



# NATIONAL INSTITUTE OF JUSTICE **PERSPECTIVES ON RESEARCH AND EVIDENCE-BASED POLICING**

ARTICLES FROM NIJ'S LEADS SCHOLARS

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**810 Seventh St. N.W.**  
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**David B. Muhlhausen, Ph.D.**

Director, National Institute of Justice

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# DIRECTOR'S MESSAGE

Every year, the National Institute of Justice (NIJ) supports 30 midcareer, research-minded law enforcement professionals to take part in professional development and travel opportunities, network, and contribute to the policing and research communities through the Law Enforcement Advancing Data and Science (LEADS) Scholars program. The LEADS scholars are both practitioners and researchers. They work in the field while simultaneously striving to evaluate and improve the work done in their departments. At NIJ, we call them “pracademics.” They embody NIJ’s goal of delivering rigorous and thoughtful police science to the field.

This year, we have partnered with RAND Corporation, the International Association of Chiefs of Police (IACP), and the Police Executive Research Forum to build a stronger program for our LEADS scholars. For the first time, we have also invited researchers and crime analysts to join the LEADS Initiative with new LEADS Academics and LEADS Civilians programs.

Through these programs, NIJ aims to expand the field’s understanding and use of evidence-based policing (EBP). EBP employs data and research to improve police practice by rooting strategies, policies, and programs in strong evidence. This approach creates a solid foundation for policing agencies and has been demonstrated to create better outcomes for officers, agencies, and communities. Our LEADS scholars, academics, civilians, and alumni are all committed to sharing EBP with their colleagues and peers.

*Perspectives on Research and Evidence-Based Policing* collects the writings of LEADS scholars to demonstrate the impact of EBP across individual agencies. LEADS scholars are encouraged to implement and advocate for evidence-based policies and practices in their departments. Their enthusiasm for using data to drive practice is apparent in the research they conduct and the writing they produce.

Current and former LEADS scholars champion EBP in a variety of formats in this anthology. Capt. Tara Coffey discusses the importance of implementing EBP. Capt. Ken Clary demonstrates the need to diversify the field and include more women in law enforcement. Officer Luke Bonkiewicz, Capt. Jason Potts, and Sgt. James Williams describe direct implementation of EBP in their agencies. Together, they illustrate the broad applications of EBP across the field.

With a foreword by Chief Michael Brown of the Alexandria (VA) Police Department — a leader both in practice and in academia as the chair of IACP’s Research Advisory Committee — *Perspectives on Research and Evidence-Based Policing* paves the way for better understanding and integration of science and evidence in law enforcement. NIJ hopes this anthology will empower the policing community to ask questions and seek answers rooted in scientific evidence.



David B. Muhlhausen, Ph.D.  
Director, National Institute of Justice





# POLICE RESEARCH — AN IMPORTANT TOOL FOR POLICE, OFTEN UNDERUTILIZED

BY CHIEF MICHAEL L. BROWN, PH.D., ALEXANDRIA (VA) POLICE DEPARTMENT

Police managers and executives routinely use various tools to effectively manage and guide their agencies. They also follow both the successes and the unsuccessful efforts of their peers in these endeavors. Evaluations of police receptiveness to research suggest that executives are receptive to research results.<sup>1</sup> Generally, rank and file officers appear to be similarly receptive and are willing to work with researchers.<sup>2</sup> However, there is a widely held perception that policing research is often underutilized and that police managers and executives miss opportunities to consider this tool when evaluating and directing their agencies' efforts.

Policing research has been around for decades. The body of knowledge was limited at first, but today it covers many of the issues that police managers and executives are currently facing. Examples of this can be found in the research on body-worn cameras, license plate readers, officer motivation, and patrol officer deployment (hot spots policing), to name a few. There is also emerging research on police legitimacy, officer safety, mental health issues, officer training, and officer wellness. There are many examples of police agencies collaborating with researchers to help create this body of knowledge. Many policing agencies have used this collaborative effort with researchers to implement, adjust, and sometimes abandon a particular policing program. The experience of collaborating with researchers has, in many cases, led to the development of a close relationship between the agency and the researcher, which can last for years.

Policing research often reveals what works and what doesn't work in the policing field. The term evidence-based policing is frequently used to describe research that targets, tests, and tracks strategies to help decision-makers deal with policing issues.<sup>3</sup> It also exposes issues that executives and managers need to consider in their policing endeavors. Many managers and executives who are interested in this material rely on organizations such as the International Association of Chiefs of Police, Police Executive Research Forum, National Police Foundation, and others to provide them access to research. There are governmental entities, such as the National Institute of Justice, that often showcase policing research. However, this is only the tip of the iceberg of policing research. There is a myriad of useful information in the research that is not highlighted by these groups. This can lead to missed opportunities to apply the research, avoid programmatic issues, and increase the potential success of a policing program.

Police executives and managers may believe that it is difficult to access policing research, but it can actually be accomplished rather simply. An email or a phone call may be the only action necessary to obtain this important information. The professional organizations noted earlier can help connect an executive or manager with a police researcher who is knowledgeable in the subject of interest. Police agencies often have such a person nearby or even within their jurisdiction. There are also policing researchers at many colleges and universities across the country. A local college or university might be able to locate policing researchers who can help the agency, or perhaps find a researcher nearby. A policing researcher may be able to unlock the often hidden treasure trove of policing research for the executive or manager, or may be able to find an individual with the knowledge that will help to address the specific issues the police agency is facing. Policing researchers can also help translate complicated findings so they are understandable. Finally, policing researchers might be willing to assist you in developing, implementing, or evaluating your own policing programs.

## 4 Police Research — An Important Tool for Police, Often Underutilized

My message to my fellow police practitioners is to reach out to the policing research community. You will find that many of the researchers are more than willing to assist you in making your policing programs and practices work for you and your agency.

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# THE IMPORTANCE OF MANAGEMENT IN EVIDENCE-BASED POLICING

BY CAPT. TARA COFFEY, NEW YORK CITY POLICE DEPARTMENT

Research-minded law enforcement officers often perform some level of management analysis, whether through in-house evaluations driven by data analytics, compliance analysis, or iterations of performance monitoring. Thoroughly planned and well-implemented research, based on an agency's specific needs and run by strong managers, not only adds to the evidence about what works for the agency but also augments experience with facts. When law enforcement officers take active roles in police science and scientific inquiry, they add to the evidence base of good policing practices and increase buy-in from their peers. This is important because the effectiveness of a program or policy might vary based on jurisdiction or circumstance.<sup>1</sup> Different agencies police different communities, each with unique perceptions of law enforcement shaped by culture, geography, and experience. The implementation of evidence-based research projects will improve policing by providing answers to what works and delivering actionable results to agencies.

Evidence-based policing research is the practice of gathering information about the effectiveness of a policing program, practice, or policy initiative by using established scientific methods. It involves examining whether an intervention is having the intended effect, and whether that effect is observable by others and is based on facts.<sup>2</sup> Integrating evidence-based programs and policies into police practice is now an expectation in criminal justice operations. Law enforcement leaders have been called on to support an expansion of policing research that evaluates the effectiveness of their policing strategies.<sup>3</sup> Police agencies therefore need a range of approaches to assess new policies, test long-standing practices, and set the best course for change.<sup>4</sup> It is not enough to merely implement an evidence-based program or policy. Evaluation of the intervention is necessary to determine whether desired outcomes are being produced and how those outcomes affect the agency, officers, and communities. The results of one evidence-based analysis might justify actionable change in policy or suggest a best practice for an agency. However, this practice might not produce the same desired outcomes when implemented elsewhere. When multiple agencies seek to replicate findings by testing and evaluating these strategies locally, they inform their own evidence-based practice.<sup>5</sup>

Conducting evidence-based research can be complex, but the effort is worth the reward. Results provide support for good policies and insights on how to improve bad ones. Long-term commitment, multifaceted protocols, and broad collaboration with internal and external colleagues may be a deterrent for some, but the long-term effects are worth the expenditure of resources. Research outcomes help improve the way we deploy our officers, manage our agencies, and engage with the community.

For those who are new to evidence-based research, the prospect can seem challenging. However, most of us have already engaged in this process without recognizing it. When we ask questions about why a protocol is working (or not) and how to test it, we are engaging in evidence-based practice. The leap from conducting informal evidence-based research to officially implementing sound research requires more planning. Guidelines for implementing rigorous evidence-based research and navigating its challenges are found in the basic tenets of project management. Leveraging on-the-ground personnel in this

process supports the project management framework in a way that can preserve the integrity of the research. Not only can these operational personnel manage research projects, they can help police leaders identify and establish research partnerships that will support such endeavors. Police leaders can leverage these officers' informal networks to initiate trainings or discussions, with the aim of identifying researchers who are best suited to supporting the goals of their agencies.<sup>6</sup>

Other points to note are that although good research is a collective effort, a strong leader with in-depth knowledge of the research agenda is essential for keeping a project on track and ensuring that the overarching goals and milestones are met. As with every other part of policing, communication and adherence to protocol are key to ensuring that a research project progresses smoothly. Regular data collection and analysis are also necessary. Constant monitoring helps uncover issues that could delay timelines, negatively affect outcomes, or discredit results.<sup>7</sup> Identifying and managing these risks early on keeps the research on the right course and could even prevent a study from becoming overly compromised, which would result in its termination. These basic principles of research can help any new evidence-based practitioner start exploring questions pertinent to his or her agency.

For those already engaged in evidence-based research, there is always room for improvement. Improving the way we use evidence-based research in the planning and implementation phases will lead to better outcomes and save agencies time, effort, and resources in supporting these endeavors. In fact, the planning stage is the most critical phase of implementing evidence-based research and practice. Good planning produces stronger research and limits waste — a major concern for short-staffed and underfunded agencies that want to optimize their performance through research.

Collaboration is also key to good research. In all parts of the process — planning, execution, and monitoring — the participation of external subject matter experts and officers with experience in research and data analysis improves the quality of the final product. This is especially important in smaller agencies where it may seem impractical to manage large and intricate projects. Engaging subject matter experts early on will ease communication lines throughout the life of the project and provide support to officers

normally focused on other priorities. In this way, we ensure that research standards are met so that stakeholders will have confidence in the outcomes.<sup>8</sup>

An example of one such collaboration is Iowa State Patrol's partnership with the Center for Evidence-Based Crime Policy at George Mason University. Together, they are planning a quasi-experimental evaluation of a multiyear project aimed at reducing traffic crashes, injuries, and fatalities.<sup>9</sup> Notably, the intervention uses a deployment strategy previously shown to effectively control crime.<sup>10</sup> In this way, Iowa State Patrol has taken an established best practice and sought to test it locally, thereby building its own evidence base. Integral to this partnership is the area commander, whose participation in all stages of the project framework grounds the research in an operational context.

The many nuances of putting research designs into practice can be navigated and monitored by operational personnel. This role is integral to research partnerships and can mitigate issues that have the potential to compromise results. Using data-driven approaches to assess agency operations, adequately communicate and translate research requirements, and explain why those requirements are important aids in preventing corruption of the research design. Those actions also help produce a project that rigorously evaluates what it is intended to measure.

Conducting evidence-based research inside an agency legitimizes the decision-making process both internally and for the broader community.<sup>11</sup> However, the quality of the research and results must be high because they provide justification for action and change. Good management optimizes the research process, produces reliable conclusions, and ultimately increases stakeholder satisfaction. Good management comes from engaged law enforcement personnel who take ownership and lead efforts to improve the way their agencies function. They understand that continuous growth requires continuous assessment. They know that when we test ourselves, we can see our weaknesses with greater clarity and improve upon them. Choosing to go beyond assumption and anecdotes, to explore the effects of our practices, and to seek out the answers to important questions shows that we are committed to continuous improvement that benefits our own officers and the communities we serve.

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# RECRUITING AND RETAINING WOMEN POLICE OFFICERS — THE MESSAGE YOUR ORGANIZATION SENDS MATTERS

BY CAPT. KEN CLARY, IOWA STATE PATROL

**W**ith 25 years of experience in a state police organization, the last 11 of which I have served as a commander, I have witnessed our department's struggles with recruiting and retaining women in sworn law enforcement positions. This issue has a greater impact on state organizations than their county and municipal counterparts. According to the Bureau of Justice Statistics,<sup>1</sup> the national average for sworn women police officers in county and city departments is approximately 13%, while state police organizations struggle to maintain half that number. Police agencies have made little progress in increasing this number since the mid-1980s, especially regarding women in command positions.<sup>2</sup>

Multiple studies since the 1970s have found that diverse and representative police forces are more effective and beneficial for the communities they serve.<sup>3</sup> Given the underrepresentation of women in leadership positions within law enforcement, the task of rectifying this identified problem has fallen mainly on their male counterparts.<sup>4</sup> Nearly every agency has faced significant challenges in addressing this issue, and all agencies have much work to do before their departments fully reflect the diversity of the communities they serve. The fact that progress may be slowing when it comes to diversifying law enforcement adds to the severity of the issue.<sup>5</sup>

Several explanations address the dearth of women in law enforcement. Although their male counterparts are doing the same jobs, women are often called to the profession for a variety of different personal and professional reasons than men.<sup>6</sup> For example, although both men and women value job security, women prioritize a supportive work climate, job enrichment, family-friendly work policies, choice of work assignment, and social contribution.<sup>7</sup> Generational differences create an additional hurdle between command staff personnel and the young women they are attempting to recruit to their departments.<sup>8</sup> If women are not involved in crafting messaging to recruit female officers, this distinction is likely to be lost and that message less effective.

Recruiting women for positions in law enforcement is only one side of the problem. Retention also proves difficult among women officers. Anecdotally, it is thought that women leave policing due to challenges with work-life balance, underrepresentation, and leadership.<sup>9</sup> Rigorous evaluations are needed to determine the accuracy of these assumptions. Appreciating the unique skills female officers can bring to the job (for example, female officers' increased effectiveness in de-escalating incidents compared to their male counterparts) is the first step in welcoming them into a profession where they are vastly underrepresented. The next step is to make them feel like a valued and important member of the team.

Creating a formalized leadership/mentoring program for underrepresented women police officers is one way that many departments are currently attempting to address these issues. Education about the benefits of diversity in policing, systematic internal assessments of why women are leaving departments,<sup>10</sup> conversations with patrol staff about causes of the problem, creation of policies that enable women to balance work and family life, and promotion of women into positions of leadership may also increase retention among women officers. When these steps are skipped, law enforcement command staff are left scratching their heads as to why women may not wish to stay with their organizations. However, when these steps are followed accurately, both officers and the department as a whole benefit greatly from the inclusion and participation of women officers.

In order to significantly increase the number of women in law enforcement throughout the nation, I believe departments must select people — both recruiters and mentors — who understand those we seek to employ. They should work to identify women in their departments, empower them to create the recruiting message, and help them create a culture that embraces their differences and the values they bring to their departments and law enforcement as a whole. Providing women with the necessary resources — and allowing them the latitude to set up specialized recruiting, mentoring, and leadership training for incumbent officers and new recruits — will begin to create a culture that leads to an increase in the number of female officers in a measurable way.

It will take a concerted effort by command staff across organizations to achieve this goal, but a number of studies have shown that making our police forces more demographically representative of the populations they serve may provide numerous benefits.<sup>11</sup> I challenge anyone who reads this paper to redouble your efforts and empower the appropriate personnel with the resources to accomplish this mission.

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# THE *IMPACT* OF A PATROL OFFICER: EVALUATING PRODUCTIVITY METRICS

BY OFFICER LUKE BONKIEWICZ, LINCOLN (NE) POLICE DEPARTMENT

Patrol officers perform a large number of diverse community services that both police researchers and police agencies have struggled to validly quantify, implement, and evaluate.<sup>1</sup> Although numerous studies have admirably described the duties and responsibilities of patrol officers,<sup>2</sup> far fewer studies have attempted to quantify and evaluate these activities using metrics beyond raw outputs, such as arrests or citations.

There are many reasons for the lack of sophisticated metrics of patrol officer productivity. Lack of data has traditionally stymied researchers, but so has the increasing complexity of a patrol officer's job — as well as differences in communities' geography and public safety priorities. Yet despite these methodological challenges and differences across jurisdictions, citizens expect patrol officers to use tax dollars and resources efficiently and productively, and they rightfully expect law enforcement agencies to evaluate the performance of patrol officers.

This is not merely an academic question but a sobering quandary for police agencies and communities. A perceived misuse of time and resources may negatively impact public perceptions of law enforcement, and studies suggest that if citizens perceive police officers as incompetent or unproductive, their trust in and willingness to cooperate with officers may suffer considerably.<sup>3</sup> A lack of valid, standardized productivity metrics may also cause expectations to vary among line-level officers and police supervisors, potentially leading to unexpected criticism and denied pay increases during annual evaluations.

This article advances the discussion on patrol officer productivity by discussing traditional methods for evaluating productivity, identifying recurrent issues concerning productivity metrics, examining innovative methods for evaluating patrol officers, and introducing new guidelines for those who create, use, and analyze patrol officer productivity metrics.

## Traditional Patrol Officer Productivity Metrics

Productivity scholars have operationalized productivity in several ways, but the basic concept usually includes two dimensions: efficiency and effectiveness.<sup>4</sup> Efficiency denotes how a person or organization generates an output using the least possible resources, whereas effectiveness measures the quality of a person's or organization's outputs. Historically, research analyzing patrol officer productivity has focused on efficiency measures, mainly because agencies generally track and measure activity through raw outputs, such the number of arrests or citations.<sup>5</sup>

However, there is considerable variation in the police literature in how police agencies and researchers measure officer efficiency, and even more broadly, what constitutes productivity. Psychological studies have analyzed police productivity using supervisor evaluations<sup>6</sup> as well as the number of reprimands and citizen complaints received.<sup>7</sup> Other police researchers have approached patrol officer productivity by examining arrest rates,<sup>8</sup> investigative inquiries and quarterly performance evaluations,<sup>9</sup>

clearance rates and crime reduction,<sup>10</sup> and traffic citation issuing rates.<sup>11</sup> Although studies have identified and correlated many different predictors of productivity, there is much less focus on whether these measures validly capture the diverse range of patrol officer activities.

There are two main reasons for the substantial variation in how law enforcement agencies and researchers have analyzed patrol officer productivity. First, in-depth law enforcement data about specific officers (beyond their arrests and other readily retrieved outputs) are often not widely available.<sup>12</sup> Second, if these data are available, they may contain raw outputs for a limited number of police activities, such as arrests or citations, rather than detailed information about a wide array of activities, such as directed patrols, community presentations or meetings, and assisting other officers on calls for service. In short, researchers have historically been limited by the lack of availability and depth of data on patrol officer activity as well the subjectivity and difficulty in measuring and analyzing these data.<sup>13</sup>

However, as agencies have improved their methods for capturing a wider variety of patrol officer activity and as fruitful partnerships between researchers and law enforcement agencies have flourished, there has been a renewed interest in developing and improving productivity metrics for patrol officers. Yet despite advances in technology, methodology, and collaborative research between scholars and police agencies, several threats routinely undermine the validity of any measure of patrol officer productivity.

### **Recurrent Threats to the Construct Validity of Productivity Measures**

One of the most significant threats to productivity metrics involves Goodhart's Law, often phrased as: "When a measure becomes a target, it ceases to be a good measure."<sup>14</sup> Goodhart's Law may be especially problematic for the law enforcement profession because productivity is frequently measured in raw outputs, such as citations or arrests.<sup>15</sup> For example, if officers believe their productivity is largely measured in arrests, their patrol activity might solely consist of making arrests, potentially even in situations where arrest is not supported by probable cause, policy, or proper use of discretion. The declining quality of police service is one possible consequence of defining

productivity with a small number of measures that can easily become targets.

Another threat involves divergence between the priorities of line-level officers and command staff. If the priorities of command staff do not mirror those of line-level officers and are not clearly communicated to them, then patrol officers may engage in activities unrelated to productivity metrics. For instance, if traffic enforcement is a high priority for command staff but line-level officers view narcotics activity or robberies as more pressing issues, then officers may engage in focused deterrence and other strategies instead of writing traffic tickets. In this situation, patrol officers may not be rated as productive, even though their activities may nonetheless positively impact the community far beyond their performance rating.

A third threat involves the correlation of outputs to community outcomes. A patrol officer's activities should be correlated with positive community outcomes, such as reductions in violent and property crime and increases in overall quality of life. Productivity metrics that have little or no relationship with crime, disorder, or quality of life likely have little or no validity for agencies and communities, even if officers score exceptionally high on such metrics.

However, the biggest threat to validity may be tracking and measuring tasks that do not fall within the traditional realm of law enforcement activities. Police officers are asked to do more and display a greater array of skills than in prior decades. They must effectively engage with a wide variety of community members and groups, use data and science to advance department and community goals, and connect citizens with resources for any number of issues (e.g., homelessness, mental health, and domestic violence). Police researchers must find ways to validly and reliably measure these types of activities, especially if police departments prioritize them.

### **Improved Measures of Patrol Officer Productivity**

Researchers have attempted to improve traditional measures of patrol officer productivity in several ways. One way involves using a larger number of diverse productivity indicators. Including multidimensional indicators reduces the chances of one measure becoming a target (i.e., it defies Goodhart's Law), necessitates discussion between

line-level and command staff members about what outputs should be included, and allows researchers and agencies to correlate a wide variety of outputs with community outcomes. For instance, instead of only measuring arrests, some researchers have measured police performance using self-initiated stops, warnings, citations, administrative complaints, sick hours, and on-duty injuries as well as z-score summaries to more easily interpret an officer’s performance.<sup>16</sup>

Van Meter’s zero-based approach is another innovative attempt to quantify and evaluate patrol officer performance.<sup>17</sup> His system views police officers as productive before evaluation and assigns each officer a zero, the best possible score. The system analyzes nonscheduled absenteeism, cost of preventable error, and productive use of time to evaluate police officers, and the zero indicates that a police officer has no uncorrected performance issues. However, some have criticized Van Meter’s system for preventing police officers from prioritizing their daily activities,<sup>18</sup> suggesting the potential for a disconnect between command staff and line-level officer priorities.

Borrowing from a baseball statistic called Value Over Replacement Player, researchers have constructed Value Over Replacement Cop (VORC), a metric that accounts for the diverse activities of patrol officers, weights different outputs, evaluates officers in terms of productive time and

prosecution rates, and offers police agencies the flexibility to prioritize and weight patrol officer activities (see exhibit 1).<sup>19</sup> VORC’s major strength is also its weakness — namely, that it allows agencies to prioritize and weight outputs, which leads to criticisms about the appropriate prioritization and weighting of outputs.

A close relative of VORC is Z-Score per Productive Time (Z-PRO), a more sophisticated measure that estimates a patrol officer’s performance in terms of productive time using a combination of z-scores for directed patrols, traffic warnings, traffic citations, DUIs, misdemeanor arrests, felony arrests, and warrant arrests.<sup>20</sup> Exhibit 2 displays Z-PRO’s wide variety of outputs as well as other important measures, such as the number and types of completed reports, minutes spent on follow-up investigations, calls for service minutes, and minutes spent assisting other officers — a major advantage over traditional, more simplistic measures.

One key weakness of these metrics, as with other innovative metrics, is that their relationship to community outcomes is unknown. Although researchers have examined the correlation between potential components of a productivity metric and community outcomes (e.g., traffic citations and motor vehicle collisions), much less is known about the correlation between broader productivity indices and community outcomes (e.g., how Z-PRO correlates with crime and disorder). However, although I recognize

**Exhibit 1. Value Over Replacement Cop (VORC) Formula**

$$VORC = 100 * \left( \frac{(H) + ((\Theta) + 2(I) + 3(K) + (\Lambda) + 2(M) + (N)) * (P)}{A - (B + \Gamma + \Delta + 20(E + Z))} \right) - 100$$

$$* \left( \frac{(.9) * \left( \frac{(\Xi) O}{\Pi} \right)}{(\Xi)} \right)$$

*A* = total monthly on-duty minutes; *B* = calls-for-service minutes; *Γ* = follow-up time and meetings; *Δ* = officer assist time; *E* = number of incident reports; *Z* = number of additional case information reports; *H* = number of selectives; *Θ* = number of warnings; *I* = number of officials; *K* = number of warrants; *Λ* = number of misdemeanor arrests times their respective weights; *M* = number of arrests for driving under the influence; *N* = number of felonies times their respective weights; *P* = officer’s prosecution rate; *Ξ* = officer’s productive time, *A* - (*B* + *Γ* + *Δ* + 20(*E* + *Z*)); *O* = department average P-score, or average, *H* + (*Θ* + *I* + *K* + *Λ* + *M* + *N*) \* *P*; and *Π* = department average self-initiated time.

**Exhibit 2. Z-Score per Productive Time (Z-PRO) Formula**

$$\text{Z-PRO} = \frac{(\text{Average } (A + B + C + D + E + F) - O)}{(G - (H + I + J + 20(K + L) + 10M))} * 100,000$$

*A* = an officer's z-score for selectives, *B* = an officer's z-score for traffic warnings, *C* = an officer's z-score for traffic citations, *D* = an officer's z-score for warrant arrests, *E* = an officer's z-score for misdemeanor arrests, and *F* = an officer's z-score for felony arrests. This value can be expressed as *N*. *O* = absolute value of *N* \* (1 – prosecution rate). This value is then rated on a scale of 1 to 100 with measuring increments of 0.1. *G* = total on-duty minutes, *H* = calls for service minutes, *I* = follow-up time and meetings, *J* = officer assist time, *K* = number of incident reports, *L* = number of additional case information reports, and *M* = number of information or intelligence reports. All outputs are annual totals.

the importance of such outcome measures, instead of narrowing the point of focus to outcomes only, I urge researchers and police agencies to consider the following guidelines when developing, implementing, and analyzing patrol officer productivity metrics.

**IMPACTT Guidelines**

I designed the IMPACTT guidelines to help police researchers and practitioners evaluate the validity of patrol officer productivity metrics. IMPACTT is an acronym for the following recommendations: The outputs of any productivity metric must be **I**dentified and prioritized, be **M**easured both quantitatively and qualitatively, be evaluated in terms of **P**roductive time, account for a diverse **A**rray of duties, be **C**orrelated with community outcomes, and be **T**racked and **T**ested over a prolonged period.

First, agencies must **I**dentify and prioritize the outputs of a metric and communicate these priorities to line-level officers. Patrol officers should have a clear understanding of which activities are valued most by their department and community. I also recommend that agencies either weight outputs or use a z-score index to more easily distinguish between low- and high-performing officers.

Second, the outputs of productivity metrics should be **M**easured both quantitatively and qualitatively. Before implementing a metric, agencies must have the technology to record and measure the targeted outputs, as well as the ability to create and maintain searchable databases so the outputs can be analyzed and evaluated. In terms of qualitatively evaluating outcomes, the rate of prosecution for citations and arrests may be one quality control measure. If an officer makes a large number of arrests that fail to result in charges because of shoddy investigations

or follow-up, then the officer's performance metric should reflect this deficiency.

Third, performance metrics must evaluate patrol officers in terms of **P**roductive time. Too often, researchers and agencies analyze totals for arrests, patrols, or citations without accounting for how many calls for service an officer handled or how many minutes an officer spent assisting other officers, writing reports, or conducting follow-up investigations. The validity of any productivity metric is vastly improved when it accounts for an officer's available minutes for self-initiated activities, e.g., traffic or warrant enforcement.

Fourth, productivity metrics must include an **A**rray of activities, especially in communities where police agencies are generalist departments. Generalist patrol officers not only respond to calls for service and make arrests but also may conduct traffic enforcement, warrant searches, follow-up investigations, community presentations, directed patrols in high-crime areas, and many other activities. Productivity metrics must be multidimensional to quantitatively capture the diverse array of a patrol officer's activities.

Fifth, productivity metrics should be **C**orrelated with community outcomes. Agencies should be able to demonstrate that patrol officer outputs (e.g., citations, arrests, performance evaluations) are related to property or violent crime rates, quality of life outcomes, public perceptions of and trust in the police, or public perceptions of crime and disorder. Moreover, agencies should be able to demonstrate that a productivity index — and not just its individual components — is also correlated with community outcomes.

Finally, patrol officer productivity measures should be **Tracked** and **Tested** over prolonged periods. This practice allows researchers and agencies to correlate outputs with community outcomes, reprioritize outputs if necessary, and guard against a limited number of measures becoming targets.

## Discussion

For many decades, research on methodologies for measuring patrol officer productivity has failed to advance due to a lack of data, insufficient technology to track patrol activities, and a narrow focus on a few types of outputs. Although more sophisticated metrics have been developed, researchers and law enforcement agencies must remain cautious of threats to the validity of these metrics, including the potential for outputs to become targets, a disconnect between the priorities of command staff and line-level officers, and low correlation between metrics and community outcomes. To improve the validity of productivity metrics and guard against recurrent threats, I put forth a series of suggestions called the IMPACTT guidelines. These guidelines recommend that the outputs of productivity metrics should be identified and prioritized, be measured both quantitatively and qualitatively, be evaluated in terms of productive time, account for a diverse array of duties, be correlated with community outcomes, and be tracked and tested over a prolonged period. I believe that researchers and law enforcement agencies can use these guidelines to develop, refine, and assess new methods for evaluating patrol officer productivity.

*Disclaimer: Opinions or points of view expressed in this document are those of the authors and do not reflect the official position of the U.S. Department of Justice. Findings and conclusions of the research reported here are those of the authors and do not reflect the official position or policies of the U.S. Department of Justice.*

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**NCJ 254820**







# HOW DO WE KNOW IT WORKS? CONDUCTING A RAPID RESEARCH POLICE EXPERIMENT TO TEST THE EFFECTIVENESS OF FLASHING POLICE LIGHTS ON AUTO CRIME

BY CAPT. JASON POTTS, VALLEJO (CA) POLICE DEPARTMENT

The Vallejo Gateway Plaza Shopping Center in Vallejo, California, has been a hot spot for thefts from automobiles for years. A 25% increase in thefts from 2015 to 2016 led the Vallejo Police Department (VPD) to investigate a new tactic that might help limit crime in this high-crime area.<sup>1</sup> In 2017, we deployed a multitude of police interventions and conducted a quasi-experiment to test deterrence and enforcement strategies. We invested significant effort into this initiative. By deploying GPS bait technology, focused patrol, and undercover surveillance to detect offenders; disseminating paper crime-prevention flyers; investing in an electronic bulletin board to raise awareness; and placing unoccupied police cars in crime hot spots, we reduced crime by 40% in 2017 compared to the previous year.<sup>2</sup>

However, our response was expensive. Increasing the number of law enforcement personnel may generally serve to reduce crime, but the major limitation on this strategy is the cost of resources. Labor and equipment are costly and typically must be justified. In 2017, VPD spent an excessive amount on overtime, GPS technology, rental cars, hidden cameras, and crime prevention awareness advertising.<sup>3</sup> As the research indicates, crime often concentrates in specific locations. If police can target these locations to look for underlying patterns, then positive outcomes might be realized.<sup>4</sup> The analogy often used is that police should “work” a hot spot just as an experienced investigator works a case.<sup>5</sup> Thus, in 2018, VPD chose to implement an approach focused on deterrence and prevention with an eye toward cost-benefit analysis. We aimed to increase effectiveness with the *appearance* of increased presence through flashing police lights, while tracking the data to see if this new strategy was effective.

VPD sought to test the effect of code-2 police lights on thefts through a practitioner-led research project. Code-2 lights are steadily flashing blue, red, and amber lights on a patrol car that serve to increase awareness and perception of police presence. Increasing the number of law enforcement personnel in the field may generally help to reduce crime, but using

more police officers and equipment can become expensive, especially when factoring in overtime pay for personnel. The proposed approach circumvents the major limitation: the cost of resources. Creating the appearance of additional police presence by activating police lights while keeping the number of officers unchanged may cost-effectively achieve crime reduction in hot spots.

## Methods

We partnered with BetaGov — a research organization at New York University — to measure total auto crime, arrests, motor vehicle registration checks, and citizen contacts that resulted from our intervention. During the study, two police cars were assigned to a high-density shopping center each day for a shift from 12 p.m. to 10 p.m. The 34-day trial started on November 23, 2018, and ended on December 28, 2018 (excluding December 24 and 25). The total number of days was evenly divided into intervention (lights on) and control (lights off) conditions, providing a total of 17 days for each condition. Each day of the trial was randomly assigned to a condition, stratified by day of the week, to ensure an equal number of each condition fell in the early, middle, and late periods of the month. As a result, we provided equal distribution over time to control for any change in crime that might occur naturally over the month. The 34 days of data offered limited statistical power, but there were positive signals that may inform future studies.

Officers followed common police procedures when approaching citizens suspected of committing crimes. However, on intervention days they were instructed to deactivate their flashing lights if officer or citizen safety required it. We captured stops, arrests, and motor vehicle registration checks by looking at data associated with each officer's unique call signal. We ensured that officers were following the condition for the day (lights on or off) by spot-checking. Spot-checks witnessed a 100% compliance rate with experimental conditions. Officers were told of the condition by a text message reminder an hour before their shift. We did not control for the fact that officers knew whether they were in the intervention or control group (i.e., participants were not blinded).

## Results

VPD found that flashing code-2 lights were associated with a 50% reduction in total auto crime when compared to the lights-off condition. However, this finding was not statistically significant, although it closely approached significance. Exhibit 1 shows the number of events by condition and the statistical results. For example, during the lights-on condition, there were six total auto crimes (constituting the sum of auto thefts and auto burglaries) versus 12 total auto crimes when participants operated with lights off ( $p = 0.07$ ). Despite an outlier of four auto burglaries on the last day and during the last hour of the trial, and even with the trial's limited statistical power, the

**Exhibit 1. Total Number of Crimes Recorded During the Intervention Period**

	Lights On	Lights Off	$p$ Value
Total auto crimes	6	12	0.07
Auto thefts	0	4	0.03*
Auto burglaries	6	8	0.4
Daily average vehicle registration checks	12.5	7.4	0.12
Daily average arrests	0.8	0.4	0.2
Daily average citizen contacts	3.9	3.7	0.8

\*  $p < 0.05$

intervention showed some potential signs of effectiveness. Notably, during the lights-on condition there were zero auto thefts, compared to four during the lights-off condition — a significant finding ( $p = 0.03$ ).

Additionally, during the lights-off condition, 126 motor vehicle registration checks were conducted (i.e., 7.4 per day). In contrast, the lights-on condition resulted in 212 checks (i.e., 12.5 per day). Despite this 68% increase in checks during the lights-on condition, a t-test did not demonstrate a significant difference in motor vehicle registration checks between groups ( $p = 0.12$ ). We were unable to answer why the increase in checks occurred, but we speculated that because officers knew they were in the experimental condition, they were adjusting their behavior to inflate their activity accordingly. Similarly, despite double the number of daily average arrests during the lights-on condition compared with the lights-off condition, a t-test demonstrated no significant difference in arrests between the two groups ( $p = 0.2$ ). The results also showed no significant difference in the average number of daily citizen contacts.

## Discussion

Crime associated with motor vehicles is a problem for cities across the United States, and especially in California. Circumstances that contribute to the risk for motor vehicle crime include the presence of large parking lots, parking lots with several entry and exit points, inadequate street lighting, and parking locations near freeways. Limiting opportunities for perpetrators to burglarize a car without getting caught is essential to reducing motor vehicle crime.<sup>6</sup> At VPD, we aimed to make it less attractive for thieves to commit motor vehicle crimes by having visible officers patrol a high-density shopping center with their lights on.

Police and businesses have taken other measures to reduce motor vehicle crime. Target-hardening strategies — such as installing additional lighting in parking lots and on streets, increasing patrol in known crime hot spots, and prohibiting parking after business hours — appear to help prevent cars from being stolen or broken into.<sup>7</sup> However, most of these measures are costly and require location-specific data to be effective. For example, implementers must consider where lighting needs to be installed, where (if any) crime hot spots exist in a city, and what level of additional police presence is required to lower crime rates.

We demonstrated that an observable law enforcement presence is associated with reduced auto crime — particularly auto theft. Accordingly, simply by improving visibility, police departments may be able to decrease risky pursuits, traffic stops, and related arrests. It is possible that better police relations could also result from deterrence strategies that reduce adverse contacts between communities and police and create the perception of increased safety.

## Limitations

This study also had several limitations that should be considered for improving future research. First, the 34 days of data offered a relatively small sample size, even though the results align with the findings of a previous randomized controlled trial in Connecticut.<sup>8</sup> Second, among study participants there was some apathy about increasing visibility; some officers believed that offenders would know their locations and commit crimes somewhere else. Third, there was concern about confusing the public by keeping police lights on while driving between different locations in the high-density lot. The solution was to allow the officers discretion to activate lights while in the lots only. Fourth, since the study hours ran from noon to 10 p.m., lights activated during the daylight hours were less visible than at night. Finally, no community survey was conducted in connection with this experiment, so it is uncertain whether the lights-on days increased police legitimacy or provided a perception of increased safety within the community.

## Conclusions

There is no cure-all to the challenges of crime reduction and police legitimacy. Policing is based mostly on “culture, politics, law, agency-specific values, and public opinion,”<sup>9</sup> but the hope is that by continually analyzing and assessing data we can better understand the impact of our responses. Using the best available evidence to strategically inform our long-term decisions can help us improve public safety by optimizing crime reduction.<sup>10</sup> We still have a long way to go in regard to embracing data in policing. If Billy Beane of the Oakland A’s can face resistance to embracing data and analysis in professional baseball despite being widely successful, then we in policing should not be surprised that our profession still emphasizes experience and tradition while viewing evidence-based approaches with skepticism.<sup>11</sup>

We showed that we could meet the challenge of a city working to reduce its crime without overextending its budget. We were able to target, test, and track our data to see what strategies were most effective. More importantly, we demonstrated that we could conduct rapid, rigorous, and well-executed research without reducing the efficiency and adaptability of our efforts. Finally, our intervention may inform future studies, all while successfully reducing crime and making the holiday season in our city safer for residents and visitors.

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# EFFECT OF HIGH-VISIBILITY ENFORCEMENT ON MOTOR VEHICLE CRASHES

BY SGT. JAMES WILLIAMS, METRO NASHVILLE POLICE DEPARTMENT

In early 2017, the South Precinct of the Metro Nashville Police Department was struggling with high numbers of motor vehicle crashes that were straining limited resources. This scenario is not limited to Nashville. During 2017, according to the National Highway Traffic Safety Administration, 6.4 million motor vehicle traffic crashes were reported by police throughout the United States.<sup>1</sup> Compared to other areas of policing, research on traffic enforcement and the role of police in reducing crashes is relatively limited.<sup>2</sup> However, the research available does suggest that sustained enforcement actions discouraging the driving behaviors that lead to crashes can have a positive impact on reducing them.<sup>3</sup> In Nashville, a concerted effort was made to delve into the traffic crash data and use that data to develop a strategy to reduce crashes in the target areas. By using the data collected from various sources, a clearer picture of the crash problem emerged. This data analysis led to two high-visibility enforcement (HVE) plans that aimed to reduce the harms associated with crashes and improve policing outcomes. The HVE plans were focused solely on traffic crash data and were in no way associated with crime statistics or a crime prevention strategy.

The first HVE plan was developed in the South Precinct of the Metro Nashville Police Department. Crashes were causing a significant strain on resources there. Between 2016 and 2018, the Metro Nashville Police Department reported over 33,000 crashes per year.<sup>4</sup> Patrol officers spent an average of 100 minutes on each crash they responded to.

The first step in developing the plan was to identify the location where the enforcement was to take place. One particular roadway had seen a recent fatal crash. Using the department's Compstat report and records management system, two segments along the same roadway were found to have 14 crashes per week compared to a similar roadway segment that experienced six crashes per week. Temporal analysis showed that crashes were more likely in the hours leading up to the evening rush hour. Finally, with the help of the Tennessee Department of Safety's Tennessee Integrated Traffic Analysis Network, the leading contributing factors to crashes in the target location were identified. These contributing factors included drivers following improperly and failing to maintain their lane. It is believed that driver distraction could be an underlying factor when drivers strike the vehicle in front of them (attributed to following improperly) or fail to maintain their lane. The various types of distractions — cellphones, radios, eating, navigation systems — take attention away from safe driving behavior.

HVE is a proven countermeasure and universal traffic-safety approach designed to create deterrence and change unlawful and risky driving behaviors. HVE combines highly visible and proactive law enforcement strategies to target specific violations. The ultimate goal of HVE is to deter risky driving behaviors and subsequently reduce crashes in the targeted area.<sup>5</sup> The HVE model was paired with a hypothesis based on the Koper Curve. The study that resulted in the Koper Curve found that "Police can maximize crime and disorder reduction at hot spots by making proactive, 10-15 minute stops at these locations on a random, intermittent basis, thus maximizing deterrence and minimizing the amount of unnecessary time spent at hot spots."<sup>6</sup> In the application of this particular HVE plan, it was hypothesized that the enforcement "waves" could have an ideal dosage

to reduce crashes. Based on the previous identification of corridors with high numbers of crashes and the associated temporal analysis, the Koper method was applied to target the driving behaviors associated with traffic crashes. We hypothesized that implementing HVE plans along the roadway segment hot spots would reduce the number of traffic crashes in an efficient manner. Two interventions were implemented to determine the effectiveness of our efforts to reduce crashes.

### Experiment 1: Pilot Project Testing of HVE

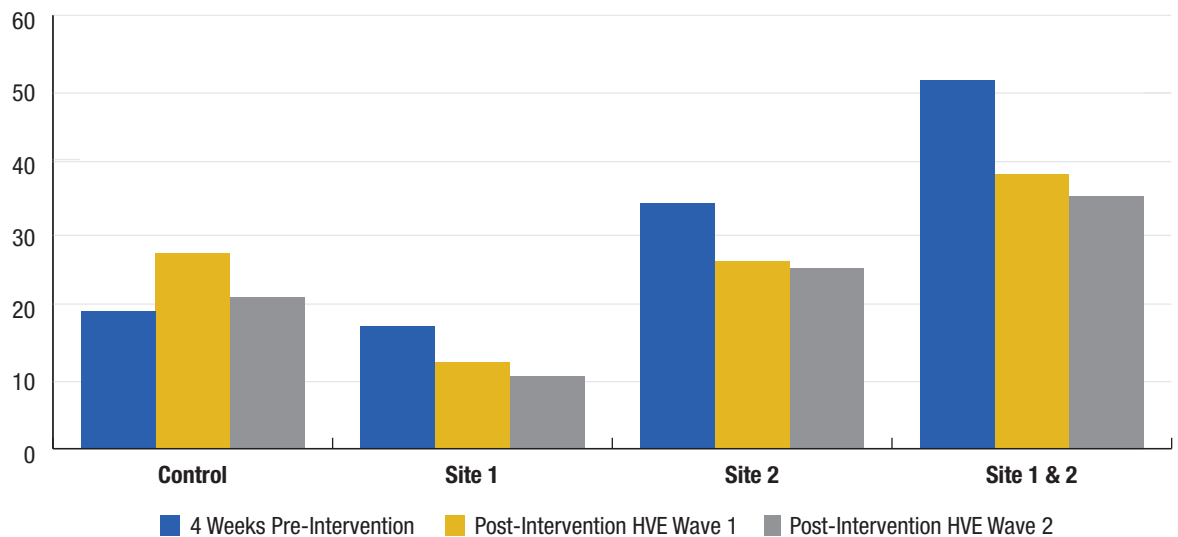
The HVE plan focused a group of officers along the target areas for two hours leading up to the afternoon rush hour for two days a week, once a month — the initial dosage. Officers were given specific instructions to seek out and enforce only those violations that correlated to the contributing factors discovered in the data analysis. The emphasis was not on the number of traffic stops or tickets but rather on behaviors they observed that could lead to a crash, such as distracted driving, following too closely, and speeding. Distracted driving could include cellphone usage, eating and drinking, other passengers, and anything else that takes the driver’s attention away from safe driving actions.

The plan used on-duty officers from the patrol precinct and generally consisted of six to eight officers for each wave. The group consisted of officers who were on a proactive precinct “flex” team as well as precinct-level traffic officers. Those on the flex team were uniformed officers who generally did not answer calls for service but were deployed for proactive crime prevention activities. These officers were included in the planning phase as well as in briefings after each enforcement period, which created buy-in among the officers who participated.

The results from this initial 2017 program demonstrated a reduction in crashes in the target area (see exhibit 1). At the beginning of the enforcement plan, the roadway segment that was chosen averaged 12 crashes per week (seven property damage crashes and five injury crashes). After using the HVE plan for three months, the target area averaged eight crashes per week (five property damage crashes and three injury crashes). During this period, there were no major events or major changes impacting traffic flow, such as construction. These numbers averaged out to a 33% reduction over a three-month intervention period. Data from the department had shown that, on average, an officer spent 100 minutes from the time dispatched to the completion of each crash investigation. Assuming

**Exhibit 1. Experiment 1: Pre- and Post-Intervention**

**Number of Crashes**



Note: Comparison of crash statistics four weeks before intervention and post-intervention demonstrates a 33% reduction in crashes after HVE at the target site. In contrast, the control site demonstrated a trending increase in crashes over the same period.



that one officer responds to each crash, the reduction represented a decrease of more than 26 man-hours per month in time spent on crashes. During the same period, crashes throughout the city were trending upward. A comparison site's crash counts were also tracked during the same period, and this site shared some of the same characteristics as the roadway segment where the enforcement was conducted — it had a similar number of lanes and vehicle travel, and no directed HVE was conducted. This site was characterized by a “business as usual” approach, in which officers conducted random independent enforcement if violations were observed. The crash counts at the comparison site showed a slight upward trend during the same period as the experiment.

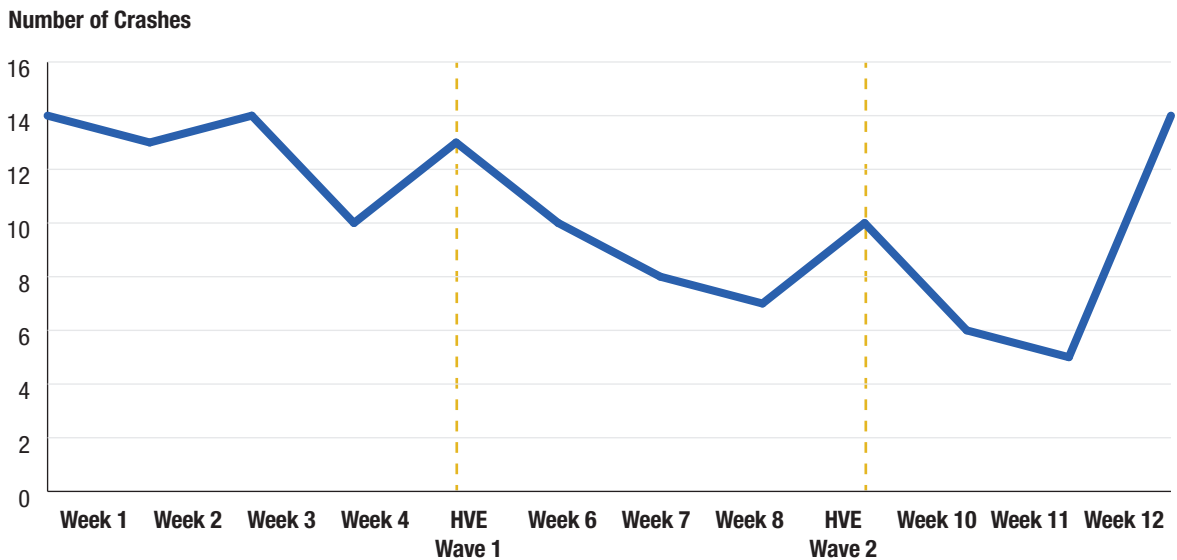
An analysis of the plan's results also uncovered an optimal dosage for the target area. While the plan called for the enforcement to occur once a month, the data indicated a shorter effective window. After an enforcement wave, crashes declined for three weeks. Typically, in the fourth week after the enforcement, the crash count would begin to increase. Optimal dosage in the target area was two days a week for two hours each day, every three weeks (see exhibit 2).

### Experiment 2: Expanded Testing of HVE

In 2019, the police department's Traffic Section identified a need to expand and experiment with the initial plan piloted in the South Precinct. There was an increased interest in implementing data-driven and evidence-based traffic enforcement programs throughout the county. There was also a need for a clear traffic crash reduction plan across all police precincts in Nashville. Again, an HVE strategy was deployed, which provided an opportunity to further test the strategy from the previous initiative at a larger scale and among a variety of locations. At the conclusion of this experiment, we also evaluated the results not only for effectiveness and efficiency but also to ensure that the plan did not unfairly target any one demographic in the community.

The citywide plan involved much of the same process as the 2017 South Precinct plan. Target areas were identified in seven police precincts and again focused on roadway segments. Armed with the knowledge developed in the South Precinct, the Traffic Section set out to create a dosage schedule covering a six-week period for all of the identified hot spots.

**Exhibit 2. Experiment 1: Total Crashes**



Note: HVE reduced the number of crashes at target sites for three weeks before the number began to trend upwards. A dosage of two hours a day of HVE for two days every three weeks reduced the crash numbers at hot spots compared to those at the control sites. Dashed lines denote weeks of HVE at target sites.

Data were used much more broadly in developing this plan. For example, the specific contributing factors for each hot spot were not examined. Instead of identifying which violations were contributing to crashes in individual hot spots and focusing on those violations, officers were asked to focus on the same violations across every hot spot. These violations were the same as those in Experiment 1 — the focus was on moving violations and the unsafe driving behaviors that lead to crashes. Some of these violations, such as speeding and drivers' failure to maintain their lane, are the leading factors in the fatal crashes throughout the city. Since citywide data were used for all of the hot spots, it is possible that we did not have as great an impact on crashes as we could have if data specific to each hot spot were used.

The citywide plan implemented two-hour enforcement waves at each hot spot over two consecutive days. Unlike Experiment 1, in which enforcement occurred at times when violations were highest, the current plan implemented waves at different periods over the two days. This was done to account for a citywide temporal analysis that showed crash likelihood spanned several hours. Every two days the officers would go to a hot spot in a different precinct. This schedule created a prescribed dosage of every 2½ to three weeks for each hot spot. During the enforcement periods, officers would generally conduct roving patrol in the area and stop violators they observed while driving through the area. In locations that safely allowed it, officers might conduct stationary patrol, where they would position their vehicle on the shoulder or on the side of the roadway to conduct speed enforcement.

The enforcement trial conducted by the Traffic Section provided only four enforcement waves at each hot spot but did have some positive impacts on crashes. However, a reduction in crashes did not occur at all hot spots. Overall, in the six weeks prior to the enforcement, the seven hot spots accounted for 297 crashes. In the six weeks following the first enforcement wave at each hot spot, there were 230 crashes across the seven hot spots (see exhibit 3A), for an overall 22.56% reduction in crashes. During the enforcement periods, there were no major events or major changes impacting traffic flow, such as construction, at any of the selected hot spots. Six of the seven hot spots showed reductions in crashes. Some of the reductions were considerable, including a reduction of just over 50% at one hot spot, while others were between 10% and 20% (see exhibit 3B). In contrast, one hot spot in the West

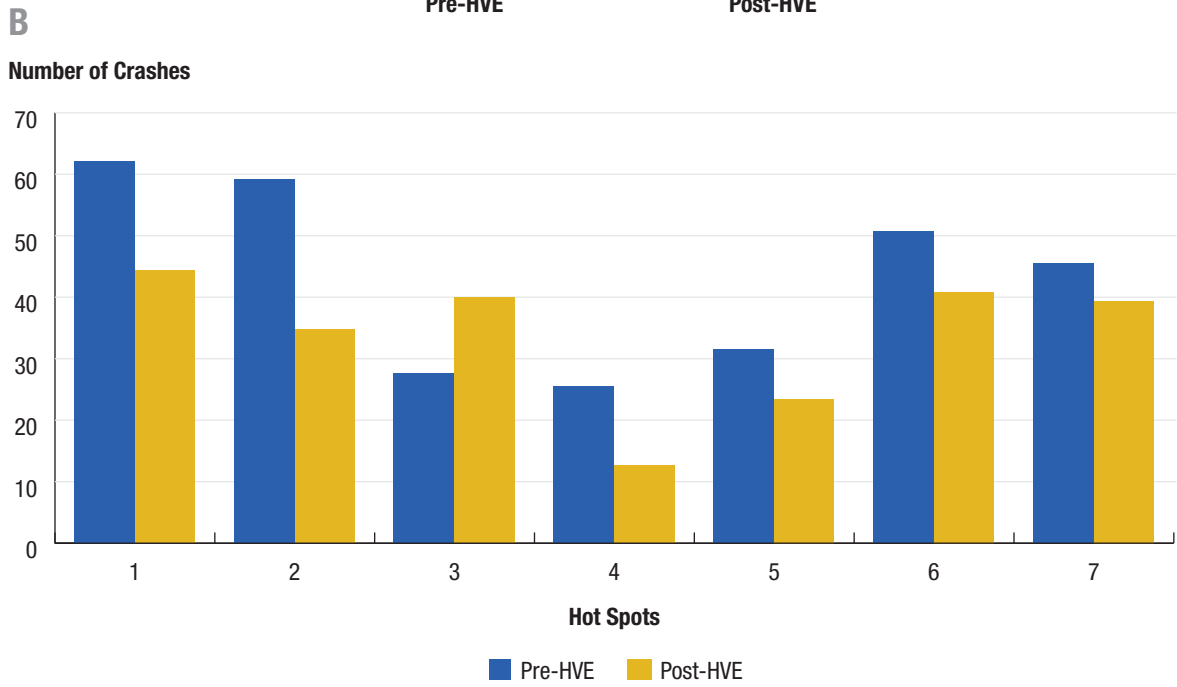
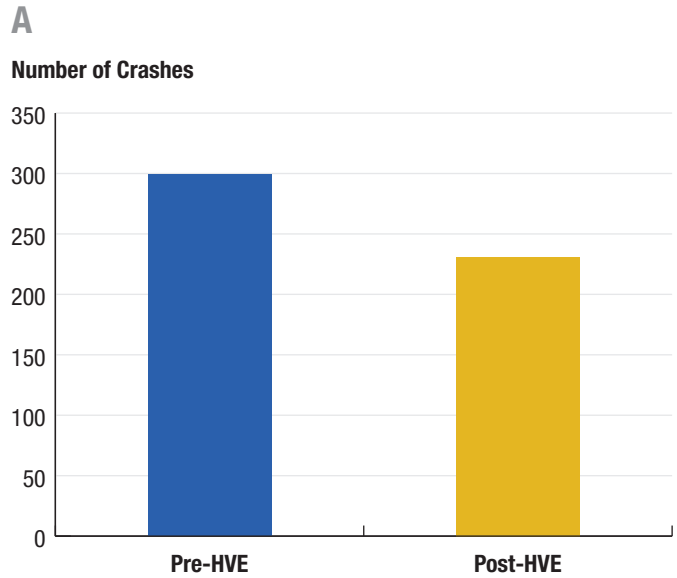
Precinct actually saw a significant increase in crashes over the enforcement trial. Officers noted that it was particularly difficult to conduct enforcement in this hot spot. The roadway was very narrow and congested, and it is possible that these factors contributed to the crash numbers. The mixed results point to the reality that not all hot spots are the same and that targeted enforcement based on the specific characteristics of each hot spot is more effective in curtailing motor vehicle incidents. Some level of local knowledge and experimentation will likely need to take place to maximize the results in multiple locations.

## Discussion

In evaluating the 2019 crash reduction trial, the Metro Nashville Police Department wanted to determine if the program was effective, efficient, and fair to citizens. All three considerations are important for public officials. Initial results seem to indicate that the plan was effective in reducing crashes and efficient in reducing the amount of time officers spent on enforcement and maximizing the benefit of the enforcement. The final aspect of fairness — ensuring that any program does not unfairly target some citizens over others — is also an important factor. In 2018, the Policing Project completed “An Assessment of Traffic Stops and Policing Strategies in Nashville.” The assessment found that there were racial disparities in traffic stops in the city, particularly for those based on nonmoving violations. Additionally, it was concluded that traffic stops were not an effective strategy for reducing crime.<sup>7</sup>

In order to address the limitation of “fairness to citizens,” the crash reduction trial completed by the Traffic Section took great care to ensure that disparities such as those uncovered by the Policing Project were not repeated. This was accomplished in several ways. First, the hot spots were identified in seven precincts across the city. They were based solely on crash statistics; crime statistics were not considered in hot spot identification. Second, officers were told to focus on driving behaviors, specifically moving violations that typically contribute to crashes. Finally, the quality of stops was emphasized over quantity. Again, quality stops were defined as stops for the behaviors that lead to crashes. Other violations, particularly regulatory offenses that do not impact safe driving, were not emphasized. The trial was planned this way to avoid the unintended consequences of tying together traffic enforcement and crime reduction. The Policing Project's assessment noted that Nashville's driving-age population

**Exhibit 3. Experiment 2: Results**



Note: (A) The total number of crashes declined by 22.56% from six weeks before the HVE was conducted to six weeks after the HVE was conducted. (B) The number of crashes across six hot spots declined six weeks after HVE. Only hot spot 3 demonstrated an increase in the number of crashes.

was 58% white, 27% black, 9% Hispanic, and 6% other (including Asian).<sup>8</sup> The assessment also determined that “in 2017, the per capita stop rate was 44% higher for black drivers than for white drivers.”<sup>9</sup> The racial breakdown of the drivers who were stopped during the enforcement trial was 55.5% white, 35.8% black, 2.9% Hispanic, 1.9% Asian, and 3.9% other. As such, this study sought to maximize the effectiveness, efficiency, and fairness of the program. More analysis is necessary to determine if focusing on crash-only hot spots, independent of crime, and only those traffic violations that lead to crashes results in a more equitable distribution of traffic stops.

The two traffic initiatives undertaken in Nashville used a data-driven and evidence-based approach to reduce the social harms created by traffic crashes as well as reduce the burden that responding to crashes places on officers’ time. The initial enforcement initiative paved the way for adding to the evidence base and experimenting with new programs within the police department. Rather than simply adopting a strategy blindly, an effort was made to rigorously plan, collect data, and test different hypotheses while aiming to improve the outcomes of police services. The second initiative provided a small trial case for expanding enforcement on a consistent basis across the city. These initiatives provided the department with a springboard to continue to experiment with and refine the approach the department takes to reduce traffic crashes.

Going forward, we hope to make data-driven HVE plans a regular part of the crash-reduction strategy in the department. We hope to institutionalize the practice of data analysis, HVE waves in hot spots, and evaluation so we can proactively impact driving behaviors in the city. These two experiments have shown the need for more robust and efficient data analysis in order to more efficiently identify hot spots. Just as importantly, we see the need to identify the reasons that crashes are occurring and target those root problems. The best outcomes in traffic enforcement can be seen when you make traffic stops in the right places, at the right times, and for the right reasons.

Despite law enforcement’s best efforts nationwide, traffic crashes continue to lead to over 37,000 deaths each year nationally.<sup>10</sup> Law enforcement will need to continue to develop strategies and provide enforcement and education to the public to reduce crashes.

## Notes

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# ABOUT THE AUTHORS

## **Officer Luke Bonkiewicz**

Luke Bonkiewicz is a police officer with 13 years of experience in not only law enforcement, but also quantitative research methods and data analysis. He has analyzed data on racial disparities in traffic stops, driver's license suspension programs, assault-on-officer incidents, and use-of-control incidents. He has also published peer-reviewed research on patrol officer productivity, police response to mental health calls, and the role of police in disasters and evacuations. Bonkiewicz coordinates the Lincoln (NE) Police Department's Study of Police Experience for the Advancement of Research and Service Center, whose goal is to develop and evaluate evidence-based policing practices.

## **Chief Michael L. Brown**

Michael L. Brown currently serves as the chief of the Alexandria (VA) Police Department. Prior to this assignment, he served as a director at the National Highway Traffic Safety Administration. He was also the deputy secretary for public safety in California and commissioner of the California Highway Patrol.

Brown is currently the co-chairman of the International Association of Chiefs of Police Research Advisory Committee and a fellow and board member of the National Police Foundation. He received his doctorate in criminology, law, and society from George Mason University.

## **Capt. Ken Clary**

Ken Clary has worked for the Iowa State Patrol since 1994 and currently serves as an area commander. He received his master's degree in public administration from Upper Iowa University and is currently a Ph.D. candidate at the University of Nebraska – Omaha. He was selected by NIJ as a LEADS scholar (2016-2019), graduated from the FBI National Academy (Session 269), and completed the International Association of Chiefs of Police's Leadership in Police Organizations program and Northwestern University's School of Police Staff and Command. Clary also serves as an executive fellow for the National Police Foundation and was inducted into the Evidence-Based Policing Hall of Fame in 2019.

### **Capt. Tara Coffey**

Tara Coffey is the executive officer of the 101st Precinct in Queens. She has proudly served as a police officer with the New York City Police Department for 15 years. Throughout her tenure, Coffey has held patrol assignments, supervised crime analysis units, and led special projects teams tasked with supporting high priority initiatives for the department. Her current research focuses on understanding barriers to promotion among midranking officers.

### **Capt. Jason Potts**

Jason Potts is a captain with the Vallejo Police Department, where he has served for 19 years. He is presently the commander of the Investigations Bureau, where he leads the department's detective division, emergency services unit, and community services section. Potts is also a military reserve special agent with the Coast Guard Investigative Service.

Potts serves on the executive board of the American Society of Evidence-Based Policing. He is also a Police Foundation fellow and an NIJ LEADS alumnus. Potts earned a Master of Advanced Studies in criminology, law, and society from the University of California – Irvine.

### **Sgt. James Williams**

James Williams is currently a supervisor in the Traffic Section of the Metro Nashville Police Department. During his time with the department, he has served as a patrol officer, crash investigator and reconstructionist, and patrol supervisor. He is a certified drug recognition expert. Williams has a bachelor's degree in sociology from the University of Kentucky and a master's degree in public policy and administration from Northwestern University. For his master's thesis, Williams researched the use and effectiveness of predictive analytics to inform enforcement strategies aimed at reducing traffic-related deaths and offenses.









