
Philadelphia, Pennsylvania

Smart Policing Initiative

**Testing the Impacts of Differential Police
Strategies on Violent Crime Hotspots**

Smart Policing Initiative: Site Spotlight

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Smart Policing: Research Snapshot

Despite the popularity of hotspots policing and the evidence on its effectiveness, there is surprisingly little research on what police officers should do in high-crime hotspots. The Philadelphia Police Department (PPD) and its research partners in the Department of Criminal Justice at Temple University sought to test the impacts of differential police strategies employed at violent crime hotspots, using a randomized controlled design. Together they identified 27 hotspots to receive foot patrol, another 27 to receive problem-oriented policing, and 27 more to receive offender-focused policing. Within each strategy the researchers randomly assigned 20 hot spots to receive the treatment and seven to act as control hotspots. The PPD implemented the interventions over a period of four to seven months in 2010-2011, and the research partners used advanced multi-level analysis to assess the impact of each strategy on violent crime in the targeted hotspots.

With regard to foot patrol, each District Captain was given discretion to determine how foot patrol would be implemented within their assigned deployment areas as long as each target area was patrolled a minimum of 8 hours a day, 5 days a week, for 12 weeks. The problem-oriented policing strategy consisted of teams of district officers, working in collaboration with community members and with the support of personnel from police headquarters identifying, analyzing, and implementing strategies targeting specific problems. The offender-focused strategy used Criminal Intelligence Unit (CIU) officers to identify repeat violent offenders who either lived in the target area or were suspected of being involved in violent crimes there. Team members and patrol officers frequently made contact with these prolific offenders using a variety of strategies.

Results showed that the offender-focused strategy outperformed both foot patrol and problem-solving strategies. Compared to the control areas, the treatment areas that received the offender-focused strategy experienced a 22-percent decrease in violent crime, and a 31-percent decrease in violent street felonies. No significant crime declines occurred in the areas that received problem-solving or foot patrol.

The success of the offender-focused strategy suggests that by focusing police efforts on the “problem people” associated with “problem places,” police can achieve significant crime reductions while avoiding negative community perceptions of their actions. Results also show that more complex strategies—such as problem solving—may not generate crime reduction benefits as quickly as offender-focused strategies. Last, results from two recent foot patrol experiments in Philadelphia raise interesting questions about the optimal conditions for implementation of foot patrol and potential minimum crime thresholds for producing successful crime control.

PHILADELPHIA, PENNSYLVANIA SMART POLICING INITIATIVE: TESTING THE IMPACTS OF DIFFERENTIAL POLICE STRATEGIES ON VIOLENT CRIME HOTSPOTS

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I. Introduction

The Philadelphia Police Department (PPD) and its research partners in the Department of Criminal Justice at Temple University sought to test the impacts of differential police strategies employed at violent crime hotspots, using a randomized controlled design. The Philadelphia Smart Policing Initiative (SPI) team examined the city's 2009 incident database using advanced spatial analysis to identify 81 mutually exclusive violent crime hotspots. The SPI team selected 27 hotspots to receive foot patrol, 27 to receive problem-oriented policing, and 27 to receive offender-focused strategies. Within each strategy the researchers randomly assigned 20 hotspots to receive the treatment and seven to act as control hotspots. The PPD implemented the interventions over a period of four to seven months in 2010–2011, and the research partners used advanced multi-level analysis to assess the impact of each strategy on violent crime in the targeted hotspots. Overall, the Philadelphia SPI team sought to inform the dialogue on the types of activities officers should engage in while targeting violent crime hotspots.

II. The Problem

The existence of concentrations of crime at particular places, commonly called

“hotspots,” is now widely recognized among police and criminal justice researchers. Deterrence theory and routine activities theory offer a strong theoretical foundation to support the efficacy of hot spots policing. Deterrence theory holds that crime occurs where the perceived risk of committing a crime is lower than the perceived reward.¹ The presence of a police officer is assumed to influence that calculus by increasing the risk. Similarly, routine activities theory identifies the absence of capable guardianship as one of the elements necessary for a crime to occur.² When police officers are present at a place, they act as capable guardians. Moreover, advances in data availability and information systems have enabled police departments to routinely and precisely identify the locations of their biggest crime problems. In fact, in 2007, more than half of all police agencies serving 50,000 or more residents used computers to identify crime hotspots.³ The evidence

¹ Beccaria, Cesare. 1764, translated 1963. *On Crimes and Punishments*. Translated by H. Paolucci. Upper Saddle River: Prentice-Hall. Original edition, 1764.

Bentham, Jeremy. 1948 [1789]. *An Introduction to the Principles of Morals and Legislation*. New York: Kegan Paul.

² Cohen, Lawrence E., and Marcus Felson. 1979. Social Change and Crime Rate Trends: A Routine Activity Approach. *American Sociological Review* 44:588-608.

³ Reaves, Brian A. (2010). *Local police departments, 2007*. Washington, DC: Bureau of Justice Statistics.

of crime concentration has led to a natural shift away from random patrol to more focused strategies that target resources at the high-crime places (called “hotspots policing”).⁴ In fact, the National Research Council Committee to Review Research on Police Policy and Practices concluded: “...studies that focused police resources on crime hot spots provide the strongest collective evidence of police effectiveness that is now available.”⁵

Despite the popularity of hotspots policing and the evidence on its effectiveness, there is surprisingly little research on what officers should do in high-crime hotspots. A review of the available research identified only two comparative studies. The first, in Lowell, MA, examined the impacts of different problem-solving strategies across hotspots and found that situational crime prevention strategies outperformed aggressive enforcement and social service strategies.⁶ The second study, in Jacksonville, FL, compared directed patrol to problem-oriented policing (POP) and found that the POP strategies generated significantly greater crime reductions compared to the patrol strategies.⁷ Other than these two studies, there is virtually no evidence to guide police departments in their hotspots policing activities. Telep and Weisburd highlighted this point when they noted that: “While the evidence on the

effectiveness of hot spots policing is persuasive, there still remains the question of what specifically police officers should be doing at hot spots to most effectively reduce crime.”⁸

III. THE RESPONSE

The Philadelphia SPI team sought to address this limitation in the knowledge base through a randomized controlled study examining the impacts of three different police strategies in violent crime hotspots. The three selected strategies were foot patrol, problem-solving, and an offender-focused initiative. First, violent crime hotspots were delineated using spatial statistics. Violent crime data were accessed from the city’s 2009 incident database. Violent crime included homicide, robbery, aggravated assault, and misdemeanor assault. Two different local measures for detecting spatial association and concentration were applied: Local Indicators of Spatial Association (LISA) and Hierarchical Nearest Neighbor Clustering (HNN).⁹ After lengthy discussions, police executives felt they could commit resources to adequately address 60 treatment areas.

Senior police commanders (District Captains) used their operational knowledge to delineate the final boundaries of 81 mutually-exclusive deployment areas and to identify which type of intervention should be applied in each. They identified 27 areas suitable for foot patrol, 27 areas that would benefit from problem solving, and 27 areas where

⁴ Braga, Anthony A. (2001). The effects of hot spots policing on crime. *Annals of the American Academy* 578:104-125.

⁵ National Research Council Committee to Review Research on Police Policy and Practices. (2004). *Fairness and effectiveness in policing: The evidence*. Edited by W. Skogan and K. Frydl: The National Academies Press. 250.

⁶ Braga, Anthony A., and Brenda J. Bond. (2008). Policing crime and disorder hot spots: A randomized controlled trial. *Criminology* 46 (3):577-607.

⁷ Taylor, Bruce, Christopher Koper, and Daniel Woods. (2011). A randomized controlled trial of different policing strategies at hot spots of violent crime. *Journal of Experimental Criminology* 7 (2):149-181.

⁸ Telep, Cody, and David Weisburd. 2011. What is known about the effectiveness of police practices? *Prepared for "Understanding the Crime Decline in NYC" funded by the Open Society Institute*, http://www.ijay.cuny.edu/Telep_Weisburd.pdf. P. 6.

⁹ Full details of the analysis strategy, see: Ratcliffe, J.H; Groff, E.R; Haberman, C.; & Sorg, E.T. (2012). *Smart Policing Initiative Final Report*. Philadelphia: Center for Security and Crime Science, Temple University.

police would focus enforcement on violent repeat offenders. Police commanders drew deployment areas around the hot spots identified by the LISA and HNN analyses, taking into consideration the street network and environmental features. The final 81 hot spots were small, containing an average of 3 miles of streets and 23.5

intersections. The research partners used a random number generator to assign each stratum of 27 areas, resulting in 20 areas being assigned to treatment and 7 to control. Figure 1 shows the distribution of hotspots and differential police strategies throughout the city of Philadelphia.

Figure 1. Map of Philadelphia and Experimental Areas by Type

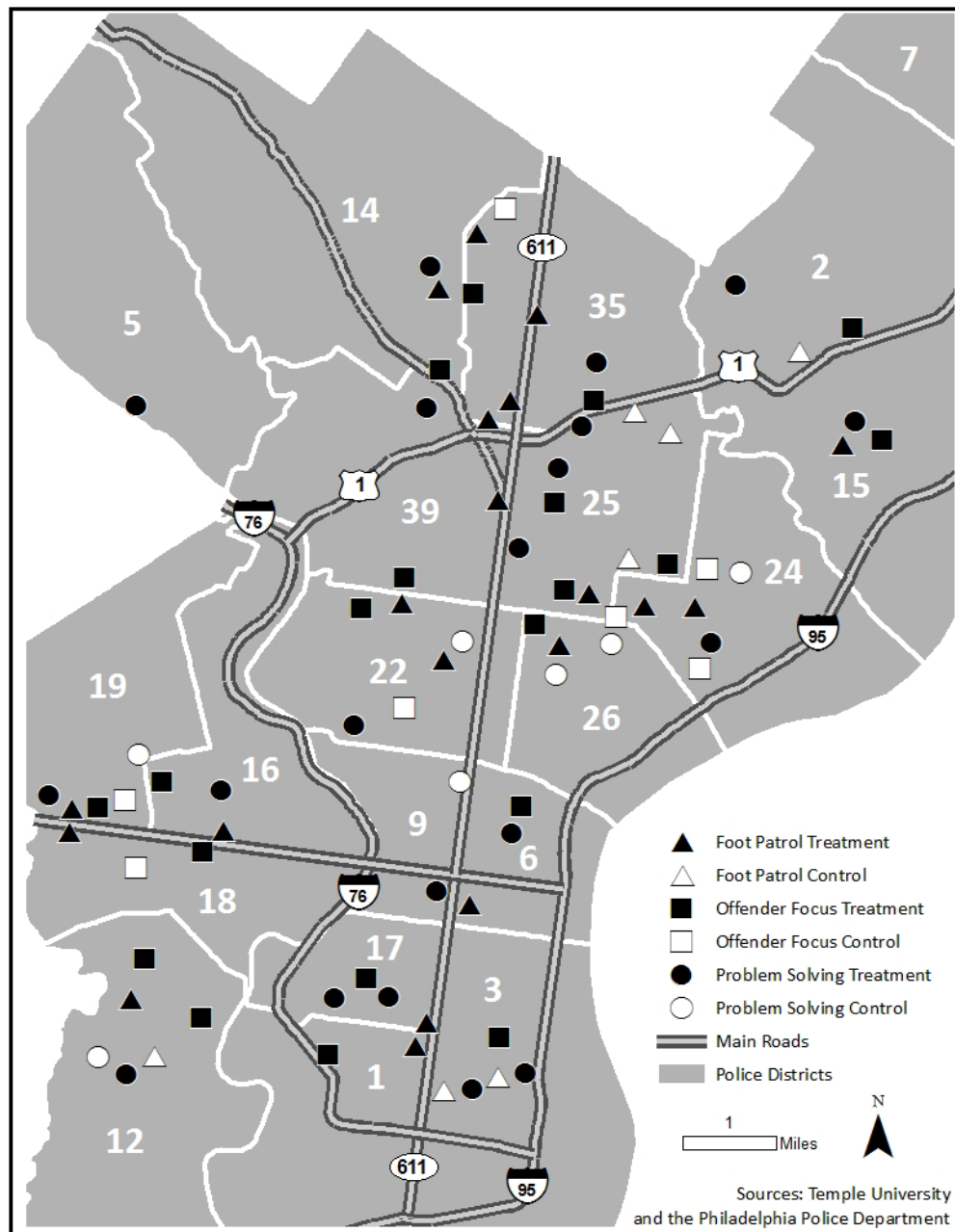
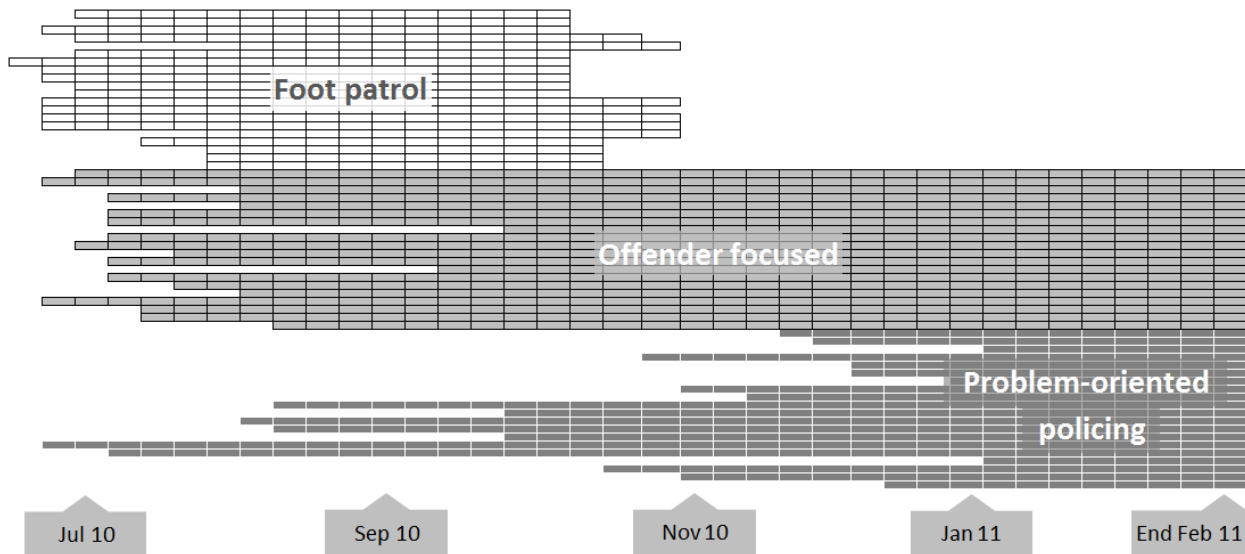


Figure 2. Implementation Periods by Type of Policing Strategy and Week



Foot Patrol

Each District Captain was given discretion to determine how foot patrol would be implemented within their assigned deployment areas as long as each target area was patrolled a minimum of 8 hours a day, 5 days a week, for 12 weeks. District Captains determined how many officers would patrol, which days and times officers would patrol, and other operational decisions. In all but one target area, officers patrolled in pairs and worked one shift, 5 days a week. The timing of patrol varied based on crime problems as determined by the Captain and shift times. In about half of the areas (9 out of 20) officers were volunteers, and the rest were chosen by their immediate supervisors. Officers with varying years of service were used to patrol the 20 deployment areas. Officers were not given any special orders or instructions regarding their activities while on foot patrol (e.g., it was left to the discretion of individual officers).

Problem Solving

The tenets of problem-oriented policing (POP) introduced by Goldstein and a modified SARA (Scanning, Analysis, Response, and Assessment) process framed the work conducted in the problem-solving areas.¹⁰ Teams of district officers, in collaboration with community members and with the support of personnel from police headquarters, conducted problem-oriented policing. Since POP was still relatively new at the Department, all members of the problem-solving teams attended a one-day POP training class which introduced the theoretical foundation of POP, described the SARA/problem-solving process, and provided the trainees with examples of problem solving in practice. Class instructors were PPD officers who were then assigned to mentor specific target areas (e.g., aid with problem identification and response development). The problem-

¹⁰ Goldstein, Herman. (1979). Improving policing: A problem-oriented approach. *Crime and Delinquency* 25:236-258; Clarke, Ronald V., and John Eck. (2005). *Crime analysis for problem solvers in 60 steps*. Washington DC: United States Justice Department, Office of Community Oriented Policing Services.

solving teams and mentors met periodically during the implementation of problem solving to discuss each team's efforts and modify the problem-solving strategy as needed. The Captain overseeing each problem-solving area was required to submit and continuously update action plans documenting the strategy and progress in each area. Specific actions taken at each site varied with the problem identified.

Offender Focused

The tenets of intelligence-led policing framed the offender-focused (OF) strategy.¹¹ The focus was on identifying the repeat violent offenders who either lived in the target area or were suspected of being involved in violent crimes there. Offenders qualified for the initiative if they had a history of violent offenses (homicide, aggravated assault, robbery, or weapons possession) and were strongly suspected to be involved in a criminal lifestyle (i.e., drug dealing, gang membership, etc.). The offender-focused component was introduced during a meeting with PPD executive commanders, researcher partners, district personnel assigned to implementing the strategy, and the police department's Central Intelligence Unit (CIU). A member of the police department's CIU was assigned to each target area to maintain a list of repeat violent offenders. District Captains assigned officers they drew from the agency's tactical operations team to staff the offender-focused teams. Importantly, they were not assigned to take radio calls. The OF team members and patrol officers made frequent contact with the prolific offenders using a variety of strategies; for example, making small talk with a known offender, or serving arrest warrants for a recently committed offense. In addition to

briefing patrol officers in the district about the initiative and distributing lists of the offenders in the initiative, OF team members in some districts used flat-screen televisions in their roll-call rooms to display photos and other intelligence gathered on these prolific offenders to patrol officers not assigned to the OF teams.

IV. RESULTS

Two separate violent crime measures were examined as outcomes: all violent crime and violent street felonies. The outcomes of all violent crime include: a) homicides, b) robberies, c) aggravated assaults, and d) simple (non-felony) assaults; however, the violent street felonies outcome excludes simple assaults. All outcomes are measured as bi-weekly counts for each experimental and control area, and are sourced from the PPD incident database.¹²

The analyses show that the violent crime hot spots receiving the offender-focused strategy experienced a 22-percent reduction in violent crime counts, compared to the offender-focused control areas ($\beta = -.249$; $ERR = .779$; $p < 0.025$). The foot patrol and problem-solving treatment effects were statistically insignificant. The offender-focused areas experienced a 33-percent reduction in expected violent street felony counts, compared to the offender focused controls

¹¹ Ratcliffe, Jerry H. (2008). *Intelligence-Led Policing*. Collumpton, UK: Willan Publishing.

¹² All repeated measures multilevel models are specified using an over-dispersed Poisson distribution and an exposure variable of geographic area in square miles. Because the varying implementation schedule, it is possible that natural variation (i.e., short-term history) or seasonality impacted the bi-weekly outcome/output counts during the experiment. In order to control for temporal effects we included 36 time period indicator variables. The first time period in the 37 bi-weekly series served as the referent and the remaining 36 indicator variables were coded with a value of "1" if an observation on the dependent variable is from the time period a particular dummy variable represented and "0" otherwise.

areas ($\beta = -.402$; $ERR = .669$; $p < 0.025$). The problem solving and foot patrol treatment effects are again statistically insignificant. In sum, the offender-focused

strategy outperformed both foot patrol and problem-solving strategies when compared to their respective control areas. These results are summarized in Table 1.

Table 1. Measuring the Impacts of Police Strategies

| Police Strategy | Violent Crime Reduction | Violent Street Felonies Reduction |
|------------------------|--------------------------------|--|
| Offender Focused | 22% | 31% |
| Foot Patrol | N/S | N/S |
| Problem-Oriented | N/S | N/S |

The Philadelphia SPI team also examined the impact of each strategy on three measures of police activity, including pedestrian stops, automobile stops, and narcotics crime. All three outputs are largely police-initiated actions, and are generally perceived as indicators of officer-generated outputs in large urban police departments. Results showed that the three policing strategies did not impact pedestrian stop counts or narcotics crimes during the study period. The only significant finding related to these measures of police activity involved automobile stops in the problem-solving areas. Specifically, the number of automobile stops was significantly lower in the problem-solving treatment areas relative to the problem-solving control areas.

V. LESSONS LEARNED

Explaining Why the Offender-Focused Strategy Reduced Violent Crime

There are several possible practical explanations for the success of the offender focus (OF) strategy. First, focusing on repeat offenders is a traditional policing strategy. After the appropriate offenders were identified, officers did not require any new training to learn the skills necessary to focus on prolific offenders. It is likely that the

police personnel were simply the most comfortable implementing this strategy because it was familiar to them. Second, focusing on repeat offenders enjoys widespread support in both the department and community. Last, OF officers were selected from the districts' tactical operations squads. These officers were accustomed to taking on special operations and have an organizational reputation for being proactive officers who make a lot of stops and arrests. They also had no responsibility for answering radio calls, so they had the ability to give the people and places extra attention.

Beyond immediate crime reduction, OF policing has several potential ancillary benefits. First, a carefully implemented OF strategy can be less intrusive for law abiding citizens. By focusing on specific people who are suspected or known to be involved in illegal and/or violent activity, police can avoid broad-based increases in pedestrian and automobile stops which disproportionately affect those living in impoverished, minority neighborhoods. The fact that there were no significant differences in the numbers of pedestrian or car stops or narcotics incidents lends support to the interpretation that OF enables police officers to be more judicious with their field investigations. Second, an add-on benefit of stopping the "right" people instead of a wide cross-section of people is that such a strategy makes it

more likely that the community will perceive police actions as procedurally just. When community members perceive that police actions are fair, they are more likely to be more satisfied with, and have confidence in, police services, follow the law, and help police fight crime.¹³

Explaining Why Problem-Oriented Policing and Foot Patrol Did Not Reduce Violent Crime

Problem solving was still relatively new in PPD and the patrol officers assigned to work on the project were still responsible for answering radio calls. Thus, similar to the implementation in most departments, problem-solving activity was conducted in down-time between other duties. The result was that even with the additional support of a mentor at headquarters, problem-solving teams undertook relatively ‘shallow’ analyses. In addition, fieldwork and fidelity surveys showed that at least eight of the problem-solving areas switched to a focus on nonviolent crime and/or quality of life issues during the experiment. At least four sites focused on narcotics in addition to a specific violent or nonviolent crime problem. In the end, almost half of the problem-solving sites did not implement a strategy targeting violent crime problems.

In the case of foot patrol, the strategy was implemented differently from the recent (and successful) foot patrol experiment in Philadelphia.¹⁴ One difference was in the experience level of the officers. The current study involved placing veteran officers rather than rookies in the hotspot

areas. As indicated by the lack of any significant increases in police output measures, the veterans were less aggressive in their enforcement than the rookies from the PPD’s prior foot patrol experiment (who increased pedestrian and vehicle stops by 64 and 7 percent, respectively, and narcotics incidents by 15 percent). Furthermore, the officers in this experiment did not receive any specific foot patrol training.

Another potentially significant difference between the earlier experiment and this one was in the dosage level. FP officers in this experiment spent only half the amount of time in a hotspot in comparison to the prior foot patrol study (i.e., one shift instead of the two shifts per day). It could be that there is a threshold of foot patrol presence required to make a difference. Or it could be that potential offenders are able to adapt more easily when only one shift of officers is present on any given day. Moreover, the timing of the dosage was also different. In eight of the sites, officers worked exclusively during the day shift rather than the busier late afternoon/early evening shift. Finally, the average size of the FP areas in this experiment was 61 percent larger than in the successful 2009 experiment. These differences suggest the need for more research to discover the appropriate amount of foot patrol presence to achieve a crime reduction.

Conclusion

The Philadelphia SPI team tested the impact of three different strategies—foot patrol, problem solving, and offender focused—on violent crime hotspots. Results showed that an offender-focused strategy in selected areas achieved a 22-percent reduction in violent crime and a 33-percent reduction in violent felonies compared to the control areas. Results indicate that by focusing police efforts on the “problem people” associated with

¹³ Tyler, Tom R. (2003). Procedural justice, legitimacy, and the effective rule of law. In *Crime and Justice: A Review of Research*, edited by M. H. Tonry. Chicago, IL: Chicago University Press.

¹⁴ Ratcliffe, Jerry H., Travis Taniguchi, Elizabeth R. Groff, and Jennifer D. Wood. 2011. The Philadelphia foot patrol experiment: A randomized controlled trial of police patrol effectiveness in violent crime hotspots. *Criminology* 49 (3):795-831.

“problem places,” police can achieve significant crime reductions while avoiding negative community perceptions of their actions. Results also show that more complex strategies—such as problem solving—may not generate crime reduction benefits as quickly as offender-focused strategies. Last, results from two recent foot patrol experiments in Philadelphia raise interesting questions about the optimal conditions for implementation of foot patrol and potential minimum crime threshold effects for producing successful crime control.

ABOUT THE AUTHORS

Jerry Ratcliffe is a Professor in the Department of Criminal Justice and Director of the Center for Security and Crime Science at Temple University. He is a former police officer with the Metropolitan Police (London, UK) and his research interests include intelligence-led policing, police leadership and decision-making, crime science, and spatial criminology. He holds a Ph.D. from the University of Nottingham.

Elizabeth Groff is an Associate Professor in the Department of Criminal Justice at Temple University. She is a fellow of the Academy of Experimental Criminology and a former visiting scholar at the Netherlands Institute for the Study of Crime and Law Enforcement. Her research focuses on crime prevention strategies, the role of technology in police organizations; and the relationship between place and crime. Elizabeth holds a Ph.D. in Geography from the University of Maryland, College Park.

Cory Haberman is a doctoral student in the Department of Criminal Justice Temple University. His research interests include environmental criminology, near

repeat victimization, crime analysis, and evidence-based policing.

Evan Sorg is a research associate and doctoral student in the Department of Criminal Justice at Temple University, and a former New York City police officer. His research involves policing, program and policy evaluation and the geography of crime.

Nola Joyce has over twenty-five years with the public sector, with extensive experience in the area of public safety. She joined the Philadelphia Police Department in February 2008 and is currently Deputy Commissioner and Chief Administrative Officer for the Department. She heads Organizational Services, Strategy, and Innovation.

She received the Gary P. Hayes award in 2010 from the Police Executive Research Forum. The work of the PPD with Temple University on the Philadelphia Foot Patrol experiment resulted in the department receiving the IACP/Sprint Award for Excellence in Law Enforcement Research in 2010. Recently she has worked with the Office for the Security and Co-operation in Europe on gender issues in the security sector and providing support for the implementation of the UN Security Council Resolution (UNSCR 1325). She is a member of the International Association of Chiefs of Police Research Advisory Committee and the U.S. Department of Justice, Bureau of Justice Assistance’s Law Enforcement Futurist Group.

Prior to working with the Philadelphia Police Department, Ms. Joyce worked at the Chicago Police Department, Metropolitan Police Department, Washington, D.C. and the Illinois Department of Corrections. Ms. Joyce holds three master’s degrees and is working toward a Doctor of Philosophy in Criminal Justice at Temple University.