The Police Foundation Displacement and Diffusion Study

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A series of randomized field trials demonstrate that police efforts focused on hot spots can result in meaningful reductions in crime and disorder (e.g., see Braga & Bond, 2008; Braga et al., 1999; Sherman & Weisburd, 1995; Weisburd & Green, 1995a). This strong body of rigorous evaluations led the National Research Council Committee to Review Research on Police Policy and Practices (2004: 35) to conclude that "taking a focused geographic approach to crime problems can increase the effectiveness of policing" (see also Braga, 2001; Weisburd & Eck, 2004). However, the value of hot spots policing is highly dependent on whether such approaches can reduce crime at hot spots without displacing it to areas nearby.

Spatial displacement represents a direct and significant threat to place-based policing. If crime will simply move around the corner in response to targeted police interventions at hot spots, there is little reason for carrying out hot spots policing programs. This idea that the police cannot reduce crime but can only push it to other areas has traditionally been an objection to focusing intervention programs on high crime places (Repetto, 1976). The research evidence regarding displacement as a result of focused policing interventions in contrast suggests overall that threats of displacement are much overstated (see Braga, 2008). Indeed, studies to-date have been more likely to identify a "diffusion of crime control benefits" (Clarke & Weisburd, 1994) around targeted areas than evidence of displacement. That is, in a number of studies an unanticipated crime decline has been found in untargeted areas surrounding intervention sites.

Prior research, however, has typically examined displacement only as a secondary concern after a treatment impact at target sites has been identified. For example, none of the five hot spots studies identified by Braga’s (2001) systematic review of hot spots policing that assessed displacement focused on it as a main outcome. As Weisburd & Green (1995b) have pointed out, such indirect studies of displacement often suffer from methodological flaws. A study that is designed primarily to evaluate a direct program impact will be unlikely to have an optimal design for identifying displacement and diffusion.
The main focus of this study is immediate spatial displacement or diffusion to areas near the targeted sites of a police intervention. This research represents the first attempt we are aware of to examine displacement as a primary outcome, and thus it was designed to optimize the identification of displacement and diffusion outcomes. Do focused prevention efforts simply move crime around the corner? Or, conversely, do hot spots policing efforts that bring unusually high dosages of police presence to target areas diffuse crime prevention benefits to areas immediately surrounding the target areas? To answer these questions, two study sites were selected in Jersey City, New Jersey. One area had a high concentration of drug and violent crime; the other was the site of a strong concentration of prostitution activity.

**Methodology**

*Intervention sites*

In each site, small target areas were selected to receive intensive police enforcement (see Figures 1 and 2). To capture any displacement or diffusion effects, two catchment areas surrounding the targeted areas were defined for each site. We divided the catchment areas into an area immediately next to the target area (catchment area 1) and an area more removed (catchment area 2) to allow us to distinguish between movement to a block immediately adjacent to the target area and movement further away.

The sites were carefully selected to provide an optimal measurement of displacement and diffusion effects. We sought to identify sites that consistently showed high levels of criminal activity but excluded areas that were surrounded by such high levels of crime that a displacement effect would be masked. Conversely, we wanted there to be enough crime in the areas surrounding the site that a diffusion of crime control benefits could be observed. We excluded sites that were surrounded by a physical boundary, and small areas with high concentrations of crime were preferred, as larger target areas would require the police department to harness more resources into intervention strategies in order to achieve a sufficient level of intensity. We also sought to identify areas with concentrations of acquisitive crime with the assumption that offenders would feel pressured to continue committing these crimes for financial needs, regardless of police interventions. Using crime data from the Jersey City Police Department, discussions with police, and observations of sites, we initially identified three locations for the study: one with high concentrations of drug and violent crime, one with high levels of prostitution activity, and one with concentrations of burglary. Inconsistent implementation of crime control strategies at the burglary site led us to exclude it from the study.

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1 For a more detailed description of the study and methods see Weisburd et al., 2004; Weisburd et al. 2006.
Figure 1: Violent crime/drug site—Storms Avenue

Violent Crime/Drug Site

Legend
- Jersey City Streets
- Violent Crime/Drug Target Area
- Violent Crime/Drug Catchment Area 1
- Violent Crime/Drug Catchment Area 2
Using an advisory board of distinguished crime prevention experts, including Ronald Clarke, Herman Goldstein, Stephen Mastrofski, and Jerome Skolnick, we developed tailored interventions for each of the sites. In the Cornelison Avenue prostitution site, the interventions had three major goals: removing offenders from the site, reducing opportunities for prostitution in the physical environment, and working with community groups to help solve the life problems of women involved in prostitution. To remove prostitutes from the area, police strategies included a combination of enhanced police presence and arrests of prostitutes in the area by assigning two full-time officers to the target area during the intervention period, as well as large numbers of arrests of johns during seven reverse sting operations in which female officers worked undercover as prostitutes. Police also worked with Public Works to clean up trouble spots that facilitated prostitution. A fence was built around one particularly problematic wooded area on
Cornelison Avenue. Finally, police made efforts to address the root causes of prostitution by collaborating with community groups that offered social services and substance abuse treatment for prostitutes.

In the Storms Avenue drug and violent crime site, a nine-officer narcotics task force was assigned to the target area. As in the prostitution site, a multi-pronged effort was used to address crime in the area. First, the nine officers represented a major increase in police presence in a small geographic area that previously had just two officers assigned. The police also worked with the prosecutor's office to target repeat violent offenders through a Violent Offender Removal Program. Twenty-one offenders were prosecuted under the program, which involved fast tracking of the prosecution and efforts to keep offenders in jail prior to trial. Police also used code enforcement to pressure local businesses and apartment building owners to remove opportunities for drug crime.

The catchment areas received no extra police attention. Intervention officers were given maps of the target areas and were constantly reminded about the importance of not bringing extra police attention to the catchment areas. Project officers who made arrests in the catchment areas had to provide justification for their actions. A specific set of instructions were provided as to when officers could pursue suspects into the catchment areas (see Weisburd et al., 2004). We assumed that if displacement was an inevitable result of hot spots policing, it would be most evident in these geographically proximate areas. In turn, these areas would also be the most likely to experience a diffusion of crime control benefits, if this was the outcome of the focused crime prevention efforts in targeted areas.

Data collection

Our main measure of crime and disorder in the hot spots was drawn from a total of 3,063 social observations in the violent crime/drug site and 3,066 observations in the prostitution site. Social observations have been found to be a valid method for assessing street level crime and disorder problems and have been used successfully in prior studies (Sherman & Weisburd, 1995). Additionally we felt it particularly useful to use observational data because of the focus on prostitution and open air drug activity, two activities that are visible on the street. Social observations of disorder were collected by 12 trained observers during 20 minute observation periods on a single street block using a standardized instrument and codebook. For both of the intervention sites, observations took place in nine waves: one before, six (drug site) or seven (prostitution site) during, and one (prostitution site) or two (drug site) after the intervention. Observers were randomly assigned to the study sites’ street segments during the study period.

We also collected qualitative data that provided another source for assessing program effects and allowed us to gain a more nuanced understanding of the processes underlying the quantitative outcomes observed. Members of the research team conducted interviews with individuals arrested in the target areas of both sites, and an independent ethnographer was hired to conduct field interviews and observations in and around the prostitution site. The research team conducted 47 interviews of individuals arrested in the prostitution site and 51 interviews of individuals arrested from the drug and violent crime site. Arrestee interviews and ethnographic observations allowed us to gain a better understanding of how the interventions affected individuals in the targeted sites.

Effects of the interventions

For there to be any reason to suspect possible displacement or diffusion of benefits, it is necessary for the intervention to have had a strong impact on crime in the targeted areas. Our data showed that the police implemented intensive and targeted crime prevention initiatives at both of the target sites in our study. More generally as we describe below, our data provide little evidence that these crime prevention gains were displaced to areas nearby the target areas. Indeed, where there is evidence of change, it is in the direction of a diffusion of crime control benefits.
Prostitution site

We collapsed three mutually exclusive observation categories together to form an overall indicator of street-level prostitution activities: loitering or wandering for the purpose of prostitution, soliciting for the purpose of prostitution, and picked-up for the purpose of prostitution. In Figure 3 we report the mean number of events per observation for each wave (month) of data collection for the target and catchment areas. The dashed lines indicate the start and end of the police intervention. These data illustrate a dramatic reduction in street-level prostitution activities in the first month of the intervention in the target area. The average number of prostitution events recorded declined by almost 70 percent, dropping from an average of three events per street segment per observation period to only one.

We did not include comparison sites for either of our intervention areas both because of the lack of reasonable comparison areas in Jersey City and because of the expense of conducting social observations in additional geographic areas. As a result, while the results in Figure 3 are dramatic, they could reflect more general trends in prostitution activity citywide at the time of the intervention. To address this issue, we adjusted our estimates based on citywide call data for events related to prostitution. The results suggest that even when taking into account the overall declining crime trend in the rest of the city, there was a large and statistically significant reduction in prostitution events when comparing the baseline period to just the first month of the intervention, the entire intervention period, and the post-intervention period (see Table 1).

When we examine findings from the two catchment areas, we see no evidence of crime from the target area displacing and simply moving around the corner. As seen in Figure 3, while prostitution activity was lower at the baseline period in the catchment areas, it shows no evidence of increasing during the intervention period. Indeed, there is instead evidence of a diffusion of crime control benefits as observed prostitution activity declined in both catchment areas. Results controlling for citywide trends further reinforce these findings. The adjusted declines in the catchment areas were large, varying between 38 and 64 percent and most comparisons were statistically significant. Again, the decline from the baseline period to month one was fairly dramatic with a 63 percent adjusted decline in catchment area 1 and a 55 percent adjusted decline in catchment area 2 (see Table 1).

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2 One problem in interpreting these data is that historical and in particular seasonal trends in crime behavior may be affecting the level of prostitution behavior that is observed. The trend of reduction of prostitution events did not follow the same trend as the weather changes; this was notable in the later months of the intervention. Similarly, changes in observed drug activity did not follow seasonal trends, nor was it explained by secular trends in drug offenses citywide (see Weisburd et al., 2006).
Figure 3: Observed prostitution activities

Table 1: Difference in the mean observed prostitution events per observation in selected periods

<table>
<thead>
<tr>
<th>Comparison</th>
<th>Mean # Events Time 1 (N)</th>
<th>Mean # Events Time 2 (N)</th>
<th>% Change Social Obs.</th>
<th>Adj. % Change</th>
<th>Adj. Change t statistic</th>
</tr>
</thead>
<tbody>
<tr>
<td>A. Target Area</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pre: Wave 1</td>
<td>2.96 (97)</td>
<td>0.92 (112)</td>
<td>-69</td>
<td>-59</td>
<td>-5.39**</td>
</tr>
<tr>
<td>Pre: During</td>
<td>2.96 (97)</td>
<td>1.04 (769)</td>
<td>-65</td>
<td>-33</td>
<td>-3.20**</td>
</tr>
<tr>
<td>Pre: Post</td>
<td>2.96 (97)</td>
<td>1.17 (90)</td>
<td>-61</td>
<td>-45</td>
<td>-3.59**</td>
</tr>
<tr>
<td>B. Catchment Area 1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pre: Wave 1</td>
<td>1.01 (107)</td>
<td>0.27 (126)</td>
<td>-73</td>
<td>-63</td>
<td>-3.09**</td>
</tr>
<tr>
<td>Pre: During</td>
<td>1.01 (107)</td>
<td>0.26 (849)</td>
<td>-75</td>
<td>-43</td>
<td>-2.18</td>
</tr>
<tr>
<td>Pre: Post</td>
<td>1.01 (107)</td>
<td>0.24 (96)</td>
<td>-76</td>
<td>-61</td>
<td>-3.01**</td>
</tr>
<tr>
<td>C. Catchment Area 2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pre: Wave 1</td>
<td>.37 (125)</td>
<td>0.13 (124)</td>
<td>-65</td>
<td>-55</td>
<td>-2.17</td>
</tr>
<tr>
<td>Pre: During</td>
<td>.37 (125)</td>
<td>0.11 (837)</td>
<td>-70</td>
<td>-38</td>
<td>-1.64</td>
</tr>
<tr>
<td>Pre: Post</td>
<td>.37 (125)</td>
<td>0.07 (96)</td>
<td>-80</td>
<td>-64</td>
<td>-2.70**</td>
</tr>
</tbody>
</table>

† p < .10  †† p < .05  ††† p < .01  †††† p < .001
(two-tailed separate variance t-test for means)

+ Estimates are adjusted for citywide trends in emergency calls for service for disorder related calls
Drug and violent crime site

In the drug and violent crime site, social observations did not provide a robust measure for violent crime, but they did allow us to measure change in drug crime. We combined three types of observations of drug-related behavior for our measure of observed drug activities: soliciting for a drug sale, involvement in a drug transaction, and observed use of drugs. Our social observation data showed a 55 percent reduction in observed drug activity in the first month of the intervention in the target area, a trend that continued throughout the intervention period and through the post-intervention period (see Figure 4). Analysis of the adjusted mean differences in drug activity from our pre-intervention data collection period to the during- and post-intervention measures showed a large and statistically significant decline in the number of observed drug activities in the target area even after adjusting for citywide changes in drug offenses (see Table 2).

Figure 4 shows the mean observed number of drug activities in the target and catchment areas in each wave. As the figure illustrates, the trends in the catchment areas follow those found in the target area, with large proportional declines in the mean number of events observed. Nonetheless, because of the relatively lower base rate of activity in the catchment areas, the adjusted data do not lead to statistically significant outcomes at the .05 level, though one comparison—between the pre-intervention period and the first month of intervention—does achieve statistical significance at the .10 level in catchment area 2 (see Table 2). Despite the lack of statistically significant declines, the overall adjusted percent changes were still substantial in the catchment areas ranging from 33 to 80 percent when comparing the pre-period to Wave 1, the during-intervention period, or the post-intervention period. This again suggests a diffusion of crime control benefits to surrounding areas and provides little evidence of geographic displacement.

Figure 4: Observed drug activities
We also examined observed disorder\(^3\) in the drug and violent crime site (see Figure 5). Again, disorder declined substantially in the first month of the intervention period in the target area as well as both catchment areas and remained lower throughout the intervention and post-intervention period. The declines comparing disorder in the baseline period and disorder in the first intervention wave, the entire intervention period, and the post-intervention waves were all statistically significant in the target area and both catchment areas (see Table 3). These declines ranged from 48 to 62 percent in the target area and from 43 to 64 percent in the catchment areas.

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\(^3\) Disorder was measured as a combination of 11 different indicators of social disorder (e.g., loud disputes, panhandling, drinking alcohol in public, falling down in public)
Figure 5: Observed disorder

![Graph showing observed disorder over time.]

Table 3: Difference in mean observed disorder events per observation in selected periods

<table>
<thead>
<tr>
<th>Comparison</th>
<th>Mean # Events Time 1 (N)</th>
<th>Mean # Events Time 2 (N)</th>
<th>% Change Social Obs.</th>
<th>Adj. % Change</th>
<th>Adj. Change t-statistic</th>
</tr>
</thead>
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<tr>
<td>A. The Target Area</td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pre: Wave 1</td>
<td>4.10 (83)</td>
<td>1.38 (114)</td>
<td>-66</td>
<td>-62</td>
<td>-4.55***</td>
</tr>
<tr>
<td>Pre: During</td>
<td>4.10 (83)</td>
<td>.91 (650)</td>
<td>-78</td>
<td>-48</td>
<td>-3.86***</td>
</tr>
<tr>
<td>Pre: Post</td>
<td>4.10 (83)</td>
<td>.75 (211)</td>
<td>-82</td>
<td>-60</td>
<td>-4.76***</td>
</tr>
<tr>
<td>B. Catchment Area 1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pre: Wave 1</td>
<td>2.54 (89)</td>
<td>1.06 (125)</td>
<td>-58</td>
<td>-54</td>
<td>-2.69**</td>
</tr>
<tr>
<td>Pre: During</td>
<td>2.54 (89)</td>
<td>.53 (720)</td>
<td>-79</td>
<td>-49</td>
<td>-2.88**</td>
</tr>
<tr>
<td>Pre: Post</td>
<td>2.54 (89)</td>
<td>.39 (239)</td>
<td>-85</td>
<td>-63</td>
<td>-3.69***</td>
</tr>
<tr>
<td>C. Catchment Area 2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pre: Wave 1</td>
<td>1.33 (95)</td>
<td>.42 (131)</td>
<td>-68</td>
<td>-64</td>
<td>-4.32***</td>
</tr>
<tr>
<td>Pre: During</td>
<td>1.33 (95)</td>
<td>.36 (733)</td>
<td>-73</td>
<td>-43</td>
<td>-3.17**</td>
</tr>
<tr>
<td>Pre: Post</td>
<td>1.33 (95)</td>
<td>.21 (243)</td>
<td>-84</td>
<td>-62</td>
<td>-4.55***</td>
</tr>
</tbody>
</table>

†p < .10  ‡p < .05  ‡‡p < .01  ‡‡‡p < .001
(two-tailed separate variance t-test for means)

+ Estimates are adjusted for citywide trends in emergency calls for service for disorder related calls
Understanding the outcomes: Findings from the qualitative data

Overall, these social observation data reflect a strong crime reduction effect in the target and catchment areas of both sites. Consistent with previous examinations of immediate spatial displacement, we found no displacement effects from targeted police activity in the study sites and evidence of a diffusion of crime control benefits to the surrounding areas. This finding in the context of a controlled study that was designed to directly assess displacement and diffusion effects adds strong support to a policy approach which focuses police resources at crime hot spots. Our qualitative data collection further expands on some of the underlying causes for these findings.

Interviews with arrestees, social observations, and field interviews showed strong evidence that offenders resisted movement away from the targeted areas. Most offenders lived close to their "work" in the targeted sites and they felt comfortable with these locations. Their preference to remain in the area was based in part on a natural tendency to stay within established business and social networks. The following quote from a prostitute illustrates this reasoning:

"I will always go into an area I know. This way, if I need help, I know that somehow I can find someone or get someone's attention. But, in the same way, I don't go into an area that would give away what I am doing and get me arrested."

This resistance to movement also has a strongly rational component. Other areas that may offer similar opportunities for prostitution or drug selling in the city often have established networks. Moving into another established location could potentially put offenders into conflict with established actors in those areas. This was particularly true for the Storms Avenue interviewees who noted that movement to another area with an established drug trade was likely to lead to violence. One arrestee elaborates, "You can't deal in areas you aren't living in; it ain't your turf. That's how people get themselves killed."

Following these concerns, our arrestee interviews showed only a few examples of movement away from established locations; only three prostitutes (9.7 percent) and six drug arrestees (11.8 percent) reported moving the locations of their criminal activities. Displacement activity tended to be somewhat random; the sites selected never really achieved very high levels of activity.

Our data also provided explanations for the reduction of crime in the catchment areas (diffusion of crime control benefits). Ethnographic work showed evidence of desistence among a non-trivial number of prostitutes, and interviews suggested that a number of individuals involved in criminal activity in both sites were removed from the streets for substantial periods. It seems reasonable to assume that at least some of the criminal activity in the catchment areas was carried out by these offenders.

Deterrence is another possible explanation for diffusion of crime control benefits. The offenders did not have a clear view of the limits of the police interventions or the reason for their intensity during the intervention period. Offenders were not sure of the time constraints of the intervention and adapted their behavior to what they thought was occurring rather than the actual strategy used by police. From the perspective of the offender, it would have been reasonable to conclude that police interventions brought on one street block would have been added to nearby street blocks as well. This suggests that the police can utilize the limited knowledge of offenders about crime prevention to maximize the crime prevention benefits of interventions.

Additionally, our qualitative data allowed us to examine other forms of displacement that are more difficult to detect using quantitative methods. The qualitative data suggested that while spatial displacement was unlikely it was not uncommon for offenders to adapt to crime prevention activities by changing the way they carried out their criminal activity in the target area. In the case of prostitution, for instance, method displacement often involved arranging dates with clients to avoid going out on the streets and risking detection by police. These changes in method may reflect an overall benefit from the
perspective of the police and public, as moving behavior indoors reduces the level of street crime and disorder.

There was little observed temporal and crime type displacement. Several prostitutes mentioned shifting their work hours to very late at night or very early in the morning to avoid police patrols. One attempted to get into the drug trade but had a negative experience due to her addiction (using the product rather than selling it), which led her to a conflict with her supplier.

Conclusions

Our study developed specifically to examine displacement and diffusion provides strong support for the conclusion that geographically focused police interventions are not likely to lead to displacement of crime, and that the more likely outcome is diffusion of crime control benefits to locations nearby the target areas. This finding, in the context of a controlled study that was designed to directly evaluate displacement and diffusion effects, adds strong support to a policy approach that focuses police resources at crime hot spots.

Our study suggests that while spatial displacement is unlikely, other forms of displacement may occur as a result of hot spots crime prevention initiatives. Our ethnographic field work and arrestee interviews show that while some offenders desist from criminality as a result of hot spots interventions, a number seek out adaptations that will allow them to continue offending in the targeted areas. Importantly, however, even in this case the overall result may be a crime prevention benefit as the total level of crime activity using such adaptations is likely to be reduced. This again reinforces the likely overall crime prevention benefits of hot spots policing.
References


About the Police Foundation

The Police Foundation is a national, nonpartisan, nonprofit organization dedicated to supporting innovation and improvement in policing. Established in 1970, the foundation has conducted seminal research in police behavior, policy, and procedure and works to transfer to local agencies the best information about practices for dealing effectively with a range of important police operational and administrative concerns.

Our purpose is to help the police be more effective in doing their job, whether it is deterring robberies, intervening in potentially injurious domestic disputes, or working to improve relationships between the police and the communities they serve. To accomplish our mission, we work closely with police officers and police departments across the country, and it is in their hard work and contributions that our accomplishments are rooted. The foundation helps police departments to acquire both the knowledge gained through research and the tools needed to integrate that knowledge into police practices. Working with law enforcement agencies seeking to improve performance, service delivery, accountability, and community satisfaction with police services, the foundation offers a wide range of services and expertise.

The Crime Mapping & Problem Analysis Laboratory operates with the goals of providing practical assistance and information to police departments and to developing the physical and theoretical infrastructure necessary for further innovations in police and criminological theory.

The foundation has done much of the research that led to a questioning of the traditional model of professional law enforcement and toward a new view of policing—one emphasizing a community orientation. For example, research on foot patrol and on fear of crime demonstrated the importance to crime control efforts of frequent police-citizen contacts made in a positive, non-threatening way. As a partner in the Community Policing Consortium, the foundation, along with four other leading national law enforcement organizations, played a principal role in the development of community policing research, training, and technical assistance. Sometimes foundation research findings have challenged police traditions and beliefs. When police agencies employed routine preventive patrol as a principal anti-crime strategy, a foundation experiment in Kansas City showed that routine patrol in marked patrol cars did not significantly affect crime rates. When police officials expressed reservations about using women on patrol, foundation research in Washington, DC, showed that gender was not a barrier to performing patrol work. To address the intense debate about how police should respond to incidents of domestic violence, the foundation conducted the Minneapolis Domestic Violence Experiment—the first scientifically controlled test of the effects of arrest for any crime. Foundation research on the use of deadly force was cited at length in a landmark 1985 U.S. Supreme Court decision, Tennessee v. Garner. The court ruled that the police may use deadly force only against persons whose actions constitute a threat to life.

Motivating all of the foundation's efforts is the goal of efficient, effective, humane policing that operates within the framework of democratic principles and the highest ideals of the nation.