View metadata, citation and similar papers at core.ac.uk

brought to you by CORE

provided by Publikationsserver der Universität Tübingen

Campbell Systematic Reviews
2012:8
First published: 27 June, 2012
Last updated: June, 2012
Search executed: January, 2011

Hot spots policing effects on crime

Anthony Braga, Andrew Papachristos, David Hureau

THE CAMPBELL COLLABORATION

Colophon

Title	Hot spots policing effects on crime.
Institution	The Campbell Collaboration
Authors	Braga, Anthony Papachristos, Andrew Hureau, David
DOI	10.4073/csr.2012.8
No. of pages	94
Last updated	June 2012
Citation	Braga, A., Papachristos, A., & Hureau, D. Hot spots policing effects on crime. Campbell Systematic Reviews 2012:8 DOI: 10.4073/csr.2012.8

Copyright	© Braga et al. This is an open-access article distributed under the terms of the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited

Contributions	Anthony Braga, Andrew Papachristos and David Hureau contributed to the writing and revising of this review. The authors plan to update this review every five years.
Editors for this review	Editor: David B. Wilson Managing editor: Charlotte Gill
Support/funding	Earlier iterations of this systematic review were supported in part by funds from the Smith Richardson Foundation and the U.S. National Academy of Sciences.
Potential conflicts of interest	With colleagues, Braga has conducted two randomized controlled experiments and one quasi-experimental evaluation that found hot spots policing to be effective in controlling crime and disorder problems. Moreover, his colleagues (e.g., David Weisburd and Lorraine Mazerolle) have conducted other experimental evaluations of the effects of hot spots policing on crime. Although Braga doesn't have an ideological bias towards the effectiveness of place-focused interventions, it may be uncomfortable for him to report findings in this review that contradict the findings of his experiment or experiments conducted by his colleagues. Papachristos and Hureau have collaborated with Braga on an evaluation of the effects of hot spots policing program in Boston. Beyond that single study, neither Papachristos nor Hureau has been involved in evaluating hot spots policing interventions.

Corresponding author	Anthony Braga, Ph.D. Kennedy School of Government Harvard University 79 Joh. F. Kennedy St. Cambridge, MA 02138 USA E-mail:Anthony_Braga@harvard.edu

Campbell Systematic Reviews

Editors-in-Chief	Mark W. Lipsey, Vanderbilt University, USA Arild Bjørndal, The Centre for Child and Adolescent Mental Health, Eastern and Southern Norway & University of Oslo, Norway
Editors	
Crime and Justice	David B. Wilson, George Mason University, USA
Education	Sandra Wilson, Vanderbilt University, USA
Social Welfare	William Turner, University of Bristol, UK Geraldine Macdonald, Queen's University, UK & Cochrane Developmental, Psychosocial and Learning Problems Group
International Development	Birte Snilstveit, 3ie, UK Hugh Waddington, 3ie, UK
Managing Editor	Karianne Thune Hammerstrøm, The Campbell Collaboration
Editorial Board	
Crime and Justice	David B. Wilson, George Mason University, USA Martin Killias, University of Zurich, Switzerland
Education	Paul Connolly, Queen's University, UK Gary W. Ritter, University of Arkansas, USA
Social Welfare	Aron Shlonsky, University of Toronto, Canada
International Development	Peter Tugwell, University of Ottawa, Canada Howard White, 3ie, India
Methods	Therese Pigott, Loyola University, USA Ian Shemilt, University of Cambridge, UK

The Campbell Collaboration (C2) was founded on the principle that systematic reviews on the effects of interventions will inform and help improve policy and services. C2 offers editorial and methodological support to review authors throughout the process of producing a systematic review. A number of C2's editors, librarians, methodologists and external peer-reviewers contribute.

The Campbell Collaboration
P.O. Box 7004 St. Olavs plass
0130 Oslo, Norway
www.campbellcollaboration.org

Table of contents

TABLE OF CONTENTS 3

ABSTRACT 5
Background 5
Objectives 5
Search Strategy 5
Selection Criteria 5
Data collection and Analysis 6
Results 6
Authors' Conclusions 6

1 BACKGROUND 7

2 OBJECTIVES 11

3 METHODS 12
3.1 Inclusion and Exclusion Criteria 12
3.2 Search Strategy 14
3.3 Details of Study Coding Categories 15
3.4 Statistical Procedures and Conventions 16
3.5 Treatment of Qualitative Research 17

4 FINDINGS 18
4.1 Selection of studies 18
4.2 Characteristics of Selected Studies 19
4.3 Narrative Review of the Effects of Hot Spots Policing on Crime 20
4.4 Meta-Analysis of the Effects of Hot Spots Policing on Crime 24

5 CONCLUSION 30

6 PLANS FOR UPDATING THE REVIEW 33

7 ACKNOWLEDGEMENTS 34

8 REFERENCES 35

9 STUDIES INCLUDED IN SYSTEMATIC REVIEW 41

10 TABLES 43

10.1 Characteristics of Eligible Hot Spots Policing Evaluations 43
10.2 Hot Spots Policing Experiments and Quasi-Experiments 44
10.3 Results of Hot Spots Policing Experiments and Quasi-Experiments 51
10.4 Moderator Analyses of Study Outcome Types and Hot Spots Policing Program Types 57

11 FIGURES 58
11.1 Combined Effects Sizes for Study Outcomes 58
11.2 Largest Effect Sizes for Study Outcomes 59
11.3 Smallest Effect Sizes for Study Outcomes 59
11.4 Research Design Sizes as Moderator of Study Outcomes 60
11.5 Combined Effect Sizes for Displacement and diffusion Outcomes 61
11.6 Largest Effect Sizes for Displacement and Diffusion Outcomes 62
11.7 Smallest Effect Sizes for Displacement and Diffusion Outcomes 63
11.8 Research Design type as Moderator for Displacement and Diffusion Outcomes 64
11.9 Hot Spots Program Type as Moderator of Study Outcomes 65
11.10 Funnel Plot of Standard Error Between Standard Difference in Means 66

12 APPENDIX 67
12.1 Experts Contacted During Search Process 67
12.2 Coding Sheets 70
12.3 Detailed Narrative Review of the Effects of Eligible Hot Spots Policing Evaluations on Crime 80
12.4 Effect Sizes for All Outcomes for 20 Main Effects Tests of Hot Spots Policing 95
12.5 Effect Sizes for All Outcomes for 13 Displacement and Diffusion Effects Tests of Hot Spots Policing 96

Abstract

BACKGROUND

In recent years, crime scholars and practitioners have pointed to the potential benefits of focusing crime prevention efforts on crime places. A number of studies suggest that there is significant clustering of crime in small places, or "hot spots," that generate half of all criminal events. A number of researchers have argued that many crime problems can be reduced more efficiently if police officers focused their attention to these deviant places. The appeal of focusing limited resources on a small number of high-activity crime places is straightforward. If we can prevent crime at these hot spots, then we might be able to reduce total crime.

OBJECTIVES

To assess the effects of focused police crime prevention interventions at crime hot spots. The review also examined whether focused police actions at specific locations result in crime displacement (i.e., crime moving around the corner) or diffusion (i.e., crime reduction in surrounding areas) of crime control benefits.

SEARCH STRATEGY

A keyword search was performed on 15 online abstract databases. Bibliographies of past narrative and empirical reviews of literature that examined the effectiveness of police crime control programs were reviewed and forward searches for works that cited seminal hot spots policing studies were performed. Bibliographies of past completed Campbell systematic reviews of police crime prevention efforts and hand searches of leading journals in the field were performed. Experts in the field were consulted and relevant citations were obtained.

SELECTION CRITERIA

To be eligible for this review, interventions used to control crime hot spots were limited to police enforcement efforts. Suitable police enforcement efforts included

traditional tactics such as directed patrol and heightened levels of traffic enforcement as well as alternative strategies such as aggressive disorder enforcement and problem-oriented policing. Studies that used randomized controlled experimental or quasi-experimental designs were selected. The units of analysis were limited to crime hot spots or high-activity crime "places" rather than larger areas such as neighborhoods. The control group in each study received routine levels of traditional police enforcement tactics.

DATA COLLECTION AND ANALYSIS

19 studies containing 25 tests of hot spots policing interventions were identified and full narratives of these studies were reported. Ten of the selected studies used randomized experimental designs and nine used quasi-experimental designs. A formal meta-analysis was conducted to determine the crime prevention effects in the eligible studies. Random effects models were used to calculate mean effect sizes.

RESULTS

20 of 25 tests of hot spots policing interventions reported noteworthy crime and disorder reductions. The meta-analysis of key reported outcome measures revealed a small statistically significant mean effect size favoring the effects of hot spots policing in reducing citizen calls for service in treatment places relative to control places. The effect was smaller for randomized designs but still statistically significant and positive. When displacement and diffusion effects were measured, unintended crime prevention benefits were associated with the hot spots

AUTHORS' CONCLUSIONS

The extant evaluation research provides fairly robust evidence that hot spots policing is an effective crime prevention strategy. The research also suggests that focusing police efforts on high-activity crime places does not inevitably lead to crime displacement and crime control benefits may diffuse into the areas immediately surrounding the targeted locations.

1 Background

In recent years, crime scholars and practitioners have pointed to the potential benefits of focusing crime prevention efforts on crime places. A number of studies suggest that crime is not spread evenly across city landscapes. Rather, there is significant clustering of crime in small places, or "hot spots," that generate half of all criminal events (Pierce et al. 1988; Sherman, Gartin, and Buerger 1989; Weisburd et al. 1992). Even within the most crime-ridden neighborhoods, crime clusters at a few discrete locations and other areas are relatively crime free (Sherman, Gartin, and Buerger 1989). A number of researchers have argued that many crime problems can be reduced more efficiently if police officers focused their attention to these deviant places (Sherman and Weisburd 1995; Weisburd and Green 1995a). The appeal of focusing limited resources on a small number of high-activity crime places is straightforward. If we can prevent crime at these hot spots, then we might be able to reduce total crime.

Hot spots policing has become a very popular way for police departments to prevent crime. A recent Police Foundation report found that 7 in 10 departments with more than 100 sworn officers reported using crime mapping to identify crime hot spots (Weisburd et al. 2003). Many police departments reported having the capability to manage and analyze crime data in sophisticated ways and, through management innovations such as Compstat, hold officers accountable for implementing problem-solving strategies to control hot spot locations (Weisburd et al. 2003). The Police Executive Research Forum (2008) surveyed 176 U.S. police departments and reported that nearly 9 out of 10 agencies used hot spots policing strategies to deal with violent crime in their jurisdictions and that problem-solving techniques were often deployed to address violent crime hot spots.

A growing body of research evidence suggests that focused police interventions, such as directed patrols, proactive arrests, and problem-oriented policing, can produce significant crime prevention gains at high-crime "hot spots" (see, e.g. Braga 2008; Eck 1997, 2002; Weisburd and Eck 2004). Indeed, the National Research Council's Committee to Review Research on Police Policy and Practices concluded "...studies that focused police resources on crime hot spots provided the strongest collective evidence of police effectiveness that is now available" (Skogan and Frydl, 2004: 250). However, critics of place-based interventions charge that such policing

strategies result in displacement – that is, criminals move to places not protected by police intervention (e.g. Reppetto 1976). The available evidence suggests that hot spots policing interventions are more likely to be associated with the diffusion of crime control benefits into surrounding areas rather than crime displacement (e.g. Braga and Weisburd 2010; Weisburd et al. 2006).

Unlike most innovations in policing, which are normally based on increasing operational and management efficiency, the emergence of hot spots policing can be traced directly to emerging theoretical perspectives in criminology that suggest the importance of places in understanding crime (Weisburd and Braga 2003). The consideration of such place-oriented strategies in crime control policy arose from research suggesting that micro-level variation in crime existed within communities. The observation that the distribution of crime varied within neighborhoods has existed for some time (see Hawley 1944, 1950; Shaw and McKay 1942; Werthman and Piliavin 1967); however, until recently, little research examined this variance beyond the community level of analysis. With the advent of powerful computer systems and software packages, several studies revealed that over half of all crimes in a city are committed at a few criminogenic places within communities (Pierce et al. 1988; Sherman, Gartin, and Buerger 1989). Further, research by Taylor and Gottfredson (1986) suggests that conclusive evidence links this variation to physical and social characteristics of particular blocks and multiple dwellings within a neighborhood. This uneven distribution of crime within specific neighborhoods has been reported in studies of a variety of crime types including drug selling (Weisburd and Green 1994), burglary (Pease 1991), robbery (Hunter and Jeffrey 1992), and auto theft (Clarke and Harris 1992).

Beyond studies observing the clustering of criminal events, in their review of the research literature, Eck and Weisburd (1995) identified four other theoretical concepts that illuminate the role of place in crime. Facilities, such as bars, churches, and apartment buildings have been found to affect crime rates in their immediate environment depending on the type of people attracted, the way the space is managed, or the possible crime controllers present such as owners, security, or police. Site features such as easy access, a lack of guardians, inept or improper management, and the presence of valuable items have been suggested to influence the decisions offenders make about the place they choose to commit their crimes. Studies of offender mobility suggest that offenders' target searching behavior is influenced by personal characteristics (such as gender, age, race, experience, and crime types) and the distribution of crime targets. A direct outgrowth of offender mobility patterns, research on target selection posits that offenders seek places with cues that indicate acceptable risks and gains, such as homes on the outskirts of affluent neighborhoods; these places are found during intentional target searches and during their daily legitimate routines.

The study of crime events at places is influenced and supported by three complementary theoretical perspectives: rational choice, routine activities, and

environmental criminology. The rational choice perspective assumes that "offenders seek to benefit themselves by their criminal behavior; that this involves the making of decisions and choices, however rudimentary on occasion these choices may be; and that these processes, constrained as they are by time, the offender's cognitive abilities, and by the availability of relevant information, exhibited limited rather than normative rationality" (Cornish and Clarke 1987: 933). This perspective is often combined with routine activity theory to explain criminal behavior during the crime event (Clarke and Felson 1993). Routine activities theory posits that a criminal act occurs when a likely offender converges in space and time with a suitable target (e.g., victim or property) in the absence of a capable guardian (Cohen and Felson 1979). Rational offenders come across criminal opportunities as they go about their daily routines and make decisions whether to take action. The assumption is that, if victims and offenders are prevented from converging in space and time through the effective manipulation of the situations and settings that give rise to criminal opportunities, police can reduce crime.

Environmental criminology explores the distribution and interaction of targets, offenders, and opportunities across time and space; understanding the characteristics of places, such as facilities, is important as these attributes give rise to the opportunities that rational offenders will encounter during their routine activities (Brantingham and Brantingham 1991). Although this perspective is primarily concerned with applied crime prevention, Weisburd and his colleagues (1992: 48) suggest "environmental criminology's basic contribution lay in its call for a change in the unit of analysis from persons to places." The attributes of a place are viewed as key in explaining clusters of criminal events. For example, a poorly lit street corner with an abandoned building, located near a major thoroughfare, provides an ideal location for a drug market. The lack of proper lighting, an abundance of "stash" locations around the derelict property, a steady flow of potential customers on the thoroughfare, and a lack of informal social control (termed defensive ownership) at the place generates an attractive opportunity for drug sellers. In many such cases, the police spend considerable time and effort arresting sellers without noticeably impacting the drug trade. The compelling criminal opportunities at the place attract sellers and buyers, and thus sustain the market. If the police want to be more efficient at disrupting the market, this suggests they should focus on the features of the place which cause the drug dealing to cluster at that particular location (see, e.g. Green 1996). This perspective is considered a radical departure from traditional criminological theories that focused prevention efforts on the individual and ignored the importance of place (Weisburd 1997; Sherman, Gartin, and Buerger 1989).

Indeed, police officers have long recognized the importance of place in crime problems. Police officers know the locations within their beats that tend to be trouble spots and are often very sensitive to signs of potential crimes across the places that comprise their beats. As Bittner (1970: 90) suggests in his classic study of police work, some officers know "the shops, stores, warehouses, restaurants,

hotels, schools, playgrounds, and other public places in such a way that they can recognize at a glance whether what is going on within them is within the range of normalcy." The traditional response to such trouble spots typically included heightened levels of patrol and increased opportunistic arrests and investigations. Until recently, police crime prevention strategies did not focus systematically on crime hot spots and did not seek to address the underlying conditions that give rise to high-activity crime places.

The widespread use of hot spots policing to prevent crime warrants ongoing careful reviews of the available empirical evidence on the crime control benefits of the approach. This document provides an updated version of a previously completed Campbell Collaboration systematic review of the effects of hot spots policing on crime (Braga 2001, 2005, 2007).

2 Objectives

This review will synthesize the existing published and non-published empirical evidence on the effects of focused police crime prevention interventions at high-activity crime places and will provide a systematic assessment of the preventive value of focused police crime prevention efforts at crime hot spots. The review also examined whether focused police actions at specific locations result in crime displacement or a diffusion of crime control benefits.

3 Methods

This review synthesizes existing published and non-published empirical evidence on the effects of focused police crime prevention interventions at crime hot spots and provides a systematic assessment of the preventive value of these programs. In keeping with the conventions established by the systematic reviews methods literature, the stages of this review and the criteria used to select eligible studies are described below.

3.1 INCLUSION AND EXCLUSION CRITERIA

3.1.1 Types of studies

In eligible studies, crime places that received the hot spots policing intervention were compared to places that experienced routine levels of traditional police service (i.e., regular levels of patrol, ad-hoc investigations, etc.). The comparison group study had to be either experimental or quasi-experimental (nonrandomized) (Campbell and Stanley 1966; Cook and Campbell 1979).

3.1.2 Type of areas

The units of analysis were crime hot spots or high-activity crime "places." As Eck (1997: 7-1) suggests, "a place is a very small area reserved for a narrow range of functions, often controlled by a single owner, and separated from the surrounding area... examples of places include stores, homes, apartment buildings, street corners, subway stations, and airports." All studies using units of analysis smaller than a neighborhood or community were considered. This constraint was placed on the review process to ensure that identified studies were evaluating police strategies focused on the small number of locations that generate a disproportionate amount of crime in urban areas.

As described earlier, hot spots policing was a natural outgrowth of theoretical perspectives that suggested specific places where crime concentrates were an important focus for strategic crime prevention efforts. Police interventions implemented at the community or neighborhood level would not be specifically focused on small places, often encompassing only one or a few city blocks, that would be considered hot spots of crime. However, this review does include quasi-experimental designs that compare changes at larger areal units, such as policing districts or census tracts, if the implemented hot spots policing program was clearly

focused at specific places within the larger areal unit. For instance, The Kansas City Gun Project quasi-experiment evaluated the effects of increased gun seizures focused at gun hot spots within an 8 by 10 block police beat on gun crime relative to traditional policing services in comparison police beats (Sherman and Rogan 1995a).

The methodological approaches used to identify hot spots in the eligible studies were also reviewed. Diverse types of hot spots may respond to treatment in different ways. As such, the review needed to be sensitive to varying hot spot identification methods that could influence whether or not the treatment generated crime prevention gains.

3.1.3 Types of interventions

To be eligible for this review, interventions used to control crime hot spots were limited to police-led crime control efforts. Suitable police enforcement efforts included traditional tactics such as directed patrol and heightened levels of traffic enforcement as well as alternative strategies such as aggressive disorder enforcement and problem-oriented policing (Goldstein 1990). Studies of police crackdown programs were also considered (see, e.g. Sherman 1990). However, to be included in the review, crackdown programs had to be focused on very specific places. Some ongoing attention to crime hot spots must be a characteristic of the program whether it was a series of subsequent crackdowns or simple maintenance of the targeted area through other means (e.g. additional follow-up directed patrol). This inclusion criterion ensured that only crackdown programs that were similar to more formal hot spots policing programs were considered.

3.1.4 Types of outcome measures

Eligible studies had to measure the effects of police intervention on officially recorded levels of crime at places such as crime incident reports, citizen emergency calls for service, and arrest data. Other outcomes measures such as survey, interview, systematic observations of social disorder (such as loitering, public drinking, and the solicitation of prostitution), systematic observations of physical disorder (such as trash, broken windows, graffiti, abandoned homes, and vacant lots), and victimization measures used by eligible studies to measure program effectiveness were also coded and analyzed.

Particular attention was paid to studies that measured crime displacement effects and diffusion of crime control benefit effects. As mentioned earlier, policing strategies focused on specific locations have been criticized as resulting in displacement (see Reppetto 1976). More recently, academics have observed that crime prevention programs may result in the complete opposite of displacement—that crime control benefits were greater than expected and “spill over” into places beyond the target areas (Clarke and Weisburd 1994). The quality of the methodologies used to measure displacement and diffusion effects, as well as the types of displacement (spatial, temporal, target, modus operandi) examined, was

assessed. Based on our a priori knowledge of several hot spots policing experiments (e.g. Weisburd and Green 1995; Braga et al. 1999), we expected most analyses of displacement and diffusion effects to compare pre-test and post-test counts of official crime data in catchment areas surrounding treatment and control hot spots.

3.2 SEARCH STRATEGY

Several strategies were used to perform an exhaustive search for literature fitting the eligibility criteria. First, a keyword search was performed on an array of online abstract databases (see lists of keywords and databases below). Second, the bibliographies of past narrative and empirical reviews of literature that examined the effectiveness of police crime control programs were reviewed (Braga 2008; Eck and Maguire 2000; Sherman 1997, 2002; Skogan and Frydl, 2004; Weisburd and Eck 2004). Third, forward searches for works that cited seminal hot spots policing studies were performed (Braga et al. 1999; Sherman et al. 1989; Sherman and Weisburd 1995; Sherman and Rogan 1995a; Weisburd and Green 1995a). Fourth, bibliographies of past completed Campbell systematic reviews of police crime prevention efforts were searched (Mazerolle et al. 2007; Weisburd et al. 2008; Bowers et al. 2010). Fifth, hand searches of leading journals in the field were performed.1

The searches were all completed between October 2010 and January 2011. Thus, the review only covers studies published in 2010 and earlier. Sixth, after finishing the above searches and reviewing the studies as described later, the list of studies meeting our eligibility criteria was emailed in June 2011 to leading criminology and criminal justice scholars knowledgeable in the area of hot spots policing strategies. These 83 scholars were defined as those who authored at least one study which appeared on our inclusion list, anyone involved with the National Academy of Sciences review of police research and other leading scholars (see Appendix 1). This helped to identify studies the above searches left out as these experts were able to make referrals to studies that were missed, particularly unpublished studies. Finally, an information specialist was engaged at the outset of our review and at points along the way in order to ensure that appropriate search strategies were used to identify the studies meeting the criteria of this review.2

1 These journals were: *Criminology, Criminology & Public Policy, Justice Quarterly, Journal of Research in Crime and Delinquency, Journal of Criminal Justice, Police Quarterly, Policing, Police Practice and Research, British Journal of Criminology, Journal of Quantitative Criminology, Crime & Delinquency, Journal of Criminal Law and Criminology,* and *Policing and Society*. Hand searches covered 1979-2010.

2 Ms. Phyllis Schultze of the Gottfredson Library at the Rutgers University School of Criminal Justice executed the initial abstract search and was consulted throughout on our search strategies. Rosalyn Bocker, a Ph.D. student at the Rutgers School of Criminal Justice, also assisted with the abstract search.

The following fifteen databases were searched:

1. Criminal Justice Periodical Index
2. Sociological Abstracts
3. Social Science Abstracts (SocialSciAbs)
4. Social Science Citation Index
5. Arts and Humanities Search (AHSearch)
6. Criminal Justice Abstracts
7. National Criminal Justice Reference Service (NCJRS) Abstracts
8. Educational Resources Information Clearinghouse (ERIC)
9. Legal Resource Index
10. Dissertation Abstracts
11. Government Publications Office, Monthly Catalog (GPO Monthly)
12. Google Scholar
13. Online Computer Library Center (OCLC) SearchFirst
14. CINCH data search
15. C2 SPECTR (Campbell Collaboration Social, Psychological, Educational and Criminological Trials Register)

The following terms were used to search the fifteen databases listed above:

1. Hot spot AND police
2. Crime place AND police
3. Crime clusters AND police
4. Crime displacement
5. Place-oriented interventions
6. High crime areas AND police
7. High crime locations AND police
8. Targeted policing
9. Directed patrol
10. Crackdowns
11. Enforcement swamping

3.3 DETAILS OF STUDY CODING CATEGORIES

All eligible studies were coded (see coding protocol attached in Appendix 2) on a variety of criteria including:

1. Reference information (title, authors, publication etc.)
2. Nature of description of selection of site, problems etc.
3. Nature and description of selection of comparison group or period
4. The unit of analysis

5. The sample size
6. Methodological type (randomized experiment or quasi-experiment)
7. A description of the hot spots policing intervention
8. Dosage intensity and type
9. Implementation difficulties
10. The statistical test(s) used
11. Reports of statistical significance (if any)
12. Effect size/power (if any)
13. The conclusions drawn by the authors

The three authors independently coded each eligible study. Where there were discrepancies, the authors jointly reviewed the study and determined the final coding decision.

3.4 STATISTICAL PROCEDURES AND CONVENTIONS

Analysis of outcome measures across studies were carried out in a uniform manner and, when appropriate and possible, involved quantitative analytical methods. We used meta-analyses of program effects to determine the size and direction of the effects and to weight effect sizes based on the variance of the effect size and the study sample size (Lipsey and Wilson 2001). In this systematic review, the standardized mean difference effect size (also known as Cohen's d; see Rosenthal 1994) was used. The Effect Size Calculator, developed by David B. Wilson and available on the Campbell Collaboration's web site, was used to calculate standardized mean difference effect sizes for reported outcomes in each study. 3 Biostat's Comprehensive Meta Analysis Version 2.2 was then used to conduct the meta-analysis of effect sizes. The specific approaches used to calculate effect sizes for each outcome in the eligible studies are described in the meta-analysis section.

3.4.1 Determination of independent findings

One problem in conducting meta-analyses in crime and justice is that investigators often did not prioritize outcomes examined. This is common in studies in the social sciences in which authors view good practice as demanding that all relevant outcomes be reported. For example, the Jersey City Drug Market Analysis Program experiment presents an array of outcome measures including violence, property, disorder, and narcotics calls for service (Weisburd and Green 1995a). However, the lack of prioritization of outcomes in a study raises the question of how to derive an overall effect of treatment. For example, the reporting of one significant result may reflect a type of "creaming" in which the authors focus on one significant finding and ignore the less positive results of other outcomes. But authors commonly view the

3 http://www.campbellcollaboration.org/resources/effect_size_input.php

presentation of multiple findings as a method for identifying the specific contexts in which the treatment is effective. When the number of such comparisons is small and therefore unlikely to affect the error rates for specific comparisons such an approach is often valid.

The studies were analyzed using three approaches. The first approach is conservative; we calculated an overall mean effect size for each study that combined reported outcomes in each study. The second represents the largest effect reported in the studies and gives an upper bound to the review findings. It is important to note that in some of the studies with more than one outcome reported, the largest outcome reflected what authors thought would be the most direct program effect. This was true for the Jersey City Drug Market Analysis Program experiment, which examined a wider range of crime outcome measures, but suggested that the largest program effects would be found in the case of disorder calls of service given the program's focus on street-level drug markets (Weisburd and Green 1995a). Finally, the smallest effect size for each study was analyzed. This approach is the most conservative and likely underestimates the effect of hot spots policing programs on crime. It was used here primarily to provide a lower bound to the review findings.

3.5 TREATMENT OF QUALITATIVE RESEARCH

Qualitative research on crime and disorder outcomes was not included in this systematic review. The authors hope that a qualitative researcher will assist in future updates to this review with a synthesis of qualitative evaluation measures.

4 Findings

4.1 SELECTION OF STUDIES

Search strategies in the systematic review process generate a large number of citations and abstracts for potentially relevant studies that must be closely screened to determine whether the studies meet the eligibility criteria (Farrington and Petrosino 2001). The screening process yields a much smaller pool of eligible studies for inclusion in the review. The search strategies produced 4,315 distinct abstracts using the 11 keywords and 15 databases. The contents of the 4,315 abstracts were reviewed for any suggestion of an experimental or quasi-experimental evaluation of hot spots policing interventions. 131 distinct abstracts were selected for closer review and the full-text reports, journal articles, and books for these abstracts were acquired and carefully assessed to determine whether the interventions involved focused police enforcement efforts at crime hot spots and whether the studies used randomized controlled trial designs or nonrandomized quasi-experimental designs. 19 eligible studies were identified and included in this review:

1. Minneapolis Repeat Call Address Policing (RECAP) Program (Sherman, Buerger, and Gartin 1989)
2. New York Tactical Narcotics Teams (Sviridoff, Sadd, Curtis, and Grinc 1992)
3. St. Louis Problem-Oriented Policing in Three Drug Market Locations Study (Hope 1994)
4. Minneapolis Hot Spots Patrol Program (Sherman and Weisburd 1995)
5. Jersey City Drug Markets Analysis Program (DMAP) (Weisburd and Green 1995a)
6. Kansas City Gun Project (Sherman and Rogan 1995a)
7. Kansas City Crack House Police Raids Program (Sherman and Rogan 1995b)
8. Beenleigh Calls for Service Project (Criminal Justice Commission 1998)
9. Jersey City Problem-Oriented Policing at Violent Places Project (Braga, Weisburd, Waring, Green Mazerolle, Spelman, and Gajewski 1999)
10. Houston Targeted Beat Program (Caeti 1999)
11. Oakland Beat Health Program (Mazerolle, Price, and Roehl 2000)
12. Pittsburgh Police Raids at Nuisance Bars Program (Cohen, Gorr, and Singh 2003)

13. Buenos Aires Police Presence after Terror Attack Initiative (DiTella and Schargrodsky 2004)
14. Philadelphia Drug Corners Crackdowns Program (Lawton, Taylor, and Luongo 2005)
15. Jersey City Displacement and Diffusion Study (Weisburd, Wyckoff, Ready, Eck, Hinkle, and Gajewski 2006)
16. Lowell Policing Crime and Disorder Hot Spots Project (Braga and Bond 2008)
17. Jacksonville Policing Violent Crime Hot Spots Project (Taylor, Koper, and Woods 2011)
18. Philadelphia Foot Patrol Program (Ratcliffe, Taniguchi, Groff, and Wood 2011)
19. Boston Safe Street Teams Program (Braga, Hureau, and Papachristos 2011)

4.2 CHARACTERISTICS OF SELECTED STUDIES

Table 1 presents the basic characteristics of the 19 eligible hot spots policing studies. 17 of the 19 (89.5%) identified studies were conducted in the United States. One hot spots policing evaluation was conducted in Australia (Criminal Justice Commission 1998) and another was conducted in Argentina (DiTella and Schargrodsky 2004). Ten studies (52.6%) were completed in medium-sized cities with between 200,000 and 500,000 residents, seven studies (36.8%) were completed in large cities with more than 500,000 residents, and two studies were completed in smaller cities with less than 200,000 residents. Four cities were the research sites for multiple hot spots policing evaluations. Jersey City (NJ) was the site for three studies (Braga et al. 1999; Weisburd and Green 1995; Weisburd et al. 2006); while Minneapolis (MN) (Sherman, Buerger, and Gartin 1989; Sherman and Weisburd 1995), Kansas City (MO) (Sherman and Rogan 1995a, 1995b), and Philadelphia (Lawton et al. 2005; Ratcliffe et al. 2011) were the sites for two studies each. Fourteen of the eligible hot spots policing studies were published in peer-reviewed journals (73.7%), three were available as unpublished reports (15.8%), and two were available as published reports (10.5%).

Ten eligible studies used randomized controlled trials (52.6%) and nine eligible studies used quasi-experimental research designs (47.4%) to evaluate the effects of hot spots policing on crime. Five of the 19 eligible studies evaluated more than one hot spots policing intervention. In sum, the 19 eligible studies provided 25 distinct experimental and quasi-experimental tests of hot spots policing on crime. The Minneapolis RECAP experiment separately evaluated problem-oriented policing interventions at residential and commercial addresses (Sherman, Buerger, and Gartin 1989). The Vera Institute of Justice separately evaluated the Tactical Narcotics Team intervention at hot spots areas via quasi-experimental analyses in two separate New York Police Department precincts (Sviridoff et al. 1992). The Houston Targeted Beat Program quasi-experimental evaluation separately tested the

effects of problem-oriented policing, high-visibility patrol, and zero-tolerance policing on hot spots in targeted high-crime beats (Caeti 1999). The Jersey City Displacement and Diffusion study examined the impact of problem-oriented policing interventions on a prostitution hot spot and a drug crime hot spot in separate quasi-experiments (Weisburd et al. 2006). Finally, the Jacksonville Policing Violent Crime Hot Spots experiment separately tested the effects of direct-saturation patrol and problem-oriented policing on violent street crime (Taylor et al. 2011).

Across the 25 tests in the 19 eligible hot spots policing studies, problem-oriented policing was the evaluated in 13 of the tests (52%). Increased patrol strategies and drug enforcement operations were evaluated in five tests (20%) each. Zero-tolerance policing[4] was evaluated in one test in the Houston Targeted Beat Program quasi-experiment (Caeti 1999) and an intervention designed to increase gun searches and seizures was tested in the Kansas City Gun quasi-experimental evaluation (Sherman and Rogan 1995a). 17 of the 25 hot spots policing tests also included analyses to determine whether the hot spots policing intervention generated any immediate spatial crime displacement or diffusion of crime control benefits effects.

4.3 NARRATIVE REVIEW OF THE EFFECTS OF HOT SPOTS POLICING ON CRIME

This section provides a brief narrative review of the effects of the eligible hot spots policing interventions on crime. Table 2 summarizes the treatments, hot spot definitions, and research designs. Table 3 summarizes the main effects of the intervention on crime and disorder measures, treatment effects as measured by other non-official data sources, and, if measured, the immediate spatial displacement and diffusion of crime control benefits effects. A more detailed narrative review of the 19 hot spots policing studies and the 25 tests contained in the eligible studies is provided in Appendix 3.

4.3.1 Main Effects of Hot Spots Policing on Crime

A noteworthy majority of the hot spots policing evaluations concluded that hot spots policing programs generated significant crime control benefits in the treatment areas relative to the control areas. Only 5 of the 25 tests of hot spots policing interventions did not report noteworthy crime control gains associated with the approach. These five tests were the Minneapolis RECAP treatment at commercial addresses (Sherman, Buerger, and Gartin 1989), the New York Tactical Narcotics Team in the 70th Precinct (Sviridoff et al. 1992), the Beenleigh Calls for Service

4 "Zero tolerance" is a policy whereby law enforcement officials do not tolerate any disorder especially public order offences such as vagrancy, disorderly conduct, or soliciting for prostitution.

Project (Criminal Justice Commission 1998), the Houston Targeted Beat Program's problem-oriented policing intervention (Caeti 1999), and the Jacksonville direct-saturation patrol intervention (Taylor et al. 2011).

The largest crime control effects were reported by three quasi-experiments: the Buenos Aires Police Presence after Terror Attack study (75% reduction in motor vehicle theft at protected blocks; DiTella and Schargrodsky 2004), the Jersey City Displacement and Diffusion Study (58% reduction in drug crime events at targeted drug hot spot and 45% reduction in prostitution events at the targeted prostitution hot spot; Weisburd et al. 2006), and the Kansas City Gun Project (49% reduction in gun crime in the targeted area; Sherman and Rogan 1995a). Randomized controlled trials generally reported smaller crime control effects. The Kansas City Crack House Raids experiment reported the smallest crime control effect; treatment blocks experienced a statistically significant reduction in total calls for service that rapidly decayed over a two week period when compared to control blocks (Sherman and Rogan 1995b).

To test the statistical significance of the observed distribution of crime reduction effects reported by the 25 tests, we used an application of the binomial distribution known as the sign test (Blalock 1979). This simple test examines the probabilities of getting an observed proportion of successes from a population of equal proportions of successes and failures. 20 of the 25 tests (80%) of hot spots policing interventions in the 19 eligible studies reported noteworthy crime control gains. According to the sign test, this result was statistically significant (exact binomial two tailed probability = .0041).

4.3.2 Crime Displacement and Diffusion Effects of Hot Spots Policing

17 of the 25 tests (68.0%) examined whether focused police efforts were associated with crime displacement or diffusion of crime control benefits (see Table 3). Prior to a discussion of the research findings, it must be noted that it is very difficult to detect displacement effects, because the potential manifestations of displacement are quite diverse. As Barr and Pease (1990) suggest, "if, in truth, displacement is complete, some displaced crime will fall outside the areas and types of crime being studied or be so dispersed as to be masked by background variation... no research study, however massive, is likely to resolve the issue" (293). Diffusion effects are likely to be as difficult to assess. All 17 tests were limited to examining immediate spatial displacement and diffusion effects; that is, whether focused police efforts in targeted areas resulted in crime "moving around the corner" or whether these proximate areas experienced unintended crime control benefits.

Our review suggests that diffusion of crime control benefits effects were more likely to be observed than crime displacement. Only 3 of the 17 studies reported substantial immediate spatial displacement of crime into areas surrounding the targeted locations. The tests that reported statistically significant crime displacement effects were in the St. Louis Problem-Oriented Policing in Three Drug

Market Locations Study (Hope 1994), Jacksonville Problem-Oriented Policing at Violent Crime Hot Spots experiment (Taylor et al. 2011), and Philadelphia Foot Patrol experiment (Ratcliffe et al. 2011). However, eight tests suggested possible diffusion effects associated with the focused police interventions. The tests that reported statistically significant diffusion of crime control benefits effects were in the Jersey City DMAP experiment (Weisburd and Green 1995), Kansas City Gun Project (Sherman and Rogan 1995a), Houston Targeted Beat Program (two tests: areas surrounding the zero-tolerance beats and problem-oriented policing beats; Caeti, 1999), Oakland Beat Health study (Mazerolle et al. 2000), Philadelphia Drug Corners Crackdowns Project (Lawton et al. 2005), and the Jersey City Displacement and Diffusion Study (two tests : buffer zones surrounding the targeted prostitution hot spot and the targeted drug hot spots; Weisburd et al. 2006).

As with our simple assessment of main effects, we used the sign test to determine whether hot spots policing interventions generated statistically significant immediate spatial crime displacement. 14 of the 17 tests (82.4%) of spatial crime displacement did not report statistically significant movement of crime from targeted hot spots into surrounding areas. According to the sign test, this result was statistically significant (exact binomial two tailed probability = .0127).

4.3.3 Study Implementation

The majority of the eligible hot spots policing studies seemed to implement the desired treatment successfully. Seven studies (36.8% of 19), however, did report potential threats to the integrity of the treatment. The Minneapolis RECAP experiment showed no statistically significant differences in the prevalence of citizen calls for service at commercial addresses that received the problem-oriented policing treatment as compared to control commercial addresses (Sherman, Buerger, and Gartin 1989). These results were probably due to the assignment of too many cases to the RECAP unit, thus outstripping the amount of resources and attention the police officers provided to each address (Buerger 1993). Moreover, the simple randomization procedure led to the placing of some of the highest event addresses into the treatment group; this led to high variability between the treatment and control groups and low statistical power. Although the overall findings suggest that the RECAP program was not effective in preventing crime, a case study analysis revealed that several addresses experienced dramatic reductions in total calls for service (Buerger 1992: 1-6, 133-139, 327-331).

The Vera Institute of Justice evaluation of the Tactical Narcotics Teams noted that the intervention was not implemented as planned in one of the two treatment precincts (Sviridoff et al. 1992). In the 67th Precinct, 20% of the staffing of the Tactical Narcotics Team was re-assigned to another department initiative. As a result, the treatment in the 67th Precinct yielded fewer arrests and the maintenance of targeted drug hot spots by uniform patrol was shortened when compared to the treatment in the 70th Precinct.

The patrol treatment in the Minneapolis Hot Spots experiment (Sherman and Weisburd 1995: 638-639) was disrupted during summer months due to a peak in the overall calls for service received by the Minneapolis Police Department and a shortage of officers due to vacations; this situation was further complicated by changes in the computerized calls for service system implemented in the fall. The changes in the calls for service system and the disappearance of differences in patrol dosage between treatment and control hot spots during summer months were addressed by conducting separate outcome analyses using different intervention time periods; there were no substantive differences in the outcomes of the experiment across the different time periods.

The Jersey City DMAP experiment (Weisburd and Green 1995: 721) and Jersey City POP at Violent Places experiment (Braga 1997: 107-142) reported instances where the treatments were threatened by subversion by the participants. The officers charged with preventing crime at the treatment hot spots were resistant to participating in the programs and this resulted in low levels of treatment during the early months of both experiments. In the Jersey City DMAP experiment, this situation was remedied by providing a detailed crackdown schedule to the Narcotics Squad commander and extending the experiment from 12 months to 15 months. This problem was remedied in the Jersey City POP experiment by changing the leadership of the POP unit, developing an implementation accountability system, providing additional training in the problem-oriented policing approach, and through other smaller adjustments.

The Houston Beat Patrol Program reported that the three "high visibility" patrol beats managed by one substation experienced police resistance to the program (Caeti 1999). However, the evaluation suggested that the treatment was applied with enough integrity to measure possible impacts on reported crime outcomes. In the Jersey City Displacement and Diffusion Study, focused police attention was originally applied to three crime hot spots; unfortunately, the Police Foundation research team detected that the intervention was not being applied with an adequate dosage in the burglary hot spot and, as such, dropped the location from the evaluation (Weisburd et al. 2006).

Of course, these implementation problems are not unique to these hot spots policing experiments and quasi-experiments; many well-known criminal justice field experiments have experienced and successfully dealt with methodological difficulties.5 It is also important to note here that none of the eligible studies noted

5 The landmark Kansas City Preventive Patrol Experiment had to be stopped and restarted three times before it was implemented properly; the patrol officers did not respect the boundaries of the treatment and control areas (Kelling et al. 1974). Likewise, the design of the Minneapolis Spouse Abuse Experiment was modified to a quasi-experiment when randomization could not be achieved because officers chose to arrest certain offenders on a non-random basis (Berk, Smyth, and Sherman 1988).

problems with attrition. Since the units-of-analysis were places, this may have diminished common attrition issues commonly found in evaluations involving people as the units-of-analysis.

4.4 META-ANALYSIS OF THE EFFECTS OF HOT SPOTS POLICING ON CRIME

Our meta-analyses of the effects of hot spots policing programs on crime were limited to 16 of the 19 eligible studies. Two studies, the St. Louis Problem-Oriented Policing in Three Drug Market Locations Study (Hope 1994) and the Beenleigh (Australia) Calls for Service Project (Criminal Justice Commission 1998), did not report the necessary information to calculate program effect sizes. As described in Appendix 3, the Houston (TX) Targeted Beat Program (Caeti 1999) did not use appropriate statistical methods to estimate program effects and, unfortunately, accurate effect sizes could not be calculated. We were able to calculate effect sizes for 20 main effects tests and 13 displacement and diffusion tests in these 16 eligible studies.

Computation of effect sizes in the studies was not always direct. The goal was to convert all observed effects into a standardized mean difference effect size metric. None of the studies we examined calculated standardized effect sizes, and indeed, it was sometimes difficult to develop precise effect size metrics from published materials. This reflects a more general problem in crime and justice with "reporting validity" (Farrington, 2006; Lösel and Köferl, 1989), and has been documented in recent reviews of reporting validity in crime and justice studies (see Perry and Johnson, 2008; Perry et al., 2010).

As described earlier, David B. Wilson's Effect Size Calculator was used to calculate the standardized mean difference effect sizes for all outcomes in the eligible studies. For Minneapolis RECAP, we used the chi-square values comparing the difference in calls for service at RECAP and control targets before and after the intervention. We calculated effect sizes from exact p-values from the F tests used in the two-way analysis of variance calculations for calls for service data in the Jersey City DMAP experiment and the cutoff p-values from the OLS parameter estimates of enforcement months 1 – 6 effects on drug calls in the Pittsburgh Police Raids at Nuisance Bars quasi-experiment. For the Kansas City Gun Project, Philadelphia Drug Corners Crackdowns, Jersey City Displacement and Diffusion Study, and the Buenos Aires Terror Attack Study, we calculated standardized mean effect sizes based on the t-test results reported for the intervention variables' effects on the outcome variables.6 For the remaining studies, we calculated odds ratios based on reported pre-test and post-test (or intervention period) crime outcome counts for

6 If t-tests were not reported, we calculated these statistics by dividing the reported coefficient by the reported standard error.

treatment and control groups; we calculated the variance of the odds ratios following the method outlined in the Appendix of Farrington et al. (2007). In Appendix 4, we provide effect sizes for each outcome for the 20 tests. In Appendix 5, we provide effect sizes for each outcome for the 13 displacement and diffusion tests.

Using the overall mean effect size from each study for 20 main effects tests, the forest plots in Figure 1 show the standardized difference in means between the treatment and control or comparison conditions (effect size) with a 95 percent confidence interval plotted around them for all tests. Points plotted to the right of 0 indicate a treatment effect; in this case, the test showed a reduction in crime or disorder. Points to the left of 0 indicate a backfire effect where control conditions improved relative to treatment conditions. Since the Q statistic which was significant at the $p < .05$ level ($Q = 184.021$, $df = 19$, $p < 0.000$), we used a random effects model to estimate the overall mean effect size based on a heterogeneous distribution of effect sizes. The meta-analysis of effect sizes suggests an effect in favor of hot spots policing strategies ($p<.001$). However, the overall effect size for these studies is .184; this would be considered a small mean effect size (see Cohen, 1988).

Seventeen tests reported effect sizes that favor treatment conditions over control conditions. The Kansas City Gun quasi-experiment (.866), Philadelphia Drug Corners Crackdown quasi-experiment (.855), and Buenos Aires Police Presence after Terror Attack quasi-experiment (.617) tests reported the largest statistically significant effect sizes while the Minneapolis Hot Spots Patrol experiment (.061) reported the smallest statistically significant effect size. The forest plots in Figures 2 and 3 present the meta-analyses of the largest and smallest effect sizes for each study, respectively.7 For the largest effect size meta-analysis, the overall standardize mean difference effect size was moderate (.278) and statistically significant at the $p < .05$ level. For the smallest effect size meta-analysis, the overall standardize mean difference effect size was small (.155) and statistically significant at the $p < .05$ level. Table 4 presents mean effect sizes for the effects of hot spots policing programs on violent crime, property crime, drug offense, and disorder offense outcomes. Hot spots policing programs produced statistically-significant ($p <.05$) positive mean effect sizes for drug offense outcomes (.249), violent crime outcomes (.175), and disorder offense outcomes (.151). Hot spots policing programs also produced a positive but smaller mean effect size for property crime outcomes (.084) that was statistically significant at a less restrictive level ($p <.10$).

Given the important distinction in methodological quality between the randomized controlled trials and quasi-experimental evaluation studies, we also examined research design as a moderator variable. Figure 4 presents a random effects model

7 Random effects models were used to estimate the overall standardized mean effect sizes. For the largest effect size meta-analysis, $Q = 217.994$, $df = 19$, $p < 0.000$. For the smallest effect size meta-analysis, $Q = 182.513$, $df = 19$, $p < 0.000$.

examining the two different classes of evaluation designs included in this review.8 Consistent with prior research suggesting that weaker designs are more likely to report stronger effects in crime and justice studies (Weisburd et al. 2001; Welsh et al. 2011), the quasi-experimental designs were associated with a much larger within-group effect size (.325, p <.05) relative to the randomized controlled trial designs (.116, p <.05).

4.4.1 Meta-Analysis of Displacement and Diffusion Effects

In this analysis, we analyzed crime displacement and diffusion effects jointly as two sides of a single distribution that ranged from harmful to beneficial effects. Using the overall mean effect size from each study for 13 displacement and diffusion tests, the forest plots in Figure 5 show the standardized difference in means between the treatment and control or comparison conditions (effect size) with a 95 percent confidence interval plotted around them for all tests. Points plotted to the right of 0 indicate a diffusion of crime control benefits effect; in this case, the test showed a reduction in crime or disorder in the areas surrounding the targeted hot spots. Points to the left of 0 indicate a crime displacement effect. Since the Q statistic which was significant at the p < .05 level (Q = 22699.482, df = 12, p = 0.000), we used a random effects model to estimate the overall mean effect size based on a heterogeneous distribution of effect sizes. The meta-analysis suggests a small but statistically significant overall diffusion of crime control benefits effect (.104) generated by the hot spots policing strategies (p<.001).

Nine tests reported effect sizes that favor diffusion effects over displacement effects. The Philadelphia Drug Corners Crackdown quasi-experiment (.580), Jersey City Displacement and Diffusion Study quasi-experiments (buffers around prostitution site = .395, buffers around drug crime site = .124),9 Oakland Beat Health experiment (.160), Jersey City Problem-Oriented Policing at Violent Places experiment (.049), Lowell Policing Crime and Disorder Hot Spots experiment (.013), and Boston Safe Street Teams quasi-experiment (.009) reported statistically significant diffusion effects. Four tests reported effect sizes that favor displacement effects over diffusion effects. Only the Philadelphia Foot Patrol experiment reported a statistically significant displacement effect (-.057). The forest plots in Figures 6

8 We used a random effects model for this comparison. For the quasi-experiments, Q = 64.257, df = 8, p<0.000. For the randomized controlled trials, Q= 33.581, df = 10, p<0.000. For the overall analysis, the Between Group Q = 86.182, df = 1, p<0.000.

9 The Jersey City Displacement and Diffusion Study quasi-experiment measured separate displacement and diffusion effects for one-block and two-block buffer zones surrounding the targeted prostitution and drug crime hot spots. The Buenos Aires Police Presence after Terror Attack quasi-experiment measured treatment effects on blocks immediately surrounding the block with the protected Jewish center and blocks one removed from the block with the protected Jewish center. For both studies, distinct effect sizes were calculated for each of the two sets of buffer areas.

and 7 present the meta-analyses of the largest and smallest effect sizes for each study, respectively.10 Both meta-analyses estimated overall effect sizes that favored diffusion effects over displacement effects. For the largest effect size meta-analysis, the overall standardize mean difference effect size was small (.136) and statistically significant at the $p < .05$ level. For the smallest effect size meta-analysis, the overall standardize mean difference effect size was also small (.071) and statistically significant at the $p < .05$ level. We also examined the impact of research design on displacement and diffusion effect sizes. Consistent with our analyses of main effects, the quasi-experimental designs were associated with a larger within-group diffusion effect size (.140, $p < .05$) relative to the randomized controlled trial designs (.049, $p < .05$) (Figure 8).

4.4.2 Program Type as Effect Size Moderator

Our narrative review documented that hot spots policing programs have adopted problem-oriented policing, focused drug enforcement, increased patrol, increased gun searches and seizures, and zero-tolerance policing to control high-activity crime places. Problem-oriented policing programs attempt to change the underlying conditions at hot spots that cause them to generate recurring crime problems (Goldstein 1990). The other hot spots policing interventions represent increased traditional policing activities concentrated at specific places to prevent crime through general deterrence and increased risk of apprehension. There is, of course, some overlap between the enforcement interventions employed by the problem-oriented policing hot spots programs and the actions taken by the increased policing hot spots programs. However, these two general types of programs represent fundamentally different orientations in dealing with the problems of high-activity crime places.

Moderator variables help to explain and understand differences across studies in the outcomes observed. Program type could be an influential moderator of the observed effect sizes in our overall meta-analysis. Figure 9 presents a random effects model examining the two different program types: problem-oriented policing and increased policing.11 Our meta-analysis revealed that problem-oriented policing programs produced a larger overall mean effect size (.232, $p < .000$) that was twice the size of the increased traditional policing overall mean effect size (.113, $p < .000$). Table 3 also compares the effects of problem-oriented policing programs relative to

10 Random effects models were used to estimate the overall standardized mean effect sizes. For the largest effect size meta-analysis, Q = 215.154, df = 18, $p = 0.000$. For the smallest effect size meta-analysis, Q = 178.851, df = 18, $p = 0.000$.

11 A random effects model was used because the within-group effect size variation was determined to be heterogeneous for the two program types. For problem-oriented policing programs, Q = 51.718, df = 9, $p = 0.000$. For increased policing programs, Q = 42.615, df = 9, $p = 0.000$. The between Q = 89.688, df = 1, $p = 0.000$.

increased traditional policing programs for specific crime outcome types. It is important to note here that there are a relatively small number of studies in each of the police program type subcategories within the crime outcome categories; the small number of cases impacts the precision of the estimates and increases the widths of confidence intervals. As Table 3 reveals, the 95% confidence intervals overlap for these two distinct types of police interventions in the violent crime, property crime, and drug offense categories. This suggests that the mean effect sizes for the subcategories may not be dissimilar. Nevertheless, problem-oriented policing interventions generated larger mean effect size point estimates relative to increased policing interventions for all crime outcome categories. The most noteworthy differences were in property crime category (increased policing did not generate a statistically-significant mean effect size while problem-oriented policing did) and the disorder offense category (95% confidence intervals do not overlap).

Finally, we also examined the crime displacement and diffusion of crime control benefits effects reported in evaluations of these two general types of hot spots policing programs. Problem-oriented policing programs produced a small but statistically-significant overall diffusion of benefits effect (.093, $p < .05$) in areas immediately surrounding the treatment hot spots relative to areas immediately surrounding the control hot spots. While increased policing programs also produced a small diffusion of benefits effect, it was not statistically significant.

4.4.3 Publication Bias

Publication bias presents a strong challenge to any review of evaluation studies (Rothstein 2008). Campbell reviews, such as ours, take a number of steps to reduce publication bias, as represented by the fact that three of the 19 eligible studies in our review came from unpublished sources. Wilson (2009) has argued moreover that there is often little difference in methodological quality between published and unpublished studies suggesting the importance of searching the "grey literature." Our extensive search procedures, the use of an information retrieval specialist (Phyllis Schultze), and the mobilization of an extensive network of police scholars made it unlikely that relevant unpublished works would remain hidden from this review.

We used the trim-and-fill procedure (Duval and Tweedie 2000) to estimate the effect of potential data censoring, such as publication bias, on the outcome of the meta-analyses. The diagnostic funnel plot is based on the idea that, in the absence of bias, the plot of study effect sizes should be symmetric about the mean effect size. If there is asymmetry, the trim-and-fill procedure imputes the missing studies, adds them to the analysis, and then re-computes the mean effect size.

A visual inspection of the resulting funnel plot indicated some asymmetry with more studies with a large effect and a large standard error to the right of the mean than the left of the mean. The trim-and-fill procedure determined that two studies should be added to create symmetry. The funnel plot with imputed studies is presented in

Figure 10. These additional studies only slightly changed the mean effect size estimate. Using a random effects model, the mean random effect decreased from 0.184 (95% *CI* = 0.115, 0.252) to 0.164 (95% *CI* = 0.095, 0.233). Indeed, the 95 percent confidence intervals substantially overlap, suggesting that the mean effect sizes are likely to be the same.

5 Conclusion

The results of this systematic review support the assertion that focusing police efforts at high activity crime places can be effective in preventing crime (Braga 2008; Eck 1997, 2002; Skogan and Frydl, 2004; Weisburd and Eck 2004). Our systematic review identified 25 tests of hot spots policing in 19 eligible studies. Twenty of the 25 tests reported noteworthy crime control gains associated with the hot spots policing interventions when treatment conditions were compared to control conditions. A meta-analysis of key reported outcome measures revealed a small but statistically significant mean effect size favoring the effects of hot spots policing in reducing crime in treatment places relative to control places. The extant evaluation research seems to provide fairly robust evidence that hot spots policing is an effective crime prevention strategy.

As this systematic review was in its final stages of approval, three new unpublished randomized controlled trials of hot spots policing were completed. All three experiments reported significant crime control gains and further strengthen the conclusions of this systematic review.[12]

Due to data limits, the current state-of-the-art in assessing crime displacement has focused mostly on figuring out if crime simply moved elsewhere (Braga 2008; Weisburd and Green 1995b). To some observers, establishing the absence of a displacement effect is fundamentally impossible because the potential manifestations of displacement are quite diverse (Barr and Pease 1990). In this review, 17 studies measured potential immediate spatial displacement and diffusion

[12] Cody Telep, Renee Mitchell, and David Weisburd completed a hot spots policing patrol experiment in Sacramento, California, that found significant declines in both calls for service and crime incidents in the treatment hot spots relative to the controls as a result of the intervention (randomly rotating police officers for 15 minutes patrol in each treatment hot spot). David Weisburd and Police Foundation colleagues conducted a hot spots policing patrol experiment involving Automated Vehicle Locator (AVL) technology that reported knowledge of AVL increased the amount of patrol delivered in the experimental hot spots, and decreased crime measured weekly. Barak Ariel and Lawrence Sherman led an experiment in the London Underground that randomly allocated either solo or double police patrols to half of hot spots (officers patrolled the platforms for one hour, during hot hours and hot days shifts; 15 minutes at a time, four times per shift). Preliminary analyses suggest that the difference in both crime and calls for service is over 25% lower in the targeted platforms than in the controls.

effects. When displacement was measured, it was very limited and unintended crime prevention benefits were more likely to be associated with the hot spots policing programs. A meta-analysis of key reported outcome measures in the areas surrounding targeted hot spots revealed a small but statistically significant mean effect size favoring a diffusion of crime control benefits rather than a crime displacement effect. Based on this encouraging evidence, it seems that focusing police efforts on high-activity crime places does not inevitably lead to crime displacement and crime control benefits may diffuse into the areas immediately surrounding the targeted locations (see also Bowers et al. 2011).

Ten of the 19 eligible studies in this reviewed used randomized controlled trials to evaluate the effects of hot spots policing on crime. When research design was considered as an effect size moderator, our meta-analysis reported that the quasi-experimental evaluation generated large overall effect sizes when compared to the randomized controlled trials. While the biases in quasi-experimental research are not clear (e.g. Campbell and Boruch 1975; Wilkinson and Task Force on Statistical Inference 1999), recent reviews in crime and justice suggest that weaker research designs often lead to more positive outcomes (e.g. see Weisburd, Lum, and Petrosino 2001; Welsh et al. 2011). This does not mean that non-experimental studies cannot be of high quality, but only that there is evidence that non-experimental designs in crime and justice are likely to overstate outcomes as contrasted with randomized experiments.

Beyond thinking about the relative crime prevention value of these programs, we need to know more about community reaction to increased levels of police enforcement action. Police effectiveness studies have traditionally paid little attention to the effects of policing practices upon citizen perceptions of police legitimacy (Tyler 2000, 2001). Does the concentration of police enforcement efforts lead citizens to question the fairness of police practices? As suggested by the Kansas City gun quasi-experiment, there is some evidence that residents of areas that are subjected to hot spots policing welcome the concentration of police efforts in problem places (Shaw 1995). The Lowell Policing Crime and Disorder Hot Spots experiment noted that community members in treated hot spot areas noticed the increased police presence and its desirable impacts on local disorder problems (Braga and Bond 2009). The Jersey City Problem-Oriented Policing in Violent Places experiment also reported that community members often perceived that the focused police problem-solving attention improved disorder problems in the treatment hot spots (Braga 1997).

Nonetheless, focused aggressive police enforcement strategies have been criticized as resulting in increased citizen complaints about police misconduct and abuse of force in New York City (Greene 1999). Rosenbaum (2006) cautions that hot spots policing can easily become zero-tolerance and indiscriminate aggressive tactics can drive a wedge between the police and communities. A recent evaluation of the adverse system side effects of Operation Sunrise, described here as the Philadelphia Drug Corners Crackdown, found that initiative strained the local judicial system by

generated a high volume of arrests that resulted in a significant increase in fugitive defendants (Goldkamp and Vilcica 2008). Short-term crime gains produced by particular types of hot spots policing initiatives could undermine the long-term stability of specific neighborhoods through the increased involvement of mostly low-income minority men in the criminal justice system. The potential impacts of hot spots policing on legitimacy may depend in good part on the types of strategies used and the context of the hot spots affected. Whatever the impact, we need to know more about the effects of hot spots policing approaches on the communities that the police serve.

In our review, we found that problem-oriented policing interventions generated larger overall effect sizes when compared to the increased policing interventions. While arresting offenders remains a central strategy of the police and a necessary component of the police response to crime hot spots, it seems likely that altering place characteristics and dynamics will produce larger and longer-term crime prevention benefits (Braga and Weisburd 2010). We believe that the problem-oriented policing approach holds great promise in developing tailored responses to very specific recurring problems at crime hot spots. While it is difficult for police agencies to implement the "ideal" version of problem-oriented policing (Braga and Weisburd 2006; Cordner and Reidel 2005; Eck 2006), we believe that even "shallow" problem solving better focuses police crime prevention efforts at crime hot spots. Implementing situational prevention strategies that reduce police reliance on aggressive enforcement strategies may also yield positive benefits for police-community relations.

6 Plans for Updating the Review

We plan to update this review every five years in accordance with Campbell Collaboration guidelines.

7 Acknowledgements

Earlier iterations of this systematic review were supported in part by funds from the Smith Richardson Foundation and the U.S. National Academy of Sciences. David B. Wilson deserves special thanks for his analytic support (and patience) in the completing the meta-analysis. We would also like to thank Phyllis Schultze of Rutgers University's Criminal Justice Library, Rosalyn Bocker, and Deborah Braga for their assistance in searching for and locating eligible studies. David Weisburd, Larry Sherman, Mark Lipsey, Anthony Petrosino, Brandon Welsh, Charlotte Gill, Cynthia Lum, and David Farrington also deserve thanks for making helpful comments on earlier iterations of this review. Finally, we would like to thank David Weisburd, Josh Hinkle, and Cody Telep for sharing data from their problem-oriented policing systematic review and Bruce Taylor, Christopher Koper, and Daniel Woods for sharing data from their hot spots policing randomized controlled trial.

8 References

Barr, R., & Pease, K. (1990). Crime placement, displacement, and deflection. In M. Tonry & N. Morris (Eds.), *Crime and justice: A review of research* (vol. 12, pp. 277-318) Chicago: University of Chicago Press.

Berk, R., Smyth, G., & Sherman, L. (1988). When random assignment fails: Some lessons from the Minneapolis spouse abuse experiment. *Journal of Quantitative Criminology* 4, 209-23.

Bittner, E. (1970). *The functions of the police in modern society*. New York: Aronson.

Bowers, K., Johnson, S., Guerette, R., Summers, L., & Poynton, S. (2011). *Spatial displacement and diffusion of benefits among geographically focused policing initiatives.* Campbell Systematic Reviews DOI: 10.4073/csr.2011.3.

Braga, A. (1997). *Solving violent crime problems: An evaluation of the Jersey City police department's pilot program to control violent places.* Ph.D. diss., Rutgers University. Ann Arbor, MI: University Microfilms International.

Braga, A. (2001). The effects of hot spots policing on crime. *Annals of the American Academy of Political and Social Science* 578, 104 – 25.

Braga, A. (2005). Hot spots policing and crime prevention: A systematic review of randomized controlled trials. *Journal of Experimental Criminology* 1, 317 – 342.

Braga, A. (2007). *The effects of hot spots policing on crime*. Campbell Systematic Reviews DOI:10.4073/csr.2007.1

Braga, A. (2008). *Problem-oriented policing and crime prevention.* 2nd ed. Monsey, NY: Criminal Justice Press.

Braga, A., & Bond, B. (2009). Community perceptions of police crime prevention efforts: Using interviews in small areas to evaluate crime reduction strategies. In J. Knutsson & N. Tilley (Eds.), *Evaluating crime reduction* (pp. 85 - 120). Monsey, New York: Criminal Justice Press.

Braga, A., & Weisburd, D. (2010). *Policing problem places: Crime hot spots and effective prevention.* New York: Oxford University Press.

Braga, A., & Weisburd, D. (2006). Problem-oriented policing: The disconnect between principles and practice. In D. Weisburd & A. Braga (Eds.), *Police*

innovation: Contrasting perspectives (pp. 133 – 154). New York: Cambridge University Press.

Brantingham, P., & Brantingham, P. (Eds). (1991). *Environmental criminology*. 2nd ed.Prospect Heights, IL: Waveland Press.

Buerger, M. (Ed). (1992). *The crime prevention casebook: Securing high crime locations.* Washington, DC: Crime Control Institute.

Buerger, M. (1993). *Convincing the recalcitrant: An examination of the Minneapolis RECAP experiment.* Ph.D. diss., Rutgers University. Ann Arbor, MI: University Microfilms International.

Campbell, D.T., & Boruch, R. (1975). Making the case for randomized assignment to treatment by considering the alternatives: Six ways in which quasi-experimental evaluations in compensatory education tend to underestimate effects. In C. Bennett & A. Lumsdaine (Eds.), *Evaluation and experiment: Some critical issues in assessing social programs* (pp. 195 – 296). New York: Academic Press.

Campbell, D.T., & Stanley, J. (1966). *Experimental and quasi-experimental designs for research*. Chicago: Rand McNally.

Clarke, R.V., & Felson, M. (Eds.) (1993). *Routine activity and rational choice. Advances in criminological theory* (vol. 5). New Brunswick, NJ: Transaction Press.

Clarke, R.V., & Harris, P. (1992). Auto theft and its prevention. In M. Tonry (Ed.), *Crime and justice: A review of research* (vol. 16, pp. 1-54). Chicago: University of Chicago Press.

Clarke, R.V., & Weisburd, D. (1994). Diffusion of crime control benefits: Observations on the reverse of displacement. *Crime Prevention Studies* 2, 165-84.

Cohen, J. (1988). *Statistical power analysis for the behavioral sciences*. 2nd ed. Hillsdale, NJ: Lawrence Erlbaum.

Cohen, L., & Felson, M. (1979). Social change and crime rate trends: A routine activity approach. *American Sociological Review* 44, 588-605.

Cook, T. & Campbell, D.T. (1979). *Quasi-experimentation: Design and analysis issues for field settings*. Boston: Houghton Mifflin.

Cordner, G., & Biebel, E. (2005). Problem-oriented policing in practice. *Criminology and Public Policy* 4, 155 – 180.

Cornish, D., & Clarke, R.V. (1987). Understanding crime displacement: An application of rational choice theory. *Criminology* 25, 933-947.

Duval, S., & Tweedie, R. (2000). A nonparametric “trim and fill” method of accounting for publication bias in meta-analysis. *Journal of the American Statistical Association* 95, 89-98.

Eck, J. (1997). Preventing crime at places. In University of Maryland, Department of Criminology and Criminal Justice (Eds.), *Preventing crime: What works, what doesn't, what's promising* (pp. 7-1 – 7-62). Washington, DC: Office of Justice Programs, U.S. Department of Justice.

Eck, J. (2002). Preventing crime at places. In L. Sherman, D. Farrington, B.Welsh, & D. L. MacKenzie (Eds.), *Evidence-based crime prevention* (pp. 241-294). New York: Routledge.

Eck, J. (2006). Science, values, and problem-oriented policing: Why problem-oriented policing? In D. Weisburd & A. Braga (Eds.), *Police innovation: Contrasting perspectives* (pp. 117 – 132). New York: Cambridge University Press.

Eck, J., & Maguire, E. (2000). Have changes in policing reduced violent crime? An assessment of the evidence. In A. Blumstein & J. Wallman (Eds.), *The crime drop in America* (pp. 207 – 265). New York: Cambridge University Press.

Eck, J., & Weisburd, D. (1995). Crime places in crime theory. In J. Eck & D. Weisburd (Eds.), *Crime and place* (pp. 1-34). Monsey, NY: Criminal Justice Press.

Farrington, D. (2006). Methodological quality and the evaluation of anti-crime programs.*Journal of Experimental Criminology* 2, 329-327.

Farrington, D., Gill, M., Waples, S., & Argomaniz, J. (2007). The effects of closed-circuit television on crime: Meta-analysis of an English national quasi-experimental multi-site evaluation. *Journal of Experimental Criminology* 3, 21 – 38.

Farrington, D., & Petrosino, A. (2001). The Campbell Collaboration Crime and Justice Group. *Annals of the American Academy of Political and Social Science* 578, 35-49.

Goldkamp, J., & Vilcica, E. (2008). Targeted enforcement and adverse system side effects: The generation of fugitives in Philadelphia. *Criminology* 46, 371 – 410.

Goldstein, H. (1990). *Problem-oriented policing*. Philadelphia: Temple University Press.

Green, L. (1996). *Policing places with drug problems*. Thousand Oaks, CA: Sage Publications.

Greene, J. A. (1999). Zero tolerance: A case study of police practices and policies in New York City. *Crime and Delinquency* 45, 171-81.

Hawley, A. (1944). Ecology and human ecology. *Social Forces* 23, 398-405.

Hawley, A. (1950). *Human ecology: A theory of urban structure*. New York: Ronald Press.

Hunter, R., & Jeffrey, C.R. (1992). Preventing convenience store robbery through environmental design. In R. Clarke (Ed.), *Situational crime prevention:*

Successful case studies (pp. 194-204). Albany, New York: Harrow and Heston.

Kelling, G., Pate, A., Dickman, D., & Brown, C. (1974). *The Kansas City preventive patrol experiment: A technical report.* Washington, DC: Police Foundation.

Lipsey, M., & Wilson, D.B. (2001). *Practical meta-analysis*. Applied social research methods series (vol. 49). Thousand Oaks, CA: Sage Publications.

Lösel, F., & Köferl, P. (1989). Evaluation research on correctional treatment in West Germany: A meta-analysis. In H. Wegener, F. Lösel, & J. Haisch (Eds.), *Criminal behavior and the justice system* (pp. 334-355). New York: Springer.

Mazerolle, L., Soole, D., & Rombouts, S. (2007). *Street level drug law enforcement: A meta-analytic review*. Campbell Systematic Reviews, DOI: 10.4073/csr.2007.2.

Pease, K. (1991). The Kirkholt project: Preventing burglary on a British public housing estate. *Security Journal* 2, 73-77.

Perry, A., & Johnson, M. (2008). Applying the consolidated standards of reporting trials (CONSORT) to studies of mental health provision for juvenile offenders: A research note. *Journal of Experimental Criminology* 4, 165-185.

Perry, A., Weisburd, D., & Hewitt, C. (2010). Are criminologists reporting experiments in ways that allow us to assess them? *Journal of Experimental Criminology* 6, 245 – 263.

Pierce, G., Spaar, S., & Briggs, L. 1988. *The character of police work: Strategic and tactical implications.* Boston, MA: Center for Applied Social Research, Northeastern University.

Police Executive Research Forum (2008). *Violent crime in America: What we know about hot spots enforcement.* Washington, DC: Police Executive Research Forum.

Reppetto, T. (1976). Crime prevention and the displacement phenomenon. *Crime & Delinquency* 22, 166-77.

Rosenthal, R. (1994). Parametric measures of effect size. In H. Cooper & L. Hedges (Eds.), *The handbook of research synthesis* (pp. 231-244). New York: Russell Sage Foundation.

Rothstein, H.R. (2008). Publication bias as a threat to the validity of meta-analytic results. *Journal of Experimental Criminology* 4, 61-81.

Shaw, C., & McKay, H. (1942). *Juvenile delinquency and urban areas*. Chicago: University of Chicago Press.

Shaw, J. (1995). Community policing against guns: Public opinion of the Kansas City gun experiment. *Justice Quarterly* 12, 695-710.

Sherman, L. (1990). Police crackdowns: Initial and residual deterrence. In M. Tonry & N. Morris (Eds.), *Crime and justice: A review of research* (vol. 12, pp. 1-48). Chicago: University of Chicago Press.

Sherman, L. (1997). Policing for crime prevention. In University of Maryland, Department of Criminology and Criminal Justice (Eds.), *Preventing crime: What works, what doesn't, what's promising* (pp. 8-1 – 8-58). Washington, DC: Office of Justice Programs, U.S. Department of Justice.

Sherman, L. (2002). Fair and effective policing. In J.Q. Wilson & J. Petersilia (Eds.), *Crime: Public policies for crime control* (pp. 383-412). Oakland, CA: Institute for Contemporary Studies Press.

Sherman, L., Gartin, P., & Buerger, M. (1989). Hot spots of predatory crime: Routine activities and the criminology of place. *Criminology* 27, 27-56.

Skogan, W., & Frydl, K. (Eds.) (2004). *Fairness and effectiveness in policing: The evidence.* Committee to Review Research on Police Policy and Practices. Washington, DC: The National Academies Press.

Taylor, R., & Gottfredson, S. (1986). Environment design, crime, and prevention: An examination of community dynamics. In A.J. Reiss & M. Tonry (Eds.), *Communities and crime* (pp. 387 – 416). Chicago: University of Chicago Press.

Tyler, T. (2000). Social justice: Outcomes and procedures. *International Journal of Psychology* 35, 117-125.

Tyler, T. (2001). Public trust and confidence in legal authorities: What do majority and minority groups members want from the law and legal institutions? *Behavioral Sciences and the Law* 19, 215-235.

Weisburd, D. (1997). *Reorienting crime prevention research and policy: From causes of criminality to the context of crime.* Research report. Washington, DC: National Institute of Justice, U.S. Department of Justice.

Weisburd, D., & Braga, A. (2003). Hot spots policing. In H. Kury & J. Obergfell-Fuchs (Eds.), *Crime prevention: New approaches* (pp. 337-354). Mainz, Germany: Weisser Ring.

Weisburd, D., & Eck, J. (2004). What can police do to reduce crime, disorder, and fear? *Annals of the American Academy of Political and Social Science* 593, 42-65.

Weisburd, D., & Green, L. (1994). Defining the street level drug market. In D. MacKenzie and C. Uchida (Eds.), *Drugs and crime: Evaluating public policy initiatives* (pp. 61-76). Thousand Oaks, CA: Sage Publications.

Weisburd, D., & Green, L. (1995b). Measuring immediate spatial displacement: Methodological issues and problems. In J. Eck & D. Weisburd (Eds.), *Crime and place* (pp. 349-361). Monsey, NY: Criminal Justice Press.

Weisburd, D., Lum, C., & Perosino, A. (2001). Does research design affect study outcomes in criminal justice? *Annals of the American Academy of Political and Social Science* 578, 50 -70.

Weisburd D., Telep, C., Hinkle, J., & Eck, J. (2008). *The effects of problem-oriented policing on crime and disorder*. Campbell Systematic Reviews, DOI: 10.4073/csr.2008.14.

Weisburd, D., Maher, L., & Sherman, L. (1992). Contrasting crime general and crime specific theory: The case of hot spots of crime. *Advances in Criminological Theory* (vol. 4, pp. 45-69). New Brunswick, NJ: Transaction Press.

Weisburd, D., Mastrofski, S., McNally, A.M., Greenspan, R., & Willis, J. (2003). Reforming to preserve: Compstat and strategic problem solving in American policing. *Criminology and Public Policy* 2, 421 – 456.

Welsh, B., Peel, M., Farrington, D., Elffers, H., & Braga, A. (2011). Research design influence on study outcomes in crime and justice: A partial replication with public area surveillance." *Journal of Experimental Criminology* 7, 183-198.

Werthman, C., & Piliavin, I. (1967). Gang members and the police. In D. Bordua (Ed.), *The police: Six sociological essays* (pp. 56-98). New York: John Wiley and Sons.

Wilkinson, L., & Task Force on Statistical Inference. (1999). Statistical methods in psychology journals: guidelines and expectations. *American Psychologist* 54, 594 – 604.

Wilson, D.B. (2001). Meta-analytic methods for criminology. *Annals of the American Academy of Political and Social Science* 578, 71-89.

Wilson, D. B. (2009). Missing a critical piece of the pie: Simple document search strategies inadequate for systematic reviews. *Journal of Experimental Criminology* 5, 249 – 440.

9 Studies Included in Systematic Review

Braga, A., & Bond, B. (2008). Policing crime and disorder hot spots: A randomized controlled trial. *Criminology*, 46 (3): 577 – 608.

Braga, A., Hureau, D., & Papachristos, A. (2011). An ex-post-facto evaluation framework for place-based police interventions. Unpublished manuscript.

Braga, A., Weisburd, D., Waring, E., Mazerolle, L.G., Spelman, W., & Gajewski, F. (1999). Problem-oriented policing in violent crime places: A randomized controlled experiment. *Criminology* 37, 541-80.

Caeti, T. (1999). *Houston's targeted beat program: A quasi-experimental test of police patrol strategies.* Ph.D. diss., Sam Houston State University. Ann Arbor, MI: University Microfilms International.

Cohen, J., Gorr, W., & Singh, P. (2003). Estimating intervention effects in varying risk settings: Do police raids reduce illegal drug dealing at nuisance bars? *Criminology*, 41 (2): 257 – 292.

Criminal Justice Commission. (1998). *Beenleigh calls for service project: Evaluation report.* Brisbane, Queensland, AUS: Criminal Justice Commission.

DiTella, R., & Schargrodsky, E. 2004. Do police reduce crime? Estimates using the allocation of police forces after a terrorist attack. *American Economic Review* 94, 115 – 133.

Hope, T. (1994). Problem-oriented policing and drug market locations: Three case studies. *Crime Prevention Studies* 2, 5-32.

Lawton, B., Taylor, R., & Luongo, A. (2005). Police officers on drug corners in Philadelphia, drug crime, and violent crime: Intended, diffusion, and displacement impacts. *Justice Quarterly* 22, 427 – 451.

Mazerolle, L., Price, J., & Roehl, J. (2000). Civil remedies and drug control: a randomized field trial in Oakland, California. *Evaluation Review, 24,* 212 – 241.

Ratcliffe, J., Taniguchi, T., Groff, E., & Wood, J. (2011). The Philadelphia foot patrol experiment: A randomized controlled trial of police patrol effectiveness in violentcrime hot spots. Criminology (in press).

Sherman, L., Buerger, M., & Gartin, P. (1989). *Beyond dial-a-cop: A randomized test of Repeat Call Policing (RECAP)*. Washington, DC: Crime Control Institute.

Sherman, L., & Rogan, D. (1995a). Effects of gun seizures on gun violence: 'Hot spots' patrol in Kansas City. *Justice Quarterly* 12, 673-694.

Sherman, L., & Rogan, D. (1995b). Deterrent effects of police raids on crack houses: A randomized controlled experiment. *Justice Quarterly* 12, 755-82.

Sherman, L., & Weisburd, D. (1995). General deterrent effects of police patrol in crime hot spots: A randomized controlled trial. *Justice Quarterly* 12, 625-648.

Sviridoff, M., Sadd, S., Curtis, R., & Grinc, R. (1992). *The neighborhood effects of street-level drug enforcement: tactical narcotics teams in New York*. New York: Vera Institute of Justice.

Taylor, B., Koper, C., & Woods, D. (2011). A randomized controlled trial of different policing strategies at hot spots of violent crime. *Journal of Experimental Criminology* 7, 149-181.

Weisburd, D., & Green, L. (1995a). Policing drug hot Spots: The Jersey City DMA experiment. *Justice Quarterly* 12, 711-36.

Weisburd, D., Wyckoff, L., Ready, J., Eck, J., Hinkle, J., and Gajewski, F. (2006). Does crime just move around the corner? A controlled study of spatial displacement and diffusion of crime control benefits. *Criminology* 44, 549 – 592.

10 Tables

10.1 CHARACTERISTICS OF ELIGIBLE HOT SPOTS POLICING EVALUATIONS

Characteristics		N	Percent
Evaluation country, N =19	United States	17	89.5
	Argentina	1	5.3
	Australia	1	5.3
City population, N=19	Small (< 200,000 residents)	2	10.6
	Medium (200,000 – 500,000 residents)	10	52.6
	Large (> 500,000 residents)	7	36.8
Evaluation type, N=19	Randomized controlled trial	10	52.6
	Quasi-experimental design	9	47.4
Publication type, N=19	Peer-reviewed journal	14	73.7
	Unpublished report	3	15.8
	Published report	2	10.5
Intervention type, N=25	Problem-oriented policing	13	52
	Increased patrol (foot or car)	5	20
	Drug enforcement operations	5	20
	Increased gun searches and seizures	1	4
	Zero-tolerance policing	1	4
Displacement / diffusion measurement, N=25	Did measure displacement / diffusion effects	17	68
	Did not measure displacement / diffusion effects	8	32

10.2 HOT SPOTS POLICING EXPERIMENTS AND QUASI-EXPERIMENTS

Study	Treatment	Hot Spot Definition	Research Design*
Minneapolis (MN) RECAP Sherman, Buerger, and Gartin (1989)	Problem-oriented policing interventions comprised of mostly traditional enforcement tactics with some situational responses 1 year intervention period Integrity of treatment threatened by large caseloads that outstripped the resources the RECAP unit could bring to bear	Addresses ranked by frequency of citizen calls for service divided into commercial and residential lists; the top 250 commercial and top 250 residential addresses were included in experiment	Randomized controlled trial; control and treatment groups were each randomly allocated 125 commercial and 125 residential addresses Differences in the number of calls to each address from a baseline year to the experimental year were compared between RECAP and control groups
New York (NY) Tactical Narcotics Teams Sviridoff, Sadd, Curtis, and Grinc (1992)	Undercover and plainclothes police crackdown on street drug markets primarily using "buy and bust" operations 90 day intervention period Treatment in 67th precinct was limited by diminished manpower resources that resulted in fewer arrests and a shortened uniformed patrol maintenance presence	TNT operating in 67th and 70th precincts were evaluated Enforcement actions targeted at hot spots in precincts described as particular streets, intersections, and sets of buildings	Quasi-experiment; targeted areas in 67th and 70th precincts were compared to similar areas in 71st precinct ARIMA time series analyses of assault, robbery, and burglary crime incident trends in treatment and comparison areas 36 month study time period that compared 3 month intervention periods to non intervention months
St. Louis (MO) POP in 3 Drug Areas Hope (1994)	Problem-oriented policing interventions comprised of mostly traditional enforcement tactics with some situational responses 9 month intervention period No threats to the integrity of the treatment reported	Subjective selection of POP efforts made at 3 hot spot locations comprised of specific addresses associated with street-level drug sales	Quasi-experiment; changes in citizen calls at hot spot addresses location were compared to changes in calls at other addresses on the block as well as other blocks in surrounding areas Simple trend analyses including 12 month pre- and 6 month post- intervention periods

Study	Treatment	Hot Spot Definition	Research Design*
Minneapolis (MN) Hot Spots Sherman and Weisburd (1995)	Uniformed police patrol; experimental group, on average, experienced twice as much patrol presence 1 year intervention period Breakdown in the treatment noted during the summer months	110 hot spots comprised of address clusters that experienced high volumes of citizen calls for service, had stable numbers of calls for over two years, and were visually proximate	Randomized controlled trial; control and treatment groups were each randomly allocated 55 hot spots within statistical blocks Differences of differences between citizen calls in baseline and experimental years, comparing control and treatment groups
Jersey City (NJ) DMAP Weisburd and Green (1995)	Problem-oriented crackdowns followed by preventive patrol to maintain crime control gains 15 month intervention period Slow progress at treatment places caused intervention time period to be extended by 3 months	56 drug hot spot areas identified based on ranking intersection areas with high levels of drug-related calls and narcotics arrests, types of drugs sold, police perceptions of drug areas, and offender movement patterns	Randomized controlled trial; control and treatment groups were each randomly allocated 28 drug hot spots within statistical blocks Differences of differences between citizen calls during 7 month pre-test and post-test periods, comparing control and treatment groups
Kansas City (MO) Gun Project Sherman and Rogan (1995a)	Intensive enforcement of laws against illegally carrying concealed firearms via safety frisks during traffic stops, plain view, and searches incident to arrest on other charges 29 week intervention period No threats to the integrity of the treatment reported; Two phases of patrols reported due to shifts in grant funding	8 by 10 block target beat selected by federal officials for Weed and Seed grant Enforcement actions targeted at hot spots in beat identified by computer analyses	Quasi-experiment; target beat matched to a control beat with nearly identical levels of drive-by shootings Difference of means comparing weekly gun crimes between intervention period and 29 week pre-test period Time series analyses of weekly gun crimes for 52 week before-after period (ARIMA – effect of abrupt intervention in time series) Analysis of variance models with one extra pre year and post year to examine changes in homicides and drive-by shootings for both

Study	Treatment	Hot Spot Definition	Research Design*
			patrol phases
Kansas City (MO) Crack House Raids Sherman and Rogan (1995b)	Court authorized raids on crack houses conducted by uniformed police officers Intervention period was the day of the raid All but 7 cases received randomly assigned treatment as assigned No threats to the integrity of the treatment reported	207 blocks with at least 5 calls for service in the 30 days preceding an undercover drug buy; sample was restricted to raids on the inside of residences where a drug buy was made that was eligible for a search warrant	Randomized controlled trial; Raids were randomly allocated to 104 blocks and were conducted at 98 of those sites; the other 103 blocks did not receive raids Differences of differences analytic design; pre-post time periods were 30 days before and after raid for experimental blocks, and 30 days before and after controlled buy at treatment block for control blocks
Beenleigh (AUS) Calls for Service Project Criminal Justice Commission (1998)	Problem-oriented policing interventions comprised of mostly traditional enforcement tactics with some situational responses 6 month intervention period No threats to the integrity of the treatment reported	Two groups of 10 addresses that experienced the highest volume of calls during separate six month periods	Quasi-experiment; Beenleigh, a lower income suburb with a population of 40,000, was matched to similar Brown Plains suburb Simple time series analyses of total monthly calls for service in 5 month pre-test, 6 month intervention, and 3month post-test periods 19 pre/post no control case studies
Jersey City (NJ) POP at Violent Places Braga et al. (1999)	Problem-oriented policing interventions comprised of mostly aggressive disorder enforcement tactics w/ some situational responses 16 month intervention period Initial slow progress at places caused by resistance of officers to implement intervention	24 violent crime places identified based on ranking intersection areas with high levels of assault and robbery calls and incidents, and police and researcher perceptions of violent areas	Randomized controlled trial; 24 places were matched into like pairs based on simple quantitative and qualitative analyses; control and treatment groups were each randomly allocated 12 places within matched pairs Differences of differences between a number of indicators during 6 month pre-test and post-test periods, comparing control and treatment groups

Study	Treatment	Hot Spot Definition	Research Design*
Houston (TX) Targeted Beat Program Caeti (1999)	Patrol initiative designed to reduce Index crimes in 7 beats. 3 beats used "high visibility patrol" at hot spots 3 beats used "zero tolerance" policing at hot spots 1 beat used a problem-oriented policing approach comprised of mostly traditional tactics to control hot spots 2 year intervention period 3 "high visibility" patrol beats managed by one substation experienced police resistance to the program	7 highest crime beats were selected for this program Enforcement actions targeted at hot spots in beats identified by computer analyses	Quasi-experiment; target beats were matched to non-contiguous comparison beats through cluster analysis and correlations of Census data Difference of means in reported crime were used to evaluate program effects for 3 year pre-intervention and 2 year intervention period
Oakland (CA) Beat Health Program Mazerolle, Price, and Roehl (2000)	Problem-oriented policing intervention that used civil remedies to alleviate drug and disorder problems at targeted properties 5.5 month intervention period No threats to the integrity of the treatment reported	100 street blocks with a place on the block that was referred to the Beat Health Team as having a drug and/or blight problem	Randomized controlled trial; control and treatment groups were each randomly allocated 50 street blocks within residential and commercial statistical blocks Differences of differences analytic design; pre-post time periods were 21.5 months before and 12 months after 5.5 month intervention period
Pittsburgh (PA) Police Raids at Nuisance Bars Cohen, Gorr, and Singh (2003)	Raids by narcotics squad on nuisance bars to reduce drug selling in and around targeted bar Intervention period ranged from 1 month to 5 months per nuisance bar area with a mean of 3.7 raids per month	37 nuisance bar areas and 40 comparison non-nuisance bar areas were included in the analysis Bar areas were defined as by a 660 foot radius around the treatment and comparison bars that captured roughly 2 to 3	Quasi-experiment; treatment nuisance bars were compared to non-equivalent non-nuisance bars located in the same neighborhood OLS and Tobit regression models estimated the impact of the intervention at

Study	Treatment	Hot Spot Definition	Research Design*
	during enforcement period No threats to the integrity of the treatment reported	blocks in any direction from the bar	treatment areas relative to comparison areas controlling for land-use and population-based risks 36 month study time period with varying pre-test and post-test periods for targeted bar areas
Buenos Aires (ARG) Police Presence after Terrorist Attack DiTella and Schargrodsky 2004	Increased police presence at Jewish centers in three neighborhoods 5 month intervention period No threats to the integrity of the treatment reported	37 street blocks with Jewish centers were evaluated	Quasi-experiment; 37 police-protected blocks were compared with 839 other blocks Differences of differences analytic design; pre-post time periods were 4 months before and 5 months after police protection was implemented
Philadelphia (PA) Drug Corners Crackdowns Lawton, Taylor, and Luongo (2005)	Police crackdown that stationed officers at high-activity drug locations 18 week intervention period No threats to the integrity of the treatment reported	0.1 mile (~1 street block) areas were constructed around 214 targeted high-activity drug locations and 73 comparison sites	Quasi-experiment; targeted areas were matched to comparison areas based on spatial analyses of drug crimes and simple analyses of U.S. Census data ARIMA time series analyses of drug crime incident and violent crime incident trends in treatment and comparison areas 139 week study time period that compared 121 weeks pre-treatment trends to 18 weeks treatment trends
Jersey City (NJ) Displacement and Diffusion Study Weisburd, Wickoff, Ready, Eck, Hinkle, and Gajewski (2006)	Problem-oriented policing interventions comprised of mostly traditional enforcement tactics with some situational responses 6 month intervention period Burglary hot spot dropped	Two hot spots (one drug and one prostitution) identified based on computerized mapping and database technology supplemented by police officer observations	Quasi-experiment; observed prostitution and drug event trends were examined over a 9 month period and adjusted for citywide disorder and drug call trends, respectively Difference of means tests compared pre-test and

Study	Treatment	Hot Spot Definition	Research Design*
	from study due to inadequate dosage of police intervention		post-test mean observed events
Lowell Policing Crime and Disorder Hot Spots Project Braga and Bond (2008)	Problem-oriented policing interventions comprised of mostly aggressive disorder enforcement tactics w/ some situational responses 12 month intervention period No threats to the integrity of the treatment reported	34 crime and disorder hot spots identified based on spatial analyses of calls for service and supplemented by police officer and researcher observations	Randomized controlled trial; 24 places were matched into like pairs based on simple quantitative and qualitative analyses; control and treatment groups were each randomly allocated 12 places within matched pairs Differences of differences between a number of indicators during 6 month pre-test and post-test periods, comparing control and treatment groups
Jacksonville (FL) Policing Violent Crime Hot Spots Program Taylor, Koper, and Woods (2011)	Two interventions tested: problem-oriented policing and direct-saturation patrol 90 day intervention period No threats to the integrity of the treatment reported	83 violent crime hot spots identified based on spatial analyses of incidents and calls for service	Randomized controlled trial; 83 places were randomly allocated in statistical blocks to problem-oriented treatment (22), direct-saturation patrol treatment (21), and control (40) conditions Differences of differences between a number of violent and property crime indicators during 1 year pre-test and 90 day post-test periods, comparing control and experimental groups
Philadelphia (PA) Foot Patrol Program Ratcliffe, Taniguchi, Groff, and Wood (2011)	Foot patrol in violent crime hot spots 12 week intervention period No threats to the integrity of the treatment reported	120 violent crime hot spots identified based on spatial and temporal analyses of street violent crime incidents	Randomized controlled trial; 120 places were matched into like pairs based on ranking of violent crime incident volume; control and treatment groups were each randomly allocated 60 places within matched pairs Differences of differences between a number of indicators during 3 month pre-test and intervention periods, comparing control and treatment groups

Study	Treatment	Hot Spot Definition	Research Design*
Boston (MA) Safe Street Teams Program Braga, Hureau, and Papachristos (2011)	Problem-oriented policing interventions comprised of mostly enforcement initiatives and limited situational responses 3 year intervention period No threats to the integrity of the treatment reported	13 violent crime hot spots based on spatial analyses of violent street crimes and officer perceptions of place boundaries	Quasi-experiment; 564 comparison street units were matched via propensity scores to 478 treatment street units Growth curve regression models were used to estimate intervention effects at treatment street units relative to comparison street units over 10 year time period

*The control group in each study received routine levels of traditional police enforcement tactics.

10.3 RESULTS OF HOT SPOTS POLICING EXPERIMENTS AND QUASI-EXPERIMENTS

Study	Crime Outcomes	Other Outcomes	Displacement / Diffusion
Minneapolis (MN) RECAP Sherman, Buerger, Gartin (1989)	No statistically significant differences in the prevalence of citizen calls for service at commercial addresses Statistically significant 15% reduction in calls for service at residential address in the first six months that decline to 6% in the first full year	None	Not measured
New York (NY) Tactical Narcotics Teams Sviridoff, Sadd, Curtis, and Grinc (1992)	No statistically significant reductions in assault, robbery, and burglary incidents in the 70th precinct In the 67th precinct, there was a statistically significant reduction in assault incidents; no statistically significant reductions in robbery or burglary incidents	Pre-post community survey and interviews suggested that TNT did not improve community perceptions of disorder, reduce fear of crime, increase use of public amenities, or improve community attitudes towards the police.	Not measured
St. Louis (MO) POP in 3 Drug Areas Hope (1994)	All 3 drug locations experienced varying reductions in total calls Regression analysis suggests that reductions on blocks where drug locations were located were greater than other blocks and intersections in surrounding areas	None	Compared trends in calls at targeted addresses to trends in calls at other addresses on same block Location 1- significant displacement into surrounding addresses; Location 2- no displacement or diffusion; Location 3- no displacement or diffusion
Minneapolis (MN) Hot Spots Patrol Sherman and Weisburd (1995)	Modest, but statistically significant reductions in total crime calls for service ranging from 6% to 13%	Systematic observations of crime and disorder were half as prevalent in experimental as in control hot spots	Not measured

Study	Crime Outcomes	Other Outcomes	Displacement / Diffusion
Jersey City (NJ) DMAP Weisburd and Green (1995)	Statistically significant reductions in disorder calls for service in treatment drug markets relative to control drug markets No change in violent and property crime calls	None	Examined displacement and diffusion effects in two-block catchment areas surrounding the treatment and control drug places and replicated the drug market identification process Little evidence of displacement; analyses suggest modest diffusion of benefits for disorder
Kansas City (MO) Gun Project Sherman and Rogan (1995a)	65% increase in guns seized by the police; 49% decrease in gun crimes in treatment area 15% reduction in guns seized by the police; 4% increase in gun crimes in control area	Separate pre/post quasi-experiment surveying citizens opinions of KC gun project suggests citizens were aware of the project, generally supported the intensive approach, and perceived an improvement in the quality of life in treatment neighborhood compared to residents in comparison beat	Displacement tests using pre/post difference in means and ARIMA time series analyses were conducted in 7 contiguous beats No significant displacement into specific beats; 2 beats showed significant reductions in gun crimes
Kansas City (MO) Crack House Raids Sherman and Rogan (1995b)	Modest decreases in citizen calls and offense reports that decayed in two weeks	None	Not measured
Beenleigh (AUS) Calls for Service Project Criminal Justice Commission (1998)	No noteworthy differences in total number of calls between Beenleigh and Brown Plains areas Noteworthy reductions in calls reported by non-experimental pre/post impact assessments in 16 of the 19 case studies	None	Not measured

Study	Crime Outcomes	Other Outcomes	Displacement / Diffusion
Jersey City (NJ) POP at Violent Places	Statistically significant reductions in total calls for service and total crime incidents	Observation data revealed that social disorder was alleviated at 10 of 11 treatment places relative to control places	Examined displacement and diffusion effects in two-block catchment areas surrounding the treatment and control violent places
Braga et al. (1999) Braga (1997)	All crime categories experienced varying reductions; statistically significant reductions in street fight calls, property calls, narcotics calls, robbery incidents, and property crime incidents	Non-experimental observation data revealed that physical disorder was alleviated at 10 of 11 treatment places	Little evidence of immediate spatial displacement or diffusion
		Non-experimental interviews with key community members in target locations suggest no noteworthy improvements in citizen perceptions of places	
Houston (TX) Targeted Beat Program Caeti (1999)	Aggregated experimental beats experienced significant reductions in auto theft, total Part I Index crimes, and total Part I suppressible (robbery, burglary, auto theft) index crimes relative to aggregate control beats	None	Simple pre/post analyses of reported crimes in beats contiguous to treatment beats No evidence of significant displacement; contiguous beats surrounding 3 target areas (problem-solving beat, 2 zero-tolerance beats) experienced possible diffusion of benefits in particular reported crimes
	3 “zero tolerance” beats experienced mixed results; certain reported crimes decreased in particular beats		
	3 “high visibility” beats experienced reductions in a wide variety of Index crimes		
	Problem solving beat experienced no significant decrease relative to control beat		

Study	Crime Outcomes	Other Outcomes	Displacement / Diffusion
Oakland (CA) Beat Health Program Mazerolle, Price, and Roehl (2000)	Statistically significant reductions in drug calls in treatment blocks relative to control blocks; no statistically significant differences in other call types	None	Examined displacement and diffusion effects in 500 foot radii catchment areas surrounding the treatment and control street blocks Analyses of catchment areas suggested an overall diffusion of crime control benefits for treatment catchment areas relative to control catchment areas
Pittsburgh (PA) Police Raids at Nuisance Bars Program Cohen, Gorr, and Singh (2003)	Statistically significant reductions in drug calls in treatment bar areas relative to control bar areas that largely disappeared when intervention ceased	None	Not measured
Buenos Aires (ARG) Police Presence after Terrorist Attack Initiative DiTella and Schargrodsky 2004	Statistically significant 75% reduction in motor vehicle thefts	None	Examined displacement and diffusion effects in blocks that were one and two blocks away from treatment blocks No evidence of immediate spatial displacement or diffusion
Philadelphia (PA) Drug Corners Crackdowns Program Lawton, Taylor, and Luongo (2005)	Statistically significant reductions in violent crime incidents and drug crime incidents in treatment areas; no statistically significant changes in violent crime incidents and drug crime incidents in comparison areas	None	ARIMA analyses of 0.1 buffer areas surrounding targeted locations suggested a significant reduction in violent crime incidents; mixed findings for drug crime incidents
Jersey City (NJ) Displacement and Diffusion Study	Statistically significant 45% reduction at the targeted prostitution location Statistically significant 58% reduction at the targeted drug	Ethnography and interviews with arrested offenders confirmed that offenders did not displace from targeted locations into surrounding areas	Examined displacement and diffusion effects in one and two block catchment areas surrounding targeted locations

Study	Crime Outcomes	Other Outcomes	Displacement / Diffusion
Weisburd, Wickoff, Ready, Eck, Hinkle, and Gajewski (2006)	crime location		Analyses revealed significant diffusion of crime control benefits
Lowell (MA) Policing Crime and Disorder Hot Spots Project Braga and Bond (2008)	Statistically significant reductions in total calls for service All crime categories experienced varying reductions; statistically significant reductions in street fight calls, property calls, narcotics calls, robbery incidents, and property crime incidents	Observation data revealed that social disorder was alleviated at 14 of 17 treatment places relative to control places Observation data revealed that physical disorder was alleviated at 13 of 17 treatment places relative to control places Pre-test and post-test interviews with key community members in treatment and control locations suggest that disorder problems were positively impacted	Examined displacement and diffusion effects in two-block catchment areas surrounding the treatment and control violent places No evidence of immediate spatial displacement or diffusion
Jacksonville (FL) Policing Violent Crime Hot Spots Program Taylor, Koper, and Woods (2011)	Problem-oriented policing generated statistically significant 33% reduction in street violence Direct-saturation patrol did not generate any statistically significant reductions	None	Examined displacement and diffusion effects in 500 feet buffer zones surrounding the treatment and control violent places Evidence of immediate spatial displacement associated with problem-oriented policing intervention
Philadelphia (PA) Foot Patrol Program Ratcliffe, Taniguchi, Groff, and Wood (2011)	Statistically significant 23% reduction in street violent crime incidents	None	Examined displacement and diffusion effects in buffer zones constructed by the research team Evidence of immediate spatial displacement associated with foot patrol; however, the net benefit of foot patrol in reducing violent crime exceeded the displacement effect

Study	Crime Outcomes	Other Outcomes	Displacement / Diffusion
Boston (MA) Safe Street Teams Program Braga, Hureau, and Papachristos (2011)	Statistically significant 14% reduction in violent crime incidents	None	Examined displacement and diffusion effects in two-block catchment areas surrounding the treatment and control street units No evidence of immediate spatial displacement or diffusion

10.4 MODERATOR ANALYSES OF STUDY OUTCOME TYPES AND HOT SPOTS POLICING PROGRAM TYPES

Crime category	N Studies	Effect Size	95% C.I.
Violent crimes	12	.175*	.061, .289
Problem-Oriented Policing	7	.190*	.016, .396
Increased Traditional Policing	5	.157*	.014, .300
Property crimes	9	.084+	-.010, .178
Problem-Oriented Policing	4	.101*	.021, .181
Increased Traditional Policing	5	0.087	-.067, .241
Drug offenses	5	.249*	.103, .395
Problem-Oriented Policing	3	.261*	.170, .352
Increased Traditional Policing	2	.139*	.065, .212
Disorder offenses	6	.151*	.052, .251
Problem-Oriented Policing	4	.331*	.101, .562
Increased Traditional Policing	2	.063*	.031, .096
Displacement / Diffusion Effects	13	.104*	.073, .136
Problem-Oriented Policing	8	.093*	.073, .113
Increased Traditional Policing	5	0.106	-.210, .418

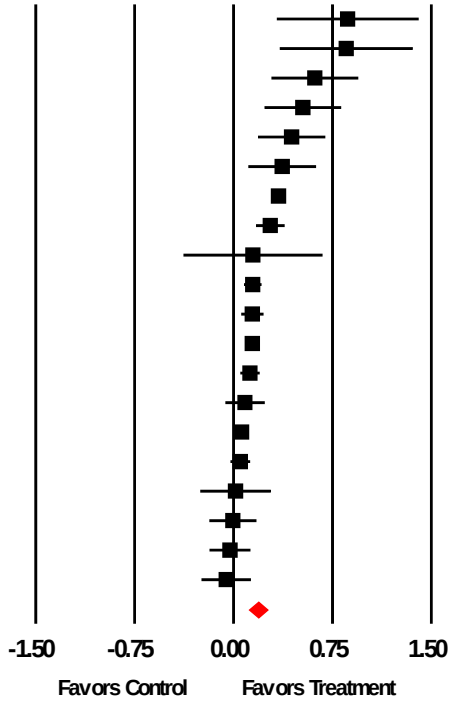
Note: Random effects meta-analysis models used in all reported effect sizes.

+ = $p < .10$
* = $p < .05$

11 Figures

11.1 COMBINED EFFECTS SIZES FOR STUDY OUTCOMES

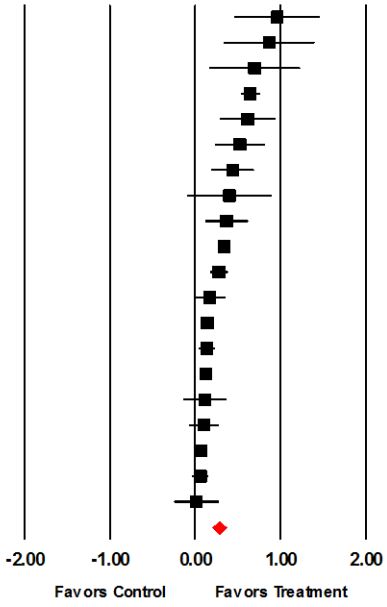
Study name	Outcome	Std diff in means	Standard error	p-Value
KC Gun	Gun crimes	0.866	0.275	0.002
Phila. Drug Corners	Combined	0.855	0.258	0.001
Buenos Aires Police	Motor vehicle theft incidents	0.617	0.169	0.000
JC Disp. Prost.	Prostitution events	0.525	0.149	0.000
JC Disp. Drug	Drug events	0.441	0.131	0.001
Minn. RECAP Resid.	Total calls	0.369	0.132	0.005
Boston SST	Total violent incidents	0.341	0.020	0.000
Oakland Beath Health	Drug calls	0.279	0.056	0.000
JC DMAP	Combined	0.147	0.270	0.585
Lowell POP	Total calls	0.145	0.034	0.000
JC POP	Combined	0.143	0.043	0.001
Phila. Foot Patrol	Violent incidents	0.143	0.021	0.000
Pittsburgh Bar Raids	Drug calls	0.125	0.038	0.001
NYC TNT 67	Combined	0.087	0.077	0.257
Minn. Patrol	Total calls	0.061	0.015	0.000
KC Crack	Total calls	0.051	0.039	0.188
Minn. RECAP Comm	Total calls	0.015	0.137	0.913
Jacksonville POP	Combined	-0.005	0.092	0.959
NYC TNT 70	Combined	-0.027	0.080	0.739
Jacksonville Patrol	Combined	-0.055	0.096	0.568
		0.184	0.035	0.000



Meta-Analysis Random Effects Model, Q = 184.021, df = 19, p<0.000

11.2 LARGEST EFFECT SIZES FOR STUDY OUTCOMES

Study name	Outcome	Std diff in means	Standard error	p-Value
Phila. Drug Corners	Violent incidents	0.962	0.259	0.000
KC Gun	Gun crimes	0.866	0.275	0.002
JC DMAP	Disorder calls	0.696	0.275	0.011
JC POP	Robbery incidents	0.645	0.060	0.000
Buenos Aires Police	Motor vehicle theft incidents	0.617	0.169	0.000
JC Disp. Prost.	Prostitution events	0.525	0.149	0.000
JC Disp. Drug	Drug events	0.441	0.131	0.001
Lowell POP	Robbery calls	0.402	0.255	0.115
Minn. RECAP Resid.	Total calls	0.369	0.132	0.005
Boston SST	Total violent incidents	0.341	0.020	0.000
Oakland Beath Health	Drug calls	0.279	0.056	0.000
NYC TNT 70	Assault incidents	0.171	0.097	0.078
Phila. Foot Patrol	Violent incidents	0.143	0.021	0.000
Jacksonville POP	Property calls	0.139	0.051	0.007
Pittsburgh Bar Raids	Drug calls	0.125	0.038	0.001
KC Crack	Property calls	0.113	0.130	0.385
NYC TNT 67	Assault incidents	0.103	0.089	0.249
Minn. Patrol	Soft calls	0.068	0.018	0.000
Jacksonville Patrol	Property calls	0.061	0.050	0.222
Minn. RECAP Comm.	Total calls	0.015	0.137	0.913
		0.278	0.042	0.000

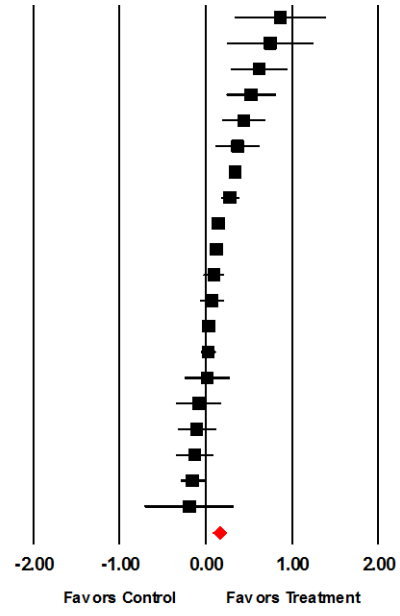


Meta-Analysis Random Effects Model

Overall Q = 217.994, df = 19, p = 0.000

11.3 SMALLEST EFFECT SIZES FOR STUDY OUTCOMES

Study name	Outcome	Std diff in means	Standard error	p-Value
KC Gun	Gun crimes	0.866	0.275	0.002
Phila. Drug Corners	Drug incidents	0.748	0.257	0.004
Buenos Aires Police	Motor vehicle theft incidents	0.617	0.169	0.000
JC Disp. Prost.	Prostitution events	0.525	0.149	0.000
JC Disp. Drug	Drug events	0.441	0.131	0.001
Minn. RECAP Resid.	Total calls	0.369	0.132	0.005
Boston SST	Total violent incidents	0.341	0.020	0.000
Oakland Beath Health	Drug calls	0.279	0.056	0.000
Phila. Foot Patrol	Violent incidents	0.143	0.021	0.000
Pittsburgh Bar Raids	Drug calls	0.125	0.038	0.001
Lowell POP	Larceny calls	0.093	0.064	0.149
NYC TNT 67	Robbery incidents	0.070	0.073	0.336
Minn. Patrol	Hard calls	0.033	0.029	0.252
KC Crack	Disorder calls	0.028	0.048	0.559
Minn. RECAP Comm.	Total calls	0.015	0.137	0.913
JC POP	Narcotics arrests	-0.086	0.134	0.520
Jacksonville Patrol	Any violence calls	-0.103	0.115	0.370
Jacksonville POP	Any violence calls	-0.131	0.111	0.239
NYC TNT 70	Robbery incidents	-0.154	0.073	0.036
JC DMAP	Violence calls	-0.193	0.267	0.470
		0.155	0.042	0.000

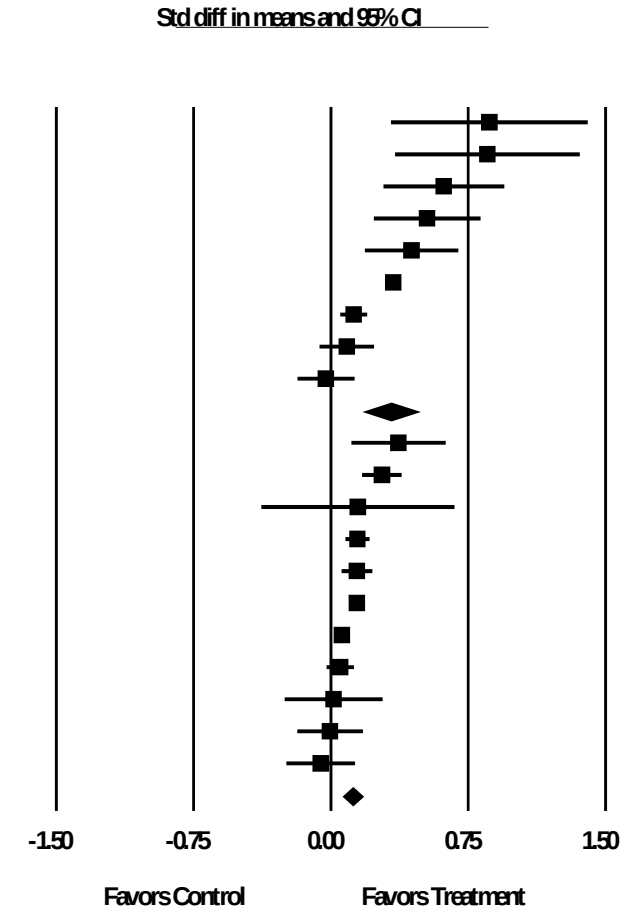


Meta-Analysis Random Effects Model

Overall Q = 182.513, df = 19, p = 0.000

11.4 RESEARCH DESIGN TYPE AS MODERATOR OF STUDY OUTCOMES

Group by Design	Studyname	Outcome	Statistics for each study		
			Std diff in means	Standard error	p-Value
Quasi	KC Gun	Gun crimes	0.866	0.275	0.002
Quasi	Phila. Drug Corners	Combined	0.855	0.258	0.001
Quasi	Buenos Aires Police	Motor vehicle theft incidents	0.617	0.169	0.000
Quasi	JC Disp. Prost.	Prostitution events	0.525	0.149	0.000
Quasi	JC Disp. Drug	Drug events	0.441	0.131	0.001
Quasi	Boston SST	Total vicdent incidents	0.341	0.020	0.000
Quasi	Pittsburgh Bar Raids	Drug calls	0.125	0.038	0.001
Quasi	NYC TNT 67	Combined	0.087	0.077	0.257
Quasi	NYC TNT 70	Combined	-0.027	0.080	0.739
Quasi			0.325	0.072	0.000
RCT	Minn. RECAP Resid.	Total calls	0.369	0.132	0.005
RCT	Oakland Beath Health	Drug calls	0.279	0.056	0.000
RCT	JC DMAP	Combined	0.147	0.270	0.585
RCT	Lowell POP	Total calls	0.145	0.034	0.000
RCT	JC POP	Combined	0.143	0.043	0.001
RCT	Phila. Foot Patrol	Vicdent incidents	0.143	0.021	0.000
RCT	Minn. Patrol	Total calls	0.061	0.015	0.000
RCT	KC Crack	Total calls	0.051	0.039	0.188
RCT	Minn. RECAP Comm	Total calls	0.015	0.137	0.913
RCT	Jacksonville POP	Combined	-0.005	0.092	0.959
RCT	Jacksonville Patrol	Combined	-0.055	0.096	0.568
RCT			0.116	0.026	0.000

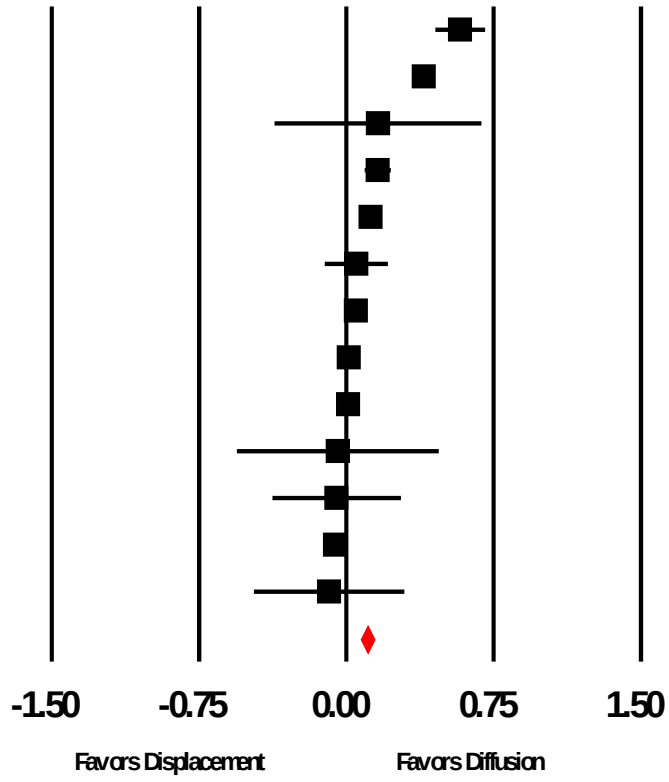


Meta-Analysis Random Effects Model

Quasi-experiment Q = 64.257, df = 8, p<0.000
Randomized Controlled Trial Q = 33.581, df = 10, p<0.000
Between Group Q = 86.182, df = 1, p <0.000

11.5 COMBINED EFFECT SIZES FOR DISPLACEMENT AND DIFFUSION OUTCOMES

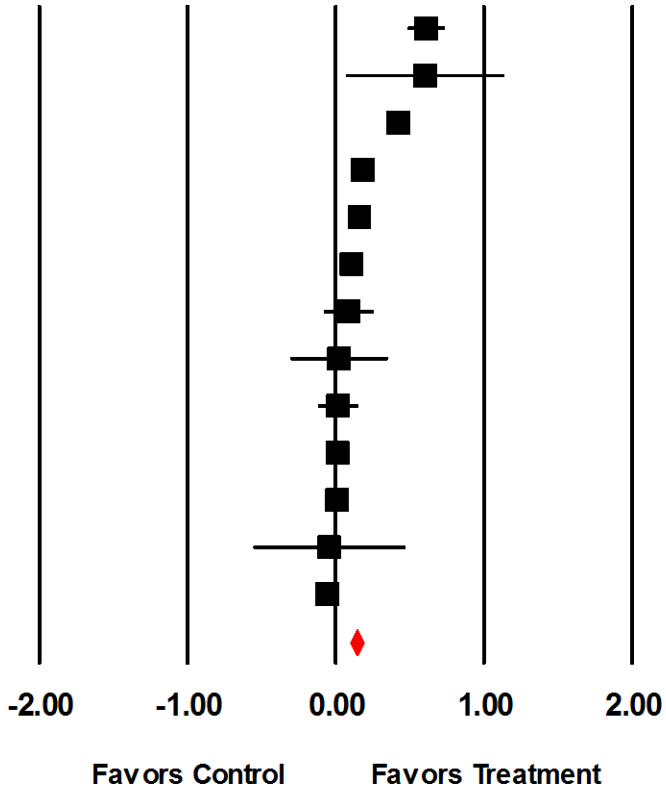
Study name	Outcome	Std diff in means	Standard error	p-Value
Phila. Drug Corners	Combined	0.580	0.065	0.000
JC Disp. Prost.	Combined	0.395	0.019	0.000
JC DMAP	Combined	0.161	0.269	0.550
Oakland Beat Health	Drug calls	0.160	0.035	0.000
JC Disp. Drug	Combined	0.124	0.015	0.000
Buenos Aires Police Protect	Combined	0.051	0.082	0.540
JC POP	Combined	0.049	0.001	0.000
Lowell POP	Total calls	0.013	0.001	0.000
Boston SST	Violent incidents	0.009	0.000	0.000
KC Gun	Gun crimes	-0.044	0.263	0.868
Jacksonville POP	Combined	-0.050	0.167	0.766
Phila. Foot Patrol	Violent incidents	-0.057	0.000	0.000
Jacksonville Patrol	Combined	-0.088	0.196	0.654
		0.104	0.016	0.000



Meta-Analysis Random Effects Model, Q = 22699.482, df = 12, p<0.000

11.6 LARGEST EFFECT SIZES FOR DISPLACEMENT AND DIFFUSION OUTCOMES

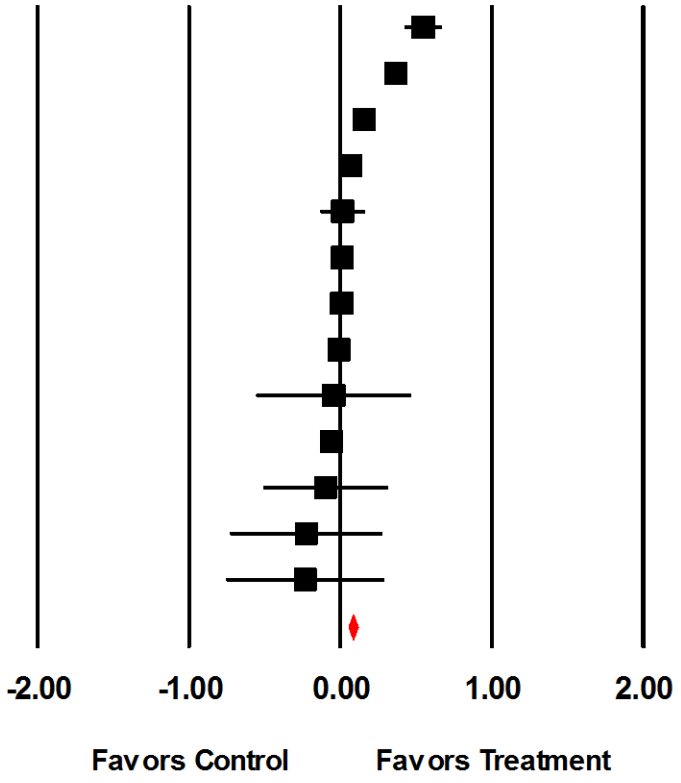
Study name	Outcome	Statistics for each study		
		Std diff in means	Standard error	p-Value
Phila. Drug Corners	Violent incidents	0.611	0.065	0.000
JC DMAP	Narcotics calls	0.604	0.273	0.027
JC Disp. Prost.	Prost. events 1	0.423	0.020	0.000
JC Disp. Drug	Drug events 2	0.182	0.015	0.000
Oakland Beat Health	Drug calls	0.160	0.035	0.000
JC POP	Total calls	0.108	0.000	0.000
Buenos Aires Police Protect	MV Theft 1	0.087	0.087	0.318
Jacksonville POP	Violence calls	0.022	0.169	0.895
Jacksonville Patrol	Property calls	0.016	0.071	0.822
Lowell POP	Total calls	0.013	0.001	0.000
Boston SST	Violent incidents	0.009	0.000	0.000
KC Gun	Gun crimes	-0.044	0.263	0.868
Phila. Foot Patrol	Violent incidents	-0.057	0.000	0.000
		0.138	0.022	0.000



Meta-Analysis Random Effects Model, Q = 64754.230, df = 12, p<0.000

11.7 SMALLEST EFFECT SIZES FOR DISPLACEMENT AND DIFFUSION OUTCOMES

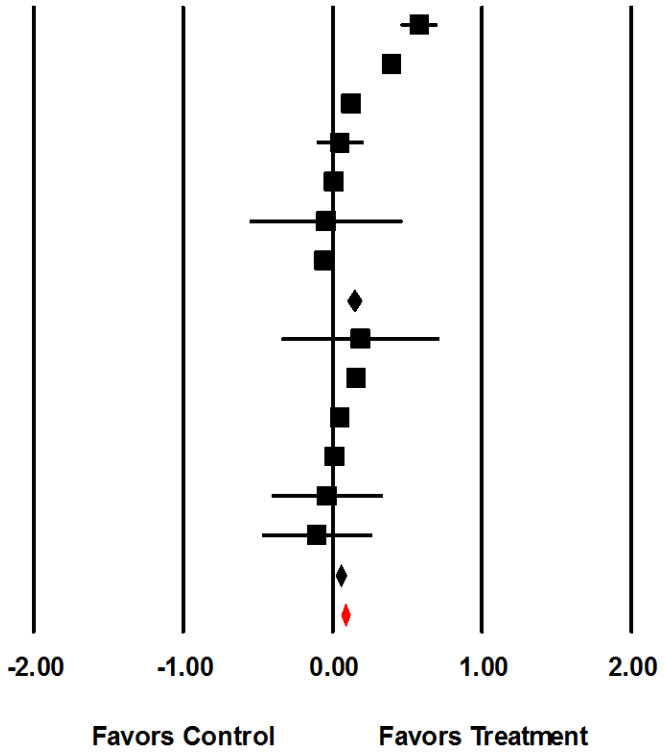
Study name	Outcome	Std diff in means	Standard error	p-Value
Phila. Drug Corners	Drug incidents	0.548	0.065	0.000
JC Disp. Prost.	Prost. events 2	0.366	0.019	0.000
Oakland Beat Health	Drug calls	0.160	0.035	0.000
JC Disp. Drug	Drug events 1	0.066	0.015	0.000
Buenos Aires Police Protect	MV Theft 2	0.014	0.077	0.857
Lowell POP	Total calls	0.013	0.001	0.000
Boston SST	Violent incidents	0.009	0.000	0.000
JC POP	Total incidents	-0.009	0.001	0.000
KC Gun	Gun crimes	-0.044	0.263	0.868
Phila. Foot Patrol	Violent incidents	-0.057	0.000	0.000
Jacksonville POP	Any violence incidents	-0.097	0.212	0.647
Jacksonville Patrol	Non-DV incidents	-0.225	0.259	0.385
JC DMAP	Property calls	-0.231	0.268	0.389
		0.079	0.015	0.000



Meta-Analysis Random Effects Model, Q = 17757.662, df = 12, p<0.000

11.8 RESEARCH DESIGN TYPE AS MODERATOR FOR DISPLACEMENT AND DIFFUSION OUTCOMES

Group by Design	Study name	Outcome	Std diff in means	Standard error	p-Value
Quasi	Phila. Drug Corners	Combined	0.580	0.065	0.000
Quasi	JC Disp. Prost.	Combined	0.395	0.019	0.000
Quasi	JC Disp. Drug	Combined	0.124	0.015	0.000
Quasi	Buenos Aires Police Protect	Combined	0.051	0.082	0.540
Quasi	Boston SST	Violent incidents	0.009	0.000	0.000
Quasi	KC Gun	Gun crimes	-0.044	0.263	0.868
Quasi	Phila. Foot Patrol	Violent incidents	-0.057	0.000	0.000
Quasi			0.140	0.023	0.000
RCT	JC DMAP	Combined	0.187	0.271	0.491
RCT	Oakland Beat Health	Drug calls	0.160	0.035	0.000
RCT	JC POP	Combined	0.049	0.001	0.000
RCT	Lowell POP	Total calls	0.013	0.001	0.000
RCT	Jacksonville POP	Combined	-0.037	0.192	0.846
RCT	Jacksonville Patrol	Combined	-0.105	0.190	0.582
RCT			0.049	0.017	0.003
Overall			0.081	0.013	0.000

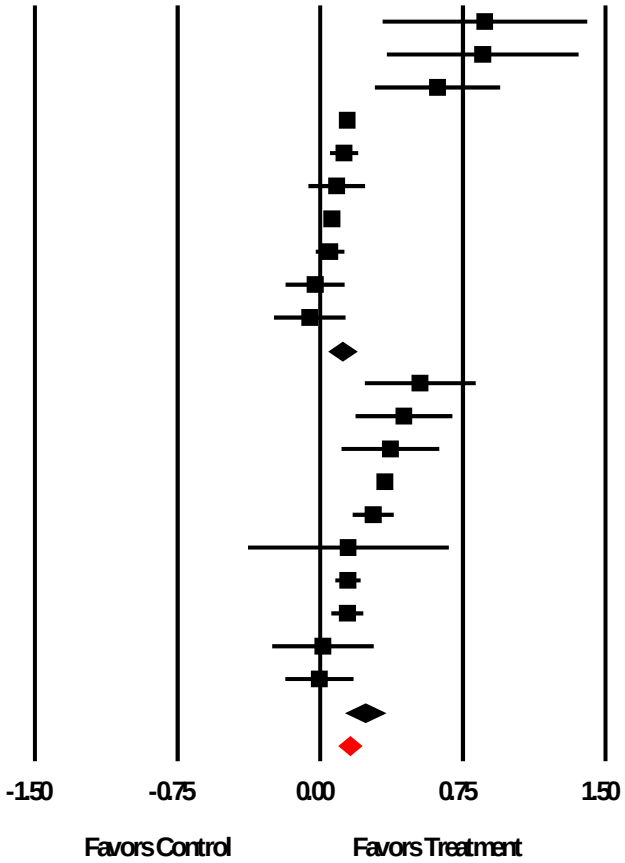


Meta-Analysis Random Effects Model

Randomized Controlled Trial Q = 1192.564, df =5, p <0.000
Quasi-Experiment Q = 17033.591, df = 6, p<0.000
Between Group Q = 10.420, df = 1, p<0.001

11.9 HOT SPOTS PROGRAM TYPE AS MODERATOR OF STUDY OUTCOMES

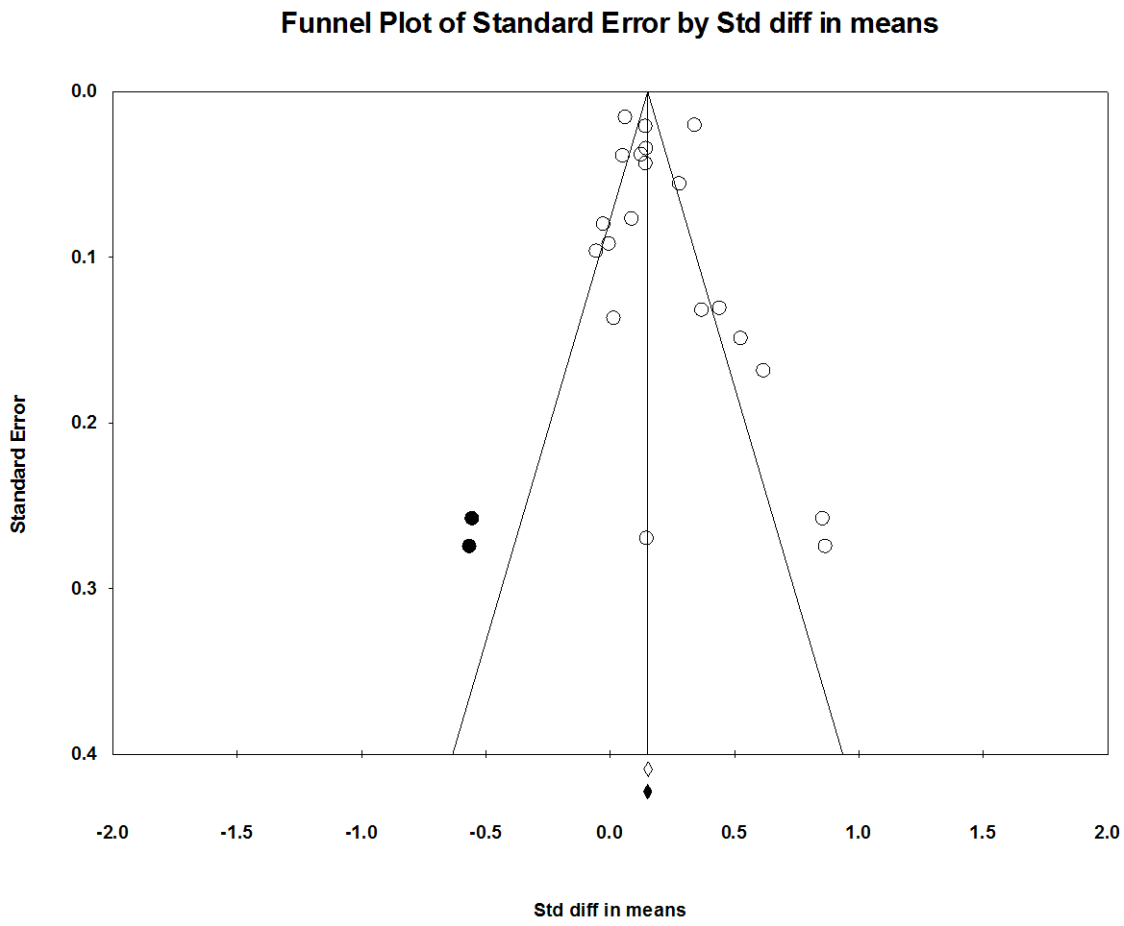
Group by Program Type	Study name	Outcome	Statistics for each study: Std diff in means	Standard error	p-Value
Increased Policing	KC Gun	Gun crimes	0.866	0.275	0.002
Increased Policing	Phila. Drug Corners	Combined	0.855	0.258	0.001
Increased Policing	Buenos Aires Police	Motor vehicle theft incidents	0.617	0.169	0.000
Increased Policing	Phila. Foot Patrol	Violent incidents	0.143	0.021	0.000
Increased Policing	Pittsburgh Bar Raids	Drug calls	0.125	0.038	0.001
Increased Policing	NYC TNT 67	Combined	0.087	0.077	0.257
Increased Policing	Minn. Patrol	Total calls	0.061	0.015	0.000
Increased Policing	KC Crack	Total calls	0.051	0.039	0.188
Increased Policing	NYC TNT 70	Combined	-0.027	0.080	0.739
Increased Policing	Jacksonville Patrol	Combined	-0.055	0.096	0.568
Increased Policing			0.113	0.034	0.001
Problem-Oriented Policing	JC Disp. Prost.	Prostitution events	0.525	0.149	0.000
Problem-Oriented Policing	JC Disp. Drug	Drug events	0.441	0.131	0.001
Problem-Oriented Policing	Minn. RECAP Resid.	Total calls	0.369	0.132	0.005
Problem-Oriented Policing	Boston SST	Total violent incidents	0.341	0.020	0.000
Problem-Oriented Policing	Oakland Beath Health	Drug calls	0.279	0.056	0.000
Problem-Oriented Policing	JC DMAP	Combined	0.147	0.270	0.585
Problem-Oriented Policing	Lowell POP	Total calls	0.145	0.034	0.000
Problem-Oriented Policing	JC POP	Combined	0.143	0.043	0.001
Problem-Oriented Policing	Minn. RECAP Comm.	Total calls	0.015	0.137	0.913
Problem-Oriented Policing	Jacksonville POP	Combined	-0.005	0.092	0.959
Problem-Oriented Policing			0.232	0.049	0.000
Overall			0.152	0.028	0.000



Meta-Analysis Random Effects Model

Increased Policing Q = 42.615, df = 9, p<0.000

11.10 FUNNEL PLOT OF STANDARD ERROR BT STANDARD DIFFERENCE IN MEANS



12 Appendix

12.1 EXPERTS CONTACTED DURING SEARCH PROCESS

1. David Bayley, University at Albany, SUNY
2. Lawrence Bobo, Harvard University
3. Brenda Bond, Suffolk University
4. Kate Bowers, University College London
5. Alfred Blumstein, Carnegie Mellon University
6. Gerben Bruinsma, Netherlands Institute for the Study of Crime and Law Enforcement
7. Rod Brunson, Rutgers University
8. Michael Buerger, Bowling Green State University
9. James Bueerman, Redlands (CA) Police Department
10. Timothy Bynum, Michigan State University
11. George Capowich, Loyola University, New Orleans
12. Steven Chermak, Michigan State University
13. Jacqueline Cohen, Carnegie Mellon University
14. Ronald V. Clarke, Rutgers University
15. Ruth Davis, The Pymatuning Group
16. Scott Decker, Arizona State University
17. John E. Eck, University of Cincinnati
18. Robin Engel, University of Cincinnati
19. Graham Farrell, Loughborough University
20. David Farrington, University of Cambridge
21. Patrick Gartin, Missouri State University
22. Herman Goldstein, University of Wisconsin
23. Peter Grabosky, Australian National University
24. Jack Greene, Northeastern University
25. Joshua Hinkle, Georgia State University
26. Timothy Hope, Keele University
27. Shane Johnson, University College London
28. George Kelling, Rutgers University

29. David M. Kennedy, John Jay College of Criminal Justice
30. David A. Klinger, University of Missouri, St. Louis
31. Johannes Knutsson, Norwegian Police University College
32. Christopher Koper, Police Executive Research Forum
33. Janet Lauritsen, University of Missouri, St. Louis
34. Brian Lawton, George Mason University
35. Gloria Laycock, University College London
36. Cynthia Lum, George Mason University
37. Tracey Maclin, Boston University
38. Edward R. Maguire, American University
39. Peter Manning, Northeastern University
40. Stephen D. Mastrofski, George Mason University
41. Lorraine Mazerolle, University of Queensland
42. Jack McDevitt, Northeastern University
43. Edmund McGarrell, Michigan State University
44. Tracey Meares, Yale University
45. Mark H. Moore, Harvard University
46. Daniel Nagin, Carnegie Mellon University
47. Ruth Peterson, Ohio State University
48. Glenn L. Pierce, Northeastern University
49. Alex Piquero, Florida State University
50. Jerry Ratcliffe, Temple University
51. Justin Ready, Arizona State University
52. George Rengert, Temple University
53. Greg Ridgeway, RAND Corporation
54. Dennis Rosenbaum, University of Illinois, Chicago
55. Richard Rosenfeld, University of Missouri, St. Louis
56. Robert Sampson, Harvard University
57. Michael Scott, University of Wisconsin, Madison
58. Elaine B. Sharp, University of Kansas
59. Lawrence Sherman, University of Cambridge
60. Wesley Skogan, Northwestern University
61. William Spelman, University of Texas, Austin
62. Travis Taniguchi, Redlands (CA) Police Department
63. Bruce Taylor, University of Chicago
64. Ralph Taylor, Temple University
65. Cody Telep, George Mason University
66. Nick Tilley, University College London
67. George E. Tita, University of California, Irvine

68. Jeremy Travis, John Jay College of Criminal Justice
69. Tom Tyler, New York University
70. Craig Uchida, Justice and Security Strategies
71. Samuel Walker, University of Nebraska, Omaha
72. Elin J. Waring, Lehman College, CUNY
73. Alexander Weiss, Northwestern University
74. Charles Wellford, University of Maryland
75. Brandon Welsh, Northeastern University
76. David Weisburd, Hebrew University Law School
77. James Q. Wilson, Boston College
78. Jeremy M. Wilson, Michigan State University
79. Jennifer Wood, Temple University
80. Daniel Woods, Police Executive Research Forum
81. Robert Worden, University at Albany, SUNY
82. Laura Wyckoff, University of Maryland
83. Sue-Ming Yang, Georgia State University

12.2 CODING SHEETS

I. ELIGIBILITY CHECK SHEET

1. Document ID: __ __ __ __

2. Study Author Name(s) _____

3. Study Title: _____

4. Journal Name, Volume and Issue: _____

5. Document ID: __ __ __ __

6. Coder's Initials __ __ __

7. Date eligibility determined: _____

8. A study must meet the following criteria in order to be eligible. Answer each question with a"yes" or a "no."

a. The study is an evaluation of a hot spots policing intervention. _____

b. The study includes a comparison group (or a pre-intervention comparison period in the case of pre-post studies), which did not receive the treatment condition (problem-oriented policing). Studies may be experimental or quasi-experimental. _____

c. The study reports on at least one crime outcome. _____

d. The study is written in English. _____

If the study does not meet the criteria above, answer the following question:

a. The study is a review article that is relevant to this project (e.g. may have references to other studies that are useful, may have pertinent background information) ____

9. Eligibility status:

____ Eligible

____ Not eligible

____ Relevant review

Notes:

_____

II. CODING PROTOCOL

Reference Information

1. Document ID: __ __ __ __

2. Study author(s):_____

3. Study title: _____

4. Publication type: _____
    1. Book
    2. Book chapter
    3. Journal article (peer reviewed)
    4. Thesis or doctoral dissertation
    5. Government report (state/local)
    6. Government report (federal)
    7. Police department report
    8. Technical report
    9. Conference paper
    10. Other (specify))_____

5. Publication date (year): _____

6a. Journal Name:_____
6b. Journal Volume: _____
6c. Journal Issue: _____

7. Date range of research (when research was conducted):
Start: _____
Finish: _____

8. Source of funding for study: _____

9. Country of publication: _____

10. Date coded: _____

11. Coder's Initials: __ __ __

Describing the Hot Spots Policing Intervention

12a. Did the study formally identify the treatment as a hot spots policing intervention?

1. Yes
2. No

12b. If No, what did the study call the intervention? _____

13. What crime problem was targeted for the intervention? (Select all that apply)
1. Total crime
2. Violent crime
3. Property crime
4. Homicide
5. Sexual assault / rape
6. Robbery
7. Assault
8. Burglary
9. Larceny
10. Motor vehicle theft
11. Disorder
12. Other (specify) _____

14. What unit of analysis was used to identify hot spots? (Select all that apply)
1. Addresses
2. Street segments / intersections
3. Street blocks
4. Crime clusters defined through spatial analysis (e.g., kernel density, etc.)
5. Other unit (specify) _____

15. What type of policing intervention was implemented in the targeted hot spots? (Select all that apply)
1. "Shallow" problem-oriented policing (limited analysis, many traditional responses).
2. Disorder enforcement
3. Increased levels of motorized patrol
4. Increased levels of foot patrol
5. Raids / search warrants
6. Crackdowns
7. Other (specify) _____

16. What did the evaluation indicate about the implementation of the response?
1. The response was implemented as planned or nearly so
2. The response was not implemented or implemented in a radically different way than originally planned
3. Unclear/no process evaluation included

17. If the process evaluation indicated there were problems with implementation of the response, describe these problems:_____

18. Country where study was conducted: _____

19. City (and state/province, if applicable) where study was conducted: _____

Methodology/Research design:

20. Type of study: _____
    1. Randomized experiment
    2. Nonequivalent control group (quasi-experimental)
    3. Multiple time series (quasi-experimental)
    4. Other (specify) _____

21. How were study units allocated to treatment or comparison conditions?
    1. Simple random allocation
    2. Random allocation in pairs, blocks, or some other sophisticated technique
    3. Simple descriptive matching
    4. Sophisticated statistical matching (e.g. propensity scores)
    5. Other (specify) _____

22. Explain how independent and extraneous variables were controlled so that it was possible to disentangle the impact of the intervention or how threats to internal validity were ruled out._____

23. Did the study measure spatial crime displacement and diffusion of crime control benefits?
    1. Yes
    2. No

24. Explain how the study measured spatial crime displacement and diffusion of crime control benefits._____

The following questions refer to the units receiving treatment:

25. Units receiving treatment: _____
    1. Addresses
    2. Street segments / intersections
    3. Street blocks
    4. Crime clusters defined through spatial analysis (e.g., kernel density, etc.)
    5. Other unit (specify) _____

26. What is the exact unit receiving treatment?_____

The following question refers to the units not receiving treatment

27. Units NOT receiving treatment: _____

1. Addresses
2. Street segments / intersections
3. Street blocks
4. Crime clusters defined through spatial analysis (e.g., kernel density, etc.)
5. Other unit (specify) _____

28. What were the casual hypotheses tested in this study?_____

29. Please identify any theories from which the causal hypotheses were derived._____

Outcomes reported *(Note that for each outcome, a separate coding sheet is required. This includes main effects outcomes as well as crime displacement and diffusion of crime control benefits outcomes)*

30. How many crime / alternative outcomes are reported in the study? _____

31. What is the specific outcome recorded on this coding sheet?_____

32. Was it the primary outcome of the study? _____
1. Yes
2. No
3. Can't tell/researcher did not prioritize outcomes

33. Was this initially intended as an outcome of the study? _____
1. Yes
2. No (explain)
3. Can't tell

34. If no, explain why:_____

Unit of analysis

35. What was the unit of analysis for the research evaluation?
1. Addresses
2. Street segments / intersections
3. Street blocks
4. Crime clusters defined through spatial analysis (e.g., kernel density, etc.)
5. Other unit (specify) _____

36. How many units of analysis are there for the intervention in the study? _____

37. Did the researchers collect nested data within the unit of analysis?
1. Yes
2. No

Dependent Variable

38. What type of data was used to measure the outcome covered on this coding sheet?

1. Official data (from the police)
2. Researcher observations
3. Self-report surveys
4. Other (specify) _____

39. If official data was used, what specific type(s) of data were used? (Select all that apply)

1. Calls for service (911 calls)/crime reports
2. Arrests
3. Incident reports
4. Level of citizen complaints
5. Other (specify)
6. N/A (official data not used)
7. Other (specify) _____

40. If researcher observations were used, what types of observations were taken? (Select all that apply)

1. Physical observations (e.g. observed urban blight, such as trash, graffiti)
2. Social observations (e.g. observed disorder, such as loitering, public drinking)
3. Other observations (specify)
4. N/A (researcher observations not used)
5. Other (specify) _____

41. If self-report surveys were used, who was surveyed? (Select all that apply)

1. Residents/community members
2. Business owners
3. Elected officials
4. Government/social service agencies
5. Other (specify) _____
6. N/A (self-report surveys not used)

42. Specifically identify the outcome covered on this coding sheet _____

43. For the units of analysis in this study, what time periods were examined for the outcome covered on this coding sheet?

1. Yearly
2. Monthly
3. Weekly

4. Other researcher defined time periods (specify)

44. What was the length in time of the follow-up period after the intervention?____

45. Did the researcher assess the quality of the data collected?
1. Yes
2. No

46a. Did the researcher(s) express any concerns over the quality of the data?
1. Yes
2. No

46b. If yes, explain _____

Effect size/Reports of statistical significance

Dependent Measure Descriptors

47. Statistical analysis design: _____
1. Pretest comparison
2. Post-test comparison
3. Follow-up comparison
4. N/A

Sample Size

48. Based on the unit of analysis for this outcome, what is the total sample size in the analysis?_____

49. What is the total sample size of the treatment group (group that receives the response)? _____

50. What is the total sample size of the control group (if applicable)? _____

51a. Was attrition a problem in the analysis for this outcome?
1. Yes
2. No

51b. If attrition was a problem, provide details (e. g. how many cases were lost and why were they lost).____

52. What do the sample sizes above refer to?
1. Addresses
2. Street segments / intersections

3. Street blocks
4. Crime clusters defined through spatial analysis (e.g., kernel density, etc.)
5. Other unit (specify) _____

Effect Size Data

53. Raw difference favors (i.e. shows more success for):
    1. Treatment group
    2. Control group
    3. Neither (exactly equal)
    4. Cannot tell (or statistically insignificant report only)

54. Did a test of statistical significance indicate statistically significant differences between either the control and treatment groups or the pre and post tested treatment group?
    1. Yes
    2. No
    3. Can't tell
    4. N/A (no testing completed)

55. Was a standardized effect size reported?
    1. Yes
    2. No

56. If yes, what was the effect size? _____

57. If yes, page number where effect size data is found _____

58. If no, is there data available to calculate an effect size?
    1. Yes
    2. No

59. Type of data effect size can be calculated from:
    1. Means and standard deviations
    2. *t*-value or *F*-value
    3. Chi-square (df=1)
    4. Frequencies or proportions (dichotomous)
    5. Frequencies or proportions (polychotomous)
    6. Other (specify) _____

Means and Standard Deviations

60a. Treatment group mean. _____
60b. Control group mean. _____

61a. Treatment group standard deviation. _____
61b. Control group standard deviation. _____

Proportions or frequencies
62a. *n* of treatment group with a successful outcome. _____
62b. *n* of control group with a successful outcome. _____

63a. Proportion of treatment group with a successful outcome. _____
63b. Proportion of treatment group with a successful outcome. _____

Significance Tests
64a. *t*-value _____
64b. *F*-value _____
64c. Chi-square value (*df*=1) _____

Calculated Effect Size
65a. Effect size _____
65b. Standard error of effect size _____

Conclusions made by the author(s)

Note that the following questions refer to conclusions about the effectiveness of the interventionin regards to the current outcome being addressed on this coding sheet.

66. Conclusion about the impact of the hot spots intervention?
    1. The authors conclude the program positively impacted crime / disorder
    2. The authors conclude the problem did not positively impact crime / disorder
    3. Unclear/no conclusion stated by authors

67. Did the assessment find evidence of a geographic displacement of crime?
    1. Yes
    2. No
    3. Not tested

68. Did the assessment find evidence of other types of displacement of crime?
    1. Yes. Please specify _____
    2. No
    3. Not tested

69. Did the assessment find evidence of a geographic diffusion of crime control benefits?
    1. Yes

2. No
3. Not tested

70. Did the assessment find evidence of other types of diffusion of crime control benefits?

1. Yes. Please specify _____
2. No
3. Not tested

71. Did the author(s) conclude that the hot spots policing intervention was beneficial?

1. Yes
2. No
3. Can't tell

72. Did the author(s) conclude there was a relationship between the hot spots policing intervention and a reduction in crime? _____

1. Yes
2. No
3. Can't tell

73. Who funded the intervention? _____

74. Who funded the evaluation research? _____

75a. Were the researchers independent evaluators?

1. Yes
2. No

75b. If no, explain the nature of the relationship:_____

76. Additional notes about conclusions:_____

77. Additional notes about study:_____

12.3 DETAILED NARRATIVE REVIEW OF THE EFFECTS OF ELIGIBLE HOT SPOTS POLICING EVALUATIONS ON CRIME

12.3.1 Minneapolis (MN) Repeat Call Address Policing (RECAP) Program

In the Minneapolis RECAP program, a randomized controlled trial was used to test the effects of problem-oriented policing on commercial and residential addresses that generated large volumes of calls for service to the police (Sherman, Buerger, and Gartin 1989). The 452 commercial and residential addresses that generated the high numbers of calls for service to the Minneapolis Police Department over a one year period were identified via a simple ranking procedure and included in the experiment. A specialized unit of one sergeant and four patrol officers were assigned to implement the problem-oriented policing strategy at treatment addresses for a one year intervention time period. After simple random allocation procedure was completed, 107 commercial addresses and 119 residential addresses received the problem-oriented policing. The calls for service during the baseline year (1986) were compared to calls for service during the intervention year (1987) to estimate the effect of the problem-oriented policing intervention on the treatment commercial and residential addresses. Subsequent accounts of the of the RECAP treatment noted some innovative problem solving but generally described a problem-oriented policing intervention comprised of traditional law enforcement actions, referrals to social services, informal counseling by police, and modest changes to the physical environment (Buerger 1992, 1993).

The evaluation noted several issues with the execution of the research design (Sherman, Buerger, and Gartin 1989). The two most important were: 1) by chance alone, the simple randomization procedure resulted in many of the most active addresses to be allocated to treatment conditions; the instability between control and treatment groups resulted in reduced statistical power to detect a treatment effect, and 2) the specialized unit was understaffed to deal with 226 high-activity addresses and the resulting treatment dosage was low. Analyses of pre-post differences in calls for service revealed no statistically significant differences for the treatment commercial addresses relative to the control commercial addresses. However, analyses of pre-post differences in calls for service at treatment residential addresses relative to control residential addresses revealed a statistically significant 15% reduction in calls in the first six months that declined to 6% in the first full year.

12.3.2 New York (NY) Tactical Narcotics Teams

The New York Police Department first launched the Tactical Narcotics Team (TNT) program in May 1988 to by allocating a team of officers to a drug-plagued area in Queens; by 1989, TNT was operating in locations throughout New York City (Sviridoff, Sadd, Curtis, and Grinc 1989). The TNT intervention was designed as a

mobile overlay of resources to supplement existing police staffing in particular areas suffering from disorderly street-level drug market problems and was comprised of plainclothes and undercover officers who relied upon "buy and bust" operations to disrupt local drug markets. TNT deployments lasted for 90 days followed by "maintenance" of high visibility police presence. Beginning in 1989, the Vera Institute of Justice completed an external two year study of TNT operations.

The Vera impact evaluation used a quasi-experimental design and measured the impact of TNT on assault, robbery, and burglary incidents in two treatment precincts, the 67th and 70th, relative to one comparison precinct, the 71st (Sviridoff, Sadd, Curtis, and Grinc 1989). Entire precincts were not treated as research sites; rather the evaluation focused on TNT impacts in small drug market areas defined as "particular streets, intersections, sets of buildings, or other 'hot spots'" (p. 12). The Vera evaluation also included pre-intervention and post-intervention surveys of community residents and a number of pre-post qualitative interviews in the targeted areas. The evaluation noted some implementation difficulties in the study precincts that included diminished resources and arrests in the 67th precinct and a shorter than planned maintenance period in the 70th precinct. ARIMA interrupted time series models found that the TNT intervention did not generate statistically significant reductions in assault, robbery, and burglary incidents in the 70th precinct. However, in the 67th precinct, ARIMA time series models found a statistically significant reduction in assault incidents associated with the TNT intervention but no statistically significant reductions in robbery or burglary. The community survey and interviews suggested that TNT did not improve community perceptions of disorder, reduce fear of crime, increase use of public amenities, or improve community attitudes towards the police.

12.3.3 St. Louis (MO) Problem-Oriented Policing at Three Drug Market Locations

Hope (1994) documented three case studies that were part of a "Community Oriented Problem Solving" initiative launched by the St. Louis Metropolitan Police Department in 1991. In the three case studies, specific addresses associated with street-level drug sales were targeted for focused police attention. In the case studies, Hope (1994) described problem-oriented policing interventions comprised of mostly traditional enforcement tactics with some situational responses. These situational responses included housing code enforcement and boarding up and securing buildings. The problem-oriented policing intervention period lasted for nine months.

The evaluation of the interventions in the three case studies used a quasi-experimental design; changes in citizen calls at hot spot addresses location were compared to changes in calls at other addresses on the block as well as other blocks in surrounding areas (Hope 1994). Simple trend and OLS regression analyses examined citizen calls for service during the nine month intervention as well as 12

month pre- and 6 month post- intervention periods. The evaluation reported that all 3 drug locations experienced varying reductions in total calls. Regression analysis suggested that reductions on blocks where drug locations were located were greater than other blocks and intersections in surrounding areas. Hope (1994) also examined immediate spatial crime displacement and diffusion of crime control benefits by comparing trends in calls at targeted addresses to trends in calls at other addresses on same block. He reported mixed results. In case study 1, the intervention seemed to generate significant displacement into surrounding addresses. However, in case studies 2 and 3, he did not find any significant displacement or diffusion effects.

12.3.4 Minneapolis (MN) Hot Spots Patrol Program

The Minneapolis Police Department collaborated with academic researchers to re-examine the deterrent effects of police patrol on crime (Sherman and Weisburd 1995). The landmark Kansas City Patrol Experiment concluded that varying levels of police patrol had no significant effects on crime (Kelling et al. 1974). The Minneapolis redesign of the Kansas City Patrol Experiment addressed two limitations of the original design. First, the small number of areas (15 patrol beats) in the Kansas City experiment resulted in weak statistical power of the design to detect an effect. Second, the police patrol treatment was diffused across relatively large areas (patrol beats); as such, the dosage level of the police patrol intervention applied to the treatment areas may not have been enough to generate a deterrent effect. The research team identified 110 hot spots based on clustering of calls for service at specific addresses and consideration of researcher observations of appropriate place boundaries. These 110 hot spots were allocated to treatment and control conditions in five statistical blocks (resulting in 55 treatment hot spots and 55 control hot spots). The analysis compared calls for service at treatment locations relative to control locations for a baseline year relative to a treatment year.

Based on the observations of trained researchers, the treatment hot spots received twice as much police patrol presence when compared to the control hot spots (Sherman and Weisburd 1995). The study authors noted that there was some breakdown in the treatment applied during summer months due to officer vacations and peak calls for service to the police department. The authors conducted a sensitivity analysis with varying comparison dates to account for the lack of dosage during the summer months. Using a series of analysis of variance models, the authors reported that the police patrol treatment generated between 6% and 13% statistically-significant reductions in calls for service in treatment hot spots relative to calls for service in control hot spots. Analyses of systematic social observation data on disorderly behavior in the hot spots collected by trained researchers suggested that observed disorder was only half as prevalent in treatment hot spots relative to control hot spots.

12.3.5 Jersey City (NJ) Drug Market Analysis Program

The Jersey City Police Department collaborated with the Center for Crime Prevention Studies at Rutgers University to design and implement a randomized controlled trial to evaluate the effects of a problem-oriented drug enforcement strategy at drug hot spots in Jersey City, New Jersey (Weisburd and Green 1995a). Using computer mapping technology supplemented by perceptions of Jersey City narcotics officers of drug market boundaries, the research team identified 56 drug hot spots that were randomly allocated in statistical blocks to treatment and control conditions (28 treatment hot spots and 28 control hot spots). The treatment followed a stepwise strategy that encouraged business owners and residents to be engaged in crime control efforts, implemented carefully-designed crackdowns focused on dealers operating in targeted drug hot spots, and employed a post-crackdown maintenance of targeted areas by heightened uniform patrol presence. The control drug markets experienced unsystematic arrest-oriented narcotics enforcement activity that represented the routine drug enforcement work pursued by the Jersey City Police Department's narcotics squad.

The randomized controlled trial used mixed model analysis of variance methods to compare calls for service during 7 month pre-intervention to calls for service during 7 month post-intervention time periods at the treatment and control drug hot spots (Weisburd and Green 1995a). The analysis revealed statistically significant reductions in disorder calls for service in the treatment drug markets relative to the control drug markets. Violent and property calls for service were not significantly impacted by the intervention. The research team also used mixed model analysis of variance methods to compare calls for service during 7 month pre-intervention to calls for service during 7 month post-intervention time periods at the two-block buffer zones surrounding the treatment and control drug hot spots. The analysis revealed a statistically-significant reduction, or diffusion of benefits effect, in public morals and narcotics calls for service in the treatment buffers relative to control buffers. Finally, the research team also replicated the drug market identification process similar to what was employed to identify the original study drug market locations. This exercise suggested that drug market activity was twice as likely to be found in areas surrounding the control drug hot spots relative to areas surrounding the treatment drug hot spots.

12.3.6 Kansas City (MO) Gun Project

The Kansas City Gun Project examined the gun violence prevention effects of proactive patrol and intensive enforcement of firearms laws via safety frisks during traffic stops, plain view searches and seizures, and searches incident to arrests on other charges (Sherman and Rogan 1995a). The quasi-experimental evaluation focused on testing the hypothesis that gun seizures and gun crimes would be inversely related. In other words, an increase in the number of guns seized in the targeted location would be associated with a decrease in gun crimes in the targeted location. The Gun Project intervention was limited to one target patrol beat that was

matched to a comparison beat with nearly identical numbers of drive-by shootings in 1991. Simple computer analyses of call and incident data were used to focus police interventions at hot spot locations within the targeted beat. A pair of two-officer cars, working overtime from 7 p.m to 1 a.m. seven days a week and not required to answer citizen calls for service, provided extra patrol in the targeted beat. The officers initiated a high volume of contact with the street population. During 29 weeks in 1992-1993, the directed patrols resulted in 1,090 traffic citations, 948 car checks, 532 pedestrian checks, 170 state or federal arrests, and 446 city arrests (Sherman and Rogan 1995a). The comparison beat received routine levels of police activities.

Sherman and Rogan (1995a) used a variety of quantitative methodologies, including before and after difference of means, ARIMA (Auto Regressive Integrated Moving Average) time series models, and analysis-of-variance models, to evaluate the gun crime data. The quasi-experimental evaluation revealed that proactive patrols focused on firearm recoveries resulted in a statistically significant 65% increase in gun seizures (29 additional guns seized) and a statistically significant 49% decrease in gun crimes in the target beat area (83 fewer gun crimes); gun seizures and gun crimes in the comparison beat area did not significantly change (Sherman and Rogan 1995a). The Kansas City Gun quasi-experiment also used before and after difference of means tests and ARIMA time series analyses to examine whether gun crimes were displaced into seven beats contiguous to the target beat. None of the contiguous beats showed significant increases in gun crime and two of the contiguous beats reported significant decreases in gun crimes.

A separate non-equivalent control group quasi-experiment examined community reaction to the Kansas City intervention and, through surveys of randomly-selected residents in the treatment and control areas, found that the community strongly supported the intensive patrols and perceived an improvement in the quality of life in the treatment neighborhood (Shaw 1995). In contrast to broader concerns about the effects of proactive policing programs on police-community relations, the Kansas City hot spots patrol program apparently did not increase community tensions. The research did not, however, attempt to measure the views of persons stopped by police patrolling in the hot spot areas. Shaw (1995) presents data revealing that two-thirds of all persons arrested for illegally carrying concealed weapons in the target area in 1992 did not live in the target area. Shaw (1995) suggests that most offenders in gun hot spot areas may be outsiders who come only for trouble and, as such, the street population who are stopped and checked by the police may have very different views from the residents of that area.

12.3.7 Kansas City (MO) Crack House Police Raids Program

The Kansas City (MO) Police Department collaborated with researchers from the Crime Control Institute and the University of Maryland to test the deterrent effects of uniformed police raids of crack houses on block-level crime and disorder

(Sherman and Rogan 1995b). Using a randomized controlled trial, the research design required all eligible cases to be drawn from blocks with at least five calls for service in the 30 days preceding an undercover drug buy made at the inside of a residence. All cases had to be eligible for a search warrant (as judged by Street Narcotics Unit officers) before random assignment occurred. Of 207 eligible cases, court-authorized raids were randomly allocated to 104 blocks and were conducted at 98 of those sites; the other 103 blocks did not receive raids.

The analysis followed an "intention-to-treat" plan in which cases were analyzed according to random assignment to treatment rather than the treatments actually received (Sherman and Rogan 1995b). Negative binomial regression models were used to analyze citizen calls for service and offense reports during 30 day pre-intervention and 30 day post-intervention time periods at treatment blocks relative to control blocks. The evaluation reported modest decreases in citizen calls (p=.06) and offense reports (p=.15) at treatment blocks relative to control blocks that decayed in two weeks.

12.3.8 Beenleigh (AUS) Calls for Service Project

The Criminal Justice Commission and the Queensland Police Service launched the Beenleigh Calls for Service Project in September 1996 to determine whether problem-oriented policing would reduce the number of calls for service to the Beenleigh Police Division (Criminal Justice Commission 1998). At the time of the project, Beenleigh was described as a lower-income suburb with a population of some 40,000 residents. The Criminal Justice Commission's Research Division analyzed calls for service data for the Beenleigh Police Division and identified two groups of ten addresses that experienced the highest volume of calls during separate six month periods. These twenty addresses then received the problem-oriented policing treatment for a six month intervention period. The problem-oriented interventions were comprised of increased police presence at the targeted addresses, providing crime prevention information and advice to people at the targeted addresses, altering the physical environment (such as trimming bushes and shrubs), and making referrals of problems to other agencies (Criminal Justice Commission 1998: x – xi).

The Criminal Justice Commission (1998) research team used a quasi-experimental design to compare calls for service trends in Beenleigh to calls for service in the matched town of Brown Plains. Simple time series analyses of total monthly calls for service in 5 month pre-test, 6 month intervention, and 3month post-test periods found no noteworthy differences in the total number of calls in the town of Beenleigh relative to the matched town of Brown Plains (Criminal Justice Commission 1998: 25). However, simple non-experimental pre/post comparisons found noteworthy reductions in total citizen calls for service in 16 of 19 case studies included in the report. The research team concluded that the problem-oriented policing strategy enjoyed some success in reducing calls for service at the targeted

locations, but due to the small scale of the project and limitations of the research design, these crime prevention gains were not large enough to be detected at the aggregate town level (Criminal Justice Commission 1998: 28).

12.3.9 Jersey City (NJ) Problem-Oriented Policing at Violent Places Project

The Jersey City Police Department collaborated with researchers from Rutgers University's Center for Crime Prevention Studies to evaluate the effects of problem-oriented policing interventions on high-activity violent crime places (Braga, Weisburd, Waring, Green Mazerolle, Spelman, and Gajewski 1999). Using computerized mapping and database technologies, 24 violent crime places were identified based on ranking intersection areas with high levels of assault and robbery calls and incidents, and police and researcher perceptions of violent areas. These 24 high activity violent crime places were matched into twelve pairs and one member of each pair was allocated to treatment conditions in a randomized block field experiment. The treatment consisted of problem-oriented policing interventions comprised of mostly aggressive disorder enforcement tactics with some situational responses. The duration of the intervention time period was 16 months.

Using Poisson regression models, the main analyses examined the differences of differences between a number of indicators during 6 month pre-test and post-test periods, comparing control and experimental groups. The analyses found that the treatment resulted in statistically significant reductions in total calls for service and total crime incidents, as well as varying reductions in all subcategories of crime types, in the treatment violent crime hot spots relative to controls (Braga et al. 1999: 562-563). Analyses of systematic observation data collected during the pre-test and post-test periods revealed that social disorder was alleviated at 10 of 11 treatment places relative to controls (Braga et al. 1999: 564).[13] Non-experimental systematic observation data collected pre-test and post-test at treatment places suggested that physical disorder was alleviated at 10 of 11 treatment places (Braga et al. 1999: 564).[14] Pre-test and post-test interviews with key community members suggested that community perceptions of places improved at 7 of 12 treatment places (Braga 1997: 235-236). The research team also used experimental analyses to examine displacement and diffusion effects in two-block catchment areas surrounding the treatment and control violent crime places. The analyses found little evidence of immediate spatial displacement or diffusion effects.

[13] One case was excluded from these analyses because the observational data were inappropriately collected (Braga et al. 1999: 564).
[14] One case was excluded from these analyses because it did not have any physical disorder in the pre-test and post-test periods (Braga et al. 1999: 564).

12.3.10 Houston (TX) Targeted Beat Program

Between 1994 and 1996, the Houston Police Department launched the Targeted Beat Program to reduce Part I crimes in the 7 highest crime beats in the city (Caeti 1999). Funds were allocated to use overtime officers to saturate these 7 beats; computer analyses were used to further target enforcement actions at specific hot spots locations within the treatment beats. The Houston Police Department used varying crime reduction strategies across the 7 targeted beats: 3 beats used "high visibility patrol" at hot spots, 3 beats used "zero tolerance" policing at hot spots, and 1 beat used a problem-oriented policing approach comprised of mostly traditional tactics to control hot spots. The intervention period lasted for 2 years.

Caeti (1999) used a quasi-experimental design to estimate treatment effects of the Houston Targeted Beat Program; target beats were matched to non-contiguous comparison beats through cluster analysis and correlations of Census data. Unfortunately, the results of the Houston Targeted Beat quasi-experiment must be interpreted with caution. The key analytic measures of effectiveness were comparisons of pre-test and post-test differences (as measured by t-tests) in reported crime incidents at treatment beats relative to control beats (Caeti 1999: 319-322). However, the analyses did not examine the differences of differences between treatment and control areas. As such, the quasi-experimental analyses did not directly measure whether observed changes in treatment beats were significantly different from observed changes in control beats. Reported statistically significant reductions in treatment beats relative to non-significant decreases and any increases in reported crime can be interpreted with caution as a treatment effect. However, conclusions that the program did not work in treatment beats with reported significant crime reductions relative to control beats with significant crime reductions were not justified. It was completely possible that the observed significant reductions in the treatment beats were significantly greater than the significant reductions in control beats.

Given these caveats, the Houston Targeted Beat quasi-experiment suggests that the aggregated treatment beats experienced significant reductions in auto theft, total Part I index crimes,[15] and total Part I "patrol suppressible" crimes (robbery, burglary, and auto theft) relative to aggregated control beats. The three treatment beats where "zero tolerance" aggressive disorder policing was used to control hot spots experienced mixed reductions in Part I crimes relative to control beats; the three treatment beats where "high visibility" directed patrol was used to control hot spots experienced reductions in a wide variety of Part I crimes relative to control beats; the one treatment beat where an enforcement problem-oriented policing strategy was implemented to control hot spots did not experience noteworthy

[15] Part I Index crimes are eight serious crimes used by the U.S. Federal Bureau of Investigation in the Uniform Crime Reports and include murder, forcible rape, robbery, aggravated assault, larceny, burglary, motor vehicle theft, and arson.

decreases relative to a control beat. The limits of the analytic framework preclude conclusions that certain types of policing strategies may be more effective in preventing crime in hot spots. Nevertheless, the results of this study can be broadly taken to support the position that focused police enforcement efforts can be effective in reducing crime at hot spots.

The Houston Targeted Beat quasi-experiment examined displacement and diffusion effects by conducting simple pre/post comparisons of reported Part I index crimes in beats contiguous to the treatment beats. The analyses revealed no overall evidence of displacement and contiguous beats surrounding three targeted beats (1 problem-oriented policing beat and 2 "zero tolerance" beats) experienced possible diffusion effects as several types of reported Index crimes decreased notably.

12.3.11 Oakland (CA) Beat Health Program

The Oakland Police Department's Beat Health program was a problem-oriented policing intervention designed "to control drug and disorder problems, in particular, and restore order by focusing on the physical decay conditions of targeted commercial establishments, private homes, and rental properties" (Mazerolle et al. 2000, p. 213). The Oakland Police officers collaborated with teams of city agency representatives to inspect drug nuisance properties, coerce landowners to clean up blighted properties, post "no trespassing" signs, enforce civil law codes and municipal regulatory rules, and initiate court proceedings against property owners who fail to comply with civil law citations. The program evaluation used a randomized controlled trial to determine the impact of the Beat Health civil remedy program (treatment group) relative to the impact of the routine policing activities of the regular patrol division (control group) on street blocks in Oakland, California (Mazerolle et al., 2000).

Street blocks were eligible for inclusion in the evaluation when a residential or commercial property on a street block was referred to the Beat Health Unit as having a drug and/or blight problem. Control and treatment groups were each randomly allocated 50 street blocks within residential and commercial statistical blocks (total N = 100). The experimental analysis used the differences of differences design; pre-post time periods were 21.5 months before and 12 months after the 5.5 month intervention period. The research design also explicitly examined displacement and diffusion effects in 500 foot radii catchment areas surrounding the treatment and control street blocks. Mazerolle et al. (2000) found that the Beat Health program generated a statistically significant reduction in drug calls in treatment blocks relative to control blocks but no statistically significant differences in other call types. Analyses of catchment areas suggested an overall diffusion of crime control benefits for treatment catchment areas relative to control catchment areas.

12.3.12 Pittsburgh (PA) Police Raids at Nuisance Bars Program

Concerned about an apparent association between bars and drug dealing, the Pittsburgh (PA) Police Department established the Nuisance Bar Task Force which included prosecutors, liquor control, code enforcement agencies, and community representatives (Cohen, Gorr, and Singh 2003). Nuisance bars were initially identified through calls to the Mayor's "Bar Hot-Line" and to the police narcotics and vice squads; nuisance bars were then officially targeted after plainclothes detectives verified reports of drug dealing and other disorder problems in and around the business premises. After designation as a nuisance bar, it was subjected to raids by the narcotics squad. The evaluators examined raids at 37 nuisance bars conducted between January 1990 and December 1992 (Cohen, Gorr, and Singh 2003). Nuisance bars received an average of 3.7 raids per month during enforcement periods that lasted between one (43%) and five months (18%).

The evaluators used a quasi-experimental design to compare trends in drug calls for service in targeted nuisance bar areas relative to trends in drug calls for service in non-nuisance bar areas (Cohen, Gorr, and Singh 2003). The units of analysis were 660 foot areas (2-3 blocks in either direction) surrounding the 37 targeted nuisance bars and 40 non-nuisance bars located in the same neighborhoods. To estimate intervention impacts, the evaluators used OLS and Tobit regression models that controlled for land-use and population-based risk factors, secular trends, serial autocorrelation, length of enforcement periods, and the number of raids. The evaluators concluded that the police raids resulted in statistically significant reductions in drug calls in the treatment areas relative to control areas during periods of active enforcement. These crime control gains largely disappeared when active enforcement ceased.

12.3.13 Buenos Aires (ARG) Police Presence after Terror Attack Study Initiative

On July 18, 1994, terrorists exploded a bomb at the main Jewish center in Argentina, resulting in 85 deaths and an additional 300 wounded (DiTella and Schargrodsky 2004). One week after this tragedy, the Argentinean government assigned police protection to all Jewish and Muslim centers in the country. DiTella and Schargrodsky (2004) collected data on the number of motor vehicle thefts per block in three neighborhoods in Buenos Aires for the 9 month period between between April 1, 1994 and December December 31, 1994. The authors then collected information on the location of protected Jewish center on the blocks. The authors used difference-in differences estimators in Least Squares Dummy Variable regression models to examine the impact of increased police presence on motor vehicle thefts per block for blocks with Jewish institutions (treatment), one-block away from Jewish institutions, and two-blocks away from Jewish institutions in three Buenos Aires neighborhoods over a 9 month period (5 months post-test, 4 months pre-test).

The analysis included 37 treatment blocks, 161 blocks one-block from treatment, 226 blocks two-blocks from treatment, and 876 total blocks in the analysis. The results found that extra police presence was associated with a statistically-significant 75 percent reduction in motor vehicle thefts on the targeted blocks (DiTella and Schargrodsky 2004). The extra police presence was not associated with significant immediate crime displacement or diffusion of crime control benefits to blocks surrounding the protected Jewish centers. The regression analysis did not report any statistically significant differences in motor vehicle theft in the blocks that were one-block from the treatment block and in the blocks that were two-blocks from the treatment block.

12.3.14 Philadelphia (PA) Drug Corners Crackdowns Program

The Philadelphia (PA) Police Department launched Operation Safe Streets on May 1, 2002 to crackdown on 214 of the highest drug activity locations by stationing officers at these places 24 hours a day, 7 days a week (Lawton, Taylor, and Luongo 2005). Of the 214 locations, 34 were defined as the intersection of two streets and 180 were defined as single addresses. The evaluation team created circular 0.1 mile buffers around the 214 treatment locations (equivalent of roughly one city block in Philadelphia). The evaluators developed 73 "matched" 0.1 mile comparison areas through spatial analyses to identify non-treated high-activity drug locations elsewhere in Philadelphia and further examination of demographics via simple analyses of 2000 US Census data. Buffer zones, comprised of 0.1 mile areas surrounding treatment areas, were also constructed to examine immediate spatial crime displacement and diffusion of benefits effects.

Auto-Regressive Integrated Moving Average (ARIMA) interrupted time series analysis models were used to analyze trends in violent crime incidents and drug crime incidents at treatment areas and comparison areas (Lawton, Taylor, and Luongo 2005). ARIMA models were also used to examine trends in treatment buffer zones and comparison buffer zones. The time series analyses examined trends in 121 weeks of pre-treatment data and 18 weeks of treatment data. The impact analysis revealed that the Operation Safe Streets intervention was associated with statistically-significant reductions in violent crime incidents and drug crime incidents at the treatment areas; no significant intervention time period changes in outcomes were noted at the comparison areas. The analyses of the adjoining buffer zones suggested a statistically-significant reduction, or diffusion of benefits, for violent crime incidents. The results of the analyses of drug crime incident trends in the adjoining buffer zones were mixed, however. Depending on the specification of the ARIMA model, the intervention either generated a displacement effect (1,0,1) or a diffusion effect (1,0,0).

12.3.15 Jersey City (NJ) Displacement and Diffusion Study

The Police Foundation collaborated with the Jersey City Police Department on a controlled study to determine whether targeted police action at two high-activity

crime places led to immediate spatial crime displacement or diffusion of crime control benefits in the areas surrounding the targeted places (Weisburd, Wyckoff, Ready, Eck, Hinkle, and Gajewski 2006). Crime mapping and database technologies, supplemented by police officer observations, were used two identify the two study locations: a street prostitution hot spot and a very active street-level drug market. One-block and two-block buffer zones (or "catchment areas") were constructed around the two targeted crime places to measure possible displacement and diffusion effects emanating from the focused police actions in targeted crime places. The interventions at the prostitution and drug hot spots could be broadly described as enforcement problem-oriented policing interventions comprised of focused traditional police activities with limited situational responses.

The outcome measure in the evaluation were prostitution and drug events occurring during 20 minute observation periods in target and buffer areas as noted by trained observers from the research team (Weisburd et al. 2006). More than 6,000 20-minute observations were made in the target and buffer areas over the course of the study. At the prostitution hot spot location and surrounding catchment areas, the authors used a quasi-experimental design where observed prostitution event trends were examined over a 9 month period and adjusted for citywide disorder call trends. At the drug crime hot spot location and surrounding catchment areas, the authors used a quasi-experimental design where observed drug-behavior events were examined over a 9 month period and adjusted for citywide drug call trends. Difference of means tests were used to evaluate pre-test v. post-test changes in observed events in targeted areas adjusting for citywide trends in respective call categories.

For the prostitution hot spot location, the authors reported a statistically significant 45% reduction at the targeted location, a statistically significant 61% reduction in catchment area 1, and a statistically significant 64% reduction in catchment area 2. For the drug crime hot spot location, the authors reported a statistically significant 58% reduction at the targeted location, a non-statistically significant 33% reduction in catchment area 1, and a statistically significant 64% reduction in catchment area 2. Ethnographic research in the neighborhoods and interviews with arrested offenders suggested that offenders in the targeted areas didn't simply displace into surrounding areas because the diminished opportunities and increased risks associated with moving were judged to exceed any gains from continuing their criminal behavior in proximate areas.

12.3.16 Lowell (MA) Policing Crime and Disorder Hot Spots Project

The Lowell Police Department collaborated with Harvard University researchers to implement a randomized controlled trial testing the effects of problem-oriented policing strategies in reducing crime and disorder problems at hot spots in Lowell, Massachusetts (Braga and Bond 2008). Spatial analyses of crime and disorder calls for service, coupled with police officer and researcher observations on place

boundaries, were used to identify 34 crime and disorder hot spots. These hot spots were matched in like pairs based on simple comparisons of numbers and types of calls for service, place characteristics, and neighborhood demographics. One member of each pair was randomly allocated to treatment conditions in a randomized block field experiment. The treatment consisted of problem-oriented policing interventions comprised of mostly aggressive disorder enforcement tactics with some situational responses. The duration of the intervention time period was 12 months.

Using count-based regression models, the main analyses examined the differences of differences between a number of indicators during 6 month pre-test and post-test periods, comparing control and treatment groups. The analyses found that the treatment resulted in statistically significant reductions in total calls for service, as well as varying reductions in all subcategories of crime types, in the treatment hot spots relative to controls (Braga and Bond, 2008). Analyses of systematic observation data collected during the pre-test and post-test periods revealed that social disorder was alleviated at 14 of 17 treatment places relative to controls (Braga and Bond, 2008). Additional analyses of systematic observation data collected during the pre-test and post-test periods revealed that physical disorder was alleviated at 13 of 17 treatment places relative to controls (Braga and Bond, 2008). A mediation analysis of the core treatment elements suggested that the crime and disorder gains were driven by situational responses rather than increased misdemeanor arrests or police-led social service actions.

Pre-test and post-test interviews with key community members suggested that they noticed an increased police presence and disorder problems were positively impacted in treatment places relative to control places (Braga and Bond, 2009). However, the respondents did not detect any significant changes in police strategy, the willingness of the police to work with residents, or the demeanor of the police toward citizens. The research team also used experimental analyses to examine displacement and diffusion effects in two-block catchment areas surrounding the treatment and control hot spots. The analyses found little evidence of immediate spatial displacement or diffusion effects.

12.3.17 Jacksonville (FL) Policing Violent Crime Hot Spots Program

The Police Executive Research Forum collaborated with the Jacksonville Sheriff's Office to implement a randomized controlled trial to test the crime control effects of problem-oriented policing and direct-saturation patrol at treatment violent crime hot spots relative to control violent crime hot spots (Taylor, Koper, and Woods 2011). The research team used spatial analyses to identify 83 "street violence" hot spots that average 0.02 square miles in size. These 83 violent crime hot spots were then randomly allocated within statistical blocks to problem-oriented policing treatment (N=22), direct-saturation patrol treatment (N=21), and control conditions (N=40). The problem-oriented policing and direct-saturation patrol treatments

lasted for 90 days. The problem-oriented policing treatment was comprised of enforcement initiatives and situational crime prevention measures; Taylor et al. (2011) reported that 283 problem-oriented interventions were implemented across the 22 treatment locations.

The PERF research team compared 1 year pre-treatment outcomes to 90-day post-treatment outcomes and used Poisson and negative binomial regressions to estimate difference in differences treatment effects on violent and property crime calls and incidents (Taylor et al. 2011). The problem-oriented policing intervention was associated with a statistically significant 33% reduction in "street violence" and other noteworthy reductions in violence and property crime during the 90 days following the intervention. The direct-saturation patrol treatment was not associated with any statistically significant reductions in violent and/or property crimes. Using the same analytic framework, the PERF research team examined displacement and diffusion effects in 500 feet buffers surrounding the treatment and control hot spots. The analysis suggested that violent crime problems may have been displaced from problem-oriented policing treatment hot spots into the surrounding buffer zones. The analysis did not find any noteworthy treatment or diffusion results associated with the direct-saturation patrol intervention.

12.3.18 Philadelphia (PA) Foot Patrol Program

The Philadelphia Police Department collaborated with Temple University researchers to implement a randomized controlled trial to determine whether foot patrol prevents crime at violent crime hot spots (Ratcliffe, Taniguchi, Groff, and Wood 2011). The research team identified 120 hot spots based on spatial and temporal analyses of "street" violent crime incidents occurring between 2006 and 2008. The research team also considered the perceptions of Philadelphia Police commanders in the determination of hot spot boundaries. The 120 hot spots were ranked by volume of violent crime incidents, matched into like pairs, and then randomly allocated to treatment (N=60) and control conditions (N=60). The treatment was comprised of pairs of officers patrolling on foot in shifts covering 10 AM through 2 AM the next morning from Tuesday through Saturday each week. The intervention period lasted 12 weeks over the summer of 2009.

The Temple University research team used inverted odds ratios and linear regression models to estimate the differences of differences in street violent crime incidents during the intervention periods to street violence incidents during the pre-intervention periods for the treatment and control hot spots (Ratcliffe et al. 2011). The analysis revealed that the foot patrol treatment generated a statistically significant 23% reduction in violent crime incidents in the treatment hot spots relative to the control hot spots. Buffer areas were constructed by the research team around the study hot spots. Subsequent analyses of violent crime in the buffer areas suggested that some violent crime was displaced from foot patrol hot spots into the surrounding areas; however, Ratcliffe et al. (2011) concluded that the violent crime

control gains in the treatment areas exceeded the violent crime displacement into the surrounding areas.

12.3.19 Boston (MA) Safe Street Teams Program

The Boston Police Department launched the Safe Street Teams hot spots policing in January 2007 to address a recent increase in violent crime (Braga, Hureau, and Papachristos 2011). Using computerized mapping technology and qualitative judgments on place boundaries, the Boston Police Department identified 13 violent crime hot spots to receive a Safe Street Team. Each team was staffed by one sergeant and six police officers. These teams were required to remain in their designated areas and implement problem-oriented policing interventions to address violent crime problems in their hot spot areas. The teams implemented problem-oriented policing interventions that were predominately characterized by increased enforcement initiatives and limited situational crime prevention responses (Braga et al. 2011).

A nonrandomized quasi-experimental design was used to evaluate the violent crime control benefits of the Safe Street Team program at treated street segments and intersections relative to untreated street segments and intersections (Braga et al. 2011). Propensity score matching techniques were used to identify equivalent comparison places in Boston. Growth curve regression models were use to analyze violent crime trends at treatment street units (N=478) relative to comparison street units (N=564). The pre-intervention period included yearly counts of violent index crimes between 2000 and 2006 time period while the intervention time period included yearly counts of violent index crimes between 2007 and 2009. The analysis revealed that the Safe Street Team program was associated with a statistically significant 14% reduction in violent crime at treatment street units relative to comparison street units. Using the same analytical framework, the evaluators also examined violent crime trends at street units in two-block zones surrounding the treatment street units relative to control street units. The growth curve regression models did not report statistically significant spatial crime displacement or diffusion of crime control benefits effects.

12.4 EFFECT SIZES FOR ALL OUTCOMES FOR 20 MAIN EFFECTS TESTS OF HOT SPOTS POLICING

Study	Outcome	Effect Size (std. diff. in means)	Std. Error
Boston Safe Street Teams	Total violent incidents	0.341	0.020
Buenos Aires Police Presence	Motor vehicle theft incidents	0.617	0.169
Jacksonville Patrol	Any violence calls	-0.103	0.115
Jacksonville Patrol	Any violence incidents	-0.082	0.133
Jacksonville Patrol	Non-DV incidents	-0.093	0.139
Jacksonville Patrol	Non-DV violence calls	-0.088	0.116
Jacksonville Patrol	Property calls	0.061	0.050
Jacksonville Patrol	Property incidents	-0.096	0.062
Jacksonville POP	Any violence calls	-0.131	0.111
Jacksonville POP	Any violence incidents	0.034	0.119
Jacksonville POP	Non-DV violence calls	-0.116	0.111
Jacksonville POP	Non-DV violence incidents	0.064	0.126
Jacksonville POP	Property calls	0.139	0.051
Jacksonville POP	Property incidents	-0.060	0.068
JC Disp. Drug	Drug events	0.441	0.131
JC Disp. Prost.	Prostitution events	0.525	0.149
JC DMAP	Disorder calls	0.696	0.275
JC DMAP	Property calls	-0.061	0.267
JC DMAP	Violence calls	-0.193	0.267
JC POP	Disorder calls	0.167	0.062
JC POP	Disorder incidents	0.334	0.180
JC POP	Narcotics arrests	-0.086	0.134
JC POP	Narcotics calls	0.212	0.081
JC POP	Non-DV assault incidents	0.425	0.154
JC POP	Property calls	0.128	0.054
JC POP	Property incidents	0.227	0.083
JC POP	Robbery calls	-0.072	0.190
JC POP	Robbery incidents	0.645	0.060
JC POP	Street fight calls	0.339	0.204
JC POP	Total calls	0.088	0.033
JC POP	Total incidents	0.197	0.052
KC Crack	Disorder calls	0.028	0.048
KC Crack	Property calls	0.113	0.130
KC Crack	Total calls	0.051	0.039
KC Crack	Violent calls	0.094	0.129
KC Gun	Gun crimes	0.866	0.275
Lowell POP	Assault calls	0.205	0.080
Lowell POP	Burglary calls	0.186	0.124
Lowell POP	Disorder calls	0.140	0.047
Lowell POP	Larceny calls	0.093	0.064
Lowell POP	Robbery calls	0.402	0.255
Lowell POP	Total calls	0.145	0.034
Minn. Patrol	Hard calls	0.033	0.029
Minn. Patrol	Soft calls	0.068	0.018
Minn. Patrol	Total calls	0.061	0.015
Minn. RECAP Comm.	Total calls	0.015	0.137
Minn. RECAP Resid.	Total calls	0.369	0.132
NYC TNT 67	Assault incidents	0.103	0.089
NYC TNT 67	Burglary incidents	0.088	0.066
NYC TNT 67	Robbery incidents	0.070	0.073
NYC TNT 70	Assault incidents	0.171	0.097
NYC TNT 70	Burglary incidents	-0.097	0.066
NYC TNT 70	Robbery incidents	-0.154	0.073
Oakland Beat Health	Drug calls	0.274	0.056
Phila. Drug Corners	Drug incidents	0.748	0.257
Phila. Drug Corners	Violent incidents	0.962	0.259
Phila. Foot Patrol	Violent incidents	0.143	0.021

12.5 EFFECT SIZES FOR ALL OUTCOMES FOR 13 DISPLACEMENT AND DIFFUSION EFFECTS TESTS OF HOT SPOTS POLICING

Study	Outcome	Effect Size (std. diff. in means)	Std. Error
Boston Safe Street Teams	Violent incidents	0.009	0.000
Buenos Aires Police Protect	MV Theft 1	0.087	0.087
Buenos Aires Police Protect	MV Theft 2	0.014	0.077
Jacksonville Patrol	Any violence incidents	-0.083	0.259
Jacksonville Patrol	Non-DV calls	-0.104	0.199
Jacksonville Patrol	Non-DV incidents	-0.225	0.259
Jacksonville Patrol	Property calls	0.016	0.071
Jacksonville Patrol	Property incidents	-0.027	0.114
Jacksonville Patrol	Violence calls	-0.104	0.197
Jacksonville POP	Any violence incidents	-0.097	0.212
Jacksonville POP	Non-DV calls	0.011	0.170
Jacksonville POP	Non-DV incidents	-0.001	0.224
Jacksonville POP	Property calls	-0.085	0.067
Jacksonville POP	Property incidents	-0.150	0.102
Jacksonville POP	Violence calls	0.022	0.169
JC Disp. Drug	Drug events 1	0.066	0.015
JC Disp. Drug	Drug events 2	0.182	0.015
JC Disp. Prost.	Prost. events 1	0.423	0.020
JC Disp. Prost.	Prost. events 2	0.366	0.019
JC DMAP	Disorder calls	0.135	0.268
JC DMAP	Narcotics calls	0.604	0.273
JC DMAP	Property calls	-0.231	0.268
JC DMAP	Violence calls	0.136	0.268
JC POP	Total calls	0.108	0.000
JC POP	Total incidents	-0.009	0.001
KC Gun	Gun crimes	-0.044	0.263
Lowell POP	Total calls	0.013	0.001
Oakland Beat Health	Drug calls	0.160	0.035
Phila. Drug Corners	Drug incidents	0.548	0.065
Phila. Drug Corners	Violent incidents	0.611	0.065