

**The Bill Blackwood
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**Data-Driven Approach to Crime and Traffic Safety:
An Operational Model of Evidence Based Policing**

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ABSTRACT

Police organizations are under intense pressure to effectively decrease crime and increase public safety. Police administrators are given a variety of different tactics to accomplish their mission, but many of these tactics have shown to be unsuccessful. Evidence based policing is an approach to police practices that utilizes the best available research and evidence to formulate the methods to effectively deliver police services. Hot spot targeting has proven to effectively decrease crime and disorder. Hot spot targeting utilizes crime data, police dispatched calls for service, and other data to identify the small locations such as a city block, street corner, or specific address that has a disproportionate amount of crime and disorder. Once the targeted locations are discovered, police leaders develop strategies to effectively address the issues related to the specific locations.

The data driven approach to crime and traffic safety (DDACTS) is an operational model based upon hot spot targeting that has proven results in decreasing crime and traffic accidents. Multiple agencies throughout the country have developed an infrastructure of DDACTS instructors to provide the resources necessary for the successful implementation of the model to meet the specific needs of their community. The DDACTS model is rooted in evidence based policing and should be implemented by all agencies throughout the country.

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INTRODUCTION

Evidence based policing is a concept that dates back to the President's Commission on Law Enforcement in 1967. The report advocated for the use of research, criminologists, and sociologists in policing. While the traditional policing model continued to dominate, police agencies slowly began to adopt an evidence based policing model (Sherman, 2013). The primary focus of evidence based policing is that police resource allocation is formulated by a sound research base. The research focuses on different police practices to determine what types of police interventions work best to control various crime (Mazerolle & Martin, 2012). The concept of evidence based policing argues that police practices be employed or discontinued based on evidence that supports their effectiveness (Sherman, 2015).

Some of the first evidence based policing research came from Kansas City in 1974 with the Kansas City prevention patrol experiment. The experiment focused on frequency of police patrols and found that it did not have an effect on crime. While the limitations to this specific study have been reviewed by other scholars, what mattered historically was the growing understanding of police leaders that there could be a more effective way to provide police services (Sherman, 2013).

The evidence based policing model evolved into three strategic principles, targeting, testing, and tracking (Sherman, 2013). Targeting suggests that police conduct and apply research to target the predictable locations of crime and disorder. Testing is required after the target locations are chosen to determine which police methods works best. Tracking requires the police agency to generate internal evidence to track the daily effects of the practices (Sherman 2013). Departments across the country have adopted

aspects of evidence based policing to various degrees. While most departments utilizing evidence based policing concentrate most of their efforts on targeting and tracking, there is still a growing amount of data analysis on testing to identify what works, the pinnacle to evidence based policing. (Sherman, 2013).

Hot spot targeting is a method for police to identify the small fraction of locations in a city where crime happens more often than the other areas of the city. Through the use of crime mapping, analysts are able to pinpoint the specific street corners or blocks where crime occurs the most. While some of these hot spots may change from month to month or year to year, many remain unchanged for over 15 years. Researchers have shown that doubling the amount of marked patrol cars specifically in the hot spots at higher crime times can reduce crime and disorder (Sherman, 2013).

According to the National Academy of Science, the most effective way to reduce crime and disorder is to focus on crime hot spots (Hoelzer, 2011). There is a growing number of experiments to determine the effectiveness of targeting hot spots. A review of these experiments has given compelling evidence to support the concept that a focused police presence to a specific geographic location can greatly reduce crime. There is no evidence to support the idea that hot spot targeting displaces crime to surrounding areas. The evidence supports the opposite; hot spot targeting reduces the crime in surrounding areas (Ariel, Weinborn, & Sherman, 2016).

Data-driven approaches to crime and traffic safety (DDACTS) is an operational model of policing based on the components of evidence based policing and hot spot targeting. DDACTS uses a combination of both traffic crash data and crime data through geo-mapping to identify common locations where crime and traffic accidents

occur (Kanable & Dewey-Kollen, 2009). The model identifies areas where there is both a disproportionate number of traffic accidents and criminal activity to develop targeted areas for traffic enforcement (Howard 2016).

Agencies utilizing the DDACTS model assign marked patrol vehicles to work traffic enforcement in locations that have high numbers of traffic crashes and criminal activity. The agencies have experienced reduced traffic crashes by reinforcing and encouraging safe driving behaviors among the community. The officers increased rate of contacts with the citizens also leads to identifying and arresting criminals in the area. (Geraci, 2010). The DDACTS model has been endorsed by multiple policing organizations including the National Institute of Justice, Bureau of Justice Assistance, International Association of Chiefs of Police, and National Organization of Black Law Enforcement Executives (Howard, 2016).

There are seven steps to the DDACTS model (Larimore, Collins, & Thorkildsen, 2015). The first step, partners and stakeholder participation, requires law enforcement agencies and citizens to come to improve the quality of life in the community. The second step, data collection, uses location based crime, crash, and traffic related data to form the foundation of DDACTS. The third step, data analysis, creates integrated maps that overlay crime, crash, and traffic related data to identify the hotspots. The fourth step, strategic operations, guides the operational assignments towards the hotspots. The fifth step, information sharing and outreach, provides for opportunities to share results and promote community participation. The sixth step, monitoring, evaluation, and adjustments, assess the crime and crash reduction, cost savings and

other outcome measurements. The final step, outcomes, measures the effectiveness of the reductions in crime, crashes, and traffic violations (Larimore et al., 2015).

DDACTS was designed through the combined efforts of the Department of Transportation, National Highway Traffic Safety Administration (NHTSA) and the National Institute of Justice (NIJ) (Howard, 2016). NHTSA partnered with the International Association of Directors of Law Enforcement Standards and Training (IADLEST) in October 2010. IADLEST primary role was to increase awareness of the model and coordinate DDACT Implementation Workshops. IADLEST began conducting DDACT Implementation Workshops in Texas in June 2011 (Howard, 2016). Texas A&M University's Texas Transportation Institute (TTI) joined the partnership to educate additional Texas law enforcement communities on the benefits of using DDACTS (Howard, 2016). DDACTS is an operational model of evidence based policing that has shown proven results and should be implemented by all departments.

POSITION

The first position of this paper is targeting hot spots of crime and disorder is an effective approach to police operational strategies. Evidence based policing utilizes the best available research to develop strategies for police practices (Sherman 2015). There is an abundance of evidence showing crime is disproportionately concentrated in a few small areas of a city such as an intersection, city block, or specific address (Ariel et al., 2016). Utilizing crime data, police dispatched call data, and traffic reports, analysts can map out where these specific locations are to effectively deploy police resources. Researches have conducted numerous randomized trials to test the preventive effect of police presence at these hot spots and found through systematic

reviews that the increase police presence reduced the recorded crime in the targeted area (Ariel et al., 2016, p. 278).

Many scholars attribute the success of targeted hot spot policing toward the concept of deterrence. The deterrence theory suggests that the threat of incarceration or interdiction deters offenders from committing the crime or disorder (Ariel et al., 2016). Researchers in the United Kingdom conducted a study on target hot spot policing utilizing police community support officers (PCSOs). PCSOs are civilian police staff who wear uniforms similar to police constables, yet do not have any arrest powers. The study placed PCSOs in targeted hot spots and used separate hot spots as a control group. The study found that simply increasing the probability that an offender will encounter an agent of the state can have an impact on crime (Ariel et al., 2016).

While there are several different approaches to hot spot policing, researchers have found common attributes for successful deployment (Ariel et al., 2016). The first attribute is that the police must consciously be focused on the specific hot spot. The second attribute is that the police must have a clearly stated mission in the specific hot spot (Ariel et al., 2016). The key to a successful operational strategy includes selecting the correct locations, developing a proven strategic plan to address the specific disorder in the area, and deploying a visible police presence in that location. Successfully targeting hot spots requires a deployment of police resources based on evidence and an overall operational plan, not officer intuition (Hoelzer, 2011).

The second position of this paper is that the DDACTS model is a method of hot spot targeting that has proven to be successful at decreasing crime and improving traffic safety. Various law enforcement agencies began utilizing the DDACTS model as their

primary operational model as early as 2008. By 2014, over 700 law enforcement agencies across the country adopted DDACTS (Howard, 2016). Multiple studies have shown the DDACTS model successfully increased traffic safety and decreased crime. The Shawnee Police Department of Shawnee, Kansas implemented DDACTS in 2010 after experiencing a 22% increase in violent crime. Shawnee also experienced persistent traffic problems. NHTSA sponsored an implementation workshop and all the officers in the department were trained on the DDACTS strategy. The city's traffic engineer and the police department's crime analyst worked together to obtain the appropriate data to determine the crime and traffic accident hot spots. The Shawnee Police Department reviewed traffic accidents and crime data during the three years before the implementation of DDACTS and the three years after. Traffic accidents dropped 24% and target crimes dropped 40% after the three years. Robberies within the targeted area dropped 70% (Larimore et al., 2015).

Another study involved the Lafourche Parish Sheriff's Office (LPSO) (Kanable & Kollen, 2009). The LPSO implemented DDACTS in April 2009. The LPSO maps two-mile perimeter hotspots to determine the locations with the highest rates of incidents and assigns a deputy to that area for regular patrol. The LPSO compared the crime data of the first three months of 2009 to the first three months of 2010 and found that personal crimes dropped 42% inside the hotspots and property crime dropped 11% (Kanable & Kollen, 2009). The LPSO compared the average number of traffic crashes from 2005-2008 with the average number of traffic accidents in 2009 and found a 22% reduction in traffic crashes (Kanable & Kollen, 2009).

Thibodaux, LA Police Department implemented DDACTS in 2011 as their primary operational model. Thibodaux determined the hotspots that accounted for a disproportionate amount of crime and traffic accidents and deployed officers to those areas to engage in highly visible enforcement. Thibodaux compared the average accidents and major crimes from 2011-2013 with the previous three year averages. Thibodaux discovered traffic crashes were reduced by 31%, thefts were reduced by 27%, business burglaries dropped 25%, and vehicle burglaries dropped 47%. These three case studies show when implemented correctly, DDACTS has proven to be successful in reducing crime and improving traffic safety (Silverii, 2015).

The third position of this paper is that any police organization can easily implement the DDACTS model due to the infrastructure already in place to custom fit the evidence based policing objectives to any agency regardless of size or needs. As discussed in this paper, there is a vast amount of research supporting the use of evidence based policing and hot spot targeting. While the majority of research advocates the benefits of evidence based policing and identifies promising case studies, it fails to give the actual specific steps necessary for a police agency to implement an operational plan based on the research. For example, Lawrence Sherman published multiple studies advocating the benefits of evidence based policing and hot spot targeting (Sherman, 2013; Sherman, 2015; Ariel et al., 2016). Sherman's studies identified the process of targeting, testing, and tracking and advocated the use of crime mapping to determine the hot spots of crime and then to deploy police resources to those locations (Sherman, 2013). The research failed to explain exactly how a mid-sized agency would accomplish the task of obtaining the necessary data or how that

agency would go about interpreting that data to map out hot spots. Lawrence Sherman and additional authors specifically stated in a 2016 study “it is still an open question as to what is the best tactical approach to policing hot spots” (Ariel et al., 2016, p. 282). While some academic studies have argued that crime can be controlled by simply saturating the targeted hot spot with police without any specific organized structure, others have examined what specific types of police presence is most effective at reducing crime. Few of the academic studies provide detailed measurements on what the police were exactly doing in the hot spots (Ariel et al., 2016).

The task of identifying those specific areas in the community that have a proven higher crime rate and higher traffic accidents, assigning officers to specifically target those areas, and then measuring the results could seem overwhelming to any administrator or police supervisor. NHTSA provides technical support to any agency in the country who wishes to implement the DDACTS model. NHTSA has teamed up with a host of partners from around the country to assist any agency in developing the model to best meet the needs of that specific agency (Geraci, 2010). Multiple DDACTS implementation workshops are conducted all over the country to teach anyone working in policing how to be successful with the model (Howard, 2016).

Specifically, in the State of Texas, the Texas Department of Transportation (TxDOT) joined with other agencies to create a three-part program for successful implementation of DDACTS throughout the entire state (Howard, 2016). The three-part program includes an eight-hour agency specific strategic planning workshop and eight hours of focused technical assistance. The program developed an instructional group of DDACTS experts to continually train other agencies within the state and conducted an

intensive two-day analytical training workshop for personnel responsible for hotspot mapping within their respective department (Howard, 2016). Based on the resources available for departments across the country, there is no reason why a department would not be successful implementing a DDACTS operational model to meet the specific needs of their community.

COUNTER ARGUMENTS

The strongest counter argument against the implementation of the DDACTS model is that focusing on hot spots would merely move the crime and traffic accidents to a different location. Early sociologists termed this phenomenon displacement. They argued that a concentrated crime prevention effort at a particular location would shift the crime events from place to place without any long-term crime reduction (Telep, Weisburd, Gill, Vitter, & Teichman 2014). The current research shows that this is an inaccurate assumption. The more likely outcome of hot spot targeted crime reduction is diffusion, surrounding areas outside the targeted locations see a decreased crime rate (Telep et al., 2014).

Multiple researchers conducted a meta-analysis of 20 studies on crime hot spot displacement and diffusion. The analysis showed that displacement of crime is uncommon. One of the possible reasons for the lack of displacement is that opportunities to commit a crime may not exist as easily in a nearby area, thus the offender does not have the opportunity to commit the crime (Telep et al., 2014). One of the possible reasons for the diffusion of crime in surrounding areas is that the offenders apprehended in the targeted hot spots were the same individuals committing criminal acts in the surrounding areas (Telep et al., 2014).

Another prominent counter argument to avoid implementing DDACTS or any evidence based approach to policing is that officers would not be receptive to the practice (Dawson & Stanko, 2016). Police officers who have responded to crime and disorder the same way for years and believe they have been successful in doing their job may not want to change their style of policing. Scholars who work with various law enforcement agencies describe police cultures as resistant to change and skeptical of social science research (Dawson & Stanko, 2016). A major opposition to evidence based policing is simply a fear of the unknown. Once the concept of evidence based policing is fully understood, the resistance may be replaced with an endorsement (Sherman, 2015). A major advantage of utilizing the DDACTS model as the agency's operational model for evidence based policing is that there is a specific training program in place to educate the officers on the advantages of the program (Howard, 2016).

Telep (2017) conducted research examining police officer receptivity to research and evidence based policing. Telep (2017) surveyed over 900 officers from five different agencies to determine their receptivity to evidence based policing. The research discovered that those officers who have advance education and those who have been exposed to research through training were more receptive to evidence based policing (Telep, 2017). Based on this research, regularly communicating the benefits of evidence based policing with the officers can improve their receptivity and application of the practice.

RECOMMENDATION

All police agencies should implement the DDACTS operational model due to its proven effectiveness based on the concepts of Evidence Based Policing. The DDACTS

model is an easily implemented operational model that has shown results in reducing crime and improving traffic safety (Geraci, 2010; Howard, 2016; Kanable & Kollen, 2009; Silverii, 2015). Evidence based policing requires that all police resource deployment be based upon solid research of what works. Hot spot targeting is a form of evidence based policing that has proven to be successful at decreasing crime and disorder. Analysts use crime mapping to determine the specific block, intersection, or specific address where crime is most likely to occur. Once the specific locations are chosen, police target those specific locations for strategic action (Sherman, 2013). One of the major counter arguments to hot spot targeting is that the crime is merely displaced to a different location without any actual benefits. Researchers have disproved this argument and actually discovered the opposite, surrounding areas outside the targeted hot spot experienced a reduction in crime (Telep et al., 2014).

The DDACTS model is an operational model that builds upon hot spot targeting to provide proven results to not only in decreasing crime but also in decreasing traffic accidents (Geraci, 2010). DDACTS encompasses the three strategic principles of evidence based policing, targeting, testing, and tracking. The DDACTS model relies upon crime data, dispatched calls for service, and traffic reports to determine the cross sections where crime and traffic accidents occur. Through this research, the model targets the locations for high visible patrol and enforcement. The DDACTS model requires the analysts to review and test these locations to determine which methods work best. The model continually tracks the daily police work in these targeted areas to determine the effects of the methods (Howard, 2016).

The DDACTS model has proven to be successful through multiple case studies such as the ones listed in Shawnee, Kansas, Thibodaux, Louisiana, and Lafourche Parish Sheriff's Office (Larimore et al., 2015; Silverii, 2015; Kanable & Kollen, 2009). One of the major deterrents of an agency adopting the DDACTS model is a lack of technical knowledge on how to accomplish the goals of developing the operational plan. Multiple agencies have partnered to ensure any agency in the country is provided the resources they need to adopt the model. In Texas, there is a three part program for the successful implementation of the DDACTS model throughout the entire state (Howard, 2016). Based on the evidence that the DDACTS model is successful at decreasing crime and improving traffic safety, it is recommended that all agencies in the country adopt and fully implement data driven approach to crime and traffic safety as their primary operational model.

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