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# **The Effects of Problem-Oriented Policing on Crime and Disorder**

David Weisburd, Cody W. Telep, Joshua C. Hinkle, John E. Eck



**THE CAMPBELL COLLABORATION**

# Colophon

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# THE EFFECTS OF PROBLEM-ORIENTED POLICING ON CRIME AND DISORDER\*

David Weisburd\*\*, Cody W. Telep\*\*\*, Joshua C. Hinkle\*\*\*\*, and John E. Eck\*\*\*\*\*

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## Structured Abstract

### Authors

Weisburd, D.; Telep, C. W.; Hinkle, J. C.; Eck, J. E.

### Title

The effects of problem-oriented policing on crime and disorder

### Abstract

#### *Background:*

Problem-oriented Policing (POP) was first introduced by Herman Goldstein in 1979. The approach was one of a series of responses to a crisis in effectiveness and legitimacy in policing that emerged in the 1970s and 1980s. Goldstein argued that police were not being effective in preventing and controlling crime because they had become too focused on the “means” of policing and had neglected the “goals” of preventing and controlling crime and other community problems. Goldstein argued that the unit of analysis in policing must become the “problem” rather than calls or crime incidents as was the case during that period. POP has had tremendous impact on American policing, and is now one of the most widely implemented policing strategies in the US.

#### *Objectives:*

To synthesize the extant problem-oriented policing evaluation literature and assess the effects of problem-oriented policing on crime and disorder

#### *Selection criteria:*

Eligible studies had to meet three criteria: (1) the SARA model was used for a problem-oriented policing intervention; (2) a comparison group was included; (3) at least one crime or disorder outcome was reported with sufficient data to generate an effect size. The unit of analysis could be people or places.

#### *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. Second, we reviewed the bibliographies of past reviews of problem-oriented policing. Third, we performed forward searches for works that have cited seminal problem-oriented policing studies. Fourth, we performed hand searches of leading journals in the field. Fifth, we searched the publications of several research and professional agencies. Sixth, after finishing the above searches we e-mailed the list of studies meeting our eligibility criteria to leading policing scholars knowledgeable in the area of problem-oriented policing to ensure we had not missed any relevant studies.

#### *Data collection and analysis:*

For our ten eligible studies, we provide both a narrative review of effectiveness and a meta-analysis. For the meta-analysis, we coded all primary outcomes of the eligible studies and we report the mean effect size (for studies with more than one primary

outcome, we averaged effects to create a mean), the largest effect, and the smallest effect. Because of the heterogeneity of our studies, we used a random effects model.

*Main results:*

Based on our meta-analysis, overall problem-oriented policing has a modest but statistically significant impact on reducing crime and disorder. Our results are consistent when examining both experimental and quasi-experimental studies.

*Conclusions:*

We conclude that problem-oriented policing is effective in reducing crime and disorder, although the effect is fairly modest. We urge caution in interpreting these results because of the small number of methodologically rigorous studies on POP and the diversity of problems and responses used in our eligible studies.

## Summary

We conducted a systematic review to examine the effectiveness of problem-oriented policing (POP) in reducing crime and disorder. Eligible studies had to meet three criteria: (1) the SARA model was used; (2) a comparison group was included; (3) at least one crime or disorder outcome was reported. Units of analysis could be places or people. After an exhaustive search strategy that identified over 5500 articles and reports, we found only 10 studies that met our inclusion criteria. This result is particularly surprising given the strong support that has been voiced for POP by both scholars and practitioners. Using meta-analytic techniques, we find an overall modest but statistically significant impact of POP on crime and disorder. We also report on our analysis of pre/post comparison studies. While these studies are less methodologically rigorous, they are more numerous, and our search identified 45 studies that met our other criteria, but did not have a comparison group. Results of these studies indicate an overwhelmingly positive impact of POP. Overall, our results suggest problem-oriented policing has a modest impact on reducing crime and disorder, but we urge caution in interpreting these findings, because of the small number of eligible studies we located and the diverse group of problems and response these studies included.

# 1 Background for the Review<sup>1</sup>

In an article in *Crime & Delinquency* in 1979, Herman Goldstein critiqued police practices of the time by noting that they were more focused on the “means” of policing than its “ends.” His critique drew from a series of recently completed studies that suggested that such standard policing practices as “preventive patrol” (Kelling et al., 1974) or “rapid patrol car response to calls for service” (Kansas City Police Department, 1977) had little impact on crime. Goldstein suggested that the research evidence was not idiosyncratic but reflected a more serious crisis in policing. To illustrate his concern, he referred to a newspaper article in the UK that reported on bus drivers in a small city that were driving by bus stops waving and smiling, but failing to pick up passengers. When questioned by a reporter, a representative for the bus company responded that “it is impossible for the drivers to keep their timetable if they have to stop for passengers” (Goldstein, 1979: 236). Goldstein argued that the police too had become so focused on such issues as the staffing and management of policing that they had begun to ignore the problems policing was meant to solve. Goldstein saw this dysfunction as at the heart of the inability of policing to be effective in solving community problems.

Goldstein called for a paradigm shift in policing that would replace the primarily reactive, incident driven “standard model of policing” (NRC, 2004; Weisburd & Eck, 2004) with a model that required the police to be proactive in identifying underlying problems that could be targeted to alleviate crime and disorder at their roots. He termed this new approach “problem-oriented policing” to accentuate its call for police to focus on problems and not on the everyday management of police agencies. Goldstein also expanded the traditional mandate of policing beyond crime and law enforcement. He argued that the police should deal with an array of problems in the community, including not only crime but also social and physical disorders. He also called for police to expand the tools of policing much beyond the law enforcement powers that were seen as the predominant tools of the standard model of policing. In Goldstein’s view the police needed to draw upon not only the criminal law but also civil statutes and rely on other municipal and community resources if they were to successfully ameliorate crime and disorder problems.

John Eck and William Spelman (1987) drew upon Goldstein’s idea to create a straightforward model for implementing POP, which has become widely accepted. In an application of problem solving in Newport News, in which Goldstein acted as a consultant, they developed the SARA model for problem solving. SARA is an acronym representing four steps they suggest police should follow when implementing problem-oriented policing. “Scanning” is the first step, and involves the police identifying and prioritizing potential problems in their jurisdiction that may be causing crime and disorder. After potential problems have been identified, the next step is “Analysis.” This involves the police analyzing the identified problem(s) so that appropriate responses can be developed. The third step, “Response,” has the police developing and implementing interventions designed to solve the problem(s). Finally, once the response has been administered, the final step is “Assessment” which involves assessing the impact of the response on the targeted problem(s).

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<sup>1</sup> This section borrows heavily from Weisburd & Eck (2004).

A 2004 report from the National Research Council offered the following description of problem-oriented policing and how the SARA model works in practice:

The heart of problem-oriented policing is that this concept calls on police to analyze problems, which can include learning more about victims as well as offenders, and to consider carefully why they came together where they did. The interconnectedness of person, place, and seemingly unrelated events needs to be examined and documented. Then police are to craft responses that may go beyond traditional police practices ... Finally, problem-oriented policing calls for police to assess how well they are doing. Did it work? *What* worked, exactly? Did the project fail because they had the wrong idea, or did they have a good idea but fail to implement it properly? (NRC, 2004: 91)

A number of studies going back to the mid-1980s demonstrate that problem solving can reduce fear of crime (Cordner, 1986), violent and property crime (Eck & Spelman, 1987), firearm-related youth homicide (Kennedy et al., 2001) and various forms of disorder, including prostitution and drug dealing (Capowich & Roehl, 1994; Eck & Spelman, 1987; Hope, 1994). For example, a study in Jersey City, New Jersey, public housing complexes (Mazerolle et al., 2000a) found that police problem-solving activities caused measurable declines in reported violent and property crime, although the results varied across the six housing complexes studied. In another example, Clarke and Goldstein (2002) report a reduction in thefts of appliances from new home construction sites following careful analysis of this problem by the Charlotte-Mecklenburg Police Department and the implementation of changes in building practices by construction firms.

Two experimental evaluations of applications of problem solving in crime hot spots (Braga et al., 1999; Weisburd & Green, 1995) have been cited often in support of problem-oriented policing approaches (e.g. see NRC, 2004).<sup>2</sup> In a randomized trial involving Jersey City violent crime hot spots, Braga et al. (1999) reported reductions in property and violent crime in the treatment locations. While this study tested problem-solving approaches, it is important to note that focused police attention was brought only to the experimental locations. Accordingly, it is difficult to distinguish between the effects of bringing focused attention to hot spots and that of such focused efforts being developed using a problem-oriented approach. The Jersey City Drug Market Analysis Experiment (Weisburd & Green, 1995) provides more direct support for the added benefit of the application of problem-solving approaches in hot spots policing. In that study, a similar number of narcotics detectives were assigned to treatment and control hot spots. Weisburd and Green (1995) compared the effectiveness of unsystematic, arrest-oriented

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<sup>2</sup> A systematic review of “hot spots policing” has been conducted by Anthony Braga (2001, 2007). Hot spots policing focuses on small geographic areas and concentrations of crime. Hot spots policing per se does not demand detailed analysis of the problem identified and often relies on a law enforcement response. Problem-oriented policing can focus on small geographic areas (hot spots); however, further analysis is undertaken to determine the creation of the hot spot and responses are tailored to the needs of each hot spot. Further, problem-oriented policing also examines non-geographic concentrations of crime – repeat offenders, repeat victims, hot products, and so forth. In short, while problem-oriented policing at hot spots can be considered a type of problem-oriented policing, many hot spots policing programs do not use the more systematic methods associated with problem-oriented policing.

enforcement based on ad hoc target selection (the control group) with a treatment strategy involving analysis of assigned drug hot spots, followed by site-specific enforcement and collaboration with landlords and local government regulatory agencies, and concluding with monitoring and maintenance for up to a week following the intervention. Compared with the control drug hot spots, the treatment drug hot spots fared better with regard to disorder and disorder-related crimes.

Past narrative reviews have concluded that research is supportive of the capability of problem solving to reduce crime and disorder (e.g. Weisburd & Eck, 2004; NRC, 2004). The National Research Council panel on police practices and policies concluded for example that, “There is a growing body of research evidence that problem-oriented policing is an effective approach” (NRC, 2004: 243). In turn, evidence of the effectiveness of situational and opportunity-blocking strategies, while not necessarily police based, provides indirect support for the effectiveness of problem solving in reducing crime and disorder. Problem-oriented policing has been linked to routine activity theory, rational choice perspectives, and situational crime prevention (Clarke, 1992a, 1992b; Eck & Spelman, 1987). Recent reviews of prevention programs designed to block crime and disorder opportunities in small places find that most of the studies report reductions in target crime and disorder events (Eck, 2002; Poyner, 1981; Weisburd, 1997). Furthermore, many of these efforts were the result of police problem-solving strategies. We note that many of the studies reviewed employed relatively weak designs (Clarke, 1997; Weisburd, 1997; Eck, 2002).

POP has emerged as one of the most widely accepted and widely used strategies in American policing. This is indicated both by the adoption of POP by major federal agencies and national policing groups, the creation of national awards for effective problem-oriented policing programs, and the widespread adoption of the approach in American policing and throughout the world. For example, the U.S. federal agency, the Office of Community Oriented Policing Services (COPS) adopted POP as a key strategy, funding the Center for Problem-Oriented Policing ([www.popcenter.org](http://www.popcenter.org)), and developing over 50 problem-specific guides for police. The Police Executive Research Forum adopted POP as a “powerful tool in the policing arsenal,” in the 1980s and began to run a yearly national conference to promulgate and advance POP strategies (Solé Brito & Allan, 1999: xiii). In 1993 the Herman Goldstein Award was created for “problem solving excellence,” and since its inception there have been over 800 submissions from around the world. In the UK, the Tilley Award for POP was created in 1999, and has since received almost 600 submissions. Reflecting the wide scale adoption of POP by American police agencies, the 2003 Law Enforcement Management and Administrative Statistics (LEMAS) survey reported that 66 percent of local police agencies over 100 officers claimed to be using POP tactics (Bureau of Justice Statistics, 2006).

## **2 Objectives of the Review**

The objective of this systematic review is to synthesize the extant empirical evidence (published and unpublished) on the effects of problem-oriented policing on crime and disorder. We seek to go beyond prior studies in two ways. First, our review takes a much more

comprehensive approach to identifying problem-oriented policing studies than prior narrative reviews as detailed below. We also summarize prior studies using meta-analysis, and do not simply rely on counting the number of studies that reach a specific threshold of evidence (the “vote counting approach”). As described later, the statistical summary approach has important implications for coming to conclusions regarding the effects of problem-oriented policing.

Our main research question is whether problem-oriented policing is effective in reducing crime and disorder. Originally, we hoped to use meta-analysis to examine additional questions that would have shed important light on the nature of problem solving. These included a review of whether different types of problem solving had differential effects on crime and disorder, and whether specific types of crime or disorder appear more amenable to problem solving approaches. Unfortunately, as detailed below, the number of studies that met our inclusion criteria were not large enough to examine these questions statistically, though we do try to draw some conclusions regarding these questions through a narrative review of the studies. We also set out to examine questions of cost effectiveness in our review. However, none of the studies we examined provided data on cost effectiveness issues.

As our review of the literature makes clear, departments using problem-oriented policing have applied a diverse group of tactics to ameliorate a variety of problems. As such, it is important to note that we are examining the effectiveness of a process used by the police to develop tactics, not a particular police tactic. For our purposes, the method used to develop the intervention is the treatment. The studies examined below differ greatly in the problems addressed and the solutions implemented, but they share the common thread of using a problem-oriented approach.

### **3 Methods**

#### **3.1 Criteria for inclusion and exclusion of studies in the review**

The scope of this review is experimental and quasi-experimental studies that include comparison groups. The preliminary eligibility criteria were as follows:

1. The study must be an evaluation of a problem-oriented policing intervention. For this it is necessary to develop an operational definition of problem-oriented policing. For this review only police interventions following the basic tenets of the SARA model outlined above will be eligible for inclusion. This is to say that such interventions must involve the identification of a problem believed to be related to crime and/or disorder outcomes, the development and administration of a response specifically tailored to this problem and an assessment of the effects of the response on a crime or disorder outcome.
2. The study must include a comparison group which did not receive the treatment condition (problem-oriented policing).
3. The study must report on at least one crime/disorder outcome including sufficient quantitative data to calculate an effect size.
4. The study may deal with problem areas or problem people.

While the main focus of our review follows these criteria, a number of problem-oriented policing experts who were contacted in the study identification stage of our research (see below) suggested that a review which ignores simple pre-post studies without control groups would miss a large number of problem-oriented policing evaluations. Though as we note below, we have strong concerns regarding the methodological rigor of such studies, we did identify such studies and analyze them separately from our main analysis.

### 3.2 Search strategy for identification of relevant studies

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, we reviewed the bibliographies of past reviews of problem-oriented policing. Third, we performed forward searches for works that have cited seminal problem-oriented policing studies.<sup>3</sup> Fourth, we performed hand searches of leading journals in the field.<sup>4</sup> Fifth, we searched the publications of several research and professional agencies (see list below). Our searches were all completed during the fall of 2006. Thus, our review only covers studies published in 2006 and earlier. Sixth, after finishing the above searches and reviewing the studies as described later, we e-mailed the list of studies meeting our eligibility criteria in June 2007 to leading policing scholars knowledgeable in the area of problem-oriented policing. These scholars were defined as those who authored at least one study which appeared on our inclusion list as well as anyone on the list of affiliates of the POP Center (<http://popcenter.org/aboutCPOP.html>), anyone involved with the National Academy of Sciences review of police research (NRC, 2004), and other leading policing scholars identified by the authors. This helped us identify studies the above searches left out as these experts were able to refer us to studies we missed, particularly unpublished pieces such as dissertations. Finally, we consulted with an information specialist at the outset of our review and at points along the way in order to ensure that we used appropriate search strategies.

The following databases were searched:

1. Criminal Justice Periodical Index
2. Criminal Justice Abstracts
3. National Criminal Justice Reference Services (NCJRS) Abstracts
4. Sociological Abstracts
5. Social Science Abstracts (SocialSciAbs)
6. Social Science Citation Index

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<sup>3</sup> The seminal pieces used were: Goldstein, 1979; Goldstein, 1990; Spelman and Eck, 1987; Eck and Spelman, 1987; Braga et al., 1999.

<sup>4</sup> These journals were: *Criminology*, *Criminology and 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*, *Policing and Society*. Hand searches covered 1979-2006.



7. Dissertation Abstracts
8. Government Publications Office, Monthly Catalog (GPO Monthly)
9. Police Executive Research Forum (PERF) database of problem-oriented policing examples (POPNet)
10. C2 SPECTR (The Campbell Collaboration Social, Psychological, Educational and Criminological Trials Register)
11. Australian Criminology Database (CINCH)
12. Centrex (Central Police Training and Development Authority)- UK National Police Library

The following keywords were used to search the databases listed above (in all cases where police is listed we would also use policing and “law enforcement”):

1. “Problem-oriented policing”
2. Police AND “problem solving”
3. SARA model
4. Police AND SARA
5. Police AND scanning
6. Police AND analysis
7. Police AND “problem identification”
8. Police AND identify AND problem
9. Police AND “situational crime prevention”
10. POP

The publications of the following groups were searched:

1. Center for Problem-Oriented Policing (Tilley Award and Herman Goldstein Award submissions, Problem-Specific Guides for Police)
2. Institute for Law and Justice
3. Community Policing Consortium (electronic library)
4. Vera Institute for Justice (policing publications)
5. Rand Corporation (public safety publications)
6. Police Foundation

The following agencies’ publications were searched and the agencies were contacted if necessary:

1. Home Office (United Kingdom)
2. Australian Institute of Criminology
3. Swedish Police Service
4. Norwegian Ministry of Justice and the Police
5. Royal Canadian Mounted Police
6. Finnish Police (Poliisi)
7. Danish National Police (Politiet)
8. The Netherlands Police (Politie)
9. New Zealand Police

The bibliographies of the following sources on problem-oriented policing were reviewed:

1. Braga (2002). Problem-oriented policing and crime prevention.
2. National Research Council (2004). Fairness and effectiveness in policing: The evidence
3. Mazerolle and Ransley (2005). Third party policing.
4. Mazerolle, Soole, and Rombouts (2005). Drug law enforcement: The evidence.
5. Scott (2000). Problem-oriented policing: Reflections on the first 20 years.

Several strategies were used to obtain full-text versions of the studies found through searches of the various abstract databases listed above. First, we attempted to obtain full-text versions from the electronic journals available through the University of Maryland library research port. When electronic versions are not available, we used print versions of journals available at the library. When the journals or articles were not available at the University of Maryland library, we made use of the Interlibrary Loan Office (ILL) to try to obtain the journal from the libraries of other area schools. When these methods did not work, we contacted the author(s) of the article and/or the agency that funded the research to try to get a copy of the full-text version of the study. We were able to identify report documents for all studies that were deemed relevant for full text review.

### **3.3 Details of study coding categories**

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

- a. Reference information (title, authors, publication etc.)
- b. Nature of description of selection of site, problems etc.
- c. Nature and description of selection of comparison group or period
- d. The unit of analysis
- e. The sample size
- f. Methodological type (randomized experiment, quasi-experiment or pre-post test)
- g. A description of the POP intervention
- h. Dosage intensity and type
- i. Implementation difficulties
- j. The statistical test(s) used
- k. Reports of statistical significance (if any)
- l. Effect size/power (if any)
- m. The conclusions drawn by the authors

Joshua Hinkle and Cody Telep (authors of the review) independently coded each eligible study. Where there were discrepancies, either Dr. Eck or Dr. Weisburd reviewed the study and determined the final coding decision. The coding of the pre-post studies was checked by Noah Miller (a graduate student at the University of Maryland). Our coding database, which includes the quantitative data used to calculate the effect sizes we describe below, is available on the Campbell Collaboration website.

## 4 Findings

### 4.1 Selection of Studies

We used a broad search strategy to ensure that we identified all relevant publications that met our inclusion criteria. As a result, our initial search produced a large number of hits in the databases searched (i.e. citations). We identified 5282 studies using our set of keywords on the 12 online databases. We narrowed this list by reviewing titles and abstracts and removing any studies not related to policing, any studies not in English<sup>5</sup>, any duplicates, and book reviews. This left us with a total of 1964 citations. We then removed any studies that were not related to problem-oriented policing, leaving us with 628 studies. Finally, we removed studies that we were certain did not meet our methodological criteria (e.g. non-evaluation studies that just describe what problem-oriented policing is), leaving us with 124 citations. We reviewed the full text of these 124 studies to make final eligibility determinations. After reviewing these studies, we found four that met our inclusion criteria. We identified an additional 282 studies with our search of agency and research group publications. After more closely reviewing abstracts and full-text of these studies, we found two Goldstein Award submissions that met our inclusion criteria. Our forward search using seminal articles did not identify any additional citations we had not located with our prior searches. The hand search of leading journals in the field also did not identify any additional eligible studies. Thus, after our initial eligibility review, we found six studies that met all of our inclusion criteria.

We emailed 62 policing scholars and practitioners (see list in Appendix B) for feedback on our list of studies and asked for their help in identifying additional studies. With the assistance of these problem-oriented policing experts, we identified three additional eligible studies. In turn, we identified one new study from additional hand searches of bibliographies. Thus, we found a total of 10 studies that met all of our eligibility criteria.

While it is not uncommon in Campbell reviews to find only a small number of studies regarding a specific practice, the absence of a wide body of evidence in the area of problem-oriented policing is particularly concerning. POP represents a broad array of strategies applied to a broad array of problems. The development of systematic knowledge for policing accordingly requires that there be an equally broad array of studies that would allow us to assess what types of strategies are effective in what types of circumstances and for what types of crime. Additionally, this omission of systematic study using rigorous research methods is particularly troubling given the wide spread adoption of problem-oriented policing in the U.S. and elsewhere.

One explanation for the relatively small number of studies that met the methodological criteria of our review may be that much evaluation of problem-oriented policing has used weaker research designs. In our communications with POP scholars, some argued that it was particularly difficult to identify comparison groups for POP programs because problems by their nature were often unique. Accordingly, many problem-oriented policing programs are evaluated

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<sup>5</sup> In an effort to ensure we were not missing any key studies published in other languages, we did examine non-English studies that cited Goldstein (1979) or Goldstein (1990) on Google Scholar. After translating titles and/or abstracts, we determined that none of these studies met our inclusion criteria.

using simple before and after research designs. Such designs are generally excluded from Campbell reviews because the absence of a control group makes it difficult to differentiate between general trends in crime and trends produced by the intervention. For example, a decline over a period of time may reflect a general crime trend in a city rather than the direct impact of treatment. While we recognize the difficulties of identifying control groups for POP programs, our review itself documents that such approaches are possible in evaluating POP programs. Moreover, given the wide spread adoption of problem-oriented policing across the U.S. and elsewhere, the lack of a larger body of high quality research evidence is certainly an important finding of our review.

As noted earlier, based on reactions of problem-oriented policing scholars we also identified problem-oriented policing studies that were evaluations using the SARA design, but did not meet our methodological criteria of being a randomized experiment or a quasi-experiment with a comparison group. During our initial database search and search of agency publications, we found 24 studies that met our inclusion criteria, 11 of which were Goldstein and Tilley Award submissions. (We examine the potential biases of the award submissions later.) After further review, we eliminated three of these studies as ineligible after determining they did not have proper data for inclusion or did not fully follow the SARA model. Our consultation with leading policing scholars helped us identify many additional pre/post studies. After a re-reviewing of Goldstein and Tilley submissions to look for eligible pre-post studies, and reviewing additional sources provided by policing experts, we found 24 additional eligible pre/post studies, 22 of which were Goldstein and Tilley submissions, giving us a total of 45 before/after studies. These studies will be analyzed separately and discussed in greater detail in section 4.6.

For the main analysis of this systematic review, the 10 eligible studies identified and discussed below are:

1. POP in a suburban Pennsylvania park (Baker & Wolfer, 2003)
2. POP in Jersey City violent crime places (Braga, Weisburd, Waring, Green Mazerolle, Spelman, & Gajewski, 1999)
3. Knoxville Public Safety Collaborative (Knoxville Police Department, 2002)
4. Oakland Beat Health program (Mazerolle, Price, & Roehl, 2000b)
5. Minneapolis Repeat Call Address Policing (RECAP)(Sherman, Buerger, & Gartin, 1989)
6. Philadelphia Safe Travel To and From School Program (Stokes, Donahue, Caron, & Greene, 1996)
7. Atlanta Problem-Oriented Policing Approach to Drug Enforcement Project (Stone, 1993)
8. San Diego Coordinated Agency Network project (C.A.N.) (Thomas, 1998)
9. United Kingdom National Reassurance Policing Programme (Tuffin, Morris, & Poole, 2006)
10. Jersey City Drug Market Analysis Project (Weisburd & Green, 1995)

We do not include any evaluations of “pulling levers policing” in our main analysis, as none of the existing studies include control conditions that met our study requirements (see

section 4.6).<sup>6</sup> We should also note we did not include Hope's (1994) problem-oriented policing in St. Louis project and the Beenleigh Calls for Service Project (Criminal Justice Commission, 1998). Although both of these studies report on problem-oriented policing interventions with a comparison group, neither includes sufficient data to calculate an effect size. In Hope (1994), there is not exact pre and post crime count data provided and the standardized residual change scores cannot be used for the calculation of an effect size for meta-analysis. The Beenleigh Calls for Service Project (1998) has pre and post crime counts for certain case studies, but does not have the exact data available for the entire project. In particular, there was very limited data comparing the Beenleigh Police Division and the Browns Plains Police Division (the comparison group identified by the authors). We make reference to the overall findings of these studies in our narrative description below, but based on data limitations, we did not include these two POP evaluations in our final statistical analyses.

## 4.2 Characteristics of studies

The 10 eligible studies come from eight different U.S. cities (Jersey City was the site for two studies) and six wards in the United Kingdom. Lorraine Green Mazerolle was lead author or co-author on three of the studies and David Weisburd was an author or co-author in two studies.

Four of the eligible studies were randomized experiments and six were quasi-experiments with a comparison group. The randomized experiments were all place-based interventions as were four of the six quasi-experiments. The two person-based interventions focused on probationers and parolees in Knoxville and San Diego.

The interventions covered a variety of problems, demonstrating the wide applicability of problem-oriented policing. Two interventions dealt with reducing probationer/parolee recidivism, two targeted drug markets, one responded to vandalism and drinking in a park, one combated crime in hot spots of violence, one addressed school victimization, two tackled problem addresses, and one targeted overall crime. These interventions also used a variety of approaches to address crime and disorder.

We briefly give some background information below on each of the eligible studies. We provide characteristics of the eligible studies in Table 1. More detailed information comparing the studies on the problems addressed, use of the SARA technique, responses, and evaluation design is provided in Table 2.

### Baker & Wolfer, 2003

Baker and Wolfer describe a POP intervention in a small Pennsylvania town aimed at targeting vandalism and substance use in a local park. During the scanning and analysis process, officers noted that the park was full of litter and had overgrown brush, allowing offenders to hide from police. Using crime-prevention surveys and crime mapping, they determined that the problem was isolated in the small area in and around the park. To respond, officers target hardened by removing overgrown shrubs. They used other methods of situational crime prevention by installing cameras, repairing fences, improving lighting, locking the park at night, limiting access, and posting rules and regulations. In addition, the police used proactive patrol and increased enforcement of the curfew law to target juvenile offenders. Officers worked with

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<sup>6</sup> The evaluation of Operation Ceasefire does include a broad based comparison with other cities (see Braga et al., 2001). However, as we discuss in section 4.6 we did not consider this control condition to meet our study requirements. That evaluation is included in our analysis of pre-post studies.

residents to establish a Neighborhood Watch to coordinate cooperation between the police and area residents. To assess the project, researchers used a quasi-experimental design with a comparison group. Volunteers administered 29-question surveys both before and after the project to random samples of residents in the immediate area of the park and a comparison group of residents who lived in the same town, but not adjacent to the park.

#### Braga et al., 1999

Braga and colleagues document a POP project in Jersey City, NJ designed to address hot spots of violent crime. These hot spots were defined using computerized mapping and then officers worked to determine what problems existed at each hot spot. After initially choosing 28 pairs of violent crime places, the randomized experiment was narrowed to 12 pairs- 12 hot spots received problem-oriented policing and 12 received traditional patrol. In the 12 treatment pairs, officers were required to complete an analysis report assessing the specific problems in the particular hot spot. They were encouraged to use official data and meetings with, or surveys of, community members. Although all the hot spots were chosen because of high rates of violence (typically street fights, drug market violence, and/or robbery), officers also identified widespread disorder problems that included public drinking and loitering. Officers designed a response to specifically target the problems they uncovered in the analysis stage. Thus, the exact response varied by hot spot, but the responses all included some aspect of aggressive order maintenance and most included efforts to make physical improvements to the area (e.g. removing trash, improving lighting) and drug enforcement. To assess the project, the researchers used calls for service data, as well of pre and post observations of physical and social disorder.

#### Knoxville Police Department, 2002

The Knoxville Police Department describes a program designed in response to citizen complaints about repeat offenders. These repeat offenders tended to be parolees or probationers that received limited supervision and services in the community. Working with the Tennessee Board of Probation and Parole, officers reviewed parolee records and citizen complaints, determining that past efforts such as increased patrol (more arrests) and reduced workloads had been largely unsuccessful. They recognized that these offenders re-entering the community frequently had dysfunctional families and substance abuse and mental health problems. The two agencies created the Knoxville Public Safety Collaborative as a response, combining the resources of the police and probation services and collaborating with 25 human service providers to bring much needed services to parolees. The response involved coordinated and proactive treatment in which the parolee and parole officer developed a release plan, followed by a multi-division staff meeting to discuss treatment options, and then the parolee supervision by a team including police officers, probation officers, and community service providers. The 265 parolees in the program were compared to a historical comparison group of 261 parolees who would have been eligible for the program. This quasi-experimental evaluation was completed by the University of Tennessee School of Social Work.

#### Mazerolle, Price, & Roehl, 2000b

Mazerolle and colleagues describe a randomized experiment testing the impact of the Beat Health problem-oriented policing program in Oakland, CA. The Beat Health program was designed to address drugs and disorder at problem addresses/street blocks in the city. Sites were referred to the Beat Health team through hotlines, community meetings, and reviews of calls for

service. Half of the sites (50) referred were randomly selected to receive the Beat Health treatment; the other half (50) received normal patrol. The analysis used a blocked design to compare residential and commercial addresses separately. The Beat Health intervention involved a team of one police officer and one police service technician visiting a site to identify and analyze the problem and to make contact with the property owner or place manager to try to address the problems. The police attempted to build a close working relationship with individuals who had a stake in improving the property and tried to provide guidance on crime prevention. The intervention typically involved pressuring third parties (usually the landlord of a problem apartment building or property owner) to make changes to improve property conditions. The Beat Health team could also use the SMART (Specialized Multi-Agency Response) Team, made up of city inspectors, to enforce local housing, fire, and safety codes. The team could also instigate legal action against landlords and property owners through civil law. This project used a problem-oriented approach to third party policing: Beat Health teams met with property owners and closely examined problem sites to determine the best course of action to target problems. Calls for service data were used for the assessment.

#### Sherman, Buerger, & Gartin, 1989

Sherman and associates describe the Minneapolis, MN Repeat Call Policing (RECAP) program designed to respond to commercial and residential addresses with a high number of calls for service. Using calls for service data, the top 500 addresses with the most calls were examined. Schools, city hall, hospitals, police stations, parks, check-cashing locations, and intersections were all removed because police felt these locations were inappropriate for the intervention. The remaining sites were blocked into half commercial (250) and half residential sites (250). These sites were then randomized in rank-ordered pairs with half of the sites assigned to receive a problem-oriented policing treatment and half to receive standard patrol. After some data cleaning issues, a total of 119 residential sites and 107 commercial sites received the treatment. The treatment team was four officers and a sergeant who were assigned to visit each site and use as many sources as possible to diagnose the problem. These sources included analysis of call data and incident reports, on-site interviews of residents, and interviews of place managers. Officers were then supposed to design and implement an intervention plan that needed to be approved by the sergeant. The actual treatment varied greatly across addresses. Officers spent a lot of time helping landlords with problem tenants and providing letters to repeat domestic violence victims informing them of their rights and available services. Commercial responses were even more heterogeneous than residential responses. The time spent at each site also varied considerably with officers visiting some addresses only once and others weekly throughout the yearlong intervention period. The program was assessed using a comparison of calls for service data.

#### Stokes et al., 1996

Stokes and associates document a problem-oriented policing project designed to reduce student victimization on the way to and from middle school in Philadelphia, PA. Officers recognized that school violence was an issue, and they worked to understand the underlying problems. Using focus groups, victimization surveys, and analysis of police and school data, the police, along with representatives from the Center for Public Policy at Temple University and vice-principals from Philadelphia middle schools all came to better understand the dynamics of students being attacked on their way to or from school. They used crime mapping to visually

display unsafe locations identified by students and the student victimization survey provided data on the level of victimization, how often this victimization was reported, and how dangerous students perceived their trip to and from school to be. Using this data, the Philadelphia Police Department decided to create a police-secured safe corridor for students to travel on foot safely to one middle school. Using officers from the Philadelphia PD, the Temple University PD, and the Philadelphia Housing Authority, the police used crime maps to create a corridor 10 blocks long and three blocks wide where police patrols were increased from 8-9am and 2:30-4pm. During these time periods, two foot patrol officers, a patrol car, and a bike patrolled the corridor. A pre and post student victimization survey was used for the assessment. Student responses in the target middle school were compared to responses from students in three similar middle schools.

### Stone, 1993

Stone describes a problem-oriented policing project in Atlanta, GA designed to address drug selling and use in public housing projects. Two housing projects were chosen as intervention sites and two were used as comparisons in this quasi-experiment. To analyze the drug problems, a management team was created with representatives from the Atlanta Police Department and the housing authority. The management team conducted resident victimization surveys to determine the extent of problems and understand resident perceptions of crime problems. The research team, along with the police, conducted extensive research to document the drug problem in the area by examining data from the police, drug treatment facilities, schools, courts, social service agencies, and corrections agencies. The management team focused on five problem areas in the response: poor lighting, abandoned cars, abundant litter, poor playgrounds, and improperly strung clotheslines. These five problems were identified by residents, officers, and supervisors, and the management team thought focusing on these problems would help address some of the underlying issues leading to drug problems. There was also an effort to get uniformed officers to work more closely with undercover narcotics detectives and to have all officers work more cooperatively with the Atlanta Housing Authority. The team did successfully work with Georgia Power to implement weekly lighting checks, abandoned cars were quickly removed, resident clean up days reduced the litter problem, and dangerously strung clotheslines that could get in the way of officers were quickly repaired. The program was assessed using pre and post victimization data on whether residents in the target and comparison housing projects had been asked to buy or sell drugs.

### Thomas, 1998

Thomas describes the Coordinated Agency Network (C.A.N.) designed to reduce juvenile probationer recidivism in San Diego. The San Diego Police and the San Diego County Probation Department Juvenile Division both recognized that juveniles were frequently being re-arrested after release on probation. In San Diego, low-risk juvenile offenders were typically “banked,” meaning they only had to contact their probation officer by mail. They were largely unsupervised and frequently failed to abide by the conditions of their probation. An analysis of the area revealed that many of these juveniles needed greater supervision because of unstable family lives, and because of their close geographic proximity to major drug ports, gang activity, and a large prison. The police and probation division formed C.A.N. to increase supervision and monitoring of juvenile probationers. Fifteen officers volunteered to help monitor the juveniles and to refer them and their families to community-based support programs. After an initial



assessment by a senior probation officer, police officers assigned to each juvenile would make bi-weekly visits to be supervisors and mentors. The program included a graduated model of sanctions and rewards based on the juvenile's compliance with probation along with their performance at school. For the assessment, recidivism rates for a group of 80 C.A.N. participants were compared to a group of 80 similar "banked" juveniles who did not participate.

#### Tuffin, Morris, & Poole, 2006

Tuffin and colleagues report on the National Reassurance Policing Programme implemented in six wards (neighborhoods) in the United Kingdom. The program was designed to address the "reassurance gap," the idea that residents are fearful of increasing crime rates even when crime is actually decreasing. This gap has been explained in part by the signal crimes perspective, which argues that certain crimes, particularly certain types of disorder, signal to the community that crime is out of control. Thus, the rates of these signal crimes are more important in generating resident perceptions than actual overall crime rates. The program had three main focuses: having accessible and visible police officers, community involvement in identifying priorities for police, and using targeted police activity and problem solving. A seven-stage model was used to implement the program: *Research*- officers had to find out about the neighborhood and how to engage residents; *Engage*- police needed to create conditions for dialogue; *Public preferences*- officers used surveys, questionnaires, neighborhood meetings, and visual audits to better understand problems facing the community; *Investigation and analysis*-police used meetings and focus groups to give a deeper analysis to identified problems; *Public choices*- the police presented the findings of their analysis to residents, so the community could choose priorities; *Plan and action*-officers developed and implemented a plan with local partners; *Review*- police completed an assessment of the problem. The specific problems targeted varied by ward, but all included some type of anti-social behavior, and typically involved drug problems. The researchers used total recorded crime as a method of assessment, comparing each target site to a similar comparison ward before and after the implementation of the program.

#### Weisburd & Green, 1995

Weisburd and Green evaluate the Jersey City, NJ Drug Market Analysis Program. The program identified 56 hot spots of high-activity drug dealing. These hot spots were identified using narcotics sales arrests, drug-related calls for service, narcotics tip-line information, and the assessments of narcotics detectives. Half of these hot spots were randomly assigned to a problem-oriented policing treatment and half received routine enforcement that relied primarily on arrest. The cases were randomized in four statistical blocks, based on volume of drug activity. The program recognized from the outset the need to assign specific officers to specific hot spots to increase accountability, and the need to allow for a diversity of responses to address the problems at a specific hot spot. The program included a step-wise process similar to the SARA model. In the planning stage, officers collected data on the physical, social, and criminal characteristics of each area. In the implementation stage, officers coordinated efforts to conduct a crackdown at the hot spot and use other relevant responses to address underlying problems at the hot spot. Finally, in the maintenance stage, officers attempted to maintain the positive impact of the crackdown. To implement the experiment, squads of narcotics officers were randomly assigned to the treatment or control hot spots. The assessment used calls for service data.

### **4.3 Narrative review of the impact of problem-oriented policing on crime and disorder**

Of the ten eligible studies, eight reported findings in favor of problem-oriented policing, though those effects (as we will see in the next section) vary widely. In Table 3, we provide a summary of results for each eligible study and we provide a narrative analysis of the results here before turning to meta-analytic techniques in the next section.

All of the randomized experiments reported findings suggesting the effectiveness of problem-oriented policing as compared to the control conditions. These experimental studies all employed, at least to some extent, a hot spots approach to using POP (Weisburd & Braga, 2006), which suggests that problem-oriented policing may be particularly effective when used in concert with hot spots policing. In the Jersey City POP in violent crime places experiment (Braga et al., 1999), there was a statistically significant decline in total calls for service and total crime incidents when comparing six months before and after the intervention. For specific call types, there were significant decreases in calls for street fighting, property crime, and narcotics at treatment sites relative to control areas after intervention and significant decreases in incidents for robbery and property crimes. Change in calls for robbery and disorder and changes in incidents for disorder, narcotics, and non-domestic assault incidents were statistically nonsignificant between groups. Social and physical observation data showed improvement in visible disorder in 10 of the 11 treatment areas compared to the control sites after the intervention.

In the Oakland Beat Health study (Mazerolle et al., 2000b), there was a significant decrease in drug calls for service in the experimental sites compared to the control sites using data from 12 months before and after the intervention. Examining only residential sites, experimental drug calls decreased by 13.2 percent while control drug calls increased by 14.4 percent. There was no significant difference between the two groups for disorder, violence, and property calls for service, although only drugs and disorder were primary outcomes. Disorder at commercial experimental sites declined more significantly than disorder at residential experimental sites.

In the Minneapolis RECAP study (Sherman et al., 1989), there was a slightly larger decline in calls for service at target residential sites compared to control sites, but little or no difference in commercial sites when comparing 1986 to 1987 data. For residential sites, calls declined 6 percent in RECAP sites, but increased 0.10 percent in control sites. For commercial sites, calls declined in both sites with a very slightly larger decline in the RECAP sites (10.96 percent vs. 10.70 percent). The residential call decline was more dramatic in the first six months of the experiment when RECAP sites had a 6.96 percent drop in calls compared to an 8.07 percent increase in control sites. Significant findings were reported only for residential addresses included in the study.

While these studies tested problem-solving approaches, it is important to note that focused police attention was brought only to the experimental locations. Accordingly, it is difficult to distinguish between the effects of bringing focused attention to hot spots and that of such focused efforts being developed using a problem-oriented approach. The Jersey City Drug Market Analysis Experiment (Weisburd & Green, 1995) provides a more direct test of the application of problem-solving approaches because experimental and treatment conditions

received similar levels of police attention (but a SARA approach was used only in the treatment hot spots). The experimental sites had significantly smaller increases in disorder calls compared to the control sites using seven months of before and after data. In particular, the project had a positive impact on calls related to public morals, suspicious persons, and assistance. The experiment had no significant impact on property crime or violent crime calls for service. Drug related calls for service were not analyzed both because the experimental treatment likely impacted drug-related calls for service (i.e. residents were encouraged to report drug activity to police), and statistical analyses were made difficult by distributional issues in the data (see Weisburd and Green 1995: 727, note 15).

Both of the probationer/parolee quasi-experiments reported significant findings in favor of the problem-oriented policing protocols. In the San Diego Coordinated Agency Network project (Thomas, 1998), the recidivism rate for program participants was only six percent. A random group of similar juveniles not chosen for the program had a 22 percent recidivism rate. In the Knoxville project (Knoxville Police Department, 2002), 29 percent of program participants successfully completed the terms of their parole, while only 11 percent of those in a historical comparison group did not have their parole revoked.

In the Baker and Wolfer (2003) study, the residents living near the park were significantly more likely than comparison group residents to report being the victims of vandalism or seeing public drinking. However, after the intervention, the victimization rates for the target area had declined to the point where there was not a statistically significant difference between the two groups. The authors conclude that the program helped decrease crime in the park.

The Tuffin et al. (2006) report on reassurance policing produced results favoring problem-oriented policing, although these were largely driven by major crime declines in two of the sites. Overall, crime dropped by 4 percent more in the target sites than the comparison sites. But in three of the sites declines were similar to control sites, and in one site the target group had a crime increase while the comparison had a crime decrease. Victimization rates also declined about five percent more in the target sites than the comparison sites. Thus, there was an overall positive finding related to POP and crime control effectiveness, but the impact varied greatly across the sites.

The two studies that did not report findings in favor of problem-oriented policing results were Stone (1993) and Stokes et al. (1996). In the Stone (1993) study, the rate of being asked to buy or sell drugs measured on a resident victimization survey increased in both the treatment and comparison housing projects, but the increase was substantially higher in the treatment area. Violent crime did decrease in the intervention area, but total crime and property crime increased at a rate greater than the comparison sites. In the Stokes et al. (1996) study, the safety corridor proved to be largely unsuccessful. The rate of student victimization actually increased in the target school, while decreasing significantly in the three comparison schools, indicating a backfire effect of the problem-oriented policing intervention. The victimization question was not a fluke; results for the perception of danger question are almost identical with an increase in students perceiving their trip to school as dangerous in the target school and a decrease in the comparison schools.

As we noted above we did not include Hope's (1994) POP study in St. Louis or the Beenleigh Calls for Service Project (Criminal Justice Commission, 1998) as eligible studies, because of a lack of available data for computing effect sizes. Still, these studies did employ a comparison group and were evaluations of POP, so we briefly note their findings here. Hope (1994) found that POP was successful in reducing calls for service in three drug market locations. Declines in surrounding blocks were nonexistent or less substantial. In the Beenleigh project, when Beenleigh was compared to a similar police division that did not have a POP intervention (Browns Plains), there are no significant differences between the two locations. Certain case studies were successful in reducing crime, but there was no major project impact at the aggregate level.

#### *A note on possible displacement and diffusion impacts in place based studies*

One concern in studies that examine targeted place based interventions is that crime prevented at targeted sites may "displace" to other areas (Repetto, 1976; Weisburd et al., 2006). Though we do not examine displacement in our review it has been a focus of a previous Campbell review on Hot Spots Policing (Braga, 2007). That review concluded drawing upon five studies (two of which are included in our review: Weisburd & Green, 1995 and Braga et al., 1999) that spatial displacement was not a significant threat to hot spots policing initiatives, and indeed that the evidence was stronger that there was a "diffusion of crime prevention benefits" (Clarke & Weisburd, 1994) to areas close by than displacement of crime. Our review examines only the effects of problem-oriented policing on targeted problems and not potential displacement or diffusion of crime control benefits either spatially or in terms of methods, crime types or offenders.

#### **4.4 Meta-analysis of the impact of problem-oriented policing on crime and disorder**

We completed a meta-analysis of the 10 eligible studies to examine the standardized effect size for each study and to calculate an overall random effect for the impact of problem-oriented policing on crime and disorder. We used Biostat's Comprehensive Meta Analysis program for our analyses and to create the forest plots we present below.

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 & Köferl, 1989), and has been documented in recent reviews of reporting validity in crime and justice studies (see Perry & Johnson, 2008; Perry et al., in progress). For the two probation studies (Knoxville Police Department, 2002; Thomas, 1998) and the Stokes et al. (1996) study, we used the proportion of successes (or failures) to calculate an effect size. These calculations all used the odds ratio method. For the Stone (1993) study, we used the difference in pre to post mean change between the treatment and comparison sites<sup>7</sup>, sample size, and the t-statistic value from a

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<sup>7</sup> To calculate the difference between sites, Stone (1993) used the formula:

paired group t-test examining factor scores on a victimization survey. In the case of Weisburd and Green (1995) 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. For Sherman et al. (1989), we used the chi square values comparing the difference in calls for service at RECAP and control targets before and after the intervention. We could find no satisfactory method for conversion of data from Braga, et al. (1999), and therefore converted the estimates to an odds ratio following the method outlined in the Appendix of Farrington et al. (2007)<sup>8</sup>. We also used the odds ratio method for the Baker and Wolfer (2003) study, the Mazerolle et al. (2000) article, and the Tuffin et al. (2006) report. We think it important to note that most of the studies reviewed are place based, with only two studies (Knoxville Police Department, 2002; Thomas 1998), both quasi experiments, using person based outcomes. While the very specific components of these two studies make it difficult to distinguish design effects from project components, it is clearly important in the future when larger numbers of studies are available to examine this question.

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. 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 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.

A primary outcome is defined in our review as one that was a major focus of the problem-oriented policing intervention. The police needed to be specifically targeting the crime or call type in an outcome for us to identify an outcome as primary. For example, in the Mazerolle et al. (2000: 220) study, the authors note that the Beat Health program “uses a variety of tactics to resolve drug and disorder issues.” The authors present data on calls for service for disorder, drug crime, property crime, and violent crime. Because of this description of the intervention, we chose to include only drug and disorder calls as primary outcomes, and these were the outcomes we used for our mean effect size discussed below.

Where a number of studies use similar outcome measures, it is possible to make comparisons across studies of outcomes for specific measures (e.g. specific types of crimes). In our review such an approach is not possible, because the types of interventions and types of crimes vary widely as noted earlier. Accordingly we analyze the studies using three approaches. The first is conservative in the sense that it combines all primary outcomes reported into an overall average effect size statistic. The second represents the largest effect reported in the

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(|pre treatment mean- post treatment mean |) – (|pre comparison mean – post comparison mean|)

<sup>8</sup> Although our effect size estimates for Braga et al. (1999) are smaller than those reported in Braga’s (2007) systematic review of hot spots policing, we believe this method provides a better estimate of the true effect and variance. Braga is currently re-analyzing the original study data to obtain the most accurate effect size estimate for this study, and we will update our effect size calculation if necessary in the update for this review. The crime count data we used are available in Braga’s (1997) dissertation.

studies and gives an upper bound to our 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 Experiment, which examined violent and property crimes, but assumed that the largest program effects given the intervention would be found in the case of calls for disorder (Weisburd & Green 1995). Finally, we present the smallest effect size for each study. This approach is the most conservative and likely underestimates the effect of POP on crime. We use it here primarily to provide a lower bound to our findings.

In Figure 1, we present the mean effect sizes for all eligible studies.<sup>9</sup> Five of the studies had just one outcome so the mean effect size will be the same as the largest effect size (discussed below). For the Thomas (1998) and Knoxville Police Department (2002) studies, the outcome is probation/parole success (recidivism rate). For Tuffin et al. (2006), total crime incidents were reported as the primary outcome. In Stone (1993), a victimization survey question was reported that asked residents whether they had been asked to buy or sell drugs and in Stokes et al. (1996) a victimization survey question which asked students whether they had been attacked or bothered on the way to or from school was reported. For the other five studies, we combined multiple primary outcomes. In Baker and Wolfer (2003), we took the mean effect for reports of seeing vandalism and drinking. For Braga et al., (1999), we combined total crime calls and total crime incidents. In Mazerolle et al., (2000b) we averaged calls for service for drugs and for disorder. In Sherman et al. (1989), the two coded outcomes were commercial calls for service and residential calls for service, and for Weisburd and Green (1995), property, violence, and disorder calls for service were all combined. In Appendix C, we provide effect sizes for each outcome for the 10 eligible studies.

Positive effect sizes indicate an effect in favor of problem-oriented policing leading to a reduction in crime and disorder. The forest plots in Figure 1 show the standardized difference in means between the treatment and control or comparison group (effect size) with a 95 percent confidence interval plotted around them for all eligible studies. Points plotted to the right of 0 indicate a treatment effect; in this case, the study showed a reduction in crime or disorder. Points to the left of 0 indicate a backfire effect where crime or disorder actually increased after a POP intervention. We used a random effects model, because as noted earlier, problem-oriented policing interventions are a heterogeneous treatment that can vary considerably between studies. The common factor is the process used by the police. Heterogeneity is also found in the types of problems addressed and outcomes examined. Our assumption regarding the large degree of heterogeneity in our review is confirmed when we examine the Q statistic which was significant at the  $p < .05$  level ( $Q = 58.240$ ,  $df = 9$ ). We further examine the issue of heterogeneity of our eligible studies at the end of this section.

Using the mean effect criterion for all eligible studies, we find a strongly significant effect in favor of problem-oriented policing strategies. The size of the effect is relatively modest however, with a standardized mean difference (Cohen's  $d$ ) of .126. This means that on average

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<sup>9</sup> The combined effects were computed using the Comprehensive Meta Analysis program which averaged effects and variances. This is the same as assuming a correlation of 1.0 among the outcomes, which yields the largest possible standard error. Thus, the mean effect size is a very conservative approach.

the POP intervention led to a .13 standard deviation unit decline in the outcome measures examined. This magnitude of effect is defined by Lipsey (1990) as small but meaningful and could “easily be of practical significance” (Lipsey, 2000: 109). Cohen (1988) however, defines a small effect as having a  $d$  value of .20. Importantly, if we had used a simple “vote counting” approach to these data, relying only on statistically significant studies ( $p < .05$ ) we would have concluded that POP was not effective. This is the case because only 4 of the ten studies met the traditional significance criterion.

In examining the individual effect sizes for specific studies, the two person-based studies have the largest overall effects. Both the probationer/parolee studies have a moderate to large positive impact on probation success. The Baker and Wolfer (2003) and Sherman et al. (1989) studies both have a modest impact on crime, but both fail to reach statistical significance because of large standard errors. Braga et al. (1999), Mazerolle et al. (2000b), and Weisburd and Green (1995) all also show a modest impact on crime and disorder. The Weisburd and Green (1995) study is highly statistically significant and the Braga et al. (1999) and Mazerolle et al. (2000b) studies are statistically significant at the  $p < .10$  level.<sup>10</sup> The other three studies all failed to show a positive impact of POP on crime and disorder. In the Tuffin et al. (2006) and Stone (1993) studies, there was essentially no impact of POP on crime. The Stokes et al. (1996) study had a highly significant backfire effect; the POP intervention seemed to actually lead to increased student victimization. We discuss limitations of these studies that may have led to these null and negative findings in the next section.

Given the important distinction in methodological quality between quasi-experimental and randomized experimental studies, we also report the results separately by method. In Figure 2, we examine the mean effect sizes for only the four randomized experiments. The overall random effect becomes slightly larger (0.147) and remains highly statistically significant ( $p < .001$ ). In Figure 3, we look at only the quasi-experiments. The random effect is larger than the overall average (0.158) primarily because of the very large effects in the two probationer/parolee studies, but the random effect estimate across the studies fails to reach statistical significance ( $p = .108$ ). Thus, size of the effect does not vary greatly based on type of study.

In Figure 4, we present the meta-analytic results for the largest effect size for each study. As we noted above, this can be viewed as an upper limit for the effects of problem-oriented policing based on existing studies. This can also be seen as where problem-oriented policing programs that examined multiple outcomes can be most effective. For studies with a single outcome, this finding is identical to Figure 1. As one would expect, the overall random effect is substantially larger (0.297) than the mean combined effect size and this effect remains statistically significant ( $p = .0397$ ).<sup>11</sup> Among the five studies with more than one coded outcome, several of the largest effect sizes were substantially larger than the mean. For the

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<sup>10</sup> Our effect size estimates for Weisburd & Green (1995) differ from previous systematic reviews that included these studies (Braga, 2007; Mazerolle et al., 2008) because our use of the original ANOVA data from the study allowed us to compute more exact effect sizes from the  $p$ -values of the  $F$  tests.

<sup>11</sup> The  $p$ -value for the random effect combining largest effects is greater than the  $p$ -value for the mean effects because the standard errors for the largest effects tended to be larger than the standard errors for smaller effects. See Appendix C.

Jersey City Drug Market Analysis Program, (Weisburd and Green, 1995), the largest effect (disorder calls for service) was more than four times the size of the mean effect (0.696 vs. 0.147) For RECAP (Sherman et al., 1989) the largest effect (residential calls for service) of 0.369 was nearly double the mean effect and was highly statistically significant. The largest effect for the Beat Health Project (Mazerolle et al. 2000b) (drugs calls for service) was more than double the mean effect. In the Jersey City POP in violent places study (Braga et al., 1999), the largest effect (total incidents) was not substantially larger than the mean, but it did reach statistical significance in this analysis. The public drinking effect for Baker and Wolfer (20003) was about .10 larger than the mean effect, but it still failed to reach statistical significance.

We show the largest effects for just the randomized experiments in Figure 5. As noted earlier, all four randomized studies reach statistical significant when examining just the largest effect, and the overall random effect of 0.394 ( $p$  value = .011) indicates a moderate impact of problem-oriented policing on crime and disorder. In Figure 6, we present the largest effect sizes for quasi-experiments. The random effect of 0.167 is substantially smaller than that for randomized experiments and fails to reach statistical significance at the  $p < .05$  level.

In Figure 7, we present the smallest effect size for each study. As expected, the mean random effect decreases substantially to 0.058, but the effect is still positive. We present these results to help bound the findings above on mean and largest effect size. These effects are downwardly biased because, as we noted above, some studies included multiple primary outcomes but assumed the program would have the largest impact in one area. Still, even when POP performs at its “worst,” we still find an overall slight positive impact of problem-oriented policing on crime and disorder.

As we noted above, our ten eligible studies exhibited great heterogeneity, as we anticipated when evaluating an approach like problem-oriented policing that is designed to be applied to a broad array of police problems. In addition, some of the heterogeneity exhibited across studies may be due to complications in computing comparable effect sizes across studies. As we discussed above, the effect size calculation process was not always easy. As a result of the heterogeneity across our eligible studies, we urge caution in interpreting our overall findings.

### *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 six of the 10 eligible studies in our review came from unpublished sources (one dissertation, two government reports, and three unpublished reports or award submissions). Wilson 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” (Wilson, in progress). For our review, there may also be a bias in unpublished studies that are never the less available for review, since two studies were identified through the Goldstein Award competition. The San Diego C.A.N. project (Thomas, 1998) and the Knoxville Public Safety Collaborative (Knoxville Police Department, 2002) were both Goldstein Award submissions. These two studies also reported the largest overall effect sizes, both of which were highly statistically significant. Although these studies were both submitted



for an award, and so are biased towards success (because, as we discuss further below, we would not expect police departments to submit unsuccessful interventions to a POP competition), both studies made strong efforts to identify reasonable and statistically valid comparison groups.

We compared mean effect sizes for unpublished vs. published studies. The mean effect size for published studies is 0.147 ( $p = .00$ ) and for unpublished studies, the average effect is 0.153 ( $p = .10$ ). The similarity between the mean effect sizes between the published and unpublished literature suggests that publication bias may not have major impact on the outcomes of this review.

We generated a funnel plot to examine for possible selection bias in our results. A visual inspection indicates 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. We used the trim-and-fill procedure developed by Duval and Tweedie (Duval and Tweedie, 2000) to examine how our estimate would change in the absence of this asymmetry. The trim-and-fill procedure determined that three studies should be added to create symmetry. The funnel plot with imputed studies is presented in Figure 8. These additional studies dramatically alter the mean effect size estimate. The mean random effect decreased from 0.126 (95% CI = 0.033, 0.219) to 0.060 (95% CI = -0.042, 0.162). In our analysis, however, the trim-and-fill results may be somewhat misleading. These findings do not necessarily indicate a publication bias; indeed, two of the studies causing the asymmetry were unpublished. As Rothstein (2008) points out, this method assumes publication bias when there is asymmetry towards the bottom of the funnel plot. These studies towards the bottom are smaller studies (since they have a larger standard error) and have a larger effect size. However, it is possible that smaller studies genuinely produce larger effects. Particularly in the case of problem-oriented policing, evaluations tend to show more successful results when the project uses a smaller, more manageable caseload for officers. As we review below, when problem-oriented policing projects endeavor to tackle too much at one time, they often face serious implementation issues. A second issue with trim-and-fit pointed out by Rothstein (2008) is an assumption of a relatively homogenous population of studies. As we noted above, these studies are not at all homogeneous. Using simulations, Terrin and associates (2003) found that the trim-and-fit method can spuriously correct for non-existent publication bias. Indeed, when we examine a more homogeneous subset of our data, the randomized experiments, which all focused to some extent on micro places, the trim-and-fill method finds no need for additional studies. Thus, while the trim-and-fill method led to a decreased random effect estimate, we believe the trim-and-fill method may be overestimating the extent of publication bias.

#### **4.5 Study implementation**

Overall, most of the studies report at least a moderate level of success in implementing treatment. Nonetheless, there were specific implementation problems in some of the studies, and this provides a context for understanding differences in impacts across the programs. We review these implementation problems in Table 4.

Of the experimental studies, only Mazerolle et al., 2000b reported full implementation without any significant problems. The Braga et al. (1999) study originally intended for officers

to focus on 56 problem hot spots (in 28 matched pairs), but due to organizational changes in the Jersey City Police Department caused by massive retirements and extensive non-POP work, the final project included only 12 hot spots and only limited progress was made in the first eight months of the intervention (Braga, 1997). After limited progress in the first nine months of the experiment, Weisburd and Green (1995) extended the intervention period to achieve fuller implementation. The experiment achieved full implementation during the last five months of the intervention.

The Sherman et al. (1989) RECAP study presented more serious intervention problems (see Buerger, 1993). There were multiple issues with the selection of hot spots for the intervention. Even after extensive efforts to remove duplicate calls from the computer logs, the researchers estimated that up to 15 percent of calls were “mirrors”--duplicates created as a result of multiple people calling 911 for the same incident. In addition, certain high call addresses showed remarkable instability in examining year-to-year call trends, affecting the precision of estimates. Certain addresses that were reviewed by police and thought to correspond to separate places were actually found to be different entrances for the same location, leading to problems when initially one location could be both in the treatment and control group. In implementing the project, the team of five officers assigned to the intervention was overwhelmed by the number of hot spot locations. In turn, the 226 addresses with a multitude of different problems were difficult to adequately respond to in a year. The absence of calls for service reductions in the second half of the experiment may be a result of officer fatigue with the intervention and an inability of officers to stay motivated during the entire year. In addition, the sergeant in charge of the RECAP team changed midway through the experiment, which may have altered the course of the treatment.

The most “successful” quasi-experiments, the two programs to reduce probationer/parolee recidivism, faced no major implementation difficulties. In turn, though these studies could not rely on the strong assumptions of a randomized experiment, they put significant effort in trying to identify valid comparison conditions. The Knoxville Police Department study (2002) made a particular effort to choose a comparable historical sample of parolees and the University of Tennessee assisted with statistical analyses to offer evidence of compatibility. The San Diego C.A.N. project (Thomas, 1998) also took strides to use a well-chosen comparison group by comparing the 80 project participants to a random sample of 80 juveniles who were on probation, but not chosen for program participation.

The Baker and Wolfer (2003) study did not evidence significant implementation failures, but the evaluation method was potentially problematic. The comparison group of borough residents not living near the park could still have included residents that used the park and were aware of the police intervention. The survey sample sizes were also fairly small, which helps explain the large standard error for the effect size estimates.

The other three quasi-experiments had more substantial problems, which may explain the study outcomes observed. Stone (1993) reported that the Atlanta Police Department did not seem entirely interested in properly implementing the POP project. Many officers did not view problem solving as “real” police work, so effort was often limited. There was a lack of administrative support from top officials in the department and the POP training was poorly

delivered and limited. In addition, Atlanta hosted the Democratic National Convention prior to the intervention forcing officers to delay vacations because of high staffing demands. Finally, as the intervention began in the summer, officers frequently took time off, leaving the POP program chronically understaffed.

Stokes et al. (1996), which produced the only backfire effect in our review, also evidenced implementation difficulties, in this case with their school safety corridor. The largest problem seemed to be that despite an awareness campaign, two-thirds of students at the target school reported they were unaware of the existence of the corridor. In addition, even though violence was more likely in the post-school afternoon hours, the corridor was more poorly staffed during this time period, due to police shift changes and more limited police resources. Also, the victimization survey used by the researchers was not ideal for a middle school population, and many students had difficulty answering the questions.

Tuffin et al. (2006) reported a number of problems with full implementation of Reassurance Policing. Their process evaluation found that only two of the six target sites fully implemented the program. The other four sites had difficulties in effectively partnering with the community and using targeted problem solving. The sites that fully implemented the response showed the strongest results in favor of problem-oriented policing.

As a final note, some scholars have recently questioned whether problem-oriented policing as practiced in the field meets Goldstein's (1979; 1990) original criterion of POP (Cordner and Biebel, 2005; Braga and Weisburd, 2006). It is clear that in some of these evaluations, officers did not complete a thorough analysis of problems prior to developing a response. We do not have detailed process evaluations on all of the studies, but "shallow" problem-solving likely occurred in many of these studies. Thus, although we have focused on response implementation in this section, scholars argue that most POP interventions fail to fully follow through on the principles of POP, regardless of the success of the response.

#### **4.6 Pre/post studies**

As noted earlier, we also collected pre/post studies that did not have a control or comparison condition. These studies are weaker methodologically, but are more numerous in the problem-oriented policing literature. We found a total of 45 pre/post or before/after design studies that met our new inclusion criteria for pre-post studies. Typically, these studies examined official crime data before and after a problem-oriented policing intervention to determine how the POP project affected crime. These studies rarely took statistical steps to account for "history," the idea that crime rates may be rising or falling independent of the specific problem-oriented policing project.

We should note that these studies vary somewhat in methodological quality and not all can be categorized as "simple pre-post." Braga and colleagues (2001) evaluation of the Boston Gun Project, for example, used a time series analysis and a comparison to similar sized cities to assess the impact of Operation Ceasefire on youth homicide rates.<sup>12</sup> This is certainly more

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<sup>12</sup> We do not include other "pulling levers policing" programs (see Kennedy, 2006) in this section though such programs are sometimes defined as problem-oriented policing programs. First, these projects explicitly note they

methodologically rigorous than just an assessment of pre and post crime counts. We chose to include the Braga et al. (2001) study in this section (rather than in the main analysis), because we found this comparison to other cities insufficient for meeting our inclusion criteria. Cities chosen as comparisons for Boston were matched only on population (i.e. the largest cities in the U.S. were used) or geographic proximity (i.e. the largest cities in New England were used). We found these matching techniques to be inadequate to show that these other cities could be validly compared to Boston.

In Table 5, we briefly summarize each study by providing a description of the problem, the response, and the findings. These studies covered a wide variety of problems ranging from neighborhood disorder to homicide. As with our eligible studies, responses also varied greatly, but frequently included a combination of increased community involvement, targeted enforcement, and situational/environmental improvements.

Thirty-two of the 45 studies come from Goldstein or Tilley Award submission. Both of these awards are given to police departments for outstanding problem-oriented policing projects that are innovative, use effective problem solving, and show success in reducing crime. The Goldstein Awards began in 1993 and are given by the Center for Problem-Oriented Policing. Most submissions come from American departments, although departments from the United Kingdom, Canada, and Australia have also submitted entries. The Tilley Awards are given to departments only in the United Kingdom and have been administered by the Home Office since their inception in 1999. The Center for Problem-Oriented Policing website includes a database of every submission for both awards, providing a large resource of POP case studies.

Since many of our pre/post studies were submissions for an award, they almost exclusively report on successful problem-oriented policing interventions. This makes sense, as it would be illogical for departments to attempt to win a POP award with a project that was not effective, (though most submissions are not accompanied by a systematic evaluation). Thus, over half of our pre/post studies would appear to be biased towards success. This leads to a potential publication bias (Rothstein, 2008), or in this case, a non-publication bias. In our case these non-published award submissions may actually be more positive than the published literature. We address this issue below.

In Figure 9, we use a bar graph to display the percent change in crime and disorder reported in each study. When more than one primary outcome was present in a study, we averaged to create a single outcome for every study. These outcomes correspond to the findings described in Table 5. The results overwhelmingly are in favor of problem-oriented policing effectiveness. Of our 45 pre/post studies, 43 report a decline in crime or disorder after the problem-oriented policing intervention. Thus, even though 32 of our studies were award

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are attempting to replicate the Operation Ceasefire framework in a different city. We question whether the SARA model is adequately followed in situations where an intervention is simply adopted from a different city. Second, pulling levers projects typically involve a working group that oversees the operation, and the police may not necessarily take a dominant enough role in this working group for the project to qualify as problem-oriented *policing*. In the Tita et al. (2003: xv) study, for example, the researchers lament that no group took a leadership role in the intervention, and the police viewed the project as the “RAND study.” We think it important to note as well, that Anthony Braga and David Weisburd have begun a Campbell Collaboration systematic review of pulling levers policing. Accordingly, the excluded studies will be assessed in a future Campbell review.

submissions and 31 of these showed a positive impact, 12 of our 13 other studies also reported a beneficial impact of problem-oriented policing. Only one study (Maguire & Nettleton, 2003) reported an increase in crime after using POP. The average percent change in crime over all studies was a sizeable 44.45 percent decrease in crime.

To account for variation in sample size (i.e. crime incidents or calls for service) between studies, we calculated a weighted average percent change by weighting each study by the inverse of its variance and assuming crime follows a Poisson distribution. An approximation to the variance based on the Poisson distribution is:

$$\text{Variance} = (\text{pre count} + \text{post count}) / [\text{pre count}^2 * (\text{pre count} / \text{post count})]$$

With this sampling variance, we constructed a confidence interval around the percentage change for each study. A plot of proportion change with confidence intervals is presented in Figure 10. After weighting each study by the inverse of its variance, we recalculated the average percent change. Even with weighting, the average decrease in crime is still 32.49 percent. This represents the fixed effect mean estimate for the impact of problem-oriented policing on crime and disorder in the pre-post studies. Even though these before and after studies do not employ the methodological rigor of a randomized experiment, they do consistently show a substantial impact of problem-oriented policing on crime and disorder, both in the award submissions and published journal articles.

To address our publication bias concern, we compared the percent change for all studies and then for published and unpublished studies separately. We present these findings in Table 6. As noted above, the overall percent change for all studies was a 44.45 percent decrease in crime and disorder. When, we examine only award submissions, there is a larger percent decrease of 47.79 percent. For the non-award submissions, the percent decrease is smaller, but still substantial (35.55 percent). For the six published studies, the average percent decrease is very similar to the award submissions (47.42 percent). Thus, although there is variation across publication type, the results are not substantively different. Across publication medium, problem-oriented policing is associated with a sizable crime decline in before/after studies that do not employ control groups.

## **5 Discussion and Conclusions**

We began our study with a main research question regarding the effectiveness of problem-oriented policing in reducing crime and disorder. Overall, our review reinforces prior findings based on narrative reviews (NRC, 2004; Sherman and Eck, 2002; Weisburd & Eck, 2004) and more general assumptions regarding the crime and disorder prevention benefits of POP approaches (Bullock and Tilley, 2003; Eck & Spelman, 1987; Goldstein, 1990; Scott, 2000). Whether we used a more conservative mean effect size approach, or examine the largest effects on crime and disorder reported, we find that POP approaches have a significant effect on the outcomes examined. Importantly, the results are similar whether we look at experimental or non-experimental studies.

One surprise in our analysis given prior discussion of problem-oriented policing is the relatively modest effects observed in the studies. The average mean effect size of between .10 and .20 for POP interventions, while meaningful and statistically significant, does not suggest the substantial impact on crime and disorder for the approach that some scholars may have assumed. One explanation for this may be that scholars are often citing specific studies and specific outcomes. In this context our examination of the largest effects in the studies often led to much more robust outcomes. In turn, it is not always disingenuous to focus on such outcomes, as they are sometimes the main concern of the intervention (e.g. see Weisburd and Green, 1995). Additionally, when we examine pre/post studies we do in fact find much stronger impacts for POP approaches. Whether this is a result of the weakness of the methods used is not possible to examine fully in this review.

Nonetheless, we think that the combination of findings in our study, and their consistency across experimental and quasi-experimental studies, adds strength to our general conclusions. In turn, despite our concerns regarding pre/post studies without comparison groups, their consistency also adds weight to the conclusion that POP is an effective policing strategy.

What is most surprising in our review is that there is so small a group of studies that meet our main inclusion threshold. As we have noted already, problem-oriented policing is one of the most important and widely implemented police innovations of the last two decades. The small group of studies in our review allows us to come to a solid conclusion regarding the promise of problem-oriented policing, but it does not allow statistical conclusions regarding the types of approaches that work best for specific types of problems. We think it a major public policy failure that the government and the police have not invested greater effort and resources in identifying the specific approaches and tactics that work best in combating specific types of crime problems. The portfolio of studies that exists is at best serendipitous, and does not represent any concerted public effort to either assess the effectiveness of problem-oriented policing as an approach, or understand the mechanisms that would make it more successful.

We can make some broad generalizations about how and when POP seems to work best from our narrative review of the studies. First, POP appears most effective when police departments are on board and fully committed to the tenants of problem-oriented policing. In Stone (1993) for example, the program suffered greatly because the Atlanta Police Department was not fully committed to POP. Second, program expectations must be realistic. Officer caseload must be kept to a manageable level and police should not be expected to tackle major problems in a short period of time. In the RECAP study (Sherman et al., 1989), for example, officers were overwhelmed by dealing with over 200 problem addresses in a year period. Conversely, Braga and associates (1999) gave officers a more manageable 12 hot spot caseload, and officers were more effective in implementing the response. In general, we found larger effect sizes for studies that focused on particular types of crime (e.g. disorder), as opposed to total crime, providing further evidence of the importance of a more focused approach.

One important conclusion from our review that can be drawn from the diversity of programs and problems addressed is that POP can be applied successfully to a diverse group of problems in a variety of situations. The most successful studies in this review covered problems ranging from parolee recidivism to violence in hot spots to drug markets. But this diversity of

programs and approaches should also bring caution to any conclusions drawn from our study. These studies often involve overlapping interventions such as hot spots policing or community policing. For example Braga's (2007) systematic review of hot spots policing included three of the same studies we include in our review. Indeed, many policing interventions are so multi-faceted that it can be difficult to isolate the impact of any one aspect of the treatment. But with problem-oriented policing, it is important to remember that we are not evaluating a particular police strategy per se. Instead we are evaluating a process police use to develop strategies. Despite a small number of eligible studies, we find an overall positive impact of POP across different units of analysis, different types of problems, and different types of outcome measures.

## **6 Plans for Updating the Review**

The authors expect to update the review every five years.

## **7 Statement Concerning Conflicts of Interest**

Professor Weisburd has been an evaluator of problem-oriented policing programs, including the Jersey City Drug Market Analysis Experiment. He has also published a review with Professor Eck of police effectiveness in the ANNALS (2004), which was based on Weisburd and Eck's work at the National Research Council. The narrative review suggests that POP programs do have a positive crime and disorder outcome. The review provides the basis for Professor Weisburd's interest in carrying out this systematic review. Professor Weisburd would not have been uncomfortable if the findings had shown that the narrative review was incorrect.

Professor Eck has participated in the early and continuing development of problem-oriented policing. He is an Individual Affiliate of the Center for Problem-Oriented Policing and has written extensively on the positive value of problem-oriented policing, as well as how to carry out problem-oriented crime analysis, solution development, and evaluations. In the Weisburd and Braga (2006) edited book, *Police Innovation*, he is classified by the editors as an advocate of problem-oriented policing. Professor Eck has reviewed place-based interventions for the Maryland group, which includes many problem-oriented interventions, and found them generally effective. With Professor Weisburd he helped draft the police effectiveness chapter for the National Research Council review of police research. In this and their subsequent coauthored article the authors concluded problem-oriented policing was effective. Professor Eck has written extensively on the limitations of systematic reviews, the limitations of randomized designs, and the value of small-n case studies.

Cody Telep and Joshua Hinkle have done no previous scholarly work related to problem-oriented policing.

## 8 Acknowledgments

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## 11 Tables

Table 1: Characteristics of eligible studies

<b>Publication Type</b>	<b>N</b>	<b>Percentage</b>
Peer-reviewed journal	4	40%
Government report	2	20%
Unpublished report	3	30%
Dissertation	1	10%
<b>Study Type</b>	<b>N</b>	<b>Percentage</b>
Randomized experiment	4	40%
Quasi-experiment	6	60%
<b>Country of Study</b>	<b>N</b>	<b>Percentage</b>
United States	9	90%
United Kingdom	1	10%
<b>Publication Year</b>	<b>N</b>	<b>Percentage</b>
Prior to 1991	1	10%
1991-1995	2	20%
1996-2000	4	40%
2001-2006	3	30%

Table 2: SARA characteristics and research design for eligible studies

<b>Study</b>	<b>Problem</b>	<b>Scanning and Analysis</b>	<b>Treatment/Response</b>	<b>Research Design and Units</b>
Baker & Wolfer (2003)	Park with alcohol use, drug use, and vandalism	-Did physical survey of the park -Used crime prevention surveys and crime mapping to isolate specifically where the problem was occurring and where the offenders resided	-Target hardening- improved lighting, added cameras, removed brush, repaired fence -Proactive patrol -Offender response- used curfew law, public drinking law, removed pay phone used for drug deals -Victim response- crime newsletter and increased communication with residents	Quasi experiment with comparison group- survey of 250 residents living near the park compared to sample of 670 residents from the entire town
Braga et al. (1999)	Hot spots of violent crime (e.g. street fighting, robbery, assault, drug market violence)	-Computerized mapping used to create 28 pairs of hot spots -12 pairs chosen for analysis; officers completed report on problems using crime data and resident surveys and interviews	-Used a tailored solution to meet the problems observed in the analysis phase -Responses varied, but all included aggressive order maintenance, most included a situational intervention and drug enforcement	Randomized experiment- 12 hot spots receiving POP compared to 12 matched hot spots receiving normal patrol
Knoxville Police Department (2002)	Probationers frequently re-arrested; citizen complaints	-Review of crime and probation revocation data with Tenn. Board of Probation & Parole -Recognition that human service providers needed	-Public Safety Collaborative involved police, parole, and 25 human service providers -Probationer developed release plan, then multi-agency case meeting to discuss supervision, then team supervision and treatment and graduated sanctions	Quasi experiment with comparison group- 265 probationers in the program compared to a historical sample of 261 probationers who would have qualified for the program
Mazerolle, Price, & Roehl (2000)	Drugs and disorder at nuisance locations	-Beat Health team visited problem site and conducted physical survey and worked with place	-Tried to develop working relationship with property owners to assist with fixing problems -Could use team of city inspectors	Randomized experiment- 50 hot spots (usually street blocks) receiving Beat Health compared to 50 sites referred

		managers to address concerns	and civil law to fine and/or take property managers to court	to Beat Health that only received normal patrol
Sherman, Buerger, & Gartin (1989)	High numbers of calls for service at commercial and residential addresses	-Call logs used to generate highest call addresses in the city -For each address, officers were supposed to diagnose the problem using official data and interviews and then develop an action plan approved by the supervisor	-With 226 addresses to treat, there was wide variation in strategies used by five officer RECAP team -Residential strategies often focused on helping landlords with problem tenants and helping repeat domestic violence victims -Commercial strategies were very heterogeneous	Randomized experiment-comparing commercial (119 pairs) and residential (107) addresses that received POP from RECAP team to control addresses
Stokes et al. (1996)	Student violent victimization occurring on the way to and/or from school	-Police, researchers, and principals work together to analyze problem -Conduct student focus groups and initial victimization survey to map student addresses with student-identified problem areas to see where a safe path to school was needed	-Creation of a Safe Corridor- 7-9 police officers patrolled a 10x3 block area from 8-9am and 2:30-4pm -Included a patrol car, foot patrol, and bike patrol	Quasi experiment with comparison group- Victimization survey of 414 students at one target middle school compared to 1681 students at three nearby middle schools
Stone (1993)	Drugs in public housing projects	-Created Management Team with representatives from the police and the housing authority -Conducted resident survey and meetings with police officers, investigators, and supervisors	-Focused on improving lighting, abandoned cars, trash/litter, playground equipment, and improperly placed clotheslines to address underlying problems associated with drug dealing	Quasi experiment with comparison group- Victimization survey of residents of two public housing projects receiving POP (N = 149) compared to two similar comparison housing projects (N = 135)
Thomas (1998)	High re-arrest rates of juvenile probationers	-Recognition of police and probation officers that juvenile supervision was inadequate	-Created Coordinated Agency Network (C.A.N.) between probation and police departments -Increased community-based	Quasi experiment with comparison group- 80 probationers in the program compared to a sample of 80

		-Examined crime and arrest data and consulted prior research	supervision, mentoring, and program referral using police time instead of standard mail reporting	probationers who would have qualified
Tuffin, Morris, & Poole (2006)	Varies by ward- all included anti-social behavior and most included problems with drugs	-Seven stage plan similar to SARA -(1) Research, (2) engage, (3) public preferences, (4) investigation and analysis, (5) public choices, (6) plan and action, (7) review	-Varied by site based on neighborhood priorities, but included increasing police presence, and developing a targeted response that involved community stakeholders	Quasi experiment with comparison group- Six sites (neighborhoods in the UK) matched to comparison areas
Weisburd & Green (1995)	Drug and drug-related disorder	Step-wise process of addressing drug hot spots -"planning stage" involved collecting data on the physical, social, and criminal characteristics of the place, using crime maps, meeting with residents and businesses	-"implementation stage" addressed hot spot using coordinated crackdown and marshaling of government resources (e.g. building code violations) -"maintenance stage" ensured drug activity remained under control	Randomized experiment- 28 hot spots receiving step-wise treatment compared to 28 hot spots receiving normal drug area patrol

Table 3: Crime/disorder outcomes and displacement/diffusion results for eligible studies

<b>Study</b>	<b>Crime/Disorder Outcomes</b>	<b>Other Outcomes</b>	<b>Displacement/Diffusion</b>
Baker & Wolfer (2003)	-Target group residents were significantly more likely to report noticing vandalism and public drinking/disorderly conduct in the pre-POP survey compared to the comparison group, but in the post survey, noticing these crimes decreased in the target group and there was no significant difference between the groups	Target group more likely to regularly see officers on patrol and report that foot and bicycle patrol had reduced their fear of crime	Likely some dispersion of drug offenders to other areas, but not well measured
Braga et al. (1999)	-Comparing 6 months of pre- and post-incidents and calls for service, significant decline in total criminal incidents and calls for service in treatment compared to control hot spots -Significant decrease in calls for street fighting, property, and narcotics -Nonsignificant change in robbery and disorder calls and assault, disorder, and narcotics incidents	Social and physical disorder declined at 10 of the 11 treatment hot spots comparing pre-treatment to post-treatment observations	-Only property crime incidents significantly displaced into two-block catchment areas around treatment hot spots- may just have been an artifact of experimental conditions -Several crimes showed evidence of a diffusion of benefits
Knoxville PD (2002)	-78 in program (29%) succeeded (parole not revoked and discharged from program) while only 29 (11%) in comparison group succeeded	For those who recidivated, offenders in the program were less likely to have parole revoked for committing new crimes (13%) than those in comparison group (22%)	No problem with displacement
Mazerolle, Price, & Roehl (2000)	-Significant decrease in experimental group drug calls compared to control group -No significant difference between experimental and control for disorder, violent crime, or property crime -Commercial disorder declined	None	-Evidence of spatial displacement into catchment areas at the commercial sites, especially the control sites -Some evidence of a diffusion of benefits in catchment areas around experimental residential locations

	significantly compared to residential disorder in the experimental group		
Sherman, Buerger, & Gartin (1989)	-Small decrease in calls for service in treatment residential addresses compared to control (6.01% treatment group decrease compared to .10% increase in control group), especially for the first six months of the experiment -No difference in commercial addresses	None	Not tested
Stokes et al. (1996)	-Victimization rate in test school increased in second victimization survey from 19.4% to 20.2% -There was a statistically significant decrease in victimization at the control schools (21.1 percent down to 15.2 percent)	-Results of perception of danger are similar; the percentage of students afraid of being attacked increased 1% at the test school and decreased 1.5% at the control schools -Less than 1/3 of students knew that the Corridor existed	Not tested
Stone (1993)	-Rate of being asked to buy or sell drugs increases significantly in intervention and control areas, but a greater increase in intervention area (up 68.29% vs. 30.88% in control area) -Narcotics arrests and violent crime decrease in intervention area compared to control area, but total crime and property crime were higher in intervention area	None	Not tested
Thomas (1998)	-Those in C.A.N. program had ¼ the recidivism rate of a random group of those not selected for the program (6% vs. 22%)	Those in C.A.N. were more likely to complete probation conditions (27% vs. 20% in comparison group)	Not tested
Tuffin, Morris, & Poole (2006)	-Two of the six sites had significantly larger reductions in total recorded crime than the controls	-Target sites had increased public confidence in the police and greater feelings of safety	Not tested

	<ul style="list-style-type: none"> <li>-Three of the sites had crime declines similar to the controls</li> <li>-One site had a crime increase and the control had a significant crime decrease</li> </ul>	<ul style="list-style-type: none"> <li>-The decrease for self-reported victimization was about 5% greater in the target areas compared to the control sites</li> </ul>	
Weisburd & Green (1995)	<ul style="list-style-type: none"> <li>-Experimental group has significantly smaller increases in disorder calls (especially public morals, assistance, suspicious persons) compared to control group</li> <li>-No impact on violent or property calls</li> <li>-Difficult to determine impact on drug calls- experiment itself likely changed reporting behavior</li> </ul>	None	<ul style="list-style-type: none"> <li>-Calls for service not more likely to be displaced to experimental catchment areas; instead there appeared to be a diffusion of crime control benefits to 2 block areas surrounding experimental hot spots</li> <li>-New hot spots 2x more likely to appear in control group catchment areas</li> </ul>

Table 4: Study problems and implementation issues

Study	Implementation Problems	Other Limitations
Baker & Wolfer (2003)	No concerns noted by authors	-Some spillover in the policing practices between the target and control group; although control group members did not live near the park, they still could have been using it and seen the police efforts -Survey sample sizes were relatively small and groups were not entirely equivalent
Braga et al. (1999) (implementation issues reviewed in Braga, 1997)	-Lieutenant did not commit to the project, but sergeants eventually able to get violent crimes unit to focus on problem-solving -Manpower limitations due to massive retirements and summer vacations	Small number of target sites
Knoxville PD (2002)	No major concerns, but some confidentiality issues with the partnership and some officers too busy to devote much time; some resistance to creating the database for the project since other police/probation databases already existed	None noted by author
Mazerolle, Price, & Roehl (2000)	No concerns noted- Beat Health program had been running successfully in Oakland prior to the experiment	None noted by authors
Sherman, Buerger, & Gartin (1989)	-The resources of the RECAP team were too limited to give a lot of time to every problem address and likely gave too much time to certain addresses -Residential crime decrease only appeared for the first 6 months- could have been officer fatigue or a new sergeant who was more confrontational -Some RECAP solutions were citywide, which could have diluted any treatment impact at a particular address	-A lot of difficulties in creating the call database- even after efforts to remove duplicates, authors realized that “mirroring” (the same call being reported more than once) had occurred in up to 15% of cases. Some addresses that were thought to be independent were actually two entrances to the same building, sometimes putting one building in both the treatment and control group -Some of the highest call addresses had substantial instability in number of calls over time
Stokes et al. (1996)	-Due to shift changes and officer time constraints,	-Victimization survey instrument was not well



	<p>there were more officers in the corridor in the morning than the afternoon, even though incidents were more concentrated in the afternoon.</p> <p>-Despite publicity efforts, many students (over 2/3) did not know the corridor existed</p>	<p>suited to a middle school population</p> <p>-Recognition that violence occurring on the way to and from school may be difficult to detect and not reducible through only increased police presence</p>
Stone (1993)	<p>-Difficulty in getting enough officers involved- Atlanta busy hosting Democratic National Convention and then lots of officer vacations</p> <p>-POP was only marginally implemented due to several areas of concern that included bad training, poor relationship with public and other agencies, lack of administrative support- officers were not that interested in problem-solving (saw it as “social work”) and their supervisors did not encourage them to problem-solve</p> <p>-Officers did not make progress on one of their five target areas- improving playground equipment</p>	<p>-Some issues with surveying residents in the post-test (lower response rate)</p>
Thomas (1998)	No concerns noted by author	None noted by author
Tuffin, Morris, & Poole (2006)	<p>-Four of the six sites had some issues with fully implementing the response- variation in ability to effectively partner with the community and use targeted problem-solving</p>	<p>-Some difficulties in matching target and comparison sites- only matched on population density, percent minority, percent managers and checked to see if crime rates were similar</p> <p>-For victimization survey, concerns about sample size and representativeness</p>
Weisburd & Green (1995)	<p>-Treatment was implemented very slowly during the first nine months, so intervention period was increased from 12 to 15 months; during the last five months, all the hot spots received the treatment</p>	<p>-May be some impact on findings caused by experimental officers treating experimental hot spots differently in post-intervention period</p>

Table 5: Description of pre/post and before/after design studies (\* Indicates Tilley or Goldstein Award submission)

<b>Study</b>	<b>Problem</b>	<b>Response</b>	<b>Findings</b>
Anselmo (2002)*	Robberies of Hispanic residents in a Charlotte, NC apartment complex	Created International Relations Unit to improve police relationship with Hispanic community	Robberies of Hispanics declined by 2/3 in apartment complex, while robberies of Hispanics citywide increased nearly 30 percent
Arlington Police Department (2006)*	Open-air drug dealing, violent crime, and weapons violations in a neighborhood	Removed offenders, developed and maintained partnership with residents to address quality of life issues	Substantial decrease (75 percent) in calls for service
Aspin (2006)*	Commercial burglary, vehicle crime, and violent crime in Trafford Park, UK	Road closures and new fence built, business watch program	Total crime decreased by over 22 percent in three years after program implementation
Braga et al. (2001)	Youth homicide and youth firearms violence in Boston, MA	Operation Ceasefire uses pulling levels deterrence strategy- focused on high-rate gang offenders	Youth homicide reduced 63 percent and comparison to other cities shows there was no national trend to explain this decline
Buffalo Police Department (2001)*	Street prostitution in Buffalo, NY	Arresting johns, alternative sentencing and social service outreach for prostitutes	Calls for service related to prostitution dropped by 61 percent four years after the program
Burton (1998)*	Crime in and around a country-western club in Arlington, TX	Cooperative partnership with club management, better training for bar staff, ejection of problem patrons	Calls for service at the club decreased by 27 percent in the year after the program started
Burton (2006)*	Sexual assaults in minicabs in London, UK	Crackdowns on illegal cabs, better alternative transportation services, notified women of dangers of minicabs	Rapes and sexual assaults in minicabs decreased by 30 percent a year after the program started
Capowich et al. (1995)	Drug activity in five apartment complexes in Tulsa, OK	Worked with community groups, increased enforcement; problems with getting the department to carry out POP	Total incidents and calls for service declined on average in the target apartment complexes while increasing in comparison complexes, but implementation

			issues made authors reluctant to conclude POP was successful
Cator (2006)*	Overall crime and disorder in and around a school in Portsmouth, UK	Improved partnership with school officials, got students involved in crime prevention, property marking, CCTV	Despite authors conclusion that program was a major success, there was no change in the number of total crime incidents
Clarke & Goldstein (2002)	Theft of kitchen appliances from homes at construction sites in Charlotte, NC	Delay of appliance installation until owners occupied the homes	Targeted appliance theft declined from 58 in 1999 to 30 in 2000 in experimental area; appliance thefts up in the rest of the city
Clarke & Bichler-Robertson (1998)	Overall crime and disorder in five apartment complexes in San Diego, CA	Visited problem tenants, posted clear rules, cleaned up grounds, restricted building access, used resident managers, increased funding for lighting and parking improvements	Calls for service declined by 71 percent in year after the program, while increasing substantially in similar nearby apartments
Coombs (2006)*	Crime and disorder at a music festival in Somerset, UK	Created a partnership with city council and festival organizer, used CCTV, improved lighting, better security guard training, new perimeter fence	Reported crime dropped by more than 70 percent after response implemented
Davies (2006)*	Low-level crime and disorder hot spots in Staffordshire, UK	Two-day clean-up operation, set up environmental services hotline	All crime decreased 19 percent two months after the clean-up
Donaghy (1999)*	Overall crime and disorder, especially burglary in three estates in Leicester, UK	Joint investigations with housing officers, use of CCTV, fences, and new lighting, close relationship with community	Total crime incidents declined 32 percent in the three years after program implementation
Earle & Edmunds (2004)*	Vehicle crime in Portsmouth, UK	Increased intelligence gathering, focused on notifying citizens of risks with media campaign	Vehicle crime declined by 31 percent in 20 months since the start of the program
Evans (1998)*	Domestic violence-related homicide in Newport News, VA	Task force with prosecutors and social service agencies to share information, better training on DV laws for officers	Proportion of homicides related to domestic violence decreased from 49 percent before the program to less than 16 percent in the 12

			years since the program started
Green (1996)	Drug nuisance problems in addresses in Oakland, CA	SMART program (see description of Mazerolle et al., 2000b)	Decline in official police contacts after SMART intervention
Hall (1995)*	Juvenile drug activity on a street in Norfolk, VA	Increased lighting, street barricade, resident interviews to gather intelligence	Calls for service declined from 14 to 1 in two months after the program
Herzog (2002)	Motor vehicle theft in Israel	Creation of proactive police unit, increase in searches of garages, chop shops, and warehouses for stolen parts	17 percent decline in the motor vehicle theft rate in the two years after the program started
Holderness (1998)*	Crimes committed by large homeless/transient population in Fontana, CA	Work with social service agencies to set up transient referral network, aggressive nuisance law enforcement	Average number of transient-related calls for service per month dropped from 56 to 26 in year after program started
Hopkins (2004)	Alcohol-related violence in the town center of Nottinghamshire, UK	Pro-active enforcement by licensing officers at bars, high visibility patrolling	Reported alcohol-related assault declined by 12 percent in the post project year
Jordan (2001)*	School violence in Boston, MA	Home visits from clergy, use of metal detectors, better communication between police and students	84 percent reduction in school violence incidents after program
Landry (1999)*	High crime at a townhouse complex in Phoenix, AZ	Intensive enforcement to address gangs, clean-up activities, block party	Calls for service in the townhouses declined 47 percent
Lopez (2001)	Juvenile graffiti vandalism in San Benito, TX	Improved lighting, regulation of spray paint purchase, increased surveillance, quick graffiti removal	Criminal mischief cases in target area declined from 31 to 21 in year after program implementation, but city-wide graffiti cases also decreased from 321 to 189
Maguire & Nettleton (2003)	Alcohol-related violence and disorder in Cardiff, UK	Training for bar staff, changes to bar licensing policy, targeted police patrol	4 percent decrease in alcohol-related assaults, but a 49 percent increase in alcohol-related disorder
Mazerolle et al.	Serious crime at six public	Changes in physical (e.g. increased	POP activity related to a

(2000a)	housing projects in Jersey City, NJ	lighting) and social context (e.g. providing services for drug – dependent residents) of apartments	significant decrease in serious crime calls
McDonald (2000)*	Street level drug dealing in a neighborhood in Chicago, IL	High intensity and zero tolerance enforcement, close relationship with community to maintain progress	Total calls for service in the area dropped by 72 percent in the year after program implementation
McNerlin & Allen (2003)*	Assaults in the City Centre of Londonderry, UK	Partnerships with bar owners and city agencies to address problem drinking; proactive, targeted policing	City Centre assaults declined by 43 percent after the program
Metro Dade Police Department (1996)*	Violent crime committed against tourists near the Miami Airport in Dade County, FL	Tourist-oriented policing unit created, increased patrols, more information and warnings for tourists	Crimes around the airport declined 15 percent in the year after the program was implemented
Middleham & Marston (2004)*	Missing persons cases (often repeat cases) in Lancashire, UK	Partnerships with other agencies to address criminal activity of missing persons	Repeat missing persons cases declined from 88 to 28 in target division the year after the program started, while increasing from 388 to 542 in the rest of the force
Murdie (2003)*	Alcohol-related violence in hot spots in Belfast, Northern Ireland	Training of bar doormen, CCTV, focused public information campaign, targeted enforcement	Assaults in south Belfast declined 18 percent in year after program
Pease (1991)	Repeat residential burglary in an estate in Rochdale, UK	Removal of prepayment meters, target hardening, cocoon Neighborhood Watch program	Residential burglaries declined 58 percent in year after program began
Pearson & Armes (2004)*	Prostitution, drug use, and disorder in a neighborhood in Preston, UK	Improved lighting, demolition of abandoned garages, CCTV, new fencing, landscaping	Total crime decreased from 40 incidents to 19 in year after program
Peel Regional Police (1996)*	Trespassers coming to a school to commit crime in Peel, ON	Environmental changes to alter the parking lot and enhance natural security	Police incidents at school reduced from 62 to 9 in the school year after the changes made
Prince & Spicer (1999)*	Nuisance activities (e.g. aggressive panhandling) in an	Environmental changes (e.g. vegetation and graffiti removal, new	Total calls for service reduced by 46 percent one year after the

	intersection in Vancouver, BC	trashcans), increased enforcement	program began
Sheard (1997)*	Overall crime and disorder at a video arcade in Delta, BC	Design changes to arcade (ample lighting, increased visibility) and management changes (age restrictions, more security)	Average quarterly calls for service dropped by 46 percent in six years since arcade changes were made
Siggs (2005)*	Street drinking and begging in Brighton and Hove, UK	Multi-agency approach to provide homeless with social services, new law to ban street drinking	The number of beggars found on the street declined from 33 to 3 a year after the program started
Smith (2004)*	Motor vehicle theft and serious crime at a truck stop in Staffordshire, UK	Better staff training, CCTV, new fencing, improved lighting, new signage, police pressured management to make changes to avoid license revocation	Serious crime incidents declined 62 percent in year after program started
Smith (2005)*	Residential burglary in a neighborhood in Staffordshire, UK	Target hardening with alleygating (gates across alleys and foot paths), offenders given drug treatment to reduce re-offending	Average monthly burglaries declined from 61 to 21 in three years after program implementation
St. Petersburg Police Department (1996)*	Street level drug activity in a neighborhood in St. Petersburg, FL	Community mobilization, street barricades, high visibility patrol on motorcycles	Drug law violation calls for service dropped 34 percent one year after the program
Tai & Smith (1998)*	Car theft, prostitution, and illegal cabs in a block in San Diego, CA	Geographic probation to keep out repeat offenders, citizen education, increased car theft warning signs	Total crime reports decreased 46 percent in year after program started
Thistlethwaite & Pertica (2002)*	Drug use and criminal activity of recently released offenders in Blackpool, UK	Targeted 35 specific offenders and provided drug treatment and greater supervision upon release	Total crime decreased 18 percent a year after the program started; greater decrease than any other police division in Lancashire
Thomas (2001)*	Street robbery in Bristol, UK	Used anti-robbery advice cards, arranged new taxi and bus service	Robbery decreased by 41 percent after the program started
White et al. (2003)	Homicide in Richmond, CA	Collaborative task force, targeted domestic violence, youth outreach, community involvement	Homicide dropped significantly after program starts; ARIMA shows only 2 of 75 comparison cities in California had a similar

			trend
Williams et al. (2001)	Illicit drug use and drug-related crime in Adelaide, Australia	Worked with government agencies, made use of local intelligence, integrated drug enforcement with specialist and non-specialist police	Small decline in total drug-specific offenses; program helped stabilize increasing crime rates

Table 6: Overall percent change for pre/post studies

<b>Studies</b>	<b>n</b>	<b>Percent Change</b>
All pre-post studies	45	-44.45
All pre-post studies weighted by the inverse variance	45	-32.49
Goldstein and Tilley submissions only	32	-47.79
All non-Goldstein and Tilley submissions	13	-35.55
All non-Goldstein and Tilley submissions except Maguire et al. (2003)	12	-40.40
Peer-reviewed articles only	6	-47.42



## 12 Figures

Figure 1: Mean effect sizes for all eligible studies

### Mean Effect Sizes for Experimental and Quasi-Experimental Studies

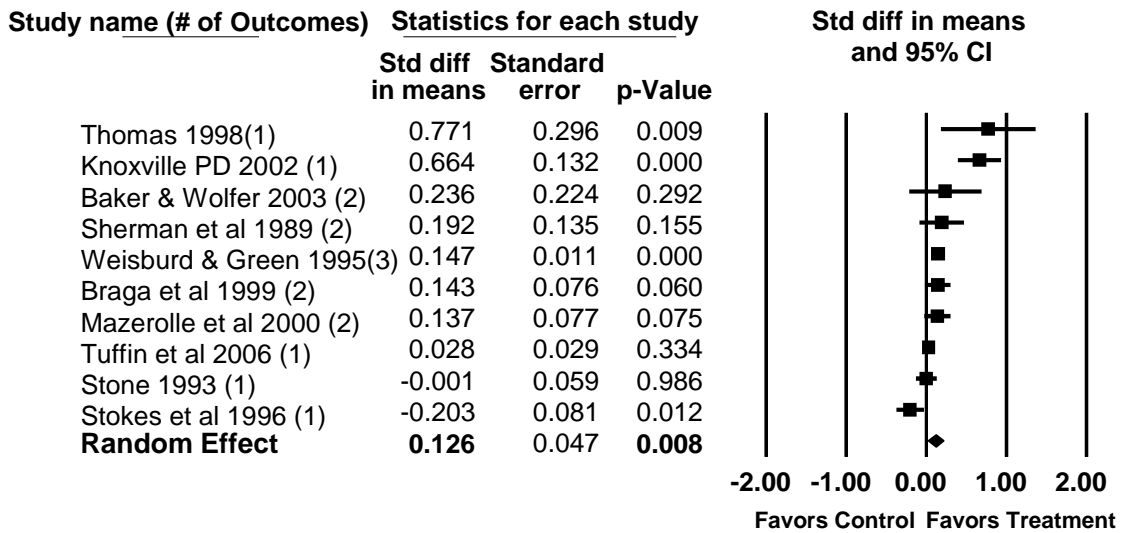


Figure 2: Mean effect sizes for randomized experiments

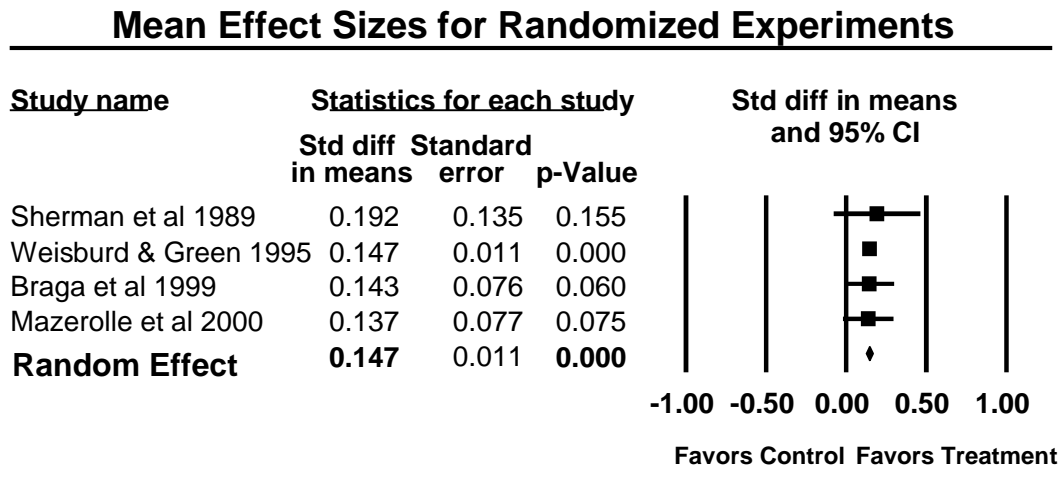


Figure 3: Mean effect sizes for quasi-experiments

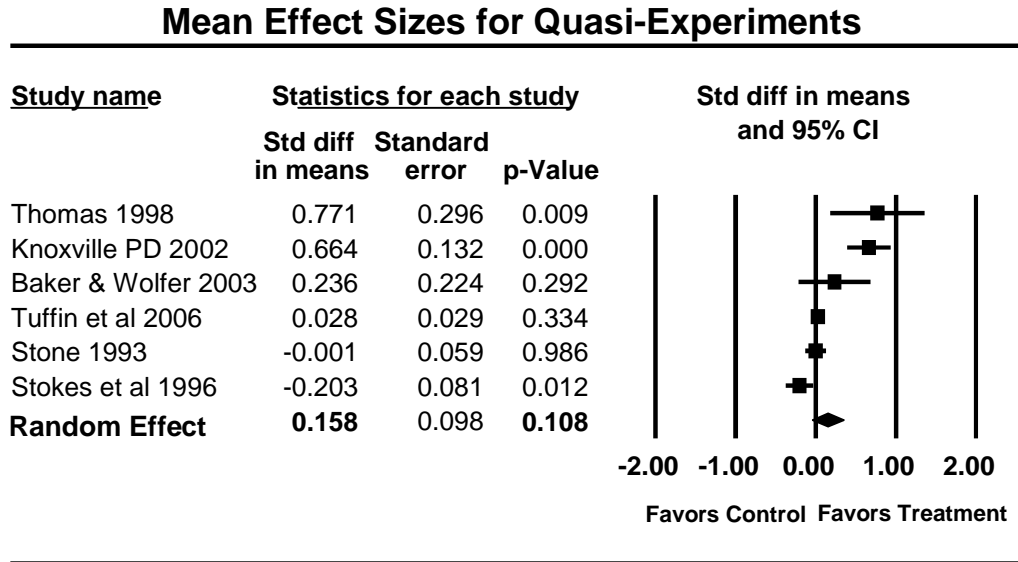


Figure 4: Largest effect sizes and the outcomes these effects correspond to for all eligible studies

### Largest Effect Sizes for Experimental and Quasi-Experimental Studies

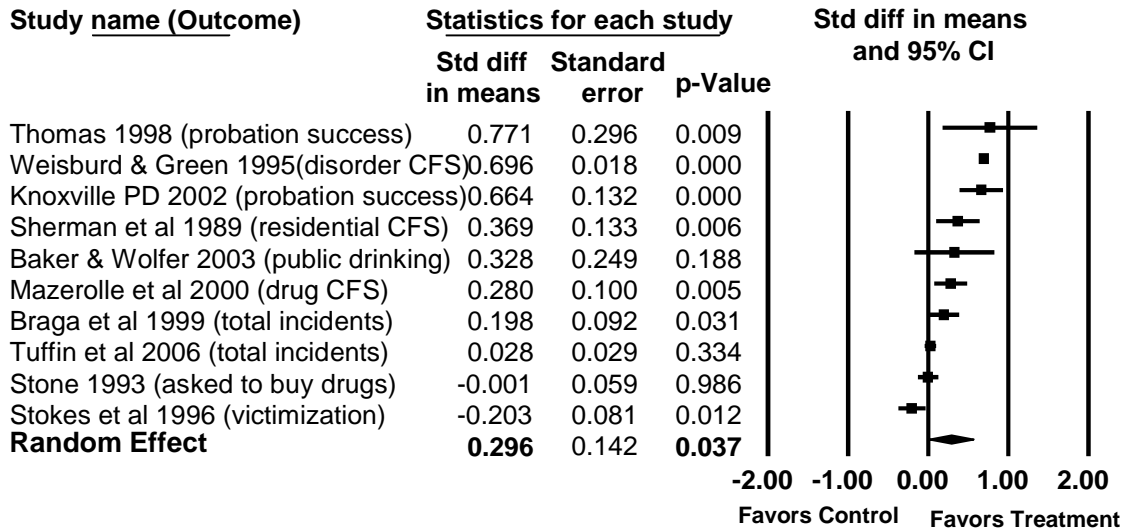


Figure 5: Largest effect sizes for randomized experiments

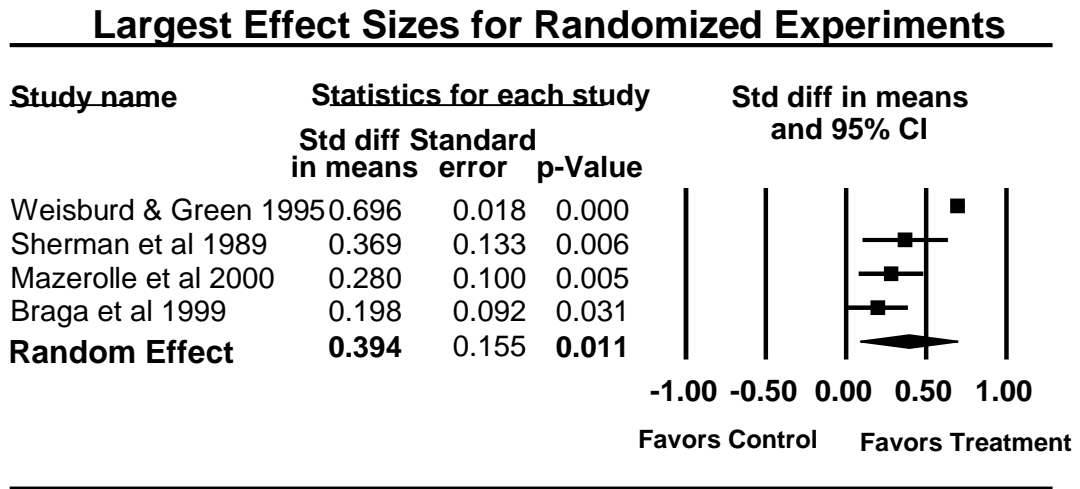


Figure 6: Largest effect sizes for quasi-experiments

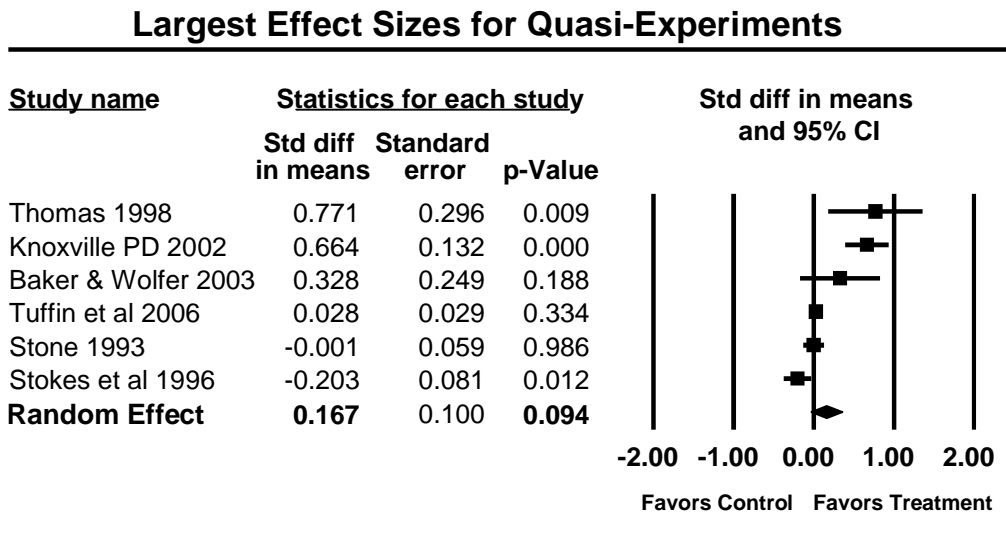


Figure 7: Smallest effect sizes and the outcomes these effects correspond to for all eligible studies

### Smallest Effect Sizes for Experimental and Quasi-Experimental Studies

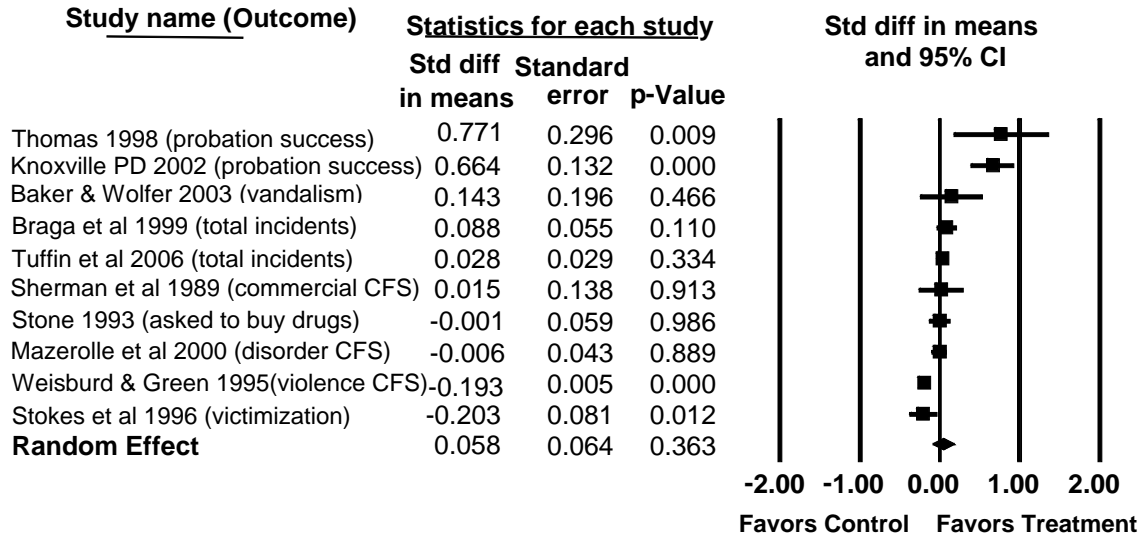


Figure 8: Funnel plot for all eligible studies with imputed studies from trim-and-fill analysis

Note: Empty circles are the original studies. Filled in circles indicate imputed studies from the trim-and-fill analysis.





Figure 9: Percent change for pre/post studies (top bar is average percent change)

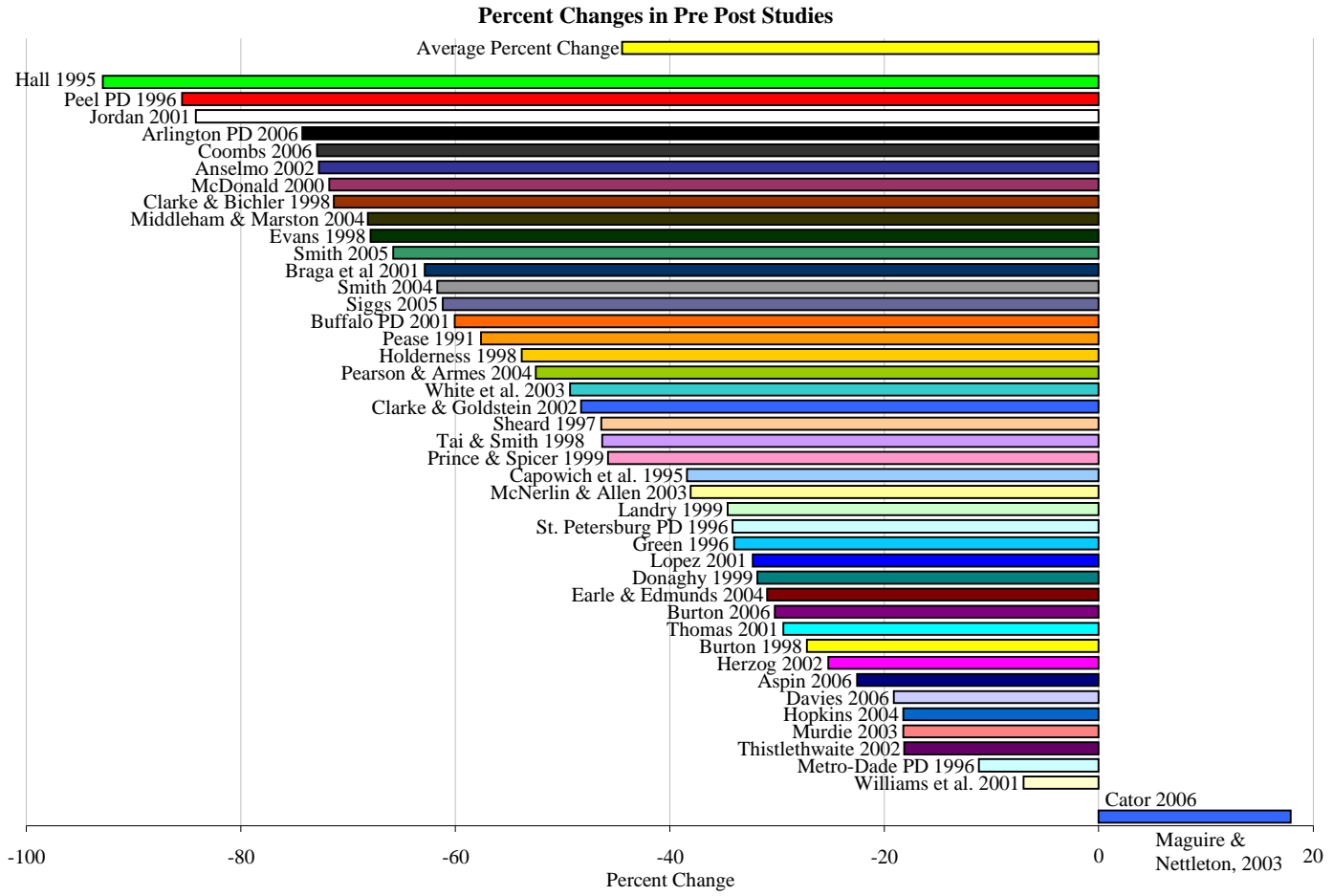
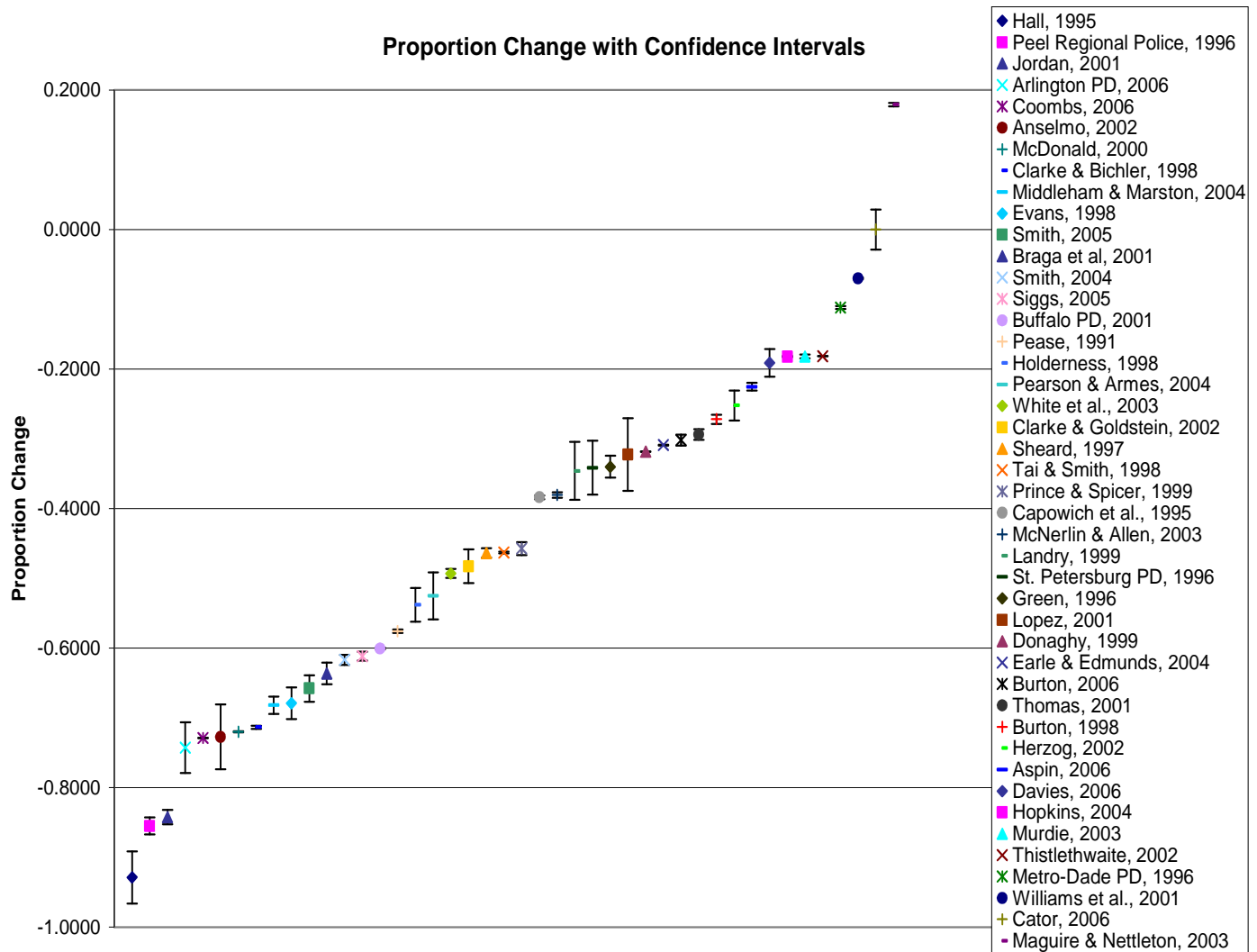


Figure 10: Proportion change with confidence intervals for pre/post studies



## 13 Appendix A

### POP META-ANALYSIS CODING SHEETS

#### I. ELIGIBILITY CHECK SHEET

1. Document ID: \_\_ \_\_ \_\_ \_\_

2. First author last name: \_\_\_\_\_

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 problem-oriented policing intervention (the SARA model is followed). \_\_\_\_\_

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, quasi-experimental, or pre-post evaluations. \_\_\_\_\_

c. The study reports on at least one crime/disorder outcome<sup>13</sup>. \_\_\_\_\_

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) \_\_\_\_\_

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<sup>13</sup>For our purposes, we will include studies that aim to affect both physical and social disorder. Physical disorder consists of neighborhood dilapidation as indicated by various factors including graffiti, broken windows, abandoned lots, abandoned cars, and boarded up houses. Social disorder consist of various behaviors and nuisance crime such as the following: harassment, noise, neighbor disputes, public dispute/argument, riot/civil disorder, intoxicated person, public drinking, loitering, other public nuisance, and disorderly conduct. Any study that examines the effects of problem-oriented policing on these or similar disorder outcomes will be eligible for our review.

9. Eligibility status:

- Eligible
- Not eligible
- Relevant review

Notes:

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## II. CODING PROTOCOL

### Reference Information

1. Document ID: \_\_\_ \_\_\_ \_\_\_
2. Study author(s): \_\_\_\_\_
3. Study title: \_\_\_\_\_
- 4a. 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)
- 4b. Specify (Other) \_\_\_\_\_
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 Problem**

12. How did the problem come to the attention of the police? (Select all that apply)

- 1. Crime analysis unit
- 2. Citizen meeting/organization
- 3. Officer observation/suggestion
- 4. Other government agency
- 5. Funding agency
- 6. Researcher
- 7. Other (specify)

12b. Specify (Other) \_\_\_\_\_

13. What was the environment where the problem occurred? (Select all that apply)

- 1. Residential
- 2. Recreational (bars, restaurants, parks)
- 3. Offices
- 4. Retail
- 5. Industrial
- 6. Agricultural
- 7. Education
- 8. Human service (jails, courts, hospitals)
- 9. Public ways
- 10. Transport (buses, airports)
- 11. Open/transitional (construction sites, abandoned buildings)

14a. What type of event makes up the problem? \_\_\_\_\_

- 1. Predatory crimes against persons (sexual assault, robbery, homicide)
- 2. Predatory crimes against property (vandalism, auto theft)
- 3. Illegal service crimes (prostitution, selling drugs)
- 4. Public disorder crimes (disorderly conduct, drunkenness)
- 5. Vehicular/traffic offenses
- 6. Status crimes
- 7. Hard drug use
- 8. Overall crime/disorder
- 9. Other (specify)

14b. Specify (Other) \_\_\_\_\_

15. Specifically, what event(s) makes up the problem?

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16. What is the unit of analysis of the problem? (Use grid below and enter number for corresponding cell)

	Offenders/ Handlers	Targets/ Victims	Guardians	Places/ Managers
Individual/micro	1	4	7	10
Small area/meso	2	5	8	11
Large area/macro	3	6	9	12

17a. What data sources were used for analysis of the selected problem? (Select all that apply)

1. Official crime data
2. Arrest information
3. Surveys of people (non-offenders)
4. Surveys of places or environments
5. Interviews and discussions with people (non-offenders)
6. Interviews of offenders
7. Literature examination
8. Consultation with government agencies
9. Consultations with businesses
10. Consultations with community organizations
11. Other (specify)

17b. Specify (Other) \_\_\_\_\_

18a. What groups were consulted in creating the response? (Select all that apply)

1. Neighborhood associations/organizations
2. Government organizations/agencies
3. Social service agencies
4. Commercial establishments/businesses
5. National organizations with an interest in the problem (e.g. MADD)
6. Individual residents
7. Other police departments
8. Specialized units in the police department
9. Other (specify)

18b. Specify (other) \_\_\_\_\_

**Describing the Response**

19. At what unit of analysis was the treatment delivered/intervention directed at? (Use grid below and enter number for corresponding cell)

	Offenders/ Handlers	Targets/ Victims	Guardians	Places/ Managers
Individual/micro	1	4	7	10
Small area/meso	2	5	8	11
Large area/macro	3	6	9	12

20a. What aspects of situational crime prevention were used in the implementation of the response? (Select all that apply)

1. Increasing the effort of crime
2. Increasing the risks of crime
3. Reducing the rewards of crime
4. Reducing provocations
5. Removing excuses for crime
6. N/A- Situational crime prevention not used
7. Other

20b. Specify (Other)\_\_\_\_\_

21a. What groups (other than the police) were involved in the implementation of the response? (Select all that apply)

1. Neighborhood associations/organizations
2. Government organizations/agencies
3. Social service agencies
4. Commercial establishments/businesses
5. National organizations with an interest in the problem (e.g. MADD)
6. Individual residents
7. Other police agencies
8. Other criminal justice agencies
9. Other (specify)

21b. Specify (Other)\_\_\_\_\_



22a. At what level of the police department was the response implemented? \_\_\_\_\_

1. Entire department/all officers involved
2. Certain precincts/districts involved
3. Special unit (i.e. community policing unit) involved
4. Select few officers in specific area involved
5. Other (specify)
6. N/A (not mentioned)

22b. Specify (Other)\_\_\_\_\_

23a. What divisions of the police department were involved in implementing the response?

(Select all that apply)

1. Patrol
2. Investigations
3. Drugs/narcotics
4. Crime analysis
5. Other (specify)

23b. Specify (other) \_\_\_\_\_

### ***Implementation of Response***

24. 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

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

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### ***Location of the intervention***

26. Country where study was conducted: \_\_\_\_\_

27. City (and state/province, if applicable) where study was conducted: \_\_\_\_\_

*The following questions refer to the area receiving treatment:*

28a. Geographic area receiving treatment: \_\_\_\_\_

1. Micro place (street segments/blocks)
2. Neighborhood/police beat
3. Police district/precinct
4. Entire city
5. Other (specify)

28b. Specify (Other)\_\_\_\_\_

29. What is the exact geographic area receiving treatment?

---

*The following refer to the area not receiving treatment (applicable if there is a separate control group in the study)*

30a. Geographic area NOT receiving treatment: \_\_\_\_\_

1. Micro place (street segments/blocks)
2. Neighborhood/police beat
3. Police district/precinct
4. Entire city
5. Other (specify)

30b. Specify (Other)\_\_\_\_\_

31. What is the exact geographic area not receiving treatment?

---

*The following questions are about the target population of the intervention (if the intervention is not targeting groups of problem people skip to question 38):*

32a. What is the target population of the treatment? \_\_\_\_\_

1. Specific group(s) of offenders
2. Specific group(s) of victims
3. Specific group(s) of other community residents
4. Entire population (no specific groups targeted)
5. Other (specify)

32b. Specify (other) \_\_\_\_\_

33. What is the exact target population? \_\_\_\_\_

34. Total population of target population (if known): \_\_\_\_\_

35. Gender composition of target population:

1. Mostly male
2. Mostly female
3. Unknown/not mentioned

36. Age composition of target population

1. Mostly juvenile
2. Mostly adult
3. Unknown/not mentioned

37. Socio-economic status of target population:

1. Mostly below poverty line
2. Mostly above poverty line
3. Unknown/not mentioned

**Methodology/Research design:**

38a. Type of study: \_\_\_\_\_

1. Randomized experiment
2. Nonequivalent control group (quasi-experimental)
3. Multiple time series (quasi-experimental)
4. Pre-post test (no control group)
5. Interrupted time series
6. Other (specify)

38b. Specify (Other)\_\_\_\_\_

***Outcomes reported*** (Note that for each outcome, a separate coding sheet is required)

39. How many crime/disorder outcomes are reported in the study? \_\_\_\_\_

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

---

41. Was it the primary outcome of the study? \_\_\_\_\_

1. Yes
2. No
3. Can't tell/researcher did not prioritize outcomes

42a. Was this initially intended as an outcome of the study? \_\_\_\_\_

1. Yes
2. No (explain)
3. Can't tell

42b. If no, explain why:

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### ***Unit of analysis***

43. What was the unit of analysis for the research evaluation? (Use grid below and enter number for corresponding cell)

	Offenders/ Handlers	Targets/ Victims	Guardians	Places/ Managers
Individual/micro	1	4	7	10
Small area/meso	2	5	8	11
Large area/macro	3	6	9	12

44. How many units of analysis are there for the intervention in the study? \_\_\_\_\_

45. Did the researchers collect nested data within the unit of analysis?

1. Yes
2. No

### ***Dependent Variable***

46a. 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)

46b. Specify (Other)\_\_\_\_\_

47a. 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)

47b. Specify (Other)\_\_\_\_\_

48a. 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)

48b. Specify (Other)\_\_\_\_\_

49a. 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)

49b. Specify (Other)\_\_\_\_\_

50. Did the researcher assess the quality of the data collected?

1. Yes
2. No

51a. Did the researcher(s) express any concerns over the quality of the data?

1. Yes
2. No

51b. If yes, explain

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52a. Does the evaluation data correspond to the initially stated problem? (i.e. if the problem is fear of crime, does the evaluation data look at whether fear of crime decreased)

1. Yes
2. No

52b. If no, explain the discrepancy:

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---

**Effect size/Reports of statistical significance**

*Dependent Measure Descriptors*

53. Statistical analysis design: \_\_\_\_\_
1. Pretest comparison
  2. Post-test comparison
  3. Follow-up comparison
  4. N/A

*Sample size*

54. Based on the unit of analysis for this outcome, what is the total sample size in the analysis?  
\_\_\_\_\_

55. What is the total sample size of the treatment group (group that receives the response)?  
\_\_\_\_\_

56. What is the total sample size of the control group (if applicable)? \_\_\_\_\_

- 57a. Was attrition a problem in the analysis for this outcome?
1. Yes
  2. No

57b. If attrition was a problem, provide details (e. g. how many cases lost and why they were lost).

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- 58a. What do the sample sizes above refer to?
1. Crimes
  2. People
  3. Geographic areas
  4. Places
  5. Other (specify)

58b. Specify (other) \_\_\_\_\_

### *Effect Size Data*

59. Raw difference favors (i.e. shows more success for):
1. Treatment group
  2. Control group
  3. Neither (exactly equal)
  9. Cannot tell (or statistically insignificant report only)
60. 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)
61. Was a standardized effect size reported?
1. Yes
  2. No
62. If yes, what was the effect size? \_\_\_\_\_
63. If yes, page number where effect size data is found \_\_\_\_\_
64. If no, is there data available to calculate an effect size?
1. Yes
  2. No
- 65a. 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)

65b. Specify (other) \_\_\_\_\_

### *Pre-post Study Counts*

- 66a. Pre-period number of events for current outcome in target area \_\_\_\_\_
- 66b. During intervention-period number of events for current outcome in target area \_\_\_\_\_
- 66c. Post-Period Number of events for current outcome in target area \_\_\_\_\_

If comparison area used:

66d. Pre-period number of events for current outcome in comparison area \_\_\_\_\_

66e. During intervention-period number of events for current outcome in comparison area \_\_\_\_\_

66f. Post-Period number of events for current outcome in comparison area \_\_\_\_\_

66g. Did the evaluation control for validity by using multivariate methods (i.e. regression) to assess the impact of the program?

1. Yes

2. No

66h. If yes, did this analysis find that the intervention reduced the outcome at a statistically significant level?

1. Yes

2. No

3. N/A

#### *Means and Standard Deviations*

67a. Treatment group mean. \_\_\_\_\_

67b. Control group mean. \_\_\_\_\_

68a. Treatment group standard deviation. \_\_\_\_\_

68b. Control group standard deviation. \_\_\_\_\_

#### *Proportions or frequencies*

69a.  $n$  of treatment group with a successful outcome. \_\_\_\_\_

69b.  $n$  of control group with a successful outcome. \_\_\_\_\_

70a. Proportion of treatment group with a successful outcome. \_\_\_\_\_

70b. Proportion of control group with a successful outcome. \_\_\_\_\_

#### *Significance Tests*

71a.  $t$ -value \_\_\_\_\_

71b.  $F$ -value \_\_\_\_\_

71c. Chi-square value ( $df=1$ ) \_\_\_\_\_

#### *Calculated Effect Size*

72a. Effect size \_\_\_\_\_

72b. Standard error of effect size \_\_\_\_\_



**Conclusions made by the author(s)**

*Note that the following questions refer to conclusions about the effectiveness of the intervention in regards to the current outcome/problem being addressed on this coding sheet.*

73. Conclusion about the impact of the intervention? \_\_\_\_\_

1. The authors conclude problem declined
2. The authors conclude the problem did not decline
3. Unclear/no conclusion stated by authors

74. Did the assessment find evidence of a geographic displacement of crime? \_\_\_\_\_

1. Yes
2. No
3. Not tested

75. Did the assessment find evidence of a temporal displacement of crime? \_\_\_\_\_

1. Yes
2. No
3. Not tested

76. Did the author(s) conclude that the POP intervention beneficial? \_\_\_\_\_

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

77. Did the author(s) conclude there a relationship between the POP intervention and a reduction in crime/disorder? \_\_\_\_\_

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

78. Additional notes about conclusions:

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79. Additional notes about study:

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## 14 Appendix B

List of policing scholars and practitioners contacted to identify any studies we missed (Note: Job titles reflect employer as of June 2007)

<i>Name</i>	<i>Employer</i>
Annan, Sam	Metropolitan Police- District of Columbia
Bayley, David	University at Albany, State University of New York
Boba, Rachel	Florida Atlantic University
Bobo, Lawrence	Stanford University
Braga, Anthony	Harvard University
Bynum, Tim	Michigan State University
Capowich, George	Loyola University, New Orleans
Clarke, Ronald	Rutgers-Newark, The State University of New Jersey
Cordner, Gary	Eastern Kentucky University
Davis, Rob	RAND Corporation
Forst, Brian	American University
Glensor, Ron	Reno Police Department
Goldstein, Herman	University of Wisconsin Law School
Greene, Jack	Northeastern University
Heimberger, Bob	St. Louis Metropolitan Police Department
Hope, Tim	Keele University
Kelling, George	Rutgers-Newark, The State University of New Jersey
Kennedy, David	John Jay College of Criminal Justice
Klinger, David A.	University of Missouri- St. Louis
Knutsson, Johannes	National Police Academy of Norway
Koper, Chris	University of Pennsylvania
Lauritsen, Janet	University of Missouri- St. Louis
Laycock, Gloria	Jill Dando Institute, University College London
Maclin, Tracey	Boston University Law School
Maguire, Ed	George Mason University
Manning, Peter	Northeastern University
Mastrofski, Stephen	George Mason University
Mazerolle, Lorraine	Griffith University
McElroy, Jerome E.	New York Criminal Justice Agency
McGarrell, Ed	Michigan State University
Meares, Tracey	Yale University Law School
Mills, Andy	San Diego Police Department
Moore, Mark	Harvard University
Newman, Graeme	University at Albany, State University of New York
Peterson, Ruth	Ohio State University
Ready, Justin	John Jay College of Criminal Justice
Roehl, Janice	Justice Research Center
Rosenbaum, Dennis	University of Illinois at Chicago
Sampson, Rana	Community Policing Associates

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Saville, Gregory	University of New Haven
Schmerler, Karin	Chula Vista Police Department
Schultze, Phyllis	Rutgers-Newark, The State University of New Jersey
Scott, Michael	University of Wisconsin Law School
Sharp, Elaine B.	University of Kansas
Sherman, Lawrence	University of Pennsylvania
Silverman, Eli	John Jay College of Criminal Justice
Skogan, Wesley	Northwestern University
Skolnick, Jerome	New York University Law School
Sousa, William	University of Nevada, Las Vegas
Spelman, William	University of Texas
Stephens, Darrel	Charlotte-Mecklenburg Police Department
Stephenson, Paul	London Metropolitan Police
Tilley, Nick	Nottingham Trent University
Tita, George	University of California, Irvine
Travis, Jeremy	John Jay College of Criminal Justice
Uchida, Craig	Justice and Security Solutions
Walker, Samuel	University of Nebraska, Omaha
Weisel, Deborah Lamm	North Carolina State University
Wellford, Charles	University of Maryland
Welsh, Brandon	University of Massachusetts Lowell
Willis, James	George Mason University
Worden, Robert	University at Albany, State University of New York

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## 15 Appendix C

Effect sizes for all outcomes for 10 eligible studies

<i>Study</i>	<i>Outcome</i>	<i>Effect size (std. diff. in means)</i>	<i>Std. Error</i>
Baker & Wolfer 2003	reported seeing public drinking/disorderly conduct	0.328	0.249
Baker & Wolfer 2003	reported vandalism	0.143	0.196
Braga et al. 1999	total calls for service	0.088	0.055
Braga et al. 1999	total incidents	0.198	0.092
Knoxville PD 2002	probation success	0.664	0.132
Mazerolle et al. 2000	disorder calls for service	-0.006	0.043
Mazerolle et al. 2000	drugs calls for service	0.280	0.100
Sherman et al. 1989	commercial calls for service	0.015	0.138
Sherman et al. 1989	residential calls for service	0.369	0.133
Stokes et al. 1996	victimized on the way to/from school	-0.203	0.081
Stone 1993	being asked to buy or sell drugs	-0.001	0.059
Thomas 1998	probation success	0.771	0.296
Tuffin et al. 2006	total crime incidents	0.028	0.029
Weisburd & Green 1995	disorder calls for service	0.696	0.018
Weisburd & Green 1995	property crime calls for service	-0.061	0.002
Weisburd & Green 1995	violent crime calls for service	-0.193	0.005