

Program Profile: Data-Driven Approaches to Crime and Traffic Safety (DDACTS) in Kansas

Evidence Rating: Promising - One study



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Program Summary

This is a law-enforcement model in which both location-based crime and automobile crash data is analyzed to determine where such incidents disproportionately occur (“hot spots”) and to employ targeted traffic enforcement strategies. The program is rated Promising. The areas of targeted enforcement experienced significant declines in robberies, burglaries, and traffic crashes.

Program Description

Program Goals

Data-Driven Approaches to Crime and Traffic Safety (DDACTS) is a law-enforcement model in which both location-based crime and automobile crash data is analyzed through geo-mapping to determine problem locations, or “hot spots” (areas of high incidence of crimes and crashes) to employ targeted traffic enforcement strategies. The goal of DDACTS is to reduce crime, crashes, and traffic violations, as a means of improving the quality of life in the community.

Program Components

DDACTS implementation is based on the following seven guiding principles of comprehensive, community-based law enforcement:

1. **Partners and stakeholder participation:** Attain stakeholder and partner input and engagement.

2. **Data collection:** Review the current data collection and analysis system, select mapping software, and create a plan to collect crash, crime, calls for service, and enforcement data.
3. **Data analysis:** Develop a clear process for analyzing data and developing reporting procedures.
4. **Strategic operations:** Select law-enforcement strategies and tactics based on findings from data analysis and develop a comprehensive operational plan to provide the framework for monitoring, evaluating, and adjusting the strategies. Develop an implementation plan.
5. **Information sharing and outreach:** Share progress and garner feedback from community members, other partners, and stakeholders, and develop a plan for communicating about DDACTS through the media.
6. **Monitoring, evaluation, and adjustment:** Use the findings from the data analyses to make adjustments to DDACTS field operations. Document and report changes to data sources, mapping techniques, reallocation of resources and staff, training, etc.
7. **Outcomes:** Identify specific outcomes (such as changes in calls for service and gang violence incidents), as well as administrative outcomes (such as changes in personnel and equipment, cooperation, and community support), determine how they will be measured, and determine the party responsible for monitoring and evaluating.

For a link to the DDACTS Operational Guidelines, see Implementation Information.

Theoretical Background

DDACTS is based on the spatial distribution of crime in “hot spots,” in which a small percentage of addresses account for a large number of calls for service or crime (Sherman et al. 1989). DDACTS is also based on crime pattern theory, which involves the convergence of offenders and targets in places (“crime attractors”) where offenders gravitate to commit crime, such as bar districts, retail drug markets, and large parking lots (Brantingham and Brantingham 2008). Deterrence theory serves as the motivation for increasing highly visible traffic enforcement in hot spots for crime and traffic crashes.

Evaluation Outcomes

Study 1

Targeted Crimes (Robbery/Commercial Burglary only)

Bryant and colleagues (2015) found the target area experienced significant declines in robberies (88 percent) and commercial burglaries (84 percent) over the 3 three years after the Data-Driven Approaches to Crime and Traffic Safety (DDACTS) intervention.

After the enactment of DDACTS, the comparison area initially experienced a drop, but later experienced an increase in robberies.

Vehicle Crashes

Over the 3 years after the enactment of DDACTS, the target area experienced significant declines in traffic crashes (24 percent), whereas the comparison area suffered an increase in vehicular crashes.

Study 2

Total Target Crimes

Bryant and colleagues (2014) found that, compared with the control area and the rest of Shawnee (the comparison areas), the target zone experienced the largest reduction in total target crimes (a significant 39.52 percent decline).

Total Vehicle Collisions

The DDACTS target zone experienced the largest reduction in total vehicle collisions, compared with the control area and the rest of Shawnee (the comparison areas). However, this difference was not statistically significant.

Evaluation Methodology

Study 1

Bryant and colleagues (2015) compared trends in crime and automobile accidents over a 6-year period (3 years prior to the Data-Driven Approaches to Crime and Traffic Safety (DDACTS) policy change and 3 years following the DDACTS policy change) in target and comparison areas in Shawnee, Kansas. The DDACTS “hot spot” area was determined through the co-analysis of crime and traffic accident data. The DDACTS area comprised 2 percent of the city’s total land area and 7.5 percent of its population, but accounted for 10.3 percent of the city’s Part 1 violent crimes and a disproportionate number of traffic accidents. The comparison area was selected because it was similar to the DDACTS area in terms of space, land use, and crime.

DDACTS was initiated on July 6, 2010. The pre-implementation period lasted between July 6, 2007, and July 5, 2010. The post-implementation period lasted between July 6, 2010, and July 5, 2013. The researchers conducted analyses in both the DDACTS target area and the comparison area.

Bivariate analyses and interrupted time series (ITS) analysis were conducted to determine the impact of the DDACTS model on robberies, commercial and residential burglaries, and vehicle collisions.

Study 2

Bryant and colleagues (2014) conducted a pre- and posttest comparison of means with two comparison groups to determine the effects of the DDACTS initiative on crimes and automobile collisions in the target zone of Shawnee, Kansas. The treatment area was the DDACTS zone (the 75th Street corridor between Switzer Road and Quivira Road); the two comparison areas were in the control zone along Shawnee Mission Parkway and the rest of Shawnee (areas not included in either the target zone or the control area).

The pretest included the 3 years of crime and traffic collision data prior to the implementation of DDACTS on July 6, 2010. The posttest included the 3 years of crime and traffic collision data after the implementation of DDACTS on July 6, 2010. The researchers extracted, cleaned, and analyzed data from the police records management system (PRMS), using the Automated Tactical Analysis of Crime (ATAC) Workstation software. The outcomes of interest were total target crimes, which included auto burglary, auto theft, robbery, and total vehicle collisions (including collisions with and without injuries).

Cost

Implementation of Data-Driven Approaches to Crime and Traffic Safety (DDACTS) activities has no budgetary impact, as existing staff and no extra duty or overtime assignments are used. While on duty, officers assigned to the DDACTS location are simply required to conduct the enforcement activities during unassigned, discretionary time.

Implementation Information

All line personnel, including sergeants, officers, detectives, and dispatchers, receive training on Data-Driven Approaches to Crime and Traffic Safety (DDACTS) philosophy and guiding principles, provided by law-enforcement executives.

Law-enforcement agencies interested in obtaining technical assistance on DDACTS or identifying local partnerships may contact the National Highway Traffic Safety Administration, Bureau of Justice Assistance, or National Institute of Justice.

Evidence-Base (Studies Reviewed)

These sources were used in the development of the program profile:

Study 1

Bryant, Kevin M., Gregory M. Collins, and Michael D. White. 2015. *Shawnee*,

Kansas, Smart Policing Initiative. Washington, D.C.: Bureau of Justice Assistance, Smart Policing Initiative.

Study 2

Bryant, Kevin M., Greg Collins, and Josie Villa. 2014. *An Evaluation of Data-Driven Approaches to Crime and Traffic Safety in Shawnee, Kansas: 2010-2013*. Washington, D.C.: Bureau of Justice Assistance, Smart Policing Initiative.

Additional References

These sources were used in the development of the program profile:

Brantingham, Paul, and Patricia Brantingham. 2008 "Crime Pattern Theory." In Richard Wortley and Paul Maserolle (eds.). *Environmental Criminology and Crime Analysis*. Portland, Ore.: Willan Publishing.

McClure, David, Jeremy Levy, Nancy La Vigne, and David Hayeslip. 2014. *DDACTS Evaluability Assessment: Final Report on Individual and Cross-Site Findings*. Washington, D.C.: Department of Justice.

National Highway Traffic Safety Administration. 2014. *Data-Driven Approaches to Crime and Traffic Safety (DDACTS): Operational Guide*. (Report No. DOT HS 811 185). Washington, D.C.: National Highway Traffic Safety Administration.

https://www.nhtsa.gov/staticfiles/nti/ddacts/811185_DDACTS_OpGuidelines.pdf

Sherman, Lawrence W., Patrick R. Gartin, and Michael E. Buerger. 1989. "Hot Spots of Predatory Crime: Routine Activities and the Criminology of Place." *Criminology* 42:283–321.

Related Practices

Following are CrimeSolutions.gov-rated practices that are related to this program:

Hot Spots Policing

Used by many U.S. police departments, hot spots policing strategies focus on small geographic areas or places, usually in urban settings, where crime is concentrated. The practice is rated Effective. The analysis suggests that hot spots policing efforts that rely

on problem-oriented policing strategies generate larger crime reduction effects than those that apply traditional policing strategies in crime hot spots.

Evidence Ratings for Outcomes:

 Crime & Delinquency - Multiple crime/offense types

Problem-Oriented Policing

These analytic methods are used by police to develop crime prevention and reduction strategies. The practice is rated Promising and led to a significant decline in crime and disorder.

Evidence Ratings for Outcomes:

 Crime & Delinquency - Multiple crime/offense types