Problem-Oriented Policing in Public Housing: Final Report of the Jersey City Project*

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Executive Summary

- The public housing problem-oriented policing project was a cooperative effort by Jersey City's Public Housing Authority and the Police Department to solve serious crime problems across three low-rise and three high-rise public housing sites.

- The Housing Authority and the Police Department formed six problem-solving "site teams" comprising public housing representatives, on and off-duty police officers, tenant representatives, and a social service liaison officer. These teams collectively identified and analyzed drug and violent crime problems in the six target public housing sites in our study.

- Our project in Jersey City began with the premise that public housing sites differ from one site to the next. We suggested that even *within* public housing sites, some places (like some playgrounds and some building lobbies) would have problems, while others would not.

- The corollary was that problems within public housing locations would have varied causes and thus varied responses should be applied to solve (or reduce) the problems.

- We distinguished all common areas by their function and identified six broad types of common areas: walkways, buildings, playgrounds, parking lots, rest areas, and community centers. We identified 172 unique common areas across the six public housing sites.

- When the distributions of problems were examined *across* public housing sites we found that the six public housing sites in Jersey City experienced very different distributions of problems.

- Crime is not evenly distributed across all common areas in a public housing site. About half of the common areas were deemed "safe places" in public housing sites and different public housing sites had different distributions of crime problems.

- Buildings were the most frequently cited common area generating drug problems in all six public housing sites in our study.

- Approximately 7 percent of all the site apartments (N=184) generated 50 percent of the calls across the six housing sites.

- The site teams initiated situational crime prevention tactics such as changing public pay phones to enable out-going calls only and CPTED interventions such as improving lighting in some dimly lit corners of one public housing site. Site teams also sought to control crime problems in common areas using traditional policing tactics such as arrests, surveillances, investigations, order maintenance, and enforcing open warrants.

- Our evaluation team recorded a total of 602 assigned activities during the one year intervention period and we documented a steady increase in unique problem-solving activities completed each month.

- Our research found that the problem-oriented policing activities, collectively implemented by site teams comprising police, public housing officers, and social service liaison officers, significantly reduced interpersonal, property, vehicle, and assistance calls for service.

- Our research found that the reductions in calls for service for these categories of crime were significant and attributable to the number of problem-oriented policing activities implemented in each site.

- We did not find, however, significant reductions in the number of calls for service over time for disorder-type problems and drug market problems. We expect that the low base rate of calls from public housing residents regarding incivilities and drug problems confounds this result.

- Our social observational data throws weight behind our supposition that the calls for service are an inadequate measure of the impact of the problem-oriented policing program on disorderly type activity. Indeed, our systematic social observations show that marginal and illicit activity decreased across the six public housing sites during the one year intervention period.

- Our research also found differences among the six public housing site teams in their ability to impact crime problems. Two site teams in particular – Gladstone and Brighton – significantly reduced the number of calls for service over time.

- Importantly, we found that the physical structure differences that were significant predictors of changes in calls for service over time (total number of units) did not explain why Brighton and Gladstone site teams were most successful in reducing crime problems. Moreover, social structural factors such as percent unemployed, percent AFDC, and percent single headed households did not exhibit strong relationships to the changes overtime in calls for service.

- We concluded that stable membership in the site-based problem-solving teams combined with a high volume of completed problem-solving activities contributed to the successful reduction in calls for service regarding serious crime problems in Brighton and Gladstone.

- Our evaluation of a problem-oriented policing program implemented in six of the most crime ridden public housing sites in Jersey City challenges the notion that public housing sites represent the last bastion of program resistance.

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Chapter One:

Introduction

Controlling serious crime problems in public housing settings has been a principal concern for policy makers, researchers, and criminal justice practitioners for many years. Research shows that rates of violent crime are generally higher in urban public housing sites than other inner-city locations. Indeed, research using census tract- and block group-level data shows, after controlling for economic and housing characteristics, that urban public housing sites generate more index crimes of all types than other nearby neighborhoods (Brill and Associates, 1977; Roncek, Bell, and Francik, 1981; see also DeFrances and Smith, 1994) Similarly, Dunworth and Saiger (1993) found that housing sites in Phoenix, Los Angeles, and Washington, D.C. produced significantly higher levels of violent and drug-related activity compared to nearby neighborhoods as well as city wide.

Crime problems in many public housing sites across the United States have led federal, state, and local governments to implement a vast array of intervention programs to make public housing areas safer places to live. Many of these programs date back to the 1960s when public housing administrators realized that high-rise developments built in the late 1950s posed numerous security problems (Annan and Skogan, 1993). Since this time public housing sites across the United States have served as testing grounds for a broad range of crime prevention strategies. For example, early research by Oscar Newman found that accessibility and physical layout were key determinants of crime, fear, and transience in public housing populations (Newman, 1973; Newman and Franck, 1980). Newman and his colleagues subsequently advocated changes to the design of public housing to create "defensible space" and enable

residents to better monitor and maintain areas that were clearly designated as their own (see also Jeffery, 1977; Rainwater, 1970). The ensuing popularity of "defensible space," and the closely related concept known as Crime Prevention Through Environmental Design (CPTED), spawned extensive efforts to clean up the physical appearances of public housing communities.

Beyond cleaning up and changing the physical conditions of public housing sites, a wide variety of strategies have been implemented to target the persistent crime and social problems that characterize public housing sites. These strategies include increasing patrol presence in high crime public housing sites (Skogan and Annan, 1994; Weisel, 1990a), pouring money into special drug law enforcement programs in sites that are designated a "High Intensity Drug Trafficking Area" pursuant to Section 1005 of the Anti-Drug Abuse Act of 1988 (Anti-Drug Abuse Act of 1988, Pub. L. No. 100-690), and establishing partnerships between local police departments and local housing authorities. Many of these partnership building efforts seek to implement problem-oriented policing programs to reduce drug and crime problems (see Dunworth and Saiger, 1993; Gajewski, Green, and Weisburd, 1993; Giacomazzi, McGarrell and Thurman, 1996; Popkin et al, 1997; Weisel, 1990b).

The problem-oriented policing approach seeks to identify crime problems, analyze the factors contributing to problems, develop appropriate responses to directly eliminate or reduce the magnitude of identified problems, and then assess the effectiveness of these strategies (Eck and Spelman, 1987; Goldstein, 1990). Problem-oriented policing programs typically extend the responsibility for crime control beyond the police and rely on third parties (such as property owners, citizens, and local agency inspectors) to solve crime and disorder problems (Buerger and Mazerolle, 1998). Our final report presents the results of a problem-oriented policing project that sought to control crime problems across six public housing sites in Jersey City, New Jersey.

The public housing problem-oriented policing project was a cooperative effort by Jersey City's Public Housing Authority and the Police Department to solve serious crime problems across three low-rise and three high-rise public housing sites. The Housing Authority and the Police Department formed six problem-solving "site teams" comprising public housing representatives, on and off-duty police officers, tenant representatives, and a social service liaison officer. These teams collectively identified and analyzed drug and violent crime problems in the six target public housing sites in our study. Each site team member was asked to identify individual problems in their respective public housing sites and then, as a team, they analyzed and prioritized target problems prior to implementing tactical responses. This final report draws from the efforts of these six problem-solving teams to implement a problem-oriented policing approach to solve serious crime problems in the city's public housing sites.

Chapter Two introduces our Jersey City public housing research sites and then in Chapter Three we present the problem-oriented policing program implemented in Jersey City to target serious crime problems in the six study sites. Chapter Four presents our impact results using calls for service data and Chapter Five assesses the impact of our problem-oriented policing program using five waves of social observations. In Chapter Six we conclude with a discussion about the theoretical, methodological and practical implications of our research for dealing with serious crime problems within public housing communities.

Chapter Two:

The Jersey City Project Site

Jersey City resembles other densely-populated, industrial cities in the Northeast of the United States. Located in the New York City metropolitan area, Jersey City sustains concentrated areas of poverty, low-income housing, and crime. Three out of ten Jersey City residents are foreign born: a higher proportion than is found in any other metropolis except Miami, Florida. Jersey City is best characterized as a working class, blue-collar urban center. The 1990 census shows an overall unemployment rate of 11 percent, and indicates that 18 percent of the total population (n = 228,537) and 35 percent of all female-headed households (n = 16,785) live in poverty. A substantial number of these impoverished families reside in the eleven public housing sites managed by the Jersey City Housing Authority.

Drawing from a 1994 citywide analysis of narcotics and violent crime data, six public housing sites emerged as experiencing severe and persistent crime problems: Oakdale, Gladstone, Woodlawn, Ivanhoe, Brighton, and Bellevue (Weisburd and Green, 1995)[1]. Five of these six public housing sites were ranked in the top ten drug markets (Weisburd and Green, 1995) and violent crime places (Braga et. al, forthcoming) in the city. Most notably, Oakdale was consistently ranked as the number one drug market and violent crime place in Jersey City. Table 2.1 profiles the six public housing sites included in our study.

[1] The names of the six public housing sites reported in this report are all pseudonyms.

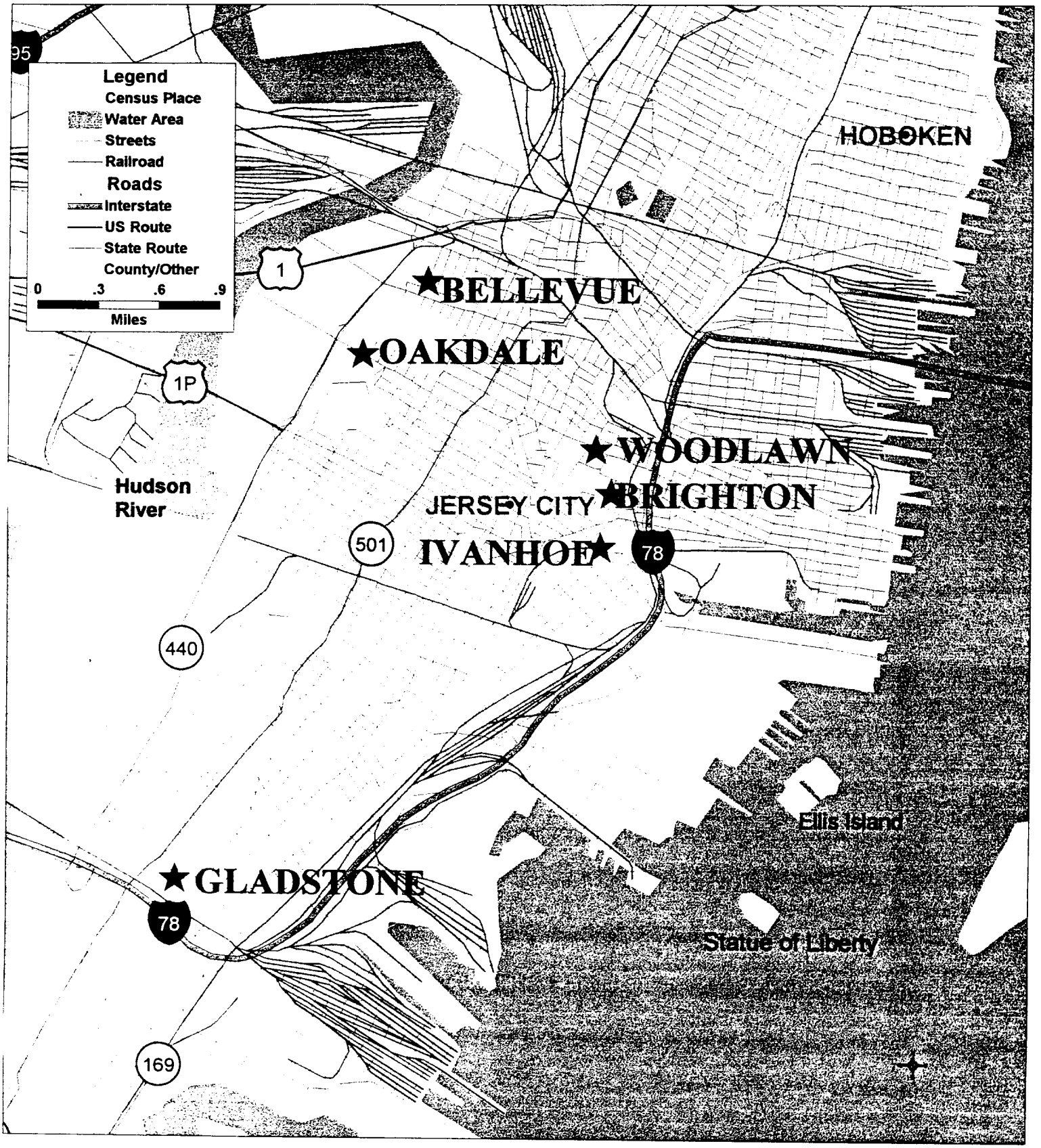
Table 2.1. Profile of Six Targeted Public Housing Sites in Jersey City

Site	Style	Units	% One Adult	% AFDC	% Employed	% Elderly
Oakdale	High-rise	645	60	51	27	5
Gladstone	High-rise	524	52	38	30	15
Woodlawn	High-rise	440	51	34	40	10
Ivanhoe	Low-rise	487	47	30	32	18
Brighton	Low-rise	314	42	32	35	22
Bellevue	Low-rise	230	45	35	24	18

As Table 2.1 shows, there were between 230 and 645 housing units in the sites in our study. Overall, our study sites comprised a total of 2,640 discrete units. The percentage of elderly households ranged from 5 percent in one site (Oakdale) to 22 percent in another study site (Brighton), with most sites in the study falling well below the city (25 percent) and national (35 percent) averages (Holzman, 1996). On average, about one third of all public housing adults in our study sites were employed and about one third received Aid to Families with Dependent Children (AFDC).

The six public housing sites included in our study were located in the east, west and south districts of the Jersey City Police Department. They were also places experiencing a tremendous number of social problems. Figure 2.1 (over page) depicts, geographically, the proximity of the six sites in our study and then the following pages depict the deteriorated state of our target sites prior to the problem-oriented policing intervention.

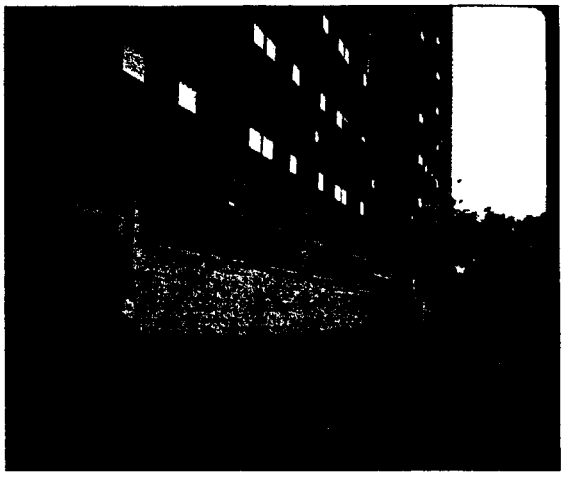
Figure 2.1
Jersey City Problem-Oriented Policing Program: Public Housing Sites



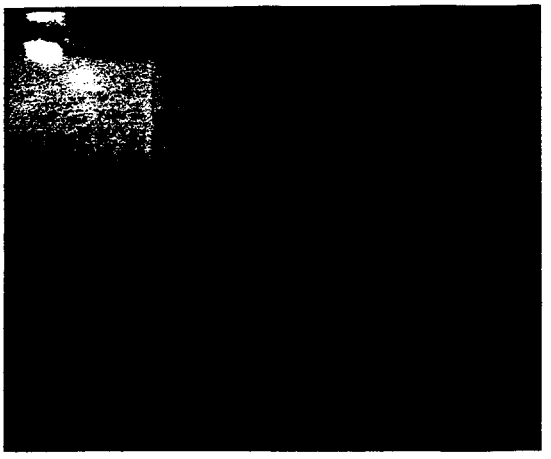
Playground at Brighton

Parking lot at Bellevue

Courtyard at Oakdale

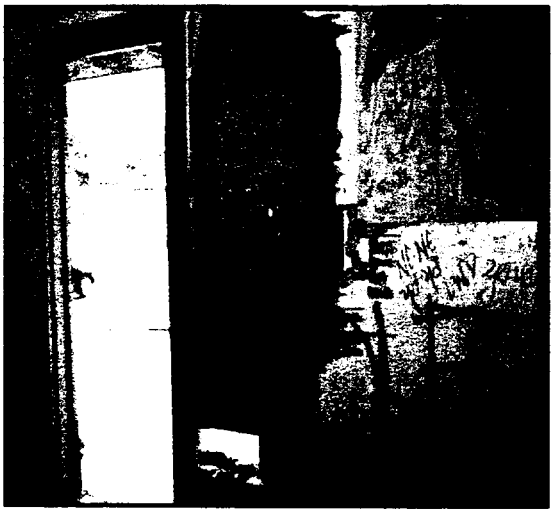


Building #2 at Gladstone

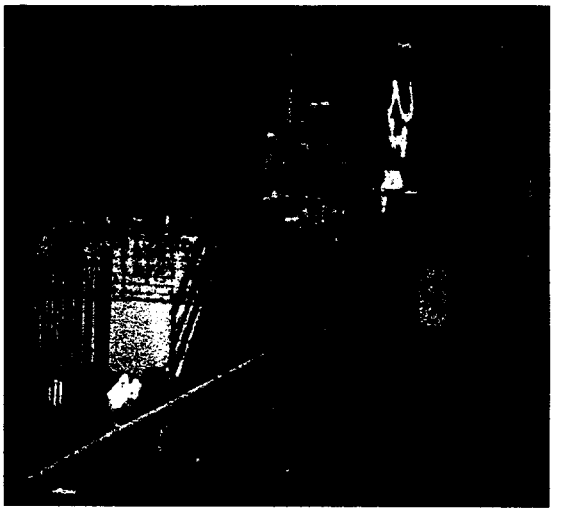


Elevator at Gladstone

Stairwell at Gladstone



Lobby at Gladstone



Backdoor Building #4 at Oakdale

Chapter Three:

The Jersey City Public Housing

Problem-Oriented Policing Program

In October 1994, the National Institute of Justice sponsored the University of Cincinnati to partner with the Jersey City Police Department and the Jersey City Public Housing Authority (JCPHA) to implement and evaluate a problem-oriented policing program to address serious crime problems in six high crime public housing sites in the city. This chapter describes the program intervention.

3.1 Public Housing Site Teams

We began our project by creating problem-oriented policing "site teams" in each of the participating public housing sites. Each site team consisted of seven members who represented the interests of each of the larger communities: a police lieutenant who served as the project leader, two community service officers (CSOs), one site-based police officer, one civilian site manager, one social service liaison officer, and one or more tenant representatives. Over the course of a 12-month intervention period (from May 1995 through April 1996) each site team met for monthly meetings to identify the places within the public housing sites that were causing most of the serious crime problems, to discuss these place-specific crime problems, to coordinate problem-solving strategies, and to report on the status of problem-solving activities implemented each month. An evaluation coordinator documented the amount, location, and nature of problem-solving tasks completed from month to month, as well as contextual information about the teams' progress through the stages of the problem-solving SARA model (Scanning, Analysis,

Response, Assessment) and any obstacles that were encountered. Our field researchers also met face-to-face and contacted site team members by phone on a weekly basis to track their progress on assigned problem-oriented policing activities.

3.2 Identifying and Analyzing Places with Problems

Applying the problem-oriented policing process to controlling crime problems in public housing necessarily requires an understanding of the distribution and causes of crime problems within public housing sites. However most public housing crime problems are approached from a "one-size-fits-all" perspective: when public housing sites have drug problems, housing authorities often introduce drug treatment programs or increase levels of traditional drug enforcement efforts site-wide; when public housing sites have problems with unemployed people, job skills training programs are established. Innovative tactics are used to address public housing problems, but the problems are seen as universal not only among many public housing sites, but also within public housing sites.

Our project in Jersey City took a somewhat different approach to controlling problems in public housing: we began with the premise that public housing sites differ from one site to the next and we suggest that even *within* public housing sites, some places (like some playgrounds and some building lobbies) will have problems, while others will not. Consistent with environmental criminology in general (see Brantingham and Brantingham, 1981) and hot spots of crime studies in particular (see Pierce, Spaar and Briggs, 1988; Sherman, Gartin and Buerger, 1989; Sherman and Weisburd, 1995; Weisburd and Green, 1994; 1995) we suggest that some places are more crime-prone than others and that even within crime-ridden public housing sites there will be places that escape crime problems. We propose that the physical, spatial, cultural, legal, and psychological cues of common area places within public housing environments will

impact the way that offenders create "cognitive maps" of suitable targets (e.g. see Brantingham and Brantingham, 1981). These cognitive maps will thus shape the nature and distribution of crime and disorder hot spots within these public housing areas. The corollary is that problems within public housing locations will have varied causes and thus varied responses should be applied to solve (or reduce) the problems.

The following sections present our problem identification process in public housing that shifts the unit of analysis from high crime addresses (e.g. public housing sites) to very specific locations (e.g. playgrounds, buildings, and walkways) within high crime public housing sites. From the outset, we expected that certain areas in public housing sites such as building lobbies, parking lots, and playgrounds would be more crime-prone than others. The problem-solving teams in each of the public housing sites in Jersey City used the SARA approach to problem-oriented policing to tailor problem-solving responses and specifically target high priority problems.

Crime Problems in Public Housing

For the calendar year of 1993, Jersey City's six housing projects were the target of 881 arrests (five percent of all arrests in the city). Of the 881 total arrests in the six sites, nearly 40 percent were for narcotics violations, 9 percent were for assault, 2 percent were for robbery, and the remaining 48 percent were for other offenses. Of all persons arrested, 22 percent were under 18 years of age, 89 percent were male and 78 percent were African American. Table 3.1 displays the distribution of these arrests across the six public housing sites.

Table 3.1: Arrests By Selected Crime Type By Public Housing Site

	Number and Percent of Arrests									
	Narcotics		Assault		Robbery		Other		Total	
	N	%	N	%	N	%	N	%	N	%
Oakdale	30	8.5	19	21.8	4	18.2	86	20.5	139	15.8
Gladstone	51	14.5	11	12.7	1	4.5	53	12.6	116	13.2
Woodlawn	164	46.6	26	29.9	9	40.9	128	30.5	327	37.1
Ivanhoe	60	17.0	15	17.3	3	13.7	89	21.2	167	18.9
Brighton	27	7.7	7	8.0	1	4.5	32	7.6	67	7.6
Bellevue	20	5.7	9	10.3	4	18.2	32	7.6	65	7.4
Total	**352**	**100**	**87**	**100**	**22**	**100**	**420**	**100**	**881**	**100**

As this table shows, nearly half of all public housing narcotics arrests occurred in the Woodlawn site (46.6 percent). Similarly, the Woodlawn public housing site generated the greatest number of both assault and robbery arrests compared to the other five sites in our study. Two of the low rise sites (Brighton and Bellevue) had the least numbers of arrests compared to the other sites in our study.

Common Areas in Public Housing Sites

While the six public housing sites in our study were universally identified as hot spots of drug and violent crime activity since 1990 (see Weisburd and Green, 1994; 1995) our methods for identifying "hot spots" did not provide insight about the variability of the problems or the exact locations of the crime prone places inside the public housing sites. One of the biggest hurdles to identifying hot spots in places with high population densities, such as public housing sites and large apartment blocks, is getting data at a small units of analysis. The Jersey City Police Department, as do many police departments, record public housing calls, arrests, and investigations to the collective address of the public housing site, not to the specific locations

within the public housing sites where the problems occur[2]. Occasionally text fields will identify "the playground" as the crime location but provide limited information regarding *which* playground. Recognizing this deficiency, we developed a strategy for identifying hot spots at what we refer to as "common areas."[3] By treating the public housing sites as a series of different problems occurring in different common areas allowed us to analyze the unique problem causes and possible crime control responses for different problems within each public housing site.

The first step in our problem identification process was to delineate all common areas across and within the six public housing locations. We defined "common areas" as:

> "discrete public places within a public housing community that are used for the purpose of recreation, mobility, and routine interactions."

We distinguished all common areas by their function and identified six broad types of common areas: walkways, buildings, playgrounds, parking lots, rest areas, and community centers[4]. As Table 3.2 shows, we identified 172 unique common areas across the six public housing sites.

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[2] We recognize, however, the importance of being able to get official data at the common area level and we worked on this problem in two ways: First, we tagged (or marked) each of the common areas with a name tag. The Housing Authority erected signs identifying which common areas are which (i.e. North End Parking Lot, Dales Street Parking Lot, Central Playground). Second, we made changes to the department's computerized CAD system to enable call takers to ask specific questions as to where a particular event occurred. For example, call takers are prompted to ask a caller whether a fight is occurring in a playground, walkway, parking lot, etc, and then the call takers ask which particular playground, walkway, parking lot was the location where the crime occurred. A geofile of all the different ways that tenants, police, and housing authorities refer to common areas was created to increase the "match" rate of calls to the common area level of analysis.

[3] While our scanning process formed the basis for identification of hot spots at the common area level, official call for service data formed the basis for identification of problem apartments within the public housing sites (see later). We identified those apartments generating the greatest frequency of calls at each of the housing sites. As was done with the scanning analysis at the common area level, this information was presented to the site teams at their monthly meetings.

[4] We defined "walkways" as any paved, outdoor passage for walking within a public housing complex; buildings as any roofed and walled structure built for permanent use (as for a dwelling) within a public housing complex; playgrounds as a piece of land within a public housing site used for and equipped with facilities for recreation, especially by children; parking lots as any area within a public housing site used for the parking of motor vehicles; rest areas as a gathering area within a public housing area that typically contains benches and tables; and community centers as a building located in a public housing area designed for the purpose of bringing together residents with common interests.

Table 3.2: Number and Percent Distribution of Common Areas by Site

Site	N	%
Oakdale	22	12.8
Gladstone	20	11.6
Woodlawn	25	14.5
Ivanhoe	43	25.0
Brighton	30	17.4
Bellevue	32	18.7
Total	**172***	**100.0**

* The mean number of common areas in public housing sites in Jersey City was 28.7

As Table 3.2 shows, the three low-rise sites (Ivanhoe, Brighton and Bellevue) had the greatest absolute numbers of common areas. Conversely, the three high rise sites had fewer common areas. That is, they had fewer playgrounds, parking lots, rest areas, walkways, and buildings.

Table 3.3 shows the distribution, in rank order, of the types of common areas across the six public housing sites.

Table 3.3: Number and Percent Distribution of Common Areas by Type

Type of Common Area	N	%
Walkways	54	31.4
Buildings	52	30.2
Playgrounds	29	16.9
Parking Lots	21	12.2
Rest Areas	13	7.6
Community Centers	3	1.7
Total	**172**	**100**

As this table shows, the most frequent type of common area in public housing sites was walkways (n=54) and the second most frequent was buildings (n=52). In total, only three community centers were found across the six public housing sites in Jersey City.

Identifying Problems and Problem Places in Public Housing

Delineating common areas in public housing sites was an important first step in our ability to identify the places within the public housing sites that had problems. However, we wanted to know the types of problems occurring in the common areas. Therefore, we asked each member of our problem-solving teams[5] in each of the six public housing sites to complete a "Problem Description Form." This approach allowed each site team member an opportunity to draw "cognitive maps" of perceived hot spot locations inside the public housing. We also asked site team members to identify the nature, type, and seriousness of each problem within the housing sites' common areas.

Across the six public housing sites in our study, twenty-seven site team members identified a total of 528 problems[6] across 88 unique places. Table 3.4 presents the distribution of problems identified by site team members in rank order.

[5] For each site, our problem solving teams comprised the Housing Authority site manager, a tenant representative, the social liaison officer, on-duty Community Service Officers, off-duty site based police officers, off-duty patrol officers, and our program coordinator (a sergeant from the police department who worked off-duty hours as the Jersey City Housing Authority security coordinator).

[6] The 528 problems are not mutually exclusive because different site team members could identify the same problem. To help site teams prioritize the problems they would tackle as a team we used a weighting system that took into account those problems that were identified by more than one site team member (see later).

Table 3.4: Number of Problems by Type

Type of Problem	N
Drugs	92
Loitering	78
Lewdness	70
Graffiti	63
Loud Music	50
Drinking	44
Litter	32
Assaults/Fights	26
Parking	24
Domestics	12
Robbery	5
Burglary	3
Other	29
Total [7]	**528**

As this table shows, drugs were the most commonly identified problem in the public housing sites (n=92), followed by loitering (n=78), lewdness (n=70), and graffiti (n=63). When we examined the rank ordering of problems for each individual public housing site, drugs were the most commonly identified problem in four of the public housing locations (Oakdale, Gladstone, Ivanhoe, Brighton). Nonetheless, our analysis also shows that some problems are more prevalent in some public housing sites than others: at Bellevue, the most commonly identified problem was litter, while lewdness (mainly urinating in public) was identified as the most frequently occurring problem at Woodlawn.

In completing the "Problem Description Forms" site team members were asked to mark the exact locations of problems on a detailed map of each public housing site. In essence, we asked site team members to draw their own "cognitive maps" of places within the public housing

[7] Of the 528 problems identified, 13 problems were not clearly specified to a common area location. Rather, they were problems that occurred throughout the site. These were classified as site wide problems.

sites that they felt had drug or violent crime problems. This process allowed us to identify the places both across and within public housing sites that site team members perceived were generating the majority of problems.

By examining the distribution of problems across the public housing sites we found that some public housing sites have a greater proportion of common areas with problems than others. Table 3.5 below presents the percent of common areas by public housing site with identified problems.

Table 3.5: Number and Percent of Common Areas with Problems by Site

Site	N of Common Areas	N with Problems	% with Problems
Oakdale	22	14	64
Gladstone	20	6	30
Woodlawn	25	16	64
Ivanhoe	43	9	21
Brighton	30	24	80
Bellevue	32	19	59
Total	**172**	**88**	**51**

As this table shows, site team members perceive that only about half of all common areas (n=88; 51 percent) have some type of drug, disorder or violent crime problem. When the distributions of problems are examined *across* public housing sites, our data show that the six public housing sites in Jersey City experience very different distributions of problems. For example, 21 percent (n = 9 of 43) of the common areas at Ivanhoe were identified as having a problem. By contrast, 80 percent (n = 24 of 30) of Brighton's common areas were seen as having at least one perceived problem.

While our analysis so far suggests that crime problems are unequally distributed both across public housing sites and within public housing common areas, our next table shows that distribution patterns can be partly explained by type of common area. Table 3.6 below presents

the number and percent of common areas with identified problems by type of common area.

Table 3.6: Number and Percent of Common Areas with Problems by Type

Type of Common Area	N	N with Problems	%
Building	52	38	73.1
Playground	29	11	37.9
Walkway	54	16	29.6
Parking Lot	21	15	71.4
Rest Area	13	6	46.2
Community Center	3	2	66.7
Total	**172**	**88**	--

As Table 3.6 shows, nearly three quarters of the buildings across the six public housing sites are perceived as having problems. Site team members perceived that most of the problems in buildings were (in rank order) in lobbies, stairwells, hallways, and elevators. The second most problem-plagued area in the public housing sites were the parking lots. While there are only 21 parking lots among the six public housing sites in our study, 71.4 percent of them were perceived as having a drug, disorder or violent crime problem. By contrast, only 16 of the 54 (29.6 percent) of the walkways in our public housing sites were perceived as having a problem.

In our first stage of analysis we sought to assess the prevalence of problems across the six public housing sites in our study. Our analysis revealed that crime is not evenly distributed across all common areas in a public housing site. Rather, we know that in the aggregate about half of the common areas were deemed "safe places" in public housing sites. However different public housing sites had different distributions of crime problems. Some sites had crime problems in many common areas while other sites had crime and disorder problems in a smaller proportion of common areas. Moreover, when we examined the distributions of problems across common area types we found that different common areas had different distributions of

problems. In the second stage of our analysis we explore whether different common areas across the six public housing sites in our study generate different types of crime problems.

The problem-solving teams in our study suggested to our research team that different types of places tended to attract different types of problems. Moreover, they intuitively felt that different places in the public housing sites would require different types of efforts to solve the problems. We used these general assessments by the site team members to explore the variability in problems both within and across our six public housing sites. Our analysis of public housing problems draws from the problem identification data described above (n = 515 problems in 88 common areas) as well as interviews with a random sample of 216 residents[8] across the six public housing sites in our study. Specifically, we asked these residents to identify the common area places that they "avoided" because they perceived the place had a crime or disorder problem. Drawing from these data sources, our analysis in this section includes the following variables:

[8] Prior to the implementation of problem solving responses across our six public housing sites, we conducted a survey of a stratified random sample of 300 residents. We successfully interviewed 216 residents (72 percent response rate). In the survey, among many questions, we asked public housing residents to identify places that they avoid within their public housing site.

Variables	Percent
	N = 172
Avoid	
0 = Residents do not avoid the common area	79.9
1 = Residents avoid the common area	20.3
Hilow	
0 = Low rise site	61.0
1 = High rise site	39.0
Type of Place	
Building	30.2
Walkway	31.4
Playground	16.9
Rest area	7.6
Parking Lot	12.2
Community Center	1.7
Disorder Problems[9]	
0 = No disorder problem	52.9
1 = Disorder problem	47.1
Drug Problems	
0 = No drug problem	72.7
1 = Drug problem	27.3
Violent Crime Problem[10]	
0 = No violent crime problem	89.5
1 = Violent crime problem	10.5

Drug, Disorder, and Violent Crime Problems in Different Common Areas

In this section we use a series of cross-classification tables to examine the distribution patterns of drug, disorder, and violent crime problems across and within the six public housing sites in our study. We also examine the different types of common areas that are associated with drug, disorder, and violent crime problems. In Table 3.7, we present the numbers and percents of common areas with drug, disorder, and violent crime problems by public housing site.

[9] Disorder problems included loitering, lewdness, graffiti, loud music, drinking, litter, and parking.

[10] Violent crime problems included assaults and fights, domestic violence, and robberies.

Table 3.7: Type of Problem in Common Areas by Public Housing Site

Site	Drug		Disorder		Violent Crime	
	N	%	N	%	N	%
Oakdale	6	12.8	14	17.3	5	27.8
Gladstone	5	10.6	6	7.4	--	--
Woodlawn	12	25.5	15	18.5	--	--
Ivanhoe	6	12.8	5	6.2	--	--
Brighton	12	25.5	24	29.6	13	72.2
Bellevue	6	12.8	17	21.0	--	--
Total	**47**	**100.0**	**81**	**100.0**	**18**	**100.0**
p<		**.024**		**.001**		**.001**

As this table shows, of the 47 common areas identified as having a drug problem, about a quarter were located in Woodlawn and another quarter were located in Brighton. These two public housing sites are geographically close (about 2 blocks from each other) in the East District of Jersey City. Similarly, nearly 30 percent of the common areas identified as having a disorder problem were located in Brighton. Bellevue's common areas also contributed significantly to the disorder problems across public housing sites (N = 17 common areas). For violent crime problems, nearly three quarters of the common areas with violent crime problems came from Brighton. Overall, this table suggests that Brighton contributes significantly to drug, disorder, and violent crime problems when common areas with problems are compared across the sites.

Table 3.8 below, provides further support that the common areas in the low-rise public housing sites (predominately driven by Brighton) contribute more places with drug, disorder, and violent crime problems than high rise sites in absolute terms.

Table 3.8: Type of Problem by Common Areas in Low and High Rise Sites

Style	Drug		Disorder		Violent Crime	
	N	%	N	%	N	%
High Rise	23	48.9	35	43.2	5	27.8
Low Rise	24	51.1	46	56.8	13	72.2
Total	**47**	**100.0**	**81**	**100.0**	**18**	**100.0**
p<		**.10**		**.28**		**.30**

As this table shows, about half of the common areas with drug problems are in low rise sites (51.1%), just over half of the common areas with disorder problems are in low rise sites (56.8%), and nearly three quarters of the common areas with violent crime problems are in low rise sites (72.2%).

While these tables could suggest that common areas in low rise public housing have more problems than common areas in high rise sites, one needs to take into account the greater absolute number of common areas in the low rise sites compared to the high rise sites: Bellevue, Brighton and Ivanhoe each have more common areas (n = 105 in total) than the three high rise sites (n = 67). When the total number of common areas in low and high rise settings are controlled for, we find that common areas in high rise public housing sites have a greater chance of having drug and disorder problems than common areas in low rise settings. About one-third of the common areas in the high-rise public housing sites (23 of 67) were identified as having a drug problem compared to less than a quarter of the common areas in the low-rise public housing sites (24 of 105). For disorder problems, just over one half of the common areas in the high rise sites were identified as having a disorder problem (35 of 67) compared to 43.8 percent (46 of 105) having a disorder problem in the low-rise sites. The low rise public housing sites, however,

had more (relatively speaking) common areas with violent crime problems (12.4%) than high rise sites (7.5%).

Our finding that high rise public housing sites have a greater proportion of common areas with drug and disorder problems than low-rise sites is consistent with a vast body of literature that points to the criminogenic nature of high rise public housing sites (e.g. see Newman, 1973). This finding is further supported when we examine the common area places that residents identified as being "avoided places." Table 3.9 presents the number and percent of common areas by public housing site that residents believe are places they should avoid.

Table 3.9: Public Housing Site by Percent Common Areas that Residents Avoid

Site	N Common Area	N Avoided	% Avoided
Oakdale	22	10	45.5
Gladstone	20	5	25.0
Woodlawn	25	7	28.0
Ivanhoe	43	5	11.6
Brighton	30	4	13.3
Bellevue	32	4	12.5
Total	**172**	**35**	**20.3**

As this table shows, the three high rise sites (Oakdale, Gladstone, and Woodlawn) have the greatest proportions of common areas that residents avoid compared to the three low rise sites. Residents identified ten of Oakdale's common areas (45.5%) as being places they would avoid compared to just five of Ivanhoe's 43 common areas that residents would avoid.

While these preceding tables suggest that there are differences in the distribution of common areas with drug, disorder, and violent crime problems across the six public housing sites in general and between low and high rise sites in particular, we also wanted to explore the *types* of common areas that generated most of the problems. Table 3.10 depicts the types of common areas in the six public housing sites in our study with different types of problems.

Table 3.10: Type of Common Area by Type of Problem

Commo.. Area Types	Drugs		Disorder		Violent Crime	
	N	%	N	%	N	%
Building	28	59.6	34	42.0	10	55.6
Walkway	7	14.9	14	17.3	4	22.2
Playground	7	14.9	10	12.3	3	16.7
Rest Area	3	6.4	6	7.4	--	--
Parking Lot	2	4.3	15	18.5	1	5.6
Community Center	--	--	2	2.5	--	--
Total	**47**	**100.0**	**81**	**100.0**	**18**	**100.0**
p<		**.001**		**.002**		**.19**

As this table shows, over half of the 47 common areas with drug problems were generated by buildings (59.6%). Similarly, buildings were places with disorder (42%) and violent crime (55.6) problems. Walkways and playgrounds were two other common areas with drug problems and parking lots and walkways contributed to disorder problems. Walkways were a common area that tended to attract violent crime problems.

We also sought to determine whether there were any differences in the types of problems among the different common areas across the six public housing sites in our study. Table 3.11 summarizes the primary common areas that experienced different problems by public housing site.

Table 3.11: Public Housing Site by Type of Problem by Rank Order of Common Area with Problems

	Drugs	Disorder	Violent Crime
Oakdale	Buildings Playgrounds	Buildings Parking Lots	Buildings Playgrounds
Gladstone	Buildings Parking Lots	Buildings Parking Lots	----
Woodlawn	Buildings Rest Areas Walkways	Buildings Rest Areas Parking Lots Playgrounds	----
Ivanhoe	Buildings Playgrounds	Buildings	----
Brighton	Buildings Playgrounds Walkways	Buildings Walkways Playgrounds	Buildings Walkways Playgrounds
Bellevue	Buildings Walkways	Walkways Buildings Parking Lots	----

As Table 3.11 shows, buildings were the most frequently cited common area generating drug problems in all six public housing sites in our study. For Oakdale, Ivanhoe, and Brighton the playgrounds were the second most often identified common area that had drug problems. The walkways were cited as drug problem areas, but not in the two most notorious high-rise sites: Oakdale and Gladstone.

The buildings were identified as the primary places with disorder problems across all sites in our study except Bellevue. Bellevue's walkways were the most often cited common area with disorder problems. The parking lots also figured prominently as places with disorder problems principally in Oakdale and Gladstone. Finally, although buildings once again were

listed as the most crime-prone violent crime areas, Oakdale and Brighton identified the playgrounds as places with violent crime problems.

Table 3.11 clearly illustrates the importance of examining varying problems in different public housing sites at the common area level of analysis. Such an analysis is crucial for problem-solving teams since it provides specific information on exact problems and exact locations and allows teams to tailor their responses accordingly.

Prioritizing Problems for Problem-Solving Efforts in Public Housing

While the scanning and analysis stages of the problem-oriented policing project begin to build a profile of crime-prone places across different types of common areas in public housing sites, we thought from the outset that the problems and problem places identified by our site team members varied by the incidence and seriousness of the problem. Therefore, we sought to develop a seriousness score for identified problems within each of the public housing sites that would enable site team members to focus their problem-solving efforts on the highest priority problems.

To rank order the 515 problems (in discrete common areas) by seriousness we developed a problem scoring method comprising three components: first, we wanted to give greater weight to identical problems identified by multiple site team members. For example, if three members identified loitering as a problem in a particular parking lot of one public housing site, then we wanted the problem to receive more weight than a loitering problem in another parking lot in the same housing site that was only identified by one site team member. Second, we wanted to make sure that we gave more weight to those places that were identified more often as problem places than those places that were identified less often as problem places. For example, if one particular playground was identified by site team members as being a hot spot of drug, loitering, and

gambling problems, then we wanted the playground to receive greater weight than say a walkway that was only identified by site team members as being a place where people drank in public. Third, we wanted to take into account site team members' perceived seriousness of each problem. As such, a perceived seriousness score was developed across four dimensions: fear associated with the problem, the degree to which the problem was considered violent, the impact of the problem on the public housing community, and the harm the problem causes the housing community.

Taking these three components into account, we developed a seriousness score using the following weighting system:

A = problem variable = n times problem identified
B = place variable = n times place identified
C = weighted problem variable = 1/n times problem identified*10
D = weighted place variable = 1/n times place identified*10
E = total effect variable = fear+violent+harm+impact/4
F = total weight problem =1/n times problem identified*10 +
fear+violent+harm+ impact/ 4 (C + E)
G = total weight place = 1/n times place identified*10 +
fear+violent+harm+impact/4 (D + E)

Final Score = total weight problem (F) + total weight place (G)

Overall, those problems identified most frequently by site team members (e.g. drugs, loitering, lewdness, graffiti) also ranked high on our final seriousness score. This result formed the first basis for site teams to select and prioritize problems to tackle.

We also examined the distribution of problems by type of place and level of seriousness (see Table 3.12). Table 3.12 shows that problem-solving team members perceive that buildings and, to a much lesser extent, playgrounds and walkways are places with the most serious problems.

Table 3.12: Distribution of Problems by Level of Seriousness and Type of Place

	LEVEL OF SERIOUSNESS							
	High		Moderate		Low		Total	
PLACE	N	%	N	%	N	%	N	%
Building	172	77.8	120	54.8	38	50.6	330	64.0
Walkway	26	11.7	18	8.2	14	18.7	58	11.3
Playground	22	10.0	44	20.1	6	8.0	72	14.0
Rest Area	1	0.5	14	6.4	2	2.7	17	3.3
Parking Lot	0	--	21	9.6	13	17.3	34	6.6
C'ty Center	0	--	2	0.9	2	2.7	4	0.8
TOTAL	**221**	**100**	**219**	**100**	**75**	**100**	**515**	**100**

As this table shows, for those problems classified as being in the "most serious" category, over three-quarters of the problems (77.8 percent) were seen as being in and around the buildings (e.g. lobbies, entrance ways). Similarly, site team members perceive that the buildings are places with moderate and low levels of problems. From discussions with site team members, we believe that these results have several explanations: first, buildings are where most of the drug, violent crime, and disorder problems occur in public housing sites. Indeed, our results suggest that site team members perceive that serious and less serious problems tend to cluster around the buildings. Second, public housing residents cannot avoid buildings and their "comings and goings" in and out of the buildings afford a heightened chance for observing problems. Therefore any problems in buildings are most likely to be seen as the most serious. Third, there may be more general activity in playgrounds, walkways, and parking lots, perhaps masking drug and disorder problems in these places. For example, places with functional uses, such as parking lots and playgrounds, may give "cover" for illicit drug activity. However, this same illicit activity in buildings does not go unnoticed because buildings cannot be avoided. These results were used as

second basis for site teams to prioritize the problems that they would tackle as part of the problem-oriented policing program.

3.3 Identifying and Analyzing Apartments with Problems

Apart from problems in common area places, we also identified problems in individual apartments. Domestic violence, burglary, vandalism, drug selling and other problems occurring in apartments were identified by the number of calls for service that individual apartments generated during the year prior to the intervention period. Table 3.13 shows the distribution of calls to apartments across the six sites in our study.

Table 3.13: Number and Percent of Calls for Service in Public Housing Apartments

N Calls	N Apartments	Percent
0	1329	52.0
1	495	19.4
2	307	12.1
3	144	5.6
4	96	3.8
5	44	1.7
6	38	1.5
7	24	0.9
8	18	0.7
9	16	0.6
10+	44	1.7
Total	**2555**	**100.0**

As Table 3.13 shows, 44 apartments each generated more than ten calls for service in 1994 and several units produced more than twenty calls in that same year. Consistent with the hot spot literature in general (see Sherman, Gartin, and Buerger, 1989; Sherman and Weisburd, 1995), approximately 7 percent of all the site apartments (N=184) generated 50 percent of the calls across the six housing sites (see Table 3.13). The ten households generating the most calls for non-trivial offenses (violent crime, property crime and drugs) in each public housing site

were identified as "problem apartments" and subsequently targeted for intervention.

3.4 Developing and Implementing Problem-Oriented Policing Responses

Problem-oriented policing activities targeting nuisance apartments were geared toward providing social and educational services to specific leaseholders, including referral to treatment and counseling programs. The site teams used more intrusive measures -- such as evicting or arresting residents -- when they assessed other problem-solving tactics as being inadequate to solve the problem. Problem-solving efforts that targeted outdoor common areas focused on changing the physical and social context in which crimes were occurring. For example, the site teams initiated situational crime prevention tactics such as changing public pay phones to receive out-going calls only and CPTED interventions such as improving lighting in some dimly lit corners of one public housing site. Site teams also sought to control crime problems in common areas using traditional policing tactics such as arrests, surveillances, investigations, order maintenance, and enforcing open warrants.

In order to assess the problem-oriented policing responses delivered by the six site teams, we created a unit of assessment that we defined as a "problem-solving activity." We define a "problem-solving activity" as:

> "the basic unit of action carried out by a site team member as part of a larger crime control strategy."

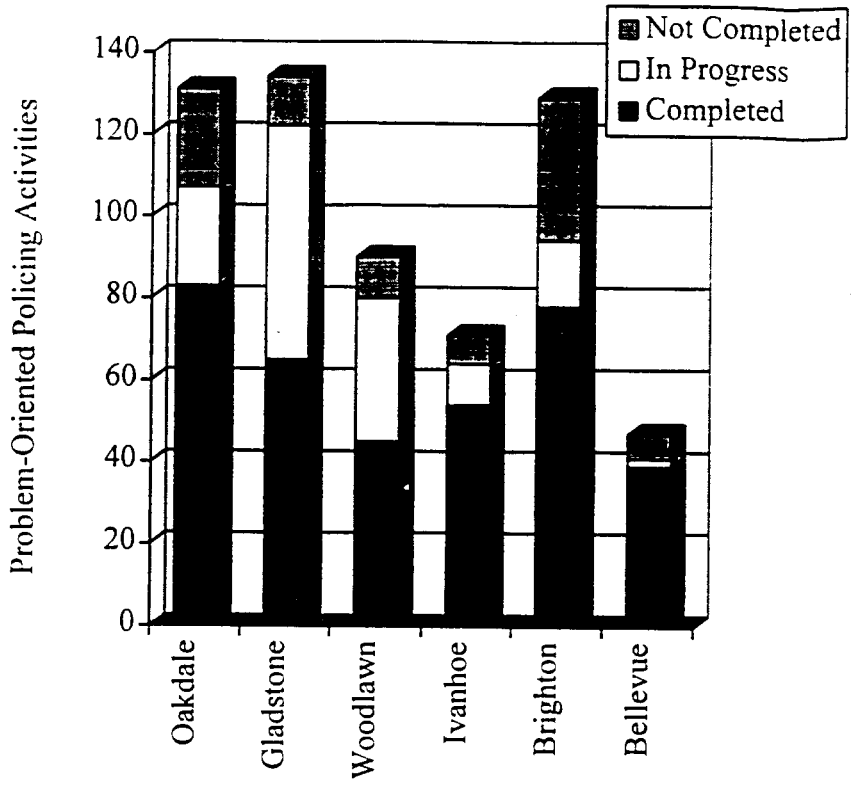
Progress by site team members on each strategy and on each discrete activity was tracked during the one year intervention period every two weeks by our evaluation team. We documented the person responsible for each activity, what activities were completed, what activities were forgotten, what activities were carried over from week to week and month to month (e.g. sweeps scheduled every month), as well as those activities that were ongoing (e.g. court proceedings to

evict a tenant).

Most strategies initiated by the problem-solving site teams consisted of two or more tightly-linked activities that were carried out sequentially. For example, a strategy to evict a Bellevue tenant who had been selling crack cocaine out of her apartment involved five activities: (1) the CSOs obtained a warrant to search the premise; (2) the narcotics unit subsequently raided her apartment; (3) an arrest was made; (4) the site manager followed up the arrest by issuing a notice to cease for the pending criminal charges; and (5) finally, the manager scheduled a tenancy hearing, which caused the tenant to abandon her lease shortly thereafter.

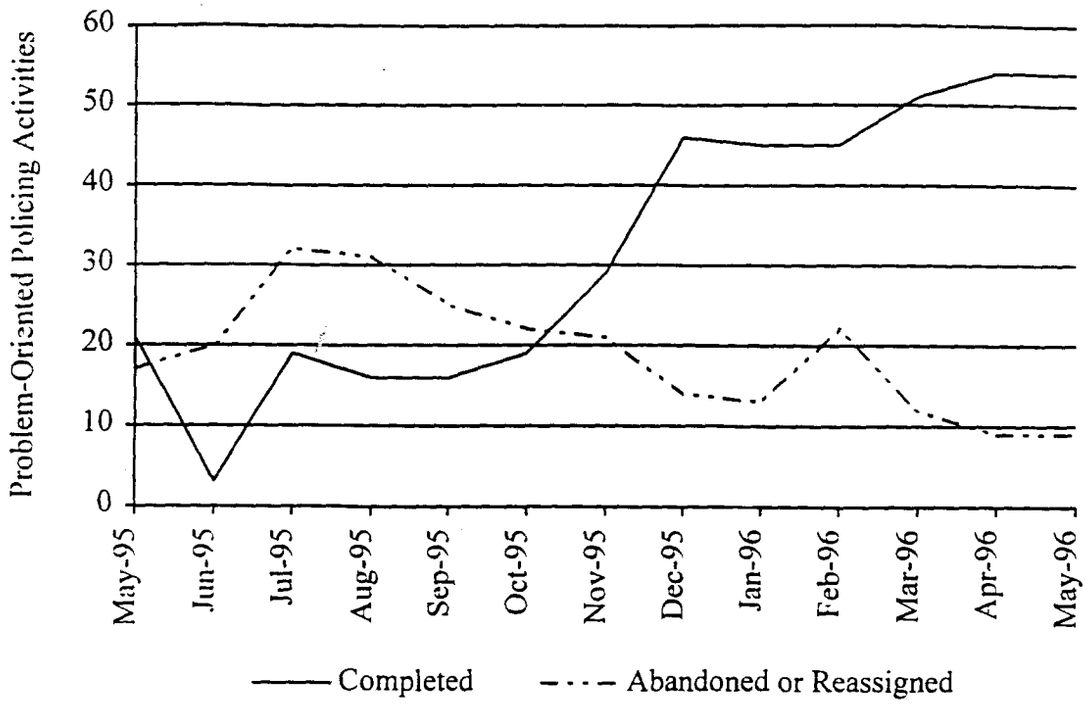
Each activity chain was dissected to quantify what activities were completed over time and space as well as those activities that were either carried over or forgotten. Figure 3.1 illustrates the overall problem-solving dosage administered by each site team, measured by the number of problem-oriented policing activities completed during the 12-month intervention period.

Figure 3.1. Problem-Oriented Policing Activities
by Public Housing Site



Our evaluation team recorded a total of 602 assigned activities during the one year intervention period: 364 activities were completed, 144 activities were defined as ongoing activities, and 94 activities were abandoned or forgotten. Three sites -- Oakdale, Gladstone, and Brighton -- received high levels of problem-solving treatment, each exceeding 60 problem-solving activities during the one year intervention period. Figure 3.2 illustrates the trend in problem-solving activities over time.

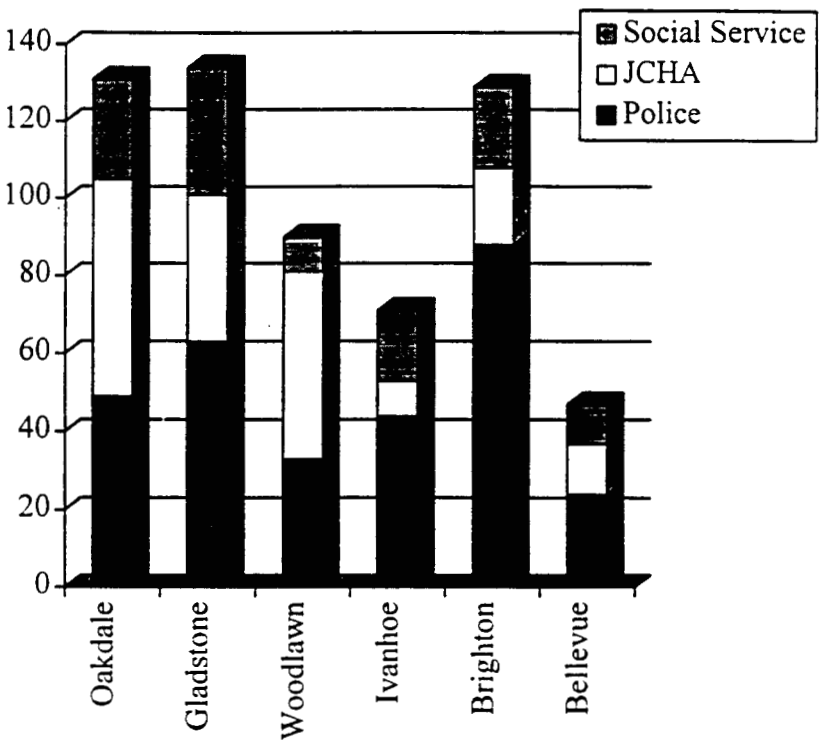
Figure 3.2. Problem-Oriented Policing Activities Over Time



As Figure 3.2 shows, we documented a steady increase in unique problem-solving activities completed each month (the count of problem-solving activities each month is not cumulative from the previous month) from July 1995 through May 1996. Figure 3.2 also shows an initial increase then a steady decline in the number of problem-solving activities either carried over month-to-month or abandoned. This suggests that the site teams were initiating and following through on more problem-solving activities as the program matured.

Figure 3.3 depicts the three major types of problem-oriented policing activities (police, housing authority, social service) implemented by the site teams.

Figure 3.3. Types of Problem-Oriented Policing Activities by Public Housing Site



Police Strategies	Activities
Arrest specific person	170
Investigate problem	49
Enforce open warrants	13
Order maintenance	69
Housing Authority Strategies	
Evict public housing resident	21
Create housing policy	8
Coordinate program or event	31
Improve physical design	62
Improve communication	62
Social Service Strategies	
Provide treatment or counseling	51
Increase employment opportunities	31
Educate residents	19
Prevent truancy	16

As Figure 3.3 shows, police officers were responsible for carrying out the majority of the problem-solving activities assigned during the course of the program. These enforcement-oriented strategies included arresting specific key suspects, investigating the circumstances contributing to a problem, enforcing open warrants, and strategically targeting incivilities (order maintenance). The Public Housing Authority implemented somewhat fewer problem-oriented policing activities than the police. Public housing authority strategies included evicting residents, creating and enforcing new housing policies, coordinating crime prevention events, improving the physical design of housing areas (CPTED), and implementing new measures to improve communication between the housing authority and residents. Only a handful of social service strategies were implemented within the six study sites. These social service strategies included referring residents to treatment or counseling, advertising employment opportunities for residents (i.e., creating job banks), educating residents (i.e., teen pregnancy awareness and anti-violence campaigns), and working with truancy officers.

Figure 3.3 indicates the majority of problem-oriented policing activities were police-executed tactics at both Gladstone and Brighton. At Oakdale, by contrast, many of the responses were orchestrated by public housing authority employees. At first glance, this suggests that the coercive authority of the police is more effective in controlling crime in public housing than the different tactical responses that are available to public housing employees[11]. However, it is important to recognize that all problems and strategies were identified, organized, and carried out within the site-team context. Simply because the strategy to evict a nuisance apartment was the

[11] We point out that, in Jersey City, public housing sites are policed by the Jersey City Police Department and not a separate public housing police department.

responsibility of the housing authority (and therefore classified as a "housing authority strategy") does not mean that housing employees are exclusively involved in carrying out each link in a chain of activities that comprises that strategy. As demonstrated in the earlier eviction example, many or sometimes all of the individual activities leading to the final act of evicting a leaseholder (i.e., obtain search warrant, raid apartment, arrest specific actor) may involve police or social service assistance. Similarly, coercive police strategies structured for the arrest of a key suspect (i.e., drug supplier) will usually involve the participation of the housing authority or the social service liaison to provide lease information, remove boarders involved in the drug trade, or to locate potential informants. In this context, a police strategy should not be seen as a series of law enforcement activities, rather a complex sequence of planned group responses. The sworn site-based officers were effective precisely because so many of their responses were contingent upon the group dynamics of the site team.

Our process analysis sheds light on the nature of decision making and the flow of information within the team structure which contributes to our understanding why Gladstone and Brighton emerged as the sites with the most successful problem-oriented policing teams. Housing employees, tenants, and the social service liaison in the Gladstone and Brighton site teams saw their role as one of providing reliable information to the site-based officers so they could make informed decisions and respond more effectively. This flow of information was, for the most part, non-reciprocal. The police internalized their role as the "receivers" and reinforced this non-reciprocal flow of information by sometimes balking on their duty to exchange information and by often proposing problem-oriented policing strategies to other members of the group that placed them on the receiving end. For the most part, however, all parties adjusted to this arrangement and the two groups were quite organized during the analysis and responses

stages.

3.5 Site Team Membership

These results suggest that coercive police activities may have a stronger impact on crime problems than less coercive activities. We suggest, however, that membership and attendance at site team meetings comprise two other important factors why Gladstone and Brighton demonstrated reductions in calls for service. We explore these issues in Table 3.14.

Table 3.14 shows that membership of the Gladstone and Brighton site teams, particularly the site-based police officers assigned to these teams, was stable throughout the intervention period. By contrast, we documented a tremendous amount of turnover in the membership of the other site teams (Oakdale in particular). We suggest that the stability of personnel on problem-solving teams, particularly police membership, is perhaps one of the most important contributing factors in successful problem-solving. This result also suggests that problem-oriented policing programs in otherwise resistant public housing sites (e.g., Gladstone which is a high-rise housing complex with a high rate of unemployment, single adult households, and high rates of AFDC recipients) that make an effort to maintain stable membership of personnel assigned to problem-solving teams are more likely to impact crime problems than teams that have a high rate of personnel turnover (see also Green, 1996).

Table 3.14. Profile of Six Public Housing Site Teams in Jersey City

Site	Number of Meetings	Number of Different Attendees	Average Attendance per Meeting	% Police Attendance	% PHA Attendance	% Social Service Attendance
Oakdale	11	15	6.64	50.68	26.03	9.59
Gladstone	9	22	7.56	54.41	27.94	5.88
Woodlawn	11	10	6.64	49.32	28.77	6.85
Ivanhoe	8	12	7.13	45.61	33.33	8.77
Brighton	11	11	5.64	58.06	24.19	1.61
Bellevue	6	8	6.67	52.50	22.50	15.00

Source: Weekly site team progress reports and monthly narratives.
Note: The last three columns do not add up to 100% because the % researcher attendance was omitted.

Chapter Four:

Calls for Service

We assess the impact of the problem-oriented policing program implemented in Jersey City from two and a half years of citizen calls for police service (January 1994 through July 1996). Calls for police service comprise a common source of outcome information for many police interventions (see Mazerolle and Roehl, 1998; Sherman, Shaw and Rogan, 1995; Sherman and Weisburd, 1995; Warner and Pierce, 1993; Weisburd and Green, 1995). Indeed, Sherman and his colleagues argue that calls for police service "provide the widest ongoing data collection net for criminal events in the city" (Sherman, Gartin and Buerger, 1989:35). Similarly, Warner and Pierce argue that calls for service data are biased only by citizens' willingness to report crimes" (Warner and Pierce, 1993:512).

Researchers who use calls for service data, however, are not without their critics. Klinger and Bridges (1997), for example, argue that calls for service are biased because they do not include crimes that come to police attention through means other than police dispatch centers; because callers can provide misleading information (see also Reiss, 1971); and because they consist of what police call takers record about what citizens tell them (see also Gilsinan, 1989). Overall, Klinger and Bridges (1997) identify three types of error in calls for service crime counts: calls identified as non-criminal events that are in fact criminal activity (false negatives), callers that classify non-criminal behavior as criminal (false positives), and calls that misclassify the nature of criminal incidents (crime misclassification). They conclude that calls for service data under count the amount of crime officers encounter on patrol (by about 23 percent), that the counting bias varies by crime type -- over counting burglary by about 3 percent, under counting

violent crimes (assault, sexual assault and robbery) by about one third, and under counting trespassing by about 51 percent -- and that errors in calls for service crime counts vary systematically across space (1997:719-720).

We propose that calls for service provide a reasonable measure of serious crime problems, particularly violent and property crimes in public housing sites. Indeed, our data show consistently higher levels of reporting these serious types of crime problems (about fifteen calls per month) than disorder problems (about seven calls per month). Our systematic social observations of behavior and physical conditions in common areas in these six public housing sites, however, documented many more instances of disorderly behavior[12]. As such, we propose that calls for service regarding more serious crimes in public housing sites comprise an adequate measure of serious crime activity. Calls for service data, however, seem less useful as a measure of public disorder problems in public housing sites. Our work in the public housing sites suggest that residents tend not to call the police about things they might consider to be trivial events, like loitering, drinking in public, urination, trespassing, and suspicious persons. As one tenant representative suggested, "the police have bigger fish to fry" and many public housing tenants believe calling the police would be a waste of time because the incident is usually over by the time they arrive.

[12] We conducted a series of independent observations in each of the common areas over five time periods spanning the period of our project. We conducted five waves of observations (spring 95, summer 95, fall 95, winter 96, spring 96), we conducted four observations per wave (weekday day, weekday night, weekend day, weekend night) across 172 common areas. In total we collected 3200 observations across the six public housing sites over the period of our problem-oriented policing project. The results of these observations are reported in Chapter 5.

4.1 Analytic Strategy

The empirical models presented in this chapter examine repeated measures of calls for police service at 60 equally spaced points in time (from January 1, 1994 to June 30, 1996). Our specific research questions demanded that we examine changes in calls for service both across and within public housing sites, as well as any changes in the different categories of calls for service (especially violent crimes, property, and drugs). We wanted to measure the specific impact of problem-oriented policing activities on calls for service over time and also compare these trends across sites. With these research questions in mind, we employed a mixed model to measure the impact of the intervention on different call categories across the six housing sites over 30 months (60 two-week intervals). The mixed model, also considered a multi-level model, is one method for analyzing time-series data while, at the same time, allowing one to examine the nested effects of a co-variate. In our case, the mixed model allowed us to examine both changes in calls (by type) over time as well as the individual impacts of problem-oriented policing activities in each site.

The mixed model draws upon an autoregressive covariance structure (AR1) that is specific to time-series data. For our study, the autoregressive model was designed to measure the impact of problem-oriented policing on serious crime across housing sites over repeated measures. Repeated measures of call data were matched to each public housing site and then aggregated to evenly spaced 2-week intervals (N = 60): 32 observation points prior to the intervention, 24 points during the intervention, and 4 points of follow-up data. The mixed model is thus fitted to time-series data containing two levels of analysis: *time* is considered the level 1, within-subjects factor where different measurements on the same subject (housing project) are observed at different points in time; and *site-level variables* comprise the level-2, between-

subjects factor, where differences in treatment (problem-oriented policing activities) and population characteristics (e.g. percentage of AFDC recipients, building style, number of units) can be measured between "subjects," which in this case is between public housing sites (see Littell et al., 1996). As such, the purpose of the mixed model was to compare within- and between-subject calls for service trends over time.

The mixed model fits these data and our specific research questions for several reasons. Simple linear models assume that between-subjects predictors and their error terms are mutually independent and that the variance of the error terms is constant. By contrast, the mixed model comprising an autoregressive covariance structure does not assume that error terms are mutually independent. The mixed model specification implies that the volume and type of calls for service observed at a given point in time may depend upon enduring events or conditions in a particular site, and that random variations in calls will operate on large intervals of time rather than on singular observation periods. In other words, circumstances such as the management style, the stability of a drug market, or strategic problem-oriented policing activities in a public housing site may have a collective impact on a block of observation points. A reverse-sting operation, for example, that disrupts a street-level drug market at Oakdale at period 4 may have a lagged effect on calls observed at period 5, and perhaps later periods.

With time series data we could not assume that observations within a site would be equally correlated. As such, the basic assumptions of simple linear models would have been violated. Moreover, in most time-series data sets, observations at adjacent points in time are more highly correlated than observations at distant times. Analysis of these data, therefore, requires the within case covariance to be removed. The mixed model approach does this by applying a parametric structure to the covariance matrices, where the covariance of the estimates

is assumed to be a function of the distance between two observations[13]. The first order autoregressive structure specifies that the covariance between two observations that are w intervals apart is $\sigma^2\rho^w$, where w is the number of time intervals between observations, the parameter σ^2 is the variance of an observation, $Var(y_{ijk}) = \sigma^2$, and ρ is the correlation between sequential observations on the same site. It follows that ρ is the correlation between observations at times one and two, ρ^2 is the correlation between observations at times one and three, ρ^3 is the correlation between observations at times one and four, and so forth (Littell et al., 1996). The covariance structure assumed under an auto-correlation model is thus:

$$\begin{bmatrix}
1 & \rho & \rho^2 & . & . & \rho^{k-1} & . & . & . & . & . & . \\
\rho & 1 & \rho & \rho^2 & . & \rho^{k-2} & . & . & . & . & . & . \\
. & . & . & . & . & . & . & . & . & . & . & . \\
\rho^{k-1} & . & . & . & \rho & 1 & . & . & . & . & . & . \\
. & . & . & . & . & . & 1 & \rho & \rho^2 & . & . & \rho^{k-1} \\
. & . & . & . & . & . & \rho & 1 & \rho & \rho^2 & . & \rho^{k-2} \\
. & . & . & . & . & . & . & . & . & . & . & . \\
. & . & . & . & . & . & \rho^{k-1} & . & . & . & \rho & 1
\end{bmatrix}$$

The block diagonal matrix indicates that the covariance between measurements on the same block is no longer assumed to be 0, and the variance of the error terms is not expected to be constant. The models examined in this paper used the SAS PROC GLIMMIX option for a

[13] Another approach that incorporates non-independence would be to add an autocorrelation parameter to a traditional time series analysis. However, a major advantage of the SAS GLIMMIX procedure (mixed model procedure) over time series analysis is that the mixed model will estimate *aggregate* treatment effects for all the sites together, as well as the *nested* (or individual) effects of problem-solving within each housing site. The mixed model approach is thus more efficient than conducting seven time series analyses, six for the individual sites and another for the overall intervention.

Poisson probability distribution which is generally deemed appropriate for count data, such as these, in which there are a high frequency of empty cell counts in the data set making an assumption of normality inappropriate. The mixed model approach then relies upon maximum likelihood estimation or restricted maximum likelihood estimation to assess the model goodness of fit (see Waring, 1998; Searle et al., 1992).

4.2 Results

We present our results in four parts: first, we examine the impact of the problem-oriented policing program across the six public housing sites in our study. Second, we compare the impact of the problem-oriented policing program between the six study sites. Third, we discuss the impacts of different types of problem-oriented policing activities and fourth, we present our results that depicts the impact of the problem-oriented policing program on different crime categories.

Overall Impact of the Problem-Oriented Policing Program

Table 4.1 presents the results of the first autoregressive mixed model[14] which examines the cumulative impact of the problem-oriented policing program on serious calls for service[15]. Building style, the number of units, and the percentage of households receiving AFDC (Aid to Families with Dependent Children) are included as controls. Additionally, we control for the intervention period of the time series data (pre-intervention, during intervention, post-intervention). We also include the number of problem-oriented policing activities completed during each two-week interval to measure the impact of the aggregate number of problem-

[14] All mixed models presented in this report include an extra-dispersion scale which adjusts the standard errors to account for over-dispersion. This is appropriate because diagnostics (i.e. the Pearson Chi-Square/degrees of freedom and the deviance/degrees of freedom) indicate that there is over-dispersion in the models. Inclusion of the extra-dispersion scale correctly adjusts the estimation of the standard errors of the individual parameter estimates.

solving activities on calls for service across the six public housing sites. We included problem-oriented policing activities as a fixed treatment effect rather than a random effect because the decision to implement a problem-solving strategy was strategically determined by the site teams and not randomly selected from a "population" of problem-solving activities. Indeed, one would hope that within the SARA approach to problem-oriented policing that problem-solvers carefully choose treatment activities that match their analysis of the problem rather than randomly select responses that may or may not have a chance of success.

Table 4.1. Autoregressive Model for Overall Effects of Problem-Oriented Policing Activities on Calls for Service

Parameter	Estimate	T	Pr > |T|
Intercept	1.9752	14.28	0.0049
Time Period:			
Pre-intervention	-0.0762	-1.03	0.3054
Intervention	-0.0077	0.09	0.9270
Post-intervention	-	-	-
Building Style	-0.1718	-2.73	0.1118
Total Units	0.0017	7.04	0.0196
Percent AFDC	0.0159	3.95	0.0584
POP Activity	-0.0216	-2.92	0.0037
Cov Parm	**Estimate**	**Z**	**Pr > |Z|**
DIAG AR (1)	0.3031	5.63	0.0001
Residual	2.0149	11.86	0.0001
Model Fitting Information			
Akaike's Information Criterion			-76.3614
Schwarz's Bayesian Criterion			-80.2279
Likelihood Ratio Test (DF = 9)			34.3828
-2 REML Log Likelihood			148.7228
Extra-dispersion scale			2.0166

[5] Includes persons, interpersonal, vehicle, assistance, property and drugs.

Our results show that sites with low-rise (or walk-up style) architectural designs, fewer housing units, and a smaller percentage of AFDC recipients had fewer calls for service over time than high-rise sites, sites with larger numbers of housing units, and sites with high rates of AFDC recipients. These findings are consistent with the seminal research on public housing sites in New York City conducted by Oscar Newman in the 1970s (Newman, 1973).

Our results also indicate that the aggregate number of problem-solving activities implemented during each two-week observation period is a significant predictor of the trend in calls for service over time. We find that an increase in the number of completed site team activities is positively associated with reductions in calls for service over time. This finding is consistent with the program goals and suggests that site teams that implemented a large quantity of problem-solving tasks during the evaluation period directly impacted the number of serious crime calls for police service in the six public housing sites.

To disentangle whether this impact was merely an "announcement effect" – the result of simply informing residents that a problem-solving program had been implemented – we controlled for the time period (before, during or after program implementation) in the mixed model analysis. As Table 3 shows, the categorical time period variable was not statistically significant. This suggests that it was not the intervention period itself that caused a reduction in calls, but the number of problem-oriented policing activities completed during each observation period. That is, residents did not stop calling the police about crime problems simply because they were aware of the program or some related period effect. Rather, this first model indicates that there was something about the actual frequency of problem-oriented policing activities that contributed to changes in the number of calls for service.

We propose that this overall reduction in calls for service is not an artifact of general reductions in calls for service across Jersey City over the last several years. In fact, our data reveal a 4 percent decrease in calls for service citywide compared to a 25 percent decrease in calls for service in the six public housing sites in our study.

The Differential Impact of the Problem-Oriented Policing Program Between Public Housing Sites

Table 4.2 seeks to answer whether there a difference in the impact of the problem-solving intervention between the six public housing sites? Table 4.2 presents the results of an autoregressive model that examines the nested (or separate) effects of the problem-solving activities implemented by each of the six site teams.

Table 4.2. Autoregressive Model for Nested Effects of Problem-Oriented Policing Activities on Calls for Service

Parameter	Estimate	T	Pr > |T|
Intercept	1.9954	13.68	0.0053
Time Period:			
Pre-intervention	-0.0692	-0.97	0.3320
Intervention	0.0208	0.26	0.7976
Post-intervention	_	_	_
Building Style	-0.1288	-1.99	0.1854
Total Units	0.0015	6.18	0.0252
Percent AFDC	0.0166	3.91	0.0597
POP (Oakdale)	-0.0192	-1.67	0.0965
POP (Gladstone)	-0.0469	-3.42	0.0007
POP (Woodlawn)	-0.0140	-0.92	0.3590
POP (Brighton)	-0.0371	-2.80	0.0054
POP (Bellevue)	-0.0195	-1.06	0.2898
POP (Ivanhoe)	0.0046	0.37	0.7098
Cov Parm	**Estimate**	**Z**	**Pr > |Z|**
DIAG AR (1)	0.2714	4.89	0.0001
Residual	1.9150	11.91	0.0001
Model Fitting Information			
Akaike's Information Criterion			-85.2421
Schwarz's Bayesian Criterion			-89.0943
Likelihood Ratio Test (DF = 14)			16.6213
-2 REML Log Likelihood			166.4843
Extra-dispersion scale			1.9410

Like the model presented in Table 4.1, this model reveals that low-rise public housing sites with fewer housing units and sites with a lower percentage of AFDC recipients were likely

to have fewer calls for service over time than high-rise sites, sites with large numbers of units, and sites with high rates of AFDC recipients. We also find that, as with the results from the earlier model, the intervention period was not a significant predictor of change in calls for service, thus ruling out an "announcement effect" of the problem-oriented policing program. Table 4.2 also differentiates the impact of the problem-oriented policing program by public housing site. The results show that the number of problem-oriented policing activities was a significant predictor of change in calls for service in two of the six sites: Gladstone and Brighton. More problem-oriented policing activities in Gladstone and Brighton led to greater reductions in calls for service over time. Problem-oriented policing activities in the other four sites did not significantly impact calls for service.

Problem-Oriented Policing Impact by Crime Type

Our research also sought to examine the differential impact of problem-oriented policing on different types of crime problems in public housing settings. Table 4.3 displays the parameter estimates for problem-oriented policing activities across a series of nine autoregressive models predicting specific calls types that, as with the earlier models, control for intervention period (before, during, and after intervention), building style, total units and percent AFDC.

Table 4.3. Parameter Estimates for Problem-Oriented Policing Activities Predicting Specific Call Types (Controlling for Time Period, Building Style, Total Units, and Percent AFDC)

Parameter	Person	Interpersonal	Property	Vehicle	Nuisance	Suspicious	Morals	Assistance	Narcotics
Intercept	0.283	0.432	0.148	-1.854	1.137	0.378	-1.575	0.483	0.726
Time Period:									
Pre-intervention	-0.067	-0.066	0.146	-0.176	-0.460**	0.022	0.275	-0.209*	0.270
Intervention	-0.123	0.118	0.370*	-0.008	0.011	-0.158	0.117	-0.010	0.264
Post-intervention	_	_	_	_	_	_	_	_	_
Building Style	-0.209	-0.313*	0.200	-0.065	-0.502	0.052	-0.639	-0.020	-0.206
Total Units	0.002**	0.002**	-0.000	-0.000	0.003**	0.002*	0.005**	0.001*	0.004*
Percent AFDC	0.026**	0.025**	0.012	0.056*	-0.045*	-0.021	-0.039	0.019*	-0.012
POP Activity	-0.004	-0.026**	-0.036**	-0.118**	-0.021	0.012	0.011	-0.027**	-0.012
Cov Parm									
DIAG AR (1)	0.3824	0.0010	0.4048	0.0417	0.0002	0.0346	0.0051	0.0067	0.0001
Residual	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001

Table 4.3 reveals five important results. First, problem-oriented policing activities impacted differently upon the different categories of calls for service. Specifically, our results show that problem-oriented policing activities led to reductions in calls for service concerning interpersonal violent crimes (robberies, assaults, domestic assaults), property crimes (burglary), vehicle crimes (auto theft), as well as citizen requests for police assistance (which includes broken sewer line, traffic control problems, and other service needs such as mentally disoriented person walking around or a dead animal found).

We did not, however, find that the problem-oriented policing activities reduced disorder types of crimes (e.g. drugs, morals, nuisance, and suspicious persons). We propose several reasons why we find these results in our data: first, it might be the case that problem-oriented policing cannot reduce drug market or social disorder problems; second, the Jersey City problem-oriented policing program did not set out to explicitly reduce disorder problems (although site teams did aim from the outset to reduce drug problems and some of their problem solving efforts appeared geared towards addressing disorder problems with a view to solving more serious crime problems – see Chapter 5); third, we suggest that public housing residents typically do not call the police for drug and disorder incidents. We find, for instance, few calls for service regarding public disturbances and drug problems in our data over the two and one-half year study period. Indeed, the mean number of calls per month for disorder types of problems averaged about seven calls per month. By contrast, the mean number of calls per month was higher for interpersonal ($\bar{x}$ = 15) and assistance ($\bar{x}$ = 11) problems. We propose two reasons why we find very few residents calling the police about disorder and drug problems: first, we suggest that public housing residents are most likely fearful of drug dealers and worry about retaliation; second, we suggest that public housing residents are exposed to higher rates of violent types of crimes. As such, they

may be more inclined to call only about these serious problems than call the police about comparatively minor problems.

Second, Table 4.3 shows that the intervention period is not significant across every call category. This result suggests that the relationship between problem-oriented policing activities and calls for service during each two week period is not spurious and cannot be explained by the presence or absence of the intervention period. This means that the problem-oriented policing activities had a direct effect on impacting crime problems.

Third, physical and social structural factors had different influences on different categories of calls for service. Most notably, we found that those public housing sites with more housing units had relatively more calls for service overtime than those public housing sites with fewer housing units. This result held for all crime categories except property and vehicle crimes.

Fourth, Table 4.3 shows that there is a relationship between percent of AFDC recipients and violent crime (person and interpersonal) calls. This result suggests that public housing sites with more AFDC recipients (and a common proxy for percent youths) have more violent crime problems than those public housing sites with fewer AFDC recipients.

Finally, the autoregressive statistic (DIAG AR (1)) shows that for most call categories there is autocorrelation between time periods as one would expect with time series data. Interestingly, however, our results show that person and property crimes seem to be more random than other categories of crime, a result that reflects what we tend to know about patterns of crime problems.

Chapter Five:

Social Observations

Systematic social observations of human behavior in public places comprise an important method to measure changes in behavior over time, especially as the result a crime control intervention like problem-oriented policing. This chapter reports the results of a series of systematic observations over a one year time period on the 172 common areas across the six public housing sites in our study.

5.1 Theoretical Perspective

Our study of behavior in public places began with the assumption that common areas in public housing sites, like street blocks, qualify as behavior settings (see also Felson, 1995; Perkins and Taylor, 1996; Taylor, 1988; Taylor, 1997; Taylor and Harrell, 1996; Taylor et. al., 1984; Taylor, Shumaker and Gottfredson, 1985). These behavior settings are "...regularly occurring, temporally and spatially bounded person-environment units" (Taylor, 1988: 128). They are made up of three major components: the setting participants, a standing pattern of behavior, and the surrounding physical environment which contains the behavior (Taylor, 1988).

Residents of a behavior setting (e.g. a street block or common area) are hypothesized to engage in a variety of territorial behaviors which maintain the standing patterns of behavior or the setting program and enhance informal social control of the behavior setting (Taylor 1988). Several factors are thought to affect territorial behaviors. One perspective focuses on the effects of disorder on territorial functioning (Skogan 1990; Skogan 1986; Taylor 1986) arguing that an increase in disorder or incivilities leads to fear of crime which in turn leads to a withdrawal of residents and then a decrease in the amount of informal social control (see also Wilson and

Kelling, 1981).

Disentangling social activities (both deviant and non-deviant) and control mechanisms (both formal and informal) at different units of analysis, and understanding the dominant characteristics of these elements at different units of analysis, provides a theoretical and empirical means to examine the patterns of illicit activity and the impact of control efforts at a variety of units of analysis.

At each specific unit of examination, the physical boundaries, use of space and means of control can be separately identified. For example, in an apartment, the unit of analysis may be defined by the physical walls; the predominant uses of space may be defined as cooking dinner, sleeping and watching television; and the principal means of control may be defined as the discipline exerted by parents or other persons living in the same apartment. For business units, social activities are usually dictated by the type of business operation. For example, activities at fast food stores are characterized by food preparation by the employees and customers coming and going from the store. For these businesses, the principal means of control may be defined as the control exerted over the behavior of employees coupled with employee surveillance over the customers.

The individual apartment or business unit, however, is also part of an address. By examining the use of space at an address (or say a public housing site) one can observe a greater range of activities and control mechanisms than those activities and controls identified at a single apartment. At the same time, however, the activities and controls at the public housing site *include* the activities and controls that operate in the single apartment. For example, a teenager living in a public housing site is controlled by the discipline exerted by his or her guardian. This same teenager, however, is also part of a social control network that operates on the public

housing site either through a peer network living in the same public housing site or by the site manager of the complex. Other controls can also be identified which temper the behavior of the teenager when the individual person is examined as the unit of analysis. These social controls derive, for example, from a variety of sources such as from schools and sporting clubs. However, the specific place-controls exerted against all people who go about their day-to-day business when the place becomes the unit of analysis provides a different matrix of controls than those identified when the controls and activities of the individual person is examined.

Similarly, when business addresses are examined, a specific matrix of social controls can be identified. For example, groups of stores create a focal point for activity providing local citizens with access to a range of goods and services. While surveillance in the individual store is usually conducted by the employee, surveillance across these groups of stores is sometimes maintained by private security guards or the police. At some places police may be dispatched to an address or drive-by a problem location providing formal control both over the individual store and the address (or collection of stores). Additionally, these addresses are controlled through informal control mechanisms dictated by the relationships that operate at individual housing or work units (e.g. see La Gory, 1983).

Patterns of social activity and control mechanisms can also be identified at larger, more macro, units of analysis. For example, at the area unit of analysis social networks exist between community members (e.g. see Yancey, 1983) and physical barriers divide one set of routine activities from another (e.g. see Shaw and McKay, 1942. See also Cohen and Felson, 1979). For example, as one moves from a residential to a business section of a city the boundaries between neighborhoods can be constructed based on the place where shops cease to exist and homes dominate the landscape. Moreover, the degree to which one type of behavior (such as licit

behavior) prevails over another (such as illicit behavior) in the neighborhood is dependent both on the level and type of control mechanisms at work.

By changing the unit of examination from the public housing site to the neighborhood the types of social activities that predominate are also different. For example, those activities that operate in the wider community, while embracing people's behavior at the address or apartment/business level of analysis, also include a range of other ventures such as journeys of people from their house to the store to work and to social events in the local area (see Cohen and Felson, 1979).

Unlike the place-specific social controls at the apartment, or business, or public housing site levels of analysis the social controls that are exerted in the wider community derive primarily from larger social structural factors such as schools, churches and the businesses that interact with all users of the public and private space of the neighborhood. Consistent with this broad focus, research using this macro (community) level of analysis generally examines social networks and these broad social structural factors which control human behavior (see Gans, 1962; Shaw and McKay, 1942; Yancey, 1983).

5.2 Systematic Social Observational Data

Researchers use a variety of methods to measure social activity. Surveying residents about their perceptions of street activity, for example, is a commonly utilized method of inquiry (see for example Brown and Altman 1981; Bursik and Grasmick 1993; Greenberg and Rohe 1986; Hirschfield, Brown and Bowers 1996; Mazerolle, Kadleck and Roehl, 1998; Perkins and Taylor 1996; Rosenbaum and Lavrakas 1995; Skogan 1986). Another way of measuring social activity is through on-site field observations of street activity (see for example Mazerolle, Kadleck and Roehl, 1998; Perkins and Taylor 1996; Taylor 1995a; Taylor 1996). Ralph Taylor,

however, suggests that residents' perceptions of disorder and on-site assessments of disorder may not be measuring the same underlying construct (Perkins and Taylor, 1996; Taylor, 1995a; Taylor, 1995b; Taylor, 1996). On-site assessments appear to be measuring the actual conditions of a location while resident surveys appear to be capturing the actual conditions of a location filtered through the various psychological attributes and psychological processes of residents. In fact, one study by Taylor (1995c) finds that up to 90 percent of the variation in residents' perceptions of ecological conditions may be psychological rather than ecological.

The data reported in this chapter draw from on-site observations of social activity in the 172 common areas across the six public housing sites in our study. Our research supports and extends prior research that uses on-site ratings by trained researchers in order 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 neighborhood (indeed see Mazerolle, Kadleck, and Roehl, 1998). Rather, ours is an argument suggesting that residents may not be the most objective lens from which to view the physical changes on a street.

We conducted five waves of observations over the one and a half years of our evaluation project (Spring 1995, Summer 1995, Fall 1995, Winter 1996, Spring 1996). During each wave we conducted one observation in four distinct time periods (weekend day, weekend night, weekday day, weekday night) for each of the 172 common areas. In total we conducted 3440 observations across the five waves, across the four time periods over the 172 common areas. Structured field observations of routine licit activities (e.g. pedestrians, children playing, people walking along) and illicit activities (e.g. drug selling, fighting) were made of each common area.

Our decision to conduct four observations per common area during each wave derived from our understanding that common areas in public housing sites have stable patterns of

behavior, or rhythms of recurring behavior and activity, that are somewhat predictable and routine (see also Mazerolle, Roehl and Kadleck, 1998; Taylor, 1988). Felson (1995) also suggests that activities occur in fairly predictable rhythms where patterns of behavior are dictated by a host of factors including residents' working hours, sleeping times, and recreational times (see also Mazerolle, Roehl and Kadleck, 1998).

We suggest that the reliability and validity of on-site observations increases as the unit of analysis decreases in size. We propose that public housing common areas and other small units of analysis (e.g. street blocks, hot spots) 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 public housing common area may have four distinct time periods with four distinct patterns of behavior: (1) the morning hours when residents are taking children to school or going to work, (2) the daytime hours when elderly people or non-daytime working adults use the common spaces, (3) the afternoon hours when children are coming home from school and adults are returning home from work, and (4) the evening hours when people are at socializing in the common areas. This kind of predictability in the standing patterns of behavior on a street block are rarely present for neighborhoods for a number of reasons: the overall 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.

5.3 Results

The analyses presented in this section show the percent change in licit, marginal, and illicit activities over five waves of observational data. We measure changes in the nature of social behavior in common areas by examining the proportion of licit activities to illicit activities over time. It is difficult to make such comparisons using the raw numbers because the volume of social activity varies widely from season to season. The licit activities observed during our field observations include children playing, police patrolling, and people walking, conversing, and engaging in recreation. Marginal behaviors consist of loitering, gambling, and suspicious or borderline activities for which there are city ordinances. Illicit activities include more serious crimes and disorders such as selling drugs, fighting, drinking in public, and blaring loud music.

Figures 5.1 through 5.6 present the changes in social activity by site. Overall, the graphs show that the percent of observed illicit behavior is very small (about ten percent at the start of the project and decreasing to less than five percent by the end of the project). This result is consistent with most criminological research reporting that crime is, in fact, a rare event and is similarly a rare event in public housing sites. The vast majority of observed social activity across the six target public housing sites was regular, licit activities such as children playing, people walking, conversing, and engaging in recreational activities. Of particular note is the fact that the percent of licit activities increased over the course of our problem-oriented policing project across all six of the public housing sites in our study.

Figure 5.1. Social Observations at Oakdale Public Housing Site

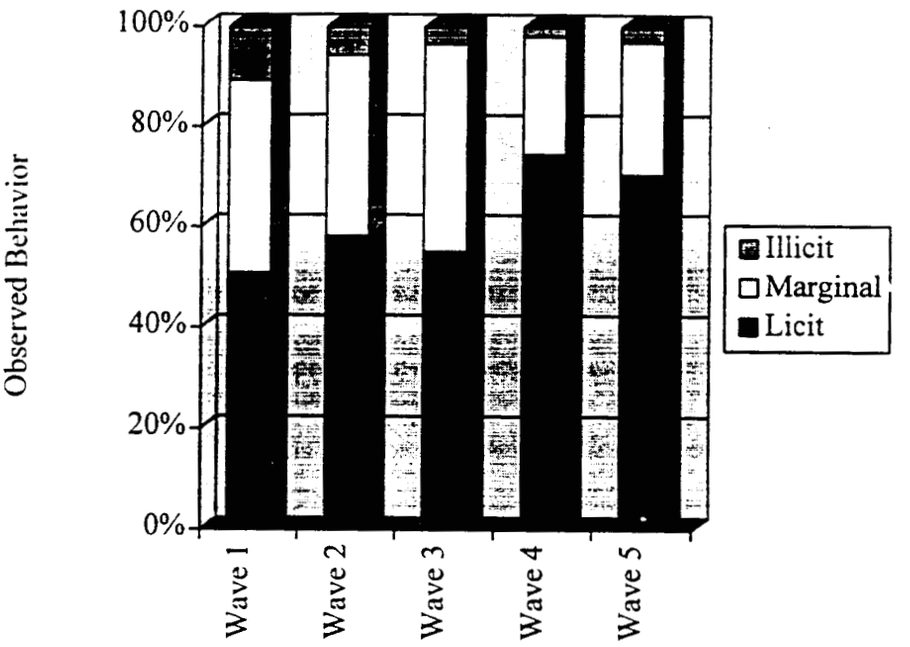


Figure 5.2. Social Observations at Gladstone Public Housing Site

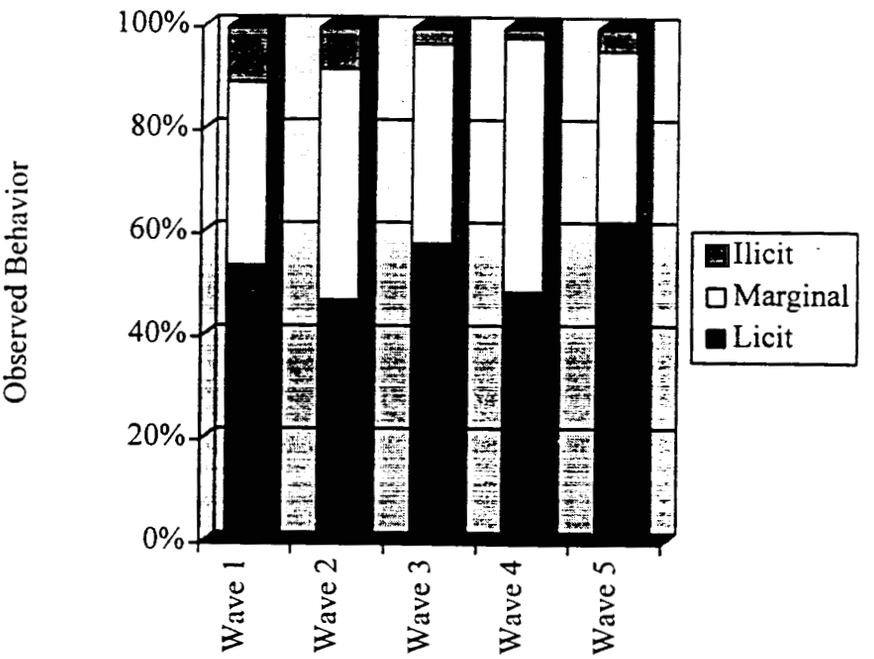


Figure 5.3. Social Observations at Woodlawn Public Housing Site

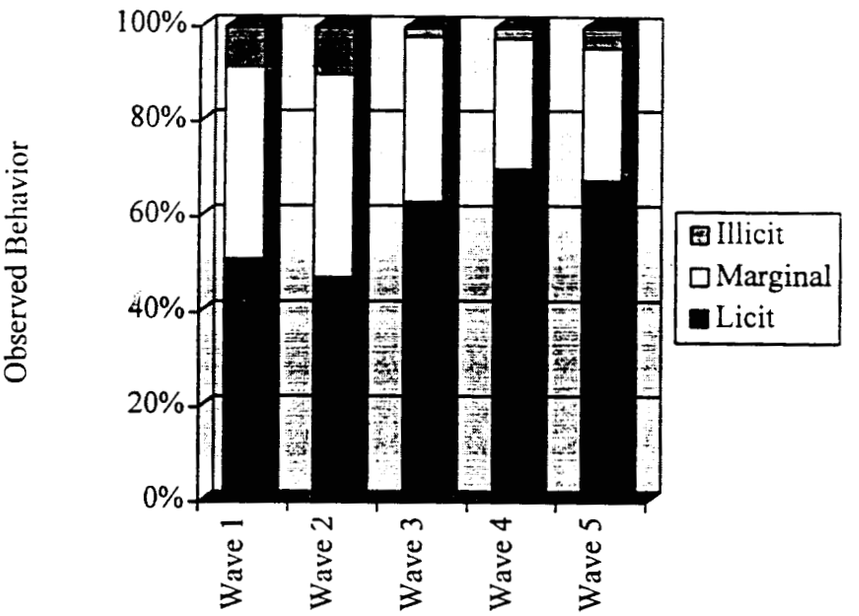


Figure 5.4. Social Observations at Ivanhoe Public Housing Site

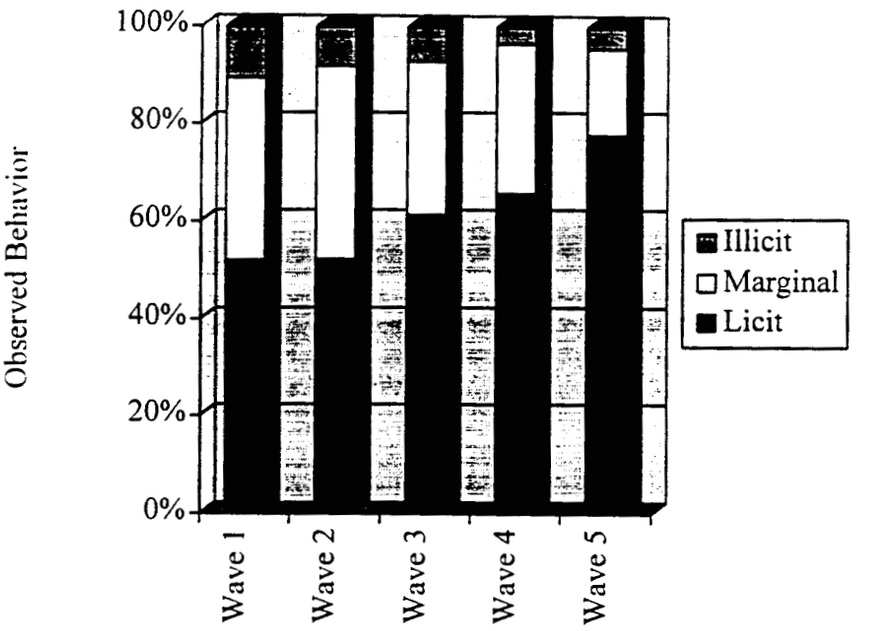


Figure 5.5. Social Observations at Brighton Public Housing Site

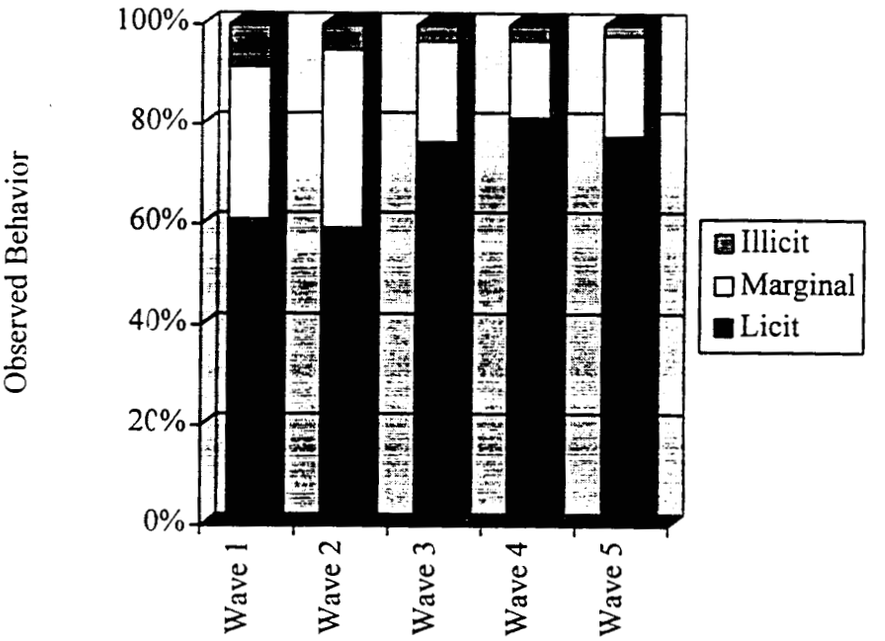
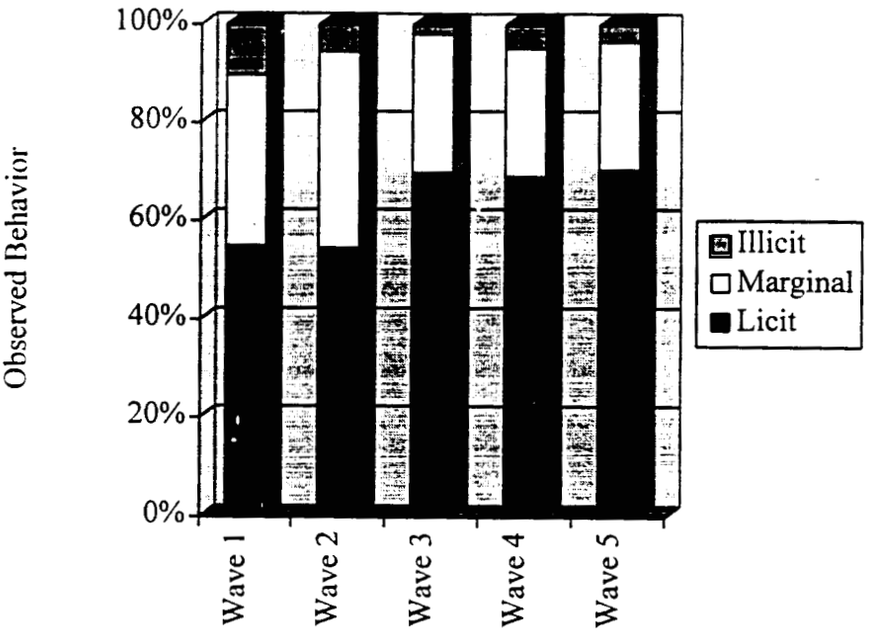


Figure 5.6. Social Observations at Bellevue Public Housing Site



Our social observational data suggest two main outcomes: first, the ratio of licit to illicit social activity in the six public housing sites in our study increased over the one year intervention period. Second, it appears that the problem-oriented policing program most likely led to decreases in marginal activity and, to a lesser extent, the program probably led to decreases in illicit activity. We remind readers, however, that the problem-oriented policing program goals were to reduce serious crime activity. The results presented in Chapter Four showed significant impacts on serious crime, especially in Brighton and Gladstone, but no real impact on disorderly types of activity. By contrast, the results from our social observations suggest that the problem-oriented policing seems effective at reducing marginal type activities such as loitering, gambling, and suspicious behavior.

We do not believe that the results from the social observations (Chapter Five) and the calls for service (Chapter Four) are inconsistent with one another. Rather, we propose two arguments that bring the two findings together. First, calls for service do not adequately measure the amount of disorder activity in public housing sites because residents simply do not seem to call about this type of low-level activity. Second, we believe that the focus of the problem-oriented policing program implemented in the public housing sites in Jersey City was consistent with what Wilson and Kelling (1982) refer to as the "broken windows" hypothesis. It appears that problem-solving teams attempted to impact serious crime problems by targeting some of the incivility behaviors in public housing sites. Our charts presented in this chapter tend to support these two arguments and suggest that the police were in fact successful at reducing illicit activities.

Chapter Six:

Conclusions

Crime problems in public housing sites have a reputation as being more intractable than problems in other high crime places. High-rise public housing sites are typically located in poor neighborhoods with high crime rates (Skogan and Annan, 1994 129-130). Residents are generally older and poor and the non-elderly residents are disproportionately single with children and unemployed. Skogan and Annan (1994) suggest that "residents often lack the capacity to defend themselves, be it against predators, gangs looking for revenge, or drug dealers engaged in turf wars or intimidation" (1994: 130; see also Popkin et al, 1997). Many policy makers believe that only hard core policing tactics (e.g. arrests, sweeps) that characterize the "War on Drugs" can reduce the significant crime problems in public housing sites and program evaluators report very few interventions that seem to make lasting change.

Our evaluation of a problem-oriented policing program implemented in six of the most crime ridden public housing sites in Jersey City challenges the notion that public housing sites represent the last bastion of program resistance. Our research shows that the problem-oriented policing activities, collectively implemented by site teams comprising police, public housing officers, and social service liaison officers, can significantly reduce interpersonal, property, vehicle, and assistance calls for service. Our research found that the reductions in calls for service for these categories of crime were significant and attributable to the number of problem-oriented policing activities implemented in each site. We did not find, however, significant reductions in the number of calls for service over time for disorder-type problems and drug market problems. We expect that the low base rate of calls from public housing residents

regarding incivilities and drug problems confounds this result. Our social observational data throws weight behind our supposition that the calls for service are an inadequate measure of the impact of the problem-oriented policing program on disorderly type activity. Indeed, our results show that marginal and illicit activity decreased across the six public housing sites during the one year intervention period.

Our research also found differences among the six public housing site teams in their ability to impact crime problems. Two site teams in particular – Gladstone and Brighton – significantly reduced the number of calls for service over time. Importantly, we found that the physical structure differences that were significant predictors of changes in calls for service over time (total number of units) did not explain why Brighton and Gladstone site teams were most successful in reducing crime problems. Moreover, social structural factors such as percent unemployed, percent AFDC, and percent single headed households did not exhibit strong relationships to the changes overtime in calls for service. These social structural factors also varied qualitatively between the two successful sites: Brighton and Gladstone. For instance, building style (Brighton was a low rise and Gladstone a high rise) and the sheer number of problem-oriented policing activities alone could not explain the reason why these two site teams were most successful in reducing serious crime problems. We concluded that stable membership in the site-based problem-solving teams combined with a high volume of completed problem-solving activities contributed to the successful reduction in calls for service regarding serious crime problems in Brighton and Gladstone.

Our research has several important methodological and policy implications and our research offers some general and important insights into the growing problem-oriented and community-oriented policing literature. The problem-oriented policing program implemented in

the Jersey City public housing sites comprised a wide range of responses: CPTED (e.g. lighting), situational crime prevention (e.g. pay phone capabilities to enable outgoing calls only), civil remedies (e.g. evictions and special leaseholder provisions), traditional policing (e.g. sweeps, arrests, surveillances), treatment (e.g. drug treatment and alcohol counseling), and informal social control (e.g. stability of CSO's assigned to individual housing sites). We found that the two most successful sites (Gladstone and Brighton) implemented more police-initiated strategies than those sites that relied more upon public housing or social service responses. This is not to say that traditional policing tactics are more effective, but that the coercive authority of the police within a problem-oriented policing program is important to bringing about change. This finding is consistent with Green's (1996) evaluation of Oakland Police Department's Beat Health program that found that city inspectors were effective in cleaning up blighted places with drug dealing problems when they gained access to properties through police problem-solving efforts. We conclude, therefore, that sworn officers need to take an active and high profile role in problem-solving within a team context in order to bring about change.

Our research also challenges the widely-held notion that crime-ridden, high-rise public housing sites where the residents are typically poor, single, unemployed and with children are places that are highly resistant to change. We found that the problem-oriented policing program implemented across six study sites had a differential impact and that one of the key defining factors that led to decreases in violent crime, property, vehicle and assistance calls was the stability of the problem-oriented policing teams. This result suggests that long term assignments of police officers to work within particular public housing settings might reduce the distrust that many public housing residents feel about the police in general, it might give the police time to get to know the residents better, it would most likely give the police a knowledge base regarding

the types of social services available to help residents in trouble, and it would give the housing authority personnel an opportunity to work with the police to target some of the problem people and places within public housing communities.

Our research offers some important measurement and methodological insights. First, our study systematically measured the process of problem-oriented policing and carefully integrated the problem-oriented policing activities with our impact assessment. We documented the extent of scanning efforts, we examined the types of analysis conducted on a defined problem, we measured the quantity and quality of problem-solving responses, and we recorded efforts to assess the impact of problem-oriented policing tactics. This process formed an integral component to our assessment of how problem-oriented policing programs succeed (or flounder) in public housing sites. Finally, by using a mixed model we were able to disentangle the relative influences of problem-oriented policing activities across the six public housing sites in our study. As such, this method provides an innovative approach to comparing and contrasting the factors that constrain or enhance the control of crime problems in public housing sites.

Problem-Oriented Policing in Public Housing: Final Report of the Jersey City Project*

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Executive Summary

- The public housing problem-oriented policing project was a cooperative effort by Jersey City's Public Housing Authority and the Police Department to solve serious crime problems across three low-rise and three high-rise public housing sites.

- The Housing Authority and the Police Department formed six problem-solving "site teams" comprising public housing representatives, on and off-duty police officers, tenant representatives, and a social service liaison officer. These teams collectively identified and analyzed drug and violent crime problems in the six target public housing sites in our study.

- Our project in Jersey City began with the premise that public housing sites differ from one site to the next. We suggested that even *within* public housing sites, some places (like some playgrounds and some building lobbies) would have problems, while others would not.

- The corollary was that problems within public housing locations would have varied causes and thus varied responses should be applied to solve (or reduce) the problems.

- We distinguished all common areas by their function and identified six broad types of common areas: walkways, buildings, playgrounds, parking lots, rest areas, and community centers. We identified 172 unique common areas across the six public housing sites.

- When the distributions of problems were examined *across* public housing sites we found that the six public housing sites in Jersey City experienced very different distributions of problems.

- Crime is not evenly distributed across all common areas in a public housing site. About half of the common areas were deemed "safe places" in public housing sites and different public housing sites had different distributions of crime problems.

- Buildings were the most frequently cited common area generating drug problems in all six public housing sites in our study.

- Approximately 7 percent of all the site apartments (N=184) generated 50 percent of the calls across the six housing sites.

- The site teams initiated situational crime prevention tactics such as changing public pay phones to enable out-going calls only and CPTED interventions such as improving lighting in some dimly lit corners of one public housing site. Site teams also sought to control crime problems in common areas using traditional policing tactics such as arrests, surveillances, investigations, order maintenance, and enforcing open warrants.

- Our evaluation team recorded a total of 602 assigned activities during the one year intervention period and we documented a steady increase in unique problem-solving activities completed each month.

- Our research found that the problem-oriented policing activities, collectively implemented by site teams comprising police, public housing officers, and social service liaison officers, significantly reduced interpersonal, property, vehicle, and assistance calls for service.

- Our research found that the reductions in calls for service for these categories of crime were significant and attributable to the number of problem-oriented policing activities implemented in each site.

- We did not find, however, significant reductions in the number of calls for service over time for disorder-type problems and drug market problems. We expect that the low base rate of calls from public housing residents regarding incivilities and drug problems confounds this result.

- Our social observational data throws weight behind our supposition that the calls for service are an inadequate measure of the impact of the problem-oriented policing program on disorderly type activity. Indeed, our systematic social observations show that marginal and illicit activity decreased across the six public housing sites during the one year intervention period.

- Our research also found differences among the six public housing site teams in their ability to impact crime problems. Two site teams in particular – Gladstone and Brighton – significantly reduced the number of calls for service over time.

- Importantly, we found that the physical structure differences that were significant predictors of changes in calls for service over time (total number of units) did not explain why Brighton and Gladstone site teams were most successful in reducing crime problems. Moreover, social structural factors such as percent unemployed, percent AFDC, and percent single headed households did not exhibit strong relationships to the changes overtime in calls for service.

- We concluded that stable membership in the site-based problem-solving teams combined with a high volume of completed problem-solving activities contributed to the successful reduction in calls for service regarding serious crime problems in Brighton and Gladstone.

- Our evaluation of a problem-oriented policing program implemented in six of the most crime ridden public housing sites in Jersey City challenges the notion that public housing sites represent the last bastion of program resistance.

responsibility of the housing authority (and therefore classified as a "housing authority strategy") does not mean that housing employees are exclusively involved in carrying out each link in a chain of activities that comprises that strategy. As demonstrated in the earlier eviction example, many or sometimes all of the individual activities leading to the final act of evicting a leaseholder (i.e., obtain search warrant, raid apartment, arrest specific actor) may involve police or social service assistance. Similarly, coercive police strategies structured for the arrest of a key suspect (i.e., drug supplier) will usually involve the participation of the housing authority or the social service liaison to provide lease information, remove boarders involved in the drug trade, or to locate potential informants. In this context, a police strategy should not be seen as a series of law enforcement activities, rather a complex sequence of planned group responses. The sworn site-based officers were effective precisely because so many of their responses were contingent upon the group dynamics of the site team.

Our process analysis sheds light on the nature of decision making and the flow of information within the team structure which contributes to our understanding why Gladstone and Brighton emerged as the sites with the most successful problem-oriented policing teams. Housing employees, tenants, and the social service liaison in the Gladstone and Brighton site teams saw their role as one of providing reliable information to the site-based officers so they could make informed decisions and respond more effectively. This flow of information was, for the most part, non-reciprocal. The police internalized their role as the "receivers" and reinforced this non-reciprocal flow of information by sometimes balking on their duty to exchange information and by often proposing problem-oriented policing strategies to other members of the group that placed them on the receiving end. For the most part, however, all parties adjusted to this arrangement and the two groups were quite organized during the analysis and responses

stages.

3.5 Site Team Membership

These results suggest that coercive police activities may have a stronger impact on crime problems than less coercive activities. We suggest, however, that membership and attendance at site team meetings comprise two other important factors why Gladstone and Brighton demonstrated reductions in calls for service. We explore these issues in Table 3.14.

Table 3.14 shows that membership of the Gladstone and Brighton site teams, particularly the site-based police officers assigned to these teams, was stable throughout the intervention period. By contrast, we documented a tremendous amount of turnover in the membership of the other site teams (Oakdale in particular). We suggest that the stability of personnel on problem-solving teams, particularly police membership, is perhaps one of the most important contributing factors in successful problem-solving. This result also suggests that problem-oriented policing programs in otherwise resistant public housing sites (e.g., Gladstone which is a high-rise housing complex with a high rate of unemployment, single adult households, and high rates of AFDC recipients) that make an effort to maintain stable membership of personnel assigned to problem-solving teams are more likely to impact crime problems than teams that have a high rate of personnel turnover (see also Green, 1996).

Table 3.14. Profile of Six Public Housing Site Teams in Jersey City

Site	Number of Meetings	Number of Different Attendees	Average Attendance per Meeting	% Police Attendance	% PHA Attendance	% Social Service Attendance
Oakdale	11	15	6.64	50.68	26.03	9.59
Gladstone	9	22	7.56	54.41	27.94	5.88
Woodlawn	11	10	6.64	49.32	28.77	6.85
Ivanhoe	8	12	7.13	45.61	33.33	8.77
Brighton	11	11	5.64	58.06	24.19	1.61
Bellevue	6	8	6.67	52.50	22.50	15.00

Source: Weekly site team progress reports and monthly narratives.
Note: The last three columns do not add up to 100% because the % researcher attendance was omitted.

Chapter Four:

Calls for Service

We assess the impact of the problem-oriented policing program implemented in Jersey City from two and a half years of citizen calls for police service (January 1994 through July 1996). Calls for police service comprise a common source of outcome information for many police interventions (see Mazerolle and Roehl, 1998; Sherman, Shaw and Rogan, 1995; Sherman and Weisburd, 1995; Warner and Pierce, 1993; Weisburd and Green, 1995). Indeed, Sherman and his colleagues argue that calls for police service "provide the widest ongoing data collection net for criminal events in the city" (Sherman, Gartin and Buerger, 1989:35). Similarly, Warner and Pierce argue that calls for service data are biased only by citizens' willingness to report crimes" (Warner and Pierce, 1993:512).

Researchers who use calls for service data, however, are not without their critics. Klinger and Bridges (1997), for example, argue that calls for service are biased because they do not include crimes that come to police attention through means other than police dispatch centers; because callers can provide misleading information (see also Reiss, 1971); and because they consist of what police call takers record about what citizens tell them (see also Gilsinan, 1989). Overall, Klinger and Bridges (1997) identify three types of error in calls for service crime counts: calls identified as non-criminal events that are in fact criminal activity (false negatives), callers that classify non-criminal behavior as criminal (false positives), and calls that misclassify the nature of criminal incidents (crime misclassification). They conclude that calls for service data under count the amount of crime officers encounter on patrol (by about 23 percent), that the counting bias varies by crime type -- over counting burglary by about 3 percent, under counting

violent crimes (assault, sexual assault and robbery) by about one third, and under counting trespassing by about 51 percent -- and that errors in calls for service crime counts vary systematically across space (1997:719-720).

We propose that calls for service provide a reasonable measure of serious crime problems, particularly violent and property crimes in public housing sites. Indeed, our data show consistently higher levels of reporting these serious types of crime problems (about fifteen calls per month) than disorder problems (about seven calls per month). Our systematic social observations of behavior and physical conditions in common areas in these six public housing sites, however, documented many more instances of disorderly behavior[12]. As such, we propose that calls for service regarding more serious crimes in public housing sites comprise an adequate measure of serious crime activity. Calls for service data, however, seem less useful as a measure of public disorder problems in public housing sites. Our work in the public housing sites suggest that residents tend not to call the police about things they might consider to be trivial events, like loitering, drinking in public, urination, trespassing, and suspicious persons. As one tenant representative suggested, "the police have bigger fish to fry" and many public housing tenants believe calling the police would be a waste of time because the incident is usually over by the time they arrive.

[12] We conducted a series of independent observations in each of the common areas over five time periods spanning the period of our project. We conducted five waves of observations (spring 95, summer 95, fall 95, winter 96, spring 96), we conducted four observations per wave (weekday day, weekday night, weekend day, weekend night) across 172 common areas. In total we collected 3200 observations across the six public housing sites over the period of our problem-oriented policing project. The results of these observations are reported in Chapter 5.

4.1 Analytic Strategy

The empirical models presented in this chapter examine repeated measures of calls for police service at 60 equally spaced points in time (from January 1, 1994 to June 30, 1996). Our specific research questions demanded that we examine changes in calls for service both across and within public housing sites, as well as any changes in the different categories of calls for service (especially violent crimes, property, and drugs). We wanted to measure the specific impact of problem-oriented policing activities on calls for service over time and also compare these trends across sites. With these research questions in mind, we employed a mixed model to measure the impact of the intervention on different call categories across the six housing sites over 30 months (60 two-week intervals). The mixed model, also considered a multi-level model, is one method for analyzing time-series data while, at the same time, allowing one to examine the nested effects of a co-variate. In our case, the mixed model allowed us to examine both changes in calls (by type) over time as well as the individual impacts of problem-oriented policing activities in each site.

The mixed model draws upon an autoregressive covariance structure (AR1) that is specific to time-series data. For our study, the autoregressive model was designed to measure the impact of problem-oriented policing on serious crime across housing sites over repeated measures. Repeated measures of call data were matched to each public housing site and then aggregated to evenly spaced 2-week intervals (N = 60): 32 observation points prior to the intervention, 24 points during the intervention, and 4 points of follow-up data. The mixed model is thus fitted to time-series data containing two levels of analysis: *time* is considered the level 1, within-subjects factor where different measurements on the same subject (housing project) are observed at different points in time; and *site-level variables* comprise the level-2, between-

subjects factor, where differences in treatment (problem-oriented policing activities) and population characteristics (e.g. percentage of AFDC recipients, building style, number of units) can be measured between "subjects," which in this case is between public housing sites (see Littell et al., 1996). As such, the purpose of the mixed model was to compare within- and between-subject calls for service trends over time.

The mixed model fits these data and our specific research questions for several reasons. Simple linear models assume that between-subjects predictors and their error terms are mutually independent and that the variance of the error terms is constant. By contrast, the mixed model comprising an autoregressive covariance structure does not assume that error terms are mutually independent. The mixed model specification implies that the volume and type of calls for service observed at a given point in time may depend upon enduring events or conditions in a particular site, and that random variations in calls will operate on large intervals of time rather than on singular observation periods. In other words, circumstances such as the management style, the stability of a drug market, or strategic problem-oriented policing activities in a public housing site may have a collective impact on a block of observation points. A reverse-sting operation, for example, that disrupts a street-level drug market at Oakdale at period 4 may have a lagged effect on calls observed at period 5, and perhaps later periods.

With time series data we could not assume that observations within a site would be equally correlated. As such, the basic assumptions of simple linear models would have been violated. Moreover, in most time-series data sets, observations at adjacent points in time are more highly correlated than observations at distant times. Analysis of these data, therefore, requires the within case covariance to be removed. The mixed model approach does this by applying a parametric structure to the covariance matrices, where the covariance of the estimates

is assumed to be a function of the distance between two observations[13]. The first order autoregressive structure specifies that the covariance between two observations that are w intervals apart is $\sigma^2\rho^w$, where w is the number of time intervals between observations, the parameter σ^2 is the variance of an observation. $Var(y_{ijk}) = \sigma^2$, and ρ is the correlation between sequential observations on the same site. It follows that ρ is the correlation between observations at times one and two, ρ^2 is the correlation between observations at times one and three, ρ^3 is the correlation between observations at times one and four, and so forth (Littell et al., 1996). The covariance structure assumed under an auto-correlation model is thus:

$$\begin{bmatrix}
1 & \rho & \rho^2 & . & . & \rho^{k-1} & . & . & . & . & . & . \\
\rho & 1 & \rho & \rho^2 & . & \rho^{k-2} & . & . & . & . & . & . \\
. & . & . & . & . & . & . & . & . & . & . & . \\
\rho^{k-1} & . & . & . & \rho & 1 & . & . & . & . & . & . \\
. & . & . & . & . & . & 1 & \rho & \rho^2 & . & . & \rho^{k-1} \\
. & . & . & . & . & . & \rho & 1 & \rho & \rho^2 & . & \rho^{k-2} \\
. & . & . & . & . & . & . & . & . & . & . & . \\
. & . & . & . & . & . & \rho^{k-1} & . & . & . & \rho & 1
\end{bmatrix}$$

The block diagonal matrix indicates that the covariance between measurements on the same block is no longer assumed to be 0, and the variance of the error terms is not expected to be constant. The models examined in this paper used the SAS PROC GLIMMIX option for a

[13] Another approach that incorporates non-independence would be to add an autocorrelation parameter to a traditional time series analysis. However, a major advantage of the SAS GLIMMIX procedure (mixed model procedure) over time series analysis is that the mixed model will estimate *aggregate* treatment effects for all the sites together, as well as the *nested* (or individual) effects of problem-solving within each housing site. The mixed model approach is thus more efficient than conducting seven time series analyses, six for the individual sites and another for the overall intervention.

Poisson probability distribution which is generally deemed appropriate for count data, such as these, in which there are a high frequency of empty cell counts in the data set making an assumption of normality inappropriate. The mixed model approach then relies upon maximum likelihood estimation or restricted maximum likelihood estimation to assess the model goodness of fit (see Waring, 1998; Searle et al., 1992).

4.2 Results

We present our results in four parts: first, we examine the impact of the problem-oriented policing program across the six public housing sites in our study. Second, we compare the impact of the problem-oriented policing program between the six study sites. Third, we discuss the impacts of different types of problem-oriented policing activities and fourth, we present our results that depicts the impact of the problem-oriented policing program on different crime categories.

Overall Impact of the Problem-Oriented Policing Program

Table 4.1 presents the results of the first autoregressive mixed model[14] which examines the cumulative impact of the problem-oriented policing program on serious calls for service[15]. Building style, the number of units, and the percentage of households receiving AFDC (Aid to Families with Dependent Children) are included as controls. Additionally, we control for the intervention period of the time series data (pre-intervention, during intervention, post-intervention). We also include the number of problem-oriented policing activities completed during each two-week interval to measure the impact of the aggregate number of problem-

[14] All mixed models presented in this report include an extra-dispersion scale which adjusts the standard errors to account for over-dispersion. This is appropriate because diagnostics (i.e. the Pearson Chi-Square/degrees of freedom and the deviance/degrees of freedom) indicate that there is over-dispersion in the models. Inclusion of the extra-dispersion scale correctly adjusts the estimation of the standard errors of the individual parameter estimates.

solving activities on calls for service across the six public housing sites. We included problem-oriented policing activities as a fixed treatment effect rather than a random effect because the decision to implement a problem-solving strategy was strategically determined by the site teams and not randomly selected from a "population" of problem-solving activities. Indeed, one would hope that within the SARA approach to problem-oriented policing that problem-solvers carefully choose treatment activities that match their analysis of the problem rather than randomly select responses that may or may not have a chance of success.

Table 4.1. Autoregressive Model for Overall Effects of Problem-Oriented Policing Activities on Calls for Service

Parameter	Estimate	T	Pr > |T|
Intercept	1.9752	14.28	0.0049
Time Period:			
Pre-intervention	-0.0762	-1.03	0.3054
Intervention	-0.0077	0.09	0.9270
Post-intervention	-	-	-
Building Style	-0.1718	-2.73	0.1118
Total Units	0.0017	7.04	0.0196
Percent AFDC	0.0159	3.95	0.0584
POP Activity	-0.0216	-2.92	0.0037
Cov Parm	**Estimate**	**Z**	**Pr > |Z|**
DIAG AR (1)	0.3031	5.63	0.0001
Residual	2.0149	11.86	0.0001
Model Fitting Information			
Akaike's Information Criterion			-76.3614
Schwarz's Bayesian Criterion			-80.2279
Likelihood Ratio Test (DF = 9)			34.3828
-2 REML Log Likelihood			148.7228
Extra-dispersion scale			2.0166

[15] Includes persons, interpersonal, vehicle, assistance, property and drugs.

Our results show that sites with low-rise (or walk-up style) architectural designs, fewer housing units, and a smaller percentage of AFDC recipients had fewer calls for service over time than high-rise sites, sites with larger numbers of housing units, and sites with high rates of AFDC recipients. These findings are consistent with the seminal research on public housing sites in New York City conducted by Oscar Newman in the 1970s (Newman, 1973).

Our results also indicate that the aggregate number of problem-solving activities implemented during each two-week observation period is a significant predictor of the trend in calls for service over time. We find that an increase in the number of completed site team activities is positively associated with reductions in calls for service over time. This finding is consistent with the program goals and suggests that site teams that implemented a large quantity of problem-solving tasks during the evaluation period directly impacted the number of serious crime calls for police service in the six public housing sites.

To disentangle whether this impact was merely an "announcement effect" – the result of simply informing residents that a problem-solving program had been implemented – we controlled for the time period (before, during or after program implementation) in the mixed model analysis. As Table 3 shows, the categorical time period variable was not statistically significant. This suggests that it was not the intervention period itself that caused a reduction in calls, but the number of problem-oriented policing activities completed during each observation period. That is, residents did not stop calling the police about crime problems simply because they were aware of the program or some related period effect. Rather, this first model indicates that there was something about the actual frequency of problem-oriented policing activities that contributed to changes in the number of calls for service.

We propose that this overall reduction in calls for service is not an artifact of general reductions in calls for service across Jersey City over the last several years. In fact, our data reveal a 4 percent decrease in calls for service citywide compared to a 25 percent decrease in calls for service in the six public housing sites in our study.

The Differential Impact of the Problem-Oriented Policing Program Between Public Housing Sites

Table 4.2 seeks to answer whether there a difference in the impact of the problem-solving intervention between the six public housing sites? Table 4.2 presents the results of an autoregressive model that examines the nested (or separate) effects of the problem-solving activities implemented by each of the six site teams.

Table 4.2. Autoregressive Model for Nested Effects of Problem-Oriented Policing Activities on Calls for Service

Parameter	Estimate	T	Pr > |T|
Intercept	1.9954	13.68	0.0053
Time Period:			
Pre-intervention	-0.0692	-0.97	0.3320
Intervention	0.0208	0.26	0.7976
Post-intervention	-	-	-
Building Style	-0.1288	-1.99	0.1854
Total Units	0.0015	6.18	0.0252
Percent AFDC	0.0166	3.91	0.0597
POP (Oakdale)	-0.0192	-1.67	0.0965
POP (Gladstone)	-0.0469	-3.42	0.0007
POP (Woodlawn)	-0.0140	-0.92	0.3590
POP (Brighton)	-0.0371	-2.80	0.0054
POP (Bellevue)	-0.0195	-1.06	0.2898
POP (Ivanhoe)	0.0046	0.37	0.7098
Cov Parm	**Estimate**	**Z**	**Pr > |Z|**
DIAG AR (1)	0.2714	4.89	0.0001
Residual	1.9150	11.91	0.0001
Model Fitting Information			
Akaike's Information Criterion			-85.2421
Schwarz's Bayesian Criterion			-89.0943
Likelihood Ratio Test (DF = 14)			16.6213
-2 REML Log Likelihood			166.4843
Extra-dispersion scale			1.9410

Like the model presented in Table 4.1, this model reveals that low-rise public housing sites with fewer housing units and sites with a lower percentage of AFDC recipients were likely

to have fewer calls for service over time than high-rise sites, sites with large numbers of units, and sites with high rates of AFDC recipients. We also find that, as with the results from the earlier model, the intervention period was not a significant predictor of change in calls for service, thus ruling out an "announcement effect" of the problem-oriented policing program. Table 4.2 also differentiates the impact of the problem-oriented policing program by public housing site. The results show that the number of problem-oriented policing activities was a significant predictor of change in calls for service in two of the six sites: Gladstone and Brighton. More problem-oriented policing activities in Gladstone and Brighton led to greater reductions in calls for service over time. Problem-oriented policing activities in the other four sites did not significantly impact calls for service.

Problem-Oriented Policing Impact by Crime Type

Our research also sought to examine the differential impact of problem-oriented policing on different types of crime problems in public housing settings. Table 4.3 displays the parameter estimates for problem-oriented policing activities across a series of nine autoregressive models predicting specific calls types that, as with the earlier models, control for intervention period (before, during, and after intervention), building style, total units and percent AFDC.

Table 4.3. Parameter Estimates for Problem-Oriented Policing Activities Predicting Specific Call Types (Controlling for Time Period, Building Style, Total Units, and Percent AFDC)

Parameter	Person	Interpersonal	Property	Vehicle	Nuisance	Suspicious	Morals	Assistance	Narcotics
Intercept	0.283	0.432	0.148	-1.854	1.137	0.378	-1.575	0.483	0.726
Time Period:									
Pre-intervention	-0.067	-0.066	0.146	-0.176	-0.460**	0.022	0.275	-0.209*	0.270
Intervention	-0.123	0.118	0.370*	-0.008	0.011	-0.158	0.117	-0.010	0.264
Post-intervention	_	_	_	_	_	_	_	_	_
Building Style	-0.209	-0.313*	0.200	-0.065	-0.502	0.052	-0.639	-0.020	-0.206
Total Units	0.002**	0.002**	-0.000	-0.000	0.003**	0.002*	0.005**	0.001*	0.004*
Percent AFDC	0.026**	0.025**	0.012	0.056*	-0.045*	-0.021	-0.039	0.019*	-0.012
POP Activity	-0.004	-0.026**	-0.036**	-0.118**	-0.021	0.012	0.011	-0.027**	-0.012
Cov Parm									
DIAG AR (1)	0.3824	0.0010	0.4048	0.0417	0.0002	0.0346	0.0051	0.0067	0.0001
Residual	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001

Table 4.3 reveals five important results. First, problem-oriented policing activities impacted differently upon the different categories of calls for service. Specifically, our results show that problem-oriented policing activities led to reductions in calls for service concerning interpersonal violent crimes (robberies, assaults, domestic assaults), property crimes (burglary), vehicle crimes (auto theft), as well as citizen requests for police assistance (which includes broken sewer line, traffic control problems, and other service needs such as mentally disoriented person walking around or a dead animal found).

We did not, however, find that the problem-oriented policing activities reduced disorder types of crimes (e.g. drugs, morals, nuisance, and suspicious persons). We propose several reasons why we find these results in our data: first, it might be the case that problem-oriented policing cannot reduce drug market or social disorder problems; second, the Jersey City problem-oriented policing program did not set out to explicitly reduce disorder problems (although site teams did aim from the outset to reduce drug problems and some of their problem solving efforts appeared geared towards addressing disorder problems with a view to solving more serious crime problems – see Chapter 5); third, we suggest that public housing residents typically do not call the police for drug and disorder incidents. We find, for instance, few calls for service regarding public disturbances and drug problems in our data over the two and one-half year study period. Indeed, the mean number of calls per month for disorder types of problems averaged about seven calls per month. By contrast, the mean number of calls per month was higher for interpersonal ($\bar{x}$ = 15) and assistance ($\bar{x}$ = 11) problems. We propose two reasons why we find very few residents calling the police about disorder and drug problems: first, we suggest that public housing residents are most likely fearful of drug dealers and worry about retaliation; second, we suggest that public housing residents are exposed to higher rates of violent types of crimes. As such, they

may be more inclined to call only about these serious problems than call the police about comparatively minor problems.

Second, Table 4.3 shows that the intervention period is not significant across every call category. This result suggests that the relationship between problem-oriented policing activities and calls for service during each two week period is not spurious and cannot be explained by the presence or absence of the intervention period. This means that the problem-oriented policing activities had a direct effect on impacting crime problems.

Third, physical and social structural factors had different influences on different categories of calls for service. Most notably, we found that those public housing sites with more housing units had relatively more calls for service overtime than those public housing sites with fewer housing units. This result held for all crime categories except property and vehicle crimes.

Fourth, Table 4.3 shows that there is a relationship between percent of AFDC recipients and violent crime (person and interpersonal) calls. This result suggests that public housing sites with more AFDC recipients (and a common proxy for percent youths) have more violent crime problems than those public housing sites with fewer AFDC recipients.

Finally, the autoregressive statistic (DIAG AR (1)) shows that for most call categories there is autocorrelation between time periods as one would expect with time series data. Interestingly, however, our results show that person and property crimes seem to be more random than other categories of crime, a result that reflects what we tend to know about patterns of crime problems.

Chapter Five:

Social Observations

Systematic social observations of human behavior in public places comprise an important method to measure changes in behavior over time, especially as the result a crime control intervention like problem-oriented policing. This chapter reports the results of a series of systematic observations over a one year time period on the 172 common areas across the six public housing sites in our study.

5.1 Theoretical Perspective

Our study of behavior in public places began with the assumption that common areas in public housing sites, like street blocks, qualify as behavior settings (see also Felson, 1995; Perkins and Taylor, 1996; Taylor, 1988; Taylor, 1997; Taylor and Harrell, 1996; Taylor et. al., 1984; Taylor, Shumaker and Gottfredson, 1985). These behavior settings are "...regularly occurring, temporally and spatially bounded person-environment units" (Taylor, 1988: 128). They are made up of three major components: the setting participants, a standing pattern of behavior, and the surrounding physical environment which contains the behavior (Taylor, 1988).

Residents of a behavior setting (e.g. a street block or common area) are hypothesized to engage in a variety of territorial behaviors which maintain the standing patterns of behavior or the setting program and enhance informal social control of the behavior setting (Taylor 1988). Several factors are thought to affect territorial behaviors. One perspective focuses on the effects of disorder on territorial functioning (Skogan 1990; Skogan 1986; Taylor 1986) arguing that an increase in disorder or incivilities leads to fear of crime which in turn leads to a withdrawal of residents and then a decrease in the amount of informal social control (see also Wilson and

Kelling, 1981).

Disentangling social activities (both deviant and non-deviant) and control mechanisms (both formal and informal) at different units of analysis, and understanding the dominant characteristics of these elements at different units of analysis, provides a theoretical and empirical means to examine the patterns of illicit activity and the impact of control efforts at a variety of units of analysis.

At each specific unit of examination, the physical boundaries, use of space and means of control can be separately identified. For example, in an apartment, the unit of analysis may be defined by the physical walls; the predominant uses of space may be defined as cooking dinner, sleeping and watching television; and the principal means of control may be defined as the discipline exerted by parents or other persons living in the same apartment. For business units, social activities are usually dictated by the type of business operation. For example, activities at fast food stores are characterized by food preparation by the employees and customers coming and going from the store. For these businesses, the principal means of control may be defined as the control exerted over the behavior of employees coupled with employee surveillance over the customers.

The individual apartment or business unit, however, is also part of an address. By examining the use of space at an address (or say a public housing site) one can observe a greater range of activities and control mechanisms than those activities and controls identified at a single apartment. At the same time, however, the activities and controls at the public housing site *include* the activities and controls that operate in the single apartment. For example, a teenager living in a public housing site is controlled by the discipline exerted by his or her guardian. This same teenager, however, is also part of a social control network that operates on the public

housing site either through a peer network living in the same public housing site or by the site manager of the complex. Other controls can also be identified which temper the behavior of the teenager when the individual person is examined as the unit of analysis. These social controls derive, for example, from a variety of sources such as from schools and sporting clubs. However, the specific place-controls exerted against all people who go about their day-to-day business when the place becomes the unit of analysis provides a different matrix of controls than those identified when the controls and activities of the individual person is examined.

Similarly, when business addresses are examined, a specific matrix of social controls can be identified. For example, groups of stores create a focal point for activity providing local citizens with access to a range of goods and services. While surveillance in the individual store is usually conducted by the employee, surveillance across these groups of stores is sometimes maintained by private security guards or the police. At some places police may be dispatched to an address or drive-by a problem location providing formal control both over the individual store and the address (or collection of stores). Additionally, these addresses are controlled through informal control mechanisms dictated by the relationships that operate at individual housing or work units (e.g. see La Gory, 1983).

Patterns of social activity and control mechanisms can also be identified at larger, more macro, units of analysis. For example, at the area unit of analysis social networks exist between community members (e.g. see Yancey, 1983) and physical barriers divide one set of routine activities from another (e.g. see Shaw and McKay, 1942. See also Cohen and Felson, 1979). For example, as one moves from a residential to a business section of a city the boundaries between neighborhoods can be constructed based on the place where shops cease to exist and homes dominate the landscape. Moreover, the degree to which one type of behavior (such as licit

behavior) prevails over another (such as illicit behavior) in the neighborhood is dependent both on the level and type of control mechanisms at work.

By changing the unit of examination from the public housing site to the neighborhood the types of social activities that predominate are also different. For example, those activities that operate in the wider community, while embracing people's behavior at the address or apartment/business level of analysis, also include a range of other ventures such as journeys of people from their house to the store to work and to social events in the local area (see Cohen and Felson, 1979).

Unlike the place-specific social controls at the apartment, or business, or public housing site levels of analysis the social controls that are exerted in the wider community derive primarily from larger social structural factors such as schools, churches and the businesses that interact with all users of the public and private space of the neighborhood. Consistent with this broad focus, research using this macro (community) level of analysis generally examines social networks and these broad social structural factors which control human behavior (see Gans, 1962; Shaw and McKay, 1942; Yancey, 1983).

5.2 Systematic Social Observational Data

Researchers use a variety of methods to measure social activity. Surveying residents about their perceptions of street activity, for example, is a commonly utilized method of inquiry (see for example Brown and Altman 1981; Bursik and Grasmick 1993; Greenberg and Rohe 1986; Hirschfield, Brown and Bowers 1996; Mazerolle, Kadleck and Roehl, 1998; Perkins and Taylor 1996; Rosenbaum and Lavrakas 1995; Skogan 1986). Another way of measuring social activity is through on-site field observations of street activity (see for example Mazerolle, Kadleck and Roehl, 1998; Perkins and Taylor 1996; Taylor 1995a; Taylor 1996). Ralph Taylor,

however, suggests that residents' perceptions of disorder and on-site assessments of disorder may not be measuring the same underlying construct (Perkins and Taylor, 1996; Taylor, 1995a; Taylor, 1995b; Taylor, 1996). On-site assessments appear to be measuring the actual conditions of a location while resident surveys appear to be capturing the actual conditions of a location filtered through the various psychological attributes and psychological processes of residents. In fact, one study by Taylor (1995c) finds that up to 90 percent of the variation in residents' perceptions of ecological conditions may be psychological rather than ecological.

The data reported in this chapter draw from on-site observations of social activity in the 172 common areas across the six public housing sites in our study. Our research supports and extends prior research that uses on-site ratings by trained researchers in order 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 neighborhood (indeed see Mazerolle, Kadleck, and Roehl, 1998). Rather, ours is an argument suggesting that residents may not be the most objective lens from which to view the physical changes on a street.

We conducted five waves of observations over the one and a half years of our evaluation project (Spring 1995, Summer 1995, Fall 1995, Winter 1996, Spring 1996). During each wave we conducted one observation in four distinct time periods (weekend day, weekend night, weekday day, weekday night) for each of the 172 common areas. In total we conducted 3440 observations across the five waves, across the four time periods over the 172 common areas. Structured field observations of routine licit activities (e.g. pedestrians, children playing, people walking along) and illicit activities (e.g. drug selling, fighting) were made of each common area.

Our decision to conduct four observations per common area during each wave derived from our understanding that common areas in public housing sites have stable patterns of

behavior, or rhythms of recurring behavior and activity, that are somewhat predictable and routine (see also Mazerolle, Roehl and Kadleck, 1998; Taylor, 1988). Felson (1995) also suggests that activities occur in fairly predictable rhythms where patterns of behavior are dictated by a host of factors including residents' working hours, sleeping times, and recreational times (see also Mazerolle, Roehl and Kadleck, 1998).

We suggest that the reliability and validity of on-site observations increases as the unit of analysis decreases in size. We propose that public housing common areas and other small units of analysis (e.g. street blocks, hot spots) 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 public housing common area may have four distinct time periods with four distinct patterns of behavior: (1) the morning hours when residents are taking children to school or going to work, (2) the daytime hours when elderly people or non-daytime working adults use the common spaces, (3) the afternoon hours when children are coming home from school and adults are returning home from work, and (4) the evening hours when people are at socializing in the common areas. This kind of predictability in the standing patterns of behavior on a street block are rarely present for neighborhoods for a number of reasons: the overall 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.

5.3 Results

The analyses presented in this section show the percent change in licit, marginal, and illicit activities over five waves of observational data. We measure changes in the nature of social behavior in common areas by examining the proportion of licit activities to illicit activities over time. It is difficult to make such comparisons using the raw numbers because the volume of social activity varies widely from season to season. The licit activities observed during our field observations include children playing, police patrolling, and people walking, conversing, and engaging in recreation. Marginal behaviors consist of loitering, gambling, and suspicious or borderline activities for which there are city ordinances. Illicit activities include more serious crimes and disorders such as selling drugs, fighting, drinking in public, and blaring loud music.

Figures 5.1 through 5.6 present the changes in social activity by site. Overall, the graphs show that the percent of observed illicit behavior is very small (about ten percent at the start of the project and decreasing to less than five percent by the end of the project). This result is consistent with most criminological research reporting that crime is, in fact, a rare event and is similarly a rare event in public housing sites. The vast majority of observed social activity across the six target public housing sites was regular, licit activities such as children playing, people walking, conversing, and engaging in recreational activities. Of particular note is the fact that the percent of licit activities increased over the course of our problem-oriented policing project across all six of the public housing sites in our study.

Figure 5.1. Social Observations at Oakdale Public Housing Site

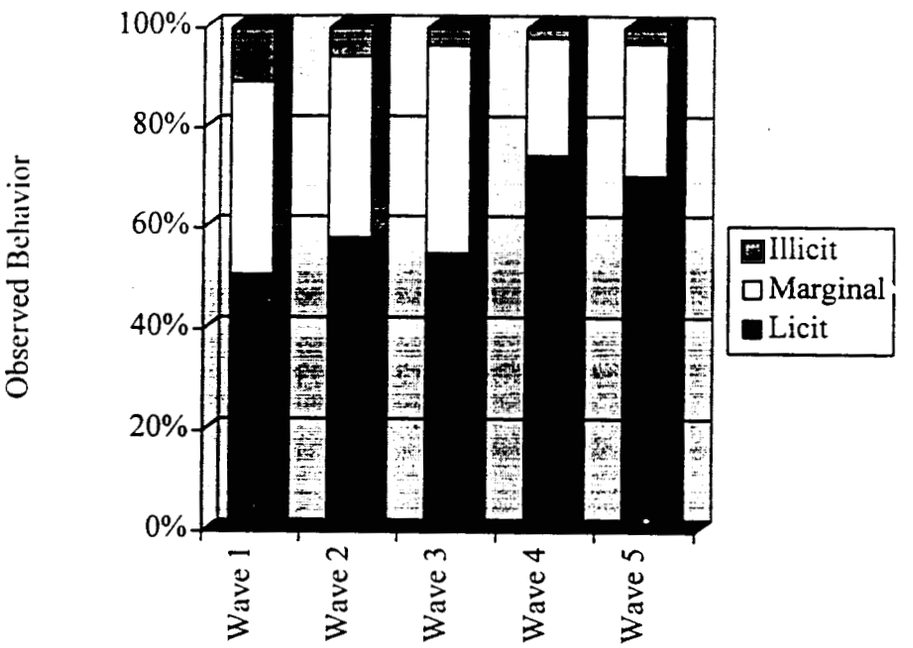


Figure 5.2. Social Observations at Gladstone Public Housing Site

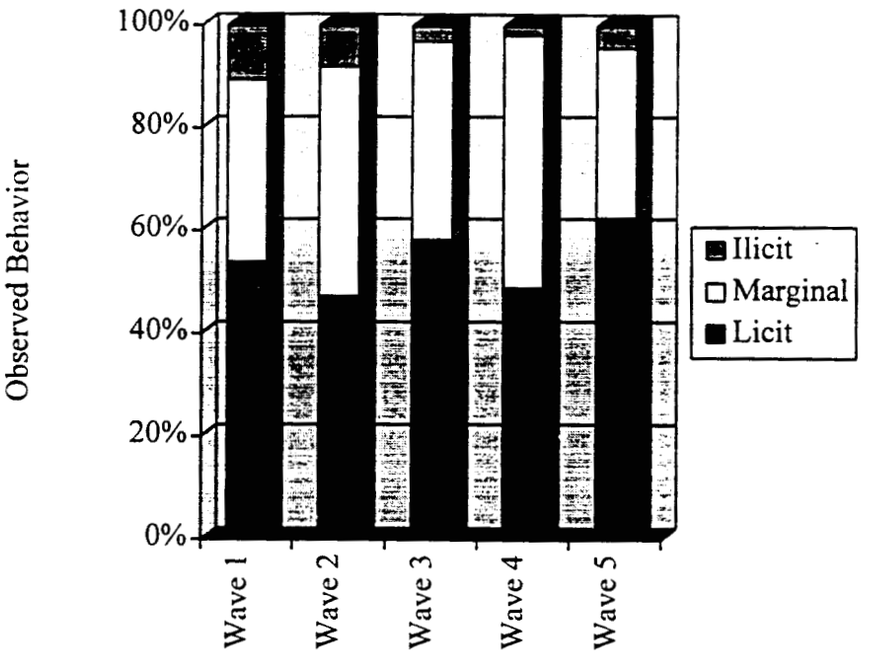


Figure 5.3. Social Observations at Woodlawn Public Housing Site

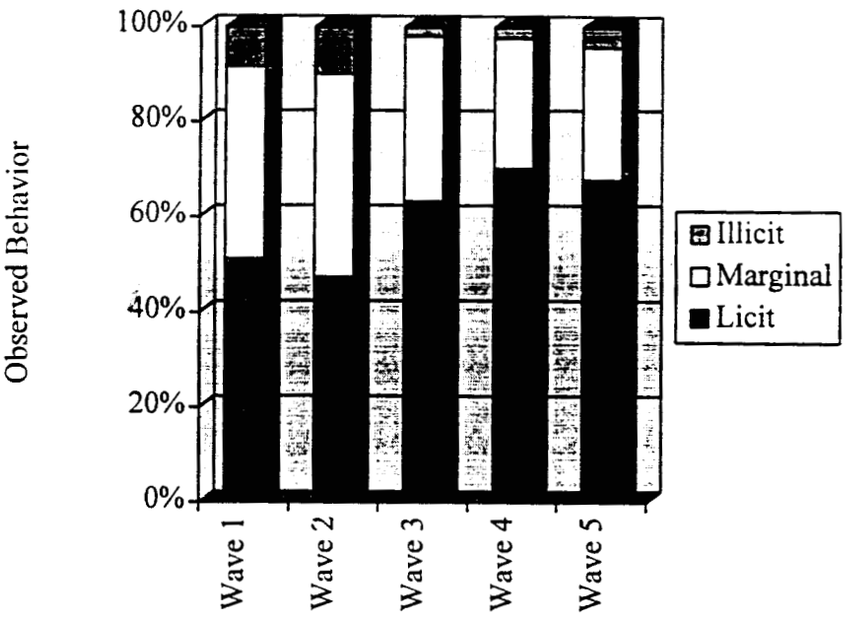


Figure 5.4. Social Observations at Ivanhoe Public Housing Site

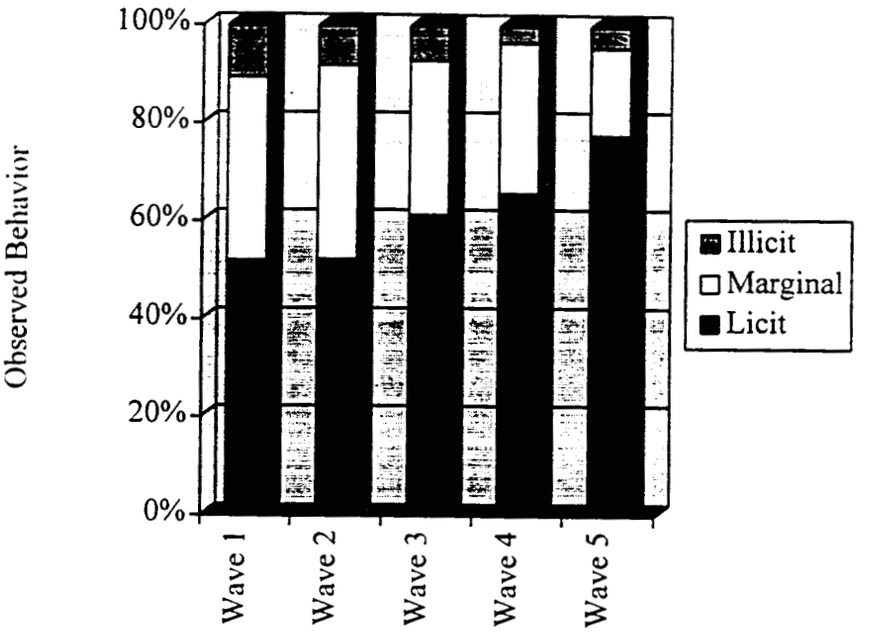


Figure 5.5. Social Observations at Brighton Public Housing Site

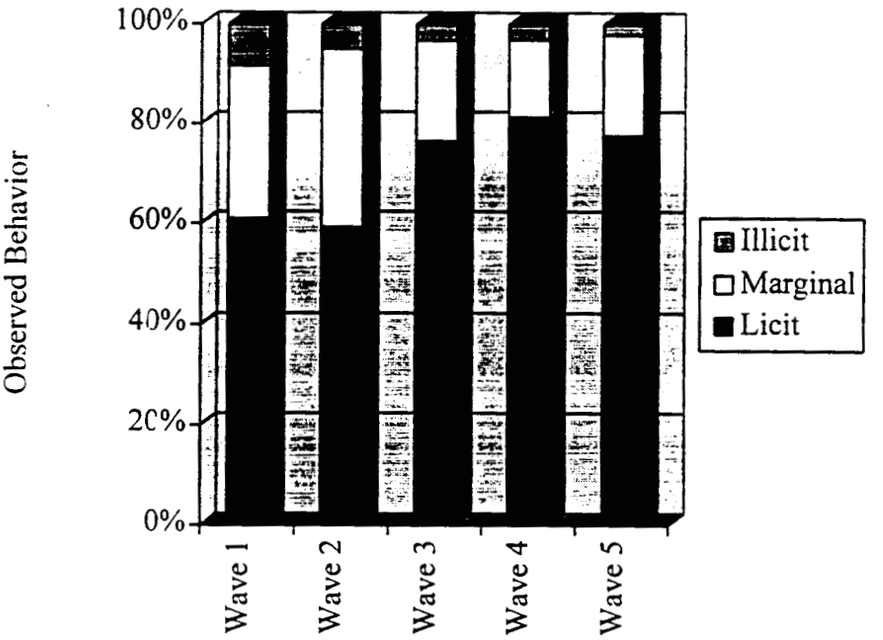
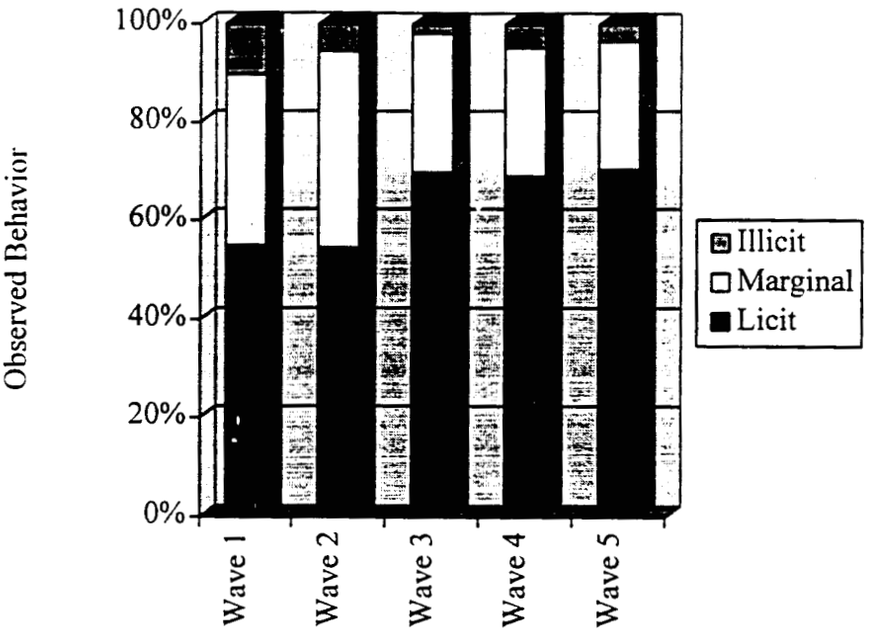


Figure 5.6. Social Observations at Bellevue Public Housing Site



Our social observational data suggest two main outcomes: first, the ratio of licit to illicit social activity in the six public housing sites in our study increased over the one year intervention period. Second, it appears that the problem-oriented policing program most likely led to decreases in marginal activity and, to a lesser extent, the program probably led to decreases in illicit activity. We remind readers, however, that the problem-oriented policing program goals were to reduce serious crime activity. The results presented in Chapter Four showed significant impacts on serious crime, especially in Brighton and Gladstone, but no real impact on disorderly types of activity. By contrast, the results from our social observations suggest that the problem-oriented policing seems effective at reducing marginal type activities such as loitering, gambling, and suspicious behavior.

We do not believe that the results from the social observations (Chapter Five) and the calls for service (Chapter Four) are inconsistent with one another. Rather, we propose two arguments that bring the two findings together. First, calls for service do not adequately measure the amount of disorder activity in public housing sites because residents simply do not seem to call about this type of low-level activity. Second, we believe that the focus of the problem-oriented policing program implemented in the public housing sites in Jersey City was consistent with what Wilson and Kelling (1982) refer to as the "broken windows" hypothesis. It appears that problem-solving teams attempted to impact serious crime problems by targeting some of the incivility behaviors in public housing sites. Our charts presented in this chapter tend to support these two arguments and suggest that the police were in fact successful at reducing illicit activities.

Chapter Six:

Conclusions

Crime problems in public housing sites have a reputation as being more intractable than problems in other high crime places. High-rise public housing sites are typically located in poor neighborhoods with high crime rates (Skogan and Annan, 1994 129-130). Residents are generally older and poor and the non-elderly residents are disproportionately single with children and unemployed. Skogan and Annan (1994) suggest that "residents often lack the capacity to defend themselves, be it against predators, gangs looking for revenge, or drug dealers engaged in turf wars or intimidation" (1994: 130; see also Popkin et al, 1997). Many policy makers believe that only hard core policing tactics (e.g. arrests, sweeps) that characterize the "War on Drugs" can reduce the significant crime problems in public housing sites and program evaluators report very few interventions that seem to make lasting change.

Our evaluation of a problem-oriented policing program implemented in six of the most crime ridden public housing sites in Jersey City challenges the notion that public housing sites represent the last bastion of program resistance. Our research shows that the problem-oriented policing activities, collectively implemented by site teams comprising police, public housing officers, and social service liaison officers, can significantly reduce interpersonal, property, vehicle, and assistance calls for service. Our research found that the reductions in calls for service for these categories of crime were significant and attributable to the number of problem-oriented policing activities implemented in each site. We did not find, however, significant reductions in the number of calls for service over time for disorder-type problems and drug market problems. We expect that the low base rate of calls from public housing residents

regarding incivilities and drug problems confounds this result. Our social observational data throws weight behind our supposition that the calls for service are an inadequate measure of the impact of the problem-oriented policing program on disorderly type activity. Indeed, our results show that marginal and illicit activity decreased across the six public housing sites during the one year intervention period.

Our research also found differences among the six public housing site teams in their ability to impact crime problems. Two site teams in particular – Gladstone and Brighton – significantly reduced the number of calls for service over time. Importantly, we found that the physical structure differences that were significant predictors of changes in calls for service over time (total number of units) did not explain why Brighton and Gladstone site teams were most successful in reducing crime problems. Moreover, social structural factors such as percent unemployed, percent AFDC, and percent single headed households did not exhibit strong relationships to the changes overtime in calls for service. These social structural factors also varied qualitatively between the two successful sites: Brighton and Gladstone. For instance, building style (Brighton was a low rise and Gladstone a high rise) and the sheer number of problem-oriented policing activities alone could not explain the reason why these two site teams were most successful in reducing serious crime problems. We concluded that stable membership in the site-based problem-solving teams combined with a high volume of completed problem-solving activities contributed to the successful reduction in calls for service regarding serious crime problems in Brighton and Gladstone.

Our research has several important methodological and policy implications and our research offers some general and important insights into the growing problem-oriented and community-oriented policing literature. The problem-oriented policing program implemented in

the Jersey City public housing sites comprised a wide range of responses: CPTED (e.g. lighting), situational crime prevention (e.g. pay phone capabilities to enable outgoing calls only), civil remedies (e.g. evictions and special leaseholder provisions), traditional policing (e.g. sweeps, arrests, surveillances), treatment (e.g. drug treatment and alcohol counseling), and informal social control (e.g. stability of CSO's assigned to individual housing sites). We found that the two most successful sites (Gladstone and Brighton) implemented more police-initiated strategies than those sites that relied more upon public housing or social service responses. This is not to say that traditional policing tactics are more effective, but that the coercive authority of the police within a problem-oriented policing program is important to bringing about change. This finding is consistent with Green's (1996) evaluation of Oakland Police Department's Beat Health program that found that city inspectors were effective in cleaning up blighted places with drug dealing problems when they gained access to properties through police problem-solving efforts. We conclude, therefore, that sworn officers need to take an active and high profile role in problem-solving within a team context in order to bring about change.

Our research also challenges the widely-held notion that crime-ridden, high-rise public housing sites where the residents are typically poor, single, unemployed and with children are places that are highly resistant to change. We found that the problem-oriented policing program implemented across six study sites had a differential impact and that one of the key defining factors that led to decreases in violent crime, property, vehicle and assistance calls was the stability of the problem-oriented policing teams. This result suggests that long term assignments of police officers to work within particular public housing settings might reduce the distrust that many public housing residents feel about the police in general, it might give the police time to get to know the residents better, it would most likely give the police a knowledge base regarding

the types of social services available to help residents in trouble, and it would give the housing authority personnel an opportunity to work with the police to target some of the problem people and places within public housing communities.

Our research offers some important measurement and methodological insights. First, our study systematically measured the process of problem-oriented policing and carefully integrated the problem-oriented policing activities with our impact assessment. We documented the extent of scanning efforts, we examined the types of analysis conducted on a defined problem, we measured the quantity and quality of problem-solving responses, and we recorded efforts to assess the impact of problem-oriented policing tactics. This process formed an integral component to our assessment of how problem-oriented policing programs succeed (or flounder) in public housing sites. Finally, by using a mixed model we were able to disentangle the relative influences of problem-oriented policing activities across the six public housing sites in our study. As such, this method provides an innovative approach to comparing and contrasting the factors that constrain or enhance the control of crime problems in public housing sites.

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