The author(s) shown below used Federal funds provided by the U.S. Department of Justice and prepared the following final report:

Document Title:	**St. Louis County Hot Spots in Residential Areas (SCHIRA) Final Report: Assessing the Effects of Hot Spots Policing Strategies on Police Legitimacy, Crime, and Collective Efficacy**
Author(s):	**Tammy Rinehart Kochel, Ph.D., George Burruss, Ph.D., David Weisburd, Ph.D.**
Document No.:	**249747**
Date Received:	**February 2016**
Award Number:	**2011-IJ-CX-0007**

This report has not been published by the U.S. Department of Justice. To provide better customer service, NCJRS has made this federally funded grant report available electronically.

Opinions or points of view expressed are those of the author(s) and do not necessarily reflect the official position or policies of the U.S. Department of Justice.

ST. LOUIS COUNTY HOT SPOTS IN RESIDENTIAL AREAS (SCHIRA)

FINAL REPORT:

ASSESSING THE EFFECTS OF HOT SPOTS POLICING STRATEGIES ON POLICE LEGITIMACY, CRIME, AND COLLECTIVE EFFICACY

Tammy Rinehart Kochel, PhD
Principal Investigator
Southern Illinois University

George Burruss, PhD
Consultant
Southern Illinois University

David Weisburd, PhD
Project Mentor
George Mason University

February 2015
Revised June 2015

Acknowledgements

Special gratitude and acknowledgment is given to members of the project team who were essential in the success of this study, including Lt. Pete Morrow, Executive Director Bill Howe, former Chief Tim Fitch, and all Command Staff at SLCPD, as well as Brett Lord Castillo, GIS Designer/Programmer and Zach Schleicher, Crime Analyst; Dr. David Weisburd, Project Mentor; Dr. George Burruss, Statistical Consultant and more; Robert Heimberger, Problem Solving Trainer;, Joe Pashea and Karen Jones, Field Research Coordinators; Karla Keller Avelar, Project Manager, the many student volunteers, graduate students, and interviewers who worked on the project, and Eric Martin, NIJ Project Officer.

This project was supported by Award No. 2011-IJ-CX-0007, awarded by the National Institute of Justice, Office of Justice Programs, U.S. Department of Justice. The opinions, findings, and conclusions or recommendations expressed in this publication/program/exhibition are those of the author(s) and do not necessarily reflect those of the Department of Justice.

This document is a research report submitted to the U.S. Department of Justice. This report has not been published by the Department. Opinions or points of view expressed are those of the author(s) and do not necessarily reflect the official position or policies of the U.S. Department of Justice.

Introduction

The St. Louis County Hot Spots in Residential Areas (SCHIRA) study was a joint project between Dr. Tammy Rinehart Kochel, Principal Investigator (PI), Southern Illinois University Carbondale (SIUC), and St. Louis County Police Department, MO (SLCPD). The purpose of this project was to conduct an experiment to study how a collaborative problem solving approach (PS) versus directed patrol (DP) versus standard policing practices (SPP) (the control group) differently impact crime in hot spots, but more importantly how the varied strategies impact residents' opinions about police, their neighborhoods, and their willingness to exert collective efficacy. The expected effects are outlined in Figure 1. Changing the amount of visibility and the nature and quantity of police interaction and response were expected to impact crime and also residents' perceptions about police services and conduct, affecting police legitimacy, perceptions of safety and victimization, and residents' willingness to promote collective efficacy. Project milestones are depicted in the timeline, Figure 2 in the Appendix.

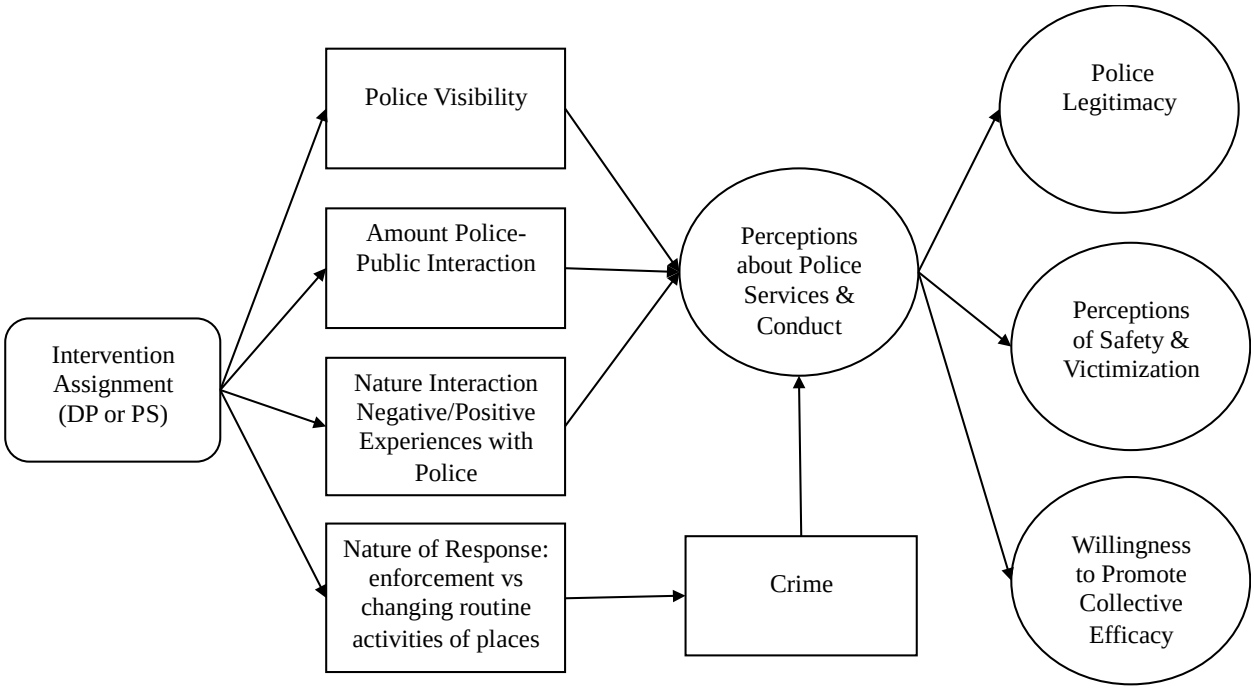

Figure 1. Conceptual Model

This document is a research report submitted to the U.S. Department of Justice. This report has not been published by the Department. Opinions or points of view expressed are those of the author(s) and do not necessarily reflect the official position or policies of the U.S. Department of Justice.

These processes are examined within a diverse, suburban, Midwestern county with approximately one million residents. St. Louis County is the most populous county in Missouri. Although 70% of the population is Caucasian, a significant minority of residents are African American (23%). While the average household income in the County is above the national average, the Northern part of the County has a geographic concentration of residents with a much lower median income and higher proportion of residents living in poverty. This area also has a high concentration of African-American residents and of crime. SLCPD has primary patrol jurisdiction over much of this part of the County. SLCPD provides primary policing services to the unincorporated areas as well as in 17 municipalities with which they contract.

Hot Spot Selection

To identify hot spots, a County crime analyst examined Part I and Part II crime incidents between December 2010 and November 2011 first using kernel density with Robert Cross and Getis Ord GI* and then assessing counts at street segments to identify crime concentrations in residential areas. Commercial areas were excluded due to lack of a stable population to experience and report on the treatment across time. We identified areas with at least 40 addresses to ensure a sufficient population to reliably assess public perceptions. Precinct commanders vetted potential hot spots based on the nature and severity of the crime problems over time and at the point of selection. Eligible areas included single and multifamily residential areas for which the SLCPD had primary patrol jurisdiction.[1] Seventy-one hot spots were included in the study.

Project hot spots, on average, sized .01 square miles, equivalent to about four city blocks. Two-thirds of sites are multi-family housing. These sites are not equivalent to inner city street segments used in past hot spots studies. At baseline (2011), sites averaged 31 crime incidents in a year, ranging from 8 to 115 incidents (crime counts). Project hot spots account for 0.25% of the

[1] One hot spot was deleted when the property manager refused to permit access for interviewers.

This document is a research report submitted to the U.S. Department of Justice. This report has not been published by the Department. Opinions or points of view expressed are those of the author(s) and do not necessarily reflect the official position or policies of the U.S. Department of Justice.

residential areas in St. Louis County and 10.6% of the Part I and II crimes in residential areas. Common crime problems included assault, vandalism, burglary, drugs, and larceny.

Treatment Design and Integrity

Using a random number generator, we randomly assigned treatment status first among four extremely high crime locations (1 PS, 1 DP, 2 SPP), then North County locations (10 PS, 11 DP, 17 SPP),[2] followed by the remaining hot spots (9 PS, 8 DP, 12 SPP) to generate 40 treatment sites and 31 controls. Hot spots assigned to SPP were not identified to officers.

Problem Solving. Twenty-two officers were assigned by their supervisors to the 20 PS sites, with an effort to maintain stability across the 5-month treatment period. Officers were trained in the SARA method of PS[3] in an initial 2-day session, plus a 1-day booster, and were offered individual telephone consultation by Robert Heimberger, an experienced PS trainer and former Sergeant with the St. Louis Metropolitan Police Department. Officers were required to partner with at least one stakeholder on at least one problem and to tie response strategies to what they learned about the conditions contributing to the identified problem(s). The majority of problems chosen were property crimes—burglary and theft of or from vehicles, but also included domestic violence, assault, drug and gang problems, and quality of life concerns. PS officers varied in the degree to which they involved stakeholders and the extent of response activities. In a few locations, problems resolved with limited to no intervention by officers, whereby other locations included multi-pronged approaches. Officers' responses to the problems included educating residents to target harden, securing vacant residences, intensive follow-up with troubled juveniles, increasing communication

[2] Blocking on North County was done because sufficient numbers of hot spots were located in the North County precinct (more than half) such that if by chance, most or all of the treatment sites were randomly assigned here, officers would not be able to successfully implement the treatment due to manpower constraints. Doubling the time spent in DP locations and working through PS projects placed constraints on officers' time.

[3] SARA stands for Scanning, Analysis, Response and Assessment. This approach requires specific focus on a pattern of problem behaviors of concern to the police and the public, and applies the scientific method to understand the root causes of problems and tailor responses to the nature of those root causes, while assessing the impact of the responses. See Schmerler, Perkins, Phillips, Rinehart, and Townsend (2006) for an overview.

This document is a research report submitted to the U.S. Department of Justice. This report has not been published by the Department. Opinions or points of view expressed are those of the author(s) and do not necessarily reflect the official position or policies of the U.S. Department of Justice.

with a variety of agencies, identifying and stopping a fencing operation, enforcing ordinances, securing access to utility boxes and air conditioning units, and other approaches. To ensure treatment integrity, PS officers submitted a written update and met monthly with the PI to discuss progress and adjust course. Paid observers documented activities twice per PS hot spot.

Directed Patrol. The goal within directed patrol sites was to double the time spent at the location by officers. We used automated vehicle location (AVL) data to document time spent at baseline and weekly during the treatment to assess treatment integrity. On average, officers spent 2.25 hours per week at each hot spot in the seven weeks preceding the treatment period; thus, officers would ideally spend an average of 4.5 hours weekly at each DP hot spot during treatment.

To promote transparency and clarity, the PI, Dr. Tammy Rinehart Kochel, prepared a project summary and defined officer and researcher roles in a memorandum to be distributed to all police personnel involved in the project and others interested in it. The memorandum also provided officers with contact information for the PI and human subjects committee, for questions and concerns. The memorandum and DP process was first conveyed to command staff by Lt. Pete Morrow, SLCPD coordinator. The PI subsequently met with command staff to discuss the treatment. Precinct commanders conveyed treatment expectations and provided the memorandum to officers. During the first two weeks of treatment, the PI and Dr. George Burruss, project consultant, rode with line officers covering DP hot spots to answer questions, providing additional copies of the memorandum directly to officers.

Efforts were made to target specific "hot times" by conducting 11-15 minute patrols each targeted hour. A special procedure was arranged with dispatchers and officers to record time spent and officer activities. Forty-one 4-hour blocks of systematic social observation were used to assess the reliability of officer activity data. Comparing extra patrols reported by officers versus those recorded by observers, reliability of activities was 88% (51 of 58 extra patrols had matching activities

This document is a research report submitted to the U.S. Department of Justice. This report has not been published by the Department. Opinions or points of view expressed are those of the author(s) and do not necessarily reflect the official position or policies of the U.S. Department of Justice.

recorded by observer and officer). Officers were not asked to perform specific activities, rather to be visible. Officers tended to conduct stationary or roving patrols, sometimes completed reports, and less frequently conducted vehicle enforcement, foot patrol, or pedestrian stops, or conversed with residents.

The PI and project crime analyst worked closely with the SLCPD coordinator to provide weekly feedback to officers expected to patrol the hot spots and their supervisors. AVL data suggests that officers generally increased time spent in DP sites relative to baseline and relative to the PS and SPP sites, except for the last two weeks of the project, at which point officer fatigue with the treatment prevailed (See Figure 3, Appendix).

Measuring Impact

Crime Impact

The expectation, based on a solid foundation of rigorous past research, was that concentrating police resources in focused hot spots of crime would reduce crime. A meta-analysis examining 19 experimental or quasi-experimental assessments of hot spots policing found that a variety of police strategies targeting high crime places reduced crime, at least modestly (Braga, Papachristos, & Hureau, 2012).[4] Using calls for service data,[5] we conducted three interrupted time series analyses using an autoregressive integrated moving average (ARIMA), controlling for the effects of summer on crime, to assess whether the trend changed during the treatment period across the treatment sites relative to control sites. DP and PS sites showed an overall reduction in calls for service during the intervention period compared to the pre-intervention period; SPP sites saw no statistically significant decline. The intervention period calls for service dropped by an average of

[4] Previous research does find, however, that it can be difficult to identify crime effects of HSP when the base rates of crime are low, as was the case in some project hot spots (Hinkle, Weisburd, Famega, & Ready, 2013). Nonetheless, our results follow earlier studies.

[5] Of course, a hot spots approach that increases police-community relations and builds trust (e.g., collaborative problem solving) might initially increase calls for service as residents' willingness to report crimes to police increases.

This document is a research report submitted to the U.S. Department of Justice. This report has not been published by the Department. Opinions or points of view expressed are those of the author(s) and do not necessarily reflect the official position or policies of the U.S. Department of Justice.

five calls per week across DP sites, from 94 to 89, a 5% reduction, while PS sites declined by an average seven calls per week, from 92 to 85, a 7% reduction, relative to no significant change in SPP sites, with 138 calls on average during pre-intervention and the same average during the treatment period. See Figures 4-6 in the Appendix.[6]

Table 1. ARIMA Analysis of Calls for Service

Hot Spot Type	AR, I, MA	Treatment Period b		Summer b		Adj. R^2
Directed Patrol	1,0,0	-13.094	**	18.073	***	0.234
Problem Solving	0,0,0	-11.257	*	8.655	*	0.092
Control	0,0,0	-5.667	n.s.	12.698	*	0.089

Notes: *$p < 0.050$; ** $p < 0.010$; *** $p < 0.001$; n.s. $p > 0.051$
R^2 estimated through Prais-Winsten AR(1) or OLS regression

Community Impact

While our study confirms a strong body of evidence on the crime effects of HSP, the main innovation in our work is our ability to examine and understand how different types of police approaches in hot spots may differently impact public views about police, especially police legitimacy. Public perceptions of police legitimacy are important in a democratic society, as well as pragmatic. When residents view police authority as more legitimate, they are more likely to obey the law, cooperate with police, and support police (Jackson, Bradford, Stanko, & Hohl, 2012; Kochel, Mastrofski, & Parks, 2013; Sunshine & Tyler, 2003; Tyler, 2006; Tyler & Hou, 2002). We conducted a series of person-to-person survey interviews with hot spot residents to assess the impact of the strategies on public opinion about police, perceptions of crime and safety, and willingness to exert collective efficacy—neighborhood cohesion and taking action to address problems in the

[6] The figures also depict the counterfactual—the predicted calls for service had no change in policing occurred in the PS and DP sites, but rather the trend continued along its pre-intervention course. The predicted values are higher than those experienced during treatment.

This document is a research report submitted to the U.S. Department of Justice. This report has not been published by the Department. Opinions or points of view expressed are those of the author(s) and do not necessarily reflect the official position or policies of the U.S. Department of Justice.

neighborhood. We conducted 2,851 surveys across three waves.[7] In the first wave, 985 surveys were completed; wave two produced 768 completed surveys, and wave three produced 1,098 surveys. We had completion rates of 22 to 33 percent, with cooperation rates ranging from 38 to 52 percent,[8] with the lowest completions occurring in the coldest months: wave two.[9,10]

Table 2. Survey Completion by Treatment Type and Wave

	Baseline (W1) Mar-May 2012	Short Term Impact (W2) Nov12-Jan13	Long Term Impact (W3) May13-Jul13
Directed Patrol	265	214	319
Problem Solving	266	223	311
Controls	454	331	468
	n=985	n=768	n=1098
Completion Rate	23.72%	22.41%	33.28%
Cooperation Rate	38.43%	42.17%	52.23%

Sample. African Americans represented the majority of respondents with 72% of the completed surveys. The second largest racial group was white with 20%. The majority of respondents were women, composing 60% of the completed surveys. Over 50% of completions were with respondents under age 40, with ages 20-29 making up the largest subgroup at 27%. The

[7] In waves 2 and 3, some completions were made by phone and a few by mail.

[8] The cooperation rate reflects completions divided by the number of individuals with whom we made in-person or telephone contact minus those with whom we had unresolvable language barriers (respondents with language barriers that we could not overcome included wave 1, n=27, wave 2, n=20, wave 3, n=13).

[9] For wave 1, addresses within each hotspot were randomly selected using random number generation. Addresses were drawn from a database provided by the police partner. Only one respondent over the age of eighteen could participate in the survey from each address. In subsequent waves, we attempted to speak with the same respondent; however, address level substitution was permitted (e.g., son then father, one roommate and then the other). Additionally, we supplemented each wave with a new random sample at each hot spot.

[10] Baruch (1999) reports a discouraging decline in the average response rate in published articles over time from the 1970s through the 1990s. Survey response and cooperation rates vary across the survey delivery method, length of survey, nature of the respondent being interviewed, organization administering the survey, survey topic, compensation, and many other factors. High crime areas and many of the specific populations historically found within high crime areas tend to have low response rates (Campanelli, Sturgis, & Purdon, 1997; Groves, 2006; Groves & Couper, 1998; Groves et al., 1992; Link & Burks, 2013). Ferguson and Mindel (2007), who studied fear of crime, had a 33% response rate. In crime hot spots, Hinkle et al. (2013) had a 46.1% cooperation rate (excluding contacts with language and cognitive barriers), while Gwiasda, Taluc, and Popkin (1997), surveying public housing residents using tenant patrol members were able to generate response rates ranging from 61% to 76% over time. Pashea and Kochel (2014) explain some of the strategies we used to maximize the response rate while also ensuring the safety of interviewers.

This document is a research report submitted to the U.S. Department of Justice. This report has not been published by the Department. Opinions or points of view expressed are those of the author(s) and do not necessarily reflect the official position or policies of the U.S. Department of Justice.

majority of surveys are of respondents with at least some college education (59%); 8% do not have a GED or high school diploma. Just over half of the sample earns less than $25,000 per year—21% make between $15,000 - $24,999 per year, 23% make less than $15,000 per year, and 12% earn nothing. About 71% of the sample is single or divorced. One-quarter own their homes, compared to 72% countywide that own their residences. Seventy percent have lived at the address five or fewer years.

Results. On average, residents of hot spots saw police several times each week. The treatment did not result in residents of DP groups seeing police significantly more often, but did appear to protect them from the declining trend reported by the SPP group residents at wave 2. See Figure 7.[11] Similarly residents in PS hot spots were not significantly more likely to report awareness of police-community collaborations than the SPP residents. However, only this group reported consistent non-significant increases across time, increasing from about 20% of residents at baseline who claimed that police meet with residents or businesses to address crime and other problems, to 25% at wave 2 and 27% at wave 3. Thus, tests suggest no significant increase in visibility among DP residents and no significant differences in police-community collaboration among PS residents, relative to SPP. The treatment did not make a big impact. However, the trends are in the expected directions.

We used multiple survey questions to generate key outcome measures of community perceptions: police legitimacy, procedural justice and trust in police, competence and satisfaction with police, frequency of police misconduct, willingness to cooperate with police, personal safety in

[11] Specifically, DP treatment positively influenced the trend in wave 2, immediately following treatment, relative to the controls. Control residents reported seeing police significantly less frequently at wave 2 compared to baseline, while DP residents reported no appreciable difference. However, in wave 3, control residents reported a positive trend, with residents reporting seeing police more frequently at wave 3 than wave 2. Both DP and PS residents had declining trends in wave 3, although only PS residents reported significantly less frequent sightings of police. DP residents again found no significant difference.

This document is a research report submitted to the U.S. Department of Justice. This report has not been published by the Department. Opinions or points of view expressed are those of the author(s) and do not necessarily reflect the official position or policies of the U.S. Department of Justice.

the neighborhood, victimization risk, and neighborhood collective efficacy.[12] Table 3 provides the descriptive statistics. We used multilevel mixed effects regression with robust standard errors, in Stata 13, to assess the effects of treatment across time on key outcomes, accounting for the nesting generated by repeated measures, individuals within addresses, addresses within hot spots, and hot spots that were either located in North County or not (blocking procedure used during random assignment).[13] We found a few more of points of impact on public opinion within the DP treatment sites than the PS Treatment, relative to controls.

Competence and Satisfaction. What was not affected by either DP or PS treatment were perceptions about the competence of police and satisfaction with police. Although there was significant improvement in public views about the competence of police and satisfaction with police across this timeframe, we found no significant differences in trends for DP and PS sites relative to SPP sites on the perceived competence of and satisfaction with police. Even SPP sites saw improvements over time. See Figure 9.

Legitimacy. However, as shown in Figure 10, both DP and PS residents saw initial declines in legitimacy immediately following treatment compared to SPP residents, with DP sites experiencing steeper declines. In theory, we had been concerned that increasing police presence, particularly in DP sites, might lead residents to view this presence as an occupation force or cause residents to experience more stops or more negative interactions, and that this exposure might diminish views

[12] We first applied confirmatory factor analysis, and upon finding good model fit and good reliability for each measure, as well as relatively similar factor loadings across indicators within each factor, we computed mean scores and converted them to POMP scores (Percent of Maximum Possible) to produce easily interpreted and compared findings (See Cohen, Cohen, Aiken, & West, 1999 for an explanation of POMP and a rationale for its use).

[13] The likelihood ratio test was used to assess whether modeling random effects provided a better fit than a one-level regression. In all cases, the multilevel model had a better fit. Additionally, we tested the full model relative to a model that did not account for the nesting in North County, as the partial variance coefficient for North County tends to be small. Most of the models showed a better fit by including the North County level and thus all models include it. Because the County has clear geographic distinctions in the racial distribution of residents, we also ran models that included race as an individual level predictor, albeit the experimental design should account for this individual level difference. Comparing the likelihood ratio and BIC and AIC scores for the models with and without race showed that in some cases adding race explained more of the variation, while in other cases, it did not. The differences were slight and thus we report the models without race as a predictor. None of the findings differ, however, with race in the model. As would be expected, however, race was frequently significantly associated with the outcomes of interest.

This document is a research report submitted to the U.S. Department of Justice. This report has not been published by the Department. Opinions or points of view expressed are those of the author(s) and do not necessarily reflect the official position or policies of the U.S. Department of Justice.

about police authority. Survey results suggest that concerns for police legitimacy are warranted. However, by wave 3, there was no detectable difference in the DP and PS sites relative to SPP sites on views about police legitimacy, and the DP sites experienced a significant increase in legitimacy from wave 2 to wave 3. Thus, in spite of the initial negative impact on legitimacy, this effect is not sustained in the six to nine months following treatment.

Procedural Justice and Trust. Closely aligned in the literature with legitimacy, perceptions about procedural justice and trust in police were also impacted for DP residents. Although DP residents reported significantly higher scores for procedural justice and trust at wave 2 than at wave 1, the increase was significantly less than that experienced by SPP sites, suggesting that the treatment dampened this positive trend—with residents not experiencing as much trust and procedural justice as they would have in absence of the treatment. However, as with legitimacy, this effect does not linger. In the long term, there is no difference in procedural justice and trust between either treatment group relative to the SPP residents. Thus, the negative effect among DP residents on procedural justice and trust is also not sustained. See Figure 11, Appendix.

Police Misconduct. One might reasonably suspect that the behaviors contributing to these negative effects among DP residents might include increased aggressive policing strategies, as perceived by residents (albeit officer activity logs suggest otherwise). However, the measure for perceptions about the frequency of police misconduct (stopping people without good reason, using more force than the circumstance requires, and using insulting language) does not support this as the basis for these views. The DP treatment shows a negative effect at wave 2, compared to controls. In other words, the decline in frequency of perceived misconduct among DP residents was steeper relative to SPP residents. Although PS, DP, and SPP residents reported declines across time, the DP treatment appears to have led to greater declines among DP residents than among controls at both

This document is a research report submitted to the U.S. Department of Justice. This report has not been published by the Department. Opinions or points of view expressed are those of the author(s) and do not necessarily reflect the official position or policies of the U.S. Department of Justice.

wave 2 and wave 3 assessments. Thus, DP did not appear to generate resident concerns about aggressive policing. See Figure 12, Appendix.

Victimization Risk. In fact, among DP residents, concerns about victimization risk in the neighborhood were dampened by the treatment, relative to SPP residents. SPP residents and PS residents reported significant increases in victimization risk at wave 2 compared to baseline, but DP residents showed only a slight, non-significant increase. However, this beneficial effect is not sustained in the long term. No difference was detected in the long-term follow-up between either PS or DP residents relative to controls. However, the trend is declining across all three groups. See Figure 13, Appendix.

Personal Safety. Detrimental effects on feelings of personal safety were felt in the short term among PS residents. Residents of the PS group saw a significantly sharper decline in feelings of personal safety immediately following treatment, compared to SPP residents (who also experienced a significant drop in feelings of safety from wave 1 to wave 2, just not as steep). But again, this negative effect does not persist at the long-term assessment. See Figure 14.

Cooperation with Police. Scores for cooperation with police tend to be fairly high, scoring within 80-90 percent of the maximum possible range. Yet, both treatments appeared to generate long-term improvements in residents' willingness to cooperate with police, relative to SPP residents. Both DP and PS residents reported a significantly greater willingness to cooperate with police at wave 3 compared to wave 2. SPP residents saw a non-significant decline during this time. In high crime areas, where cooperation with police is not commonplace, this is a particularly important outcome. See Figure 15, Appendix.

Collective Efficacy. Long-term benefits also manifest for collective efficacy. Collective efficacy is a social process of developing shared values and norms for behavior and building a collective willingness among residents to take action to support those norms. This is particularly difficult to

This document is a research report submitted to the U.S. Department of Justice. This report has not been published by the Department. Opinions or points of view expressed are those of the author(s) and do not necessarily reflect the official position or policies of the U.S. Department of Justice.

build in areas of disadvantage and high crime (Sampson, Raudenbush, & Earls, 1997). Residents of DP sites, relative to controls reported significant improvements in collective efficacy at wave 3. In fact, DP sites had the lowest collective efficacy scores at baseline (52 on a scale of 0-100), saw a positive trend throughout the study, including significant increases between wave 1 and wave 2, and, as stated, outperformed SPP sites in improvement between wave 2 and wave 3 (with all 3 groups averaging at about 56% of the maximum possible at wave 3). Thus, while DP may have initially and temporarily harmed police legitimacy—perhaps as residents questioned the motives behind the increased police presence—increasing the duration officers spend within these locations conducting stationary and roving patrols, and the subsequent reductions in crime, might provide a neighborhood safety net. This in turn may allow more social interaction among residents or even to build confidence among residents that they could act against neighborhood problems without reprisal and engage more in self-policing. PS sites also saw a positive trend, but differences were not statistically significant. See Figure 16, Appendix.

Summary. Overall, the community survey results suggest that DP, as implemented by SLCPD for this study, generated some initial mistrust and procedural justice concerns, which may be what hindered police legitimacy in the time immediately following treatment. However, the long term gains suggest that among DP residents, relative to residents experiencing SPP, views about legitimacy, trust and procedural justice did not suffer, and in fact, residents viewed the police as less aggressive over time, felt less at risk in the time immediately following the treatment, and were more willing to cooperate with police and felt more integrated and secure in their neighborhoods in the long term. While the PS residents also suffered from initial declines in legitimacy following treatment, and residents also felt a small decline in safety in these locations immediately following treatment relative to SPP sites, PS sites, too, reported an increased willingness to cooperate with police in the long term. Therefore, the community impact of HSP, on the whole, appears positive in

This document is a research report submitted to the U.S. Department of Justice. This report has not been published by the Department. Opinions or points of view expressed are those of the author(s) and do not necessarily reflect the official position or policies of the U.S. Department of Justice.

the long term. It may be that steps could be taken to explain the treatment to residents prior to implementation to allay concerns about the change in officer presence and activities, which may help address concerns and reduce mistrust or initial challenges to police legitimacy. Additionally, further support could be offered to officers attempting to implement PS treatment, as it was more challenging (see officers' assessments below). Improved implementation and more collaborative implementation in partnership with residents may promote better community outcomes.

Officers' Assessments

The study also examined officers' perceptions of implementing HSP. Prior to implementing PS & DP, 151 SLCPD line-level officers anonymously completed a web-based survey. Following the treatment period, 240 officers (29% of the sworn force) completed a more comprehensive web-based survey. Surveyed officers mirror all officers in demographics, similar at both time points, except with more years of experience at the latter wave. See Table 4, Appendix.

In general, officers' views did not vary across the two waves. Officers felt that they had the legitimacy needed to do their jobs well, that they police fairly, that the public trusts police to make decisions that are right for the people, and that they can maintain order and control crime. In both waves, officers supported increasing visibility on high crime blocks to reduce crime and also addressing conditions that facilitate opportunities for crime. They also acknowledged the importance of addressing the priorities important to the people in the community. Officers were satisfied with their jobs. Officers' opinions varied most by the area to which they were assigned. The officers varied slightly based on experience (time on the job), whether they conducted HSP, and among those providing treatment, the type of HSP treatment (DP versus PS).

Officers assigned to areas in the Northern part of the County, with high concentrations of minority residents, poverty, and crime, were more likely to report incongruence between the laws and policies of police relative to community beliefs, that citizens are less likely to respect police

This document is a research report submitted to the U.S. Department of Justice. This report has not been published by the Department. Opinions or points of view expressed are those of the author(s) and do not necessarily reflect the official position or policies of the U.S. Department of Justice.

authority and obey directives, and that citizens are less trusting that police make the right decisions for residents. Officers with more experience felt more strongly that residents respect police authority and the department, and report feeling more safe. As seniority can be associated with geographic assignment, this, too, may in part relate to area of assignment. Likewise, assignment to implement HSP may relate to geographic assignment, as officers assigned to more crime-ridden precincts were more likely to be assigned to implement HSP (and also had less experience). Therefore, it is not surprising that officers assigned to implement HSP were less likely to feel that citizens respect police authority, trust police, follow police directives, accept decisions, or respect the department. They also felt less capable of controlling crime, likely for the same reason.

Implementation Capacity. Results suggest that officers who provided DP or PS treatment under the project (n=103 of survey respondents) felt that they had the resources, training, and supervisor support needed to implement the treatment. Although, reasonably so, officers implementing PS were more likely to state that additional training beyond the academy is required and that they need more resources to implement HSP well. Officers were slightly more likely to claim that they did not have sufficient time in their shifts to implement HSP properly, and this did not vary based on HSP strategy (PS versus DP). Also, officers delivering both types of HSP strategies were concerned that providing PS & DP in specific hot spots interfered with their ability to provide quality police services to other geographic areas.

Implementation Style. Officers did not report implementing more aggressive policing as a consequence of conducting HSP, nor, however, did they feel that doing HSP led them to engage in more creative ways to address the needs of their assigned areas. However, PS officers reported being more creative than officers implementing DP. Officers were fairly divided in their opinion (leaning slightly positive) about whether implementing HSP resulted in more positive interaction with

This document is a research report submitted to the U.S. Department of Justice. This report has not been published by the Department. Opinions or points of view expressed are those of the author(s) and do not necessarily reflect the official position or policies of the U.S. Department of Justice.

residents or businesspersons in the hot spots. Officers implementing PS felt more strongly about this benefit.

Implementation Outcomes. Officers were asked their perceptions about three citizen outcomes. First, officers did not notice more negative opinions about police from the public as a result of the effort, and, in fact, were just slightly more likely to report that that HSP led to a more grateful public. These views did not vary based on the type of police strategy. Finally, while overall, officers providing treatment did not believe that residents were more likely to pitch in to improve the area as a result of HSP, PS officers felt more positively, on average, and somewhat agreed that residents were more likely to pitch in as a result of receiving HSP.

Conclusions

We conclude from these findings that in suburban, residential crime hot spots, HSP remains an effective, at least short-term, crime prevention strategy. Both PS and DP sites experienced significant crime declines, while the SPP group did not. Detrimental effects on the community were few and not sustained, while benefits, particularly for residents in DP hot spots were quite positive and may accumulate in the longer term. Disadvantageous effects on the community were limited to initial feelings of mistrust and concerns about procedural justice among DP residents and declines in views about police legitimacy immediately following treatment in both DP and PS sites, relative to SPP. Residents of PS sites also experienced slightly larger declines in feelings of personal safety than the SPP sites immediately following treatment. Conversely, those in DP sites reported less frequent aggressiveness and misconduct by police and lower victimization risk than SPP residents. In the long term, none of the detrimental effects are sustained and DP sites reported significant improvements in collective efficacy; in addition, both DP and PS residents reported significant increases in willingness to cooperate with the police in the longer term, compared to SPP.

This document is a research report submitted to the U.S. Department of Justice. This report has not been published by the Department. Opinions or points of view expressed are those of the author(s) and do not necessarily reflect the official position or policies of the U.S. Department of Justice.

Both PS & DP policing strategies appear to be viable and effective ways to reduce crime in hot spots in the short term without lasting deleterious effects on public views about police. These findings, coupled with those of Weisburd, Hinkle, Famega & Ready (2011), which found no significant negative community impact of broken windows policing in crime hot spots, begin to build the case that not only can HSP reduce crime, but that in doing so using a variety of different strategies, police will not bring long-term harm to important police-community relationships.

This document is a research report submitted to the U.S. Department of Justice. This report has not been published by the Department. Opinions or points of view expressed are those of the author(s) and do not necessarily reflect the official position or policies of the U.S. Department of Justice.

References

Braga, A. A., Papachristos, A. V., & Hureau, D. M. (2012). The effects of hot spots policing on crime: An updated systematic review and meta-analysis. *Justice Quarterly*, (online first).

Campanelli, P., Sturgis, P., & Purdon, S. (1997). *Can you hear me knocking: An Investigation into interviewers on survey response rates*. London: Social and Community Planning Research.

Cohen, P., Cohen, J., Aiken, L. S., & West, S. G. (1999). The problem of units and the circumstance for POMP. *Multivariate Behavioral Research*, *34*(3), 315–346.

Ferguson, K. M., & Mindel, C. H. (2007). Modeling fear of crime in Dallas neighborhoods: A test of Social Capital Theory. *Crime & Delinquency*, *53*(2), 322–349.

Groves, R. M. (2006). Nonresponse rates and nonresponse bias in household surveys. *Public Opinion Quarterly,* 70(5), 646-675.

Groves, R. M., & Couper, M. P. (1998). *Nonresponse in household interview surveys*. New York, NY: Wiley.

Groves, R. M., Cialdini, R. B., & Couper, M. P. (1992). Understanding the decision to participate in a survey. *Public Opinion Quarterly*, *56*(4), 475-495.

Gwiasda, V., Taluc, N., & Popkin, S. J. (1997). Data collection in dangerous neighborhoods: Lessons from a survey of public housing residents in Chicago. *Evaluation Review*, *21*(1), 77-93.

Hinkle, J. C., Weisburd, D., Famega, C., & Ready, J. (2013). The problem is not just sample size: The consequences of low base rates in policing experiments in smaller cities. *Evaluation Review*, *37*(3-4), 213–238.

Jackson, J., Bradford, B., Stanko, B., & Hohl, K. (2012). *Just authority?: Trust in the police in England and Wales*. New York: Routledge.

This document is a research report submitted to the U.S. Department of Justice. This report has not been published by the Department. Opinions or points of view expressed are those of the author(s) and do not necessarily reflect the official position or policies of the U.S. Department of Justice.

Kochel, T. R., Parks, R., & Mastrofski, S. D. (2013). Examining police effectiveness as a precursor to legitimacy and cooperation with police. *Justice Quarterly*, *30*(5), 895–925.

Link, M. W., & Burks, A. T. (2013). Leveraging auxiliary data, differential incentives, and survey mode to target hard-to-reach groups in an address-based sample design. *Public Opinion Quarterly*, 77(3), 696-713.

Pashea, J. & Kochel, T.R. (2014). Face-to-face Surveys in high crime areas: Balancing respondent cooperation and interviewer safety. Unpublished manuscript.

Sampson, R.J., Raudenbush, S.W, & Earls, F. (1997). Neighborhoods and violent crime: A multilevel study of collective efficacy. *Science,* 277(5328), 918–924.

Schmerler, K., Perkins, M., Phillips, S., Rinehart, T., & Townsend, M. (2006). *A Guide to Reducing Crime and Disorder through Problem-Solving Partnerships*. US Department of Justice, Office of Community Oriented Policing Services.

Sunshine, J., & Tyler, T. R. (2003). The role of procedural justice and legitimacy in shaping public support for policing. *Law & Society Review*, *37*(3), 513–548.

Tyler, T. R., & Huo, Y. J. (2002). *Trust in the law: Encouraging public cooperation with the police and courts*. New York: Russell Sage.

Tyler, T. R. (2006). *Why people obey the law*. Princeton, NJ: Princeton University Press.

Weisburd, D., Hinkle, J. C., Famega, C., & Ready, J. (2011). The possible "backfire" effects of hot spots policing: an experimental assessment of impacts on legitimacy, fear and collective efficacy. *Journal of Experimental Criminology*, *7*(4), 297–320.

This document is a research report submitted to the U.S. Department of Justice. This report has not been published by the Department. Opinions or points of view expressed are those of the author(s) and do not necessarily reflect the official position or policies of the U.S. Department of Justice.

Appendix

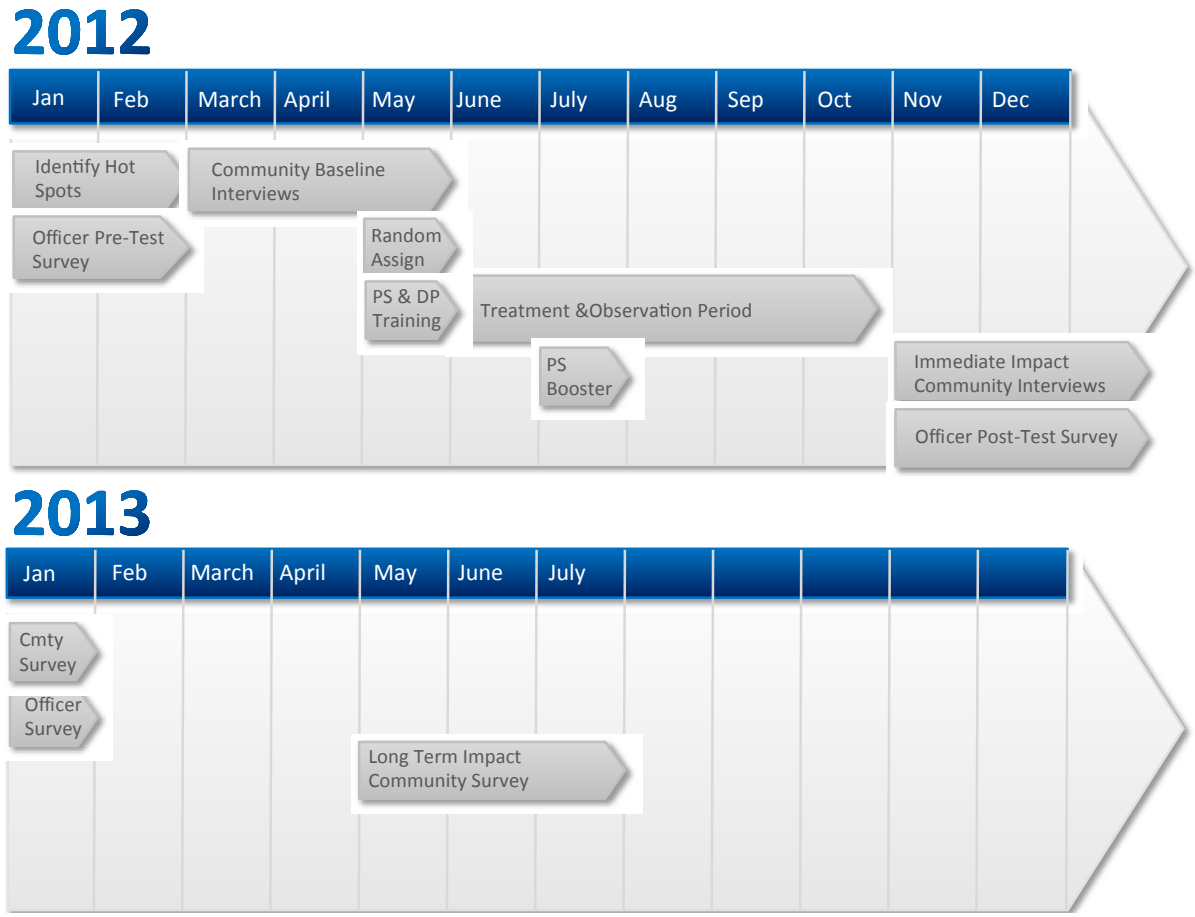

Figure 2. Project Timeline Milestones

This document is a research report submitted to the U.S. Department of Justice. This report has not been published by the Department. Opinions or points of view expressed are those of the author(s) and do not necessarily reflect the official position or policies of the U.S. Department of Justice.

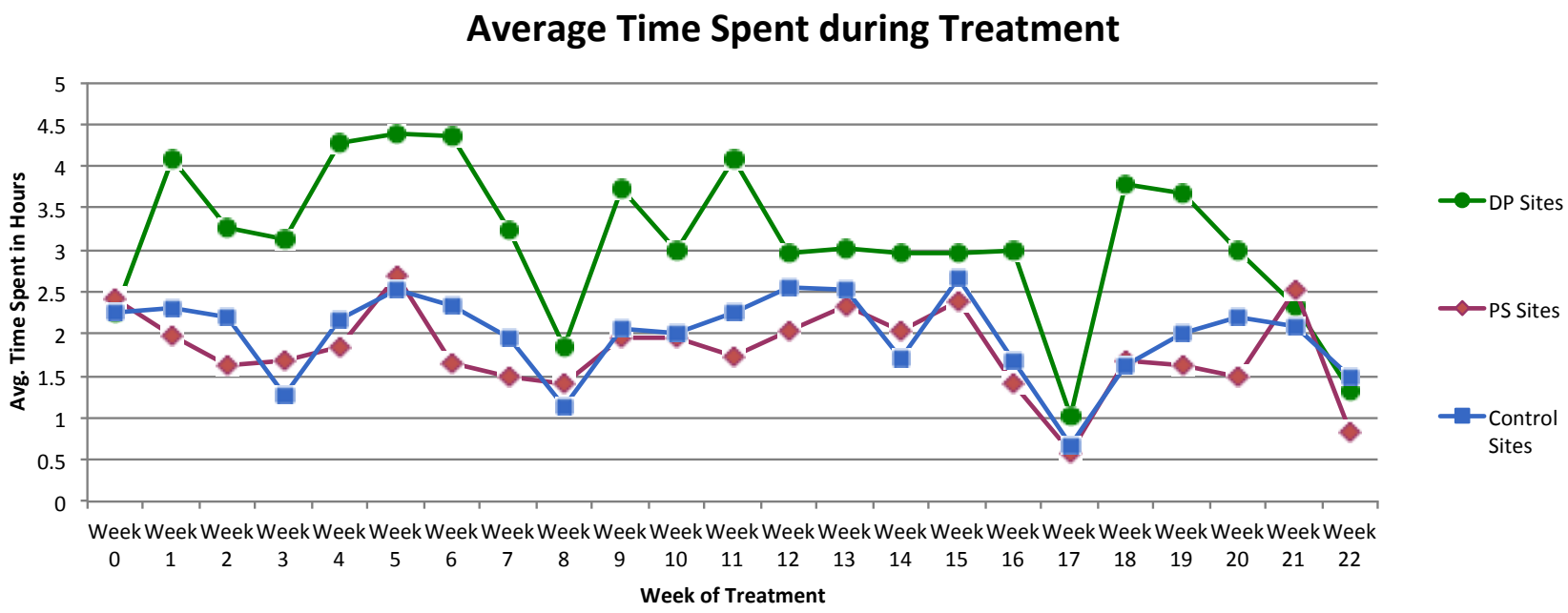

Figure 3. Automated Vehicle Location Data Showing Time Spent by Treatment Type Across Time

This document is a research report submitted to the U.S. Department of Justice. This report has not been published by the Department. Opinions or points of view expressed are those of the author(s) and do not necessarily reflect the official position or policies of the U.S. Department of Justice.

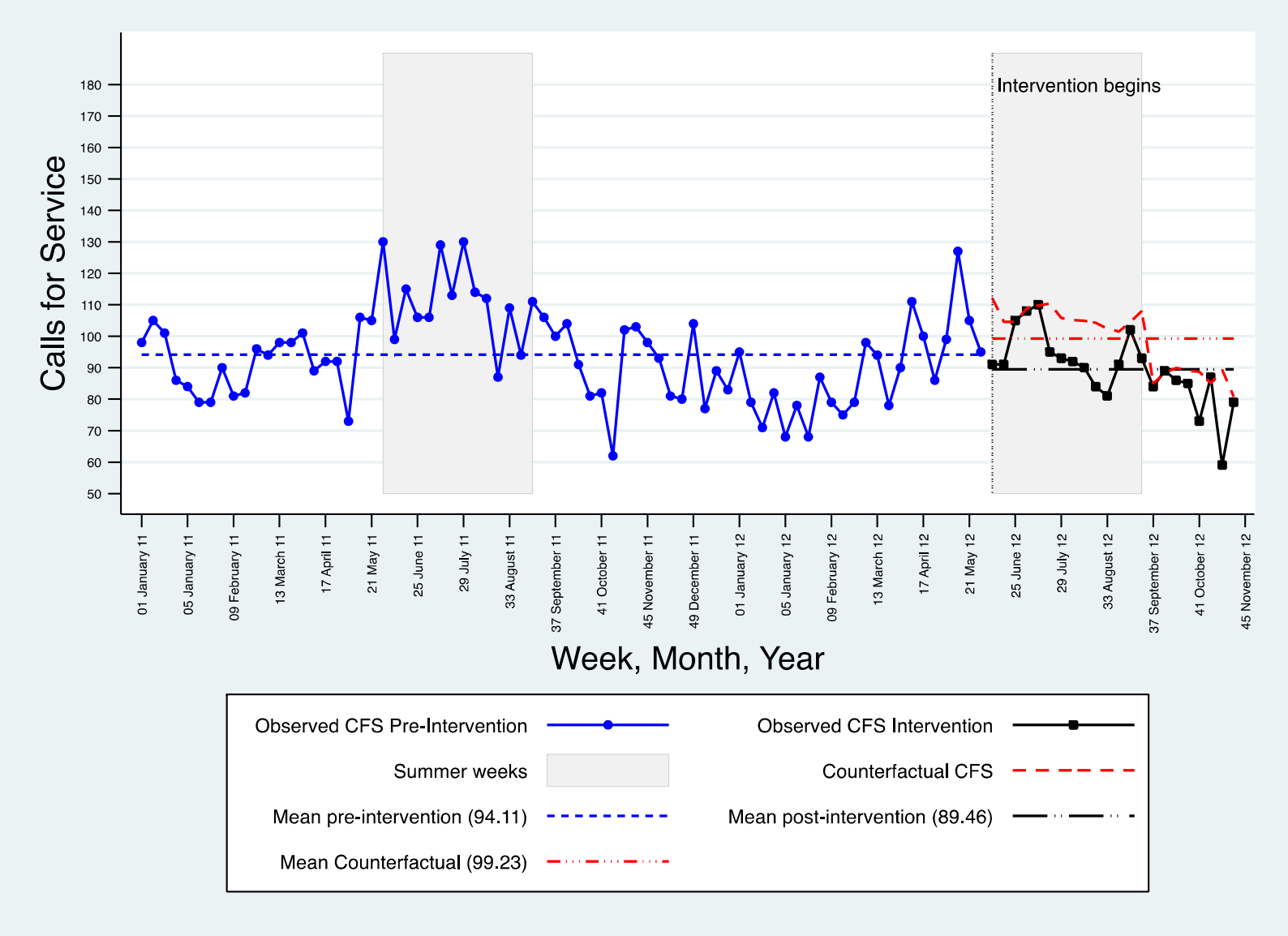

Figure 4. Directed Patrol Sites Time Series Showing a Reduction in Mean Calls for Service

This document is a research report submitted to the U.S. Department of Justice. This report has not been published by the Department. Opinions or points of view expressed are those of the author(s) and do not necessarily reflect the official position or policies of the U.S. Department of Justice.

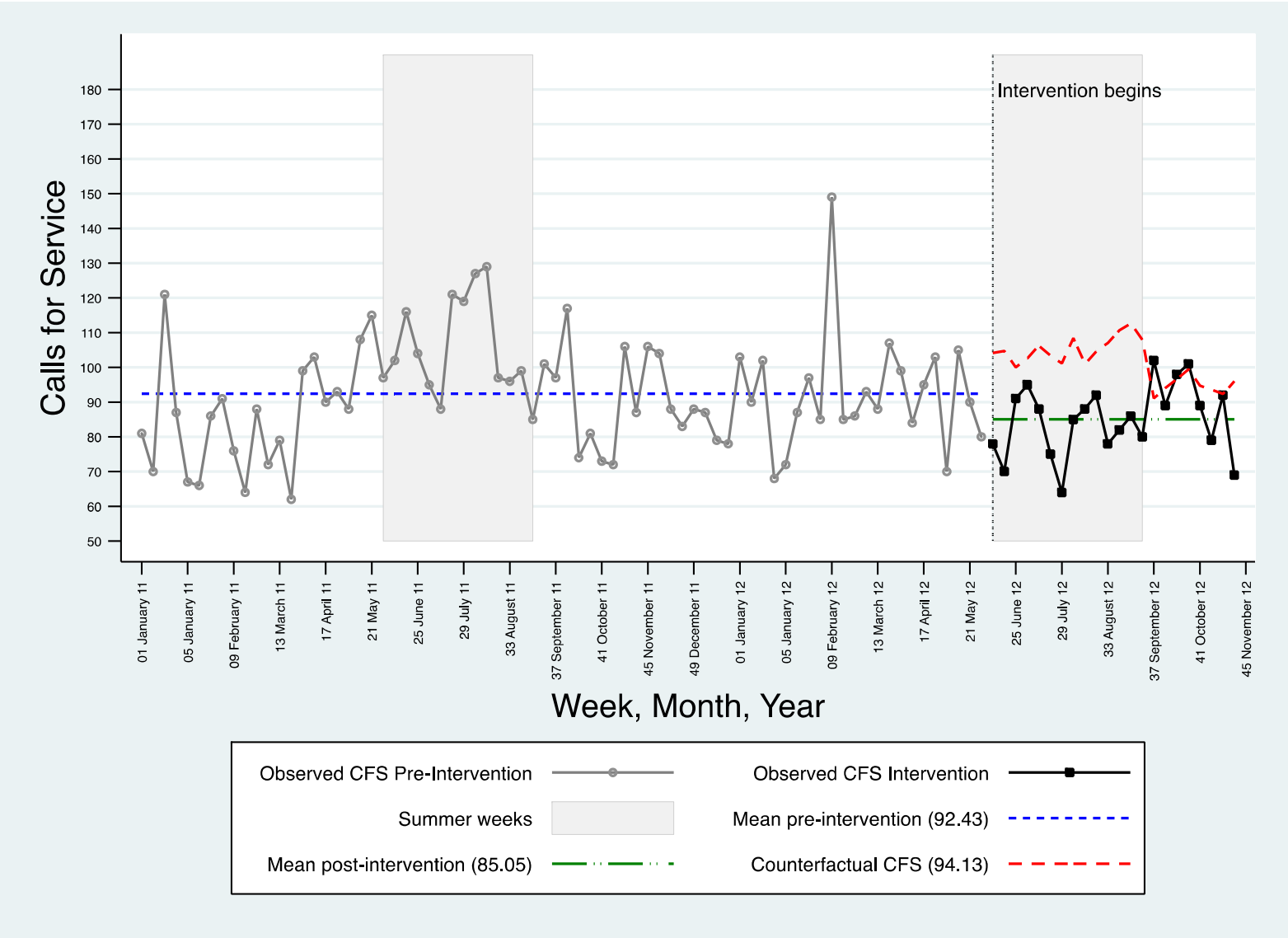

Figure 5. Problem Solving Sites Time Series Showing a Reduction in Mean Calls for Service.

This document is a research report submitted to the U.S. Department of Justice. This report has not been published by the Department. Opinions or points of view expressed are those of the author(s) and do not necessarily reflect the official position or policies of the U.S. Department of Justice.

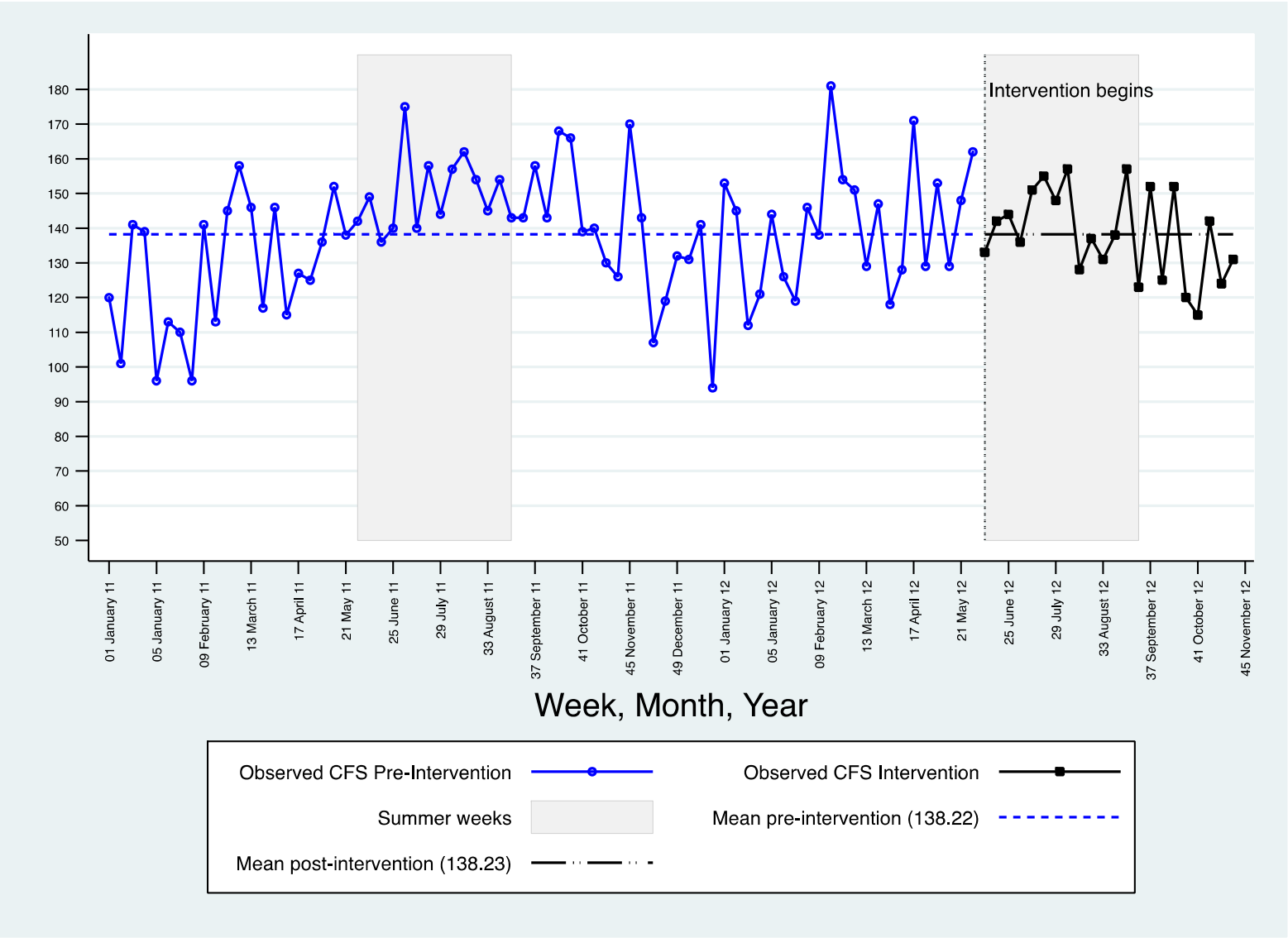

Figure 6. Control Sites Time Series Showing No Change in Mean Calls for Service.

This document is a research report submitted to the U.S. Department of Justice. This report has not been published by the Department. Opinions or points of view expressed are those of the author(s) and do not necessarily reflect the official position or policies of the U.S. Department of Justice.

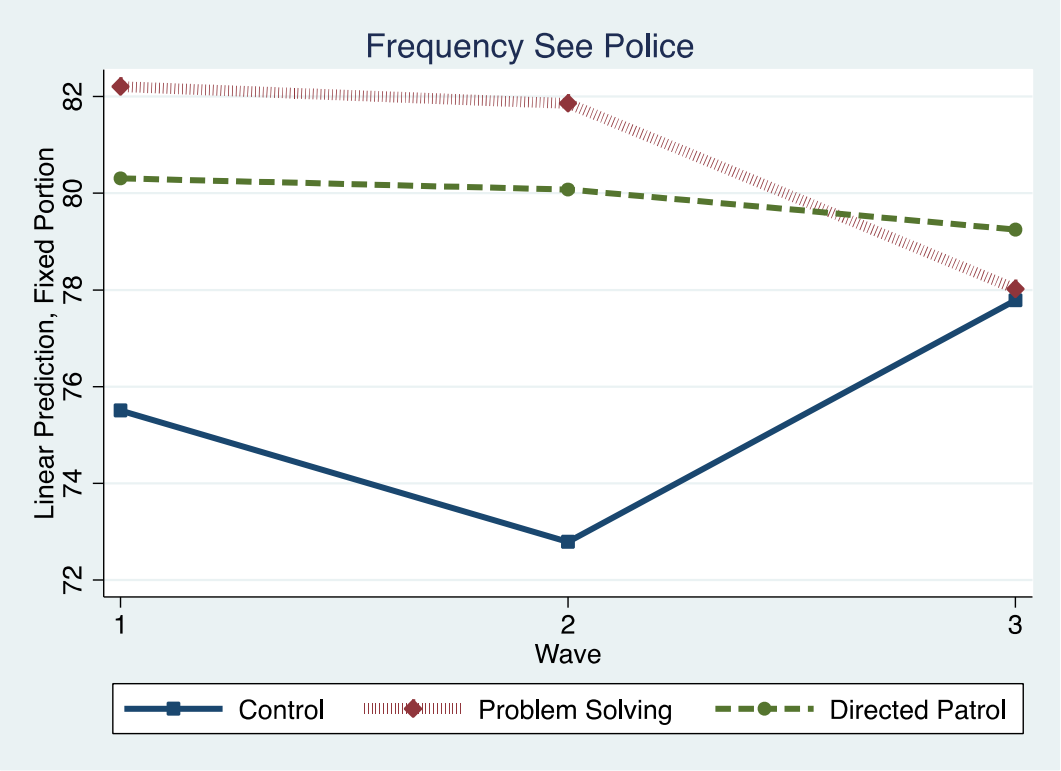

Figure 7. Frequency See the Police by Time by Wave

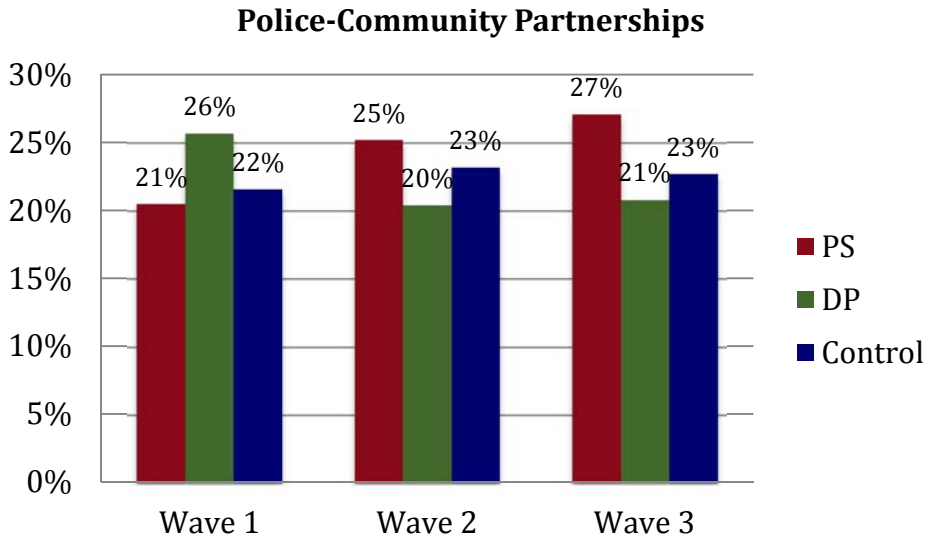

Figure 8. Percentage of Residents Aware of Collaborative Efforts

This document is a research report submitted to the U.S. Department of Justice. This report has not been published by the Department. Opinions or points of view expressed are those of the author(s) and do not necessarily reflect the official position or policies of the U.S. Department of Justice.

Table 3. Measurement Operationalization

Construct	Items (Response Options 1-4)	n	Range	Mean	St. Dev.	α
Procedural Justice and Trust	Q20. Area police address citizens in a respectful manner and appropriate tone. Q23. Area police try to help citizens solve their problems. Q26. For the most part, area police are honest. Q27. Area police can be trusted to make decisions that are right for the people in this area. Q28. Area police treat people fairly. Q30. Police care about the crime-related concerns of people in this area. Q31. The police provide the same quality of service to all citizens in the area. Q33. Area police explain their actions to people. Q34. Area police take the time to listen to people.	2834	0-100	64.1	27.1	.9296
Competence and Satisfaction	Q5. Overall, how good of a job are your local police doing in this area? Q11. In general, how satisfied are you with the quality of police services in the area? Q12. In general, how satisfied are you with the tactics police use in the area? Q13. In general, how satisfied are you with the frequency that you see police in the area? Q18. Police respond quickly to the area when people ask them for help. Q19. The police in this area know how to carry out their official duties properly. Q21. The police in the area are capable of maintaining order on the streets. Q24. I respect the way area police use their authority. Q32. Police are capable of controlling crime in the area.	2849	0-100	67.1	24.2	.9083

This document is a research report submitted to the U.S. Department of Justice. This report has not been published by the Department. Opinions or points of view expressed are those of the author(s) and do not necessarily reflect the official position or policies of the U.S. Department of Justice.

Police Legitimacy Q22. You should do what the police tell you to even if you disagree. Q25. I feel that I should accept decisions made by area police, even if I do not understand the reasons for their decisions. Q29. You should obey police directives because that is the *proper* or *right* thing to do.	2831	0-100	69.9	26.1	.7262
Police Misconduct (Response Options are 1-5 for these indicators only) *How often do you think police officers…* Q35. Stop people on area streets without good reason? Q36. Use insulting language when talking to people in the area? Q37. Use more force than is necessary under the circumstances against people in the area?	2678	0-100	48.9	28.7	.8316
Cooperate with police *How likely would you be to…* Q39. Report a crime/ dangerous or suspicious activities in the area to the police. Q40. When you have information that may help solve a crime, call and give police the information.	2790	0-100	85.6	24.5	.7262
Neighborhood					
Collective Efficacy *People in this area…* Q14. Are a close-knit community. Q15. Are willing to help each other. Q16. Share the same values. Q17. Get together or interact with one another. *How likely would others living or working in the area be to…* Q44. Do something if children were spray-painting graffiti on a local building? Q45. Do something if a group of children from the area were skipping school and hanging out on the street corner. Q46. Break up a fight occurring in front of a house or business. Q47. Report a violent crime that they saw to the police.	2838	0-100	55.5	24.3	.8246
Personal Safety *How safe do you feel…* Q49a. Leaving your home unlocked while you are there? Q50. Walking alone in this area during the day? Q51. Walking alone in this area after dark? Q52. Inside your home after dark?	2779	0-100	64.6	25.2	.7188

This document is a research report submitted to the U.S. Department of Justice. This report has not been published by the Department. Opinions or points of view expressed are those of the author(s) and do not necessarily reflect the official position or policies of the U.S. Department of Justice.

Neighborhood Victimization Risk *How likely others living or working in the area would be to:* Q48. Have something stolen from them while on the block (e.g., a car, a purse/wallet, other property). Q49. Become a victim of a violent crime (e.g., assault, sexual assault).	2723	0-100	50.7	32.6	.7376

This document is a research report submitted to the U.S. Department of Justice. This report has not been published by the Department. Opinions or points of view expressed are those of the author(s) and do not necessarily reflect the official position or policies of the U.S. Department of Justice.

Figure 9. Perceptions about Police Competence and Satisfaction with Police by Treatment Across Time

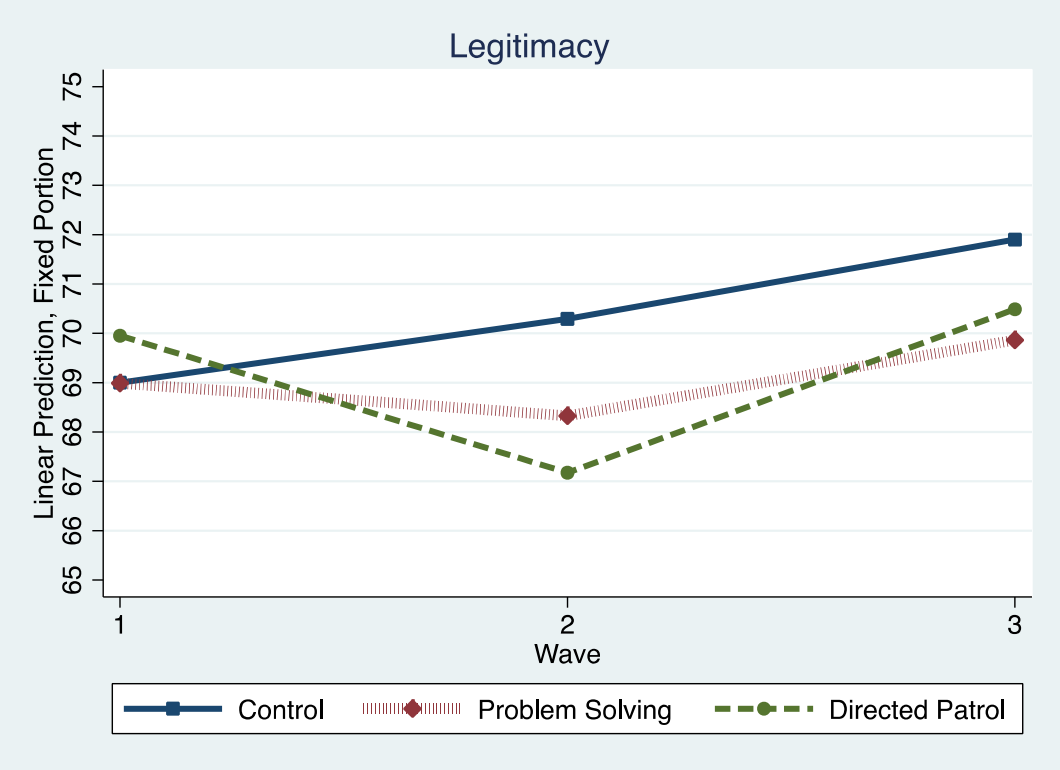

Figure 10. Perceptions of Police Legitimacy by Treatment Across Time

This document is a research report submitted to the U.S. Department of Justice. This report has not been published by the Department. Opinions or points of view expressed are those of the author(s) and do not necessarily reflect the official position or policies of the U.S. Department of Justice.

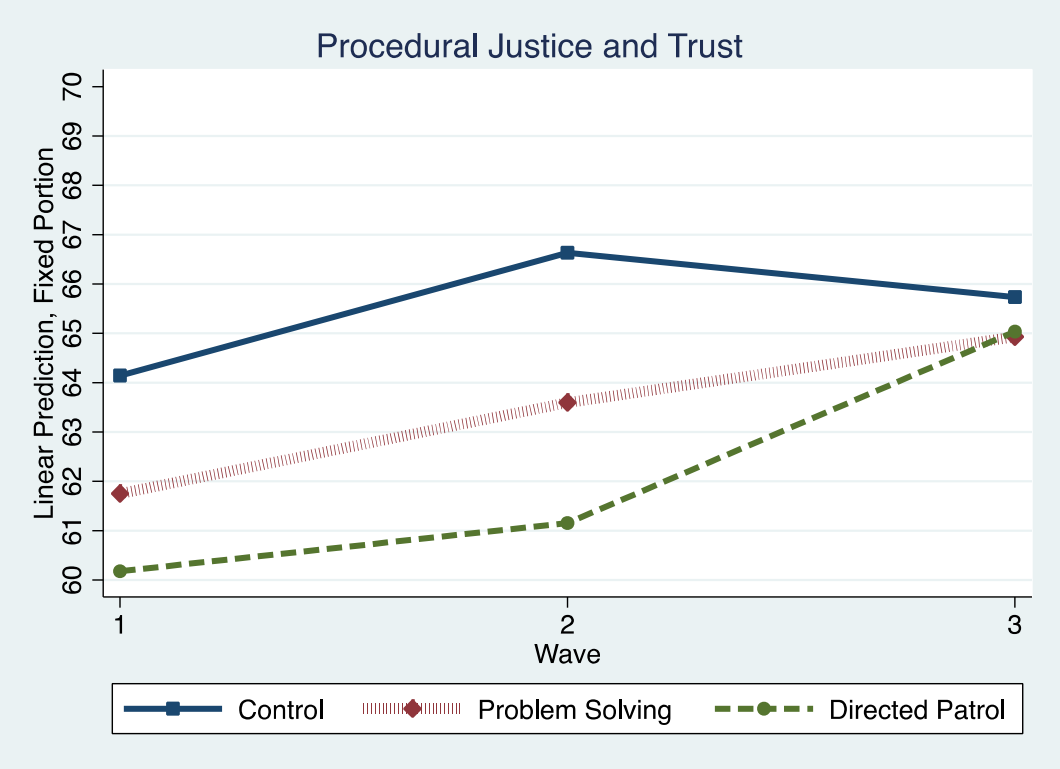

Figure 11. Trust and Perceptions about Procedural Justice by Treatment across Time

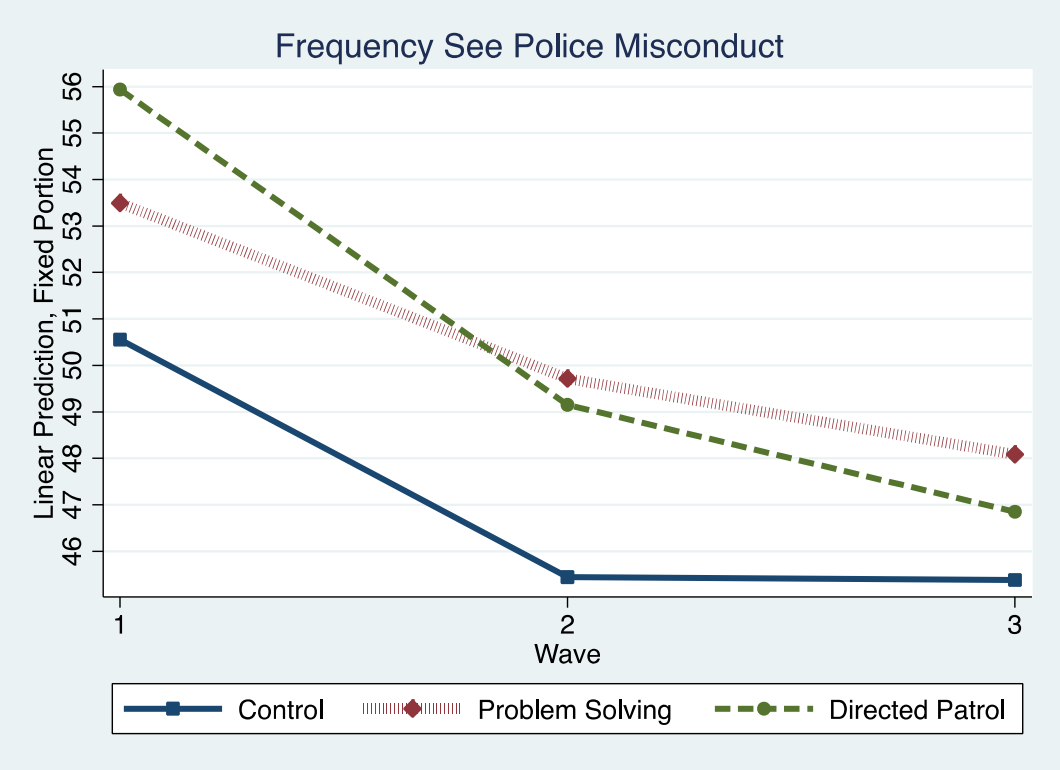

Figure 12. Frequency See Police Misconduct by Treatment Across Time

This document is a research report submitted to the U.S. Department of Justice. This report has not been published by the Department. Opinions or points of view expressed are those of the author(s) and do not necessarily reflect the official position or policies of the U.S. Department of Justice.

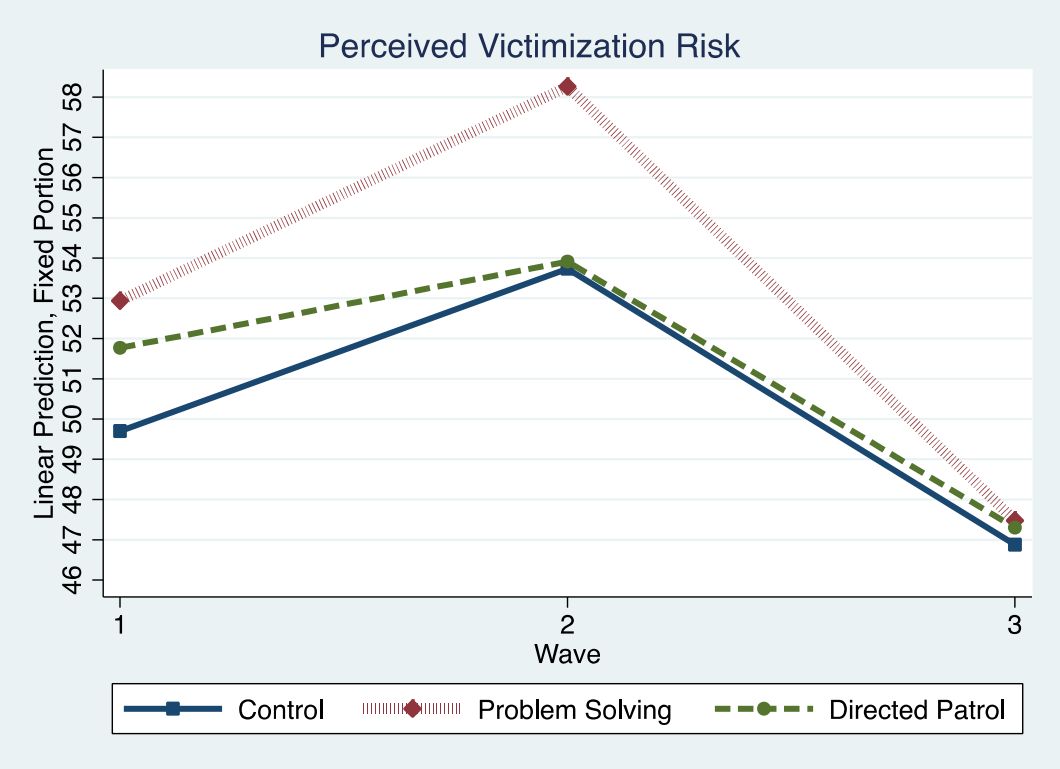

Figure 13. Perceived Victimization Risk by Treatment Across Time

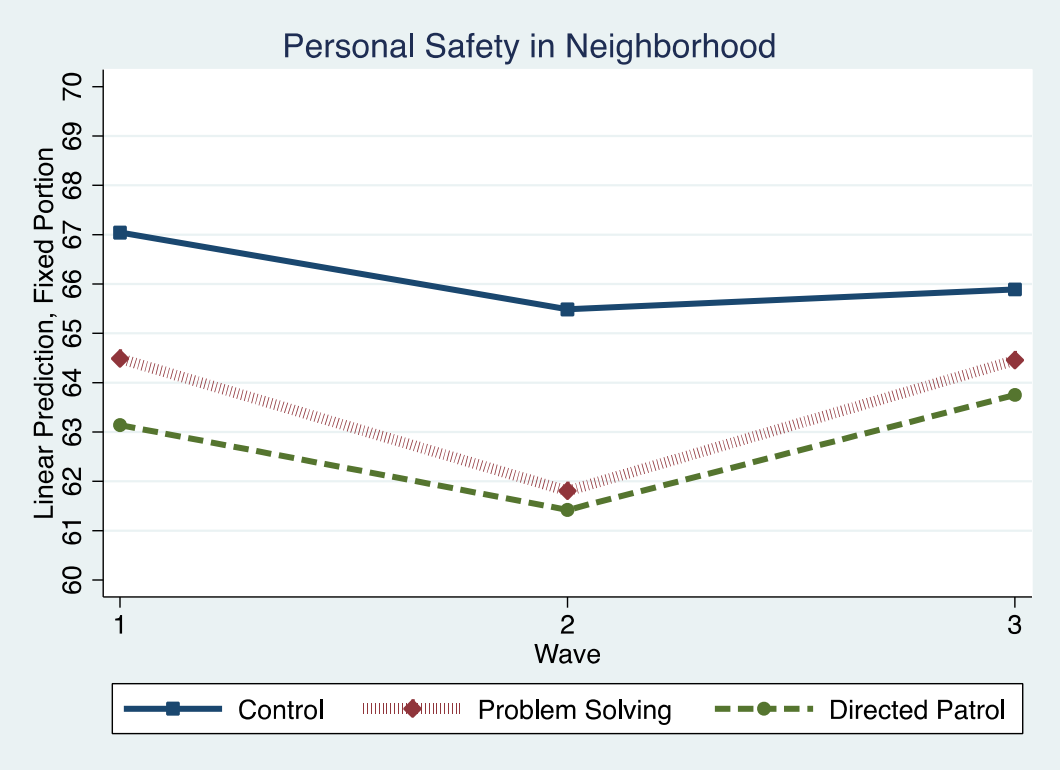

Figure 14. Perceived Personal Safety by Treatment Across Time

This document is a research report submitted to the U.S. Department of Justice. This report has not been published by the Department. Opinions or points of view expressed are those of the author(s) and do not necessarily reflect the official position or policies of the U.S. Department of Justice.

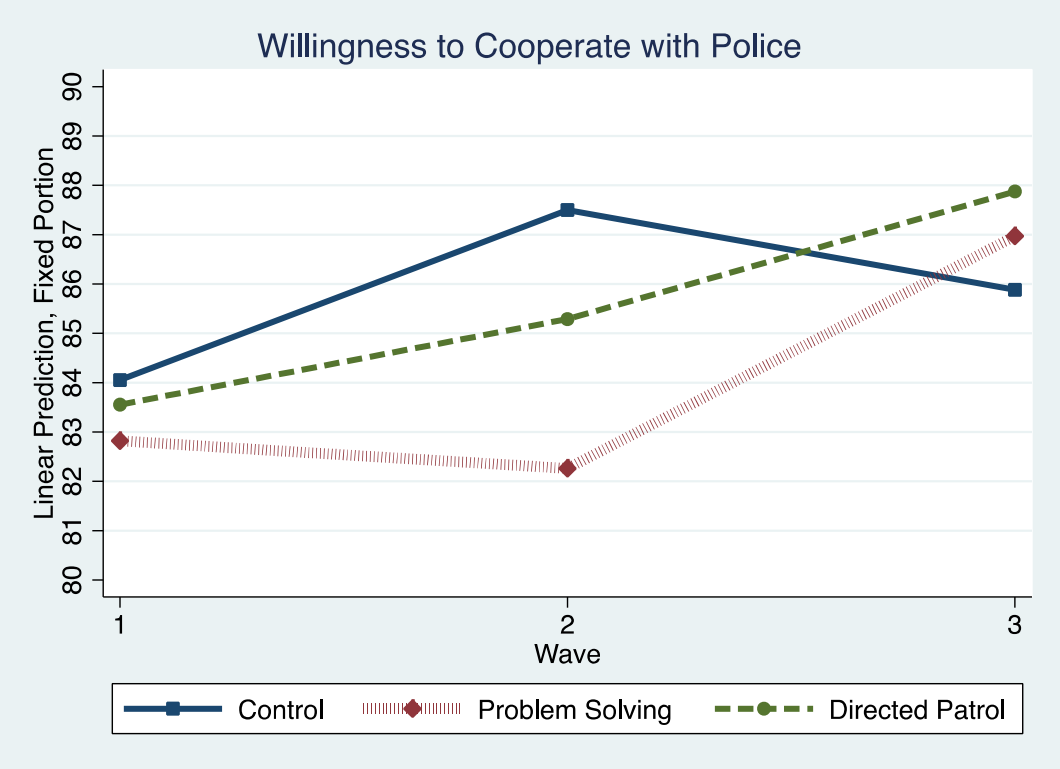

Figure 15. Willingness to Cooperate with Police by Treatment Across Time

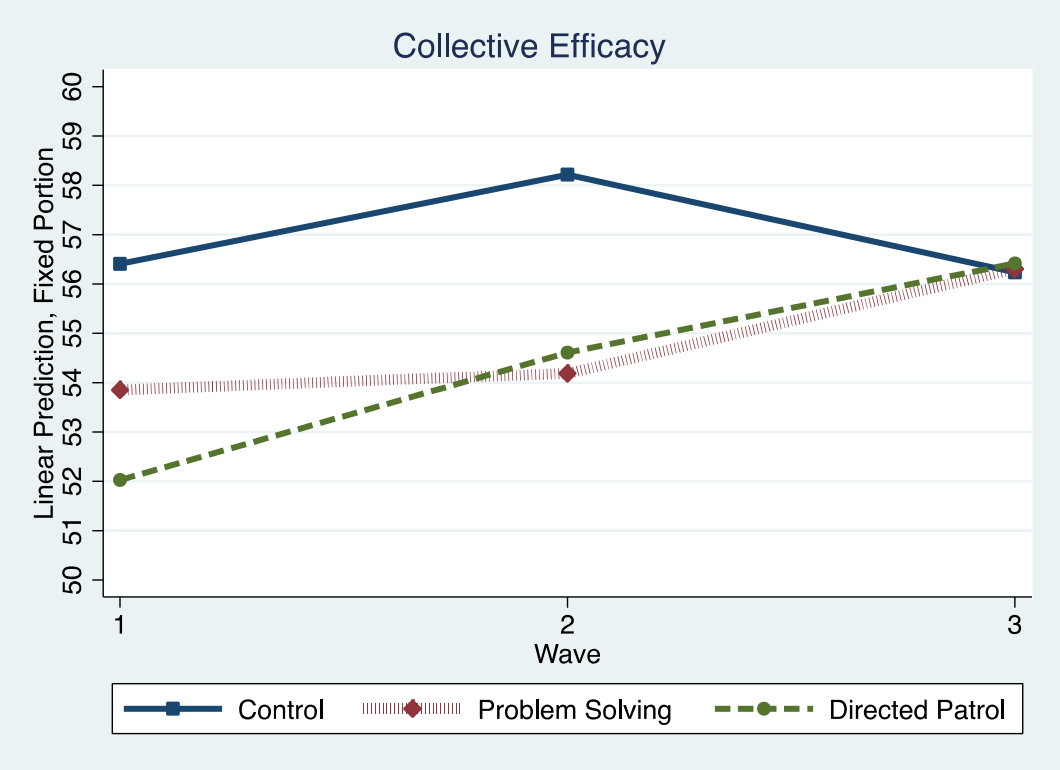

Figure 16. Perceptions of Collective Efficacy By Treatment Type Across Time

This document is a research report submitted to the U.S. Department of Justice. This report has not been published by the Department. Opinions or points of view expressed are those of the author(s) and do not necessarily reflect the official position or policies of the U.S. Department of Justice.

Table 4: Officer Survey Respondent and Saint Louis County Citizen Demographics

Variable	Pre-Program Officers Surveyed	Post-Program Officers Surveyed	All Saint Louis County Officers	Saint Louis County Residents
Gender	n=143	n=221	n = 542	
male	85.3%	86.9%	85.1%	47.3%
female	14.7%	13.1%	14.9%	52.7%
Race	n=143	n=220		
white	89.5%	90.5%	88.0%	70.3%
black	8.4%	7.3%	9.4%	23.3%
other	2.1%	2.3%	2.6%	6.4%
Ethnicity	n=141	n=218		
Hispanic	1.4%	1.4%	1.7%	2.5%
non-Hispanic	98.6%	98.6%	98.3%	97.5%
Experience	n=143	n=221		
0-3 years	32.9%	23.1%	32.1%	--
4-9 years	25.8%	32.1%	26.6%	--
10+ years	41.3%	44.8%	41.3%	--

This document is a research report submitted to the U.S. Department of Justice. This report has not been published by the Department. Opinions or points of view expressed are those of the author(s) and do not necessarily reflect the official position or policies of the U.S. Department of Justice.

Key Project Personnel

Tammy Rinehart Kochel, PhD
Principal Investigator

Lt. Peter Morrow
St. Louis County Police Department Project Liaison

David Weisburd, PhD
Project Mentor

George Burruss, PhD
Project Consultant

Zachary Schleicher
St. Louis County Police Department Crime Analyst

Brett Lord Castillo
St. Louis County Police Department Crime Analyst

Joe Pashea, MA
Field Research Coordinator

Karen Jones
Field Research Coordinator

Karla Keller Avelar, MA
Project Manager

Robert Heimberger
Problem Solving Trainer

Eric Martin
National Institute of Justice Program Manager

This document is a research report submitted to the U.S. Department of Justice. This report has not been published by the Department. Opinions or points of view expressed are those of the author(s) and do not necessarily reflect the official position or policies of the U.S. Department of Justice.

Scholarly Products in Progress

Status: Under Review

Morrow, P. & Kochel, T.R. (submitted to Police Chief Magazine). *Problem Solving versus Directed Patrol in Hot Spots: How Do These Approaches Affect Residential Communities?*

Pashea, J. and Kochel, T.R. (submitted to a scholarly outlet). *Face-to-Face Surveys in High Crime Areas: Balancing Respondent Cooperation and Interviewer Safety*

Status: Revising

Kochel, T.R. *Police Legitimacy and Cooperation in Crime Hotspots: Applying Systems Justification Theory To Assess Direct and Conditional Effects of Victimization Risk and Collective Efficacy in the Decision Calculus*

Status: In Preparation

Burruss, G., Kochel, T.R., and Weisburd, D. *Short-Term and Residual Crime Impact of the St Louis County Hot Spots in Residential Areas (SCHIRA) Experiment.*

Kochel, T.R. and Weisburd, D. *Assessing Community Consequences of Implementing Hot Spots Policing in Residential Hot Spots*

This document is a research report submitted to the U.S. Department of Justice. This report has not been published by the Department. Opinions or points of view expressed are those of the author(s) and do not necessarily reflect the official position or policies of the U.S. Department of Justice.