National Highway Traffic Safety Administration

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DDACTS

DATA-DRIVEN APPROACHES TO CRIME AND TRAFFIC SAFETY

An Historical Overview

Integrating "hot spot" technologies to establish effective methods for deploying law enforcement resources through analysis of crash and crime data.

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16. Abstract

Data-Driven Approaches to Crime *and* Traffic Safety (DDACTS) is a law enforcement operational model which integrates location-based traffic crash and crime data to establish effective and efficient methods for deploying law enforcement and other resources. Using geo-mapping to identify areas through temporal and spatial analysis that have high incidences of crime and crashes, DDACTS employs targeted traffic enforcement strategies. By saturating locations with high crash and crime incidences with highly-visible traffic enforcement, DDACTS communities play a simultaneous dual role of reducing traffic crashes and traffic violations, and fighting crime. Drawing on the deterrent value of highly-visible traffic enforcement and the knowledge that crimes often involve the use of motor vehicles, the goal of DDACTS is to reduce the incidence of traffic violations, crashes and crime in communities across the country.

DDACTS: A Historical Overview examines the history and development of enforcement theories upon which the DDACTS operational model is grounded. The document explores the relationship between traffic enforcement and crime, a growing trend to direct law enforcement strategy towards places rather than individuals, describes how law enforcement organizations have learned to use data as a basis for strategy, efforts to integrate traffic enforcement with the broader law enforcement mission, and offers views about the success of DDACTS.

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DDACTS: An Historical Overview

Introduction

In a recent article in *Governing*, readers learned about a new public safety initiative:

> "Police in a growing number of communities are finding that by merging crime and traffic data, they can take steps to dramatically lower traffic accidents and violations, and reduce crime with little or no additional funding.
>
> "Using data to determine community 'hot spots,' where both criminal activity and traffic incidents occur, police are deploying high-visibility traffic enforcement to targeted areas. The initiative, called Data-Driven Approaches to Crime *and* Traffic Safety (DDACTS), was first piloted in several communities in 2008 by a partnership among the National Highway Traffic Safety Administration (NHTSA), Bureau of Justice Assistance, and National Institute of Justice" (Kerrigan, 2011).

In many ways DDACTS represents the culmination of over 30 years of work designed to better integrate law enforcement traffic services with the broader law enforcement community. Moreover, it is a remarkable story about how policy communities can work together to improve community safety.

Traffic Enforcement and Crime

One of the key elements of the DDACTS model is the nexus between the strategy and tactics of traffic enforcement and the prevention of non-traffic crime. In other words, "The application of *high-visibility* traffic enforcement is a proven and effective countermeasure that addresses both crime and crashes whether they occur simultaneously or independently in time and/or location" (Bureau of Justice Assistance, 2009).

The relationship between traffic enforcement and crime has been the subject of a number of studies, each contributing an important piece to our understanding. The first look at the effect of law enforcement crime control strategies was probably Harvard University political scientist James Q. Wilson's 1968 study, *Varieties of Police Behavior* (Wilson, 1968). Wilson sought to better understand what law enforcement officers do and in particular how law enforcement officers and their organizations exercise discretion in decision-making. That is, he wanted to better understand, for example, why an officer decides to stop a traffic violator, and how the officer decides what action to take.

Wilson developed a typology of policing "styles" that included the watchman style, the service style, and the legalistic style. In the watchman style organization, officers place a

high priority on order maintenance, and the administrators of these agencies allow officers to overlook minor offenses like traffic violations. In the watchman style departments officers are encouraged to "ignore the little stuff," and to "be tough" where it is important.

In the service style department's officers look seriously at all types of requests for service, but they are less likely to use legal and formal processes to intervene. While the department will pay careful attention to serious crime, they are likely to avoid arrests and citations for minor offenses. Wilson found, for example, that vehicle stops in these communities were much more likely to result in warnings than in citations.

The third style of policing described by Wilson was the legalistic style. The emphasis in such departments is on law enforcement rather than order maintenance. That is, in these departments officers will generally choose a law enforcement response to most encounters. Not surprisingly, officers in these departments were much more likely to issue traffic citations than officers in either the watchman or service style departments. Wilson suggests that traffic enforcement is particularly attractive in legalistic departments because "traffic law enforcement is one way to prevent accidents," and that traffic stops are an opportunity to" discover fugitives, stolen merchandise, illegal weapons, and stolen cars." Moreover, he argues that the more vehicle stops the agency conducts the more likely they are to catch criminals, and because they usually get positive response from this result, they are likely to make even more stops.

Wilson's 1968 book was based largely on a qualitative study of eight law enforcement agencies. In 1978 Wilson and his colleague Barbara Boland conducted a quantitative study to measure whether the policing style of a community had an effect on crime (Wilson & Boland, 1968). In this study Wilson and Boland examined law enforcement activity in 35 large American cities.

This rigorous quantitative study concluded that cities with the highest rate of traffic citations per officer (the measure of "patrol aggressiveness") experienced the lowest rates of commercial robbery. They suggested that aggressive patrol strategies could affect crime in two ways. First, they argued that, "by stopping, questioning, and otherwise closely observing citizens, especially suspicious ones, the police are more likely to find fugitives, detect contraband (such as stolen property or concealed weapons), and apprehend persons fleeing from the scene of a crime." They also suggested that, "aggressive patrol strategy will affect the crime rate directly, and not through its effect on the arrest rate, if it leads would-be offenders to believe that their chances of being arrested have increased, even though they have not."

The Wilson and Boland study generated a great deal of attention in the academic community. It came shortly after the release of the Kansas City Patrol Experiment that suggested that routine law enforcement patrol had limited effects on crime and disorder (Kelling, Pate, Dieckman, & Brown, 1974). While many criminologists interpreted the Kansas City results to suggest that law enforcement strategy was not important, Wilson and Boland, by contrast, suggested that, in fact, an aggressive patrol strategy could reduce crime.

Herbert Jacob and Michael Rich were critical of the Wilson-Boland findings. They examined the relationship between robbery rates and traffic citation rates in Atlanta, Boston,

Houston, Minneapolis, Newark, Oakland, Philadelphia, and San Jose for the period of 1948 to 1978. Based on this work they concluded that," the number of moving violations is not a good indicator of police aggressiveness…" (Jacob & Rich, 1981).

In 1988 Robert Sampson and Jacqueline Cohen conducted a replication of the Wilson-Boland study using data from 171 American cities with populations over 100,000. As their measure of patrol aggressiveness they used arrests per officer for driving under the influence and arrests for disorderly conduct. Sampson and Cohen concluded that aggressive policing had a strong effect on increasing the certainty of arrest for robbery (Sampson & Cohen, 1988).

By 1990 we had strong empirical evidence that traffic enforcement had an effect on crime. This effect worked two ways. First, traffic enforcement made law enforcement activities more visible, and thus it served as a general deterrent to crime. This was in contrast to the modest level of visibility that is derived through routine patrol. Second, traffic enforcement reduced crime by making it more difficult for offenders to use motor vehicles. That is, when officers stop vehicles they are likely to find contraband or other evidence of crime, and thus offenders may be more reluctant to use their vehicle in the commission of a crime.

These research findings were of particular interest to the National Highway Traffic Safety Administration, which for many years had worked to convince law enforcement executives that traffic enforcement should be part of their overall crime control strategies. In order to learn more about how traffic enforcement could be used as a tool for crime control, NHTSA funded field experiments in Dayton, Ohio, and Baltimore County, Maryland (Weiss, Lucke, & Reischl, 1993). The Dayton project was particularly informative (Weiss & Freels, 1996).

The Dayton Traffic Enforcement Experiment began in January 1992 and lasted for six months. The project was designed, in part, to better understand how traffic enforcement could be used by an agency to reduce crime. Officers participating in the experiment were instructed to enforce traffic laws in the target area, focusing on the hours of 6 p.m. to midnight. Officers were encouraged to make stops in visible areas. They could either issue citations or warnings. Officers participating in the project conducted these stops as part of their normal duties. No additional officers were assigned to the target area.

The results in Dayton were mixed. Unlike previous studies there was no reduction in robbery in the target area, but there was a relatively large reduction in auto theft. The study team expected that as a result of increased traffic enforcement the department would experience an increase in arrests for illegal guns, drugs, and other contraband in the target area. Surprisingly, they experienced a *large reduction* in arrests for those offenses in the target area, leading some observers to question the utility of traffic enforcement as a tool for interrupting criminal enterprises. However, there is strong evidence to believe that the reason the officers found less contraband in the target area was that offenders were avoiding the target area, thus reinforcing the notion that traffic enforcement can increase deterrence.

Our understanding of the relationship between traffic enforcement and crime was further enhanced by two NHTSA studies in Grand Prairie, Texas, and Peoria, Illinois (Stuster, Sheehan, & Morford, 1997). The Grand Prairie study focused on the outcomes of vehicle stops. The study found that "47 percent of the arrests made by Grand Prairie traffic

personnel in 1994 were for serious violations, including DWI, burglary, robbery, and violent crimes," and that "1,267, or 36 percent of the arrests made by traffic officers were made in response to officer observations such as an illegal weapon or contraband in a vehicle."

The Peoria study examined what happened when a new superintendent of police promoted a strong emphasis on traffic enforcement. The new strategy encouraged more vehicle stops and citations, the introduction of sobriety checkpoints and a collaborative effort between the Illinois State Police, the Peoria County sheriff, and the local school district.

Researchers compared the time period (1994-1996) after implementation of the new policy with the time period prior to implementation. The results appear in Table 1.

Activity	**Result**
Traffic Citations Issued	+24%
Officer Initiated Activity	+28%
Custodial Arrests	+16%
DUI Arrests	+11%
Traffic Crashes	-21%
Citizen-Generated Calls for Service	-6%
Violent Crime	-10%
Property Crime	-12%

Table 1 Results of Traffic Enforcement Program in Peoria, 1994-1996.

One of the more interesting studies about traffic enforcement and crime was funded by the National Institute of Justice in Kansas City, Missouri (Sherman, Shaw, & Rogan, (1995). The Kansas City Gun Experiment was designed to evaluate a law enforcement strategy to reduce gun violence, drive by shootings, and homicides in a patrol beat where the homicide rate was 20 times higher than the national average. For 29 weeks, from July 7, 1992, to January 27, 1993, the Kansas City Police Department officers assigned to the project focused on gun detection through aggressive patrol, primarily vehicle stops. The results of this study were quite striking:

- Gun seizures by police in the target area increased by more than 65 percent, while gun crimes declined in the target area by 49 percent;
- There was no measurable displacement of gun crimes to patrol beats surrounding the target area;
- Drive by shootings dropped from 7 to 1 in the target area, doubled from 6 to 12 in the comparison area, and showed no displacement to adjoining beats;
- Homicides showed a statistically significant reduction in the target area but not in the comparison area;
- Before-and-after surveys of residents showed that respondents in the target area became less fearful of crime and more positive about their neighborhood than respondents in the comparison area;
- Vehicle stops were the most productive method of finding guns, with an average of 1 gun found in every 28 vehicle stops; and
- Two-thirds of the people arrested for gun carrying in the target area resided outside the area.

Two studies in Indianapolis helped us to better understand the ways in which traffic enforcement and crime interact. In 1995 Indianapolis experienced a significant increase in violent crime, much of it related to street-level drug sales. Based on the results from Kansas City, the Indianapolis Police Department conducted a small project to test whether increasing vehicle stops could reduce crime (Weiss & McGarrell, 1999, July).

In the "Safe Streets" Project, Weiss and McGarrell analyzed eight beats in Indianapolis that experienced high levels of aggressive traffic enforcement during a 6-week period. In this study, officers patrolled an extra 4 hours at the end of their shift; thus there were more officers on patrol than the prior comparison time. Beats experiencing a significant decrease in reported burglaries and auto vehicle thefts were those in which officers concentrated solely on stopping as many vehicles as possible. Significant reductions in auto vehicle theft were also realized in other beats where officers focused on consent searches for drugs and greater use of computer criminal history checks of persons and vehicles. In addition, there was a diffusion of program benefits to contiguous beats.

Arguably, the most rigorously conducted study of traffic enforcement and crime was conducted in Indianapolis in the summer of 1997 (McGarrell, Chermak, Weiss, & Wilson, 2001). Building on its experience in the "safe streets" project, the Indianapolis Police Department (IPD) launched a more refined and carefully implemented effort to measure the effect of directed patrol on crime.

IPD applied directed patrol tactics in two districts in two different ways. The East District followed a general deterrence strategy in which officers stopped many vehicles, issued many citations, and made 1 felony arrest for every 100 vehicle stops. The North District employed a targeted deterrence strategy. It assigned fewer officers, and although they stopped fewer vehicles and issued fewer citations they made almost 3 times as many arrests for every 100 stops than the officers in the East District.

Officers in the North District were more likely to stop and arrest felons because they focused on specific suspicious behavior and individuals. Homicide went down in both districts, but the North District also reduced gun crime overall—and it did so using fewer resources (McGarrell, Chermak, & Weiss, 2002).

Perhaps most important, residents of the communities expressed support for the IPD's directed patrol program and expressed support for the department. In spite of the fact that officers stopped nearly 5,000 vehicles, no complaints were filed against officers assigned to the project (Chermak, McGarrell, & Weiss, 2001).

DDACTS and the Criminology of Place

One of the key components of the DDACTS model is the strategic and tactical focus on places. This focus is based on three underlying assumptions:

- It is more efficient to focus on places than to focus on individuals;
- The places that experience a high number of traffic crashes also exhibit a high number of crimes; and
- Tools like computer mapping have made it easier to adopt place-based strategies.

In this section of the report we examine these three assumptions.

It is generally held that the traditional focus of policing is people, and in particular on offenders (Eck & Weisburd, 1995). In recent years, however, there has been an increased interest in how law enforcement agencies could shift that focus from people to places (Weisburd, 2008).

Interestingly, traffic safety advocates have understood the importance of place for a very long time. August Vollmer, who served as police chief in Berkeley from 1905 to 1932, used "pin" maps to highlight the location of traffic crashes and calls for service. Vollmer's student, O.W. Wilson, whose textbook on police administration was the seminal work for most law enforcement executives, would later endorse this approach (Bruce, 2009). One of the most frequently used approaches to traffic crash reduction is the Selective Traffic Enforcement Program in which law enforcement resources are often focused on locations with high rates of crashes (NHTSA, 1971).

In the broader law enforcement community the interest in place is relatively recent. In the 1980s criminologist Lawrence Sherman examined calls for service for the Minneapolis Police Department. He found that 3.5 percent of the addresses in the city accounted for 50 percent of the calls for service (Sherman, Gartin, & Buerger, 1989). A more recent study of 14 years worth of data showed that half of Seattle's crimes take place on 4.5 percent of its streets (Harthorne, 2011).

Not only do we find that a relatively small percentage of places account for a substantial fraction of a community's crime and calls for service, but that these locations are relatively stable over time. While law enforcement strategies that focus on people will be subject to changes in community demographics (e.g. offenders will often age out of crime), places tend to be much more stable over time (Weisburd, Bushway, Lum, & Yang, 2004).

There is strong evidence that place-based strategies are effective. The National Research Council's study of police research and practice concluded, "Studies that focused police resources on hot spots provide the strongest evidence of police effectiveness that is now available" (Skogan & Frydl, 2004).

A common critique of place-based strategies is that if the law enforcement agency focuses on a particular place then offenders will respond by relocating to another location. This phenomenon is often called the displacement effect. A number of studies have examined this possibility and have found that, in general, crime is not displaced. In fact, several studies have found a "diffusion of benefit." That is, not only is crime not displaced, but places surrounding the target of law enforcement attention benefit from the strategy (Clarke & Weisburd, 1994).

A second part of the DDACTS model links the frequency crime at a location with the frequency of traffic crashes at that location. Some DDACTS agencies have reported that their data indicates that crashes and crimes do occur in the same locations (Hall, 2009). In fact, there are prior studies that lend support to this relationship.

When a local high school athlete was killed over a stop sign right-of-way dispute, the citizens of Albuquerque looked for a response from the police department (Stuster, 2001). An Albuquerque police officer was assigned the task of developing the Safe Streets

program. He first plotted the locations of traffic crashes in the city. Albuquerque had 33 of the top 50 crash locations in New Mexico. Analysis indicated that 27 of the 33 high-crash locations were in four geographic clusters. It turned out that all four were high-crime areas. When the crime and crash maps were combined it was clear that the two were closely related.

It was not clear to the department whether there was a causal link between crime and crashes. They did observe, however, that many of the people arrested in the target areas resided outside of the areas. That fact -- and given that the geographical clustering suggested an opportunity -- along with traffic enforcement were viewed as the best approaches.

The special traffic enforcement program of Safe Streets 1997 revolved around four major elements: saturation patrols, follow-up patrols, freeway speed enforcement, and sobriety checkpoints. The program also included a focus on fixing "Broken Windows." That is, they directed enforcement activities in those areas that had signs of crime and disorder (Wilson & Kelling, 1982).

The department also enlisted the support of numerous traditional partners such as regional law enforcement agencies. They also included non-traditional partners like the New Mexico Department of Transportation, the local courts, and the Federal Highway Administration.

The results of the Safe Streets program were impressive. The four special enforcement areas together experienced a 9.5-percent decrease in crimes against persons during the first six months of the program, compared to the same months one year earlier. Interestingly, crime began to increase above the previous year's rate at about the time the traffic enforcement shifted from the target areas to other arterials. Crimes against persons remained 2 percent below the previous year's rates during the second half of the program, despite the shift in traffic enforcement effort away from the high-crime neighborhoods. Overall, crimes against persons in 1997 were 5 percent below the 1996 tallies in the four special enforcement areas. The overall decline included a 29-percent decline in homicide, a 17-percent decline in kidnapping, and a 10-percent decline in assault.

There were similarly impressive results in reducing crashes. From 1996 to 1997 there was a 9-percent decline in property-damage-only (PDO) crashes, an 18-percent decline in injury crashes, a 20-percent decline in DWI crashes, and a 34-percent decline in fatal crashes. While Albuquerque experienced an 18-percent reduction in serious injury crashes in 1997 the other urban areas in New Mexico declined by only 3 percent.

The following table illustrates the level of activity during the Safe Streets project:

Action	Number
Citations	85,231
Vehicles Towed	5,703
Misdemeanor Arrests	1,981
Misdemeanor Warrants	1,290
DWI Arrests	987
Felony Arrests	417
Felony Warrants	132
Stolen Vehicles Recovered	112
DRE Arrests	55

Table 2 Police Officer Activity Albuquerque PD Safe Streets 1997

A great deal of research suggests a link between traffic crashes and crime at the community level. For example, Austin Porterfield found that at the State level traffic fatality rates were highly correlated with crime rates including murder, burglary, aggravated assault, robbery and auto theft (Porterfield, 1960). Michalowski studied 119 vehicular homicide cases and concluded that the characteristics of the victims and offenders of vehicular homicide were very similar to that of other violent crimes. He suggested that "the tendency toward aggressive behavior, characteristic of a subculture of violence, influences the way an individual drives as well as his face-to-face interactions" (Michalowski, 1975).

A more recent study by David Giacopassi and David Forde examined the relationship between traffic fatalities and crime. Like prior studies they found the two to be correlated at both the State and city level. However, unlike prior studies, they believe that "traffic fatalities are indices of incivility and aggression, indicating a disregard for social conventions, leading to more serious normative violations like homicide." Moreover, they suggest that when law enforcement agencies pay inadequate attention to traffic law violations it can lead to "a general condition where people feel they may break the law with impunity" (Giacopassi & Forde, 2000).

The final component of our examination of DDACTS and place-based policing is the use of mapping. As we have described elsewhere, mapping the locations of crimes, calls for service, and traffic crashes is not new. In fact it has been used in some degree for over 100 years. What is new is the availability of computerized mapping systems that can make it relatively easy to use this tool as part of a crime control program. In a recent study, 62 percent of a sample of 125 departments with 100 or more sworn officers reported having adopted computerized crime mapping (Weisburd & Lum, 2005).

A recent discussion of mapping describes the functions of maps:

- Are pictures of information about areas and places;
- Help us visualize data;
- Are like the proverbial pictures worth a thousand words; and
- Enable information to be seen at a glance (Harries, 1999).

This is a good framework to understand how mapping supports DDACTS. Every law enforcement agency must find ways to respond to increasing demands with limited

resources. Law enforcement managers must determine how best to deploy officers for traffic enforcement. Maps that compare crash locations with enforcement activity may help to identify a disparity between the nature of the problem and the countermeasure. Maps can help to provide a fact-based picture of where crime is occurring in a community, thus helping to balance citizen perceptions.

In the case of DDACTS mapping can be an important tool. First, mapping can help organizations better understand how crashes and crimes are related. Second, mapping can be used to make the case that traffic enforcement is really an appropriate tool to address the crime *and* traffic problems. Finally, mapping can be useful to demonstrate to the community the results of the DDACTS initiative; see the National Institute of Justice's "Geography and Public Safety: A Quarterly Bulletin of Applied Geography for the Study of Crime and Public Safety."

Of course it is important to note that the use of crime mapping in support of DDACTS may have unintended consequences. That is, each time a law enforcement agency illustrates a map depicting the success or failure of its strategy, it may influence citizen behavior and be cause for concern. Information, in this sense, may cause uncertainty (Monmonier, 1997).

Using Data to Drive Law Enforcement Strategy

It is important to note that the word "data" is the first component of DDACTS. The DDACTS model and guiding principles place a great emphasis on data as a basis to identify target areas, develop strategy, and monitor performance. This need to effectively use data might be a significant obstacle to implementing the DDACTS model save for the fact that over the past 30 years law enforcement agencies have become adept at using data in meaningful and efficient ways. We believe that this transformation has been driven, in large part, by the adoption of two innovations, Problem-Oriented Policing and COMPSTAT.

In 1979, Herman Goldstein, a professor of law at the University of Wisconsin, and previously a member of the senior leadership at the Chicago Police Department, published an article that offered the vision of a very different approach to policing (Goldstein, 1979). In his description of problem oriented policing Goldstein argued that the law enforcement community had focused almost entirely on the "means" of policing. That is, there had been far too much emphasis placed on "staffing, management, and organization." He suggested that law enforcement should pay much greater attention to the results, or "ends" of their efforts.

Goldstein indicated that such an approach would require that law enforcement organizations:

- Identify problems in precise terms;
- Research the problems;
- Document the nature of the current response;
- Engage in a broad exploration of alternative responses; and
- Weigh the merits of the responses.

Goldstein pointed out the word "problem" referred to "the incredibly broad range of troublesome situations that prompt citizens to call the police, such as city robberies,

residential burglaries, battered wives, speeding cars, runaway children, accidents, acts of terrorism, even fear. He argues that, "these and similar problems are the essence of police work. They are the reason for having a police agency."

Goldstein's idea was straightforward. He argued that the law enforcement should pay less attention to responding to incidents and pay more attention to solving the problems that generate the demands for service. This approach would be very dependent on data. The proposed analytical strategy would come to be known as SARA (Scanning, Analysis, Response, and Assessment) (Center for Problem-Oriented Policing, 2011). As we see below the SARA approach is quite similar to that used in DDACTS.

Scanning:

- Identifying recurring problems of concern to the public and the police
- Identifying the consequences of the problem for the community and the police
- Prioritizing those problems
- Developing broad goals
- Confirming that the problems exist
- Determining how frequently the problem occurs and how long it has been taking place
- Selecting problems for closer examination

Analysis:

- Identifying and understanding the events and conditions that precede and accompany the problem
- Identifying relevant data to be collected
- Researching what is known about the problem type
- Taking inventory of how the problem is currently addressed and the strengths and limitations of the current response
- Narrowing the scope of the problem as specifically as possible
- Identifying a variety of resources that may be of assistance in developing a deeper understanding of the problem
- Developing a working hypothesis about why the problem is occurring

Response:

- Brainstorming for new interventions
- Searching for what other communities with similar problems have done
- Choosing among the alternative interventions
- Outlining a response plan and identifying responsible parties
- Stating the specific objectives for the response plan
- Carrying out the planned activities

Assessment:

- Determining whether the plan was implemented (a process evaluation)
- Collecting pre– and post–response qualitative and quantitative data
- Determining whether broad goals and specific objectives were attained
- Identifying any new strategies needed to augment the original plan
- Conducting ongoing assessment to ensure continued effectiveness

As the law enforcement community learned more about the problem-oriented (or as it was later to be called, "problem-solving") approach it became clear that there was not a general body of knowledge that law enforcement practitioners could turn to in order to help them use the SARA methodology. Even when agencies were able to define a problem they did not have easy access to information about what worked to solve these problems in other communities.

With funding from the Department of Justice, researchers at the University of Wisconsin established a Web-based Center for Problem-Oriented Policing (POP). The Web site offers problem-specific guides such as *Assaults in and Around Bars*, or *Speeding in Residential Areas*. It also offers "response guides" such as *Police Crackdowns* and problem-solving tool guides.

Interestingly, for a number of reasons, the nexus between traffic safety and problem solving is quite strong. First, traffic related issues (violations, crashes, and congestion) are closely related to quality of life. When citizens fear for the safety of their family because of dangerous drivers in their neighborhoods they often turn to law enforcement for help. In some communities law enforcement agencies do not devote enough attention to these types of complaints. Second, traffic safety issues are well suited to the problem-oriented approach. One of Goldstein's earliest applications of this approach was a study of impaired driving in Madison, Wisconsin, in 1981 (Scott, 2000). Goldstein understood that addressing a problem as complex as DUI required careful analysis and a multifaceted response. It is no surprise that the California Highway Patrol and the Washington State Patrol have been awarded the Herman Goldstein Award for Excellence in Problem-Oriented Policing for comprehensive traffic safety programs.

The other law enforcement innovation that has strengthened the feasibility of DDACTS is COMPSTAT, a relatively new law enforcement management strategy that originated in the New York City Police Department (NYPD) in the early 1990s. The effort began as a way to deal with crime data that was being collected on a daily basis at each precinct (interestingly, the department's main information system provided crime data that was nearly one year old). The department began to convene weekly meetings to discuss the timely crime data. These "discussions" evolved into an intense and often heated effort to increase accountability for crime control.

In each COMPSTAT session the department focuses on a particular geographic command, typically a borough. The senior staff from the command and the precinct commanders from that command would discuss crime trends, major cases, and their intervention strategies. The presenters are questioned by a group of senior executives of NYPD. While this dialogue

is underway, PowerPoint images of relevant crime and performance data were displayed prominently behind the presenter.

The COMPSTAT process has four critical components:

- Accurate and timely intelligence
- Effective tactics
- Rapid deployment of personnel and resources
- Relentless follow-up and assessment (Silverman, 1999)

There are a number of aspects of the NYPD program that were critical to its success, including:

- Department executives had access to extensive data gathered and prepared by the COMPSTAT unit. Their briefing sometimes included data about incidents that had occurred in the evening before the meeting.
- COMPSTAT sessions were very public (i.e., open to members of the department of all ranks), and could prove to be extremely embarrassing for commanders who were ill prepared. This kind of public scrutiny was very unusual in policing. It was rare to criticize senior law enforcement officials in front of their subordinates.
- NYPD took actions when commanders were unsuccessful. Underperforming commanders were replaced. This created unusual opportunities for women and members of minority groups to assume leadership positions.
- Commanders who were successful in reducing crime were often rewarded with increased resources and assets. This tended to shift the department's focus from programs that don't work to those that do.
- COMPSTAT forced units to communicate with each other. If, for example, a precinct detective supervisor failed to share information with the precinct's narcotics supervisor it would reflect badly on the precinct commander, and that situation would generally be rectified very quickly.
- COMPSTAT emphasized the notion that law enforcement agencies could control crime and improve the quality of life in New York, and that it was the department's responsibility to do just that.

The COMPSTAT process received enormous attention in the law enforcement community. Hundreds of departments have adopted COMPSTAT–like programs. Among the more notable are those in Seattle, Baltimore, Minneapolis, Los Angeles, Nashville, Philadelphia, and Mesa, Arizona. Many small and medium communities have also adopted COMPSTAT (Weisburd, Mastrofski, Greenspan, & Willis, 2004). Many agencies have learned that it is important to shape and mold the COMPSTAT process to fit its organizational norms. In other words, COMPSTAT worked in New York, and can work in other places if properly adapted.

Some people have criticized COMPSTAT, arguing that because COMPSTAT is essentially a "top-down" approach to management, it is inconsistent with community policing, which focuses on individual officer empowerment. In fact, as one recent study points out, there are strong linkages between crime control, community policing, and COMPSTAT (Abt Associates, 2003). Among those commonalities are:

- *Community Interface.* COMPSTAT can facilitate a two-way exchange of information between the police and the community by incorporating (in addition to crime and other computerized police data) various kinds of community data in the police COMPSTAT meetings (e.g., community satisfaction or quality of life surveys), or by providing the community with access to non-sensitive COMPSTAT information via the police department Web site.

- *Environmental Scanning.* This information domain emphasizes the need to incorporate an array of data, including social and community data, into the police decision-making process. The COMPSTAT process, in theory, provides a forum for display and discussion of these other data sets, as they could be incorporated into the process in much the same manner that police crime data are.

- *Interorganizational Linkages.* Community policing requires that the police work closely with other governmental agencies, nonprofit organizations, and the private sector to address crime and disorder problems. The COMPSTAT process can fulfill this requirement either by including other agency data in the COMPSTAT data analyses (e.g., social service agency data that depict possible contributing factors to crime problems) or by including representatives from these other organizations in the meetings.

- *Workgroup Facilitation.* COMPSTAT meets the workgroup facilitation requirement by enabling key stakeholders within a geographic area–both within and outside the police department – to participate in COMPSTAT meetings.

- *Problem Orientation.* The problem orientation requirement stresses the need to focus on problems rather than incidents. COMPSTAT meetings focus on community problems and examine their nature and extent via crime and other trends. In addition, while COMPSTAT processes generally display incident-level crime data, they could also potentially display other data that show potential contributing factors to community problems.

- *Area Accountability***.** COMPSTAT is perhaps best aligned with the area accountability requirement that commanders be responsible for specific geographic areas and, therefore, have access to information that provides them with required information about their assigned geographic area. COMPSTAT crime maps are of course inherently area-specific; other analyses, presented as either tabular data or graphs, can be presented in an area-specific manner as well.

One of the best illustrations of the way in which POP and COMPSTAT have been used in a DDACTS model is in Nashville. Former Chief Ronal Serpas is a strong proponent of COMPSTAT and the use of traffic enforcement as a tool to improve the quality of life for Nashville residents. He has written that, "Quality data, timely managed, shared and used to direct field activities is a successful strategy" (Serpas & Morley, 2008). Moreover he has said, "Far too much energy is wasted on considering what the police cannot do and what commanders do not have; valuable time and momentum are lost by focusing on these negatives. Our uses of valid and reliable data are fundamental to our efforts to direct

positive change and to educate the public that we can and do make a difference" (Anacapa Sciences, Inc., 2009).

Traffic Enforcement is Law Enforcement

One of the key successes of the DDACTS model is that it has bridged the gap between those that think that traffic enforcement is a separate discipline, one best done by specialists and those that believe that traffic enforcement is central to the core law enforcement functions of preventing crime and disorder. The DDACTS principle of "reducing social harms" has provided a framework for law enforcement agencies to more efficiently deploy resources by escaping conventional ideas about policing and traffic safety.

Of course, when we see the effectiveness of DDACTS, it seems appropriate to wonder how the law enforcement approach to traffic safety became so fragmented. In this section we examine that question.

Law enforcement agencies have played a key role in traffic safety for over 100 years. The NYPD, for example, created a motorcycle squad in 1911. The unit was charged primarily with traffic enforcement.

The development of the current model of law enforcement traffic service delivery can be traced to Evanston, Illinois. In 1929, under the direction of police Lieutenant Frank Kreml, Evanston established the nation's first Accident Prevention Bureau. The subsequent success of this bureau was recognized and imitated by other law enforcement departments throughout the country. In 1932 Evanston's Accident Prevention Bureau won the first of many National Safety Council traffic safety awards, causing Evanston to be named America's Safest City. (Only eight years earlier the city ranked fifth in U.S. traffic fatalities). In 1936 Kreml was appointed director of the newly created Traffic Institute at Northwestern University. The Traffic Institute formed a strong relationship with the highway safety committee of the International Association of Chiefs of Police (City of Evanston, no date).

The Traffic Institute promoted a comprehensive approach to crash prevention that included crash records, engineering, public information and traffic enforcement. Interestingly, this approach focused primarily on places rather than individuals, much like the DDACTS model.

As this approach to crash prevention began to take hold in the United States we observed the advent of the specialized traffic division. That is, many departments assigned traffic responsibilities to a special unit. Between 1936 and 1941 specialized law enforcement traffic units were started in Los Angeles, Detroit, Atlanta, Chattanooga, Chicago, Cincinnati, Cleveland, Oakland, and Portland (Kreml, 1954). In a 1954 article Kreml examined the need for traffic specialization. He suggested that the size of the traffic safety problem required the law enforcement community to create specialized traffic units. The argument is detailed below.

> "In summary, police forces in the United States today are faced with a gigantic traffic supervision problem which, as has been indicated, can be effectively controlled through efficient use of manpower and equipment. The

> best organizational facility for the accomplishment of this mission is highly trained, specialized forces. Except in a few instances, the general patrol forces are incapable of the function because of lack of training, administrative skill, and competent, interested supervision. Every effort should be made at once to attack the problem of reducing traffic accidents and congestion through the specialized traffic division, while, at the same time, the general patrol forces and the general administrative personnel are trained to assume an increasing share of this responsibility."

It is not difficult to imagine how this promotion of the specialized traffic unit, coming from a key institution, would have a strong influence. Even today it is not uncommon to find specialized traffic units; even in relatively small organizations. Not only did Kreml argue that the specialized unit was important, but he seemed to suggest a real distinction between traffic specialists and others in the department, giving rise to the notion that traffic enforcement was different; an idea that remains strong today.

Like most organizations, law enforcement agency performance can be harmed by too much specialization. In the case of traffic services, there may be distinct advantages tied to staffing a specialized unit, but the presence of such a unit may send an unintended message to the rest of the organization that traffic safety is someone else's responsibility.

The delivery of law enforcement traffic services was significantly enhanced by the creation of NHTSA in 1970. NHTSA has taken a multi-faceted approach to enhancing the law enforcement role in traffic safety. Among its activities have been:

- Research and demonstration projects to evaluate strategies;
- Training and conferences for law enforcement personnel;
- Programs to support focus areas such as impaired driving and occupant restraint;
- Support for the Highway Safety Committee of IACP and the Traffic Safety Committee of the National Sheriffs' Association;
- Support for the National Law Enforcement Challenge; and
- Support of focus areas through grants to cover costs of law enforcement service delivery.

One of NHTSA's biggest challenges has been to convince law enforcement executives of the need to focus on traffic safety. In addition to the problems associated with the overspecialization of traffic services there are other factors that have made law enforcement executives reluctant to commit resources to traffic safety programs:

- The belief that addressing crime problems is more important to maintaining public safety than addressing traffic problems.
- Citizens are skeptical about the use of traffic enforcement as a law enforcement strategy. Some view traffic enforcement as a means of revenue generation, and this view is often reinforced when local communities publicly bemoan the lack of citation revenue (Solomon, 2010).
- Law enforcement organizations often use traffic enforcement as a measure of officer performance, rather than promoting it as a tool to prevent crashes. In response, officers resist departmental efforts to increase performance, calling it a "quota" system (Blankstein, 2011).
- Support for traffic enforcement was damaged by the imposition of the National Maximum Speed Limit, that, even though it had a positive effect on crash reduction

created difficulties for the agencies charged with enforcement (TRB, 1998).

- Traffic enforcement has come under scrutiny by those who argue that it is disproportionately applied against members of ethnic and racial minorities (Ramirez, McDevitt, & Farrell, 2000).

In the face of these issues NHTSA worked with its partners to strengthen traffic enforcement. This is well reflected in publications and conference proceedings.

In the *Highway Safety Desk Book,* a joint effort of NHTSA and IACP, law enforcement executives are reminded of the crime control effects of traffic enforcement:

> "Traffic law enforcement gives officers at the state, local, and county levels the unparalleled opportunity to save lives. The causal relationship between consistent, goal-oriented enforcement and casualty reduction stands clear and unimpeachable. Traffic enforcement is demonstrably justifiable on its own merits. Yet, today an emerging secondary benefit reinforces the value of roving patrol officers. They have become major crime fighters! America's long-standing reliance on the motor vehicle has put crime literally on the nation's streets and highways. Murderers, robbers, auto thieves, and drug traffickers all travel by motor vehicle. And when they violate traffic laws—a frequent occurrence because criminals typically are preoccupied by their crimes—that familiar police light appears in the mirror. This once meant two things: a short conversation with the officer and a traffic citation. Today, much more can follow.
>
> What happens in those few moments when an officer approaches a violator describes the quiet revolution taking place within law enforcement. Officers more frequently recognize that the violator doesn't quite fit the circumstances. The subject's demeanor, the caliber of responses to questions, a lack of knowledge about the vehicle—these and similar factors noted by the alert, trained observer recommend further investigation. And further investigation pays off in criminal arrests. None of this results from mere luck. Specialized training, a growing reservoir of favorable experience and, perhaps most important, the intelligent wariness of the individual combine to transform him from a traffic officer into something more. It's as if we're getting two people for the price of one: an officer skilled in traffic and another knowledgeable in general criminal investigative technique" (NHTSA, 1996).

In the fall of 1995, the Police Executive Research Forum (PERF) worked with NHTSA to develop plans for a national symposium on traffic policing. The collaboration with PERF was important because this group, consisting largely of large city chiefs of police, had not devoted much attention to traffic policing. The meeting was held in September 1996 and attended by 31 highway safety leaders (NHTSA, 1999). Among the key conclusions of the forum was that law enforcement executives did not fully appreciate the crime control benefits of traffic enforcement.

Following the PERF effort, NHTSA contacted the International Association of Chiefs of Police (IACP) for comments and possible follow-up discussion. It was determined that additional work on this important issue would be beneficial to all law enforcement and allied organizations, and, as a result, the IACP entered into a partnership with NHTSA to

produce a report. The chairman of the IACP Highway Safety Committee (HSC) assumed responsibility for this project and appointed a subcommittee of HSC members and other law enforcement executives to produce the document (IACP & NHTSA, 2001). *Traffic Safety in the New Millennium* offered a strong assessment of the role of traffic enforcement and crime:

> "Traffic safety programs form an integral component of the effective, comprehensive law enforcement operation. Unfortunately, not all law enforcement executives recognize this important fact. Other law enforcement issues constantly compete with traffic safety for law enforcement's attention, and too often traffic safety initiatives take a 'back seat' to what are perceived as more important programs. Violent crime, gang violence and the proliferation of illegal narcotics are matters that, to many police executives, far outweigh the need to dedicate time to proactive traffic safety. Nothing could be farther from the truth. Many successful traffic safety initiatives have resulted not only in reductions in crashes, but in additional positive results that benefit our communities in many areas."

In the section on organizational commitment, a more positive approach emerges. They propose the following actions:

- Make traffic safety a core value;
- Integrate traffic safety throughout all operations of the department. When feasible a traffic safety unit should be established;
- Provide necessary training, equipment, and staff to fulfill the responsibility of providing traffic safety to the public; and
- Emphasize the importance of traffic safety during training and presentations to all personnel.

This statement maintains the traditional support for the specialized traffic unit while adopting a more organization-wide approach to traffic safety.

In the wake of the attacks of September 11, 2001, it became even more difficult to devote scarce resources to traffic enforcement. In response, NHTSA launched its *Conducting Complete Traffic Stops* program. This program offered training to law enforcement agencies on how to gather information during vehicle stops while protecting the constitutional rights of drivers. In describing the program, then NHTSA associate administrator Otis Cox said:

> "At NHTSA, our challenge is to help the law enforcement community address traffic safety issues, without compromising its responsibilities for criminal enforcement and security. This is why we work with the IACP and other law enforcement organizations to promote the concept of the complete traffic stop.
>
> Traffic law enforcement benefits can go far beyond the traffic stop. Proper scrutiny of traffic offenders often leads to significant arrests for criminal and terrorist related activities. Reports from law enforcement agencies are replete with incidents where officers have seized stolen vehicles and stolen merchandise, made drug and weapon possession and trafficking charges, and uncovered evidence of child abuse-all in the course of traffic enforcement. In

areas of homeland security, alert officers have identified undocumented aliens and vehicles carrying explosives and large amounts of cash that could lead to acts of terrorism" (Cox, 2003).

In July 2007 an article appeared in the *Police Chief Magazine* that described some of the challenges and opportunities of providing law enforcement traffic services. Strategic and Tactical Approaches to Traffic Safety (STATS) offered a new model that included four goals:

- To enable law enforcement agencies to provide effective traffic enforcement without depending on federal funding
- To use data-driven models for allocating enforcement resources
- To develop strategies for using traffic enforcement to reduce overall criminal activity
- To develop and train a new generation of traffic safety professionals (Weis & Morkel, 2007).

In September 2007, the Northwestern University Center for Public Safety and the Colorado State Patrol held a STATS conference in Denver. Participants heard from a range of speakers who described innovative approaches to achieving public safety, many of which included the use of traffic enforcement. The common thread through all of the presentations was the need to think strategically, use data to inform decision-making, hold individuals accountable for performance, and remember that traffic enforcement is law enforcement. Following the Denver STATS conference, NHTSA formed a working group to discuss how the lessons from STATS could be applied.

In 2008, a working design and guiding principles for DDACTS emerged. A group of seven test sites (Baltimore County, MD, Lafourche Parish, LA, Nashville, TN, Oakland, CA, Rochester, NY, St. Albans, VT, Washoe County Sheriff's Office, NV) were announced, and support was provided by NHTSA, BJA, and the National Institute of Justice, the research and evaluation arm of the Department of Justice (Burch & Geraci, 2009).

In addition to the collaboration with Federal agencies, DDACTS was endorsed by a myriad of law enforcement organizations including:

- International Association of Chiefs of Police,
- International Association of Crime Analysts,
- National Sheriffs' Association,
- National Organization of Black Law Enforcement Executives,
- National District Attorneys Association,
- National Criminal Justice Association,
- American Probation and Parole Association,
- Governors Highway Safety Association, and
- American Association of Motor Vehicle Administrators.

Conclusion

This report has examined how innovations in the law enforcement and academic communities have combined to provide the intellectual and policy foundations for the

DDACTS model. We know, however, that many good ideas and programs are never implemented. In this section we examine why DDACTS has emerged to become such a vibrant program. Why, in other words, is DDACTS "an idea whose time has come"? Our view is summarized below.

1. DDACTS capitalized on a more refined understanding of the relationship between traffic enforcement and crime. For many years traffic safety advocates worked to gain the support of law enforcement executives to do more traffic enforcement. Because it was difficult to generate support for crash prevention programs, advocates attempted to convince law enforcement executives that there were residual crime control benefits from traffic enforcement. Consider the NHTSA "Looking Beyond the Ticket" program launched in 2007. In the preface readers are told,

> "Looking Beyond the Ticket is a strategy to encourage officers to think about each traffic stop as a new opportunity to not only make the roads and streets safer but possibly to discover a more serious traffic offense or a criminal activity" (NHTSA, 2007).

This program and the "Conducting Complete Traffic Stops" program emphasized the notion that if an agency makes vehicle stops officers will discover wanted persons and contraband. However attractive on its face, this approach has limitations because the likelihood of such a discovery is very low, and the focus of the program is on "big" arrests, often at the expense of more data-driven strategy. While this "byproduct" approach strengthened the case for those agencies already engaged in traffic enforcement, it probably was not a very strong motivator for those that did not.

The real difference between DDACTS and its predecessor programs is that it focuses on places. By doing so it permits law enforcement agencies to form an evidence-based, politically defensible approach to public safety. That is, agencies adopting the DDACTS model can argue that they have identified the places where both crimes and crashes are occurring, and that they are using well-defined, effective, research-based strategies. The DDACTS model is very efficient because it places less emphasis on specialized units (many of which have been eliminated as a result of budget issues) and makes better use of officer uncommitted time.

2. DDACTS reflects the change to "Smart Policing." Law enforcement agencies are adopting evidence-based, data-driven strategies and tactics that are effective, efficient, and economical (Smart Policing Initiative, 2010). They have benefitted significantly from access to good data and having people on staff that know how to use it. The adoption of problem-oriented policing and COMPSTAT have helped agencies to improve their data systems, and fostered a generation of law enforcement managers who are comfortable working with information. This facilitates the adoption of DDACTS.

At the same time the law enforcement community has endorsed the notion that law enforcement managers must be held accountable for results, not just activity. The DDACTS model makes a strong and important distinction between *outputs* (what the agency does) and *outcomes* (the results of these activities). The DDACTS focus on places is at the cutting-edge of criminological research.

3. DDACTS has been very effectively communicated. At a recent DDACTS workshop a participant told the group that his chief had attended a meeting where DDACTS was discussed, and, as a result, the agency decided to find out more about DDACTS. We suspect that many workshop participants would have told a similar story about why they were attending.

An important component of the adoption of innovation is communication. That is, before an organization can adopt a new program or policy it must know about it, and have enough information to make an informed decision about its appropriateness for their organization.

Law enforcement organizations use both formal and informal channels to learn about innovations (Weiss, 1998). DDACTS has been particularly well marketed on the Web, in professional publications, and at conferences. The effort has benefitted from exposure through NHTSA, BJA, and NIJ, as well as through the partner organizations. DDACTS has effectively used social media sites like "Linked In." In addition, DDACTS has received considerable media attention.

Among the most effective marketing strategies of DDACTS are the training workshops. These sessions serve two valuable purposes. First, they train agency representatives about the DDACTS model. Second, they help to create a national peer network, one of the strongest predictors of effective adoption and implementation (Weiss, 1997).

4. DDACTS does not offer grant funding as an incentive to participation. Participating agencies can receive limited analytical technical support at no cost to the agency. This makes the program stronger in several ways. First, agencies that participate do so because they believe it will be good for their communities. Second, there are no explicit program goals and objectives. Thusly, participating agencies do not have to meet highly particularized performance standards. Finally, because DDACTS is not grant-funded, participating agencies can craft tactics and strategies that address local public safety concerns.

5. DDACTS has bridged the gap between Federal law enforcement programs. One of the longstanding challenges facing the law enforcement community is that the Federal agencies charged with law enforcement research and support has viewed traffic safety and crime as separate domains. In some sense this dichotomy reflected the division that exists in the law enforcement community.

DDACTS represents a change in the way the policy community approaches policing. Through the efforts of senior leadership at NHTSA, BJA, NIJ and COPS, there is widespread communication about DDACTS. This collaboration provides legitimacy to those law enforcement executives who have not traditionally been part of the highway safety community. Because of this collaboration, DDACTS is not merely a traffic program, or a crime control program, but it is a comprehensive approach to reducing social harm and improving public safety.

6. DDACTS facilitates a meaningful dialogue about race and traffic stops. This is an important conversation because evidence suggests that one half of all contacts between citizens and law enforcement officers occur during vehicle stops (Durose, Langan, & Smith, 2005).

DDACTS is effective because it relies on data and analysis, not pre-conceived notions about the nature of crime and disorder. Joseph McMillan, President of the National Association of Black Law Enforcement Executives, summed up this issue when he said, "If the data analysis reveals that criminal activity and traffic crashes occur at a specific place within a community, then it is at that place that law enforcement activities need to be focused. A non-biased, data-driven approach to crime and traffic safety delivers law enforcement services at the right place and at the right time."

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For information about DDACTS, including the DDACTS toolkit, please visit www.nhtsa.gov/ddacts.

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