CONTROLLING SOCIAL DISORDER USING CIVIL REMEDIES: RESULTS FROM A RANDOMIZED FIELD EXPERIMENT IN OAKLAND, CALIFORNIA

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Abstract: *This paper reports the results of a randomized field study conducted in Oakland, CA where civil remedies were used to target drug, crime and disorder problems in 50 "experimental" places; and traditional police tactics (surveillance, arrests, field interrogations) were used in 50 "control" places. Oakland's civil remedy program uses citations for building, health, sewer, sidewalk and rodent control code violations, drug nuisance abatement laws, and coercion of third parties (such as property owners, apartment superintendents, and business owners) to clean up blighted and drug nuisance places. On-site observations of social activity on the 100 face blocks in our study were used to measure changes in street behavior as a result of the interventions. Results reveal a decrease in drug dealing and a decline in signs of disorder on the Beat Health-*

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targeted face blocks. We conclude that the Beat Health program generally enhanced social conditions in the 50 experimental places.

INTRODUCTION

The use of civil remedies in controlling social disorder has become increasingly more central to police problem-solving efforts in recent years. Indeed, police departments from New York to San Francisco to Chicago are now advocating the restoration of order by targeting quality-of-life problems, by aggressively dealing with disorder problems (such as panhandling, public drinking, vandalism, public urination), and by focusing on reducing fear of crime (Kelling and Coles, 1996).

Oakland CA's Beat Health program is an example of a civil remedy program (see also Eck, 1997). Beat Health seeks to control drug, crime and disorder problems and restore order by focusing on the physical decay conditions of targeted commercial establishments, private homes and rental properties. Police work with teams of city agency representatives to inspect drug nuisance properties, coerce landowners to clean up blighted properties, post "no trespassing" signs, enforce civil law codes and municipal regulatory rules, and initiate court proceedings against property owners who fail to comply with civil law citations. While the ultimate targets of the Beat Health program are offending individuals living or socializing in target "zones," the proximate targets of the program include landlords, business owners and private property owners.

This paper examines the impact of the Beat Health program on the social and physical conditions of street blocks (or target zones) surrounding 50 targeted commercial establishments, businesses, private homes and rental properties. These blocks are compared, under experimental conditions, to 50 similar street blocks targeted by the regular patrol division of the Oakland Police Department. We begin our paper with a description of the operational components of the Beat Health program. We then discuss the evaluation design and study site characteristics, and describe the interventions at the target sites. This is followed by a discussion of the outcome data and the data collection methods used to assess the social and physical conditions of the street blocks in the study. The results are then presented, along with a discussion of their theoretical and policy implications.

OAKLAND AS THE STUDY SITE

Oakland is the eighth largest city in California (California, Department of Finance, 1996). The 1990 census data indicate that there are 372,242 people living within the 53.8 square miles of the city. Oakland lies across the bay to the east of San Francisco. The city is ethnically diverse with about 45% of the population being African American; 35% Hispanic;[1] about 15% white; and a growing Asian community. Since the 1960s the average household size has been steadily dropping, and there is now an average of 2.34 persons per household. The median income for residents of Oakland is about $20,000 per year, and more than 16% of families live below the poverty line. During the early 1980s, Oakland experienced severe levels of unemployment, which reached 12.9% in 1982 (California, Oakland Office of Community Development, 1992).

The city of Oakland has over 140,000 housing units, more than 50% of which are rented. In 1989 the median rent for a one-bedroom apartment was $560 per month, representing a 12% increase since 1985. Most of the housing units in Oakland are single-family homes, reflecting a style of housing common throughout the West Coast. As with other U.S. cities, the city of Oakland experienced a large increase in real estate prices during the mid-1980s. However, by the 1990s the cost of purchasing property had declined and the median sale price of an Oakland home was about $185,000 (California, Oakland Office of Community Development, 1992).

OAKLAND'S BEAT HEALTH PROGRAM

The Oakland Police Department established the Beat Health Program in October 1988. Since its inception, the program has been used at nearly 3,000 places throughout Oakland, targeting an average of 330 cases per year. Five Beat Health teams, each comprising one uniformed officer and a "partner" police service technician (non-sworn), provide services throughout the city. Beat Health police officers, working in conjunction with their partner police service technicians, "open" a case after making a preliminary site visit to a place that has generated emergency calls, a number of narcotics arrests or special requests from community groups for police assistance. Police begin by visiting nuisance locations and establishing working relationships with citizens, apartment superintendents, landlord and business owners living or working both at the target address and in the immediate surroundings. During the early stages of the intervention, police communicate landlords' rights and tenants' responsibilities, provide ideas for simple crime

prevention measures and gain the citizens' confidence that the police are supporting them in their efforts to clean up the problem location.

The key element of Oakland's Beat Health program is a site visit by the Specialized Multi-Agency Response Team (SMART). The SMART visits involve a series of coordinated visits to problem locations by a group of city inspectors. Depending on preliminary assessments made by the police, representatives from agencies such as housing, fire, public works, Pacific Gas and Electric, and vector control are invited to inspect a problem location, and, where necessary, to enforce local housing, fire and safety codes. About two-thirds of the cases are cited for at least one code violation from a city inspector. The most common type is a housing code violation (Green, 1996).

The police department also draws on its in-house legal expertise and, as needed, uses a variety of civil laws[2] to bring suit against the owners of properties with drug problems. For example, the Uniform Controlled Substances Act makes every building where drug use occurs a nuisance; it allows the city to use the civil law to eliminate the problem by fining the owner, or by closing or selling the property. About 2% of cases result in formal court action against a property owner (Green, 1996).

Although the Beat Health approach focuses on cleaning up the physical conditions of targeted sites, police also increase the levels of uniformed police presence. During routine drive-bys, Beat Health officers sometimes arrest or stop and talk to people who frequent the location (termed a "field contact" in Oakland).

The Landlord Training Program is another important component of the Beat Health program. Landlords are encouraged to screen prospective renters and are informed about the processes for evicting troublesome tenants. In nearly 40% of Beat Health cases, an eviction notice is served against a tenant. Since three-quarters of the locations are typically rented or leased, Beat Health intervention involves a 50% chance of a tenant eviction at some time during the intervention.

STUDY DESIGN

Our evaluation design built from knowledge about the numbers and types of sites that the Beat Health Unit has targeted since 1988 (see Green, 1996). Importantly, we knew that the Beat Health Unit targeted about 14 residential properties for every one commercial site targeted. Moreover, it had been concluded that "...when commercial places were targeted, significant reductions in drug nuisance activity were achieved within targeted sites and surrounding areas" (Green, 1996:98). To enable closer examination of the impact of Beat Health on residential

and commercial properties, we used a blocked randomized experimental design by assigning commercial properties to one block and residential properties to another. We randomized cases in the study within statistical blocks because we believed there were substantial differences between drug dealing activities at commercial and residential properties. Randomized block designs, which allocate cases randomly within pairs or groups, minimize the effects of variability on a study by ensuring that like cases are compared with one another (see Lipsey, 1990; Neter, et al., 1990; Weisburd, et al., 1993).[3]

We sought to include 100 cases in our experiment by selecting 14 commercial sites and 86 residential locations to be randomly allocated to the treatment condition (Beat Health intervention) or to the control condition (uniformed patrol response). Potential Beat Health cases were referred to the Beat Health Unit through several different sources including a narcotics hotline, referrals from other Oakland Police Department officers and community groups, and systematic reviews of "hot spot" arrest locations.[4] Approximately 100 cases (both known drug sites and unknown sites) are typically introduced to the Beat Health Unit each month. These referrals, known as "goldenrods," were recorded on a form each day (or as the case became known to the Beat Health Unit).

All incoming goldenrods from October 15 to December 15 were checked as to their eligibility to be included in the study. Not included for random allocation were existing and old Beat Health locations, locations typically not targeted by the program (e.g., Section 8 housing sites[5] and public housing sites), places that had already been targeted by the patrol division and places that were deemed an "imminent danger" (e.g., child abuse problems evident at the site).

As eligible cases were randomly allocated, new incoming cases had to be mapped. If an incoming goldenrod fell within a 300-foot radius (about one street block) of a case already randomly allocated, the case was withheld and not allocated to either the patrol division or the Beat Health Unit.[6] This case selection criterion allowed for an examination of the effects of the experimental and control treatments, without fear of direct proximal contamination from a nearby site. In effect, this design allowed for an analysis of a catchment area activity (or street block activity) free of some of the confounding problems that arise with overlapping catchment areas and duplicate cases that could potentially bias the evaluation results (for a discussion of these issues see Green, 1995).

Incoming cases were also verified as being either commercial or residential properties. Residential properties were allocated within the "residential block" and commercial properties were randomly allocated to the control or experimental treatment within the commercial block.

Cases randomly allocated to the control condition (uniformed patrol response) were referred to beat officers through an established "beat binder" system. These beat binders were simply folders kept in each patrol car that included places that either community service officers or supervising officers requested beat officers pay attention to. During the intervention phase of our experiment, we added control-allocated cases to the beat binders. By mid-December 1995, the Beat Health Unit was targeting 50 sites (7 commercial and 43 residential), and the patrol division was targeting 50 sites (7 commercial and 43 residential).

CHARACTERISTICS OF THE STUDY LOCATIONS

The study sites came to the attention of the Beat Health Unit in roughly three ways: Nearly half of all cases were "goldenrods" from known individuals in the community (48%); about a quarter were referred anonymously through drug hotline calls, and another quarter were identified through hot-spot searches of places with high numbers of vice and drug arrests over the previous six months. Most of the study sites were rental properties (77%) and twelve of the experimental sites and eleven of the control sites were owner-occupied. Of the dozen owner-occupied experimental sites, ten involved problems with relatives of the owner (see Table 1): the most typical situation was when the children or grandchildren of an elderly owner were involved in drug dealing. In one experimental location the problem was the owner. Ten of the experimental sites and seven of the control sites were completely or partially vacant.

Table 1 also presents the distribution of problems by control and experimental sites (as reported on incoming goldenrods). Drug dealing was reported as a major problem in approximately three-quarters of the locations in both groups. Other problems in the experimental sites included drug use (n=14), blight (n=14), and nuisance problems such as noise and unkempt yards (n=7). Of the control sites, 36 recorded drug dealing problems, followed by blight (n=l 1), other criminal offenses (n=6), drug use (n=4) and nuisance problems (n=4). Other complaints included rat and roach infestations, prostitution, trespassing, problems with pit bulls and/or other animals, and other health and welfare issues.

Prior to the start of the experiment, the control sites and the experimental sites had similar levels of arrest activity (see Table 2). For example, patrol officers made 65 arrests for disorder problems in the experimental sites and 68 in the control sites. For violent crimes, patrol officers made exactly the same number of arrests in the experimental

Table 1: Characteristics of Study Sites

	Experimental		Control	
	Number	**Percent**	**Number**	**Percent**
Reported by:				
Hotline	8	16	19	38
Vice/drug arrest	17	34	8	16
Individual	14	28	10	20
Community/business group	3	6	4	8
Property owner	4	8	2	4
OPD officer (not BH)	1	2	5	10
Beat Health Unit	3	6	1	2
Other			1	1
Problems reported on goldenrods:				
Drug dealing	38	76	36	72
Drug use	14	28	4	8
Trash, blight	14	28	11	22
Rats, rodents	3	6	1	2
Other health hazards	4	8	3	6
Prostitution	3	6	2	4
Trespassing	3	6	1	2
Other criminal offenses	4	8	6	12
Dogs/animals	5	10	3	6
Human welfare	2	4	1	2
Alcohol abuse			2	4
Nuisance	7	14	4	8
Problem involves relatives of owner	10	20	1	2
Problem is owner:	1	2		

Table 2: Pre-Intervention Arrests

Type of Offense	Experimental	Control
Property	54	64
Violent	79	79
Weapons	15	17
Drugs	205	169
Vice	26	21
Disorder	65	68
Total	**444**	**418**

and control sites during the nine and a half months prior to the start of the experiment (n=79). For drug violations, patrol officers made 169 arrests in the control catchment zones, and 205 arrests in the experimental catchment zones prior to the start of the experiment.

EXPERIMENTAL AND CONTROL INTERVENTIONS

Beat Health officers personally visited all but two of the experimental sites. The initial visit was made to confirm the nature of the problem at the target site. The officers checked out the condition of the property from the outside, particularly if trash, blight, hazards or animal problems were reported. Contact was also made with tenants, neighbors and owners/managers to discuss problems or to put tenants on alert that reports had been made. In 35 of the 50 experimental locations, the officers talked to the property owner in person or by telephone. Of the two properties not visited, one was owned by an individual that the Beat Health officers identified as "reputable," and contact was made by a warning letter and telephone calls. The other property was not visited but the owner was sent a warning letter.

Other formal actions taken by officers against the experimental sites included SMART inspections (n=23), general warning letters (n=9), "11570" (drug-related) warning letters (n=13), beat orders (n=9), evictions (n=19) and property clean-ups (n=3). During the 23 SMART inspections instigated against experimental target sites, city inspectors issued nine housing and safety citations, six vector control violations, two sidewalk citations and one sewer violation. The city attorney's office did not file suit against any of the experimental site owners during the period of our experimental tracking (one year).

The nine general warning letters sent by Beat Health officers informed the owners that complaints of problem activities (e.g., drug dealing) had been reported on their property. These letters also advised the owners of steps that they might want to take to prevent or minimize the problems, and offered assistance in resolving the problem. These general warning letters differed from the 11570 letters, which made specific reference to Section 11570 of the California Health and Safety Code (also known as the Drug Nuisance Abatement Act) that holds owners and managers responsible for knowingly allowing illicit drug activity to occur on their property.[7] These 11570 letters also make reference to Section 11366.5(a), stating that criminal actions may be also taken. The 11570 letters serve as official notice of drug activity and a copy is forwarded to the city attorney. The owner is encouraged to call

the Beat Health officer in charge of the case for assistance in eliminating the problem.

In most cases the warning letters (both general and 11570), coupled with assistance and pressure from the Beat Health officers, resulted in solving the problem. A primary "solution" to the problem was eviction. In 19 of the 50 experimental sites, problem tenants were evicted from the property. In several other cases, the problem was resolved when the tenants moved out without eviction orders. The Beat Health Unit cannot order or request that tenants be evicted, but they support eviction as a problem-solving strategy.

Beat Orders were issued in at least nine of the experimental sites. These orders officially notified the patrol division of the problems at a specific locations and requested its cooperation in solving the problem. Beat Health officers then worked in partnership with the patrol division to solve the problem. The patrol division provided extra coverage of the experimental sites by stopping suspicious people loitering in the target area, conducting warrant checks and driving by the target site more frequently. Problems related to liquor stores and bars were referred to the Alcohol Beverage Action Team (n=2). Other intervention efforts included property clean-ups and referrals. At one site a property clean-up was conducted by city agencies (who then billed the owner for the work). Referrals to other agencies were also made in some cases, including referrals to Legal Assistance for Seniors and subsidized loan programs for rehabilitation work.

During the five-month intervention period (October 15, 1995 through March 15, 1996), patrol officers continued to make about the same number of arrests in both the control and experimental catchment zones (with n=271, 51% of arrests occurring in the control zones). In total, patrol officers made 247 arrests for drug violations, 85 arrests for property offenses, 85 arrests for violent crime offenses, 65 arrests for disorder violations, 31 arrests for vice offenses and 18 arrests for weapons offenses in the 300-foot catchment areas immediately surrounding the 100 targeted properties (total of N=531 arrests).

OUTCOME DATA AND METHODS

One way to measure social activity on a street block is through on-site field observations of street activity (see, for example, Perkins and Taylor, 1996; Taylor 1995a; 1997b; 1996; 1995b). On-site assessments tend to measure the actual conditions of a location, while surveys of residents tend to capture the actual conditions of a location filtered through the various psychological attributes and psychological proc-

esses of residents (see Perkins and Taylor, 1996; Taylor, 1995a; 1995b; 1996; 1997b). One study by Taylor (1995c) finds that up to 90% of the variation in residents' perceptions of ecological conditions may be psychological rather than ecological.

The outcome data reported in this paper draw from on-site observations of the social and physical conditions of the 100 street blocks in the present study.[8] The study supports and extends prior research that uses on-site ratings by trained researchers to capture the "ecological" changes in the neighborhood or street. We do not argue against the use of surveys that focus on residents' perceptions of their street (indeed, see Mazerolle, et al., 1998). Rather, ours is an argument suggesting that residents may not be the most objective lens through which to view the physical changes on a street.

We conducted two on-site observations of each street block as these cases were randomly allocated to either the experimental or control group (before). We then conducted an additional two observations of each street block five months later (after). Structured observations were made of each face block surrounding the 100 problem locations during two of four randomly selected time periods (11 a.m. to 2 p.m., 2 p.m. to 5 p.m., 5 p.m. to 8 p.m. and 8 p.m. and 11 p.m.) . Attention is focused on routine licit activity (e.g., pedestrians, children playing, people coming in and out of businesses), illicit activity (e.g., drug dealing, loitering, urinating in public), litter, graffiti, trash, traffic and the presence of law enforcement and security personnel.

As Table 3 shows, trained observers made 400 on-site visits to the experimental and control sites (200 before and 200 after). The randomization process generated a fairly even distribution of observations across the four time periods, across experimental and control sites, as well as across the before-and after-intervention test periods.

Our decision to conduct two observations per street block per period derived from the understanding that street blocks have standing patterns of behavior, or rhythms of recurring behavior and activity, that are somewhat predictable and routine (Taylor, 1988; Taylor 1997a). Felson (1995) also suggests that activities occur in fairly predictable rhythms where patterns of behavior are dictated by a host of factors, including individual people's working hours, sleeping times and recreational times.

On-site observations of social activity can be conducted for either a sample of a street's activity rhythms or a "census of the total population of activity rhythms." For example, if a street block has a constant standing pattern of behavior (or just one activity rhythm) across all minutes of an hour, across all hours of a day and across all days of a

Table 3: Distributions of Observation Time Periods

	Experimental		Control		Total
	Before	After	Before	After	
11 a.m.-2 p.m.	19	19	28	26	92
2 p.m.-5 p.m.	24	24	19	22	89
5 p.m.-8 p.m.	31	31	25	24	111
8 p.m.-11 p.m.	26	26	28	28	108
Total	**100**	**100**	**100**	**100**	**400**

week, then one could reasonably assume that conducting one on-site observation of social activity at any time of the day and on any day of the week would adequately capture the true social activity patterns of that street block. In this extreme case one could argue that consideration of sampling error is not a concern, because one observation would be representative of the population of social activity patterns (n=1) for that street block. Alternatively, if a street block has a varied standing pattern of behavior where, for example, the morning hours are different than the afternoon hours, which are then different from the early evening and the nighttime hours, then one could conclude that there are at least four standing patterns of behavior on that particular street block.[9] In this type of case, the total population of standing patterns of behavior is quite small (N=4), and if one were to draw a sample of time periods of social activity that was quite large (e.g., n=2) relative to the size of the population of time periods of social activity (e.g., N=4), the standard error may not be as problematic as expected (see Blalock, 1979; see also Rosenbaum and Lavrakas, 1995; Weisburd and Green, 1991). Indeed, Rosenbaum and Lavrakas (1995) conclude that the size of the population is not always associated with the stability of estimates (p.296).

We suggest that the reliability and validity of on-site observations increases as the unit of analysis decreases. We propose that street blocks and other small units of analysis (e.g., hot spots, public housing common areas) have fewer and less complex patterns of street activity (or standing patterns of behavior) than neighborhoods, communities or other larger units of analysis that have more complex and varied patterns of social behavior. For example, a street block with an elementary school on the block may have four distinct time periods with four distinct patterns of behavior: (1) the morning hours when children are being dropped off at school; (2) the daytime hours when the children are in school and playing on the school grounds during break times; (3) the

afternoon hours when children are being picked up from school and adults are returning home from work; and (4) the evening hours when people are at home with their families. This kind of predictability in the standing patterns of behavior on a street block is rarely present for neighborhoods for a number of reasons: the absolute number of people frequenting a neighborhood makes it more difficult to anticipate standing patterns of behavior; the range of land-use patterns across a neighborhood (businesses, single-family homes, multi-dwellings) creates more complex rhythms of social activity; and the diversity of people living and working in neighborhoods leads to more complex and diverse patterns of social behavior.

The average of the two observations was used as the count of people involved in the various types of activity before and after the intervention. For example, if before the intervention two people were observed selling drugs on a target street block during the time period from 2 p.m. through 5 p.m., and four people were observed selling drugs on the same block during the time period from 8 p.m. to 11 p.m., then we counted three people as selling drugs before the intervention in that particular target street block. The averaged "before" score was regressed onto the raw "after" score to generate a residual gain score (see Bohrnstedt, 1969; Bursik and Webb, 1982; Cronbach and Furby, 1970) and thus enable analysis of the amount of change occurring during the course of the intervention. This procedure allows for identification of changes in a street block activity, such that positive (or greater) scores of a residualized variable indicate more of a particular characteristic (e.g., more drug dealing) than would be expected based on the "before" value and negative (or lower) scores of a residualized variable indicate less of a particular characteristic than would be expected based on the "before" value.

RESULTS

Table 4 presents the mean number of people engaged in a variety of licit activities (e.g., supervised children playing, pedestrians, people at bus stops) and illicit activity (e.g. people selling drugs, people loitering, intoxicated people) both before and after the experiment and in the experimental and control locations. We also present the mean scores (before and after) of observed physical disorder,[10] as well as the presence of police and other security personnel observed on the study blocks before and after the experiment. We display the statistical significance of the differences (using residual gain scores) between the experimental

and control conditions, accounting for the block-randomized design of the study.[11]

The key findings from Table 4 show that four conditions (males selling drugs,[12] signs of physical disorder, males at pay phones and males at bus stops) were statistically significant at the .05 level. As the table shows, the mean number of males selling drugs on the experimental street blocks went from .06 (or 3 people) before the intervention to .04 (2 people) after the intervention. For the control street blocks, by contrast, we observed more males selling drugs after the intervention period (22 people) compared to before the intervention (5 people) ($p = 0.015$).

The differences between the physical disorder conditions of the control and experimental groups are also statistically significant at the .05 level. As Table 4 shows, we find that although the signs of disorder increased slightly for the experimental group (from a score of 8.04 before to 8.46 after), the control group started off with the same score as the experimental group, yet increased to a score of 9.184 by the end of the intervention period ($p = 0.020$).

Table 4 also shows that the mean amount of prosocial behavior generally increased in both the control and experimental locations. For example, there were more adult males and females stopping to talk to one another on the street, walking up and down a street, and coming in and out of businesses in both the experimental and control sites. We also recorded more police and other security (private, crossing guards) present in both locations after the intervention period.

In terms of antisocial behavior observed after the experiment, there were fewer adult males and females loitering, youths loitering, males with boom boxes, homeless people and people drinking in public in the experimental street blocks after Beat Health intervention than in the control street blocks. These results, however were not statistically significant.

DISCUSSION AND CONCLUSION

The Beat Health program in Oakland, CA is an example of a police-implemented civil remedy program. The Beat Health Unit seeks to clean up the physical conditions of drug dealing places using a number of tactics that rely upon the police working with other city agencies, coercing landowners, building partnerships with business owners and working with people living at the target sites. The civil remedy tactics used by the Beat Health team include police recommendations to landowners to evict troublesome tenants; "SMART" inspections by city

Table 4: Changes in Signs of Physical Disorder and the Mean Number of People (per Street Block) Engaged in Measured Social Activity: Pre- Versus Post-Intervention Periods (by Group)

	Group				p=
	Experimental		Control		
Dependent Variables	**Before Mean**	**After Mean**	**Before Mean**	**After Mean**	**(group) ****
Supervised kids playing (private yard, street, school yard)	0.32	0.22	0.26	0.10	0.366
Unsupervised kids playing (private yard, street)	0.02	0.36	0.30	0.26	0.261
Adult males' general activity (stop to talk, pedestrians, in/out businesses)	1.70	2.08	1.68	2.28	0.565
Adult females' general activity (stop to talk, pedestrians, in/out businesses	0.92	1.44	1.14	1.24	0.202
Males and females on bicycles (adult & youth)	0.36	0.36	0.28	0.28	0.585
Males at bus stops	0.06	0.08	0.04	0.00	0.006*
Females at bus stops	0.06	0.06	0.00	0.00	0.216
Males at pay phones	0.02	0.00	0.04	0.06	0.041*
Adult males loitering (by bars, stores and other places)	1.28	0.40	1.24	0.60	0.281
Adult females loitering (by bars, stores and other places)	0.26	0.16	0.30	0.08	0.299
Male youths loitering (by bars, stores and other places)	0.44	0.40	0.58	0.36	0.815
Female youths loitering (by stores and other places)	0.12	0.04	0.06	0.10	0.210
Males with boom boxes, homeless, or drinking	0.20	0.04	0.14	0.14	0.103
Females drinking	0.08	0.02	0.04	0.00	0.283
Males selling drugs†	0.06	0.04	0.10	0.44	0.015*
Disorder scale (range 4-24) higher values = more disorder	8.04	8.46	8.04	9.18	0.020*
Police/security present	0.00	0.08	0.12	0.16	0.261

*p<0.05

†No females were observed selling drugs.

** Differences in the residual gain scores between control and experimental groups.

housing, sewer, sidewalks and vector control inspectors; and warning letters sent to landowners informing them of the actions that will be taken if the drug dealing, trash and disorder problems are not dealt with.

The results of our randomized field experiment suggest that the Beat Health program decreased the level of drug dealing and improved the physical conditions of street blocks targeted using the Beat Health approach relative to efforts to affect drug dealing and physical decay in the control sites targeted by the uniformed patrol division. In the experimental sites, fewer males were selling drugs and there were fewer signs of physical decay after the intervention relative to the control group sites that were targeted by the patrol division.

Our experiment finds that a civil remedy approach to problem solving adopted by police departments is more effective in resolving problems than traditional police patrols in inflicted neighborhoods. Specifically, our research suggests that the Beat Health approach to solving drug and physical decay problems is effective in decreasing observable problems on target street blocks.

These results have several implications for the development of drug control efforts that aim to target places exhibiting drug and disorder problems. First, unlike other traditional drug enforcement tactics such as arrests, undercover buys, raids and the use of confidential informants, our research shows that a problem-solving approach using civil remedies to clean up the physical conditions of properties can impact the level of drug activity at targeted locations. Second, the use of a civil remedy program like Beat Health illustrates the face value of extending the traditional role of policing (see also Clarke, 1992; 1993, 1994a; 1994b; Goldstein, 1990): the Beat Health program requires the establishment of working relationships with other city agency representatives (such as housing, health and city works) and elicits the support of non-offending third parties (such as landlords and business owners) to bring about a crime control effect.

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NOTES

1. The Hispanic category in the census is not mutually exclusive of other racial categories.

2. For example, Section 11570 of the California Health and Safety Code states: "Every building or place used for the purpose of unlawfully selling, serving, storing, keeping, manufacturing, or giving away any controlled substance, precursor or analog specified in this division, and every building or place wherein or upon which those acts take place, is a nuisance which shall be enjoined, abated and prevented, and for which damages may be recovered, whether it is a public or a private nuisance." In addition, Section 11366.5(a) stipulates that persons managing or controlling a building who allow the unlawful manufacturing, storing or distributing of any controlled substance can be imprisoned for up to one year. Some of the local municipal codes that are enforced include obstructions (6-1.09), building constituting a menace to public safety (2-4.09), unnecessary noises (3-1.01), unsecured buildings (2-4.09) and dumping garbage (4-5.12).

3. There are two basic advantages of using a block randomized design: first, computations with randomized block designs are simpler than those with covariance analysis, and, second, randomized block designs are essentially free of assumptions about the nature of the relationship between the blocking variable and the dependent variable, while covariance analysis assumes a definite form of relationship. A drawback of randomized block designs is that somewhat fewer degrees of freedom are available for experimental error than with covariance analysis for a completely randomized design (Neter, et al., 1990).

4. The Beat Health Unit employs a crime analyst (sworn police officer).

5. Section 8 housing sites were excluded because a special unit deals exclusively with problems at these places. Nonetheless, to facilitate coordination and communication the Section 8 Housing Unit sits in on weekly Beat Health Unit meetings.

6. While a larger catchment area radius than 300 feet would have been better (indeed, the larger the uncontaminated catchment area, the better) the realities of withholding cases from intervention raises ethical considerations. By using the 300 foot criteria, we sought to both minimize the ethical problems of withholding cases and maintain our ability to assess the catchment area effects of the interventions without proximal overlap.

7. The penalties under Section 11570 include fines of up to $25,000, closure of the property for up to one year and sale of the property to satisfy city costs.

8. We also conducted a survey of 400 residents living on the 100 street blocks in our study. The results of this survey are reported in Mazerolle, Kadleck, and Roehl (1998).

9. This example would assume constant variation of social activity across days of the week as well as across the four seasons.

10. The physical disorder scale was constructed by adding together a series of ordinal scales of observed physical decay. The scales ranged from 1 (almost none) to 4 (almost everywhere) and included measures of garbage, litter, broken glass, trash, junk, cigarette butts, needles, syringes, empty beer or liquor bottles and graffiti. The alpha reliability score for the scale was .77; and the additive measure could range from 4 (hardly any signs of physical decay) to 24 (extensive signs of physical decay).

11. We used a fixed-model analysis of variance by first taking into account the direct effects of the covariates (block and type), then the main effects of the factors, and then the interactions between block and type to assess statistical significance in our study:

SS (DIFFERENCE) = SS TYPE + SS BLOCK + SS(TYPE X BLOCK)

12. We did not present females selling drugs because no females were observed selling drugs either before or after the experiment.