Shawnee, Kansas, Smart Policing Initiative

Reducing Crime and Automobile Collisions through Data-Driven Approaches to Crime and Traffic Safety (DDACTS)
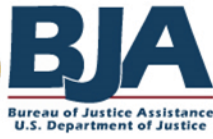
March 2015

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Smart Policing Initiative
Spotlight Report

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Published March 2015

Smart Policing: Research Snapshot

From 2008 to 2010, the city of Shawnee, Kansas, experienced a 22 percent increase in violent crime. At the same time, the Shawnee Police Department (SPD) was acutely aware of persistent traffic accident hot spots. Moreover, budgetary constraints resulted in nearly a 5-percent decrease in the department's sworn staff in one year (2009). The SPD leadership became increasingly concerned about their ability to maintain a sufficient level of service, and to effectively respond to changing crime trends in the city. In response to these emerging concerns, the SPD implemented the Data-Driven Approaches to Crime and Traffic Safety (DDACTS) model beginning in July 2010. DDACTS identifies locations where crime and traffic problems disproportionately co-occur, and then deploys increased police presence and high-visibility traffic enforcement (HVTE) in those areas. The DDACTS model is grounded in seven guiding principles that highlight collaboration, data-driven decision-making, hot spots policing, and ongoing program assessment and dissemination of findings. In 2011, the Department received funding from the Bureau of Justice Assistance's Smart Policing Initiative (SPI) to support the implementation of DDACTS and conduct a rigorous evaluation of the impact of the DDACTS model on crime and automobile crashes in the city of Shawnee.

The Shawnee SPI team employed a three-pronged evaluation to examine the implementation and impact of the DDACTS model. First, the SPI team conducted two waves of focus groups with officers from units throughout the department. Results from the focus groups showed evidence of a shift in culture and officer "buy-in," especially with the divisions of the department most closely associated with the model. Participants agreed that DDACTS is an effective and sustainable initiative. The first wave of focus groups identified several areas in need of improvement, most notably with providing training, addressing concerns over resource depletion, and delivery of a clear message about the foundations and goals of the program.

Second, the Shawnee SPI team administered surveys to businesses and residents in the DDACTS target area, well after program implementation. Results indicated that a majority of respondents perceived a greater police presence and more traffic stops in the area, and they expressed support for high-visibility, targeted traffic enforcement. Moreover, most respondents stated that DDACTS has improved the quality of life in Shawnee, and the majority rated the relationship between SPD and residents and businesses as very good to excellent.

Third, the Shawnee SPI team employed a quantitative impact evaluation of DDACTS by comparing trends in crime over a six-year period (three years pre-implementation and three years post) in the target area and a comparison area. Using both bivariate and interrupted time series analysis, the SPI team demonstrated that the DDACTS model produced statistically significant decreases in robberies (88 percent), commercial burglaries (84 percent), and vehicle crashes (24 percent). The Shawnee SPI experience highlighted several important lessons for police managers and line officers, including recognition of the fundamental connection between crime and traffic problems, the importance of program fidelity through careful implementation, and the need to overcome the tendency to view DDACTS through a "zero tolerance" lens that minimizes the collaborative, data-driven, and problem-solving aspects of the model.

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Shawnee, Kansas, Smart Policing Initiative: Reducing Crime and Automobile Collisions through Data-Driven Approaches to Crime and Traffic Safety (DDACTS)

Kevin M. Bryant, Gregory M. Collins, and Michael D. White

INTRODUCTION

The Shawnee, Kansas Police Department and its research partner at Benedictine College, Dr. Kevin Bryant, sought to address crime and automobile collisions in a targeted hot spot through Data-Driven Approaches to Crime and Safety (DDACTS). From 2008 to 2010, the city of Shawnee experienced a 22 percent increase in violent crime, driven in large part by an upsurge in rapes and robberies. Though rare in Shawnee, the number of murders and attempted murders doubled as well (from two in 2008 to four in 2010). At the same time, budgetary constraints resulted in nearly a 5-percent decrease in the department's sworn staff in one year (2009).[1] The Shawnee Police Department leadership became increasingly concerned about their ability to maintain a sufficient level of service, and to effectively respond to changing crime trends in the city.

In March 2010, the Shawnee Chief of Police and command staff attended a DDACTS presentation at the annual Kansas Department of Traffic Safety Conference. DDACTS, a program sponsored jointly by the National

Highway Traffic Safety Administration (NHTSA) and the U.S. Department of Justice (Bureau of Justice Assistance and National Institute of Justice), employs temporal and spatial analysis to identify areas with disproportionate incidences of both traffic accidents and criminal activity. Increased police presence and high-visibility traffic enforcement (HVTE) are then deployed in those areas through a targeted enforcement strategy.[2] The program is grounded in the principle of deterrence (i.e., the effect of high-visibility traffic enforcement) and conventional wisdom regarding the use of motor vehicles in many crimes (i.e., either in commission of the crime or in escape from the crime scene). The Shawnee Police Department implemented the DDACTS model beginning in July 2010. In 2011, the Department received funding from the Bureau of Justice Assistance's Smart Policing Initiative (SPI) program to conduct a rigorous evaluation of the impact of the DDACTS model on crime and automobile crashes in the city of Shawnee.

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[1] http://www.fbi.gov/stats-services/crimestats

[2] *Data-Driven Approaches to Crime and Traffic Safety (DDACTS) Operational Guidelines*. Washington, DC: National Highway Traffic Safety Administration and US Department of Justice. August 2009.

I. THE PROBLEM

The city of Shawnee, KS, is a suburban community on the western edge of the Kansas City Metropolitan area. The Shawnee Police Department (SPD) currently employs 85 sworn officers and 22 civilians. The department serves a population of 62,290 residents (Census Bureau, 2010). The population of Shawnee is 90.4 percent white and 4.8 percent African American. Approximately 9 percent of the population is Hispanic. The median household income is $73,341, and 4.7 percent of the families in the city are below the poverty level.[3]

Though Shawnee has traditionally experienced violent crime rates that are well below the national average, the city witnessed notable increases in violent crime (murder/manslaughter, rape, robbery, aggravated assault) from 2008 to 2010. In fact, the violent crime rate (per 100,000 residents) increased from 152.7 in 2008 to 187.0 in 2010. The two-year upsurge was driven primarily by substantial spikes in rape (from 6 to 22 incidents), robbery (from 14 to 22 incidents), and murder/attempted murder (from two to four incidents). Notably, the 22-percent spike in violence in Shawnee occurred at the same time that violent crime was declining nationally by 14 percent (see Figure 1 on page 3).
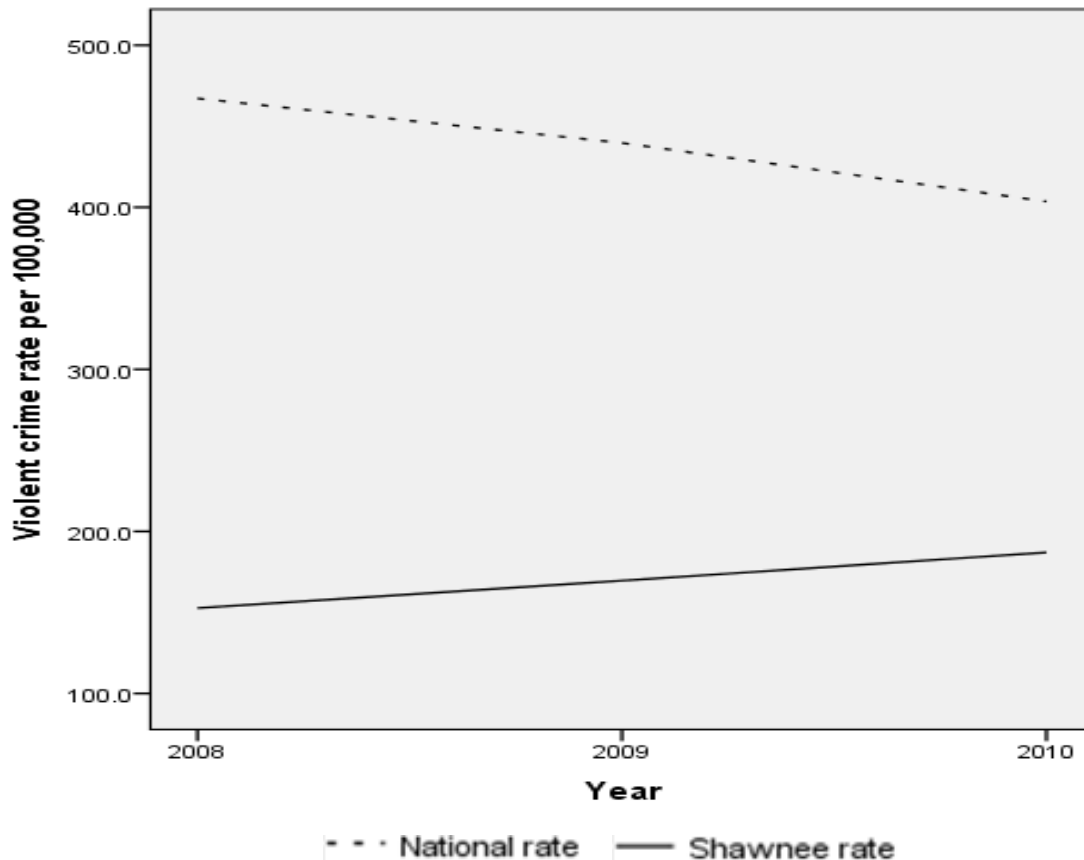
SPD has long been concerned with traffic accidents and their impact on quality of life for Shawnee residents. In 2002, SPD formed a Traffic Safety Unit (TSU) comprised of four patrol officers and one sergeant. The unit is responsible for traffic violation enforcement and crash investigation. Following the formation of the TSU, the numbers of vehicle crashes were generally reduced across the city, and the trend in automobile accidents continued downward between 2008 and 2010 (from 1,145 to 1,009). However, despite the efforts of the TSU, there continued to be persistent hot spots for vehicle crashes within the city.

At the same time, financial constraints forced the SPD to reduce its sworn staff by 4.5 percent in 2009, as open sworn officer positions were unfilled, and officers were re-assigned to patrol from Crime Prevention, D.A.R.E. (Drug Abuse Resistance Education), and Warrant Service units. The officers working in these assignments were primarily responsible for community based programs, such as robbery prevention programs and residential security surveys. The loss of these positions also meant that the uniformed officers were almost exclusively responding to calls for service, with little in the way of positive engagement with residents.

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[3] http://www.cityofshawnee.org/WEB/ShawneeCMS.nsf/vwContent/Demographics?OpenDocument&navKey=PlanningandZoning

Figure 1. Violent Crime Rate per 100,000 Citizens Nationally and in Shawnee, KS, 2008-2010

II. THE RESPONSE: DDACTS

Given the diverging trends in crime and personnel/resources, SPD leadership sought to identify strategies that would allow them to operate more efficiently and effectively by "doing more with less." In early 2010, the Shawnee Police Chief and command staff began exploring the DDACTS model and, within six months, all line officers had received DDACTS training and the program was inaugurated in July 2010. The DDACTS model utilizes data to identify locations where both traffic accidents and crime disproportionately occur. Agency resources are then assigned to the crime/crash hot spot to engage in high-visibility traffic enforcement. More generally, the model relies on seven guiding principles:

- **Partners and Stakeholder Participation**: Partnerships among law enforcement agencies and with local [community] stakeholders are essential and provide opportunities and synergies for decreasing social harm and improving the quality of life in a community.

- **Data Collection**: Place-based, current crime, crash, and traffic-related data, which are coded for type of incident, time of day, and day of week, are the building blocks of DDACTS. The collection of crime data may include Part I and Part II crimes. Additional data may include citizen complaints, field interviews, dangerous driving behaviors, and other nontraditional data such as the location of parolees and probationers, individuals with suspended or revoked licenses, and wanted persons.

- **Data Analysis**: The creation of integrated maps that overlay crime, crash, and traffic-related data lets agencies identify problem locations, or "hot spots." Additional analysis, through a number of proven hot spot evaluation techniques, can distinguish correlated factors for each type of data, delineate spatial and temporal factors, and consider environmental influences on crime and crashes.

- **Strategic Operations**: Based on data analysis, agencies are able to identify hot spots on which to focus enforcement activities and countermeasures. Hot spot analysis guides the realignment of workflow and operational assignments to focus enforcement efforts and increase efficiency.

- **Information Sharing and Outreach**: Built into the model are opportunities to share results, promote community participation, and document accomplishments. Regularly generated progress reports give management the documentation needed to keep officers informed, hold meetings with community members, and report to government administrators and elected officials. Progress reports also provide the basis for ongoing media relations.

- **Monitoring, Evaluation, and Adjustments**: Data collection and analysis procedures allow for the monitoring, evaluating, and adjusting of field and internal operations. They also provide an opportunity to regularly assess crime and crash reduction, cost savings, and other outcome measures that define success.

- **Outcomes:** Goals and objectives that emerge during problem area identification and strategic plan preparation are developed into outcome measures. These measures are used to assess effectiveness relating to reductions in crime, crashes, and traffic violations; cost savings; the use of specific interventions; and personnel deployment.[4]

DDACTS in Shawnee

The DDACTS model represented a paradigm shift in Shawnee because the police department had previously treated crime and crashes as two distinct, unrelated problems. For example, the police department has a crime analyst

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[4] DDACTS *Operational Guidelines*. 2009: iii.

who tracks crime data and creates reports on offenders, crime trends, and locations. The city's traffic engineer, who operates within the public works department, tracked the traffic crash data. Although officers typically receive information on traffic crashes during the pre-shift briefing, data regarding crash trends and problem locations were generally not provided to line officers.

Under DDACTS, the crime analyst began to collaborate with the traffic engineer to mine the traffic crash locations (and causes) and to link those accident data with crime analysis. Once the crime and crash data were co-analyzed, several areas of the city emerged as "hot spots" for crime; but only one area stood out for both traffic and crime problems. This area comprises 2 percent of the City's total land area and 7.5 percent of the City's population; yet, in 2009, this area accounted for 10.3 percent of the Part 1 violent crime in the entire city. The area, known as the 75th Street corridor, also included several smaller locations (e.g., intersections) which generated a disproportionate number of automobile crashes.

Once all line personnel had received DDACTS training,[5] the members of the Special Investigation Unit (SIU) and the Crime Resistant Community Program (CRCP)[6] spent several days reaching out

to businesses and residents in the target area. SIU officers notified the businesses along 75th Street, and CRCP officers made contact with managers at the nine apartment complexes in the area. Apartment managers and business owners were told the police department would be applying new policing principles along 75th Street that would increase police presence and enforcement of all traffic laws.

DDACTS was launched on July 6, 2010. Crime and automobile accident data were used to assign officers to patrol crime/crash hot spot locations in the target area during specific days of the week and times of day. Officers were assigned to conduct high-visibility traffic enforcement (HVTE) in the identified locations during the identified times. The DDACTS assignments were made by shift supervisors using normal shift staffing. These were not overtime assignments. When an officer was assigned to patrol a DDACTS location, he/she would notify the dispatcher at the start of the assignment, and the officer would become unavailable for routine report calls. The DDACTS information was also used at other times of the day to guide officers in use of their discretionary time. In order to facilitate information exchange, a computerized data base was created to house DDACTS hot spot information and to make it available to officers in patrol cars and on computers through the department

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[5] The training was a two-hour block of instruction presented to sergeants, officers, detectives, and dispatchers.

[6] The Crime Resistant Community Program (CRCP) uses specially trained patrol officers from the department to

maintain communication and assist with problem solving in multi-housing complexes. The officers are assigned to one or more multi-housing properties.

network (via mobile data terminals, or MDTs). Moreover, on a weekly basis, the Chief and members of the department command staff examined the number of hours per week that officers spent in the DDACTS area during target times. The Shawnee SPI team's goal was to have officers spend a total of eight hours per week in the DDACTS target area, conducting additional traffic enforcement related patrols. Officers were routinely able to exceed that initial goal. Table 1 depicts the weekly average of time and outputs of officers (number of contacts, arrests, citations, written warnings, and field interview cards) working in the DDACTS zone for the three years under study.

Table 1. Officer Time and Activity in DDACTS Zone, 2010-2013

Weekly Average	Hours	Contacts	Arrests	Citations	Warnings	Field
2010/2011	27.43	72.35	3.63	60.65	20.46	3.23
2011/2012	34.66	76.73	3.63	59.25	24.90	1.00
2012/2013	49.71	104.15	5.27	71.17	42.60	1.98

IV. ASSESSMENT

The Shawnee SPI team employed a three-pronged evaluation to examine the implementation of DDACTS, to measure the degree of awareness and approval of the program by business owners and residents, and to assess the impact of DDACTS on crime and automobile accidents. First, the SPI team conducted focus groups of randomly selected officers from across the department, including employees from traffic, patrol, investigations, and dispatch as well as mid-level supervisors and command staff. Second, the Shawnee SPI team surveyed business owners and community residents in the DDACTS target area. Last, the Shawnee SPI team and experts at CNA, the technical assistance provider for the Smart Policing Initiative, conducted Interrupted Time Series Analysis with six years of crime and automobile accident data to assess the impact of the DDACTS model on target crimes and crashes.[7]

Officer Focus Groups

Officers and civilian staff from SPD were queried about the purpose of DDACTS, the training, perceived effectiveness, and sustainability of the model. Two waves of focus groups were completed—the first in January 2012, and the second in early 2013. The first wave was conducted several months after DDACTS started, and was intended to capture the degree of employee buy-in as well as issues and concerns with implementation.[8] The purpose of the follow-up focus groups was

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[7] The authors thank Tom Geraghty at CNA for conducting the Interrupted Time Series Analysis.

[8] Each focus group consisted of 4 to 6 employees, and the SPI team held one focus group for each department unit except for patrol (two patrol focus groups were held given the larger number of officers assigned to that unit).

to determine if officer attitudes had changed since the initial round of focus groups, especially with regard to perceived effectiveness and sustainability of the DDACTS model. The primary themes from the police department focus groups are described below.[9]

Purpose of DDACTS:

Officers across all units accurately understood the purpose of DDACTS, especially command staff, supervisors, patrol officers, investigations, and dispatch. For example, one participant in the command staff focus group stated, "We have a lot of data that tells us where and when crime and crashes are occurring and we are able to narrow those times and that focus down on specific days and times – we want to put cops in those areas with their red and blue lights flashing in order to affect the behavior of motorists and criminals." [10] Notably, several participants in the traffic unit focus group demonstrated a lack of awareness of the DDACTS purpose, suggesting it is simply a "fancy name" for work the department has always engaged in, albeit with lower tolerance.

DDACTS Training:

Officers in the traffic, patrol, and investigation units expressed concerns

with the DDACTS training. Common complaints included: the training did not provide enough detail on DDACTS activities; the goals of the strategy were not fully explained; and the approach involves basic police activities that they were already taught to do, such as vehicle stops and citizen contacts. Though the supervisor and command staff focus groups had more positive views on the training, they acknowledged that the department's quick implementation may have limited officer acceptance of the strategy and officer participation in the development of the operational plan. One commander noted, "I don't know if it [the training] necessarily wasn't adequate, but I think it probably could have been improved…maybe with a little more; I know we tried hard, but we didn't get a lot of buy-in at the beginning."

Perceived Effectiveness:

Officers across all units expressed positive views regarding the potential for DDACTS to reduce crime and automobile crashes. However, other concerns were noted. For example, patrol officers felt that the strategy greatly restricted their use of discretion (e.g., when to make car stops and to issue tickets), and that it limited response times to other areas of the city. Several officers worried about the negative response by citizens and businesses in the DDACTS area. Crime displacement was also a commonly expressed concern: "If criminals want to, they will commit a crime; where they

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[9] For a full discussion of the police department focus groups, see: Bryant, K.M. & Collins, G. 2014. *An Evaluation of Data-Driven Approaches to Crime and Safety in Shawnee, Kansas:* 2010-2013. Shawnee, Kansas: Benedictine College and Shawnee Police Department.

[10] Bryant, K.M. & Collins, G. 2014. p. 12.

commit may change, but they will commit it."

Sustainability:

Officers across all focus groups expressed concerns regarding the sustainability of DDACTS, noting that the strategy may be effective initially, but would eventually result in diminishing returns. Citizen disapproval was also a commonly cited concern. Officers' negative attitudes about sustainability were also tied to some of the themes mentioned above, such as the lack of officer discretion, placing too many resources in one area, and crime displacement. Supervisors and command staff expressed their own concerns about sustainability, particularly with regard to officer buy-in and the impact on department resources (e.g., the strategy may "run the force ragged").

Follow-up Focus Groups:

The first wave of focus groups provided valuable information regarding officers' perceptions of DDACTS and its impact. Over the next several months, the department leadership worked with officers to modify the operational plan and address officers' concerns about sustainability and effectiveness. The department then conducted a second wave of focus groups (with patrol, traffic, supervisors, and command staff) to determine whether attitudes had changed. [11] Results from the follow-up

focus groups suggested that officer buy-in with DDACTS had improved notably, as did officers' perceptions of its effectiveness. Concerns about resource depletion and crime displacement had also declined. In sum, there was significant evidence suggesting that the DDACTS philosophy was becoming normalized in the department's culture.

Business Surveys

On June 8, 2013, the SPD command staff administered surveys to 57 businesses in the DDACTS target area. [12] The survey asked business respondents a range of questions regarding awareness of the program, concerns about crime, attitudes toward SPD, and perceived effectiveness of DDACTS. Overall, the findings indicated a high level of support for the SPD and the strategies employed through DDACTS. Selected business survey findings illustrate this point:

- 51.8 percent of respondents noticed that the number of traffic stops along 75th street had increased in the last two years.

- Nearly half of respondents reported seeing police patrol near their business daily (35.7 percent) or several times per day (13.2 percent).

- Most respondents were concerned about crime near their business (62.5

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[11] Scheduling conflicts hindered efforts to conduct follow-up focus groups with investigators and dispatchers.

[12] The survey included 17 multiple choice items and two open-ended questions. Businesses were provided with a copy of the survey and a postage-paid return envelope. The command staff sought to make contact with 93 businesses, for a response rate of 62 percent.

percent somewhat concerned; 21.4 percent very concerned). More than one-third (37.5 percent) indicated that their business had been victimized in the last five years (burglary, theft or robbery).

- Respondents were less concerned about traffic violations and crashes near their business (28.6 percent somewhat concerned; 7.1 percent very concerned).

- Among respondents who were aware of the DDACTS program, most thought it had improved the quality of life in the area (40.0 percent

somewhat improved; 33.3 percent improved).

- More than 90 percent of respondents indicated that they had a good (41.1 percent), very good, (25.0 percent), or excellent (26.8 percent) relationship with SPD.

- More than 80 percent of respondents reported that high-visibility traffic enforcement was effective (57.1 percent) or very effective (25.0 percent) in reducing crime and crashes near their business (see Figure 2). A similar percentage reported targeted patrol as effective (50.0 percent) or very effective (30.4 percent).

Figure 2. Perceived Effectiveness of High-Visibility Traffic Enforcement
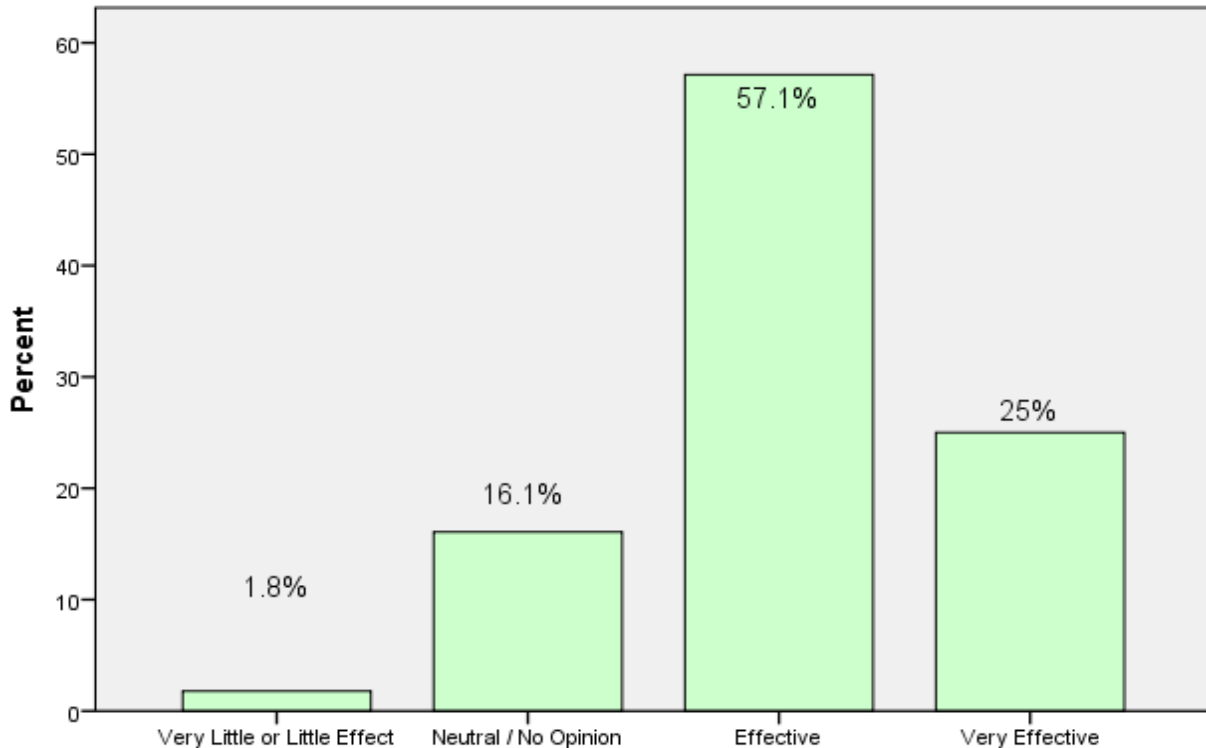
Community Surveys

The Shawnee SPI team obtained a list of all home addresses in the DDACTS target area, including 1,825 multi-family housing units, 610 single family homes, and 162 duplexes. The team created an online survey to assess residents' perceptions of crime, traffic safety, and the SPD, as well as the DDACTS model. In February 2013, the team sent a postcard to all residences with instructions on how to complete the survey (in both English and Spanish). Since the initial response rate was quite low (142 completed surveys), the Shawnee SPI team sent surveys home with children from two elementary schools in the area (generating an additional 120 completed surveys), coordinated with a local religious congregation (producing six additional surveys), and hand-delivered surveys to six apartment complexes in the target area producing an additional 39 responses (for a total of 307 completed surveys). The community survey asked many of the same questions as the business survey; overall, the findings from residents and businesses were very consistent. [13] For example:

- Nearly 90 percent of surveyed residents noticed an increased police presence in the target area; 81.3 percent noticed an increase in traffic stops made by police.

- Approximately 68 percent of surveyed residents were concerned (37.9 percent) or very concerned (29.6 percent) with crime in their neighborhood. Yet, 65 percent indicated that they felt safe or very safe in their neighborhood.[14]

- Nearly 60 percent of surveyed residents stated that they were concerned (35.4 percent) or very concerned (24.2 percent) with traffic violations and crashes in their neighborhood.

- Among surveyed residents who were aware of the program, most (approximately 75 percent) felt it had improved the quality of life in the area (see Figure 3 on page 11).

- More than 80 percent of surveyed residents indicated that they had a good (51.4 percent), very good (22.3 percent), or excellent (9.2 percent) relationship with SPD.

- Approximately 75 percent of surveyed residents reported that the primary tactics under DDACTS—high-visibility traffic enforcement and targeted patrol—are effective (52 to 56 percent) or very effective (15 to 25 percent).

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[13] For a full discussion of the resident survey methodology, see: Bryant, K.M. & Collins, G. 2014. *An Evaluation of Data-Driven Approaches to Crime and Safety in Shawnee, Kansas*: 2010-2013. Shawnee, Kansas: Benedictine College and Shawnee Police Department.

[14] Residents and business owners were equally concerned about crime in the area, but residents were significantly more concerned than businesses about traffic violations and crashes.

Figure 3. DDACTS and Quality of Life

Figure 3. DDACTS and Quality of Life
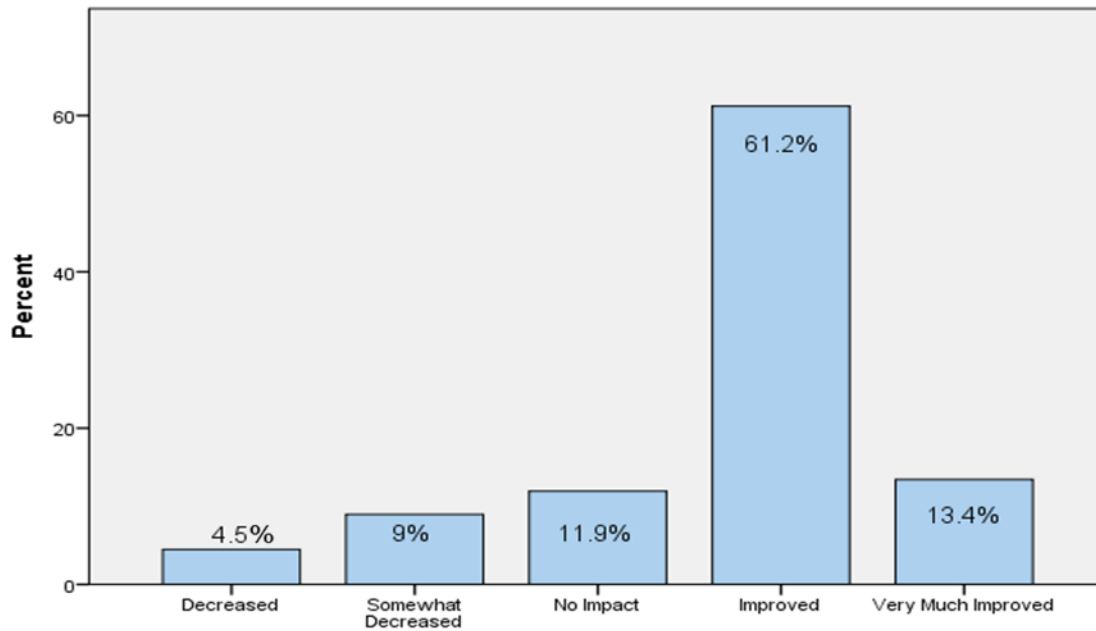
Quantitative Analysis

The Shawnee SPI team also employed a quantitative impact evaluation of DDACTS by comparing trends in crime over a six-year period (three years pre-implementation and three years post) in the target area and a comparison area. The comparison area was selected because of spatial, land use, and crime similarities to the target area. The team used both bivariate analysis and Interrupted Time Series Analysis. Tables 2, 3, and 4 show the total number of target crimes[15] and the total number of automobile crashes in the DDACTS, the comparison area, and the rest of Shawnee for a six-year period. In the DDACTS area (Table 2), target crimes dropped by nearly 40 percent after implementation of the model, including a

70 percent reduction in robberies.[16] This decline (from 291 offenses to 176) is statistically significant. Automobile crashes also dropped significantly after the onset of the DDACTs strategy, by 24 percent (from 314 to 238 crashes). Though the comparison zone experienced slight declines in target crimes and crashes (6.2 percent and 14.5 percent, respectively), the changes were not statistically significant (Table 3). Table 4 shows that crime in the rest of Shawnee actually increased slightly (by 5 percent) after DDACTS implementation, while automobile accidents declined by 16.6 percent (statistically significant, but substantially lower than the DDACTS area).

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[15] Target crimes include auto burglary, auto theft, and robbery. Crashes include both accidents with and without injuries.

[16] Note that robberies were relatively rare. Before DDACTs, there were, on average, 9.0 robberies a year. After DDACTS, there were, on average, 2.7 robberies per year.

Table 2. Target Crimes and Crashes in DDACTS Zone: Pre- and Post-DDACTS

	Pre DDACTS: 7/6/07 - 7/5/10						Post DDACTS: 7/6/10 - 7/5/13						P-value	% Change
	-3	-2	-1	Avg	SD	Total	1	2	3	Avg	SD	Total		
Total Target Crime	104	73	114	97.0	21.4	291	53	69	54	58.7	9.0	176	0.05	-39.5%*
Total Crashes	121	90	103	104.7	15.6	314	85	76	77	79.3	4.9	238	0.05	-24.2%

* = p-value < .05

Table 3. Target Crimes and Crashes in Comparison Zone: Pre- and Post-DDACTS

	Pre DDACTS: 7/6/07 - 7/5/10						Post DDACTS: 7/6/10 - 7/5/13						P-value	% Change
	-3	-2	-1	Avg	SD	Total	1	2	3	Avg	SD	Total		
Total Target Crime	80	58	72	70.0	11.1	210	62	84	51	65.7	16.8	197	0.73	-6.2%
Total Crashes	199	152	133	161.3	34.0	484	121	139	154	138.0	16.5	414	0.34	-14.5%

* = p-value < .05

Table 4. Target Crimes and Crashes in Rest of Shawnee: Pre- and Post-DDACTS

	Pre DDACTS: 7/6/07 - 7/5/10						Post DDACTS: 7/6/10 - 7/5/13						P-value	% Change
	-3	-2	-1	Avg	SD	Total	1	2	3	Avg	SD	Total		
Total Target Crime	262	257	238	252.3	12.7	757	247	247	297	263.7	28.9	791	0.57	5.0%
Total Crashes	759	667	692	706.0	47.6	2118	623	548	596	589.0	38.0	1767	0.03	-16.6%*

* = p-value < .05

The Shawnee SPI data were also subjected to Interrupted Time Series analysis (ITS). ITS analysis is a method for assessing the effectiveness of a policy intervention by estimating changes in the level and trend (rate and direction of change over time) of time series data before and after the policy change. Interrupted time series analysis is a very effective and powerful quasi-experimental design.[17] ITS was employed to assess the

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[17] ITS accomplishes this task by combining segmented regression with methods for dealing with serial correlation. For a description of ITS see: Shadish, W. R.,

impact of DDACTS on robberies, burglaries (commercial and residential), auto burglaries (including license plates and tags), auto theft, assault and battery, theft, vandalism, vehicle collisions, and injurious or fatal auto collisions. The analysis was conducted in both the DDACTS target area and the comparison area.

The results indicate that the DDACTS intervention was associated with statistically significant declines in robberies, commercial burglaries, and vehicle collisions. These declines were sizeable and were limited to the target area, providing persuasive evidence that the declines were caused by DDACTS. For example, Figure 4 shows the monthly trend in robberies in the DDACTS and comparison areas over the six-year period. The vertical line represents the implementation of DDACTS, and the trend line shows a notable drop in robberies that coincides with the onset of DDACTS. In the DDACTS target area, the trend line shows a significant drop in robberies immediately after the onset of the program, followed by a continued gradual decline. The analysis indicates that robberies in the target area dropped by 88 percent after DDACTS implementation.[18] The comparison area

also experienced an initial drop in robberies after the onset of DDACTs, but the trend during the remainder of the post-intervention period is upward, indicating an increase in robberies. Results show a similar decline in commercial burglaries in the DDACTS target area (84 percent reduction).

Figure 5 shows the ITS results for vehicle crashes in both areas. The trend line shows the vehicle crashes in both the DDACTS and comparison areas were declining in the pre-intervention period. However, post-intervention the declining trend continues in the DDACTS area (24 percent reduction), while the comparison area experiences an upward trend in crashes. The ITS results also show that the DDACTS strategy was associated with more modest declines in residential burglary, license plate/tag thefts, and vehicle collisions involving injuries or fatalities.[19] Last, the analysis indicated that the DDACTS intervention had no effect on the number of auto burglaries or auto thefts, nor was it associated with any change in vandalism, theft, or assault and batteries.

Overall, the results from the focus groups of officers, and from the business and resident surveys, indicate that the DDACTS program was well-received both internally and by stakeholders in the community. Results from the quantitative analysis demonstrate that DDACTS led to a statistically significant reduction in two

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Cook, T. D., & Campbell, D. T. 2002. *Experimental and Quasi-Experimental Designs for Generalized Causal Inference.* Belmont, CA: Wadsworth Cengage Learning.

[18] The crime drop is determined by comparing the predicted number of robberies in the target area under the DDACTS intervention to the predicted number of robberies had the intervention never been implemented (i.e., using the pre-intervention model coefficients).

[19] Findings for these outcomes were approaching statistical significance, but did not reach p<.05.

target crimes—robberies and commercial burglaries—as well as in vehicle crashes.

V. LESSONS LEARNED

For the Police Manager

There is a fundamental connection between crime and traffic problems: The idea that crime and traffic problems are related makes intuitive sense. Most offenders will use a vehicle either to commit the crime, or as a means of transportation to and from the scene of the crime. And in some cases, the crime actually involves an automobile (i.e., auto theft). Moreover, traffic crashes do not occur evenly across a city or community. Rather, they occur disproportionately in a small number of high-risk areas—much like crime. The DDACTS model applies 21st century policing principles to target those areas where both crime and traffic problems co-occur. Those principles include:

- Real-time, ongoing data analysis to identify co-occurring crime and traffic hot spots;
- Place-based, hot spots police interventions that include high-visibility police presence and enforcement;
- Intensive outreach and collaboration efforts to garner support and participation from relevant stakeholders in the community;

- Ongoing assessment of program impact, and dissemination of those results to relevant stakeholders.

The DDACTS model represents a clear example of "doing more with less" through a problem solving approach that is collaborative, data-driven, and place-based. The model is clearly articulated in the DDACTS Operational Guidelines (2009), and the seven basic principles outlined in the Guide (and in this report) offer a clear road map for successful implementation of the DDACTS model. Importantly, the results from the Shawnee SPI demonstrate that DDACTS is an effective strategy for reducing targeted crimes and automobile accidents.

The implementation of DDACTS requires line officer buy-in, adequate training, and continued monitoring to insure program fidelity: DDACTS is not designed as a short-term initiative or crackdown on crime and vehicle crashes. Rather, the model requires a philosophical shift in how a police department views its role, particularly with regard to improving quality of life and reducing social harms. The Operational Guidelines note that DDACTS represents "a starting point for executing long-term change in which law enforcement professionals take a more integrated approach to the deployment of

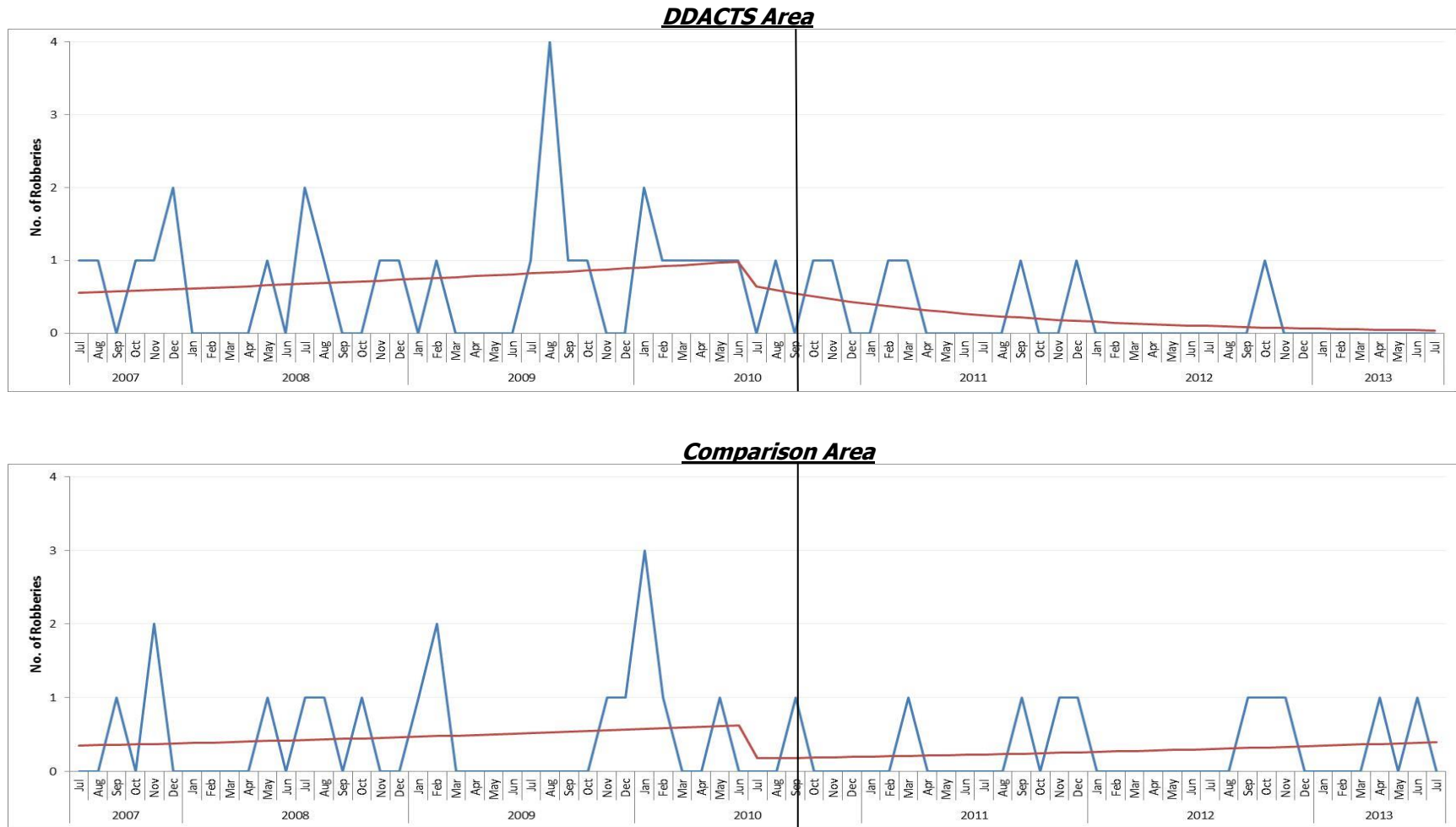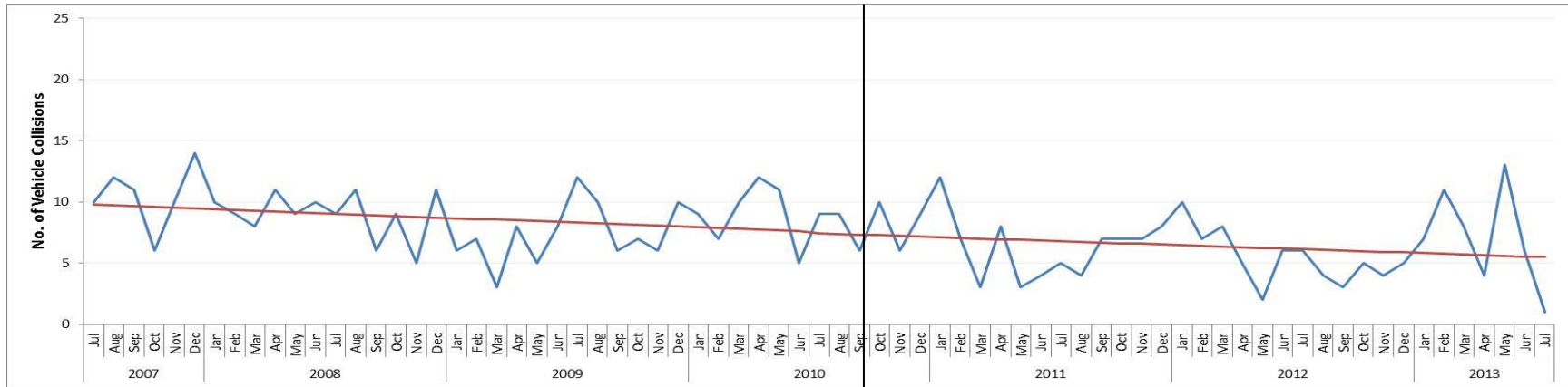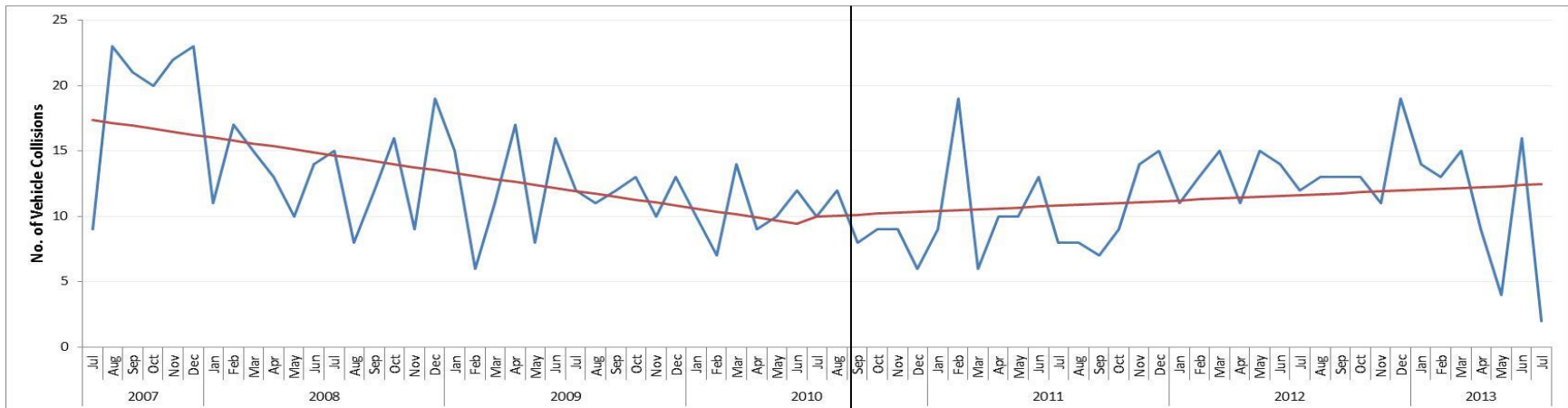**Figure 4. Interrupted Time Series Analysis with Robberies**

Figure 5. Interrupted Time Series Analysis with Vehicle Crashes

DDACTS Area

Comparison Area

16

personnel and resources."[20] Moreover, DDACTS in practice represents much more than traditional traffic enforcement. Rather, DDACTS is data-driven; it examines the co-occurrence of crime and crashes; it requires internal and external buy-in; and it includes rigorous, real-time assessment of implementation and impact. In many ways, DDACTS resembles the SARA model of problem-oriented policing (scanning, analysis, response, and assessment).

The results from the Shawnee officer focus groups underscore the importance of delivering a clear, articulate message about the DDACTS model, its guiding principles, and its long-term focus. When the message is vague or the training is rushed, officers will not get the full picture, and the likelihood of successful implementation and long-term buy-in will be substantially reduced. In addition to the basic principles, overall goals, and operational features, officer training should highlight how the DDACTS model is different from traditional traffic enforcement. The model represents an innovative blending of two public harms, and applies advanced principles of data analysis, problem solving, and hot spots policing to the co-occurrence of those harms. Any explanation of DDACTS that reduces the model to simple traffic enforcement crackdowns is inadequate, and dismisses its strong theoretical (i.e.,

deterrence) and operational (hot spots policing) foundations.

For the Line Officer

Increased police presence and high-visibility traffic enforcement can effectively reduce crime and traffic collisions: The results from the Shawnee SPI demonstrate that the DDACTS model can effectively reduce certain types of crime, as well as vehicle crashes. Given the strong theoretical foundation (e.g., deterrence), the logical connection between traffic and crime problems, and the application of hot spots policing principles (which are evidence-based), the findings presented here are, perhaps, not surprising. Nevertheless, the Shawnee SPI represents the first rigorous test of the DDACTS model, with an impact evaluation that reaches Level 4 on the Maryland Scale of Scientific Methods (the second highest score on the scale).[21] The results presented here are compelling evidence that the model, when implemented well, works. The challenge for line officers will be to adhere to all of the DDACTS guiding principles, and to avoid the temptation to view the strategy through a "zero tolerance" lens. The model involves collaboration, and it requires buy-in from business owners and residents. The DDACTS model requires

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[20] *Driven Approaches to Crime and Traffic Safety (DDACTS) Operational Guidelines*. Washington, DC: National Highway Traffic Safety Administration and US Department of Justice. August 2009. P. ii.

[21] For more information on the Maryland Scientific Scale, see: Sherman, L., Gottfredson, D.C., MacKenzie, D.L., Eck, J., Reuter, P., & Bushway, S.D. *Preventing Crime: What Works, What Doesn't, What's Promising*. National Institute of Justice, Research in Brief, July 1998.

police officers to adopt 21st century policing principles. It does not require them to act as "mindless drones" who simply pull over motorists for every traffic violation that they witness. DDACTS reduces social harms, enhances citizen safety, and improves quality of life—it is not a zero tolerance strategy.

Communicate your intentions and garner buy-in from businesses and residents: There is now widespread recognition that the police need citizen support, cooperation, and input to successfully prevent and reduce crime. Citizens are co-producers of public safety. The same philosophical approach serves as the foundation for preventing and reducing the co-occurrence of crime and vehicle crashes. Citizens and business owners should not be viewed as adversaries. They are partners. They are sources of vital information as the "eyes and ears" on the street. They are consumers of the public good that is generated by effective policing. And they are evaluators of the effectiveness of the strategies deployed by the police. Importantly, effectiveness is no longer measured solely by crime rates; it is now also conceptualized through citizen perceptions of procedural justice and police legitimacy. [22] How the police implement their strategies matters. And DDACTS should be implemented in a manner that is consistent with the

prevailing focus on fair, impartial, and procedurally just policing.

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[22] Tyler, T. R. (1990). *Why People Obey the Law*. New Haven: Yale University Press.

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