respondents that certain types of supportive housing clients were less desirable to the public than others. There was less agreement; however, about the rankings. It was remarkable that the vast majority of our key informants volunteered that race or ethnicity of the clientele was not a major factor influencing a neighborhood’s reaction to a supportive facility.
- *Developer.* “Reputation” was the mantra repeated by our respondents. Developers with good “track records” were often given the benefit of the doubt in siting a new facility, by officials and neighbors alike. Successful prior facilities in the area can be used as “proof” in the face of neighborhood skepticism, noted one respondent.
- *Density.* If neighbors perceived that an area was already “saturated” with supportive and/or subsidized housing, their opposition to further increments of such would be intensified. Some developers with whom we spoke explicitly sought to avoid areas with concentrations of extant supportive facilities for precisely this reason.

Several developers of supportive housing seemed guided in their siting choices only by “targets of opportunity,” like foreclosed homes or closing military facilities. Once on a site, responding to actual or potential neighborhood concerns through sound management was central for several providers. The head of a group operating several large-scale shelters and transitional facilities recognized the neighborhood disruptions caused by behavioral problems of some of their residents in the past, and learned to better screen and strengthen their case management efforts as a result. A further aspect of management deemed crucial by a large majority of providers was maintenance and repair of the facility. The epitome of this position was expressed by one program executive, who set as a goal that her organization’s homes would always be the “best maintained on the block.”

Quantitative Analysis of Property Value Impacts

Our econometric methodology required that we consider only those supportive sites that opened at least 2,000 feet away from any operating sites and had sufficient sales or crime data both before and after it opened.⁶ This yielded eleven and fifteen analysis sites for our property value and crime impact models, respectively. Only special care homes ranging in size from four to twelve occupants were represented in the property impacts analysis, while the crime analysis included both special care and community corrections facilities varying in size from four to 164 residents.

Overall, we found that the set of eleven supportive housing facilities we analyzed for the price impact analysis was associated with a *positive* impact on house prices in the surrounding neighborhood. In general, the area within 1,001 to 2,000 feet of *any* supportive housing analysis site experienced both an increase in general level of prices and upward trend in house prices relative to the prices of similar homes not near such facilities. This reversed a *relative decline* in house prices (compared to elsewhere in the census tract) that existed in these areas prior to the presence of the supportive housing site. These apparent positive impacts were *greater the larger the number of beds* within supportive facilities at this distance. The same effect of a larger magnitude was observed in the 501-1,000 foot distance ring. We caution that these results apply only to the *average* patterns across neighborhoods surrounding these eleven sites, which began operation from 1989 through 1995, and the particular size configurations, program operators, and clientele that these facilities represent.

While the *average* relationship between this set of supportive housing facilities and proximate house prices was positive, not all site/neighborhood combinations in Denver experienced the same relationship. When we disaggregated our analysis to measure impacts for different common clusters of sites and neighborhoods, we found that the set of five supportive housing sites located in low-valued, heavily minority (typically majority Black-occupied) neighborhoods consistently evinced the positive price impacts noted above. By contrast, the site in the highest-value, overwhelmingly White-occupied neighborhood apparently had a *negative* effect on house prices, as did another (poorly maintained) site in a modestly valued, high-density core neighborhood with Hispanics comprising one-quarter of the population.

Because small clusters of our supportive sites tended to fall within a common category in multiple stratification criteria, we stress that we cannot unambiguously distinguish here between results that are generated by a certain type of neighborhood or by a subset of supportive sites. Moreover, our disaggregated estimates are based on small analysis samples of supportive sites. We therefore emphasize that these results should not be generalized; they may not necessarily

⁶The selection of the 2,000 feet cutoff distance is somewhat arbitrary, but represents the maximum distance at which price and crime effects of supportive housing might still be felt. We deliberately chose a rather large cutoff to be able to rule out the possibility that impacts could exist at further distances.

be due to the characteristics of the host neighborhoods but rather to idiosyncrasies of the particular supportive sites. In sum, context is crucial, but we are unable here to definitively disentangle which elements of the context have the most effect on the results.

Quantitative Analysis of Crime Impacts

Regarding crime impacts during the 1990-1997 period for the set of 15 facilities analyzed, there were no differences in the rates of any type of reported offenses between areas where supportive housing was developed and in other, “control” areas in Denver. Moreover, we found no statistically significant differences in the rates of reported violent, property, criminal mischief, and total crimes before and after a supportive facility opened, at any distance. We did, however, identify a strong direct relationship between the rate of disorderly conduct reports and 500 foot proximity to a supportive site.⁷ The increase in the rate of such reports was greater the larger the number of supportive beds in the vicinity. Unlike the aforementioned price impacts, these crime impacts were statistically significant and of comparable magnitude in most strata analyzed. There was a pattern that suggested, however, that supportive housing’s effect on increasing disorderly conduct reports was greater in the lower-valued neighborhoods.

Qualitative Analysis of Impacts: Focus Groups

Since the enactment of the Denver Large Residential Care Use Ordinance in 1993, presumably both the market and homeowners are made aware of the siting and characteristics of supportive housing. It is thus understandable that the econometric results suggest that the real estate market in Denver is receiving consistent and accurate information regarding the location of supportive housing and that house pricing systematically reflects this information. The fact that the effect seems to vary across sites/tracts may merely indicate that no generalizations about impact can be made without the particulars of the site (its operator and clientele, for example) and/or its surrounding neighborhood context.

It is quite interesting, then, that four out of our nine homeowner focus groups did not specifically mention the (one or more) supportive housing facilities we knew to be operating within 2,000 feet of the participants’ homes. In other groups, unsolicited complaints were made about some supportive facilities, but other sites in the vicinity were either not mentioned or participants volunteered that these other sites were “not a problem.” This suggests that many (but not all) operators of supportive facilities have been successful, through their maintenance and tenant screening and management efforts, in blending their supportive housing into the larger community.

⁷Disorderly conduct reports include unlawful assembly and disturbing the peace. For a complete list of crime categories, see Table C.3 in Annex C.

Generalizations about “supportive housing” impacts that do not take into account site-specific operating and maintenance practices are thus risky.

Our focus groups consistently emphasized elements of neighborhood quality of life that are relevant to supportive housing developers and policy makers: the physical condition of the neighborhood, the presence of numerous or poorly-kept rental properties, social cohesion, increased traffic, and public safety. In turn, when operators of supportive facilities seem able to address many of these issues effectively, the supportive housing facility becomes virtually “invisible” to nearby homeowners as a major determinant of their neighborhood quality of life.

The focus groups raised dimensions of several of our supportive facilities and their host neighborhoods that provide crucial additional insights into the foregoing disaggregate econometric results. Unfortunately, these dimensions do little to pinpoint the source of these results. In fact, they raise the possibility that some may not have been due to supportive housing at all, but rather to spurious events in the neighborhood that were roughly coincident with the operating period of the supportive facility.

Conclusions and Policy Recommendations

Our findings suggest that the fears commonly expressed by residents faced with the prospects of a supportive housing facility being developed nearby are exaggerated, at least in Denver. Although our personal reconnaissance, key informant interviews, and focus groups identified cases where particular supportive facilities are reputedly causing problems for the neighborhood, these cases clearly are not the typical pattern in Denver. Overall, there is no statistical evidence that the development of special care supportive housing generally reduces property values or that the development of special care and community correction facilities increases rates of serious crime nearby.

Nevertheless, our results reinforce what our key informants indicated: developers must pay close attention to management, education, and siting. Nearby homeowners clearly can distinguish between well-managed and poorly managed facilities, and public opposition to development of additional facilities likely is fueled by a few vignettes regarding the latter. Well-managed facilities, on the other hand, apparently can become “invisible” to homeowners as potential concerns or factors contributing to neighborhood change, based on our focus groups.

Enhanced public education is implied by our findings because conventional fears about the impact of supportive housing are not, in general, justified in Denver. Our statistical results thus fully support opinion poll studies of other researchers in Denver and nationwide, which show that

residents' actual experiences with supportive housing nearby are much more satisfactory than they had predicted (Wahl, 1993 and Cook, 1997).

As for siting, we reiterate our theme of contextuality. We cannot make specific or definitive siting recommendations on the basis of this study, due to the small sample sizes of analysis sites and neighborhoods in our disaggregated results. Nevertheless, we believe that our results represent strong evidence suggesting that the sort of property value and crime impacts that one might anticipate from the siting of a broad range of supportive facilities varies across space in an important manner. It thus behooves developers of supportive housing to plan carefully where particular sorts of supportive facilities are likely to yield the most positive impacts for their environs, instead of behaving purely opportunistically, acquiring properties that might serendipitously present themselves on the market.

Our study raises interesting questions regarding the efficacy of potentially modifying Denver's current legal requirements as they relate to notification and zoning board renewal. Our central finding—that supportive housing generally has a positive impact on neighborhoods when done at a small scale, but that poorly managed properties can be deleterious to neighborhoods—implies that public policy would do well to encourage both public education and high-quality operation in the realm of supportive housing.

Given this, Denver might consider strengthening its existing biennial renewal process, perhaps by requiring a public hearing on the operation of the facility in question, about which all neighborhood residents in its vicinity are notified personally. Regardless of the programmatic particulars that might be considered, the key lesson of this study should be kept in the forefront: context matters. Developers/operators and regulators of supportive housing must constantly be aware that care is required in siting, management, maintenance, community sensitivity and oversight to ensure that in each individual situation the facility's potential for positive neighborhood impacts is maximized while potential negative impacts are minimized.

A GUIDE TO THIS REPORT

The remainder of this report presents the details of the policy and programmatic history of supportive housing in Denver, followed by our research methods, analysis, and policy recommendations. Chapter 2 describes the techniques we used to gather background information from key informants. It reviews the history of supportive housing in Denver, including the demographic, economic, historical, and policy context. The methodology presented in Chapter 3 begins with a non-technical overview for those who are less familiar with econometric modeling. It then discusses in detail the theoretical foundation of the statistical models used in this analysis, reviews prior models, and gives the exact specifications of the models that we used to quantify

property value and crime impacts of supportive housing. We also present our methods for recruiting and conducting focus groups, as well as the characteristics of the focus group sites. A description of the data sources used to produce the model estimates is given in Chapter 4. This Chapter also provides maps showing the locations of supportive housing sites in Denver. The outcomes from the statistical model estimations and focus groups are reported in Chapter 5, followed by a discussion of the implications of these findings. Finally, Chapter 6 contains our conclusions and overall policy recommendations from this analysis.

The Annexes to this report contain additional materials for those who are interested in more details of the various stages of our research. These Annexes contain discussion and interview guides, additional statistical tables not presented in the main body of the report, results from the regression model runs, focus group procedures, and brief summaries of each of the nine focus groups.

CHAPTER 2

ISSUES RELATED TO SUPPORTIVE HOUSING IN DENVER

METHODOLOGY FOR COMMUNITY AND POLICY RECONNAISSANCE

We begin with a brief summary of the field methodology we employed for our Community and Policy Reconnaissance in Denver. We used three sources of information: (1) archival materials and published reports, (2) key informant interviews, and (3) statistical databases. Each source was probed to glean insights about how Denver’s supportive housing programs operated, in what sorts of neighborhoods they operated, the political context in which they operated, and opinions about what sorts of neighborhood impacts they produced, if any, and the reputed reasons for such impacts.

Archival Materials and Published Reports

We searched archival records of the two major metropolitan daily newspapers for stories related to the Denver supportive housing programs and obtained a wide variety of local agency reports. Moreover, we conducted literature reviews of HUD reports and scholarly literature related to supportive housing programs and their potential neighborhood impacts in cities across the nation.

Key Informant Interviews

During February 1998, we interviewed 16 key informants in Denver: ten supportive housing service providers, two for-profit developers who often worked on supportive facilities, three City officials, and a City Councilman. The complete listing of all those interviewed and sample interview guides are provided in Annex A.

Subjects for key informant interviews were initially selected based on one or more of the following criteria: (1) leadership position in an agency primarily responsible for implementing supportive housing programs, (2) elected local official with long-standing reputation for interest in housing policy, or (3) name that frequently appeared in newspaper coverage of local political controversy surrounding supportive housing. During each of these initial interviews we asked the respondent for names of additional people with whom to speak. This “snowball” method yielded the sample comprising the remainder of our interviews.

Before conducting interviews we took care to assure smooth entry into the community, inasmuch as supportive housing policies had the potential to inflame political passions in ways that might damage ongoing programs and hurt recipients of the supportive services. Prior to the actual interviews, we scoured archival materials to familiarize ourselves with the local context, personalities and issues. We also consulted with local resident experts with whom the researchers had long-standing professional relationships, who helped us become better attuned to local sensitivities and institutional and interpersonal interconnections. HUD headquarters in Washington, DC sent letters of introduction and support for our research to local informants.

Each interview was structured by an Interview Guide (see Annex A), although in all cases the conversation developed organically. All respondents were assured that their responses would be kept confidential. Thus, citations of respondents below will refer only to their generic categories ("local elected official," for example), which are specified in sufficiently broad terms that several respondents are contained within each.

Statistical Databases

Our primary sources of statistical data for describing the neighborhood contexts in which the Denver supportive housing programs were operating included published U.S. Census reports and the Urban Institute's Underclass Database. The latter consists of selected census tract data extracted from the decennial censuses of population and housing for 1970, 1980 and 1990. It is extremely useful in its applicability to examining trends at the tract level, inasmuch as all data are converted to standard (*i.e.*, 1990) boundaries of census tracts. Statistics extracted from the Underclass Database were compiled into tables that are included in the body of this report and were used to provide a general picture of the demographic and housing patterns in Denver. To further enhance our understanding of the spatial nature of these patterns, we created a series of maps that display the geographic distributions of key census indicators.

Data related to the location and characteristics of supportive housing were obtained from the Denver Zoning Administrator. According to local ordinance since 1993, information about the location and number of clients of all supportive housing must be registered with the City and County of Denver, updated monthly, and made a matter of public record. In addition, we were able to obtain information on the start of occupancy and programmatic characteristics of most of these sites.

A PROFILE OF DENVER

To place our study of supportive housing in its proper context, this section provides a general overview of the demographic and housing trends in Denver for the years 1980 and 1990.

Table 2.1 summarizes Census data on population, education and employment, income and poverty, and housing characteristics for Denver by race/ethnic groupings. Because the spatial distribution of these changes are vitally important to this project, we have also created a series of maps that highlight the geographic distributions of key indicators in census tracts throughout the city (see Maps 2.1 to 2.10, pp. 2-19 to 2-28).

Population Characteristics

Denver serves as the economic, political and social center of not only the metropolitan area but also of the State of Colorado. In Denver, the City and County are geographically congruent and have a single, county-level government. During the 1980s, while the metropolitan population grew by one-tenth of a percent, the population of Denver declined by 5 percent. The population of Denver was 467,610 in 1990. Significant decreases in the White (*i.e.*, White non-Hispanic) population (-12 percent) and modest declines in the non-Hispanic Black population (-1 percent) in Denver were only partially offset by substantial increases in the Hispanic population (+16 percent) during the 1980s. These population shifts were reflected in the changing ethnic composition of Denver. By 1990, 61 percent of Denverites were White, 23 percent were Hispanic and 12 percent were Black. The 1980s also witnessed growth of foreign-born Hispanics. By 1990, one out of every six Hispanics was foreign-born.

Table 2.1. Selected Population and Housing Characteristics by Ethnicity, Denver County 1980-90

	1980				1990			
	All	White	Black	Hispanic	All	White	Black	Hispanic
<i>Population Characteristics</i>								
Total population	492,365	326,554	58,408	92,348	467,610	287,162	57,793	107,382
Median age (in years)	30.2	32.3	25.9	23.0	33.8	37.3	30.6	26.0
% households headed by females	18.7	14.9	35.8	25.7	22.2	15.3	41.3	30.2
% foreign born	6.2	5.0	1.7	9.9	7.4	3.8	2.3	15.2
<i>Education and Employment Characteristics</i>								
% with < H.S. degree	25.3	22.0	29.9	57.2	20.8	12.6	25.0	49.6
% college graduates	24.8	27.9	12.0	6.1	29.0	37.1	14.5	6.9
Labor force participation rate	66.4	66.4	68.5	64.1	67.6	67.6	66.9	68.4
Unemployment rate	5.0	4.2	8.1	8.9	6.8	4.6	11.5	11.5
<i>Income and Poverty Status</i>								
Median family income	19,527	21,062	15,211	13,945	32,038	38,501	24,619	20,863
% households receiving public assistance	7.4	5.4	15.7	17.6	7.6	4.5	15.2	15.3
% families living in poverty	10.3	6.6	21.2	22.9	13.1	6.2	23.0	27.9
% persons living in poverty	13.7	10.2	23.3	23.9	17.1	9.8	27.0	30.6
% female-headed families living in poverty	30.2	21.5	41.2	49.3	34.1	21.1	41.0	51.5

Table 2.1. Selected Population and Housing Characteristics by Ethnicity, Denver County 1980-90 (continued)

	1980				1990			
	All	White	Black	Hispanic	All	White	Black	Hispanic
<i>Housing Characteristics</i>								
Total year-round housing units	227,806	----	----	----	239,636	----	----	----
Occupied housing units	211,566	170,406	21,587	27,887	210,952	148,238	23,785	34,358
Housing vacancy rate	7.1	----	----	----	12.0	----	----	----
% owner-occupied	50.2	52.7	43.6	41.5	49.2	52.9	42.5	39.9
% renter-occupied	49.8	47.3	56.4	58.5	50.8	47.1	57.5	60.1
% housing units built prior to 1940	29.4	29.8	23.4	33.4	25.7	25.7	19.1	28.8
% housing units in 20+ unit structures	N/A	N/A	N/A	N/A	26.1	24.0	17.8	13.3
Median housing value	62,000	63,700	55,700	51,300	78,300	84,100	68,000	62,700
Median contract rent	213	222	195	175	338	362	302	294

NOTES: With the exception of total population counts for 1980, estimates of population and housing characteristics for Whites in 1980 include white Hispanics. Estimates on the number of housing units in structures with 20+ units could not be calculated from published records in 1980. In 1990, all estimates are based on mutually exclusive ethnic categories.

SOURCES: Various published tables were used from the following sources: U.S. Bureau of the Census (1983). *1980 Census of Population and Housing, Population and housing characteristics for Census Tracts: Denver-Boulder CO.* Washington D.C.: U.S. Government Printing Office; U.S. Bureau of the Census (1993). *1990 Census of Population and Housing, Population and Housing Characteristics for Census Tracts and Block Numbering Areas: Denver-Boulder CO.* Washington D.C.: U.S. Government Printing Office.

The City of Denver, as well as the larger metropolitan area, remains highly segregated along racial and ethnic lines. Although only 23 percent of all metro area Whites lived in Denver in 1990, 51 percent of Hispanics and 63 percent of Blacks were Denver residents. In 1980, 72 percent of all Blacks and 57 percent of all Hispanics would have had to move from their place of residence in Denver in order to live in integrated neighborhoods with Whites.¹ During the 1980s, however, Black segregation from Whites decreased substantially—59 percent of Black residents in Denver would have had to move from their place of residence in 1990 to live in integrated neighborhoods. In contrast, Hispanic segregation from Whites declined only slightly. In 1990, 57 percent of all Hispanics would have had to move in order to live in integrated neighborhoods with Whites. Black residents in Denver tend to be concentrated in Northeast Denver while Hispanic residents tend to be concentrated in Northwest Denver, as well as in some neighborhoods in central Denver.

¹Based on analysis of unpublished dissimilarity indices calculated by Anna Santiago, Wayne State University.

Maps 2.1 and 2.2 show the percentage of Black residents in 1990 and the change in the percentage of Black residents (in percentage points) from 1980 to 1990 in Denver City and County census tracts. Most tracts in the area (102 out of 142) have fewer than 10 percent Black residents. The Black population is largely concentrated in the northeast part of the city, with 13 tracts having majority (> 50 percent) Black populations. From 1980 to 1990, most tracts in Denver experienced an increase in the share of Blacks. However, 42 census tracts showed a decline in the proportion of Black residents. Some of these latter tracts are in areas that had relatively high proportions of Blacks in 1980.

Maps 2.3 and 2.4 provide similar geographic distributions for the Hispanic population. Map 2.3 shows a quite clear division of the city into Hispanic and non-Hispanic areas. The western portion of the city contains mostly tracts with over 40 percent Hispanic. A second concentration of Hispanics can be found in the northeast corner of the city. These areas also experienced the most rapid growth in the proportion of Hispanics during the 1980s, with several tracts showing increases of greater than 10 percentage points.

The 1980s also witnessed the significant growth in minority families headed by females. By 1990, 41 percent of Black families and 30 percent of Hispanic families were headed by women. In contrast, the fraction of White mother-only families increased only slightly from 14.9 percent in 1980 to 15.3 percent in 1990.

Education and Employment Characteristics

There are marked ethnic differences in the levels of educational attainment in Denver. Although the fraction of individuals with college degrees increased and the fraction of individuals with less than high school degrees decreased in the 1980s, the results presented in Table 2.1 underscore the very low levels of educational attainment of Hispanics in Denver. In 1990, nearly one-half of all adult Hispanics over the age of 25 had not completed high school. Only 7 percent held college degrees. In contrast, less than 13 percent of White and 25 percent of Black adults had not finished high school. Moreover, 37 percent of Whites and nearly 15 percent of Blacks held college degrees.

While the lower levels of educational attainment of minority, and particularly Hispanic, residents might account for their significantly higher unemployment rates (12 percent) relative to Whites, they do not translate into markedly different rates of labor force participation. Across all groups, approximately two-thirds of persons over the age of 16 were in the labor force. In 1980, Blacks had the highest rate of labor force participation (69 percent); by 1990, Hispanics had the highest rate (68 percent). During the 1980s, unemployment rates increased for all groups, although the increase was almost negligible for Whites. Further, the unemployment rates for Blacks and Hispanics were nearly 2.5 times higher as that for Whites.

Income and Poverty Status

In 1990, the median family income in Denver was \$32,038. However, there was considerable variation by ethnicity. On the upper end, White median family income was \$36,501. On the lower end, Hispanic median family income was \$20,863. Relative to White residents of Denver, Blacks and Hispanics experienced substantial erosion in their income during the 1980s. In 1980, Black and Hispanic median family incomes were 72 percent and 66 percent, respectively, of White median family income. By 1989, Black median family income had fallen to 64 percent of White median family income; for Hispanics the gap had widened to 54 percent of White median family income. Thus, it is not surprising that 1989 family poverty rates for Blacks and Hispanics were 3.7 and 4.5 times higher, respectively, than the rate for Whites. By 1989, 23 percent of Black and 28 percent of Hispanic families were living in poverty. Although the ethnic differentials are not as pronounced for individual poverty rates, Blacks and Hispanics were approximately three times more likely to experience poverty than are Whites.

The findings in Table 2.1 underscore the precarious economic position of mother-only families. In Denver, more than one-third of all families headed by women were living in poverty. However, this ranged from 21 percent of White families to 41 percent of Black families and 52 percent of Hispanic families. Poverty rates among White and Black mother-only families decreased slightly during the 1980s, while the rates increased among Hispanic mother-only families.

Despite the high rates of poverty in Denver, the fraction of households receiving public assistance was relatively low. Approximately one out of 13 households received public assistance in 1989—up slightly from 1980. Moreover, participation in public assistance programs declined for all groups in the 1980s—and the decline was most marked for Hispanics. Nevertheless, approximately 15 percent of Black and Hispanic households received public assistance in 1990—a rate that was three times higher than that for Whites. Map 2.5 shows that the census tracts with the highest proportions of households receiving public assistance are in the western portion of the city. Forty out of the 142 tracts have greater than 10 percent of households receiving public assistance.

Housing Characteristics

Approximately 26 percent of the housing units were built before 1940 in Denver. Hispanics were more likely to live in these older units (29 percent) than Whites (26 percent) and Blacks (19 percent). In addition, 26 percent of the housing stock of Denver was constructed in complexes with 20 or more units. While 24 percent of all Whites lived in these larger housing complexes in 1990, only 18 percent of Blacks and 13 percent of Hispanics did. Although new housing construction added modestly to the housing stock in the 1980s—an increase of 5 percent of total

units—the housing market mirrored the collapse of the Denver economy during the latter half of the 1980s. Vacancy rates climbed markedly from 7 percent in 1980 to 12 percent by 1990.

The instability of the local economy was reflected in the decrease in homeownership, particularly among minority residents. By 1990, less than one-half of all households owned their homes. Home ownership rates varied from a high of 53 percent among Whites to a low of 40 percent among Hispanics. Nevertheless according to Map 2.6, there are few areas with a high concentration (more than 80 percent) of rental housing. In addition, Map 2.7 shows that 56 tracts experienced a decline in the proportion of rental housing during the 1980s while another 95 tracts had only a slight (0 to 5 percentage points) increase.

Median housing values increased during the 1980s but at a markedly slower pace for Blacks and Hispanics. Further, there were sizable differences in the median value of homes across ethnic groups. For Whites, the median value was \$84,100, while for Blacks and Hispanics, it was \$68,000 and \$62,700, respectively. The median contract rent in Denver was \$338, ranging from a low of \$294 for Hispanics and a high of \$362 for Whites. The areas with the highest house values in 1990 were in the southeast quadrant of the city (Map 2.8). Almost all tracts showed very modest growth in house values in the 1980s—155 tracts had 0 to 50 percent increase in average house values during the decade (Map 2.9). The 1990s witnessed an explosion in housing prices, with prices in 61 census tracts increasing 75 percent or more from 1990 to 1996 (Map 2.10).

The demographic overview of Denver presented here reviews the statistical changes during the 1980s while the maps illustrate the spatial aspects of these shifts. Both overviews are useful in gaining perspective on neighborhood transition. The political context, presented below, rests on these subtle changes and how they influenced the way residents perceived the future of their neighborhoods and the prospective threat posed by supportive housing.

DENVER'S DELIVERY SYSTEM FOR SUPPORTIVE HOUSING

Supportive housing is delivered by a wide range of organizations in Denver. According to the Denver Community Development Agency's most recent *Housing Resource Directory* (n.d.), 22 non-profit and for-profit organizations provided "emergency/crisis/transitional" housing and another 21 provided "special needs" housing in the metropolitan area. What constitutes supportive housing is clearly specified. Denver's Large Residential Care Use Ordinance makes four distinctions within the general supportive housing rubric:²

²The following is excerpted from City and County of Denver, 1998, *Large Residential Care Use Handbook*.

- *Small Special Care Home.* A residential care facility which is the primary residence of less than nine unrelated persons who live as a single housekeeping unit and receive more than 12 hours per day of on-premises treatment, supervision, custodial care or special care due to physical condition or illness, mental condition or illness, or behavioral or disciplinary problems.
- *Large Special Care Home.* A residential care facility as above, which is the primary residence of nine or more unrelated persons.
- *Community Corrections Facility.* A structure which provides residence to three or more persons who have been placed in a community corrections program requiring correctional supervision, including programs to facilitate transition to a less-structured residential arrangement.
- *Homeless Shelter.* A facility that primarily provides overnight accommodations for homeless people and is operated in a way which encourages short-term occupancy.

Between 1987 and 1997, 146 supportive housing sites were occupied within Denver.³ The locations of these sites are presented in Map 2.11 (p. 2-29). It demonstrates a distinct clustering of sites in the near south side and east-central areas of Denver, near the Downtown-Capitol district. Comparison with maps 2.1-2.10 suggests that supportive housing in Denver is disproportionately located in more minority-occupied census tracts. To be more precise, at the end of 1997, 41 percent of the 146 registered supportive housing facilities were located in census tracts having 20 percent or more Hispanic population in 1990. By contrast, 19 percent were located in tracts having 20 percent or more Black population and 8 percent in tracts with less than five percent each of Hispanic and Black populations. The distribution of supportive housing facilities across neighborhood home value ranges is considerably more uniform. Thirty-nine percent were located in tracts having values in the lowest third of the 1990 median home value distribution, 24 percent were in the middle third, and 37 percent were in the highest third.

The key characteristics of the supportive housing sites in Denver are as follows:

- *Type.* Forty-two (42) percent are classified as Small Special Care Homes, 44 percent as Large Special Care Homes; 9 percent as Adult Community Corrections Facilities (including 2 percent for Transitional Homes); 3 percent as Homeless Shelters, and 2 percent combinations of above.

³Data from *Bi-Annual Residential Care Use Renewal* tabulations, City and County of Denver Zoning Administration, transmitted March 2, 1998.

- *Sponsor.* Sixty-three (63) percent are operated by non-profit agencies; 37 percent are operated by for-profit organizations, but three-fourths of the 12 sites developed in 1997 are for profit.
- *Scale.* Forty-two (42) percent house less than nine residents; 18 percent house between 10 and 19 residents; 30 percent house between 20 and 100 residents; 10 percent house over 100 residents; the smallest facility listed houses three and the largest 320⁴; and
- *Age.* Only 22 percent (for the 95 percent of facilities listing opening dates) were developed prior to 1980, 41 percent from 1980 through 1989, and 37 percent since 1989 (through 1997).

From the above it is clear that the pace of development of supportive housing sites in Denver has intensified in the 1980s and 1990s. After low rates of production prior to 1980, the average annual rate of development rose from 4.7 sites during the 1980s to 5.3 during the 1990s. The level of Denver governmental financial support for these facilities is \$1.9 million for the 1998 fiscal year.⁵

According to our key informants in Denver, the most significant local event shaping the provision of supportive housing has been the *Goebel* case, in which chronically mentally ill plaintiffs sued governmental service providers for supplying inadequate care.⁶ Public mental health services in Colorado are provided by state institutions and community mental health facilities, supervised by the Colorado Department of Institutions through its Division of Mental Health. In 1981, due to insufficient funds and the failure of the state legislature to provide increased support, the Denver Department of Health and Hospitals (DHH), the care provider in the catchment area encompassing Downtown and the Capitol Hill areas, developed a plan to reduce mental health care services. Plaintiffs filed suit on behalf of themselves and up to 5,000 low-income, chronically mentally ill persons residing in this catchment area to enjoin the reduction of services. The suit alleged that the 1973 Colorado Act for the Care and Treatment of the Mentally Ill created broad statutory rights for certain identified chronically mentally ill persons to receive comprehensive care and treatment, and that the variety of participating state and local

⁴All community correctional facilities house between 40 and 84 residents; two transitional homes house eight and 28 residents; three homeless shelters house 70, 110, and 250 persons.

⁵According to the *City and County of Denver Consolidated Plan, 1998-2002*, \$731 thousand of this total is provided through the HOME program and another \$650 thousand through HOPWA.

⁶*Goebel et al., v. Colorado Department of Institutions et al.*, 1981, (830 P.2d 1036) with several subsequent appeals and ancillary suits. The following section draws heavily from the Westlaw database's review of the case.

governmental bodies were denying this right. The trial court found for the plaintiffs in 1985, defined a plaintiff class, and ordered the defendants to submit a plan for delivery of appropriate community mental health services.

This plan was developed, but before it could be implemented in 1985 the state legislature amended the 1973 Act to include the phrase “subject to available appropriations.” The trial court concluded that it no longer had jurisdiction to order injunctive relief and dismissed all claims except for damages incurred between 1981 and 1985. Plaintiffs appealed on several grounds and the case cycled between the state Supreme Court and the trial court until January 1994, when an settlement was finally reached, with 1,600 plaintiff class members certified (Pankratz, 1998).

Under terms of this settlement, Denver agreed to (Pankratz, 1998; Lindsay, 1998):

- Develop a follow-up and referral system for the chronically mentally ill who are treated on an emergency or inpatient basis at the (then) Denver General Hospital.
- Provide \$150 thousand annually for supportive housing services from 1994 through 1996.
- Develop “affordable and appropriate” housing for 250 chronically mentally ill, ranging from small group homes to independent apartments.

The Denver Housing Authority (DHA) originally planned to develop the requisite 250 units, but altered its policy with the advent of a new Executive Director in 1996 (Lindsay, 1998). Instead, DHA provided 100 Section 8 rental assistance certificates earmarked for chronically mentally ill tenants.⁷ In response, the Community Development Agency devised a plan to use Denver funds to leverage state and other monies to contract with for-profit and non-profit developers to supply the required supportive housing. The 250 mandated *Goebel* units were produced.⁸ In May 1998, however, a Denver judge ruled that Denver had failed to meet its third *Goebel* obligation above, inasmuch as the rents being charged in seven supportive facilities were not “affordable” and 50 others did not meet other requirements for the chronically mentally ill (Lindsay, 1998; Pankratz, 1998). The judge ordered that Denver contribute \$2.8 million to buy down the mortgages on the seven facilities to render them affordable and to develop 50 additional supportive units. Inasmuch as this is almost a million dollars more than Denver had planned to spend under its Consolidated Plan, the potential for continued rapid expansion of the supportive housing sector is manifest.

⁷Interview with two DHA officials, Feb., 1998.

⁸Interview with Denver Community Development Agency official, Feb., 1998.

LEGAL RESTRICTIONS ON THE SITING OF SUPPORTIVE HOUSING IN DENVER

Over the last decade there have been highly visible and contentious debates in Denver over affordable and supportive housing sites scattered throughout residential areas. These debates ultimately resulted in the passage by City Council of ordinances that have strictly regulated numerous aspects of affordable and supportive housing development.

Undoubtedly the most vehement arguments transpired in the context of the Denver Housing Authority's (DHA) plans to expand their Dispersed Housing Program (Galster, Santiago, Smith, and Tatian, 1998). In 1969, the DHA began operating a public housing "dispersal" program involving 100 single-family and duplex units acquired at foreclosure sales, which were then renovated and occupied by DHA tenants. In 1988, HUD ordered DHA to publicly notify the Denver City Council about the site-by-site details and obtain its approval for any dispersed housing plans. Prior to that ruling, DHA housing acquisitions needed to be described only in general terms to the Council and required only the Mayor's consent.

When DHA proposed its second-phase dispersal plan, which involved purchases of over 400 additional homes in middle-class neighborhoods, an inflammatory political skirmish ensued, centering on the concerns of the local citizenry regarding the perceived deleterious effects of moving public housing residents into middle class neighborhoods. In response to these concerns, a Council-appointed task force drafted a set of guidelines regulating further DHA acquisitions. These guidelines stipulated that the DHA could not acquire more than one unit per block face and no more than one percent of the units in any census tract. Moreover, DHA was to target the "non-impacted" areas of Denver for these purchases.

These proposed guidelines did little to defuse the controversy. Opponents argued that the plan would increase crime and erode property maintenance in recipient neighborhoods, and was inequitable inasmuch as poor families could occupy better-quality homes than working class families currently living in these areas. Proponents argued that the plan was crucial for improving the quality of life for DHA tenants, enhancing the geographic diversity of their residential options, and creating an environment where their chances of economic self-sufficiency were enhanced. The Denver City Council approved the plan after much debate and formulated an intergovernmental agreement, which has been in operation since 1989.

Given this precedent, the siting patterns evident in Map 2.11, and the aforementioned acceleration in the pace of supportive housing facility development, the Large Residential Care Use Ordinance (R.M.C. 59-80(2), later amended) was passed on May 28, 1993. This law sought to ameliorate concerns related to the facilities of both supportive housing advocates and host neighborhoods (City and County of Denver, 1998a, b). For the former, the law affirmed the need for housing special care populations in non-institutionalized, non-concentrated residential settings,

located throughout Denver in ways aiding their integration into the mainstream of society. For the latter, it affirmed the importance of maintaining viable neighborhoods and the potential validity of neighborhood concerns, specified minimum separation requirements among facilities, and established a mechanism of consultation between the developer and the host neighborhood, mediated by city officials.⁹

Two key modifications in the Ordinance have transpired since 1993. In April 1997, the clause that forbade development of any new supportive facilities within a specified distance of an existing facility was amended to exclude small group homes. The consensus in City Council was that the previous separation requirement would have ruled out so many potential sites, given the scale of Denver, that the supply of supportive housing would have been unfairly constrained.¹⁰ In February 1998, the Ordinance was further amended to expand the distance from proposed sites that defined which neighborhood organizations must be sent the development application as a form of prior notification.

As of late 1998, the Large Residential Care Uses Ordinance contains the following provisions of central interest here (City and County of Denver, 1998a, b):

- Developers of all supportive housing facilities (including Small Special Care Homes) must: meet with a Zoning Department staff person prior to submitting an application, send a copy of the development application and their contact information to the neighborhood organization(s) whose boundaries encompass or are within 700 feet of the proposed site, designate a contact person that will be available to respond to community concerns on an ongoing basis, and be willing to participate in a meeting with the organization and city officials if requested.
- All proposed sites must have all necessary licenses, at least one staff person on-site, adequate parking, and exterior modifications which are harmonious with the

⁹Similar regulations requiring minimum separation between assisted or supportive housing sites have been challenged legally in other jurisdictions, primarily on the grounds that they violate the Fair Housing Amendments Act of 1988. For example, in *Association for Advancement of Mentally Handicapped, Inc. v. City of Elizabeth* (D.N.J. 1996), the District Court invalidated a New Jersey statute allowing municipalities to deny permits for supportive housing located within 1,500 feet of an existing site (CHLP, N.d.). In *Larkin v. State of Michigan* (E.D. Mich. 1994), the Court overturned a state statute permitting the denial of a license for a group home if it would “substantially contribute to an excessive concentration” of such facilities and requiring a review of the number of existing and proposed sites within 1,500 feet (Foote, N.d.). But, in *Familystyle of St. Paul v. City of St. Paul, Minn.* (8th Cir. 1991), the Court upheld the City’s denial of permits for three group homes in a one-half block area already occupied by 21 supportive sites. The City claimed that issuance of the permits would violate a state law requiring that group homes be sited in a manner to foster “community integration,” as well as Minnesota deinstitutionalization policy, which specified that community residential facilities be located at least one-quarter mile apart. (Petrila, 1994; Foote, N.d.).

¹⁰Interview with key informant, February 1998.

existing neighborhood; the zoning for the site must conform with permissible zones specified for the particular supportive housing type.

- Large residential care use facilities must be located a minimum of two thousand feet from another like facility, and no more than two other like facilities for that use can exist within a four thousand foot radius. (A ten percent exception to these spacing rules can be granted by the Zoning Administrator if it would not “substantially or permanently injure the surrounding neighborhood.”)
- The proposed site must be at least six thousand square feet and have a minimum width of fifty feet.
- Large Special Care Homes in most zones are restricted to being developed in structures existing on or before May 24, 1993, and are limited to a maximum of 40 residents.
- Community Corrections Facilities must be located more than 1,500 feet from a school and/or residential district, cannot exceed one resident per 200 square feet of gross floor area, and can house a maximum of 60 residents (40 in some zones).
- Homeless Shelters must be located more than 500 feet from a school and cannot have more than 200 beds.

The Ordinance gives Denver’s Zoning Administrator the power to approve, approve with conditions, or deny a permit for supportive housing. Permits are reviewed semi-annually. Citizen complaints about a supportive care facility are investigated by the Administrator and, if necessary, a conciliation meeting among the conflicting parties is arranged. The Administrator is empowered to issue a cease and desist order and issue a summons and complaint into court.

It is instructive that the Large Residential Care Uses Ordinance requires an applicant for a supportive housing development to notify the nearby neighborhood associations, insofar as there remains a lively debate among scholars and practitioners about the wisdom of such (National Law Center on Homelessness and Poverty, 1997; Cook, 1997). Some advocate that developers adopt a “low-profile strategy,” only informing the neighbors after a supportive facility has been put into operation. They argue that such notification needlessly intensifies opposition (Seltzer, 1984; Pendall, 1999), given evidence that neighbors’ negative expectations about supportive housing far exceed their negative evaluations after the fact (Wahl, 1993, Cook, 1997). Others counter that failure to provide advance notification and a formal mechanism for neighborhood reaction and discussions with the developer merely erodes trust in the supportive housing industry and local government (Wenocur and Belcher, 1990). Interestingly, a majority of

our key informants argued that the prime source of opposition was “misguided fears and ignorance,” which could only be assuaged through effective educational programs in neighborhoods prior to site development.

DIMENSIONS OF NEIGHBORHOOD CONCERNS REGARDING SUPPORTIVE HOUSING

Although in principle the 1993 Large Residential Care Uses Ordinance should have allayed neighborhoods’ potential concerns about the siting and operation of supportive housing, our reconnaissance in 1998 revealed significant residual issues. Numerous case studies of recent supportive housing siting controversies in Denver were offered as important illustrations by our key informants. Our review of these cases indicates that four central dimensions of concerns appear paramount: neighborhood, clientele, developer, and density. Below we provide brief overviews of five archetypical cases which have occurred over the past few years, to provide textural context for our statistical investigations. Inasmuch as all supportive housing sites are a matter of public record in Denver, we violate no confidentiality issues by using precise addresses below. We then distill conclusions from these cases related to the four central dimensions above.

Illustrations of Supportive Housing Siting Controversies

1125 Columbine St. This site was developed by Atlantis, an agency providing health care and housing for people with physical disabilities. Eight units in the 34-unit complex were set aside for these clients. According to our informants, this site generated intense controversy when it was proposed because media accounts erroneously characterized it as a “halfway house for criminals” and the site was located across from an elementary school. The political controversy was further complicated by the fact that the school simultaneously wanted to expand and use the proposed site for a parking lot. After numerous meetings with the community, during which the true characteristics of those living in the supportive facility was clarified and an alternative school parking arrangement was devised, opposition subsided and the facility went forward.

200 South Sherman St. This site is a former single-family home converted for use by eight women with chronic mental illness and/or dual diagnosis with alcohol/substance addiction. The facility had previously been used as a group home but in response to the *Goebel* case was converted by Denver Health to a facility with the aforementioned clientele. This change, according to an informant, made the neighborhood “go ballistic.” Apparently, an anonymous flyer had been distributed in the neighborhood claiming that this was to be a group home for juvenile sex offenders. In concert, a nearby Catholic church, its schools, and residents vehemently protested, arguing that these new group home residents would pose a threat to school children walking past their facility. Denver Health’s meetings with the parties and attempts to inform them about the nature of the proposed mentally ill clientele failed to quell the protests. The church, however,

ultimately ran afoul of the Office of Peace and Justice of the Archdiocese of Denver, who persuaded them that it was inappropriate to deny housing to anyone. At this point the negotiations between Denver Health, the church, and the neighborhood proceeded affirmatively. Several key results emanated from these negotiations. The clientele was limited to women, who were perceived as less dangerous by the neighborhood. The facility was re-painted in a Victorian color scheme to better blend with the dominant neighborhood style. And Denver Health agreed to screen out any applicants if they had previous convictions as pedophiles.

Josephine and 14th St. Project. The Colorado AIDS Project, in association with Del Norte Development, applied to rehabilitate an old, deteriorated mansion for use by 17 people with AIDS. According to our informants, the initial reaction of opponents in the neighborhood was not hysteria, but “solid reservations and good questions” whether the project would be badly managed, weakly supervised, and poorly maintained, thus blighting and endangering the area. Moreover, some opponents argued that there were already more than enough supportive facilities in the immediate area. The developers were able to counter effectively that their previous supportive housing facilities reflected none of their legitimate worries. In addition, the facility was billed as “caring for our own neighbors,” inasmuch as a high proportion of the residents in the neighborhood were gay. Final compromises included improving landscaping, adding parking, and neighborhood participation on the project’s Board of Directors and the team designing an addition to the original structure. The project went forward nine months after the initial meeting with the neighborhood.

Lowry Air Force Base. Inasmuch as the federal McKinney Act gives priority to non-profit housing developers to acquire surplus military base property, several supportive housing providers in Denver proposed projects in the recently de-activated Lowry Air Force Base on the eastern edge of Denver. One was Catholic Charities, who wanted to develop 40 townhomes (amid 600 homes already on the former base) as transitional facilities for the homeless. Inasmuch as several private neighborhoods abut this area of the base, this proposal (and others) for supportive housing was met with considerable public outcry, with fears of crime, drugs, disease, and property value decline aired verbally and through dissemination of flyers. Catholic Charities canvassed, distributed leaflets, and its President wrote letters to all members of Catholic parishes in the area in an attempt to build understanding and support, which eventually was forthcoming and the project commenced.

Lowell Terrace. The Sabin Group, a subsidiary of the Mental Health Corporation of Denver, secured a \$1.2 million HUD grant in November, 1997, to build a new, 18-unit building for low-income, chronically mentally ill individuals (Ensslin, 1997). The Sabin Group had a substantial track record, having already built 106 units in eight locations around Denver. In response to Sabin’s proposed development, the Bow Mar Heights Improvement Association protested to the Zoning Administrator, alleging that the proposed use would “further institutionalize a residential neighborhood which is already saturated with institutions, ...add to an undue concentration of low-

income housing,...and is inappropriate near schools.”¹¹ The letter cited as evidence the eight supportive housing facilities housed at the former Fort Logan nearby. The worries articulated in the letter focused on danger: murders committed over the last few years by former residents of the Fort Logan complex were presented in detail. In a subsequent letter, the Association argued that the proposed site failed to meet the minimum spacing requirements of the Large Residential Carte Uses Ordinance.¹² These concerns were later reiterated by the area’s City Counselor, a longstanding critic of dispersed affordable and supportive housing programs.¹³ Despite these objections the site was approved and is under construction at this writing.

Patterns of Opposition to Supportive Housing

In light of the aforementioned illustrations of neighborhood reactions to proposed facilities, we asked our key informants whether they had distilled from their experiences any consistent patterns that would describe the intensity of opposition to a proposed supportive housing facility. Their responses consistently focused on four factors: neighborhood, clientele, developer, and density.

- *Neighborhood.* Respondents indicated that neighborhoods that were more wealthy, white-occupied, and dominated by single-family, owner-occupied homes erected more effective barriers to supportive housing in Denver. One developer of housing for people with AIDS, for example, recounted a multi-year process of attempting to acquire a site in the tony Cherry Creek subdivision, to no avail. Four others remarked how “diverse” and “less well-off” neighborhoods were often welcoming of supportive housing. These perceptions are, of course, entirely consistent with extant scholarly findings (Seltzer, 1984; Wenocur and Belcher, 1990; Takahashi and Dear, 1997).
- *Clientele.* There was substantial consensus among our developer respondents that some groups within supportive housing were less desirable to the public than others. There was less agreement; however, about the rankings. One volunteered that convicted criminals and troubled adolescents were least desirable, but another said it was the chronically mentally ill and mentally retarded. One claimed that the homeless were at the bottom, then the mentally ill and physically disabled.

¹¹Letter from Bow Mar Heights Improvement Association to Kent Strapko, Zoning Administrator, December 10, 1997.

¹²Letter from Bow Mar Heights Improvement Association to Kent Strapko, Zoning Administrator, February 18, 1998.

¹³Interview with Denver City Councilman, February 1998.

Yet another gave the following ranking, from least to most desirable: substance/alcohol abusers, criminals, mentally ill and homeless, developmentally disabled, and seniors. Interestingly, this last ranking corresponds precisely to those which have been produced in various public opinion surveys across the nation (Takahashi and Dear, 1997). It also was remarkable that the vast majority of our key informants volunteered that race or ethnicity of the clientele was not a major factor influencing a neighborhood's reaction to a supportive facility; only one suggested that it was.

- *Developer.* "Reputation" was the mantra repeated by our respondents. Developers with good "track records" were often given the benefit of the doubt in siting a new facility, by officials and neighbors alike. The conversion of the old University of Denver Law School building into a single-room occupancy facility and the aforementioned Josephine-14th St. project were cited as illustrations of where favorable developer reputations smoothed the approval and neighborhood entry process. Successful prior projects in the area can be used as "proof" in the face of neighborhood skepticism, noted one respondent.
- *Density.* If neighbors perceived that an area was already "saturated" with supportive and/or subsidized housing, their opposition to further increments of such would be intensified. Some developers with whom we spoke explicitly sought to avoid areas with concentrations of extant supportive facilities for precisely this reason.

DENVER DEVELOPERS' STRATEGIES FOR LIMITING NEIGHBORHOOD OPPOSITION

In light of the aforementioned illustrations of neighborhood reactions to proposed facilities, we asked our key informants in the supportive housing industry in Denver how they attempted to limit opposition from and facilitate harmonious relations with the host neighborhood. The consistent themes we heard were siting, screening, and management.

Several developers seemed guided in their siting choices only by "targets of opportunity," like foreclosed homes or closing military facilities. One even seemed bent on pursuing a site in a neighborhood where strong opposition was already patently obvious. Most of our respondents, however, were more self-conscious and pragmatic in making site selections that would not fly in the face of expected community opposition.

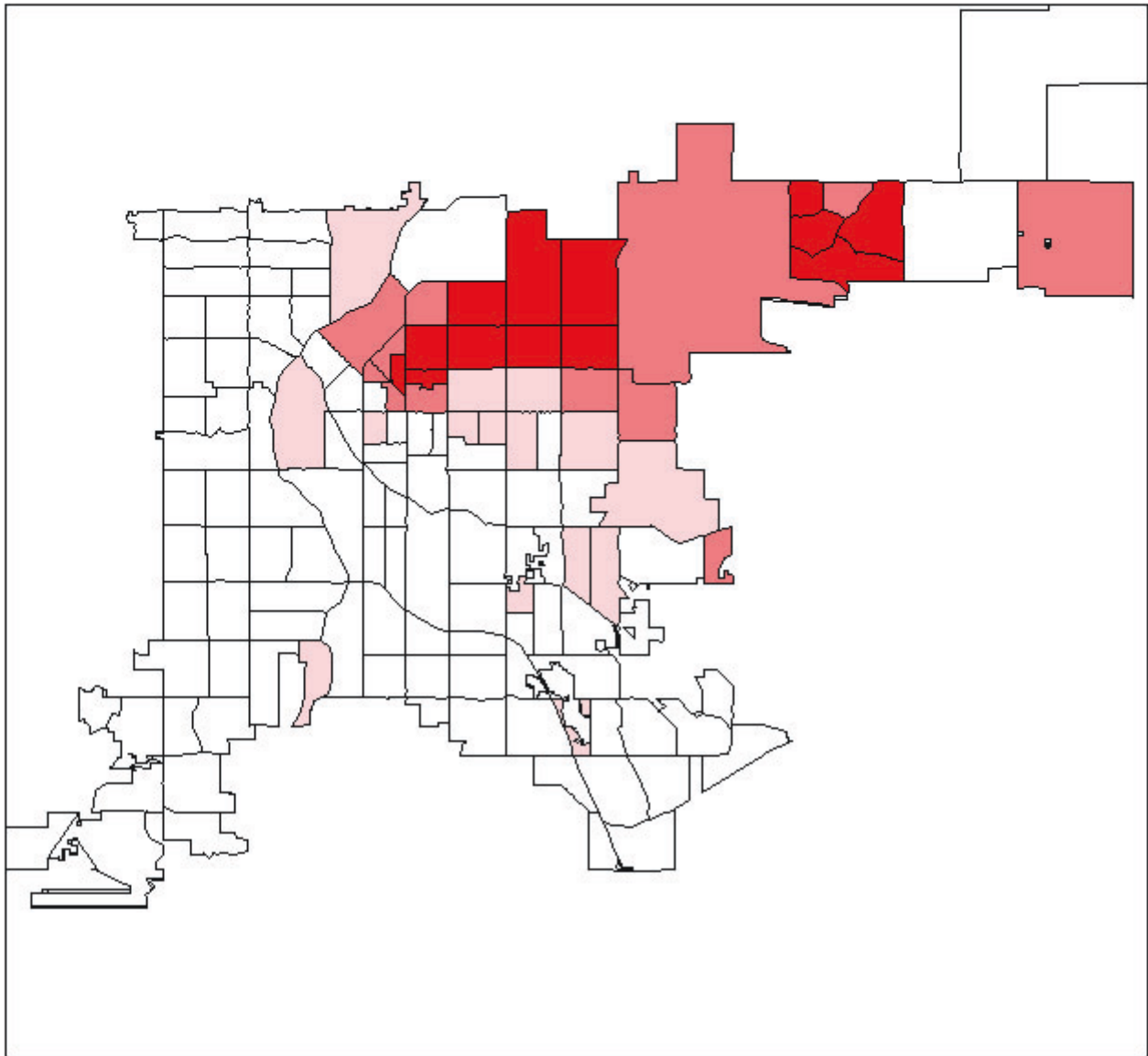
Once on a site, responding to actual or potential neighborhood concerns through sound management was central for several providers. The head of a group operating several large-scale

shelters and transitional facilities recognized the neighborhood disruptions caused by behavioral problems of some of their residents in the past, and learned to better screen and strengthen their case management efforts as a result. Another provider of transition facilities for the homeless similarly sees the criminal record checks, past eviction checks, and responsive case management as keys to their improved community relations. A further aspect of management deemed crucial by a large majority of providers was maintenance and repair of the facility. The epitome of this position was expressed by one program executive, who set as a goal that her organization's homes would always be the "best maintained on the block."

These positions correspond closely to public opinions summarized in a series of focus groups and a written survey conducted by the Center for Human Investment Policy at the request of the Colorado Coalition for the Homeless (Gould and O'Brien, 1997). The study was designed as a reconnaissance into the attitudes, values, and perceptions of residents in over a dozen Denver neighborhoods toward the placement of supportive housing facilities. It revealed clear opinions on the part of prospective neighbors that:

- Opposition was related not just by the presence of supportive facilities but also by the density of such and other subsidized units already in the area.
- The facility should blend in well with homes in the area.
- Group homes for parolees should not be placed near a school.
- Group homes for the elderly and children were easier to incorporate in their neighborhoods than parolees and the mentally ill.
- The facility should be small and well-maintained.
- Clients should be carefully managed by a responsible and responsive operator.

The study conceded that many residents do worry that the placement of group homes will lower their property values. But, to the researchers' surprise, they found that opposition to group homes came less from a bias against the clientele but rather from a sense of anger, frustration, and powerlessness with the process for addressing their concerns about how supportive facilities are sited, approved, and managed. Respondents did not feel comfortable with the information provided by developers and did not expect these service providers to be responsive to their concerns. The study concluded that supportive housing providers and neighborhoods needed to establish bonds of trust so that they could thereby "recognize the benefits of strengthening the context in which they all coexist" (Gould and O'Brien, 1997:6).

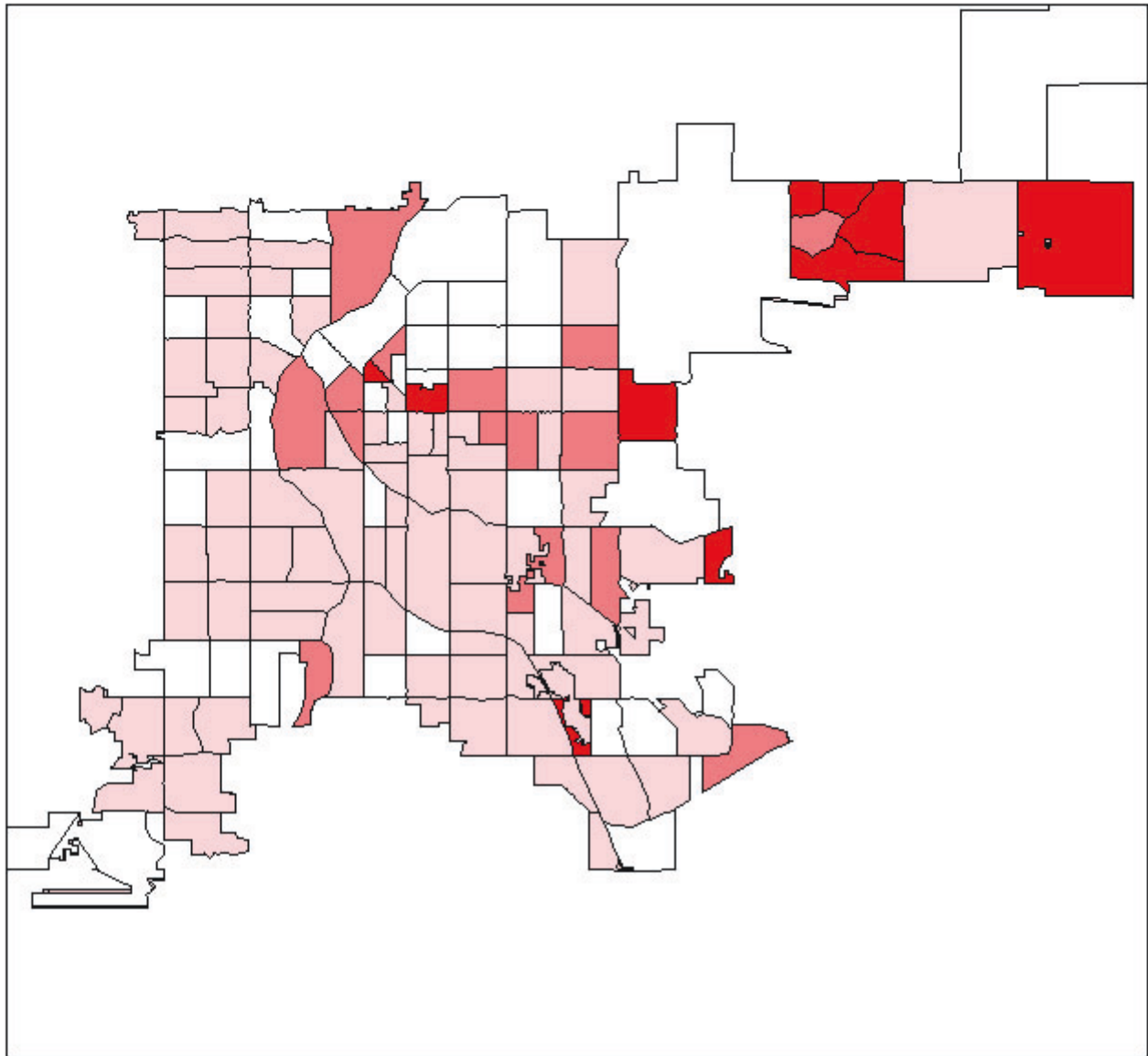


1 inch=3.1 miles

**Map 2.1: Percent Black
1990**



	0 to 10 (144)
	10 to 20 (15)
	20 to 50 (12)
	50 to 100 (13)

Denver Census Tracts

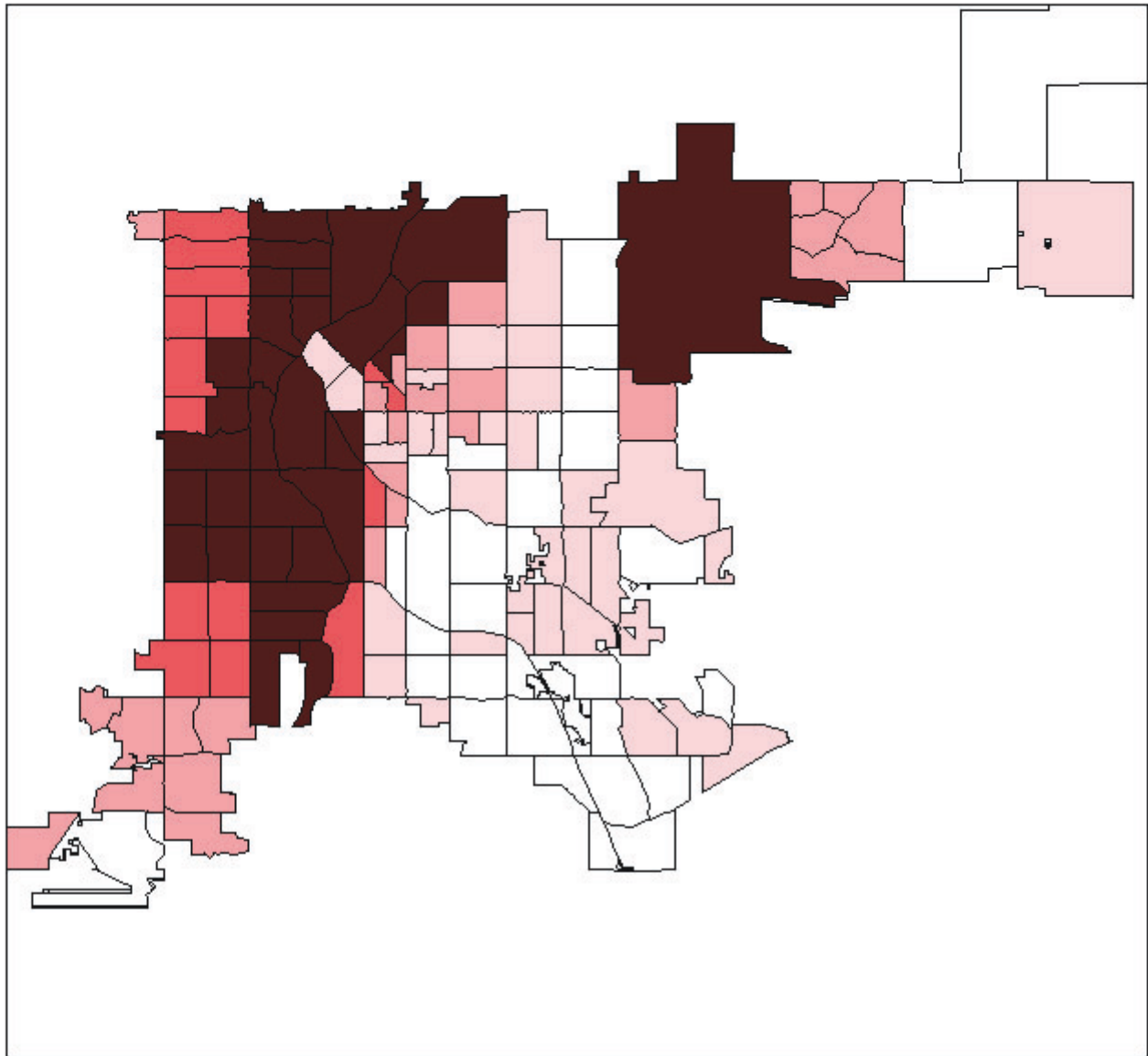


1 inch=3.1 miles

**Map 2.2: Change in Percent Black
(Percentage Points), 1980-1990**

	less than 0	(42)
	0 to 5	(116)
	5 to 10	(16)
	greater than 10	(10)

Denver Census Tracts

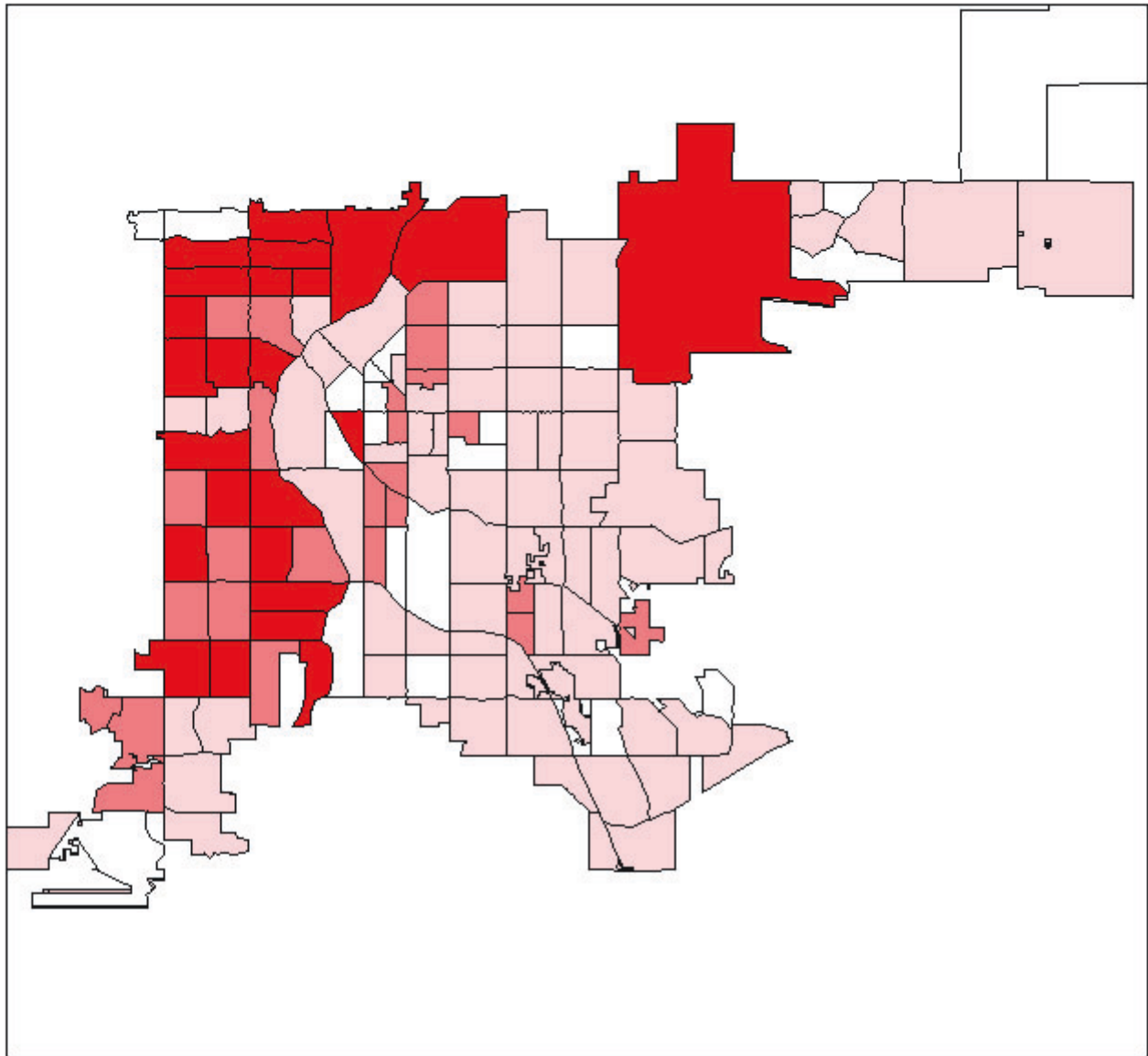


1 inch=3.1 miles

**Map 2.3: Percent Hispanic
1990**




□	0 to 5	(78)
□	5 to 10	(33)
□	10 to 20	(26)
□	20 to 40	(15)
□	40 to 85.7	(32)

Denver Census Tracts

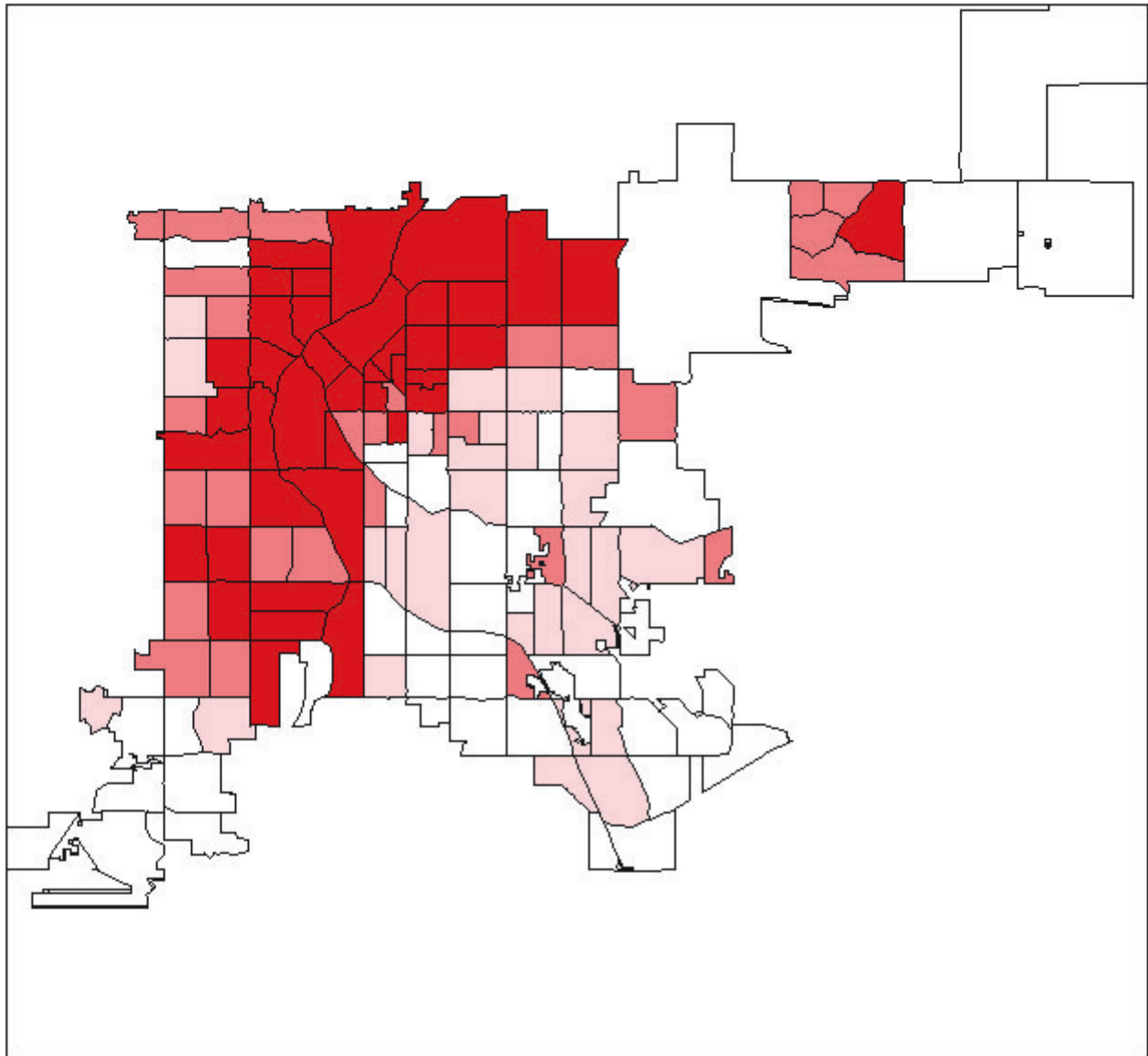


1 inch=3.1 miles

**Map 2.4: Change in Percent Hispanic
(Percentage Points), 1980-1990**

	less than 0	(28)
	0 to 5	(107)
	5 to 10	(25)
	greater than 10	(24)

Denver Census Tracts

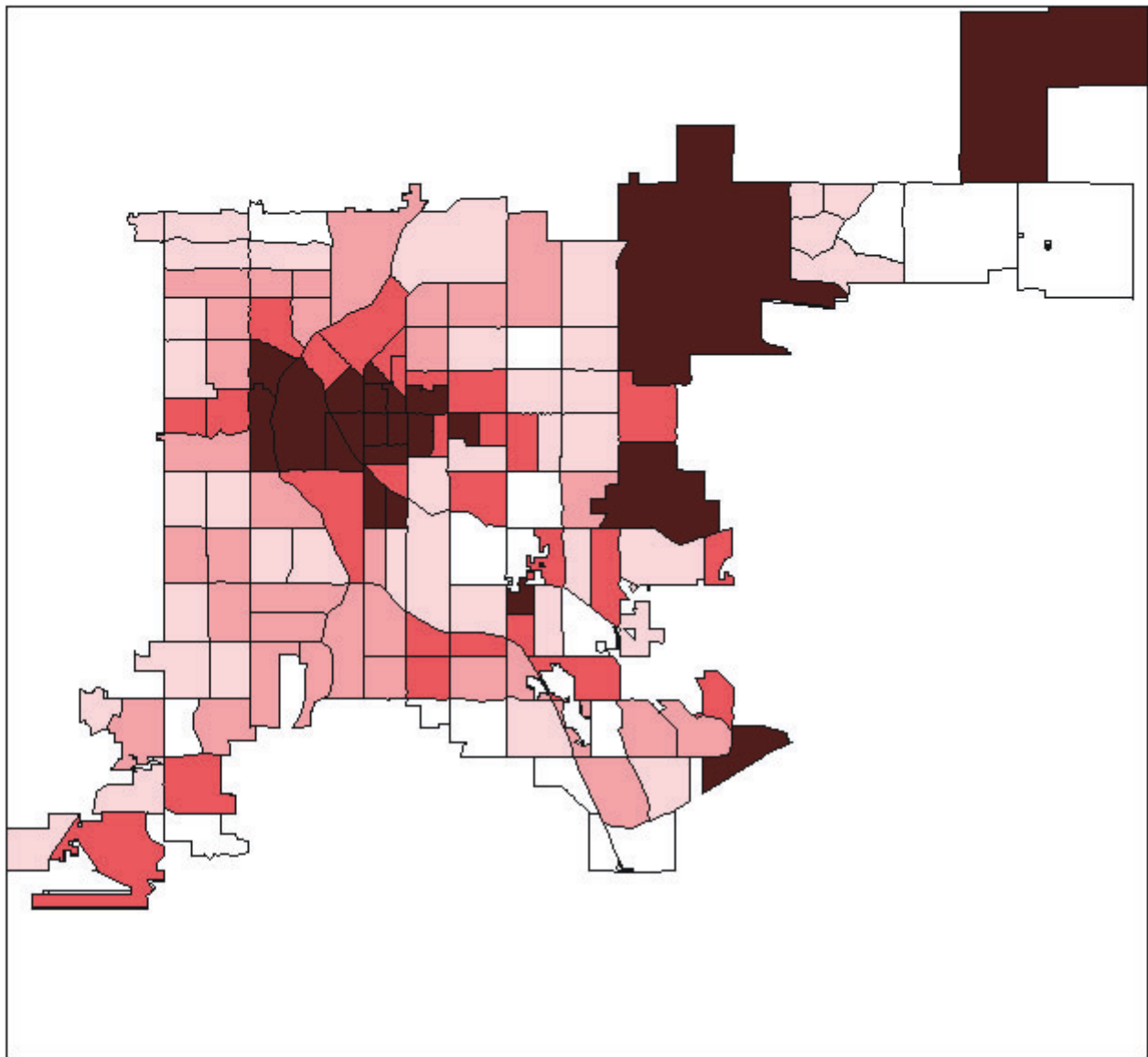


1 inch=3.1 miles

**Map 2.5: Percent Households
Receiving Public Assistance, 1990**

□	0 to 3	(88)
□	3 to 6	(27)
□	6 to 10	(29)
■	greater than 10	(40)

Denver Census Tracts

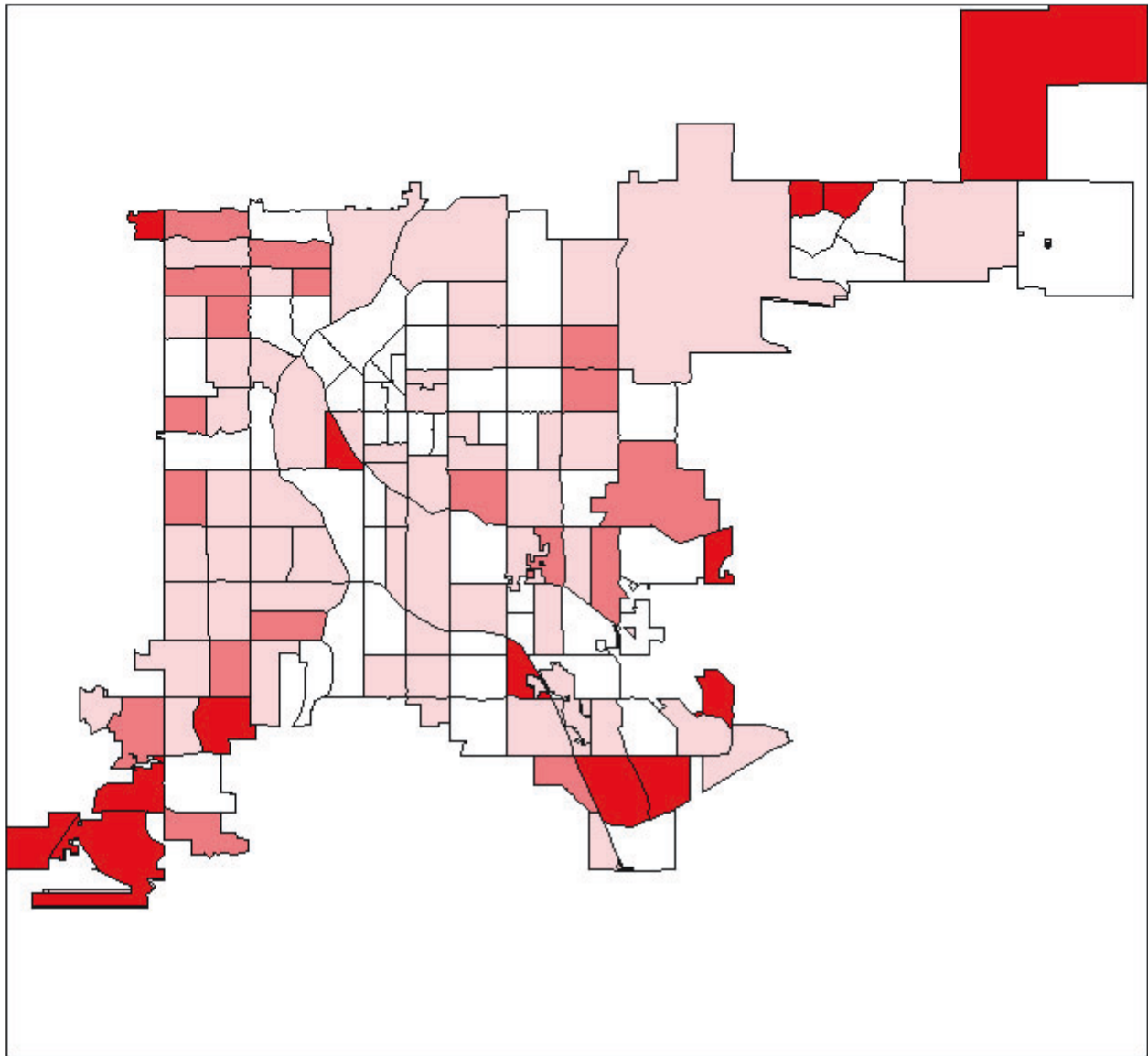


1 inch=3.1 miles

Map 2.6: Percent Renter Occupied Housing
1990

□	0 to 20	(63)
□	20 to 40	(39)
□	40 to 60	(33)
□	60 to 80	(27)
□	80 to 100	(22)

Denver Census Tracts

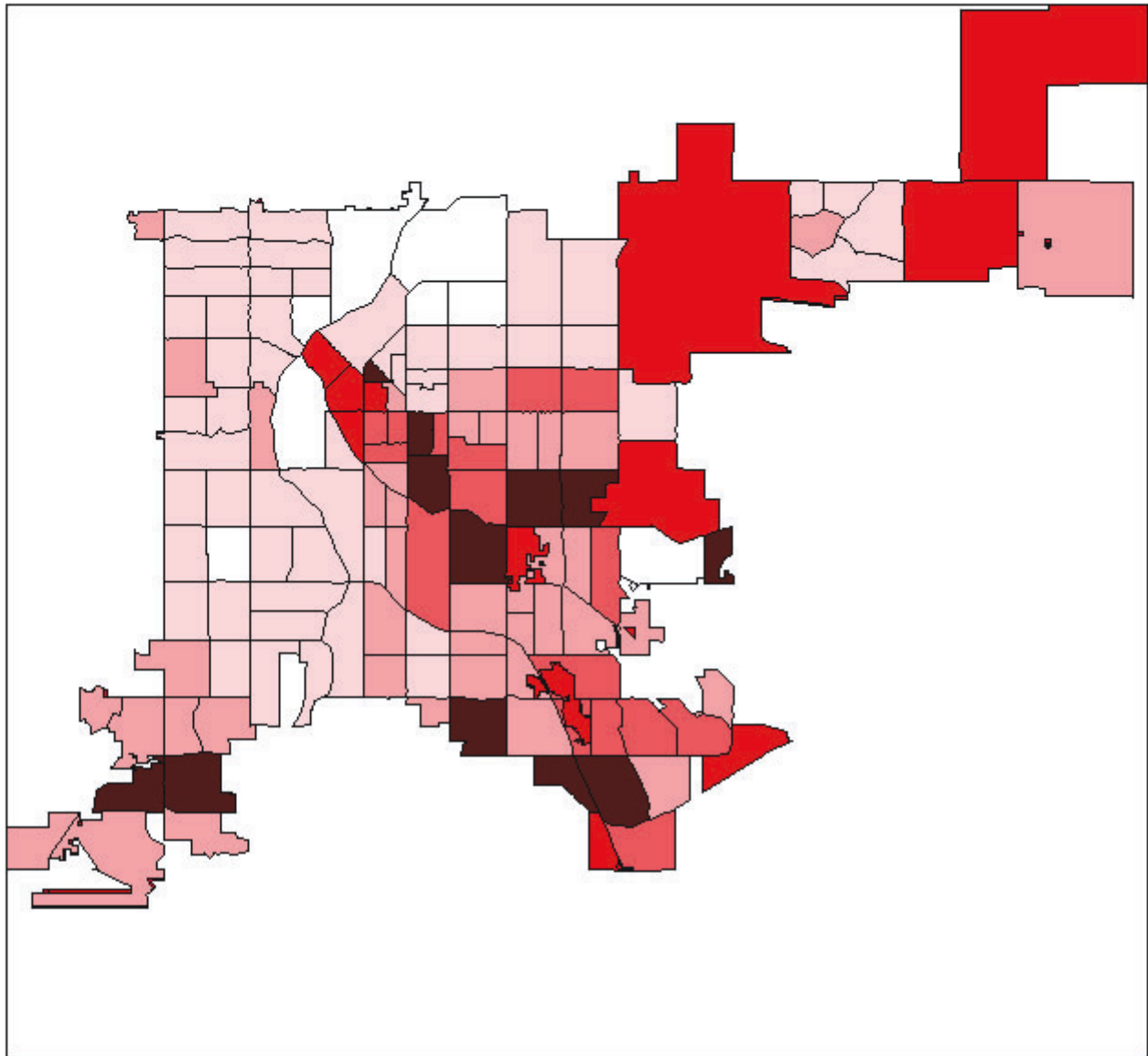


1 inch=3.1 miles

**Map 2.7: Change in Pct. Renter Occupied Housing
(Percentage Points), 1980-1990**






□	less than 0	(56)
□	0 to 5	(95)
□	5 to 10	(18)
■	greater than 10	(15)

Denver Census Tracts

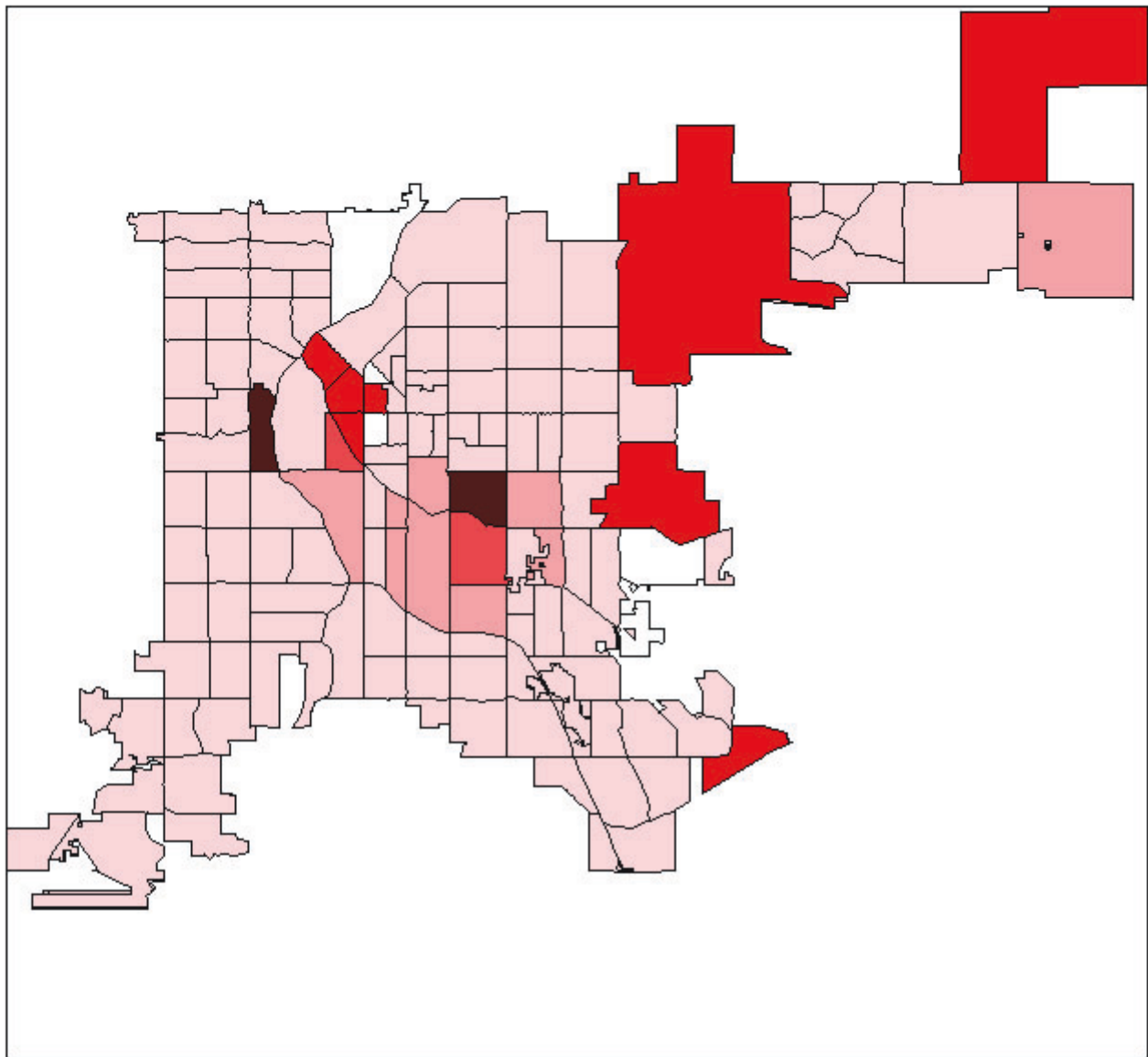


1 inch=3.1 miles

**Map 2.8: Median House Values
1990**

	less than \$50,000	(8)
	50,000 to 75,000	(51)
	75,000 to 100,000	(44)
	100,000 to 125,000	(18)
	greater than \$125,000	(13)

Denver Census Tracts

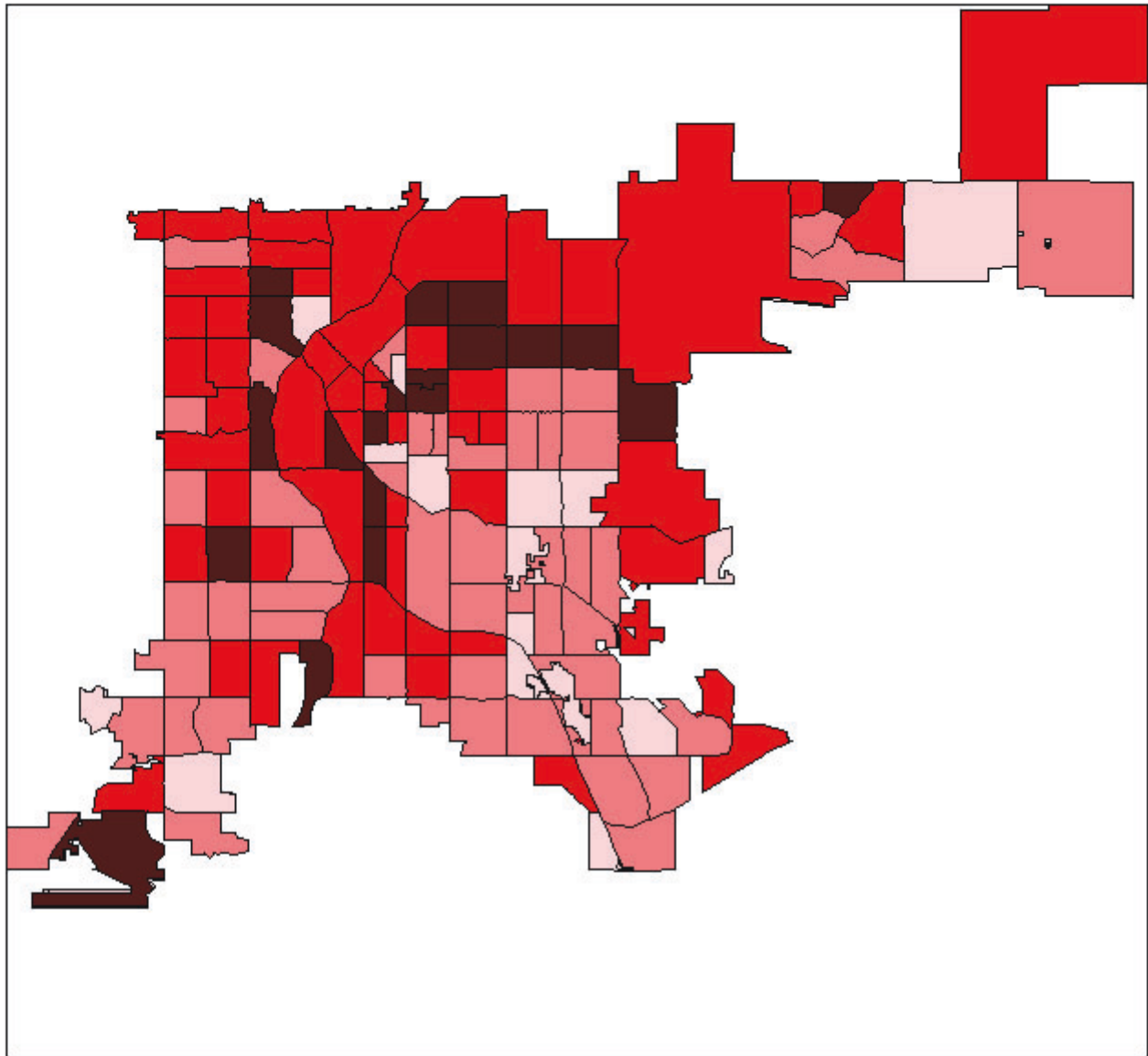


1 inch=3.1 miles

**Map 2.9: Percent Change in Average House Values
1980-1990**






□	less than 0	(8)
□	0 to 50	(155)
□	50 to 75	(9)
□	75 to 100	(2)
□	100 to 140	(2)

Denver Census Tracts

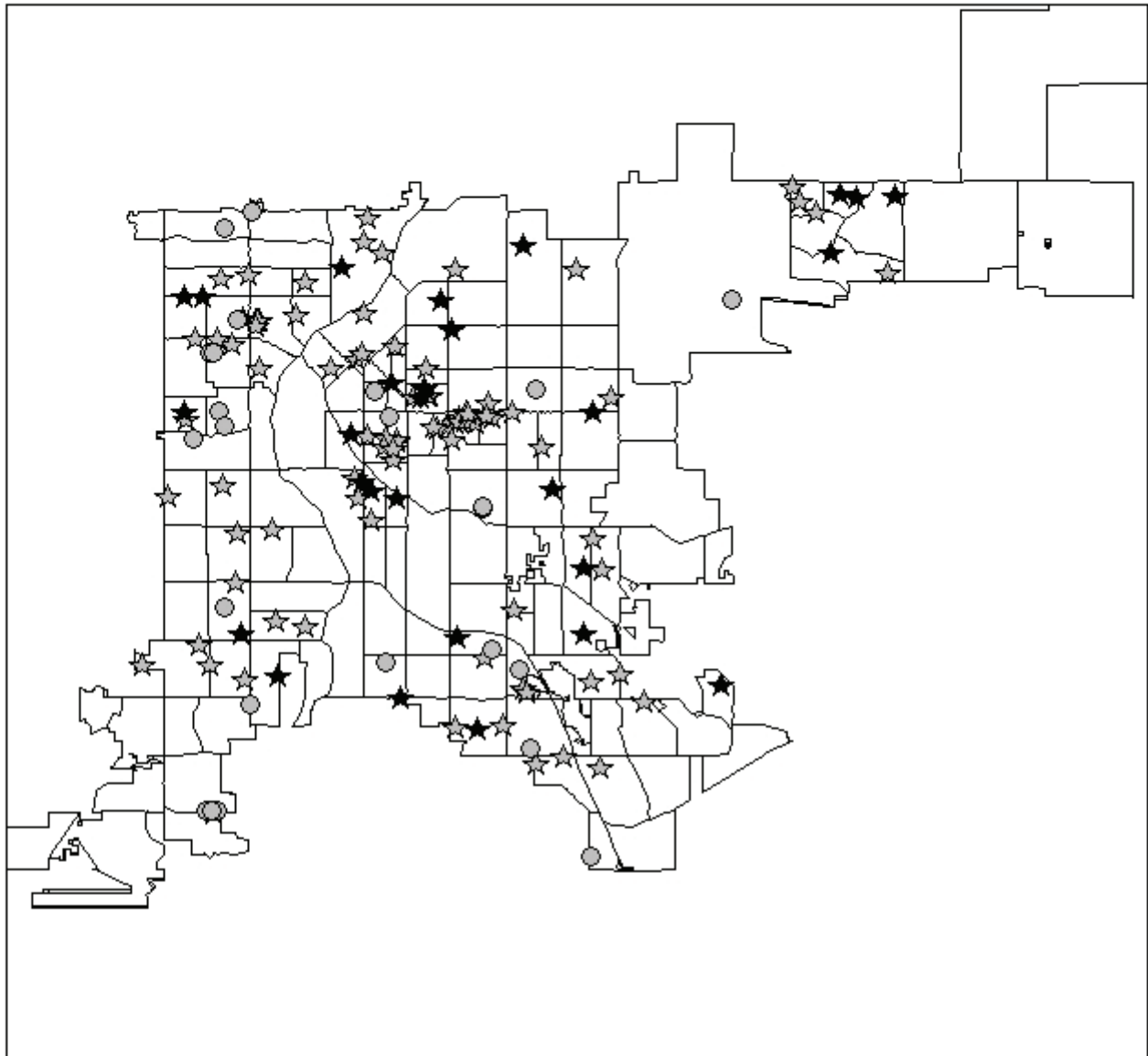


1 inch=3.1 miles

Map 2.10: Percent Change in Average House Values
1990-1996

	less than 0	(0)
	0 to 50	(54)
	50 to 75	(51)
	75 to 100	(41)
	100 to 280	(20)

Denver Census Tracts



1 inch=3.1 miles

Map 2.11: Supportive Housing Sites

- ★ Sites opened from 1989 though 1995 (29)
- ☆ Sites opened before 1989 or after 1995 (87)
- Sites where opening date is unknown (30)

Denver Census Tracts

CHAPTER 2

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CHAPTER 3

QUANTITATIVE AND QUALITATIVE METHODS

Nothing can be quite as intimidating and incomprehensible as a discussion of advanced econometric models. Unfortunately, such models form the core of our quantitative analysis and they must be described with sufficient precision to be clearly reviewed and the accuracy of their findings assessed by specialist peers. The importance of the topic being investigated demands nothing less.

Nevertheless, at base our approach has a strong intuitive appeal. Thus, in this overview we aim to give a reader a comprehensible (albeit superficial) description of what our model is trying to accomplish and how it goes about doing so. Readers for whom this proves a sufficiently detailed explanation can then skip to the description of the focus group sites and methods at the end of this chapter. This will provide a sufficiently detailed explanation to understand the results presented in Chapter 5.

A NON-TECHNICAL OVERVIEW

Our impact models builds upon the work of numerous researchers who have investigated the degree to which a variety of factors associated with a neighborhood affect the sales prices of single-family homes and the reports of crimes. The heart of these investigations consists of a statistical model that attempts to explain the variation in sales prices or crime reporting rates in different neighborhoods according to characteristics of the neighborhood, the larger community, and (in the case of the property value model) the house being sold.

To use the property value model to illustrate, we want to decompose the selling price of a single-family home into implicit prices paid for the home's myriad attributes—such as rooms, yard size, fireplaces, maintenance levels, year of construction—as well as attributes associated with the home's surroundings. This latter set can include the quality of local public schools, the condition of nearby properties, the proximity to shopping, the socioeconomic and racial characteristics of neighbors, and, of particular interest here, the presence of supportive housing. The idea is that homes with a different bundle of attributes will sell for different prices, and that a home's sales price can be predicted by measuring the amount of each attribute present and multiplying that amount by its implicit price. By adding up the implicit values of the different attributes of a house, one can arrive at its total sales price.

The method for decomposing home sales prices into implicit prices of attributes is *multiple regression analysis*. In this technique, a sample of home sales is drawn and as many attributes of each home as feasible are measured. Home sales becomes the dependent variable in the regression model, and the attributes become the independent (or explanatory) variables. The multiple regression algorithm estimates coefficients for each attribute variable, finding the coefficients that provide the “best fit” between the observed house prices and those that would be predicted by the model. These estimated coefficients can then be interpreted as the implicit prices of these attributes.

Thus, should a regression of home sales prices on the properties’ housing and neighborhood attributes produce, as illustration, a negative coefficient for the attribute “age of the home,” we would interpret this to mean that the market does not value older homes as much as newer ones. Similarly, if our regression were to estimate a positive coefficient for the attribute “a park is within two blocks,” it would signify that the market valued proximity to parks.

It is important to realize that coefficient is estimated independent of the effects of all the other attribute variables specified in the regression model. That is, one can interpret these coefficients as the additional impact on price that is contributed by the given attribute, controlling for the effects of all the other attributes. A crucial implication is that the accuracy of results is greater if one can control for as many attributes as possible in the multiple regression.

For the purposes of this study, we focus attention on a particular attribute: “proximity to a *supportive housing site*” or, alternatively, “proximity to a *number of supportive housing beds*.”¹ We define “proximity” in terms of three distances “rings”: within 500 feet, 501-1,000 feet, and 1,001-2,000 feet. A “supportive housing program” houses and provides services to a wide variety of individuals, including those who are elderly, mentally ill, recovering from substance abuse, developmentally or physically disabled, or serving a criminal sentence in a community correctional facility. Our goal is to ascertain the degree to which proximity to supportive housing affects sales prices in Denver’s housing market, controlling for a wide variety of attributes. These attributes include the home’s structural characteristics, characteristics of the surrounding neighborhood measured both at the census tract scale and at the “micro-neighborhood” scale of 2,000 feet around a subsidized site, and measures to adjust for seasonal and business cycle influences.

To do this, we structure our multiple regression model to create the equivalent of a “pre/post” experiment. Effectively, we compare the level and trend of home prices in a micro-neighborhood both before and after a site within the area is occupied by a supportive housing

¹We use “beds” as a measure of the capacity of the supportive housing site. Providers must specify the number of beds in the proposed supportive site when registering it with the City. The City database, from where our data comes, contains this information but does not track actual occupancy of the site over time.

program. This level and trend is estimated on the basis of sales of identical homes or, more accurately, homes whose differences in prices have been adjusted so as to make them comparable. If either the level or the trend in prices were to be different after occupancy, that would signal to us that there was an independent effect from the supportive housing site.²

This pre/post approach is central to the power of our method and, indeed, represents a significant methodological advance in the analysis of house prices. It therefore warrants some additional explanation. Our model takes the locations of supportive housing sites that opened between 1989 and 1995. For each site, we circumscribe a 2,000 foot radius circle and take every home sale within this circle that occurred up to the time that the supportive housing site opened. Then, for each of the three distance rings noted above, we use a regression model to calculate the trend in prices, adjusting for any differences in attributes that may affect a home's price. We do the same for several years' worth of sales beginning with the quarter after a supportive site was opened. Finally, we compare the two trends and draw conclusions.

To more clearly see how we make these comparisons and draw conclusions regarding the impact of supportive sites, consider the following illustrative (and hypothetical) examples:

1. Prior to opening of a supportive site, the surrounding neighborhood's prices are holding constant, with the average home selling for \$80,000. After the supportive housing site is operating, prices remain at \$80,000. Conclusion: no impact from the supportive housing site.
2. As in 1., but in the quarter after the supportive housing site opens, prices drop to \$70,000 and remain constant thereafter. Conclusion: negative impact from the supportive site.
3. As in 1., but in the quarter after the supportive housing site opens, prices remain at \$80,000 but decline thereafter. Conclusion: negative impact from the supportive housing site.
4. As in 1., but in the quarter after the supportive housing site opens, prices either rise to \$90,000 or rise thereafter. Conclusion: positive impact from the supportive housing site.

²The price levels and trends, as well as the other coefficients in our models, are *estimates* and therefore have uncertainty associated with their values. While an estimated coefficient may be positive or negative, the uncertainty associated with this estimate may be large enough that one cannot say reliably that this attribute has an effect on sales prices. In reporting our results, we generally use a standard of "95 percent confidence," meaning that we only show impacts which we are 95 percent sure are not zero.

5. Prior to occupancy of a supportive housing site, the surrounding neighborhood's prices are rising five percent annually, and, just before the opening date, the average home sells for \$80,000. The quarter after the supportive housing site opens, prices remain at \$80,000 but thereafter prices rise only two percent annually. Conclusion: negative impact from the supportive housing site.
6. As in 5., but in the quarter after the supportive housing site opens prices drop to \$70,000 but continue to rise five percent annually. Conclusion: negative impact from the supportive housing site.
7. As in 5., but in the quarter after the supportive housing site opens, prices either rise to \$90,000 or thereafter prices rise ten percent annually. Conclusion: positive impact from the supportive housing site.

The reader can easily extend the logic above to cover the situation of a neighborhood initially in decline before the supportive housing site was occupied. But what is trickier is the situation where post-occupancy there is *both* a change in the *level* of prices and in the *trend* of prices, and the two work in opposite directions.

For example, take a situation where prior to occupancy of a supportive housing site, the surrounding neighborhood's prices are rising five percent annually. Just before the opening date, the average home in the area sells for \$80,000. In the quarter after the supportive housing site opens, prices rise to \$90,000 (a positive impact in the short term) but thereafter prices rise only two percent annually (a negative impact in the long term). One can see that at some future time the initial \$10,000 price increase will be eroded by the slower appreciation rate such that the level of prices in the neighborhood will be exactly what it would have been had the initial \$80,000 value continued to appreciate at the original five percent rate. Prior to this date, the impact on the neighborhood would have been positive. Past this point into the future, however, this hypothetical neighborhood may have lower prices than would have occurred in the absence of the supportive housing site.

The crime impact model works analogously to the property value model. We have again used a pre/post design to attempt to measure the possible impact of supportive housing sites on crime rates in nearby areas. To do this, we calculated annual crime rates in subareas defined by rings of 0-500, 501-,1000, and 1,001-2,000 feet around selected supportive housing sites. By including in our models observations of crime rates both before and after the opening of the site, and by controlling for general trends in crime rates in parts of Denver not near any supportive housing, we are able to estimate the affect the site may have had on crimes nearby areas.

The general set of models described above, when estimated over either the entire set of house sales or reported crimes and for all supportive housing sites, allows us to determine the average impacts of supportive housing for Denver. This assumes, however, that the impacts are similar in all subareas of the city and for all types of sites. To determine whether the housing programs we were studying might have different impacts in different types of neighborhoods or for different types of sites, we estimated our models on various stratifications of house sales and subsets of supportive housing sites. Selected results from these stratified models are presented in Chapter 5.

The next two sections of this chapter set our model in the context of methodological history and provide more technical detail. Readers who do not require this level of explanation may skip to the discussion of our focus group sites and procedures at the end of this chapter. In Chapter 5, we will present our results in the context of graphs that portray situations analogous to those described hypothetically above. Our assessment of impacts relies on the logic illustrated here, so readers who do not read the technical description of the models below will still be able to understand the results derived from our empirical analysis.

QUANTITATIVE ANALYSIS OF PROPERTY VALUE IMPACTS

Previous Studies: Results and Methodological Shortcomings

By the end of the 1980s at least a dozen scholarly studies had investigated the question of whether supportive housing for renters with mental or physical handicaps generated a negative impact on neighboring single-family property values. The common conclusion reached by these studies was that there was no sizable or statistically significant impact. After reviewing “every available study,” the Mental Health Law Project (1988: abstract) concluded that “[they] conclusively establish that a group home as community residential facility for mentally disabled people does not adversely affect neighbors’ property values or destabilize a neighborhood.” A few studies even concluded that there was a positive property value impact, especially in lower-valued neighborhoods (Dear, 1977; Wagner and Mitchell, 1980; Gabriel and Wolch, 1984; Farber, 1986; Boydell, Trainor and Pierri, 1989; Hargreaves, Callanan, and Maskell, 1998).

Only one study of this period provided even a hint of dissension, and it could be convincingly discounted on methodological grounds. Gabriel and Wolch (1984) studied the relationship between the number of human service facilities per 1,000 residents of census tracts in Oakland and median home sales prices in the tract, using multiple regression analysis. When all tracts were included in the regression, larger numbers of residential facilities for both adult and children proved inversely related to median prices. When regressions were disaggregated by predominant race of occupancy, however, the only adverse impacts appeared to be from adult

residential facilities located in predominantly black-occupied tracts. In any event the lack of variables controlling for other aspects of census tracts that could affect prices besides human service facilities renders all conclusions from this study suspect.

Recently, however, the conventional wisdom of no impact has been shaken by several, more sophisticated statistical studies that have concluded that, with certain circumstances and kinds of developments, supportive housing can create severe effects on proximate property values. Galster and Williams (1994) investigated the effects of dwellings occupied exclusively by severely mentally disabled tenant on sales prices of nearby homes in two small Ohio towns. Controlling for features of the dwelling and the neighborhood, proximity within two blocks of two small, newly constructed apartment buildings for the mentally ill resulted in a 40 percent decrease in sales prices. However, proximity to three similar, new apartment complexes or to three rehabilitated apartment buildings for the mentally ill had no impact on prices. The authors interpreted the results as suggesting that siting, building type, and tenant allocation procedures mattered more for potential neighborhood spillover effects than occupancy by mentally ill tenants.

Lyons and Lorange (1993) investigated the impacts of four locations where federally supportive buildings housed handicapped tenants in St. Paul, MN. The apartment complexes ranged in size from 10 to 103 units. Surprisingly, they found a negative impact from each handicapped unit, but the size of the negative impact diminished with marginal increases in the number of units. For example, an apartment with ten handicapped units within one-half mile of a single-family home reduced the assessed value of that home by a statistically significant \$1670; within one mile it reduced it by \$682. But, an apartment with one hundred handicapped units within one-half mile of a single-family home was estimated to *increase* the assessed value of that home by \$1,300; although within one mile it reduced it by \$1,600. The authors offered no explanation for these results.

Colwell, Dehring, and Lash (1998) analyzed seven group homes which opened during the 1987-1994 period in seven communities in suburban Chicago. Each site housed between four and eight handicapped tenants. Controlling for neighborhood-specific housing price trends and levels, they considered whether there were any noticeable aggregate shifts in the overall home sales price gradients across these seven areas after a nearby group home was announced. They found no post announcement impact within 750 feet, but a reduction in sales prices of 13 percent if the sales were within sight of the group home. Moreover, if a community protest arose after the announcement, and additional 7.7 percent price declination occurred, which the authors attributed to the negative "signaling" effect that such a protest had for the market evaluation of the area.

One possible explanation for why the forgoing analyses have come to such variant, non-generalizable conclusions is because they employ different methodologies, each of which suffers

from serious, if somewhat different, shortcomings. The three alternative approaches can be termed: control area, pre/post, and econometric.

The *control area approach*, represented by Dear (1977), Wolpert (1978), Boeckh, Dear, and Taylor (1980), Lauber (1986), Iglhaut (1988) and Boydell, Trainor and Pierri (1989), selects neighborhoods that are otherwise comparable to one(s) that have supportive housing located within them and then compares property value levels or trends in both sets. The fundamental challenge here is identifying areas that are, indeed, identical in all respects save for supportive housing and that have no other forces or land developments which differentially affect them subsequent to the supportive housing development. Indeed, this challenge may be insurmountable, inasmuch as developers and occupants of supportive dwellings may choose certain neighborhoods precisely because they have attributes that are particularly attractive for their purposes.

The *pre/post approach*, represented by Wagner and Mitchell (1979; 1980), Lindauer, Tungt, and O'Donnell (1980), Ryne and Coyne (1985), District of Columbia Association for Retarded Citizens (1987), Iglhaut (1988), and Boydell, Trainor and Pierri (1989), compares levels and/or trends in property values in the same neighborhood(s) between periods preceding and then succeeding the introduction of a supportive development.³ The difficulty here is ensuring that there are no additional forces that may effect values in the target neighborhood, such as macroeconomic or local housing submarket pressures, and are coincident with the supportive development. For example, the entire metropolitan area's housing market may be in an area of deflationary prices, whereupon there will be a tendency for any pre/post comparison of values in any neighborhood to show a secular trend of decline, regardless of the presence of a supportive housing site.

The *econometric approach* has many variants, but typically it tries to ascertain whether there is an independent, cross-sectional variation in housing prices that can be associated with proximity to a supportive site. Although not an inherent flaw in the approach, virtually all previous econometric studies have failed to control for the idiosyncratic characteristics of the micro-neighborhood environment that surrounds (say, within a radius of a quarter mile) but is unrelated to the supportive housing site. Instead, most settle for variables that measure characteristics of the encompassing census tract, which may be poor proxies for conditions in the area near the supportive site. Thus, if these omitted, micro-neighborhood variables were correlated with the location of supportive housing, apparently statistically significant proximity effects might erroneously be attributed to the latter instead of the former. One candidate for such an important omitted variable is the presence of a (possibly large) apartment building in the area, into which

³The comparison often is accomplished with the aid of multivariate statistical procedures to control for differences in the properties being sold pre- and post-occupancy of the site.

some handicapped households are placed at a later date after the building is rehabilitated. In such a case the statistics could not distinguish between the impacts of proximity to an apartment building and proximity to a supportive housing development.

This criticism takes on additional importance when considering the main flaw that all three approaches share: they cannot, in their current specifications, convincingly distinguish the direction of causation between trends in neighborhood property values and the siting of supportive housing. Put differently, because they do not control for the quality and market strength of the micro-neighborhood into which supportive housing is placed relative to the larger universe of potential sites, they cannot ascertain, for instance, whether supportive sites lead to neighborhood decline or whether supportive sites are systematically located in areas having property values that are low and/or expected to depreciate in the future.

There are several reasons why the latter causal pattern is possible, which are related to behaviors of the public agency developers and owners of the supportive facility and the nature of the local real estate market. First, the public authority or non-profit organization developing a supportive facility will be encouraged to husband its scarce resources by acquiring the least-expensive properties (vacant land or existing structures) available. Second, if new construction of supportive housing is contemplated, the location of vacant, appropriately zoned parcels will likely be constraining on choices. Third, if rehabilitation of structures for use as supportive housing is contemplated, minimization of expected lifetime development costs of the structure implies choices of certain building types that likely are concentrated in certain types of neighborhoods (Newman, Harkness, Galster, and Reschovsky, 1997). All these reasons imply that the particular micro-neighborhoods in which supportive housing is developed are not likely to be representative, and thus their housing price levels or trends are not likely to be well measured by regression equation proxies that are measured at a more aggregated geographic scale.

Two of the aforementioned studies come close to achieving the appropriate level of control, but they ultimately fall short. Both Galster and Williams (1994) and Colwell, Dehring, and Lash (1998) employ a “spatial fixed effects” specification wherein dummy variables denote the idiosyncratic *level* of home prices associated with the micro-neighborhood within a certain distance from a supportive housing site (either future or current). A corresponding set of dummy variables denotes whether these price *levels* differ significantly after the supportive housing is announced or begins operation. This econometric version of a pre/post method fails, however, to control for the *trend* in sales prices extant in this micro-neighborhood prior to the introduction of the subsidized housing. For example, if the given area were to be on a trajectory of steep depreciation prior to the introduction of supportive housing, it would likely manifest a lower level of prices after the opening of the supportive site than before. But this would not be due to the supportive site, but rather to a continuation of pre-existing trends in this micro-neighborhood. Thus, only an econometric specification that controls for pre-/post-occupancy deviations in *both*

price *levels and trends* in the micro-neighborhood near the supportive site can yield unambiguous implications about the causal impact of the supportive housing site.

Our approach overcomes all the above shortcomings of prior approaches. By employing a variant of the “pre/post” design involving localized fixed effects it controls for micro-neighborhood characteristics unrelated to supportive housing. By relating these localized fixed effects to property value trends and levels in larger geographic areas it distinguishes the self-selection of supportive housing into weak neighborhood submarkets from the ultimate consequences of such housing on these neighborhoods. By controlling for the characteristics of sold properties and more macro trends in values it purges several additional confounding elements from the analysis. The complete specification of our model follows.

A Conceptual Framework for Analyzing the Determinants of House Prices

We adopt the conventional assumption that each house may be described as a package of various characteristics which describe numerous attributes of the structure [S], neighborhood [N], and local public services [L]. Symbolically:

$$H = f([S], [N], [L]) \quad [1]$$

where H can be thought of as the "quality" of that house or its "hedonic value" (Rothenberg et al., 1991: ch. 3). The price of the housing package is a function of its embodied quality:

$$P = g(H) \quad [2]$$

The "hedonic price function" represented by [2] represents, according to Rosen (1974), "a joint envelope of a family of 'value functions' [of sellers]." The partial derivative of P in [2] with respect to a particular attribute of the house yields the implicit price of that attribute. Rosen suggested that if hedonic relationships in part reflect sellers' pricing strategies there will be a problem in identifying household preferences. This concern is less severe in the case of housing because, as Muellbauer (1974) demonstrates, household preferences dominate "in second-hand durables markets where aggregate supply is fairly stable and particular supplies are usually held in decentralized fashion." Thus, the sign and magnitude of the implicit price can be interpreted as a measure of the degree to which households in the market prefer (or are averse to) that attribute (Muellbauer, 1974). Should proximity to a supportive housing site prove to have a negative implicit price in the estimated hedonic index, it would imply that the site was imposing a social cost upon its neighbors.

Functional Form

We must first specify a particular mathematical form for the hedonic price equation [1] above. Two conventional practices exist in this regard. The first adopts a flexible, non-linear functional form and searches for a "best-fit" over an array of alternative parameters, using a technique proposed by Box and Cox (Halvorsen and Pollakowski, 1981). Two shortcomings render this approach inferior here. First, inasmuch as all variables end up being interacted with others, interpretation of coefficients is exceedingly difficult. Second, the power transformation employed in the Box-Cox technique becomes problematic in the presence of many dummy variables, such as will be the case with our specifications (Cooley and LeRoy, 1985)]. Thus, in this research we adopted the other conventional approach of specifying a theoretically sensible functional form *a priori*. Based on previous work (Rothenberg et al., 1991: ch. 13), we will use a semi-log form, that is, expressing the logarithm of sales price as a linear function of the house and neighborhood characteristics and other dependent variables.

Localized Fixed Effects

As shown in equations [1] and [2], the sales price of a home will be affected by numerous neighborhood attributes (including physical and occupancy characteristics of neighboring properties, environmental conditions, and potentially the proximity of supportive housing sites) and attributes of the local public sector (including schools, police protection, taxes, and zoning). The challenge facing the analyst is to gather complete data on this array of neighborhood attributes so that results will not be tainted by omitted variable bias. This challenge has two facets: one must not only gather a comprehensive, dauntingly large set of attributes, but one also must ascertain the geographic area over which these attributes are most appropriately measured for each site.

The approach we have chosen responds to this challenge by specifying a spatial fixed effects model. That is, dummy variables were specified that denote a particular geographic areas ranging in scale from a census tract down to the area within 500 feet of a supportive housing site. These variables control, in summary form, for the idiosyncratic bundle of attributes that are present in the corresponding space. The effect on sales prices of individual attributes in this bundle cannot be determined, however.

Our procedure is distinguished by its specification of the "neighborhood." We employed a set of fixed-boundary, mutually exclusive areas (census tracts) for defining one set of spatial fixed effect variables. However, to measure fixed effects in smaller, micro-neighborhoods we relied on a different procedure. Essentially, we defined a series of "neighborhoods" centered on each supportive housing site, each one comprising one of several concentric rings within a range of 2,000 feet. Depending on the proximity of the supportive housing sites, these neighborhoods may overlap. Our specification estimated a fixed effect for these micro-neighborhood spaces, either as a group or individually; we experimented with both degrees of aggregation.

Alternative Aggregated Model Specifications and their Assumptions

Overview. We estimated three alternative specifications of the hedonic price function [1] above that did not distinguish among supportive housing sites. Each specification is founded on particular assumptions that we will discuss below. Because we employed all supportive housing sites in Denver as the basis for estimating the parameters of these house price functions, we refer to them as our “aggregate models.” These alternatives are expressed symbolically as:

Aggregated Model 1 (proximity to any supportive site model):

$$\begin{aligned} \text{LnP} = & c + [\text{Struct}][b] + [\text{Quarter}][n] + [\text{Tract}][m] + [\text{SpaceH}][p] \\ & d \cdot \text{DAI}_{500} + e \cdot \text{DAI}_{1k} + f \cdot \text{DAI}_{2k} + g \cdot \text{DPost}_{500} + h \cdot \text{DPost}_{1k} + j \cdot \text{DPost}_{2k} + \\ & q \cdot \text{Time}_{500} + r \cdot \text{Time}_{1k} + s \cdot \text{Time}_{2k} + t \cdot \text{TrPost}_{500} + u \cdot \text{TrPost}_{1k} + v \cdot \text{TrPost}_{2k} + e \end{aligned} \quad [3]$$

Aggregated Model 2 (proximity to number of supportive sites interaction model):

$$\begin{aligned} \text{LnP} = & c + [\text{Struct}][b] + [\text{Quarter}][n] + [\text{Tract}][m] + [\text{SpaceH}][p] \\ & d \cdot \text{DAI}_{500} + e \cdot \text{DAI}_{1k} + f \cdot \text{DAI}_{2k} + g \cdot \text{Post}_{500} + h \cdot \text{Post}_{1k} + j \cdot \text{Post}_{2k} + \\ & q \cdot \text{Time}_{500} + r \cdot \text{Time}_{1k} + s \cdot \text{Time}_{2k} + t \cdot \text{TrPost}_{500} + u \cdot \text{TrPost}_{1k} + v \cdot \text{TrPost}_{2k} + \\ & t' \cdot (\text{TrPost}_{500} * \text{Post}_{500}) + u' \cdot (\text{TrPost}_{1k} * \text{Post}_{1k}) + v' \cdot (\text{TrPost}_{2k} * \text{Post}_{2k}) + e \end{aligned} \quad [4]$$

Aggregated Model 3 (proximity to number of supportive beds interaction model):

$$\begin{aligned} \text{LnP} = & c + [\text{Struct}][b] + [\text{Quarter}][n] + [\text{Tract}][m] + [\text{SpaceH}][p] \\ & d \cdot \text{DAI}_{500} + e \cdot \text{DAI}_{1k} + f \cdot \text{DAI}_{2k} + g \cdot \text{UPost}_{500} + h \cdot \text{UPost}_{1k} + j \cdot \text{UPost}_{2k} + \\ & q \cdot \text{Time}_{500} + r \cdot \text{Time}_{1k} + s \cdot \text{Time}_{2k} + t \cdot \text{TrPost}_{500} + u \cdot \text{TrPost}_{1k} + v \cdot \text{TrPost}_{2k} + \\ & t' \cdot (\text{TrPost}_{500} * \text{UPost}_{500}) + u' \cdot (\text{TrPost}_{1k} * \text{UPost}_{1k}) + v' \cdot (\text{TrPost}_{2k} * \text{UPost}_{2k}) + e \end{aligned} \quad [5]$$

Where the components of the models are defined as follows:

LnP	Log of the sales price
c	Constant term
[Struct]	Vector of structural characteristics of home, including home and lot size, age, building materials and type, and numerous amenities; for details, see Annex D

[Quarter]	Vector of dummies indicating the time (year and quarter) of sale; seasonal and intertemporal trend measure
[Tract]	Vector of census tract dummies indicating the location of home; tract fixed effect measure
[SpaceH]	Vector of X, Y, XY, X ² and Y ² spatial heterogeneity correction variables
DPost _x	Post-occupancy dummy for distance ring x; equals 1 if sale occurs within x feet of one or more supportive housing sites; zero otherwise
DAI _x	Dummy for distance ring x; equals 1 if sale occurs within x feet of current or future supportive housing site; zero otherwise
Post _x	Number of supportive housing sites for distance ring x at time of sale
UPost _x	Number of supportive housing beds for distance ring x at time of sale
TrPost _x	Post-occupancy trend variable for distance ring x; equals 0 if sale is pre-occupancy for all sites in distance ring; if sale is post-occupancy of a site in ring x, then equals 1 if sale occurs in first quarter after site was occupied, equals 2 if sale occurs in second quarter after site was occupied, etc.
Time _x	Trend variable for distance ring x; equals 0 if no sites are in distance ring x of the sale; otherwise, equals 1 if sale occurs in first quarter of study period (1st quarter 1987), equals 2 if sale occurs in second quarter of study period, and sale is in distance ring x, etc.
e	A random error term with the usual assumed i.i.d. statistical properties.

All lower case letters in the equations (b, c, d, etc.) represent coefficients to be estimated.

Model 1 tests for both price level shift and price trend slope alteration effects in impact areas near supportive housing sites, and thus makes relatively few assumptions about what form any impact might take. Below we summarize how the various trend and fixed effects are being controlled for in Model 1 in a way that permits us to identify unambiguously the impact of proximity to a supportive housing site:⁴

⁴A site refers to a unique street address for a single or multi-family property.

[Quarter]	Measures quarterly changes in the overall county house price levels associated to seasonality and general market trends
[Tract]	Measures the fixed effect on house prices due to location in the area defined by the Census tract
DAI _x	Measures the fixed effect throughout the County of being in the area defined as within distance x of one or more supportive housing site(s), regardless of whether occupied yet
DPost _x	Measures the fixed effect throughout the County of being in the area defined as within distance x of one or more supportive housing site(s) after occupancy
Time _x	Measures the trend in house prices during the study period in the area throughout the County defined as within distance x of one or more supportive housing site(s), regardless of whether occupied yet
TrPost _x	Measures the trend in house prices during the study period in the area throughout the County defined as within distance x of one or more supportive housing site(s) after occupancy

Similar points can be made graphically with the aid of Figure 3.1, which portrays hypothetical alternative price patterns associated with proximity to a supportive housing site, *ceteris paribus*, both pre- and post-occupancy of that site. Several sorts of potential negative price impacts are illustrated. In the case of the upper set of lines, a neighborhood with a strong, positive trend in price appreciation could be adversely affected by the opening of a supportive housing site through: (1) a diminution of the rate of price appreciation (pattern A-A'-A''); (2) a discontinuous shift down in the price gradient but a re-establishment of the prior rate of appreciation (pattern A-A'-B-B'); or (3) both of the above (pattern A-A'-B-B''). The same three sorts of negative impacts are shown with the lower lines in Figure 3.1, which portray a neighborhood with declining prices prior to occupancy of the supportive housing site.

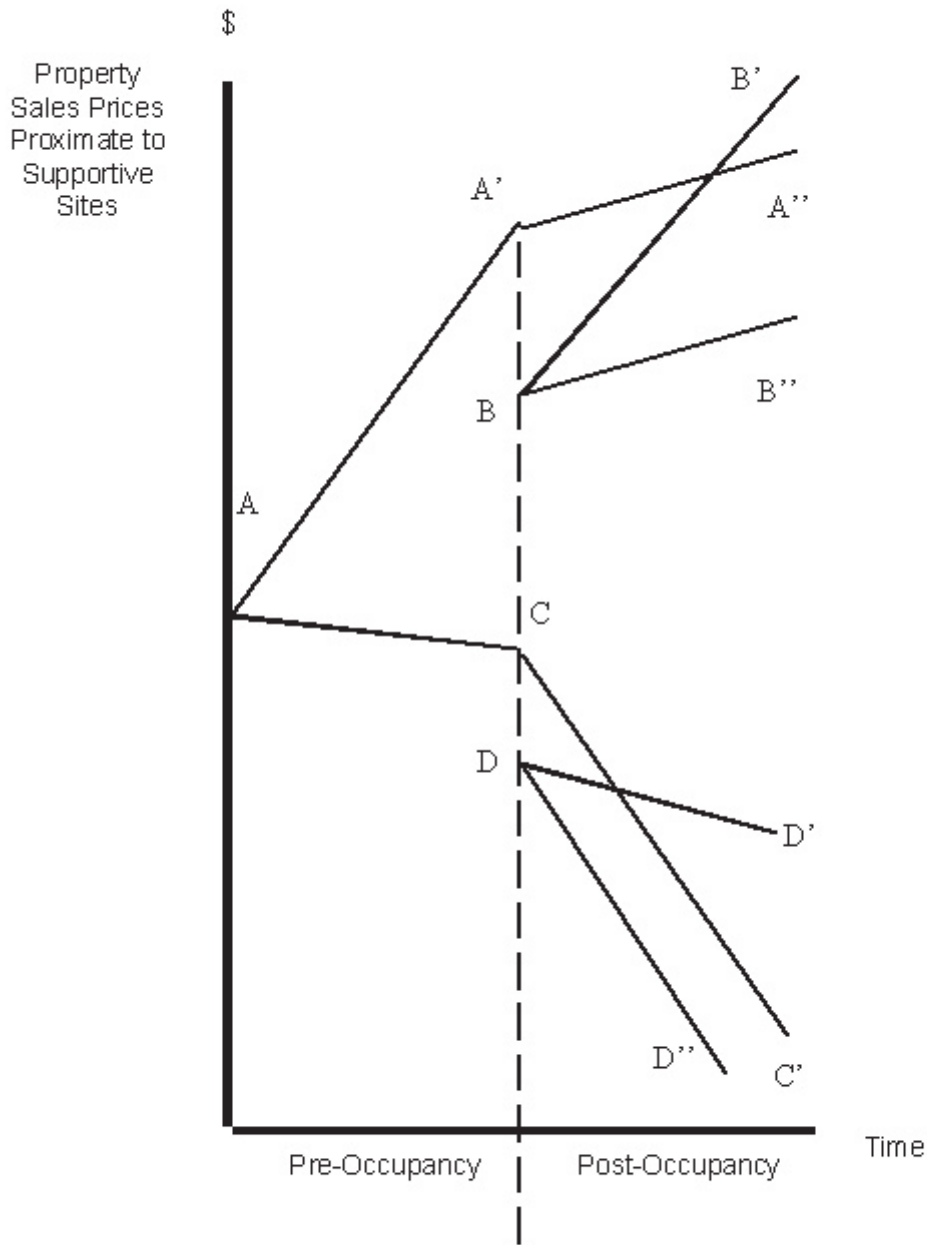
The test for statistical significance of the post-occupancy shift coefficients (g, h, j) of the DPost_x variables is equivalent to testing that there is a discontinuous change in the price levels in the micro-neighborhoods (defined by a particular distance ring) around supportive housing sites post-occupancy. In terms of Figure 3.1, it is equivalent to testing whether A'=B or C=D. The test for statistical significance of the post-occupancy trend coefficients (t, u, v) of TrPost_x is equivalent to testing that there is a change in the price trends in the micro-neighborhoods around supportive housing sites post-occupancy. In terms of Figure 3.1, this is equivalent to testing whether the

slopes of A-A' and A'-A'' are equal (or the slopes of A-C and C-C' are equal). Should both the shift and trend post-occupancy coefficients prove to not be significantly different from zero, it would reject the hypothesis of impact.

Should one or both be statistically significant, however, the magnitude of supportive housing impact across all sites involves assessing whether $(d+q\text{Time}^*) - (g+t\text{TrPost})$, $(e+r\text{Time}^*) - (h+u\text{TrPost})$, and/or $(f+s\text{Time}^*) - (j+v\text{TrPost}) \neq 0$, where Time^* represents the latest quarter prior to opening of the supportive housing program. Should the alterations in shift and trend terms yield contrary implications (such as a downward shift but increased slope in the price gradient), it will be necessary to calculate net effects at different quarters post-occupancy.

FIGURE 3.1

Illustration of Three Potential Types of Negative Property Value Impacts from Supportive Housing



Note: Diminution of Trend: A-A'-A'', A-C-C'
Downward Shift: A-A'-B-B'; A-C-D-D''
Both: A-A'-B-B'', A-C-D-D''

Models 2 and 3 build upon the foundation specification of Model 1 but differ from it in two important ways. Model 1 implicitly assumes that the measured impact of proximity to any supportive site(s) is invariant to the number of such proximate sites. Model 2 relaxes this assumption and allows the post-occupancy shift variable to assume the number of supportive housing sites at the given distance at the time of sale. Model 3 does the same, but uses the number of supportive housing *beds* instead of sites. These numbers of sites and beds varied considerably across our sample, as shown by the maximum values in Table 3.1.⁵

	Proximity (Feet)		
	<u>0-500</u>	<u>501-1,000</u>	<u>1,001-2,000</u>
Sites	2	2	6
Beds	116	151	167

Models 2 and 3 also test for the possible effects of the number of sites or beds on the post-occupancy price trends by use of the multiplicative interaction variables. That is, the model measures whether the decline (or appreciation) in house prices is magnified by the number of supportive housing sites or beds present.

We stress that the results of any regression model do not offer conclusive proof of causation, merely association. Nevertheless, our specification, by clearly delineating pre- and post-occupancy changes in prices, provides exceptionally convincing evidence in this regard.

Alternative Stratifications

The issue of aggregation poses an additional challenge to the analyst. At one extreme, one can assume that all supportive housing has identical impacts across all sites and housing submarkets and thereby gain maximum sample sizes. Such an assumption may not withstand close scrutiny, however. At the other extreme, one can permit variations in impact across sites

⁵ For the quantitative analysis, we assumed that any site where the starting date was unknown was opened before our analysis period, and therefore was present at the time that any sale occurred. These maximums are for the analysis sample of 45,601 sales.

or across submarkets, but the price will be smaller sample sizes, and, consequently, less precision in estimating impacts. Therefore, to examine the impacts of individual sites, one must choose locations where there are a large number of pre and post sales observations at various distances.

To determine whether the housing programs we were studying might have different impacts in different types of neighborhoods, we estimated our models on various stratifications of house sales. The different strata were defined according to the characteristics of the census tracts in which the sales occurred, such as racial/ethnic composition, median property values, and changes in average house prices.

While these stratified estimations did not always yield useful or interesting results (because of sample size problems, for one reason), we report selected results from these models and discuss their implications in Chapter 5.

QUANTITATIVE ANALYSIS OF CRIME IMPACTS

Previous Studies

With one notable exception, previous studies of the relationship between subsidized housing and crime rates have focused on conventional public housing developments. Despite this focus, extant research on crime in and around public housing may be characterized as dated, fragmented, and controversial. Holzman's (1996, p. 362) recent review of criminological research on public housing in the United States describes the knowledge gap which currently exists. Holzman states that "investigators seeking background material on crime in public housing have had to chiefly rely on a small number of studies done prior to 1981" and "most of this research amounts to only snapshots of a relatively few densely populated localities".

While several studies have found higher crime rates in public housing and neighborhoods with public housing (Newman, 1972; Brill and Associates, 1975, 1976, 1977a, b, c), some others found evidence that levels of crime in and around public housing were exaggerated (Farley, 1982). Perhaps the strongest evidence for a causal relationship was provided by Roncek et al. (1981), who studied public housing sites in Cleveland. They concluded that public housing, especially larger sites, had a positive impact on crime rates in surrounding blocks. More recent research, much of which concentrates on drug trafficking and public housing (Dunworth and Saiger, 1993; Harrell and Gouvis, 1994), has helped to rekindle the public housing and crime debate by challenging the direction of causality. No consensus has yet emerged about the degree to which public housing acts as an independent factor tending to increase the level of crime in the neighborhoods in which it is located.

The impact of other forms of subsidized housing on crime has previously been analyzed only by Goetz, Lam, and Heitlinger (1996). This exceptional study analyzed the effect on monthly rates of reported crime emanating from 14 multi-family, low-income housing projects that were purchased and rehabilitated by CDCs in central neighborhoods of Minneapolis from 1986 to 1994. This represents the only extant study employing a regression analysis roughly analogous to the one in our study (though with a different unit of observation and measurement of crime). They tested for each site individually as well as in aggregate the degree to which both the level and the trend in crime differed pre-/post-rehabilitation. Overall, they found that in aggregate there was a significantly lower level of crime calls (both for total and violent crime) from these properties after their conversion to subsidized housing, though there was a slightly higher trend in crime afterward. When analyzed individually, eight developments showed no change, five showed a decrease, and two showed a slight increase in calls to police. Only one of the 14 projects evaluated, however, represented supportive housing: a 25-unit, single-room occupancy hotel with a homeless transitional facility; its development had no measurable impact on crime. Clearly, no generalizations can be made from the Goetz, Lam, and Heitlinger study, nor previous research on conventional public housing, about the impacts of developing supportive housing sites on crime rates in surrounding areas.

Several researchers have explored the use of spatial statistics to analyze crime data (Griffith, 1987; Anselin, 1992; Bailey and Gatrell, 1995). However, no studies to date on subsidized housing and crime have employed spatial statistical techniques to diagnose spatial dependence/spatial autocorrelation and to control for this effect in constructing a predictive model. Accordingly, no studies have sought to quantify any spatial relationships that have been posited.

An Econometric Model for Analyzing Determinants of Local Crime Rates

Our econometric approach for investigating the impacts of supportive housing developments relies on much of the same intuition which guided the home price impact modeling effort described above in Part 1 of this chapter. In particular, we again utilize the “pre-/post-development” approach for three geographic subareas centered on each of our analysis sites: a circular area with a 500 foot radius and two concentric rings with widths defined by 501-1,000 feet and 1,001-2,000 feet distances from the supportive site. We measure the rate (reported crimes divided by resident population) of property and violent crimes in each of these areas both before and after the supportive facility begins operation; any difference signifies an impact from the facility. Of course, this comparison is made controlling for crime reporting trends present throughout Denver and in those census tracts where our fifteen analysis sites are located. The

former trends are estimated based on crime reporting rates measured for the remaining portions of census tracts across the city that do not have supportive housing sites within 2,000 feet.⁶

The regression observations were each weighted by a weight variable proportional to the total 1990 Census population in the subarea for which the crime reporting rate was calculated. This gave more influence in the regression estimations to subareas with larger population than to those with smaller population. We used a weighted ordinary least squares procedure to estimate the regression coefficients.

In symbolic terms, the foregoing test can be accomplished with the following regression specifications:⁷

Crime Model 1 (proximity to any supportive site model):

$$\text{Crime}_{it} = c + [\text{Year}_i][n] + [\text{Tract}_j][m] + [\text{Site}_s][n] + [\text{SpaceL}][p] + d \cdot \text{CRAI}_{500} + e \cdot \text{CRAI}_{1K} + f \cdot \text{CRAI}_{2K} + g \cdot \text{CPost}_{500} + h \cdot \text{CPost}_{1K} + j \cdot \text{CPost}_{2K} + q \cdot \text{Time}_{500} + r \cdot \text{Time}_{1k} + s \cdot \text{Time}_{2k} + t \cdot \text{TrPost}_{500} + u \cdot \text{TrPost}_{1k} + v \cdot \text{TrPost}_{2k} + e \quad [6]$$

Crime Model 2 (proximity to number of beds in supportive site model):

$$\text{Crime}_{it} = c + [\text{Year}_i][b] + [\text{Tract}_j][m] + [\text{Site}_s][n] + [\text{SpaceL}][p] + d \cdot \text{CRAI}_{500} + e \cdot \text{CRAI}_{1K} + f \cdot \text{CRAI}_{2K} + g \cdot \text{CUPost}_{500} + h \cdot \text{CUPost}_{1K} + j \cdot \text{CUPost}_{2K} + q \cdot \text{Time}_{500} + r \cdot \text{Time}_{1k} + s \cdot \text{Time}_{2k} + t \cdot \text{TrPost}_{500} + u \cdot \text{TrPost}_{1k} + v \cdot \text{TrPost}_{2k} + e \quad [7]$$

Where the components of the models are defined as follows:

- Crime_{it} Annual rate of reported Type I crimes per 100 residents during year t
- c Constant term to be estimated by regression

⁶We used MapInfo mapping software to create separate geographic boundaries for the three distance rings and for areas within a census tract not within 2,000 feet of a supportive housing site. Each of these distinct geographic subareas were treated as individual observations in our regressions. To determine crime reporting rates for each observation, we divided the total crimes reported in the subarea by a population total calculated from 1990 Census block group level data.

⁷Unlike the property value model, the crime model does not have a “proximity to number of supportive sites” model. In the crime model, each distance ring is only proximate to one analysis site and therefore the “number of sites” model would be identical to the “any site” model. The number of beds does vary from site to site, however, so it is possible to estimate a separate “number of supportive beds” model.

[Year] _t	Vector of dummy variables indicating the year t; a temporal trend site measure for all areas within census tracts not within 2,000 feet of a supportive site
[Tract] _j	Vector of dummy variables denoting each of j census tracts; a tract fixed effect measure
[Site] _s	Vector of dummy variables denoting each of s sites; a site fixed-effect measure to correct for autocorrelation and heteroskedasticity
[SpaceL]	A spatial lag variable with a distance cutoff of 15,000 feet to correct for spatial autocorrelation
CRAI _x	Dummy variable for distance ring x; equals one if observed crime rate is for area within x feet of current or future supportive housing site, whether operating or not; zero otherwise
CPost _x	Post-opening dummy variable for distance ring x; equals one if observed crime rate is for area within x feet of currently operating supportive housing site; zero otherwise. If the site opened in the same year as the crime rate observation, then CPost _x equals one if the site opened in the first half of the year, and zero otherwise.
CUPost _x	Post-opening number of supportive beds variable for distance ring x; equals the number of beds at the analysis site for which the crime rate is being measured
TrPost _x	Post-occupancy trend variable for distance ring x; equals 0 if crime is pre-occupancy for all sites in distance ring; if crime is post-occupancy of a site in ring x, then equals 1 if crime occurs in first year after site was occupied, equals 2 if crime occurs in second year after site was occupied, etc.
Time _x	Trend variable for distance ring x; equals 0 if no sites are in distance ring x of the crime; otherwise, equals 1 if crime occurs in first year of study period (1990), equals 2 if crime occurs in second year of study period, and crime is in distance ring x, etc.
ε	A random error term with the usual assumed statistical properties

All lower case letters in equations [6] and [7] (c, d, e, etc.) represent coefficients to be estimated. The control variables specified above work in analogous fashion to those discussed in the context or price impact equations [3]-[5] above. Should the coefficients of any of the CPost_x or CUPost_x variables prove statistically significant, it would suggest that the presence of a supportive site (or the size of the facility) had a consistent impact on the level of the type of crime being measured in the distance range x.

ECONOMETRIC AND DATA ISSUES

In estimating the values of the coefficients in each of the property value and crime models, we took a number of steps to eliminate or minimize several data conditions that could have adversely affected our estimations. These steps are described below.

Outlier observations have the potential to exert undue influence on regression estimations and bias results. In estimating our property value models, we wished to exclude from our database home sales that were highly idiosyncratic and did not represent arms-length transactions. In this vein, we eliminated the top and bottom two percent of all observations according to sales price and land area. On the basis of trial regressions, we also dropped records yielding regression residuals greater than two standard deviations from the mean value of all observations. These records might have biased the estimates in our models if they had been retained.⁸ Similarly, we excluded any crime reporting rate area with a 1990 population of less than 40 from the crime models because the small denominator resulted in extremely high crime rates that had a distorting effect on the model estimations.

One of the key assumptions in ordinary least squares (OLS) regression is that the data not exhibit the property of *heteroskedasticity*. This problem occurs when the error terms (ϵ) in the regression models do not have finite and constant variance. Heteroskedasticity can cause inefficiency and bias in the parameter estimates, meaning that the standard errors may be larger or smaller than they should be (Intriligator, 1978: 156). If uncorrected, this might lead one to conclude that results were not statistically significant when, in fact, they were, or to conclude that results were significant when, in fact, they were not. In the first case, this condition might cause us to fail to find significant price or crime impacts; in the second, it would lead us to find significant price or crime impacts where there were none. We controlled for heteroskedasticity of the model error terms in our property value regressions using the White (1980) covariance matrix to correct

⁸Sales were also dropped for properties that did not have a complete set of house characteristics. In addition, we eliminated other sales which did not fit into our pre/post model design and might have confused our results. See Annex B for details. The final number of sales used to estimate our regressions (as reported in Annex D) were therefore much less than the number of sales reported in Table 5.1.

all standard errors. For the crime models, we used a least-squares dummy variable approach to control for both heteroskedasticity and autocorrelation (see below).

Autocorrelation, also referred to as *serial correlation*, is a problem often affecting time-series data. Autocorrelation occurs when the error terms of the regression estimations are not independent of one another, violating one of the assumptions of OLS regression. The presence of autocorrelation results in estimators that are not efficient and can affect tests of statistical significance (Intriligator, 1978: 159). Since our crime reporting rates are panel data (i.e., both time-series and cross-sectional), we had strong reason to suspect that both autocorrelation and heteroskedasticity would be a problem. Since the source of the problem was known to us (i.e., it is related to the fact that we were looking at a fixed set of analysis sites over a period of several years), we were able to use a least-squares dummy-variable approach (Hsiao, 1986: 29-32) to correct for both conditions. We defined a series of dummy variables for each supportive housing analysis site to incorporate into our crime models.

Spatial dependence, sometimes known as *spatial autocorrelation*, is analogous to serial correlation and refers to the possibility that, in the case of the property value model, the observed price of one home is not independent of the prices of other homes nearby in geographic space. The presence of spatial dependence would violate one of the key assumptions of the error terms in the models—their independence across observations. If left uncorrected, such spatial dependence would lead to biased parameter estimates and misleading t-tests for statistical significance levels of parameters. The severity of this problem in house price regressions has been demonstrated by Can and Megbolugbe (1997).

To test for this potential problem, we employed a specification that Can and Megbolugbe (1997) found to be robust. We calculated the *spatial lag* of the dependent variable (house price or crime rate) and included it in our model as an independent variable. The spatial lag is a weighted average of all of the observations of the dependent variable within a certain distance from the reference observation. The average is weighted by the *spatial weight*, which is some function of the distance between observations. Consistent with the approach of Can and Megbolugbe, we used the inverse of the distance (1/d) as the spatial weight. For the property value model, the formula for the spatial lag is:

$$SpLag(P_i) = \frac{\sum_j (1/d_{ij}) P_j}{\sum_j 1/d_{ij}}$$

where P_i is the sale for which we are calculating the spatial lag, d_{ij} is the distance between sales i and j , and P_j is one of the set of all sales within distance D of P_i and that occurred within the six months prior to the date of P_i . For the crime models, we substituted crime rate for P in the formula

above, used the centroids of the analysis subareas as points for determining d_{ij} and calculated the spatial lag using crime rates for subareas in the same year as the reference observation.

One of the key parameters is the selection of the cutoff distance D . The choice of D depends upon the researcher's knowledge and assumptions as to how far the supposed spatial dependence is likely to be felt, but can be tested by evaluating the effectiveness of different choices. For the property value model, we assumed that a minimum cutoff distance of 2,000 feet would be necessary to see a spatial effect. We calculated spatial lags at this distance, but also tested spatial lags with cutoffs of 5,000 and 10,000 feet to examine the possibility that spatial dependence may exist over a larger area. Because the crime model does not use point data, it was necessary to test larger cutoff distances than for the property model. We tried distance cutoffs of 10,000, 12,500, and 15,000 feet.

Because of the large numbers of house sales, calculating the spatial lag is computationally intensive and very time consuming for the property value models. We therefore conducted several test cases before attempting to create spatial lags for the entire set of house sales. We calculated spatial lag variables for three census tracts and estimated one of our model specifications first without any spatial lag variable, and then trying each of the spatial lag variables in turn. The test was whether the addition of the spatial lag variable significantly improved the goodness of fit (R^2) of the model.⁹

For the property value model, none of the spatial lag variables improved the model fit by any substantial amount. If the cost to computing the spatial lag were small, one might decide to include it in the models anyway. Given the fact that creating spatial lags for over 100,000 sales would take a great deal of time, we decided that the negligible improvement in the model estimations was not worth the cost of such an effort. We have therefore not included the spatial lag in our property value models.

For the crime models, however, we found that the introduction of the spatial lag variable did affect the regression results. Since the largest improvement of the estimates was produced by using the 15,000 foot cutoff, we have included this variable in all of the crime regressions.

Spatial heterogeneity, sometimes known as spatial submarket segmentation, refers to the systematic variation in the behavior of a given process across space. Here, the issue is whether the parameters of the hedonic price equation are invariant across space or whether they assume

⁹We actually calculated and tested six alternative specifications of spatial lag for each census tract. We created spatial lag variables for the sales price and for the log of sales price using 2,000, 5,000, and 10,000 foot cutoffs. To give some idea of the computationally intensive nature of determining spatial lag, calculating six spatial lag variables for each of six census tracts took over 32 hours on a Pentium computer.

different values according to the local socioeconomic, demographic, and/or physical contexts of the various neighborhoods across a metropolitan area. If such were the case, the error term ϵ would be heteroskedastic, thus rendering ordinary least-squares inefficient and its estimated variances of parameter estimates biased.

To deal with this issue we employed the “spatial contextual expansion with quadratic trend” specification as suggested by Can (1997). This method involves adding to the models the latitude (X) and longitude (Y) coordinates of each observation in the following variables (normalized so that zero values represent the center of the city): X, Y, XY, X², and Y². Higher numerical values of X (Y) signify increasing distance from the center of the city heading west (north). These variables typically proved statistically significant in our aggregate property value model specifications (see Annex D for details), suggesting that our various controls for local fixed effects needed further supplementation from these spatial coordinates. We therefore included these variables in all of our property value models. Since the observations in the crime models do not employ point data, however, we would have to have used the centroids of the different subareas to construct the X and Y coordinates. Since these variables would be highly correlated with the site and tract dummy variables already included in these specifications, we did not include corrections for spatial heterogeneity in the crime models.

QUALITATIVE ANALYSIS OF IMPACTS: FOCUS GROUP SITES AND METHODS

The use of focus groups has a long-standing history in the social sciences as a tool to provide in-depth information for evaluative purposes.¹⁰ The main purpose for using focus groups in this study was to determine how differences in local resident composition, social cohesion, interaction among neighborhood residents, political mobilization, and local area idiosyncracies might help explain the observed patterns in the results of the crime and property value impact models. They also potentially gave us an opportunity to rule out competing explanations from factors that we were not able to account for in our models.

Through the use of focus groups, we engaged in an in-depth discussion with homeowners about what makes a good neighborhood, what affects quality of life in their neighborhood, what are the characteristics of community residents, and how they perceive changes in the quality of life and the composition of their community. The focus groups also provided a more contextual understanding of the relative importance residents place on different factors, such as changes in property values and the presence of supportive housing or tenants, that affect the quality of life

¹⁰For an extensive discussion on the appropriate methodology and use of focus group interview data for evaluation purposes, see Hayes and Tatham (1989), Stewart and Shamdasani (1990), and Krueger (1994).

in their neighborhoods. To understand how the focus group participants formed their views on these topics, we probed them on their perceptions, sources of information, and local social networks.

While the focus groups allowed us to capture any comments made by homeowners about supportive housing sites or clients, it is important to note that these topics emerged in the discussion only if they were brought up by focus group participants themselves. The discussion guide was designed not to beg the question about the presence of supportive housing programs. In fact, the lack of awareness about such sites may be part of the explanation for the lack of an observed property value impact in some areas. We were therefore reluctant to trigger a socially destructive “experimenter effect” by revealing the presence of supportive housing sites in the neighborhood.

The remainder of this section gives a brief overview of the procedures we followed to recruit focus group participants and conduct the focus group discussions. A complete description on these procedures, including a copy of the focus group discussion guide, is included in Annex E. A table summarizing the characteristics of the focus group participants can be found in Annex F, and summaries of each focus group are provided in Annex G.

Description of Methods

Description of Denver Focus Group Neighborhoods¹¹

The location of each of the nine focus group sites is shown on Map 3.1 and descriptive characteristics of the sites and surrounding census tracts are presented in Tables 3.2 and 3.3. We refer to the sites in the text and the table by their neighborhood name. A number in the name indicates that multiple sites included in our analysis are located in the same neighborhood. The focus group sites were selected from among those that began operation between 1989 and 1995. They are meant to represent a cross-section of neighborhoods where supportive housing sites are located. Two of the neighborhood sites are located in Northeast Denver, another in Northwest Denver, two are in East Denver, and a sixth site is located in Southwest Denver. Another site is located in North Denver. The remaining two sites are located in Central Denver neighborhoods that are relatively proximate to the City’s downtown.

¹¹Data for these neighborhood descriptions were obtained from the “Neighborhood Facts” database compiled by the Piton Foundation (<http://www.piton.org>, accessed May 9, 1999).

Each of these sites represent distinctive communities in Denver. Berkeley is a middle class neighborhood experiencing considerable influx of Hispanics. Clayton is a predominantly Black, working/middle class neighborhood north of the downtown area. Congress Park is an older, fairly affluent and racially mixed neighborhood adjacent to downtown Denver. Harvey Park, a White working and middle class neighborhood, has also experienced considerable growth of Hispanic residents. Hilltop is a predominantly White, affluent neighborhood located adjacent to the old Lowry Air Force Base. Montbello has been identified as a racially mixed, working/middle class neighborhood. South Park Hill, located adjacent to the old Stapleton Airport, is one of the older, middle to upper class neighborhoods in Denver. While South Park Hill is still predominantly White, the neighborhood has a sizable minority (primarily Black) population. The Speer neighborhood, notable for its mixed residential and commercial land use, is a community that has experienced considerable gentrification in the 1990s.

Here are brief descriptions of each of the focus group neighborhoods:

Table 3.2 - Characteristics of Supportive Housing Sites in Focus Group Areas

Neighborhood	Program type	Zoning	Starting Year	Number of Residents	Other Supportive Housing within 2000 Feet	
					Sites	Units
Berkeley #1	Senior Special Care	R2	1989	8	1	116
Clayton	Hospice	R2	1993	8	1	8
Congress Park	Children with Developmental Disabilities	R3	1984	7	8	132
Harvey Park	Mental Health	R1	1989	8	0	0
Hilltop	Developmental Disabilities	R0	1992	8	0	0
Montbello #1	Developmental Disabilities	R1	1990	4	1	12
Montbello #2	Children's Home	R1	1992	8	0	0
S. Park Hill	Mental Health	R1	1990	8	0	0
Speer #1	Mental Health	R3	1993	6	5	66

Berkeley #1. Located in the Northwest Denver neighborhood of Berkeley, this neighborhood had a population of 8,470 in 1998. Nearly 70 percent of all residents were White, 29 percent were Hispanic, and less than one percent were African American. Homeowners occupied 62 percent of all housing units in the neighborhood. Slightly less than half of all renters paid more than 30 percent of their incomes on rent. Sixty (60) percent of all housing units were built prior to 1940. In 1995, the average sale price for homes located in Berkeley was \$92,912. About 6 percent of the housing units are publicly subsidized. The overall crime rate in 1997 was 81.3 per 1,000.

Clayton. Located in North Denver, Clayton had a population of 3,863 in 1998. Nearly 70 percent of neighborhood residents are Black, 17 percent are Hispanic, and 11 percent are White. Almost 59 percent of the housing units were owner-occupied. More than 60 percent of all renters in the neighborhood were rent-burdened.¹² Slightly more than one-third of the homes in Clayton were built before 1940. The average sales price for homes in Clayton was \$53,784. More than 14 percent of the housing in the neighborhood is publicly subsidized. Clayton has the highest crime rate among the study areas at 114.1 per 1,000.

Congress Park. This middle-class neighborhood is located in close proximity to downtown

Table 3.3 - Characteristics of Neighborhoods (Census Tracts) Surrounding Focus Group Sites

Neighborhood	Population 1990	Pct. Black		Pct. Hispanic		Pct. Renters 1990	Median House Value 1990	Pct. Change in House Values	
		1980	1990	1980	1990			1980-90	1990-96
Berkeley #1	5,257	0.4	0.6	19.0	29.3	40.8	64,900	-22.5	56.5
Clayton	2,916	89.4	87.1	2.8	7.8	34.3	60,600	-20.7	71.2
Congress Park	3,962	10.5	11.8	4.3	10.7	81.6	97,400	-17.5	60.2
Harvey Park	5,623	1.8	3.1	27.0	36.8	48.9	63,400	-27.5	42.4
Hilltop	3,809	2.9	0.8	0.6	1.6	6.1	194,500	3.8	7.8
Montbello #1	3,004	33.0	48.7	22.4	16.8	32.7	55,100	-31.2	81.5
Montbello #2	4,371	40.1	54.7	12.9	13.3	19.1	63,900	-34.8	50.0
S. Park Hill	4,048	20.4	22.3	4.0	4.1	23.0	105,300	-16.1	35.4
Speer #1	3,882	3.7	3.6	16.6	23.8	81.0	83,100	-7.3	93.7

Denver. In 1998, Congress Park has 9,441 residents. Nearly 80 percent of the residents are White but about 12 percent are Black and another seven percent are Hispanic. Approximately 37 percent of the housing units are owner-occupied. Among renters, almost one-third are rent-burdened. Slightly less than two-thirds of the housing units were built before 1940. In 1995, the average home sales price was \$176,121. Approximately four percent of the units are publicly subsidized. In 1997, the overall crime rate was 75 per 1,000.

Harvey Park. Located in Southwest Denver, Harvey Park had a resident population of 10,349 in 1998. Approximately 69 percent of the residents are White and 25.5 percent are Hispanic. The neighborhood has a growing Asian presence as well. Seven out of ten housing units in Harvey Park are owner-occupied. Nearly half of the renters were rent-burdened. This neighborhood is comprised of newer homes: only one percent of the units were built prior to 1940.

¹²"Rent-burdened" is defined according to the 1990 Census as a household paying more than 30 percent of its monthly income on gross rent.

In 1995, the average sales price of homes in the neighborhood was \$100,983. Fewer than 2 percent of the units are publicly subsidized. The overall crime rate in Harvey Park was 57 per 1,000 in 1997.

Hilltop. One of the most exclusive neighborhoods in Denver, this neighborhood is highly segregated by class and ethnicity. Of the 8,415 residents living in Hilltop in 1998, nearly 93 percent are White. The largest minority group in the neighborhood are Latinos who make up 3.6 percent of the population. Three-quarters of all housing units in Hilltop are owner-occupied. Among renters, nearly 40 percent are rent-burdened. One of Denver's newer neighborhoods, only 15 percent of the housing stock was built prior to 1940. The average home sales price was \$281,173 in 1995. Publicly subsidized housing units comprise only 0.1 percent of the neighborhood housing stock. This neighborhood has one of the lowest crime rates in Denver at 25.6 per 1,000.

Montbello. Two focus group sites were located in the Northeast Denver neighborhood of Montbello. This neighborhood had a 1998 population of 18,684. Often perceived as being a primarily Black neighborhood, Montbello's resident population is considerably more diverse. Approximately 58 percent of the residents are Black, 24 percent are White, and 14 percent are Hispanic. Homeowners occupied nearly 71 percent of all housing units in the area. Housing is relatively new: there were no housing units constructed prior to 1940. The average 1995 sale price for homes in Montbello was estimated at \$83,890. Among renters, nearly half would be considered to be rent-burdened paying more than 30% of their income on housing. Four percent of the units in the neighborhood are publicly subsidized. The 1997 overall crime rate in the neighborhood was 52.1 per 1,000.

South Park Hill. Located in East Denver, this neighborhood is adjacent to the old Stapleton Airport. In 1998, this neighborhood had a population of 8,975. Approximately three-quarters of the residents are White, 17 percent are Black, and about 5 percent are Hispanic. Three out of four housing units are owner-occupied. Four out of ten renters paid 30 percent or more of their income on housing. Nearly two-thirds of the housing stock was built prior to 1940. In 1995, the average sale price for homes in South Park Hill was \$183,284. Only 2.2 percent of the housing units in the neighborhood are publicly subsidized. The overall crime rate in 1997 was 63 per 1,000.

Speer #1. Located just to the southwest of downtown Denver, Speer is a community that has experienced considerable gentrification during the 1990s. Home to 10,275 residents in 1998, Speer is predominantly White (77 percent) with a smaller Black population (3.5 percent) and a growing Hispanic population (16 percent). The neighborhood has a mix of architecturally significant, turn-of-the-century homes and newer construction (39 percent of the units were built prior to 1940). This neighborhood is primarily renter-occupied: less than one out of five residents

own their homes. Among renters, one-third paid 30 percent of their income on housing. The average home sales price in 1995 was \$135,813. Only 1.2 percent of the housing units in Speer are publicly subsidized. The overall crime rate in the neighborhood was 92 per 1,000 in 1997.

Description of Supportive Housing Sites Selected for Focus Groups

The following are descriptions of the supportive housing sites located in the center of the areas from which focus group participants were recruited. All focus group participants were homeowners who lived within at least 2,000 feet of the indicated supportive housing site. There may also, however, be other supportive housing sites in the same area (see Table 3.2).

The descriptions of the physical appearance and exterior landscaping and property maintenance are from a “windshield survey” made by the project team. A windshield survey simply means that these descriptions are based on external observations only. We did not enter any of the supportive housing sites, nor did we interview or speak to any of the residents, staff, or site managers.

Berkeley #1. Large, old seemingly single-family home. Cars are parked in the back yard which has been black-topped. Wooden fire escape in rear identifies it as a multifamily dwelling. A few trashy items on premises and 2 full dumpsters in rear. Short block face with four comparable single family homes. Across the street is a large security wall surrounding the former Elitch Amusement Park which is currently being redeveloped for residential and commercial use. Located in the opposite corner is a car repair lot. The surrounding neighborhood is modest, comprised on older bungalows with varying levels of maintenance but no major deterioration.

Clayton. Large, old single family house with beautiful plantings and good maintenance. The site is the most impressive home on the block face. The rest of the block is comprised of sturdy, older brick single-family homes, all well-maintained. Most have security bars on windows and doors. No non-residential uses.

Congress Park. Plain, old two-story brick with peeling paint on brick and a noticeable lack of landscaping. Dwelling fits in with turn-of-the-century neighborhood which looks a little tattered at the fringes. There are several obvious multi-unit structures on the block, many converted from single-family homes.

Harvey Park. This is a sprawling, split level ranch with good maintenance, attractive iron fencing. It is the largest house on the block. The block face is comprised on well-maintained, small ranches of brick with siding, The block faces an elementary school. This is a completely residential, single-family area.

Hilltop. Large, modern ranch home. Well-kept with the exception of grass a bit long and an old, toppled TV antenna. It is surprising that the site is not a single-family home. All other homes in the neighborhood are in great condition; mainly contemporary single-family brick ranches. No non-residential uses.

Montbello #1. Single-story ranch with faded paint, spotty painting and other maintenance needs. Block face has very similar homes, all reasonably well-maintained. Many homes have security bars. There are no non-residential uses.

Montbello #2. The outstanding house on the block. It is beautifully landscaped and maintained and even has a garden waterfall. Easily mistaken for a family residence. The rest of the block is comprised on well-maintained ranches. Block is all residential. There is a good deal of new single-family home construction in Montbello within ½ mile of both sites in the neighborhood.

South Park Hill. Large, stately older home in mint condition. Monaco Parkway has many similar homes up and down the street in both directions. This is still an elite, high upkeep neighborhood on a classic boulevard. The home is not an *obvious* group home. It is located on the corner of a busy cross street to Monaco with some retail uses.

Speer #1. This is a two story, older home with some visible signs of under-maintenance and minimal landscaping that clearly marks it as the worst house on the block face. The rest of the block consists of architecturally significant, beautifully painted and landscaped, turn-of-the-century, single-family brick homes.

Recruitment of Focus Group Participants

Since one of the core research questions posed in the focus groups concerns property value change, we limited focus group participation to homeowners who had resided in the neighborhood for two or more years. A targeted mailing was used to identify and screen potential focus group participants. Using a mailing list generated from property tax roll records, a recruitment letter in both English and Spanish was sent to all homeowners living within 1,000 to 1,400 feet of the selected subsidized housing site.¹³

The recruitment letter described the project as a study on the quality of life in American neighborhoods. To conform with informed consent requirements, the letter indicated that the

¹³The Urban Institute subcontracted with the Latin American Research and Service Agency (LARASA) to conduct the focus group recruitment process. LARASA staff also organized and helped facilitate the focus group sessions.

study was being sponsored by HUD. Participants were not, however, told that supportive housing was the focus of our research. When necessary, we used a screening form returned by prospective participants to form focus groups that were representative of the demographic characteristics of the neighborhood.

Composition of the Focus Groups

The nine focus groups ranged from 5 to 16 participants with an average size of 9 participants across all sites. On average, the participants resided in their current neighborhoods for 19.1 years and in Denver for 34.7 years. The longest average tenure was found in Clayton (30.2 years) and the shortest average tenure was 10 years in the Speer neighborhood. Only 29 percent of the participating households had children under 18, with the highest percentages found in the Montbello neighborhood. On average, nearly one-third of the participants were retirees. However, more than half of the participants from Harvey Park, Clayton, and Hilltop were retired.

The racial and ethnic composition of the groups reflected both the demographics of the neighborhoods and the self-selection of residents in response to our invitation to participate. On average across the groups, 73 percent of the Denver participants were White, 12 percent were Black, and another 12 percent were Hispanic. Nonetheless, the focus group in Clayton was 100 percent Black and the focus groups in South Park Hill, Hilltop and Speer were 100 percent White. Eighty (80) percent of the respondents had attended college with nearly half holding undergraduate or graduate degrees. Approximately 62 percent of the respondents were women.

Topic Areas Addressed in Focus Groups

Four main topic areas were addressed in the discussion guide (see Annex E). The first area of discussion concerned general questions on what makes for a good place to live and resident feelings regarding how their neighborhood reflected this definition. The second set of questions elicited participant opinions regarding neighborhood residents, existing social networks, and respondent perceptions regarding the presence or absence of community cohesion. The third topic area included questions on perceived changes in the neighborhood during the last five years, including changes in property values. Participants were asked to identify the changes that had occurred and to provide explanations as to why they thought these changes had occurred. If supportive housing was mentioned in the discussion, additional probes were utilized to further identify how supportive housing impacted property values. Finally, participants were asked to describe any perceived changes in neighborhood residents. These questions were used to assess any perceived changes in both the characteristics of neighborhood residents as well as the tenor of neighborhood interaction.

Focus Group Facilitation

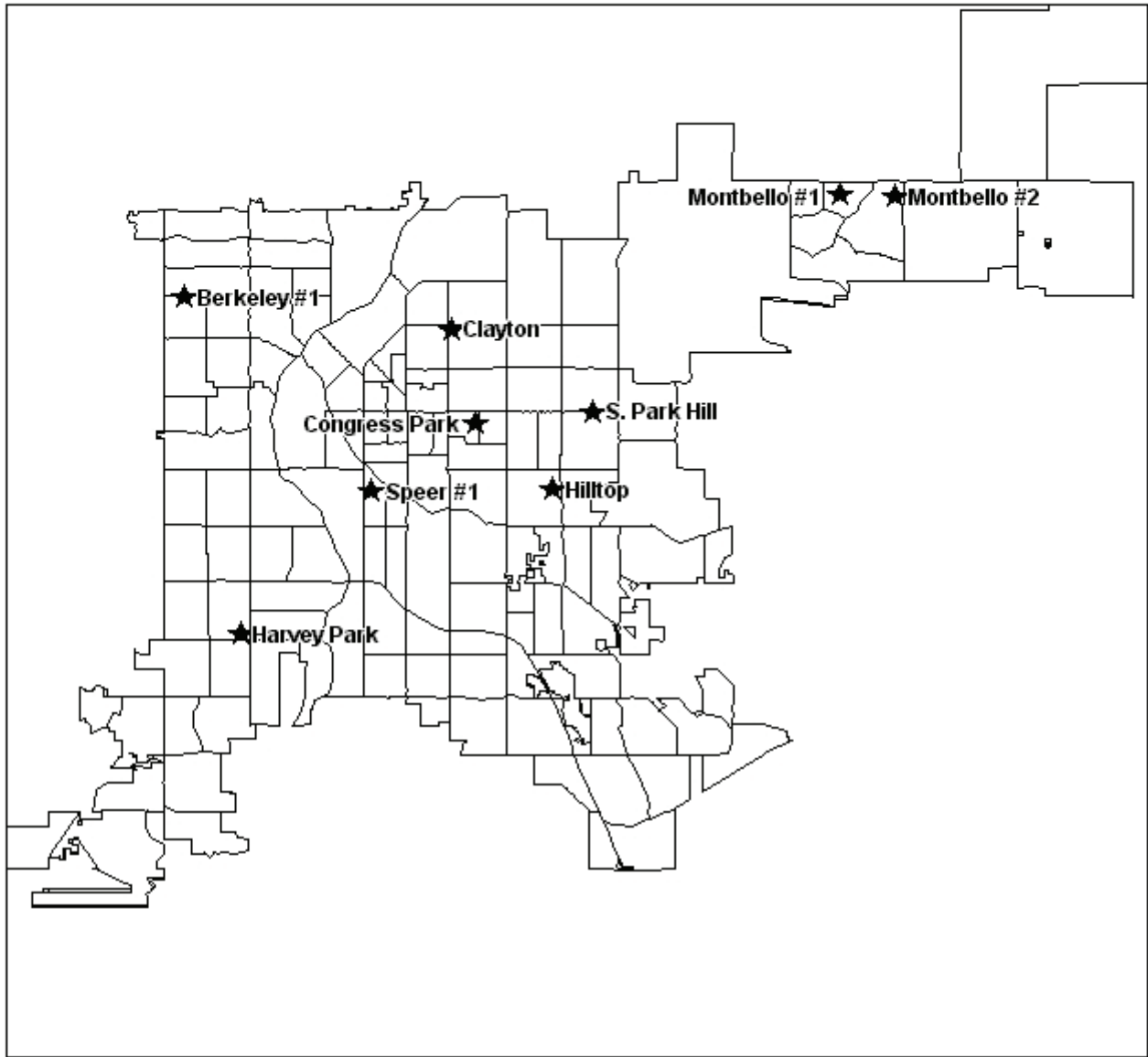
Each focus group was conducted using a two-member interviewing team consisting of a facilitator and a recorder. The facilitator led the group discussion, ensuring that all participants joined in the discussion, saw that all issues were satisfactorily discussed, and guided the conversation in an efficient and effective manner. Facilitators and recorders were assigned to mirror the racial and ethnic composition of the focus group.

During the facilitator's introductory remarks, verbal and written assurances of respondent anonymity were provided. Each participant reviewed and signed an informed consent form prior to the group discussion.¹⁴

Data Analysis Strategies

During each focus group session, the recorder was asked to keep detailed notes regarding the content of the discussion. Upon completion of the focus group, both the facilitator and recorder were asked to write up their notes and impressions of the session. When possible, these notes were written up prior to a debriefing session between members of the research staff to check for inter-rater reliability. With few exceptions, facilitator and recorder notes were comparable. The notes and the initial write-ups completed by the facilitator and recorder were all integrated into a two-page summary of findings for each focus group (see Annex G). The focus group comments were analyzed to identify key themes that emerged in the discussion. Analytical files based on these key themes, were then created identifying relevant materials from the group discussion. Using content analysis, these thematic files also were analyzed to identify any contextual information that would facilitate interpretation of the quantitative results.

¹⁴A copy of the informed consent form can be found in Annex E.



1 inch=3.1 miles

Map 3.1: Location of Focus Group Sites

★ Sites chosen for Focus Groups (9)

Denver Census Tracts

CHAPTER 3

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CHAPTER 4

DESCRIPTION OF DATA SOURCES

The preceding chapter discussed the different model specifications that we used to quantify the impact of supportive housing assistance programs on residential property values and reported crime rates. For the former, we needed data on residential property sales, including the street address of the house (so that the sale can be fixed in space), the amount and date of the sale, and characteristics of the house, such as square footage, lot size, number of rooms, age, and type of construction, that also affect the price of sale. Furthermore, we needed data for a range of sales starting at least two years prior to the opening date of the housing program in question. For the crime model, we needed a list of the dates, types, and locations of reported crimes.

For both models, we required the locations and opening dates of the supportive housing sites in Denver. Again, to fix the location of these sites in space we needed the sites' addresses. In addition, some basic characteristics of the sites such as number of beds (residents) and type of services provided are very useful for understanding the nature of these programs and for interpreting some of the modeling results.

HOME SALES

The most complete source of home sale data available is the property tax rolls maintained by local property tax assessment offices. Because all property sales must be registered with the assessor, these records contain a complete set of the most recent sales transactions for every residential property. Furthermore, since legally the actual sales price must be reported to the assessor, the amount of the sale is considered to be quite accurate. The assessor's records also contain data on the physical attributes of the property, as well as information on the buyer and seller. Tax roll records are in the public domain and can be obtained directly from some tax assessment offices or through private data vendors.

We purchased a complete set of property tax roll records for Denver from the private data vendor Experian. Experian obtains tax roll data directly from tax assessment offices throughout the country and then reformats and sells the data to private users. The Experian data contain all of the information available from the tax rolls on the property itself (including address, number of rooms, square footage, and type of construction), as well as the dates and amounts of the last two sales for each property.

The tax roll data may not be sufficient to obtain a complete sales history for each property, however. If a property was sold more than two times during the period of interest, then the sales record will not be complete as only the two most recent sales will be recorded. Therefore, we supplemented the tax roll data with a sales history data file, also obtained from Experian, that had a listing of the dates and amounts of every sale of the properties in the county. This sales history file allowed us to have a complete record of sales back to 1987 for Denver.

Both the tax roll and sales history files were geocoded to match street addresses with latitude and longitude coordinates, Census geographic identifiers (*i.e.*, state, county, tract, and block), and US Postal Service ZIP+4 codes.¹ The geocoding rates were very successful for both study locations. We were able to geocode 98 percent of property addresses in Denver to an exact street address or to a ZIP+4 centroid.² Sales records that could not be geocoded to at least this level of precision were excluded from the analysis.

Because the sales history file does not contain all of the detail on the physical attributes of the property, as does the tax roll data, the two data sources must be merged together to get a complete data set for our model specifications. This is not as simple a process as it might seem. In principle, each property is identified by a unique parcel identification number. And one should be able to use this number to match records in the tax roll file with the sales history file. Unfortunately, the parcel numbers are not always consistent between the two files, so matching files all records this way is not possible. Another possibility is to use street addresses, but these are also not always formatted uniformly between the two files, making matching difficult.

To make the merging of the two files as accurate as possible, we used two key fields for matching records. The first was the parcel number and the second was a reformatted “address” field, consisting of the ZIP+4 code and the street number of the property. In principle, each of these fields should be able to identify uniquely each property record. We first attempted to match sales history to tax roll records using both fields at the same time. For all records that could not be matched this way, we attempted to match them first using one field and, if unsuccessful, per the other.

We were able to match 82 percent of the records using both parcel number and address. A further 2 percent of the records were matched using parcel number alone, and another 2 percent were matched using address alone. The remaining 14 percent of the Denver sales history records could not be matched to tax roll records.

¹Geocoding was done using MapMarker software from MapInfo Corporation.

²ZIP+4 codes are roughly equivalent to a city block. The centroid of a ZIP+4 would be the geographical center of a block.

In evaluating the success of the tax roll-sales history merge, it is important to keep in mind that the sales history is only intended to supplement the sales recorded in the tax roll data. Looking at the properties where we were successfully able to merge the two sources of property transactions, we found that less than 2 percent of all the properties in both study areas had more than 2 sales recorded since the start of the sales history data. In other words, for virtually all of the properties the tax roll data by itself was sufficient to obtain the complete sales history for the period of interest.

Table 4.1
Residential Single-Family Home Sales in Denver
in Denver, 1987-1997

Sales Price (\$)	
Mean	86,853
Std Dev	50,515
Min	9,000
Max	344,000
Number of Sales	
Total	74,569
1987	4,517
1988	6,533
1989	7,083
1990	7,665
1991	7,615
1992	8,644
1993	8,781
1994	8,626
1995	7,599
1996	7,285
1997 (partial)	221

Note: Cleaned sales of single-family homes with top and bottom two percent of sales by price and land area removed.

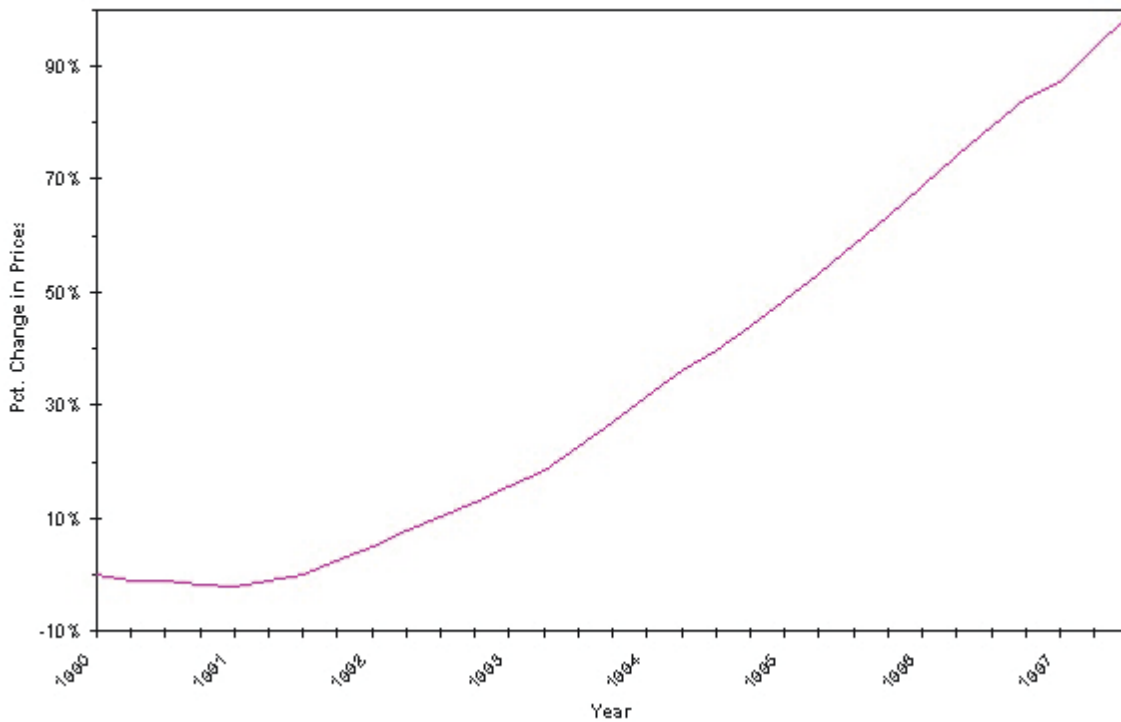
From the final set of sales data, we selected only sales of single-family homes. To ensure that we are only dealing with “typical” homes, we eliminated the top and bottom two percent of sales according to sales price and land area. Table 4.1 summarizes the sales prices and the numbers of sales of single-family homes per year from the cleaned sales file. The average sales price was \$87,000, ranging from \$9,000 to 344,000. The total volume of sales is fairly even from year to year (note that we only have data for part of 1997).

To get a sense of how house prices have been changing in our study areas in the 1990s, Figure 4.1 shows trend lines for prices of single-family homes from 1990 through the second quarter of 1997. Each point on the graph represents the total percentage change in average house prices from the first quarter of 1990. These trend lines were derived from our regression models, and so incorporate adjustments for the quality and location of the home. To de-emphasize seasonal fluctuations, the trend lines have also been smoothed by taking one year moving averages. The figure shows the dramatic increase in Denver’s property values through most of the decade. The house prices dropped slightly in 1991 but soon began a sharp rise that continued throughout the rest of the period, ending at almost a 100 percent average increase in mid-1997.

CRIME RATES

The Denver Police Department provided databases of crimes reported to the police from 1990 to 1997. Each annual database of 45,000 - 54,000 records included the date and type of crime, and the "state plane coordinates" where the crime took place. We converted the state plane coordinates to latitude and longitude for our mapping and distance calculations. The rates

Figure 4.1 - Percent Change in Single-Family Home Prices in Denver



were based on 1990 block group population. Major categories were assigned to groupings of crimes for the analysis (See Annex C, Table C.4 for complete listing).³

The total crime rate in Denver rose from 10 crimes per 100 residents in 1990 to 11.6 crimes in 1993 and then declined for the next four years to 9.6 crimes in 1997 (Table 4.2). Property crime, which makes up the majority of all crimes, also followed this pattern. Criminal mischief, which describes low-level property damage, also peaked in 1993. The downward trend in violent crime did not begin until 1995, two years after the property crime shift. The level of disorderly conduct, which includes disturbing the peace and emitting loud noise on public property, remained steady at 0.2 crimes per 100 residents for the eight years of analysis.

Maps 4.1 and 4.2 show the variation across census tracts that is masked by the citywide figures. Violent crime reached 6.7 crimes per 100 residents in the highest crime area, and did not occur at all in some southern tracts. One tract experienced 59 property crimes per 100 residents, while other neighborhoods only had 1. The violent and property crimes reveal the same pattern of higher crime along the northern edge and the center west, following the general pattern of the poorer and higher minority areas. The two dotted tracts were left out of the map range because

	1990	1991	1992	1993	1994	1995	1996	1997
Total Crimes	10.0	10.3	11.5	11.6	10.8	10.5	10.5	9.6
Property	6.6	6.5	7.5	7.5	6.8	6.7	6.6	5.9
Violent	0.8	1.0	1.0	1.0	1.0	0.9	0.8	0.7
Criminal Mischief	1.2	1.3	1.4	1.4	1.3	1.2	1.2	1.1
Disorderly Conduct	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Other	1.1	1.2	1.3	1.4	1.5	1.6	1.8	1.7

their extremely small population resulted in extraordinarily high crime rates.

SUPPORTIVE HOUSING

In addition to the home sales and crime data, we also needed data on the location and characteristics of the supportive housing sites. We combined lists obtained from the Denver

³It should be kept in mind that these are rates of *reported* crimes, which are not necessarily all crimes that occurred. The variation of crime rates across different parts of the city and across different crime categories may be partially due to variations in reporting rates.

Zoning Commission and the Colorado Department of Health and Environment to determine the long-term sites opened in December 1997.

The supportive housing database consisted of 146 supportive housing sites which were occupied at some time between 1987 and 1997 (Table 4.3). The databases included information on the program's address, the year the program started, the type of program, and the number of beds (residents). The sites varied widely in age, resident population, and size.

We identified the supportive housing locations by geocoding the addresses of the sites. We were able to geocode 90 percent of the records to an exact street address and an additional 10 percent to a ZIP+4 centroid. The locations of all of the supportive housing sites were shown earlier in Map 2.11. The sites were scattered throughout the city, with a higher concentration in

Table 4.3 - Opening Dates of Supportive Housing Sites in Denver

Year of Opening	Number of sites
<i>Total</i>	146
pre 1970	9
1970 - 1974	4
1975 - 1979	21
1980 - 1984	19
1985 - 1989	27
1990 - 1994	20
1995 - 1997	16
Unknown	30

the center and northwest corner.

Over half of the sites were opened in the 1980's and 1990's, as shown in Table 4.3. We were unable to ascertain the opening dates of twenty percent of the sites. Some of the sites with missing dates had closed by the time of our analysis, while others had merged or been folded into a larger organization.

The sites covered a wide array of programs, with about three-quarters housing adults and one-quarter children (Table 4.4). Almost one-third of the sites provided personal care, the most frequent program type for adults. Unspecified children's homes represented the largest group for children. Another one-quarter of the programs served mentally ill or developmentally disabled adults and children. Adult Correctional Facilities and Substance Abuse programs each represented 10 percent of the total sites.

The size of the supportive housing programs ranged from 3 to 320 beds, with an average of 40 beds per site (Table 4.5). Approximately 40 percent of the sites had less than 10 beds, and an additional 40 percent held 10 to 50 beds. The remaining twenty percent were larger facilities, ranging from 50 to 320 beds.

Table 4.4 - Supportive Housing in Denver by Program Type

Program Type	Number of Sites
<i>Total</i>	146
Adult clients	107
Personal Care - unspecified	41
Mental Health	17
Developmentally Disabled	17
Correctional Facilities	14
Substance Abuse	13
Personal Care - Senior Housing	3
Hospice	1
Convent	1
Child clients	27
Children's Home - unspecified	17
Correctional Facilities	7
Developmentally Disabled	3
Unknown	12

Table 4.5 -Supportive Housing Sites in Denver by Number of Units

Number of Units	Number of Sites
<i>Total</i>	146
3 - 4	9
5 - 9	47
10 - 19	29
20 - 50	28
50 - 99	15
100 - 149	8
150 - 320	10

ANALYSIS SITES

We conducted our econometric analysis of property value impacts and crime impacts on two (overlapping) subsets of the 146 pre-1998 vintage supportive housing sites. We will refer to these subsets as *analysis sites*. These analysis sites were chosen because they had sufficient observations of housing sales or reported crime rates in both the pre- and post-opening periods to allow us to estimate impacts in the immediate vicinity of the sites.

To operationalize the pre/post econometric specifications described above for the property value impact model, we were restricted to those supportive locations having: (1) no other supportive sites within 2,000 feet when it opened; and (2) an opening date that yields sufficient observations of sales prices both pre- and post-opening. These restrictions reduced our sites to 29. These are shown on Map 4.3. To ensure the reliability of our estimates, we also imposed the restriction that a supportive site have an average annual rate of single-family homes sales of at least 2.0 in each of the concentric circle ranges of 0-500 feet, 501-1,000 feet, and 1,001-2,000 feet both prior to and subsequent to first occupancy. This restriction produced our final sample of 11 analysis sites. They are described in Table 4.6.

It is essential for the interpretation of property value results to note that 10 of the analysis sites are Small Special Care facilities and one is a Large Special Care Facility (but houses only 12 residents). None of the property value analysis sites are Community Corrections or Homeless Facilities (see Table 4.6 and definitions in Ch. 2). The specific Special Care program types span a wide range, including senior care, substance abuse rehabilitation, mental health, developmental disabilities, children with disabilities, and hospice. Thus, the property value model results should be interpreted as stemming from a set of small-scale facilities engaged in a wide range of supportive activities, but not qualifying as community corrections or homeless shelters/transitional

Table 4.6 - Characteristics of Supportive Housing Sites for Property Value Impacts Analysis

Neighborhood	Program type	Zoning	Starting Year	Number of Beds	Other Supportive Housing within 2000 feet	
					Sites	Units
Berkeley #1	Senior Special Care	R2	1989	8	1	116
Clayton	Hospice	R2	1993	8	1	8
Hilltop	Developmental Disabilities	R0	1992	8	0	0
Montbello #1	Developmental Disabilities	R1	1990	4	1	12
Montbello #2	Children's Home	R1	1992	8	0	0
Montbello #3	Substance Rehabilitation	R1	1995	12	1	4
Montbello #4	Unknown	R1	1995	5	0	0
S. Park Hill	Mental Health	R1	1990	8	0	0
Speer #1	Mental Health	R3	1993	6	5	66
Virginia Village	Personal Care Boarding Home	R1	1992	4	0	0
Washington Virginia Vale	Substance Rehabilitation	R1	1989	8	1	151

facilities.

The subset of home sales to be used in the econometric analysis was chosen in relation to these analysis sites. We used all single-family home sales that either were: (1) not within 2,000 feet of any occupied supportive site (or one for which we had no opening date), or (2) within 2,000 feet of one (or more) of our analysis sites after occupancy. We omitted sales that were within 2,000 feet of any other occupied supportive site(s) but did not qualify as an analysis site(s). This yielded a sample of 45,601 sales and permitted unambiguous tests based on our pre/post principles of deciphering property value impacts.

For the crime impact model, we limited ourselves to the 19 supportive housing sites opening from 1992 through 1995, so as to have at least two years' of crime data available both pre- and post-year of opening. Three of these sites were then excluded because they were within

1,000 feet of pre-existing supportive sites. Preliminary runs indicated that (for reasons explained more fully below) one additional site, for juvenile corrections, should also be eliminated from the sample. We therefore employed 15 analysis sites in our crime impact analysis. Their locations are shown on Map 4.4, and corresponding descriptive information is presented in Table 4.7.

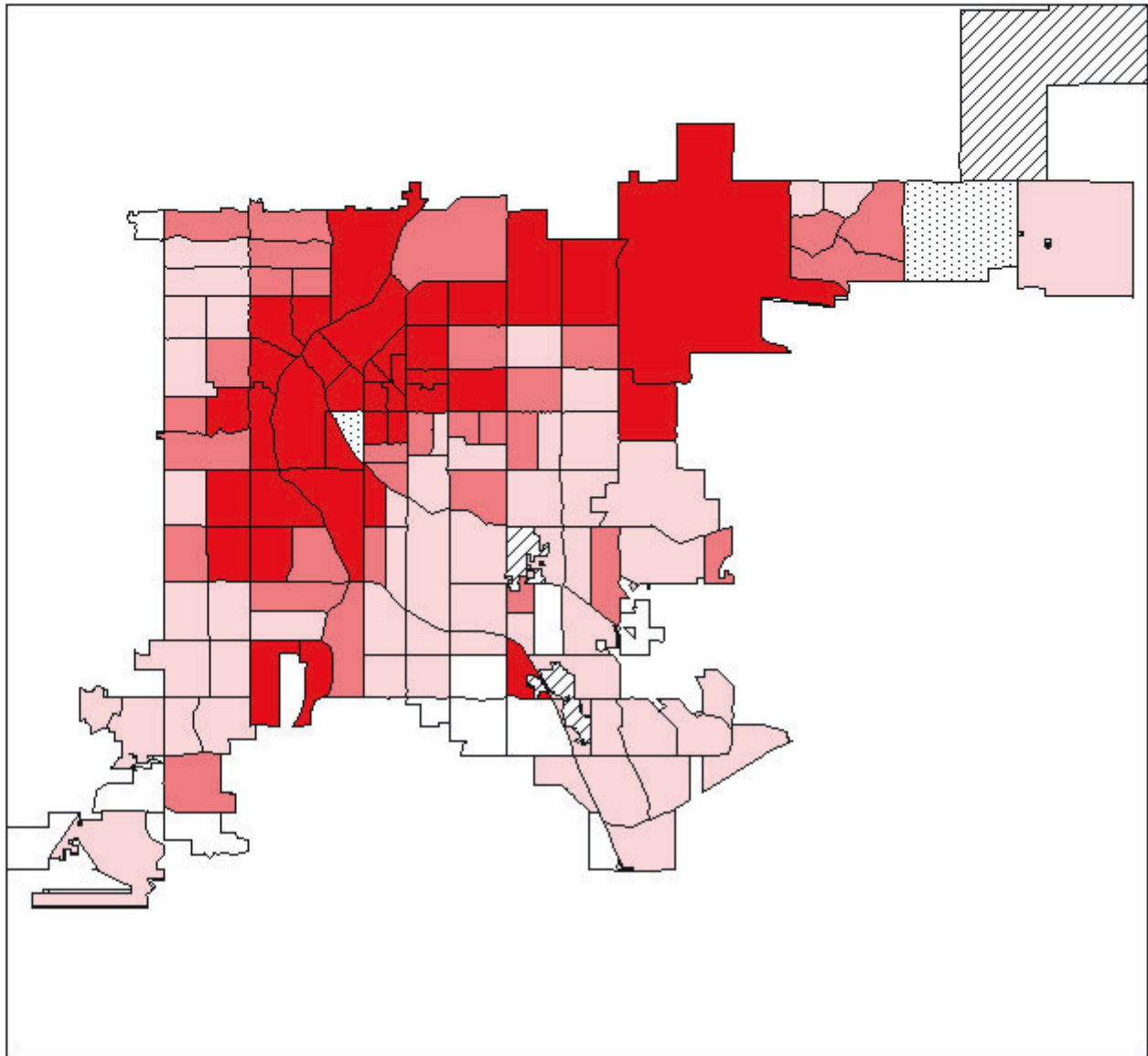
Note that 9 of the crime analysis sites are Small Special Care facilities (six duplicate sales analysis sites), five (5) are Large Special Care Facilities (with two housing more than 100 residents), and one is a Community Corrections Facility. None of the crime analysis sites are Homeless Facilities (see Table 4.7 and definitions in Ch. 2). The specific program types represented by the crime analysis sites include those represented by the sales analysis sites, in addition to a community corrections program. Thus, the crime impact model results should be interpreted as stemming from a diverse set of small- and large-scale facilities engaged in a wide range of supportive activities, but not qualifying as homeless shelters/transitional facilities.

As a final aid to the interpretation of results, consider the nature of our two analysis samples in light of the May, 1993 Denver Ordinance described in Chapter 2. Of the 11 property value analysis sites, seven (7) were opened before the Ordinance went into effect; the corresponding figure for the 15 crime analysis sites is three (3). However, given that we imposed the same spatial separation requirements as the Ordinance to qualify as an analysis site, our results can be fairly interpreted as relevant to a set of supportive sites that meet spacing requirements equivalent to those imposed by the Ordinance. We can make no claims about the degree to which supportive facilities opening prior to May, 1993, fulfilled during the study period the other clauses of the Ordinance.

There was no minimum level of crimes used to qualify a geographic area (i.e., a census tract or any of the concentric rings around supportive sites) for inclusion in the sample, since zero crime represented a valid observation. However, we did eliminate geographic areas as units of observation following the same principles applied to home sales above. We used all geographic areas (i.e., their measured crime rates) that either were: (1) not within 2,000 feet of any occupied supportive site (or one for which we had no opening date), or (2) within 2,000 feet of one (or more) of our analysis sites after occupancy. We omitted site areas that were within 1,000 feet of any other occupied supportive site(s) but did not qualify as an analysis site(s). One additional area was excluded because it did not have a positive spatial lag variable. Finally, we excluded any area with a 1990 population less than 40 because the small denominator resulted in extremely high crime rates. This yielded a sample of 1,304 geographic areas for the crime impact analysis.

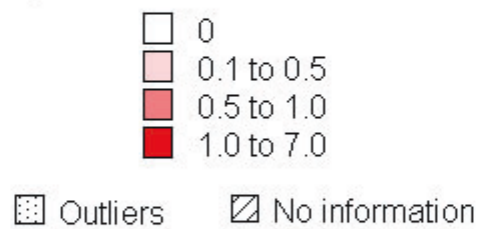
Table 4.7 - Characteristics of Supportive Housing Sites for Crime Impacts Analysis

Neighborhood	Program type	Zoning	Starting Year	Number of Beds	Other Supportive Housing within 2000 feet	
					Sites	Units
Berkeley #2	Personal Care Boarding Home	R2	1993	116	1	8
Clayton	Hospice	R2	1993	8	1	8
Cole	Personal Care Boarding Home	R2	1994	4	0	0
College View	Personal Care Boarding Home	R1	1994	7	0	0
Globeville	Community Correctional Facility/Adult	I2	1993	60	0	0
Hampden	Personal Care Boarding Home	R2	1993	60	0	0
Hiltoe	Developmental Disabilities	R0	1992	8	0	0
Montbello #2	Children's Home	R1	1992	8	0	0
Montbello #3	Substance Rehabilitation	R1	1995	12	1	4
Montbello #4	Unknown	R1	1995	5	0	0
Rosedale	Personal Care Boarding Home	R5	1993	164	0	0
Speer #1	Mental Health	R3	1993	6	5	66
Speer #2	Personal Care Boarding Home	R3	1993	53	0	0
Virginia Village	Personal Care Boarding Home	R1	1992	4	0	0
Wellshire	Mental Health	R1	1995	4	1	8

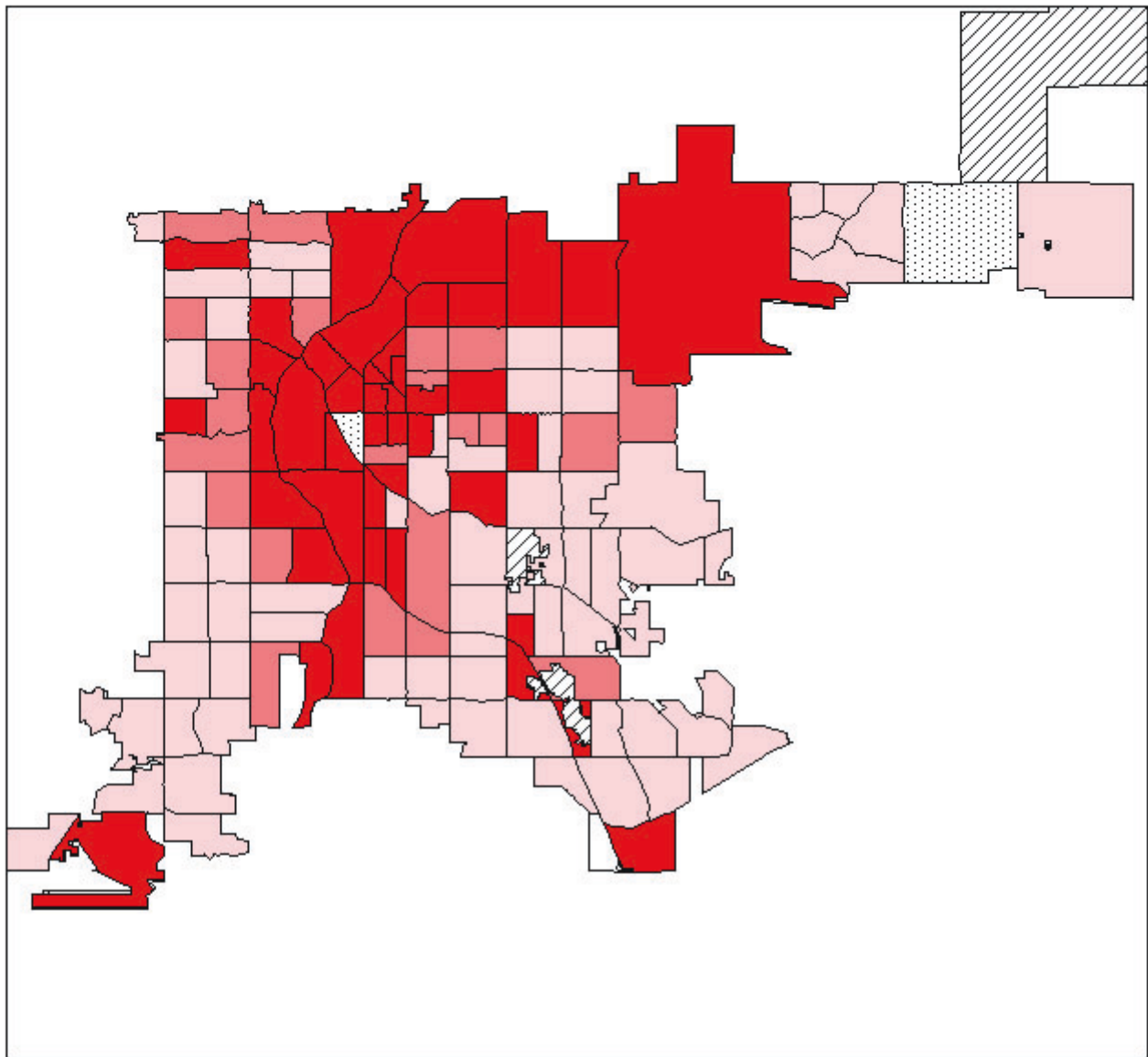


1 inch=3.1 miles

**Map 4.1: Violent Crimes
per 100 residents, 1997**



Denver Census Tracts



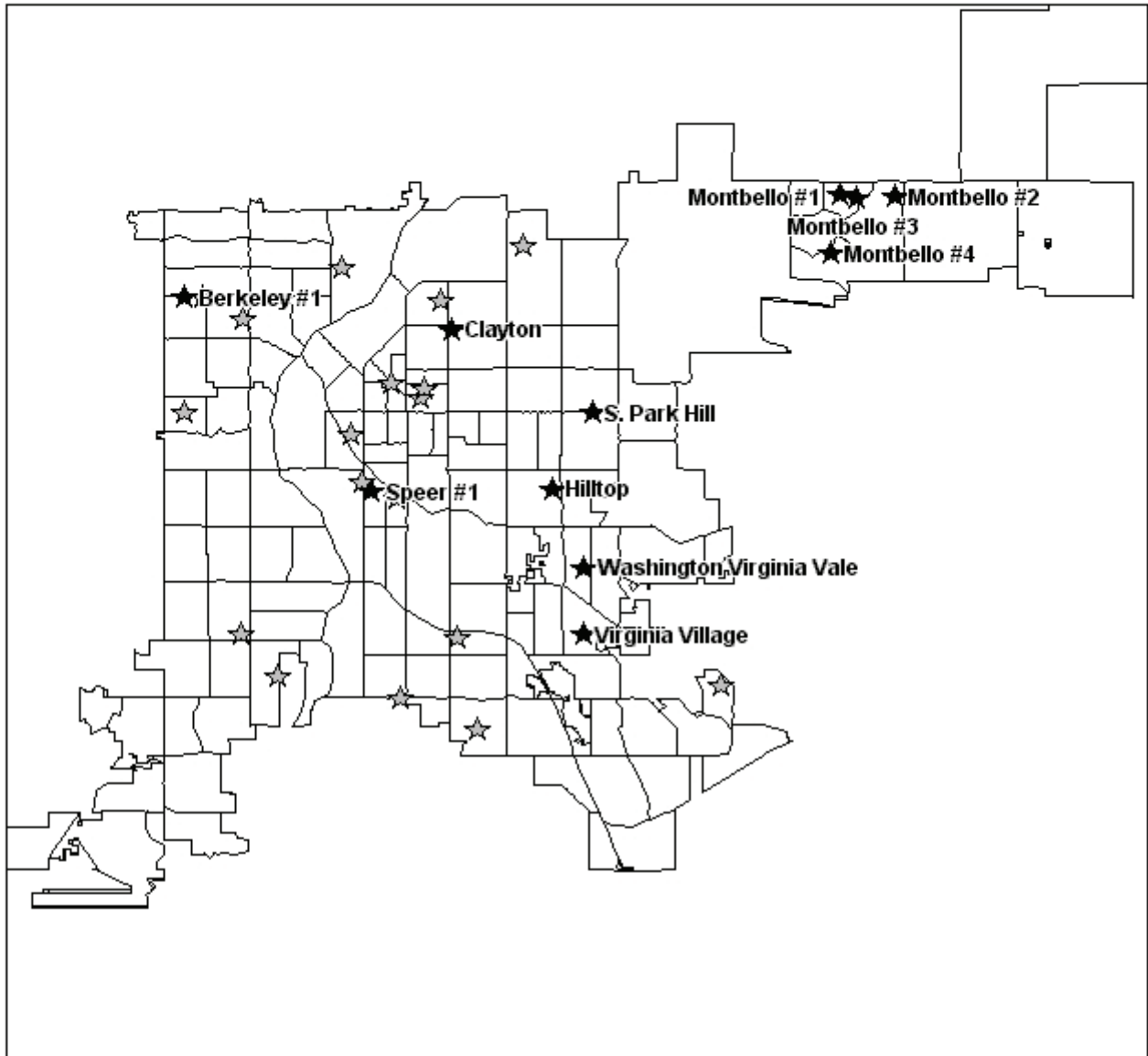
1 inch=2.9 miles

**Map 4.2: Property Crimes
per 100 residents, 1997**



 Outliers  No information

Denver Census Tracts

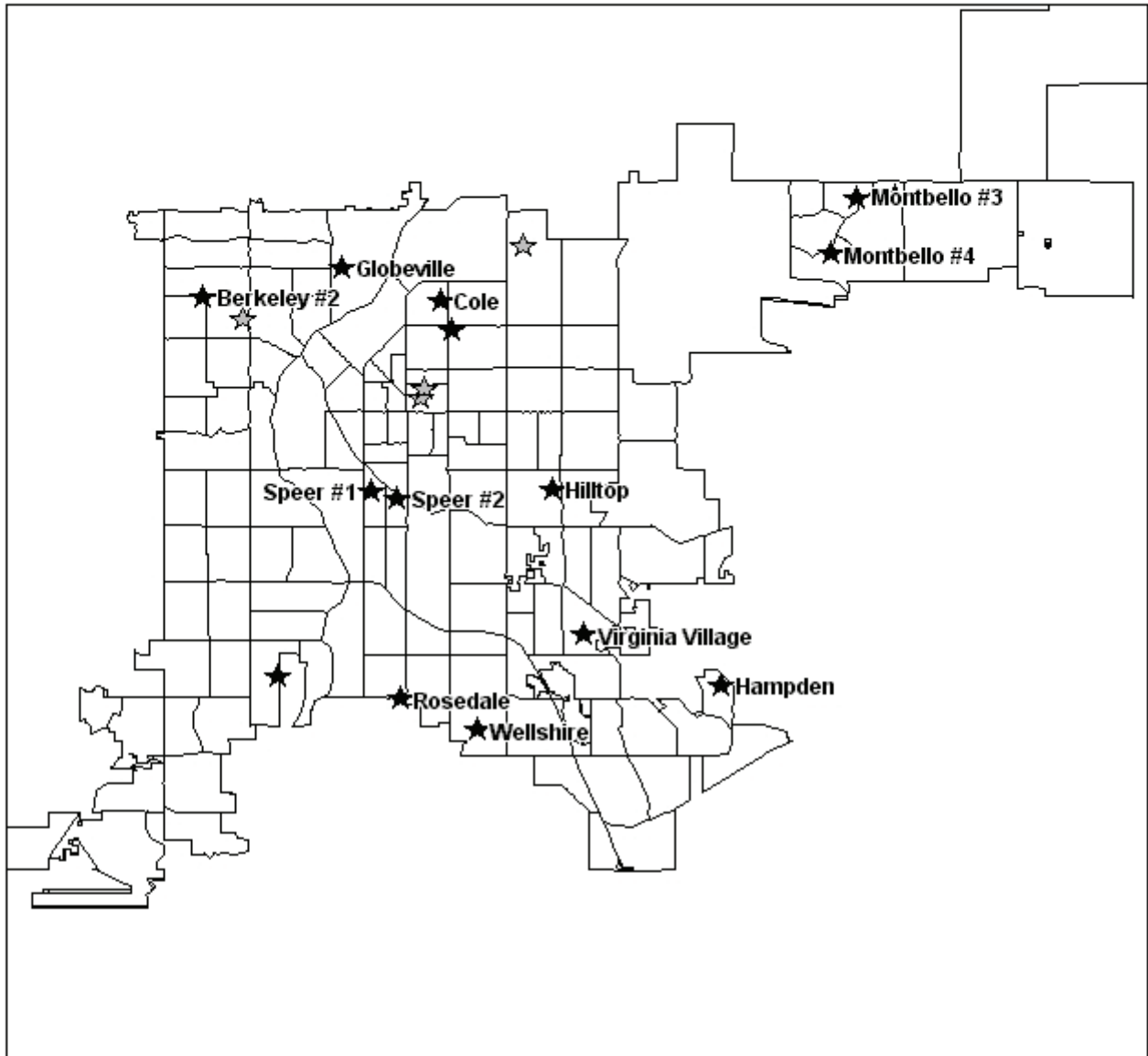


1 inch=3.1 miles

Map 4.3: Supportive Housing Sites
Opened between 1989 and 1995

- ★ Sites near an average of 2 or more house sales per year (11)
- ☆ Sites near an average of less than 2 house sales per year (17)

Denver Census Tracts



1 inch=3.1 miles

Map 4.4: Supportive Housing Sites
Opened between 1992 and 1995

- ★ Sites included in analysis (15)
- ☆ Sites excluded from analysis (4)

Denver Census Tracts

CHAPTER 4

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CHAPTER 5

EMPIRICAL RESULTS AND THEIR IMPLICATIONS

This chapter presents our findings related to property value and crime impacts of the supportive housing programs in Denver. As was explained in Chapter 4, the house price and crime impact models allow us to obtain both aggregated estimates (to measure the average impact of all supportive housing analysis sites in Denver) and disaggregated estimates (to measure how the characteristics of an area or subset of supportive analysis sites affect the price impacts). We used information obtained from the key informant interviews and the focus group participants to add context to our assessment of the impacts. The chapter concludes with a brief discussion of the implications of these results.

Overall, we found that the set of eleven supportive housing facilities we analyzed for the price impact analysis was associated with a *positive* impact on house prices in the surrounding neighborhood. In general, the area within 1,001 to 2,000 feet of *any* supportive housing analysis site experienced both an increase in general level of prices and upward trend in house prices relative to the prices of similar homes not near such facilities. This reversed a *relative decline* in house prices (compared to elsewhere in the census tract) that existed in these areas prior to the presence of the supportive housing site. These apparent positive impacts were *greater the larger the number of beds* within supportive facilities at this distance. The same effect of a larger magnitude was observed in the 501-1,000 foot distance ring. We caution that these results apply only to the *average* patterns across neighborhoods surrounding these eleven sites, which began operation from 1989 through 1995, and the particular size configurations, program operators, and clientele that these facilities represent.

While the *average* relationship between this set of supportive housing facilities and proximate house prices was positive, not all site/neighborhood combinations in Denver experienced the same relationship. When we disaggregated our analysis to measure impacts for different common clusters of sites/neighborhoods, we found that the set of five supportive housing sites located in low-valued, heavily minority-occupied neighborhoods consistently evinced the positive price impacts noted above. By contrast, the site in the highest-value, overwhelmingly White-occupied neighborhood apparently had a *negative* effect on house prices, as did another (poorly maintained) site in a modestly valued, high-density core neighborhood having 24 percent of its population classified as Hispanic.

Because small clusters of our supportive sites tended to fall within a common category within multiple stratification criteria, we stress that we cannot unambiguously distinguish here

between results that are generated by a certain type of neighborhood or by a subset of supportive sites. Moreover, our disaggregated estimates are based on small samples of analysis sites. We therefore emphasize that these results should not be generalized; they may not necessarily be due to the characteristics of the host neighborhoods but rather to idiosyncrasies of the particular supportive sites.¹ In sum, context is crucial, but we are unable to disentangle definitively which elements of context are the most important.

Regarding crime impacts during the 1990-1997 period for the set of 15 facilities analyzed, there were no differences in the rates of any type of reported offenses between areas where supportive housing was developed and in other, “control” areas in Denver. Moreover, we found no statistically significant differences in the rates of violent, property, criminal mischief, and total reported crimes before and after a supportive facility opened, at any distance. We did, however, identify a strong direct relationship between the rate of disorderly conduct reports and 500 foot proximity to a supportive site. The increase in the rate of such reports was greater the larger the number of supportive housing beds in the vicinity. Unlike the aforementioned price impacts, these crime impacts were statistically significant and of comparable magnitude in most strata analyzed. There was a pattern that suggested, however, that supportive housing’s effect on increasing disorderly conduct reports was greater in the lower-valued neighborhoods.

ESTIMATED PROPERTY VALUE IMPACTS AND THEIR INTERPRETATION

We start by examining the results of our aggregate house price impact models.² These models are designed to measure the average impact of our sample of eleven supportive housing analysis sites across the entire city. We summarize the regression results in graphical form for our three specifications at distance rings for which coefficients were statistically significant.³ The graphs in Figures 5.1 and 5.2 show the relative percentage differences in prices over time in single-family home sales prices in proximity to supportive housing sites, compared to baseline prices for similar dwellings elsewhere in the same census tracts but not within 2,000 feet of any supportive sites. The vertical axis on the graph indicates the percentage differences in house prices over the baseline. The horizontal axis indicates time, starting with the beginning of our

¹In addition, some disaggregate results may have been produced by spurious factors which we discuss below.

²Overall, the aggregated models performed extremely well. The adjusted R-squares were 0.82 in the regressions and did not vary significantly across the three model specifications. Not surprisingly given the exceptional sample sizes, virtually all of the [Struct], [Tract], and [Quarter] control variables evinced coefficients that were significantly different from zero. All the coefficients of the [Struct] characteristics of homes proved to have the expected signs. Results of the [Struct] and [Quarter] control variables, as well as the impact variables, are provided in Annex D.

³In these graphs, we only show the effect of regression coefficients significant at the 95 percent confidence level (two-tailed test).

study period, the first quarter of 1987. The first dotted line indicates a representative starting date chosen as the point of first occupancy of the archetypal supportive facility. Therefore, the section of the graph to the left of the dotted line is the estimated relative price pattern *before* the supportive housing site was occupied, and the section to the right of the dotted line is the price pattern *after* the site was occupied.

Sales Price Patterns Before Supportive Sites are in Operation

The results show that in Denver there was a systematic tendency for our sample of supportive housing sites developed during the early 1990s to be located in relatively lower-valued or declining pockets within census tracts. These results were robust across our model specifications.⁴ The negative and statistically significant coefficients on the distance-specific fixed-effects dummy variables indicate that home prices within 500 feet of areas that were to be acquired for supportive facilities were 8 percent lower, on average, than prices of comparable homes elsewhere in the census tract. The corresponding estimates for the 501-1,000 feet and 1,001-2,000 feet distance rings are roughly 5 percent and 2 percent, respectively.

Our key informant interviews provided two potential (but not mutually exclusive) explanations of this empirical finding. First, providers of supportive housing often acquired vacant, sometimes deteriorated property for their facilities. Insofar as these properties had been generating negative externalities for the surrounding neighborhood for oftentimes considerable periods prior to their acquisition, these micro-neighborhoods defined by proximity to these properties would tend to have lower values. Second, there is a source of potential self-selection bias in supportive housing developers' purchasing strategies. Because these developers were likely to search more intensively for buildings for purchase in areas where "they could get the most building for the money," thereby stretching their scarce programmatic resources as far as possible, supportive facilities would tend to be located in the weaker niches within census tracts. Developers might also search in such areas because they expect less opposition there (Pendall, 1999).

Property Value Impacts of Supportive Housing Occupancy: Aggregate Results

The aggregate regressions (using all sales proximate to our eleven study sites⁵) showed statistically significant evidence of *positive property price impacts* associated with the opening of

⁴In models 1 and 2, the DAII coefficient was statistically significant in the 0-500 range, while the Time coefficient was statistically significant in the 501-2,000 foot range. In model 3, the DAII coefficient was significant and the Time coefficient was insignificant for all distances.

⁵All regressions also used all sales that were not within 2,000 feet of any supportive site.

this particular set of supportive housing facilities as a group. During the late 1980s to mid-1990s for some distance ranges, we observed overall increases in property value levels and trends as a result of proximity to this group of supportive housing sites under investigation, with greater numbers of proximate supportive housing beds magnifying the apparent beneficial impacts. We reiterate that these results were produced by a set of small-scale, special care facilities, with no large sites, correctional facilities, or homeless shelters included. Nevertheless, because a wide range of special care programs are represented, no conclusions should be drawn about the impacts of particular program types.

Consider first the results of Model 1, as shown in Figure 5.1. After a supportive housing facility was occupied, sales prices within 1,001-2,000 feet reversed their previous relative downward trend evinced before occupancy.⁶ Fourteen quarters after occupancy, prices at this distance were only 3.0 percent less than the baseline within the census tract; immediately preceding occupancy they were 4.3 percent less. Had the pre-occupancy trend persisted, by second quarter 1997 the properties within this distance ring would have been 6.5 percent below baseline. Thus, on average across all eleven supportive sites opening during our 1989-1995 study period, sales prices 3.5 years after opening were about 3.5 percentage points higher within 1,001-2,000 feet of a supportive facility than they would have been in the facility's absence.

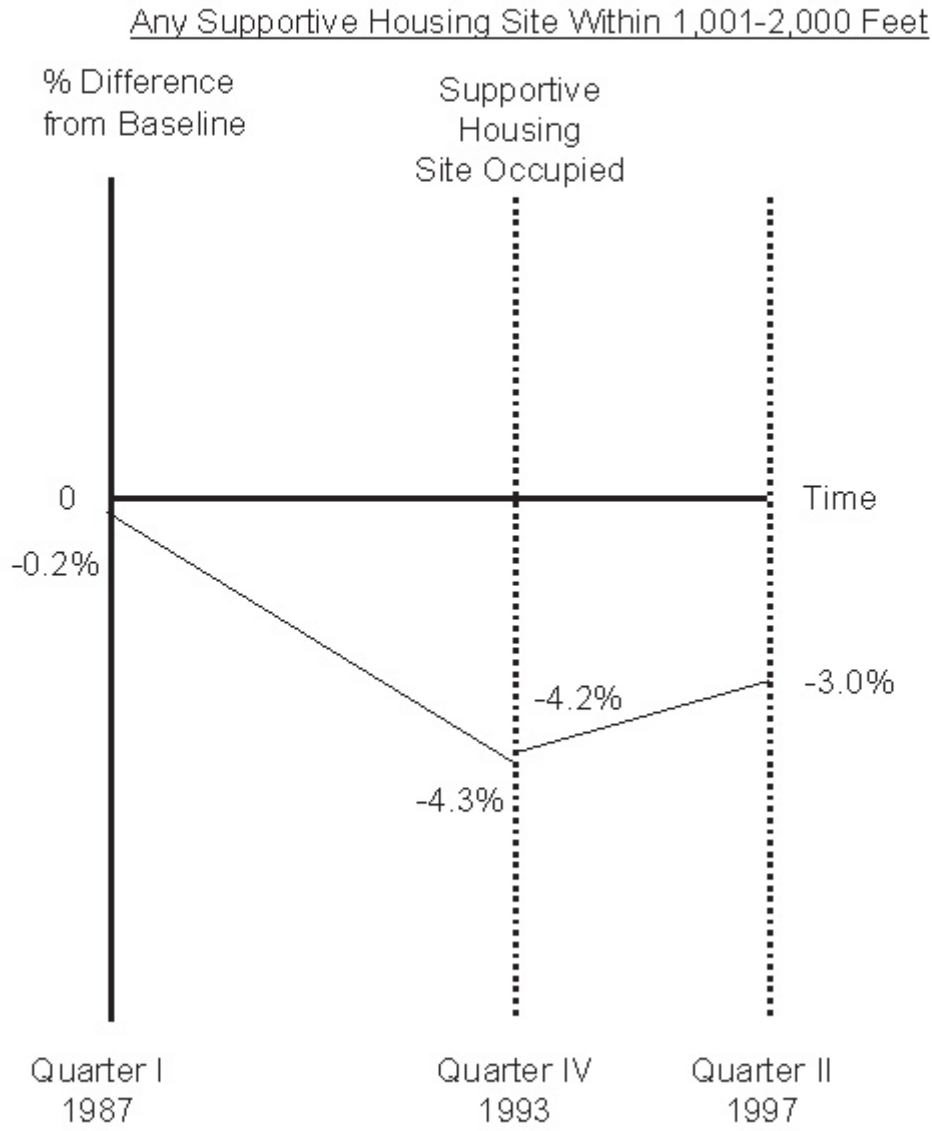
Figure 5.2 shows that these aforementioned results are generally magnified when there are larger numbers of proximate supportive housing beds at distances from 501-2,000 feet. (There were no indications that the impacts were related in a statistically significant way to variations in the number of proximate sites; see Model 2 results in Annex D.) Both panels consider three alternative numbers of supportive housing beds, at the 10th, 50th, and 90th percentiles of the number of beds for the subset of sales that occurred within the respective distances from an open supportive housing site. The left-hand panel of Figure 5.2 shows the results obtained with our Model 3 specification at a distance of 501-1,000 feet. Although the post-occupancy coefficient for the number of beds is statistically significant and positive, the interaction term's coefficient is statistically significant and negative, producing a curious result. Larger numbers of proximate supportive housing beds increases the *level* of prices but progressively reduces the subsequent *trend* in prices. At 14 beds, the net effect is that overall price level within 501-1000 feet of the site(s) is slightly higher for ten years than it would have been had the supportive site(s) never been opened.

The right-hand panel of Figure 5.2 shows the estimates from Model 3 at the 1,001-2,000 feet distance. This specification indicates that only four supportive housing beds within range boosts the level of prices 0.4 percentage points after the facility opens; with 59 beds this impact

⁶There were no statistically significant coefficients estimated in Model 1 for distance rings closer than 1,000 feet.

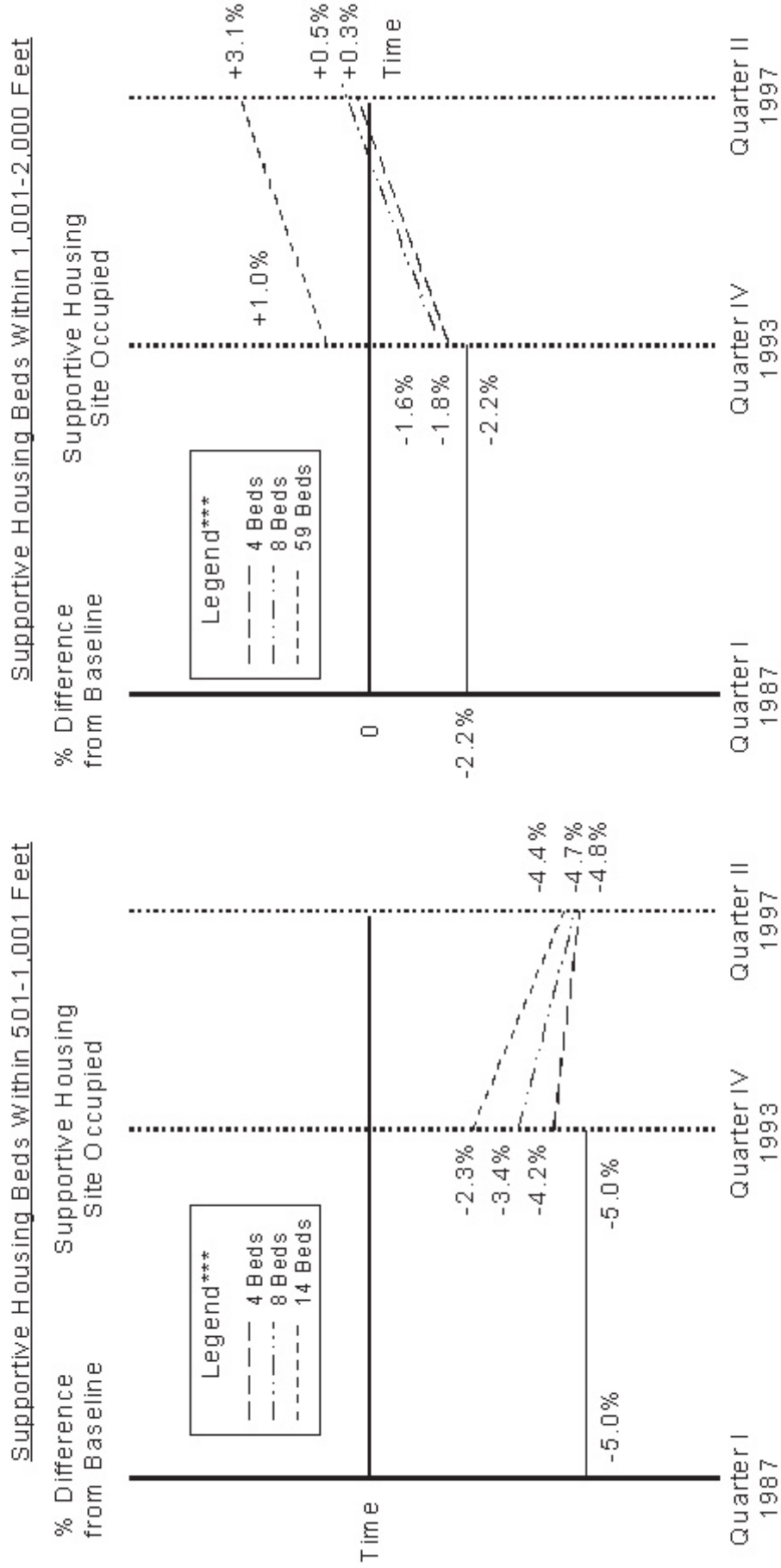
rises to a full 3.1 percentage points. The apparent positive effect grows over time, regardless of the number of beds.

FIGURE 5.1
 Estimated Price Trends Within 2,000 Feet of Any Supportive Housing Site(s),* Denver
 (Relative to Baseline Areas of Same Tracts Not Within 2,000 Feet)**



* There were no statistically significant impacts of supportive housing observed at distances closer than 1,000 feet
 ** Baseline prices control for seasonal and county-wide quarterly trends, plus housing stock characteristics.

FIGURE 5.2
 Estimated Price Trends as Function of Density of Supportive Housing Beds, * Denver
 (Relative to Baseline Areas of Same Tracts Not Within 2,000 Feet) **



* There were no observed aggregate density effects of supportive housing beds at distances closer than 500 feet.

** Baseline prices control for seasonal and county-wide quarterly trends, plus housing stock characteristics.

*** The number of beds in both figures represent the 10th, 50th, and 90th percentiles of beds within 2,000 feet of a sale.

Why No Price Impacts at Closer Ranges? What is curious about the foregoing results is that statistically significant impacts were observed only in the distance rings 501-2,000 feet from the supportive site(s), not in the closest ring. Smaller sample sizes of sales within this smallest ring may provide the answer. We believe that these results are also consistent, however, with the hypothesis of “countervailing externalities.” We hypothesize that supportive housing sites may (depending on neighborhood context, structure, clientele, and management) generate several distinct types of externalities, some positive and others negative, some extending relatively short distances and others considerably farther. At certain distances where both positive and negative externalities are operating they can, in effect, cancel each other out, yielding no net effects on observed sales prices at that range. But, at other distances only one sort of externality may predominate.

Interviews with our key informants and reviews of the literature suggest that several, potentially countervailing externalities may be at play when it comes to supportive housing, each with its own associated range of impact:

- Increased parking and traffic congestion: negative externality, usually confined close to site.
- Resident behavior (noise, littering, e.g.) on site: negative externality, usually confined close to site.
- Resident behavior (pan-handling, crime, e.g.) off site: negative externality, may extend far from site.
- Rehabilitation or construction of facility: positive externality signaling investment in area, spark to investor confidence, and possibly removing of blighting prior use of property, may extend far from site.
- Upkeep of property: could be positive or negative externality, depending on intensity and in comparison to others on the block-face, usually confined within sight of facility.

Here, the aggregate observations are consistent with the notion that positive externalities associated with improving the property before the supportive facility opens and/or comparatively superior maintenance of the facility during operation predominate in the 501-2,000 foot distance ring, whereas at closer proximity positive and negative externalities are countervailing to the point where no net impact is produced. Foreshadowing the results of our crime models, we believe that the negative effect of increased disorderly conduct crime in the 0-500 foot ring around supportive housing sites may be canceling out any potential positive externalities exhibited in the larger rings.

Are the Aggregate Results Robust? To ascertain the strength of the aforementioned results, we conducted an additional test. We expanded our analysis sample to include 18 additional supportive facilities developed from 1989-1995 and their associated proximate home sales. Unlike our original eleven-site analysis sample, which required a minimum annual average of two home sales per distance ring during the study period, these additional sites did not satisfy any minimum sales criteria. Thus, while this enhanced sample provides a larger number and greater geographic and programmatic diversity of supportive sites, over half of its site observations provide pre/post opening estimates of price levels and trends which may be quite imprecise. We therefore advise treating them with caution.

Nevertheless, the results produced by regression analysis of this enhanced sample generally correspond with those of the more precise sample. Supportive facilities tend to be developed in areas which are lower-valued than average for the census tract. Fewer of the impact variable coefficients are statistically significant across Models 1-3. The most powerful specification, Model 3, evinces positive price impacts at distance ranges from 500 to 2,000 feet from a supportive facility, however. We conclude, therefore, that the overall finding from our original analysis sample is robust: higher prices on average are associated with proximity to a supportive site, and with larger numbers of supportive housing beds in the vicinity, at least at some distance ranges.

Property Value Impacts of Supportive Housing Occupancy: Disaggregate Results

Each of the three specifications of our aggregated impact models were replicated for different clusters of census tracts in Denver. We stratified census tracts according to the racial/ethnic composition,⁷ median 1990 home values, and real changes in median home values from 1990-1996.

The overall positive price effects attributed to 1,001-2,000 foot proximity to supportive housing beds in the aggregated models do not occur across all types of neighborhoods in Denver and in all configurations of supportive facilities. Rather, they apparently occur for the sites we observed in low-value but rapidly appreciating, heavily minority (typically majority Black-occupied) neighborhoods. Opposite effects are indicated for two other site/neighborhood combinations, one in the most affluent, predominantly White-occupied neighborhood and the other in a modestly valued, high-density core neighborhood with Hispanics comprising a quarter of the residents.

⁷White tracts were defined as those containing less than 5% Black and 5% Hispanic. Black and Hispanic tracts were those that were substantially integrated (20-49 percent Black or Hispanic) as well as those that were majority Black or Hispanic.

Because we have only eleven supportive sites in our analysis sample, the aforementioned stratification procedures yield clusters of supportive sites that tend to fall within a common category within multiple stratification criteria. Thus, we stress that we cannot unambiguously distinguish here between results that are generated by a certain type of neighborhood or by idiosyncrasies associated with a subset of supportive sites. (We probe these idiosyncrasies further below with the help of our focus groups.) Therefore we will refer to these results in terms of site/tract clusters.

One prime site/tract cluster that emerged from our stratification consisted of five sites: four in the Montbello neighborhood, and one in the Clayton neighborhood. This cluster is distinguished by its relatively low property values (maximum \$69,000) and high percentages of non-Anglo populations (minimum 39 percent). See Map 3.1 and Table C.1. As of 1990, the four census tracts represented by the Montbello and Clayton sites had 49 percent or higher Black population and 8-17 percent Hispanic population. In all of these tracts, median home values were in the lowest third of the distribution (ranging from \$55,000-\$69,000), and home value appreciation rates from 1990-1996 were substantial, in the range of 39-82 percent. The supportive services that these five sites provide span a wide range, including hospice, substance abuse rehabilitation, and care for children and adults with developmental disabilities. It was only for this cluster of sites/tracts that the aggregate results above of positive property value impacts were manifested. This is an important qualification to the aggregate results.

However, for a site located in a different type of tract, the disaggregate regressions revealed apparent negative property value impacts from 501-2,000 feet of the supportive sites. This combination involved a site in the Hilltop neighborhood that houses residents with cerebral palsy. The surrounding census tract has less than three percent non-White residents and boasts a median home value of \$195,000, far above the others in the sample and almost twice that of the second-highest in the sample. Because this analysis site/neighborhood is clearly an outlier—the only observation in a homogeneous White-occupied area and the only area with median home values above \$105,000, we caution that no generalizations from this result should be made.

We also disaggregated to the point where only those sales within 2,000 feet of an individual site, plus all other sales in the same census tract not within 2,000 feet of any operating supportive site, were used in an individual regression. Using this procedure, only two of our eleven individual supportive sites produced any reliable, statistically significant evidence of impacts. A site in the Montbello neighborhood, a converted single-family home for eight children requiring special care, robustly evinced positive property value impacts from 500 to 2,000 feet, across all models. At the time of the windshield survey in 1999, this facility was by far the most impressively maintained and landscaped on the block-face, with numerous flower gardens and even a fountain. On the other hand, a site in the Speer neighborhood, a converted home for six mentally ill residents, evinced statistically significant negative property value impacts up to 1,000

feet away (site Speer #1).⁸ At the time of the windshield survey in 1999, this facility was by far the least well maintained and landscaped on the block-face. Further insights about these sites and interpretations of statistical results will be gleaned from focus groups discussed below.

Key Insights of the Focus Groups Regarding Property Value Impacts of Supportive Housing

Awareness of Supportive Housing Sites. Since the enactment of the Denver Large Residential Care Use Ordinance in 1993, which stipulates that developers of supportive housing must notify affected neighborhood associations and that all licensed supportive sites be listed publicly, presumably both the market and homeowners are aware of the existence, location, and characteristics of supportive facilities. It is thus understandable that the econometric results suggest that the real estate market in Denver is receiving consistent and accurate information regarding the location of supportive housing sites and that house pricing systematically reflects this information. The fact that the effect seems to vary across sites/tracts may merely indicate that no generalizations about impact can be made without the particulars of the site (its operator and clientele, for example) and its surrounding neighborhood context.

It is quite interesting, then, that four out of our nine focus groups did not specifically mention the (one or more) supportive housing facilities we knew to be operating within 2,000 feet of the participants' homes. In other groups, unsolicited complaints were made about some supportive facilities (see below), but other sites in the vicinity were either not mentioned or participants volunteered that these other sites were "not a problem." This suggests that many (but not all) operators of supportive facilities have been successful, through their maintenance, tenant screening and management efforts, in blending their supportive housing into the larger community.⁹ Generalizations about "supportive housing" impacts are thus risky.

Comments about Supportive Housing Sites. Our focus groups consistently emphasized elements of neighborhood quality of life that are relevant to supportive housing developers and policy makers alike: the physical condition of the neighborhood, the presence of numerous or poorly-kept rental properties, social cohesion, increased traffic, and public safety. In turn, when operators of supportive facilities seem able to address many of these issues effectively, the supportive housing facility becomes virtually "invisible" to nearby homeowners as a major determinant of their neighborhood quality of life. This is consistent with scholarly literature that has found that people's oftentimes negative expectations about what supportive housing will bring

⁸This result was not robust across specifications, however, and had econometric problems indicated that reduce the reliability of these results.

⁹To comply with informed consent requirements, all of the focus group participants in Denver were informed that HUD was a sponsor of this study.

to the neighborhood are typically not substantiated after the fact (Cook, 1997). Our Denver respondents attest to this:

“At the time it [the home for Cerebral Palsy children] went in, we were very concerned about therapists coming and going, but there’s been no problems. The house is right across the street from us. It’s been there for 8 years. We never noticed any increased traffic.” (Respondent, Hilltop)

“They’re low impact – there isn’t a spotlight on them existing on the block.” (Respondent, Speer)

“They had to vote on a half-way house – Hazel Court – it is a home for women with schizophrenia. We don’t have any trouble with them. I live right in back of the house.” (Respondent, Harvey Park)

“I think that one of the things that people worry about is that this is okay with exactly what they [the developer of supportive housing] said, but when are they going to shove something in that’s not acceptable? They didn’t shove anything else in and that worked. Yet, I’d hate to see if they brought something else in—like if they would bring criminals in, [or] a halfway house.” (Respondent, Hilltop)

Participants often volunteered, however, that nearby supportive facilities negatively influenced the quality of neighborhood life through one or more of the dimensions above, but particularly in terms of impacts on property values and safety:

“But if I were to show my house, I might not choose to tell them [prospective buyers] that [supportive housing] is what is there.” (Respondent, Hilltop).

“I don’t have anything against halfway houses but I don’t think they should be across the street from an elementary school.” (Respondent, Speer)

“... when the registered pedophiles moved in—convicted felons—we weren’t told. This is my neighborhood and I want them out..” (Respondent, Harvey Park).

Moreover, respondents from several neighborhoods indicated that although they understood the need for supportive housing, they were concerned that some neighborhoods disproportionately shouldered the burden of providing these accommodations. This concern is illustrated by the following comments:

“I guess that another thing that our [Park Hill] Neighborhood Association is always concerned about is that they have taken unfair advantage of our part of the city. They have put all of the group homes here and not just mental health but also criminal offenders and they are not well supervised. The concept is good but they’ve put them all in the same neighborhoods and they don’t spread them out. Park Hill has become the beneficiary – a kind of dumping grounds in a lot of ways because of the attitude of more popular, more wealthy neighborhoods that said, ‘We don’t want those kind of people living here.’ ”

“They are dumping these people on our neighborhoods where we have lived for years and years. None of us makes tons of money, but for example, how many half-way houses are in Cherry Creek [a wealthy Denver area]? How many are there in Washington Park? (Respondents, South Park Hill).

Idiosyncrasies of Particular Site/Tract Clusters. The focus groups raised dimensions of several of our supportive facilities and their host neighborhoods that provide crucial additional insights into the foregoing disaggregate econometric results. Unfortunately, these dimensions do little to pinpoint the source of these results. In fact, they raise the possibility that some may not have been due to supportive housing at all, but rather to spurious events in the neighborhood that were roughly coincident with the operating period of the supportive facility.

The primary finding of the apparent positive impact in the low-value, predominantly non-Anglo stratum of sites/tracts can be better comprehended on the basis of our focus group discussions. There is evidence that the broad-range positive price impact (up to 2,000 feet) is due to externalities (both in terms of removing blight and building confidence in the area) generated by the initial development of the facilities during a period with minimal positive real estate activity. One focus group participant from the Montbello area noted, for example, that things were so bleak during the recession earlier in the decade that the neighborhood had witnessed “500 foreclosed homes that had to be auctioned at \$20,000 a piece.” Moreover, a direct, positive externality likely was generated by the observed superior ongoing maintenance at the majority of sites comprising this cluster. This is especially true with regards to the exceptional landscaping of the Montbello #2 site, which measured a positive price impact from 501-2,000 feet in its individual regression.

There also is evidence, however, of a potential spurious relationship within this site/neighborhood cluster. Both first-hand observation by the researchers and numerous comments by focus group participants indicated that large numbers of new, higher-quality homes have been built over the last few years within 2,000 feet of the four Montbello sites within the cluster. These concentrations of higher-valued homes could, in themselves, generate positive externalities that may have boosted prices for existing homes in areas near supportive housing sites in Montbello (Simons, Quercia, and Maria, 1998). Thus, the apparent positive impact from

the low-value, predominantly Hispanic cluster of sites, and the individual Montbello site, must be interpreted with caution.

Other interesting insights can be gained about the converted home for mentally ill residents in the Speer neighborhood (site Speer #1). Recall that this is the only site that yielded statistically significant negative value impacts when analyzed separately, and was noticeably deficient in upkeep from other properties on the block-face, according to our windshield survey. Ironically, however, the focus group assembled from homeowners near this site did not perceive this site as a problem, even though they clearly knew what it was and where it was located. One said, "*It [the mental health site] is fine...It's been here a long time. They've done a good job in the management of it.*" One resolution of this apparent anomaly may be that, inasmuch as many of the participants had, along with many others in the neighborhood, rehabilitated their homes recently after acquiring them, their reference point for "inadequate maintenance" was established in a prior era when the overall condition of the neighborhood was far inferior to its current condition. Under this interpretation, the poor upkeep of this supportive facility may, indeed, be evaluated negatively by prospective home purchasers in the area (yielding the econometric result observed), yet existing homeowners do not perceive it as a problem.

Another interpretation of the econometric results for this site is supplied by our focus group discussion. It may represent a statistical anomaly associated with the relatively recent conversion of many former boarding houses into their original configurations as single-family homes, which is roughly coincident with the period when the supportive site was in operation. Former boarding houses likely would not have been priced correctly by our hedonic equation, because the coefficients for the structural characteristics (the [Struct] variables) would have typically been calibrated for dwellings that always had been designed for single-family occupancy.

For example, the implicit value the equation placed on each 1,000 square footage in a dwelling would be based on a standard number of constituent rooms in a single-family home. But in a boarding house, the same area would be subdivided into a vastly larger number of (small) rooms, which necessitates considerable expense for returning to original, single-family configuration by removing partitions. Therefore, the actual sales price of a boarding house intended for conversion into a single-family unit will be considerably less than a current single-family unit of the same floor area. If, then, a non-trivial number of such boarding house purchases and conversions coincidentally occurred after the opening of the supportive housing facility, as indeed was suggested by our focus group participants, these sales would have appeared to be lower than otherwise would have been predicted, based on the measurable characteristics of the sold structures. However, the price decrement may have been erroneously attributed to the proximity of the supportive facility, instead of the idiosyncrasies of the structures being sold.

A Further Caveat: Effects of a Booming Housing Market. Before closing this discussion of property value impacts of supportive housing, it is necessary to place the quantitative and qualitative results within the context of a city which has experienced tremendous growth in property values during the past few years. Since 1991, the housing market in Denver has been booming after the previous decade-long drought. Participants from all of the focus groups indicated that the value of their homes had increased sharply, with most indicating a two-to-threefold increase from their original purchase price.

Although some participants expressed concern about the effect of higher prices and accompanying rapid population growth on their neighborhoods, most homeowners were quite happy with the increases they noted in the value of their property. Several focus group participants believed that these price increases were good for their neighborhoods, particularly in terms of improving physical conditions. Other homeowners expressed the opinion that in a climate of rising property values, neighbors were more likely to look after their properties. They noted that homes were being fixed up and that a number of properties were converting from rental use to homeownership.

The aggregate econometric results showing positive impacts and the failure of most focus group homeowners to indict supportive housing programs need to be viewed in this environment of rising house prices. While it is true that some of our focus group participants did not hesitate to speak negatively about certain examples of supportive housing, one might also postulate that homeowners and the market as a whole probably are less likely to notice small potential home price deflators in a booming housing market.¹⁰

ESTIMATED CRIME IMPACTS AND THEIR INTERPRETATION

Public safety was uniformly viewed by our focus groups as a key component of the quality of life in a neighborhood. Given these attitudes, our econometric results take on added saliency.

We start by examining the results of our aggregate crime impact models.¹¹ These models are designed to measure the average impact of our analysis sample of 15 supportive housing facilities, across the entire city, which were not within 1,000 feet of any other facility before they

¹⁰Pendall (1999) finds opposition to various forms of affordable housing is less in faster-growing communities.

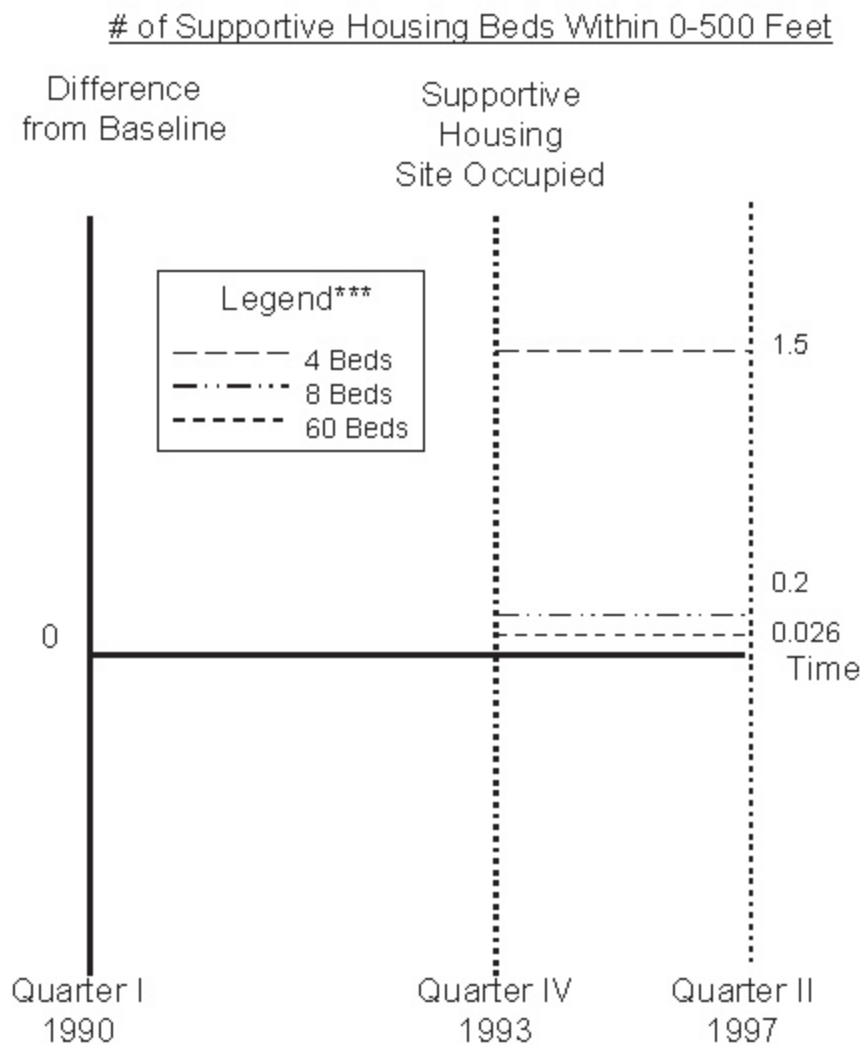
¹¹Overall, the aggregate crime models performed extremely well. The adjusted R-squares ranged from a low of 0.55 in the model for disorderly conduct crime, to a high of 0.93 for the model for total crime. They did not vary significantly between the two model specifications [6] and [7]. Results are provided in Annex D, Tables D.3 and D.4.

opened and commenced operations between 1992 and 1995.¹² We summarize the regression results in graphical form for specifications where coefficients for particular distance rings were statistically significant.¹³ The graph in Figure 5.3 shows for the 1990-1997 period the *differences* in the rate of a particular type of reported crime in proximity to supportive housing sites, compared to elsewhere in (portions of) census tracts not within 2,000 feet of any supportive sites. The vertical axis on the graph indicates the differences in reported annual crime rates per 100 population. The horizontal axis indicates time, starting with the beginning of our crime study period, 1990. The vertical dotted line indicates a representative starting date chosen as the point of first occupancy of the archetypal supportive facility, December 31, 1993. Therefore, the section of the graph to the left of the dotted line is the comparative crime rate pattern during the four years *before* the supportive housing site was occupied, and the section to the right of the dotted line is the pattern during the four years *after* the site was occupied.

¹²The numbers of sites included in the crime analysis (15) differs from the number in the property value analysis (11) because the time periods considered for the two analyses were different (1989 to 1995 for property values and 1992 to 1995 for crimes) and because we used a minimum sales per year criterion to select the property value analysis sites that did not apply in the crime analysis. See Chapter 4 for more details.

¹³In these graphs, we only show the effect of regression coefficients significant at the 95 percent confidence level (two-tailed test), using standard errors produced by population-weighted least squares.

FIGURE 5.3
 Estimated Disorderly Conduct Rates Within 500 Feet of Supportive Housing Site,*
 (Relative to Denver Baseline Areas Not Within 2,000 Feet of Any Supportive Sites)**



* There were no statistically significant impacts of supportive housing observed in the 500-2,000 feet range, using weighted least squares.

** Baseline rates control for county-wide annual trends, plus small area-specific, fixed characteristics.

*** The number of beds represent the 10th, 50th, and 90th percentiles of beds for areas within 500 feet of a supportive housing site.

Before proceeding to an interpretation of our statistical findings, the reader should be cautioned to recognize the unavoidable ambiguity arising from the use of reported crime data. The data reflect both the (reputed) commission of a crime and an official police report filed regarding such. Clearly, not all actual crime may be reported, and not all that is reported necessarily represents an arrest or an action that would produce a conviction in a court of law. This potential lack of correspondence is likely to be less serious for certain types of violent or property crimes, but may be considerable when considering criminal mischief and disorderly conduct offenses. Given the results reported below, this caution carries particular weight.

Crime Trends Before Supportive Sites are in Operation

The results show that in Denver there was no systematic tendency for our analysis sample of 15 supportive housing sites that were developed during the early 1990s to be located in areas of comparatively high crime. Neither the pre-occupancy fixed-effect dummy or trend variables' coefficients were statistically significant for any distance range for any of the five crime types investigated, indicating that the level and the trend of crime in the areas where these supportive housing facilities were developed were no different, on average, from those in areas that were far from any supportive facilities during this period.

There were, however, clear spatial patterns in the rate of reported crimes in Denver. The coefficient of our spatial lag variable was strongly positive and statistically significant for all aspects of crime except disorderly conduct (where it was insignificant). This indicates that there is a strong correlation between crime rates in nearby (up to 15,000 feet) neighborhoods, an unsurprising finding that has been observed before (Griffith, 1987; Anselin, 1992; Bailey and Gatrell, 1995). It also indicates that cross-sectional regression studies of crime which do not control for such spatial autocorrelation may face serious econometric problems.

Crime Impacts of Supportive Housing Occupancy: Aggregate Results

The aggregate regressions, which measure the average impact of all 15 crime analysis sites, showed no statistically significant evidence of any crime impacts within any distance of an operating supportive facility for violent, property, criminal mischief, and total crime rates. Thus, in general for this particular set of facilities opening in the early 1990s in Denver, we conclude that proximity to supportive housing had *no significant effect* on the reported rates of total, violent, or

property crime.¹⁴ We reiterate that the analysis sites upon which this finding is based vary considerably in size and program type. Thus, it is inappropriate to attribute this result to any particular type of supportive housing.

There is one important qualification to this generalization, however. For this set of facilities overall we observed a robust, highly statistically significant relationship between *reported disorderly conduct rates* and *500 foot proximity* to a supportive facility, when the scale of the facility was modeled (equation [7] above). As portrayed in 1990-1993 segment of Figure 5.3, disorderly conduct rates observed in the 500-foot ring in which a supportive facility was later to open were not significantly different from rates in other areas not within 2,000 feet of any current or future supportive sites. After the opening of a supportive facility, the relative rate of disorderly conduct shifted upward by 0.026 for each supportive unit in the vicinity. This is a substantive change. For a typical supportive facility of eight beds, for example, it would represent a doubling of disorderly conduct rates (measured at the Denver mean of 0.2) in the vicinity. For the analysis sample maximum of 60 beds, the predicted increase in disorderly conduct offenses would be 1.5, representing a roughly 15 percent increase in the *total* crime rate for this small vicinity, on average.

This finding provides the clear implication that, the greater the number of beds in a supportive facility, the greater the incidence of police reports of disorderly conduct. Our method cannot determine whether it is the behavior of residents in the facility, the behavior of neighbors to the supportive housing, the fact that neighbors of supportive housing may be more likely to call the police than other households who witness the same behaviors, or some other explanation that is responsible for these higher levels of crime reports.¹⁵ Nevertheless, our pre/post model makes it very likely that some aspect of the presence of a supportive housing site in the area is contributing to this effect.

Additional support for this view is provided by the finding that the coefficients for the post-opening number of supportive beds variables at the 501-1,000 feet and 1,001-2,000 feet ranges were extremely small in magnitude and statistical significance, consistent with the hypothesis of localized negative externalities created in the vicinity of the supportive facility. Further, the finding above of no positive property value impact within 500 feet (but rather from 501-2,000 feet) is consistent with the hypothesis of negative externalities (such as disorderly conduct activity) being offset by positive externalities (such as rehabilitation of the site).

¹⁴The classification of violent and property crimes corresponds to those used in the FBI's *Uniform Crime Reports* (see Annex C, Table C.4). These categories of crimes were most often cited by our focus group participants as being important to neighbors of supportive housing sites.

¹⁵Our crime data do not identify the complainant, so we cannot determine whether crime reports are being filed by the supportive housing site occupants or management or by their neighbors.

Crime Impacts of Supportive Housing Occupancy: Disaggregate Results

Unlike the findings for the property value impact models above, here the aggregate and disaggregate results proved remarkably consistent. As in the property value disaggregate analysis, we re-estimated our crime impact models on subsamples of our neighborhoods stratified by racial-ethnic composition, and property value level and appreciation rates.

Regarding our primary finding, disorderly conduct rates proved statistically significant and of roughly comparable magnitudes in most of the strata analyzed. The important exceptions to this generalization was the stratification by terciles of median 1990 property values and 1990 percent Hispanic. For the property values, the coefficients for the post-opening number of supportive beds variables at the 0-500 feet range were statistically significant but had values of 0.02, 0.07, and 0.09 in the higher, middle, and lower terciles, respectively. For the Hispanic terciles, the coefficients for the post-opening number of supportive beds variables at the 0-500 feet range were statistically significant with values of 0.09, 0.07, and 0.02 in the higher, middle, and lower terciles, respectively. A few of the strata evinced statistically significant impacts in the 501-1,000 feet range, though the patterns are less definitive.

The only other noteworthy finding from the disaggregate results regarded violent crimes. The post-opening number of supportive beds variable at the 0-500 feet range had a statistically significant and positive coefficient in the stratum defined by 95 percent or more white residents. The post-occupancy trend variables for 501-1,000 and 1,001-2,000 feet had statistically significant and positive coefficients in the stratum defined by lower home appreciation rates. Inasmuch as lower appreciation areas also typically had the higher values in 1990 and were predominantly white-occupied, this set of results suggests that reported rates of violent crime increased in the vicinity after supportive housing was opened in the more affluent sections of Denver.¹⁶ This finding is based on a small number of supportive sites, however, so one should not make any firm conclusions or generalize.

Key Insights of the Focus Groups Regarding Crime Impacts of Supportive Housing

Analysis of our focus group discussions reveals much about the degree to which homeowners' perceptions correspond to these econometric results. Recall from above that all groups placed great importance on public safety and cited instances where public safety was threatened by incidents in their neighborhoods. Moreover, as noted in our discussion of property value impacts, five of the nine groups volunteered commentary about the presence of supportive facilities in their neighborhoods. Yet, interestingly, there were only three cases in which feared

¹⁶In addition, CUPost at the 501-1,000 foot range was positive for total crime in the highest-valued tercile of neighborhoods.

or perceived criminal behavior of any sort was linked directly to supportive housing. In the first instance, a homeowner from the Speer neighborhood revealed an implicit fear:

“The City doesn’t show much respect for the schools. They put a halfway home for criminals right across the street from the Catholic elementary school.”

Secondly, a Park Hill homeowner asserted that a fear of violent behavior emanating from supportive facilities was justified, given what occurred in an adjacent neighborhood:

“[They] had a home for criminal rehab-type of people. This is what I feel does not belong in a neighborhood. I feel that [facility] should never be allowed, and by virtue of the fact that there was one [in that neighborhood], a young lady was killed.”

In the third instance, a homeowner identified a “state-run facility for pedophiles” nearby, at which she claimed a variety of unsavory behaviors occurred that we could interpret as disorderly conduct:

“There are six registered pedophiles living there. This group parties and drinks all night!”
(Respondent, Harvey Park)

The concern again went beyond criminal mischief and disorderly conduct, however:

“The registered pedophiles moved in four blocks from an elementary school; there are several schools nearby. There are a group of parents working on this. We played here as children and we never had to fear. That’s why I wanted to live here [as an adult]. But now...” (Respondent, Harvey Park)

The foregoing raises an intriguing issue. If: (1) public safety is salient to homeowners, (2) they know instances when public safety is less than satisfactory, and (3) most of them know about the existence of a supportive facility nearby, why did not they make more of the linkage between disorderly conduct and supportive housing, given our strong statistical results? We consider two, non-mutually exclusive potential explanations.

First, disorderly conduct may simply not be important enough to participants (compared to property or violent crimes), either in perceived severity or frequency, for them to volunteer vignettes about such during a focus group encounter, let alone attribute it to supportive housing. Disorderly conduct incidents are comparatively rarely reported, on average. As shown in Table 4.2, this category represents only two percent of all offenses reported to police in Denver, constituting 0.2 incidents per year per 100 residents. As such, increases in disorderly conduct that may be caused by supportive housing nearby may not cognitively register in the minds of

homeowners as a sufficiently serious erosion of general public safety to mention in our discussions. A corollary point is that all but one of the focus groups agreed that crime had fallen in their neighborhood “over the past few years.” It may be the case that, in a regime of increasing general public safety, less serious and less frequent crimes, like disorderly conduct, fall further in salience as a concern for homeowners. Despite its plausibility, however, we cannot put excessive stock in this argument because multiple participants in several groups volunteered their concerns over vandalism, noise, and graffiti. People do recognize and, apparently, worry about such “minor” crimes.

We find a second explanation more persuasive. In many neighborhoods there are likely other, more visible geographic loci of criminal activity besides supportive housing facilities about which to express concerns. For example, poorly managed rental properties were sometimes blamed for eroding public safety:

“There are some rental properties that are not controlled, and too many people move in...there were sometimes five families living there, with lots of partying and drug dealers.”
(Respondent, Harvey Park)

Another homeowner discussed a former Section 8 project now converted to private rental as a place where disorderly conduct reputedly reigns:

“We are working with the police...it’s loud, noisy, they turn up their music, they show off. The trash flies, they don’t care. It’s bad.” (Respondent, Harvey Park)

Ironically, other forms of subsidized housing were also mentioned as a source of crime. Several participants in the Montbello group cited a “Section 8 home” as the center of gang activity, noise, and “fast street life” in their neighborhood. A participant in another group said:

“There’s been crack houses set up in some of these Section 8 houses.” (Respondent, Park Hill)

In other cases, a main thoroughfare with multiple entertainment venues was seen as an “importer” of crime into the area:

“When I came here my friends asked if I was afraid...Even now, they say, ‘You’re just two blocks away from Colfax Avenue.’” (Respondent, Park Hill)

“I don’t like what happens with people coming off Colfax and pulling up in front of my house. It’s not traffic, it’s prostitution. There’s a motel down the street that has given us a lot of problems. I called the police the other night.” (Respondent, Park Hill)

“There was some unfortunate [crack cocaine] traffic associated with the bars and abandoned bars...” (Respondent, Park Hill)

These comments suggest that any causal link between supportive housing and disorderly conduct offenses, as is supported by our statistical analysis, may be obscured in the perceptions of nearby homeowners if there are other, visible candidates to which to attribute the problem.

SUMMARY

Our findings suggest that the fears commonly expressed by residents faced with the prospect of a supportive housing facility being developed nearby are generally unfounded, at least in Denver. Although our personal reconnaissance, key informant interviews, and focus groups identified cases where particular supportive facilities are reputedly causing problems for a neighborhood, these cases clearly are not the typical pattern in Denver. Overall, there is no statistical evidence that the development of supportive housing generally reduces property values or increases rates of serious crime nearby. To be sure, there is a pattern of greater reports of disorderly conduct within 500 feet of (especially larger) supportive sites. Nevertheless, the results from most of our robust, aggregate models lead us to conclude that supportive housing can generate a positive fillip to property values, particularly in a lower-valued, racially and ethnically diverse area, if the developer succeeds in rehabilitating a dilapidated property and then maintains and manages it well subsequently.¹⁷ Even though such areas are likely to experience more instances of disorderly conduct emanating from the facility, it apparently is not damaging (on net) to property values there.

When respondents expressed concerns about supportive housing, it was typically within the context of specific types of clientele (i.e., criminal offenders) and focused on the perceived impact on neighborhood safety.¹⁸ There were a few vignettes indicating that some residents were acutely aware of and resentful of disorderly conduct at supportive sites nearby. However, these issues regarding the potentially deleterious impacts of supportive housing must be put into a broader context. Our focus group participants more often voiced vociferous complaints that poorly maintained and managed rental housing in general was the prime culprit behind any erosion in their neighborhood’s quality of life. It is clear that they could distinguish “bad” and “good” properties, and did not necessarily equate supportive housing with the former.

¹⁷This finding is consistent with those of previous studies. See Hogan (1996: Ch. 7).

¹⁸This has been a common public concern expressed over all sorts of scattered-site subsidized housing (Hogan, 1996: Ch. 7).

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CHAPTER 6

CONCLUSIONS AND IMPLICATIONS

Context matters. This theme has echoed throughout this study, from key informant interviews, literature reviews, focus groups, to our own empirical analyses. It is difficult and often misleading to refer to “the impacts of supportive housing,” simply because so much depends upon the particulars of each facility’s operator, clientele, neighborhood, and local public policy context.

In this study, we consider supportive housing in Denver during a period in which the city enacted an ordinance mandating strict controls over the siting, design, size, and public notification of supportive housing developments. We analyzed statistically, with a powerful econometric specification, two (overlapping) sets of supportive housing facilities that opened in Denver during the early-mid-1990s and met certain requirements regarding data adequacy and minimum separation from any extant supportive facilities. These facilities comprised a wide range of supportive sites, but included no homeless shelters. The crime analysis included one community correctional facility.

For these particular sets of facilities and their associated operational and geographic contexts as a group, we found evidence that the development of these units:

- Increased values of single-family homes within 501-2,000 feet.
- Had no effect on the rates of violent, property, criminal mischief, and total crime reports within 2,000 feet.
- Increased the rate of disorderly conduct crime reports within 500 feet.

These general patterns, however, may belie a more complex reality. When we disaggregated our regressions we found tentative suggestions that:

- The boost to home prices near supportive facilities occurs in low-value but rapidly appreciating, heavily minority (typically majority Black-occupied) neighborhoods.¹

¹This finding is consistent with those of many prior studies (Dear, 1977; Wagner and Mitchell, 1980; Gabriel and Wolch, 1984; Farber, 1986; Boydell, Trainor and Pierri, 1989; Hargreaves, Callanan, and Maskell, 1998).

- Declines in proximate home prices can occur in certain situations. We found this was the case in two site/neighborhood combinations: one in the most affluent, predominantly White-occupied neighborhood and the other in a modestly-valued, high-density core neighborhood with Hispanics comprising a quarter of the residents.²
- Larger supportive facilities have greater apparent impacts on disorderly conduct reporting rates, and this relationship appears stronger in lower-valued and Hispanic-occupied areas.

We stress that these disaggregated results are more tentative than those from the aggregate analysis because they are based on smaller numbers of analysis sites, with a more limited representation of facility and neighborhood combinations. Since it is impossible for us to ascertain the distinction between facility, clientele, management, and neighborhood effects, we are unable to identify which dimensions of context are the most important.

Contextual variations in the impact of supportive housing were evinced as well during the course of our focus group discussions. Several groups, who we knew to live near well-maintained supportive housing, voiced no concerns over any potential threats of supportive housing to their neighborhood quality of life. Indeed, the topic never arose in our discussions. In other groups, however, when the potential threat of supportive housing was noted, the prospective clientele proved crucial. The fear associated with proximate community correctional facilities was clearly the greatest. Moreover, some participants voiced their complaints about what they perceived as poorly maintained and supervised supportive facilities nearby, while others were equally vehement about “nice” supportive housing near them where residents “gave no problems to anyone.”

Were these empirical findings to have general applicability, they would hold provocative implications for developers and operators of supportive housing, as well as for public policy makers holding regulatory oversight responsibilities for these facilities. We stress that what follows is merely suggestive and designed to stimulate discussion. Firm policy conclusions can only be forwarded after additional replication in other sites. We reiterate that our study was conducted for a particular set of supportive facilities in particular neighborhood contexts located in a city where developers of supportive housing were, for a substantial part of the study period, subject to stringent requirements. Thus, generalizations from the Denver experience should not be made cavalierly.

²That individual supportive sites can depress property values, while others do not, was also found by Galster and Williams (1994).

IMPLICATIONS FOR DEVELOPERS AND OPERATORS

We begin with issues of key importance for developers and operators of supportive housing. Our statistical and focus group findings reinforce claims made consistently by our key informants at the outset of our research program: one should pay close attention to management, public education, and siting context.³

Nearby homeowners clearly can distinguish between well-managed and poorly managed facilities, and public opposition to development of additional facilities is likely fueled by vignettes regarding the latter. Well-managed facilities, on the other hand, apparently can become “invisible” to homeowners as potential concerns or factors contributing to neighborhood change, based on the comments from our focus group participants. Moreover, these sites can, according to our informants, be used as tangible evidence of “good reputation and track record” and help developers allay concerns regarding a prospective supportive housing development in an area.

Enhanced public education is implied by our findings because conventional fears about the impact of supportive housing are not, in general, justified in Denver. Our statistical results thus fully support opinion poll studies of other researchers nationwide, which show that residents’ actual experiences with supportive housing nearby are much more satisfactory than they had predicted (Wahl, 1993 and Cook, 1997). It also supports prior public opinion work on this issue with Denver audiences (Gould and O'Brien, 1997). Other studies have documented the benefits of institutionalizing mechanisms of community participation (Hogan, 1996: Ch. 7).

As for siting, we reiterate our theme of contextuality, in three dimensions. First, recall that our analysis was conducted for widely separated supportive facilities operating for roughly half the analysis period under a regime of strict regulatory oversight. Thus, whatever conclusions we produce are only necessarily relevant for a scattered-site supportive housing strategy. Second, none of our analysis concerns itself with the siting of homeless shelters, and only our crime impact model involved one observation of a community corrections facility. Third, even having noted the previous two caveats, we cannot make specific or definitive siting recommendations on the basis of this study, due to the small sample sizes of analysis sites and neighborhoods in our disaggregated results. Nevertheless, we believe that our results represent strong evidence suggesting that the sort of property value and crime impacts that one might anticipate from the siting of a broad range of supportive facilities varies across space in an important manner. It thus behooves developers of supportive housing to plan carefully where particular sorts of supportive facilities are likely to yield the most positive impacts for their environs, instead of behaving purely opportunistically, acquiring properties that might serendipitously present themselves on the market.

³These policy recommendations are consistent with those made by previous analysts (Hogan, 1996: Ch. 7).

IMPLICATIONS FOR POLICY MAKERS

As for public policy makers, our study raises interesting questions regarding the efficacy of potentially modifying Denver's current legal requirements as they relate to notification and zoning board renewal. Our central finding—that supportive housing generally has a positive impact on neighborhoods when done at a small scale, but that poorly managed properties can be deleterious to neighborhoods—implies that public policy would do well to encourage both public education and high-quality operation in the realm of supportive housing. The importance of public education regarding the clientele of supportive housing and the facilities impacts on neighborhoods was already noted. Here we raise the question as to whether the government should further encourage or even require that developers of supportive housing take a more proactive educational stance. The public sector might, for example, require that a public meeting be held as part of the application process and that all residents within a certain distance of the proposed site be personally invited to that meeting.⁴

Our findings strongly suggest that the public sector pay strict attention to the ongoing operation, tenant management, and physical maintenance of supportive housing facilities. Both our study and others have identified a frustration among some homeowners in the vicinity that management of supportive housing sites too often is unresponsive to their concerns. Given this, even an already strong supportive housing notification policy, such as in Denver, might be further enhanced by encouraging supportive housing operators to pay more attention to community concerns and good management practices. For instance, the Denver regulation could be modified to require a public hearing on the operation of the facility in question as part of the current biennial renewal process. Evaluations of the facility's past two years' performance might be provided by a regulator, with permit renewals contingent on achievement of certain minimum performance standards.

Regardless of the programmatic particulars that might be considered, the key lesson of this study should be kept in the forefront: *context matters*. Developers, operators, and regulators of supportive housing must constantly be aware that care is required in siting, management, maintenance, community sensitivity and oversight to ensure that in each individual situation the facility's potential for positive neighborhood impacts is maximized while potential negative impacts are minimized.

⁴Now in Denver only neighborhood organizations whose boundaries come within 700 feet of the proposed site need to be informed, and a meeting with these organizations is required only should they request such.

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