

THE IMPACT OF SUPPORTIVE HOUSING ON NEIGHBORHOOD CRIME RATES

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ABSTRACT: *Quantitative and qualitative methods are employed to investigate the extent to which proximity to 14 supportive housing facilities opening in Denver from 1992 to 1995 affects crime rates. The econometric specification provides pre- and post- controls for selection bias as well as a spatial autocorrelation correction. Focus groups with homeowners living near supportive housing provide richer context for interpreting the econometric results. The findings suggest that developers paying close attention to facility scale and siting can avoid negative neighborhood impacts and render their supportive housing invisible to neighbors. Implications for structuring local regulations and public education regarding supportive housing facilities follow.*

The imperative for increasing the supply of housing for Americans with special needs has become increasingly clear over the past several decades, as the effects of the AIDS epidemic, rising homelessness, and changes in approaches to serving the mentally ill and non-violent offenders have manifested themselves. A consensus has emerged that not only did many with special needs require affordable housing, but they also require supervision and a package of support services tailored to their needs, perhaps but not necessarily delivered in conjunction with the housing (Dear & Wolch, 1987, Mechanic & Rochefort, 1990, Newman, 1992). Supportive housing facilities were the result.

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Supportive housing is a broad term that refers to programs that provide support services to special needs populations in conjunction with some form of housing assistance, be it in small group homes, larger institutions, or independent apartments. The special needs populations for which supportive housing has been supplied cover a wide spectrum of groups, including the homeless, chronically mentally ill, recovering substance abusers, developmentally and physically disabled, frail elderly, non-violent offenders, and AIDS victims and other terminally ill people. It has been shown that these programs can have substantial beneficial effects on the persons receiving assistance by giving them the support they need to live in ordinary, residential neighborhoods providing enhanced educational, social, and economic opportunities (Metraux, Culhane, & Hadley, 2000; Ridgeway & Rapp, 1998).

Prior to the 1980s, supportive housing facilities were subsidized primarily by states or private philanthropies. The one longstanding exception was housing for the frail elderly, which was financed under the HUD Section 202 program initially authorized in 1954. The dramatic growth in the homeless population during the 1980s, however, led to the passage of the Stewart B. McKinney Act in 1987 (amended in 1988 and 1990) and, for the first time, the availability of significant federal resources for housing and services programs for homeless persons. During the Clinton administration, supportive housing was emphasized heavily (Fuchs & McAllister, 1996). Innovations in the field were encouraged by the HUD Supportive Housing Program Competition beginning in 1994. HUD's goal was to establish a programmatic continuum along which the needs of various categories of homeless and disabled individuals could be met effectively (U.S. Department of HUD, 1995). Supportive housing became the mainstay of this effort in communities across the country (Guhathakurta & Mushkatel, 2000). At the present time, the main public sector sources of governmental funding for supportive housing include state supplements to the Supplementary Security Income (SSI) 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., Projects for Assistance in Transition from Homelessness, Shelter Plus Care).

Concurrent with increasing governmental emphasis on supportive housing, the public's unease with living in close proximity to individuals who are served by these 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. Researchers and practitioners commonly refer to this as NIMBY (Not in My Backyard) (Dear, Takahashi, & Wilton, 1996; Freudenberg & Pastor, 1992; Takahashi & Dear, 1997). Community groups, especially wealthy, white homeowners, have become increasingly sophisticated and effective in their ability to affect decisions regarding the siting of supportive housing facilities (Graham & Logan, 1990; Pendall, 1999; Seltzer, 1984; Takahashi & Dear, 1997; Wenocur & Belcher, 1990).

The dominant fears motivating such NIMBY-style opposition are clear: property value erosion and crime (Rocha & Dear, 1989). The National Law Center (1997) polled 89 supportive housing programs from around the nation and found that 41% had experienced NIMBY opposition from either prospective neighbors or their local governments prior to beginning their operations. The most prevalent reasons for this opposition were anticipated loss of property values (64%) and a potential increase in crime (61%). Other sources of opposition stemmed from expectations of increased traffic and parking problems (39%), an unsightly facility (21%), and greater noise (18%). Concerns over supervision of residents were voiced in a few additional cases.

Our study probes the issue of neighborhood opposition to supportive housing based on fear of crime. We undertake quantitative and qualitative investigations of a range of supportive housing facilities opening in Denver during the early 1990s. We consider separately those facilities likely to be considered most feared because of crime. These facilities include those serv-

ing non-violent offenders, the mentally ill, and recovering substance abusers. We also examined separately those facilities serving the developmentally disabled and frail elderly (whose crime impact may be much less). We also compare larger and smaller facilities. Our goals are to ascertain whether: 1) rates of various sorts of reported crimes increased in the vicinity of these facilities after they opened (controlling for pre-opening trends and other factors), 2) crime impacts varied by type or scale of facility, and 3) neighbors of supportive housing facilities perceived them as generators of crime and, if so, why.

The analysis shows that our supportive housing sites were developed in areas with comparatively high rates for all types of crimes. For the sample as a whole, and for facilities housing more threatening clientele, there were no statistically significant increases in the rates of any categories of reported crime (total, violent, property, disorderly conduct, or criminal mischief offenses); these figures were based upon crimes that occurred within 2,000 feet of a supportive housing facility after it was developed. However, the sample of larger facilities evinced statistically significant increases in total and violent crime reports within 500 feet and criminal mischief within 501 to 1,000 feet after opening. The weight of the statistical and focus group evidence suggests that it was not the residents of these large facilities who were perpetrators of crime. Rather, the evidence suggests that large facilities attracted more crime because they provided a mass of prospective victims and/or eroded the collective efficacy of the neighborhood.

Our article is organized as follows. The first section reviews the literature examining the neighborhood impacts of supportive housing facilities. The following section presents an overview of the supportive housing delivery and regulatory system in Denver as a context for our analyses. We describe the character of supportive housing programs and local policies designed to minimize any harmful neighborhood impacts. We then turn to our quantitative analysis. We present our econometric model, corrections for standard and spatial econometric problems, analysis sample of supportive housing facilities and crime data, and statistical results. Our qualitative analysis follows, wherein we describe our focus groups and the key insights they produced. Finally, we deduce implications from our work for supportive housing developers and public policy makers.

THE LITERATURE ON NEIGHBORHOOD IMPACTS OF SUPPORTIVE HOUSING

Clientele, Quality of Life, and Property Values

Care must be taken when discussing the impacts of supportive housing because the term can refer to a wide variety of clientele. It is clear from opinion polls that residents make important distinctions on the basis of the clientele proposed for a new facility and adjust their reaction accordingly. Criminal offenders, substance abusers, and mentally ill typically elicit the strongest opposition (Takahashi & Dear, 1997). The National Law Center survey of supportive housing providers (1997) found that the likelihood of community opposition was greatest when the facility was developed for adult recovering substance abusers (50% of the cases met opposition), followed by those developed for adults with severe mental illness (37%).

The resistance to supportive housing facilities results from two types of processes—both economic and non-economic—though in practice the two are often not easily separable (Kaufman & Smith, 1999; Lake, 1993). Moreover, the nature and relative importance of these two elements likely vary according to the clientele of the supportive housing in question.

The primary economic reason for opposing supportive housing relates to the alleged negative externalities generated by these facilities, which are capitalized in property values within

the neighborhood (Grieson & White, 1989). Some of these externalities are independent of the special needs type being served. For instance, any multi-unit development can create unwanted traffic noise and congestion. Another source is inferior management of the facility, which results in poor upkeep of the building and grounds and inadequate supervision and monitoring of tenant behaviors. Other externalities likely are clientele specific. Supportive housing may introduce different racial and ethnic groups or lower socio-economic status populations into a neighborhood. And, as we shall explore more fully, residents of the new facility may be more prone to criminal activity, especially if they are males, members of certain racial or ethnic groups, convicted felons, or recovering substance abusers. All of these effects, it is argued by opponents, will lower the quality of life and be negatively evaluated by the housing market, resulting in psychic and pecuniary losses for property owners in the area.

By the end of the 1980s, at least a dozen scholarly studies investigated this claim for the case of group homes for the chronically mentally ill. The common conclusion was that there was no sizable or statistically significant impact (Mental Health Law Project, 1988). The same conclusion was reached in property value impact studies of group homes for the developmentally disabled (Wolpert, 1978), for children (Knowles & Baba, 1973), and for other types of facilities serving a wide range of clienteles (Farber, 1986; Hargreaves, Callanan, & Maskell, 1998; Wickware & Goodale, 1979). Some studies of the period even concluded that there was a positive property value impact from supportive housing of various types located in lower-valued neighborhoods (Boydell, Trainor, & Pierri, 1989; Dear, 1977; Farber, 1986; Hargreaves, Callanan, & Maskell, 1998; Wagner & Mitchell, 1980). However, Gabriel and Wolch (1984) provide a contrary finding. Recently, however, this conventional wisdom of no harmful impact has been shaken by several, more methodologically sophisticated statistical studies, which have concluded that, with certain circumstances and kinds of developments, supportive housing for the chronically mentally ill can create harmful effects on proximate property values (Colwell, Dehring, & Lash, 2000; Galster & Williams, 1994; Lyons & Loverage, 1993).

Subsidized Housing and Neighborhood Crime Impacts

The primary non-economic process that generates opposition to supportive housing facilities is their perceived relationship to crime in the neighborhood (National Law Center, 1997; Takahashi & Dear, 1997). Though there is no established body of theory explaining how supportive housing might influence crime, it is reasonable to posit that both direct and indirect links are possible.

The direct link is conventionally articulated by opponents: residents of supportive housing facilities are more prone toward criminal activity than would be occupants of the structure were it developed to serve more traditional markets. The plausibility of this direct link depends upon the facility's clientele. The residents of a hospice or elderly care center, for example, may pose little crime risk. However, if the residents of the supportive housing facility in question were chronically mentally ill, recovering alcoholics or drug addicts, or criminal offenders, these traits indeed may be predictive of a higher future propensity toward some types of criminal behaviors, or at a minimum some form of disorderly conduct. Given that the routine activity spaces of these residents may be locally constrained due to limited income and the nature of their special needs, this alleged criminal activity would then be manifested in the immediate environs.

One indirect link between supportive housing and neighborhood crime may transpire through its effects on collective efficacy. Collective efficacy at the neighborhood level refers to the social cohesion present among neighbors and their capacity to enforce norms of civil, lawful behavior through informal social controls. The ability of neighborhoods to actualize the val-

ues that residents share and uphold effective social control has been cited as a key vehicle for deterring crime (Sampson, Raudenbush, & Earls, 1997). Factors that hinder the generation of collective efficacy within neighborhoods include the presence of high levels of social isolation and alienation, concentrated economic disadvantage, and on-going demographic and residential change. Relative to the typical resident, supportive housing residents, especially if they are disabled in some fashion, may be more difficult for the community to enlist as an instrument of collective efficacy. Heumann's (1996) study of mixing mentally ill and recovering substance abusers amid elderly residents of an apartment complex gives an illustration of the eroding collective efficacy hypothesis.

Another indirect link may occur because the clientele of the supportive housing facility is particularly prone to victimization. Developmentally disabled or frail elderly residents may be attractive targets for criminals. Or, a group home for troubled teenagers may be targeted by a violent gang because it houses members of a rival group. This indirect mechanism suggests that, while crime rates may rise in the vicinity of supportive housing, the victims will primarily be residents of the facility and not its neighbors.

Given the public salience of the issue, it is surprising that no empirical studies have systematically investigated the impact of supportive housing facilities on neighboring crime rates. Previous studies of the relationship between subsidized housing and local crime rates have focused only on conventional public housing developments, with one notable exception. Research on crime in and around public housing may be characterized as dated, fragmented, and controversial. Holzman's (1996) review of criminological research on public housing in the United States describes the huge knowledge gap that currently exists. Holzman (1996) 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" (p. 362).

Several studies have found higher crime rates in conventional public housing and neighborhoods with public housing (Brill & Associates, 1975, 1976, 1977a, 1977b, 1977c; Newman, 1972; Roncek, Bell, & Francik, 1981). However, others found evidence that levels of crime in and around public housing were exaggerated or site-specific (e.g., Farley, 1982; Holzman, Hyatt, & Dempster, 2001). Moreover, research on drug trafficking and public housing (Dunworth & Saiger, 1993; Harrell & Gouvis, 1994) has challenged the direction of causality. Are crime rates higher in neighborhoods where public housing is located because the latter causes more crime, or is public housing systematically located in areas that already have higher crime rates? Because of inadequate statistical methodologies, 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 Community Development Corporations in central neighborhoods of Minneapolis from 1986 to 1994. To overcome the ambiguity about causation, they employed statistical models comparing crime reports pre- and post-opening of the subsidized housing. 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 a supportive housing facility: 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 drawn from the Goetz, Lam, and Heitlinger (1996) study or from previous research on conventional public housing about the impacts of developing supportive housing sites on crime rates in surrounding areas. Our research aims to begin filling this vital gap in the literature.

THE RESEARCH CONTEXT: SUPPORTIVE HOUSING IN DENVER

The Supportive Housing Delivery System

Supportive housing is delivered by a wide range of organizations in Denver. According to the Denver Community Development Agency's (n.d.) most recent *Housing Resource Directory*, 22 non-profit and for-profit organizations provided emergency, crisis, or 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 (City and County of Denver, 1998b).

- **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 that 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 that encourages short-term occupancy.

Between 1987 and 1997, 146 supportive housing sites were occupied within Denver. The locations of these sites are presented in Figure 1. It demonstrates a distinct clustering of sites in the near south side and east-central areas of Denver, near the downtown-capitol district. The distribution of supportive housing facilities across neighborhood home value ranges is considerably more uniform, however. Thirty-nine percent were located in tracts having values in the lowest third of the 1990 median home value distribution, 24% were in the middle third, and 37% were in the highest third.

Forty-two percent of the supportive housing facilities are classified as Small Special Care Homes, 44% as Large Special Care Homes, 9% as Adult Community Corrections Facilities, 3% as Homeless Shelters, and 2% are combinations of the above. Almost two-thirds are operated by non-profit agencies. Typically the facilities are of small scale: 42% house less than nine residents; 18% house between 10 and 19 residents; 30% house between 20 and 100 residents; and 10% house over 100 residents.

The growth of the industry in Denver during the past two decades is evident. Only 22% of the facilities were developed prior to 1980, 41% from 1980 through 1989, and 37% from 1989 through 1997. According to our key informants in Denver, the most significant local event stimulating the expansion of supportive housing has been the Goebel case (*Goebel et al., v. Colorado Department of Institutions et al., 1981*) in which chronically mentally ill plaintiffs

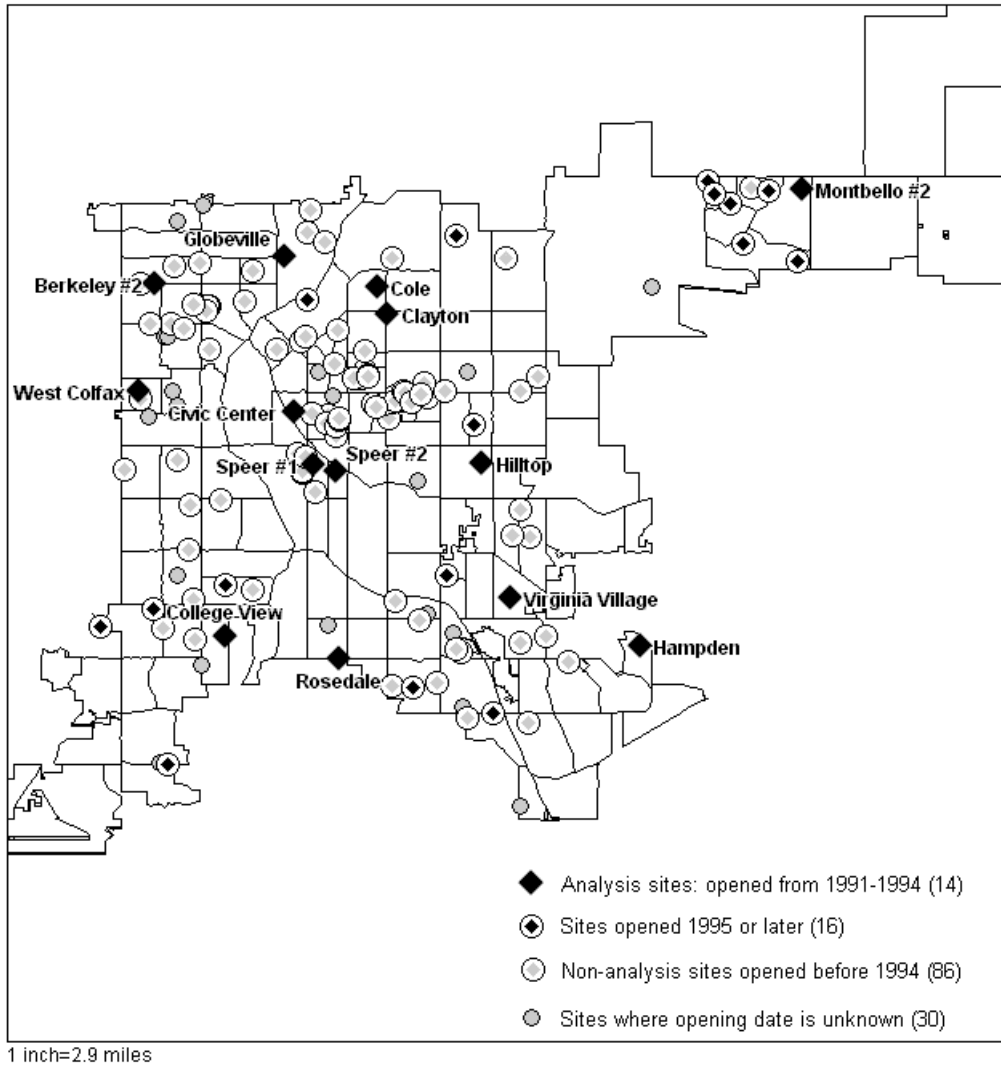


FIGURE 1
Supportive Housing Sites

sued governmental service providers for supplying inadequate care. The settlement required, among other things, that Denver provide \$150,000 annually for supportive housing services from 1994 through 1996 and develop affordable and appropriate housing for 250 chronically mentally ill persons. This housing was to range from small group homes to independent apartments (Lindsay, 1998; Pankratz, 1998).

Legal Restrictions on the Siting of Supportive Housing in Denver

Not surprising given the aforementioned acceleration in the pace of supportive housing facility development, there have been highly visible and contentious debates in Denver over site

selection. These debates ultimately resulted in the 1993 passage by city council of the Large Residential Care Use Ordinance (R.M.C. 59–80(2), later amended). This law sought to ameliorate concerns related to the facilities of both supportive housing advocates and host neighborhoods (City and County of Denver, 1998a, 1998b). For the former, the law affirmed the need for housing special care populations in non-institutionalized, non-concentrated residential settings located throughout Denver. The purpose of the policy was to aid their integration into the mainstream of society. For the latter, the law affirmed the importance of maintaining viable neighborhoods and the potential validity of neighborhood concerns. These goals were facilitated by specifying minimum separation requirements among facilities, by limiting the size and scale of facilities, and by establishing a mechanism of consultation between the developer and the host neighborhood that was mediated by city officials.

Currently, the Large Residential Care Uses Ordinance contains the following provisions designed to minimize adverse neighborhood impacts (City and County of Denver, 1998a, 1998b):

- 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 who 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.
- Proposed sites must have all necessary licenses, at least one staff person on-site, adequate parking, and exterior modifications that are harmonious with the 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 2000 feet from another like facility, and no more than two other like facilities for that use can exist within a 4000 foot radius. A 10% exception to these spacing rules can be granted by the zoning administrator if it would not substantially or permanently injure the surrounding neighborhood.
- 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. The administrator investigates citizen complaints about a supportive care facility 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.

These regulatory restrictions on supportive housing in Denver thus provide a comprehensive attempt to avoid any adverse siting consequences. Whether these regulations were needed and whether they have been successful is the subject of the empirical investigations reported in the next sections.

QUANTITATIVE ANALYSIS

Challenges in the Statistical Analysis of Supportive Housing and Neighborhood Crime

The analyst faces two fundamental challenges when trying to ascertain whether there is cross-sectional variation in crime rates that can be associated with proximity to a supportive housing site: providing adequate control variables and discerning directions of causation. The analyst must control both for the crime-influencing idiosyncrasies of the neighborhood in which supportive housing is developed and the city-wide factors in the economy, policing, and community relations that may affect broader crime trends over time. Without such controls, a cross-sectional study will be unable to avoid spurious correlation between supportive housing and neighborhood crime. For example, one candidate for such an important omitted variable is the presence of a (possibly large) apartment building in the area into which some special needs households are placed at a later date after the building is rehabilitated. In such a case the statistics could not distinguish between the crime impacts of proximity to an apartment building and proximity to a supportive housing development. Analogously, a time-series study of crime trends near supportive housing must control for crime trends across the entire city before a convincing story of neighborhood externalities can be told.

The second challenge is distinguishing direction of causation: whether supportive housing sites lead to subsequent increases in neighborhood crime or whether supportive sites are systematically located in areas having higher crime in the first place. There are four primary 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 housing facility will be encouraged to maximize 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 constrain 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 specific types of neighborhoods (Harkness, Newman, Galster, & Reschovsky, 1997). Fourth, potential opposition to the development may be less in more socially disorganized neighborhoods (Graham & Logan, 1990; Pendall, 1999). All these reasons imply that the particular neighborhoods in which supportive housing facilities are developed are not likely representative and may systematically be associated with higher-crime rates before the development occurs. This means that simple econometric specifications analyzing a cross section of neighborhood crime rates and proximity to supportive housing will discern a positive correlation, but can make no inferences about direction of causality.

Our approach meets these challenges by employing a pre- and post-econometric design involving localized fixed effects derived from the specification originated by Galster (Galster, Smith, & Tatian, 1999; Santiago, Galster, & Tatian, 2001). We allow for areas delineated by three concentric rings around supportive housing sites to have their own idiosyncratic levels and trends of crime both before and after the sites are developed. After controlling for metro-wide changes in crime rates, by comparing these localized fixed effects before and after the development of supportive housing sites, we can distinguish cause and effect unambiguously. The complete specification of our model follows.

An Econometric Model for Analyzing Determinants of Local Crime Rates

Because our model is both innovative and complicated, a non-technical overview is in order. Our regressions are designed to estimate the level and trend of neighborhood crime both before and after a supportive housing site is opened. The model projects the pre-development level and trend of crime in the neighborhood into the post-development period, while adjusting for changes in citywide crime trends. This procedure enables us to estimate the extent of crime that would have occurred had the site not been developed. Comparison of this counter-factual estimate with the actual level and trend of crime post-development provides our test of impact.

In order to get clean pre- and post-development crime estimates, we need to choose sites meeting two criteria. First, there must be enough years of crime data both before and after development to accurately measure trends. Inasmuch as we only had crime data for 1990 to 1997 and wished to have at least two years of observations both before and after a supportive housing facility opened, our sample of sites was restricted to those that opened between 1992 and 1995. Second, only the first supportive housing development in a neighborhood can be analyzed; consequently, pre-test data were gathered before any supportive housing had been developed there.

These two criteria guided our application of a Geographic Information System (GIS) to specify three types of geographic areas within Denver that form our units of analysis, as amplified in the next section. One set of neighborhoods consisted of 2,000-foot diameter circular areas centered on supportive housing sites meeting both criteria above, which are called analysis sites. A second set consisted of census tracts or parts thereof with no proximate supportive sites, which are used in the analysis as observations to control for the citywide crime trend. The third set comprised all other areas and is not employed in the analysis.

For each year in our sample, addresses of individual crimes by category as reported to the Denver police are geo-coded and accumulated by each area delineated above. Corresponding population estimates for each area are also generated by GIS through the aggregation of data for constituent census block groups. Merging the information permits the computation of annual reported crime rates for each neighborhood, which become the values of our dependent variable.

Delineation of Neighborhood Units of Observation and Crime Rates through GIS

Our GIS-defined geographic units of observation are unconventional and need detailed explanation. Using MapInfo, we parsed the space comprising the city and county of Denver into three mutually exclusive categories. Category 1 consisted of circular areas with a radius of 2,000 feet centered on supportive housing sites that were approved by Denver zoning regulators: 1) before 1991, 2) after 1995, or 3) during 1991 to 1994 and with at least one other such site within 1,000 feet at the time of approval. Category 2 consisted of areas with a radius of 2,000 feet centered on supportive housing sites that were approved by Denver zoning regulators during 1991 to 1994 and had no other such sites within 1,000 feet at the time of approval. Category 3 consisted of the remaining parts of census tracts that did not fall within either Category 1 or Category 2. Because we only had data on when a supportive housing facility was given zoning approval, not when they began operation, we assumed opening occurred within 12 months of approval.

For our statistical analysis we only used areas from categories 2 and 3. Category 1 areas did not permit us to employ our pre/post design, inasmuch as: 1) we only had crime data for 1990 to 1997 and wished to have at least two years of crime data both before and after a supportive housing facility opened, and 2) because the pre-development for the supportive housing facility in question already was contaminated by the presence of another such proximate

facility. Category 3 areas allowed us to control for Denver-wide trends in crime that were unaffected by proximity to any supportive housing sites. Category 2 areas provided the raw material for our impact tests.

To obtain a finer-grained portrait of the spatial extent of any impacts within Category 2 neighborhoods we delineated three smaller geographic areas centered on each of our supportive housing sites used in the analysis: a circular area within a 500 foot radius and two concentric rings with widths defined by 501 to 1,000 feet and 1,001 to 2,000 feet distances from the site. Each ring was used as a separate unit of observation.

For all Category 2 and 3 areas we measured the annual number of various types of crime reported to the police, based on the geo-coded addresses of each incident. To standardize these counts by population in the conventional fashion, we divided the total crimes reported in the area by a population total, calculated from 1990 census block group level data using MapInfo. Two primarily non-residential areas were excluded as units of observation.

Model Specification

Our econometric model tested for the presence of any crime impacts associated with being a certain distance from an operating supportive housing site. In symbolic terms:

$$\begin{aligned} \text{Crime}_{it} = & c + [\text{Year}_t][b] + [\text{Area}_j][m] + p \text{ SpaceLag} + d \text{ CRAll}_{500} + e \text{ CRAll}_{1K} \\ & + f \text{ CRAll}_{2K} + g \text{ CPost}_{500} + h \text{ CPost}_{1K} + j \text{ CPost}_{2K} + q \text{ Time}_{500} \\ & + r \text{ Time}_{1K} + s \text{ Time}_{2K} + t \text{ TrPost}_{500} + u \text{ TrPost}_{1K} + v \text{ TrPost}_{2K} + \epsilon \end{aligned}$$

Where the components of the model are defined and their purpose explained as follows:

Crime _{it}	Annual rate of reported Type I crimes of type <i>i</i> per 100 residents during year <i>t</i> in specified geographic area
<i>c</i>	Constant term to be estimated by regression
[Year _{<i>t</i>}]	Vector of dummy variables indicating each year <i>t</i> ; a measure of intertemporal variations in crime for all areas in Denver
[Area _{<i>j</i>}]	Vector of dummy variables denoting each of <i>j</i> – 1 Category 3 census tracts and Category 2 impact areas (or subsections thereof); a fixed-effect measure of the average level of crime during the 1990 to 1997 period reflecting the time-invariant idiosyncrasies in each
CRAll _{<i>x</i>}	Dummy variable equaling one if within <i>x</i> feet of any Category 2 sites, zero otherwise; a fixed-effect measure of the average level of crime during the 1990 to 1997 period in distance ring <i>x</i> around all sites used in analysis
CPost _{<i>x</i>}	Dummy variable equaling one if within <i>x</i> feet of any Category 2 sites after supportive housing facilities in question in operation, zero otherwise; a fixed-effect measure of the average level of crime during the post-opening period in distance ring <i>x</i> around all sites used in the analysis
Time _{<i>x</i>}	Trend variable for distance ring <i>x</i> around all Category 2 sites; equals one if crime measured in first year of study period (1990) and observation is for distance ring <i>x</i> , equals 2 if crime measured in second year of study period, and crime is in distance ring <i>x</i> , etc.; zero otherwise; a measure of crime trends during the entire 1990 to 1997 period within distance rings <i>x</i> of all supportive housing sites used in the analysis.

- TrPost_x Post-opening crime trend variable for distance ring x around all Category 2 sites; equals one if observation occurs in first year after site was occupied, equals two if observation in second year after site was occupied, etc., and zero otherwise; a measure of crime trends during the post-opening period within distance rings x of all supportive housing sites used in the analysis.
- SpaceLag A spatial lag variable with a distance cutoff of 15,000 feet; corrects for spatial autocorrelation (see below).
- ϵ A random error term with statistical properties discussed below

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

The key tests of impact involve the coefficients of the CPost_x and TrPost_x variables. Should they prove positive (and statistically significant), it would imply that the set of supportive housing sites analyzed had a consistent impact increasing either the level and/or the trend of the type of crime being measured in the distance range x . Note that this impact is measured by comparing it to what would have been manifested in those same sites had conditions prior to the opening of these facilities persisted (as shown by the coefficients of the CRall and Time variables), controlling for city-wide crime trends (as shown by the Year variables).

To better grasp the intuition of these econometric tests, consider Figure 2, which portrays hypothetical crime data over time in the neighborhood of a hypothetical supportive housing site and citywide in areas not near any such sites. Suppose that before the supportive housing site is opened, the crime rate in its surrounding neighborhood was higher than elsewhere (shown by positive CRall coefficient), though its trend (Time coefficient) was no different from other areas (coefficients for the Year dummies). If the supportive site increases crime nearby, one or more of the following will be observed. The neighborhood trend of crime (B-B') may increase absolutely compared to its pre-development trend (A-B); the coefficient of TrPost then will be positive. The neighborhood trend may continue (A-B-B"), but represent a relative increase if the citywide trend were to evince a decrease (C'-C"); again the coefficient of TrPost will be positive so long as the neighborhood trend post-development is significantly greater than B-BB". Finally, the neighborhood trend of crime post-development may mimic citywide trends (A-A") but be shifted up above its pre-development level, the coefficient of CPost then will be positive.

Econometric Issues

The superior statistical properties of ordinary least squares regression are present only when the error term (ϵ) above has finite and constant variance and is serially uncorrelated (Intriligator, 1978). Because our dataset of neighborhood crime rates represent a time-series of cross-sectional observations of varying size, we had strong reason to suspect that these assumptions would be violated. Diagnostic tests indicated both autocorrelation and heteroskedasticity problems. Because the source of the problem was known (i.e., related to the fact that we were looking at a fixed set of geographic areas over a period of several years), Hsiao (1986) shows that both conditions will be corrected when we include our aforementioned [Area _{j}] dummy variables. As an additional correction for heteroskedasticity, we used a weighted least squares procedure wherein the observations were weighted proportional to the total 1990 Census population in the neighborhood for which the crime reporting rate was calculated.

Another econometric problem is *spatial dependence*, sometimes known as *spatial autocorrelation* (Pace, Barry, & Sirmans, 1998). It is analogous to serial correlation and refers to the possibility that the observed value of the dependent variable is not independent of the values of other areas nearby in geographic space. If left uncorrected, such spatial dependence would

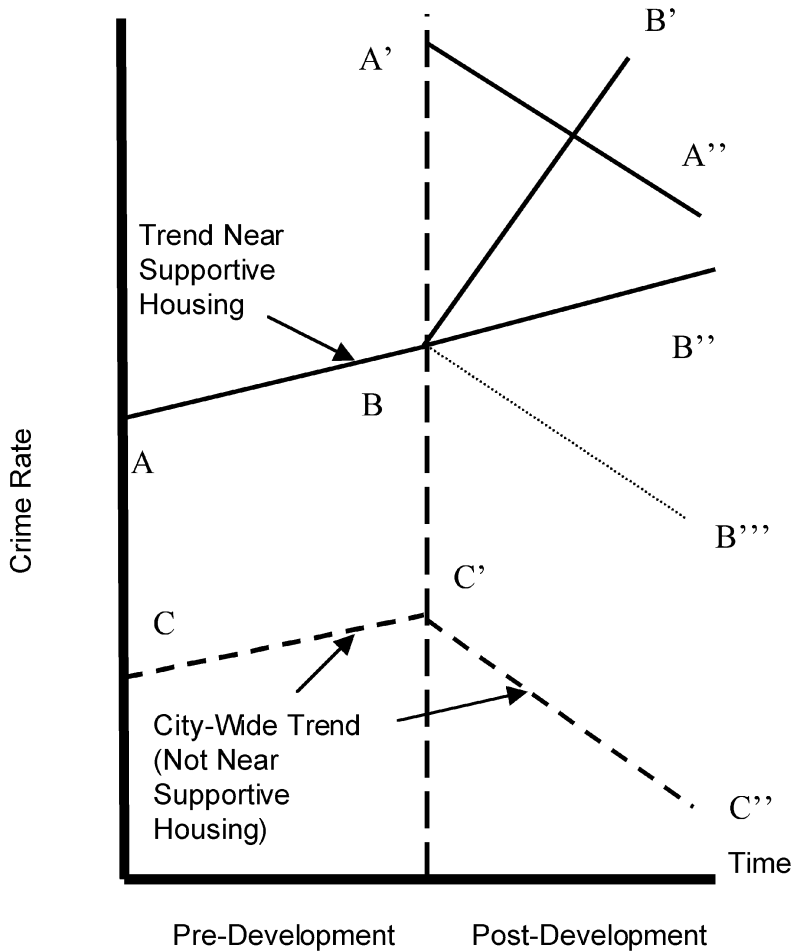


FIGURE 2
Illustration of Three Potential Types of Negative Crime Impacts from Supportive Housing

lead to biased parameter estimates and misleading t-tests for statistical significance levels of parameters.

Several researchers have explored the use of spatial statistics to analyze crime data (Anselin, 1992; Bailey & Gatrell, 1995; Griffith, 1987). However, no studies to date on subsidized housing and crime have employed spatial statistical techniques to diagnose spatial autocorrelation and to control for this effect in constructing a multivariate predictive model. To correct this problem, we calculated the spatial lag of the dependent variable and included it in our model as an independent variable. The spatial lag is an average of all of the observations of the dependent variable within a certain distance from the reference observation, weighted by the inverse of the distance between observations:

$$\text{SpaceLag}(\text{Crime}_{it}) = \frac{\sum_j [(1/D_{ijt})/\sum_j 1/D_{ijt}] \text{Crime}_{jt}}$$

Where: Crime_{it} is the crime rate in the i th area during period t for which we are calculating the spatial lag, D_{ij} is the distance between the centroids of areas i and j , and Crime_{jt} is one of

the set of all areas $j \neq i$, within range assumed to influence the given area. We tried distance cutoffs of 10,000, 12,500, and 15,000 feet, settling on the last as it yielded the greatest improvement of the regression's explanatory power.

Supportive Housing Data Employed

We obtained data on the location and characteristics of the 146 supportive housing sites operating as of December 1997, from the Denver Zoning Commission and the Colorado Department of Health and Environment. We identified the supportive housing locations by geocoding the addresses of the sites. We were able to geocode 90% of the records to an exact street address and an additional 10% to a ZIP + 4 area centroid.

We conducted our econometric analysis of crime impacts on a subset of 14 the supportive housing sites, what we call analysis sites, that defined the centers of the 2,000-foot diameter Category 2 areas noted above. These 14 sites were the only ones meeting the aforementioned criteria for inclusion. Their locations are shown in Figure 1, and corresponding descriptive information is presented in Table 1.

Note that seven of the analysis sites are Small Special Care facilities, six are Large Special Care Facilities (with three housing 100 residents or more), and one is a large Community Corrections Facility. We estimate our crime impact model for various subsets of these sites. One subset includes the three types of facilities deemed a priori to be perceived as most threatening to the neighborhood: the substance rehabilitation, mental health, and community correctional facilities; the remaining 10 non-threatening sites are another subset. The seven large facilities (with a minimum of 53 residents) and the seven small facilities (with a maximum of eight residents) constitute two more subsets differing in scale.

As a final aid to the interpretation of results, consider the nature of our analysis sample in light of the aforementioned 1993 Denver ordinance. All of the seven large facilities in our

TABLE 1

Characteristics of Supportive Housing Sites for Crime Impacts Analysis

Neighborhood	Program type	Zoning	Approval Year	Number of Beds	Other Supportive Housing within 2000 feet**	
					Sites	Units
Berkeley #2	Personal Care Boarding Home*	R2	1993	116	1	8
Civic Center	Substance Rehabilitation	B4	1991	70	1	6
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
Hilltop	Developmental Disabilities	R0	1992	8	0	0
Montbello #2	Children's Home	R1	1992	8	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
West Colfax	Personal Care Boarding Home*	B8-G	1991	100	1	24

Note. *For physically compromised, often elderly clients; **additional sites opening after the given analysis site opened.

analysis were approved before the ordinance went into effect, and all exceeded by large margins the 40-resident scale limitation subsequently imposed by that ordinance (see Table 1). Thus, analysis of the large facilities constitutes a test of the efficacy of the ordinance's facility scale limitations. However, given that our pre/post method forced us to impose the same spatial separation requirements as the ordinance to qualify as an analysis site, our results apply only to supportive housing sites that met spacing requirements equivalent to those imposed by the ordinance.

Crime Rate Data Employed

The Denver Police Department provided databases of crimes reported to them from 1990 to 1997. Each annual database of 45,000 to 54,000 records includes the date, type of crime, and the state plane coordinates where the reported crime took place. We converted the state plane coordinates to latitude and longitude for our mapping and spatial lag distance calculations using MapInfo. Crime reports were assigned to the following categories for our analysis: violent, property, criminal mischief, disorderly conduct, and total (which included the foregoing plus other).

We 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 crimes 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 significant when considering criminal mischief and disorderly conduct offenses. We, therefore, note that the observed variation in reported crimes across different parts of the city and across different crime categories may be partially due to variations in reporting rates and the veracity of reports, as well as actual commissions of bona fide crimes.

As explained above, after estimating populations for the same set of areas for which we tallied crime reports we computed reported crime rates by category and year. As can be seen in Table 2, the total reported 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. Property crime, which comprises 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 noises on public property, remained steady at 0.2 crimes per 100 residents for the eight years of analysis.

Figures 3 and 4 show the variations across census tracts that are masked by the citywide figures shown in Table 2. Violent crime reached 6.7 crimes per 100 residents in the highest

TABLE 2

Denver Reported Crime Rates per 100 residents

	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

Source: Denver Police Department.

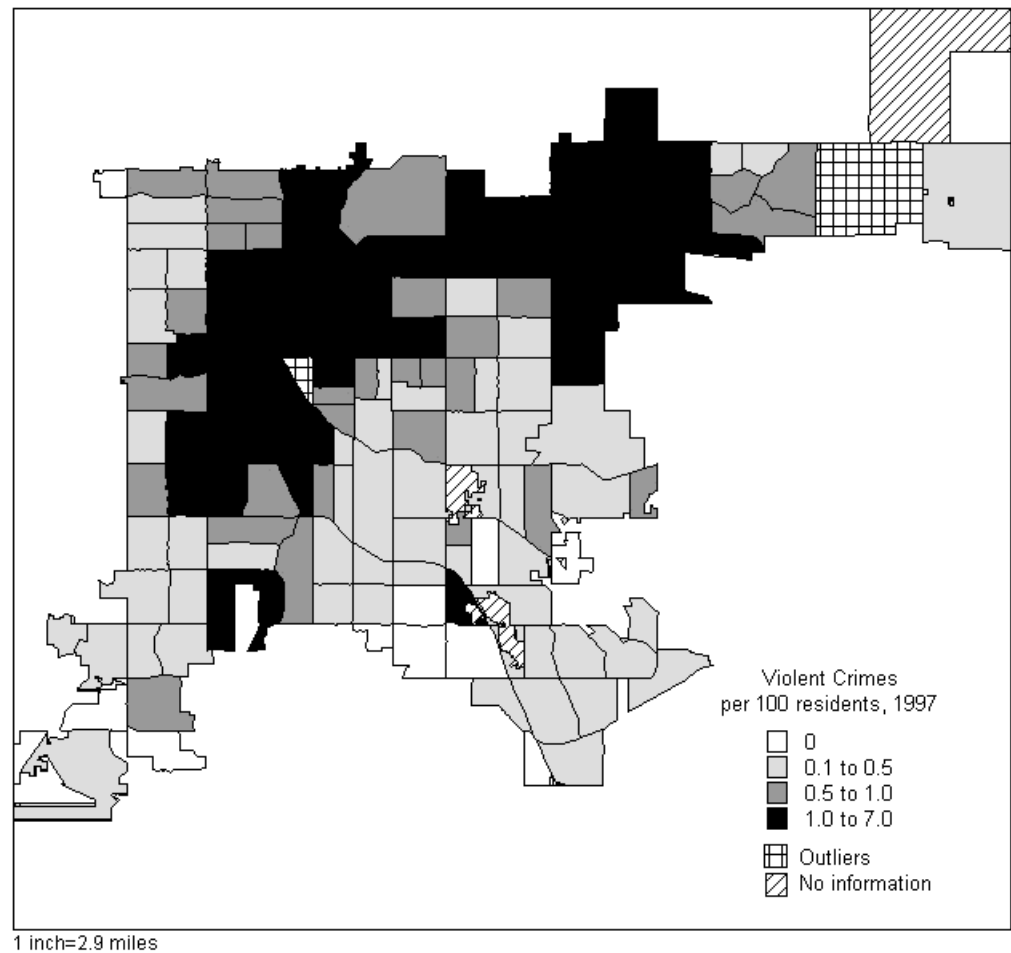


FIGURE 3
Violent Crimes per 100 Residents, 1997, Denver

crime area, and did not occur at all in some tracts. One tract experienced 59 property crimes per 100 residents, while other neighborhoods only had one. The violent and property crimes reveal the same pattern of higher crime along the northern edge and the center west, which follows the general pattern of the Denver areas with higher concentrations of poor and minority households.

There was no minimum level of crime reports used to qualify a geographic area for inclusion in the sample, because zero represented a valid observation. We, therefore, used all the aforementioned Category 2 and 3 areas, with a few minor exceptions. This yielded a sample *N* of 1,272 (159 geographic areas measured annually for eight years) as units of analysis for the econometric model estimation.

Statistical Estimates of Crime Impacts

Overall, the model performed extremely well. The adjusted R-squares ranged from a low of 0.60 in the model for disorderly conduct, the least frequently reported crime, to a high of

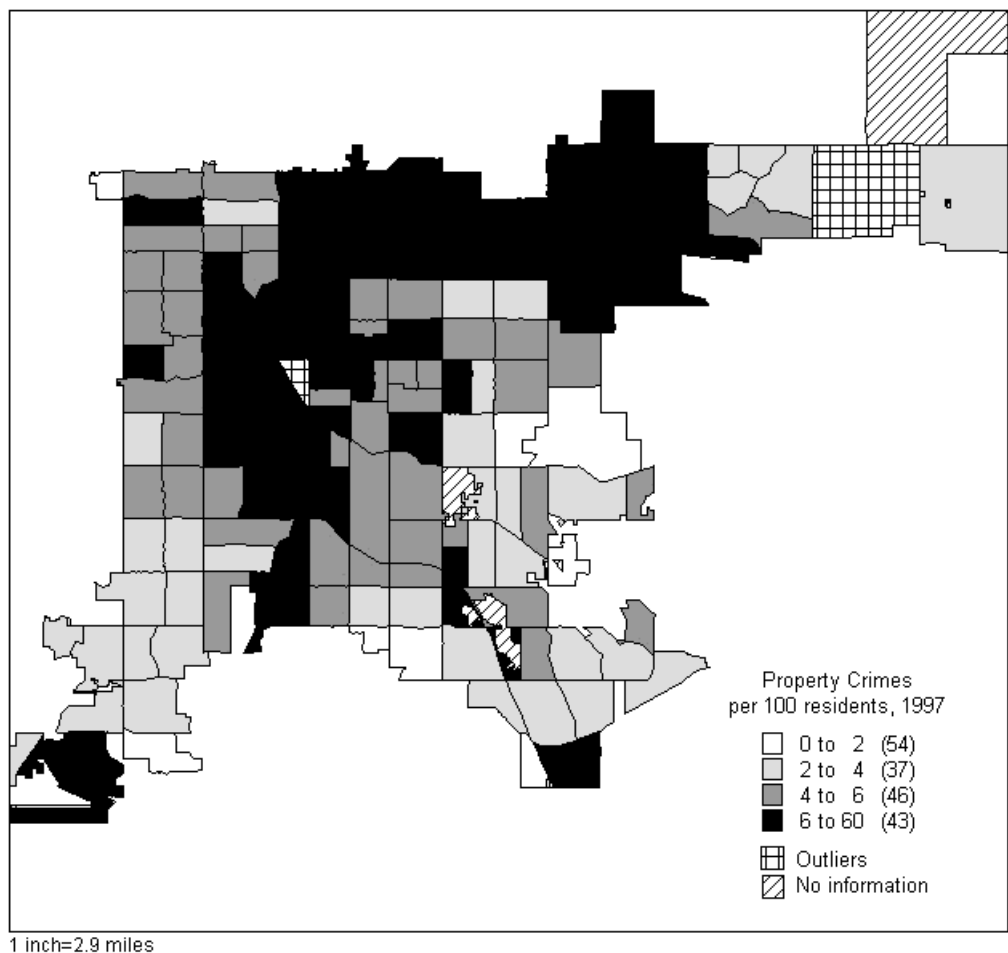


FIGURE 4
Property Crimes per 100 Residents, 1997, Denver

0.93 for the model for total crime. The results for the key impact variables are reported in Table 3. As additional parameter estimates are numerous and have no bearing on our conclusions (such as for the fixed-effect dummy variables for each geographic unit of analysis), they are omitted from Table 3.

Crime Patterns Before Supportive Housing Sites are in Operation

There was a systematic tendency for our analysis sample of supportive housing sites to be developed in areas already evincing comparatively higher crimes than other neighborhoods. The rates of property crime, violent crime, criminal mischief, and total crime (within 501 to 1,000 feet the areas where these facilities were placed) were 42 to 48% higher, on average, than those in other areas. However, crime rates within 500 feet of our analysis sites were no different. In the case of disorderly conduct, the differences were even more dramatic: in the 501 to 1,000 feet range of our analysis sites they were twice as high, and in the 1,001 to

TABLE 3

Regression Coefficients of Neighborhood Crime Impact Variables, by Crime Type

Impact Variables	Type of Reported Crime														
	Total			Property			Violent			Criminal Mischief			Disorderly Conduct		
	Full Sample	Threatening Clientele	Large Facilities	Full Sample	Threatening Clientele	Large Facilities	Full Sample	Threatening Clientele	Large Facilities	Full Sample	Threatening Clientele	Large Facilities	Full Sample	Threatening Clientele	Large Facilities
Level of Crime:															
CPost 0–500 ft.	2.24 [2.92]	–0.63 [10.51]	2.61 [4.10]	1.93 [2.34]	–2.32 [8.52]	2.56 [3.32]	0.23 [0.32]	0.32 [1.06]	0.20 [0.41]	0.17 [0.48]	0.84 [1.64]	0.05 [0.65]	–0.02 [0.15]	0.15 [0.51]	–0.04 [0.20]
CPost 501–1,000 ft.	–0.60 [1.67]	–2.58 [4.28]	0.42 [2.31]	0.37 [1.34]	3.23 [3.47]	1.29 [1.88]	–0.32 [0.19]*	–1.10 [0.43]**	–0.04 [0.23]	0.40 [0.27]	1.07 [0.67]	0.73 [0.37]††	0.1 [0.09]	–0.41 [0.21]**	0.17 [0.11]†
CPost 1,001–2,000 ft.	–0.66 [0.88]	1.17 [1.81]	–1.04 [1.23]	–0.45 [0.70]	0.29 [1.46]	–0.86 [0.99]	0.11 [0.10]	0.54 [0.18]††	0.18 [0.12]	–0.31 [0.14]	–0.44 [0.28]*	–0.54 [0.20]**	0.03 [0.04]	0.03 [0.09]	0.03 [0.06]
Trend of Crime:															
TrPost 0–500 ft.	1.55 [0.91]†	–0.37 [4.75]	2.74 [1.61]††	0.76 [0.92]	0.69 [3.85]	1.67 [1.30]	0.20 [0.13]†	–0.13 [0.48]	0.28 [0.16]††	0.23 [0.19]	–0.28 [0.74]	0.31 [0.26]	0.06 [0.06]	0.12 [0.23]	0.07 [0.08]
TrPost 501–1,000 ft.	0.28 [0.45]	1.49 [1.67]	1.15 [0.90]	–0.08 [0.53]	1.45 [1.36]	0.19 [0.73]	0.01 [0.07]	–0.31 [0.17]*	0.06 [0.08]	–0.06 [0.11]	0.13 [0.26]	–0.02 [0.14]	–0.02 0.03	0.14 [0.08]†	0.01 [0.04]
TrPost 1,001–2,000 ft.	–0.25 [0.41]	–1.48 [0.72]**	–0.20 [0.49]	–0.42 [0.29]	–1.37 [0.59]**	–0.38 [0.40]	–0.04 [.04]	–0.18 [0.07]	–0.08 [0.05]*	–0.03 [0.06]	–0.22 [0.11]**	–0.04 0.08	–0.02 [0.02]	–0.10 [0.04]**	–0.04 [0.02]*
Adjusted R-squared	0.93	0.93	0.93	0.91	0.91	0.91	0.87	0.90	0.89	0.83	0.86	0.84	0.60	0.64	0.62
Dependent Variable Mean	9.27	9.23	9.16	6.09	6.09	6.06	0.69	0.67	0.65	1.14	1.13	1.13	0.19	0.19	0.19

Note: standard errors shown parenthetically; all regressions control for other factors as shown in text

† = $p < .10$; †† = $p < .05$; ††† = $p < .01$; one-tailed tests

* = fails two-tailed test at $p < .05$

** = $p < .05$; two-tailed test

2,000 feet range they were 60 to 75% higher than in other areas. These results strongly confirm our hypothesis that there are strong forces leading to the self-selection of sites into areas evincing higher crime initially. The implication is that simple, cross-sectional regressions relating locations of supportive housing sites and neighborhood crime rates will likely overstate the causal impact of the former because they fail to control for the self-selection bias unless they employ the pre/post specification used here.

Moreover, there were clear spatial patterns in several rates of reported crimes. The coefficient of our spatial lag variable was strongly positive and statistically significant ($p < .01$) for violent crime and criminal mischief, and less so for disorderly conduct and property crime ($p < .10$). This shows that there is a strong correlation between these crime rates in nearby (up to 15,000 feet) neighborhoods, a finding that has been observed before (Anselin, 1992; Bailey & Gatrell, 1995; Griffith, 1987; Morenoff, Sampson, & Raudenbush, 2001). It also indicates that cross-sectional regression studies of crime that do not control for such spatial autocorrelation may face serious econometric problems.

Crime Impacts After Supportive Housing Sites are in Operation

The regressions showed no statistically significant evidence that the levels of reported crime rates of any category increased within any distance of a supportive housing facility after it began operating. See the coefficients of CPost in the full sample columns of Table 3. However, we observed a modestly statistically significant ($p < .10$, one-tailed test) upsurge in the trend of reported violent and total crimes within 500 feet after this set of supportive housing facilities began operating. (See the coefficients for TrPost₅₀₀ in the full sample columns of Table 3.)

To probe this provocative finding further, we stratified our sample of supportive housing facilities on the basis of two criteria: clientele and scale. Statistical tests surprisingly showed that the stratum with threatening clientele (community corrections, mental health, and recovering substance abuse facilities) was not the source of the aforementioned aggregate patterns. See the threatening clientele columns in Table 3.

Rather, it was the set of seven large facilities, each housing 53 or more residents that was associated with the negative crime impacts. See the large facilities columns in Table 3. The magnitudes and statistical significance of the post-opening trend variables within 500 feet were much greater for this stratum than for the sample as a whole. Indeed, they suggest that total crime reports near these large supportive housing facilities increased by about 30% of the sample mean each year after opening; the comparable figure for violent crime reports was 40%. Moreover, these large facilities evinced a higher rate of criminal mischief reports within 501 to 1,000 feet after opening, although this was likely a statistical anomaly because this is offset by an apparent reduction in such reports within 1,001 to 2,000 feet.

We emphasize that our method cannot definitively determine whether the statistical pattern is caused by: 1) proximity to large supportive facilities or some spurious factor; 2) the criminal behaviors of residents in these facilities, 3) neighbors of these facilities, who may be more likely to call the police than other households who witness the same behaviors, and/or 4) criminals being attracted to these facilities' environs. We argue that the weight of the evidence suggests that the latter is the most plausible explanation.

First, our pre/post model makes it very likely that some aspect of the presence of a large supportive housing site in the area is contributing to this effect, not spurious events. Additional support is provided by the finding that the coefficients for the post-opening crime trend variables grew progressively smaller in magnitude and statistical significance when one moved farther away from the site (see Table 3). This is consistent with the existence of highly localized negative externalities created in the vicinity of large supportive housing facilities.

Second, one would hypothesize that if it were the supportive housing residents themselves perpetrating crimes, the set of facilities housing the most threatening clientele would have evinced the greatest impacts. However, even with the contrary finding we cannot reject this possibility completely, for it may be that all sorts of clientele become more difficult to supervise and manage behaviorally in larger facilities.

Third, if it were the case that neighbors of larger facilities merely grew more prone to report crimes or purported crimes, then we would not expect such a large impact on violent crime. Arguably, violent crime has the least reporting error.

We believe that the evidence is most consistent with the hypothesis that larger supportive housing facilities attract criminals, for either of two reasons: lower collective efficacy and/or more victims. Neighbors may sense that they cannot possibly exercise effective informal social controls over public spaces around such a massive facility, so their vital sense of collective efficacy is eroded (Morenoff, Sampson, & Raudenbush, 2001; Sampson, Raudenbush, & Earls, 1997). Moreover, criminals may be attracted near the site because they see a large mass of potential victims and/or low collective efficacy in the area. To explore the causal connections further we employed data derived from a series of focus group discussions with homeowners residing in close proximity to supportive housing.

Qualitative Analysis

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 (Hayes & Tatham, 1989; Krueger, 1994; Stewart & Shamdasani, 1990). Through focus groups we attempted to ascertain whether neighbors were aware of proximate supportive housing and, if so, how they assessed its impact on local crime rates. Moreover, we hoped to glean insights useful in interpreting the results of the econometric models and potentially identifying factors that we were not able to account for statistically.

We engaged in in-depth discussions with focus groups of neighbors of supportive housing about a wide variety of topics related to their neighborhoods. While the focus groups allowed us to capture any comments about supportive housing sites or clients, it is important to note that these topics emerged in the discussion only if focus group participants themselves raised them. The discussion guide was designed not to question the presence or consequences of supportive housing programs to avoid triggering a socially destructive experimenter effect.

Focus Group Methodology

The nine geographic areas from which focus group participants were drawn represented a cross-section of neighborhoods where supportive housing sites were approved between 1989 and 1995. They are located in all parts of Denver, and constitute a wide array of supportive housing facilities as well as neighborhood economic and racial-ethnic profiles. We limited focus group participation to homeowners who had resided in the neighborhood for two or more years. Only addresses of homeowners could be identified using property tax roll records.

A recruitment letter in both English and Spanish was mailed to all homeowners living within 1,400 feet of the selected supportive housing site. The recruitment letter described the project as a study on the quality of life in American neighborhoods; no mention of supportive housing was made. When necessary, we used a screening form returned by prospective participants to generate focus groups that were representative of the demographic characteristics of the neighborhood.

Four main topic areas were addressed in the discussion guide. The first contained questions on what makes for a good place to live and residents' feelings regarding how their neighborhood reflected this definition. The second set of questions elicited participant opinions regard-

ing current neighborhood residents, social networks and the presence or absence of community cohesion. The third topic area included questions on perceived changes in the neighborhood during the last five years. Participants were asked to identify the changes that had occurred and to provide explanations. 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. If supportive housing facilities or clients were mentioned at any point in the discussion, additional probes were utilized.

Each focus group was conducted using a two-member interviewing team consisting of a facilitator and a recorder. The facilitator led the group discussion, and the recorder kept detailed notes regarding the content of the discussion. Facilitators and recorders were assigned to mirror the racial and ethnic composition of the focus group. Upon completion of the group discussion, both the facilitator and recorder wrote up their notes and impressions of the session. These notes were subsequently analyzed to check for inter-rater reliability. The focus group discussions were fully transcribed and analyzed to identify the key themes. Analytical files based on these key themes were then created and analyzed using content analysis to identify any contextual information that would facilitate interpretation of the quantitative results.

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

Analysis of our focus group data leaves no doubt about the importance homeowners place on safety and the potential impact on crime that supportive housing may have. The most salient finding from the focus groups was the great importance of public safety and all groups cited instances where public safety was threatened by incidents in their neighborhoods. However, the link between threats to public safety and supportive housing was not generally made. Although homeowners in five of the nine groups were aware of the supportive facilities located in their neighborhoods, a number of homeowners were adamant in their acceptance of both the facilities and their residents. Several focus groups attested to this acceptance, most clearly represented by the comment of a homeowner in a high income, white-occupied neighborhood: “At the time it [the home for Cerebral Palsy children] went in, we were very concerned . . . but there’s been no problems. The house is right across the street from us. It’s been there for eight years.”

There were only three instances where feared or perceived criminal behavior of any sort was linked directly to supportive housing, and there was no pattern linking these comments to larger facilities. One comment made by a homeowner from a near-downtown, predominantly renter-occupied neighborhood with many supportive housing facilities revealed:

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. I don’t have anything against halfway homes but I don’t think that they should be across the street from an elementary school.

Another homeowner in an upper-income, racially diverse neighborhood 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. That 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 the neighborhood], a young lady was killed.

The foregoing raises an intriguing issue: if public safety is salient to homeowners, if they know instances when public safety is less than satisfactory, and if most of them know about the existence of a supportive facility nearby, why did they not make more of the link between crime and supportive housing, given our strong statistical results? We consider three, non-mutually exclusive potential explanations.

First, in a regime of overall declining crime rates (as was the case in Denver), deleterious crime impacts associated with a supportive housing facility may have less salience for neighbors. Participants in 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 such a context, neighbors are less worried that crime did not fall as fast as it likely would have in the absence of proximate supportive housing.

Second, in many of the neighborhoods that were examined 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. In the words of a participant living in a working class, heavily Hispanic-occupied neighborhood: "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."

Ironically, other forms of subsidized housing were also mentioned as a source of crime. Several participants from a working class, predominantly black-occupied area cited a Section 8 home as the center of gang activity, noise, and fast street life in their neighborhood. A participant in an upper income, racially diverse area echoed this theme: "There's been crack houses set up in some of these Section 8 houses."

A main thoroughfare with multiple entertainment venues was seen as an importer of crime into the area, as revealed by several comments from homeowners living in an upper income, racially diverse area. One commented, "When I came here my friends asked if I was afraid. Even now, they say, 'You're just two blocks away from Colfax Avenue.'" Another said, "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." One homeowner maintained, "There was some unfortunate [crack cocaine] traffic associated with the bars and abandoned bars."

In addition to the above-mentioned problems, homeowners residing in three of the neighborhoods proximate to large supportive housing facilities identified absentee landlords, high densities, substance abuse, gangs, unsupervised teens, transients, and the influx of non-English speaking immigrants as factors contributing to crime and safety concerns in their neighborhoods, not supportive housing. These homeowner comments suggest that a potential causal link between supportive housing and crime may be obscured if there are other, visible candidates or significant changes occurring within the neighborhood to which residents attribute patterns of crime.

Third, there may be no actual relationship between supportive housing facilities and proximate crime rates (especially in the case of small facilities). This could be why our respondents rarely made the link. When operators of supportive facilities are able to address neighborhood quality of life issues effectively, the supportive housing facility apparently becomes virtually invisible to nearby homeowners. Indeed, in four of our nine groups the issue of supportive housing never arose, even though we knew all participants lived within 1,400 feet of such a facility. Three of these groups were located in areas housing only one small facility, but one was close to a facility housing more than 100 residents. We believe that these comments by homeowners (or, more precisely, their absence) are inconsistent with the hypothesis that supportive housing residents are major sources of crime. Unfortunately, the focus groups

did not definitively disentangle whether it was a mass of potential victims or an erosion of collective efficacy that more likely generated our observed statistical patterns. There was, however, a suggestion that homeowners in neighborhoods near large facilities perceived their own inability to maintain social control. In one neighborhood that experienced gang activity, teens hanging out, and a considerable influx of immigrants, residents expressed the following concerns regarding neighborhood social control. One resident said, “Sometimes we don’t have control over what happens in the neighborhood. You go with the flow or you leave.” Another contended, “What we need to do is be better informed about how we can be effective. Need someone to do it but there’s a sense of frustration. We feel a little helpless.”

Unfortunately, we are left to speculate about the degree to which the large supportive housing facility may have contributed to this apparent lack of collective efficacy. To our knowledge, we are the first to hypothesize a link between large-scale supportive housing facilities and crime through victimization and collective efficacy; more research is clearly warranted.

CONCLUSIONS AND POLICY IMPLICATIONS

We investigated 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 a set of 14 supportive housing facilities that were approved during the early 1990s and met certain requirements regarding data adequacy and minimum separation from any extant supportive housing facilities. These facilities represented a wide range of clienteles and scale. We found for the sample as a whole, and for the subset with more threatening clientele, no statistically significant evidence that the development of these facilities led to increased rates of reported violent, property, criminal mischief, disorderly conduct, or total crimes. However, for the subset of seven large facilities with 53 or more residents, rates of reported violent and total crime increased significantly within 500 feet of the sites after they opened.

We believe that the weight of the evidence suggests, however, that it is not the residents of these large supportive housing facilities who are perpetrating these crimes, despite conventional wisdom to the contrary. There is little doubt that supportive housing residents and crime remain linked in the minds of some Denver homeowners. When our focus groups expressed concerns about supportive housing, it was typically within the context of specific types of dangerous clientele, yet we could find no evidence that facilities housing such threatening clientele (criminal offenders, recovering substance abusers, mentally ill) increased crime nearby. Several groups, who we knew to live near such clientele, voiced no concerns over any potential threats. Indeed, the topic never arose in most of our discussions. Other groups were fervent about “nice” supportive housing near them where residents “gave no problems to anyone.” Our focus group participants more often voiced vociferous complaints that poorly maintained and managed rental housing, unsavory commercial establishments, gang activity, substance abuse, unsupervised teens, and transients were the prime sources of crime, not supportive housing.

We think it more likely, therefore, that the crime impact occurs because large facilities either provide a pool of potential victims and/or make it difficult for the neighborhood to maintain collective efficacy. Though not conclusive, homeowners near such facilities offered unambiguous commentary about their lack of social control in the area. This potential connection offers a fertile realm of future research.

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 regulatory requirements. Thus, generalizations from the Denver experience should not be made casually.

Implications

Our statistical and focus group findings reinforce a straightforward recommendation made by others (e.g., Hogan, 1996; National Law Center, 1997): one should pay close attention to supportive housing scale, siting, and public education. Scale emerged as the key factor, with only facilities over 53 units evincing any significant crime impacts. Ironically, such facilities would never have been approved had the Denver Large Residential Care Use Ordinance been enacted a few years earlier. Though our study does not permit the precise identification of the threshold scale where negative impacts ensue, it clearly suggests that limitations of the 40-unit range imposed in Denver seem appropriate.

As for siting, recall that our analysis was conducted for widely separated supportive housing facilities operating under a regime of strict spacing regulations. Although we can, therefore, make no claims about the consequences of a denser spatial clustering of facilities, a scattered-site supportive housing strategy involving small-scale facilities seems unlikely to produce any statistical impact on crime nor for that matter, any negative reactions from nearby homeowners. It thus behooves developers of supportive housing to identify contexts in which supportive housing facilities are likely to yield these neutral impacts for their environs, instead of behaving purely opportunistically and acquiring properties that might serendipitously present themselves on the market, regardless of scale or concentration effects.

Enhanced public education is implied by our findings because conventional fears about the crime impacts of supportive housing are not, in general, justified, as in the case of small-scale, scattered facilities in Denver (National Law Center, 1997). Our statistical results 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 (Cook, 1997; Wahl, 1993). It also supports prior public opinion work on this issue with Denver audiences (Gould & O'Brien, 1997). The tale is cautionary, but it needs to be told.

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